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Modules

Migration Guide

RC76xx Series

February 2025

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Revision History

Revision number	Release date	Changes
1	February 03, 2020	Creation
1.1	March 03, 2020	Revision for HL information and CFE images
2	March 13, 2020	Update wordings on Mounting Guidelines
3	June 10, 2020	Formatting changes Under General Information: ▪ Added more details on Table 2-1 and Table 2-5 ▪ Revised Table 2-4 and Table 2-5 Under Hardware Migration: ▪ Added Table 3-5 and Table 3-6 ▪ Added Figure 3-2 ▪ Marked JTAG pins in Figure 3-4 ▪ Updated values on Table 3-13, Table 3-14, Table 3-15, Table 3-17 ▪ Added Digital Audio section
3.1	June 15, 2020	Minor edits
3.2	June 19, 2020	Revised Table 3-2, Table 3-3, and Table 4-4
4	July 09, 2020	Added WP migration guide details
4.1	August 26, 2020	Moved SDINFO and AVSTG to Unsupported AT Commands table
5	November 06, 2020	Added support for RC7630 series
6	July 08, 2021	Added new section on CMUX Limitation

Revision number	Release date	Changes
7	July 2023	Changed headers to reflect Migration Guide Changed title to RC76 Series Removed Patents section
8	February 2025	Applied Semtech manual template Changed cover title to RC76xx Series Added RC7630J (limited availability) electrical specification and environmental rating

Contents

1: Introduction

This document provides information for developers planning to migrate from Semtech HL75xx, HL76xx, and WP76xx modules to RC76xx modules.

RC76xx modules are CF3 (SMTC Common Form Factor 3) compatible with HL75xx, HL76xx, and WP76xx modules, sharing core characteristics (e.g., core functions in hardware interfaces and AT commands, environmental specifications, etc.)

Included in this document are summaries of specific RF, hardware, interface and regulatory differences between

Module variants covered in this migration guide include:

- HL75xx and HL76xx —HL7518, HL7548, HL7588x, HL7618RD, HL7648, HL7688, HL7650, HL7690, HL7692, HL7528, HL7539
- RC76xx—RC7611, RC7611-1, RC7620, RC7620-1, RC7630, RC7630-1, RC7630J*
- WP76xx—WP7601, WP7601-1, WP7603, WP7603-1, WP7610, WP7611, WP7611-1, WP7607, WP7607-1, WP7609, WP7605

Important: **RC7630J modules have limited availability.*

Note: This document summarizes key differences between modules. For detailed module specifications, including module-specific current consumption and RF sensitivity measurements, refer to the Product Technical specification documents listed under Reference Documents.

1.1 HL Series to RC Series

Table 1-1 lists HL series modules and the recommended band/region-compatible RC76xx modules for migration.

Table 1-1: HL to RC Series Compatibility

HL Modules	Compatible RC76xx Modules
HL7518 HL7548 HL7588x HL7618RD HL7648 HL7688	RC7611 RC7611-1
HL7650 HL7690 HL7692	RC7620 RC7620-1
HL7528 HL7539	RC7630 RC7630-1 RC360J

1.2 WP Series to RC Series

Table 1-2 lists HL series modules and the recommended band/region-compatible RC76xx modules for migration.

Table 1-2: WP to RC Series Compatibility

WP Modules	Compatible RC76xx Modules
WP7601 WP7601-1 WP7603 WP7603-1 WP7610 WP7611 WP7611-1	RC7611 RC7611-1
WP7607 WP7607-1 WP7609	RC7620 RC7620-1
WP7605	RC7630 RC7630-1 RC7630J

2: Features

2.3 Features Comparison for HL75xx and HL76xx to RC7611 Series

Table 2-1 summarizes key features available in RC7611, RC7611-1, HL75xx, and HL76xx modules. For feature details, see Pinout—RC76xx Series and HL75xx/HL76xx Series.

Table 2-1: Features Comparison for HL75xx and HL76xx to RC7611 Series

Features	HL7518	HL7548	HL7588x	HL7618RD	HL7648	HL7688	RC7611	RC7611-1
SIM / USIM								
SIM / USIM Support	Yes			Yes			Yes	
Dual SIM Single Standby	Yes			Yes			Yes	
LTE	Dual-band LTE (AWS (B4), 700 MHz (B13))	Quad-band LTE B2 (1900 PCS), B4 (AWS-1), B5 (850), B17 (700 b)	Penta-band LTE B2 (1900 PCS), B4(AWS-1), B5(850), B13(700 c), B17(700 b)	Dual-band LTE (AWS (B4), 700 MHz (B13))	Triple-band, LTE 1900MHz (B2), 1700MHz (B4), 700 MHz (B12) with MFBI	Quad-band LTE B2 (1900 PCS), B4 (AWS-1), B5 (850), B17 (700 b)	LTE: B2, B4, B5, B12, B13, B14, B25, B26, B66, B71	
Protocol Stack								
LTE Category	Cat-4			Cat-1			Cat-4	Cat-1
Single-mode LTE	Yes			Yes			Yes	
UMTS	No		Dual-band	No		Dual-band	No	
VoLTE	No		HL7588V only	Basic VoLTE call (MO / MT)	Basic VoLTE call (MO / MT)	No	Yes	
HSDPA	No		Yes	No		Yes	No	
HSUPA	No		Yes	No		Yes	No	

Table 2-1: Features Comparison for HL75xx and HL76xx to RC7611 Series

Features		HL7518	HL7548	HL7588x	HL7618RD	HL7648	HL7688	RC7611	RC7611-1
Interfaces									
Radio	Main Antenna	Yes			Yes			Yes	
	Antenna Control	No			No			ANT_CNTL[0:3]	
	Diversity Antenna	Yes			Yes			Yes	
	GNSS Antenna	No			No			Yes	
	DR_SYNC	No			No			Yes	
	EXT_GPS_LNA_EN	No			No			Yes	
Power	VBATT	3-wire [3.2 - 4.5V]			3-wire [3.2 - 4.5V]			5-wire [3.2 - 4.3V]	
	BAT_RTC	1.8V			1.8V			No	
	VGPIO	1.8V			1.8V			1.8V	
Control	RESET_IN_N	Yes			Yes			Yes	
	PWR_ON_N	Yes			Yes			Yes	
	TP1 (Boot Pin)	No			No			Yes	
	W_DISABLE_N	No			No			Yes	
Indication	TX_ON	No	No	Yes	Yes			Yes	
	WWAN_LED_N	No			No			Yes	
	WAKE_ON_WWAN	No			No			Yes	
	SAFE_PWR_REMOVE	No			No			Yes	

Table 2-1: Features Comparison for HL75xx and HL76xx to RC7611 Series

Features		HL7518	HL7548	HL7588x	HL7618RD	HL7648	HL7688	RC7611	RC7611-1
Communication	USB 2.0	Yes			Yes			Yes	
	UART1	8-wire	4-wire	8-wire	8-wire			8-wire	
	UART2	No			No			4-wire	
	I2C	No			No			Yes	
	SPI	No			No			Yes	
	TRACE 5-wire	Yes			Yes			No	
Debug	JTAG	7-wire			7-wire			9-wire	
UIM	UIM1	1.8V/3V SIM			1.8V/3V SIM			1.8V/3V SIM	
	UIM2	No			No			Yes	
	eSIM	No			No			Yes	
GPIO		14 x GPIOs (3 x Multiplexed)	13 x GPIOs (3 x Multiplexed)	12 x GPIOs (2 x Multiplexed)	12 x GPIOs (2 x Multiplexed)			19 x GPIOs (4 x Multiplexed)	
ADC		No	1 x ADC [0V - 1.2V]		2 x ADC [0V - 1.2V]		1 x ADC [0V - 1.2V]	2 x ADC [0.1V - 1.17V]	
Clock	System Clock	26 MHz			26 MHz			19.2 MHz	
	Sleep Clock	32.768 kHz			32.768 kHz			32.768 kHz	
Digital Audio		4-wire PCM	No	4-wire PCM	4-wire PCM			4-wire PCM / I2S	
Mechanical									
Small Form Factor		23mm x 22mm x 2.5mm (nominal)			23mm x 22mm x 2.5mm (nominal)			23mm x 22mm x 2.5mm (nominal)	

2.4 Features Comparison for HL76xx to RC7620 Series

Table 2-2 summarizes key features available in RC7620, RC7620-1, and HL76xx modules. For feature details, see Pinout—RC76xx Series and HL75xx/HL76xx Series.

Table 2-2: Features Comparison for HL76xx to RC7620 Series

Features	HL7650	HL7690	HL7692	RC7620	RC7620-1
SIM / USIM					
LTE	Quad-band B3, B5, B8, B28	Tri-band LTE (1800 MHz (B3), 900 MHz (B8) and 800 MHz (B20))		LTE: B1, B3, B7, B8, B20, B28	
Dual-band GSM/GPRS/EDGE	No		900 MHz and 1800 MHz	900 MHz and 1800 MHz	
Dual SIM Single Standby	Yes			Yes	
SIM / USIM Support	Yes			Yes	
Protocol Stack					
LTE Category	Cat-4	Cat-1		Cat-4	Cat-1
Single-mode LTE	No	Yes	No	Yes	
VoLTE	No			Yes	
UMTS	Tri-band UMTS (B1, B5, and B8)	No		UMTS: B1, B8	
GSM / GPRS / EDGE	No		Yes	Yes	
HSDPA	Yes		No	Yes	
HSUPA	Yes		No	Yes	
Interfaces					

Table 2-2: Features Comparison for HL76xx to RC7620 Series (Continued)

Features		HL7650	HL7690	HL7692	RC7620	RC7620-1
Radio	Main Antenna	Yes			Yes	
	Antenna Control	No			ANT_CNTL[0:3]	
	Diversity Antenna	Yes			Yes	
	GNSS Antenna	No			Yes	
	DR_SYNC	No			Yes	
	EXT_GPS_LNA_EN	No			Yes	
Power	VBATT	3-wire [3.2 - 4.5V]			5-wire [3.2 - 4.3V]	
	BAT_RTC	1.8V			No	
	VGPIO	1.8V			1.8V	
Control	RESET_IN_N	Yes			Yes	
	PWR_ON_N	Yes			Yes	
	TP1 (Boot Pin)	No			Yes	
	W_DISABLE_N	No			Yes	
Interfaces						
Indication	TX_ON	Yes			Yes	
	WWAN_LED_N	No			Yes	
	WAKE_ON_WWAN	No			Yes	
	SAFE_PWR_REMOVE	No			Yes	
Communication	USB 2.0	Yes			Yes	
	UART1	8-wire			8-wire	
	UART2	No			4-wire	
	I2C	No			Yes	
	SPI	No			Yes	

Table 2-2: Features Comparison for HL76xx to RC7620 Series (Continued)

Features		HL7650	HL7690	HL7692	RC7620	RC7620-1
Debug	TRACE 5-wire	Yes			No	
	JTAG	7-wire			9-wire	
UIM	UIM1	1.8V / 3V SIM			1.8V / 3V SIM	
	UIM2	No			Yes	
	eSIM	No			Yes	
GPIO		12 x GPIOs (2 x Multiplexed)		13 x GPIOs (3 x Multiplexed)	19 x GPIOs (4 x Multiplexed)	
ADC		2 x ADC [0V - 1.2V]			2 x ADC [0.1V - 1.17V]	
Clock	System Clock	26 MHz			19.2 MHz	
	Sleep Clock	32.768 kHz			32.768 kHz	
Digital Audio		4-wire PCM	No	4-wire PCM	4-wire PCM / I2S	
Mechanical						
Small Form Factor		23mm x 22mm x 2.5mm (nominal)			23mm x 22mm x 2.5mm (nominal)	

2.5 Features Comparison for HL75xx to RC7630 Series

Table 2-3 summarizes key features available in RC7630, RC7630-1, RC7630J, HL7528, and HL7538 modules. For feature details, see Pinout—RC76xx Series and HL75xx/HL76xx Series.

