

## SAR Compliance Test Report

|                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                   |                                                                      |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------------------------------------|
| <b>Date of Report</b>                                   | 6/04/2021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Client's Contact person:</b>   | Przemysław Kitowski                                                  |
| <b>Number of pages:</b>                                 | 128                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Responsible Test engineer:</b> | Ilari Kinnunen                                                       |
| <b>Testing laboratory:</b>                              | <b>Verkotan Oy</b><br>Elektroniikkatie 17<br>90590 Oulu<br>Finland                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Client:</b>                    | <b>Mudita Sp. z o.o</b><br>Jana Czczota 9<br>02-607 Warsaw<br>Poland |
| <b>Tested device</b>                                    | Mudita Pure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                   |                                                                      |
| <b>Related reports:</b>                                 | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                   |                                                                      |
| <b>Testing has been carried out in accordance with:</b> | <p><b>47CFR §2.1093</b><br/>Radiofrequency Radiation Exposure Evaluation: Portable Devices</p> <p><b>FCC published RF exposure KDB procedures</b></p> <p><b>IEEE 1528 - 2013</b><br/>IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Technique</p> <p><b>RSS-102, Issue 5, 2015</b><br/>Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)</p> |                                   |                                                                      |
| <b>Documentation:</b>                                   | The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory                                                                                                                                                                                                                                                                                                                                                                      |                                   |                                                                      |
| <b>Test Results:</b>                                    | <p><b>The EUT complies with the requirements in respect of all parameters subject to the test.</b></p> <p>The test results relate only to devices specified in this document</p>                                                                                                                                                                                                                                                                                                                                 |                                   |                                                                      |
| <b>Date and signatures:</b>                             | 06.04.2021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                                                                      |

**Laboratory Manager**

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## 1. SUMMARY OF SAR TEST REPORT

### 1.1 Test Details

#### Equipment under Test (DUT):

|                                      |                                                                           |
|--------------------------------------|---------------------------------------------------------------------------|
| <b>Product:</b>                      | Pure                                                                      |
| <b>Manufacturer:</b>                 | Mudita sp. z o.o.                                                         |
| <b>Model:</b>                        | PU01                                                                      |
| <b>IMEI Number:</b>                  | 867698042420230 (#202), 867698041104180 (#201),<br>867698042410720 (#208) |
| <b>FCC ID:</b>                       | Contains FCC IDs: XMR201903EG25G, RFR-BL871                               |
| <b>ISED ID:</b>                      | Contains ISED IDs: 10224A-201903EG25G, 23249-BL871                        |
| <b>DUT Number:</b>                   | 22162, 22161, 22164                                                       |
| <b>Battery Type used in testing:</b> | Secondary Li-Ion Battery 3.8 V, 1600 mAh                                  |
| <b>State of the Sample</b>           | Production sample                                                         |

#### Testing information:

|                                      |                                                                                                                                                                                          |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Testing performed:</b>            | 24.08.2020 – 29.09.2020, 08.10.2020 – 09.10.2020                                                                                                                                         |
| <b>Notes:</b>                        | -                                                                                                                                                                                        |
| <b>Document ID:</b>                  | FCC SAR report_Mudita Pure_ID4331b_01042021                                                                                                                                              |
| <b>Document history and changes:</b> | This report replaces FCC SAR report_Mudita<br>Pure_ID4331b_16102020<br><br>Internal losses were added to conducted power results, thus<br>scaling factor and SAR results were decreased. |
| <b>Temperature °C</b>                | 22±2 / Controlled                                                                                                                                                                        |
| <b>Humidity RH%</b>                  | 30±20 / Controlled                                                                                                                                                                       |
| <b>Measurement performed by:</b>     | Ilari Kinnunen, Kirsi Kyllönen                                                                                                                                                           |

### 1.2 Maximum Results

The maximum reported\* SAR values for head and body-worn exposure condition. The device conforms to the requirements of the standards when the maximum reported SAR value is less than or equal to the limit. The device conforms to the requirements of the standards when the maximum reported SAR value is less than or equal to the limit. The SAR limit specified in in FCC 47 CFR part 2 (2.1093) and Health Canada's RF exposure guideline, Safety Code 6 is SAR<sub>1g</sub> of 1.6 W/kg.

### 1.2.1 Standalone SAR

| System    | Highest Reported* SAR <sub>1g</sub> (W/kg) in Head Exposure Condition | Highest Reported* SAR <sub>1g</sub> (W/kg) in Body-Worn Condition, 5mm separation distance | Result |
|-----------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------|
| GSM 850   | 0.03                                                                  | N/A                                                                                        | PASS   |
| GSM 1900  | 0**                                                                   | N/A                                                                                        | PASS   |
| GPRS 850  | N/A                                                                   | 1.13                                                                                       | PASS   |
| GPRS 1900 | N/A                                                                   | 0.28                                                                                       | PASS   |
| WCDMA 2   | 0**                                                                   | 0.15                                                                                       | PASS   |
| WCDMA 4   | 0.002                                                                 | 0.74                                                                                       | PASS   |
| WCDMA 5   | 0.07                                                                  | 0.95                                                                                       | PASS   |
| LTE 2     | 0**                                                                   | 0.15                                                                                       | PASS   |
| LTE 4     | 0.001                                                                 | 0.87                                                                                       | PASS   |
| LTE 5     | 0.07                                                                  | 0.90                                                                                       | PASS   |
| LTE 7     | 0**                                                                   | 0.05                                                                                       | PASS   |
| LTE 12    | 0.02                                                                  | 0.79                                                                                       | PASS   |
| LTE 13    | 0.05                                                                  | 0.92                                                                                       | PASS   |
| LTE 41    | 0**                                                                   | 0.03                                                                                       | PASS   |
| Bluetooth | 0.07                                                                  | 0.08                                                                                       | PASS   |

\* Reported SAR Values are scaled to upper limit of power tuning tolerance

\*\*SAR below the detection limit of the test system

### 1.2.2 Simultaneous Transmission SAR

| Highest Simultaneous Transmission SAR | Highest Reported* SAR <sub>1g</sub> (W/kg) in Head Condition | Highest Reported* SAR <sub>1g</sub> (W/kg) in Body-Worn Condition | Result |
|---------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------------|--------|
| Cellular + Bluetooth                  | 0.14                                                         | 1.17                                                              | PASS   |

### 1.2.3 Maximum Drift

|                                   |           |
|-----------------------------------|-----------|
| Maximum Drift During Measurements | -0.94 dB* |
|-----------------------------------|-----------|

\*Larger than 5% drifts included to scaling factors

### 1.2.4 Measurement Uncertainty

|                                 |         |
|---------------------------------|---------|
| Expanded Uncertainty (k=2) 95 % | ±23.4 % |
|---------------------------------|---------|

## 2. DESCRIPTION OF THE DEVICE UNDER TEST (DUT)

The DUT is a mobile phone.

The DUT has two transmit antennas for cellular bands which are not used simultaneously. Antenna A is used for frequency bands under 1GHz and Antenna B for frequency bands above 1GHz.

|                             |                                  |
|-----------------------------|----------------------------------|
| <b>Device Category</b>      | Portable                         |
| <b>Exposure Environment</b> | General population, uncontrolled |

### 2.1 Tested Frequency Bands and Operational Modes

|                           | <b>Modes of Operation</b> | <b>Modulation Mode</b> | <b>Transmitter Frequency Range (MHz)</b> |
|---------------------------|---------------------------|------------------------|------------------------------------------|
| <b>TX Frequency bands</b> | GSM/GPRS/EDGE 850         | GMSK/8PSK              | 824-849                                  |
|                           | GSM/GPRS/EDGE 1900        | GMSK/8PSK              | 1850-1910                                |
|                           | WCDMA 2                   | QPSK                   | 1850-1910                                |
|                           | WCDMA 4                   | QPSK                   | 1710-1755                                |
|                           | WCDMA 5                   | QPSK                   | 824-849                                  |
|                           | LTE 2                     | QPSK/16QAM             | 1850-1910                                |
|                           | LTE 4                     | QPSK/16QAM             | 1710-1755                                |
|                           | LTE 5                     | QPSK/16QAM             | 824-849                                  |
|                           | LTE 12                    | QPSK/16QAM             | 699-716                                  |
|                           | LTE 13                    | QPSK/16QAM             | 777-787                                  |
|                           | LTE 41                    | QPSK/16QAM             | 2496-2690                                |
|                           | Bluetooth                 | GFSK                   | 2402-2480                                |

### 2.2 Simultaneous Transmission

Bluetooth and the cellular mode can be operated simultaneously.

### 3. OUTPUT POWER

#### 3.1 Maximum specified conducted output power

From the customer, including tune-up tolerance.

| GSM 850               | Maximum Conducted Power [dBm] |
|-----------------------|-------------------------------|
| GSM (GMSK, 1Tx-slot)  | 29.5                          |
| GPRS (GMSK, 1Tx-slot) | 29.5                          |
| GPRS (GMSK, 3Tx-slot) | 29.5                          |
| EDGE (8PSK, 1Tx-slot) | 29.5                          |

| GSM 1900              | Maximum Conducted Power [dBm] |
|-----------------------|-------------------------------|
| GSM (GMSK, 1Tx-slot)  | 32                            |
| GPRS (GMSK, 1Tx-slot) | 32                            |
| GPRS (GMSK, 3Tx-slot) | 30.2                          |
| EDGE (8PSK, 1Tx-slot) | 29                            |

| WCDMA   | Maximum Conducted Power [dBm] |
|---------|-------------------------------|
| WCDMA 2 | 25                            |
| WCDMA 4 | 25                            |
| WCDMA 5 | 25                            |

| LTE    | Maximum Conducted Power [dBm] |
|--------|-------------------------------|
| LTE 2  | 25                            |
| LTE 4  | 25                            |
| LTE 5  | 25                            |
| LTE 12 | 25                            |
| LTE 13 | 25                            |
| LTE 41 | 25                            |

| Bluetooth | Maximum Conducted Power [dBm] |
|-----------|-------------------------------|
| Bluetooth | 8                             |

### 3.2 Tested conducted power

Measured conducted output power at transmitting antenna connector;

| Slot Configuration Info | GSM 850<br>CH128<br>824.2 MHz | GSM 850<br>CH 190<br>836.6 MHz | GSM 850<br>CH 251<br>848.8 MHz | GSM 1900<br>CH512<br>1850.2 MHz | GSM 1900<br>CH661<br>1880.0 MHz | GSM 1900<br>CH810<br>1909.8 MHz |
|-------------------------|-------------------------------|--------------------------------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|
| GSM (GMSK, 1Tx-slot)    | 30.05                         | 30.11                          | 30.07                          | 27.92                           | 28.48                           | 28.67                           |
| GPRS (GMSK, 1Tx-slot)   | 30.01                         | 30.15                          | 30.1                           | 28.37                           | 28.55                           | 28.73                           |
| GPRS (GMSK, 2Tx-slot)   | 29.5                          | 29.51                          | 29.44                          | 27.22                           | 27.32                           | 27.44                           |
| GPRS (GMSK, 3Tx-slot)   | 28.77                         | 28.91                          | 28.48                          | 25.12                           | 25.55                           | 25.63                           |
| GPRS (GMSK, 4Tx-slot)   | 27.61                         | 27.89                          | 27.8                           | 24.23                           | 24.21                           | 24.19                           |
| EDGE (8PSK, 1Tx-slot)   | 26.01                         | 26.02                          | 26.0                           | 25.07                           | 25.22                           | 25.28                           |
| EDGE (8PSK, 2Tx-slot)   | 24.82                         | 24.91                          | 24.81                          | 23.99                           | 24.07                           | 24.0                            |
| EDGE (8PSK, 3Tx-slot)   | 23.07                         | 23.28                          | 23.19                          | 22.65                           | 22.68                           | 22.64                           |
| EDGE (8PSK, 4Tx-slot)   | 21.98                         | 22.14                          | 22.03                          | 21.43                           | 21.39                           | 21.28                           |

Time averaged power:

| Slot Configuration Info | GSM 850<br>CH 128<br>824.2 MHz | GSM 850<br>CH 189<br>836.6 MHz | GSM 850<br>CH 251<br>848.8 MHz | GSM 1900<br>CH 512<br>1850.2 MHz | GSM 1900<br>CH 661<br>1880.0 MHz | GSM 1900<br>CH 810<br>1909.8 MHz |
|-------------------------|--------------------------------|--------------------------------|--------------------------------|----------------------------------|----------------------------------|----------------------------------|
| GSM (GMSK, 1Tx-slot)    | 21.05                          | 21.11                          | 21.07                          | 18.92                            | 19.48                            | 19.67                            |
| GPRS (GMSK, 1Tx-slot)   | 21.01                          | 21.15                          | 21.1                           | 19.37                            | 19.55                            | 19.73                            |
| GPRS (GMSK, 2Tx-slot)   | 23.5                           | 23.51                          | 23.44                          | <b>21.22</b>                     | <b>21.32</b>                     | <b>21.44</b>                     |
| GPRS (GMSK, 3Tx-slot)   | <b>24.51</b>                   | <b>24.65</b>                   | <b>24.22</b>                   | 20.86                            | 21.29                            | 21.37                            |
| GPRS (GMSK, 4Tx-slot)   | 24.61                          | 24.89                          | 24.8                           | 21.23                            | 21.21                            | 21.19                            |
| EDGE (8PSK, 1Tx-slot)   | 17.01                          | 17.02                          | 17                             | 16.07                            | 16.22                            | 16.28                            |
| EDGE (8PSK, 2Tx-slot)   | 18.82                          | 18.91                          | 18.81                          | 17.99                            | 18.07                            | 18                               |
| EDGE (8PSK, 3Tx-slot)   | 18.81                          | 19.02                          | 18.93                          | 18.39                            | 18.42                            | 18.38                            |
| EDGE (8PSK, 4Tx-slot)   | 18.98                          | 19.14                          | 19.03                          | 18.43                            | 18.39                            | 18.28                            |

For GSM bands, slot configuration with the bolded time averaged power (GPRS 850, 3 TX slot and GPRS 1900, 2 TX slot) was selected for Body SAR testing. GSM was selected for Head SAR testing instead of GPRS because GPRS cannot be used while having a voice call.

## WCDMA:

| Mode/Reference Channel | WCDMA 2                  |                          |                          | WCDMA 4                  |                          |                          | WCDMA 5                 |                         |                         |
|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|-------------------------|-------------------------|
|                        | CH 9262<br>1852.4<br>MHz | CH 9400<br>1880.0<br>MHz | CH 9538<br>1907.6<br>MHz | CH 1312<br>1712.4<br>MHz | CH 1413<br>1732.6<br>MHz | CH 1513<br>1752.6<br>MHz | CH 4132<br>826.4<br>MHz | CH 4183<br>836.6<br>MHz | CH 4233<br>846.6<br>MHz |
| <b>RMC 12.2K</b>       | 23.11                    | 22.91                    | 22.86                    | 22.3                     | 23.31                    | 22.79                    | 22.95                   | 22.86                   | 23.0                    |
| <b>HSDPA Subtest-1</b> | 22.04                    | 21.94                    | 21.89                    | 21.52                    | 22.3                     | 21.89                    | 21.9                    | 21.89                   | 21.96                   |
| <b>HSDPA Subtest-2</b> | 21.97                    | 21.91                    | 21.8                     | 21.53                    | 22.13                    | 21.93                    | 21.89                   | 21.98                   | 22.03                   |
| <b>HSDPA Subtest-3</b> | 21.43                    | 21.32                    | 21.24                    | 21.03                    | 21.6                     | 21.47                    | 21.39                   | 21.34                   | 21.51                   |
| <b>HSDPA Subtest-4</b> | 21.39                    | 21.29                    | 21.26                    | 20.99                    | 21.62                    | 21.39                    | 21.4                    | 21.42                   | 21.47                   |
| <b>HSUPA Subtest-1</b> | 21.96                    | 21.86                    | 21.79                    | 21.67                    | 22.2                     | 21.98                    | 21.96                   | 21.95                   | 22.05                   |
| <b>HSUPA Subtest-2</b> | 21.51                    | 21.4                     | 21.33                    | 20.92                    | 21.67                    | 21.4                     | 21.5                    | 21.4                    | 21.47                   |
| <b>HSUPA Subtest-3</b> | 21.92                    | 21.79                    | 21.78                    | 21.52                    | 22.07                    | 21.98                    | 21.94                   | 21.93                   | 22.07                   |
| <b>HSUPA Subtest-4</b> | 22.2                     | 22.03                    | 21.96                    | 21.19                    | 22.34                    | 21.76                    | 22.03                   | 21.94                   | 22.01                   |
| <b>HSUPA Subtest-5</b> | 21.93                    | 21.97                    | 21.91                    | 21.33                    | 22.16                    | 21.87                    | 22.0                    | 22.0                    | 22.14                   |

# LTE:

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                     |                     |               | 16QAM               |                     |                     |               |
|---------------|-------------|--------------------|---------------------|---------------------|---------------------|---------------|---------------------|---------------------|---------------------|---------------|
|               |             |                    | CH 18607 1850.7 MHz | CH 18900 1880.0 MHz | CH 19193 1909.3 MHz | 3GPP MPR [dB] | CH 18607 1850.7 MHz | CH 18900 1880.0 MHz | CH 19193 1909.3 MHz | 3GPP MPR [dB] |
| 2 / 1.4M      | 1           | 0                  | 22.75               | 23.29               | 22.36               | 0             | 21.36               | 22.08               | 21.36               | 1             |
|               | 1           | 2                  | 22.82               | 23.49               | 22.42               | 0             | 21.36               | 21.95               | 21.55               | 1             |
|               | 1           | 5                  | 22.72               | 23.12               | 22.55               | 0             | 21.4                | 21.89               | 21.11               | 1             |
|               | 3           | 0                  | 22.76               | 23.47               | 22.65               | 0             | 21.65               | 22.37               | 21.59               | 1             |
|               | 3           | 1                  | 22.91               | 23.55               | 22.57               | 0             | 21.8                | 22.49               | 21.61               | 1             |
|               | 3           | 3                  | 22.74               | 23.36               | 22.49               | 0             | 21.77               | 22.34               | 21.52               | 1             |
|               | 6           | 0                  | 21.96               | 22.35               | 21.59               | 1             | 20.88               | 21.56               | 20.77               | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                     |                     |               | 16QAM               |                     |                     |               |
|---------------|-------------|--------------------|---------------------|---------------------|---------------------|---------------|---------------------|---------------------|---------------------|---------------|
|               |             |                    | CH 18615 1851.5 MHz | CH 18900 1880.0 MHz | CH 19185 1918.5 MHz | 3GPP MPR [dB] | CH 18615 1851.5 MHz | CH 18900 1880.0 MHz | CH 19185 1918.5 MHz | 3GPP MPR [dB] |
| 2 / 3M        | 1           | 0                  | 22.61               | 23.35               | 22.71               | 0             | 21.6                | 21.56               | 20.86               | 1             |
|               | 1           | 7                  | 22.76               | 23.44               | 22.75               | 0             | 21.45               | 21.89               | 21.16               | 1             |
|               | 1           | 14                 | 22.63               | 23.28               | 22.52               | 0             | 21.29               | 21.84               | 20.81               | 1             |
|               | 8           | 0                  | 21.84               | 22.4                | 21.72               | 1             | 20.61               | 21.37               | 20.41               | 2             |
|               | 8           | 3                  | 21.69               | 22.43               | 21.7                | 1             | 20.55               | 21.44               | 20.5                | 2             |
|               | 8           | 7                  | 21.72               | 22.47               | 21.59               | 1             | 20.73               | 21.52               | 20.5                | 2             |
|               | 15          | 0                  | 21.79               | 22.32               | 21.61               | 1             | 20.81               | 21.36               | 20.5                | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                     |                     |               | 16QAM               |                     |                     |               |
|---------------|-------------|--------------------|---------------------|---------------------|---------------------|---------------|---------------------|---------------------|---------------------|---------------|
|               |             |                    | CH 18625 1852.5 MHz | CH 18900 1880.0 MHz | CH 19175 1907.5 MHz | 3GPP MPR [dB] | CH 18625 1852.5 MHz | CH 18900 1880.0 MHz | CH 19175 1907.5 MHz | 3GPP MPR [dB] |
| 2 / 5M        | 1           | 0                  | 22.64               | 23.06               | 22.57               | 0             | 21.45               | 21.58               | 20.89               | 1             |
|               | 1           | 12                 | 22.77               | 23.42               | 22.93               | 0             | 21.52               | 22.21               | 21.29               | 1             |
|               | 1           | 24                 | 22.7                | 23.22               | 22.47               | 0             | 21.16               | 21.95               | 21.17               | 1             |
|               | 12          | 0                  | 21.77               | 22.34               | 21.67               | 1             | 20.68               | 21.2                | 20.27               | 2             |
|               | 12          | 6                  | 21.79               | 22.48               | 21.74               | 1             | 20.8                | 21.45               | 20.51               | 2             |
|               | 12          | 13                 | 21.75               | 22.25               | 21.57               | 1             | 20.46               | 21.33               | 20.39               | 2             |
|               | 25          | 0                  | 21.82               | 22.37               | 21.63               | 1             | 20.57               | 21.34               | 20.53               | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK              |                 |                   |               | 16QAM             |                     |                   |               |
|---------------|-------------|--------------------|-------------------|-----------------|-------------------|---------------|-------------------|---------------------|-------------------|---------------|
|               |             |                    | CH 18650 1855 MHz | CH 18900 1880.0 | CH 19150 1905 MHz | 3GPP MPR [dB] | CH 18650 1855 MHz | CH 18900 1880.0 MHz | CH 19150 1905 MHz | 3GPP MPR [dB] |
| 2 / 10M       | 1           | 0                  | 22.63             | 21.78           | 20.64             | 0             | 21.03             | 20.44               | 20.29             | 1             |
|               | 1           | 24                 | 23.04             | 23.4            | 22.82             | 0             | 21.42             | 22.12               | 21.07             | 1             |
|               | 1           | 49                 | 22.03             | 23.17           | 22.92             | 0             | 21.22             | 21.58               | 20.86             | 1             |
|               | 25          | 0                  | 21.91             | 22.41           | 21.83             | 1             | 20.71             | 21.41               | 20.65             | 2             |
|               | 25          | 12                 | 21.95             | 22.58           | 21.82             | 1             | 20.77             | 21.54               | 20.74             | 2             |
|               | 25          | 25                 | 21.87             | 22.22           | 21.82             | 1             | 20.7              | 21.28               | 20.64             | 2             |
|               | 50          | 0                  | 21.94             | 22.27           | 21.68             | 1             | 20.76             | 21.33               | 20.5              | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                 |                     |               | 16QAM               |                     |                     |               |
|---------------|-------------|--------------------|---------------------|-----------------|---------------------|---------------|---------------------|---------------------|---------------------|---------------|
|               |             |                    | CH 18675 1857.5 MHz | CH 18900 1880.0 | CH 19125 1902.5 MHz | 3GPP MPR [dB] | CH 18675 1857.5 MHz | CH 18900 1880.0 MHz | CH 19125 1902.5 MHz | 3GPP MPR [dB] |
| 2 / 15M       | 1           | 0                  | 22.64               | 20.74           | 21.7                | 0             | 21.41               | 19.37               | 20.83               | 1             |
|               | 1           | 37                 | 23.05               | 23.81           | 21.6                | 0             | 21.66               | 22.47               | 21.24               | 1             |
|               | 1           | 74                 | 20.91               | 23.15           | 22.79               | 0             | 20.53               | 21.67               | 21.09               | 1             |
|               | 36          | 0                  | 21.87               | 22.51           | 21.7                | 1             | 20.77               | 21.18               | 20.68               | 2             |
|               | 36          | 19                 | 21.95               | 22.42           | 21.82               | 1             | 20.75               | 21.39               | 20.82               | 2             |
|               | 36          | 39                 | 21.85               | 22.25           | 21.63               | 1             | 20.68               | 21.2                | 20.61               | 2             |
|               | 75          | 0                  | 21.96               | 22.3            | 21.65               | 1             | 20.89               | 21.25               | 20.56               | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                 |                     |               | 16QAM               |                 |                     |               |
|---------------|-------------|--------------------|---------------------|-----------------|---------------------|---------------|---------------------|-----------------|---------------------|---------------|
|               |             |                    | CH 18700 1860.0 MHz | CH 18900 1880.0 | CH 19100 1900.0 MHz | 3GPP MPR [dB] | CH 18700 1860.0 MHz | CH 18900 1880.0 | CH 19100 1900.0 MHz | 3GPP MPR [dB] |
| 2 / 20M       | 1           | 0                  | 22.69               | 19.71           | 22.8                | 0             | 21.45               | 19.87           | 21.1                | 1             |
|               | 1           | 50                 | 22.98               | 23.49           | 21.34               | 0             | 21.49               | 22.28           | 21.05               | 1             |
|               | 1           | 99                 | 19.79               | 22.94           | 22.53               | 0             | 19.93               | 21.21           | 21.21               | 1             |
|               | 50          | 0                  | 21.97               | 22.26           | 21.84               | 1             | 20.91               | 21.36           | 20.59               | 2             |
|               | 50          | 25                 | 21.86               | 22.29           | 21.78               | 1             | 20.82               | 21.45           | 20.72               | 2             |
|               | 50          | 50                 | 21.91               | 22.07           | 21.8                | 1             | 20.9                | 21.11           | 20.8                | 2             |
|               | 100         | 0                  | 22.06               | 22.23           | 21.7                | 1             | 21.04               | 21.1            | 20.54               | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                     |                     |               | 16QAM               |                     |                     |               |
|---------------|-------------|--------------------|---------------------|---------------------|---------------------|---------------|---------------------|---------------------|---------------------|---------------|
|               |             |                    | CH 19957 1710.7 MHz | CH 20175 1732.5 MHz | CH 20393 1754.3 MHz | 3GPP MPR [dB] | CH 19957 1710.7 MHz | CH 20175 1732.5 MHz | CH 20393 1754.3 MHz | 3GPP MPR [dB] |
| 4 / 1.4M      | 1           | 0                  | 22.79               | 23.88               | 23.68               | 0             | 22.3                | 22.32               | 22.18               | 1             |
|               | 1           | 2                  | 23.24               | 23.98               | 23.78               | 0             | 22.25               | 22.19               | 21.94               | 1             |
|               | 1           | 5                  | 23.1                | 23.94               | 23.82               | 0             | 22.16               | 22.07               | 21.88               | 1             |
|               | 3           | 0                  | 23.19               | 24.08               | 23.77               | 0             | 22.27               | 22.94               | 22.61               | 1             |
|               | 3           | 1                  | 23.21               | 24.11               | 23.89               | 0             | 21.84               | 23.08               | 22.88               | 1             |
|               | 3           | 3                  | 22.62               | 24.13               | 23.71               | 0             | 21.72               | 22.98               | 22.7                | 1             |
|               | 6           | 0                  | 23.06               | 23.17               | 22.77               | 1             | 22.15               | 21.77               | 21.56               | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                     |                     |               | 16QAM               |                     |                     |               |
|---------------|-------------|--------------------|---------------------|---------------------|---------------------|---------------|---------------------|---------------------|---------------------|---------------|
|               |             |                    | CH 19965 1711.5 MHz | CH 20175 1732.5 MHz | CH 20385 1753.5 MHz | 3GPP MPR [dB] | CH 19965 1711.5 MHz | CH 20175 1732.5 MHz | CH 20385 1753.5 MHz | 3GPP MPR [dB] |
| 4 / 3M        | 1           | 0                  | 23.09               | 23.98               | 23.56               | 0             | 22.3                | 22.45               | 22.03               | 1             |
|               | 1           | 7                  | 21.44               | 23.93               | 23.68               | 0             | 22.09               | 22.54               | 22.39               | 1             |
|               | 1           | 14                 | 22.68               | 23.95               | 23.79               | 0             | 21.43               | 22.34               | 22.45               | 1             |
|               | 8           | 0                  | 22.98               | 23.1                | 22.69               | 1             | 22.06               | 21.93               | 21.65               | 2             |
|               | 8           | 3                  | 22.92               | 22.99               | 22.61               | 1             | 22.01               | 21.96               | 21.67               | 2             |
|               | 8           | 7                  | 22.78               | 23.0                | 22.59               | 1             | 21.86               | 22.17               | 21.64               | 2             |
|               | 15          | 0                  | 22.4                | 22.96               | 22.59               | 1             | 21.91               | 22.09               | 21.53               | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                     |                     |               | 16QAM               |                     |                     |               |
|---------------|-------------|--------------------|---------------------|---------------------|---------------------|---------------|---------------------|---------------------|---------------------|---------------|
|               |             |                    | CH 19975 1711.5 MHz | CH 20175 1732.5 MHz | CH 20375 1753.5 MHz | 3GPP MPR [dB] | CH 19975 1711.5 MHz | CH 20175 1732.5 MHz | CH 20375 1753.5 MHz | 3GPP MPR [dB] |
| 4 / 5M        | 1           | 0                  | 22.49               | 23.75               | 22.84               | 0             | 22.16               | 22.42               | 22.15               | 1             |
|               | 1           | 12                 | 22.26               | 23.86               | 23.6                | 0             | 20.95               | 22.49               | 22.45               | 1             |
|               | 1           | 24                 | 21.35               | 23.81               | 23.79               | 0             | 21.03               | 22.12               | 22.52               | 1             |
|               | 12          | 0                  | 22.36               | 22.9                | 22.67               | 1             | 21.9                | 21.65               | 21.41               | 2             |
|               | 12          | 6                  | 22.69               | 22.87               | 22.64               | 1             | 21.75               | 21.8                | 21.46               | 2             |
|               | 12          | 13                 | 22.45               | 22.85               | 22.76               | 1             | 21.54               | 21.61               | 21.58               | 2             |
|               | 25          | 0                  | 22.64               | 22.89               | 22.61               | 1             | 21.75               | 21.74               | 21.63               | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                     |                     |               | 16QAM               |                     |                     |               |
|---------------|-------------|--------------------|---------------------|---------------------|---------------------|---------------|---------------------|---------------------|---------------------|---------------|
|               |             |                    | CH 20000 1715.0 MHz | CH 20175 1732.5 MHz | CH 20350 1750.0 MHz | 3GPP MPR [dB] | CH 20000 1715.0 MHz | CH 20175 1732.5 MHz | CH 20350 1750.0 MHz | 3GPP MPR [dB] |
| 4 / 10M       | 1           | 0                  | 21.77               | 23.55               | 22.66               | 0             | 20.94               | 22.04               | 21.44               | 1             |
|               | 1           | 24                 | 22.42               | 24.08               | 23.36               | 0             | 21.17               | 22.65               | 22.33               | 1             |
|               | 1           | 49                 | 21.1                | 23.8                | 22.56               | 0             | 19.72               | 21.95               | 22.07               | 1             |
|               | 25          | 0                  | 21.9                | 23.0                | 22.76               | 1             | 20.47               | 21.87               | 21.59               | 2             |
|               | 25          | 12                 | 22.34               | 23.0                | 22.72               | 1             | 20.96               | 21.89               | 21.75               | 2             |
|               | 25          | 25                 | 21.07               | 22.76               | 22.65               | 1             | 20.67               | 21.76               | 21.65               | 2             |
|               | 50          | 0                  | 22.19               | 22.93               | 22.54               | 1             | 20.84               | 22.0                | 21.74               | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                     |                     |               | 16QAM               |                     |                     |               |
|---------------|-------------|--------------------|---------------------|---------------------|---------------------|---------------|---------------------|---------------------|---------------------|---------------|
|               |             |                    | CH 20025 1717.0 MHz | CH 20175 1732.5 MHz | CH 20325 1747.5 MHz | 3GPP MPR [dB] | CH 20025 1717.0 MHz | CH 20175 1732.5 MHz | CH 20325 1747.5 MHz | 3GPP MPR [dB] |
| 4 / 15M       | 1           | 0                  | 15.03               | 22.39               | 23.2                | 0             | 21.16               | 22.08               | 21.95               | 1             |
|               | 1           | 37                 | 22.28               | 23.91               | 22.84               | 0             | 21.41               | 22.85               | 22.57               | 1             |
|               | 1           | 74                 | 22.31               | 22.94               | 22.34               | 0             | 21.51               | 21.82               | 22.0                | 1             |
|               | 36          | 0                  | 22.17               | 22.96               | 22.64               | 1             | 20.72               | 21.91               | 21.55               | 2             |
|               | 36          | 19                 | 21.8                | 22.91               | 22.61               | 1             | 21.32               | 21.87               | 21.7                | 2             |
|               | 36          | 39                 | 21.3                | 22.81               | 22.57               | 1             | 20.88               | 21.68               | 21.66               | 2             |
|               | 75          | 0                  | 21.73               | 22.87               | 22.5                | 1             | 20.8                | 21.83               | 21.59               | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                     |                     |               | 16QAM               |                     |                     |               |
|---------------|-------------|--------------------|---------------------|---------------------|---------------------|---------------|---------------------|---------------------|---------------------|---------------|
|               |             |                    | CH 20050 1720.0 MHz | CH 20175 1732.5 MHz | CH 20300 1745.0 MHz | 3GPP MPR [dB] | CH 20050 1720.0 MHz | CH 20175 1732.5 MHz | CH 20300 1745.0 MHz | 3GPP MPR [dB] |
| 4 / 20M       | 1           | 0                  | 20.7                | 21.52               | 23.66               | 0             | 22.38               | 22.28               | 23.03               | 1             |
|               | 1           | 50                 | 21.47               | 23.93               | 23.39               | 0             | 22.99               | 23.12               | 22.76               | 1             |
|               | 1           | 99                 | 22.8                | 22.73               | 21.51               | 0             | 22.47               | 23.39               | 22.36               | 1             |
|               | 50          | 0                  | 21.51               | 22.91               | 22.88               | 1             | 22.33               | 22.30               | 22.31               | 2             |
|               | 50          | 25                 | 21.98               | 22.84               | 22.57               | 1             | 22.24               | 22.24               | 22.16               | 2             |
|               | 50          | 50                 | 22.95               | 22.74               | 22.43               | 1             | 22.30               | 22.17               | 22.10               | 2             |
|               | 100         | 0                  | 22.45               | 22.76               | 22.66               | 1             | 22.17               | 22.26               | 22.12               | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK               |                    |                    |               | 16QAM              |                    |                    |               |
|---------------|-------------|--------------------|--------------------|--------------------|--------------------|---------------|--------------------|--------------------|--------------------|---------------|
|               |             |                    | CH 20407 824.7 MHz | CH 20525 836.5 MHz | CH 20643 848.3 MHz | 3GPP MPR [dB] | CH 20407 824.7 MHz | CH 20525 836.5 MHz | CH 20643 848.3 MHz | 3GPP MPR [dB] |
| 5 / 1.4M      | 1           | 0                  | 22.97              | 23.2               | 23.49              | 0             | 21.87              | 21.84              | 22.34              | 1             |
|               | 1           | 2                  | 22.99              | 23.3               | 23.71              | 0             | 21.88              | 21.64              | 22.36              | 1             |
|               | 1           | 5                  | 23.06              | 23.29              | 23.61              | 0             | 21.79              | 21.52              | 22.3               | 1             |
|               | 3           | 0                  | 23.36              | 23.43              | 23.62              | 0             | 21.99              | 22.3               | 22.61              | 1             |
|               | 3           | 1                  | 23.43              | 23.45              | 23.61              | 0             | 22.59              | 22.41              | 22.77              | 1             |
|               | 3           | 3                  | 23.4               | 23.38              | 23.55              | 0             | 22.76              | 22.36              | 22.72              | 1             |
|               | 6           | 0                  | 22.44              | 22.34              | 22.68              | 1             | 21.48              | 21.55              | 21.51              | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK               |                    |                    |               | 16QAM              |                    |                    |               |
|---------------|-------------|--------------------|--------------------|--------------------|--------------------|---------------|--------------------|--------------------|--------------------|---------------|
|               |             |                    | CH 20415 825.5 MHz | CH 20525 836.5 MHz | CH 20635 847.5 MHz | 3GPP MPR [dB] | CH 20415 825.5 MHz | CH 20525 836.5 MHz | CH 20635 847.5 MHz | 3GPP MPR [dB] |
| 5 / 3M        | 1           | 0                  | 23.44              | 23.43              | 23.65              | 0             | 22.08              | 22.04              | 22.38              | 1             |
|               | 1           | 7                  | 23.6               | 23.25              | 23.88              | 0             | 22.3               | 22.2               | 22.58              | 1             |
|               | 1           | 14                 | 23.5               | 23.36              | 23.69              | 0             | 22.24              | 22.07              | 22.37              | 1             |
|               | 8           | 0                  | 22.57              | 22.48              | 22.7               | 1             | 21.5               | 21.36              | 21.85              | 2             |
|               | 8           | 3                  | 22.53              | 22.43              | 22.76              | 1             | 21.44              | 21.27              | 21.79              | 2             |
|               | 8           | 7                  | 22.54              | 22.39              | 22.67              | 1             | 21.48              | 21.25              | 21.78              | 2             |
|               | 15          | 0                  | 22.54              | 22.5               | 22.66              | 1             | 21.63              | 21.39              | 21.75              | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK               |                    |                    |               | 16QAM              |                    |                    |               |
|---------------|-------------|--------------------|--------------------|--------------------|--------------------|---------------|--------------------|--------------------|--------------------|---------------|
|               |             |                    | CH 20425 826.5 MHz | CH 20525 836.5 MHz | CH 20625 846.5 MHz | 3GPP MPR [dB] | CH 20425 826.5 MHz | CH 20525 836.5 MHz | CH 20625 846.5 MHz | 3GPP MPR [dB] |
| 5 / 5M        | 1           | 0                  | 23.36              | 23.18              | 23.5               | 0             | 22.0               | 21.96              | 22.05              | 1             |
|               | 1           | 12                 | 23.54              | 23.57              | 23.8               | 0             | 22.27              | 22.21              | 22.64              | 1             |
|               | 1           | 24                 | 23.46              | 23.16              | 23.61              | 0             | 22.16              | 21.73              | 22.43              | 1             |
|               | 12          | 0                  | 22.57              | 22.45              | 22.7               | 1             | 21.29              | 21.39              | 21.46              | 2             |
|               | 12          | 6                  | 22.59              | 22.45              | 22.83              | 1             | 21.54              | 21.38              | 21.53              | 2             |
|               | 12          | 13                 | 22.5               | 22.36              | 22.73              | 1             | 21.52              | 21.29              | 21.51              | 2             |
|               | 25          | 0                  | 22.54              | 22.36              | 22.72              | 1             | 21.48              | 21.43              | 21.65              | 2             |

| LTE Band<br>/ BW | RB<br>Size<br>RBs | RB<br>Offset<br>RB<br>Start | QPSK                        |                             |                           |                  | 16QAM                       |                             |                           |                  |
|------------------|-------------------|-----------------------------|-----------------------------|-----------------------------|---------------------------|------------------|-----------------------------|-----------------------------|---------------------------|------------------|
|                  |                   |                             | CH<br>20450<br>829.0<br>MHz | CH<br>20525<br>836.5<br>MHz | CH<br>20600<br>844<br>MHz | 3GPP<br>MPR [dB] | CH<br>20450<br>829.0<br>MHz | CH<br>20525<br>836.5<br>MHz | CH<br>20600<br>844<br>MHz | 3GPP<br>MPR [dB] |
| 5 / 10M          | 1                 | 0                           | 23.46                       | 23.2                        | 23.48                     | 0                | 22.15                       | 21.52                       | 22.16                     | 1                |
|                  | 1                 | 24                          | 23.72                       | 23.45                       | 23.79                     | 0                | 22.38                       | 22.09                       | 22.4                      | 1                |
|                  | 1                 | 49                          | 23.5                        | 23.52                       | 23.62                     | 0                | 21.72                       | 21.93                       | 22.21                     | 1                |
|                  | 25                | 0                           | 22.7                        | 22.48                       | 22.75                     | 1                | 21.44                       | 21.45                       | 21.66                     | 2                |
|                  | 25                | 12                          | 22.62                       | 22.52                       | 22.68                     | 1                | 21.45                       | 21.41                       | 21.63                     | 2                |
|                  | 25                | 25                          | 22.37                       | 22.5                        | 22.69                     | 1                | 21.33                       | 21.39                       | 21.7                      | 2                |
|                  | 50                | 0                           | 22.52                       | 22.48                       | 22.67                     | 1                | 21.54                       | 21.45                       | 21.7                      | 2                |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                     |                     |               | 16QAM               |                     |                     |               |
|---------------|-------------|--------------------|---------------------|---------------------|---------------------|---------------|---------------------|---------------------|---------------------|---------------|
|               |             |                    | CH 20775 2502.5 MHz | CH 21100 2535.0 MHz | CH 21425 2567.5 MHz | 3GPP MPR [dB] | CH 20775 2502.5 MHz | CH 21100 2535.0 MHz | CH 21425 2567.5 MHz | 3GPP MPR [dB] |
| 7 / 5M        | 1           | 0                  | 23.88               | 24.47               | 25.21               | 0             | 22.81               | 23.03               | 24.05               | 1             |
|               | 1           | 12                 | 24.14               | 25.05               | 25.47               | 0             | 23.15               | 23.57               | 24.24               | 1             |
|               | 1           | 24                 | 23.94               | 24.72               | 25.11               | 0             | 22.91               | 23.21               | 24.03               | 1             |
|               | 12          | 0                  | 23.03               | 23.79               | 24.38               | 1             | 22.04               | 22.63               | 23.29               | 2             |
|               | 12          | 6                  | 23.1                | 23.77               | 24.45               | 1             | 22.12               | 22.59               | 23.45               | 2             |
|               | 12          | 13                 | 23.1                | 23.64               | 24.36               | 1             | 22.07               | 22.56               | 23.25               | 2             |
|               | 25          | 0                  | 23.01               | 23.67               | 24.35               | 1             | 22.03               | 22.59               | 23.46               | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                     |                     |               | 16QAM               |                     |                     |               |
|---------------|-------------|--------------------|---------------------|---------------------|---------------------|---------------|---------------------|---------------------|---------------------|---------------|
|               |             |                    | CH 20800 2505.0 MHz | CH 21100 2535.0 MHz | CH 21400 2565.0 MHz | 3GPP MPR [dB] | CH 20800 2505.0 MHz | CH 21100 2535.0 MHz | CH 21400 2565.0 MHz | 3GPP MPR [dB] |
| 7 / 10M       | 1           | 0                  | 24.1                | 24.61               | 25.21               | 0             | 22.94               | 23.51               | 23.71               | 1             |
|               | 1           | 24                 | 24.43               | 24.76               | 25.53               | 0             | 23.24               | 23.85               | 23.98               | 1             |
|               | 1           | 49                 | 24.28               | 24.89               | 24.25               | 0             | 22.84               | 23.48               | 23.97               | 1             |
|               | 25          | 0                  | 23.28               | 23.94               | 24.44               | 1             | 22.39               | 22.8                | 23.45               | 2             |
|               | 25          | 12                 | 23.36               | 23.84               | 24.42               | 1             | 22.4                | 22.88               | 23.32               | 2             |
|               | 25          | 25                 | 23.21               | 23.8                | 24.42               | 1             | 22.32               | 22.77               | 23.41               | 2             |
|               | 50          | 0                  | 23.28               | 23.86               | 24.44               | 1             | 22.38               | 22.81               | 23.44               | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                     |                     |               | 16QAM               |                     |                     |               |
|---------------|-------------|--------------------|---------------------|---------------------|---------------------|---------------|---------------------|---------------------|---------------------|---------------|
|               |             |                    | CH 20825 2507.5 MHz | CH 21100 2535.0 MHz | CH 21375 2562.5 MHz | 3GPP MPR [dB] | CH 20825 2507.5 MHz | CH 21100 2535.0 MHz | CH 21375 2562.5 MHz | 3GPP MPR [dB] |
| 7 / 15M       | 1           | 0                  | 24.37               | 24.78               | 25.01               | 0             | 22.87               | 23.46               | 23.73               | 1             |
|               | 1           | 37                 | 24.62               | 25.21               | 25.54               | 0             | 23.17               | 23.77               | 24.41               | 1             |
|               | 1           | 74                 | 24.25               | 25.15               | 24.6                | 0             | 22.85               | 23.48               | 23.88               | 1             |
|               | 36          | 0                  | 23.46               | 23.79               | 24.39               | 1             | 22.41               | 22.81               | 23.35               | 2             |
|               | 36          | 19                 | 23.39               | 23.85               | 24.42               | 1             | 22.4                | 22.78               | 23.33               | 2             |
|               | 36          | 39                 | 23.34               | 23.82               | 24.46               | 1             | 22.34               | 22.76               | 23.34               | 2             |
|               | 75          | 0                  | 23.42               | 23.94               | 24.36               | 1             | 22.52               | 22.8                | 23.36               | 2             |

| LTE Band<br>/ BW | RB<br>Size<br>RBs | RB<br>Offset<br>RB<br>Start | QPSK                         |                              |                              |                  | 16QAM                        |                              |                              |                  |
|------------------|-------------------|-----------------------------|------------------------------|------------------------------|------------------------------|------------------|------------------------------|------------------------------|------------------------------|------------------|
|                  |                   |                             | CH<br>20850<br>2510.0<br>MHz | CH<br>21100<br>2535.0<br>MHz | CH<br>21350<br>2560.0<br>MHz | 3GPP<br>MPR [dB] | CH<br>20850<br>2510.0<br>MHz | CH<br>21100<br>2535.0<br>MHz | CH<br>21350<br>2560.0<br>MHz | 3GPP<br>MPR [dB] |
| 7 / 20M          | 1                 | 0                           | 24.18                        | 24.55                        | 23.62                        | 0                | 23.05                        | 23.41                        | 23.8                         | 1                |
|                  | 1                 | 50                          | 24.56                        | 25.01                        | 25.6                         | 0                | 23.47                        | 23.93                        | 24.36                        | 1                |
|                  | 1                 | 99                          | 24.22                        | 24.73                        | 24.4                         | 0                | 23.19                        | 23.7                         | 22.67                        | 1                |
|                  | 50                | 0                           | 23.43                        | 23.88                        | 24.4                         | 1                | 22.46                        | 22.83                        | 23.47                        | 2                |
|                  | 50                | 25                          | 23.48                        | 23.87                        | 24.46                        | 1                | 22.5                         | 22.9                         | 23.35                        | 2                |
|                  | 50                | 50                          | 23.35                        | 23.93                        | 24.35                        | 1                | 22.45                        | 22.9                         | 23.27                        | 2                |
|                  | 100               | 0                           | 23.4                         | 23.92                        | 24.32                        | 1                | 22.34                        | 22.88                        | 23.24                        | 2                |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK               |                    |                    |               | 16QAM              |                    |                    |               |
|---------------|-------------|--------------------|--------------------|--------------------|--------------------|---------------|--------------------|--------------------|--------------------|---------------|
|               |             |                    | CH 23017 699.7 MHz | CH 23095 707.5 MHz | CH 23173 715.3 MHz | 3GPP MPR [dB] | CH 23017 699.7 MHz | CH 23095 707.5 MHz | CH 23173 715.3 MHz | 3GPP MPR [dB] |
| 12 / 1.4M     | 1           | 0                  | 23.28              | 23.32              | 23.45              | 0             | 21.89              | 22.19              | 22.4               | 1             |
|               | 1           | 2                  | 23.45              | 23.63              | 23.62              | 0             | 22.06              | 21.92              | 22.25              | 1             |
|               | 1           | 5                  | 23.33              | 23.5               | 23.5               | 0             | 22.0               | 22.14              | 21.87              | 1             |
|               | 3           | 0                  | 23.41              | 23.63              | 23.68              | 0             | 22.44              | 22.7               | 22.62              | 1             |
|               | 3           | 1                  | 23.4               | 23.84              | 23.54              | 0             | 22.53              | 23.0               | 22.74              | 1             |
|               | 3           | 3                  | 23.34              | 23.77              | 23.51              | 0             | 22.6               | 22.8               | 22.59              | 1             |
|               | 6           | 0                  | 22.25              | 22.73              | 22.48              | 1             | 21.74              | 21.73              | 21.42              | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK               |                    |                    |               | 16QAM              |                    |                    |               |
|---------------|-------------|--------------------|--------------------|--------------------|--------------------|---------------|--------------------|--------------------|--------------------|---------------|
|               |             |                    | CH 23025 700.5 MHz | CH 23095 707.5 MHz | CH 23165 714.5 MHz | 3GPP MPR [dB] | CH 23025 700.5 MHz | CH 23095 707.5 MHz | CH 23165 714.5 MHz | 3GPP MPR [dB] |
| 12 / 3M       | 1           | 0                  | 23.45              | 23.54              | 23.55              | 0             | 21.68              | 22.04              | 22.35              | 1             |
|               | 1           | 7                  | 23.39              | 23.97              | 23.79              | 0             | 22.16              | 22.36              | 22.46              | 1             |
|               | 1           | 14                 | 23.39              | 23.7               | 23.6               | 0             | 22.24              | 22.01              | 22.35              | 1             |
|               | 8           | 0                  | 22.57              | 22.79              | 22.89              | 1             | 21.79              | 21.21              | 21.6               | 2             |
|               | 8           | 3                  | 22.6               | 22.89              | 22.84              | 1             | 21.55              | 21.79              | 21.8               | 2             |
|               | 8           | 7                  | 22.64              | 22.88              | 22.66              | 1             | 21.54              | 21.87              | 21.58              | 2             |
|               | 15          | 0                  | 22.56              | 22.92              | 22.66              | 1             | 21.74              | 21.81              | 21.67              | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK               |                    |                    |               | 16QAM              |                    |                    |               |
|---------------|-------------|--------------------|--------------------|--------------------|--------------------|---------------|--------------------|--------------------|--------------------|---------------|
|               |             |                    | CH 23035 701.5 MHz | CH 23095 707.5 MHz | CH 23155 713.5 MHz | 3GPP MPR [dB] | CH 23035 701.5 MHz | CH 23095 707.5 MHz | CH 23155 713.5 MHz | 3GPP MPR [dB] |
| 12 / 5M       | 1           | 0                  | 23.34              | 23.46              | 23.51              | 0             | 21.82              | 21.85              | 21.73              | 1             |
|               | 1           | 12                 | 23.59              | 23.85              | 23.55              | 0             | 22.2               | 22.58              | 22.35              | 1             |
|               | 1           | 24                 | 23.8               | 23.44              | 23.47              | 0             | 22.36              | 22.01              | 22.09              | 1             |
|               | 12          | 0                  | 22.53              | 22.71              | 22.74              | 1             | 21.33              | 21.42              | 21.45              | 2             |
|               | 12          | 6                  | 22.66              | 22.9               | 22.7               | 1             | 21.53              | 21.61              | 21.42              | 2             |
|               | 12          | 13                 | 22.83              | 22.82              | 22.66              | 1             | 21.71              | 21.81              | 21.41              | 2             |
|               | 25          | 0                  | 22.64              | 22.83              | 22.66              | 1             | 21.63              | 21.74              | 21.49              | 2             |

