FCC SAR Test Report

APPLICANT	**:**	**Xplore Technologies Corp.**
EQUIPMENT	**:**	**Wireless Modules**
BRAND NAME	**:**	**Xplore Technologies**
MODEL NAME	**:**	**EM7355**
FCC ID	**:**	**Q2GEM7355**
STANDARD	**:**	**FCC 47 CFR Part 2 (2.1093)** **ANSI/IEEE C95.1-1992** **IEEE 1528-2003**

The product was installed into Tablet PC (Brand Name: Xplore Technologies Corp, Model Name: iX104C6) during test.

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

ilac-MRA

TAF
Testing Laboratory
1190

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA3N2012	Rev. 01	Initial issue of report	Jan. 23, 2014

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Xplore Technologies Corp. Wireless Modules, EM7355** are as follows.

<Highest SAR Summary>

Exposure Position	Frequency Band	Reported 1g-SAR (W/kg)	Equipment Class	Highest Reported 1g-SAR (W/kg)
Body	GPRS850	0.73	PCB	0.87
	GPRS1900	0.64		
	WCDMA Band V	0.72		
	WCDMA Band IV	0.83		
	WCDMA Band II	0.47		
	CDMA 2000 BC10	0.69		
	CDMA 2000 BC0	0.72		
	CDMA 2000 BC1	0.87		
	LTE Band 17	0.61		
	LTE Band 13	0.56		
	LTE Band 5	0.79		
	LTE Band 4	0.86		
	LTE Band 2	0.83		
	LTE Band 25	0.72		

<Highest Simultaneous transmission SAR>

Exposure Position	Frequency Band	Equipment Class	Highest Reported Simultaneous Transmission 1g-SAR (W/kg)
Body	CDMA BC1	PCB	1.59
	WLAN2.4GHz Band	DTS	
	Bluetooth	DSS	

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2003.

2. Administration Data

2.1 Testing Laboratory

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978

2.2 Applicant

Company Name	Xplore Technologies Corp.
Address	14000 Summit Road Suite 900, Austin, Texas, 78728 USA

2.3 Application Details

Date of Start during the Test	Dec. 24, 2013
Date of End during the Test	Jan. 02, 2014

3. General Information

3.1 Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT	Wireless Modules
Brand Name	Xplore Technologies
Model Name	EM7355
FCC ID	Q2GEM7355
IMEI Code	356196050074232
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz CDMA 2000 BC10: 817.9 MHz ~ 823.1 MHz CDMA 2000 BC0: 824.7 MHz ~ 848.31 MHz CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz
Mode	• GPRS/EGPRS • RMC 12.2Kbps Rel 99 • HSDPA Rel 7, Cat14 • HSUPA Rel 6, Cat6 • CDMA2000: 1xRTT/1xEv-Do(Rel.0)/1xEv-Do(Rev.A) • LTE: QPSK, 16QAM
EUT Stage	Production Unit

Remark:
1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. WLAN/Bluetooth module is also integrated into this host. Additional WLAN SAR testing was performed for simultaneous transmission analysis and WLAN/Bluetooth power is referred to Sprotn FCC SAR Report (FCC ID: Q2G7260H, Report No: FA3N1525).

Host Information	
Host Name	Rugged Tablet PC
Brand Name	Xplore Technologies Corp
Model Name	iX104C6
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	• 802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 • Bluetooth v2.1+EDR，Bluetooth v4.0 LE
Antenna Type	WWAN: PIFA Antenna WLAN: PIFA Antenna Bluetooth: PIFA Antenna

3.2 Maximum RF output power among production units

Band	average power (dBm)			
	GSM 850		GSM 1900	
Output Power Status	Full power mode	Reduced Power mode	Full power mode	Reduced Power mode
GPRS (GMSK, 1 Tx slot)	33.50	30.50	30.50	27.50
GPRS (GMSK, 2 Tx slots)	33.00	30.00	30.00	27.00
EDGE (8PSK, 1 Tx slot)	28.00	25.00	27.00	24.00
EDGE (8PSK, 2 Tx slots)	27.00	24.00	26.00	23.00
EDGE (8PSK, 3 Tx slots)	27.00	24.00	26.00	23.00
EDGE (8PSK, 4 Tx slots)	27.00	24.00	26.00	23.00

Band	average power(dBm)				
	WCDMA Band V	WCDMA Band IV		WCDMA Band II	
Output Power Status	Full power mode	Full power mode	Reduced Power mode	Full power mode	Reduced Power mode
RMC 12.2Kbps	24.00	24.00	21.00	24.00	20.00
HSDPA Subtest-1	24.00	24.00	21.00	24.00	20.00
HSUPA Subtest-1	24.00	24.00	21.00	24.00	20.00

Band	average power(dBm)			
	CDMA BC10	CDMA BC0	CDMA BC1	
Output Power Status	Full power mode	Full power mode	Full power mode	Reduced Power mode
1xRTT RC1 SO55	24.50	24.50	24.50	21.50
1xRTT RC3 SO55	24.50	24.50	24.50	21.50
1xEV-DO Rev 0 (RTAP 153.6kbps)	24.50	24.50	24.50	21.50
1xEV-DO Rev A (RETAP 4096 bits)	24.50	24.50	24.50	21.50

LTE Band 13				
average power(dBm)				
Modulation	BW (MHz)	RB size	Full Power mode (MPR)	Full power mode
QPSK	10	≤ 12	0	24.00
QPSK	10	> 12	1	23.00
16QAM	10	≤ 12	1	23.00
16QAM	10	> 12	2	22.00
QPSK	5	≤ 8	0	24.00
QPSK	5	> 8	1	23.00
16QAM	5	≤ 8	1	23.00
16QAM	5	> 8	2	22.00

LTE Band 17				
average power(dBm)				
Modulation	BW (MHz)	RB size	Full Power mode (MPR)	Full power mode
QPSK	10	≤ 12	0	24.00
QPSK	10	> 12	1	23.00
16QAM	10	≤ 12	1	23.00
16QAM	10	> 12	2	22.00
QPSK	5	≤ 8	0	24.00
QPSK	5	> 8	1	23.00
16QAM	5	≤ 8	1	23.00
16QAM	5	> 8	2	22.00

LTE Band 5				
average power(dBm)				
Modulation	BW (MHz)	RB size	Full Power mode (MPR)	Full power mode
QPSK	10	≤ 12	0	24.00
QPSK	10	> 12	1	23.00
16QAM	10	≤ 12	1	23.00
16QAM	10	> 12	2	22.00
QPSK	5	≤ 8	0	24.00
QPSK	5	> 8	1	23.00
16QAM	5	≤ 8	1	23.00
16QAM	5	> 8	2	22.00

LTE Band 4						
average power(dBm)						
Modulation	BW (MHz)	RB size	Full Power mode (MPR)	Full power mode	Reduced Power mode (MPR)	Reduced Power mode
QPSK	20	≤ 18	0	24.00	0	20.00
QPSK	20	> 18	1	23.00	0	20.00
16QAM	20	≤ 18	1	23.00	0	20.00
16QAM	20	> 18	2	22.00	0	20.00
QPSK	15	≤ 16	0	24.00	0	20.00
QPSK	15	> 16	1	23.00	0	20.00
16QAM	15	≤ 16	1	23.00	0	20.00
16QAM	15	> 16	2	22.00	0	20.00
QPSK	10	≤ 12	0	24.00	0	20.00
QPSK	10	> 12	1	23.00	0	20.00
16QAM	10	≤ 12	1	23.00	0	20.00
16QAM	10	> 12	2	22.00	0	20.00
QPSK	5	≤ 8	0	24.00	0	20.00
QPSK	5	> 8	1	23.00	0	20.00
16QAM	5	≤ 8	1	23.00	0	20.00
16QAM	5	> 8	2	22.00	0	20.00

LTE Band 2						
average power(dBm)						
Modulation	BW (MHz)	RB size	Full Power mode (MPR)	Full power mode	Reduced Power mode (MPR)	Reduced Power mode
QPSK	20	≤ 18	0	24.00	0	21.00
QPSK	20	> 18	1	23.00	0	21.00
16QAM	20	≤ 18	1	23.00	0	21.00
16QAM	20	> 18	2	22.00	0	21.00
QPSK	15	≤ 16	0	24.00	0	21.00
QPSK	15	> 16	1	23.00	0	21.00
16QAM	15	≤ 16	1	23.00	0	21.00
16QAM	15	> 16	2	22.00	0	21.00
QPSK	10	≤ 12	0	24.00	0	21.00
QPSK	10	> 12	1	23.00	0	21.00
16QAM	10	≤ 12	1	23.00	0	21.00
16QAM	10	> 12	2	22.00	0	21.00
QPSK	5	≤ 8	0	24.00	0	21.00
QPSK	5	> 8	1	23.00	0	21.00
16QAM	5	≤ 8	1	23.00	0	21.00
16QAM	5	> 8	2	22.00	0	21.00

LTE Band 25						
average power(dBm)						
Modulation	BW (MHz)	RB size	Full Power mode (MPR)	Full power mode	Reduced Power mode (MPR)	Reduced Power mode
QPSK	20	≤ 18	0	24.00	0	21.00
QPSK	20	> 18	1	23.00	0	21.00
16QAM	20	≤ 18	1	23.00	0	21.00
16QAM	20	> 18	2	22.00	0	21.00
QPSK	15	≤ 16	0	24.00	0	21.00
QPSK	15	> 16	1	23.00	0	21.00
16QAM	15	≤ 16	1	23.00	0	21.00
16QAM	15	> 16	2	22.00	0	21.00
QPSK	10	≤ 12	0	24.00	0	21.00
QPSK	10	> 12	1	23.00	0	21.00
16QAM	10	≤ 12	1	23.00	0	21.00
16QAM	10	> 12	2	22.00	0	21.00
QPSK	5	≤ 8	0	24.00	0	21.00
QPSK	5	> 8	1	23.00	0	21.00
16QAM	5	≤ 8	1	23.00	0	21.00
16QAM	5	> 8	2	22.00	0	21.00

Band / Mode	Average Power (dBm)	
	v2.1+EDR	v4.0+LE
Bluetooth	3.5	6

Band / Frequency (MHz)		IEEE 802.11 Average Power (dBm)									
		Ant 0				Ant 1				Ant 0+1	
		11b	11g	HT20	HT40	11b	11g	HT20	HT40	HT20	HT40
2.4GHz Band	2412	15.5	13.5	13.5		14	12	12		15.5	
	2422				12				10		11.5
	2437	15.5	16.5	16.5	16.5	14	15.5	15.5	13.5	16.5	16
	2452				13				13		15
	2462	15.5	13.5	13.5		14	13.5	13.5		16.5	

Band / Frequency (MHz)		IEEE 802.11 Average Power (dBm)										
		Ant 0				Ant 1				Ant 0+1		
		11a	HT20 / VHT20	HT40 / VHT40	VHT80	11a	HT20 / VHT20	HT40 / VHT40	VHT80	HT20 / VHT20	HT40 / VHT40	VHT80
5.2GHz Band	5180	13.5	13.5			13	13			14		
	5190			9.5				10			11	
	5200	16	16			16	16			16		
	5210				8.5				8.5			9.5
	5220	15	15.5			15	15.5			15.5		
	5230			15.5				15.5			15.5	
	5240	15	15.5			15	15.5			15.5		
5.3GHz Band	5260	13.5	13.5			13	13			14		
	5270			9.5				10			11	
	5280	16	16			16	16			16		
	5290				10.5				11			11.5
	5300	16	16			16	16			16		
	5310			11				11			12	
	5320	13.5	13.5			13	13			14.5		

Band / Frequency (MHz)		IEEE 802.11 Average Power (dBm)										
		Ant 0				Ant 1				Ant 0+1		
		11a	HT20 / VHT20	HT40 / VHT40	VHT80	11a	HT20 / VHT20	HT40 / VHT40	VHT80	HT20 / VHT20	HT40 / VHT40	VHT80
5.5GHz Band	5500	13.5	13.5			13	13			14		
	5510			10.5				10.5			11	
	5520	16.5	16.5			16.5	16.5			16.5		
	5530				9				9			9.5
	5540	16.5	16.5			16.5	16.5			16.5		
	5550			16.5				16.5			16.5	
	5560	16.5	16.5			16.5	16.5			16.5		
	5580	16.5	16.5			16.5	16.5			16.5		
	5600	16.5	16.5			16.5	16.5			16.5		
	5610				14				14			17
	5620	16.5	16.5			16.5	16.5			16.5		
	5630			15.5				15.5			16.5	
	5640	16.5	16.5			16.5	16.5			16.5		
	5660	16.5	16.5			16.5	16.5			16.5		
	5670			15.5				15.5			16	
	5680	16.5	16.5			16.5	16.5			16.5		
	5690				14				14			17
	5700	13	13			12.5	12.5			13.5		
	5710			16.5				16.5			16.5	
	5720	16.5	16.5			16.5	16.5			16.5		
5.8GHz Band	5745	16.5	16.5			16.5	16.5			16.5		
	5755			16.5				16.5			16.5	
	5765	16.5	16.5			16.5	16.5			16.5		
	5775				14				14			16.5
	5785	16.5	16.5			16.5	16.5			16.5		
	5795			16.5				16.5			16.5	
	5805	16.5	16.5			16.5	16.5			16.5		
	5825	16.5	16.5			16.5	16.5			16.5		

The table below summarized necessary items addressed in KDB 941225 D05 v02r03.

FCC ID	Q2GEM7355
EUT	Wireless Modules
Operating Frequency Range of each LTE transmission band	LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz
Channel Bandwidth	LTE Band 17: 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 5: 5MHz, 10MHz LTE Band 4: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 2: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 25: 5MHz, 10MHz, 15MHz, 20MHz

Transmission (H, M, L) channel numbers and frequencies in each LTE band

Band 17

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Frequency (MHz)	Channel #	Frequency (MHz)
L	23755	706.5	23780	709
M	23790	710	23790	710
H	23825	713.5	23800	711

Band 13

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Frequency (MHz)	Channel #	Frequency (MHz)
L	23205	779.5		
M	23230	782	23230	782
H	23255	784.5		

LTE Band 5

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20425	826.5	20450	829
M	20525	836.5	20525	836.5
H	20625	846.5	20600	844

LTE Band 4

	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20375	1752.5	20350	1750	20325	1747.5	20300	1745

LTE Band 2

	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880
H	19175	1907.5	19150	1905	19125	1902.5	19100	1900

LTE Band 25

	Bandwidth 5 MHz				Bandwidth 10 MHz	Bandwidth 15 MHz	Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26365	1882.5	26365	1882.5	26365	1882.5	26365	1882.5
H	26665	1912.5	26640	1910	26615	1907.5	26590	1905

<table>
<tr><td>LTE category, uplink modulations used</td><td>Category 3, QPSK, and 16QAM</td></tr>
<tr><td>LTE transmitter and antenna implementation (standalone or sharing hardware components / antennas)</td><td>A primary antenna is used for LTE and other wireless interfaces (GSM/CDMA/WCDMA) for transmitting and receiving. LTE and other wireless interfaces (GSM/CDMA/WCDMA) share the same antenna, and cannot transmit simultaneously
A 2nd antenna is used for LTE and other wireless interfaces (GSM/CDMA/WCDMA) for receiving only</td></tr>
<tr><td>LTE Voice / Data requirements</td><td>Data only</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>Yes, per 3GPP TS 36.101 v11.0.0
Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (RB)</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
</table></td></tr>
<tr><td>LTE A-MPR</td><td>In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing.</td></tr>
<tr><td>Base station simulator used for Testing</td><td>Anritsu MT8820C</td></tr>
<tr><td>Power reduction applied to satisfy SAR compliance</td><td>Yes, proximity sensor triggered power reduction implemented on the host, iX104C6</td></tr>
</table>

3.3 Applied Standard

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2003
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r02
- FCC KDB 865664 D02 SAR Reporting v01r01
- FCC KDB 447498 D01 General RF Exposure Guidance v05r01
- FCC KDB 248227 D01 SAR meas for 802 11abg v01r02
- FCC KDB 644545 D01 Guidance for IEEE 802 11ac v01r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r01
- FCC KDB 941225 D01 SAR test for 3G devices v02
- FCC KDB 941225 D02 HSPA and 1x Advanced v02r02
- FCC KDB 941225 D03 SAR Test Reduction GSM GPRS EDGE v01
- FCC KDB 941225 D05 SAR for LTE Devices v02r03

3.4 Device Category and SAR Limits

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user. Limit for General Population/Uncontrolled exposure should be applied for this device, it is 1.6 W/kg as averaged over any 1 gram of tissue.

3.5 Test Conditions

3.5.1 Ambient Condition

Ambient Temperature	20 to 24 ℃
Humidity	< 60 %

3.5.2 Test Configuration

For WWAN SAR testing, the device was controlled by using a base station emulator. Communication between the device and the emulator was established by air link. The distance between the EUT and the antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of EUT.

The EUT was set from the emulator to radiate maximum WWAN output power during all tests. For Bottom-Face and Edge1 testing at 0cm separation, the proximity sensor will activate the power reduction and the maximum power is limited at the pre-defined level implemented in this device.

For WLAN SAR testing, WLAN engineering testing software installed on the EUT can provide continuous transmitting RF signal.

Target Power reduction applied for each wireless mode and orientation

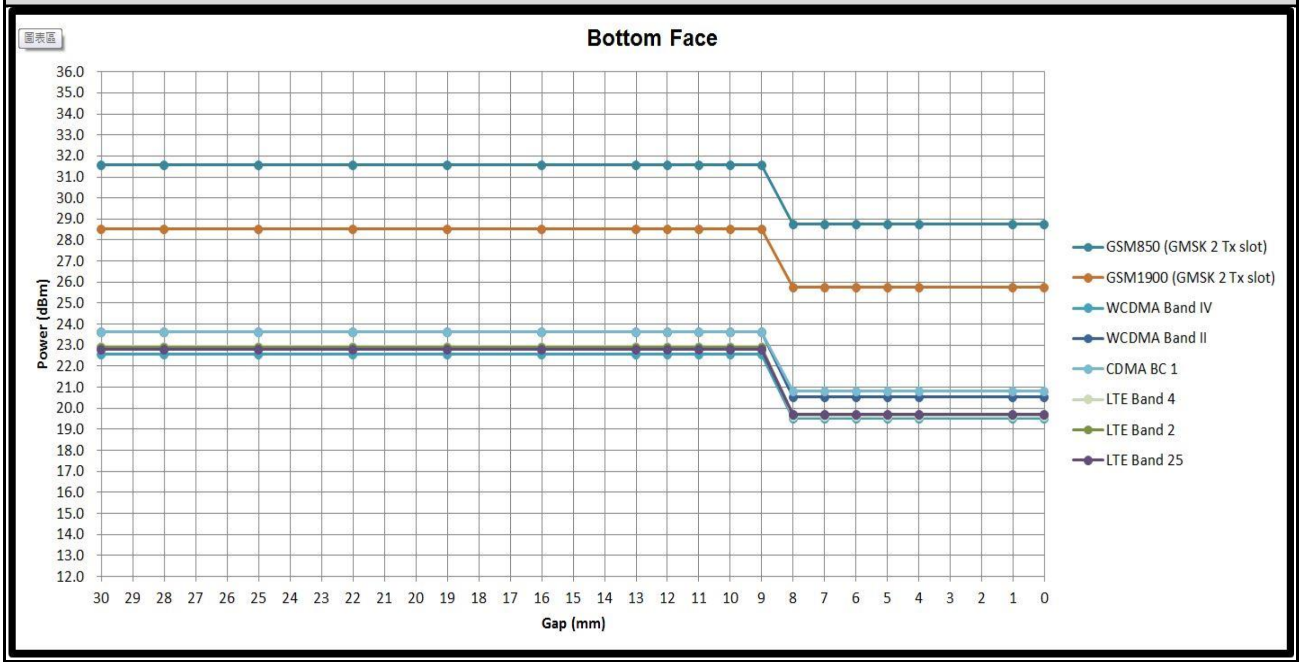
Exposure Position / wireless mode	Bottom Face[(1)]	Edge 1[(1)]	Curved surface of Edge1[1)]	Edge 2	Edge 3	Edge 4
GSM850 GPRS (GMSK 1 Tx slot)	3.0 dB	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
GSM850 GPRS (GMSK 2 Tx slots)	3.0 dB	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
GSM850 EDGE (8PSK 1 Tx slot)	3.0 dB	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
GSM850 EDGE (8PSK 2 Tx slots)	3.0 dB	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
GSM850 EDGE (8PSK 3 Tx slots)	3.0 dB	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
GSM850 EDGE (8PSK 4 Tx slots)	3.0 dB	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
GSM1900 GPRS (GMSK 1 Tx slot)	3.0 dB	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
GSM1900 GPRS (GMSK 2 Tx slots)	3.0 dB	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
GSM1900 EDGE (8PSK 1 Tx slot)	3.0 dB	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
GSM1900 EDGE (8PSK 2 Tx slots)	3.0 dB	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
GSM1900 EDGE (8PSK 3 Tx slots)	3.0 dB	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
GSM1900 EDGE (8PSK 4 Tx slots)	3.0 dB	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
WCDMA Band V	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
WCDMA Band IV	4.0 dB	4.0 dB	4.0 dB	0 dB	0 dB	0 dB
WCDMA Band II	3.0 dB	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
CDMA2000 BC10	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
CDMA2000 BC0	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
CDMA2000 BC1	3.0 dB	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
LTE Band 13	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
LTE Band 17	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
LTE Band 5	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
LTE Band 4	4.0 dB	4.0 dB	4.0 dB	0 dB	0 dB	0 dB
LTE Band 2	3.0 dB	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
LTE Band 25	3.0 dB	3.0 dB	3.0 dB	0 dB	0 dB	0 dB

Remark:
1. [(1)]: Reduced maximum limit applied by activation of proximity sensor.
2. Power reduction is not applicable for UMTS Band5, CDMA BC10 / BC0, LTE Band 13 / 17 / 5 and WLAN / Bluetooth.