Table 2-3: Features Comparison for HL75xx to RC7630 Series

Features		HL7528	HL7539	RC7630	RC7630-1	RC7630J
SIM / USIM						
LTE		LTE: B1, B3, B5, B7	LTE: B1, B19, B21	LTE: B1, B3, B5, B7, B8, B18, B19, B21		B1 , B3 , B5 , B18 , B19
UMTS		No		No		
Dual SIM Single Standby		No		Yes		
SIM/USIM support		Yes		Yes		
Protocol Stack						
LTE Category		Cat-4		Cat-4	Cat-1	Cat-4
Single-mode LTE		Yes		Yes		
Voice over LTE		Yes		Yes		
HSDPA		No		No		
HSUPA		No		No		
Interfaces						
Radio	Main antenna	Yes		Yes		
	Antenna control	No		ANT_CNTL[0:3]		
	Diversity antenna	Yes		Yes		
	GNSS antenna	No		Yes		
	DR_SYNC	No		Yes		
	EXT_GPS_LNA_EN	No		Yes		

Table 2-3: Features Comparison for HL75xx to RC7630 Series (Continued)

Features		HL7528	HL7539	RC7630	RC7630-1	RC7630J
Power	VBATT	3-wire [3.2 - 4.5V]		5-wire [3.2- 4.3V]		
	BAT_RTC	1.8V		No		
	VGPIO	1.8V		1.8V		
Control	RESET_IN_N	Yes		Yes		
	PWR_ON_N	Yes		Yes		
	TP1 (Boot pin)	No		Yes		
	W_DISABLE_N	No		Yes		
Indication	TX_ON	Yes		Yes		
	WWAN_LED_N	No		Yes		
	WAKE_ON_WWAN	No		Yes		
	SAFE_PWRT_REMOVE	No		Yes		
Communication	USB 2.0	Yes		Yes		
	UART1	8-wire		8-wire		
	UART2	No		4-wire		
	I2C	No		Yes		
	SPI	No		Yes		
Debug	TRACE 5-wire	Yes		No		
	JTAG	7-wire		9-wire		
UIM	UIM1	1.8V/3V SIM		1.8V/3V SIM		
	UIM2	No		Yes		
	eSIM	No		Yes		
GPIO		14 x GPIOs (3 x Multiplexed)		19 x GPIOs (4 x Multiplexed)		
ADC		1 x ADC [0V - 1.2V]		2 x ADC [0.1V - 1.17V]		

Table 2-3: Features Comparison for HL75xx to RC7630 Series (Continued)

Features		HL7528	HL7539	RC7630	RC7630-1	RC7630J
Clock	**System clock**	26MHz		19.2MHz		
	Sleep clock	32.768kHz		32.768kHz		
Digital audio		4-wire PCM		4-wire PCM/I2S		
Mechanical						
Small Form Factor		23mm x 22mm x 2.5mm (nominal)		23mm x 22mm x 2.5mm (nominal)		

2.6 Features Comparison for WP76xx to RC7611 Series

Table 2-4 summarizes key features available in the specified WP7601, WP7601-1,WP7603, WP7603-1, WP7610, WP7611, WP7611-1, RC7611, and RC7611-1 modules. For feature details, see Pinout—RC76xx Series and WP76xx Series.

Table 2-4: Features Comparison for WP76xx to RC7611 Series

Features		WP7601	WP7601-1	WP7603	WP7603-1	WP7610	WP7611	WP7611-1	RC7611	RC7611-1
SIM / USIM										
LTE		LTE: B4, B13		LTE: B2, B4, B5, B12		LTE: B2, B4, B5, B12, B13, B14, B17, B66	LTE: B2, B4, B5, B12, B13, B14, B25, B26, B66, B71		LTE: B2, B4, B5, B12, B13, B14, B25, B26, B66, B71	
UMTS		No		Yes		Yes	Yes		No	
Dual SIM Single Standby		Yes							Yes	
SIM / USIM Support		Yes							Yes	
Protocol Stack										
LTE Category		Cat-4	Cat-1	Cat-4	Cat-1	Cat-4	Cat-4	Cat-1	Cat-4	Cat-1
Single-mode LTE		Yes							Yes	
VoLTE		No		No		Yes	Yes		Yes	
HSDPA		No		Yes		Yes	Yes		No	
HSUPA		No		Yes		Yes	Yes		No	
Interfaces										
Radio	Main Antenna	Yes							Yes	
	Antenna Control	ANT_CNTL[0:3]		ANT_CNTL[0:3]		Yes	Yes		ANT_CNTL[0:3]	
	Diversity Antenna	Yes							Yes	
	GNSS Antenna	Yes							Yes	
	DR_SYNC	Yes							Yes	
	EXT_GPS_LNA_EN	Yes							Yes	

Table 2-4: Features Comparison for WP76xx to RC7611 Series (Continued)

Features		WP7601	WP7601-1	WP7603	WP7603-1	WP7610	WP7611	WP7611-1	RC7611	RC7611-1
Power	**VBATT**	5-wire [3.4 - 4.3V] pins 63,158,61,62,157							5-wire [3.2 - 4.3V]	
	BAT_RTC	1.8V		1.8V		No	No		No	
	VGPIO	1.8V							1.8V	
Control	**RESET_IN_N**	Yes							Yes	
	PWR_ON_N	Yes							Yes	
	TP1 (Boot Pin)	Yes							Yes	
	W_DISABLE_N	Yes							Yes	
Indication	**TX_ON**	Yes							Yes	
	WWAN_LED_N	Yes							Yes	
	WAKE_ON_WWAN	Yes							Yes	
	SAFE_PWR_REMOVE	Yes							Yes	
Communication	**USB 2.0**	Yes							Yes	
	UART1	8-wire		8-wire		Yes	Yes		8-wire	
	UART2	Yes							4-wire	
	I2C	Yes							Yes	
	SPI	Yes							Yes	
Debug	**JTAG**	Yes							9-wire	
UIM	**UIM1**	Yes		Yes					1.8V/3V SIM	
	UIM2	Yes		Yes					Yes	
	eSIM	Yes		Yes					Yes	
GPIO		24 x GPIOs		24 x GPIOs		19 x GPIOs	19 x GPIOs		19 x GPIOs (4 x Multiplexed)	
HSIC		2 x 2-wire HSIC bus							No	

Table 2-4: Features Comparison for WP76xx to RC7611 Series (Continued)

Features		WP7601	WP7601-1	WP7603	WP7603-1	WP7610	WP7611	WP7611-1	RC7611	RC7611-1
SDIO		6 X 1.8 V/2.85 V SDIO interface (SD 2.0-compliant)							No	
ADC		2xADC [0.1-1.7V] 2xADC [0-1.8V]	2 x ADC [0V - 1.2V]	2xADC [0.1-1.7V] 2xADC [0-1.8V]	2 x ADC [0V - 1.2V]	2 x ADC [0.1-1.7V]	2 x ADC [0.1-1.7V]		2 x ADC [0.1V - 1.17V]	
Clock	**System Clock**	19.2 MHz							19.2 MHz	
	Sleep Clock	32.768 kHz							32.768 kHz	
Digital Audio		4-wire PCM							4-wire PCM	
Mechanical										
Small Form Factor		23mm x 22mm x 2.5mm (nominal)							23mm x 22mm x 2.5mm (nominal)	

2.7 Features Comparison for WP76xx to RC7620 Series

Table 2-5 summarizes key features in the specified WP7607, WP7607-1, WP7609, RC7620, and RC7620-1 modules. For feature details, see Pinout—RC76xx Series and WP76xx Series.

Table 2-5: Features Comparison for WP76xx to RC7620 Series

Key Features	WP7607	WP7607-1	WP7609	RC7620	RC7620-1
SIM / USIM					
LTE	LTE: B1, B3, B7, B8, B20, B28		LTE: B1, B3, B5, B7, B8, B28	LTE: B1, B3, B7, B8, B20, B28	
UMTS	UMTS: B1, B8		UMTS: B1, B5, B8	UMTS: B1, B8	
Dual-band GSM/GPRS/EDGE	900 MHz and 1800 MHz		900 MHz and 1800 MHz	900 MHz and 1800 MHz	
Dual SIM Single Standby	Yes		Yes	Yes	
SIM / USIM Support	Yes		Yes	Yes	
Protocol Stack					
LTE Technology	Cat-4	Cat-1	Cat-4	Cat-4	Cat-1
Single-mode LTE	No		No	Yes	
VoLTE	Yes		Yes	Yes	
UMTS	Yes		Yes	Yes	
GSM / GPRS / EDGE	Yes		Yes	Yes	
HSDPA	Yes		Yes	Yes	
HSUPA	Yes		Yes	Yes	

Table 2-5: Features Comparison for WP76xx to RC7620 Series (Continued)

Key Features		WP7607	WP7607-1	WP7609	RC7620	RC7620-1
Interfaces						
Radio	Main Antenna	Yes		Yes	Yes	
	Antenna Control	Yes		Yes	ANT_CNTL[0:3]	
	Diversity Antenna	Yes		Yes	Yes	
	GNSS Antenna	Yes		Yes	Yes	
	DR_SYNC	Yes		Yes	Yes	
	EXT_GPS_LNA_EN	Yes		Yes	Yes	
Power	VBATT	5-wire [3.4 - 4.3V] pin 63,158, 61, 62, 157		5-wire [3.4 - 4.3V] pin 63,158, 61, 62, 157	5-wire [3.2 - 4.3V]	
	BAT_RTC	No		No	No	
	VGPIO	1.8V		1.8V	1.8V	
Control	RESET_IN_N	Yes		Yes	Yes	
	PWR_ON_N	Yes		Yes	Yes	
	TP1 (Boot Pin)	Yes		Yes	Yes	
	W_DISABLE_N	Yes		Yes	Yes	
Interfaces						
Indication	TX_ON	Yes		Yes	Yes	
	WWAN_LED_N	Yes		Yes	Yes	
	WAKE_ON_WWAN	Yes		Yes	Yes	
	SAFE_PWR_REMOVE	Yes		Yes	Yes	

Table 2-5: Features Comparison for WP76xx to RC7620 Series (Continued)

Key Features		WP7607	WP7607-1	WP7609	RC7620	RC7620-1
Communication	USB 2.0	Yes		Yes	Yes	
	UART1	Yes		Yes	8-wire	
	UART2	Yes		Yes	4-wire	
	I2C	Yes		Yes	Yes	
	SPI	Yes		Yes	Yes	
Debug	JTAG	9-wire		9-wire	9-wire	
UIM	UIM1	Yes		Yes	1.8V / 3V SIM	
	UIM2	Yes		Yes	Yes	
	eSIM	Yes		Yes	Yes	
GPIO		24 X GPIOs		24 X GPIOs	19 x GPIOs (4 x Multiplexed)	
HSIC		2 x 2-wire HSIC bus		2 x 2-wire HSIC bus	No	
GPIO		6 X 1.8 V/2.85 V SDIO interface (SD 2.0-compliant)		6 X 1.8 V/2.85 V SDIO interface (SD 2.0-compliant)	No	
ADC		2 x ADC [0.1V - 1.17V]		2 x ADC [0.1V - 1.17V]	2 x ADC [0.1V - 1.17V]	
Clock	System Clock	19.2 MHz		19.2 MHz	19.2 MHz	
	Sleep Clock	32.768 kHz		32.768 kHz	32.768 kHz	
Digital Audio		4-wire PCM / I2S		4-wire PCM / I2S	4-wire PCM / I2S	
Mechanical						
Small Form Factor		23mm x 22mm x 2.5mm (nominal)		23mm x 22mm x 2.5mm (nominal)	23mm x 22mm x 2.5mm (nominal)	

2.8 Features Comparison for WP76xx to RC7630 Series

Table 2-6 summarizes key features available in the specified WP7605, RC7630, RC7630-1 and RC7630J modules. For feature details, see Pinout—RC76xx Series and WP76xx Series.