| LTE Band<br>/ BW | RB<br>Size<br>RBs | RB<br>Offset<br>RB<br>Start | QPSK                        |                             |                             |                  | 16QAM                       |                             |                             |                  |
|------------------|-------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|------------------|-----------------------------|-----------------------------|-----------------------------|------------------|
|                  |                   |                             | CH<br>23060<br>704.0<br>MHz | CH<br>23095<br>707.5<br>MHz | CH<br>23130<br>711.0<br>MHz | 3GPP<br>MPR [dB] | CH<br>23060<br>704.0<br>MHz | CH<br>23095<br>707.5<br>MHz | CH<br>23130<br>711.0<br>MHz | 3GPP<br>MPR [dB] |
| 12 / 10M         | 1                 | 0                           | 23.35                       | 23.5                        | 23.69                       | 0                | 22.05                       | 21.75                       | 22.34                       | 1                |
|                  | 1                 | 24                          | 23.77                       | 23.84                       | 23.75                       | 0                | 22.43                       | 22.3                        | 22.54                       | 1                |
|                  | 1                 | 49                          | 24.0                        | 23.47                       | 23.51                       | 0                | 22.24                       | 21.94                       | 21.89                       | 1                |
|                  | 25                | 0                           | 22.59                       | 22.81                       | 22.81                       | 1                | 21.63                       | 21.7                        | 21.71                       | 2                |
|                  | 25                | 12                          | 22.87                       | 22.82                       | 22.72                       | 1                | 21.82                       | 21.63                       | 21.64                       | 2                |
|                  | 25                | 25                          | 22.97                       | 22.74                       | 22.7                        | 1                | 21.87                       | 21.74                       | 21.56                       | 2                |
|                  | 50                | 0                           | 22.69                       | 22.81                       | 22.81                       | 1                | 21.9                        | 21.7                        | 21.83                       | 2                |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK               |                    |                    |               | 16QAM              |                    |                    |               |
|---------------|-------------|--------------------|--------------------|--------------------|--------------------|---------------|--------------------|--------------------|--------------------|---------------|
|               |             |                    | CH 23205 779.5 MHz | CH 23230 782.0 MHz | CH 23255 784.5 MHz | 3GPP MPR [dB] | CH 23205 779.5 MHz | CH 23230 782.0 MHz | CH 23255 784.5 MHz | 3GPP MPR [dB] |
| 13 / 5M       | 1           | 0                  | 23.41              | 23.47              | 23.3               | 0             | 22.41              | 22.1               | 22.23              | 1             |
|               | 1           | 12                 | 23.5               | 23.69              | 23.57              | 0             | 22.6               | 22.56              | 22.81              | 1             |
|               | 1           | 24                 | 23.32              | 23.51              | 23.55              | 0             | 22.39              | 22.22              | 22.34              | 1             |
|               | 12          | 0                  | 22.53              | 22.56              | 22.58              | 1             | 21.44              | 21.43              | 21.37              | 2             |
|               | 12          | 6                  | 22.55              | 22.6               | 22.49              | 1             | 21.48              | 21.55              | 21.59              | 2             |
|               | 12          | 13                 | 22.52              | 22.45              | 22.43              | 1             | 21.44              | 21.53              | 21.55              | 2             |
|               | 25          | 0                  | 22.59              | 22.54              | 22.49              | 1             | 21.61              | 21.57              | 21.6               | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK |                    |    |               | 16QAM |                    |    |               |
|---------------|-------------|--------------------|------|--------------------|----|---------------|-------|--------------------|----|---------------|
|               |             |                    | NA   | CH 23230 782.0 MHz | NA | 3GPP MPR [dB] | NA    | CH 23230 782.0 MHz | NA | 3GPP MPR [dB] |
| 13 / 10M      | 1           | 0                  | NA   | 23.64              | NA | 0             | NA    | 22.7               | NA | 1             |
|               | 1           | 24                 | NA   | 23.55              | NA | 0             | NA    | 22.44              | NA | 1             |
|               | 1           | 49                 | NA   | 23.64              | NA | 0             | NA    | 22.02              | NA | 1             |
|               | 25          | 0                  | NA   | 22.66              | NA | 1             | NA    | 21.69              | NA | 2             |
|               | 25          | 12                 | NA   | 22.66              | NA | 1             | NA    | 21.61              | NA | 2             |
|               | 25          | 25                 | NA   | 22.62              | NA | 1             | NA    | 21.56              | NA | 2             |
|               | 50          | 0                  | NA   | 22.63              | NA | 1             | NA    | 21.65              | NA | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                   |                     |               | 16QAM               |                   |                     |               |
|---------------|-------------|--------------------|---------------------|-------------------|---------------------|---------------|---------------------|-------------------|---------------------|---------------|
|               |             |                    | CH 39675 2498.5 MHz | CH 40620 2593 MHz | CH 41565 2687.5 MHz | 3GPP MPR [dB] | CH 39675 2498.5 MHz | CH 40620 2593 MHz | CH 41565 2687.5 MHz | 3GPP MPR [dB] |
| 41 / 5M       | 1           | 0                  | 23.78               | 24.66             | 24.94               | 0             | 22.05               | 23.24             | 23.45               | 1             |
|               | 1           | 12                 | 24.06               | 25.17             | 25.03               | 0             | 22.33               | 23.51             | 23.59               | 1             |
|               | 1           | 24                 | 23.76               | 24.89             | 24.8                | 0             | 21.95               | 22.78             | 23.24               | 1             |
|               | 12          | 0                  | 22.77               | 23.99             | 24.2                | 1             | 21.69               | 22.82             | 22.98               | 2             |
|               | 12          | 6                  | 22.81               | 24.09             | 24.15               | 1             | 21.73               | 22.95             | 22.82               | 2             |
|               | 12          | 13                 | 22.77               | 24.11             | 24.0                | 1             | 21.87               | 22.85             | 22.78               | 2             |
|               | 25          | 0                  | 22.81               | 24.0              | 24.05               | 1             | 21.99               | 23.02             | 23.02               | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                     |                     |               | 16QAM               |                     |                     |               |
|---------------|-------------|--------------------|---------------------|---------------------|---------------------|---------------|---------------------|---------------------|---------------------|---------------|
|               |             |                    | CH 39700 2501.0 MHz | CH 40620 2593.0 MHz | CH 41540 2685.0 MHz | 3GPP MPR [dB] | CH 39700 2501.0 MHz | CH 40620 2593.0 MHz | CH 41540 2685.0 MHz | 3GPP MPR [dB] |
| 41 / 10M      | 1           | 0                  | 23.82               | 24.92               | 25.27               | 0             | 21.94               | 22.99               | 23.35               | 1             |
|               | 1           | 24                 | 24.27               | 25.3                | 25.39               | 0             | 22.13               | 23.19               | 23.35               | 1             |
|               | 1           | 49                 | 23.79               | 25.02               | 25.02               | 0             | 21.86               | 23.14               | 23.02               | 1             |
|               | 25          | 0                  | 22.91               | 24.02               | 24.13               | 1             | 21.97               | 23.03               | 23.11               | 2             |
|               | 25          | 12                 | 22.75               | 23.97               | 24.15               | 1             | 22.03               | 23.28               | 23.1                | 2             |
|               | 25          | 25                 | 22.82               | 24.04               | 24.02               | 1             | 21.82               | 23.15               | 23.1                | 2             |
|               | 50          | 0                  | 22.82               | 24.04               | 24.12               | 1             | 21.81               | 22.97               | 23.09               | 2             |

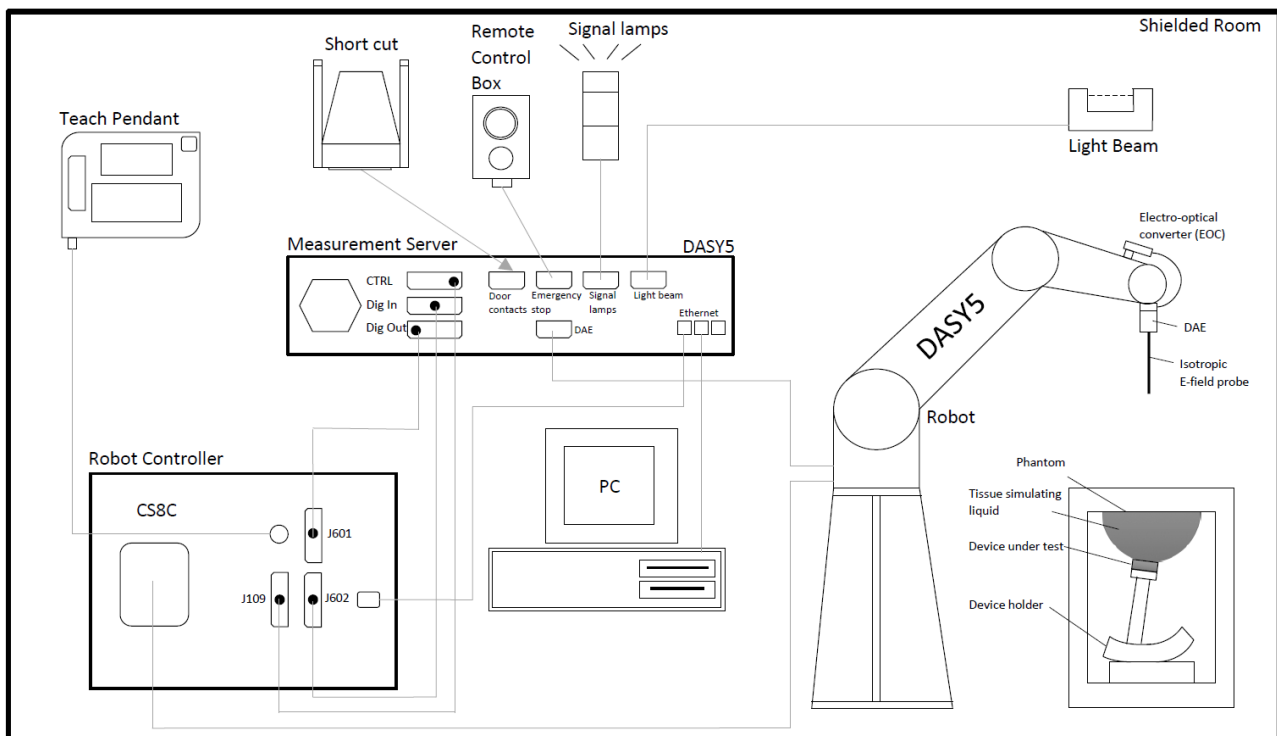
| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                     |                     |               | 16QAM               |                     |                     |               |
|---------------|-------------|--------------------|---------------------|---------------------|---------------------|---------------|---------------------|---------------------|---------------------|---------------|
|               |             |                    | CH 39725 2503.5 MHz | CH 40620 2593.0 MHz | CH 41515 2682.5 MHz | 3GPP MPR [dB] | CH 39725 2503.5 MHz | CH 40620 2593.0 MHz | CH 41515 2682.5 MHz | 3GPP MPR [dB] |
| 41 / 15M      | 1           | 0                  | 23.59               | 24.84               | 25.15               | 0             | 21.93               | 22.92               | 23.35               | 1             |
|               | 1           | 37                 | 23.72               | 25.2                | 25.34               | 0             | 22.16               | 23.45               | 23.38               | 1             |
|               | 1           | 74                 | 23.74               | 24.8                | 24.97               | 0             | 21.71               | 22.67               | 22.96               | 1             |
|               | 36          | 0                  | 22.73               | 23.94               | 24.13               | 1             | 21.74               | 22.71               | 23.12               | 2             |
|               | 36          | 19                 | 22.66               | 23.92               | 24.05               | 1             | 21.88               | 22.98               | 23.05               | 2             |
|               | 36          | 39                 | 22.58               | 23.96               | 23.89               | 1             | 21.91               | 22.85               | 22.9                | 2             |
|               | 75          | 0                  | 22.61               | 24.06               | 24.08               | 1             | 21.77               | 22.95               | 23.21               | 2             |

| LTE Band / BW | RB Size RBs | RB Offset RB Start | QPSK                |                     |                     |               | 16QAM               |                     |                     |               |
|---------------|-------------|--------------------|---------------------|---------------------|---------------------|---------------|---------------------|---------------------|---------------------|---------------|
|               |             |                    | CH 39750 2506.0 MHz | CH 40620 2593.0 MHz | CH 41490 2680.0 MHz | 3GPP MPR [dB] | CH 39750 2506.0 MHz | CH 40620 2593.0 MHz | CH 41490 2680.0 MHz | 3GPP MPR [dB] |
| 41 / 20M      | 1           | 0                  | 23.56               | 24.67               | 24.8                | 0             | 22.0                | 23.19               | 23.35               | 1             |
|               | 1           | 50                 | 23.82               | 25.01               | 25.12               | 0             | 22.15               | 23.32               | 23.28               | 1             |
|               | 1           | 99                 | 23.73               | 24.66               | 24.58               | 0             | 21.68               | 22.9                | 22.88               | 1             |
|               | 50          | 0                  | 22.88               | 23.9                | 23.98               | 1             | 21.69               | 22.73               | 22.85               | 2             |
|               | 50          | 25                 | 22.8                | 23.92               | 24.01               | 1             | 21.81               | 22.85               | 22.99               | 2             |
|               | 50          | 50                 | 22.83               | 23.92               | 23.89               | 1             | 21.83               | 22.85               | 22.76               | 2             |
|               | 100         | 0                  | 22.8                | 23.99               | 23.99               | 1             | 21.79               | 23.02               | 22.85               | 2             |

| Mode      | Modulation | Output power [dBm] |                   |                   |
|-----------|------------|--------------------|-------------------|-------------------|
|           |            | CH 1<br>2402 MHz   | CH 40<br>2442 MHz | CH 78<br>2480 MHz |
| Bluetooth | GFSK       | 4.34               | 4.17              | 4.27              |

## 4. TEST EQUIPMENT

Dasy52 near field scanning system, manufactured by SPEAG was used for SAR testing. The test system consists of high precision robotics system (Staubli), robot controller, computer, near-field probe, probe alignment sensor, and a phantom containing the tissue equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location of maximum electromagnetic field.



**Figure 1 Schematic Laboratory Picture**

#### 4.1 Test Equipment List

Main used test system components are listed below. For full equipment list and calibration intervals, please contact the testing laboratory.

| Test Equipment               | Model           | Serial Number | Calibration Date |
|------------------------------|-----------------|---------------|------------------|
| DAE                          | DAE4            | 1332          | 10.2019          |
| Probe                        | EX3DV4          | 3892          | 04.2020          |
| Probe                        | EX3DV4          | 7447          | 03.2020          |
| Dipole                       | 42/17 DIP 0G750 | 454           | 12.2018          |
| Dipole                       | D835V2          | 448           | 03.2020          |
| Dipole                       | D1800V2         | 249           | 03.2020          |
| Dipole                       | D1900V2         | 511           | 03.2020          |
| Dipole                       | 14/15 DIP 2G300 | 366           | 02.2020          |
| Dipole                       | D2450V2         | 758           | 03.2020          |
| Dipole                       | 51/18 DIP 2G600 | 474           | 12.2018          |
| DASY5 Software               | 52.8.8.1258     | -             | NA               |
| Radio Communication Analyzer | MT8820C         | 6200951734    | 11.2019          |
| Radio Communication Analyzer | MT8820C         | 6200930942    | 10.2019          |
| Radio Communication Analyzer | MT8820C         | 6200883099    | 09.2020          |
| Signal Generator             | R&S SMIQ06B     | 8349681023    | NA               |
| Amplifier                    | AR 10S1G4A      | 320421        | NA               |
| Power Sensor                 | R&S NRP-Z11     | 100265        | 12.2019          |
| Power Reflection Meter       | NRT             | 835065/049    | 02.2020          |
| Directional Power Sensor     | NRT-Z44         | 102766        | 02.2020          |

Dipole calibration period supporting data:

| Dipole and serial number | Frequency (MHz) | Measured on 09/2020 |                        |      | Calibrated       |                        |      |
|--------------------------|-----------------|---------------------|------------------------|------|------------------|------------------------|------|
|                          |                 | Return loss (dB)    | Impedance ( $\Omega$ ) |      | Return loss (dB) | Impedance ( $\Omega$ ) |      |
| DIP 0G750-454 42/17      | 750             | -22.8               | 52.9                   | -6.9 | -27.76           | 52.5                   | -3.3 |
| DIP 2G600-474 51/18      | 2600            | -23.4               | 43.7                   | -0.2 | -27.62           | 48.5                   | 3.9  |

#### 4.1.1 Isotropic E-field Probe Type EX3DV4

|                      |                                                                                                                                                             |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Construction</b>  | Symmetrical design with triangular core<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |
| <b>Calibration</b>   | Calibration certificate in Appendix D                                                                                                                       |
| <b>Frequency</b>     | 10 MHz to > 6 GHz (dosimetry); Linearity: $\pm 0.2$ dB (30 MHz to 6 GHz)                                                                                    |
| <b>Directivity</b>   | $\pm 0.3$ dB in HSL (rotation around probe axis)<br>$\pm 0.5$ dB in tissue material (rotation normal to probe axis)                                         |
| <b>Dynamic Range</b> | 10 $\mu$ W/g to > 100 mW/g, Linearity: $\pm 0.2$ dB                                                                                                         |
| <b>Dimensions</b>    | Overall length: 330 mm<br>Tip length: 10 mm<br>Body diameter: 12 mm                                                                                         |
| <b>Application</b>   | General dosimetry up to 6 GHz<br>Compliance tests of mobile phones<br>Fast automatic scanning in arbitrary phantoms                                         |

## 4.2 Phantoms

### 4.2.1 SAM phantom

The phantom used in SAR tests were the right and left head sections and flat phantom section of the twin-headed "SAM Phantom" manufactured by SPEAG. The phantom conforms to the requirements of IEEE 1528 and FCC published RF Exposure KDB Procedures.

## 4.3 Tissue Simulants

Recommended values for the dielectric parameters of the tissue simulants are given in IEEE 1528 and FCC published RF Exposure KDB Procedures. The dielectric parameters of the used tissue simulants were within  $\pm 10\%$  of the recommended values. A liquid compensation algorithm was used in DASY5 with which measured peak average SAR values were corrected for the deviation of used liquid. Depth of the tissue simulant was at least 15.0 cm from the inner surface of the flat phantom.

## 4.4 System Validation Status

| Frequency [MHz] | Dipole Type / SN      | Probe Type / SN   | Signal Type | DAE Unit / SN | Dielectric Constant $\epsilon$ Head tissue simulant | Conductivity $\sigma$ [S/m] Head tissue simulant | Validation Done      |
|-----------------|-----------------------|-------------------|-------------|---------------|-----------------------------------------------------|--------------------------------------------------|----------------------|
|                 |                       |                   |             |               |                                                     |                                                  | Head tissue simulant |
| 750             | D750V3 / 1154         | EX3DV4 / 3892     | CW/FDD      | DAE 4 / 705   | 42.29                                               | 0.91                                             | 05.2020              |
| 835             | D835V2 / 448          | EX3DV4 / 3892     | CW/GMSK     | DAE 4 / 705   | 42.03                                               | 0.95                                             | 05.2020              |
| 1800            | D1800V2 / 249         | EX3DV4 / 3892     | CW/GMSK     | DAE 4 / 705   | 40.14                                               | 1.41                                             | 05.2020              |
| 1900            | D1900V2 / 511         | EX3DV4 / 3892     | CW/FDD      | DAE 4 / 705   | 39.97                                               | 1.45                                             | 05.2020              |
| 2300            | 14/15 DIP 2G300-366   | EX3DV4 - SN: 7447 | CW          | DAE 4 / 756   | 39.73                                               | 1.74                                             | 04.2020              |
| 2450            | D2450V2 / 729         | EX3DV4 / 3892     | CW/DSSS     | DAE 4 / 705   | 39.26                                               | 1.84                                             | 05.2020              |
| 2600            | 51/18 DIP 2G600 / 474 | EX3DV4 / 3892     | CW          | DAE 4 / 705   | 39.03                                               | 1.96                                             | 05.2020              |

#### 4.5 System Check

| Date       | Tissue Type | Tissue Temp. [°C] | Frequency [MHz] | Input Power | Measured SAR <sub>1g</sub> [W/kg] | 1 W Target SAR <sub>1g</sub> [W/kg] | 1 W Normalized SAR <sub>1g</sub> [W/kg] | Deviation (%) | Plot # |
|------------|-------------|-------------------|-----------------|-------------|-----------------------------------|-------------------------------------|-----------------------------------------|---------------|--------|
| 24.08.2020 | WB Head     | 22                | 835             | 250         | 2.2                               | 9.4                                 | 8.8                                     | -6.2          | 1      |
| 25.08.2020 | WB Head     | 22                | 835             | 250         | 2.35                              | 9.4                                 | 9.4                                     | 0.2           | 2      |
| 26.08.2020 | WB Head     | 22                | 835             | 250         | 2.38                              | 9.4                                 | 9.5                                     | 1.5           | 3      |
| 27.08.2020 | WB Head     | 22                | 1900            | 250         | 9.32                              | 37.1                                | 37.3                                    | 0.5           | 4      |
| 28.08.2020 | WB Head     | 22                | 1900            | 250         | 9.46                              | 37.1                                | 37.8                                    | 2.0           | 5      |
| 31.08.2020 | WB Head     | 22                | 750             | 250         | 2.0                               | 8.5                                 | 8.0                                     | -6.1          | 6      |
| 01.09.2020 | WB Head     | 22                | 750             | 250         | 2.02                              | 8.5                                 | 8.1                                     | -5.2          | 7      |
| 02.09.2020 | WB Head     | 22                | 750             | 250         | 1.99                              | 8.5                                 | 8.0                                     | -6.6          | 8      |
| 02.09.2020 | WB Head     | 22                | 2600            | 250         | 13.5                              | 55.1                                | 54.0                                    | -2.0          | 9      |
| 04.09.2020 | WB Head     | 22                | 2600            | 250         | 13.3                              | 55.1                                | 53.2                                    | -3.4          | 10     |
| 07.09.2020 | WB Head     | 22                | 2600            | 250         | 13.3                              | 55.1                                | 53.2                                    | -3.4          | 11     |
| 08.09.2020 | WB Head     | 22                | 2600            | 250         | 13.9                              | 55.1                                | 55.6                                    | 0.9           | 12     |
| 09.09.2020 | WB Head     | 22                | 2600            | 250         | 14.3                              | 55.1                                | 57.2                                    | 3.9           | 13     |
| 09.09.2020 | WB Head     | 22                | 1800            | 250         | 9.38                              | 39.2                                | 37.5                                    | -4.3          | 14     |
| 10.09.2020 | WB Head     | 22                | 1800            | 250         | 8.89                              | 39.2                                | 35.6                                    | -9.3          | 15     |
| 14.09.2020 | WB Head     | 22                | 1800            | 250         | 9.42                              | 39.21                               | 37.68                                   | -3.9          | 16     |
| 15.09.2020 | WB Head     | 22                | 1800            | 250         | 9.3                               | 39.21                               | 37.2                                    | -5.1          | 17     |
| 16.09.2020 | WB Head     | 22                | 835             | 250         | 2.28                              | 9.38                                | 9.1                                     | -2.8          | 18     |
| 17.09.2020 | WB Head     | 22                | 835             | 250         | 2.3                               | 9.38                                | 9.2                                     | -1.9          | 19     |
| 18.09.2020 | WB Head     | 22                | 835             | 250         | 2.35                              | 9.38                                | 9.4                                     | 0.2           | 20     |
| 21.09.2020 | WB Head     | 22                | 835             | 250         | 2.37                              | 9.38                                | 9.48                                    | 1.1           | 21     |
| 22.09.2020 | WB Head     | 22                | 2450            | 250         | 13.0                              | 55.34                               | 52.0                                    | -6.0          | 22     |
| 23.09.2020 | WB Head     | 22                | 2450            | 250         | 12.7                              | 55.34                               | 50.8                                    | -8.2          | 23     |
| 24.09.2020 | WB Head     | 22                | 1900            | 250         | 9.71                              | 37.1                                | 38.84                                   | 4.7           | 24     |
| 25.09.2020 | WB Head     | 22                | 2300            | 250         | 11.8                              | 48.67                               | 47.2                                    | -3.0          | 25     |
| 28.09.2020 | WB Head     | 22                | 2300            | 250         | 11.8                              | 48.67                               | 47.2                                    | -3.0          | 26     |
| 28.09.2020 | WB Head     | 22                | 750             | 250         | 2.17                              | 8.52                                | 8.68                                    | 1.9           | 27     |
| 29.09.2020 | WB Head     | 22                | 835             | 250         | 2.37                              | 9.38                                | 9.48                                    | 1.1           | 28     |
| 29.09.2020 | WB Head     | 22                | 1800            | 250         | 9.33                              | 39.21                               | 37.32                                   | -4.8          | 29     |
| 08.10.2020 | WB Head     | 22                | 835             | 250         | 2.4                               | 9.38                                | 9.6                                     | 2.35          | 30     |
| 09.10.2020 | WB Head     | 22                | 1900            | 250         | 9.9                               | 37.1                                | 39.6                                    | 6.74          | 31     |

#### 4.6 Tissue Simulant Verification

| Date       | Tissue Type | Tissue Temp [°C] | Frequency [MHz] | Target                         |                             | Measured                |                      | Deviation |       |
|------------|-------------|------------------|-----------------|--------------------------------|-----------------------------|-------------------------|----------------------|-----------|-------|
|            |             |                  |                 | Dielectric Constant [ε] Target | Conductivity σ [S/m] Target | Dielectric Constant [ε] | Conductivity σ [S/m] | ε (%)     | σ (%) |
| 24.08.2020 | WB Head     | 22               | 835             | 41.55                          | 0.91                        | 40.39                   | 0.99                 | -2.8      | 8.6   |
| 24.08.2020 | WB Head     | 22               | 882             | 41.5                           | 0.95                        | 40.12                   | 1.01                 | -3.3      | 5.7   |
| 24.08.2020 | WB Head     | 22               | 897.5           | 41.5                           | 0.97                        | 40.05                   | 1.01                 | -3.5      | 4.5   |
| 24.08.2020 | WB Head     | 22               | 898             | 41.5                           | 0.97                        | 40.05                   | 1.01                 | -3.5      | 4.4   |
| 24.08.2020 | WB Head     | 22               | 913             | 41.48                          | 0.98                        | 39.98                   | 1.02                 | -3.6      | 4.0   |
| 25.08.2020 | WB Head     | 22               | 835             | 41.55                          | 0.91                        | 40.86                   | 0.97                 | -1.7      | 6.4   |
| 25.08.2020 | WB Head     | 22               | 842             | 41.53                          | 0.91                        | 40.83                   | 0.97                 | -1.7      | 6.3   |
| 25.08.2020 | WB Head     | 22               | 847             | 41.51                          | 0.92                        | 40.79                   | 0.97                 | -1.7      | 6.3   |
| 25.08.2020 | WB Head     | 22               | 852             | 41.5                           | 0.92                        | 40.78                   | 0.98                 | -1.7      | 6.2   |
| 25.08.2020 | WB Head     | 22               | 885             | 41.5                           | 0.95                        | 40.6                    | 0.99                 | -2.2      | 3.5   |
| 25.08.2020 | WB Head     | 22               | 897.5           | 41.5                           | 0.97                        | 40.56                   | 0.99                 | -2.3      | 2.5   |
| 25.08.2020 | WB Head     | 22               | 910             | 41.49                          | 0.97                        | 40.51                   | 1.0                  | -2.4      | 2.2   |
| 26.08.2020 | WB Head     | 22               | 835             | 41.55                          | 0.91                        | 40.12                   | 0.93                 | -3.5      | 2.5   |
| 26.08.2020 | WB Head     | 22               | 842             | 41.53                          | 0.91                        | 40.1                    | 0.94                 | -3.4      | 2.4   |
| 26.08.2020 | WB Head     | 22               | 847             | 41.51                          | 0.92                        | 40.07                   | 0.94                 | -3.5      | 2.5   |
| 26.08.2020 | WB Head     | 22               | 852             | 41.5                           | 0.92                        | 40.06                   | 0.94                 | -3.5      | 2.4   |
| 26.08.2020 | WB Head     | 22               | 882             | 41.5                           | 0.95                        | 39.89                   | 0.95                 | -3.9      | -0.1  |
| 26.08.2020 | WB Head     | 22               | 885             | 41.5                           | 0.95                        | 39.88                   | 0.95                 | -3.9      | -0.3  |
| 26.08.2020 | WB Head     | 22               | 897.5           | 41.5                           | 0.97                        | 39.83                   | 0.96                 | -4.0      | -1.3  |
| 26.08.2020 | WB Head     | 22               | 898             | 41.5                           | 0.97                        | 39.82                   | 0.96                 | -4.0      | -1.3  |
| 26.08.2020 | WB Head     | 22               | 910             | 41.49                          | 0.97                        | 39.77                   | 0.96                 | -4.1      | -1.5  |
| 26.08.2020 | WB Head     | 22               | 913             | 41.48                          | 0.98                        | 39.73                   | 0.96                 | -4.2      | -1.6  |
| 27.08.2020 | WB Head     | 22               | 1852            | 40                             | 1.4                         | 37.35                   | 1.35                 | -6.6      | -3.2  |
| 27.08.2020 | WB Head     | 22               | 1860            | 40                             | 1.4                         | 37.34                   | 1.36                 | -6.7      | -3.0  |
| 27.08.2020 | WB Head     | 22               | 1880            | 40                             | 1.4                         | 37.3                    | 1.37                 | -6.7      | -2.3  |
| 27.08.2020 | WB Head     | 22               | 1900            | 40                             | 1.4                         | 37.26                   | 1.38                 | -6.8      | -1.5  |
| 27.08.2020 | WB Head     | 22               | 1908            | 40                             | 1.4                         | 37.25                   | 1.39                 | -6.9      | -1.0  |
| 27.08.2020 | WB Head     | 22               | 1922            | 40                             | 1.4                         | 37.23                   | 1.39                 | -6.9      | -0.6  |
| 27.08.2020 | WB Head     | 22               | 1930            | 40                             | 1.4                         | 37.22                   | 1.39                 | -7.0      | -0.4  |
| 27.08.2020 | WB Head     | 22               | 1950            | 40                             | 1.4                         | 37.18                   | 1.4                  | -7.1      | 0.2   |
| 27.08.2020 | WB Head     | 22               | 1975            | 40                             | 1.4                         | 37.12                   | 1.42                 | -7.2      | 1.3   |
| 27.08.2020 | WB Head     | 22               | 1978            | 40                             | 1.4                         | 37.12                   | 1.42                 | -7.2      | 1.3   |
| 28.08.2020 | WB Head     | 22               | 1852            | 40                             | 1.4                         | 36.95                   | 1.35                 | -7.6      | -3.6  |
| 28.08.2020 | WB Head     | 22               | 1860            | 40                             | 1.4                         | 36.94                   | 1.35                 | -7.7      | -3.4  |
| 28.08.2020 | WB Head     | 22               | 1880            | 40                             | 1.4                         | 36.91                   | 1.36                 | -7.7      | -2.7  |
| 28.08.2020 | WB Head     | 22               | 1900            | 40                             | 1.4                         | 36.88                   | 1.38                 | -7.8      | -1.8  |
| 28.08.2020 | WB Head     | 22               | 1908            | 40                             | 1.4                         | 36.87                   | 1.38                 | -7.8      | -1.5  |
| 28.08.2020 | WB Head     | 22               | 1922            | 40                             | 1.4                         | 36.84                   | 1.39                 | -7.9      | -1.1  |
| 28.08.2020 | WB Head     | 22               | 1930            | 40                             | 1.4                         | 36.82                   | 1.39                 | -7.9      | -0.8  |
| 28.08.2020 | WB Head     | 22               | 1950            | 40                             | 1.4                         | 36.78                   | 1.4                  | -8.0      | -0.3  |
| 28.08.2020 | WB Head     | 22               | 1975            | 40                             | 1.4                         | 36.74                   | 1.41                 | -8.1      | 0.8   |
| 28.08.2020 | WB Head     | 22               | 1978            | 40                             | 1.4                         | 36.74                   | 1.41                 | -8.1      | 0.9   |
| 31.08.2020 | WB Head     | 22               | 704             | 42.18                          | 0.89                        | 41.25                   | 0.89                 | -2.2      | 0.4   |
| 31.08.2020 | WB Head     | 22               | 713             | 42.13                          | 0.89                        | 41.2                    | 0.9                  | -2.2      | 0.6   |
| 31.08.2020 | WB Head     | 22               | 725.5           | 42.07                          | 0.89                        | 41.08                   | 0.9                  | -2.4      | 0.9   |
| 31.08.2020 | WB Head     | 22               | 738             | 42.0                           | 0.89                        | 41.0                    | 0.9                  | -2.4      | 1.0   |
| 31.08.2020 | WB Head     | 22               | 750             | 41.94                          | 0.89                        | 40.88                   | 0.91                 | -2.5      | 1.3   |
| 31.08.2020 | WB Head     | 22               | 782             | 41.78                          | 0.9                         | 40.62                   | 0.92                 | -2.8      | 2.7   |
| 01.09.2020 | WB Head     | 22               | 704             | 42.18                          | 0.89                        | 40.25                   | 0.86                 | -4.6      | -3.7  |
| 01.09.2020 | WB Head     | 22               | 707.5           | 42.16                          | 0.89                        | 40.2                    | 0.86                 | -4.6      | -3.6  |
| 01.09.2020 | WB Head     | 22               | 711             | 42.14                          | 0.89                        | 40.19                   | 0.86                 | -4.6      | -3.6  |
| 01.09.2020 | WB Head     | 22               | 713             | 42.13                          | 0.89                        | 40.17                   | 0.86                 | -4.7      | -3.4  |
| 01.09.2020 | WB Head     | 22               | 738             | 42.0                           | 0.89                        | 40.01                   | 0.87                 | -4.8      | -2.6  |
| 01.09.2020 | WB Head     | 22               | 750             | 41.94                          | 0.89                        | 39.93                   | 0.87                 | -4.8      | -2.5  |
| 01.09.2020 | WB Head     | 22               | 779.5           | 41.79                          | 0.9                         | 39.71                   | 0.88                 | -5.0      | -1.4  |
| 01.09.2020 | WB Head     | 22               | 782             | 41.78                          | 0.9                         | 39.7                    | 0.88                 | -5.0      | -1.3  |
| 01.09.2020 | WB Head     | 22               | 784.5           | 41.76                          | 0.9                         | 39.68                   | 0.89                 | -5.0      | -1.2  |

|            |         |    |        |       |      |       |      |      |      |
|------------|---------|----|--------|-------|------|-------|------|------|------|
| 02.09.2020 | WB Head | 22 | 704    | 42.18 | 0.89 | 40.41 | 0.86 | -4.2 | -3.7 |
| 02.09.2020 | WB Head | 22 | 707.5  | 42.16 | 0.89 | 40.41 | 0.86 | -4.2 | -3.6 |
| 02.09.2020 | WB Head | 22 | 713    | 42.13 | 0.89 | 40.37 | 0.86 | -4.2 | -3.4 |
| 02.09.2020 | WB Head | 22 | 725.5  | 42.07 | 0.89 | 40.28 | 0.86 | -4.3 | -3.2 |
| 02.09.2020 | WB Head | 22 | 738    | 42.0  | 0.89 | 40.18 | 0.87 | -4.4 | -2.9 |
| 02.09.2020 | WB Head | 22 | 750    | 41.94 | 0.89 | 40.11 | 0.87 | -4.4 | -2.6 |
| 02.09.2020 | WB Head | 22 | 779.5  | 41.79 | 0.9  | 39.87 | 0.88 | -4.6 | -1.4 |
| 02.09.2020 | WB Head | 22 | 784.5  | 41.76 | 0.9  | 39.84 | 0.89 | -4.6 | -1.2 |
| 02.09.2020 | WB Head | 22 | 2502.5 | 39.13 | 1.86 | 37.29 | 1.75 | -4.7 | -6.0 |
| 02.09.2020 | WB Head | 22 | 2510   | 39.12 | 1.87 | 37.28 | 1.75 | -4.7 | -6.1 |
| 02.09.2020 | WB Head | 22 | 2535   | 39.09 | 1.89 | 37.24 | 1.77 | -4.7 | -6.6 |
| 02.09.2020 | WB Head | 22 | 2560   | 39.06 | 1.92 | 37.2  | 1.78 | -4.8 | -7.1 |
| 02.09.2020 | WB Head | 22 | 2600   | 39.01 | 1.96 | 37.14 | 1.81 | -4.8 | -7.9 |
| 04.09.2020 | WB Head | 22 | 2506   | 39.13 | 1.86 | 37.83 | 1.76 | -3.3 | -5.5 |
| 04.09.2020 | WB Head | 22 | 2572.5 | 39.04 | 1.93 | 37.74 | 1.8  | -3.4 | -6.9 |
| 04.09.2020 | WB Head | 22 | 2593   | 39.02 | 1.96 | 37.7  | 1.81 | -3.4 | -7.4 |
| 04.09.2020 | WB Head | 22 | 2595   | 39.02 | 1.96 | 37.69 | 1.81 | -3.4 | -7.4 |
| 04.09.2020 | WB Head | 22 | 2600   | 39.01 | 1.96 | 37.69 | 1.82 | -3.4 | -7.5 |
| 04.09.2020 | WB Head | 22 | 2610   | 39.0  | 1.97 | 37.67 | 1.82 | -3.4 | -7.6 |
| 04.09.2020 | WB Head | 22 | 2680   | 38.91 | 2.05 | 37.57 | 1.87 | -3.4 | -8.9 |
| 07.09.2020 | WB Head | 22 | 2502.5 | 39.13 | 1.86 | 36.88 | 1.73 | -5.7 | -6.6 |
| 07.09.2020 | WB Head | 22 | 2535   | 39.09 | 1.89 | 36.82 | 1.75 | -5.8 | -7.3 |
| 07.09.2020 | WB Head | 22 | 2560   | 39.06 | 1.92 | 36.76 | 1.77 | -5.9 | -7.7 |
| 07.09.2020 | WB Head | 22 | 2600   | 39.01 | 1.96 | 36.73 | 1.8  | -5.9 | -8.4 |
| 08.09.2020 | WB Head | 22 | 2502.5 | 39.13 | 1.86 | 37.27 | 1.74 | -4.8 | -6.3 |
| 08.09.2020 | WB Head | 22 | 2535   | 39.09 | 1.89 | 37.22 | 1.76 | -4.8 | -6.9 |
| 08.09.2020 | WB Head | 22 | 2560   | 39.06 | 1.92 | 37.19 | 1.78 | -4.8 | -7.4 |
| 08.09.2020 | WB Head | 22 | 2572.5 | 39.04 | 1.93 | 37.18 | 1.79 | -4.8 | -7.6 |
| 08.09.2020 | WB Head | 22 | 2595   | 39.02 | 1.96 | 37.15 | 1.8  | -4.8 | -8.2 |
| 08.09.2020 | WB Head | 22 | 2600   | 39.01 | 1.96 | 37.12 | 1.8  | -4.8 | -8.3 |
| 08.09.2020 | WB Head | 22 | 2610   | 39.0  | 1.97 | 37.12 | 1.81 | -4.8 | -8.5 |
| 08.09.2020 | WB Head | 22 | 2680   | 38.91 | 2.05 | 37.01 | 1.85 | -4.9 | -9.7 |
| 09.09.2020 | WB Head | 22 | 1710   | 40.14 | 1.35 | 37.36 | 1.35 | -6.9 | -0.2 |
| 09.09.2020 | WB Head | 22 | 1713   | 40.14 | 1.35 | 37.35 | 1.35 | -6.9 | -0.2 |
| 09.09.2020 | WB Head | 22 | 1720   | 40.13 | 1.35 | 37.34 | 1.35 | -6.9 | -0.3 |
| 09.09.2020 | WB Head | 22 | 1732.5 | 40.11 | 1.36 | 37.32 | 1.36 | -7.0 | -0.3 |
| 09.09.2020 | WB Head | 22 | 1733   | 40.11 | 1.36 | 37.32 | 1.36 | -7.0 | -0.3 |
| 09.09.2020 | WB Head | 22 | 1745   | 40.09 | 1.37 | 37.29 | 1.36 | -7.0 | -0.4 |
| 09.09.2020 | WB Head | 22 | 1747.5 | 40.08 | 1.37 | 37.29 | 1.36 | -7.0 | -0.4 |
| 09.09.2020 | WB Head | 22 | 1748   | 40.08 | 1.37 | 37.29 | 1.36 | -7.0 | -0.4 |
| 09.09.2020 | WB Head | 22 | 1753   | 40.07 | 1.37 | 37.28 | 1.37 | -7.0 | -0.4 |
| 09.09.2020 | WB Head | 22 | 1775   | 40.04 | 1.39 | 37.22 | 1.38 | -7.0 | -0.5 |
| 09.09.2020 | WB Head | 22 | 1785   | 40.02 | 1.39 | 37.2  | 1.38 | -7.1 | -0.6 |
| 09.09.2020 | WB Head | 22 | 1800   | 40    | 1.4  | 37.17 | 1.39 | -7.1 | -0.6 |
| 09.09.2020 | WB Head | 22 | 2506   | 39.13 | 1.86 | 37.57 | 1.8  | -4.0 | -3.4 |
| 09.09.2020 | WB Head | 22 | 2510   | 39.12 | 1.87 | 37.57 | 1.8  | -4.0 | -3.4 |
| 09.09.2020 | WB Head | 22 | 2535   | 39.09 | 1.89 | 37.53 | 1.82 | -4.0 | -4.0 |
| 09.09.2020 | WB Head | 22 | 2560   | 39.06 | 1.92 | 37.48 | 1.84 | -4.0 | -4.4 |
| 09.09.2020 | WB Head | 22 | 2593   | 39.02 | 1.96 | 37.43 | 1.86 | -4.1 | -5.0 |
| 09.09.2020 | WB Head | 22 | 2600   | 39.01 | 1.96 | 37.43 | 1.86 | -4.0 | -5.2 |
| 10.09.2020 | WB Head | 22 | 1710   | 40.14 | 1.35 | 38.48 | 1.29 | -4.1 | -4.1 |
| 10.09.2020 | WB Head | 22 | 1713   | 40.14 | 1.35 | 38.47 | 1.29 | -4.1 | -4.1 |
| 10.09.2020 | WB Head | 22 | 1720   | 40.13 | 1.35 | 38.47 | 1.3  | -4.1 | -4.2 |
| 10.09.2020 | WB Head | 22 | 1732.5 | 40.11 | 1.36 | 38.44 | 1.3  | -4.1 | -4.2 |
| 10.09.2020 | WB Head | 22 | 1733   | 40.11 | 1.36 | 38.44 | 1.3  | -4.1 | -4.2 |
| 10.09.2020 | WB Head | 22 | 1745   | 40.09 | 1.37 | 38.41 | 1.31 | -4.2 | -4.2 |
| 10.09.2020 | WB Head | 22 | 1747.5 | 40.08 | 1.37 | 38.42 | 1.31 | -4.2 | -4.2 |
| 10.09.2020 | WB Head | 22 | 1748   | 40.08 | 1.37 | 38.42 | 1.31 | -4.2 | -4.3 |
| 10.09.2020 | WB Head | 22 | 1753   | 40.07 | 1.37 | 38.4  | 1.31 | -4.2 | -4.3 |
| 10.09.2020 | WB Head | 22 | 1775   | 40.04 | 1.39 | 38.36 | 1.33 | -4.2 | -4.3 |
| 10.09.2020 | WB Head | 22 | 1785   | 40.02 | 1.39 | 38.34 | 1.33 | -4.2 | -4.5 |
| 10.09.2020 | WB Head | 22 | 1800   | 40    | 1.4  | 38.31 | 1.34 | -4.2 | -4.5 |
| 14.09.2020 | WB Head | 22 | 1710.2 | 40.14 | 1.35 | 39.03 | 1.31 | -2.8 | -2.6 |
| 14.09.2020 | WB Head | 22 | 1720   | 40.13 | 1.35 | 39.02 | 1.32 | -2.8 | -2.7 |

