BC127 Running Melody Audio5.7 RC 10 Power Measurements

Application Note

SIERRA WIRELESS®

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Rev 1

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Revision History

Revision number	Release date	Changes
1	March 22, 2017	Initial revision in SWI template.

Contents

1: Introduction

This document provides power measurement values for a BC127 running Melody Audio 5.7 RC 8, and describes the test setup under which these values were obtained.

2: Equipment Used

1. BC127 module running Melody 5.7 RC 10.
2. BC127 jig to interface signals to module.
3. Agilent 34405A 5 1/2 Digit Multimeter.
4. CSR DEV PC 1504C level translator + RS-232 cable.
5. USB<->UART converter if you do not have an RS-232 port available on your computer.
6. Analogue integrator: 1x 470uF capacitor, 1x 1Ohm 1% resistor, 1x 100Ohm 1x Resistor.
7. Agilent U8001A DC power supply.
8. Various cables needed for connections.

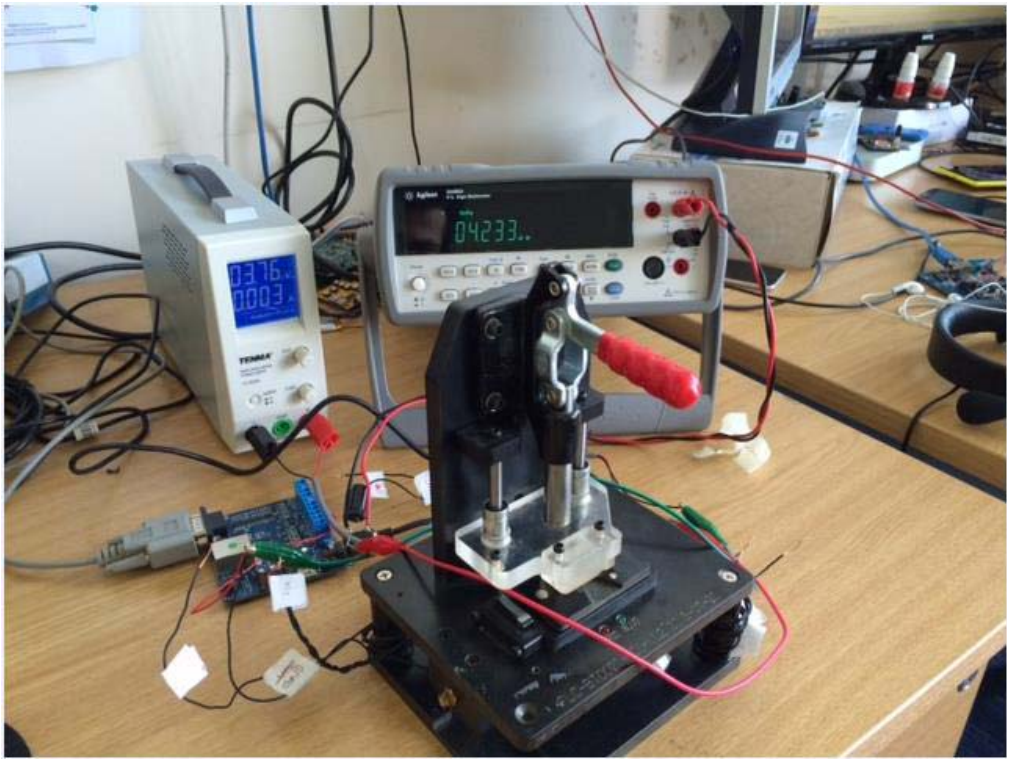

Figure 2-1: Setup Used

3: Set-up

1. Connect the module Vdd lines, through the analogue integrator following the Module and Integrator schematics.
2. Connect the module UART lines to the CSR DEV PC 1504C.
3. Connect the Agilent Multimeter to the Vmeas+ and Vmeas- nodes on the analogue integrator.
4. Configure the Agilent Multimeter for voltage measurements and set the range to the lowest supported. You do not need to enable any averaging functionality, as the analogue integrator will do that.
5. Set the Agilent power supply to 3V7, and current limit it to 100mA just in case.
6. Connect a common ground for the module, CSR DEV PC 1504C, and power supply.
7. Connect the positive terminal of the power supply to the 3V7 node of the Analogue integrator.
8. Connect UART/USB<->UART to your CSR DEV PC 1504C.
9. Open a Serial Terminal on your PC for the UART port used.
10. Briefly Connect the VREGEN pin of the module to Vdd - this will start the module.
11. You should see the Melody start prompt in your serial terminal.
12. Please follow the instruction in *Configuring Melody Audio 5.7 RC 10*.
13. You are now ready to start measuring different scenarios following the *Measurement Procedure*.