Table 2-6: Features Comparison for WP7605 to RC7630 Series

Key Features	WP7605	RC7630	RC7630-1	RC7630J
SIM / USIM				
LTE	LTE: B1, B3, B8, B11, B18, B19, B21	LTE: B1, B3, B5, B7, B8, B18, B19, B21		B1 , B3 , B5 , B18 , B19
UMTS	B1, B6, B19	No		
Dual SIM Single Standby	Yes	Yes		
SIM / USIM Support	Yes	Yes		
Protocol Stack				
LTE Category	Cat-4	Cat-4	Cat-1	Cat-4
Single-mode LTE	Yes	Yes		
VoLTE	No	Yes		
UMTS	Yes	No		
GSM/GPRS/EDGE	No	No		
HSDPA	Yes	No		
HSUPA	Yes	No		
Interfaces				

Table 2-6: Features Comparison for WP7605 to RC7630 Series

Key Features		WP7605	RC7630	RC7630-1	RC7630J
Radio	Main antenna	Yes	Yes		
	Antenna control	Yes	ANT_CNTL[0:3]		
	Diversity antenna	Yes	Yes		
	GNSS antenna	Yes	Yes		
	DR_SYNC	Yes	Yes		
	EXT_GPS_LNA_EN	Yes	Yes		
Power	VBATT	5-wire [3.4 - 4.3V]	5-wire [3.2 - 4.3V]		
	BAT_RTC	No	No		
	VGPIO	1.8V	1.8V		
Control	RESET_IN_N	Yes	Yes		
	PWR_ON_N	Yes	Yes		
	TP1 (Boot pin)	Yes	Yes		
	W_DISABLE_N	Yes	Yes		
Indication	TX_ON	Yes	Yes		
	WWAN_LED_N	Yes	Yes		
	WAKE_ON_WWAN	Yes	Yes		
	SAFE_PWR_REMOVE	Yes	Yes		
Communication	USB 2.0	Yes	Yes		
	UART1	Yes	8-wire		
	UART2	Yes	4-wire		
	I2C	Yes	Yes		
	SPI	Yes	Yes		
Debug	JTAG	Yes	9-wire		

Table 2-6: Features Comparison for WP7605 to RC7630 Series

Key Features		WP7605	RC7630	RC7630-1	RC7630J
UIM	UIM1	Yes	1.8V/3V SIM		
	UIM2	Yes	Yes		
	eSIM	Yes	Yes		
GPIO		19 x GPIOs	19 x GPIOs (4 x Multiplexed)		
HSIC		2 x 2-wire HSIC bus	No		
SDIO		6 X 1.8V/2.85V SDIO interface (SD 2.0-compliant)	No		
ADC		2 x ADC [0.1V - 1.7V]	2 x ADC [0.1V - 1.7V]		
Clock	System clock	19.2MHz	19.2MHz		
	Sleep clock	32.768kHz	32.768kHz		
Digital audio		4-wire PCM/I2S	4-wire PCM/I2S		
Mechanical					
Small Form Factor		23mm x 22mm x 2.5mm (nominal)	23mm x 22mm x 2.5mm (nominal)		

3: Regulatory Compliance, Industry Certifications, Carrier Approvals

3.9 RC76xx Series and HL75xx/HL76xx Series

Table 3-1 lists the regional carrier approvals, regulatory compliance, and industry certifications for RC76xx and HL7xxx series modules. For detailed information, refer to the RC76xx and HL75xx/HL76xx Series Product Technical Specification listed under Reference Documents.

Table 3-1: RC76xx and HL Series Regulatory Compliance, Industry Certifications, Carrier Approvals

Module	Regions	Carrier Approvals (Region-specific)															Regulatory Compliance									Industry Certifications	
		ATT	DCM	KDDI	KPN	KT	LGU+	NTT	RCI	SKT	SPR	SWI	TLS	TMO	VOD	VZW	ANT	CE	FCC	IC	JRA/ JRF	KC	NCC	RCM	RED	GCF	PTCRB
RC7611 RC7611-1	Americas	Y	-	-	-	-	-	-	-	-	Y	Y	-	Y	-	Y	-	-	Y	Y	-	-	-	-	-	Y	Y
HL7518	Americas	-	-	-	-	-	-	-		-	-	-	-	-	-	Y	-	-	Y	-	-	-	-	-	-	Y	Y
HL7548		Y	-	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	Y	Y	-	-	-	-	-	-	Y
HL7588x		Y	-	-	-	-	-	-	-	-	-	Y[a]	-	-	-	Y	-	-	Y	Y	-	-	-	-	-	Y	Y
HL7618RD		-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y		-	Y	-	-	-	-	-	-	Y	-
HL7648		Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y
HL7688		Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	-	-	-	-	-	-	Y
RC7620 RC7620-1	Australia EMEA	-	-	-	-	-	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-	Y	Y	Y	Y	-
HL7650	Australia	-	-	-	-	-	-	-	-	-	-	-	Y	Y	-	-	-	Y	-	-	-	-	-	Y	-	Y	-
HL7690	EMEA	-	-	-	Y	-	-	-	-	-	-	-	-	-	-	-	-	Y	-	-	-	-	-	-	-	Y	-
HL7692		-	-	-	-	-	-	-	-	-	-	Y	-	-	Y	-	-	Y	-	-	-	-	-	-	-	Y	-
RC7630 RC7630-1	Korea Japan	-	Y[a]	Y[a]	-	Y[a]	Y[a]	-	-	Y	-	Y[a]	-	-	-	-	-	-	-	-	Y	Y	-	-	-	Y	-
RC7630J	Japan	-	Y[a]	Y[a]	-	-	-	-	-	-	-	Y[a]	-	-	-	-	-	-	-	-	Y	-	-	-	-	Y	-

Table 3-1: RC76xx and HL Series Regulatory Compliance, Industry Certifications, Carrier Approvals (Continued)

Module	Regions	Carrier Approvals (Region-specific)															Regulatory Compliance									Industry Certifications	
		ATT	DCM	KDDI	KPN	KT	LGU+	NTT	RCI	SKT	SPR	SWI	TLS	TMO	VOD	VZW	ANT	CE	FCC	IC	JRA/ JRF	KC	NCC	RCM	RED	GCF	PTCRB
HL7528	Korea					Y	Y	-		Y												Y					
HL7539	Japan							Y												Y							

a. Planned.

3.10 RC76xx Series and WP76xx Series

Table 3-2 lists the regional carrier approvals, regulatory compliance, and industry certifications for RC76xx and WP76xx series modules. For detailed information, refer to the RC76xx Product Technical Specification and WP76xx Product Technical Specification listed under Reference Documents.

Table 3-2: RC76xx and WP76xx Regulatory Compliance, Industry Certifications, Carrier Approvals

Module	Regions	Carrier Approvals (Region-specific)																Regulatory Compliance									Industry Certifications	
		ATT	DCM	DTE	KDDI	KPN	KT	LGU+	NTT	RCI	SKT	SPR	SWI	TLS	TMO	VOD	VZW	ANT	CE	FCC	IC	JRA/ JRF	KC	NCC	RCM	RED	GCF	PTCRB
RC7611 RC7611-1	Americas	Y[a]	-		-	-	-	-	-	-	-	Y	Y	-	Y	-	Y	-	-	Y	Y	-	-	-	-	-	Y	Y
WP7601 WP7601-1	Americas	-	-		-	-	-	-	-	-	-	-	-	-	-	-	Y	-	-	Y	Y	-	-	-	-	-	Y	-
WP7603 WP7603-1		Y[a]	-		-	-	-	-	-	-	-	-	Y	-	-	-	Y	-	-	Y	Y	-	-	-	-	-	-	Y
WP7610		Y[a]	-		-	-	-	-	-	-	-	-	Y	Y[b]	-	-	Y	-	-	Y	Y	-	-	-	-	-	Y	Y
WP7611 WP7611-1		Y[a]	-		-	-	-	-	-	-	-	Y	Y	-	Y	-	Y	-	-	Y	Y	-	-	-	-	-	Y	Y
RC7620 RC7620-1	Australia EMEA	-	-		-	-	-	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-	Y	Y	Y	Y	-
WP7607 WP7607-1	EMEA	-	-	Y	-	-	-	-	-	-	-	-	Y	-	-	Y	-	-	-	-	-	-	-	Y	-	Y	Y	-
WP7609	Australia Brazil Korea	-	-	-	-	-	-	Y	-	-	-	-	Y	Y	-	-	-	Y	-	-	-	-	Y	-	Y	-	Y	-
RC7630 RC7630-1	Korea Japan	-	Y[a]		Y[a]	-	Y[a]	Y[a]	-	-	Y	-	Y[a]	-	-	-	-	-	-	-	-	Y	Y	-	-	-	Y	-
RC7630J	Japan	-	Y[a]		Y[a]	-	-	-	-	-	-	-	Y[a]	-	-	-	-	-	-	-	-	Y	-	-	-	-	Y	-
WP605	Japan	-	Y	-	-	-	-	-	Y[b,c]	-	-	-	-	-	-	-	-	-	-	Y	Y	Y	-	-	-	-	-	-

a. FirstNet
b. Data only.
c. LTE only.

4: Hardware Compatibility

4.11 Supported RF Bands—RC76xx Series and HL75xx/HL76xx Series

For detailed information, refer to the RC76xx and HL75xx/HL76xx Series Product Technical Specification listed under Reference Documents.

4.11.1 LTE and UMTS

Table 4-1 indicates all supported bands (LTE and UMTS) for RC76xx Series and HL75xx/HL76xx Series modules.

Table 4-1: Supported RF Bands—LTE and UMTS

	LTE																				UMTS				
Module	B1	B2	B3	B4	B5	B7	B8	B12	B13	B14	B17	B18	B19	B20	B21	B25	B26	B28	B66	B71	B1	B2	B4	B5	B8
RC7611 RC7611-1		Y		Y	Y			Y	Y	Y						Y	Y		Y	Y					
HL7518				Y					Y																
HL7548		Y		Y	Y				Y		Y											Y		Y	
HL7588x		Y		Y	Y				Y		Y											Y		Y	
HL7618RD				Y					Y																
HL7648		Y		Y				Y																	
HL7688		Y		Y	Y						Y											Y			Y
RC7620 RC7620-1	Y		Y			Y	Y							Y				Y			Y				Y
HL7650			Y		Y		Y											Y			Y			Y	Y
HL7690			Y				Y							Y											
HL7692			Y				Y							Y											

Table 4-1: Supported RF Bands—LTE and UMTS (Continued)

	LTE																				UMTS				
Module	B1	B2	B3	B4	B5	B7	B8	B12	B13	B14	B17	B18	B19	B20	B21	B25	B26	B28	B66	B71	B1	B2	B4	B5	B8
RC7630 RC7630-1	Y		Y		Y	Y	Y					Y	Y		Y										
RC7630J	Y		Y		Y							Y	Y												
HL7528	Y		Y		Y	Y																			
HL7539	Y												Y		Y										

4.11.2 GSM/GPRS/EDGE and GNSS

Table 4-2 indicates all supported bands (GSM/GPRS/EDGE and GNSS) for RC76xx Series and HL75xx/HL76xx Series modules.