|            |         |    |        |       |      |       |      |      |      |
|------------|---------|----|--------|-------|------|-------|------|------|------|
| 14.09.2020 | WB Head | 22 | 1732.5 | 40.11 | 1.36 | 38.99 | 1.32 | -2.8 | -2.7 |
| 14.09.2020 | WB Head | 22 | 1732.6 | 40.11 | 1.36 | 38.99 | 1.32 | -2.8 | -2.7 |
| 14.09.2020 | WB Head | 22 | 1745   | 40.09 | 1.37 | 38.97 | 1.33 | -2.8 | -2.8 |
| 14.09.2020 | WB Head | 22 | 1747.5 | 40.08 | 1.37 | 38.96 | 1.33 | -2.8 | -2.8 |
| 14.09.2020 | WB Head | 22 | 1747.6 | 40.08 | 1.37 | 38.96 | 1.33 | -2.8 | -2.8 |
| 14.09.2020 | WB Head | 22 | 1752.6 | 40.07 | 1.37 | 38.96 | 1.33 | -2.8 | -2.9 |
| 14.09.2020 | WB Head | 22 | 1784.8 | 40.02 | 1.39 | 38.89 | 1.35 | -2.8 | -3.0 |
| 14.09.2020 | WB Head | 22 | 1800   | 40    | 1.4  | 38.87 | 1.36 | -2.8 | -3.1 |
| 15.09.2020 | WB Head | 22 | 1710   | 40.14 | 1.35 | 38.95 | 1.31 | -3.0 | -2.9 |
| 15.09.2020 | WB Head | 22 | 1713   | 40.14 | 1.35 | 38.95 | 1.31 | -3.0 | -2.8 |
| 15.09.2020 | WB Head | 22 | 1720   | 40.13 | 1.35 | 38.93 | 1.31 | -3.0 | -2.9 |
| 15.09.2020 | WB Head | 22 | 1733   | 40.11 | 1.36 | 38.91 | 1.32 | -3.0 | -2.9 |
| 15.09.2020 | WB Head | 22 | 1747.5 | 40.08 | 1.37 | 38.88 | 1.33 | -3.0 | -3.1 |
| 15.09.2020 | WB Head | 22 | 1748   | 40.08 | 1.37 | 38.87 | 1.33 | -3.0 | -3.1 |
| 15.09.2020 | WB Head | 22 | 1753   | 40.07 | 1.37 | 38.88 | 1.33 | -3.0 | -3.1 |
| 15.09.2020 | WB Head | 22 | 1775   | 40.04 | 1.39 | 38.83 | 1.34 | -3.0 | -3.2 |
| 15.09.2020 | WB Head | 22 | 1785   | 40.02 | 1.39 | 38.81 | 1.35 | -3.0 | -3.3 |
| 15.09.2020 | WB Head | 22 | 1800   | 40    | 1.4  | 38.79 | 1.35 | -3.0 | -3.4 |
| 16.09.2020 | WB Head | 22 | 826    | 41.59 | 0.91 | 41.32 | 0.91 | -0.6 | 0.5  |
| 16.09.2020 | WB Head | 22 | 829    | 41.58 | 0.91 | 41.3  | 0.91 | -0.7 | 0.5  |
| 16.09.2020 | WB Head | 22 | 835    | 41.55 | 0.91 | 41.27 | 0.91 | -0.7 | 0.5  |
| 16.09.2020 | WB Head | 22 | 836    | 41.55 | 0.91 | 41.27 | 0.92 | -0.7 | 0.5  |
| 16.09.2020 | WB Head | 22 | 836.5  | 41.55 | 0.91 | 41.26 | 0.92 | -0.7 | 0.5  |
| 16.09.2020 | WB Head | 22 | 836.6  | 41.55 | 0.91 | 41.26 | 0.92 | -0.7 | 0.5  |
| 16.09.2020 | WB Head | 22 | 844    | 41.52 | 0.91 | 41.23 | 0.92 | -0.7 | 0.3  |
| 16.09.2020 | WB Head | 22 | 847    | 41.51 | 0.92 | 41.22 | 0.92 | -0.7 | 0.5  |
| 16.09.2020 | WB Head | 22 | 897.6  | 41.5  | 0.97 | 40.98 | 0.94 | -1.3 | -3.0 |
| 17.09.2020 | WB Head | 22 | 824    | 41.59 | 0.91 | 40.81 | 0.92 | -1.9 | 1.8  |
| 17.09.2020 | WB Head | 22 | 835    | 41.55 | 0.91 | 40.75 | 0.93 | -1.9 | 1.7  |
| 17.09.2020 | WB Head | 22 | 837    | 41.55 | 0.91 | 40.75 | 0.93 | -1.9 | 1.9  |
| 17.09.2020 | WB Head | 22 | 849    | 41.5  | 0.92 | 40.68 | 0.93 | -2.0 | 1.8  |
| 17.09.2020 | WB Head | 22 | 880    | 41.5  | 0.95 | 40.51 | 0.94 | -2.4 | -0.6 |
| 17.09.2020 | WB Head | 22 | 898    | 41.5  | 0.97 | 40.43 | 0.95 | -2.6 | -2.0 |
| 17.09.2020 | WB Head | 22 | 915    | 41.48 | 0.98 | 40.33 | 0.96 | -2.8 | -2.1 |
| 18.09.2020 | WB Head | 22 | 835    | 41.55 | 0.91 | 40.29 | 0.94 | -3.0 | 3.5  |
| 18.09.2020 | WB Head | 22 | 836.6  | 41.55 | 0.91 | 40.3  | 0.94 | -3.0 | 3.4  |
| 18.09.2020 | WB Head | 22 | 844    | 41.52 | 0.91 | 40.26 | 0.95 | -3.0 | 3.5  |
| 18.09.2020 | WB Head | 22 | 880    | 41.5  | 0.95 | 40.09 | 0.96 | -3.4 | 1.1  |
| 18.09.2020 | WB Head | 22 | 898    | 41.5  | 0.97 | 39.97 | 0.97 | -3.7 | -0.2 |
| 18.09.2020 | WB Head | 22 | 915    | 41.48 | 0.98 | 39.91 | 0.97 | -3.8 | -0.4 |
| 21.09.2020 | WB Head | 22 | 824    | 41.59 | 0.91 | 41.08 | 0.95 | -1.2 | 5.0  |
| 21.09.2020 | WB Head | 22 | 826    | 41.59 | 0.91 | 41.08 | 0.95 | -1.2 | 5.1  |
| 21.09.2020 | WB Head | 22 | 829    | 41.58 | 0.91 | 41.05 | 0.95 | -1.3 | 5.1  |
| 21.09.2020 | WB Head | 22 | 835    | 41.55 | 0.91 | 41.02 | 0.96 | -1.3 | 5.0  |
| 21.09.2020 | WB Head | 22 | 836    | 41.55 | 0.91 | 41.01 | 0.96 | -1.3 | 5.1  |
| 21.09.2020 | WB Head | 22 | 836.5  | 41.55 | 0.91 | 41.02 | 0.96 | -1.3 | 5.1  |
| 21.09.2020 | WB Head | 22 | 837    | 41.55 | 0.91 | 41.02 | 0.96 | -1.3 | 5.1  |
| 21.09.2020 | WB Head | 22 | 844    | 41.52 | 0.91 | 40.98 | 0.96 | -1.3 | 5.1  |
| 21.09.2020 | WB Head | 22 | 847    | 41.51 | 0.92 | 40.95 | 0.96 | -1.3 | 5.1  |
| 21.09.2020 | WB Head | 22 | 849    | 41.5  | 0.92 | 40.96 | 0.96 | -1.3 | 5.0  |
| 21.09.2020 | WB Head | 22 | 880    | 41.5  | 0.95 | 40.78 | 0.97 | -1.7 | 2.7  |
| 21.09.2020 | WB Head | 22 | 898    | 41.5  | 0.97 | 40.71 | 0.98 | -1.9 | 1.1  |
| 21.09.2020 | WB Head | 22 | 915    | 41.48 | 0.98 | 40.64 | 0.99 | -2.0 | 1.0  |
| 22.09.2020 | WB Head | 22 | 2402   | 39.29 | 1.76 | 37.25 | 1.7  | -5.2 | -3.1 |
| 22.09.2020 | WB Head | 22 | 2442   | 39.21 | 1.79 | 37.18 | 1.73 | -5.2 | -3.7 |
| 22.09.2020 | WB Head | 22 | 2450   | 39.2  | 1.8  | 37.17 | 1.73 | -5.2 | -3.8 |
| 22.09.2020 | WB Head | 22 | 2480   | 39.16 | 1.83 | 37.12 | 1.75 | -5.2 | -4.6 |
| 23.09.2020 | WB Head | 22 | 2402   | 39.29 | 1.76 | 37.79 | 1.72 | -3.8 | -2.3 |
| 23.09.2020 | WB Head | 22 | 2442   | 39.21 | 1.79 | 37.73 | 1.74 | -3.8 | -2.9 |
| 23.09.2020 | WB Head | 22 | 2450   | 39.2  | 1.8  | 37.71 | 1.75 | -3.8 | -3.0 |
| 23.09.2020 | WB Head | 22 | 2480   | 39.16 | 1.83 | 37.67 | 1.77 | -3.8 | -3.7 |
| 24.09.2020 | WB Head | 22 | 1850   | 40    | 1.4  | 38.74 | 1.44 | -3.2 | 2.6  |
| 24.09.2020 | WB Head | 22 | 1880   | 40    | 1.4  | 38.67 | 1.45 | -3.3 | 3.8  |
| 24.09.2020 | WB Head | 22 | 1900   | 40    | 1.4  | 38.65 | 1.46 | -3.4 | 4.5  |

|            |         |    |        |       |      |       |      |      |      |
|------------|---------|----|--------|-------|------|-------|------|------|------|
| 24.09.2020 | WB Head | 22 | 1910   | 40    | 1.4  | 38.62 | 1.47 | -3.5 | 5.0  |
| 25.09.2020 | WB Head | 22 | 2300   | 39.47 | 1.67 | 37.64 | 1.64 | -4.6 | -1.6 |
| 25.09.2020 | WB Head | 22 | 2310   | 39.45 | 1.68 | 37.63 | 1.65 | -4.6 | -1.7 |
| 25.09.2020 | WB Head | 22 | 2350   | 39.38 | 1.71 | 37.57 | 1.67 | -4.6 | -2.3 |
| 25.09.2020 | WB Head | 22 | 2390   | 39.31 | 1.75 | 37.53 | 1.7  | -4.5 | -2.9 |
| 28.09.2020 | WB Head | 22 | 2300   | 39.47 | 1.67 | 38.2  | 1.65 | -3.2 | -0.8 |
| 28.09.2020 | WB Head | 22 | 2310   | 39.45 | 1.68 | 38.19 | 1.66 | -3.2 | -0.9 |
| 28.09.2020 | WB Head | 22 | 2350   | 39.38 | 1.71 | 38.12 | 1.69 | -3.2 | -1.5 |
| 28.09.2020 | WB Head | 22 | 2390   | 39.31 | 1.75 | 38.07 | 1.71 | -3.1 | -2.1 |
| 28.09.2020 | WB Head | 22 | 704    | 42.18 | 0.89 | 42.69 | 0.91 | 1.2  | 2.4  |
| 28.09.2020 | WB Head | 22 | 707.5  | 42.16 | 0.89 | 42.61 | 0.91 | 1.1  | 2.6  |
| 28.09.2020 | WB Head | 22 | 711    | 42.14 | 0.89 | 42.62 | 0.91 | 1.1  | 2.6  |
| 28.09.2020 | WB Head | 22 | 750    | 41.94 | 0.89 | 42.34 | 0.93 | 1.0  | 3.8  |
| 28.09.2020 | WB Head | 22 | 779.5  | 41.79 | 0.9  | 42.16 | 0.94 | 0.9  | 4.7  |
| 28.09.2020 | WB Head | 22 | 782    | 41.78 | 0.9  | 42.15 | 0.94 | 0.9  | 4.9  |
| 28.09.2020 | WB Head | 22 | 784.5  | 41.76 | 0.9  | 42.14 | 0.94 | 0.9  | 4.9  |
| 29.09.2020 | WB Head | 22 | 829    | 41.58 | 0.91 | 42.04 | 0.96 | 1.1  | 5.2  |
| 29.09.2020 | WB Head | 22 | 835    | 41.55 | 0.91 | 41.99 | 0.96 | 1.1  | 5.2  |
| 29.09.2020 | WB Head | 22 | 836.5  | 41.55 | 0.91 | 41.99 | 0.96 | 1.1  | 5.2  |
| 29.09.2020 | WB Head | 22 | 844    | 41.52 | 0.91 | 41.96 | 0.96 | 1.1  | 5.0  |
| 29.09.2020 | WB Head | 22 | 1720   | 40.13 | 1.35 | 39.26 | 1.34 | -2.2 | -1.3 |
| 29.09.2020 | WB Head | 22 | 1732.5 | 40.11 | 1.36 | 39.24 | 1.34 | -2.2 | -1.4 |
| 29.09.2020 | WB Head | 22 | 1745   | 40.09 | 1.37 | 39.23 | 1.35 | -2.1 | -1.5 |
| 29.09.2020 | WB Head | 22 | 1800   | 40    | 1.4  | 39.11 | 1.38 | -2.2 | -1.7 |
| 08.10.2020 | WB Head | 22 | 824    | 41.59 | 0.91 | 41.61 | 0.96 | 0.0  | 5.7  |
| 08.10.2020 | WB Head | 22 | 835    | 41.55 | 0.91 | 41.5  | 0.96 | -0.1 | 5.7  |
| 08.10.2020 | WB Head | 22 | 837    | 41.55 | 0.91 | 41.5  | 0.96 | -0.1 | 5.7  |
| 08.10.2020 | WB Head | 22 | 849    | 41.5  | 0.92 | 41.44 | 0.97 | -0.2 | 5.8  |
| 09.10.2020 | WB Head | 22 | 1850   | 40    | 1.4  | 38.47 | 1.42 | -3.8 | 1.4  |
| 09.10.2020 | WB Head | 22 | 1880   | 40    | 1.4  | 38.41 | 1.43 | -4.0 | 2.3  |
| 09.10.2020 | WB Head | 22 | 1900   | 40    | 1.4  | 38.37 | 1.44 | -4.1 | 3.1  |
| 09.10.2020 | WB Head | 22 | 1910   | 40    | 1.4  | 38.35 | 1.45 | -4.1 | 3.4  |

## 5. TEST PROCEDURE

The device has two transmit antennas for cellular bands which are not used simultaneously. Antenna A is used for frequency bands under 1GHz and Antenna B for frequency bands above 1GHz. Antenna selection was done using a test software.

For the cellular technologies, the device was set to transmit using maximum power with a communication tester. Bluetooth was set to transmit on maximum power and duty cycle using a test software.

Testing was carried out in accordance with FCC KDB Publication 447498 D01 and RSS-102. KDB 941225 D05 was used to select LTE test modes for testing. Low, mid and high frequency channels for the configuration with the highest SAR value were tested as per ISED notice 2016-DRS001.

For GSM bands, slot configuration with the highest time averaged power (GPRS 850, 3 TX slot and GPRS 1900, 2 TX slot) was selected for Body SAR testing. GSM was selected for Head SAR testing instead of GPRS because GPRS cannot be used while having a voice call.

### 5.1 Device Holder

The device was placed in the device holder (illustrated below) that is supplied by SPEAG as an integral part of the Dasy system.



Device holder supplied by SPEAG

### 5.2 Test Positions

Photos of the test positions are presented in appendix A.

#### 5.2.1 Against Head Configuration

Measurements were made in "cheek" and "tilt" positions on both the left hand and right-hand sides of the phantom.

The positions used in the measurements were according to IEEE 1528 "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques".

### 5.2.2 Body-worn Configuration, 5mm separation distance

The device was placed in the SPEAG holder using the spacer and placed below the flat phantom. The distance between the device and the phantom was kept at 5mm using a separate flat spacer that was removed before the start of the measurements. The device was oriented in the foreseeable use cases with front and back sides facing the phantom to find the highest results.

## 5.3 Scan Procedures

First, area scans were used for determination of the field distribution. Next, a zoom scan was performed around the highest E-field value to determine the averaged SAR value. Drift was determined by measuring the same point at the start of the area scan and again at the end of the zoom scan.

## 5.4 SAR Averaging Methods

The maximum SAR value was averaged over a cube of tissue using interpolation and extrapolation.

The interpolation, extrapolation and maximum search routines within Dasy52 are all based on the modified Quadratic Shepard's method (Robert J. Renka, "Multivariate Interpolation of Large Sets of Scattered Data", University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988, pp. 139-148).

The interpolation scheme combines a least-square fitted function method with a weighted average method. A trivariate 3-D / bivariate 2-D quadratic function is computed for each measurement point and fitted to neighboring points by a least-square method. For the zoom scan, inverse distance weighting is incorporated to fit distant points more accurately. The interpolating function is finally calculated as a weighted average of the quadratics.

In the zoom scan, the interpolation function is used to extrapolate the Peak SAR from the deepest measurement points to the inner surface of the phantom.

## 6. MEASUREMENT UNCERTAINTY

| <b>Uncertainty Budget</b><br><b>IEEE 1528-2013</b> |               |             |      |         |          |                |                 |                |
|----------------------------------------------------|---------------|-------------|------|---------|----------|----------------|-----------------|----------------|
| Error Description                                  | Uncert. value | Prob. Dist. | Div. | (ci) 1g | (ci) 10g | Std. Unc. (1g) | Std. Unc. (10g) | (vi) $v_{eff}$ |
| <b>Measurement System</b>                          |               |             |      |         |          |                |                 |                |
| Probe Calibration                                  | ±6.0 %        | N           | 1    | 1       | 1        | ±6.0 %         | ±6.0 %          | ∞              |
| Axial Isotropy                                     | ±4.7 %        | R           |      | 0.7     | 0.7      | ±1.9 %         | ±1.9 %          | ∞              |
| Hemispherical Isotropy                             | ±9.6 %        | R           | 1.73 | 0.7     | 0.7      | ±3.9 %         | ±3.9 %          | ∞              |
| Boundary Effects                                   | ±1.0 %        | R           | 1.73 | 1       | 1        | ±0.6 %         | ±0.6 %          | ∞              |
| Linearity                                          | ±4.7 %        | R           | 1.73 | 1       | 1        | ±2.7 %         | ±2.7 %          | ∞              |
| System Detection Limits                            | ±1.0 %        | R           | 1.73 | 1       | 1        | ±0.6 %         | ±0.6 %          | ∞              |
| Modulation Response <sup>m</sup>                   | ±2.4 %        | R           | 1.73 | 1       | 1        | ±1.4 %         | ±1.4 %          | ∞              |
| Readout Electronics                                | ±0.3 %        | N           | 1    | 1       | 1        | ±0.3 %         | ±0.3 %          | ∞              |
| Response Time                                      | ±0.8 %        | R           | 1.73 | 1       | 1        | ±0.5 %         | ±0.5 %          | ∞              |
| Integration Time                                   | ±2.6 %        | R           | 1.73 | 1       | 1        | ±1.5 %         | ±1.5 %          | ∞              |
| RF Ambient Noise                                   | ±3.0 %        | R           | 1.73 | 1       | 1        | ±1.7 %         | ±1.7 %          | ∞              |
| RF Ambient Reflections                             | ±3.0 %        | R           | 1.73 | 1       | 1        | ±1.7 %         | ±1.7 %          | ∞              |
| Probe Positioner                                   | ±0.4 %        | R           | 1.73 | 1       | 1        | ±0.2 %         | ±0.2 %          | ∞              |
| Probe Positioning                                  | ±2.9 %        | R           | 1.73 | 1       | 1        | ±1.7 %         | ±1.7 %          | ∞              |
| Max. SAR Eval.                                     | ±2.0 %        | R           | 1.73 | 1       | 1        | ±1.2 %         | ±1.2 %          | ∞              |
| <b>Test Sample Related</b>                         |               |             |      |         |          |                |                 |                |
| Device Positioning                                 | ±2.9 %        | N           | 1    | 1       | 1        | ±2.9 %         | ±2.9 %          | 145            |
| Device Holder                                      | ±3.6 %        | N           | 1    | 1       | 1        | ±3.6 %         | ±3.6 %          | 5              |
| Power Drift                                        | ±5.0 %        | R           | 1.73 | 1       | 1        | ±2.9 %         | ±2.9 %          | ∞              |
| Power Scaling                                      | ±6 %          | R           | 1.73 | 1       | 1        | ±3.5 %         | ± 3.5%          | ∞              |
| <b>Phantom and Setup</b>                           |               |             |      |         |          |                |                 |                |
| Phantom Uncertainty                                | ±6.1 %        | R           | 1.73 | 1       | 1        | ±3.5 %         | ±3.5 %          | ∞              |
| SAR correction                                     | ±1.9 %        | R           | 1.73 | 1       | 0.84     | ±1.1 %         | ±0.9 %          | ∞              |
| Liquid Conductivity (mea.)                         | ±2.5 %        | R           | 1.73 | 0.78    | 0.71     | ±1.1 %         | ±1.0 %          | ∞              |
| Liquid Permittivity (mea.)                         | ±2.5 %        | R           | 1.73 | 0.26    | 0.26     | ±0.3 %         | ±0.4 %          | ∞              |
| Temp. unc. - Conductivity                          | ±3.4 %        | R           | 1.73 | 0.78    | 0.71     | ±1.5 %         | ±1.4 %          | ∞              |
| Temp. unc. - Permittivity                          | ±0.4 %        | R           | 1.73 | 0.23    | 0.26     | ±0.1 %         | ±0.1 %          | ∞              |
| Combined Std. Uncertainty                          |               |             |      |         |          | ±11.7 %        | ±11.6 %         | 361            |
| <b>Expanded STD Uncertainty</b>                    |               |             |      |         |          | <b>±23.4 %</b> | <b>±23.3 %</b>  |                |

## 7. TEST RESULTS

### 7.1 Head SAR results

When SAR value of 0 W/kg is reported, SAR in the test case is below the detection limit of the test system. The dynamic range of the used e-field probe is 10  $\mu$ W/g – >100 mW/g.

| Band    | Channel   | TX slot config | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Side  | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|---------|-----------|----------------|---------------------|-----------------------|-------------------|-------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| GSM 850 | 190/836.6 | 1              | 29.5                | 30.11                 | -0.17             | Left  | Cheek         | 3:8        | 0.0238                            | 1.00           | 0.02                              | -      |
| GSM 850 | 190/836.6 | 1              | 29.5                | 30.11                 | -0.18             | Left  | Tilt          | 3:8        | 0.0121                            | 1.00           | 0.01                              | -      |
| GSM 850 | 190/836.6 | 1              | 29.5                | 30.11                 | -0.12             | Right | Cheek         | 3:8        | 0.0231                            | 1.00           | 0.02                              | -      |
| GSM 850 | 190/836.6 | 1              | 29.5                | 30.11                 | 0.2               | Right | Tilt          | 3:8        | 0.0111                            | 1.00           | 0.01                              | -      |
| GSM 850 | 128/824.2 | 1              | 29.5                | 30.05                 | -0.18             | Left  | Cheek         | 3:8        | 0.0295                            | 1.00           | 0.03                              | 32     |
| GSM 850 | 251/848.8 | 1              | 29.5                | 30.07                 | -0.28             | Left  | Cheek         | 3:8        | 0.0188                            | 1.07           | 0.02                              | -      |

\*Larger than 5% drifts included to scaling factors

| Band     | Channel    | TX slot config | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Side  | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|----------|------------|----------------|---------------------|-----------------------|-------------------|-------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| GSM 1900 | 661/1880   | 1              | 32                  | 28.48                 | N/A**             | Left  | Cheek         | 1:4        | 0                                 | 2.25           | 0                                 | -      |
| GSM 1900 | 661/1880   | 1              | 32                  | 28.48                 | N/A**             | Left  | Tilt          | 1:4        | 0                                 | 2.25           | 0                                 | -      |
| GSM 1900 | 661/1880   | 1              | 32                  | 28.48                 | N/A**             | Right | Cheek         | 1:4        | 0                                 | 2.25           | 0                                 | -      |
| GSM 1900 | 661/1880   | 1              | 32                  | 28.48                 | N/A**             | Right | Tilt          | 1:4        | 0                                 | 2.25           | 0                                 | -      |
| GSM 1900 | 512/1850.2 | 1              | 32                  | 27.92                 | N/A**             | Right | Cheek         | 1:4        | 0                                 | 2.56           | 0                                 | -      |
| GSM 1900 | 810/1909.8 | 1              | 32                  | 28.67                 | N/A**             | Right | Cheek         | 1:4        | 0                                 | 2.15           | 0                                 | -      |

\*Larger than 5% drifts included to scaling factors

\*\*Due to low E-field generated by DUT at the location of the drift measurement, the Power Drift is not applicable

| Band    | Channel | Mode      | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Side  | Test Position | Duty Cycle | Measured SAR <sub>19</sub> [W/kg] | Scaling factor | Reported SAR <sub>19</sub> [W/kg] | Plot # |
|---------|---------|-----------|---------------------|-----------------------|-------------------|-------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| WCDMA 2 | 9400    | RMC 12.2K | 25                  | 22.91                 | N/A**             | Left  | Cheek         | 1:1        | 0                                 | 1.62           | 0                                 | -      |
| WCDMA 2 | 9400    | RMC 12.2K | 25                  | 22.91                 | N/A**             | Left  | Tilt          | 1:1        | 0                                 | 1.62           | 0                                 | -      |
| WCDMA 2 | 9400    | RMC 12.2K | 25                  | 22.91                 | N/A**             | Right | Cheek         | 1:1        | 0                                 | 1.62           | 0                                 | -      |
| WCDMA 2 | 9400    | RMC 12.2K | 25                  | 22.91                 | N/A**             | Right | Tilt          | 1:1        | 0                                 | 1.62           | 0                                 | -      |
| WCDMA 2 | 9262    | RMC 12.2K | 25                  | 23.11                 | N/A**             | Right | Cheek         | 1:1        | 0                                 | 1.55           | 0                                 | -      |
| WCDMA 2 | 9538    | RMC 12.2K | 25                  | 22.86                 | N/A**             | Right | Cheek         | 1:1        | 0                                 | 1.64           | 0                                 | -      |

\*Larger than 5% drifts included to scaling factors

\*\*Due to low E-field generated by DUT at the location of the drift measurement, the Power Drift is not applicable

| Band    | Channel | Mode      | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Side  | Test Position | Duty Cycle | Measured SAR <sub>19</sub> [W/kg] | Scaling factor | Reported SAR <sub>19</sub> [W/kg] | Plot # |
|---------|---------|-----------|---------------------|-----------------------|-------------------|-------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| WCDMA 4 | 1413    | RMC 12.2K | 25                  | 23.31                 | 0.55              | Left  | Cheek         | 1:1        | 0.00127                           | 1.67           | 0.002                             | 33     |
| WCDMA 4 | 1413    | RMC 12.2K | 25                  | 23.31                 | N/A**             | Left  | Tilt          | 1:1        | 0.0000357***                      | 1.48           | 0.0001                            | -      |
| WCDMA 4 | 1413    | RMC 12.2K | 25                  | 23.31                 | N/A**             | Right | Cheek         | 1:1        | 0                                 | 1.48           | 0                                 | -      |
| WCDMA 4 | 1413    | RMC 12.2K | 25                  | 23.31                 | N/A**             | Right | Tilt          | 1:1        | 0                                 | 1.48           | 0                                 | -      |
| WCDMA 4 | 1312    | RMC 12.2K | 25                  | 22.3                  | N/A**             | Left  | Cheek         | 1:1        | 0                                 | 1.86           | 0                                 | -      |
| WCDMA 4 | 1513    | RMC 12.2K | 25                  | 22.79                 | N/A**             | Left  | Cheek         | 1:1        | 0                                 | 1.66           | 0                                 | -      |

\*Larger than 5% drifts included to scaling factors

\*\*Due to low E-field generated by DUT at the location of the drift measurement, the Power Drift is not applicable

\*\*\*Area scan result only, zoom scan is not applicable due to low E-field generated by DUT

| Band    | Channel | Mode      | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Side  | Test Position | Duty Cycle | Measured SAR <sub>19</sub> [W/kg] | Scaling factor | Reported SAR <sub>19</sub> [W/kg] | Plot # |
|---------|---------|-----------|---------------------|-----------------------|-------------------|-------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| WCDMA 5 | 4183    | RMC 12.2K | 25                  | 22.86                 | -0.15             | Left  | Cheek         | 1:1        | 0.044                             | 1.64           | 0.07                              | -      |
| WCDMA 5 | 4183    | RMC 12.2K | 25                  | 22.86                 | -0.12             | Left  | Tilt          | 1:1        | 0.0249                            | 1.64           | 0.04                              | -      |
| WCDMA 5 | 4183    | RMC 12.2K | 25                  | 22.86                 | 0.54              | Right | Cheek         | 1:1        | 0.0353                            | 1.85           | 0.07                              | -      |
| WCDMA 5 | 4183    | RMC 12.2K | 25                  | 22.86                 | -0.23             | Right | Tilt          | 1:1        | 0.0193                            | 1.73           | 0.03                              | -      |
| WCDMA 5 | 4132    | RMC 12.2K | 25                  | 22.95                 | -0.12             | Left  | Cheek         | 1:1        | 0.0451                            | 1.60           | 0.07                              | 34     |
| WCDMA 5 | 4233    | RMC 12.2K | 25                  | 23                    | 0.14              | Left  | Cheek         | 1:1        | 0.0453                            | 1.58           | 0.07                              | -      |

\*Larger than 5% drifts included to scaling factors

| Band  | Channel | Modulation / BW [MHz] | RB Size | RB Offset | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling Factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|-------|---------|-----------------------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| LTE 2 | 18900   | QPSK/20               | 1       | 50        | 25                  | 23.49                 | N/A**             | Left Cheek    | 1:1        | 0                                 | 1.42           | 0                                 | -      |
| LTE 2 | 18900   | QPSK/20               | 50      | 25        | 25                  | 22.29                 | N/A**             | Left Cheek    | 1:1        | 0                                 | 1.87           | 0                                 | -      |
| LTE 2 | 18900   | QPSK/20               | 1       | 50        | 25                  | 23.49                 | N/A**             | Left Tilt     | 1:1        | 0                                 | 1.42           | 0                                 | -      |
| LTE 2 | 18900   | QPSK/20               | 50      | 25        | 25                  | 22.29                 | N/A**             | Left Tilt     | 1:1        | 0                                 | 1.87           | 0                                 | -      |
| LTE 2 | 18900   | QPSK/20               | 1       | 50        | 25                  | 23.49                 | N/A**             | Right Cheek   | 1:1        | 0                                 | 1.42           | 0                                 | -      |
| LTE 2 | 18900   | QPSK/20               | 50      | 25        | 25                  | 22.29                 | N/A**             | Right Cheek   | 1:1        | 0                                 | 1.87           | 0                                 | -      |
| LTE 2 | 18900   | QPSK/20               | 1       | 50        | 25                  | 23.49                 | N/A**             | Right Tilt    | 1:1        | 0                                 | 1.42           | 0                                 | -      |
| LTE 2 | 18900   | QPSK/20               | 50      | 25        | 25                  | 22.29                 | N/A**             | Right Tilt    | 1:1        | 0                                 | 1.87           | 0                                 | -      |
| LTE 2 | 18700   | QPSK/20               | 1       | 50        | 25                  | 22.98                 | N/A**             | Right Cheek   | 1:1        | 0                                 | 1.59           | 0                                 | -      |
| LTE 2 | 19100   | QPSK/20               | 1       | 99        | 25                  | 22.53                 | N/A**             | Right Cheek   | 1:1        | 0                                 | 1.77           | 0                                 | -      |

\*Larger than 5% drifts included to scaling factors

\*\*Due to low E-field generated by DUT at the location of the drift measurement, the Power Drift is not applicable

| Band  | Channel | Modulation / BW [MHz] | RB Size | RB Offset | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling Factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|-------|---------|-----------------------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| LTE 4 | 20175   | QPSK/20               | 1       | 50        | 25                  | 23.93                 | N/A**             | Left Cheek    | 1:1        | 0.000906                          | 1.28           | 0.001                             | 35     |
| LTE 4 | 20050   | QPSK/20               | 50      | 50        | 25                  | 22.95                 | N/A**             | Left Cheek    | 1:1        | 0                                 | 1.60           | 0                                 | -      |
| LTE 4 | 20175   | QPSK/20               | 1       | 50        | 25                  | 23.93                 | N/A**             | Left Tilt     | 1:1        | 0.000209***                       | 1.28           | 0.0003                            | -      |
| LTE 4 | 20050   | QPSK/20               | 50      | 50        | 25                  | 22.95                 | N/A**             | Left Tilt     | 1:1        | 0.00000376                        | 1.60           | 0.00001                           | -      |
| LTE 4 | 20175   | QPSK/20               | 1       | 50        | 25                  | 23.93                 | N/A**             | Right Cheek   | 1:1        | 0                                 | 1.28           | 0                                 | -      |
| LTE 4 | 20050   | QPSK/20               | 50      | 50        | 25                  | 22.95                 | N/A**             | Right Cheek   | 1:1        | 0                                 | 1.60           | 0                                 | -      |
| LTE 4 | 20175   | QPSK/20               | 1       | 50        | 25                  | 23.93                 | N/A**             | Right Tilt    | 1:1        | 0                                 | 1.28           | 0                                 | -      |
| LTE 4 | 20050   | QPSK/20               | 50      | 50        | 25                  | 22.95                 | N/A**             | Right Tilt    | 1:1        | 0.000123***                       | 1.60           | 0.0002                            | -      |
| LTE 4 | 20050   | QPSK/20               | 1       | 99        | 25                  | 22.8                  | N/A**             | Left Cheek    | 1:1        | 0                                 | 1.66           | 0                                 | -      |
| LTE 4 | 20300   | QPSK/20               | 1       | 0         | 25                  | 23.66                 | N/A**             | Left Cheek    | 1:1        | 0                                 | 1.36           | 0                                 | -      |

\*Larger than 5% drifts included to scaling factors

\*\*Due to low E-field generated by DUT at the location of the drift measurement, the Power Drift is not applicable

\*\*\*Area scan result only, zoom scan is not applicable due to low E-field generated by DUT

| Band  | Channel | Modulation / BW [MHz] | RB Size | RB Offset | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling Factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|-------|---------|-----------------------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| LTE 5 | 20600   | QPSK/10               | 1       | 24        | 25                  | 23.79                 | -0.53             | Left Cheek    | 1:1        | 0.0447                            | 1.49           | 0.07                              | 36     |
| LTE 5 | 20600   | QPSK/10               | 25      | 0         | 25                  | 22.75                 | -0.13             | Left Cheek    | 1:1        | 0.0353                            | 1.68           | 0.06                              | -      |
| LTE 5 | 20600   | QPSK/10               | 1       | 24        | 25                  | 23.79                 | -0.2              | Left Tilt     | 1:1        | 0.0227                            | 1.32           | 0.03                              | -      |
| LTE 5 | 20600   | QPSK/10               | 25      | 0         | 25                  | 22.75                 | -0.08             | Left Tilt     | 1:1        | 0.0178                            | 1.68           | 0.03                              | -      |
| LTE 5 | 20600   | QPSK/10               | 1       | 24        | 25                  | 23.79                 | -0.67             | Right Cheek   | 1:1        | 0.0391                            | 1.54           | 0.06                              | -      |
| LTE 5 | 20600   | QPSK/10               | 25      | 0         | 25                  | 22.75                 | -0.57             | Right Cheek   | 1:1        | 0.0289                            | 1.91           | 0.06                              | -      |
| LTE 5 | 20600   | QPSK/10               | 1       | 24        | 25                  | 23.79                 | -0.34             | Right Tilt    | 1:1        | 0.0181                            | 1.43           | 0.03                              | -      |
| LTE 5 | 20600   | QPSK/10               | 25      | 0         | 25                  | 22.75                 | -0.56             | Right Tilt    | 1:1        | 0.0149                            | 1.91           | 0.03                              | -      |
| LTE 5 | 20450   | QPSK/10               | 1       | 24        | 25                  | 23.72                 | -0.15             | Left Cheek    | 1:1        | 0.0429                            | 1.34           | 0.06                              | -      |
| LTE 5 | 20525   | QPSK/10               | 1       | 49        | 25                  | 23.52                 | 0.08              | Left Cheek    | 1:1        | 0.0432                            | 1.41           | 0.06                              | -      |

\*Larger than 5% drifts included to scaling factors

| Band  | Channel | Modulation / BW [MHz] | RB Size | RB Offset | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling Factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|-------|---------|-----------------------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| LTE 7 | 21350   | QPSK/20               | 1       | 50        | 25                  | 25.6                  | N/A**             | Left Cheek    | 1:1        | 0                                 | 1.00           | 0                                 | -      |
| LTE 7 | 21350   | QPSK/20               | 50      | 25        | 25                  | 24.46                 | N/A**             | Left Cheek    | 1:1        | 0                                 | 1.13           | 0                                 | -      |
| LTE 7 | 21350   | QPSK/20               | 1       | 50        | 25                  | 25.6                  | N/A**             | Left Tilt     | 1:1        | 0                                 | 1.00           | 0                                 | -      |
| LTE 7 | 21350   | QPSK/20               | 50      | 25        | 25                  | 24.46                 | N/A**             | Left Tilt     | 1:1        | 0                                 | 1.13           | 0                                 | -      |
| LTE 7 | 21350   | QPSK/20               | 1       | 50        | 25                  | 25.6                  | N/A**             | Right Cheek   | 1:1        | 0                                 | 1.00           | 0                                 | -      |
| LTE 7 | 21350   | QPSK/20               | 50      | 25        | 25                  | 24.46                 | N/A**             | Right Cheek   | 1:1        | 0                                 | 1.13           | 0                                 | -      |
| LTE 7 | 21350   | QPSK/20               | 1       | 50        | 25                  | 25.6                  | N/A**             | Right Tilt    | 1:1        | 0                                 | 1.00           | 0                                 | -      |
| LTE 7 | 21350   | QPSK/20               | 50      | 25        | 25                  | 24.46                 | N/A**             | Right Tilt    | 1:1        | 0                                 | 1.13           | 0                                 | -      |
| LTE 7 | 20850   | QPSK/20               | 1       | 50        | 25                  | 24.56                 | N/A**             | Right Cheek   | 1:1        | 0                                 | 1.11           | 0                                 | -      |
| LTE 7 | 21100   | QPSK/20               | 1       | 50        | 25                  | 25.01                 | N/A**             | Right Cheek   | 1:1        | 0                                 | 1.00           | 0                                 | -      |

\*Larger than 5% drifts included to scaling factors

\*\*Due to low E-field generated by DUT at the location of the drift measurement, the Power Drift is not applicable

| Band   | Channel | Modulation / BW [MHz] | RB Size | RB Offset | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling Factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|--------|---------|-----------------------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| LTE 12 | 23060   | QPSK/10               | 1       | 24***     | 25                  | 23.77                 | -0.33             | Left Cheek    | 1:1        | 0.00954                           | 1.43           | 0.01                              | -      |
| LTE 12 | 23060   | QPSK/10               | 25      | 25        | 25                  | 22.97                 | -0.33             | Left Cheek    | 1:1        | 0.00623                           | 1.72           | 0.01                              | -      |
| LTE 12 | 23060   | QPSK/10               | 1       | 24***     | 25                  | 23.77                 | -0.37             | Left Tilt     | 1:1        | 0.00531                           | 1.45           | 0.01                              | -      |
| LTE 12 | 23060   | QPSK/10               | 25      | 25        | 25                  | 22.97                 | N/A**             | Left Tilt     | 1:1        | 0.00313                           | 1.60           | 0.003                             | -      |
| LTE 12 | 23060   | QPSK/10               | 1       | 24***     | 25                  | 23.77                 | -0.42             | Right Cheek   | 1:1        | 0.0076                            | 1.46           | 0.01                              | -      |
| LTE 12 | 23060   | QPSK/10               | 25      | 25        | 25                  | 22.97                 | -0.12             | Right Cheek   | 1:1        | 0.0048                            | 1.60           | 0.01                              | -      |
| LTE 12 | 23060   | QPSK/10               | 1       | 24***     | 25                  | 23.77                 | -0.06             | Right Tilt    | 1:1        | 0.00912                           | 1.33           | 0.01                              | -      |
| LTE 12 | 23060   | QPSK/10               | 25      | 25        | 25                  | 22.97                 | N/A**             | Right Tilt    | 1:1        | 0.00459                           | 1.60           | 0.01                              | -      |
| LTE 12 | 23095   | QPSK/10               | 1       | 0****     | 25                  | 23.5                  | 0.02              | Left Cheek    | 1:1        | 0.0154                            | 1.41           | 0.02                              | -      |
| LTE 12 | 23130   | QPSK/10               | 1       | 24        | 25                  | 23.75                 | -0.04             | Left Cheek    | 1:1        | 0.0182                            | 1.33           | 0.02                              | 37     |

\*Larger than 5% drifts included to scaling factors

\*\*Due to low E-field generated by DUT at the location of the drift measurement, the Power Drift is not applicable

\*\*\*Connection between the DUT and tester was not established on LTE Band 12, CH 23060, BW10, RB 1, Offset 49, the next highest conducted power of that channel was selected for testing

\*\*\*\*Connection between the DUT and tester was not established on LTE Mode Band 12, CH 23060, BW10, RB 1, Offset 24, the next highest conducted power of that channel was selected for testing

| Band   | Channel | Modulation / BW [MHz] | RB Size | RB Offset | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling Factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|--------|---------|-----------------------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| LTE 13 | 23230   | QPSK/10               | 1       | 0         | 25                  | 23.64                 | 0.09              | Left Cheek    | 1:1        | 0.0341                            | 1.37           | 0.05                              | 38     |
| LTE 13 | 23230   | QPSK/10               | 25      | 0         | 25                  | 22.66                 | -0.15             | Left Cheek    | 1:1        | 0.0244                            | 1.71           | 0.04                              | -      |
| LTE 13 | 23230   | QPSK/10               | 1       | 0         | 25                  | 23.64                 | 0.34              | Left Tilt     | 1:1        | 0.0161                            | 1.48           | 0.02                              | -      |
| LTE 13 | 23230   | QPSK/10               | 25      | 0         | 25                  | 22.66                 | -0.24             | Left Tilt     | 1:1        | 0.0128                            | 1.81           | 0.02                              | -      |
| LTE 13 | 23230   | QPSK/10               | 1       | 0         | 25                  | 23.64                 | -0.49             | Right Cheek   | 1:1        | 0.0245                            | 1.53           | 0.04                              | -      |
| LTE 13 | 23230   | QPSK/10               | 25      | 0         | 25                  | 22.66                 | -0.37             | Right Cheek   | 1:1        | 0.0192                            | 1.87           | 0.04                              | -      |
| LTE 13 | 23230   | QPSK/10               | 1       | 0         | 25                  | 23.64                 | -0.27             | Right Tilt    | 1:1        | 0.0168                            | 1.46           | 0.02                              | -      |
| LTE 13 | 23230   | QPSK/10               | 25      | 0         | 25                  | 22.66                 | 0.08              | Right Tilt    | 1:1        | 0.011                             | 1.71           | 0.02                              | -      |
| LTE 13 | 23205   | QPSK/5                | 1       | 12        | 25                  | 23.5                  | -0.21             | Left Cheek    | 1:1        | 0.0278                            | 1.41           | 0.04                              | -      |
| LTE 13 | 23255   | QPSK/5                | 1       | 12        | 25                  | 23.57                 | 0.21              | Left Cheek    | 1:1        | 0.0272                            | 1.39           | 0.04                              | -      |

\*Larger than 5% drifts included to scaling factors

| Band   | Channel | Modulation / BW [MHz] | RB Size | RB Offset | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling Factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|--------|---------|-----------------------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| LTE 41 | 41490   | QPSK/20               | 1       | 50        | 25                  | 25.12                 | N/A**             | Left Cheek    | 1:1        | 0                                 | 1.00           | 0                                 | -      |
| LTE 41 | 41490   | QPSK/20               | 50      | 25        | 25                  | 24.01                 | N/A**             | Left Cheek    | 1:1        | 0                                 | 1.26           | 0                                 | -      |
| LTE 41 | 41490   | QPSK/20               | 1       | 50        | 25                  | 25.12                 | N/A**             | Left Tilt     | 1:1        | 0                                 | 1.00           | 0                                 | -      |
| LTE 41 | 41490   | QPSK/20               | 50      | 25        | 25                  | 24.01                 | N/A**             | Left Tilt     | 1:1        | 0                                 | 1.26           | 0                                 | -      |
| LTE 41 | 41490   | QPSK/20               | 1       | 50        | 25                  | 25.12                 | N/A**             | Right Cheek   | 1:1        | 0                                 | 1.00           | 0                                 | -      |
| LTE 41 | 41490   | QPSK/20               | 50      | 25        | 25                  | 24.01                 | N/A**             | Right Cheek   | 1:1        | 0                                 | 1.26           | 0                                 | -      |
| LTE 41 | 41490   | QPSK/20               | 1       | 50        | 25                  | 25.12                 | N/A**             | Right Tilt    | 1:1        | 0                                 | 1.00           | 0                                 | -      |
| LTE 41 | 41490   | QPSK/20               | 50      | 25        | 25                  | 24.01                 | N/A**             | Right Tilt    | 1:1        | 0                                 | 1.26           | 0                                 | -      |
| LTE 41 | 39750   | QPSK/20               | 1       | 50        | 25                  | 23.82                 | N/A**             | Right Cheek   | 1:1        | 0                                 | 1.31           | 0                                 | -      |
| LTE 41 | 40620   | QPSK/20               | 1       | 50        | 25                  | 25.01                 | N/A**             | Right Cheek   | 1:1        | 0                                 | 1.00           | 0                                 | -      |

\*Larger than 5% drifts included to scaling factors

\*\*Due to low E-field generated by DUT at the location of the drift measurement, the Power Drift is not applicable

| Band      | Channel | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling Factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|-----------|---------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| Bluetooth | 40      | 8                   | 4.17                  | N/A**             | Left Cheek    | 1:1        | 0.0147                            | 2.42           | 0.04                              | -      |
| Bluetooth | 40      | 8                   | 4.17                  | N/A**             | Left Tilt     | 1:1        | 0.00923                           | 2.42           | 0.02                              | -      |
| Bluetooth | 40      | 8                   | 4.17                  | N/A**             | Right Cheek   | 1:1        | 0.0211                            | 2.42           | 0.05                              | -      |
| Bluetooth | 40      | 8                   | 4.17                  | -0.49             | Right Tilt    | 1:1        | 0.00814                           | 2.70           | 0.02                              | -      |
| Bluetooth | 1       | 8                   | 4.34                  | N/A**             | Right Cheek   | 1:1        | 0.0107                            | 2.32           | 0.02                              | -      |
| Bluetooth | 78      | 8                   | 4.27                  | 0                 | Right Cheek   | 1:1        | 0.0296                            | 2.36           | 0.07                              | 39     |

\*Larger than 5% drifts included to scaling factors

\*\*Due to low E-field generated by DUT at the location of the drift measurement, the Power Drift is not applicable

## 7.2 Body SAR results with 5mm separation

| Band     | Channel   | TX slot configuration | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|----------|-----------|-----------------------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| GPRS 850 | 190/836.6 | 3                     | 29.5                | 28.91                 | -0.17             | Front         | 3:8        | 0.0642                            | 1.15           | 0.07                              | -      |
| GPRS 850 | 190/836.6 | 3                     | 29.5                | 28.91                 | 0                 | Back          | 3:8        | 0.786                             | 1.15           | 0.90                              | -      |
| GPRS 850 | 128/824.2 | 3                     | 29.5                | 28.77                 | -0.11             | Back          | 3:8        | 0.956                             | 1.18           | 1.13                              | -      |
| GPRS 850 | 128/824.2 | 3                     | 29.5                | 28.77                 | -0.01             | Back          | 3:8        | 0.958                             | 1.18           | 1.13                              | 40     |
| GPRS 850 | 251/848.8 | 3                     | 29.5                | 28.48                 | 0.01              | Back          | 3:8        | 0.576                             | 1.26           | 0.73                              | -      |

\*Larger than 5% drifts included to scaling factors

| Band      | Channel    | TX slot configuration | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|-----------|------------|-----------------------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| GPRS 1900 | 661/1880   | 2                     | 32                  | 27.32                 | N/A**             | Front         | 1:4        | 0                                 | 2.94           | 0                                 | -      |
| GPRS 1900 | 661/1880   | 2                     | 32                  | 27.32                 | -0.25             | Back          | 1:4        | 0.0667                            | 3.11           | 0.21                              | -      |
| GPRS 1900 | 512/1850.2 | 2                     | 32                  | 27.22                 | -0.62             | Back          | 1:4        | 0.0804                            | 3.47           | 0.28                              | 41     |
| GPRS 1900 | 810/1909.8 | 2                     | 32                  | 27.44                 | -0.26             | Back          | 1:4        | 0.0667                            | 3.03           | 0.20                              | -      |

\*Larger than 5% drifts included to scaling factors

\*\*Due to low E-field generated by DUT at the location of the drift measurement, the Power Drift is not applicable

| Band    | Channel | Mode      | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|---------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| WCDMA 2 | 9400    | RMC 12.2K | 25                  | 22.91                 | N/A**             | Front         | 1:1        | 0                                 | 1.62           | 0                                 | -      |
| WCDMA 2 | 9400    | RMC 12.2K | 25                  | 22.91                 | N/A**             | Back          | 1:1        | 0.071                             | 1.62           | 0.11                              | -      |
| WCDMA 2 | 9262    | RMC 12.2K | 25                  | 23.11                 | -0.15             | Front         | 1:1        | 0.0956                            | 1.55           | 0.15                              | 42     |
| WCDMA 2 | 9538    | RMC 12.2K | 25                  | 22.86                 | -0.25             | Front         | 1:1        | 0.076                             | 1.73           | 0.13                              | -      |