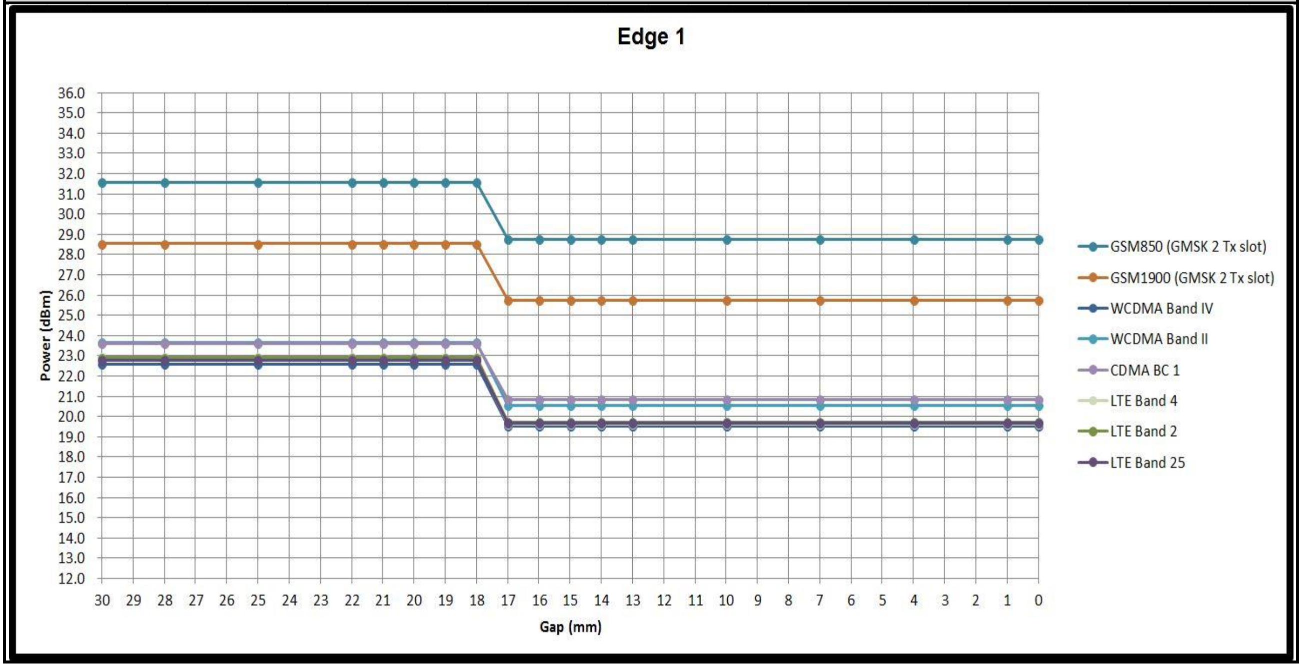
Measurement on EUT:

Band/Mode	Ch #	Measured power reduction (dBm)		Reduction Level
		w/o power back-off	w/ power back-off	(dB)
GSM850 GPRS (GMSK 2 Tx slot)	189	31.56	28.75	2.81
GSM1900 GPRS (GMSK 2 Tx slot)	661	28.53	25.75	2.78
WCDMA Band IV (RMC 12.2Kbps)	1413	22.57	19.54	3.03
WCDMA Band II (RMC 12.2Kbps)	9400	23.65	20.54	3.11
EVDO BC1 (RTAP 153.6Kbps)	600	23.62	20.84	2.78
LTE Band 4 1RB 0offset	20175	22.93	19.64	3.29
LTE Band 2 1RB 99offset	18900	22.90	19.71	3.19
LTE Band 25 1RB 49offset	26365	22.79	19.69	3.10

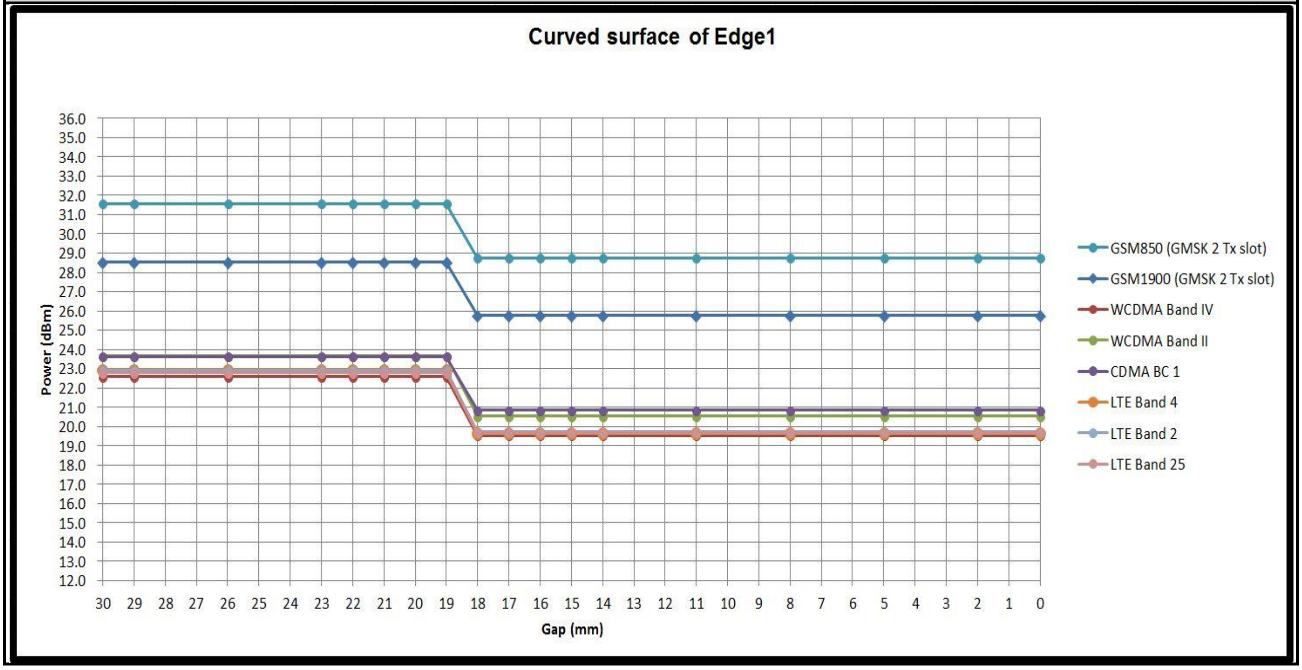
Proximity Sensor for Bottom Face detection



Proximity Sensor for Edge 1 detection



Proximity Sensor for Curved surface of Edge1 detection



4. Specific Absorption Rate (SAR)

4.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

4.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\mathbf{SAR} = \frac{d}{dt}\left(\frac{dW}{dm}\right) = \frac{d}{dt}\left(\frac{dW}{\rho dv}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg)

SAR measurement can be either related to the temperature elevation in tissue by

$$\mathbf{SAR} = C\left(\frac{\delta T}{\delta t}\right)$$

Where: C is the specific heat capacity, δT is the temperature rise and δt is the exposure duration, or related to the electrical field in the tissue by

$$\mathbf{SAR} = \frac{\sigma |E|^2}{\rho}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

5. SAR Measurement System

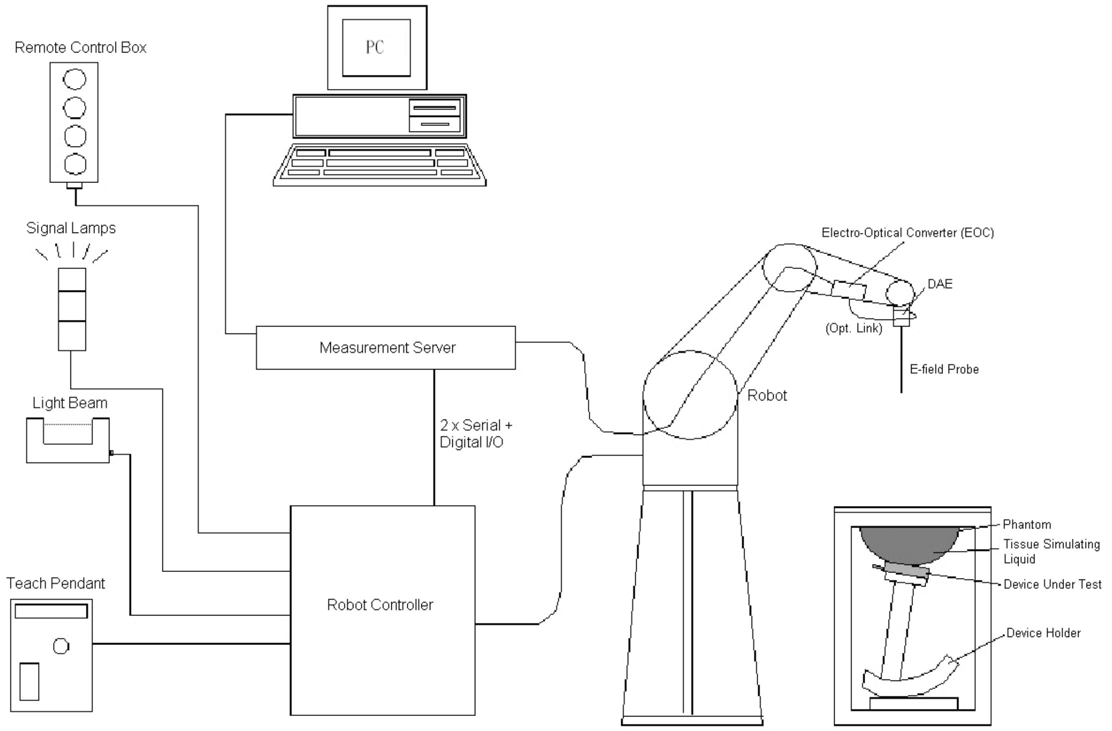


Fig 5.1 SPEAG DASY System Configurations

The DASY system for performance compliance tests is illustrated above graphically. This system consists of the following items:

- A standard high precision 6-axis robot with controller, a teach pendant and software
- A data acquisition electronic (DAE) attached to the robot arm extension
- A dosimetric probe equipped with an optical surface detector system
- The electro-optical converter (EOC) performs the conversion between optical and electrical signals
- A measurement server performs the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the accuracy of the probe positioning
- A computer operating Windows XP
- DASY software
- Remove control with teach pendant and additional circuitry for robot safety such as warming lamps, etc.
- The SAM twin phantom
- A device holder
- Tissue simulating liquid
- Dipole for evaluating the proper functioning of the system

Component details are described in in the following sub-sections.

5.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG).The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

5.1.1 E-Field Probe Specification

<ES3DV3 Probe >

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection system. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	10 MHz to 3 GHz; Linearity: ± 0.2 dB
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.4 dB in HSL (rotation normal to probe axis)
Dynamic Range	5 µW/g to 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 337 mm (Tip: 10 mm) Tip diameter: 4 mm (Body: 10 mm) Distance from probe tip to dipole centers: 3 mm

Fig 5.2 Photo of ES3DV3

<EX3DV4 Probe>

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	10 MHz to 6 GHz; Linearity: ± 0.2 dB
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 µW/g to 100 mW/g; Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm

Fig 5.3 Photo of EX3DV4/ES3DV4

5.1.2 E-Field Probe Calibration

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy shall be evaluated and within ± 0.25dB. The sensitivity parameters (NormX, NormY, and NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested. The calibration data can be referred to appendix C of this report.

5.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig 5.4 Photo of DAE

5.3 Robot

The SPEAG DASY system uses the high precision robots (DASY4: RX90BL; DASY5: TX90XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY4: CS7MB; DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability ±0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

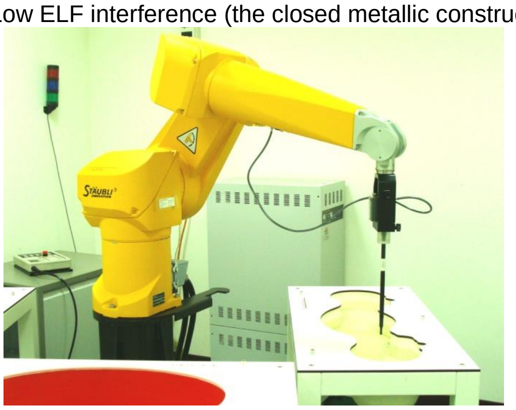


Fig 5.5 Photo of DASY4

Fig 5.6 Photo of DASY5

5.4 Measurement Server

The measurement server is based on a PC/104 CPU board with CPU (DASY4: 166 MHz, Intel Pentium; DASY5: 400 MHz, Intel Celeron), chipdisk (DASY4: 32 MB; DASY5: 128 MB), RAM (DASY4: 64 MB, DASY5: 128 MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all the real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operations.

Fig 5.7 Photo of Server for DASY4

Fig 5.8 Photo of Server for DASY5

5.5 Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom

Fig 5.9 Photo of SAM Phantom

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI4 Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)
Filling Volume	Approx. 30 liters
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm

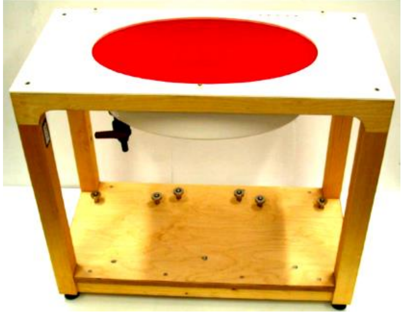


Fig 5.10 Photo of ELI4 Phantom

The ELI4 phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

5.6 Device Holder

<Device Holder for SAM Twin Phantom>

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ± 0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity ε = 3 and loss tangent δ = 0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

Fig 5.11 Device Holder

<Laptop Extension Kit>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.

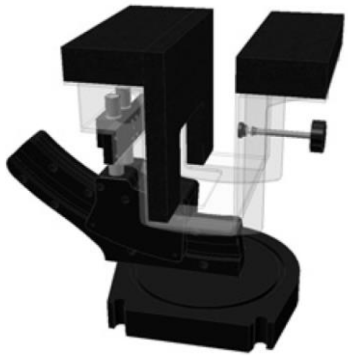


Fig 5.12 Laptop Extension Kit

5.7 Data Storage and Evaluation

5.7.1 Data Storage

The DASY software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files. The post-processing software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of erroneous parameter settings. For example, if a measurement has been performed with an incorrect crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be reevaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type (e.g., [V/m], [A/m], [mW/g]). Some of these units are not available in certain situations or give meaningless results, e.g., a SAR-output in a non-lose media, will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

5.7.2 Data Evaluation

The DASY post-processing software (SEMCAD) automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software：

Probe parameters：	- Sensitivity	$Norm_i$, a_{i0}, a_{i1}, a_{i2}
	- Conversion factor	$ConvF_i$
	- Diode compression point	dcp_i
Device parameters：	- Frequency	f
	- Crest factor	cf
Media parameters：	- Conductivity	σ
	- Density	ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multi-meter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power.

The formula for each channel can be given as：

$$\mathbf{V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}}$$

with V_i = compensated signal of channel i, (i = x, y, z)
U_i = input signal of channel i, (i = x, y, z)
cf = crest factor of exciting field (DASY parameter)
dcp_i = diode compression point (DASY parameter)

From the compensated input signals, the primary field data for each channel can be evaluated：

E-field Probes：$\mathbf{E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}}$

H-field Probes：$\mathbf{H_i = \sqrt{V_i} \cdot \frac{a_{i0}+a_{i1}f+a_{i2}f^2}{f}}$

with V_i = compensated signal of channel i, (i = x, y, z)
$Norm_i$ = sensor sensitivity of channel i, (i = x, y, z), $\mu V/(V/m)^2$ for E-field Probes
ConvF = sensitivity enhancement in solution
a_{ij} = sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
E_i = electric field strength of channel i in V/m
H_i = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude)：

$$\mathbf{E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}}$$

The primary field data are used to calculate the derived field units.

$$\mathbf{SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1000}}$$

with SAR = local specific absorption rate in mW/g
E_{tot} = total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm^3

Note that the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid.

5.8 Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1099	Nov. 11, 2013	Nov. 10, 2014
SPEAG	835MHz System Validation Kit	D835V2	4d162	Nov. 11, 2013	Nov. 10, 2014
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 27, 2013	Nov. 26, 2014
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	Nov. 12, 2013	Nov. 11, 2014
SPEAG	2450MHz System Validation Kit	D2450V2	924	Nov. 13, 2013	Nov. 12, 2014
SPEAG	5GHz System Validation Kit	D5GHzV2	1128	Jul. 24, 2013	Jul. 23, 2014
SPEAG	Data Acquisition Electronics	DAE4	778	Aug. 21, 2013	Aug. 20, 2014
SPEAG	Data Acquisition Electronics	DAE3	577	May. 08, 2013	May. 07, 2014
SPEAG	Data Acquisition Electronics	DAE3	495	May. 08, 2013	May. 07, 2014
SPEAG	Data Acquisition Electronics	DAE4	1399	Nov. 07, 2013	Nov. 06, 2014
SPEAG	Dosimetric E-Field Probe	ES3DV3	3270	Sep. 24, 2013	Sep. 23, 2014
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Sep. 10, 2013	Sep. 09, 2014
SPEAG	Dosimetric E-Field Probe	EX3DV4	3898	Jan. 14, 2013	Jan. 13, 2014
SPEAG	Dosimetric E-Field Probe	EX3DV4	3925	Jun. 12, 2013	Jun. 11, 2014
SPEAG	Dosimetric E-Field Probe	EX3DV4	3661	Jan. 15, 2013	Jan. 14, 2014
Wisewind	Thermometer	ETP-101	TM685	Oct. 22, 2013	Oct. 21, 2014
Wisewind	Thermometer	HTC-1	TM642	Oct. 22, 2013	Oct. 21, 2014
Wisewind	Thermometer	HTC-1	TM281	Oct. 22, 2013	Oct. 21, 2014
H.M.IRIS	Thermometer	TH-08	TM658	Oct. 22, 2013	Oct. 21, 2014
Anritsu	Radio Communication Analyzer	MT8820C	6201074414	Dec. 11, 2012	Dec. 10, 2014
Agilent	Wireless Communication Test Set	E5515C	GB46311322	Mar. 25, 2013	Mar. 24, 2014
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 06, 2013	May. 05, 2014
R&S	Radio communication Tester	CMW500	116160	Jan. 18, 2013	Jan. 17, 2014
SPEAG	Device Holder	N/A	N/A	NCR	NCR
Agilent	Signal Generator	E4438C	MY49070755	Oct. 08, 2013	Oct. 07, 2014
Agilent	ENA Network Analyzer	E5071C	MY46316648	Feb. 07, 2013	Feb. 06, 2014
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Jul. 23, 2013	Jul. 22, 2014
Anritsu	Power Meter	ML2495A	1240001	Sep. 11, 2013	Sep. 10, 2014
Anritsu	Power Sensor	MA2411B	1207349	Sep. 11, 2013	Sep. 10, 2014
Agilent	Dual Directional Coupler	778D	50422	Note 4	
Woken	Attenuator 1	WK0602-XX	N/A	Note 4	
PE	Attenuator 2	PE7005-10	N/A	Note 4	
PE	Attenuator 3	PE7005- 3	N/A	Note 4	
AR	Power Amplifier	5S1G4M2	0328767	Note 5	
Mini-Circuits	Power Amplifier	ZVE-3W	162601250	Note 5	
R&S	Spectrum Analyzer	FSP 7	101131	Jul. 09, 2013	Jul. 08, 2014

Table 5.1 Test Equipment List

Note:

1. The calibration certificate of DASY can be referred to appendix C of this report.
2. The Insertion Loss calibration of Dual Directional Coupler and Attenuator were characterized via the network analyzer and compensated during system check.
3. In system check we need to monitor the level on the power meter, and adjust the power amplifier level to have precise power level to the dipole; the measured SAR will be normalized to 1W input power according to the ratio of 1W to the input power to the dipole. For system check, the calibration of the power amplifier is deemed not critically required for correct measurement; the power meter is critical and we do have calibration for it
4. Attenuator 1 insertion loss is calibrated by the network Analyzer, which the calibration is valid, before system check.

6. Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 6.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 6.2.

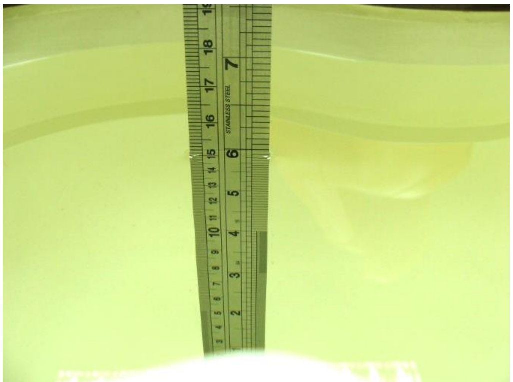


Fig 6.1 Photo of Liquid Height for Head SAR

Fig 6.2 Photo of Liquid Height for Body SAR

The following table gives the recipes for tissue simulating liquid.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (ε_r)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7

Table 6.1 Recipes of Tissue Simulating Liquid

Simulating Liquid for 5G, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

The dielectric parameters of the liquids were verified prior to the SAR evaluation using an SPEAG DAK-3.5 Dielectric Probe Kit and an Agilent Network Analyzer.

The following table shows the measuring results for simulating liquid.

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Body	22.6	0.961	53.931	0.96	55.50	0.10	-2.83	±5	2014/1/2
835	Body	22.4	0.963	54.539	0.97	55.20	-0.72	-1.20	±5	2013/12/26
835	Body	22.6	0.998	55.923	0.97	55.20	2.89	1.31	±5	2013/12/30
835	Body	22.6	0.998	55.923	0.97	55.20	2.89	1.31	±5	2013/12/30
1750	Body	22.3	1.529	52.221	1.52	53.30	0.59	-2.02	±5	2013/12/25
1750	Body	22.4	1.525	52.092	1.52	53.30	0.33	-2.27	±5	2013/12/31
1900	Body	22.3	1.521	53.218	1.52	53.30	0.07	-0.15	±5	2013/12/24
1900	Body	22.3	1.521	53.218	1.52	53.30	0.07	-0.15	±5	2013/12/24
1900	Body	22.5	1.535	52.471	1.52	53.30	0.99	-1.56	±5	2013/12/30
2450	Body	22.4	2.020	53.849	1.95	52.70	3.59	2.18	±5	2013/12/27
5200	Body	22.5	5.131	47.488	5.30	49.00	-3.19	-3.09	±5	2013/12/28
5300	Body	22.5	5.264	47.249	5.42	48.88	-2.88	-3.34	±5	2013/12/28
5600	Body	22.5	5.623	46.749	5.77	48.47	-2.55	-3.55	±5	2013/12/29
5800	Body	22.5	5.956	46.473	6.00	48.20	-0.73	-3.58	±5	2013/12/29

Table 6.2 Measuring Results for Simulating Liquid

7. System Verification Procedures

Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder.

7.1 Purpose of System Performance check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

7.2 System Setup

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:

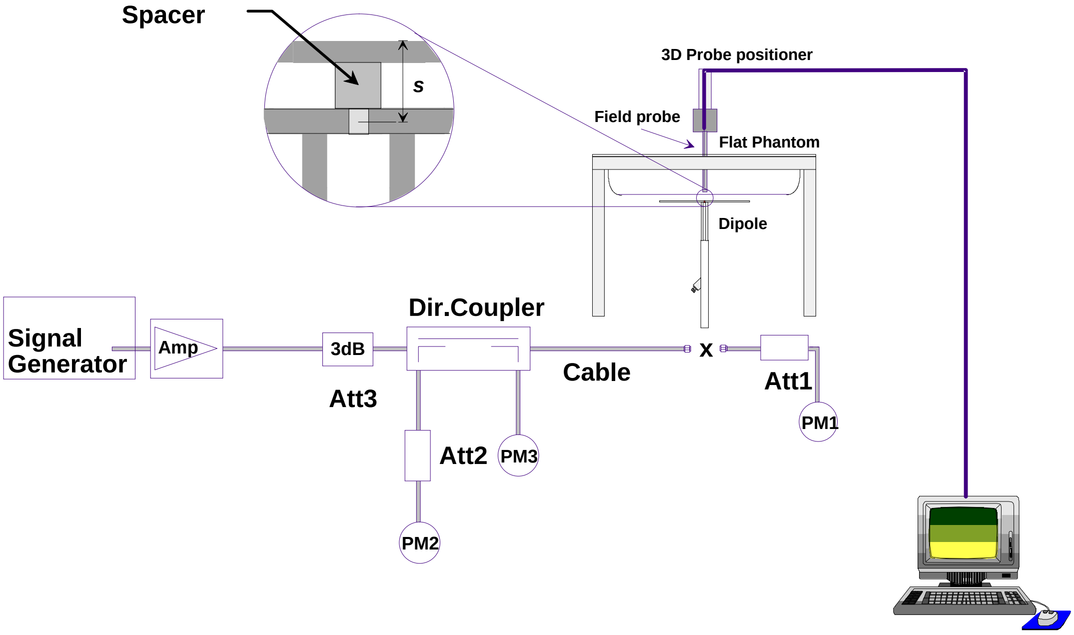


Fig 7.1 System Setup for System Evaluation

1. Signal Generator
2. Amplifier
3. Directional Coupler
4. Power Meter
5. Calibrated Dipole

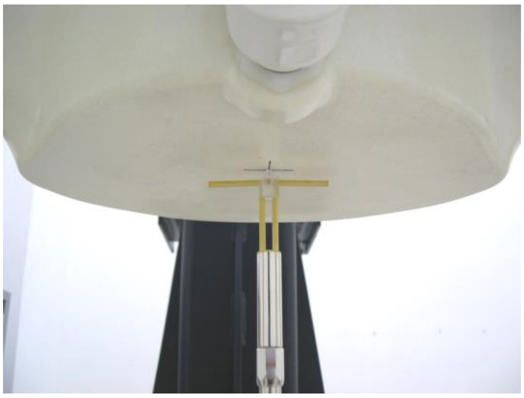


Fig 7.2 Photo of Dipole Setup

7.3 SAR System Verification Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Table 7.1 shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured SAR (W/kg)	Targeted SAR (W/kg)	Normalized SAR (W/kg)	Deviation (%)
2014/1/2	750	Body	250	D750V3-SN:1099	3925	495	2.26	8.56	9.04	5.61
2013/12/26	835	Body	250	D835V2-SN:4d162	3931	1399	2.42	9.28	9.68	4.31
2013/12/30	835	Body	250	D835V2-SN:4d162	3898	778	2.33	9.28	9.32	0.43
2013/12/30	835	Body	250	D835V2-SN:4d162	3270	778	2.49	9.28	9.96	7.33
2013/12/25	1750	Body	250	D1750V2-SN:1023	3931	1399	9.30	37.10	37.20	0.27
2013/12/31	1750	Body	250	D1750V2-SN:1023	3270	778	8.92	37.10	35.68	-3.83
2013/12/24	1900	Body	250	D1900V2-SN:5d182	3270	778	9.80	39.50	39.20	-0.76
2013/12/24	1900	Body	250	D1900V2-SN:5d182	3931	1399	9.64	39.50	38.56	-2.38
2013/12/30	1900	Body	250	D1900V2-SN:5d182	3931	577	9.72	39.50	38.88	-1.57
2013/12/27	2450	Body	250	D2450V2-SN:924	3931	1399	13.20	50.20	52.80	5.18
2013/12/28	5200	Body	100	D5GHzV2-SN:1128	3925	495	7.45	73.40	74.50	1.50
2013/12/28	5300	Body	100	D5GHzV2-SN:1128	3661	1399	6.93	74.30	69.30	-6.73
2013/12/29	5600	Body	100	D5GHzV2-SN:1128	3661	1399	7.71	77.80	77.10	-0.90
2013/12/29	5800	Body	100	D5GHzV2-SN:1128	3661	1399	7.01	72.20	70.10	-2.91

Table 7.1 Target and Measurement SAR after Normalized

8. EUT Testing Position

This device can be used also in full sized tablet exposure conditions, due to its size. Per FCC KDB 616217, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR exclusion threshold in KDB 447498 D01v05r01 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

9. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
(b) Read the WWAN RF power level from the base station simulator.
(c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
(b) Place the EUT in the positions as Appendix D demonstrates.
(c) Set scan area, grid size and other setting on the DASY software.
(d) Measure SAR results for the highest power channel on each testing position.
(e) Find out the largest SAR result on these testing positions of each band
(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

9.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

9.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

9.3 Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01v01r02 quoted below.

When the 1-g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

<table>
<tr><th colspan="3"></th><th>$\leq$ 3 GHz</th><th>> 3 GHz</th></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 ± 1 mm</td><td>½·δ·ln(2) ± 0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>$\leq$ 2 GHz: $\leq$ 15 mm
2 – 3 GHz: $\leq$ 12 mm</td><td>3 – 4 GHz: $\leq$ 12 mm
4 – 6 GHz: $\leq$ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>$\leq$ 2 GHz: $\leq$ 8 mm
2 – 3 GHz: $\leq$ 5 mm*</td><td>3 – 4 GHz: $\leq$ 5 mm*
4 – 6 GHz: $\leq$ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>$\leq$ 5 mm</td><td>3 – 4 GHz: $\leq$ 4 mm
4 – 5 GHz: $\leq$ 3 mm
5 – 6 GHz: $\leq$ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>$\leq$ 4 mm</td><td>3 – 4 GHz: $\leq$ 3 mm
4 – 5 GHz: $\leq$ 2.5 mm
5 – 6 GHz: $\leq$ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>$\geq$ 30 mm</td><td>3 – 4 GHz: $\geq$ 28 mm
4 – 5 GHz: $\geq$ 25 mm
5 – 6 GHz: $\geq$ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
* When zoom scan is required and the <u>reported</u> SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is $\leq$ 1.4 W/kg, $\leq$ 8 mm, $\leq$ 7 mm and $\leq$ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

9.4 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

9.5 SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

9.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.

10. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

Note:

1. Per KDB 447498 D01v05r01, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. According to KDB 941225 D03v01, for Body SAR testing, the EUT operating without power back-off was set in GPRS (2 Tx slots) and the EUT operating with power back-off was set in GPRS (2 Tx slots) due to its highest frame-average power.

Full Power mode (Proximity Sensor Inactive)

Band GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GPRS (GMSK, 1 Tx slot) – CS1	31.69	31.67	31.62	33.50	22.69	22.67	22.62	24.50
GPRS (GMSK, 2 Tx slots) – CS1	31.61	31.56	31.48	33.00	25.61	25.56	25.48	27.00
EDGE (8PSK, 1 Tx slot) – MCS5	26.62	26.56	26.51	28.00	17.62	17.56	17.51	19.00
EDGE (8PSK, 2 Tx slots) – MCS5	26.62	26.56	26.51	27.00	20.62	20.56	20.51	21.00
EDGE (8PSK, 3 Tx slots) – MCS5	26.48	26.35	26.32	27.00	22.22	22.09	22.06	22.74
EDGE (8PSK, 4 Tx slots) – MCS5	26.26	26.19	26.15	27.00	23.26	23.19	23.15	24.00

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.
The calculated method are shown as below:
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

Reduced Power Mode (Proximity Sensor active)

Band GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GPRS (GMSK, 1 Tx slot) – CS1	28.89	28.88	28.83	30.50	19.89	19.88	19.83	21.50
GPRS (GMSK, 2 Tx slots) – CS1	28.80	28.75	28.67	30.00	22.80	22.75	22.67	24.00
EDGE (8PSK, 1 Tx slot) – MCS5	23.81	23.76	23.70	25.00	14.81	14.76	14.70	16.00
EDGE (8PSK, 2 Tx slots) – MCS5	23.82	23.77	23.71	24.00	17.82	17.77	17.71	18.00
EDGE (8PSK, 3 Tx slots) – MCS5	23.69	23.54	23.53	24.00	19.43	19.28	19.27	19.74
EDGE (8PSK, 4 Tx slots) – MCS5	23.45	23.39	23.34	24.00	20.45	20.39	20.34	21.00

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.
The calculated method are shown as below:
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

Full Power mode (Proximity Sensor Inactive)

Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GPRS (GMSK, 1 Tx slot) – CS1	28.76	28.62	28.85	30.50	19.76	19.62	19.85	21.50
GPRS (GMSK, 2 Tx slots) – CS1	28.65	28.53	28.74	30.00	22.65	22.53	22.74	24.00
EDGE (8PSK, 1 Tx slot) – MCS5	25.15	25.09	25.40	27.00	16.15	16.09	16.40	18.00
EDGE (8PSK, 2 Tx slots) – MCS5	25.09	25.03	25.31	26.00	19.09	19.03	19.31	20.00
EDGE (8PSK, 3 Tx slots) – MCS5	24.94	24.92	25.21	26.00	20.68	20.66	20.95	21.74
EDGE (8PSK, 4 Tx slots) – MCS5	24.89	24.87	25.12	26.00	21.89	21.87	22.12	23.00

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.
The calculated method are shown as below:
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

Reduced Power Mode (Proximity Sensor active)

Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GPRS (GMSK, 1 Tx slot) – CS1	25.78	25.67	25.64	27.50	16.78	16.67	16.64	18.50
GPRS (GMSK, 2 Tx slots) – CS1	25.77	25.75	25.60	27.00	19.77	19.75	19.60	21.00
EDGE (8PSK, 1 Tx slot) – MCS5	22.06	22.01	22.00	24.00	13.06	13.01	13.00	15.00
EDGE (8PSK, 2 Tx slots) – MCS5	22.09	22.04	22.00	23.00	16.09	16.04	16.00	17.00
EDGE (8PSK, 3 Tx slots) – MCS5	21.88	21.84	21.81	23.00	17.62	17.58	17.55	18.74
EDGE (8PSK, 4 Tx slots) – MCS5	21.84	21.80	21.76	23.00	18.84	18.80	18.76	20.00

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.
The calculated method are shown as below:
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

<WCDMA Conducted Power>

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set Gain Factors (β_c and β_d) and parameters were set according to each
   ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
   iii. Set RMC 12.2Kbps + HSDPA mode.
   iv. Set Cell Power = -86 dBm
   v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
   vi. Select HSDPA Uplink Parameters
   vii. Set Delta ACK, Delta NACK and Delta CQI = 8
   viii. Set Ack-Nack Repetition Factor to 3
   ix. Set CQI Feedback Cycle (k) to 4 ms
   x. Set CQI Repetition Factor to 2
   xi. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d *(SF)*	β_c/β_d	β_{HS} *(Note1, Note 2)*	CM (dB) *(Note 3)*	MPR (dB) *(Note 3)*
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 *(Note 4)*	15/15 *(Note 4)*	64	12/15 *(Note 4)*	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$, and Δ_{CQI} = 24/15 with $\beta_{hs} = 24/15 * \beta_c$.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Setup Configuration

HSUPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting * :
   i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
   ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
   iii. Set Cell Power = -86 dBm
   iv. Set Channel Type = 12.2k + HSPA
   v. Set UE Target Power
   vi. Power Ctrl Mode= Alternating bits
   vii. Set and observe the E-TFCI
   viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d *(SF)*	β_c/β_d	β_{HS} *(Note1)*	β_{ec}	β_{ed} *(Note 5) (Note 6)*	β_{ed} *(SF)*	β_{ed} *(Codes)*	CM *(dB) (Note 2)*	MPR *(dB) (Note 2)*	*AG Index (Note 6)*	*E-TFCI*
1	11/15 *(Note 3)*	15/15 *(Note 3)*	64	11/15 *(Note 3)*	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed}1: 47/15 β_{ed}2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 *(Note 4)*	15/15 *(Note 4)*	64	15/15 *(Note 4)*	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c .

Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.

Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.

Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.

Setup Configuration

<WCDMA Conducted Power>

Note:

1. Per KDB 941225 D02v02r02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA output power is < 0.25dB higher than RMC12.2Kbps, or reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA/HSUPA SAR evaluation can be excluded.

Full Power Mode (Proximity Sensor Inactive)

Band			WCDMA V			Tune-up Limit (dBm)	WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)
TX Channel			4132	4182	4233		9262	9400	9538		1312	1413	1513	
Rx Channel			4357	4407	4458		9662	9800	9938		1537	1638	1738	
Frequency (MHz)			826.4	836.4	846.6		1852.4	1880	1907.6		1712.4	1732.6	1752.6	
MPR (dB)	3GPP Rel 99	RMC 12.2Kbps	22.20	22.27	22.38	24.00	23.64	23.65	23.80	24.00	22.40	22.57	22.37	24.00
0	3GPP Rel 6	HSDPA Subtest-1	21.47	21.54	21.65	24.00	22.59	22.60	22.75	24.00	22.36	22.48	22.31	24.00
0	3GPP Rel 6	HSDPA Subtest-2	21.23	21.30	21.35	24.00	22.04	22.09	22.24	24.00	22.31	22.45	22.28	24.00
0.5	3GPP Rel 6	HSDPA Subtest-3	21.36	21.45	21.58	23.50	22.15	22.23	22.44	23.50	21.74	21.85	21.66	23.50
0.5	3GPP Rel 6	HSDPA Subtest-4	21.25	21.35	21.44	23.50	21.65	21.76	22.02	23.50	21.66	21.79	21.61	23.50
0	3GPP Rel 6	HSUPA Subtest-1	21.31	21.30	21.35	24.00	22.00	22.15	22.21	24.00	22.15	22.25	22.11	24.00
2	3GPP Rel 6	HSUPA Subtest-2	20.13	20.28	20.35	22.00	20.65	20.71	20.95	22.00	20.23	20.25	20.26	22.00
1	3GPP Rel 6	HSUPA Subtest-3	20.44	20.42	20.48	23.00	21.00	21.14	21.23	23.00	21.04	21.26	21.11	23.00
2	3GPP Rel 6	HSUPA Subtest-4	20.26	20.38	20.46	22.00	20.72	20.73	20.93	22.00	20.25	20.30	20.21	22.00
0	3GPP Rel 6	HSUPA Subtest-5	21.79	21.86	21.87	24.00	22.04	22.10	22.25	24.00	22.07	22.10	22.05	24.00

Reduced Power Mode (Proximity Sensor active)

Band			WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)
TX Channel			9262	9400	9538		1312	1413	1513	
Rx Channel			9662	9800	9938		1537	1638	1738	
Frequency (MHz)			1852.4	1880	1907.6		1712.4	1732.6	1752.6	
MPR (dB)	3GPP Rel 99	RMC 12.2Kbps	20.53	20.54	20.69	21.00	19.37	19.54	19.34	20.00
0	3GPP Rel 6	HSDPA Subtest-1	19.56	19.51	19.64	21.00	19.34	19.45	19.28	20.00
0	3GPP Rel 6	HSDPA Subtest-2	19.06	19.00	19.13	21.00	19.28	19.40	19.25	20.00
0.5	3GPP Rel 6	HSDPA Subtest-3	19.17	19.14	19.31	20.50	18.69	18.83	18.62	19.50
0.5	3GPP Rel 6	HSDPA Subtest-4	18.67	18.65	18.93	20.50	18.66	18.76	18.58	19.50
0	3GPP Rel 6	HSUPA Subtest-1	19.09	19.07	19.08	21.00	19.10	19.21	19.10	20.00
2	3GPP Rel 6	HSUPA Subtest-2	17.72	17.69	17.85	19.00	17.20	17.25	17.24	18.00
1	3GPP Rel 6	HSUPA Subtest-3	18.09	18.05	18.12	20.00	18.03	18.23	18.06	19.00
2	3GPP Rel 6	HSUPA Subtest-4	17.73	17.71	17.86	19.00	17.23	17.29	17.21	18.00
0	3GPP Rel 6	HSUPA Subtest-5	19.06	19.02	19.16	21.00	19.05	19.06	19.02	20.00

<CDMA2000 Conducted Power>

Note:

1. Referring to KDB 941225 D01v02, the data device SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps). If 1xRTT and Ev-Do Rev A (RETAP 4096 bits) power is less than 1/4dB higher than Re v0, SAR tests with those settings are not necessary.