Table 4-2: Supported RF Bands—GSM/GPRS/EDGE and GNSS

	GSM/GPRS/EDGE		GNSS				
Module	E-GSM 900	DCS 1800	GPS	GLONASS	Galileo	BeiDou	QZSS
RC7611 RC7611-1			Y[a]	Y	Y	Y	
HL7518							
HL7548							
HL7588x							
HL7618RD							
HL7648							
HL7688							
RC7620 RC7620-1	Y	Y	Y[a]	Y	Y	Y	
HL7650							
HL7690							
HL7692	Y	Y					
RC7630 RC7630-1 RC7630J			Y[a]	Y	Y	Y	Y
HL7528							
HL7539							

a. SKU-dependent.

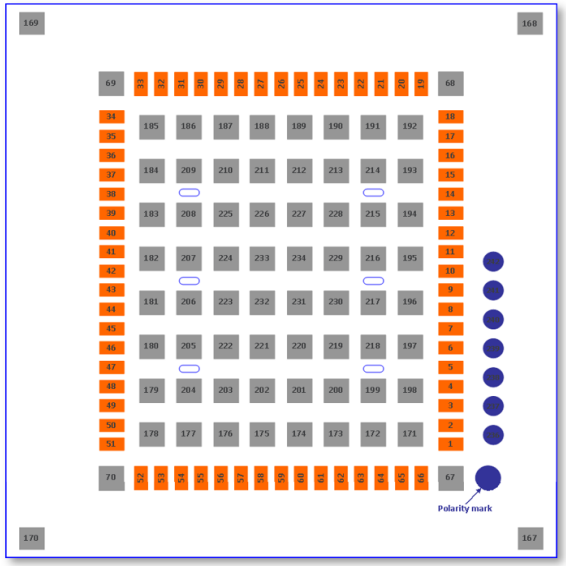
4.12 Pin Comparison—HL Series to RC Series

The following table and images show a comparative view of the HL and the RC modules based from their Ring C and Ring D pins.

Note:

- ***Ring C*** *(marked in orange) has 66 pins.*
- ***Ring D*** *(marked in violet) has 91 pins.*
- ***Pins marked in gray,*** *within Ring C and Ring D, are all ground pins.*

HL75/76 Series Module



RC76 Series Module

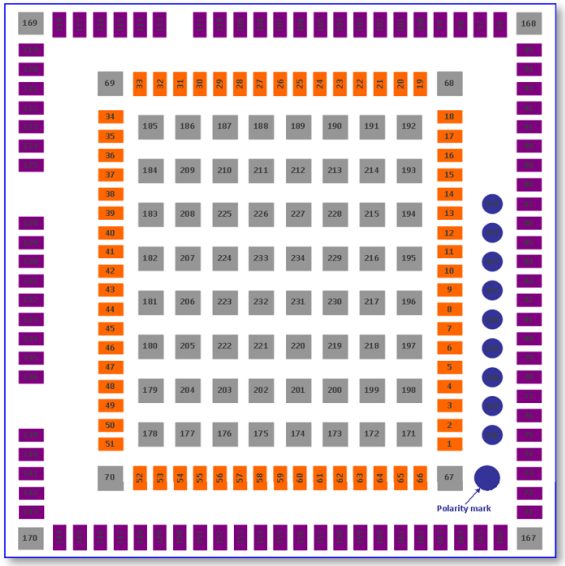


Figure 4-1: HL Series vs. RC Series pins

4.12.1 Pinout—RC76xx Series and HL75xx/HL76xx Series

The following tables show a comparative overview of available pins in the RC76xx Series and HL75xx/HL76xx Series and their specific functionalities.

Note: Some pin numbers (112, 126, 127, 137, 138, 235) do not appear in this table because there are no corresponding pads on the module's PCB.

4.12.1.1 RC76xx Series vs. HL75xx and HL76xx Series Pins

For complete pin details, refer to the RC76xx and HL75xx/HL76xx Series Product Technical Specification listed under Reference Documents.

Table 4-3: RC76xx Series vs. HL75xx and HL76xx Series Pins

Pin #	RC76xx Series	HL7518	HL7528	HL7539	HL7548	HL7588x	HL7618RD	HL7648	HL7650	HL7688	HL7690	HL7692
Ring C Ring D Ground Pin	Signal Name	Signal Name					Signal Name					
1	I2C1_CLK	GPIO1					GPIO1					
2	UART1_RI[a]	UART1_RI/ TRACE_DATA3	UART1_RI/ TRACE_DATA3	UART1_RI/ TRACE_DATA3	TRACE_DATA3	UART1_RI/ TRACE_DATA3	UART1_RI/TRACE_DATA3					
3	UART1_RTS	UART1_RTS					UART1_RTS					
4	UART1_CTS	UART1_CTS					UART1_CTS					
5	UART1_TX	UART1_TX					UART1_TX					
6	UART1_RX	UART1_RX					UART1_RX					
7	UART1_DTR	UART1_DTR	UART1_DTR	UART1_DTR	Not Connected	UART1_DTR	UART1_DTR					
8	UART1_DCD[a]	UART1_DCD / TRACE_DATA1	UART1_DCD / TRACE_DATA1	UART1_DCD / TRACE_DATA1	TRACE_DATA1	UART1_DCD / TRACE_DATA1	UART1_DCD / TRACE_DATA1					
9	UART1_DSR[a]	UART1_DSR / TRACE_DATA0	UART1_DSR / TRACE_DATA0	UART1_DSR / TRACE_DATA0	TRACE_DATA0	UART1_DSR / TRACE_DATA0	UART1_DSR / TRACE_DATA0					
10	GPIO2	GPIO2 / TRACE_DATA2					GPIO2 / TRACE_DATA2					
11	RESET_IN_N	RESET_IN_N					RESET_IN_N					

Table 4-3: RC76xx Series vs. HL75xx and HL76xx Series Pins (Continued)

Pin # Ring C Ring D Ground Pin	RC76xx Series Signal Name	HL7518	HL7528	HL7539	HL7548	HL7588x	HL7618RD	HL7648	HL7650	HL7688	HL7690	HL7692
		Signal Name					Signal Name					
12	USB_D-	USB_D-					USB_D-					
13	USB_D+	USB_D+					USB_D+					
14-15	Reserved	Not Connected					Not Connected					
16	USB_VBUS	USB_VBUS					USB_VBUS					
17-20	Reserved	Not Connected					Not Connected					
21	Reserved	BAT_RTC					BAT_RTC					
22	SYS_CLK	26M_CLKOUT					26M_CLKOUT					
23	SLEEP_CLK	32K_CLKOUT					32K_CLKOUT					
24	ADC1	Not Connected	ADC1	ADC1	ADC1	ADC1	ADC1					
25	ADC0	Not Connected					Not Connected	ADC0	ADC0	Not Connected	ADC0	ADC0
26	UIM1_VCC	UIM1_VCC					UIM1_VCC					
27	UIM1_CLK	UIM1_CLK					UIM1_CLK					
28	UIM1_DATA	UIM1_DATA					UIM1_DATA					
29	UIM1_RESET_N	UIM1_RESET					UIM1_RESET					
30	GND	GND					GND					
31	RF_DIV	RF_DIV					RF_DIV					
32	GND	GND					GND					
33	PCM_OUT / I2S_OUT	PCM_OUT	PCM_OUT	PCM_OUT	Not Connected	PCM_OUT	PCM_OUT	PCM_OUT	PCM_OUT	PCM_OUT	NC	PCM_OUT
34	PCM_IN / I2S_IN	PCM_IN	PCM_IN	PCM_IN	Not Connected	PCM_IN	PCM_IN	PCM_IN	PCM_IN	PCM_IN	NC	PCM_IN
35	PCM_SYNC / I2S_WS	PCM_SYNC	PCM_SYNC	PCM_SYNC	Not Connected	PCM_SYNC	PCM_SYNC	PCM_SYNC	PCM_SYNC	PCM_SYNC	NC	PCM_SYNC

Table 4-3: RC76xx Series vs. HL75xx and HL76xx Series Pins (Continued)

Pin # Ring C Ring D Ground Pin	RC76xx Series Signal Name	HL7518	HL7528	HL7539	HL7548	HL7588x	HL7618RD	HL7648	HL7650	HL7688	HL7690	HL7692
			Signal Name				Signal Name					
36	PCM_CLK / I2S_CLK	PCM_CLK	PCM_CLK	PCM_CLK	Not Connected	PCM_CLK	PCM_CLK	PCM_CLK	PCM_CLK	PCM_CLK	NC	PCM_CLK
37	GND	GND					GND					
38	RF_GNSS	Not Connected					Not Connected					
39	GND	GND					GND					
40	GPIO7	GPIO7					GPIO7					
41	GPIO8	GPIO8 / TRACE_CLK	GPIO8 / MIPI2_TRACE_CLK	GPIO8 / MIPI2_TRACE_CLK	GPIO8 / TRACE_CLK	GPIO8 / TRACE_CLK	GPIO8 / MIPI2_TRACE_CLK		GPIO8 / TRACE_CLK	GPIO8 / TRACE_CLK	GPIO8 / TRACE_CLK	GPIO8 / TRACE_CLK
42	DR_SYNC	Not Connected					Not Connected					
43	EXT_GPS_LNA_EN	Not Connected					Not Connected					
44	GPIO13	GPIO13					GPIO13					
45	VGPIO	VGPIO					VGPIO					
46	GPIO6	GPIO6					GPIO6					
47	TP1 (Boot pin)	Not Connected					Not Connected					
48	GND	GND					GND					
49	RF_MAIN	RF_MAIN					RF_MAIN					
50	GND	GND					GND					
51	SPI1_MRDY	GPIO14					GPIO14					
52	SPI1_MISO	GPIO10					GPIO10					
53	SPI1_CLK	GPIO11					GPIO11					
54	SPI1_MOSI	GPIO15					GPIO15					
55-57	Reserved	Not Connected					Not Connected					

Table 4-3: RC76xx Series vs. HL75xx and HL76xx Series Pins (Continued)

Pin # Ring C Ring D Ground Pin	RC76xx Series Signal Name	HL7518	HL7528	HL7539	HL7548	HL7588x	HL7618RD	HL7648	HL7650	HL7688	HL7690	HL7692
		Signal Name					Signal Name					
58	Reserved	GPIO	GPIO12	GPIO12	Not Connected	Not Connected	GPIO12	Not Connected				
59	PWR_ON_N	PWR_ON_N					PWR_ON_N					
60	TX_ON	Not Connected	TX_ON	TX_ON	Not Connected	TX_ON	TX_ON					
61-62	VBAT_RF	VBATT_PA					VBATT_PA					
63	VBAT_BB	VBATT					VBATT					
64	UIM1_DET	UIM1_DET/GPIO3					UIM1_DET / GPIO3	UIM1_DET	UIM1_DET	UIM1_DET	UIM1_DET	UIM1_DET / GPIO3
65	GPIO4	GPIO4					GPIO4					
66	I2C1_Data	GPIO5					GPIO5					
67-70	GND	GND					GND					