\*Larger than 5% drifts included to scaling factors

\*\*Due to low E-field generated by DUT at the location of the drift measurement, the Power Drift is not applicable

| Band    | Channel | Mode      | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|---------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| WCDMA 4 | 1412    | RMC 12.2K | 25                  | 23.31                 | 0.01              | Front         | 1:1        | 0.0177                            | 1.48           | 0.03                              | -      |
| WCDMA 4 | 1412    | RMC 12.2K | 25                  | 23.31                 | 0.08              | Back          | 1:1        | 0.499                             | 1.48           | 0.74                              | 43     |
| WCDMA 4 | 1312    | RMC 12.2K | 25                  | 22.3                  | -0.15             | Back          | 1:1        | 0.253                             | 1.86           | 0.47                              | -      |
| WCDMA 4 | 1512    | RMC 12.2K | 25                  | 22.79                 | -0.13             | Back          | 1:1        | 0.344                             | 1.66           | 0.57                              | -      |

\*Larger than 5% drifts included to scaling factors

| Band    | Channel | Mode      | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|---------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| WCDMA 5 | 4183    | RMC 12.2K | 25                  | 22.86                 | 0.04              | Front         | 1:1        | 0.0548                            | 1.64           | 0.09                              | -      |
| WCDMA 5 | 4183    | RMC 12.2K | 25                  | 22.86                 | 0.15              | Back          | 1:1        | 0.572                             | 1.64           | 0.94                              | -      |
| WCDMA 5 | 4132    | RMC 12.2K | 25                  | 22.95                 | -0.01             | Back          | 1:1        | 0.592                             | 1.60           | 0.95                              | 44     |
| WCDMA 5 | 4233    | RMC 12.2K | 25                  | 23                    | -0.02             | Back          | 1:1        | 0.558                             | 1.58           | 0.88                              | -      |

\*Larger than 5% drifts included to scaling factors

| Band  | Channel | Modulation / BW [MHz] | RB Size | RB Offset | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|-------|---------|-----------------------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| LTE 2 | 18900   | QPSK/20               | 1       | 50        | 25                  | 23.49                 | N/A**             | Front         | 1:1        | 0                                 | 1.42           | 0                                 | -      |
| LTE 2 | 18900   | QPSK/20               | 50      | 25        | 25                  | 22.29                 | N/A**             | Front         | 1:1        | 0                                 | 1.87           | 0                                 | -      |
| LTE 2 | 18900   | QPSK/20               | 1       | 50        | 25                  | 23.49                 | N/A**             | Back          | 1:1        | 0.0645                            | 1.42           | 0.09                              | -      |
| LTE 2 | 18900   | QPSK/20               | 50      | 25        | 25                  | 22.29                 | -0.08             | Back          | 1:1        | 0.052                             | 1.87           | 0.10                              | -      |
| LTE 2 | 18700   | QPSK/20               | 1       | 50        | 25                  | 22.98                 | -0.35             | Back          | 1:1        | 0.0887                            | 1.73           | 0.15                              | 45     |
| LTE 2 | 19100   | QPSK/20               | 1       | 99        | 25                  | 22.53                 | 0.11              | Back          | 1:1        | 0.0628                            | 1.77           | 0.11                              | -      |

\*Larger than 5% drifts included to scaling factors

\*\*Due to low E-field generated by DUT at the location of the drift measurement, the Power Drift is not applicable

| Band  | Channel | Modulation / BW [MHz] | RB Size | RB Offset | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|-------|---------|-----------------------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| LTE 4 | 20175   | QPSK/20               | 1       | 50        | 25                  | 23.93                 | -0.13             | Front         | 1:1        | 0.0156                            | 1.28           | 0.02                              | -      |
| LTE 4 | 20175   | QPSK/20               | 50      | 0         | 25                  | 22.91                 | -0.27             | Front         | 1:1        | 0.00939                           | 1.72           | 0.02                              | -      |
| LTE 4 | 20175   | QPSK/20               | 1       | 50        | 25                  | 23.93                 | -0.61             | Back          | 1:1        | 0.441                             | 1.47           | 0.65                              | -      |
| LTE 4 | 20175   | QPSK/20               | 50      | 0         | 25                  | 22.91                 | -0.07             | Back          | 1:1        | 0.349                             | 1.62           | 0.56                              | -      |
| LTE 4 | 20175   | QPSK/20               | 100     | 0         | 25                  | 22.76                 | -0.76             | Back          | 1:1        | 0.298                             | 2.00           | 0.59                              | -      |
| LTE 4 | 20050   | QPSK/20               | 1       | 99        | 25                  | 22.8                  | 0.02              | Back          | 1:1        | 0.522                             | 1.66           | 0.87                              | 46     |
| LTE 4 | 20050   | QPSK/20               | 50      | 50        | 25                  | 22.95                 | -0.09             | Back          | 1:1        | 0.392                             | 1.60           | 0.63                              | -      |
| LTE 4 | 20050   | QPSK/20               | 100     | 0         | 25                  | 22.45                 | -0.18             | Back          | 1:1        | 0.298                             | 1.80           | 0.54                              | -      |
| LTE 4 | 20300   | QPSK/20               | 1       | 0         | 25                  | 23.66                 | -0.26             | Back          | 1:1        | 0.258                             | 1.45           | 0.37                              | -      |
| LTE 4 | 20300   | QPSK/20               | 50      | 0         | 25                  | 22.88                 | -0.94             | Back          | 1:1        | 0.174                             | 2.02           | 0.35                              | -      |

\*Larger than 5% drifts included to scaling factors

| Band  | Channel | Modulation / BW [MHz] | RB Size | RB Offset | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|-------|---------|-----------------------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| LTE 5 | 20600   | QPSK/10               | 1       | 24        | 25                  | 23.79                 | -0.31             | Front         | 1:1        | 0.0537                            | 1.42           | 0.08                              | -      |
| LTE 5 | 20600   | QPSK/10               | 25      | 0         | 25                  | 22.75                 | -0.23             | Front         | 1:1        | 0.043                             | 1.77           | 0.08                              | -      |
| LTE 5 | 20600   | QPSK/10               | 1       | 24        | 25                  | 23.79                 | -0.1              | Back          | 1:1        | 0.595                             | 1.32           | 0.79                              | -      |
| LTE 5 | 20600   | QPSK/10               | 25      | 0         | 25                  | 22.75                 | 0.28              | Back          | 1:1        | 0.474                             | 1.79           | 0.85                              | -      |
| LTE 5 | 20600   | QPSK/10               | 50      | 0         | 25                  | 22.67                 | 0.13              | Back          | 1:1        | 0.488                             | 1.71           | 0.83                              | -      |
| LTE 5 | 20450   | QPSK/10               | 1       | 24        | 25                  | 23.72                 | -0.01             | Back          | 1:1        | 0.593                             | 1.34           | 0.80                              | -      |
| LTE 5 | 20450   | QPSK/10               | 25      | 0         | 25                  | 22.7                  | 0.03              | Back          | 1:1        | 0.519                             | 1.70           | 0.88                              | -      |
| LTE 5 | 20450   | QPSK/10               | 50      | 0         | 25                  | 22.52                 | 0.03              | Back          | 1:1        | 0.506                             | 1.77           | 0.90                              | 47     |
| LTE 5 | 20525   | QPSK/10               | 1       | 49        | 25                  | 23.52                 | -0.11             | Back          | 1:1        | 0.545                             | 1.41           | 0.77                              | -      |
| LTE 5 | 20525   | QPSK/10               | 25      | 12        | 25                  | 22.52                 | 0.08              | Back          | 1:1        | 0.453                             | 1.77           | 0.80                              | -      |
| LTE 5 | 20525   | QPSK/10               | 50      | 0         | 25                  | 22.48                 | -0.12             | Back          | 1:1        | 0.461                             | 1.79           | 0.82                              | -      |

\*Larger than 5% drifts included to scaling factors

| Band  | Channel | Modulation / BW [MHz] | RB Size | RB Offset | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|-------|---------|-----------------------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| LTE 7 | 21350   | QPSK/20               | 1       | 50        | 25                  | 25.6                  | N/A**             | Front         | 1:1        | 0                                 | 1.00           | 0                                 | -      |
| LTE 7 | 21350   | QPSK/20               | 50      | 25        | 25                  | 24.46                 | N/A**             | Front         | 1:1        | 0                                 | 1.13           | 0                                 | -      |
| LTE 7 | 21350   | QPSK/20               | 1       | 50        | 25                  | 25.6                  | N/A**             | Back          | 1:1        | 0.0255                            | 1.00           | 0.03                              | -      |
| LTE 7 | 21350   | QPSK/20               | 50      | 25        | 25                  | 24.46                 | N/A**             | Back          | 1:1        | 0.0282                            | 1.13           | 0.03                              | -      |
| LTE 7 | 20850   | QPSK/20               | 1       | 50        | 25                  | 24.56                 | N/A**             | Back          | 1:1        | 0.0411                            | 1.11           | 0.05                              | -      |
| LTE 7 | 21100   | QPSK/20               | 1       | 50        | 25                  | 25.01                 | 0                 | Back          | 1:1        | 0.0473                            | 1.00           | 0.05                              | 48     |

\*Larger than 5% drifts included to scaling factors

\*\*Due to low E-field generated by DUT at the location of the drift measurement, the Power Drift is not applicable

| Band   | Channel | Modulation / BW [MHz] | RB Size | RB Offset | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|--------|---------|-----------------------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| LTE 12 | 23060   | QPSK/10               | 1       | 24**      | 25                  | 23.77                 | -0.36             | Front         | 1:1        | 0.0314                            | 1.44           | 0.05                              | -      |
| LTE 12 | 23060   | QPSK/10               | 25      | 25        | 25                  | 22.97                 | -0.2              | Front         | 1:1        | 0.02                              | 1.60           | 0.03                              | -      |
| LTE 12 | 23060   | QPSK/10               | 1       | 24**      | 25                  | 23.77                 | -0.06             | Back          | 1:1        | 0.457                             | 1.33           | 0.61                              | -      |
| LTE 12 | 23060   | QPSK/10               | 25      | 25        | 25                  | 22.97                 | -0.4              | Back          | 1:1        | 0.425                             | 1.75           | 0.74                              | -      |
| LTE 12 | 23060   | QPSK/10               | 50      | 0         | 25                  | 22.69                 | 0.16              | Back          | 1:1        | 0.459                             | 1.70           | 0.78                              | -      |
| LTE 12 | 23095   | QPSK/10               | 1       | 0***      | 25                  | 23.5                  | -0.09             | Back          | 1:1        | 0.482                             | 1.41           | 0.68                              | -      |
| LTE 12 | 23095   | QPSK/10               | 25      | 12        | 25                  | 22.82                 | 0.19              | Back          | 1:1        | 0.467                             | 1.65           | 0.77                              | -      |
| LTE 12 | 23095   | QPSK/10               | 50      | 0         | 25                  | 22.81                 | 0.17              | Back          | 1:1        | 0.458                             | 1.66           | 0.76                              | -      |
| LTE 12 | 23130   | QPSK/10               | 1       | 24        | 25                  | 23.75                 | -0.01             | Back          | 1:1        | 0.514                             | 1.33           | 0.69                              | -      |
| LTE 12 | 23130   | QPSK/10               | 25      | 0         | 25                  | 22.81                 | -0.05             | Back          | 1:1        | 0.472                             | 1.66           | 0.78                              | -      |
| LTE 12 | 23130   | QPSK/10               | 50      | 0         | 25                  | 22.81                 | 0.04              | Back          | 1:1        | 0.476                             | 1.66           | 0.79                              | 49     |

\*Larger than 5% drifts included to scaling factors

\*\*Connection between the DUT and tester was not established on LTE Band 12, CH 23060, BW10, RB 1, Offset 49, the next highest conducted power of that channel was selected for testing

\*\*\*Connection between the DUT and tester was not established on LTE Band 12, CH 23060, BW10, RB 1, Offset 24, the next highest conducted power of that channel was selected for testing

| Band   | Channel | Modulation / BW [MHz] | RB Size | RB Offset | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|--------|---------|-----------------------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| LTE 13 | 23230   | QPSK/10               | 1       | 0         | 25                  | 23.64                 | -0.01             | Front         | 1:1        | 0.0307                            | 1.37           | 0.04                              | -      |
| LTE 13 | 23230   | QPSK/10               | 25      | 0         | 25                  | 22.66                 | -0.18             | Front         | 1:1        | 0.0282                            | 1.71           | 0.05                              | -      |
| LTE 13 | 23230   | QPSK/10               | 1       | 0         | 25                  | 23.64                 | 0.14              | Back          | 1:1        | 0.499                             | 1.37           | 0.68                              | -      |
| LTE 13 | 23230   | QPSK/10               | 25      | 0         | 25                  | 22.66                 | -0.23             | Back          | 1:1        | 0.386                             | 1.81           | 0.70                              | -      |
| LTE 13 | 23230   | QPSK/10               | 50      | 0         | 25                  | 22.63                 | 0.02              | Back          | 1:1        | 0.473                             | 1.73           | 0.82                              | -      |
| LTE 13 | 23205   | QPSK/5                | 1       | 12        | 25                  | 23.5                  | 0.21              | Back          | 1:1        | 0.579                             | 1.41           | 0.82                              | -      |
| LTE 13 | 23205   | QPSK/5                | 12      | 6         | 25                  | 22.55                 | -0.03             | Back          | 1:1        | 0.476                             | 1.76           | 0.84                              | -      |
| LTE 13 | 23205   | QPSK/5                | 25      | 0         | 25                  | 22.59                 | 0.14              | Back          | 1:1        | 0.515                             | 1.74           | 0.90                              | -      |
| LTE 13 | 23255   | QPSK/5                | 1       | 12        | 25                  | 23.57                 | 0.16              | Back          | 1:1        | 0.56                              | 1.39           | 0.78                              | -      |
| LTE 13 | 23255   | QPSK/5                | 12      | 0         | 25                  | 22.58                 | 0.01              | Back          | 1:1        | 0.501                             | 1.75           | 0.87                              | -      |
| LTE 13 | 23255   | QPSK/5                | 25      | 0         | 25                  | 22.49                 | 0.29              | Back          | 1:1        | 0.485                             | 1.91           | 0.92                              | 50     |

\*Larger than 5% drifts included to scaling factors

| Band   | Channel | Modulation / BW [MHz] | RB Size | RB Offset | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|--------|---------|-----------------------|---------|-----------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| LTE 41 | 41490   | QPSK/20               | 1       | 50        | 25                  | 25.12                 | N/A**             | Front         | 1:1        | 0                                 | 1.00           | 0                                 | -      |
| LTE 41 | 41490   | QPSK/20               | 50      | 25        | 25                  | 24.01                 | N/A**             | Front         | 1:1        | 0                                 | 1.26           | 0                                 | -      |
| LTE 41 | 41490   | QPSK/20               | 1       | 50        | 25                  | 25.12                 | N/A**             | Back          | 1:1        | 0.0162                            | 1.00           | 0.01                              | -      |
| LTE 41 | 41490   | QPSK/20               | 50      | 25        | 25                  | 24.01                 | N/A**             | Back          | 1:1        | 0.0122                            | 1.26           | 0.02                              | -      |
| LTE 41 | 39750   | QPSK/20               | 1       | 50        | 25                  | 23.82                 | N/A**             | Back          | 1:1        | 0.0192                            | 1.31           | 0.03                              | 51     |
| LTE 41 | 40620   | QPSK/20               | 1       | 50        | 25                  | 25.01                 | N/A**             | Back          | 1:1        | 0.0108                            | 1.00           | 0.01                              | -      |

\*Larger than 5% drifts included to scaling factors

\*\*Due to low E-field generated by DUT at the location of the drift measurement, the Power Drift is not applicable

| Band      | Channel | Maximum Power [dBm] | Conducted Power [dBm] | Power Drift* [dB] | Test Position | Duty Cycle | Measured SAR <sub>1g</sub> [W/kg] | Scaling Factor | Reported SAR <sub>1g</sub> [W/kg] | Plot # |
|-----------|---------|---------------------|-----------------------|-------------------|---------------|------------|-----------------------------------|----------------|-----------------------------------|--------|
| Bluetooth | 40      | 8                   | 4.17                  | 0.32              | Front         | 1:1        | 0.0179                            | 2.60           | 0.05                              | -      |
| Bluetooth | 40      | 8                   | 4.17                  | -0.32             | Back          | 1:1        | 0.015                             | 2.60           | 0.04                              | -      |
| Bluetooth | 1       | 8                   | 4.34                  | 0.16              | Front         | 1:1        | 0.00806                           | 2.32           | 0.02                              | -      |
| Bluetooth | 78      | 8                   | 4.27                  | 0                 | Front         | 1:1        | 0.0347                            | 2.36           | 0.08                              | 52     |

\*Larger than 5% drifts included to scaling factors

### 7.3 Simultaneous Transmission Analysis

| Exposure Condition    |           | Head SAR <sub>1g</sub> [W/kg] |            |            |           | Body SAR <sub>1g</sub> [W/kg] |      |
|-----------------------|-----------|-------------------------------|------------|------------|-----------|-------------------------------|------|
| Test Position         |           | Right Cheek                   | Right Tilt | Left Cheek | Left Tilt | Front                         | Back |
| Cellular              | GSM 850   | 0.02                          | 0.01       | 0.03       | 0.01      | N/A                           | N/A  |
|                       | GSM 1900  | 0                             | 0          | 0          | 0         | N/A                           | N/A  |
|                       | GPRS 850  | N/A                           | N/A        | N/A        | N/A       | 0.07                          | 1.13 |
|                       | GPRS 1900 | N/A                           | N/A        | N/A        | N/A       | 0                             | 0.28 |
|                       | WCDMA 2   | 0                             | 0          | 0          | 0         | 0                             | 0.15 |
|                       | WCDMA 4   | 0                             | 0          | 0.002      | 0.0001    | 0.03                          | 0.74 |
|                       | WCDMA 5   | 0.07                          | 0.03       | 0.07       | 0.04      | 0.09                          | 0.95 |
|                       | LTE 2     | 0                             | 0          | 0          | 0         | 0                             | 0.15 |
|                       | LTE 4     | 0                             | 0.0002     | 0.001      | 0.0003    | 0.02                          | 0.87 |
|                       | LTE 5     | 0.06                          | 0.03       | 0.07       | 0.03      | 0.08                          | 0.90 |
|                       | LTE 7     | 0                             | 0          | 0          | 0         | 0                             | 0.05 |
|                       | LTE 12    | 0.01                          | 0.01       | 0.02       | 0.01      | 0.05                          | 0.79 |
|                       | LTE 13    | 0.04                          | 0.02       | 0.05       | 0.02      | 0.05                          | 0.92 |
|                       | LTE 41    | 0                             | 0          | 0          | 0         | 0                             | 0.03 |
|                       | Bluetooth | 0.07                          | 0.02       | 0.04       | 0.02      | 0.05                          | 0.08 |
| Maximum Cellular SAR  |           | 0.07                          | 0.03       | 0.07       | 0.04      | 0.09                          | 1.13 |
| Maximum Bluetooth SAR |           | 0.07                          | 0.02       | 0.04       | 0.02      | 0.08                          | 0.04 |
| SAR Summation:        |           | 0.14                          | 0.05       | 0.11       | 0.06      | 0.17                          | 1.17 |

#### 7.4 IEC 62209-2 AMD1:2019

According to IEC 62209-2 AMD1:2019, the zoom scan complies if the peak spatial-average SAR is below 0.1 W/kg, or if the following criteria is met:

1. The smallest horizontal distance from the local SAR peaks to all points 3 dB below the SAR peak is larger than the horizontal grid step.
2. Ratio of SAR at the second measured point (M2) to the SAR at the closest measured point (M1) at the x-y location of the measured maximum is at least 30%.

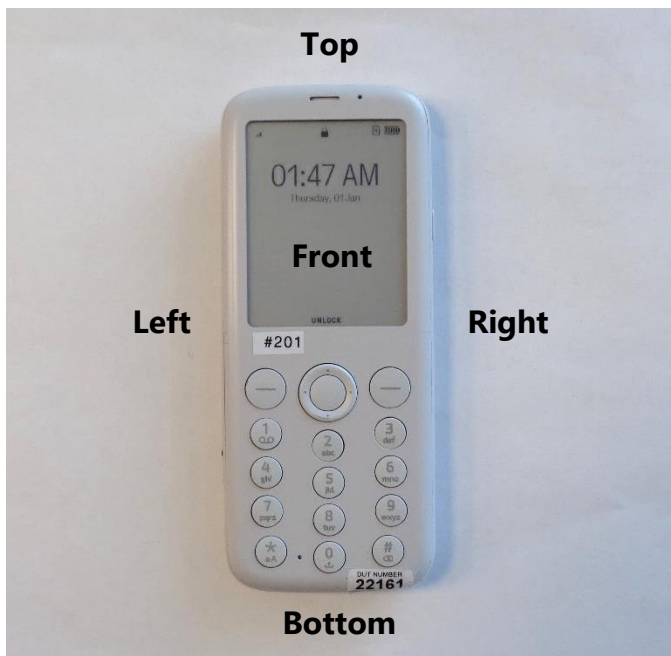
All Zoom scan peak spatial-average SAR results over 0.1 W/kg are in the table below.

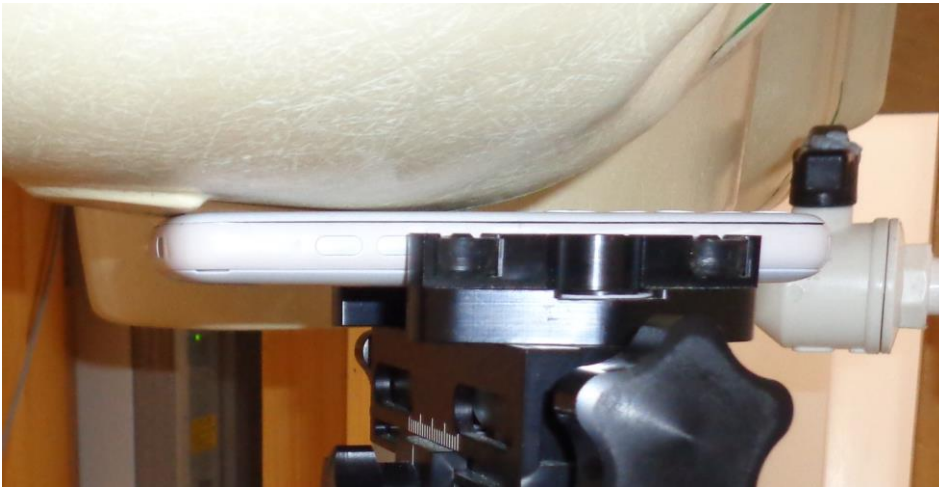
| Filename                                                        | Horizontal Grid Step [mm] | Minimum Distance [mm] | M2/M1 Ratio [%] | Result |
|-----------------------------------------------------------------|---------------------------|-----------------------|-----------------|--------|
| FCC, Body, Back, GPRS 850, mid, 3 Slots, DUT22162               | 5.0                       | 18                    | 59.1            | PASS   |
| FCC, Body, Back, GPRS 850, low, 3 Slots, DUT22162 2             | 5.0                       | 18.1                  | 65.4            | PASS   |
| FCC, Body, Back, GPRS 850, high, 3 Slots, DUT22162 2 2          | 5.0                       | 18                    | 58.3            | PASS   |
| Repeat, FCC, Body, Back, GPRS 850, low, 3 Slots, DUT22162 2 2   | 5.0                       | 18                    | 58.0            | PASS   |
| FCC, Body, Back, WCDMA 4, low, DUT22162 2                       | 5.0                       | 7                     | 45.8            | PASS   |
| FCC, Body, Back, WCDMA 4, Mid, DUT22162 2 2                     | 3.0                       | 6                     | 41.5            | PASS   |
| FCC, Body, Back, WCDMA 4, High, DUT22162 2 2                    | 3.0                       | 6                     | 37.7            | PASS   |
| FCC, Body, Back, WCDMA 5, mid, DUT22162 2                       | 7.5                       | 21.3                  | 65.9            | PASS   |
| FCC, Body, Back, WCDMA 5, low, DUT22162                         | 7.5                       | 21.2                  | 64.5            | PASS   |
| FCC, Body, Back, WCDMA 5, low, DUT22162 2                       | 7.5                       | 21.2                  | 63.1            | PASS   |
| FCC, Body, Back, LTE 4, Low, BW20, RB100, Offset0, DUT22162     | 3.0                       | 6                     | 39.7            | PASS   |
| FCC, Body, Back, LTE 4, Low, BW20, RB50, Offset50, DUT22162 2 2 | 7.5                       | 10.6                  | 41.5            | PASS   |
| FCC, Body, Back, LTE 4, low, BW20, RB1, Offset99, DUT22162 2    | 3.0                       | 6                     | 38.4            | PASS   |
| FCC, Body, Back, LTE 4, mid, BW20, RB1, Offset50, DUT22162 2    | 4.0                       | 8                     | 40.1            | PASS   |
| FCC, Body, Back, LTE 4, Mid, BW20, RB50, Offset0, DUT22162      | 4.0                       | 8                     | 40.3            | PASS   |
| FCC, Body, Back, LTE 4, Mid, BW20, RB100, Offset0, DUT22162 2   | 3.0                       | 6                     | 39.3            | PASS   |
| FCC, Body, Back, LTE 4, High, BW20, RB50, Offset0, DUT22162     | 3.0                       | 9                     | 42.1            | PASS   |
| FCC, Body, Back, LTE 4, high, BW20, RB1, Offset0, DUT22162 2    | 4.0                       | 8                     | 39.9            | PASS   |
| FCC, Body, Back, LTE 5, low, BW10, RB1, Offset24, DUT22162 2 2  | 7.5                       | 21.2                  | 67.3            | PASS   |
| FCC, Body, Back, LTE 5, Low, BW10, RB25, Offset0, DUT22162 2    | 7.5                       | 21.2                  | 57.9            | PASS   |
| FCC, Body, Back, LTE 5, Low, BW10, RB50, Offset0, DUT22162 2 2  | 7.5                       | 15                    | 55.6            | PASS   |
| FCC, Body, Back, LTE 5, Mid, BW10, RB25, Offset12, DUT22162     | 7.5                       | 15                    | 55.9            | PASS   |
| FCC, Body, Back, LTE 5, Mid, BW10, RB50, Offset0, DUT22162 2    | 7.5                       | 15                    | 56.9            | PASS   |
| FCC, Body, Back, LTE 5, mid, BW10, RB1, Offset49, DUT22162      | 7.5                       | 16.8                  | 56.7            | PASS   |
| FCC, Body, Back, LTE 5, high, BW10, RB25, Offset0, DUT22162     | 7.5                       | 16.8                  | 56.1            | PASS   |
| FCC, Body, Back, LTE 5, high, BW10, RB1, Offset24, DUT22162 2   | 7.5                       | 16.8                  | 55.2            | PASS   |
| FCC, Body, Back, LTE 5, High, BW10, RB50, Offset0, DUT22162     | 7.5                       | 15                    | 55.8            | PASS   |
| Body, Back, LTE 12, low, BW10, RB25, Offset25, DUT22162         | 5.0                       | 10                    | 43.6            | PASS   |
| Body, Back, LTE 12, low, BW10, RB1, Offset24, DUT22162          | 7.5                       | 15                    | 54.4            | PASS   |
| FCC, Body, Back, LTE 12, Low, BW10, RB50, Offset0, DUT22162     | 5.0                       | 10                    | 42.7            | PASS   |
| Body, Back, LTE 12, mid, BW10, RB1, Offset 0, DUT22162          | 5.0                       | 10                    | 43.7            | PASS   |
| FCC, Body, Back, LTE 12, Mid, BW10, RB25, Offset12, DUT22162 2  | 5.0                       | 10                    | 41.9            | PASS   |
| FCC, Body, Back, LTE 12, Mid, BW10, RB50, Offset0, DUT22162 2 2 | 5.0                       | 10                    | 47.3            | PASS   |
| FCC, Body, Back, LTE 12, High, BW10, RB25, Offset0, DUT22162    | 5.0                       | 10                    | 45.9            | PASS   |
| FCC, Body, Back, LTE 12, High, BW10, RB50, Offset0, DUT22162 2  | 5.0                       | 10                    | 46.6            | PASS   |
| Body, Back, LTE 12, high, BW10, RB1, Offset24, DUT22162 2 2     | 7.5                       | 10.6                  | 42.2            | PASS   |

|                                                                 |     |      |      |      |
|-----------------------------------------------------------------|-----|------|------|------|
| Body, Back, LTE 13, Low, BW5, RB1, Offset12, DUT22162           | 7.5 | 22.5 | 59.4 | PASS |
| FCC, Body, Back, LTE 13 low, BW5, RB12, Offset6, DUT22162       | 5.0 | 18   | 62.6 | PASS |
| FCC, Body, Back, LTE 13 low, BW5, RB25, Offset0, DUT22162 2     | 5.0 | 14.1 | 61.5 | PASS |
| Body, Back, LTE 13, mid, BW10, RB25, Offset0, DUT22162 2        | 7.5 | 22.5 | 61.0 | PASS |
| Body, Back, LTE 13, mid, BW10, RB1, Offset0, DUT22162           | 7.5 | 22.5 | 63.5 | PASS |
| FCC, Body, Back, LTE 13 mid,, BW10, RB50, Offset0, DUT22162 2 2 | 5.0 | 18   | 61.2 | PASS |
| FCC, Body, Back, LTE 13 high, BW5, RB12, Offset0, DUT22162 2    | 5.0 | 14.2 | 60.8 | PASS |
| FCC, Body, Back, LTE 13 high, BW5, RB25, Offset0, DUT22162      | 5.0 | 22.4 | 65.1 | PASS |
| Body, Back, LTE 13, High, BW5, RB1, Offset12, DUT22162          | 7.5 | 22.4 | 59.9 | PASS |

## APPENDIX A: PHOTOS OF THE DUT

Size of the DUT is 143.9 × 59.13 × 14.49 mm.





Against head, right cheek configuration.



Against head, right tilt configuration.



Against head, left cheek configuration.



Against head, left tilt configuration.



Body-worn configuration, front side towards the phantom with 5mm separation.



Body-worn configuration, back side towards the phantom with 5mm separation.

## APPENDIX B: SYSTEM CHECK SCAN

Plot 1

Date/Time: 24.8.2020 9:39:03

Test Laboratory: Verkotan Oy

**DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:448**

Communication System: UID 0, CW (0); Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.989 \text{ S/m}$ ;  $\epsilon_r = 40.389$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $60.91 \text{ V/m}$ ; Power Drift =  $-0.23 \text{ dB}$

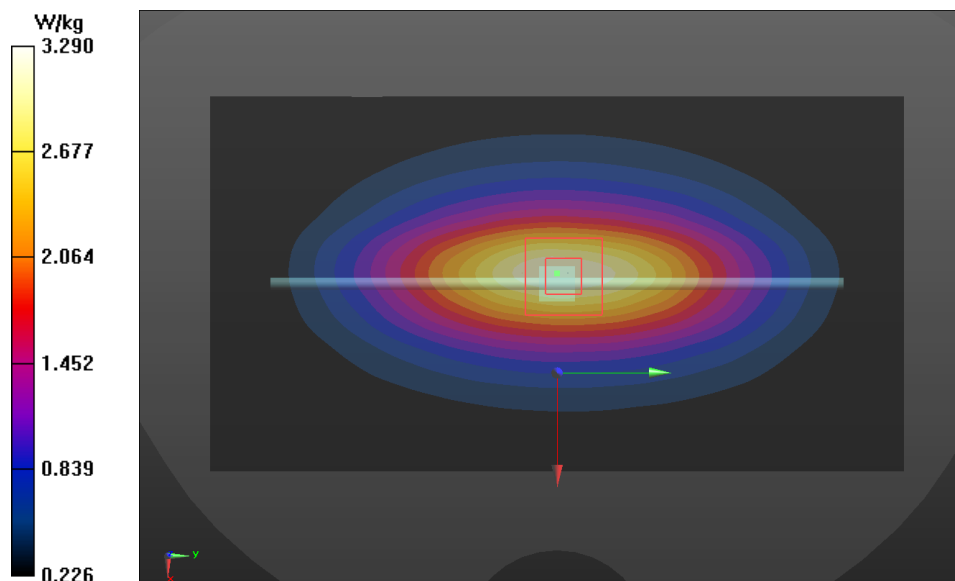
Peak SAR (extrapolated) =  $3.73 \text{ W/kg}$

**SAR(1 g) =  $2.2 \text{ W/kg}$ ; SAR(10 g) =  $1.42 \text{ W/kg}$**  (SAR corrected for target medium)

Maximum value of SAR (measured) =  $3.29 \text{ W/kg}$

**System check /Area Scan (71x131x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) =  $3.17 \text{ W/kg}$



Plot 2

Date/Time: 25.8.2020 8:05:08

Test Laboratory: Verkotan Oy

**DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:448**

Communication System: UID 0, CW (0); Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.969$  S/m;  $\epsilon_r = 40.859$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 62.37 V/m; Power Drift = -0.12 dB

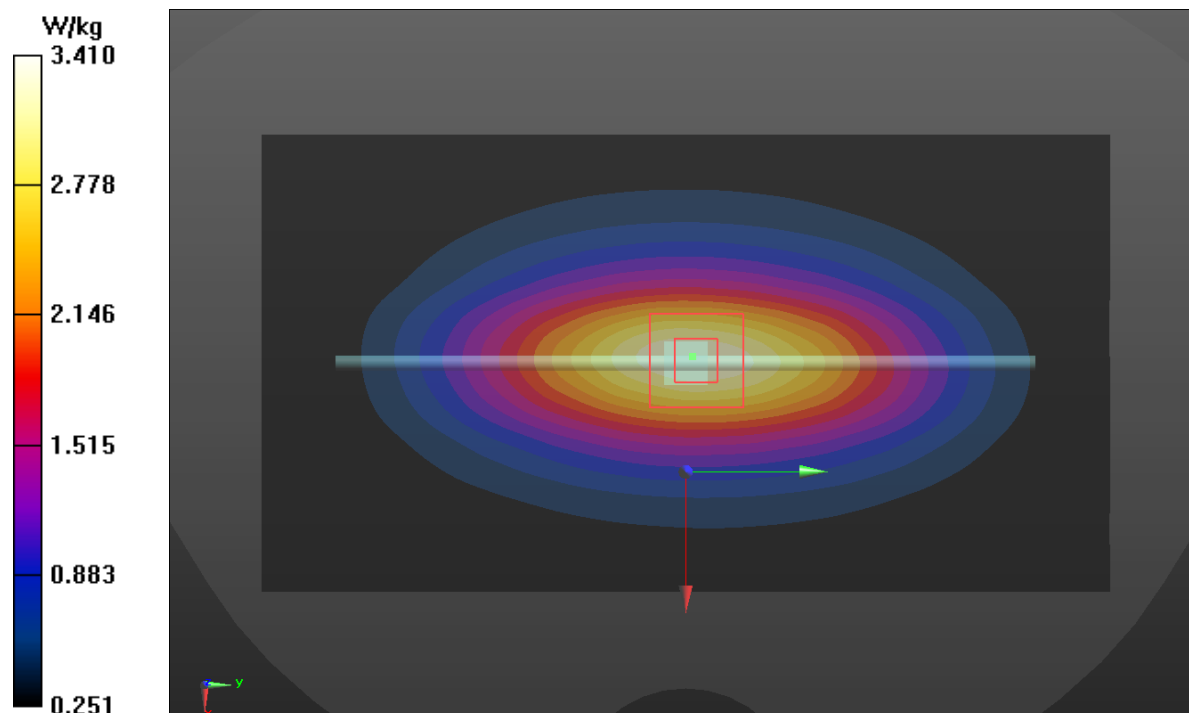
Peak SAR (extrapolated) = 3.87 W/kg

**SAR(1 g) = 2.35 W/kg; SAR(10 g) = 1.52 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 3.41 W/kg

**System check /Area Scan (71x131x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 3.32 W/kg



Plot 3

Date/Time: 26.8.2020 7:57:37

Test Laboratory: Verkotan Oy

**DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:448**

Communication System: UID 0, CW (0); Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.933$  S/m;  $\epsilon_r = 40.116$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 61.78 V/m; Power Drift = -0.18 dB

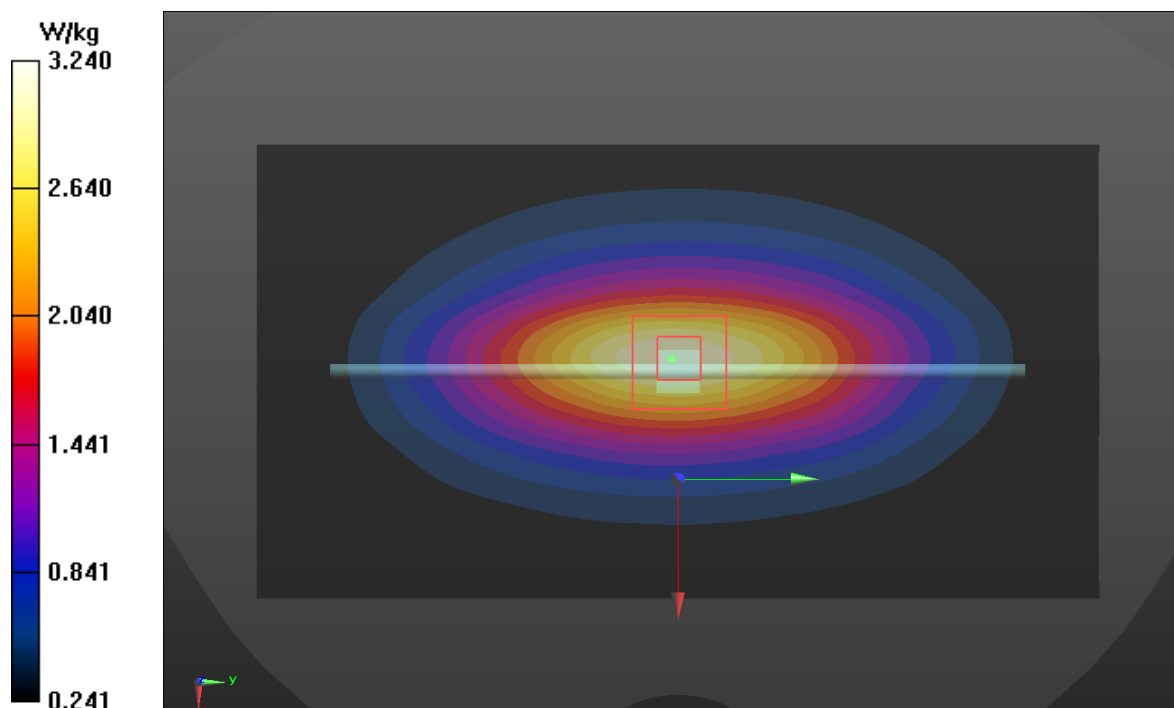
Peak SAR (extrapolated) = 3.65 W/kg

**SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.53 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 3.24 W/kg

**System check /Area Scan (71x131x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 3.20 W/kg



Plot 4

Date/Time: 27.8.2020 7:47:51

Test Laboratory: Verkotan Oy

**DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2 - SN:511**

Communication System: UID 0, CW (0); Communication System Band: D1900 (1900.0 MHz); Frequency: 1900 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.38$  S/m;  $\epsilon_r = 37.261$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.26, 8.26, 8.26); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 106.2 V/m; Power Drift = -0.14 dB

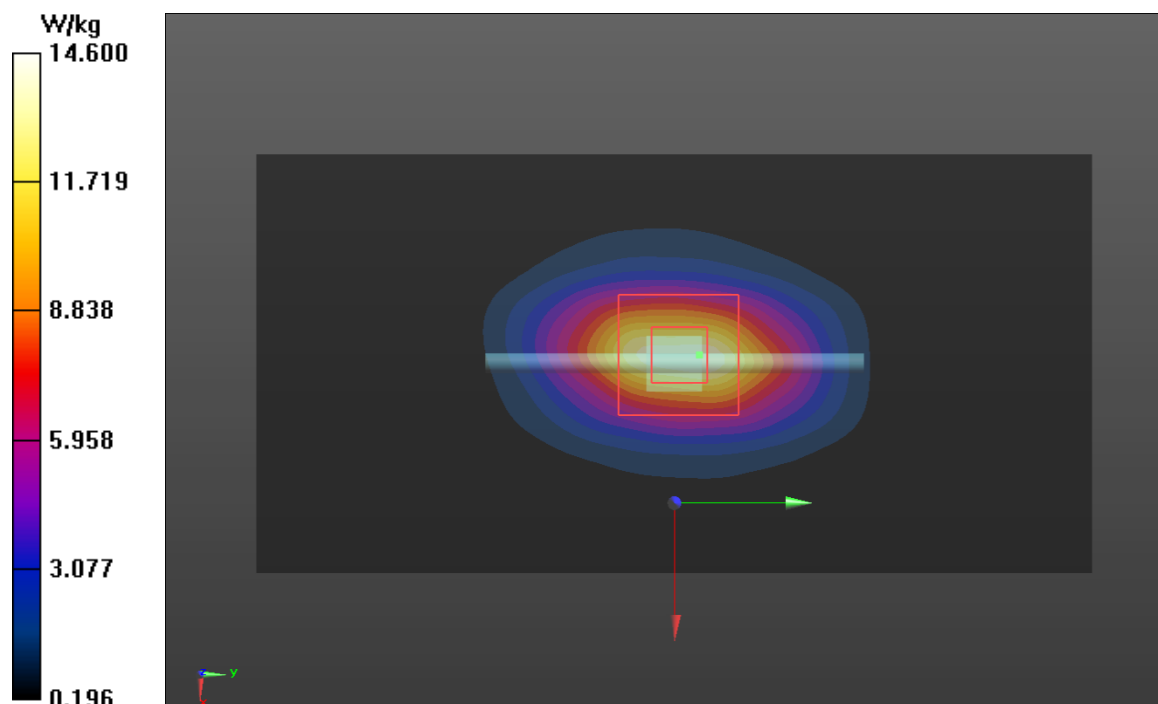
Peak SAR (extrapolated) = 17.6 W/kg

**SAR(1 g) = 9.32 W/kg; SAR(10 g) = 4.8 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 14.6 W/kg

**System check /Area Scan (51x101x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 15.2 W/kg



Plot 5

Date/Time: 28.8.2020 7:45:06

Test Laboratory: Verkotan Oy

**DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2 - SN:511**

Communication System: UID 0, CW (0); Communication System Band: D1900 (1900.0 MHz); Frequency: 1900 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.375$  S/m;  $\epsilon_r = 36.881$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.26, 8.26, 8.26); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 104.2 V/m; Power Drift = -0.12 dB

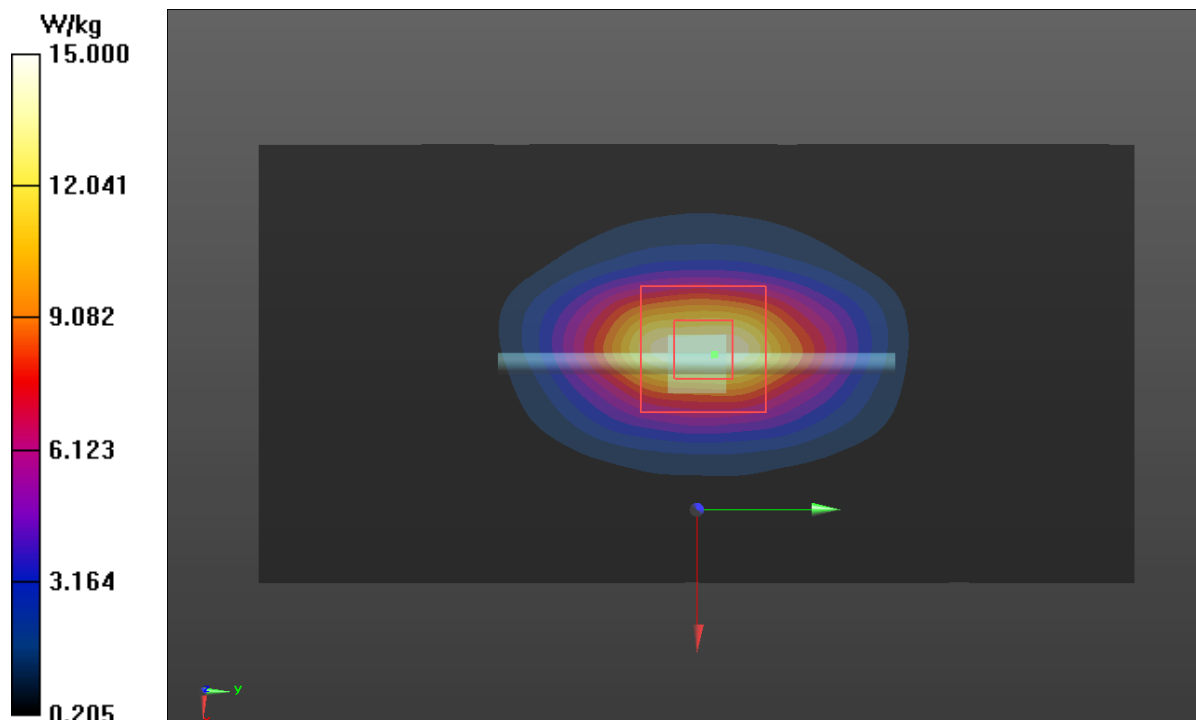
Peak SAR (extrapolated) = 18.1 W/kg

**SAR(1 g) = 9.46 W/kg; SAR(10 g) = 4.82 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 15.0 W/kg

**System check /Area Scan (51x101x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 15.1 W/kg



Plot 6

Date/Time: 31.8.2020 9:58:32

Test Laboratory: Verkotan Oy

**DUT: Dipole 750 MHz D750V3; Type: D750V3; Serial: D750V3 - SN:454**

Communication System: UID 0, CW (0); Communication System Band: D750 (750.0 MHz); Frequency: 750 MHz; Communication System  
PAR: 0 dB; PMF: 1  
Medium parameters used:  $f = 750$  MHz;  $\sigma = 0.905$  S/m;  $\epsilon_r = 40.876$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section  
Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(10.21, 10.21, 10.21); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASYS2 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 57.80 V/m; Power Drift = -0.11 dB