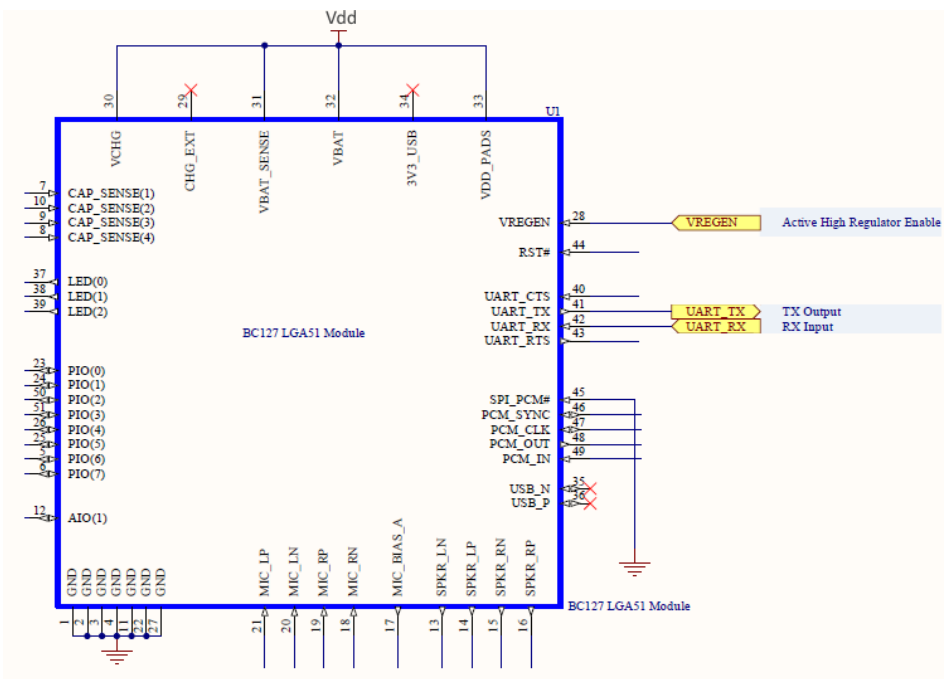

Figure 3-1: BC127 Module Connections

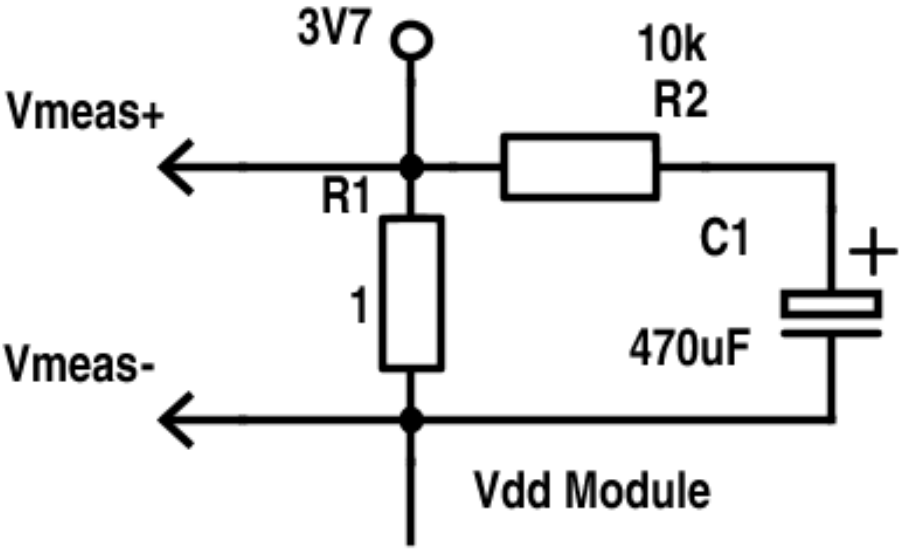

Figure 3-2: Analogue Integrator Schematics

4: Configuring Melody Audio 5.7 RC10

1. Make sure Melody Audio is using the default configuration
   ```
   RESTORE
   WRITE
   RESET
   ```
2. Disable LED indications
   ```
   SET ENABLE_LED=OFF
   WRITE
   RESET
   ```
3. To Enable Deep Sleep for deep Sleep tests
   ```
   SET DEEP_SLEEP=ON
   WRITE
   RESET
   ```

5: Measurement Procedure

1. Put Melody is desired state (eg. Connected, Streaming, In Call etc.).
2. Wait for reading on Multimeter to stabilise. This may take several tens of seconds.
3. Take steady state measurement for current state.
4. Repeat for as many tests/states is needed.
5. When DEEP SLEEP is ON, the BC127 will ignore the first characters over the UART as it is still be waking up. We used 4 \n followed by the command needed within 400ms (The DEEPSLEEP timeout).

6: Power Measurements

All measurements were made with UART connected to CSR DEV PC 1504C (except when noted otherwise).

Device used was LG G3, Running Android 5.0, Distance between Phone and Module 0.5m.

Table 6-1: Measurements

Melody Audio State	Current DEEP_SLEEP=OFF[mA]	Current DEEP_SLEEP=ON[mA]
Discoverable	4.8	1.3
Connectable	4.6	0.37[a] (0.75)
Connected (All profiles)	4.9	1.3
Connected active HFP Call, NB	13.9	13.9
Connected A2DP, SBC 44.1kHz	14.9	15.0
Connected SPP only[b]	4.9	0.56[a] (0.93)
Advertising only	4.9	1.5
Connected (BLE only)	5.0	2.4

a. This is when the UART is disconnected from test setup (removing 0.37ma leakage through CSR DEV PC 1504C), otherwise the value is 0.75mA.
b. When ENABLE_SPP_SNIFF=ON 800 800 2 1 30 and sniff mode has started and no data is being transferred.

Measurements taken on April 29, 2015.