Table 4-3: RC76xx Series vs. HL75xx and HL76xx Series Pins (Continued)

Pin # Ring C Ring D Ground Pin	RC76xx Series Signal Name	HL7518	HL7528	HL7539	HL7548	HL7588x	HL7618RD	HL7648	HL7650	HL7688	HL7690	HL7692
			Signal Name				Signal Name					
71-95	Reserved	Not Available					Not Available					
96	UART2_TX											
97	UART2_RX											
98	UART2_RTS											
99	UART2_CTS											
100	Reserved											
101	GPIO35											
102-103	Reserved											
104	GPIO32											
105	GPIO33											
106	WWAN_LED_N											
109	GPIO42											

Table 4-3: RC76xx Series vs. HL75xx and HL76xx Series Pins (Continued)

Pin # Ring C Ring D Ground Pin	RC76xx Series Signal Name	HL7518	HL7528	HL7539	HL7548	HL7588x	HL7618RD	HL7648	HL7650	HL7688	HL7690	HL7692
			Signal Name				Signal Name					
110	WAKE_ON_WWAN	Not Available					Not Available					
111, 113	GND											
114-124	Reserved											
125-128	GND											
129-135	Reserved											
136, 139	GND											
140-146	Reserved											
147	GPIO21											
148	GPIO22											
149	GPIO23											
150	GPIO24											
151	W_DISABLE_N											
152	SAFE_PWR_REMOVE											
153	ANT_CNTL0 / GPIO28											
154	ANT_CNTL1 / GPIO29											
155	ANT_CNTL2 / GPIO30											
156	ANT_CNTL3 / GPIO31											
157	VBAT_RF											
158	VBAT_BB											
159	GPIO25											
160-166	Reserved											

Table 4-3: RC76xx Series vs. HL75xx and HL76xx Series Pins (Continued)

Pin # Ring C Ring D Ground Pin	RC76xx Series Signal Name	HL7518	HL7528	HL7539	HL7548	HL7588x	HL7618RD	HL7648	HL7650	HL7688	HL7690	HL7692
			Signal Name				Signal Name					
167-234	GND	GND					GND					
236	J1	JTAG_RESET					JTAG_RESET					
237	J2	JTAG_TCK					JTAG_TCK					
238	J3	JTAG_TDO					JTAG_TDO					
239	J4	JTAG_TMS					JTAG_TMS					
240	J5	JTAG_TRST					JTAG_TRST					
241	J6	JTAG_TDI					JTAG_TDI					
242	J7	JTAG_RCK					JTAG_RCK					
243	J8	Not Available					Not Available					
244	J9	Not Available					Not Available					

a. Do not install an external pull-up on this pin, otherwise the module will not boot.

4.12.1.2 Pin Functionality—RC76xx Series and HL75xx/HL76xx Series

Table 4-4 provides a detailed comparison of specific pin functionalities between RC76xx and HL75xx/HL76xx modules.

Table 4-4: RC76xx Series and HL75xx/HL76xx Series Pin Details

	RC76xx Series	HL7518	HL7528	HL7539	HL7548	HL7588x	HL7618RD	HL7648	HL7650	HL7688	HL7690	HL7692
Antenna Interfaces												
Primary Antenna	Yes; 4 x GND pins; TX_ON (1.8V); W_DISABLE_N	Yes; 2 x GND pins	Yes; 2 x GND pins; TX_ON (2.3V);	Yes; 2 x GND pins; TX_ON (2.3V);	Yes; 2 x GND pins	Yes; 2 x GND pins; TX_ON (2.3V);	Yes; 2 x GND pins; TX_ON (2.3V);	Yes; 2 x GND pins; TX_ON (2.3V);	Yes; 2 x GND pins	Yes; 2 x GND pins; TX_ON (2.3V);	Yes; 2 x GND pins	Yes; 2 x GND pins; TX_ON (2.3V);
Antenna Control	Yes: ANT_CNTL[0:3]	No					No					
Diversity Antenna	Yes; 4 x GND pins	Yes; 2 x GND pins					Yes; 2 x GND pins					
GNSS Antenna	Yes; 4 x GND pins; DR_SYNC; EXT_GPS_LNA_EN	No					No					
Ground / NC / Reserved												
GND	84 x GND pins	78 x GND pins					78 x GND pins					
NC	0 x NC pins	16 x NC pins	14 x NC pins	14 x NC pins	21 x NC pins	15 x NC pins	14 x NC pins	14 x NC pins	9 x NC pins	14 x NC pins	17 x NC pins	13 x NC pins
Reserved	73 x Reserved pins	0 x Reserved pins					0 x Reserved pins					
Power Supply Interfaces												
Power	5 x Power pins - VBATT: [3.2V - 4.3V] / UVLO: 2.4V / Imax: 1A	3 x Power pins - VBATT: [3.2V - 4.5V] / UVLO: V / Imax: 0.945A	3 x Power pins - VBATT: [3.2V - 4.5V] / UVLO: V / Imax: 0.945A	3 x Power pins - VBATT: [3.2V -4.5V]	3 x Power pins - VBATT: [3.2V - 4.5V] / UVLO: V / Imax: 0.945A	3 x Power pins - VBATT: [3.2V - 4.5V] / UVLO: V / Imax: 0.945A	3 x Power pins - VBATT: [3.2V - 4.5V] / UVLO: V / Imax: 0.79A					
Reference Voltage	VGPIO: [1.7V - 1.9V] / Imax: 50mA	VGPIO: [1.7V - 1.9V] / Imax: 50mA					VGPIO: [1.7V - 1.9V] / Imax: 50mA					

Table 4-4: RC76xx Series and HL75xx/HL76xx Series Pin Details (Continued)

	RC76xx Series	HL7518	HL7528	HL7539	HL7548	HL7588x	HL7618RD	HL7648	HL7650	HL7688	HL7690	HL7692
Backup Battery	No	Yes					Yes					
Control and Indication Interfaces												
Control	4 x Control pins	2 x Control pins					2 x Control pins					
Indication	5 x Indication pins	0 x Indication pins	1 x Indication pins	1 x Indication pin	0 x Indication pins	1 x Indication pin	1 x Indication pin					
Communication Interfaces												
USB	3 x USB pins - VBUS: 5V or VBAT_BB-compliant USB2	3 x USB pins - VBUS: 3.3V - 5.5V					3 x USB pins - VBUS: 5V					
I2C	2 x I2C pins	0 x I2C pins					0 x I2C pins					
SPI1	4 x SPI1 pins	0 x SPI1 pins					0 x SPI1 pins					
UART1	8 x UART1 pins	8 x UART1 pins	8 x UART1 pins	8 x UART1 pins	4 x UART1 pins	8 x UART1 pins	8 x UART1 pins					
UART2	4 x UART2 pins	0 x UART2 pins					0 x UART2 pins					
TRACE	0 x TRACE pins	5 x Alternate TRACE pins					5 x Alternate TRACE pins					
UIM Interfaces												
UIM1	Yes: 1.8V / 3V capability	Yes: 1.8V / 3V capability					Yes: 1.8V / 3V capability					
eSIM => No UIM2 (ext.)	Yes	No					No					
UIM2 (ext.) => No eSIM	Yes	No					No					
Wakeup Signals / Events												
Wakeup Interrupt (Sleep State)	6 x signals[a]	2 x signals	No	No	2 x signals	2 x signals	2 x signals	2 x signals	1 x signal	2 x signals	1 x signal	1 x signal

Table 4-4: RC76xx Series and HL75xx/HL76xx Series Pin Details (Continued)

	RC76xx Series	HL7518	HL7528	HL7539	HL7548	HL7588x	HL7618RD	HL7648	HL7650	HL7688	HL7690	HL7692
Wakeup Events (ULPS)	1 x signal	No					No	No	No	No	No	No
General Purpose Input / Output												
GPIO	19 x GPIOs (4 x Multiplexed)	14 x GPIOs (3 x Multiplexed)	14 x GPIOs (3 x Multiplexed)	14 x GPIOs (3 x Multiplexed)	13 x GPIOs (3 x Multiplexed)	13 x GPIOs (3 x Multiplexed)	12 x GPIOs (2 x Multiplexed)	12 x GPIOs (2 x Multiplexed)	12 x GPIOs	12 x GPIOs (2 x Multiplexed)	12 x GPIOs	13 x GPIOs
ADC												
ADC	2 x ADC pins	0 x ADC pins	1 x ADC pin	1 x ADC pin	1 x ADC pin	1 x ADC pin	2 x ADC pins	2 x ADC pins	2 x ADC pins	1 x ADC pin	2 x ADC pins	2 x ADC pins
Digital Audio Interface												
Digital audio	4 x Digital audio pins	No	4 x PCM pins (No I2S)	4 x PCM pins (No I2S)	0 x Digital audio pins	4 x PCM pins (No I2S)	4 x PCM pins (No I2S)	4 x PCM pins (No I2S)	4 x Digital audio pins	4 x PCM pins (No I2S)	0 x Digital audio pins	4 x PCM pins (No I2S)
Clock												
Clock	2 x Clock pins	2 x Clock pins					2 x Clock pins					
JTAG												
JTAG	9 x JTAG pins	7 x JTAG pins					7 x JTAG pins					

a. If a secondary external UIM is enabled, UIM1_SIMB_DET becomes a wakeup pin.

4.13 Interfaces—RC76xx Series and HL75xx/HL76xx Series

4.13.1 Power—Main Power and USB Voltage

Table 4-5: Main Power and USB Voltage Comparison Between RC76xx Series and HL75xx/HL76xx Series Modules

	RC76xx Series			HL75xx/HL76xx Series		
	Minimum	**Typ.**	**Maximum**	**Minimum**	**Typ.**	**Maximum**
Main Power Voltage						
Input Voltage	3.2 V	3.7 V	4.3 V	3.2 V	3.7 V	4.5 V
USB Voltage						
VBUS	VBATT_BB	-	5.25V (USB Standard)	3.3V	-	5.5V

4.13.2 UART

Table 4-6: UART Interface Comparison Between RC76xx Series and HL75xx/HL76xx Series Modules

	RC76xx Series	HL75xx/HL76xx Series
UART baud rate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 921600	300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 500000, 750000, 921600, 1843200, 3000000, 3250000

4.13.3 Control Signals—Power ON and Reset_IN_N

Table 4-7: Power ON and Reset_IN_N Signal Comparison Between RC76xx Series and HL75xx/HL76xx Series Modules

	RC76xx Series	HL75xx/HL76xx Series
Power_ON Signal		
POWER_ON_N assertion time (Minimum ms)	200	25
Reset IN_N Signal		
Reset_IN_N assertion time (Minimum ms)	42	20

4.13.4 Clock Signals

Table 4-8: Clock Signals Comparison Between RC76xx Series and HL75xx/HL76xx Series Modules

	RC76xx Series	HL75xx/HL76xx Series
SYSTEM Clock (MHz)	19.2	26
SLEEP Clock (kHz)	32.768	32.768

4.13.5 ADC

Note: HL7528 has no ADC and therefore excluded in the following tables.