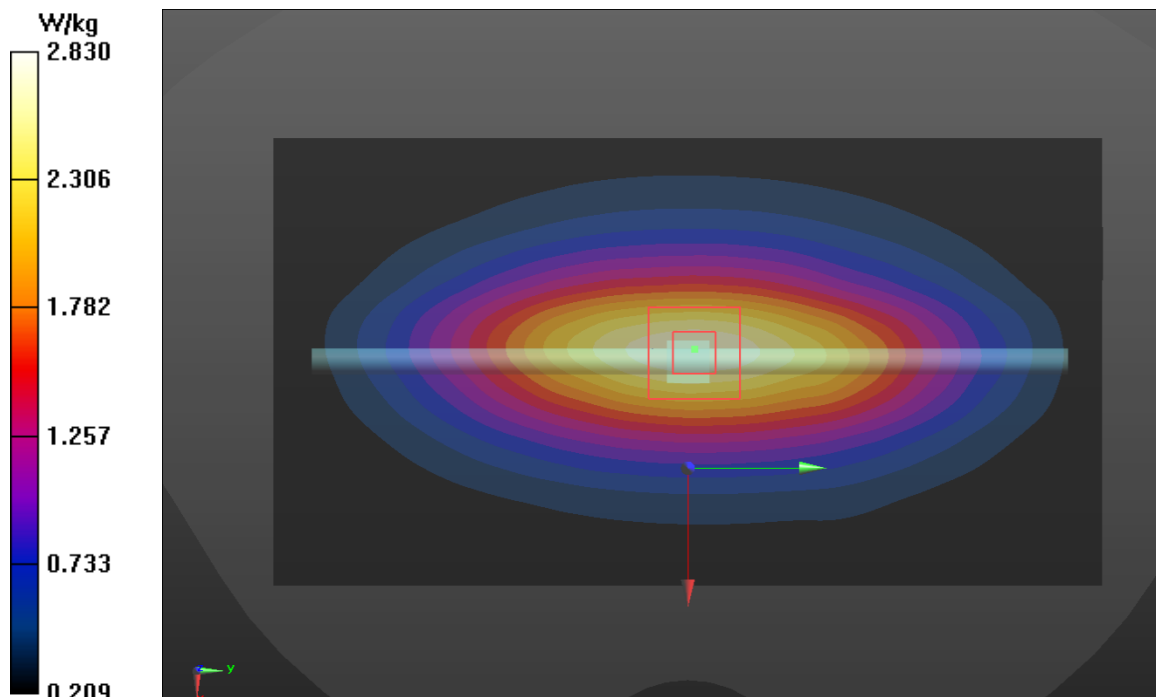
Peak SAR (extrapolated) = 3.25 W/kg

**SAR(1 g) = 2 W/kg; SAR(10 g) = 1.28 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 2.83 W/kg

**System check /Area Scan (71x131x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 2.23 W/kg



Plot 7

Date/Time: 1.9.2020 8:18:10

Test Laboratory: Verkotan Oy

**DUT: Dipole 750 MHz D750V3; Type: D750V3; Serial: D750V3 - SN:454**

Communication System: UID 0, CW (0); Communication System Band: D750 (750.0 MHz); Frequency: 750 MHz; Communication System  
PAR: 0 dB; PMF: 1  
Medium parameters used:  $f = 750$  MHz;  $\sigma = 0.871$  S/m;  $\epsilon_r = 39.925$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section  
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(10.21, 10.21, 10.21); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 58.95 V/m; Power Drift = -0.09 dB

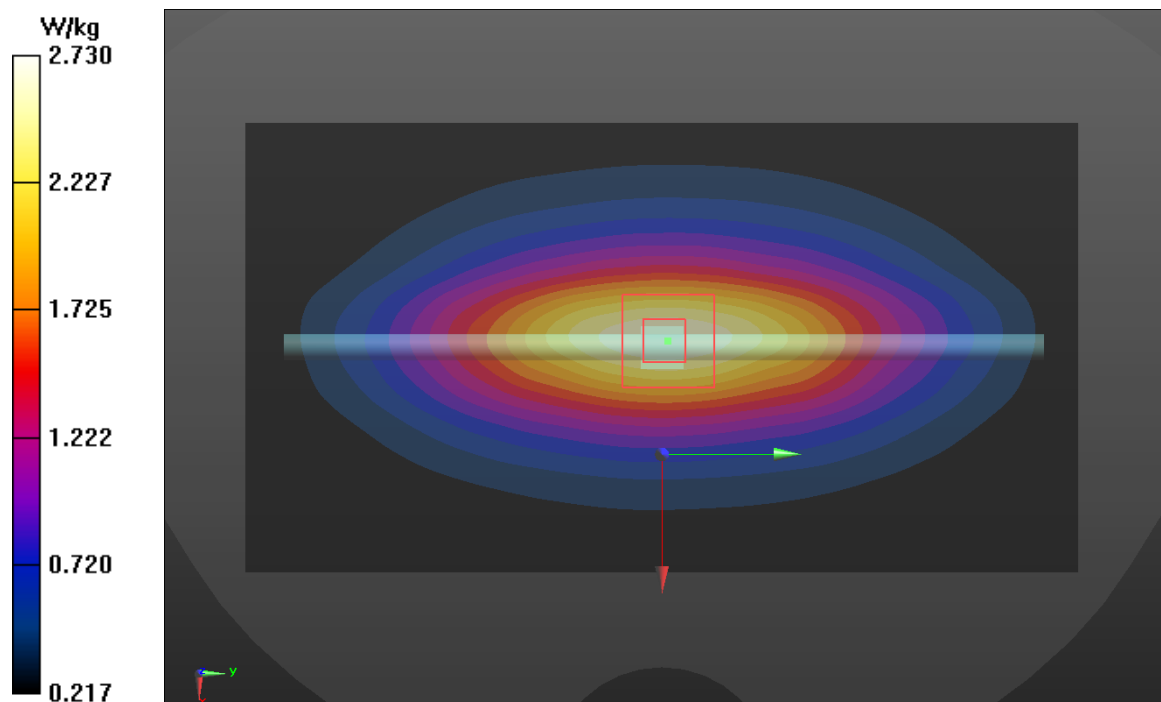
Peak SAR (extrapolated) = 3.12 W/kg

**SAR(1 g) = 2.02 W/kg; SAR(10 g) = 1.3 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 2.73 W/kg

**System check /Area Scan (71x131x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 2.59 W/kg



Plot 8

Date/Time: 2.9.2020 7:55:15

Test Laboratory: Verkotan Oy

**DUT: Dipole 750 MHz D750V3; Type: D750V3; Serial: D750V3 - SN:454**

Communication System: UID 0, CW (0); Communication System Band: D750 (750.0 MHz); Frequency: 750 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 750 \text{ MHz}$ ;  $\sigma = 0.87 \text{ S/m}$ ;  $\epsilon_r = 40.107$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(10.21, 10.21, 10.21); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASYS2 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 58.38 V/m; Power Drift = -0.24 dB

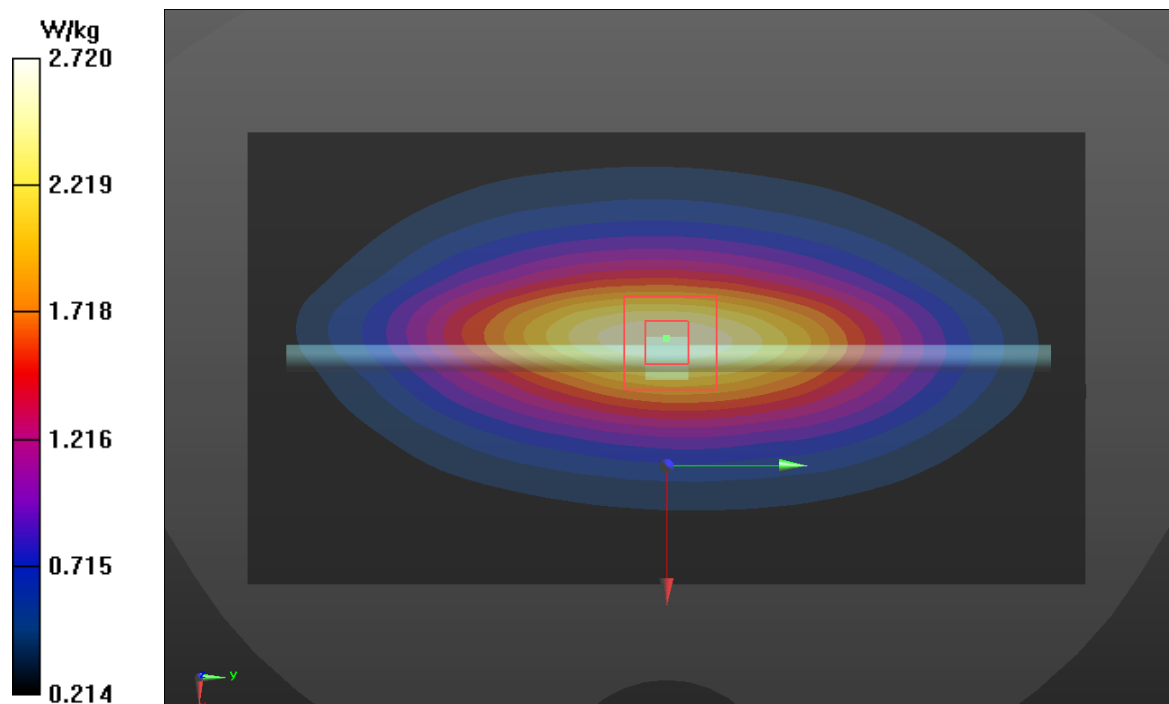
Peak SAR (extrapolated) = 3.11 W/kg

**SAR(1 g) = 1.99 W/kg; SAR(10 g) = 1.28 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 2.72 W/kg

**System check /Area Scan (71x131x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 2.65 W/kg



Plot 9

Date/Time: 2.9.2020 18:39:47

Test Laboratory: Verkotan Oy

**DUT: Dipole 2600 MHz D2600V2; Type: D2600V2; Serial: D2600V2 - SN:474**

Communication System: UID 0, CW (0); Communication System Band: D2600 (2600.0 MHz); Frequency: 2600 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 2600$  MHz;  $\sigma = 1.808$  S/m;  $\epsilon_r = 37.136$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.33, 7.33, 7.33); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 115.0 V/m; Power Drift = -0.39 dB

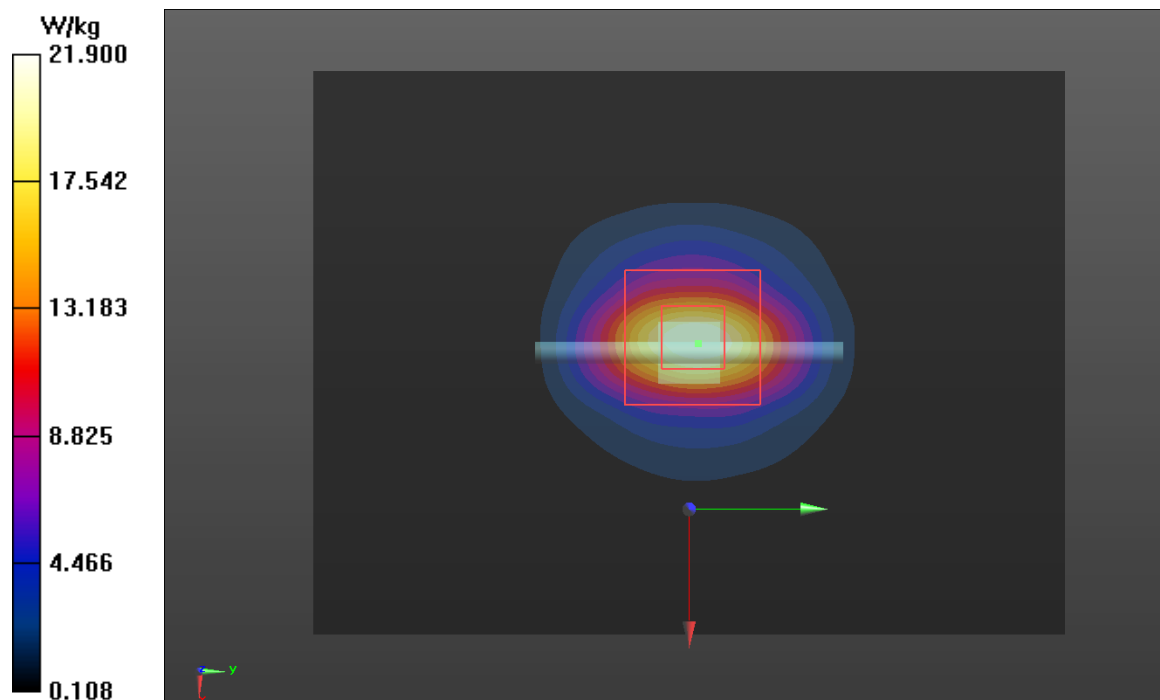
Peak SAR (extrapolated) = 26.9 W/kg

**SAR(1 g) = 13.5 W/kg; SAR(10 g) = 6.07 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 21.9 W/kg

**System check /Area Scan (61x81x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 22.0 W/kg



Plot 10

Date/Time: 4.9.2020 7:57:09

Test Laboratory: Verkotan Oy

**DUT: Dipole 2600 MHz D2600V2; Type: D2600V2; Serial: D2600V2 - SN:474**

Communication System: UID 0, CW (0); Communication System Band: D2600 (2600.0 MHz); Frequency: 2600 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 2600$  MHz;  $\sigma = 1.816$  S/m;  $\epsilon_r = 37.686$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.33, 7.33, 7.33); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASYS2 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 113.5 V/m; Power Drift = -0.07 dB

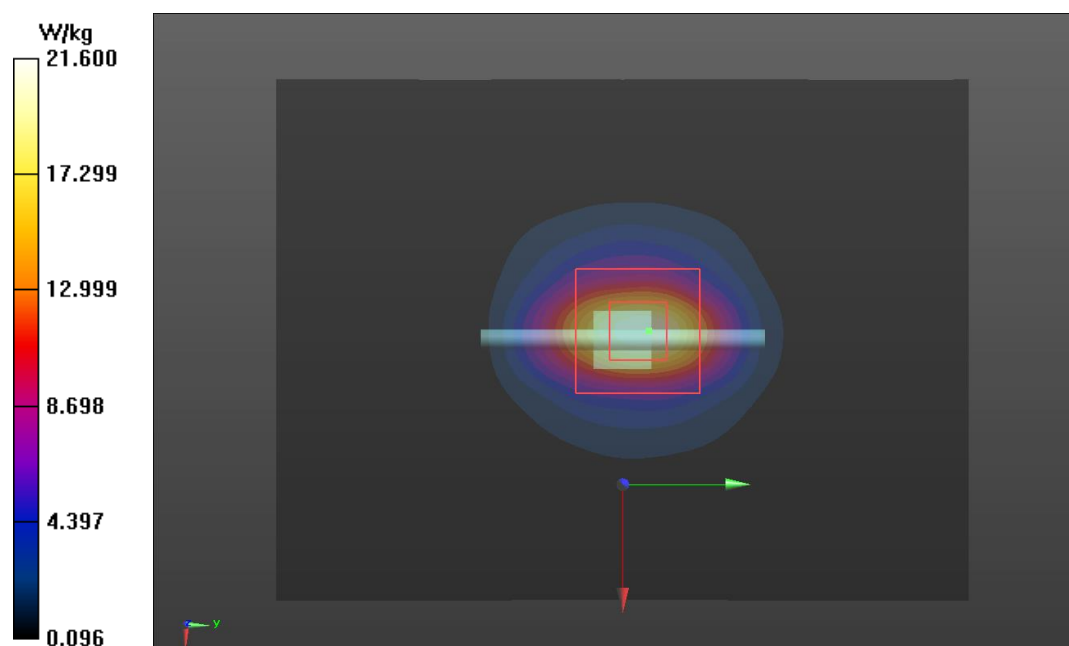
Peak SAR (extrapolated) = 27.0 W/kg

**SAR(1 g) = 13.3 W/kg; SAR(10 g) = 5.97 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 21.6 W/kg

**System check /Area Scan (61x81x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 22.4 W/kg



Plot 11

Date/Time: 7.9.2020 9:08:42

Test Laboratory: Verkotan Oy

**DUT: Dipole 2600 MHz D2600V2; Type: D2600V2; Serial: D2600V2 - SN:474**

Communication System: UID 0, CW (0); Communication System Band: D2600 (2600.0 MHz); Frequency: 2600 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 2600$  MHz;  $\sigma = 1.798$  S/m;  $\epsilon_r = 36.726$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.33, 7.33, 7.33); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 96.44 V/m; Power Drift = -0.13 dB

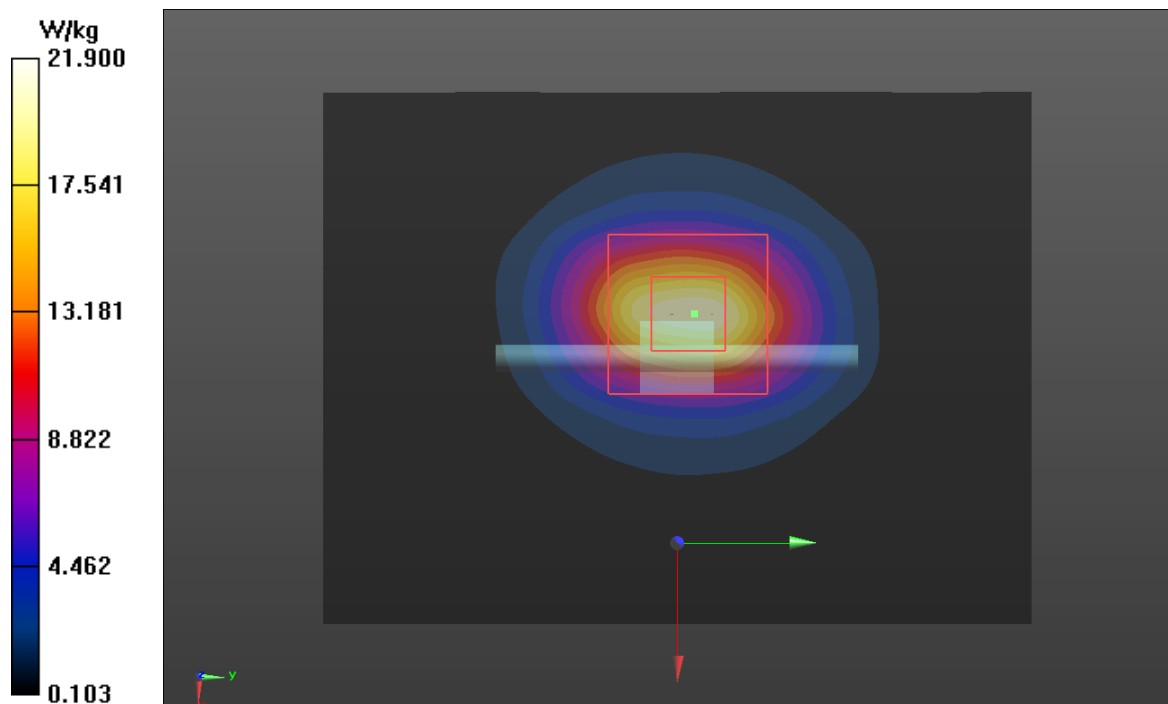
Peak SAR (extrapolated) = 27.3 W/kg

**SAR(1 g) = 13.3 W/kg; SAR(10 g) = 5.94 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 21.9 W/kg

**System check /Area Scan (61x81x1):** Interpolated grid:  $dx=1.200$  mm,  $dy=1.200$  mm

Maximum value of SAR (interpolated) = 22.1 W/kg



Plot 12

Date/Time: 8.9.2020 8:32:42

Test Laboratory: Verkotan Oy

**DUT: Dipole 2600 MHz D2600V2; Type: D2600V2; Serial: D2600V2 - SN:474**

Communication System: UID 0, CW (0); Communication System Band: D2600 (2600.0 MHz); Frequency: 2600 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 2600$  MHz;  $\sigma = 1.802$  S/m;  $\epsilon_r = 37.124$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.33, 7.33, 7.33); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 117.2 V/m; Power Drift = -0.10 dB

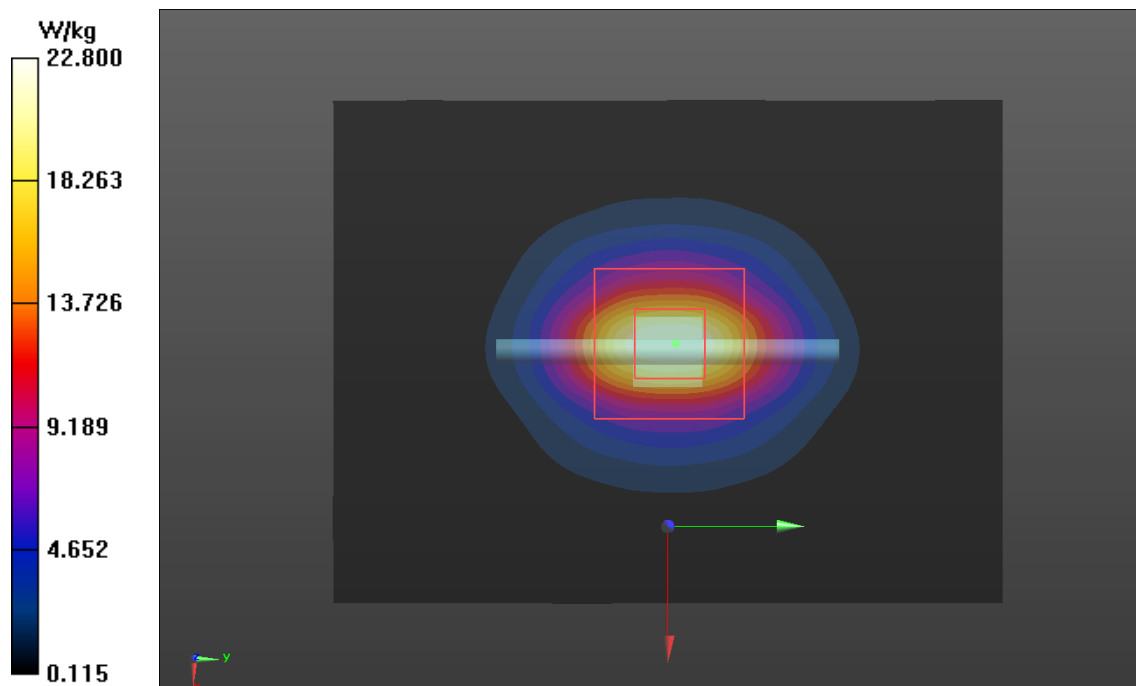
Peak SAR (extrapolated) = 28.3 W/kg

**SAR(1 g) = 13.9 W/kg; SAR(10 g) = 6.22 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 22.8 W/kg

**System check /Area Scan (61x81x1):** Interpolated grid:  $dx=1.200$  mm,  $dy=1.200$  mm

Maximum value of SAR (interpolated) = 23.0 W/kg



Plot 13

Date/Time: 9.9.2020 7:45:42

Test Laboratory: Verkotan Oy

**DUT: Dipole 2600 MHz D2600V2; Type: D2600V2; Serial: D2600V2 - SN:474**

Communication System: UID 0, CW (0); Communication System Band: D2600 (2600.0 MHz); Frequency: 2600 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 2600$  MHz;  $\sigma = 1.862$  S/m;  $\epsilon_r = 37.432$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.33, 7.33, 7.33); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 116.8 V/m; Power Drift = -0.05 dB

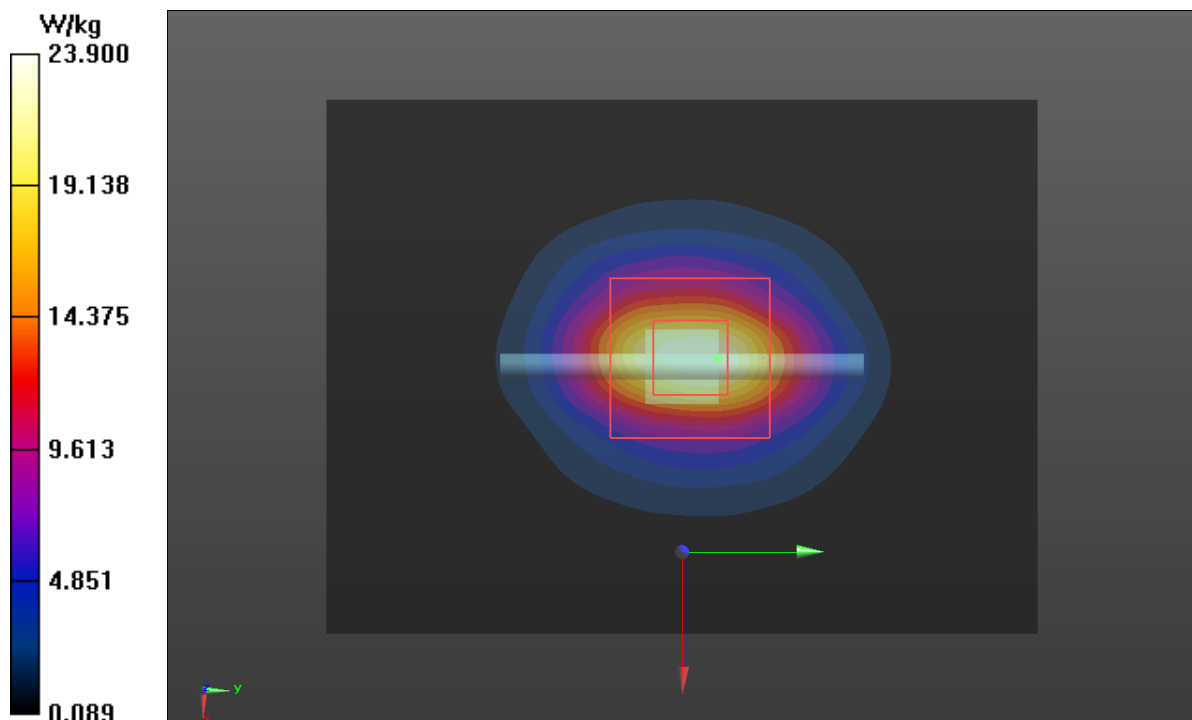
Peak SAR (extrapolated) = 29.8 W/kg

**SAR(1 g) = 14.3 W/kg; SAR(10 g) = 6.41 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 23.9 W/kg

**System check/Area Scan (61x81x1):** Interpolated grid:  $dx=1.200$  mm,  $dy=1.200$  mm

Maximum value of SAR (interpolated) = 23.1 W/kg



Plot 14

Date/Time: 9.9.2020 17:08:18

Test Laboratory: Verkotan Oy

**DUT: Dipole 1800 MHz D1800V2; Type: D1800V2; Serial: D1800V2 - SN:249**

Communication System: UID 0, CW (0); Communication System Band: D1800 (1800.0 MHz); Frequency: 1800 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 1800 \text{ MHz}$ ;  $\sigma = 1.391 \text{ S/m}$ ;  $\epsilon_r = 37.175$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.52, 8.52, 8.52); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 103.4 V/m; Power Drift = -0.05 dB

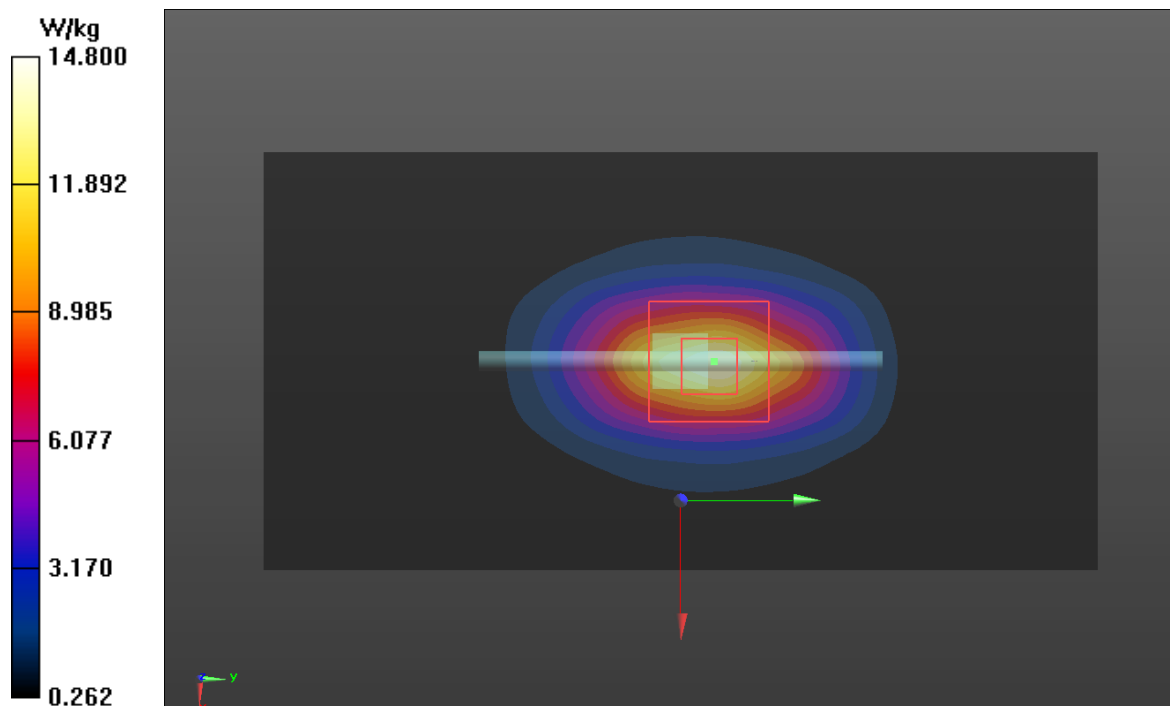
Peak SAR (extrapolated) = 17.8 W/kg

**SAR(1 g) = 9.38 W/kg; SAR(10 g) = 4.89 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 14.8 W/kg

**System check/Area Scan (51x101x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 15.2 W/kg



Plot 15

Date/Time: 10.9.2020 17:55:42

Test Laboratory: Verkotan Oy

**DUT: Dipole 1800 MHz D1800V2; Type: D1800V2; Serial: D1800V2 - SN:249**

Communication System: UID 0, CW (0); Communication System Band: D1800 (1800.0 MHz); Frequency: 1800 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 1800 \text{ MHz}$ ;  $\sigma = 1.337 \text{ S/m}$ ;  $\epsilon_r = 38.313$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.52, 8.52, 8.52); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 100.3 V/m; Power Drift = 0.01 dB

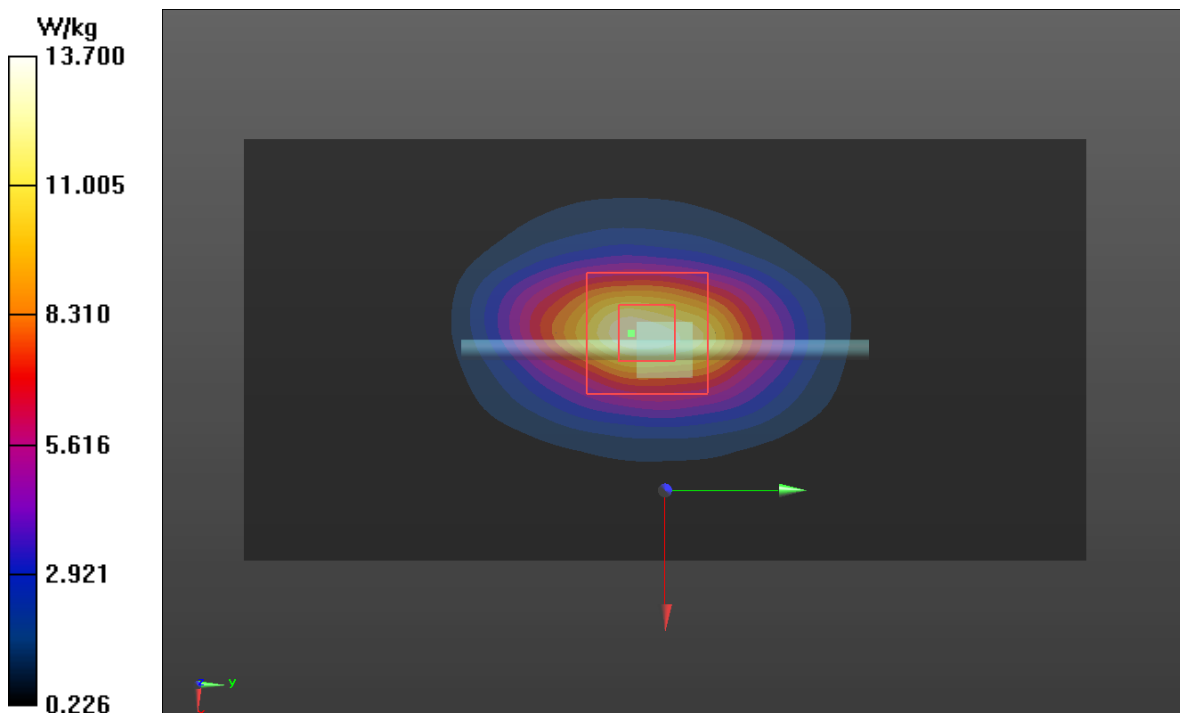
Peak SAR (extrapolated) = 16.6 W/kg

**SAR(1 g) = 8.89 W/kg; SAR(10 g) = 4.61 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 13.7 W/kg

**System check/Area Scan (51x101x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 13.9 W/kg



Plot 16

Date/Time: 14.9.2020 9:02:59

Test Laboratory: Verkotan Oy

**DUT: Dipole 1800 MHz D1800V2; Type: D1800V2; Serial: D1800V2 - SN:249**

Communication System: UID 0, CW (0); Communication System Band: D1800 (1800.0 MHz); Frequency: 1800 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 1800$  MHz;  $\sigma = 1.357$  S/m;  $\epsilon_r = 38.874$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.52, 8.52, 8.52); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 104.7 V/m; Power Drift = -0.10 dB

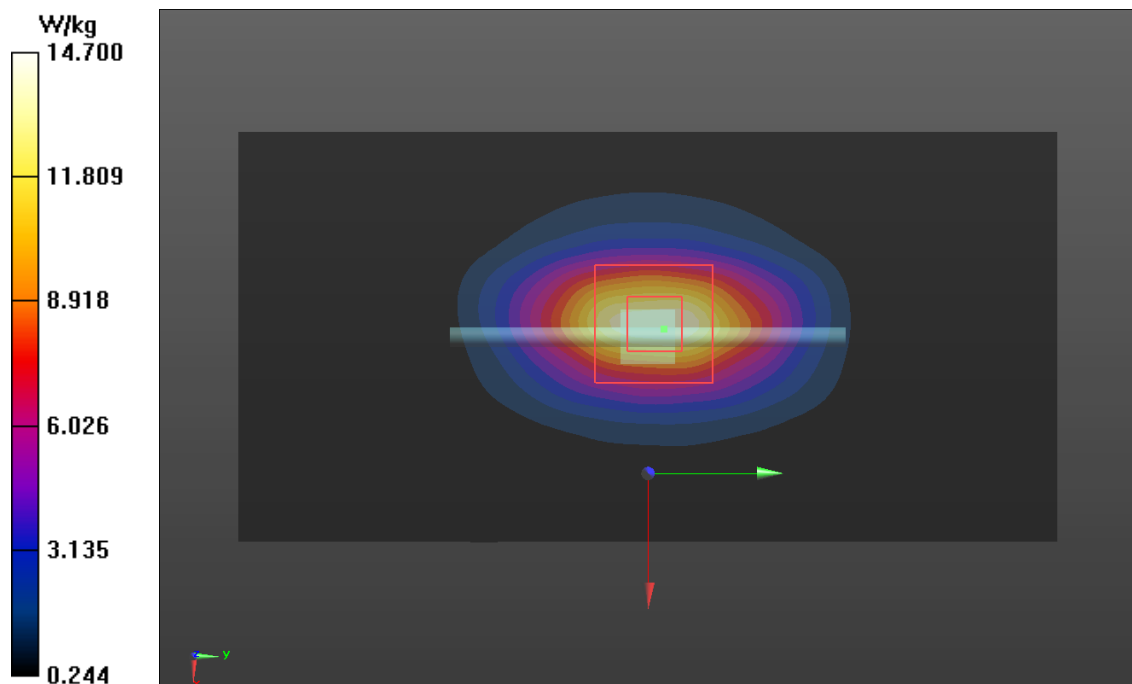
Peak SAR (extrapolated) = 17.8 W/kg

**SAR(1 g) = 9.42 W/kg; SAR(10 g) = 4.87 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 14.7 W/kg

**System check/Area Scan (51x101x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 14.5 W/kg



Plot 17

Date/Time: 15.9.2020 8:31:06

Test Laboratory: Verkotan Oy

**DUT: Dipole 1800 MHz D1800V2; Type: D1800V2; Serial: D1800V2 - SN:249**

Communication System: UID 0, CW (0); Communication System Band: D1800 (1800.0 MHz); Frequency: 1800 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 1800$  MHz;  $\sigma = 1.353$  S/m;  $\epsilon_r = 38.785$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.52, 8.52, 8.52); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 106.4 V/m; Power Drift = -0.22 dB

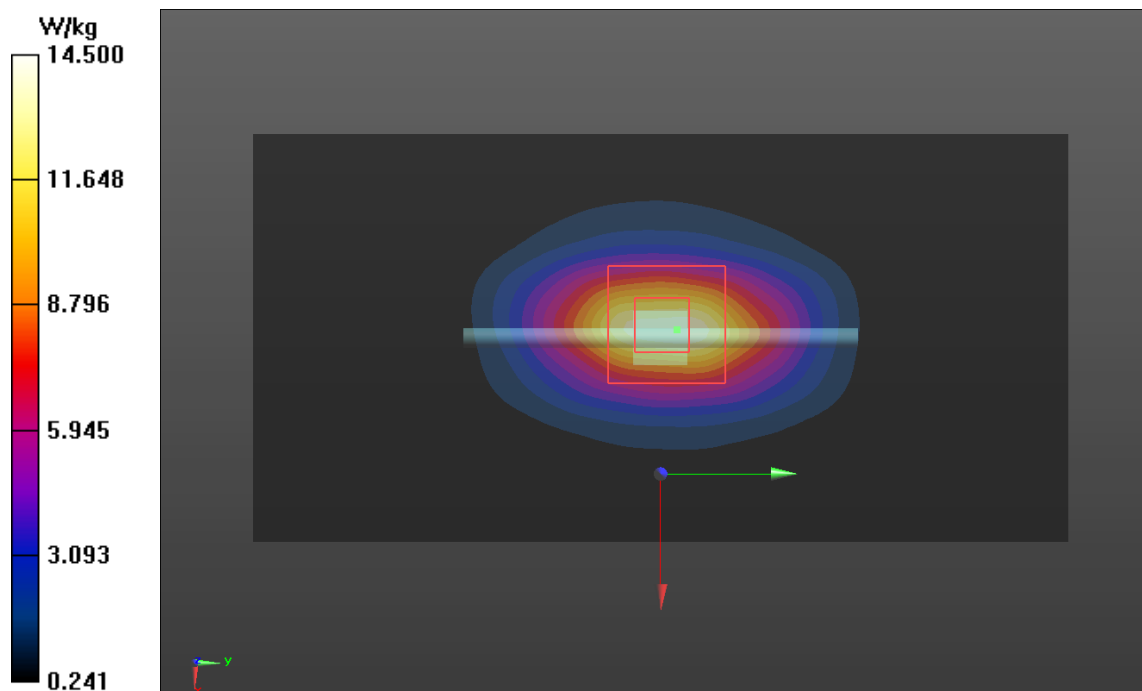
Peak SAR (extrapolated) = 17.5 W/kg

**SAR(1 g) = 9.3 W/kg; SAR(10 g) = 4.81 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 14.5 W/kg

**System check/Area Scan (51x101x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 14.8 W/kg



Plot 18

Date/Time: 16.9.2020 8:32:57

Test Laboratory: Verkotan Oy

**DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:448**

Communication System: UID 0, CW (0); Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz; Communication System PAR: 0 dB; PMF: 1  
Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.915 \text{ S/m}$ ;  $\epsilon_r = 41.27$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section  
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 61.58 V/m; Power Drift = -0.11 dB

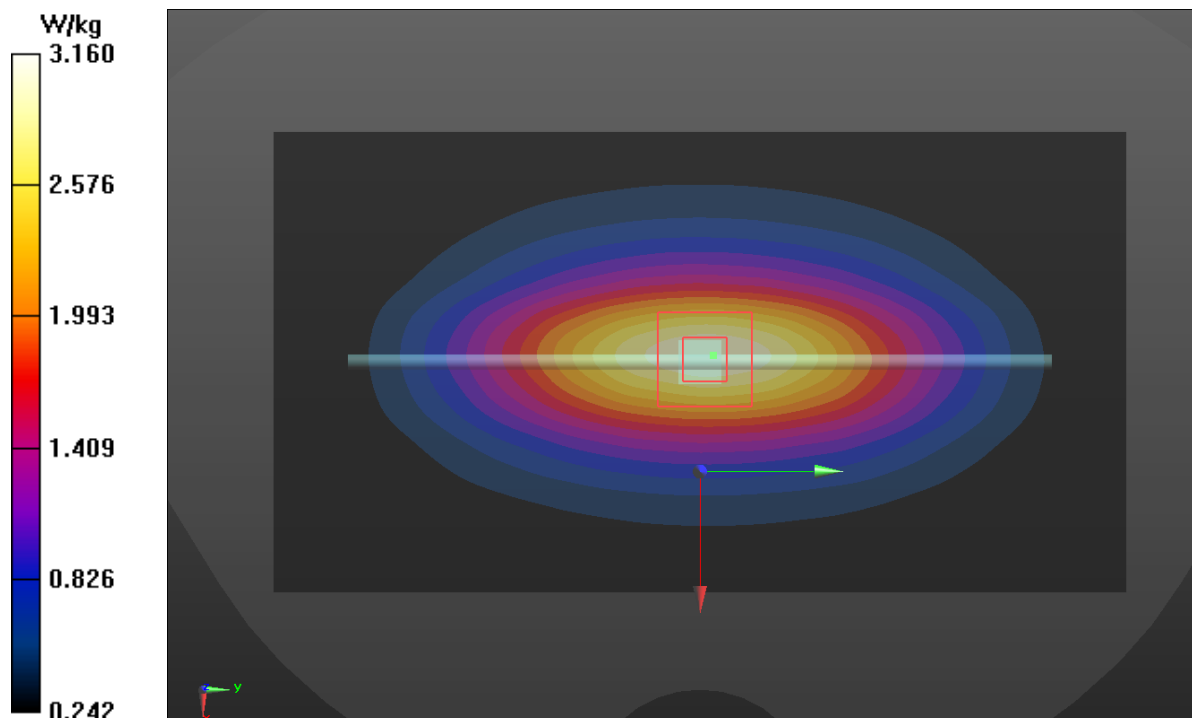
Peak SAR (extrapolated) = 3.56 W/kg

**SAR(1 g) = 2.28 W/kg; SAR(10 g) = 1.47 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 3.16 W/kg

**System check/Area Scan (71x131x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 3.08 W/kg



Plot 19

Date/Time: 17.9.2020 8:50:01

Test Laboratory: Verkotan Oy

**DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:448**

Communication System: UID 0, CW (0); Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.926$  S/m;  $\epsilon_r = 40.753$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASYS2 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 62.24 V/m; Power Drift = -0.15 dB

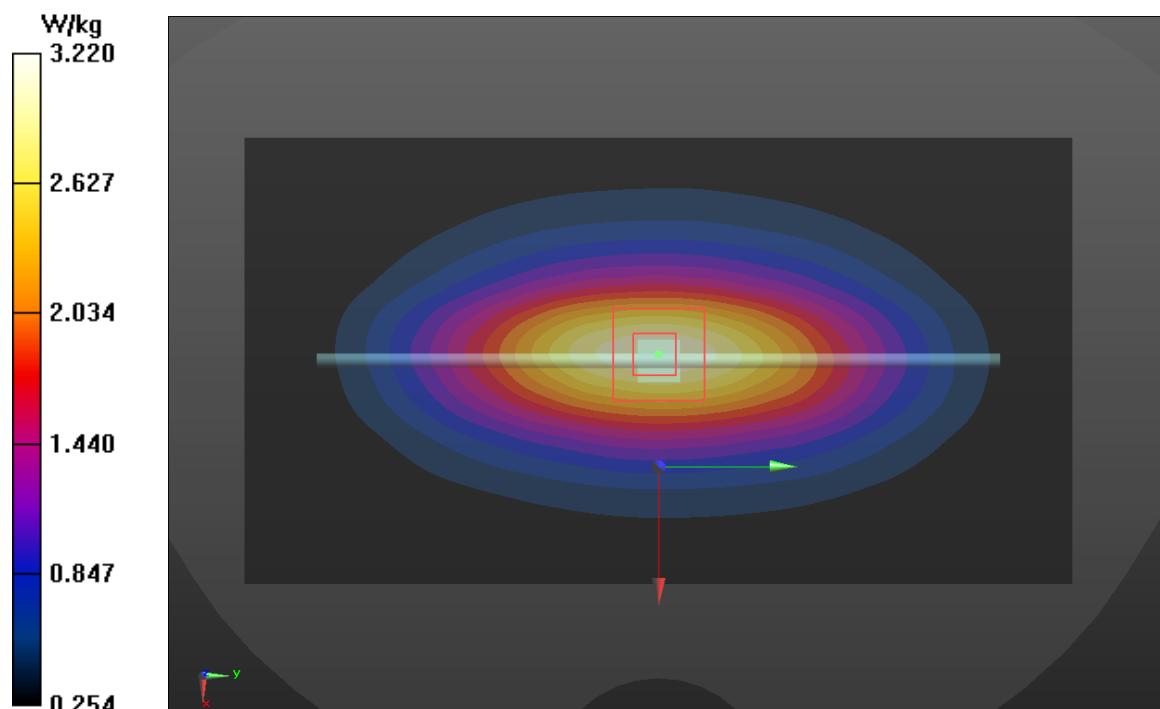
Peak SAR (extrapolated) = 3.63 W/kg

**SAR(1 g) = 2.3 W/kg; SAR(10 g) = 1.49 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 3.22 W/kg

**System check/Area Scan (71x131x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 3.14 W/kg



Plot 20

Date/Time: 18.9.2020 8:30:41

Test Laboratory: Verkotan Oy

**DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:448**

Communication System: UID 0, CW (0); Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.943$  S/m;  $\epsilon_r = 40.289$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 62.01 V/m; Power Drift = -0.08 dB

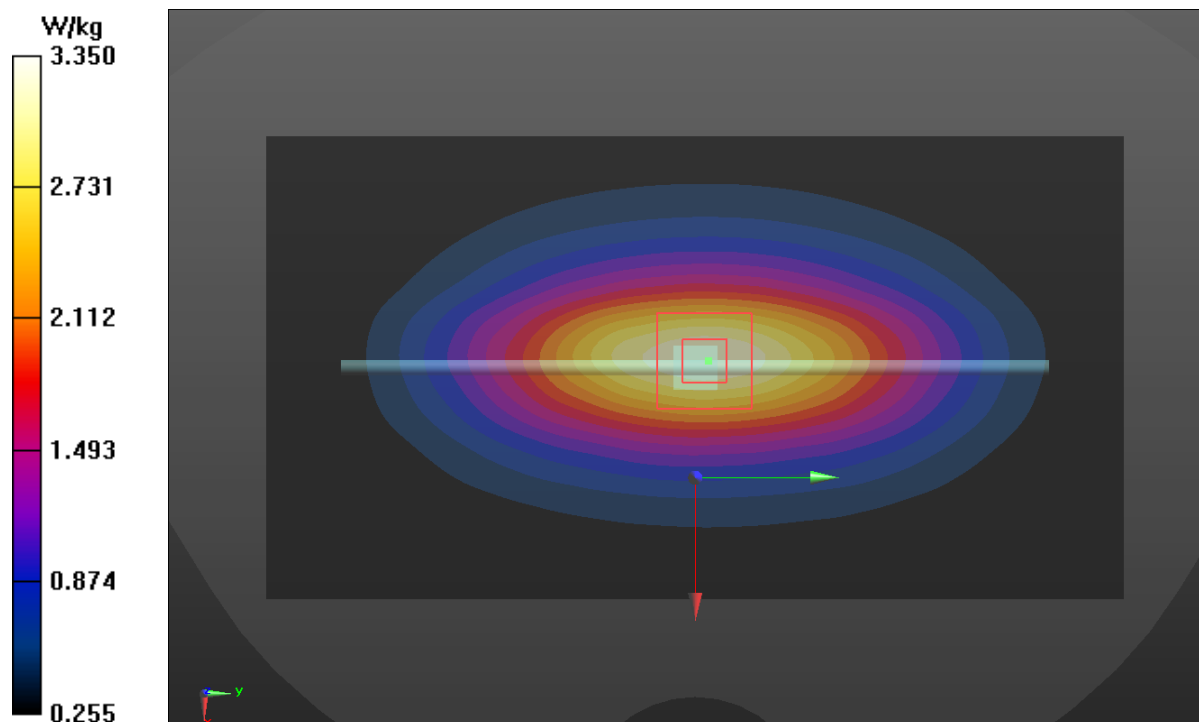
Peak SAR (extrapolated) = 3.79 W/kg

**SAR(1 g) = 2.35 W/kg; SAR(10 g) = 1.53 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 3.35 W/kg

**System check/Area Scan (71x131x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 3.20 W/kg



Plot 21

Date/Time: 21.9.2020 8:38:24

Test Laboratory: Verkotan Oy

**DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:448**

Communication System: UID 0, CW (0); Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.956$  S/m;  $\epsilon_r = 41.024$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 61.95 V/m; Power Drift = -0.06 dB