Full Power Mode (Proximity Sensor Inactive)

Band	CDMA2000 BC10			Tune-up Limit (dBm)	CDMA2000 BC0			Tune-up Limit (dBm)	CDMA2000 BC1			Tune-up Limit (dBm)
TX Channel	476	580	684		1013	384	777		25	600	1175	
Frequency (MHz)	817.9	820.5	823.1		824.7	836.52	848.31		1851.25	1880	1908.75	
1xRTT RC1 SO55	23.70	23.68	23.51	24.50	23.66	23.71	23.54	24.50	23.58	23.60	23.59	24.50
1xRTT RC3 SO55	23.66	23.53	23.41	24.50	23.55	23.71	23.50	24.50	23.61	23.56	23.58	24.50
1xEVDO RTAP 153.6Kbps	23.71	23.68	23.45	24.50	23.61	23.73	23.60	24.50	23.65	23.62	23.60	24.50
1xEVDO RETAP 4096Bits	23.68	23.58	23.49	24.50	23.50	23.72	23.52	24.50	23.61	23.59	23.55	24.50

Reduced Power Mode (Proximity Sensor active)

Band	CDMA2000 BC1			Tune-up Limit (dBm)
TX Channel	25	600	1175	
Frequency (MHz)	1851.25	1880	1908.75	
1xRTT RC1 SO55	20.56	20.57	20.54	21.50
1xRTT RC3 SO55	20.76	20.81	20.76	21.50
1xEVDO RTAP 153.6Kbps	20.86	20.84	20.81	21.50
1xEVDO RETAP 4096Bits	20.65	20.67	20.61	21.50

<LTE Conducted Power>

Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r02, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r02, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r02, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r02, when reported SAR of 1RB and 50%RB allocation for QPSK ≤0.8W/kg, and 100%RB with QPSK output power is less than 1RB and 50%RB, 100%RB allocation for QPSK is not required.
6. Per KDB 941225 D05v02r02, when reported SAR of 1RB and 50%RB allocation for QPSK >0.8W/kg for any exposure position, SAR testing of 100%RB allocation for QPSK is performed at the highest power channel.
7. 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02, 16QAM SAR testing is not required.
8. Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r02, smaller bandwidth SAR testing is not required.

<LTE Band 17 Conducted Power>

Full Power Mode

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	22.30	22.49	22.32	24.00	0
10	QPSK	1	24	22.11	22.06	22.28		
10	QPSK	1	49	22.00	22.00	22.13		
10	QPSK	25	0	21.15	21.36	21.31	23.00	1
10	QPSK	25	12	21.33	21.32	21.22		
10	QPSK	25	24	21.30	21.18	21.11		
10	QPSK	50	0	21.15	21.20	21.13		
10	16QAM	1	0	21.42	21.46	21.37	23.00	1
10	16QAM	1	24	21.33	21.09	21.23		
10	16QAM	1	49	21.29	21.32	21.11		
10	16QAM	25	0	20.27	20.31	20.23	22.00	2
10	16QAM	25	12	20.19	20.25	20.18		
10	16QAM	25	24	20.32	20.14	20.05		
10	16QAM	50	0	20.20	20.12	20.26		
Channel				23755	23790	23825	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	22.45	22.48	22.21	24.00	0
5	QPSK	1	12	22.32	22.32	22.13		
5	QPSK	1	24	22.12	22.28	22.01		
5	QPSK	12	0	21.22	21.46	21.24	23.00	1
5	QPSK	12	6	21.29	21.44	21.07		
5	QPSK	12	11	21.34	21.35	21.05		
5	QPSK	25	0	21.29	21.28	21.00		
5	16QAM	1	0	21.44	21.40	21.26	23.00	1
5	16QAM	1	12	21.36	21.38	21.06		
5	16QAM	1	24	21.16	21.24	21.04		
5	16QAM	12	0	20.29	20.38	20.16	22.00	2
5	16QAM	12	6	20.16	20.45	20.09		
5	16QAM	12	11	20.48	20.36	20.06		
5	16QAM	25	0	20.04	20.30	20.01		

<LTE Band 13 Conducted Power>

Full Power Mode

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel					23230			
Frequency (MHz)					782			
10	QPSK	1	0		22.49		24.00	0
10	QPSK	1	24		22.33			
10	QPSK	1	49		22.28			
10	QPSK	25	0		21.42		23.00	1
10	QPSK	25	12		21.38			
10	QPSK	25	24		21.45			
10	QPSK	50	0		21.33			
10	16QAM	1	0		21.23		23.00	1
10	16QAM	1	24		21.41			
10	16QAM	1	49		21.34			
10	16QAM	25	0		20.46		22.00	2
10	16QAM	25	12		20.46			
10	16QAM	25	24		20.53			
10	16QAM	50	0		20.34			
Channel				23205	23230	23255	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	22.48	22.34	22.40	24.00	0
5	QPSK	1	12	22.10	22.15	22.26		
5	QPSK	1	24	22.18	22.28	22.10		
5	QPSK	12	0	21.77	21.36	21.54	23.00	1
5	QPSK	12	6	21.20	21.34	21.32		
5	QPSK	12	11	21.22	21.38	21.21		
5	QPSK	25	0	21.17	21.15	21.31		
5	16QAM	1	0	21.46	21.49	21.49	23.00	1
5	16QAM	1	12	21.24	21.29	21.32		
5	16QAM	1	24	21.26	21.31	21.17		
5	16QAM	12	0	20.18	20.24	20.46	22.00	2
5	16QAM	12	6	20.21	20.27	20.40		
5	16QAM	12	11	20.26	20.36	20.29		
5	16QAM	25	0	20.17	20.00	20.31		

<u><LTE Band 5 Conducted Power></u>

Full Power Mode

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	22.14	22.16	22.22	24.00	0
10	QPSK	1	24	22.30	22.10	22.18		
10	QPSK	1	49	22.26	22.11	22.13		
10	QPSK	25	0	21.19	21.06	21.15	23.00	1
10	QPSK	25	12	21.23	21.12	21.18		
10	QPSK	25	24	21.25	21.07	21.18		
10	QPSK	50	0	21.02	21.05	21.00		
10	16QAM	1	0	21.17	21.27	21.29	23.00	1
10	16QAM	1	24	21.34	21.24	21.25		
10	16QAM	1	49	21.26	21.25	21.20		
10	16QAM	25	0	20.13	20.11	20.20	22.00	2
10	16QAM	25	12	20.28	20.14	20.18		
10	16QAM	25	24	20.30	20.16	20.18		
10	16QAM	50	0	20.01	20.07	20.05		
Channel				20425	20525	20625	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.09	22.21	22.17	24.00	0
5	QPSK	1	12	22.17	22.14	22.12		
5	QPSK	1	24	22.20	22.25	22.15		
5	QPSK	12	0	21.23	21.23	21.15	23.00	1
5	QPSK	12	6	21.21	21.24	21.21		
5	QPSK	12	11	21.28	21.21	21.23		
5	QPSK	25	0	21.20	21.06	21.10		
5	16QAM	1	0	21.10	21.29	21.23	23.00	1
5	16QAM	1	12	21.23	21.27	21.23		
5	16QAM	1	24	21.25	21.30	21.21		
5	16QAM	12	0	20.32	20.32	20.28	22.00	2
5	16QAM	12	6	20.30	20.35	20.28		
5	16QAM	12	11	20.33	20.31	20.21		
5	16QAM	25	0	20.17	20.20	20.16		

<LTE Band 4 Conducted Power>

Full Power Mode (Proximity Sensor Inactive)

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	22.85	22.93	22.98	24.00	0
20	QPSK	1	49	22.82	22.83	22.90		
20	QPSK	1	99	22.83	22.88	22.85		
20	QPSK	50	0	21.76	21.72	21.74	23.00	1
20	QPSK	50	24	21.66	21.67	21.65		
20	QPSK	50	49	21.68	21.69	21.61		
20	QPSK	100	0	21.67	21.62	21.73		
20	16QAM	1	0	22.00	21.91	21.97	23.00	1
20	16QAM	1	49	21.98	21.86	21.97		
20	16QAM	1	99	21.96	21.95	21.83		
20	16QAM	50	0	20.78	20.65	20.71	22.00	2
20	16QAM	50	24	20.54	20.58	20.70		
20	16QAM	50	49	20.57	20.58	20.64		
20	16QAM	100	0	20.59	20.60	20.71		
Channel				20025	20175	20325	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.85	22.86	22.96	24.00	0
15	QPSK	1	37	22.84	22.82	22.92		
15	QPSK	1	74	22.81	22.73	22.84		
15	QPSK	36	0	21.82	21.72	21.77	23.00	1
15	QPSK	36	18	21.83	21.69	21.67		
15	QPSK	36	37	21.66	21.77	21.62		
15	QPSK	75	0	21.54	21.65	21.60		
15	16QAM	1	0	22.01	21.99	22.04	23.00	1
15	16QAM	1	37	21.99	21.95	21.84		
15	16QAM	1	74	21.90	21.87	21.87		
15	16QAM	36	0	20.70	20.74	20.81	22.00	2
15	16QAM	36	18	20.63	20.66	20.75		
15	16QAM	36	37	20.68	20.62	20.63		
15	16QAM	75	0	20.43	20.58	20.61		
Channel				20000	20175	20350	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.77	22.86	22.97	24.00	0
10	QPSK	1	24	22.75	22.83	22.88		
10	QPSK	1	49	22.82	22.70	22.77		
10	QPSK	25	0	21.90	21.83	21.80	23.00	1
10	QPSK	25	12	21.84	21.75	21.69		
10	QPSK	25	24	21.73	21.73	21.69		
10	QPSK	50	0	21.68	21.61	21.63		
10	16QAM	1	0	21.86	21.95	22.02	23.00	1
10	16QAM	1	24	21.79	21.76	21.88		
10	16QAM	1	49	21.77	21.88	21.88		
10	16QAM	25	0	20.78	20.85	20.96	22.00	2
10	16QAM	25	12	20.74	20.86	20.73		
10	16QAM	25	24	20.67	20.73	20.66		
10	16QAM	50	0	20.61	20.59	20.62		

Channel				19975	20175	20375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.87	22.90	22.74	24.00	0
5	QPSK	1	12	22.95	22.80	22.91		
5	QPSK	1	24	22.83	22.85	22.61		
5	QPSK	12	0	22.00	21.82	21.88	23.00	1
5	QPSK	12	6	21.91	21.83	21.84		
5	QPSK	12	11	21.94	21.92	21.91		
5	QPSK	25	0	21.79	21.80	21.77		
5	16QAM	1	0	21.89	21.85	21.79	23.00	1
5	16QAM	1	12	21.94	21.87	21.92		
5	16QAM	1	24	21.90	21.87	21.82		
5	16QAM	12	0	21.04	20.87	21.05	22.00	2
5	16QAM	12	6	20.85	20.87	20.97		
5	16QAM	12	11	20.90	20.89	20.91		
5	16QAM	25	0	20.84	20.76	20.79		

<LTE Band 4 Conducted Power>

Reduced Power Mode (Proximity Sensor active)

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	19.60	19.64	19.79	20.00	0
20	QPSK	1	49	19.55	19.65	19.64		
20	QPSK	1	99	19.66	19.63	19.71		
20	QPSK	50	0	19.50	19.62	19.54	20.00	0
20	QPSK	50	24	19.46	19.38	19.50		
20	QPSK	50	49	19.49	19.50	19.43		
20	QPSK	100	0	19.56	19.32	19.62		
20	16QAM	1	0	19.56	19.63	19.69	20.00	0
20	16QAM	1	49	19.60	19.58	19.61		
20	16QAM	1	99	19.47	19.56	19.57		
20	16QAM	50	0	19.36	19.41	19.58	20.00	0
20	16QAM	50	24	19.12	19.29	19.55		
20	16QAM	50	49	19.08	19.30	19.38		
20	16QAM	100	0	19.18	19.43	19.58		
Channel				20025	20175	20325	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	19.62	19.71	19.67	20.00	0
15	QPSK	1	37	19.55	19.52	19.65		
15	QPSK	1	74	19.56	19.44	19.70		
15	QPSK	36	0	19.60	19.58	19.47	20.00	0
15	QPSK	36	18	19.62	19.56	19.45		
15	QPSK	36	37	19.56	19.60	19.35		
15	QPSK	75	0	19.41	19.39	19.46		
15	16QAM	1	0	19.57	19.62	19.64	20.00	0
15	16QAM	1	37	19.46	19.55	19.49		
15	16QAM	1	74	19.42	19.48	19.66		
15	16QAM	36	0	19.20	19.58	19.64	20.00	0
15	16QAM	36	18	19.10	19.41	19.58		
15	16QAM	36	37	19.28	19.42	19.35		
15	16QAM	75	0	19.03	19.34	19.42		
Channel				20000	20175	20350	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	19.49	19.65	19.75	20.00	0
10	QPSK	1	24	19.61	19.59	19.68		
10	QPSK	1	49	19.67	19.51	19.66		
10	QPSK	25	0	19.65	19.59	19.52	20.00	0
10	QPSK	25	12	19.57	19.61	19.55		
10	QPSK	25	24	19.54	19.44	19.49		
10	QPSK	50	0	19.51	19.49	19.53		
10	16QAM	1	0	19.56	19.68	19.62	20.00	0
10	16QAM	1	24	19.49	19.64	19.64		
10	16QAM	1	49	19.37	19.51	19.63		
10	16QAM	25	0	19.50	19.62	19.60	20.00	0
10	16QAM	25	12	19.32	19.61	19.49		
10	16QAM	25	24	19.38	19.53	19.43		
10	16QAM	50	0	19.27	19.40	19.47		

Channel				19975	20175	20375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	19.64	19.69	19.52	20.00	0
5	QPSK	1	12	19.61	19.62	19.69		
5	QPSK	1	24	19.41	19.61	19.51		
5	QPSK	12	0	19.52	19.62	19.71	20.00	0
5	QPSK	12	6	19.57	19.65	19.70		
5	QPSK	12	11	19.56	19.67	19.66		
5	QPSK	25	0	19.42	19.53	19.47		
5	16QAM	1	0	19.50	19.68	19.39	20.00	0
5	16QAM	1	12	19.45	19.66	19.60		
5	16QAM	1	24	19.41	19.54	19.58		
5	16QAM	12	0	19.41	19.56	19.54	20.00	0
5	16QAM	12	6	19.49	19.57	19.50		
5	16QAM	12	11	19.47	19.60	19.55		
5	16QAM	25	0	19.43	19.52	19.58		

<LTE Band 2 Conducted Power>

Full Power Mode (Proximity Sensor Inactive)

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	22.89	22.90	22.74	24.00	0
20	QPSK	1	49	22.78	22.74	22.75		
20	QPSK	1	99	22.63	22.75	22.95		
20	QPSK	50	0	21.73	21.65	21.57	23.00	1
20	QPSK	50	24	21.65	21.59	21.56		
20	QPSK	50	49	21.56	21.52	21.51		
20	QPSK	100	0	21.73	21.61	21.65		
20	16QAM	1	0	21.95	21.70	21.79	23.00	1
20	16QAM	1	49	21.79	21.94	21.70		
20	16QAM	1	99	21.64	21.78	21.91		
20	16QAM	50	0	20.62	20.53	20.53	22.00	2
20	16QAM	50	24	20.57	20.51	20.52		
20	16QAM	50	49	20.47	20.46	20.49		
20	16QAM	100	0	20.60	20.55	20.42		
Channel				18675	18900	19125	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.89	22.90	22.70	24.00	0
15	QPSK	1	37	22.75	22.83	22.72		
15	QPSK	1	74	22.68	22.73	22.94		
15	QPSK	36	0	21.70	21.71	21.64	23.00	1
15	QPSK	36	18	21.59	21.71	21.57		
15	QPSK	36	37	21.61	21.70	21.62		
15	QPSK	75	0	21.63	21.64	21.49		
15	16QAM	1	0	21.83	21.93	21.75	23.00	1
15	16QAM	1	37	21.79	21.95	21.79		
15	16QAM	1	74	21.74	21.75	22.05		
15	16QAM	36	0	20.76	20.64	20.61	22.00	2
15	16QAM	36	18	20.47	20.67	20.48		
15	16QAM	36	37	20.44	20.61	20.64		
15	16QAM	75	0	20.56	20.55	20.46		
Channel				18650	18900	19150	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.90	22.83	22.69	24.00	0
10	QPSK	1	24	22.85	22.83	22.67		
10	QPSK	1	49	22.75	22.74	22.88		
10	QPSK	25	0	21.89	21.85	21.71	23.00	1
10	QPSK	25	12	21.78	21.81	21.63		
10	QPSK	25	24	21.74	21.81	21.79		
10	QPSK	50	0	21.66	21.67	21.47		
10	16QAM	1	0	22.02	21.92	21.75	23.00	1
10	16QAM	1	24	21.87	21.96	21.87		
10	16QAM	1	49	21.87	21.78	22.08		
10	16QAM	25	0	20.77	20.71	20.65	22.00	2
10	16QAM	25	12	20.75	20.69	20.58		
10	16QAM	25	24	20.80	20.61	20.76		
10	16QAM	50	0	20.71	20.57	20.44		

Channel				18625	18900	19175	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.83	22.81	22.65	24.00	0
5	QPSK	1	12	22.89	22.82	22.76		
5	QPSK	1	24	22.82	22.74	22.94		
5	QPSK	12	0	21.84	21.88	21.82	23.00	1
5	QPSK	12	6	21.80	21.85	21.87		
5	QPSK	12	11	21.88	21.84	21.97		
5	QPSK	25	0	21.70	21.83	21.80		
5	16QAM	1	0	21.87	21.86	21.79	23.00	1
5	16QAM	1	12	22.00	21.95	21.91		
5	16QAM	1	24	21.94	21.82	21.98		
5	16QAM	12	0	20.97	20.89	20.83	22.00	2
5	16QAM	12	6	21.00	20.88	20.85		
5	16QAM	12	11	20.91	20.88	20.95		
5	16QAM	25	0	20.79	20.69	20.78		

<LTE Band 2 Conducted Power>

Reduced Power Mode (Proximity Sensor active)