Table 4-9: ADC Interface Comparison Between RC76xx Series and HL75xx/HL76xx Series Modules

Parameter	RC76xx Series		HL75xx Series, HL7618RD, HL7648, HL7688, HL 7690, HL7692				HL7650			
	Value	Units	Min	Typ	Max	Units	Min	Typ	Max	Units
Full-scale voltage level	0.1-1.7	V	-	-	-	-				
Resolution	15	bit	-	10	-	bit	-	10	-	bit
Sample rate	2.4	MHz	-	-	125	kSps	-	-	125	kSps
Voltage error	8 (typ.), 16 (max.)	mV	-	-	3.5	mV	-	-	4.7	mV
Input Voltage Range (V)	-		0	-	1.2	V	0	-	1.2	V
Integral Nonlinearity			-	-	+/- 2	LSB	-	-	+/- 2	LSB
Offset Error			-	-	+/- 2	LSB	-	-	+/- 2	LSB
Gain			849	853	858	-	849	853	858	-
Input Resistance			1	-	-	MΩ	-	-	-	-
Input Capacitance			-	1	-	pF	-	1	-	pF
Quantum						1.17	-	-	mV	1.17
Absolute Gain Drift						-	-	+/- 0.05	-	-
Output Current Source						-	4.3	-	µA	-
Input Capacitance										
Wake-up time from power save						-	50	-	µs	-

4.13.6 Indication Signal—TX_ON

Table 4-10: TX_ON Signal Comparison Between RC76xx Series and HL75xx/HL76xx Series Modules

Parameter	RC76xx Series			HL75xx/HL76xx Series		
	Minimum	Typ.	Maximum	Minimum	Typ.	Maximum
Output Voltage	1.8V	1.8V	1.8V	2.215V	2.3V	2.32V
Timing Advance	64.8 ms (LTE) / 20 ms (3G) /150 us (2G)	-	-	30μs	-	-
Timing Delay	-	-	33.8 ms (LTE) / 800 ms (3G) / 50 us (2G)	-	10μs	-

Note: 3G and 2G are only supported in RC7620 and RC7620-1 modules.

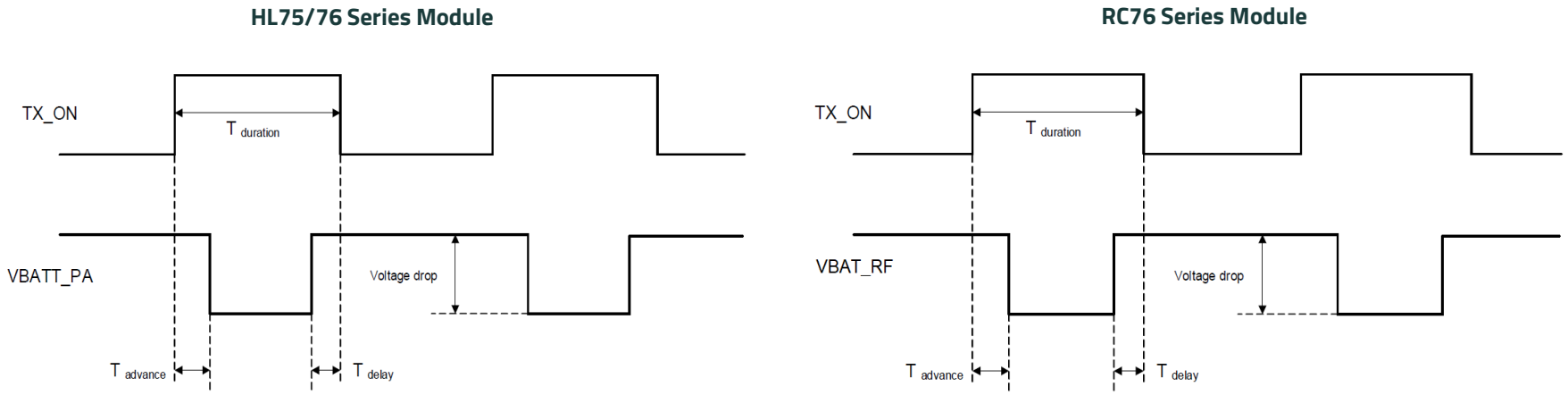


Figure 4-2: TX_ON State During Transmission

4.13.7 Digital Audio

Table 4-11: Audio Interface Comparison Between RC76xx Series and HL75xx/HL76xx Series Modules

	RC76xx Series		HL75xx/HL76xx Series
Mode	PCM master mode only	I2S master mode	PCM master or slave
Data format	16 bits linear mode	16 bits per frame	16 bits data word length, linear mode
Clock	4.096 MHz	512 KHz	256 KHz, 384 KHz, 512 KHz, 768 KHz, 1024 KHz
Sync type	Short sync		Long frame sync

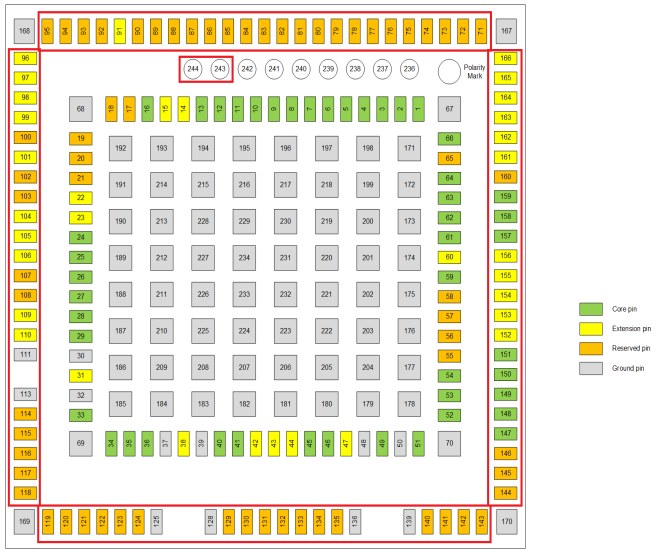
4.13.8 Mounting Guidelines—RC76xx Series on HL75xx/HL76xx Series

Important: *Avoid routing any noisy signals or sensitivity traces under the module on the application board.*

When mounting an RC76 module on an HL module footprint, the outer ring of pads do not need to be connected or taken into account. Make sure that the pins on the outer ring of the RC module will not be obstructed and no traces run beneath its outer rings. As long as there is solder resist on the board, this should be sufficient to ensure electrical isolation between the RC76 pins and the application functions. This statement is subject to testing and validation around an individual design.

The following images indicate which rings (marked in red) must not be obstructed when mounting an RC module and how it compares to an HL module:

RC76 Series Module



HL75/76 Series Module

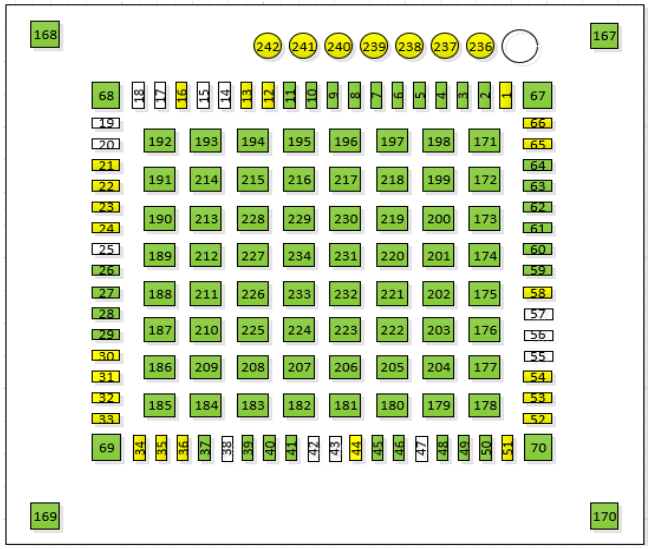


Figure 4-3: RC series module bottom view and its outer ring pins vs. HL Series module bottom view

Important: *Overall performance may vary when using the RC module with a snap-in HL module. Unused interfaces should be disabled to limit RF disturbances.*

For additional information on mounting the RC series module, refer to the AirPrime RC76 Series Customer Process Guidelines and AirPrime RC76xx Product Technical Specifications stated in the Reference Documents.

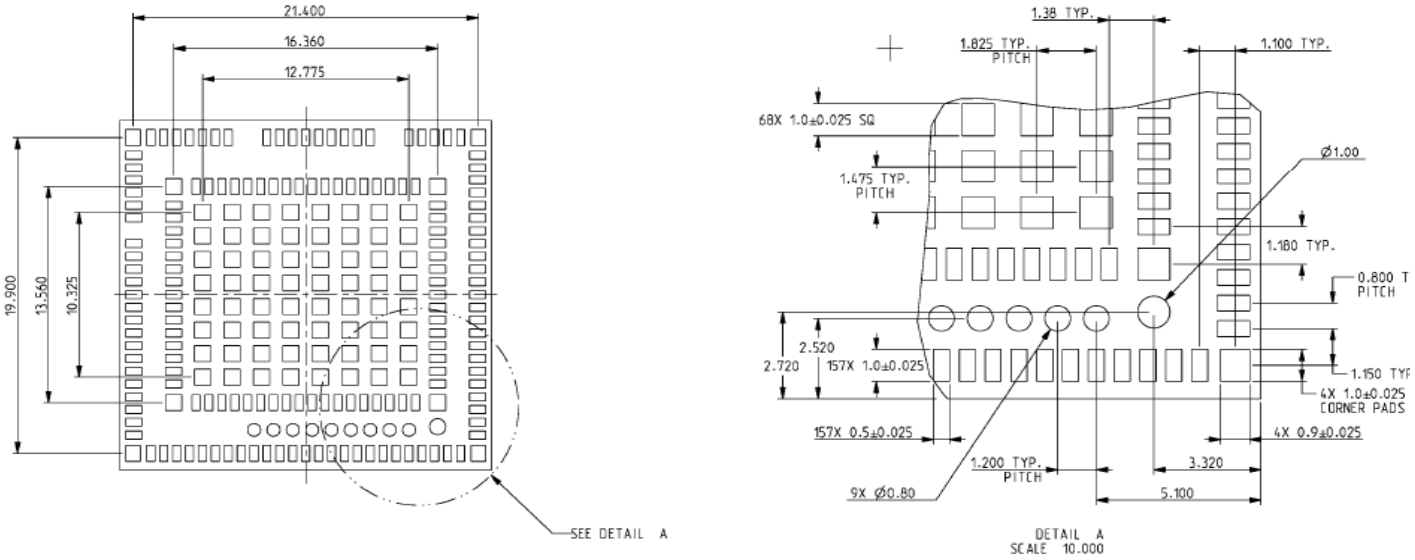


Figure 4-4: RC Series Mechanical Drawings WP Series to RC Series

4.14 Supported RF Bands—RC76xx Series and WP76xx Series

For detailed information, refer to the RC76xx Product Technical Specification and WP76xx Product Technical Specification listed under Reference Documents.

4.14.1 LTE and UMTS

Table 4-12 indicates all supported bands (LTE and UMTS) for RC76xx Series and WP76xx Series modules.