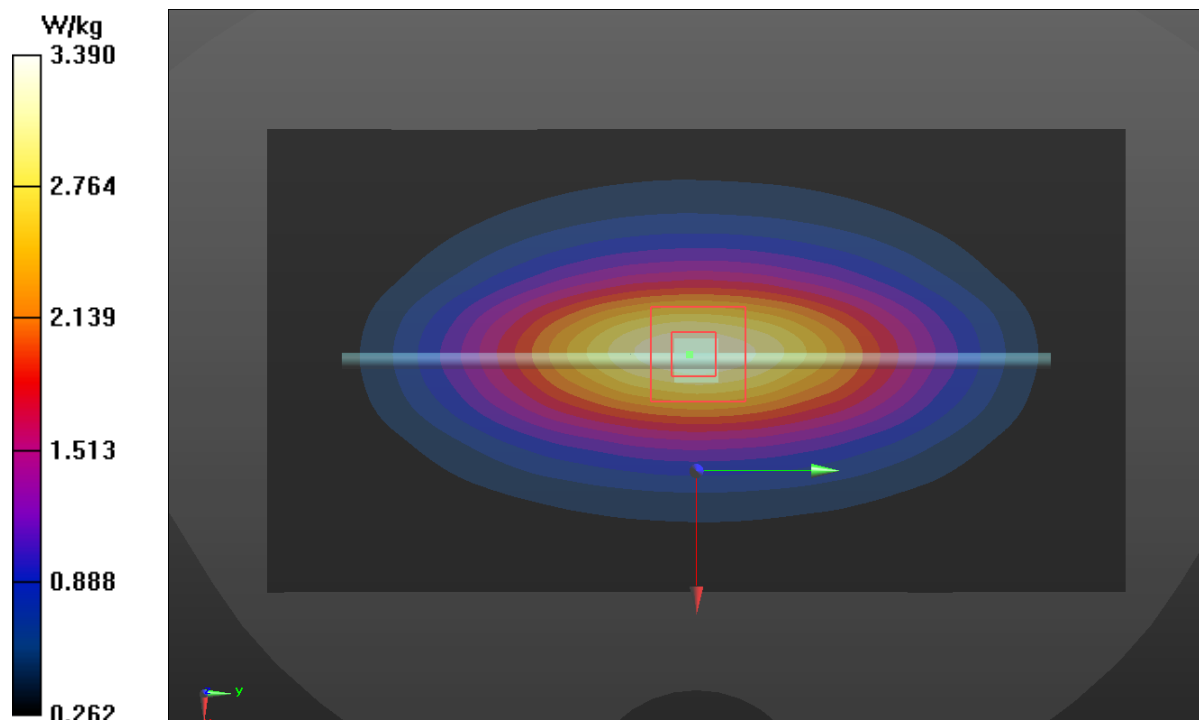
Peak SAR (extrapolated) = 3.83 W/kg

**SAR(1 g) = 2.37 W/kg; SAR(10 g) = 1.55 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 3.39 W/kg

**System check/Area Scan (71x131x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 3.31 W/kg



Plot 22

Date/Time: 22.9.2020 9:09:04

Test Laboratory: Verkotan Oy

**DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: D2450V2 - SN:758**

Communication System: UID 0, CW (0); Communication System Band: D2450 (2450.0 MHz); Frequency: 2450 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.731$  S/m;  $\epsilon_r = 37.167$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.48, 7.48, 7.48); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 109.0 V/m; Power Drift = -0.04 dB

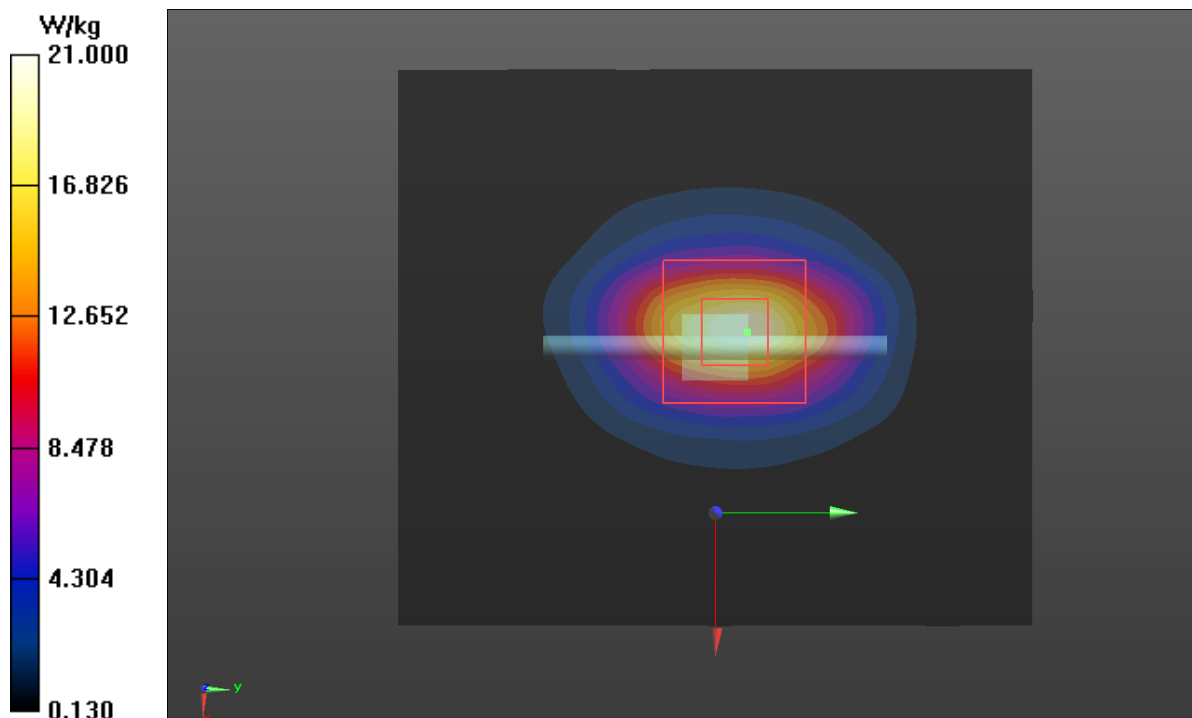
Peak SAR (extrapolated) = 26.1 W/kg

**SAR(1 g) = 13 W/kg; SAR(10 g) = 6.06 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 21.0 W/kg

**System check/Area Scan (71x81x1):** Interpolated grid:  $dx=1.200$  mm,  $dy=1.200$  mm

Maximum value of SAR (interpolated) = 21.3 W/kg



Plot 23

Date/Time: 23.9.2020 8:37:34

Test Laboratory: Verkotan Oy

**DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: D2450V2 - SN:748**

Communication System: UID 0, CW (0); Communication System Band: D2450 (2450.0 MHz); Frequency: 2450 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.746$  S/m;  $\epsilon_r = 37.714$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.48, 7.48, 7.48); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 113.1 V/m; Power Drift = -0.07 dB

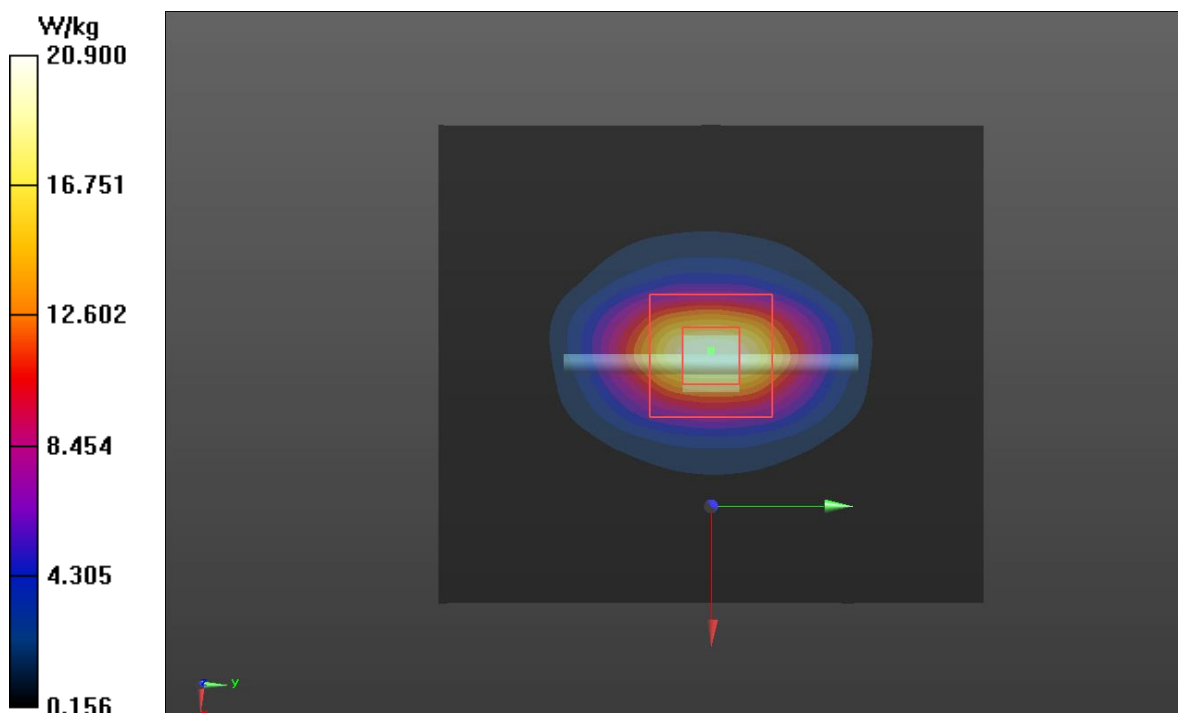
Peak SAR (extrapolated) = 25.9 W/kg

**SAR(1 g) = 12.7 W/kg; SAR(10 g) = 5.94 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 20.9 W/kg

**System check/Area Scan (71x81x1):** Interpolated grid:  $dx=1.200$  mm,  $dy=1.200$  mm

Maximum value of SAR (interpolated) = 20.7 W/kg



Plot 24

Date/Time: 24.9.2020 8:40:42

Test Laboratory: Verkotan Oy

**DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2 - SN:511**

Communication System: UID 0, CW (0); Communication System Band: D1900 (1900.0 MHz); Frequency: 1900 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.463$  S/m;  $\epsilon_r = 38.651$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.26, 8.26, 8.26); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (6x6x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 105.8 V/m; Power Drift = -0.06 dB

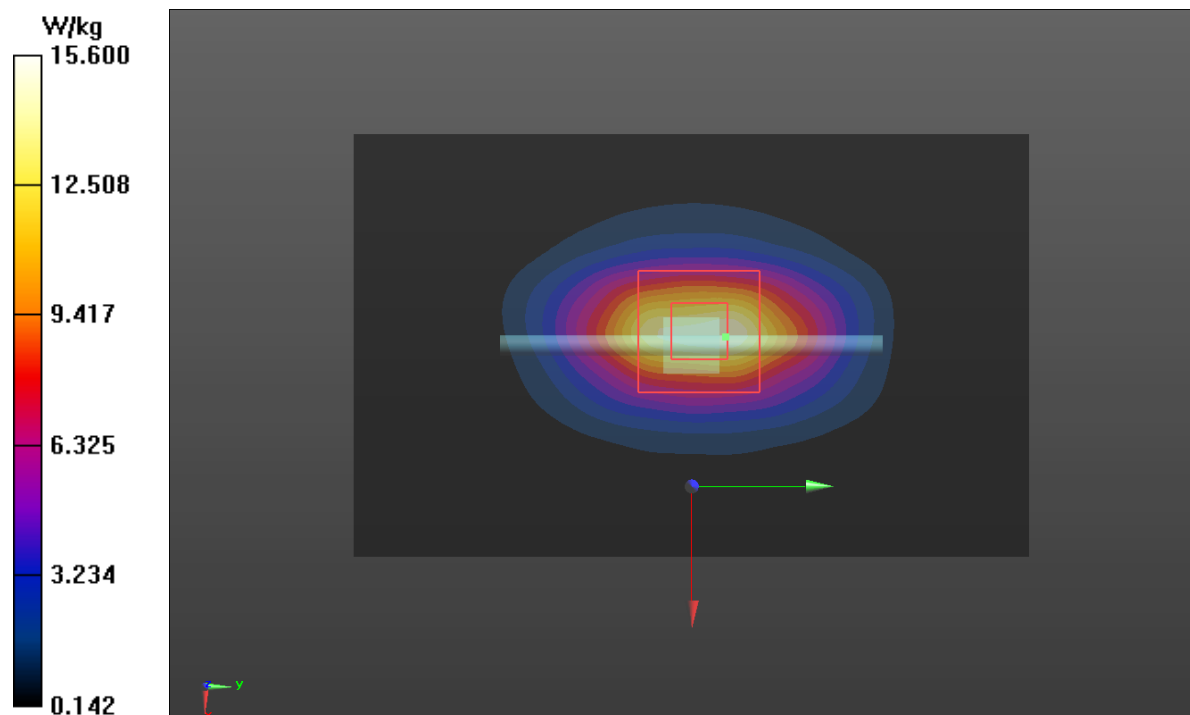
Peak SAR (extrapolated) = 18.9 W/kg

**SAR(1 g) = 9.71 W/kg; SAR(10 g) = 5.08 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 15.6 W/kg

**System check/Area Scan (51x81x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 16.2 W/kg



Plot 25

Date/Time: 25.9.2020 9:12:22

Test Laboratory: Verkotan Oy

**DUT: Dipole 2300 MHz D2300V2; Type: D2300V3; Serial: D2300V3 - SN:366**

Communication System: UID 0, CW (0); Communication System Band: D2300 (2300.0 MHz); Frequency: 2300 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 2300$  MHz;  $\sigma = 1.641$  S/m;  $\epsilon_r = 37.643$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(8.05, 8.05, 8.05); Calibrated: 25.3.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 107.5 V/m; Power Drift = 0.09 dB

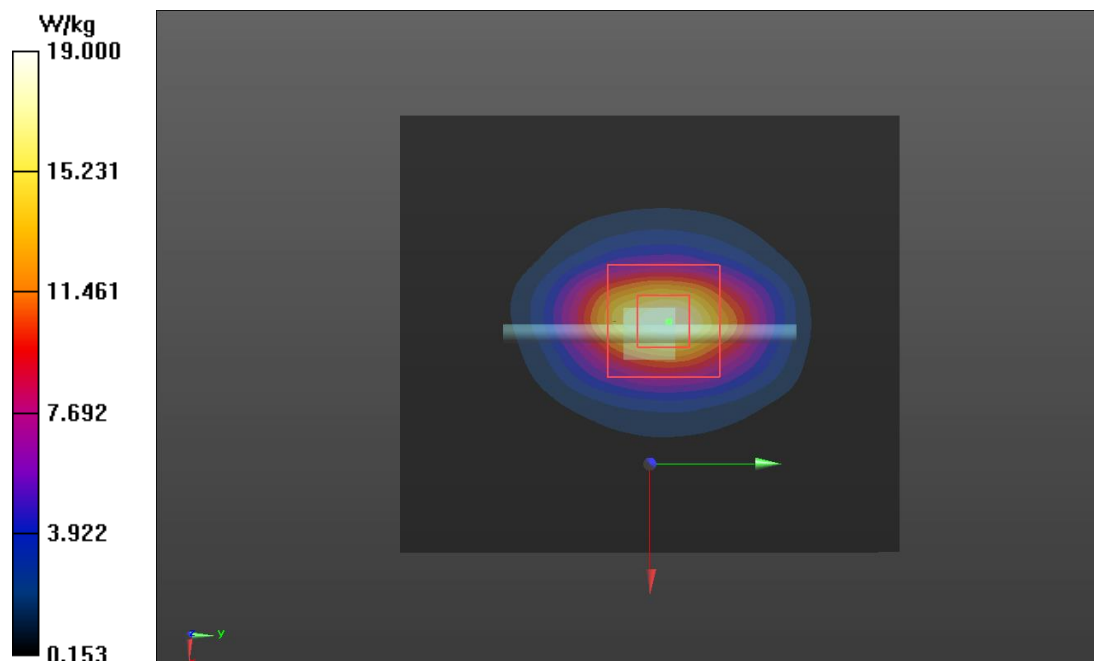
Peak SAR (extrapolated) = 23.0 W/kg

**SAR(1 g) = 11.8 W/kg; SAR(10 g) = 5.65 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 19.0 W/kg

**System check/Area Scan (71x81x1):** Interpolated grid:  $dx=1.200$  mm,  $dy=1.200$  mm

Maximum value of SAR (interpolated) = 18.9 W/kg



Plot 26

Date/Time: 28.9.2020 8:41:11

Test Laboratory: Verkotan Oy

**DUT: Dipole 2300 MHz D2300V2; Type: D2300V3; Serial: D2300V3 - SN:366**

Communication System: UID 0, CW (0); Communication System Band: D2300 (2300.0 MHz); Frequency: 2300 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 2300$  MHz;  $\sigma = 1.654$  S/m;  $\epsilon_r = 38.205$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(8.05, 8.05, 8.05); Calibrated: 25.3.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 109.8 V/m; Power Drift = -0.09 dB

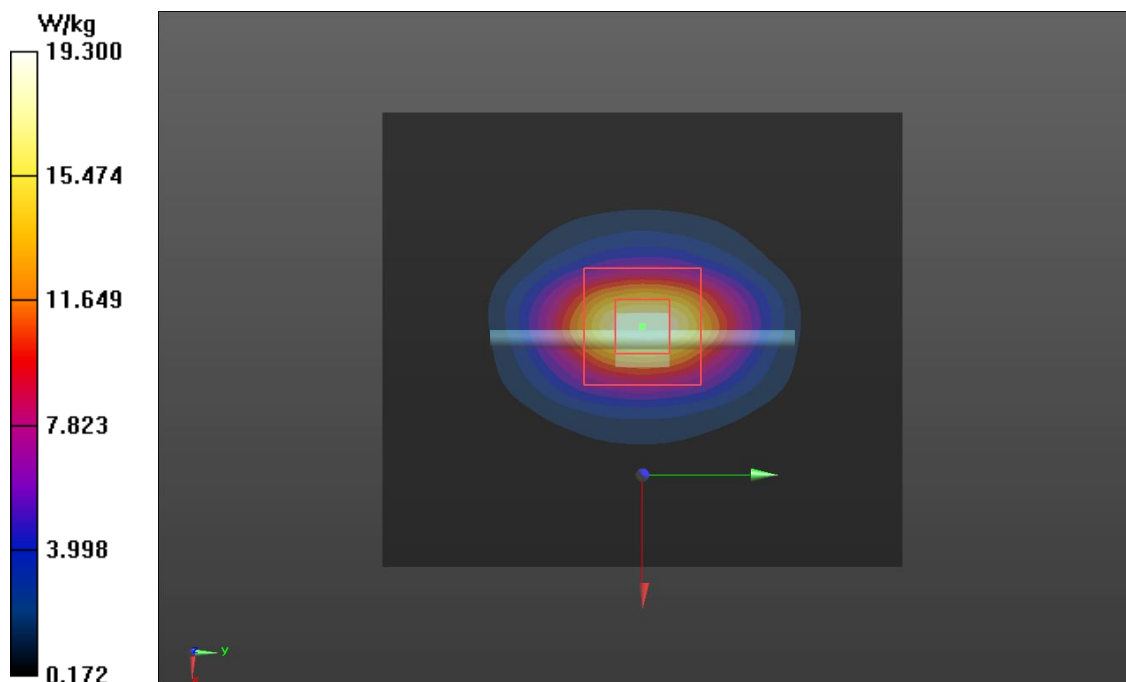
Peak SAR (extrapolated) = 23.3 W/kg

**SAR(1 g) = 11.8 W/kg; SAR(10 g) = 5.7 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 19.3 W/kg

**System check/Area Scan (71x81x1):** Interpolated grid:  $dx=1.200$  mm,  $dy=1.200$  mm

Maximum value of SAR (interpolated) = 19.2 W/kg



Plot 27

Date/Time: 28.9.2020 12:33:34

Test Laboratory: Verkotan Oy

**DUT: Dipole 750 MHz D750V3; Type: D750V3; Serial: D750V3 - SN:454**

Communication System: UID 0, CW (0); Communication System Band: D750 (750.0 MHz); Frequency: 750 MHz; Communication System  
PAR: 0 dB; PMF: 1  
Medium parameters used:  $f = 750$  MHz;  $\sigma = 0.928$  S/m;  $\epsilon_r = 42.34$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section  
Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(10.21, 10.21, 10.21); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASYS2 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 61.25 V/m; Power Drift = -0.34 dB

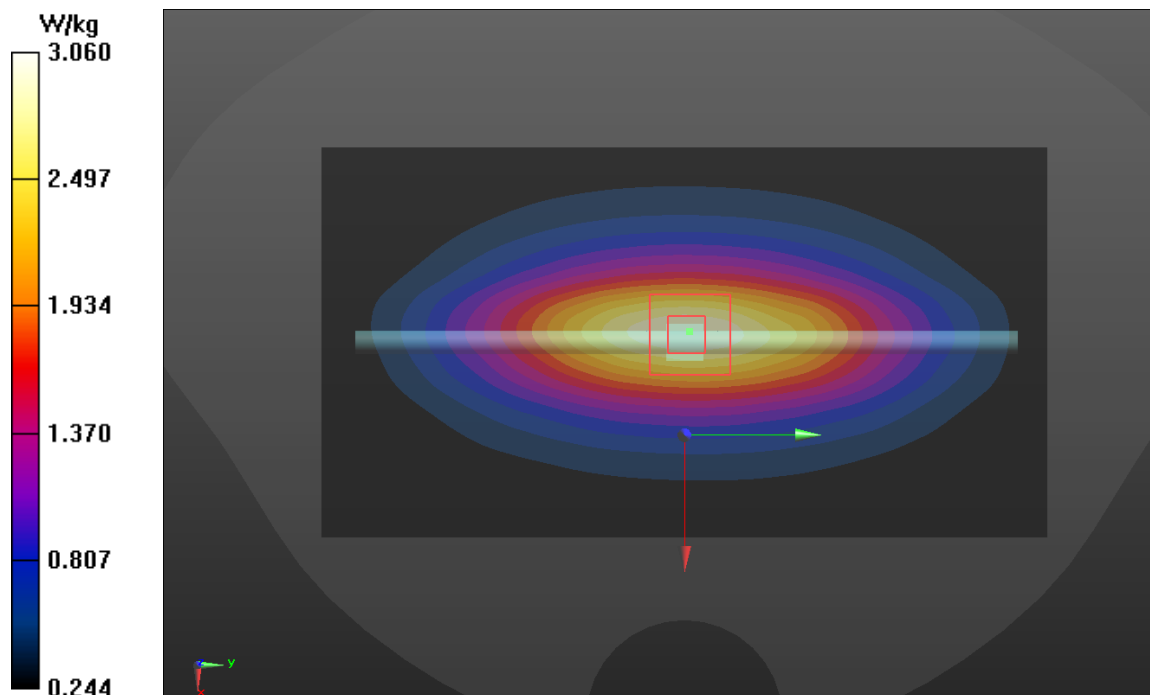
Peak SAR (extrapolated) = 3.51 W/kg

**SAR(1 g) = 2.17 W/kg; SAR(10 g) = 1.4 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 3.06 W/kg

**System check/Area Scan (71x131x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 2.95 W/kg



Plot 28

Date/Time: 29.9.2020 8:56:11

Test Laboratory: Verkotan Oy

**DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:448**

Communication System: UID 0, CW (0); Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.958$  S/m;  $\epsilon_r = 41.994$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 61.82 V/m; Power Drift = -0.04 dB

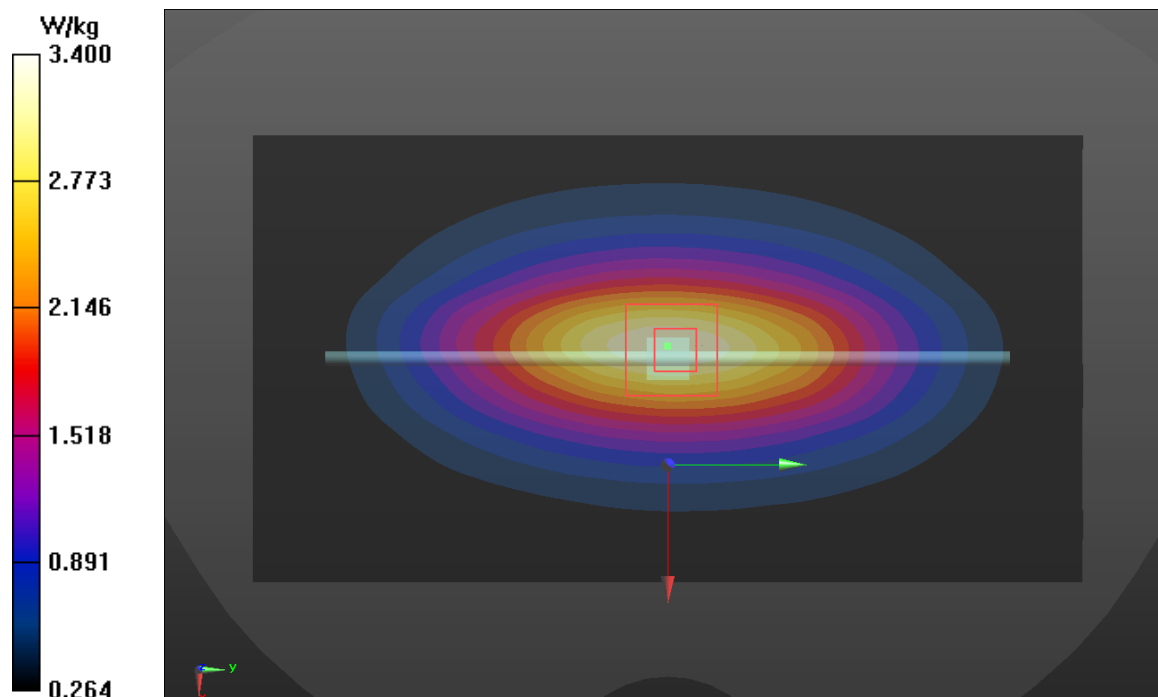
Peak SAR (extrapolated) = 3.86 W/kg

**SAR(1 g) = 2.37 W/kg; SAR(10 g) = 1.54 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 3.40 W/kg

**System check/Area Scan (71x131x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 3.31 W/kg



Plot 29

Date/Time: 29.9.2020 9:22:40

Test Laboratory: Verkotan Oy

**DUT: Dipole 1800 MHz D1800V2; Type: D1800V2; Serial: D1800V2 - SN:249**

Communication System: UID 0, CW (0); Communication System Band: D1800 (1800.0 MHz); Frequency: 1800 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 1800$  MHz;  $\sigma = 1.376$  S/m;  $\epsilon_r = 39.11$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.52, 8.52, 8.52); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**System check/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 102.8 V/m; Power Drift = -0.00 dB

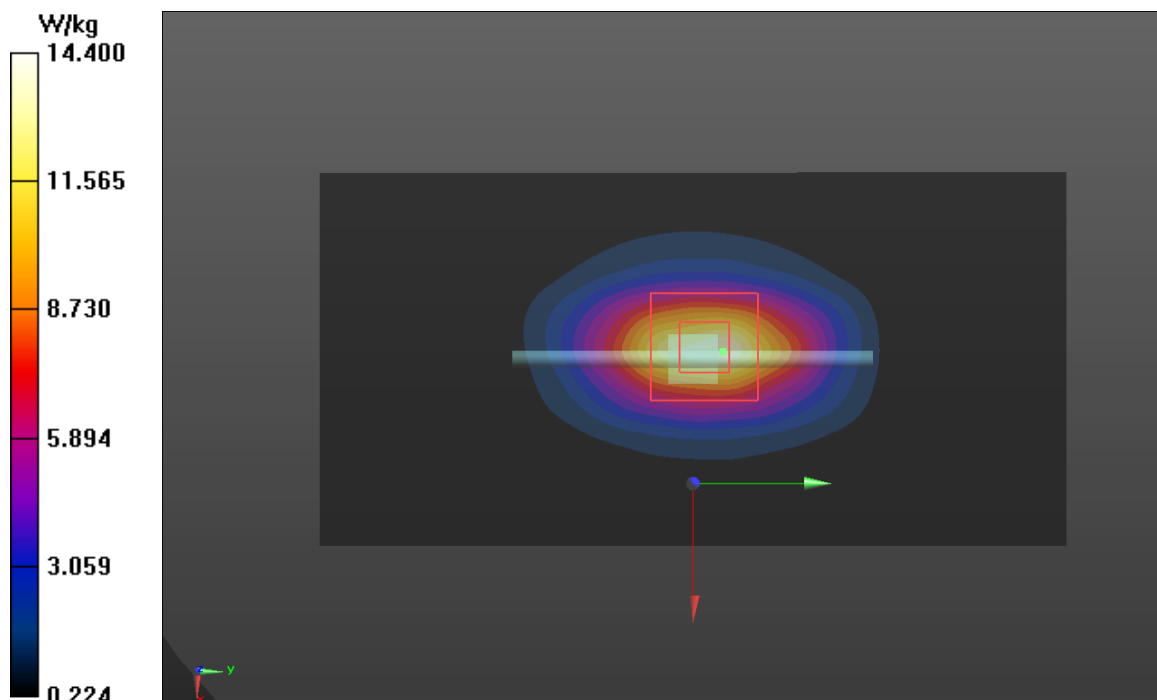
Peak SAR (extrapolated) = 17.5 W/kg

**SAR(1 g) = 9.33 W/kg; SAR(10 g) = 4.86 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 14.4 W/kg

**System check/Area Scan (51x101x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 15.1 W/kg



Plot 30

Date/Time: 8.10.2020 8:51:26

Test Laboratory: Verkotan Oy

**DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:448**

Communication System: UID 0, CW (0); Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.963 \text{ S/m}$ ;  $\epsilon_r = 41.499$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn756; Calibrated: 17.3.2020
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/system check/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $62.75 \text{ V/m}$ ; Power Drift =  $-0.11 \text{ dB}$

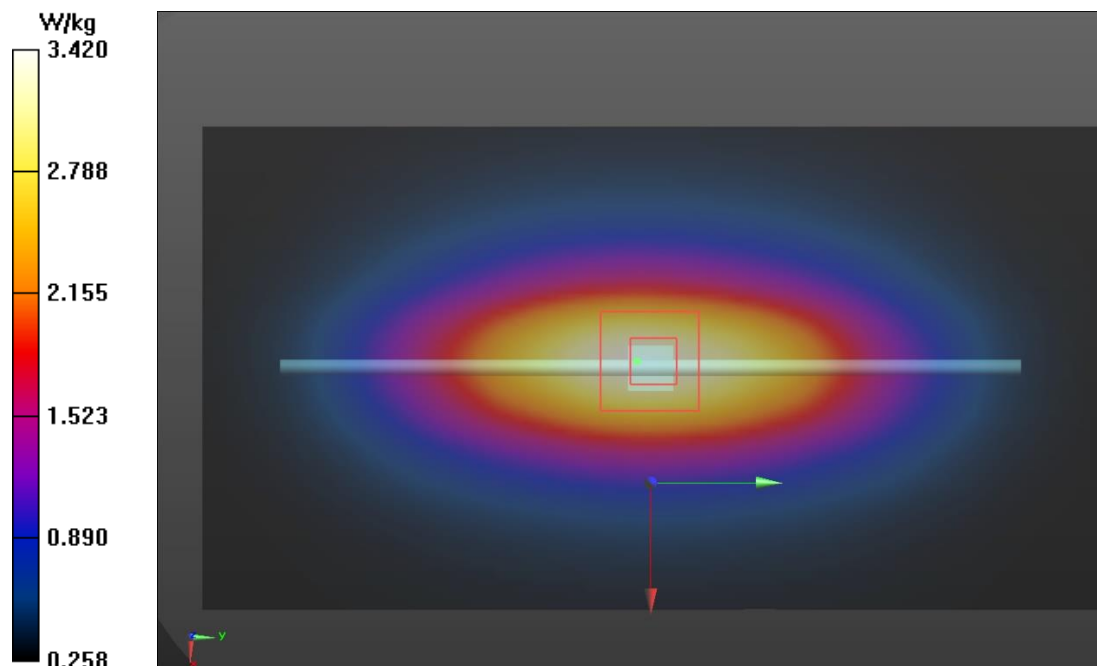
Peak SAR (extrapolated) =  $3.87 \text{ W/kg}$

**SAR(1 g) =  $2.4 \text{ W/kg}$ ; SAR(10 g) =  $1.56 \text{ W/kg}$**  (SAR corrected for target medium)

Maximum value of SAR (measured) =  $3.42 \text{ W/kg}$

**Configuration/system check/Area Scan (71x131x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) =  $3.34 \text{ W/kg}$



Plot 31

Date/Time: 9.10.2020 8:43:42

Test Laboratory: Verkotan Oy

**DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2 - SN:511**

Communication System: UID 0, CW (0); Communication System Band: D1900 (1900.0 MHz); Frequency: 1900 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.444$  S/m;  $\epsilon_r = 38.373$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.26, 8.26, 8.26); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn756; Calibrated: 17.3.2020
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASYS2 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/system check/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 105.7 V/m; Power Drift = -0.06 dB

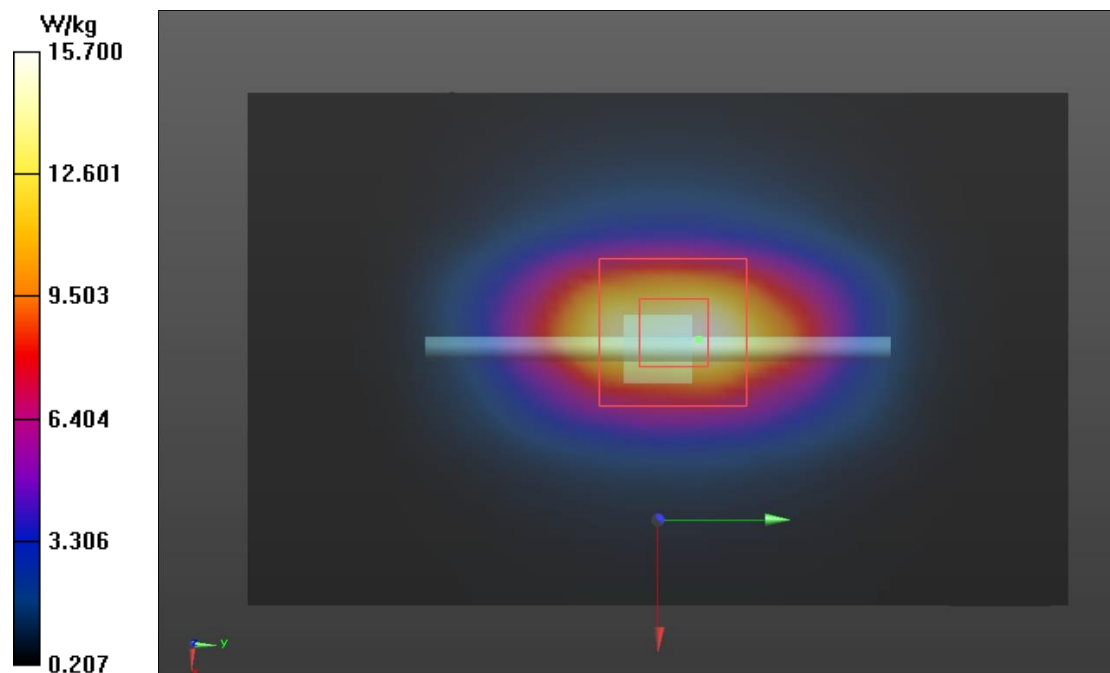
Peak SAR (extrapolated) = 19.1 W/kg

**SAR(1 g) = 9.9 W/kg; SAR(10 g) = 5.14 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 15.7 W/kg

**Configuration/system check/Area Scan (51x81x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 16.8 W/kg



## APPENDIX C: MEASUREMENT SCANS

Plot 32

Date/Time: 8.10.2020 11:13:41

Test Laboratory: Verkotan Oy

### DUT: Mudita Pure

Communication System: UID 0, Generic GSM (0); Communication System Band: GSM 850 (824.0 - 849.0 MHz); Frequency: 824.2 MHz; Communication System PAR: 9.191 dB; PMF: 2.88104  
Medium parameters used (interpolated):  $f = 824.2$  MHz;  $\sigma = 0.958$  S/m;  $\epsilon_r = 41.606$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Left Section  
Measurement Standard: DASYS (IEEE/IEC)

### DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 1.0, 31.0$
- Electronics: DAE4 Sn756; Calibrated: 17.3.2020
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASYS52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Head\_Left\_08102020/FCC, Left cheek, GSM 850, low, DUT22162 2/Area Scan (121x71x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.0373 W/kg

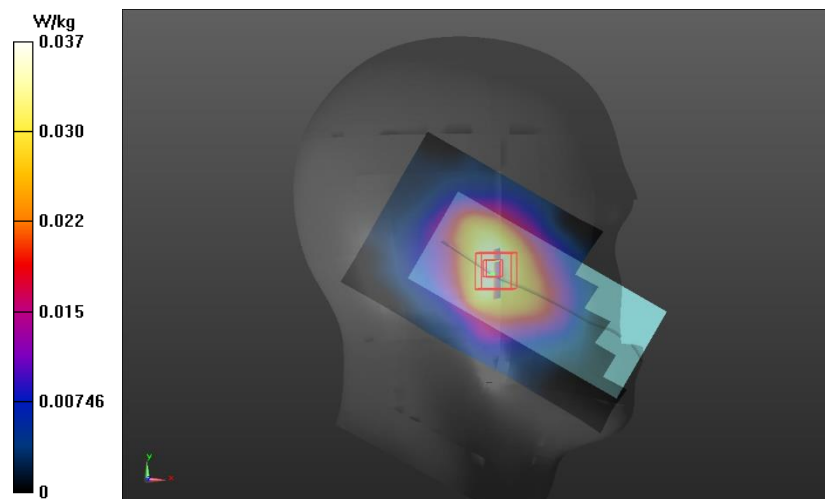
**Head\_Left\_08102020/FCC, Left cheek, GSM 850, low, DUT22162 2/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 3.909 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 0.0380 W/kg

**SAR(1 g) = 0.029 W/kg; SAR(10 g) = 0.021 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.0357 W/kg



Plot 33

Date/Time: 10.9.2020 10:35:24

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, WCDMA (0); Communication System Band: Band 4; Frequency: 1732.6 MHz; Communication System PAR: 0 dB; PMF: 1.12202e-005

Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.357$  S/m;  $\epsilon_r = 37.318$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

Measurement Standard: DASYS (IEEE/IEC/)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.52, 8.52, 8.52); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 1.0, 31.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Head\_left\_10092020/FCC, Left Cheek, WCDMA 4, mid, DUT22162/Area Scan (121x71x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.00621 W/kg

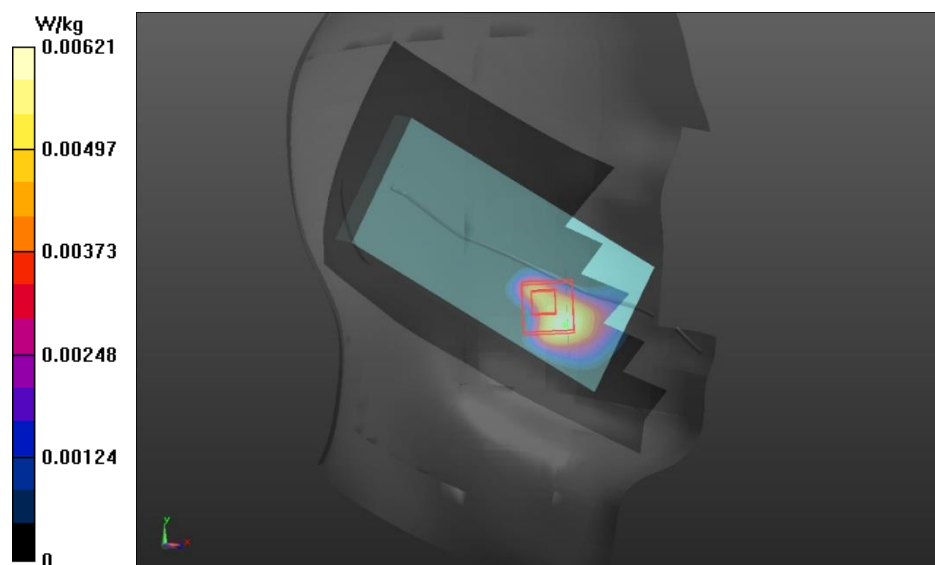
**Head\_left\_10092020/FCC, Left Cheek, WCDMA 4, mid, DUT22162/Zoom Scan (6x6x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 0.5760 V/m; Power Drift = 0.55 dB

Peak SAR (extrapolated) = 0.00826 W/kg

**SAR(1 g) = 0.00127 W/kg; SAR(10 g) = 0.000358 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.00455 W/kg



Plot 34

Date/Time: 21.9.2020 13:51:31

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, WCDMA (0); Communication System Band: Band 5; Frequency: 826.4 MHz; Communication System PAR: 0 dB; PMF: 1.12202e-005

Medium parameters used (interpolated):  $f = 826.4$  MHz;  $\sigma = 0.953$  S/m;  $\epsilon_r = 41.082$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 1.0, 31.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Head\_Left\_21092020/FCC, Left cheek, WCDMA 5, low, DUT22162/Area Scan (121x71x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.0584 W/kg

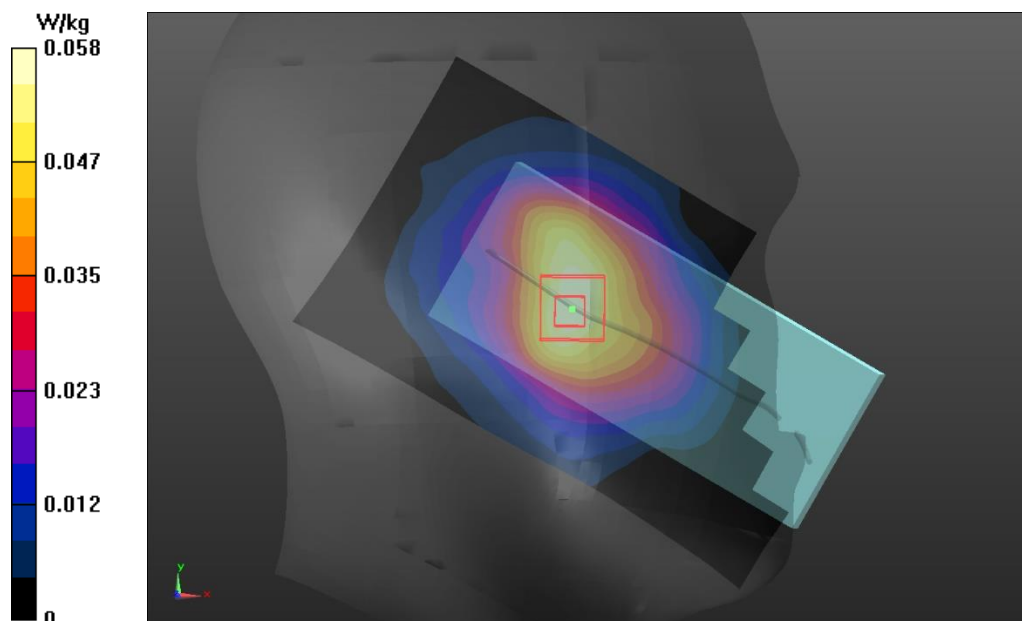
**Head\_Left\_21092020/FCC, Left cheek, WCDMA 5, low, DUT22162/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 4.695 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 0.0600 W/kg

**SAR(1 g) = 0.045 W/kg; SAR(10 g) = 0.033 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.0550 W/kg



Plot 35

Date/Time: 10.9.2020 9:21:52

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 4, E-UTRA/FDD (1710.0 - 1755.0 MHz); Frequency: 1732.5 MHz; Communication System PAR: 0 dB; PMF: 1  
Medium parameters used (interpolated):  $f = 1732.5$  MHz;  $\sigma = 1.357$  S/m;  $\epsilon_r = 37.319$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Left Section  
Measurement Standard: DASYS (IEEE/IEC)

### DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.52, 8.52, 8.52); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)),  $z = 31.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Head\_left\_10092020/FCC, Left Cheek, LTE 4, mid, BW20, RB1, Offset50, DUT22162 2 2/Zoom Scan (6x6x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 0.8390 V/m; Power Drift = N/A

Peak SAR (extrapolated) = 0.00404 W/kg

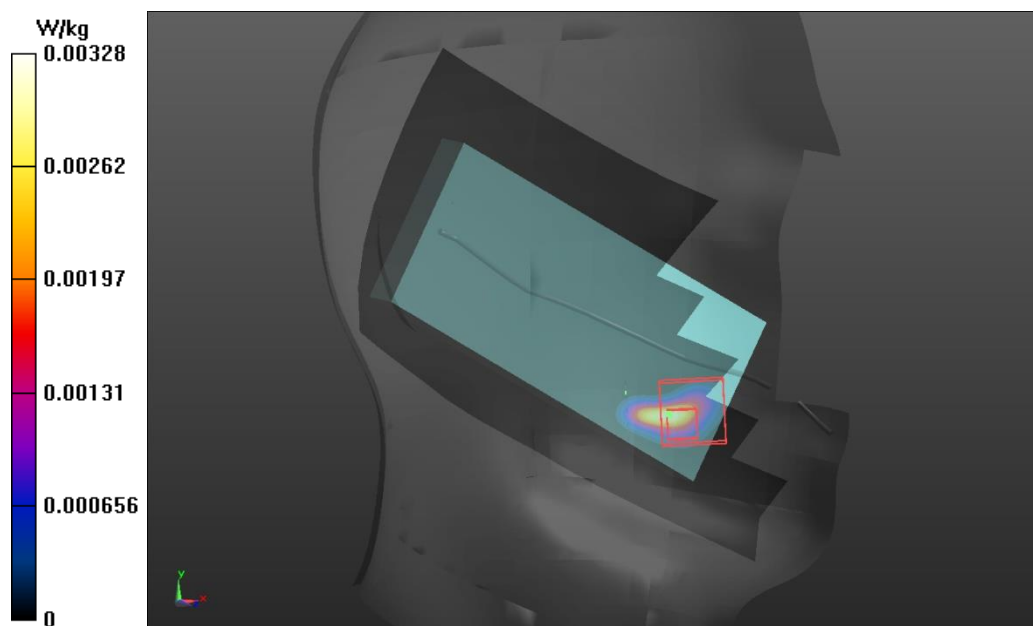
**SAR(1 g) = 0.000906 W/kg; SAR(10 g) = 0.000265 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.00328 W/kg

**Head\_left\_10092020/FCC, Left Cheek, LTE 4, mid, BW20, RB1, Offset50, DUT22162 2 2/Area Scan (121x71x1):** Interpolated grid:

$dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.00636 W/kg



Plot 36

Date/Time: 18.9.2020 14:34:57

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 5, E-UTRA/FDD (824.0 - 849.0 MHz); Frequency: 844 MHz; Communication System PAR: 0 dB; PMF: 1  
Medium parameters used:  $f = 844$  MHz;  $\sigma = 0.946$  S/m;  $\epsilon_r = 40.259$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Left Section  
Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 1.0, 31.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Head\_Left\_18092020\_2/FCC, Left Cheek, LTE 5, high, BW10, RB1, Offset24, DUT22162 2 2/Area Scan (121x71x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.0593 W/kg