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	19.82	19.71	19.56	21.00	0
20	QPSK	1	49	19.75	19.60	19.73		
20	QPSK	1	99	19.46	19.70	19.94		
20	QPSK	50	0	19.59	19.40	19.44	21.00	0
20	QPSK	50	24	19.35	19.35	19.34		
20	QPSK	50	49	19.35	19.28	19.24		
20	QPSK	100	0	19.52	19.45	19.50		
20	16QAM	1	0	19.65	19.46	19.69	21.00	0
20	16QAM	1	49	19.67	19.68	19.51		
20	16QAM	1	99	19.54	19.56	19.83		
20	16QAM	50	0	19.37	19.33	19.40	21.00	0
20	16QAM	50	24	19.40	19.38	19.38		
20	16QAM	50	49	19.17	19.29	19.30		
20	16QAM	100	0	19.47	19.32	19.42		
Channel				18675	18900	19125	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	19.74	19.84	19.69	21.00	0
15	QPSK	1	37	19.61	19.64	19.65		
15	QPSK	1	74	19.53	19.59	19.84		
15	QPSK	36	0	19.59	19.60	19.34	21.00	0
15	QPSK	36	18	19.41	19.44	19.30		
15	QPSK	36	37	19.40	19.48	19.50		
15	QPSK	75	0	19.45	19.39	19.19		
15	16QAM	1	0	19.65	19.77	19.56	21.00	0
15	16QAM	1	37	19.68	19.73	19.62		
15	16QAM	1	74	19.54	19.60	19.63		
15	16QAM	36	0	19.47	19.35	19.41	21.00	0
15	16QAM	36	18	19.24	19.52	19.22		
15	16QAM	36	37	19.17	19.44	19.53		
15	16QAM	75	0	19.42	19.44	19.33		
Channel				18650	18900	19150	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	19.73	19.65	19.62	21.00	0
10	QPSK	1	24	19.69	19.72	19.59		
10	QPSK	1	49	19.74	19.68	19.81		
10	QPSK	25	0	19.78	19.64	19.61	21.00	0
10	QPSK	25	12	19.56	19.54	19.47		
10	QPSK	25	24	19.51	19.70	19.50		
10	QPSK	50	0	19.38	19.51	19.29		
10	16QAM	1	0	19.74	19.69	19.55	21.00	0
10	16QAM	1	24	19.68	19.81	19.77		
10	16QAM	1	49	19.70	19.63	19.73		
10	16QAM	25	0	19.64	19.61	19.35	21.00	0
10	16QAM	25	12	19.64	19.41	19.32		
10	16QAM	25	24	19.51	19.46	19.64		
10	16QAM	50	0	19.43	19.43	19.25		

Channel				18625	18900	19175	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	19.69	19.69	19.59	21.00	0
5	QPSK	1	12	19.82	19.81	19.70		
5	QPSK	1	24	19.78	19.65	19.81		
5	QPSK	12	0	19.65	19.76	19.62	21.00	0
5	QPSK	12	6	19.65	19.71	19.69		
5	QPSK	12	11	19.75	19.64	19.73		
5	QPSK	25	0	19.44	19.55	19.65		
5	16QAM	1	0	19.75	19.62	19.50	21.00	0
5	16QAM	1	12	19.77	19.75	19.64		
5	16QAM	1	24	19.75	19.67	19.73		
5	16QAM	12	0	19.69	19.63	19.56	21.00	0
5	16QAM	12	6	19.72	19.67	19.57		
5	16QAM	12	11	19.74	19.64	19.67		
5	16QAM	25	0	19.67	19.49	19.62		

<LTE Band 25 Conducted Power>

Full Power Mode (Proximity Sensor Inactive)

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				26140	26365	26590		
Frequency (MHz)				1860	1882.5	1905		
20	QPSK	1	0	22.87	22.79	22.65	24.00	0
20	QPSK	1	49	22.97	22.78	22.95		
20	QPSK	1	99	22.96	22.68	22.91		
20	QPSK	50	0	21.62	21.65	21.45	23.00	1
20	QPSK	50	24	21.62	21.45	21.55		
20	QPSK	50	49	21.67	21.42	21.66		
20	QPSK	100	0	21.64	21.52	21.55		
20	16QAM	1	0	21.96	21.94	21.61	23.00	1
20	16QAM	1	49	22.00	22.00	21.90		
20	16QAM	1	99	22.00	21.74	21.92		
20	16QAM	50	0	20.72	20.61	20.39	22.00	2
20	16QAM	50	24	20.60	20.44	20.52		
20	16QAM	50	49	20.57	20.33	20.63		
20	16QAM	100	0	20.56	20.43	20.52		
Channel				26115	26365	26615	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1882.5	1907.5		
15	QPSK	1	0	22.92	22.89	22.69	24.00	0
15	QPSK	1	37	22.78	22.78	22.92		
15	QPSK	1	74	22.77	22.61	22.86		
15	QPSK	36	0	21.55	21.71	21.67	23.00	1
15	QPSK	36	18	21.63	21.56	21.72		
15	QPSK	36	37	21.68	21.46	21.78		
15	QPSK	75	0	21.61	21.46	21.57		
15	16QAM	1	0	21.86	21.95	21.66	23.00	1
15	16QAM	1	37	21.95	21.91	21.83		
15	16QAM	1	74	21.98	21.76	21.95		
15	16QAM	36	0	20.76	20.73	20.71	22.00	2
15	16QAM	36	18	20.64	20.56	20.66		
15	16QAM	36	37	20.59	20.46	20.69		
15	16QAM	75	0	20.52	20.47	20.61		
Channel				26090	26365	26640	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1882.5	1910		
10	QPSK	1	0	22.95	22.82	22.93	24.00	0
10	QPSK	1	24	22.81	22.74	22.78		
10	QPSK	1	49	22.80	22.58	22.91		
10	QPSK	25	0	21.63	21.72	21.85	23.00	1
10	QPSK	25	12	21.72	21.65	21.76		
10	QPSK	25	24	21.77	21.59	21.77		
10	QPSK	50	0	21.58	21.51	21.61		
10	16QAM	1	0	22.02	21.88	22.02	23.00	1
10	16QAM	1	24	21.83	21.83	21.90		
10	16QAM	1	49	21.82	21.63	21.80		
10	16QAM	25	0	20.59	20.75	20.87	22.00	2
10	16QAM	25	12	20.75	20.57	20.70		
10	16QAM	25	24	20.76	20.53	20.91		
10	16QAM	50	0	20.54	20.44	20.59		

Channel				26065	26365	26665	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1882.5	1912.5		
5	QPSK	1	0	22.86	22.84	22.83	24.00	0
5	QPSK	1	12	22.81	22.69	22.88		
5	QPSK	1	24	22.77	22.63	22.79		
5	QPSK	12	0	21.75	21.84	21.86	23.00	1
5	QPSK	12	6	21.76	21.73	21.91		
5	QPSK	12	11	21.79	21.65	21.88		
5	QPSK	25	0	21.58	21.66	21.81		
5	16QAM	1	0	21.85	21.85	21.83	23.00	1
5	16QAM	1	12	21.92	21.83	22.05		
5	16QAM	1	24	21.74	21.77	21.89		
5	16QAM	12	0	20.88	20.85	20.85	22.00	2
5	16QAM	12	6	20.84	20.73	20.93		
5	16QAM	12	11	20.80	20.73	20.88		
5	16QAM	25	0	20.61	20.56	20.78		

<LTE Band 25 Conducted Power>

Reduced Power Mode (Proximity Sensor active)

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				26140	26365	26590		
Frequency (MHz)				1860	1882.5	1905		
20	QPSK	1	0	19.91	19.69	19.65	21.00	0
20	QPSK	1	49	19.88	19.83	19.94		
20	QPSK	1	99	19.87	19.65	19.83		
20	QPSK	50	0	19.52	19.45	19.30	21.00	0
20	QPSK	50	24	19.57	19.36	19.47		
20	QPSK	50	49	19.66	19.36	19.55		
20	QPSK	100	0	19.54	19.43	19.44		
20	16QAM	1	0	19.86	19.78	19.51	21.00	0
20	16QAM	1	49	19.81	19.89	19.82		
20	16QAM	1	99	19.86	19.62	19.82		
20	16QAM	50	0	19.57	19.55	19.26	21.00	0
20	16QAM	50	24	19.49	19.30	19.35		
20	16QAM	50	49	19.48	19.30	19.54		
20	16QAM	100	0	19.51	19.25	19.48		
Channel				26115	26365	26615	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1882.5	1907.5		
15	QPSK	1	0	19.86	19.87	19.78	21.00	0
15	QPSK	1	37	19.83	19.85	19.83		
15	QPSK	1	74	19.68	19.57	19.78		
15	QPSK	36	0	19.43	19.52	19.63	21.00	0
15	QPSK	36	18	19.59	19.49	19.63		
15	QPSK	36	37	19.52	19.32	19.58		
15	QPSK	75	0	19.60	19.40	19.40		
15	16QAM	1	0	19.73	19.82	19.50	21.00	0
15	16QAM	1	37	19.80	19.80	19.66		
15	16QAM	1	74	19.81	19.73	19.87		
15	16QAM	36	0	19.62	19.55	19.62	21.00	0
15	16QAM	36	18	19.50	19.52	19.55		
15	16QAM	36	37	19.41	19.45	19.68		
15	16QAM	75	0	19.42	19.33	19.59		
Channel				26090	26365	26640	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1882.5	1910		
10	QPSK	1	0	19.87	19.82	19.86	21.00	0
10	QPSK	1	24	19.76	19.73	19.71		
10	QPSK	1	49	19.71	19.55	19.85		
10	QPSK	25	0	19.59	19.68	19.80	21.00	0
10	QPSK	25	12	19.64	19.61	19.59		
10	QPSK	25	24	19.67	19.56	19.68		
10	QPSK	50	0	19.58	19.39	19.60		
10	16QAM	1	0	19.85	19.71	19.83	21.00	0
10	16QAM	1	24	19.72	19.74	19.78		
10	16QAM	1	49	19.66	19.53	19.73		
10	16QAM	25	0	19.42	19.61	19.69	21.00	0
10	16QAM	25	12	19.67	19.46	19.68		
10	16QAM	25	24	19.68	19.43	19.76		
10	16QAM	50	0	19.45	19.24	19.51		

Channel				26065	26365	26665	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1882.5	1912.5		
5	QPSK	1	0	19.76	19.83	19.91	21.00	0
5	QPSK	1	12	19.74	19.66	19.88		
5	QPSK	1	24	19.86	19.62	19.87		
5	QPSK	12	0	19.63	19.83	19.85	21.00	0
5	QPSK	12	6	19.70	19.69	19.90		
5	QPSK	12	11	19.68	19.64	19.70		
5	QPSK	25	0	19.45	19.49	19.73		
5	16QAM	1	0	19.80	19.80	19.79	21.00	0
5	16QAM	1	12	19.84	19.79	19.81		
5	16QAM	1	24	19.74	19.67	19.73		
5	16QAM	12	0	19.81	19.83	19.69	21.00	0
5	16QAM	12	6	19.80	19.72	19.79		
5	16QAM	12	11	19.68	19.65	19.76		
5	16QAM	25	0	19.51	19.37	19.68		

<WLAN 2.4GHz Conducted Power>

Note:

1. This device supports SISO mode and MIMO mode configuration, when the single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode

<Antenna A>

1. Per KDB 248227 D01 v01r02, choose the highest output power channel to test SAR and determine further SAR exclusion
2. For each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 1/4dB higher than those measured at the lowest data rate
3. Per KDB 248227 D01 v01r02, 11g, 11n-HT20 and 11n-HT40 average output power is higher than 1/4dB higher than 11b mode, these modes SAR will be verified at the highest RF exposure position found in 802.11b SAR testing.

WLAN 2.4GHz 802.11b Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	Data Rate	
		1Mbps	
CH 1	2412	15.26	15.5
CH 6	2437	15.34	15.5
CH 11	2462	15.18	15.5

WLAN 2.4GHz 802.11g Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	Data Rate	
		6Mbps	
CH 1	2412	13.47	13.5
CH 6	2437	16.24	16.5
CH 11	2462	13.38	13.5

WLAN 2.4GHz 802.11n-HT20 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS0	
CH 1	2412	13.47	13.5
CH 6	2437	16.35	16.5
CH 11	2462	13.31	13.5

WLAN 2.4GHz 802.11n-HT40 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS0	
CH 3	2422	11.93	12
CH 6	2437	16.35	16.5
CH 9	2452	12.83	13

<Antenna B>

1. Per KDB 248227 D01 v01r02, choose the highest output power channel to test SAR and determine further SAR exclusion
2. For each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 1/4dB higher than those measured at the lowest data rate
3. Apply the test exclusion rule in KDB 248227 D01 v01r02 11n-HT40 output power is less than 1/4dB higher than 11b mode, thus the SAR can be excluded.
4. Per KDB 248227 D01 v01r02, 11g and 11n-HT20 average output power is higher than 1/4dB higher than 11b mode, these modes SAR will be verified at the highest RF exposure position found in 802.11b SAR testing.

WLAN 2.4GHz 802.11b Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	Data Rate	
		1Mbps	
CH 1	2412	13.98	14
CH 6	2437	13.99	14
CH 11	2462	13.77	14

WLAN 2.4GHz 802.11g Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	Data Rate	
		6Mbps	
CH 1	2412	11.78	12
CH 6	2437	15.25	15.5
CH 11	2462	13.48	13.5

WLAN 2.4GHz 802.11n-HT20 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS0	
CH 1	2412	11.88	12
CH 6	2437	15.21	15.5
CH 11	2462	13.31	13.5

WLAN 2.4GHz 802.11n-HT40 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS0	
CH 3	2422	9.81	10
CH 6	2437	13.37	13.5
CH 9	2452	12.86	13

<Antenna A+B>

WLAN 2.4GHz 802.11n-HT20 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS8	
CH 1	2412	15.28	15.5
CH 6	2437	16.38	16.5
CH 11	2462	16.09	16.5

WLAN 2.4GHz 802.11n-HT40 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS8	
CH 3	2422	11.07	11.5
CH 6	2437	15.87	16
CH 9	2452	14.78	15

<WLAN 5GHz Conducted Power>

Note:

1. This device supports SISO mode and MIMO mode configuration, when the single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode

<Antenna A>

Note:

1. Per KDB 248227 D01 v01r02, choose the highest output power channel to test SAR and determine further SAR exclusion
2. For each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 1/4dB higher than those measured at the lowest data rate.
3. Apply the test exclusion rule in KDB 248227 D01 v01r02, 11n-HT20/HT40 and 11ac-VHT20/VHT40 output power is less than 1/4dB higher than 802.11a mode, thus the SAR can be excluded.
4. For 802.11ac SAR evaluation for each frequency band, 802.11n VHT80 was verified at the worst case found in 802.11a SAR testing.

WLAN 5GHz 802.11a Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	Data Rate	
		6Mbps	
CH 36	5180	13.31	13.5
CH 40	5200	15.81	16
CH 44	5220	14.73	15
CH 48	5240	14.88	15
CH 52	5260	13.40	13.5
CH 56	5280	15.63	16
CH 60	5300	15.72	16
CH 64	5320	13.26	13.5
CH 100	5500	13.35	13.5
CH 104	5520	16.38	16.5
CH 108	5540	16.24	16.5
CH 112	5560	16.01	16.5
CH 116	5580	16.07	16.5
CH 120	5600	16.05	16.5
CH 124	5620	15.98	16.5
CH 128	5640	15.95	16.5
CH 132	5660	15.99	16.5
CH 136	5680	16.23	16.5
CH 140	5700	12.80	13
CH144	5720	16.01	16.5
CH 149	5745	16.26	16.5
CH 153	5765	16.10	16.5
CH 157	5785	16.38	16.5
CH 161	5805	16.20	16.5
CH 165	5825	16.47	16.5

WLAN 5GHz 802.11n-HT20 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS0	
CH 36	5180	13.22	13.5
CH 40	5200	15.64	16
CH 44	5220	14.70	15.5
CH 48	5240	14.80	15.5
CH 52	5260	13.38	13.5
CH 56	5280	15.59	16
CH 60	5300	15.68	16
CH 64	5320	13.22	13.5
CH 100	5500	13.26	13.5
CH 104	5520	16.30	16.5
CH 108	5540	16.20	16.5
CH 112	5560	15.98	16.5
CH 116	5580	16.03	16.5
CH 120	5600	16.01	16.5
CH 124	5620	15.92	16.5
CH 128	5640	15.88	16.5
CH 132	5660	15.82	16.5
CH 136	5680	16.11	16.5
CH 140	5700	12.75	13
CH 144	5720	15.88	16.5
CH 149	5745	16.23	16.5
CH 153	5765	16.01	16.5
CH 157	5785	16.25	16.5
CH 161	5805	16.11	16.5
CH 165	5825	16.33	16.5

WLAN 5GHz 802.11n-HT40 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS0	
CH 38	5190	9.33	9.5
CH 46	5230	14.82	15.5
CH 54	5270	9.42	9.5
CH 62	5310	10.96	11
CH 102	5510	10.33	10.5
CH 110	5550	16.01	16.5
CH 126	5630	15.48	15.5
CH 134	5670	15.42	15.5
CH 142	5710	15.80	16.5
CH 151	5755	16.24	16.5
CH 159	5795	16.30	16.5

WLAN 5GHz 802.11ac-VHT20 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS0	
CH 36	5180	13.25	13.5
CH 40	5200	15.77	16
CH 44	5220	14.72	15.5
CH 48	5240	14.85	15.5
CH 52	5260	13.35	13.5
CH 56	5280	15.52	16
CH 60	5300	15.63	16
CH 64	5320	13.21	13.5
CH 100	5500	13.30	13.5
CH 104	5520	16.22	16.5
CH 108	5540	16.21	16.5
CH 112	5560	15.93	16.5
CH 116	5580	16.00	16.5
CH 120	5600	15.96	16.5
CH 124	5620	15.84	16.5
CH 128	5640	15.81	16.5
CH 132	5660	15.91	16.5
CH 136	5680	16.08	16.5
CH 140	5700	12.68	13
CH 144	5720	15.92	16.5
CH 149	5745	16.11	16.5
CH 153	5765	16.03	16.5
CH 157	5785	16.35	16.5
CH 161	5805	16.19	16.5
CH 165	5825	16.38	16.5

WLAN 5GHz 802.11ac-VHT40 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS0	
CH 38	5190	9.30	9.5
CH 46	5230	14.66	15.5
CH 54	5270	9.41	9.5
CH 62	5310	10.88	11
CH 102	5510	10.26	10.5
CH 110	5550	16.12	16.5
CH 126	5630	15.31	15.5
CH 134	5670	15.36	15.5
CH 142	5610	15.76	16.5
CH 151	5755	16.18	16.5
CH 159	5795	16.22	16.5

WLAN 5GHz 802.11ac-VHT80 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS0	
CH 42	5210	8.43	8.5
CH 58	5290	10.42	10.5
CH 106	5530	8.88	9
CH 122	5610	13.69	14
CH 138	5690	13.60	14
CH 155	5775	13.84	14

<Antenna B>

1. Per KDB 248227 D01 v01r02, choose the highest output power channel to test SAR and determine further SAR exclusion
2. For each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 1/4dB higher than those measured at the lowest data rate.
3. Apply the test exclusion rule in KDB 248227 D01 v01r02, 11n-HT20/HT40 and 11ac-VHT20/VHT40 output power is less than 1/4dB higher than 802.11a mode, thus the SAR can be excluded.
4. For 802.11ac SAR evaluation for each frequency band, 802.11n VHT80 was verified at the worst case found in 802.11a SAR testing.