Table 4-12: Supported RF Bands—LTE and UMTS

Module	LTE																					UMTS						
	B1	B2	B3	B4	B5	B7	B8	B11	B12	B13	B14	B17	B18	B19	B20	B21	B25	B26	B28	B66	B71	B1	B2	B4	B5	B6	B8	B19
RC7611 RC7611-1		Y		Y	Y				Y	Y	Y						Y	Y		Y	Y							
WP7601 WP7601-1				Y[a]						Y[b]																		
WP7603 WP7603-1		Y[b]		Y[b]	Y[b]				Y[b]														Y	Y	Y			
WP610		Y[b]		Y[b]	Y[b]				Y[b]	Y[b]	Y[b]	Y[b]								Y[b]			Y	Y	Y			
WP7611 WP7611-1		Y[b]		Y[b]	Y[b]				Y[b]	Y[b]	Y[b]						Y[b]	Y[b]		Y[b]	Y[b]		Y	Y	Y			
RC7620 RC7620-1	Y		Y			Y	Y								Y				Y			Y					Y	
WP7607 WP7607-1	Y[b]		Y[b]			Y[b]	Y[b]								Y[b]				Y[b]			Y					Y	
WP7609	Y[b]		Y[b]		Y[b]	Y[b]	Y[b]												Y[b]			Y			Y		Y	
RC7630 RC7630-1	Y		Y		Y	Y	Y						Y	Y		Y												
RC7630J	Y		Y		Y								Y	Y														
WP7605	Y		Y				Y	Y					Y	Y			Y					Y				Y		Y

a. FDD, LTE-certified and 3G-capable, requires validation/certification for 3G use.
b. FDD

4.14.2 GSM/GPRS/EDGE and GNSS

Table 4-2indicates all supported bands (GSM/GPRS/EDGE and GNSS) for RC76xx Series and WP76xx Series modules.

Table 4-13: Supported RF Bands—GSM/GPRS/EDGE and GNSS

	GSM/GPRS/EDGE		GNSS				
Module	E-GSM 900	DCS 1800	GPS	GLONASS	Galileo	BeiDou	QZSS
RC7611 RC7611-1			Y[a]	Y	Y	Y	
WP7601 WP7601-1							
WP7603 WP7603-1							
WP610							
WP7611 WP7611-1							
RC7620 RC7620-1	Y	Y	Y[a]	Y	Y	Y	
WP7607 WP7607-1	Y	Y					
WP7609	Y	Y					
RC7630 RC7630-1 RC7630J			Y[a]	Y	Y	Y	Y
WP7605							

a. SKU-dependent.

4.15 Pin Comparison—WP Series to RC Series

The following information show a comparative view of the WP and the RC modules based from their Ring C and Ring D pins.

Note:

- ***Ring C*** *(marked in orange) has 66 pins.*
- ***Ring D*** *(marked in violet) has 91 pins.*
- ***Pins marked in gray,*** *within Ring C and Ring D, are all ground pins.*

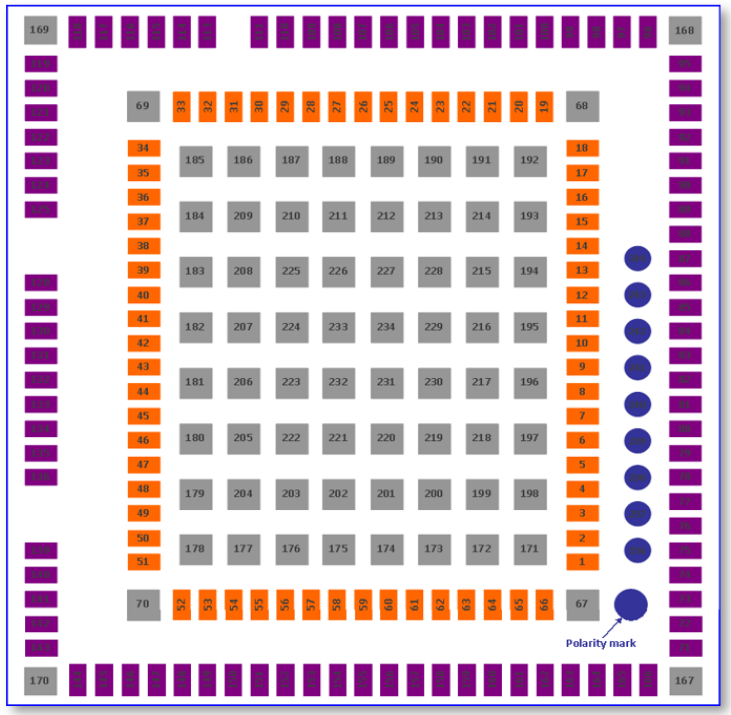


Figure 4-5: WP Series and RC Series pins

4.15.1 Pinout—RC76xx Series and WP76xx Series

The following tables show a comparative overview of available pins in the RC76xx Series and WP76xx Series and their specific functionalities.

Note: Some pin numbers (112, 126, 127, 137, 138, 235) do not appear in this table because there are no corresponding pads on the module's PCB.

4.15.1.1 RC76xx Series vs. WP76xx Series Pins

For complete pin details, refer to the RC76xx and WP76xx Series Product Technical Specification listed under Reference Documents.

Table 4-14: RC76xx Series vs. WP76xx Series Pins

Pin #	RC76xx Series	WP7601	WP7601-1	WP7603	WP7603-1	WP7605	WP7607	WP7607-1	WP7609	WP7610	WP7611	WP7611-1
Ring C or Ring D Ground Pin	Signal Name	Signal Name										
1	I2C1_CLK	I2C1_CLK										
2	UART1_RI	UART1_RI										
3	UART1_RTS	UART1_RTS										
4	UART1_CTS	UART1_CTS										
5	UART1_TX	UART1_TX										
6	UART1_RX	UART1_RX										
7	UART1_DTR	UART1_DTR										
8	UART1_DCD	UART1_DCD										
9	UART1_DSR	UART1_DSR										
10	GPIO2	GPIO2										
11	RESET_IN_N	RESET_IN_N										
12	USB_D-	USB_D-										

Table 4-14: RC76xx Series vs. WP76xx Series Pins (Continued)

Pin #	RC76xx Series	WP7601	WP7601-1	WP7603	WP7603-1	WP7605	WP7607	WP7607-1	WP7609	WP7610	WP7611	WP7611-1
Ring C or Ring D Ground Pin	Signal Name	Signal Name										
13	USB_D+	USB_D+										
14	Reserved	HSIC_DATA										
15	Reserved	HSIC_STRB										
16	USB_VBUS	USB_VBUS										
17-21	Reserved	Reserved										
22	SYS_CLK	SYS_CLK										
23	SLEEP_CLK	SLEEP_CLK										
24	ADC1	ADC1										
25	ADC0	ADC0										
26	UIM1_VCC	UIM1_VCC										
27	UIM1_CLK	UIM1_CLK										
28	UIM1_DATA	UIM1_DATA										
29	UIM1_RESET_N	UIM1_RESET_N										
30	GND	GND										
31	RF_DIV	RF_DIV										
32	GND	GND										
33	PCM_OUT/I2S_OUT	PCM_OUT/I2S_OUT										
34	PCM_IN/I2S_IN	PCM_IN/I2S_IN										
35	PCM_SYNC/I2S_WS	PCM_SYNC/I2S_WS										

Table 4-14: RC76xx Series vs. WP76xx Series Pins (Continued)

Pin #	RC76xx Series	WP7601	WP7601-1	WP7603	WP7603-1	WP7605	WP7607	WP7607-1	WP7609	WP7610	WP7611	WP7611-1
Ring C or Ring D Ground Pin	Signal Name	Signal Name										
36	PCM_CLK/I2S_CLK											
37	GND	GND										
38	RF_GNSS	RF_GNSS										
39	GND	GND										
40	GPIO7	GPIO7										
41	GPIO8	GPIO8										
42	DR_SYNC	DR_SYNC										
43	EXT_GPS_LNA_EN	EXT_GPS_LNA_EN										
44	GPIO13	GPIO13										
45	VGPIO	VGPIO										
46	GPIO6	GPIO6										
47	TP1	TP1										
48	GND	GND										
49	RF_MAIN	RF_MAIN										
50	GND	GND										
51	SPI1_MRDY	SPI1_MRDY										
52	SPI1_MISO	SPI1_MISO										
53	SPI1_CLK	SPI1_CLK										
54	SPI1_MISO	SPI1_MISO										

Table 4-14: RC76xx Series vs. WP76xx Series Pins (Continued)

Pin #	RC76xx Series	WP7601	WP7601-1	WP7603	WP7603-1	WP7605	WP7607	WP7607-1	WP7609	WP7610	WP7611	WP7611-1
Ring C or Ring D Ground Pin	Signal Name	Signal Name										
55-58	Reserved	Reserved										
59	PWR_ON_N	PWR_ON_N										
60	TX_ON	TX_ON										
61-62	VBAT_RF	VBAT_RF										
63	VBAT_BB	VBAT_BB										
64	UIM1_DET	UIM1_DET										
65	GPIO4	GPIO4										
66	I2C1_Data	I2C1_Data										
67-70	GND	GND										
71-90	Reserved	Reserved										
91	Reserved	USB_ID										
92	Reserved	GPIO38	GPIO38	GPIO38	GPIO38	Not Available	GPIO38	GPIO38	GPIO38	Not Available	Not Available	Not Available
93	Reserved	Reserved										
94	Reserved	GPIO40	GPIO40	GPIO40	GPIO40	Not Available	GPIO40	GPIO40	GPIO40	Not Available	Not Available	Not Available
95	Reserved	GPIO41	GPIO41	GPIO41	GPIO41	Not Available	GPIO41	GPIO41	GPIO41	Not Available	Not Available	Not Available
96	UART2_TX	UART2_TX										
97	UART2_RX	UART2_RX										
98	UART2_RTS	UART2_RTS										
99	UART2_CTS	UART2_CTS										

Table 4-14: RC76xx Series vs. WP76xx Series Pins (Continued)

Pin # Ring C or Ring D Ground Pin	RC76xx Series Signal Name	WP7601	WP7601-1	WP7603	WP7603-1	WP7605	WP7607	WP7607-1	WP7609	WP7610	WP7611	WP7611-1
		Signal Name										
100	Reserved	Reserved										
101	GPIO35	GPIO35										
102	Reserved	GPIO36	GPIO36	GPIO36	GPIO36	Not Available	GPIO36	GPIO36	GPIO36	Not Available	Not Available	Not Available
103	Reserved	GPIO37	GPIO37	GPIO37	GPIO37	Not Available	GPIO37	GPIO37	GPIO37	Not Available	Not Available	Not Available
104	GPIO32	GPIO32										
105	GPIO33	GPIO33										
106	WWAN_LED_N	WWAN_LED_N										
107	Reserved	ADC2	ADC2	ADC2	ADC2	Not Available	ADC2	ADC2	ADC2	Not Available	Not Available	Not Available
108	Reserved	ADC3	ADC3	ADC3	ADC3	Not Available	ADC3	ADC3	ADC3	Not Available	Not Available	Not Available
109	GPIO42	GPIO42										
110	WAKE_ON_WWAN	WAKE_ON_WWAN										
111-113	GND	GND										
114-124	Reserved	Reserved										
125-128	GND	GND										
129-135	Reserved	Reserved										
136, 139	GND	GND										
140-146	Reserved	Reserved										
147	GPIO21	GPIO21										
148	GPIO22	GPIO22										

Table 4-14: RC76xx Series vs. WP76xx Series Pins (Continued)