**Head\_Left\_18092020\_2/FCC, Left Cheek, LTE 5, high, BW10, RB1, Offset24, DUT22162 2 2/Zoom Scan (5x5x7)/Cube**

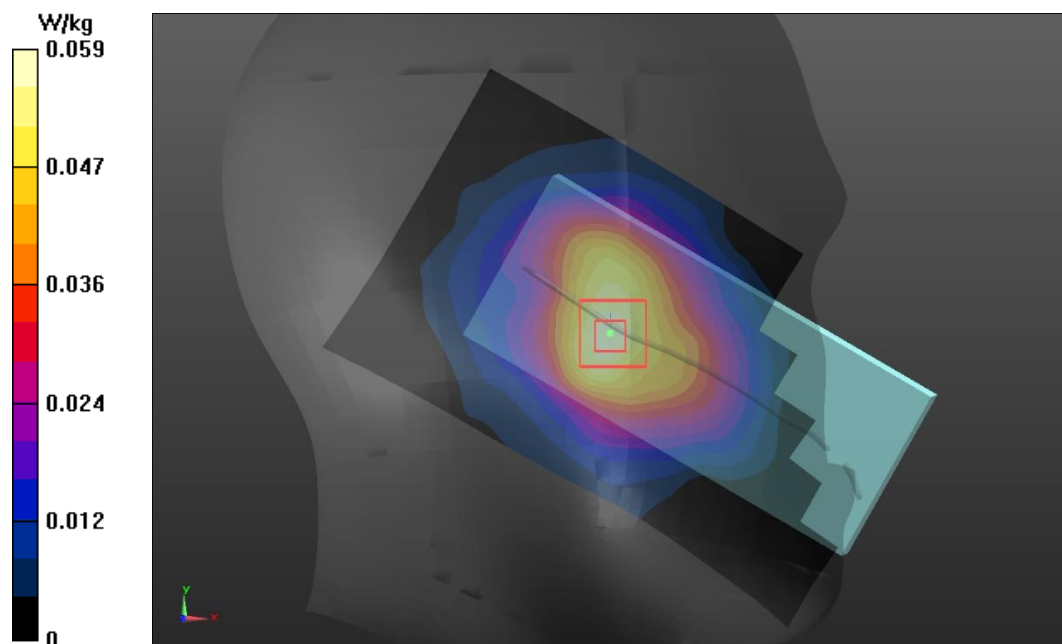
**0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 4.722 V/m; Power Drift = -0.54 dB

Peak SAR (extrapolated) = 0.0610 W/kg

**SAR(1 g) = 0.045 W/kg; SAR(10 g) = 0.032 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.0553 W/kg



Plot 37

Date/Time: 1.9.2020 13:18:08

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 12, E-UTRA/FDD (698.0 - 716.0 MHz); Frequency: 711 MHz; Communication System PAR: 0 dB; PMF: 1  
Medium parameters used:  $f = 711$  MHz;  $\sigma = 0.859$  S/m;  $\epsilon_r = 40.194$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Left Section  
Measurement Standard: DASYS (IEEE/IEC)

### DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(10.21, 10.21, 10.21); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)),  $z = 31.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Head\_Left\_01092020/LTE 12, high, Left Cheek, BW10, RB1, Offset24, DUT22162/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  
 $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 3.142 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.0240 W/kg

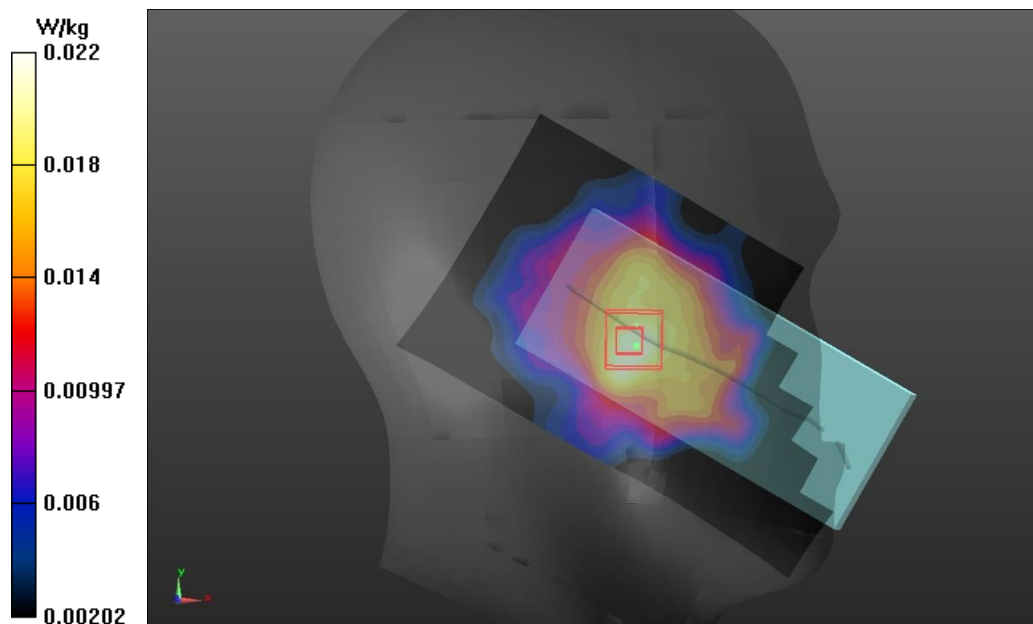
**SAR(1 g) = 0.018 W/kg; SAR(10 g) = 0.013 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.0219 W/kg

**Head\_Left\_01092020/LTE 12, high, Left Cheek, BW10, RB1, Offset24, DUT22162/Area Scan (121x71x1):** Interpolated grid:

$dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.0254 W/kg



Plot 38

Date/Time: 31.8.2020 12:34:16

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 13, E-UTRA/FDD (777.0 - 787.0 MHz); Frequency: 782 MHz; Communication System PAR: 0 dB; PMF: 1  
Medium parameters used:  $f = 782$  MHz;  $\sigma = 0.92$  S/m;  $\epsilon_r = 40.618$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Left Section  
Measurement Standard: DASYS (IEEE/IEC)

### DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(10.21, 10.21, 10.21); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)),  $z = 31.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASYS2 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Head\_left\_31082020/LTE 13, Left Cheek, mid, BW10, RB1, Offset0, DUT22161/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 3.923 V/m; Power Drift = 0.09 dB

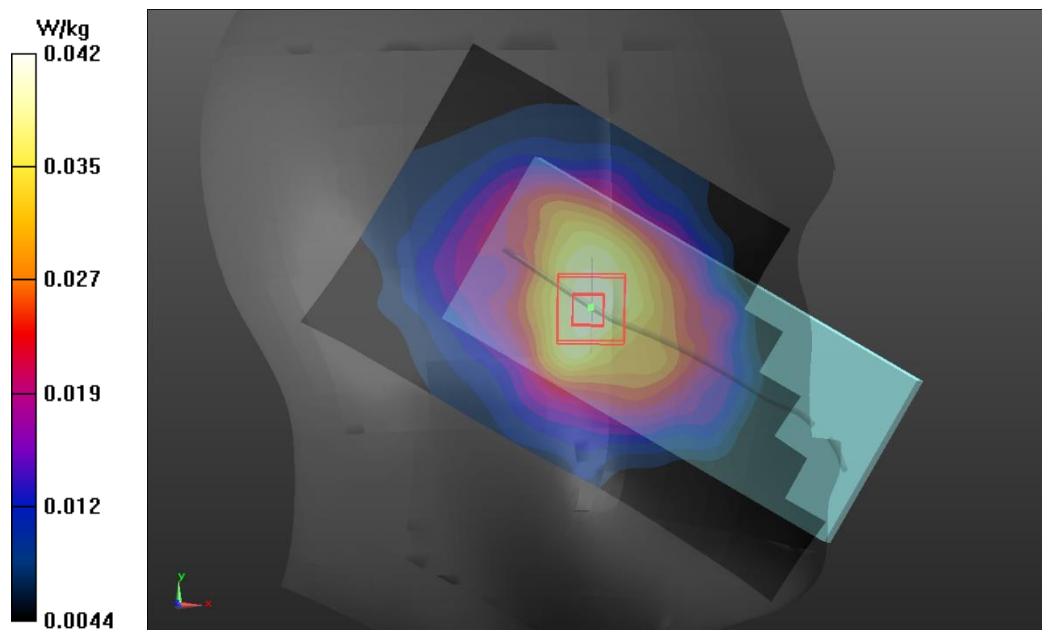
Peak SAR (extrapolated) = 0.0470 W/kg

**SAR(1 g) = 0.034 W/kg; SAR(10 g) = 0.025 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.0421 W/kg

**Head\_left\_31082020/LTE 13, Left Cheek, mid, BW10, RB1, Offset0, DUT22161/Area Scan (121x71x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.0468 W/kg



Plot 39

Date/Time: 22.9.2020 15:37:05

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, Bluetooth (0); Communication System Band: Bluetooth; Frequency: 2480 MHz; Communication System PAR: 4.771 dB; PMF: 1  
Medium parameters used:  $f = 2480$  MHz;  $\sigma = 1.748$  S/m;  $\epsilon_r = 37.12$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Right Section  
Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.48, 7.48, 7.48); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 1.0, 31.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Head\_Right\_22092020\_2/Right Cheek, BT, mid, DUT22162 2 2/Area Scan (151x91x1):** Interpolated grid:  $dx=1.200$  mm,  $dy=1.200$  mm

Maximum value of SAR (interpolated) = 0.0578 W/kg

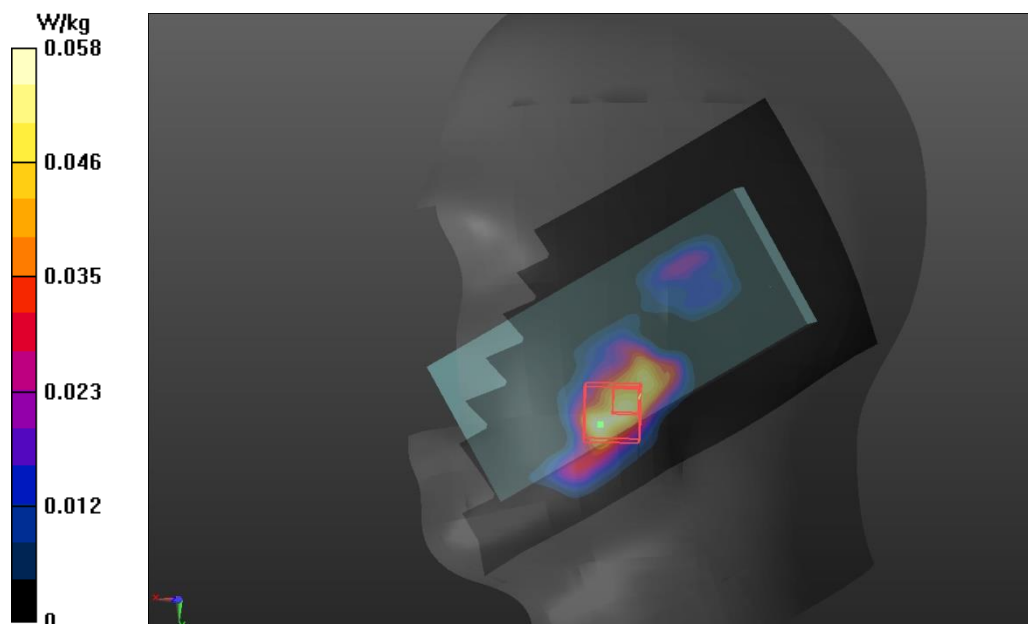
**Head\_Right\_22092020\_2/Right Cheek, BT, mid, DUT22162 2 2/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 5.163 V/m; Power Drift = -0.00 dB

Peak SAR (extrapolated) = 0.0550 W/kg

**SAR(1 g) = 0.030 W/kg; SAR(10 g) = 0.014 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.0457 W/kg



Plot 40

Date/Time: 9/17/2020 3:12:46 PM

Test Laboratory: Verkotan Oy

## Pure

Communication System: UID 0, GPRS 3slots (0); Communication System Band: 850; Frequency: 824.2 MHz; Communication System PAR: 4.265 dB

Medium parameters used (interpolated):  $f = 824.2$  MHz;  $\sigma = 0.923$  S/m;  $\epsilon_r = 40.806$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95); Calibrated: 4/28/2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 10/15/2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Body\_17092020/Repeat, FCC, Body, Back, GPRS 850, low, 3 Slots, DUT22162 2 2/Zoom Scan (8x13x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 38.65 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.50 W/kg

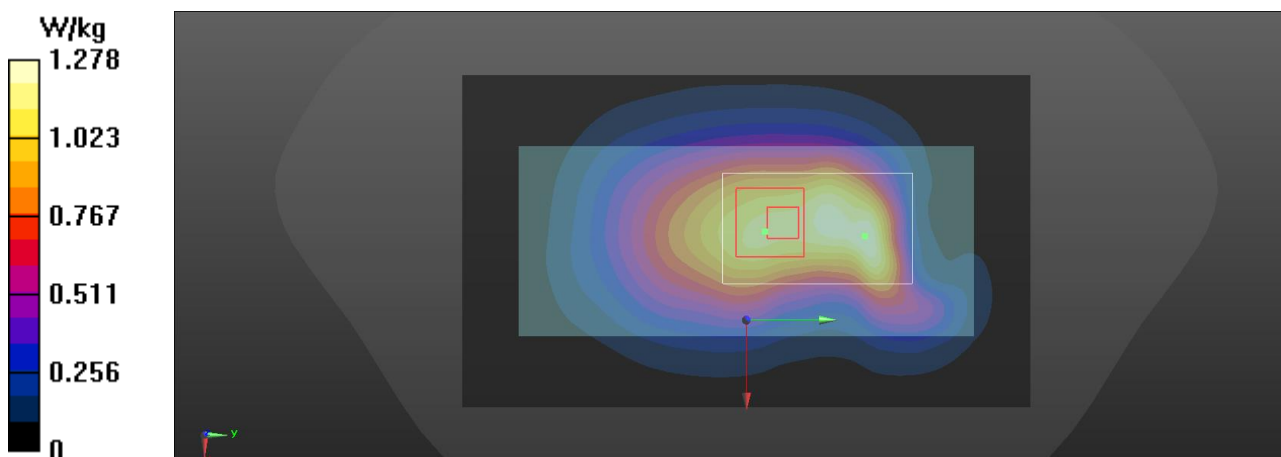
**SAR(1 g) = 0.958 W/kg; SAR(10 g) = 0.681 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 1.27 W/kg

**Body\_17092020/Repeat, FCC, Body, Back, GPRS 850, low, 3 Slots, DUT22162 2 2/Area Scan (121x71x1):** Interpolated grid:

$dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 1.28 W/kg



Plot 41

Date/Time: 24.9.2020 11:56:22

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, GPRS 2slots (0); Communication System Band: 1900 GPRS 2 slots; Frequency: 1850.2 MHz; Communication System PAR: 6.335 dB  
Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.437$  S/m;  $\epsilon_r = 38.737$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section  
Measurement Standard: DASYS (IEEE/IEC)

### DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.26, 8.26, 8.26); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection),  $z = -4.0, 31.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Body, Back, GPRS 1900, low, 2 slots, DUT22162/Area Scan (121x71x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.293 W/kg

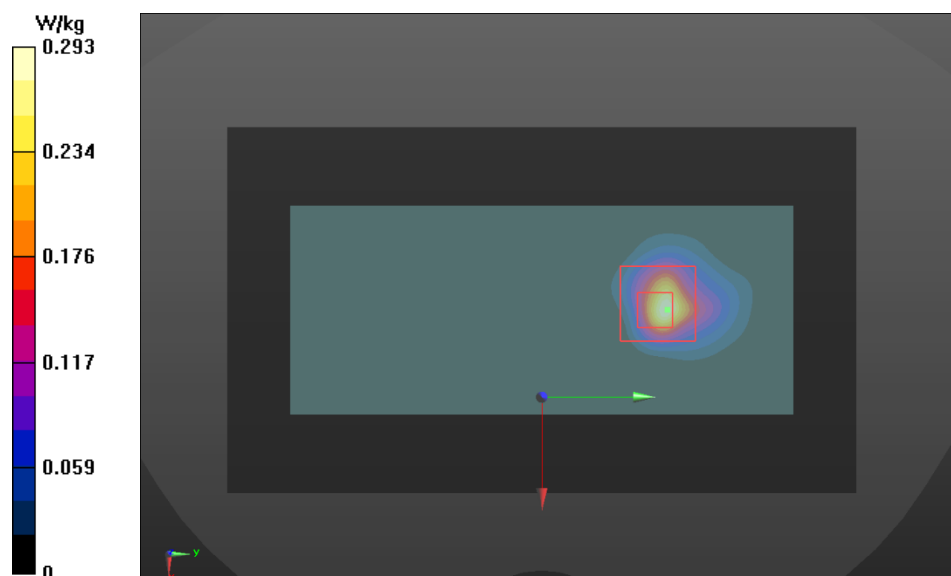
**Configuration/Body, Back, GPRS 1900, low, 2 slots, DUT22162/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 10.78 V/m; Power Drift = -0.62 dB

Peak SAR (extrapolated) = 0.239 W/kg

**SAR(1 g) = 0.080 W/kg; SAR(10 g) = 0.031 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.0960 W/kg



Plot 42

Date/Time: 27.8.2020 11:06:10

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, WCDMA (0); Communication System Band: Band 2; Frequency: 1852.5 MHz; Communication System PAR: 0 dB; PMF: 1.12202e-005

Medium parameters used (interpolated):  $f = 1852.5$  MHz;  $\sigma = 1.355$  S/m;  $\epsilon_r = 37.35$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

### DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.26, 8.26, 8.26); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASYS2 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Front\_Back, 27082020/FCC Body, Back, WCDMA 2, low, DUT22161/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 9.171 V/m; Power Drift = -0.15 dB

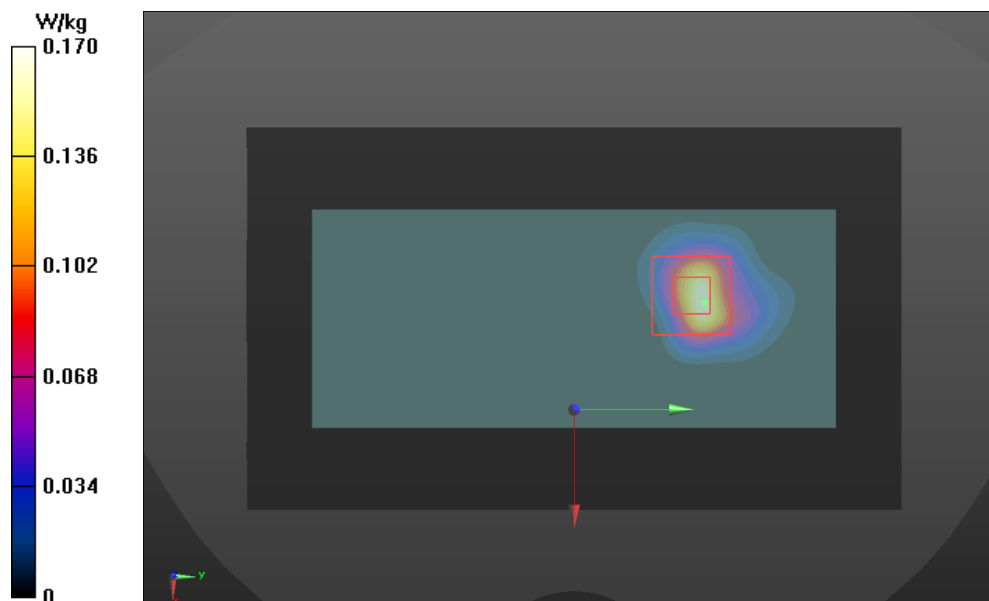
Peak SAR (extrapolated) = 0.259 W/kg

**SAR(1 g) = 0.096 W/kg; SAR(10 g) = 0.039 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.170 W/kg

**Front\_Back, 27082020/FCC Body, Back, WCDMA 2, low, DUT22161/Area Scan (121x71x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.250 W/kg



Plot 43

Date/Time: 9/15/2020 10:14:24 AM

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, WCDMA (0); Communication System Band: Band 4; Frequency: 1732.6 MHz; Communication System PAR: 0 dB; PMF: 1.12202e-005

Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.322$  S/m;  $\epsilon_r = 38.915$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

## DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.52, 8.52, 8.52); Calibrated: 4/28/2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 10/15/2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASYS2 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Body\_15092020/FCC, Body, Back, WCDMA 4, Mid, DUT22162 2 2/Zoom Scan (11x11x7)/Cube 0:** Measurement grid:  $dx=3$ mm,  $dy=3$ mm,  $dz=5$ mm

Reference Value = 24.08 V/m; Power Drift = 0.08 dB

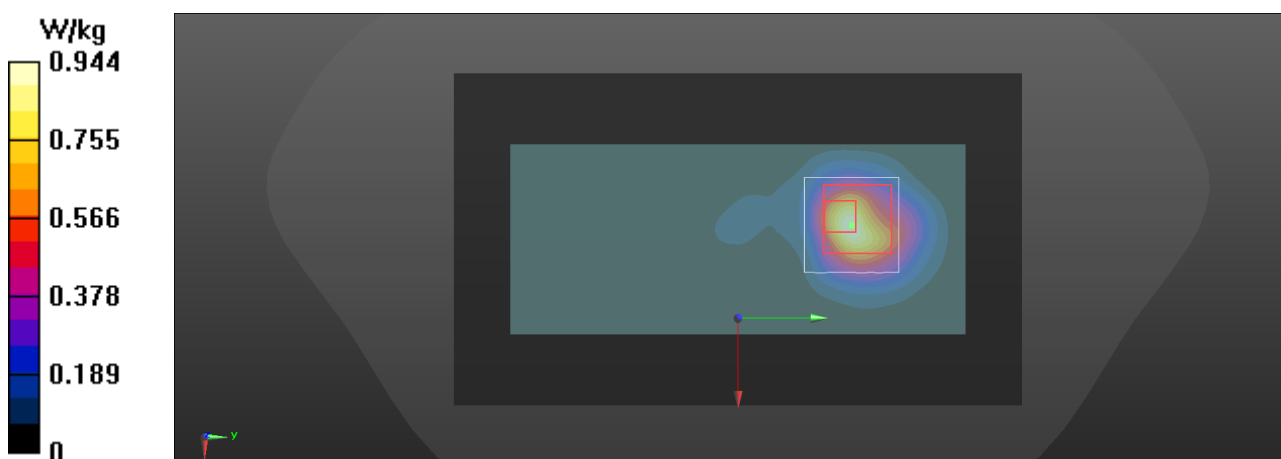
Peak SAR (extrapolated) = 1.30 W/kg

**SAR(1 g) = 0.499 W/kg; SAR(10 g) = 0.212 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.971 W/kg

**Body\_15092020/FCC, Body, Back, WCDMA 4, Mid, DUT22162 2 2/Area Scan (121x71x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.944 W/kg



Plot 44

Date/Time: 9/16/2020 2:50:29 PM

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, WCDMA (0); Communication System Band: Band 5; Frequency: 826.4 MHz; Communication System PAR: 0 dB; PMF: 1.12202e-005

Medium parameters used (interpolated):  $f = 826.4$  MHz;  $\sigma = 0.912$  S/m;  $\epsilon_r = 41.317$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

### DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95); Calibrated: 4/28/2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 10/15/2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASYS2 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Body\_16092020/FCC, Body, Back, WCDMA 5, low, DUT22162/Zoom Scan (7x8x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 28.77 V/m; Power Drift = -0.01 dB

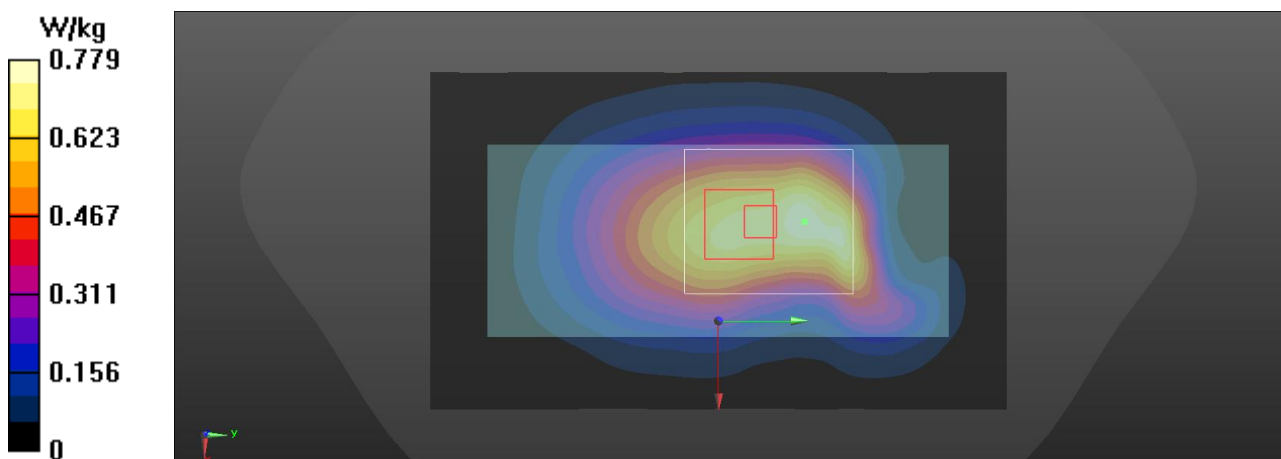
Peak SAR (extrapolated) = 0.905 W/kg

**SAR(1 g) = 0.592 W/kg; SAR(10 g) = 0.422 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.782 W/kg

**Body\_16092020/FCC, Body, Back, WCDMA 5, low, DUT22162/Area Scan (121x71x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.779 W/kg



Plot 45

Date/Time: 27.8.2020 13:15:13

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 2, E-UTRA/FDD (1850.0 - 1910.0 MHz); Frequency: 1860 MHz; Communication System PAR: 0 dB; PMF: 1  
Medium parameters used:  $f = 1860$  MHz;  $\sigma = 1.358$  S/m;  $\epsilon_r = 37.339$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section  
Measurement Standard: DASYS (IEEE/IEC)

### DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.26, 8.26, 8.26); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = -4.0, 31.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Front\_Back, 27082020/FCC Body, Back, LTE 2, low, RB1, Offset 50, DUT22161/Area Scan (121x71x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.243 W/kg

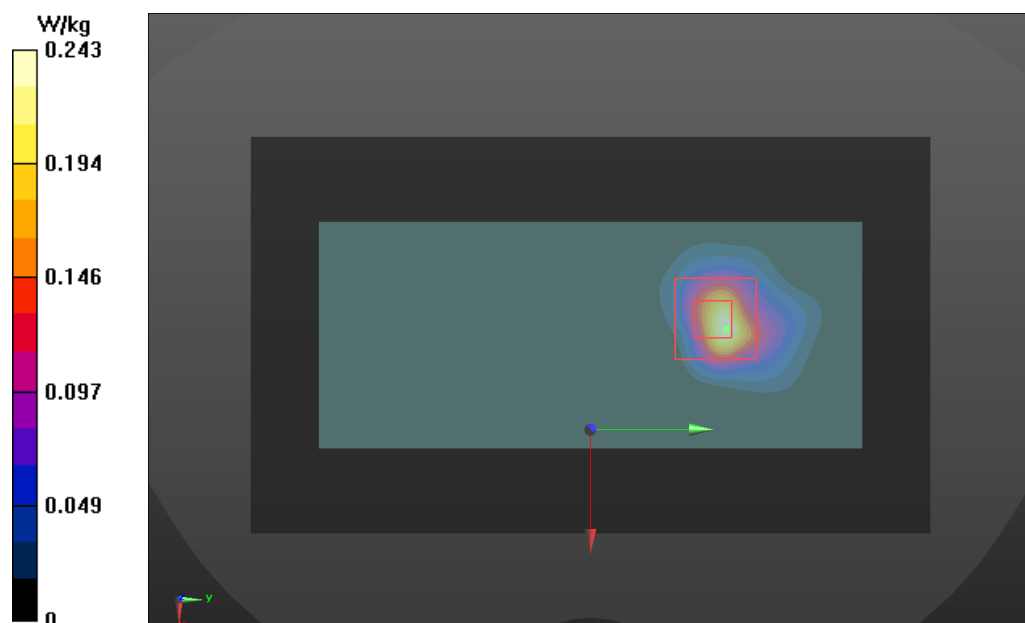
**Front\_Back, 27082020/FCC Body, Back, LTE 2, low, RB1, Offset 50, DUT22161/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 11.14 V/m; Power Drift = -0.35 dB

Peak SAR (extrapolated) = 0.243 W/kg

**SAR(1 g) = 0.089 W/kg; SAR(10 g) = 0.035 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.168 W/kg



Plot 46

Date/Time: 9/15/2020 9:03:52 AM

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 4, E-UTRA/FDD (1710.0 - 1755.0 MHz); Frequency: 1720 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used:  $f = 1720$  MHz;  $\sigma = 1.314$  S/m;  $\epsilon_r = 38.932$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

### DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.52, 8.52, 8.52); Calibrated: 4/28/2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 10/15/2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Body\_15092020/FCC, Body, Back, LTE 4, low, BW20, RB1, Offset99, DUT22162 2/Zoom Scan (11x11x7)/Cube 0:** Measurement grid:  $dx=3$ mm,  $dy=3$ mm,  $dz=5$ mm

Reference Value = 7.581 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.39 W/kg

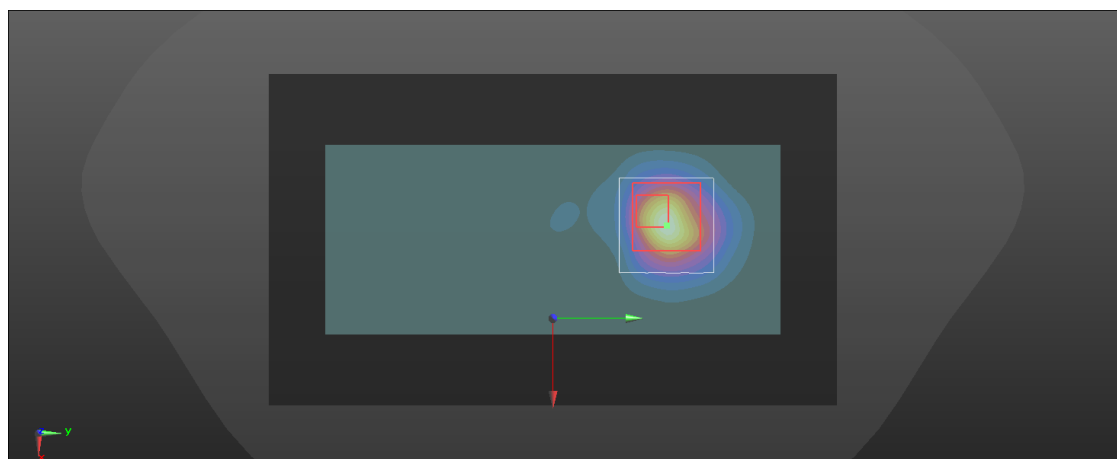
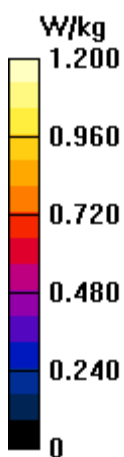
**SAR(1 g) = 0.522 W/kg; SAR(10 g) = 0.224 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 1.03 W/kg

**Body\_15092020/FCC, Body, Back, LTE 4, low, BW20, RB1, Offset99, DUT22162 2/Area Scan (121x71x1):** Interpolated grid:

$dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 1.20 W/kg



Plot 47

Date/Time: 29.9.2020 10:45:24

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 5, E-UTRA/FDD (824.0 - 849.0 MHz); Frequency: 829 MHz; Communication System PAR: 0 dB; PMF: 1  
Medium parameters used:  $f = 829$  MHz;  $\sigma = 0.955$  S/m;  $\epsilon_r = 42.035$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section  
Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**FCC, Body, Back, LTE 5, Low, BW10, RB50, Offset0, DUT22162 2 2/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 26.21 V/m; Power Drift = 0.03 dB

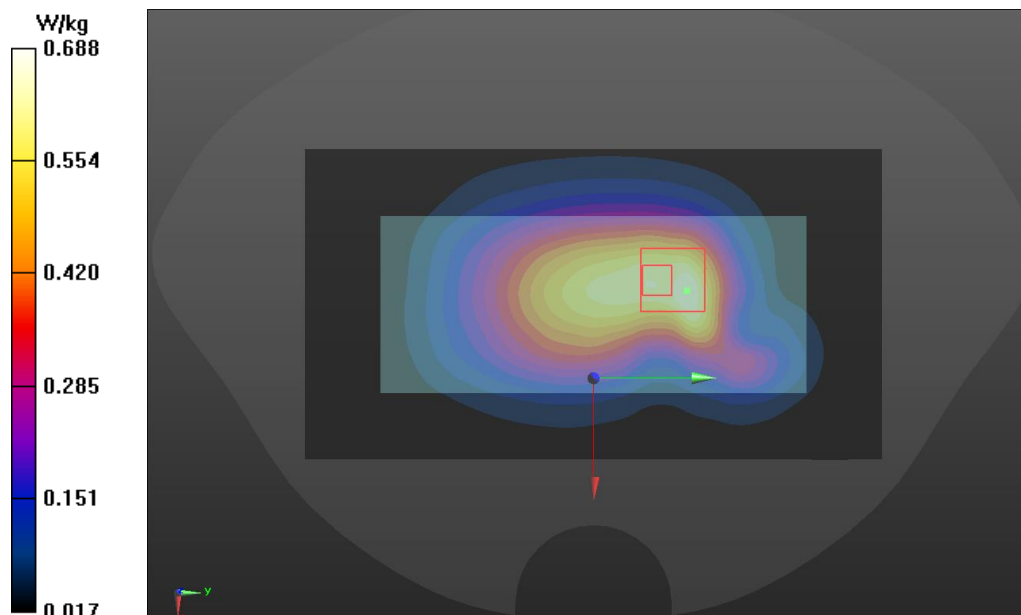
Peak SAR (extrapolated) = 0.831 W/kg

**SAR(1 g) = 0.506 W/kg; SAR(10 g) = 0.310 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.688 W/kg

**FCC, Body, Back, LTE 5, Low, BW10, RB50, Offset0, DUT22162 2 2/Area Scan (71x131x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.710 W/kg



Plot 48

Date/Time: 3.9.2020 15:55:39

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 7, E-UTRA/FDD (2500.0 - 2570.0 MHz); Frequency: 2535 MHz; Communication System PAR: 0 dB; PMF: 1  
Medium parameters used:  $f = 2535$  MHz;  $\sigma = 1.767$  S/m;  $\epsilon_r = 37.24$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section  
Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.33, 7.33, 7.33); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = -4.0, 31.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Body\_03092020/FCC, Body, Back, LTE 7, mid, BW20, RB1, Offset50, DUT22162/Area Scan (151x81x1):** Interpolated grid:  $dx=1.200$  mm,  $dy=1.200$  mm

Maximum value of SAR (interpolated) = 0.254 W/kg

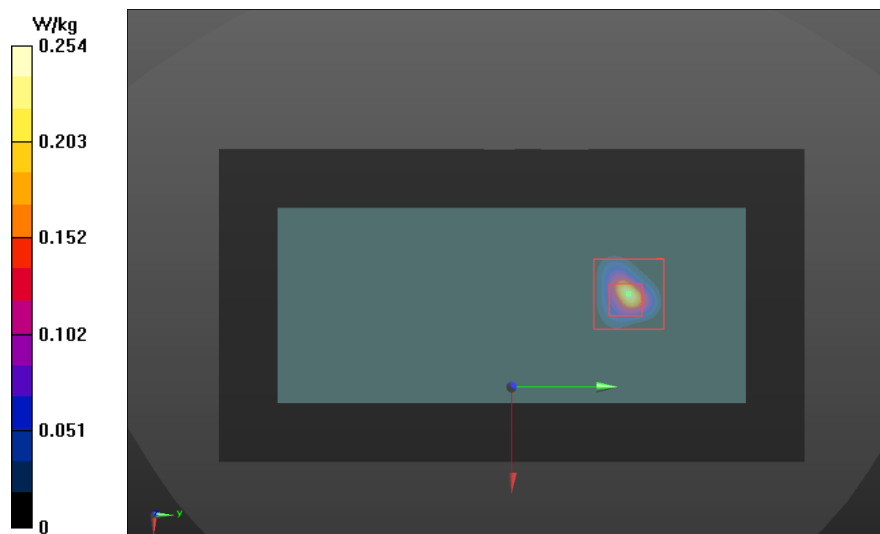
**Body\_03092020/FCC, Body, Back, LTE 7, mid, BW20, RB1, Offset50, DUT22162/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 0 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.420 W/kg

**SAR(1 g) = 0.047 W/kg; SAR(10 g) = 0.010 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.104 W/kg



Plot 49

Date/Time: 28.9.2020 16:00:44

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 12, E-UTRA/FDD (698.0 - 716.0 MHz); Frequency: 711 MHz; Communication System PAR: 0 dB; PMF: 1  
Medium parameters used:  $f = 711$  MHz;  $\sigma = 0.913$  S/m;  $\epsilon_r = 42.615$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section  
Measurement Standard: DASYS (IEEE/IEC)

### DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(10.21, 10.21, 10.21); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)),  $z = 31.0, -4.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASYS2 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/FCC, Body, Back, LTE 12, High, BW10, RB50, Offset0, DUT22162 2/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  
 $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 25.24 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.926 W/kg

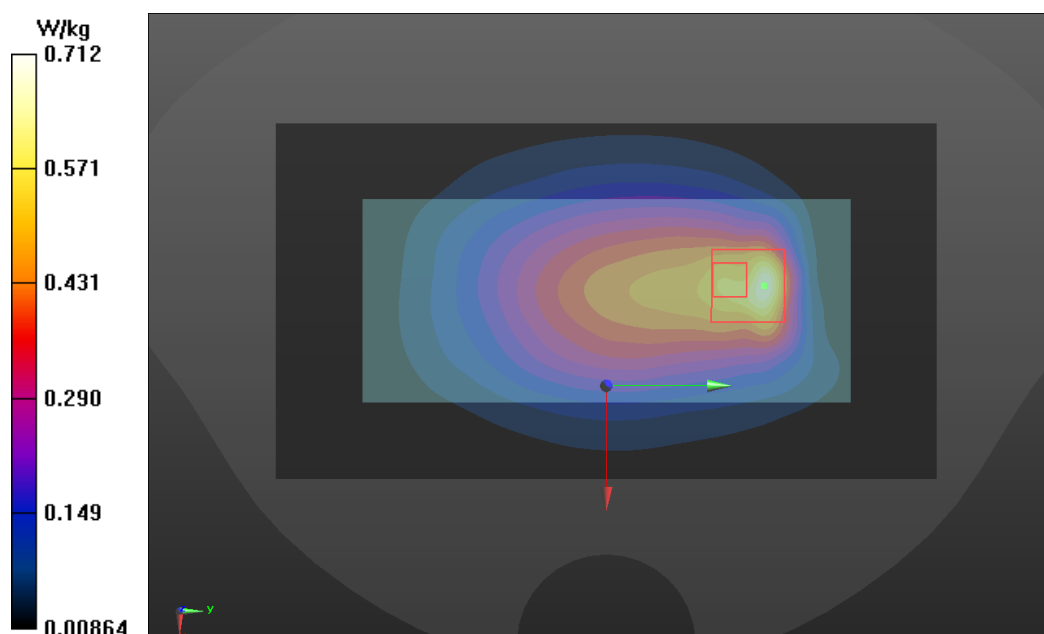
**SAR(1 g) = 0.476 W/kg; SAR(10 g) = 0.275 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.712 W/kg

**Configuration/FCC, Body, Back, LTE 12, High, BW10, RB50, Offset0, DUT22162 2/Area Scan (71x131x1):** Interpolated grid:

$dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.848 W/kg



Plot 50

Date/Time: 29.9.2020 8:10:08

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 13, E-UTRA/FDD (777.0 - 787.0 MHz); Frequency: 784.5 MHz; Communication System PAR: 0 dB; PMF: 1  
Medium parameters used (interpolated):  $f = 784.5$  MHz;  $\sigma = 0.94$  S/m;  $\epsilon_r = 42.137$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section  
Measurement Standard: DASYS (IEEE/IEC)

### DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(10.21, 10.21, 10.21); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = -4.0, 31.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/FCC, Body, Back, LTE 13 high, BW5, RB25, Offset0, DUT22162/Area Scan (71x131x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.683 W/kg

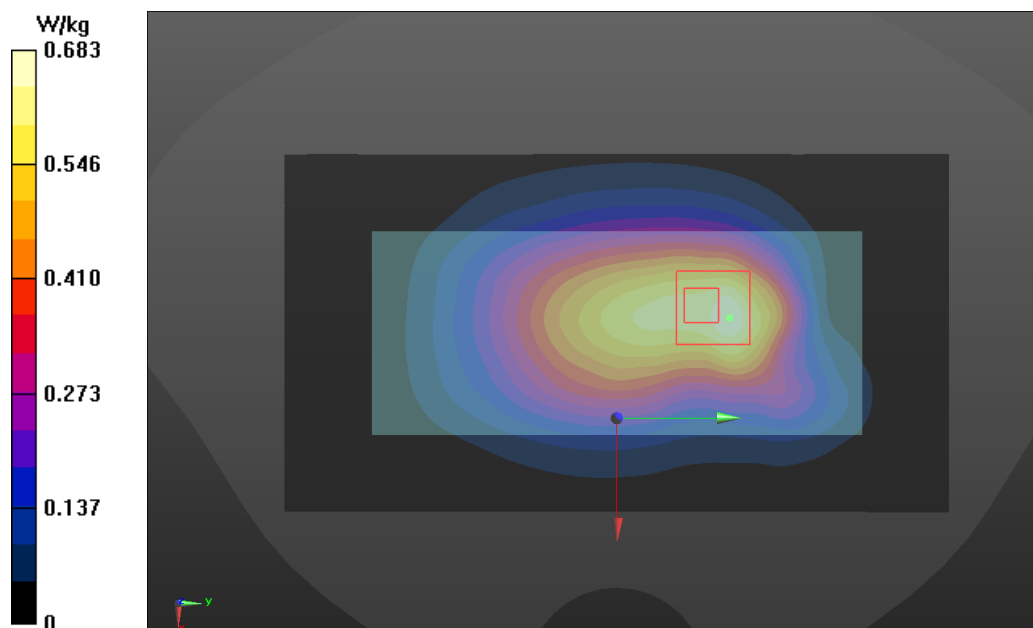
**Configuration/FCC, Body, Back, LTE 13 high, BW5, RB25, Offset0, DUT22162/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 24.93 V/m; Power Drift = 0.29 dB

Peak SAR (extrapolated) = 0.770 W/kg

**SAR(1 g) = 0.485 W/kg; SAR(10 g) = 0.311 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.678 W/kg



Plot 51

Date/Time: 9/4/2020 12:15:28 PM

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, LTE TDD (0); Communication System Band: LTE 41; Frequency: 2506 MHz; Communication System PAR: 2.017 dB; PMF: 1

Medium parameters used:  $f = 2506$  MHz;  $\sigma = 1.759$  S/m;  $\epsilon_r = 37.829$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.33, 7.33, 7.33); Calibrated: 4/28/2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = -4.0, 31.0$
- Electronics: DAE4 Sn1332; Calibrated: 10/15/2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Body\_04092020/FCC, Body, Back, LTE 41, low, BW20, RB1, Offset50, DUT22162/Area Scan (151x81x1):** Interpolated grid:  
 $dx=1.200$  mm,  $dy=1.200$  mm

Maximum value of SAR (interpolated) = 0.105 W/kg

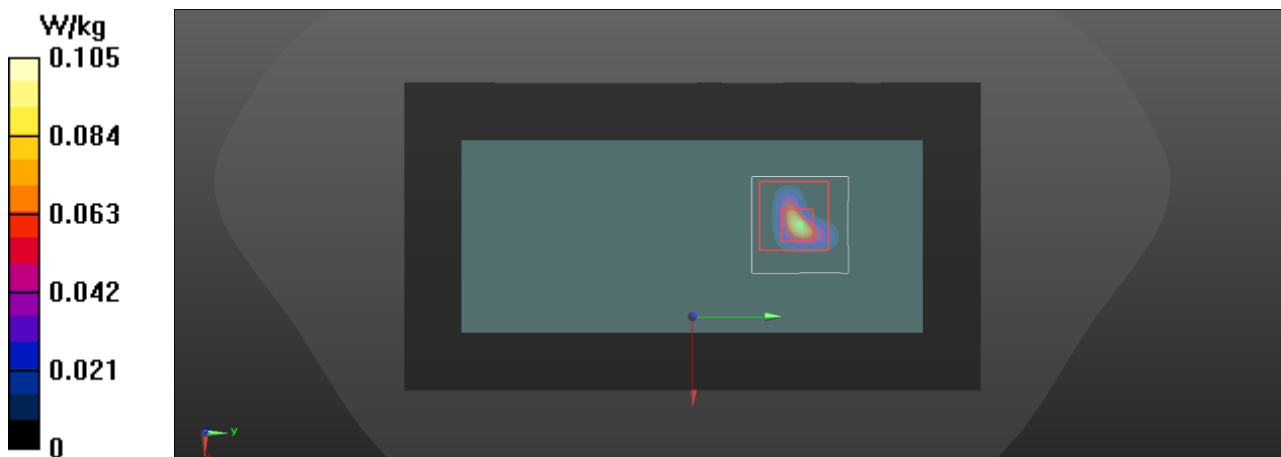
**Body\_04092020/FCC, Body, Back, LTE 41, low, BW20, RB1, Offset50, DUT22162/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  
 $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 0 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.0780 W/kg

**SAR(1 g) = 0.019 W/kg; SAR(10 g) = 0.00348 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.0564 W/kg



Plot 52

Date/Time: 23.9.2020 12:35:43

Test Laboratory: Verkotan Oy

## DUT: Mudita Pure

Communication System: UID 0, Bluetooth (0); Communication System Band: Bluetooth; Frequency: 2480 MHz; Communication System PAR: 4.771 dB; PMF: 1  
Medium parameters used:  $f = 2480$  MHz;  $\sigma = 1.765$  S/m;  $\epsilon_r = 37.669$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section  
Measurement Standard: DASYS (IEEE/IEC)

### DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.48, 7.48, 7.48); Calibrated: 28.4.2020;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = -4.0, 31.0$
- Electronics: DAE4 Sn1332; Calibrated: 15.10.2019
- Phantom: SAR2 frontTwin-SAM V4.0 (30deg probe tilt); Type: QD 000 P40 CC;
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/body 5mm front, BT, high, DUT22162 2/Area Scan (151x91x1):** Interpolated grid:  $dx=1.200$  mm,  $dy=1.200$  mm  
Maximum value of SAR (interpolated) = 0.0838 W/kg

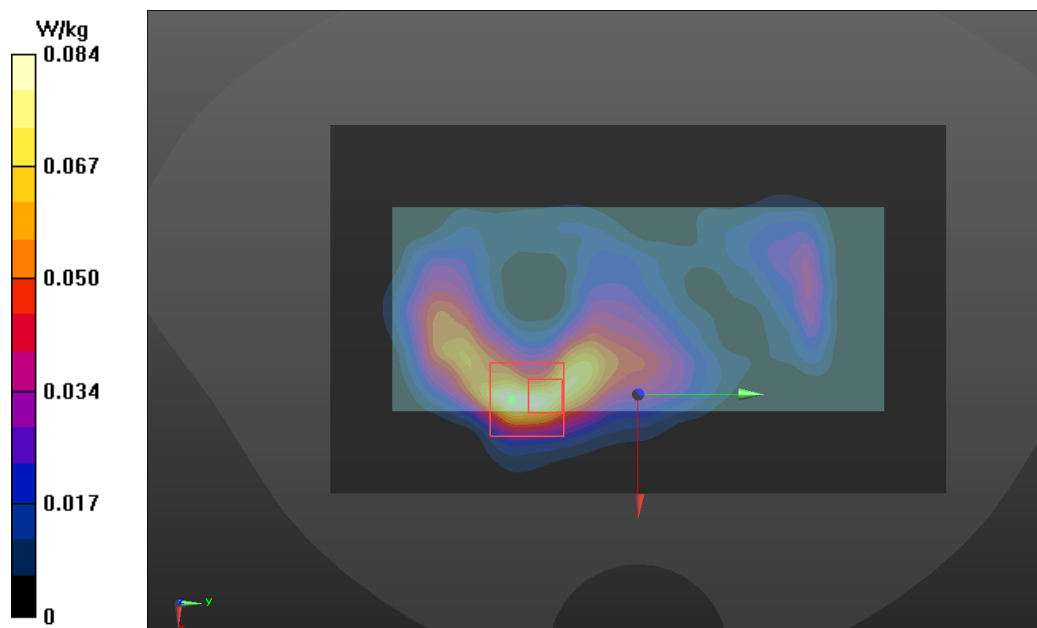
**Configuration/body 5mm front, BT, high, DUT22162 2/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 6.760 V/m; Power Drift = N/A

Peak SAR (extrapolated) = 0.0740 W/kg

**SAR(1 g) = 0.035 W/kg; SAR(10 g) = 0.014 W/kg** (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.0597 W/kg



## APPENDIX D: RELEVANT PAGES FROM PROBE CALIBRATION REPORTS

**Calibration Laboratory of**  
**Schmid & Partner**  
**Engineering AG**  
Zeughausstrasse 43, 8004 Zurich, Switzerland



**S** Schweizerischer Kalibrierdienst  
**C** Service suisse d'étalonnage  
**S** Servizio svizzero di taratura  
**S** Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)  
The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **Verkotan**

Certificate No: **EX3-3892\_Apr20**

### CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3892**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-12.v9, QA CAL-14.v5, QA CAL-23.v5, QA CAL-25.v7  
Calibration procedure for dosimetric E-field probes**

Calibration date: **April 28, 2020**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature ( $22 \pm 3^\circ\text{C}$ ) and humidity  $< 70\%$ .