WLAN 5GHz 802.11a Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	Data Rate	
		6Mbps	
CH 36	5180	12.79	13
CH 40	5200	15.71	16
CH 44	5220	14.63	15
CH 48	5240	14.69	15
CH 52	5260	12.88	13
CH 56	5280	15.64	16
CH 60	5300	15.83	16
CH 64	5320	12.57	13
CH 100	5500	12.73	13
CH 104	5520	16.44	16.5
CH 108	5540	16.30	16.5
CH 112	5560	15.99	16.5
CH 116	5580	16.14	16.5
CH 120	5600	15.58	16.5
CH 124	5620	15.56	16.5
CH 128	5640	15.66	16.5
CH 132	5660	15.76	16.5
CH 136	5680	15.79	16.5
CH 140	5700	12.47	12.5
CH 144	5720	15.69	16.5
CH 149	5745	16.38	16.5
CH 153	5765	16.30	16.5
CH 157	5785	16.28	16.5
CH 161	5805	16.20	16.5
CH 165	5825	16.24	16.5

WLAN 5GHz 802.11n-HT20 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS0	
CH 36	5180	12.75	13
CH 40	5200	15.66	16
CH 44	5220	14.60	15.5
CH 48	5240	14.66	15.5
CH 52	5260	12.76	13
CH 56	5280	15.55	16
CH 60	5300	15.69	16
CH 64	5320	12.46	13
CH 100	5500	12.66	13
CH 104	5520	16.23	16.5
CH 108	5540	16.21	16.5
CH 112	5560	15.88	16.5
CH 116	5580	16.01	16.5
CH 120	5600	15.46	16.5
CH 124	5620	15.51	16.5
CH 128	5640	15.60	16.5
CH 132	5660	15.71	16.5
CH 136	5680	15.66	16.5
CH 140	5700	12.43	12.5
CH 144	5720	15.63	16.5
CH 149	5745	16.25	16.5
CH 153	5765	16.16	16.5
CH 157	5785	16.23	16.5
CH 161	5805	16.14	16.5
CH 165	5825	16.22	16.5

WLAN 5GHz 802.11n-HT40 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS0	
CH 38	5190	9.93	10
CH 46	5230	14.54	15.5
CH 54	5270	9.65	10
CH 62	5310	10.77	11
CH 102	5510	10.45	10.5
CH 110	5550	16.12	16.5
CH 126	5630	15.36	15.5
CH 134	5670	15.38	15.5
CH 142	5610	15.61	16.5
CH 151	5755	16.22	16.5
CH 159	5795	16.14	16.5

WLAN 5GHz 802.11ac-VHT20 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS0	
CH 36	5180	12.74	13
CH 40	5200	15.63	16
CH 44	5220	14.68	15.5
CH 48	5240	14.60	15.5
CH 52	5260	12.85	13
CH 56	5280	15.51	16
CH 60	5300	15.77	16
CH 64	5320	12.54	13
CH 100	5500	12.70	13
CH 104	5520	16.21	16.5
CH 108	5540	16.26	16.5
CH 112	5560	15.76	16.5
CH 116	5580	15.95	16.5
CH 120	5600	15.42	16.5
CH 124	5620	15.53	16.5
CH 128	5640	15.63	16.5
CH 132	5660	15.75	16.5
CH 136	5680	15.73	16.5
CH 140	5700	12.33	12.5
CH 144	5720	15.66	16.5
CH 149	5745	16.31	16.5
CH 153	5765	16.26	16.5
CH 157	5785	16.22	16.5
CH 161	5805	16.08	16.5
CH 165	5825	16.15	16.5

WLAN 5GHz 802.11ac-VHT40 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS0	
CH 38	5190	9.84	10
CH 46	5230	14.60	15.5
CH 54	5270	9.78	10
CH 62	5310	10.86	11
CH 102	5510	10.33	10.5
CH 110	5550	16.17	16.5
CH 126	5630	15.26	15.5
CH 134	5670	15.33	15.5
CH 142	5610	15.56	16.5
CH 151	5755	16.27	16.5
CH 159	5795	16.11	16.5

WLAN 5GHz 802.11ac-VHT80 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS0	
CH 42	5210	8.34	8.5
CH 58	5290	10.13	11
CH 106	5530	8.68	9
CH 122	5610	13.88	14
CH 138	5690	13.62	14
CH 155	5775	13.84	14

<Antenna A+B>

WLAN 5GHz 802.11n-HT20 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS8	
CH 36	5180	13.77	14
CH 40	5200	15.80	16
CH 44	5220	15.21	15.5
CH 48	5240	15.30	15.5
CH 52	5260	13.56	14
CH 56	5280	15.69	16
CH 60	5300	15.61	16
CH 64	5320	14.14	14.5
CH 100	5500	13.88	14
CH 104	5520	16.21	16.5
CH 108	5540	16.11	16.5
CH 112	5560	16.22	16.5
CH 116	5580	16.32	16.5
CH 120	5600	16.16	16.5
CH 124	5620	16.01	16.5
CH 128	5640	15.95	16.5
CH 132	5660	16.21	16.5
CH 136	5680	16.39	16.5
CH 140	5700	13.32	13.5
CH 144	5720	16.01	16.5
CH 149	5745	16.15	16.5
CH 153	5765	16.05	16.5
CH 157	5785	16.03	16.5
CH 161	5805	16.01	16.5
CH 165	5825	16.19	16.5

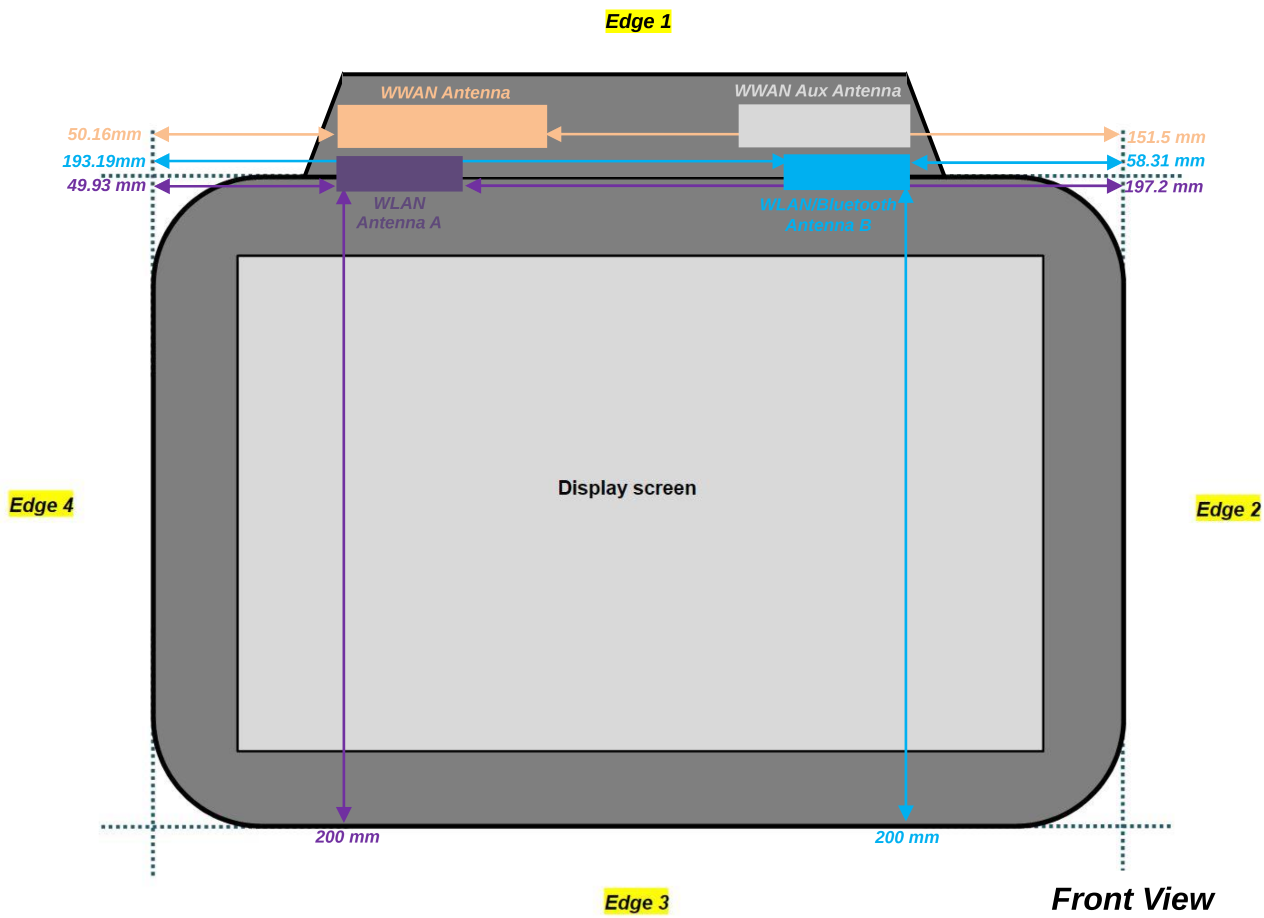
WLAN 5GHz 802.11n-HT40 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS8	
CH 38	5190	10.69	11
CH 46	5230	15.48	15.5
CH 54	5270	10.85	11
CH 62	5310	11.85	12
CH 102	5510	10.89	11
CH 110	5550	16.12	16.5
CH 126	5630	15.96	16.5
CH 134	5670	15.88	16
CH 142	5710	15.95	16.5
CH 151	5755	15.92	16.5
CH 159	5795	15.85	16.5

WLAN 5GHz 802.11ac-VHT20 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS 10	
CH 36	5180	13.71	14
CH 40	5200	15.71	16
CH 44	5220	15.18	15.5
CH 48	5240	15.26	15.5
CH 52	5260	13.51	14
CH 56	5280	15.65	16
CH 60	5300	15.52	16
CH 64	5320	14.12	14.5
CH 100	5500	13.76	14
CH 104	5520	16.03	16.5
CH 108	5540	16.01	16.5
CH 112	5560	16.10	16.5
CH 116	5580	16.26	16.5
CH 120	5600	16.11	16.5
CH 124	5620	15.96	16.5
CH 128	5640	15.88	16.5
CH 132	5660	16.11	16.5
CH 136	5680	16.22	16.5
CH 140	5700	13.26	13.5
CH 144	5720	15.95	16.5
CH 149	5745	16.11	16.5
CH 153	5765	16.00	16.5
CH 157	5785	15.84	16.5
CH 161	5805	15.96	16.5
CH 165	5825	15.99	16.5

WLAN 5GHz 802.11ac-VHT40 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS10	
CH 38	5190	10.73	11
CH 46	5230	15.22	15.5
CH 54	5270	10.96	11
CH 62	5310	11.76	12
CH 102	5510	10.85	11
CH 110	5550	16.08	16.5
CH 126	5630	15.84	16
CH 134	5670	15.81	16
CH 142	5710	15.81	16.5
CH 151	5755	15.85	16.5
CH 159	5795	15.93	16.5

WLAN 5GHz 802.11ac-VHT80 Average Power (dBm)			Tune up Limit (dBm)
Power vs. Channel			
Channel	Frequency (MHz)	MCS Index	
		MCS10	
CH 42	5210	9.42	9.5
CH 58	5290	11.45	11.5
CH 106	5530	9.42	9.5
CH 122	5610	16.10	16.5
CH 138	5690	16.33	16.5
CH 155	5775	16.12	16.5

11. Antenna Location



<SAR test exclusion table>

Exposure Position	Wireless Interface	GPRS 850 Class 10	GPRS 1900 Class 10	WCDMA Band V	WCDMA Band IV	WCDMA Band II	CDMA 2000 BC10	CDMA 2000 BC0	CDMA 2000 BC1	LTE Band 17	LTE Band 13	LTE Band 5	LTE Band 4	LTE Band 2	LTE Band 25
Exposure Position	Calculated Frequency	848MHz	1909MHz	846MHz	1750MHz	1907MHz	846MHz	848MHz	1907MHz	713MHz	784MHz	848MHz	1754MHz	1909MHz	1914MHz
	Maximum power (dBm)	27	24	24	24	24	24.5	24.5	24.5	24	24	24	24	24	24
	Maximum rated power(mW)	501	251	251	251	251	282	282	282	251	251	251	251	251	251
Bottom Face	Separation distance(mm)	5.0													
	exclusion threshold	92	69	46	66	69	52	52	78	42	44	46	66	69	69
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Edge 1	Separation distance(mm)	5.0													
	exclusion threshold	92	69	46	66	69	52	52	78	42	44	46	66	69	69
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Edge 2	Separation distance(mm)	151.5													
	exclusion threshold	737	1124	736	1128	1124	736	737	1124	660	700	737	1128	1124	1123
	Testing required?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Edge 3	Separation distance(mm)	212.0													
	exclusion threshold	1079	1729	1077	1733	1729	1077	1079	1729	948	1016	1079	1733	1729	1728
	Testing required?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Edge 4	Separation distance(mm)	50.16													
	exclusion threshold	164	110	164	115	110	164	164	110	178	170	164	115	110	110
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note:

1. Above the table, when the distance is < 50 mm exclusion threshold is "Ratio", when the distance is > 50 mm exclusion threshold is "mW"
2. Maximum power is the source-based time-average power and represents the maximum RF output power among production units
3. Per KDB 447498 D01v05r01, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
4. Per KDB 447498 D01v05r01, standalone SAR test exclusion threshold is applied; If the test separation distance is < 5mm, 5mm is used to determine SAR exclusion threshold.
5. Per KDB 447498 D01v05r01, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[$\sqrt{f(GHz)}$] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison
6. Per KDB 447498 D01v05r01, at 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following
   a) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
   b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

12. SAR Test Results

Note:

1. Per KDB 447498 D01v05r01, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v05r01, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. For SAR testing of the curved region of the device, the device was placed directly against the phantom at the point where the distance between the antenna and device exterior is a minimum.
4. Per KDB 616217 D04v01r01, the additional separation introduced by the contour against a flat phantom is > 5 mm and reported SAR is < 1.2 W/kg, a curved or contoured back surface or edge SAR is required, more detail information please refer to the setup photo.
5. Per KDB 941225 D02v02r02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA output power is < 0.25dB higher than RMC12.2Kbps, or reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA/HSUPA SAR evaluation can be excluded.
6. Per KDB 941225 D05v02r03, when reported SAR of 1RB and 50%RB allocation for QPSK ≤0.8W/kg, and 100%RB with QPSK output power is less than 1RB and 50%RB, 100%RB allocation for QPSK is not required.
7. Per KDB 941225 D05v02r03, when reported SAR of 1RB and 50%RB allocation for QPSK >0.8W/kg for any exposure position, SAR testing of 100%RB allocation for QPSK is performed at the highest power channel.
8. 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, 16QAM SAR testing is not required.
9. Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth.
10. For the exposure positions that proximity sensor power reduction is applied for SAR compliance, additional SAR testing with EUT transmitting full power in normal mode was performed; 0.7cm for bottom face, 0.7cm for edge1, 0.7cm for curved surface of edge1.
11. WLAN/Bluetooth module is also integrated into this host. Additional WLAN SAR testing was performed for simultaneous transmission analysis and WLAN/Bluetooth power is referred to Sprotn FCC SAR Report (FCC ID: Q2G7260H, Report No: FA3N1525).

12.1 Body SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	(Sensor) Power Back-off	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
150	GSM850	GPRS (2 Tx slots)	Bottom Face	0.7cm	128	824.2	OFF	31.61	33	1.377	0.05	0.177	0.244
151	GSM850	GPRS (2 Tx slots)	Curved surface of Edge1	0.7cm	128	824.2	OFF	31.61	33	1.377	0.07	0.287	0.395
152	GSM850	GPRS (2 Tx slots)	Edge 1	0.7cm	128	824.2	OFF	31.61	33	1.377	-0.02	0.375	0.516
153	GSM850	GPRS (2 Tx slots)	Edge 4	0cm	128	824.2	OFF	31.61	33	1.377	0.04	0.152	0.209
154	GSM850	GPRS (2 Tx slots)	Bottom Face	0cm	128	824.2	ON	28.8	30	1.318	-0.03	0.224	0.295
155	GSM850	GPRS (2 Tx slots)	Curved surface of Edge1	0cm	128	824.2	ON	28.8	30	1.318	0.17	0.354	0.467
156	GSM850	GPRS (2 Tx slots)	Edge 1	0cm	128	824.2	ON	28.8	30	1.318	0.03	0.552	**0.728**
85	GSM1900	GPRS (2 Tx slots)	Bottom Face	0.7cm	810	1909.8	OFF	28.74	30	1.337	0	0.085	0.114
112	GSM1900	GPRS (2 Tx slots)	Curved surface of Edge1	0.7cm	810	1909.8	OFF	28.74	30	1.337	-0.11	0.286	0.382
86	GSM1900	GPRS (2 Tx slots)	Edge 1	0.7cm	810	1909.8	OFF	28.74	30	1.337	0.06	0.307	0.410
87	GSM1900	GPRS (2 Tx slots)	Edge 4	0cm	810	1909.8	OFF	28.74	30	1.337	0.1	0.200	0.267
113	GSM1900	GPRS (2 Tx slots)	Bottom Face	0cm	512	1850.2	ON	25.77	27	1.327	-0.03	0.226	0.300
84	GSM1900	GPRS (2 Tx slots)	Curved surface of Edge1	0cm	512	1850.2	ON	25.77	27	1.327	0.01	0.485	**0.644**
88	GSM1900	GPRS (2 Tx slots)	Edge 1	0cm	512	1850.2	ON	25.77	27	1.327	0.01	0.323	0.429

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	(Sensor) Power Back-off	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
134	WCDMA V	RMC12.2Kbps	Bottom Face	0cm	4233	846.6	OFF	22.38	24	1.452	0.01	0.162	0.235
135	WCDMA V	RMC12.2Kbps	Curved surface of Edge1	0cm	4233	846.6	OFF	22.38	24	1.452	-0.07	0.263	0.382
136	WCDMA V	RMC12.2Kbps	Edge 1	0cm	4233	846.6	OFF	22.38	24	1.452	-0.01	0.493	**0.716**
137	WCDMA V	RMC12.2Kbps	Edge 4	0cm	4233	846.6	OFF	22.38	24	1.452	-0.11	0.093	0.135
98	WCDMA IV	RMC12.2Kbps	Bottom Face	0.7cm	1413	1732.6	OFF	22.57	24	1.390	-0.05	0.352	0.489
117	WCDMA IV	RMC12.2Kbps	Curved surface of Edge1	0.7cm	1413	1732.6	OFF	22.57	24	1.390	0.05	0.455	0.632
99	WCDMA IV	RMC12.2Kbps	Edge 1	0.7cm	1413	1732.6	OFF	22.57	24	1.390	0.02	0.429	0.596
100	WCDMA IV	RMC12.2Kbps	Edge 4	0cm	1413	1732.6	OFF	22.57	24	1.390	0.13	0.029	0.040
120	WCDMA IV	RMC12.2Kbps	Bottom Face	0cm	1413	1732.6	ON	19.54	20	1.112	-0.07	0.393	0.437
111	WCDMA IV	RMC12.2Kbps	Curved surface of Edge1	0cm	1413	1732.6	ON	19.54	20	1.112	-0.15	0.747	**0.830**
118	WCDMA IV	RMC12.2Kbps	Curved surface of Edge1	0cm	1312	1712.4	ON	19.37	20	1.156	-0.06	0.660	0.763
119	WCDMA IV	RMC12.2Kbps	Curved surface of Edge1	0cm	1513	1752.6	ON	19.34	20	1.164	-0.14	0.648	0.754
101	WCDMA IV	RMC12.2Kbps	Edge 1	0cm	1413	1732.6	ON	19.54	20	1.112	-0.04	0.366	0.407
114	WCDMA II	RMC12.2Kbps	Bottom Face	0.7cm	9538	1907.6	OFF	23.8	24	1.047	0.13	0.113	0.118
115	WCDMA II	RMC12.2Kbps	Curved surface of Edge1	0.7cm	9538	1907.6	OFF	23.8	24	1.047	-0.13	0.369	0.386
92	WCDMA II	RMC12.2Kbps	Edge 1	0.7cm	9538	1907.6	OFF	23.8	24	1.047	0.03	0.294	0.308
93	WCDMA II	RMC12.2Kbps	Edge 4	0cm	9538	1907.6	OFF	23.8	24	1.047	0.16	0.180	0.188
116	WCDMA II	RMC12.2Kbps	Bottom Face	0cm	9538	1907.6	ON	20.69	21	1.074	0.11	0.090	0.097
95	WCDMA II	RMC12.2Kbps	Curved surface of Edge1	0cm	9538	1907.6	ON	20.69	21	1.074	-0.08	0.439	**0.471**
94	WCDMA II	RMC12.2Kbps	Edge 1	0cm	9538	1907.6	ON	20.69	21	1.074	0	0.243	0.261