Pin #	RC76xx Series	WP7601	WP7601-1	WP7603	WP7603-1	WP7605	WP7607	WP7607-1	WP7609	WP7610	WP7611	WP7611-1
Ring C or Ring D Ground Pin	Signal Name	Signal Name										
149	GPIO23	GPIO23										
150	GPIO24	GPIO24										
151	W_DISABLE_N	W_DISABLE_N										
152	SAFE_PWR_REMOVE	SAFE_PWR_REMOVE										
153	ANT_CNTL0/GPIO28	ANT_CNTL0/GPIO28										
154	ANT_CNTL1/GPIO29	ANT_CNTL1/GPIO29										
155	ANT_CNTL2/GPIO30	ANT_CNTL2/GPIO30										
156	ANT_CNTL3/GPIO31	ANT_CNTL3/GPIO31										
157	VBAT_RF	VBAT_RF										
158	VBAT_BB	VBAT_BB										
159	GPIO25	GPIO25										
160	Reserved	Reserved										
161	Reserved	SDIO_CMD										
162	Reserved	SDIO_CLK										
163	Reserved	SDIO_DATA3										
164	Reserved	SDIO_DATA4										
165	Reserved	SDIO_DATA1										
166	Reserved	SDIO_DATA0										
167-234	GND	GND										

Table 4-14: RC76xx Series vs. WP76xx Series Pins (Continued)

Pin #	RC76xx Series	WP7601	WP7601-1	WP7603	WP7603-1	WP7605	WP7607	WP7607-1	WP7609	WP7610	WP7611	WP7611-1
Ring C or Ring D Ground Pin	Signal Name	Signal Name										
236	J1	J1										
237	J2	J2										
238	J3	J3										
239	J4	J4										
240	J5	J5										
241	J6	J6										
242	J7	J7										
243	J8	J8										
244	J9	J9										

4.16 Interfaces—RC76xx Series and WP76xx Series

4.16.1 ADC

Table 4-15: ADC Interface Comparison Between RC76xx Series and WP76xx Series Modules

	RC76xx Series		WP7601, WP7601-1, WP7603, WP7603-1, WP7605, WP7607, WP7607-1, WP7609, WP7610, WP7611, WP7611-1		
	Value	Units	ADC0 / ADC1 Value	ADC2 / ADC3 Value[a]	Units
Parameter					
Full-scale voltage level	0.1-1.7	V	0.1-1.7	0-1.8	V
Resolution	15	bit	15	12	bit
Sample rate	2.4	MHz	1.15	20.000-818.330	ksps
Voltage error	8 (typ.), 16 (max.)	mV	8 (Typ), 16 (Max)	2 (Typ)	mV
Element			**PCM**		
Slot configuration			Slot-based		
Sync type			Short		
Clock (in Master mode)			2.048 MHz		
Data formats			16-bit linear, 8-bit A-law, 8-bit mu-law		
Mode			Master or Slave		

a. ADC2 and ADC3 are only available in Group A variants.

4.16.2 Indication Signal—TX_ON

Table 4-16: TX_ON Signal Comparison Between RC76xx Series and WP76xx Series Modules

Parameter	RC76xx Series			WP76xx Series		
	Minimum	Typ.	Maximum	Minimum	Typ.	Maximum
Output Voltage	1.8V	1.8V	1.8V	1.8V	1.8V	1.8V
Timing Advance	64.8 ms (LTE) / 20 ms (3G) /150 us (2G)	-	-	10.5 ms (LTE) / 22 ms (3G) /50 us (2G)	-	-
Timing Delay	-	-	33.8 ms (LTE) / 800 ms (3G) / 50 us (2G)	-	-	4 ms (LTE) / 90 ms (3G) / 60 us (2G)

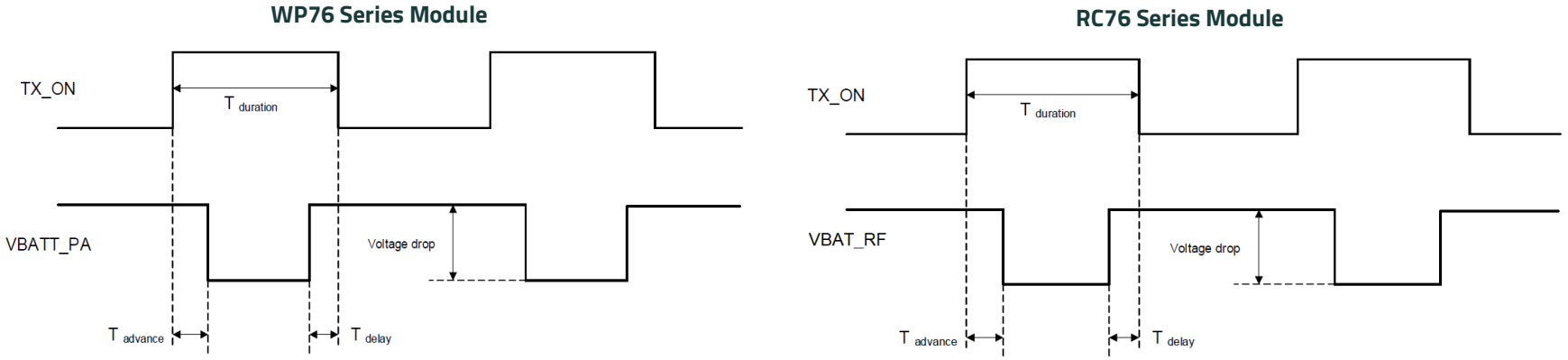


Figure 4-6: TX_ON State During Transmission

4.16.3 Digital Audio

Table 4-17: Audio Interface Comparison Between RC76xx Series and WP76xx Series Modules

	RC76xx Series		WP76xx Series	
Mode	PCM master mode only	I2S master mode	PCM master or slave mode	Master (Slave mode is not supported)
Data format	16 bits linear mode	16 bits per frame	16 bits linear mode, 8-bit A-law, 8-bit mu-law	16 bits per frame
Clock	4.096 MHz	512 KHz	2.048 MHz	1536 kHz
Sync type	Short sync		Short sync	-

4.17 Mounting Guidelines—RC76xx Series on WP76xx Series

Important: *Avoid routing any noisy signals or sensitivity traces under the module on the application board.*

The traces to Ring C must run through the inner layers of the PCB.

For additional information on mounting the RC series module, refer to the AirPrime RC76 Series Customer Process Guidelines and AirPrime RC76xx Product Technical Specifications under Reference Documents.

5: Software Information

5.18 AT Commands—RC76xx Series, HL75xx/HL76xx Series, and WP76xx Series

RC76xx, HL75xx, HL76xx, and WP76xx modules may be controlled via AT commands.

For command details, including module series-specific variations and unique commands, refer to the module-specific AT Command Guide Reference listed under Reference Documents.

5.19 Key Features Comparison Between RC76xx Series and HL75xx/HL76xx Series

Table 5-1: Software Key Features—RC76xx Series and HL75xx/HL76xx Series

Aspect	RC76xx Series	HL7588x	HL7548	HL7539	HL7528	HL7518	HL7692	HL7690	HL7688	HL7650	HL7648	HL7618RD
TX Partitions	8 MB (Binary)	No										
SMS	Yes	Yes										
Ring Signal	Yes	Yes										
Band Selection Output Pin	Yes	No										
SIM Switch	Yes	Yes				No	Yes					
SIM Tool Kit	Yes	Yes										
Low Power Mode	Yes	Yes										
Thermal Management	Yes (Advanced)	No										
Multiple PDP	Yes	Yes										
AVMS	Yes	Yes										
Memory Reliability	Yes (Enhanced)	Yes										
Dual System	Yes	No										
Antenna Detection	No	Yes										
GNSS Constellation	GPS, GLONASS, Galileo, BeiDou, QZSS[a]	No										
TCP / IP AT Command	Yes	Yes										
USB Device Mode	Supports AT, DM, NMEA, RmNet	Supports AT, Trace, NCM, MBIM										
Audio Interfaces	Yes (I2S, PCM-Master mode)	Yes (PCM)										
Audio Codec	No	Yes										
Audio Tuning	Yes	Yes						No	Yes			No

a. Supported in RC7630, RC7630-1, and RC7630J only.

5.20 Key Features Comparison Between RC76xx Series and WP76xx Series

Table 5-2: Software Key Features—RC76xx Series and WP76xx Series

Aspect	RC76xx Series	WP7601	WP7601-1	WP7603	WP7603-1	WP7605	WP7607	WP7607-1	WP7609	WP7610	WP7611	WP7611-1
TX Partitions	8 MB (Binary)	No										
Legato Open Source	Yes	No										
SMS	Yes	Yes										
Ring Signal	Yes	Yes										
Band Selection Output Pin	Yes	Yes										
SIM Switch	Yes	Yes										
SIM Tool Kit	Yes	Yes										
Low Power Mode	Yes	Yes										
Thermal Management	Yes (Advanced)	Yes										
Multiple PDP	Yes	Yes										
AVMS	Yes	Yes										
Memory Reliability	Yes (Enhanced)	Yes										
Dual System	Yes	No										
Antenna Detection	No	Yes										
GNSS Constellation	GPS, GLONASS, Galileo, BeiDou, QZSS[a]	Yes										
TCP / IP AT Command	Yes	Yes										
USB Device Mode	Supports AT, DM, NMEA, RmNet	Supports AT, Trace, NCM, MBIM										
Audio Interfaces	Yes (I2S, PCM-Master mode)	Yes (PCM)										
Audio Codec	No	Yes										

Table 5-2: Software Key Features—RC76xx Series (Continued)and WP76xx Series

Aspect	RC76xx Series	WP7601	WP7601-1	WP7603	WP7603-1	WP7605	WP7607	WP7607-1	WP7609	WP7610	WP7611	WP7611-1
Audio Tuning	Yes	Yes										
LED	No	Yes										

a. Supported in RC7630, RC7630-1, and RC7630J only.

5.21 CMUX Limitation

RC76xx modules support only the following DLCs:

- AT
- DATA
- NMEA

During data transmission, the app's processor will switch the modem to data mode. Under data mode, sending out AT commands are disabled. Once data transmission is complete, sending out AT commands are re-enabled.

The PPP connection is not affected since it directly dials up by modem. This means users can use one DLC with a PPP and other DLCs can use AT commands.

URCs can be received if DTR is toggled.

A: References

For more details, several references can be consulted, as detailed below.

Check http://source.sierrawireless.com/ for the latest documentation available and to download the following Reference Documents.

A.1 Reference Documents

A.1.1 AT Command Guide References

- RC76xx AT Command Reference Guide
  Reference: 41113566
- HL7518 and HL7548 AT Commands Interface Guide
  Reference: 4116303
- HL7528 AT Commands Interface Guide
  Reference: 4116843
- HL7539 AT Commands Interface Guide
  Reference: 4118453
- HL7588 AT Commands Interface Guide
  Reference: 4117137
- HL76xx AT Commands Interface Guide
  Reference: 4118395
- WP8548/WP75xx/WP76xx/WP77xx Command Reference
  Reference: 4118047

A.1.2 Customer Process Guidelines

- HL Series Customer Process Guidelines
  Reference: 4114330
- RC76 Series Customer Process Guidelines
  Reference: 41113573

A.1.3 Product Technical Specifications

- HL7518 Product Technical Specification
  Reference: 4115834
- HL7528 Product Technical Specification
  Reference: 4116873
- HL7539 Product Technical Specification
  Reference: 4118584
- HL7548 and HL7588x Product Technical Specification
  Reference: 4116369
- HL7618RD Product Technical Specification
  Reference: 4119874
- HL7688 Product Technical Specification
  Reference: 4119272
- HL7650 Product Technical Specification
  Reference: 41110363
- HL7690 Product Technical Specification
  Reference: 4118552
- HL7692 Product Technical Specification
  Reference: 4119631
- RC76xx Product Technical Specification
  Reference: 41113440
- WP76xx Product Technical Specification
  Reference: 4119652

A.2 Scalability Guides

- RC76xx Scalability Guide
  Reference: 41113646
- HL Series Scalability Guide
  Reference: 4115613