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|----------------------------|------------------|-----------------------------------|------------------------|
| Power meter NRP            | SN: 104778       | 01-Apr-20 (No. 217-03100/03101)   | Apr-21                 |
| Power sensor NRP-Z91       | SN: 103244       | 01-Apr-20 (No. 217-03100)         | Apr-21                 |
| Power sensor NRP-Z91       | SN: 103245       | 01-Apr-20 (No. 217-03101)         | Apr-21                 |
| Reference 20 dB Attenuator | SN: CC2552 (20x) | 31-Mar-20 (No. 217-03106)         | Apr-21                 |
| DAE4                       | SN: 660          | 27-Dec-19 (No. DAE4-660_Dec19)    | Dec-20                 |
| Reference Probe ES3DV2     | SN: 3013         | 31-Dec-19 (No. ES3-3013_Dec19)    | Dec-20                 |
| Secondary Standards        | ID               | Check Date (in house)             | Scheduled Check        |
| Power meter E4419B         | SN: GB41293874   | 06-Apr-16 (in house check Jun-18) | In house check: Jun-20 |
| Power sensor E4412A        | SN: MY41498087   | 06-Apr-16 (in house check Jun-18) | In house check: Jun-20 |
| Power sensor E4412A        | SN: 000110210    | 06-Apr-16 (in house check Jun-18) | In house check: Jun-20 |
| RF generator HP 8648C      | SN: US3642U01700 | 04-Aug-99 (in house check Jun-18) | In house check: Jun-20 |
| Network Analyzer E8358A    | SN: US41080477   | 31-Mar-14 (in house check Oct-19) | In house check: Oct-20 |

|                |                                |                                          |                                                                                                   |
|----------------|--------------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------|
| Calibrated by: | Name<br><b>Claudio Leubler</b> | Function<br><b>Laboratory Technician</b> | Signature<br> |
| Approved by:   | Name<br><b>Katja Pokovic</b>   | Function<br><b>Technical Manager</b>     | Signature<br> |

Issued: April 28, 2020

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: EX3-3892\_Apr20

Page 1 of 9

EX3DV4– SN:3892

April 28, 2020

## DASY/EASY - Parameters of Probe: EX3DV4 - SN:3892

### Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz) <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>G</sup> | Depth <sup>G</sup> (mm) | Unc (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-----------|
| 600                  | 42.7                               | 0.88                            | 10.46   | 10.46   | 10.46   | 0.10               | 1.20                    | ± 13.3 %  |
| 750                  | 41.9                               | 0.89                            | 10.21   | 10.21   | 10.21   | 0.39               | 0.96                    | ± 12.0 %  |
| 900                  | 41.5                               | 0.97                            | 9.95    | 9.95    | 9.95    | 0.38               | 0.92                    | ± 12.0 %  |
| 1750                 | 40.1                               | 1.37                            | 8.52    | 8.52    | 8.52    | 0.28               | 0.80                    | ± 12.0 %  |
| 1900                 | 40.0                               | 1.40                            | 8.26    | 8.26    | 8.26    | 0.36               | 0.80                    | ± 12.0 %  |
| 2450                 | 39.2                               | 1.80                            | 7.48    | 7.48    | 7.48    | 0.33               | 0.90                    | ± 12.0 %  |
| 2600                 | 39.0                               | 1.96                            | 7.33    | 7.33    | 7.33    | 0.34               | 0.90                    | ± 12.0 %  |
| 4400                 | 36.9                               | 3.84                            | 5.98    | 5.98    | 5.98    | 0.40               | 1.60                    | ± 13.1 %  |
| 4600                 | 36.7                               | 4.04                            | 5.77    | 5.77    | 5.77    | 0.35               | 1.80                    | ± 13.1 %  |
| 4800                 | 36.4                               | 4.25                            | 5.51    | 5.51    | 5.51    | 0.40               | 1.80                    | ± 13.1 %  |

<sup>C</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

**Calibration Laboratory of  
Schmid & Partner  
Engineering AG**  
Zeughausstrasse 43, 8004 Zurich, Switzerland



**S** Schweizerischer Kalibrierdienst  
**C** Service suisse d'étalonnage  
**S** Servizio svizzero di taratura  
**S** Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)  
The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **Verkotan**

Certificate No: **EX3-7447\_Mar20**

## CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:7447**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-14.v5, QA CAL-23.v5, QA CAL-25.v7**  
Calibration procedure for dosimetric E-field probes

Calibration date: **March 25, 2020**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature ( $22 \pm 3$ )°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|----------------------------|------------------|-----------------------------------|------------------------|
| Power meter NRP            | SN: 104776       | 03-Apr-19 (No. 217-02892/02893)   | Apr-20                 |
| Power sensor NRP-Z91       | SN: 103244       | 03-Apr-19 (No. 217-02892)         | Apr-20                 |
| Power sensor NRP-Z91       | SN: 103245       | 03-Apr-19 (No. 217-02893)         | Apr-20                 |
| Reference 20 dB Attenuator | SN: S5277 (20x)  | 04-Apr-19 (No. 217-02894)         | Apr-20                 |
| DAE4                       | SN: 660          | 27-Dec-19 (No. DAE4-660_Dec19)    | Dec-20                 |
| Reference Probe ES3DV2     | SN: 3013         | 31-Dec-19 (No. ES3-3013_Dec19)    | Dec-20                 |
| Secondary Standards        | ID               | Check Date (in house)             | Scheduled Check        |
| Power meter E4419B         | SN: GB41293874   | 06-Apr-16 (in house check Jun-18) | In house check: Jun-20 |
| Power sensor E4412A        | SN: MY41498087   | 06-Apr-16 (in house check Jun-18) | In house check: Jun-20 |
| Power sensor E4412A        | SN: 000110210    | 06-Apr-16 (in house check Jun-18) | In house check: Jun-20 |
| RF generator HP 8648C      | SN: US3642U01700 | 04-Aug-99 (in house check Jun-18) | In house check: Jun-20 |
| Network Analyzer E8358A    | SN: US41080477   | 31-Mar-14 (in house check Oct-19) | In house check: Oct-20 |

|                                                                                                                 | Name           | Function              | Signature |
|-----------------------------------------------------------------------------------------------------------------|----------------|-----------------------|-----------|
| Calibrated by:                                                                                                  | Jeton Kastrati | Laboratory Technician |           |
| Approved by:                                                                                                    | Katja Pokovic  | Technical Manager     |           |
| Issued: March 27, 2020                                                                                          |                |                       |           |
| This calibration certificate shall not be reproduced except in full without written approval of the laboratory. |                |                       |           |

EX3DV4 – SN:7447

March 25, 2020

## DASY/EASY - Parameters of Probe: EX3DV4 - SN:7447

### Basic Calibration Parameters

|                                                           | Sensor X | Sensor Y | Sensor Z | Unc (k=2)     |
|-----------------------------------------------------------|----------|----------|----------|---------------|
| Norm ( $\mu\text{V}/(\text{V}/\text{m})^2$ ) <sup>A</sup> | 0.41     | 0.42     | 0.42     | $\pm 10.1 \%$ |
| DCP (mV) <sup>B</sup>                                     | 98.5     | 91.0     | 100.2    |               |

### Calibration Results for Modulation Response

| UID | Communication System Name |   | A<br>dB | B<br>dB $\sqrt{\mu\text{V}}$ | C   | D<br>dB | VR<br>mV | Max<br>dev.  | Unc <sup>E</sup><br>(k=2) |
|-----|---------------------------|---|---------|------------------------------|-----|---------|----------|--------------|---------------------------|
| 0   | CW                        | X | 0.0     | 0.0                          | 1.0 | 0.00    | 197.2    | $\pm 2.7 \%$ | $\pm 4.7 \%$              |
|     |                           | Y | 0.0     | 0.0                          | 1.0 |         | 185.8    |              |                           |
|     |                           | Z | 0.0     | 0.0                          | 1.0 |         | 172.3    |              |                           |

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>A</sup> The uncertainties of Norm X,Y,Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Page 5).

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

<sup>E</sup> Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

EX3DV4- SN:7447

March 25, 2020

## DASY/EASY - Parameters of Probe: EX3DV4 - SN:7447

### Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz) <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>G</sup> | Depth <sup>G</sup> (mm) | Unc (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-----------|
| 750                  | 41.9                               | 0.89                            | 10.38   | 10.38   | 10.38   | 0.52               | 0.88                    | ± 12.0 %  |
| 900                  | 41.5                               | 0.97                            | 9.97    | 9.97    | 9.97    | 0.31               | 1.05                    | ± 12.0 %  |
| 1750                 | 40.1                               | 1.37                            | 8.65    | 8.65    | 8.65    | 0.29               | 0.88                    | ± 12.0 %  |
| 1950                 | 40.0                               | 1.40                            | 8.29    | 8.29    | 8.29    | 0.23               | 0.98                    | ± 12.0 %  |
| 2150                 | 39.7                               | 1.53                            | 8.21    | 8.21    | 8.21    | 0.29               | 0.88                    | ± 12.0 %  |
| 2300                 | 39.5                               | 1.67                            | 8.05    | 8.05    | 8.05    | 0.30               | 1.00                    | ± 12.0 %  |
| 2450                 | 39.2                               | 1.80                            | 7.83    | 7.83    | 7.83    | 0.29               | 1.00                    | ± 12.0 %  |
| 2600                 | 39.0                               | 1.96                            | 7.64    | 7.64    | 7.64    | 0.19               | 1.20                    | ± 12.0 %  |
| 3300                 | 38.2                               | 2.71                            | 7.00    | 7.00    | 7.00    | 0.30               | 1.30                    | ± 13.1 %  |
| 5250                 | 35.9                               | 4.71                            | 5.18    | 5.18    | 5.18    | 0.40               | 1.80                    | ± 13.1 %  |
| 5600                 | 35.5                               | 5.07                            | 4.56    | 4.56    | 4.56    | 0.40               | 1.80                    | ± 13.1 %  |
| 5750                 | 35.4                               | 5.22                            | 4.70    | 4.70    | 4.70    | 0.40               | 1.80                    | ± 13.1 %  |

<sup>C</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

## APPENDIX E: RELEVANT PAGES FROM DIPOLE CALIBRATION REPORTS



### SAR Reference Dipole Calibration Report

Ref: ACR.353.1.18.SATU.A

**VERKOTAN LTD.**  
**ELEKTRONIIKKATIE 17**  
**90590, OULU, FINLAND**  
**MVG COMOSAR REFERENCE DIPOLE**  
**FREQUENCY: 750 MHZ**  
**SERIAL NO.: SN 42/17 DIP 0G750-454**

**Calibrated at MVG US**  
**2105 Barrett Park Dr. - Kennesaw, GA 30144**




**Calibration Date: 12/19/18**

*Summary:*

This document presents the method and results from an accredited SAR reference dipole calibration performed in MVG USA using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.



## SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.353.1.18.SATU.A

|      |           |  |           |  |
|------|-----------|--|-----------|--|
| 1800 | 40.0 ±5 % |  | 1.40 ±5 % |  |
| 1900 | 40.0 ±5 % |  | 1.40 ±5 % |  |
| 1950 | 40.0 ±5 % |  | 1.40 ±5 % |  |
| 2000 | 40.0 ±5 % |  | 1.40 ±5 % |  |
| 2100 | 39.8 ±5 % |  | 1.49 ±5 % |  |
| 2300 | 39.5 ±5 % |  | 1.67 ±5 % |  |
| 2450 | 39.2 ±5 % |  | 1.80 ±5 % |  |
| 2600 | 39.0 ±5 % |  | 1.96 ±5 % |  |
| 3000 | 38.5 ±5 % |  | 2.40 ±5 % |  |
| 3500 | 37.9 ±5 % |  | 2.91 ±5 % |  |

### 7.2 SAR MEASUREMENT RESULT WITH HEAD LIQUID

The IEEE Std. 1528 and CEI/IEC 62209 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power.

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| Software                                  | OPENSAR V4                                   |
| Phantom                                   | SN 20/09 SAM71                               |
| Probe                                     | SN 18/11 EPG122                              |
| Liquid                                    | Head Liquid Values: eps' : 40.0 sigma : 0.93 |
| Distance between dipole center and liquid | 15.0 mm                                      |
| Area scan resolution                      | dx=8mm/dy=8mm                                |
| Zoon Scan Resolution                      | dx=8mm/dy=8mm/dz=5mm                         |
| Frequency                                 | 750 MHz                                      |
| Input power                               | 20 dBm                                       |
| Liquid Temperature                        | 21 °C                                        |
| Lab Temperature                           | 21 °C                                        |
| Lab Humidity                              | 45 %                                         |

| Frequency<br>MHz | 1 g SAR (W/kg/W) |             | 10 g SAR (W/kg/W) |             |
|------------------|------------------|-------------|-------------------|-------------|
|                  | required         | measured    | required          | measured    |
| 300              | 2.85             |             | 1.94              |             |
| 450              | 4.58             |             | 3.06              |             |
| 750              | 8.49             | 8.52 (0.85) | 5.55              | 5.62 (0.56) |
| 835              | 9.56             |             | 6.22              |             |
| 900              | 10.9             |             | 6.99              |             |
| 1450             | 29               |             | 16                |             |
| 1500             | 30.5             |             | 16.8              |             |
| 1640             | 34.2             |             | 18.4              |             |
| 1750             | 36.4             |             | 19.3              |             |
| 1800             | 38.4             |             | 20.1              |             |

Page: 8/11

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## SAR Reference Dipole Calibration Report

Ref : ACR.84.3.20.MVGB.A

**VERKOTAN LTD.**  
**ELEKTRONIKKATIE 17**  
**90590, OULU, FINLAND**  
**SAR REFERENCE DIPOLE**  
**FREQUENCY: 835 MHZ**  
**SERIAL NO.: SN 448**

**Calibrated at MVG**  
**Z.I. de la pointe du diable**  
**Technopôle Brest Iroise – 295 avenue Alexis de Rochon**  
**29280 PLOUZANE - FRANCE**

**Calibration date: 03/23/2020**



Accreditations 92-6789 and 92-6814  
Scope available on [www.cofrac.fr](http://www.cofrac.fr)

### Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed at MVG, using the COMOSAR test bench. The test results covered by accreditation are traceable to the International System of Units (SI).



## SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.84.3.20.MVGB.A

|      |            |  |            |  |
|------|------------|--|------------|--|
| 2300 | 39.5 ±10 % |  | 1.67 ±10 % |  |
| 2450 | 39.2 ±10 % |  | 1.80 ±10 % |  |
| 2600 | 39.0 ±10 % |  | 1.96 ±10 % |  |
| 3000 | 38.5 ±10 % |  | 2.40 ±10 % |  |
| 3500 | 37.9 ±10 % |  | 2.91 ±10 % |  |

### 7.3 MEASUREMENT RESULT

The IEEE Std. 1528 and CEI/IEC 62209 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power.

| Frequency<br>MHz | 1 g SAR (W/kg/W) |             | 10 g SAR (W/kg/W) |             |
|------------------|------------------|-------------|-------------------|-------------|
|                  | required         | measured    | required          | measured    |
| 300              | 2.85             |             | 1.94              |             |
| 450              | 4.58             |             | 3.06              |             |
| 750              | 8.49             |             | 5.55              |             |
| 835              | 9.56             | 9.38 (0.94) | 6.22              | 5.94 (0.59) |
| 900              | 10.9             |             | 6.99              |             |
| 1450             | 29               |             | 16                |             |
| 1500             | 30.5             |             | 16.8              |             |
| 1640             | 34.2             |             | 18.4              |             |
| 1750             | 36.4             |             | 19.3              |             |
| 1800             | 38.4             |             | 20.1              |             |
| 1900             | 39.7             |             | 20.5              |             |
| 1950             | 40.5             |             | 20.9              |             |
| 2000             | 41.1             |             | 21.1              |             |
| 2100             | 43.6             |             | 21.9              |             |
| 2300             | 48.7             |             | 23.3              |             |
| 2450             | 52.4             |             | 24                |             |
| 2600             | 55.3             |             | 24.6              |             |
| 3000             | 63.8             |             | 25.7              |             |
| 3500             | 67.1             |             | 25                |             |

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## SAR Reference Dipole Calibration Report

Ref : ACR.84.4.20.MVGB.A

**VERKOTAN LTD.**  
**ELEKTRONIKKATIE 17**  
**90590, OULU, FINLAND**  
**SAR REFERENCE DIPOLE**  
**FREQUENCY: 1800 MHZ**  
**SERIAL NO.: SN 249**

**Calibrated at MVG**  
**Z.I. de la pointe du diable**  
**Technopôle Brest Iroise – 295 avenue Alexis de Rochon**  
**29280 PLOUZANE - FRANCE**

**Calibration date: 03/23/2020**



Accreditations #2-6789 and #2-6814  
Scope available on [www.cofrac.fr](http://www.cofrac.fr)

### *Summary:*

This document presents the method and results from an accredited SAR reference dipole calibration performed at MVG, using the COMOSAR test bench. The test results covered by accreditation are traceable to the International System of Units (SI).



## SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.844.20.MVGB.A

|      |           |  |           |  |          |  |
|------|-----------|--|-----------|--|----------|--|
| 3000 | 41.5 ±1 % |  | 25.0 ±1 % |  | 3.6 ±1 % |  |
| 3500 | 37.0 ±1 % |  | 26.4 ±1 % |  | 3.6 ±1 % |  |
| 3700 | 34.7 ±1 % |  | 26.4 ±1 % |  | 3.6 ±1 % |  |

### 7 VALIDATION MEASUREMENT

The IEEE Std. 1528, FCC KDBs and CEI/IEC 62209 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.

#### 7.1 MEASUREMENT CONDITION

|                                           |                                                         |
|-------------------------------------------|---------------------------------------------------------|
| Software                                  | OPENSAR V5                                              |
| Phantom                                   | SN 13/09 SAM68                                          |
| Probe                                     | SN 41/18 EPG0333                                        |
| Liquid                                    | Head Liquid Values: $\epsilon_p$ : 41.7 $\sigma$ : 1.46 |
| Distance between dipole center and liquid | 10.0 mm                                                 |
| Area scan resolution                      | $dx=8mm/dy=8mm$                                         |
| Zoon Scan Resolution                      | $dx=8mm/dy=8mm/dz=5mm$                                  |
| Frequency                                 | 1800 MHz                                                |
| Input power                               | 20 dBm                                                  |
| Liquid Temperature                        | 20 +/- 1 °C                                             |
| Lab Temperature                           | 20 +/- 1 °C                                             |
| Lab Humidity                              | 30-80 %                                                 |

#### 7.2 HEAD LIQUID MEASUREMENT

| Frequency<br>MHz | Relative permittivity ( $\epsilon_r$ ) |          | Conductivity ( $\sigma$ ) S/m |          |
|------------------|----------------------------------------|----------|-------------------------------|----------|
|                  | required                               | measured | required                      | measured |
| 300              | 45.3 ±10 %                             |          | 0.87 ±10 %                    |          |
| 450              | 43.5 ±10 %                             |          | 0.87 ±10 %                    |          |
| 750              | 41.9 ±10 %                             |          | 0.89 ±10 %                    |          |
| 835              | 41.5 ±10 %                             |          | 0.90 ±10 %                    |          |
| 900              | 41.5 ±10 %                             |          | 0.97 ±10 %                    |          |
| 1450             | 40.5 ±10 %                             |          | 1.20 ±10 %                    |          |
| 1500             | 40.4 ±10 %                             |          | 1.23 ±10 %                    |          |
| 1640             | 40.2 ±10 %                             |          | 1.31 ±10 %                    |          |
| 1750             | 40.1 ±10 %                             |          | 1.37 ±10 %                    |          |
| 1800             | 40.0 ±10 %                             | 41.7     | 1.40 ±10 %                    | 1.46     |
| 1900             | 40.0 ±10 %                             |          | 1.40 ±10 %                    |          |
| 1950             | 40.0 ±10 %                             |          | 1.40 ±10 %                    |          |
| 2000             | 40.0 ±10 %                             |          | 1.40 ±10 %                    |          |
| 2100             | 39.8 ±10 %                             |          | 1.49 ±10 %                    |          |

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## SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.84.4.20.MVGB.A

|      |            |  |            |  |
|------|------------|--|------------|--|
| 2300 | 39.5 ±10 % |  | 1.67 ±10 % |  |
| 2450 | 39.2 ±10 % |  | 1.80 ±10 % |  |
| 2600 | 39.0 ±10 % |  | 1.96 ±10 % |  |
| 3000 | 38.5 ±10 % |  | 2.40 ±10 % |  |
| 3500 | 37.9 ±10 % |  | 2.91 ±10 % |  |

### 7.3 MEASUREMENT RESULT

The IEEE Std. 1528 and CEI/IEC 62209 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power.

| Frequency<br>MHz | 1 g SAR (W/kg/W) |              | 10 g SAR (W/kg/W) |              |
|------------------|------------------|--------------|-------------------|--------------|
|                  | required         | measured     | required          | measured     |
| 300              | 2.85             |              | 1.94              |              |
| 450              | 4.58             |              | 3.06              |              |
| 750              | 8.49             |              | 5.55              |              |
| 835              | 9.56             |              | 6.22              |              |
| 900              | 10.9             |              | 6.99              |              |
| 1450             | 29               |              | 16                |              |
| 1500             | 30.5             |              | 16.8              |              |
| 1640             | 34.2             |              | 18.4              |              |
| 1750             | 36.4             |              | 19.3              |              |
| 1800             | 38.4             | 39.21 (3.92) | 20.1              | 20.96 (2.10) |
| 1900             | 39.7             |              | 20.5              |              |
| 1950             | 40.5             |              | 20.9              |              |
| 2000             | 41.1             |              | 21.1              |              |
| 2100             | 43.6             |              | 21.9              |              |
| 2300             | 48.7             |              | 23.3              |              |
| 2450             | 52.4             |              | 24                |              |
| 2600             | 55.3             |              | 24.6              |              |
| 3000             | 63.8             |              | 25.7              |              |
| 3500             | 67.1             |              | 25                |              |

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## SAR Reference Dipole Calibration Report

Ref : ACR.84.5.20.MVGB.A

**VERKOTAN LTD.**  
**ELEKTRONIIKKATIE 17**  
**90590, OULU, FINLAND**  
**SAR REFERENCE DIPOLE**  
**FREQUENCY: 1900 MHZ**  
**SERIAL NO.: SN 511**

**Calibrated at MVG**  
**Z.I. de la pointe du diable**  
**Technopôle Brest Iroise – 295 avenue Alexis de Rochon**  
**29280 PLOUZANE - FRANCE**

**Calibration date: 03/23/2020**



Accreditations #2-6789 and #2-6814  
Scope available on [www.cofrac.fr](http://www.cofrac.fr)

### *Summary:*

This document presents the method and results from an accredited SAR reference dipole calibration performed at MVG, using the COMOSAR test bench. The test results covered by accreditation are traceable to the International System of Units (SI).



## SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.84.5.20.MVGB.A

|      |           |  |           |  |          |  |
|------|-----------|--|-----------|--|----------|--|
| 3000 | 41.5 ±1 % |  | 25.0 ±1 % |  | 3.6 ±1 % |  |
| 3500 | 37.0 ±1 % |  | 26.4 ±1 % |  | 3.6 ±1 % |  |
| 3700 | 34.7 ±1 % |  | 26.4 ±1 % |  | 3.6 ±1 % |  |

## 7 VALIDATION MEASUREMENT

The IEEE Std. 1528, FCC KDBs and CEI/IEC 62209 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.

### 7.1 MEASUREMENT CONDITION

|                                           |                                                           |
|-------------------------------------------|-----------------------------------------------------------|
| Software                                  | OPENSAR V5                                                |
| Phantom                                   | SN 13/09 SAM68                                            |
| Probe                                     | SN 41/18 EPG0333                                          |
| Liquid                                    | Head Liquid Values: $\epsilon_{ps}^*$ : 38.5 sigma : 1.45 |
| Distance between dipole center and liquid | 10.0 mm                                                   |
| Area scan resolution                      | $dx=8mm/dy=8mm$                                           |
| Zoon Scan Resolution                      | $dx=8mm/dy=8mm/dz=5mm$                                    |
| Frequency                                 | 1900 MHz                                                  |
| Input power                               | 20 dBm                                                    |
| Liquid Temperature                        | 20 +/- 1 °C                                               |
| Lab Temperature                           | 20 +/- 1 °C                                               |
| Lab Humidity                              | 30-80 %                                                   |

### 7.2 HEAD LIQUID MEASUREMENT

| Frequency<br>MHz | Relative permittivity ( $\epsilon_r$ ) |          | Conductivity ( $\sigma$ ) S/m |          |
|------------------|----------------------------------------|----------|-------------------------------|----------|
|                  | required                               | measured | required                      | measured |
| 300              | 45.3 ±10 %                             |          | 0.87 ±10 %                    |          |
| 450              | 43.5 ±10 %                             |          | 0.87 ±10 %                    |          |
| 750              | 41.9 ±10 %                             |          | 0.89 ±10 %                    |          |
| 835              | 41.5 ±10 %                             |          | 0.90 ±10 %                    |          |
| 900              | 41.5 ±10 %                             |          | 0.97 ±10 %                    |          |
| 1450             | 40.5 ±10 %                             |          | 1.20 ±10 %                    |          |
| 1500             | 40.4 ±10 %                             |          | 1.23 ±10 %                    |          |
| 1640             | 40.2 ±10 %                             |          | 1.31 ±10 %                    |          |
| 1750             | 40.1 ±10 %                             |          | 1.37 ±10 %                    |          |
| 1800             | 40.0 ±10 %                             |          | 1.40 ±10 %                    |          |
| 1900             | 40.0 ±10 %                             | 38.5     | 1.40 ±10 %                    | 1.45     |
| 1950             | 40.0 ±10 %                             |          | 1.40 ±10 %                    |          |
| 2000             | 40.0 ±10 %                             |          | 1.40 ±10 %                    |          |
| 2100             | 39.8 ±10 %                             |          | 1.49 ±10 %                    |          |

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## SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.84.5.20.MVGB.A

|      |            |  |            |  |
|------|------------|--|------------|--|
| 2300 | 39.5 ±10 % |  | 1.67 ±10 % |  |
| 2450 | 39.2 ±10 % |  | 1.80 ±10 % |  |
| 2600 | 39.0 ±10 % |  | 1.96 ±10 % |  |
| 3000 | 38.5 ±10 % |  | 2.40 ±10 % |  |
| 3500 | 37.9 ±10 % |  | 2.91 ±10 % |  |

### 7.3 MEASUREMENT RESULT

The IEEE Std. 1528 and CEI/IEC 62209 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power.

| Frequency<br>MHz | 1 g SAR (W/kg/W) |              | 10 g SAR (W/kg/W) |              |
|------------------|------------------|--------------|-------------------|--------------|
|                  | required         | measured     | required          | measured     |
| 300              | 2.85             |              | 1.94              |              |
| 450              | 4.58             |              | 3.06              |              |
| 750              | 8.49             |              | 5.55              |              |
| 835              | 9.56             |              | 6.22              |              |
| 900              | 10.9             |              | 6.99              |              |
| 1450             | 29               |              | 16                |              |
| 1500             | 30.5             |              | 16.8              |              |
| 1640             | 34.2             |              | 18.4              |              |
| 1750             | 36.4             |              | 19.3              |              |
| 1800             | 38.4             |              | 20.1              |              |
| 1900             | 39.7             | 37.10 (3.71) | 20.5              | 19.14 (1.91) |
| 1950             | 40.5             |              | 20.9              |              |
| 2000             | 41.1             |              | 21.1              |              |
| 2100             | 43.6             |              | 21.9              |              |
| 2300             | 48.7             |              | 23.3              |              |
| 2450             | 52.4             |              | 24                |              |
| 2600             | 55.3             |              | 24.6              |              |
| 3000             | 63.8             |              | 25.7              |              |
| 3500             | 67.1             |              | 25                |              |

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## SAR Reference Dipole Calibration Report

Ref : CR.55.2.20.SATU.A

**VERKOTAN LTD.**  
**ELEKTRONIIKKATIE 17**  
**90590, OULU, FINLAND**  
**MVG COMOSAR REFERENCE DIPOLE**  
**FREQUENCY: 2300 MHZ**  
**SERIAL NO.: SN 14/15 DIP2G300-366**

**Calibrated at MVG**  
**Z.I. de la pointe du diable**  
**Technopôle Brest Iroise – 295 avenue Alexis de Rochon**  
**29280 PLOUZANE - FRANCE**

**Calibration date: 02/24/20**

### *Summary:*

This document presents the method and results from an accredited SAR reference dipole calibration performed at MVG, using the COMOSAR test bench. The test results covered by accreditation are traceable to the International System of Units (SI).



## SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref CR.55.220.SATU.A

|      |           |  |           |  |          |  |
|------|-----------|--|-----------|--|----------|--|
| 2000 | 64.5 ±1 % |  | 37.5 ±1 % |  | 3.6 ±1 % |  |
| 2100 | 61.0 ±1 % |  | 35.7 ±1 % |  | 3.6 ±1 % |  |
| 2300 | 55.5 ±1 % |  | 32.6 ±1 % |  | 3.6 ±1 % |  |
| 2450 | 51.5 ±1 % |  | 30.4 ±1 % |  | 3.6 ±1 % |  |
| 2600 | 48.5 ±1 % |  | 28.8 ±1 % |  | 3.6 ±1 % |  |
| 3000 | 41.5 ±1 % |  | 25.0 ±1 % |  | 3.6 ±1 % |  |
| 3500 | 37.0 ±1 % |  | 26.4 ±1 % |  | 3.6 ±1 % |  |
| 3700 | 34.7 ±1 % |  | 26.4 ±1 % |  | 3.6 ±1 % |  |

## 7 VALIDATION MEASUREMENT

The IEEE Std. 1528, FCC KDBs and CEI/IEC 62209 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.

### 7.1 MEASUREMENT CONDITION

|                                           |                                                       |
|-------------------------------------------|-------------------------------------------------------|
| Software                                  | OPENSAR V5                                            |
| Phantom                                   | SN 13/09 SAM68                                        |
| Probe                                     | SN 41/18 EPG0333                                      |
| Liquid                                    | Head Liquid Values: $\epsilon_r'$ : 40.1 sigma : 1.69 |
| Distance between dipole center and liquid | 10.0 mm                                               |
| Area scan resolution                      | $dx=8mm/dy=8mm$                                       |
| Zoon Scan Resolution                      | $dx=5mm/dy=5mm/dz=5mm$                                |
| Frequency                                 | 23002300 MHz                                          |
| Input power                               | 20 dBm                                                |
| Liquid Temperature                        | 20 +/- 1 °C                                           |
| Lab Temperature                           | 21 +/- 1 °C                                           |
| Lab Humidity                              | 30-80 %                                               |

### 7.2 HEAD LIQUID MEASUREMENT

| Frequency<br>MHz | Relative permittivity ( $\epsilon_r'$ ) |          | Conductivity ( $\sigma$ ) S/m |          |
|------------------|-----------------------------------------|----------|-------------------------------|----------|
|                  | required                                | measured | required                      | measured |
| 300              | 45.3 ±10 %                              |          | 0.87 ±10 %                    |          |
| 450              | 43.5 ±10 %                              |          | 0.87 ±10 %                    |          |
| 750              | 41.9 ±10 %                              |          | 0.89 ±10 %                    |          |
| 835              | 41.5 ±10 %                              |          | 0.90 ±10 %                    |          |
| 900              | 41.5 ±10 %                              |          | 0.97 ±10 %                    |          |
| 1450             | 40.5 ±10 %                              |          | 1.20 ±10 %                    |          |
| 1500             | 40.4 ±10 %                              |          | 1.23 ±10 %                    |          |
| 1640             | 40.2 ±10 %                              |          | 1.31 ±10 %                    |          |
| 1750             | 40.1 ±10 %                              |          | 1.37 ±10 %                    |          |

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## SAR REFERENCE DIPOLE CALIBRATION REPORT

ReF: CR.55.2.20.SATU.A

|      |            |      |            |      |
|------|------------|------|------------|------|
| 1800 | 40.0 ±10 % |      | 1.40 ±10 % |      |
| 1900 | 40.0 ±10 % |      | 1.40 ±10 % |      |
| 1950 | 40.0 ±10 % |      | 1.40 ±10 % |      |
| 2000 | 40.0 ±10 % |      | 1.40 ±10 % |      |
| 2100 | 39.8 ±10 % |      | 1.49 ±10 % |      |
| 2300 | 39.5 ±10 % | 40.1 | 1.67 ±10 % | 1.69 |
| 2450 | 39.2 ±10 % |      | 1.80 ±10 % |      |
| 2600 | 39.0 ±10 % |      | 1.96 ±10 % |      |
| 3000 | 38.5 ±10 % |      | 2.40 ±10 % |      |
| 3500 | 37.9 ±10 % |      | 2.91 ±10 % |      |

### 7.3 MEASUREMENT RESULT

The IEEE Std. 1528 and CEI/IEC 62209 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power.

| Frequency<br>MHz | 1 g SAR (W/kg/W) |              | 10 g SAR (W/kg/W) |              |
|------------------|------------------|--------------|-------------------|--------------|
|                  | required         | measured     | required          | measured     |
| 300              | 2.85             |              | 1.94              |              |
| 450              | 4.58             |              | 3.06              |              |
| 750              | 8.49             |              | 5.55              |              |
| 835              | 9.56             |              | 6.22              |              |
| 900              | 10.9             |              | 6.99              |              |
| 1450             | 29               |              | 16                |              |
| 1500             | 30.5             |              | 16.8              |              |
| 1640             | 34.2             |              | 18.4              |              |
| 1750             | 36.4             |              | 19.3              |              |
| 1800             | 38.4             |              | 20.1              |              |
| 1900             | 39.7             |              | 20.5              |              |
| 1950             | 40.5             |              | 20.9              |              |
| 2000             | 41.1             |              | 21.1              |              |
| 2100             | 43.6             |              | 21.9              |              |
| 2300             | 48.7             | 48.67 (4.87) | 23.3              | 22.51 (2.25) |
| 2450             | 52.4             |              | 24                |              |
| 2600             | 55.3             |              | 24.6              |              |
| 3000             | 63.8             |              | 25.7              |              |
| 3500             | 67.1             |              | 25                |              |

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## SAR Reference Dipole Calibration Report

Ref : ACR.84.6.20.MVGB.A

**VERKOTAN LTD.**  
**ELEKTRONIIKKATIE 17**  
**90590, OULU, FINLAND**  
**SAR REFERENCE DIPOLE**  
**FREQUENCY: 2450 MHZ**  
**SERIAL NO.: SN 758**

**Calibrated at MVG**  
**Z.I. de la pointe du diable**  
**Technopôle Brest Iroise – 295 avenue Alexis de Rochon**  
**29280 PLOUZANE - FRANCE**

**Calibration date: 03/23/2020**



Accreditations #2-6789 and #2-6814  
Scope available on [www.cofrac.fr](http://www.cofrac.fr)

### Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed at MVG, using the COMOSAR test bench. The test results covered by accreditation are traceable to the International System of Units (SI).



## SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.84.6.20.MVGB.A

|      |           |  |           |  |          |  |
|------|-----------|--|-----------|--|----------|--|
| 3000 | 41.5 ±1 % |  | 25.0 ±1 % |  | 3.6 ±1 % |  |
| 3500 | 37.0 ±1 % |  | 26.4 ±1 % |  | 3.6 ±1 % |  |
| 3700 | 34.7 ±1 % |  | 26.4 ±1 % |  | 3.6 ±1 % |  |

### 7 VALIDATION MEASUREMENT

The IEEE Std. 1528, FCC KDBs and CEI/IEC 62209 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.

#### 7.1 MEASUREMENT CONDITION

|                                           |                                                         |
|-------------------------------------------|---------------------------------------------------------|
| Software                                  | OPENSAR V5                                              |
| Phantom                                   | SN 13/09 SAM68                                          |
| Probe                                     | SN 41/18 EPG0333                                        |
| Liquid                                    | Head Liquid Values: $\epsilon_p$ : 37.5 $\sigma$ : 1.80 |
| Distance between dipole center and liquid | 10.0 mm                                                 |
| Area scan resolution                      | $dx=8mm/dy=8mm$                                         |
| Zoon Scan Resolution                      | $dx=5mm/dy=5mm/dz=5mm$                                  |
| Frequency                                 | 2450 MHz                                                |
| Input power                               | 20 dBm                                                  |
| Liquid Temperature                        | 20 +/- 1 °C                                             |
| Lab Temperature                           | 20 +/- 1 °C                                             |
| Lab Humidity                              | 30-80 %                                                 |

#### 7.2 HEAD LIQUID MEASUREMENT

| Frequency<br>MHz | Relative permittivity ( $\epsilon_r$ ) |          | Conductivity ( $\sigma$ ) S/m |          |
|------------------|----------------------------------------|----------|-------------------------------|----------|
|                  | required                               | measured | required                      | measured |
| 300              | 45.3 ±10 %                             |          | 0.87 ±10 %                    |          |
| 450              | 43.5 ±10 %                             |          | 0.87 ±10 %                    |          |
| 750              | 41.9 ±10 %                             |          | 0.89 ±10 %                    |          |
| 835              | 41.5 ±10 %                             |          | 0.90 ±10 %                    |          |
| 900              | 41.5 ±10 %                             |          | 0.97 ±10 %                    |          |
| 1450             | 40.5 ±10 %                             |          | 1.20 ±10 %                    |          |
| 1500             | 40.4 ±10 %                             |          | 1.23 ±10 %                    |          |
| 1640             | 40.2 ±10 %                             |          | 1.31 ±10 %                    |          |
| 1750             | 40.1 ±10 %                             |          | 1.37 ±10 %                    |          |
| 1800             | 40.0 ±10 %                             |          | 1.40 ±10 %                    |          |
| 1900             | 40.0 ±10 %                             |          | 1.40 ±10 %                    |          |
| 1950             | 40.0 ±10 %                             |          | 1.40 ±10 %                    |          |
| 2000             | 40.0 ±10 %                             |          | 1.40 ±10 %                    |          |
| 2100             | 39.8 ±10 %                             |          | 1.49 ±10 %                    |          |

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## SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.34.6.20.MVGB.A

|      |            |      |            |      |
|------|------------|------|------------|------|
| 2300 | 39.5 ±10 % |      | 1.67 ±10 % |      |
| 2450 | 39.2 ±10 % | 37.5 | 1.80 ±10 % | 1.80 |
| 2600 | 39.0 ±10 % |      | 1.96 ±10 % |      |
| 3000 | 38.5 ±10 % |      | 2.40 ±10 % |      |
| 3500 | 37.9 ±10 % |      | 2.91 ±10 % |      |

### 7.3 MEASUREMENT RESULT

The IEEE Std. 1528 and CEI/IEC 62209 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power.

| Frequency<br>MHz | 1 g SAR (W/kg/W) |              | 10 g SAR (W/kg/W) |              |
|------------------|------------------|--------------|-------------------|--------------|
|                  | required         | measured     | required          | measured     |
| 300              | 2.85             |              | 1.94              |              |
| 450              | 4.58             |              | 3.06              |              |
| 750              | 8.49             |              | 5.55              |              |
| 835              | 9.56             |              | 6.22              |              |
| 900              | 10.9             |              | 6.99              |              |
| 1450             | 29               |              | 16                |              |
| 1500             | 30.5             |              | 16.8              |              |
| 1640             | 34.2             |              | 18.4              |              |
| 1750             | 36.4             |              | 19.3              |              |
| 1800             | 38.4             |              | 20.1              |              |
| 1900             | 39.7             |              | 20.5              |              |
| 1950             | 40.5             |              | 20.9              |              |
| 2000             | 41.1             |              | 21.1              |              |
| 2100             | 43.6             |              | 21.9              |              |
| 2300             | 48.7             |              | 23.3              |              |
| 2450             | 52.4             | 55.34 (5.53) | 24                | 24.43 (2.44) |
| 2600             | 55.3             |              | 24.6              |              |
| 3000             | 63.8             |              | 25.7              |              |
| 3500             | 67.1             |              | 25                |              |

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## SAR Reference Dipole Calibration Report

Ref : ACR.353.3.18.SATU.A

**VERKOTAN LTD.**  
**ELEKTRONIIKKATIE 17**  
**90590, OULU, FINLAND**  
**MVG COMOSAR REFERENCE DIPOLE**  
**FREQUENCY: 2600 MHZ**  
**SERIAL NO.: SN 51/18 DIP 2G600-474**

**Calibrated at MVG US**  
**2105 Barrett Park Dr. - Kennesaw, GA 30144**



**Calibration Date: 12/19/18**

### *Summary:*

This document presents the method and results from an accredited SAR reference dipole calibration performed in MVG USA using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.



## SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.353.3.18.SATULA

|      |           |      |           |      |
|------|-----------|------|-----------|------|
| 1800 | 40.0 ±5 % |      | 1.40 ±5 % |      |
| 1900 | 40.0 ±5 % |      | 1.40 ±5 % |      |
| 1950 | 40.0 ±5 % |      | 1.40 ±5 % |      |
| 2000 | 40.0 ±5 % |      | 1.40 ±5 % |      |
| 2100 | 39.8 ±5 % |      | 1.49 ±5 % |      |
| 2300 | 39.5 ±5 % |      | 1.67 ±5 % |      |
| 2450 | 39.2 ±5 % |      | 1.80 ±5 % |      |
| 2600 | 39.0 ±5 % | PASS | 1.96 ±5 % | PASS |
| 3000 | 38.5 ±5 % |      | 2.40 ±5 % |      |
| 3500 | 37.9 ±5 % |      | 2.91 ±5 % |      |

### 7.2 SAR MEASUREMENT RESULT WITH HEAD LIQUID

The IEEE Std. 1528 and CEI/IEC 62209 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1-W forward power. In bracket, the measured SAR is given with the used input power.

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| Software                                  | OPENSAR V4                                   |
| Phantom                                   | SN 20/09 SAM71                               |
| Probe                                     | SN 18/11 EPG122                              |
| Liquid                                    | Head Liquid Values: eps' : 39.8 sigma : 1.99 |
| Distance between dipole center and liquid | 10.0 mm                                      |
| Area scan resolution                      | dx=8mm/dy=8mm                                |
| Zoon Scan Resolution                      | dx=5mm/dy=5mm/dz=5mm                         |
| Frequency                                 | 2600 MHz                                     |
| Input power                               | 20 dBm                                       |
| Liquid Temperature                        | 21 °C                                        |
| Lab Temperature                           | 21 °C                                        |
| Lab Humidity                              | 45 %                                         |

| Frequency<br>MHz | 1 g SAR (W/kg/W) |          | 10 g SAR (W/kg/W) |          |
|------------------|------------------|----------|-------------------|----------|
|                  | required         | measured | required          | measured |
| 300              | 2.85             |          | 1.94              |          |
| 450              | 4.58             |          | 3.06              |          |
| 750              | 8.49             |          | 5.55              |          |
| 835              | 9.56             |          | 6.22              |          |
| 900              | 10.9             |          | 6.99              |          |
| 1450             | 29               |          | 16                |          |
| 1500             | 30.5             |          | 16.8              |          |
| 1640             | 34.2             |          | 18.4              |          |
| 1750             | 36.4             |          | 19.3              |          |
| 1800             | 38.4             |          | 20.1              |          |

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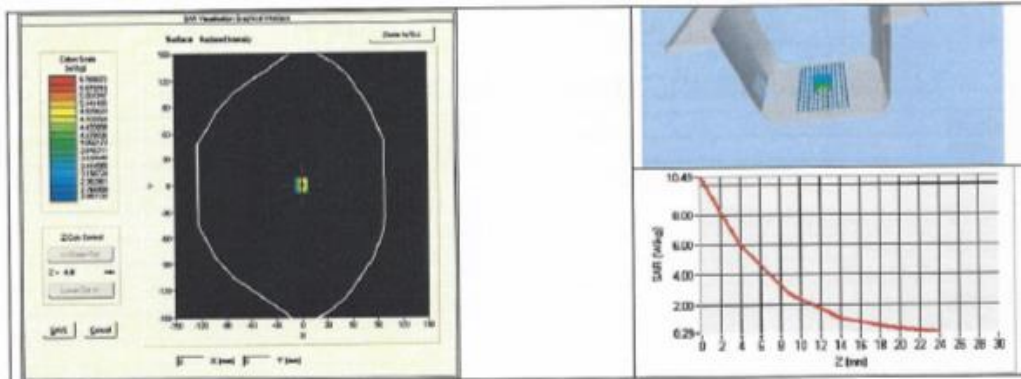
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## SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.353.3.18.SATU.A

|      |      |              |      |              |
|------|------|--------------|------|--------------|
| 1900 | 39.7 |              | 20.5 |              |
| 1950 | 40.5 |              | 20.9 |              |
| 2000 | 41.1 |              | 21.1 |              |
| 2100 | 43.6 |              | 21.9 |              |
| 2300 | 48.7 |              | 23.3 |              |
| 2450 | 52.4 |              | 24   |              |
| 2600 | 55.3 | 55.08 (5.51) | 24.6 | 24.14 (2.41) |
| 3000 | 63.8 |              | 25.7 |              |
| 3500 | 67.1 |              | 25   |              |
| 3700 | 67.4 |              | 24.2 |              |



### 7.3 BODY LIQUID MEASUREMENT

| Frequency<br>MHz | Relative permittivity ( $\epsilon_r$ ) |          | Conductivity ( $\sigma$ ) S/m |          |
|------------------|----------------------------------------|----------|-------------------------------|----------|
|                  | required                               | measured | required                      | measured |
| 150              | 61.9 $\pm$ 5 %                         |          | 0.80 $\pm$ 5 %                |          |
| 300              | 58.2 $\pm$ 5 %                         |          | 0.92 $\pm$ 5 %                |          |
| 450              | 56.7 $\pm$ 5 %                         |          | 0.94 $\pm$ 5 %                |          |
| 750              | 55.5 $\pm$ 5 %                         |          | 0.96 $\pm$ 5 %                |          |
| 835              | 55.2 $\pm$ 5 %                         |          | 0.97 $\pm$ 5 %                |          |
| 900              | 55.0 $\pm$ 5 %                         |          | 1.05 $\pm$ 5 %                |          |
| 915              | 55.0 $\pm$ 5 %                         |          | 1.06 $\pm$ 5 %                |          |
| 1450             | 54.0 $\pm$ 5 %                         |          | 1.30 $\pm$ 5 %                |          |
| 1610             | 53.8 $\pm$ 5 %                         |          | 1.40 $\pm$ 5 %                |          |
| 1800             | 53.3 $\pm$ 5 %                         |          | 1.52 $\pm$ 5 %                |          |
| 1900             | 53.3 $\pm$ 5 %                         |          | 1.52 $\pm$ 5 %                |          |
| 2000             | 53.3 $\pm$ 5 %                         |          | 1.52 $\pm$ 5 %                |          |
| 2100             | 53.2 $\pm$ 5 %                         |          | 1.62 $\pm$ 5 %                |          |

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