<CDMA2000>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	(Sensor) Power Back-off	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
146	CDMA2000 BC10	RTAP 153.6Kbps	Bottom Face	0cm	476	817.9	OFF	23.71	24.5	1.199	0.03	0.225	0.270
147	CDMA2000 BC10	RTAP 153.6Kbps	Curved surface of Edge1	0cm	476	817.9	OFF	23.71	24.5	1.199	-0.08	0.374	0.449
148	CDMA2000 BC10	RTAP 153.6Kbps	Edge 1	0cm	476	817.9	OFF	23.71	24.5	1.199	0.14	0.573	0.687
149	CDMA2000 BC10	RTAP 153.6Kbps	Edge 4	0cm	476	817.9	OFF	23.71	24.5	1.199	-0.01	0.117	0.140
140	CDMA2000 BC0	RTAP 153.6Kbps	Bottom Face	0cm	384	836.52	OFF	23.73	24.5	1.194	0.04	0.196	0.234
141	CDMA2000 BC0	RTAP 153.6Kbps	Curved surface of Edge1	0cm	384	836.52	OFF	23.73	24.5	1.194	0.17	0.385	0.460
142	CDMA2000 BC0	RTAP 153.6Kbps	Edge 1	0cm	384	836.52	OFF	23.73	24.5	1.194	0.09	0.605	0.722
143	CDMA2000 BC0	RTAP 153.6Kbps	Edge 4	0cm	384	836.52	OFF	23.73	24.5	1.194	-0.13	0.122	0.146
126	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Face	0.7cm	25	1851.25	OFF	23.65	24.5	1.216	0.04	0.162	0.197
128	CDMA2000 BC1	RTAP 153.6Kbps	Curved surface of Edge1	0.7cm	25	1851.25	OFF	23.65	24.5	1.216	-0.17	0.419	0.510
127	CDMA2000 BC1	RTAP 153.6Kbps	Edge 1	0.7cm	25	1851.25	OFF	23.65	24.5	1.216	0.16	0.457	0.556
129	CDMA2000 BC1	RTAP 153.6Kbps	Edge 4	0cm	25	1851.25	OFF	23.65	24.5	1.216	-0.12	0.224	0.272
121	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Face	0cm	25	1851.25	ON	20.86	21.5	1.159	-0.06	0.368	0.426
123	CDMA2000 BC1	RTAP 153.6Kbps	Curved surface of Edge1	0cm	25	1851.25	ON	20.86	21.5	1.159	-0.08	0.735	0.852
124	CDMA2000 BC1	RTAP 153.6Kbps	Curved surface of Edge1	0cm	600	1880	ON	20.84	21.5	1.164	0.09	0.744	0.866
125	CDMA2000 BC1	RTAP 153.6Kbps	Curved surface of Edge1	0cm	1175	1908.75	ON	20.81	21.5	1.172	-0.01	0.588	0.689
122	CDMA2000 BC1	RTAP 153.6Kbps	Edge 1	0cm	25	1851.25	ON	20.86	21.5	1.159	-0.16	0.450	0.521

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Ch.	Freq. (MHz)	(Sensor) Power Back-off	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
277	LTE Band 17	10M	QPSK	1	0	Bottom Face	0cm	23790	710	OFF	22.49	24	1.416	0.07	0.094	0.133
278	LTE Band 17	10M	QPSK	25	0	Bottom Face	0cm	23790	710	OFF	21.36	23	1.459	0.1	0.081	0.118
279	LTE Band 17	10M	QPSK	1	0	Curved surface of Edge1	0cm	23790	710	OFF	22.49	24	1.416	-0.03	0.148	0.210
280	LTE Band 17	10M	QPSK	25	0	Curved surface of Edge1	0cm	23790	710	OFF	21.36	23	1.459	-0.06	0.128	0.187
281	LTE Band 17	10M	QPSK	1	0	Edge 1	0cm	23790	710	OFF	22.49	24	1.416	0.19	0.428	0.606
282	LTE Band 17	10M	QPSK	25	0	Edge 1	0cm	23790	710	OFF	21.36	23	1.459	0.03	0.366	0.534
283	LTE Band 17	10M	QPSK	1	0	Edge 4	0cm	23790	710	OFF	22.49	24	1.416	0.04	0.038	0.054
284	LTE Band 17	10M	QPSK	25	0	Edge 4	0cm	23790	710	OFF	21.36	23	1.459	0.06	0.032	0.047
287	LTE Band 13	10M	QPSK	1	0	Bottom Face	0cm	23230	782	OFF	22.49	24	1.416	0.07	0.073	0.103
288	LTE Band 13	10M	QPSK	25	24	Bottom Face	0cm	23230	782	OFF	21.45	23	1.429	0.1	0.062	0.089
289	LTE Band 13	10M	QPSK	1	0	Curved surface of Edge1	0cm	23230	782	OFF	22.49	24	1.416	0.07	0.143	0.202
290	LTE Band 13	10M	QPSK	25	24	Curved surface of Edge1	0cm	23230	782	OFF	21.45	23	1.429	0.01	0.129	0.184
291	LTE Band 13	10M	QPSK	1	0	Edge 1	0cm	23230	782	OFF	22.49	24	1.416	-0.02	0.397	0.562
292	LTE Band 13	10M	QPSK	25	24	Edge 1	0cm	23230	782	OFF	21.45	23	1.429	-0.01	0.322	0.460
293	LTE Band 13	10M	QPSK	1	0	Edge 4	0cm	23230	782	OFF	22.49	24	1.416	0.07	0.032	0.045
294	LTE Band 13	10M	QPSK	25	24	Edge 4	0cm	23230	782	OFF	21.45	23	1.429	0.14	0.028	0.040
215	LTE Band 5	10M	QPSK	1	24	Bottom Face	0cm	20450	829	OFF	22.3	24	1.479	0.07	0.140	0.207
216	LTE Band 5	10M	QPSK	25	24	Bottom Face	0cm	20450	829	OFF	21.25	23	1.496	0.06	0.116	0.174
221	LTE Band 5	10M	QPSK	1	24	Curved surface of Edge1	0cm	20450	829	OFF	22.3	24	1.479	0.02	0.333	0.493
222	LTE Band 5	10M	QPSK	25	24	Curved surface of Edge1	0cm	20450	829	OFF	21.25	23	1.496	0.02	0.278	0.416
217	LTE Band 5	10M	QPSK	1	24	Edge 1	0cm	20450	829	OFF	22.3	24	1.479	0	0.531	0.785
218	LTE Band 5	10M	QPSK	25	24	Edge 1	0cm	20450	829	OFF	21.25	23	1.496	0.03	0.430	0.643
219	LTE Band 5	10M	QPSK	1	24	Edge 4	0cm	20450	829	OFF	22.3	24	1.479	-0.1	0.082	0.121
220	LTE Band 5	10M	QPSK	25	24	Edge 4	0cm	20450	829	OFF	21.25	23	1.496	0.17	0.062	0.093

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Ch.	Freq. (MHz)	(Sensor) Power Back-off	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
235	LTE Band 4	20M	QPSK	1	0	Bottom Face	0.7cm	20300	1745	OFF	22.98	24	1.265	0.13	0.385	0.487
236	LTE Band 4	20M	QPSK	50	0	Bottom Face	0.7cm	20050	1720	OFF	21.76	23	1.330	0.03	0.281	0.374
237	LTE Band 4	20M	QPSK	1	0	Curved surface of Edge1	0.7cm	20300	1745	OFF	22.98	24	1.265	0.09	0.596	0.754
238	LTE Band 4	20M	QPSK	50	0	Curved surface of Edge1	0.7cm	20050	1720	OFF	21.76	23	1.330	0.1	0.421	0.560
239	LTE Band 4	20M	QPSK	1	0	Edge 1	0.7cm	20300	1745	OFF	22.98	24	1.265	0.11	0.418	0.529
240	LTE Band 4	20M	QPSK	50	0	Edge 1	0.7cm	20050	1720	OFF	21.76	23	1.330	0.03	0.325	0.432
241	LTE Band 4	20M	QPSK	1	0	Edge 4	0cm	20300	1745	OFF	22.98	24	1.265	-0.16	0.028	0.035
242	LTE Band 4	20M	QPSK	50	0	Edge 4	0cm	20050	1720	OFF	21.76	23	1.330	0.02	0.019	0.025
243	LTE Band 4	20M	QPSK	1	0	Bottom Face	0cm	20300	1745	ON	19.79	20	1.050	-0.07	0.588	0.617
244	LTE Band 4	20M	QPSK	50	0	Bottom Face	0cm	20175	1732.5	ON	19.62	20	1.091	-0.04	0.551	0.601
245	LTE Band 4	20M	QPSK	1	0	Curved surface of Edge1	0cm	20300	1745	ON	19.79	20	1.050	0.11	0.739	0.776
248	LTE Band 4	20M	QPSK	50	0	Curved surface of Edge1	0cm	20175	1732.5	ON	19.62	20	1.091	-0.16	0.744	0.812
249	LTE Band 4	20M	QPSK	50	0	Curved surface of Edge1	0cm	20050	1720	ON	19.5	20	1.122	-0.06	0.763	0.856
250	LTE Band 4	20M	QPSK	50	0	Curved surface of Edge1	0cm	20300	1745	ON	19.54	20	1.112	0.03	0.719	0.799
251	LTE Band 4	20M	QPSK	100	0	Curved surface of Edge1	0cm	20300	1745	ON	19.62	20	1.091	-0.06	0.708	0.773
252	LTE Band 4	20M	QPSK	1	0	Edge 1	0cm	20300	1745	ON	19.79	20	1.050	0.1	0.398	0.418
253	LTE Band 4	20M	QPSK	50	0	Edge 1	0cm	20175	1732.5	ON	19.62	20	1.091	0.01	0.380	0.415
227	LTE Band 2	20M	QPSK	1	99	Bottom Face	0.7cm	19100	1900	OFF	22.95	24	1.274	0.15	0.115	0.146
228	LTE Band 2	20M	QPSK	50	0	Bottom Face	0.7cm	18700	1860	OFF	21.73	23	1.340	-0.04	0.115	0.154
229	LTE Band 2	20M	QPSK	1	99	Curved surface of Edge1	0.7cm	19100	1900	OFF	22.95	24	1.274	0.1	0.352	0.448
230	LTE Band 2	20M	QPSK	50	0	Curved surface of Edge1	0.7cm	18700	1860	OFF	21.73	23	1.340	-0.05	0.284	0.380
231	LTE Band 2	20M	QPSK	1	99	Edge 1	0.7cm	19100	1900	OFF	22.95	24	1.274	-0.07	0.363	0.462
232	LTE Band 2	20M	QPSK	50	0	Edge 1	0.7cm	18700	1860	OFF	21.73	23	1.340	-0.19	0.307	0.411
233	LTE Band 2	20M	QPSK	1	99	Edge 4	0cm	19100	1900	OFF	22.95	24	1.274	0.09	0.248	0.316
234	LTE Band 2	20M	QPSK	50	0	Edge 4	0cm	18700	1860	OFF	21.73	23	1.340	-0.01	0.120	0.161
223	LTE Band 2	20M	QPSK	1	99	Bottom Face	0cm	19100	1900	ON	19.94	21	1.276	-0.16	0.234	0.299
224	LTE Band 2	20M	QPSK	50	0	Bottom Face	0cm	18700	1860	ON	19.59	21	1.384	-0.05	0.455	0.630
254	LTE Band 2	20M	QPSK	1	99	Curved surface of Edge1	0cm	19100	1900	ON	19.94	21	1.276	0.05	0.524	0.669
255	LTE Band 2	20M	QPSK	50	0	Curved surface of Edge1	0cm	18700	1860	ON	19.59	21	1.384	-0.04	0.588	0.814
256	LTE Band 2	20M	QPSK	50	0	Curved surface of Edge1	0cm	18900	1880	ON	19.4	21	1.445	0.11	0.577	0.834
257	LTE Band 2	20M	QPSK	50	0	Curved surface of Edge1	0cm	19100	1900	ON	19.44	21	1.432	-0.03	0.530	0.759
258	LTE Band 2	20M	QPSK	100	0	Curved surface of Edge1	0cm	18700	1860	ON	19.52	21	1.406	0.03	0.592	0.832
259	LTE Band 2	20M	QPSK	1	99	Edge 1	0cm	19100	1900	ON	19.94	21	1.276	0.15	0.322	0.411
260	LTE Band 2	20M	QPSK	50	0	Edge 1	0cm	18700	1860	ON	19.59	21	1.384	-0.1	0.354	0.490
261	LTE Band 25	20M	QPSK	1	49	Bottom Face	0.7cm	26140	1860	OFF	22.97	24	1.268	0.17	0.162	0.205
262	LTE Band 25	20M	QPSK	50	49	Bottom Face	0.7cm	26140	1860	OFF	21.67	23	1.358	-0.03	0.112	0.152
263	LTE Band 25	20M	QPSK	1	49	Curved surface of Edge1	0.7cm	26140	1860	OFF	22.97	24	1.268	-0.06	0.428	0.543
264	LTE Band 25	20M	QPSK	50	49	Curved surface of Edge1	0.7cm	26140	1860	OFF	21.67	23	1.358	-0.11	0.399	0.542
265	LTE Band 25	20M	QPSK	1	49	Edge 1	0.7cm	26140	1860	OFF	22.97	24	1.268	0.09	0.401	0.508
266	LTE Band 25	20M	QPSK	50	49	Edge 1	0.7cm	26140	1860	OFF	21.67	23	1.358	0	0.306	0.416
267	LTE Band 25	20M	QPSK	1	49	Edge 4	0cm	26140	1860	OFF	22.97	24	1.268	0.17	0.146	0.185
268	LTE Band 25	20M	QPSK	50	49	Edge 4	0cm	26140	1860	OFF	21.67	23	1.358	0.02	0.098	0.133
269	LTE Band 25	20M	QPSK	1	49	Bottom Face	0cm	26590	1905	ON	19.94	21	1.276	0.01	0.119	0.152
270	LTE Band 25	20M	QPSK	50	49	Bottom Face	0cm	26140	1860	ON	19.66	21	1.361	0.15	0.317	0.432
271	LTE Band 25	20M	QPSK	1	49	Curved surface of Edge1	0cm	26590	1905	ON	19.94	21	1.276	-0.06	0.563	0.719
272	LTE Band 25	20M	QPSK	50	49	Curved surface of Edge1	0cm	26140	1860	ON	19.66	21	1.361	0.18	0.506	0.689
273	LTE Band 25	20M	QPSK	1	49	Edge 1	0cm	26590	1905	ON	19.94	21	1.276	-0.05	0.275	0.351
274	LTE Band 25	20M	QPSK	50	49	Edge 1	0cm	26140	1860	ON	19.66	21	1.361	-0.01	0.320	0.436

<WLAN SAR DTS>

Plot No.	Band	Mode	Test Position	Gap (cm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
159	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0cm	Ant A	6	2437	15.34	15.5	1.038	0	0.173	0.179
161	WLAN2.4GHz	802.11b 1Mbps	Curved surface of Edge1	0cm	Ant A	6	2437	15.34	15.5	1.038	-0.1	0.375	0.389
160	WLAN2.4GHz	802.11b 1Mbps	Edge 1	0cm	Ant A	6	2437	15.34	15.5	1.038	0.19	0.039	0.040
162	WLAN2.4GHz	802.11g 6Mbps	Curved surface of Edge1	0cm	Ant A	6	2437	16.24	16.5	1.062	-0.05	0.520	0.552
164	WLAN2.4GHz	802.11n-HT20 MCS0	Curved surface of Edge1	0cm	Ant A	6	2437	16.35	16.5	1.035	-0.02	0.434	0.449
165	WLAN2.4GHz	802.11n-HT40 MCS0	Curved surface of Edge1	0cm	Ant A	6	2437	16.35	16.5	1.035	-0.01	0.443	0.459
166	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0cm	Ant B	6	2437	13.99	14	1.002	0.18	0.012	0.012
167	WLAN2.4GHz	802.11b 1Mbps	Curved surface of Edge1	0cm	Ant B	6	2437	13.99	14	1.002	0.02	0.025	0.025
168	WLAN2.4GHz	802.11b 1Mbps	Edge1	0cm	Ant B	6	2437	13.99	14	1.002	0.14	0.053	0.053
169	WLAN2.4GHz	802.11g 6Mbps	Edge1	0cm	Ant B	6	2437	15.25	15.5	1.059	-0.1	0.068	0.072
170	WLAN2.4GHz	802.11n-HT20 MCS0	Edge1	0cm	Ant B	6	2437	15.21	15.5	1.069	0.04	0.073	0.078
205	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant A	165	5825	16.47	16.5	1.007	-0.17	0.336	0.338
206	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge1	0cm	Ant A	165	5825	16.47	16.5	1.007	-0.14	0.775	0.780
208	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge1	0cm	Ant A	149	5745	16.26	16.5	1.057	-0.17	1.340	**1.416**
209	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge1	0cm	Ant A	157	5785	16.38	16.5	1.028	0.15	1.300	1.336
207	WLAN5GHz	802.11a 6Mbps	Edge 1	0cm	Ant A	165	5825	16.47	16.5	1.007	-0.06	0.410	0.413
214	WLAN5GHz	802.11ac-VHT80 MCS0	Curved surface of Edge1	0cm	Ant A	155	5775	13.84	14	1.038	-0.1	0.988	1.025
210	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant B	149	5745	16.38	16.5	1.028	-0.19	0.034	0.035
211	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge1	0cm	Ant B	149	5745	16.38	16.5	1.028	-0.12	0.101	0.104
212	WLAN5GHz	802.11a 6Mbps	Edge 1	0cm	Ant B	149	5745	16.38	16.5	1.028	0.01	0.175	0.180
213	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 1	0cm	Ant B	155	5775	13.84	14	1.038	0.19	0.053	0.055

<WLAN SAR NII>

Plot No.	Band	Mode	Test Position	Gap (cm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
173	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant A	40	5200	15.81	16	1.045	-0.03	0.190	0.198
175	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge1	0cm	Ant A	40	5200	15.81	16	1.045	0.03	0.684	0.715
174	WLAN5GHz	802.11a 6Mbps	Edge 1	0cm	Ant A	40	5200	15.81	16	1.045	-0.13	0.112	0.117
176	WLAN5GHz	802.11ac-VHT80 MCS0	Curved surface of Edge1	0cm	Ant A	42	5210	8.43	8.5	1.016	0.03	0.135	0.137
179	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant B	40	5200	15.71	16	1.069	0.01	0.00971	0.010
180	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge1	0cm	Ant B	40	5200	15.71	16	1.069	0.09	0.024	0.026
181	WLAN5GHz	802.11a 6Mbps	Edge 1	0cm	Ant B	40	5200	15.71	16	1.069	0.03	0.038	0.041
182	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 1	0cm	Ant B	42	5210	8.34	8.5	1.038	0.16	0.00541	0.006
184	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant A	60	5300	15.72	16	1.067	-0.02	0.252	0.269
185	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge1	0cm	Ant A	60	5300	15.72	16	1.067	-0.11	0.440	0.469
186	WLAN5GHz	802.11a 6Mbps	Edge 1	0cm	Ant A	60	5300	15.72	16	1.067	-0.12	0.139	0.148
187	WLAN5GHz	802.11ac-VHT80 MCS0	Curved surface of Edge1	0cm	Ant A	58	5290	10.42	10.5	1.019	-0.1	0.095	0.097
189	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant B	60	5300	15.83	16	1.040	-0.01	0.00447	0.005
190	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge1	0cm	Ant B	60	5300	15.83	16	1.040	0.01	0.031	0.032
191	WLAN5GHz	802.11a 6Mbps	Edge 1	0cm	Ant B	60	5300	15.83	16	1.040	0.01	0.042	0.044
192	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 1	0cm	Ant B	58	5290	10.13	11	1.222	0.09	0.010	0.012
194	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant A	104	5520	16.38	16.5	1.028	-0.14	0.172	0.177
195	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge1	0cm	Ant A	104	5520	16.38	16.5	1.028	-0.04	0.482	0.496
197	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge1	0cm	Ant A	116	5580	16.07	16.5	1.104	-0.15	0.630	0.696
198	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge1	0cm	Ant A	120	5600	16.05	16.5	1.109	0.12	0.600	0.666
199	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge1	0cm	Ant A	136	5680	16.23	16.5	1.064	-0.02	0.732	0.779
196	WLAN5GHz	802.11a 6Mbps	Edge 1	0cm	Ant A	104	5520	16.38	16.5	1.028	-0.12	0.131	0.135
200	WLAN5GHz	802.11ac-VHT80 MCS0	Curved surface of Edge1	0cm	Ant A	122	5610	13.69	14	1.074	0.06	0.318	0.342
201	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant B	104	5520	16.44	16.5	1.014	0.12	0.015	0.015
202	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge1	0cm	Ant B	104	5520	16.44	16.5	1.014	0.19	0.062	0.063
203	WLAN5GHz	802.11a 6Mbps	Edge 1	0cm	Ant B	104	5520	16.44	16.5	1.014	0.17	0.063	0.064
204	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 1	0cm	Ant B	122	5610	13.88	14	1.028	-0.17	0.020	0.021

12.2 Repeated SAR Measurement

Plot No.	Band	Mode	Test Position	Gap (cm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
208	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge1	0cm	Ant A	149	5745	16.26	16.5	1.057	-0.17	1.340	-	1.416
500	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge1	0cm	Ant A	149	5745	16.26	16.5	1.057	-0.05	1.320	1.02	1.395

Note:

1. Per KDB 865664 D01v01r02, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg
2. Per KDB 865664 D01v01r02, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. The ratio is the largest SAR to the smallest SAR among original and repeated measurement.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

13. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Supported
1.	WWAN + 2.4GHz Antenna A + 2.4GHz Antenna B	Yes
2.	WWAN + 2.4GHz Antenna A + Bluetooth	Yes
3.	WWAN + 5GHz Antenna A + 5GHz Antenna B	No
4.	5GHz Antenna A + 5GHz Antenna B	Yes
5.	5GHz Antenna A + Bluetooth	Yes

Note:

1. WLAN/Bluetooth module is also integrated into this host. Additional WLAN SAR testing was performed for simultaneous transmission analysis and WLAN/Bluetooth power is referred to Sprotn FCC SAR Report (FCC ID: Q2G7260H, Report No: FA3N1525).
2. For simultaneous transmission analysis for exposure position of edge1 0.7cm, bottom face 0.7cm and curved surface of edge1 0.7cm, WLAN SAR tested at 0mm separation is worse and the test data is used for conservative SAR summation.
3. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
4. The Scaled SAR summation is calculated based on the same configuration and test position.
5. Per KDB 447498 D01v05r01, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*), and the peak separation distance is determined from the square root of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$, where (x_1, y_1, z_1) and (x_2, y_2, z_2) are the coordinates of the extrapolated peak SAR locations in the zoom scan
   If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary
   iii) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg
6. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v05r01 based on the formula below.
   i) (*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[$\sqrt{f(GHz)}/x$] W/kg for *test separation distances* ≤ 50 mm; where *x* = 7.5 for 1-g SAR, and *x* = 18.75 for 10-g SAR.
   ii) When the minimum test separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
   iii) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the *test separation distances* is > 50 mm.
   iv) Bluetooth estimated SAR is conservatively determined by 5mm separation, for all applicable exposure positions.

Bluetooth Max Power	Exposure Position	All Positions
6.0 dBm	Estimated SAR (W/kg)	0.168 W/kg

13.1 Body Exposure Conditions

<WWAN + 2.4GHz Antenna A + 2.4GHz Antenna B>

	WWAN			WLAN Ant A		WLAN Ant B		Summed SAR (W/kg)
Position	WWAN Band	Plot No	SAR (W/kg)	Plot No	SAR (W/kg)	Plot No	SAR (W/kg)	
Bottom Face At 0.7cm	GSM850	150	0.244	159	0.179	166	0.012	**0.44**
	GSM1900	85	0.114	159	0.179	166	0.012	**0.31**
	WCDMA IV	98	0.489	159	0.179	166	0.012	**0.68**
	WCDMA II	114	0.118	159	0.179	166	0.012	**0.31**
	CDMA BC1	126	0.197	159	0.179	166	0.012	**0.39**
	LTE Band 4	235	0.487	159	0.179	166	0.012	**0.68**
	LTE Band 2	228	0.154	159	0.179	166	0.012	**0.35**
	LTE Band 25	261	0.205	159	0.179	166	0.012	**0.40**
Curved surface of Edge1 At 0.7cm	GSM850	151	0.395	162	0.552	167	0.025	**0.97**
	GSM1900	112	0.382	162	0.552	167	0.025	**0.96**
	WCDMA IV	117	0.632	162	0.552	167	0.025	**1.21**
	WCDMA II	115	0.386	162	0.552	167	0.025	**0.96**
	CDMA BC1	128	0.51	162	0.552	167	0.025	**1.09**
	LTE Band 4	237	0.754	162	0.552	167	0.025	**1.33**
	LTE Band 2	229	0.448	162	0.552	167	0.025	**1.03**
	LTE Band 25	263	0.543	162	0.552	167	0.025	**1.12**
Edge 1 At 0.7cm	GSM850	152	0.516	160	0.04	170	0.078	**0.63**
	GSM1900	86	0.41	160	0.04	170	0.078	**0.53**
	WCDMA IV	99	0.596	160	0.04	170	0.078	**0.71**
	WCDMA II	92	0.308	160	0.04	170	0.078	**0.43**
	CDMA BC1	127	0.556	160	0.04	170	0.078	**0.67**
	LTE Band 4	239	0.529	160	0.04	170	0.078	**0.65**
	LTE Band 2	231	0.462	160	0.04	170	0.078	**0.58**
	LTE Band 25	265	0.508	160	0.04	170	0.078	**0.63**
Edge4 At 0cm	GSM850	153	0.209					**0.21**
	GSM1900	87	0.267					**0.27**
	WCDMA V	137	0.135					**0.14**
	WCDMA IV	100	0.04					**0.04**
	WCDMA II	93	0.188					**0.19**
	CDMA BC10	149	0.14					**0.14**
	CDMA BC0	143	0.146					**0.15**
	CDMA BC1	129	0.272					**0.27**
	LTE Band 17	283	0.054					**0.05**
	LTE Band 13	293	0.045					**0.05**
	LTE Band 5	219	0.121					**0.12**
	LTE Band 4	241	0.035					**0.04**
	LTE Band 2	233	0.316					**0.32**
	LTE Band 25	267	0.185					**0.19**

	WWAN			WLAN Ant A		WLAN Ant B		Summed SAR (W/kg)
Position	WWAN Band	Plot No	SAR (W/kg)	Plot No	SAR (W/kg)	Plot No	SAR (W/kg)	
Bottom Face At 0cm	GSM850	154	0.295	159	0.179	166	0.012	**0.49**
	GSM1900	113	0.3	159	0.179	166	0.012	**0.49**
	WCDMA V	134	0.235	159	0.179	166	0.012	**0.43**
	WCDMA IV	120	0.437	159	0.179	166	0.012	**0.63**
	WCDMA II	116	0.097	159	0.179	166	0.012	**0.29**
	CDMA BC10	146	0.27	159	0.179	166	0.012	**0.46**
	CDMA BC0	140	0.234	159	0.179	166	0.012	**0.43**
	CDMA BC1	121	0.426	159	0.179	166	0.012	**0.62**
	LTE Band 17	277	0.133	159	0.179	166	0.012	**0.32**
	LTE Band 13	287	0.103	159	0.179	166	0.012	**0.29**
	LTE Band 5	215	0.207	159	0.179	166	0.012	**0.40**
	LTE Band 4	243	0.617	159	0.179	166	0.012	**0.81**
	LTE Band 2	224	0.63	159	0.179	166	0.012	**0.82**
	LTE Band 25	270	0.432	159	0.179	166	0.012	**0.62**
Curved surface of Edge1 At 0cm	GSM850	155	0.467	162	0.552	167	0.025	**1.04**
	GSM1900	84	0.644	162	0.552	167	0.025	**1.22**
	WCDMA V	135	0.382	162	0.552	167	0.025	**0.96**
	WCDMA IV	111	0.83	162	0.552	167	0.025	**1.41**
	WCDMA II	95	0.471	162	0.552	167	0.025	**1.05**
	CDMA BC10	147	0.449	162	0.552	167	0.025	**1.03**
	CDMA BC0	141	0.46	162	0.552	167	0.025	**1.04**
	CDMA BC1	124	0.866	162	0.552	167	0.025	**1.44**
	LTE Band 17	279	0.21	162	0.552	167	0.025	**0.79**
	LTE Band 13	289	0.202	162	0.552	167	0.025	**0.78**
	LTE Band 5	221	0.493	162	0.552	167	0.025	**1.07**
	LTE Band 4	249	0.856	162	0.552	167	0.025	**1.43**
	LTE Band 2	256	0.834	162	0.552	167	0.025	**1.41**
	LTE Band 25	271	0.719	162	0.552	167	0.025	**1.30**
Edge1 At 0cm	GSM850	156	0.728	160	0.04	170	0.078	**0.85**
	GSM1900	88	0.429	160	0.04	170	0.078	**0.55**
	WCDMA V	136	0.716	160	0.04	170	0.078	**0.83**
	WCDMA IV	101	0.407	160	0.04	170	0.078	**0.53**
	WCDMA II	94	0.261	160	0.04	170	0.078	**0.38**
	CDMA BC10	148	0.687	160	0.04	170	0.078	**0.81**
	CDMA BC0	142	0.722	160	0.04	170	0.078	**0.84**
	CDMA BC1	122	0.521	160	0.04	170	0.078	**0.64**
	LTE Band 17	281	0.606	160	0.04	170	0.078	**0.72**
	LTE Band 13	291	0.562	160	0.04	170	0.078	**0.68**
	LTE Band 5	217	0.785	160	0.04	170	0.078	**0.90**
	LTE Band 4	252	0.418	160	0.04	170	0.078	**0.54**
	LTE Band 2	260	0.49	160	0.04	170	0.078	**0.61**
	LTE Band 25	274	0.436	160	0.04	170	0.078	**0.55**

<WWAN + 2.4GHz Antenna A + Bluetooth>

	WWAN			WLAN Ant A		Bluetooth	Summed SAR (W/kg)
Position	WWAN Band	Plot No	SAR (W/kg)	Plot No	SAR (W/kg)	Estimated SAR (W/kg)	
Bottom Face At 0.7cm	GSM850	150	0.244	159	0.179	0.168	**0.59**
	GSM1900	85	0.114	159	0.179	0.168	**0.46**
	WCDMA IV	98	0.489	159	0.179	0.168	**0.84**
	WCDMA II	114	0.118	159	0.179	0.168	**0.47**
	CDMA BC1	126	0.197	159	0.179	0.168	**0.54**
	LTE Band 4	235	0.487	159	0.179	0.168	**0.83**
	LTE Band 2	228	0.154	159	0.179	0.168	**0.50**
	LTE Band 25	261	0.205	159	0.179	0.168	**0.55**
Curved surface of Edge1 At 0.7cm	GSM850	151	0.395	162	0.552	0.168	**1.12**
	GSM1900	112	0.382	162	0.552	0.168	**1.10**
	WCDMA IV	117	0.632	162	0.552	0.168	**1.35**
	WCDMA II	115	0.386	162	0.552	0.168	**1.11**
	CDMA BC1	128	0.51	162	0.552	0.168	**1.23**
	LTE Band 4	237	0.754	162	0.552	0.168	**1.47**
	LTE Band 2	229	0.448	162	0.552	0.168	**1.17**
	LTE Band 25	263	0.543	162	0.552	0.168	**1.26**
Edge 1 At 0.7cm	GSM850	152	0.516	160	0.04	0.168	**0.72**
	GSM1900	86	0.41	160	0.04	0.168	**0.62**
	WCDMA IV	99	0.596	160	0.04	0.168	**0.80**
	WCDMA II	92	0.308	160	0.04	0.168	**0.52**
	CDMA BC1	127	0.556	160	0.04	0.168	**0.76**
	LTE Band 4	239	0.529	160	0.04	0.168	**0.74**
	LTE Band 2	231	0.462	160	0.04	0.168	**0.67**
	LTE Band 25	265	0.508	160	0.04	0.168	**0.72**
Edge4 At 0cm	GSM850	153	0.209			0.168	**0.38**
	GSM1900	87	0.267			0.168	**0.44**
	WCDMA V	137	0.135			0.168	**0.30**
	WCDMA IV	100	0.04			0.168	**0.21**
	WCDMA II	93	0.188			0.168	**0.36**
	CDMA BC10	149	0.14			0.168	**0.31**
	CDMA BC0	143	0.146			0.168	**0.31**
	CDMA BC1	129	0.272			0.168	**0.44**
	LTE Band 17	283	0.054			0.168	**0.22**
	LTE Band 13	293	0.045			0.168	**0.21**
	LTE Band 5	219	0.121			0.168	**0.29**
	LTE Band 4	241	0.035			0.168	**0.20**
	LTE Band 2	233	0.316			0.168	**0.48**
	LTE Band 25	267	0.185			0.168	**0.35**

Position	WWAN			WLAN Ant A		Bluetooth	Summed SAR (W/kg)
	WWAN Band	Plot No	SAR (W/kg)	Plot No	SAR (W/kg)	Estimated SAR (W/kg)	
Bottom Face At 0cm	GSM850	154	0.295	159	0.179	0.168	**0.64**
	GSM1900	113	0.3	159	0.179	0.168	**0.65**
	WCDMA V	134	0.235	159	0.179	0.168	**0.58**
	WCDMA IV	120	0.437	159	0.179	0.168	**0.78**
	WCDMA II	116	0.097	159	0.179	0.168	**0.44**
	CDMA BC10	146	0.27	159	0.179	0.168	**0.62**
	CDMA BC0	140	0.234	159	0.179	0.168	**0.58**
	CDMA BC1	121	0.426	159	0.179	0.168	**0.77**
	LTE Band 17	277	0.133	159	0.179	0.168	**0.48**
	LTE Band 13	287	0.103	159	0.179	0.168	**0.45**
	LTE Band 5	215	0.207	159	0.179	0.168	**0.55**
	LTE Band 4	243	0.617	159	0.179	0.168	**0.96**
	LTE Band 2	224	0.63	159	0.179	0.168	**0.98**
	LTE Band 25	270	0.432	159	0.179	0.168	**0.78**
Curved surface of Edge1 At 0cm	GSM850	155	0.467	162	0.552	0.168	**1.19**
	GSM1900	84	0.644	162	0.552	0.168	**1.36**
	WCDMA V	135	0.382	162	0.552	0.168	**1.10**
	WCDMA IV	111	0.83	162	0.552	0.168	**1.55**
	WCDMA II	95	0.471	162	0.552	0.168	**1.19**
	CDMA BC10	147	0.449	162	0.552	0.168	**1.17**
	CDMA BC0	141	0.46	162	0.552	0.168	**1.18**
	CDMA BC1	124	0.866	162	0.552	0.168	**1.59**
	LTE Band 17	279	0.21	162	0.552	0.168	**0.93**
	LTE Band 13	289	0.202	162	0.552	0.168	**0.92**
	LTE Band 5	221	0.493	162	0.552	0.168	**1.21**
	LTE Band 4	249	0.856	162	0.552	0.168	**1.58**
	LTE Band 2	256	0.834	162	0.552	0.168	**1.55**
	LTE Band 25	271	0.719	162	0.552	0.168	**1.44**
Edge1 At 0cm	GSM850	156	0.728	160	0.04	0.168	**0.94**
	GSM1900	88	0.429	160	0.04	0.168	**0.64**
	WCDMA V	136	0.716	160	0.04	0.168	**0.92**
	WCDMA IV	101	0.407	160	0.04	0.168	**0.62**
	WCDMA II	94	0.261	160	0.04	0.168	**0.47**
	CDMA BC10	148	0.687	160	0.04	0.168	**0.90**
	CDMA BC0	142	0.722	160	0.04	0.168	**0.93**
	CDMA BC1	122	0.521	160	0.04	0.168	**0.73**
	LTE Band 17	281	0.606	160	0.04	0.168	**0.81**
	LTE Band 13	291	0.562	160	0.04	0.168	**0.77**
	LTE Band 5	217	0.785	160	0.04	0.168	**0.99**
	LTE Band 4	252	0.418	160	0.04	0.168	**0.63**
	LTE Band 2	260	0.49	160	0.04	0.168	**0.70**
	LTE Band 25	274	0.436	160	0.04	0.168	**0.64**

<5GHz Antenna A + 5GHz Antenna B>

Position	WLAN Band	WLAN Ant A		WLAN Ant B		Summed SAR (W/kg)
		Plot No	SAR (W/kg)	Plot No	SAR (W/kg)	
Bottom Face At 0cm	WLAN5.2GHz Band	173	0.198	179	0.010	**0.21**
	WLAN5.3GHz Band	184	0.269	189	0.005	**0.27**
	WLAN5.5GHz Band	194	0.177	201	0.015	**0.19**
	WLAN5.8GHz Band	205	0.338	210	0.035	**0.37**
Edge1 At 0cm	WLAN5.2GHz Band	174	0.117	181	0.041	**0.16**
	WLAN5.3GHz Band	186	0.148	191	0.044	**0.19**
	WLAN5.5GHz Band	196	0.135	203	0.064	**0.20**
	WLAN5.8GHz Band	207	0.413	212	0.180	**0.59**
Curved surface of Edge1 At 0cm	WLAN5.2GHz Band	175	0.715	180	0.026	**0.74**
	WLAN5.3GHz Band	185	0.469	190	0.032	**0.50**
	WLAN5.5GHz Band	199	0.779	202	0.063	**0.84**
	WLAN5.8GHz Band	208	1.416	211	0.104	**1.52**

Position	WLAN Band	WLAN Ant A		Bluetooth	Summed SAR (W/kg)
		Plot No	SAR (W/kg)	Estimated SAR (W/kg)	
Bottom Face At 0cm	WLAN5.2GHz Band	173	0.198	**0.168**	**0.37**
	WLAN5.3GHz Band	184	0.269	**0.168**	**0.44**
	WLAN5.5GHz Band	194	0.177	**0.168**	**0.35**
	WLAN5.8GHz Band	205	0.338	**0.168**	**0.51**
Edge1 At 0cm	WLAN5.2GHz Band	174	0.117	**0.168**	**0.29**
	WLAN5.3GHz Band	186	0.148	**0.168**	**0.32**
	WLAN5.5GHz Band	196	0.135	**0.168**	**0.30**
	WLAN5.8GHz Band	207	0.413	**0.168**	**0.58**
Curved surface of Edge1 At 0cm	WLAN5.2GHz Band	175	0.715	**0.168**	**0.88**
	WLAN5.3GHz Band	185	0.469	**0.168**	**0.64**
	WLAN5.5GHz Band	199	0.779	**0.168**	**0.95**
	WLAN5.8GHz Band	208	1.416	**0.168**	**1.58**

Test Engineer： Ken Li and Ken Li

14. Uncertainty Assessment

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in Table 14.1

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor[(a)]	1/k[(b)]	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

Table 15.1. Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.0	Normal	1	1	1	± 6.0 %	± 6.0 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.4	Rectangular	√3	1	1	± 0.2 %	± 0.2 %
Probe Positioning	2.9	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Max. SAR Eval.	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Test Sample Related							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
Phantom and Setup							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
Combined Standard Uncertainty						± 11.0 %	± 10.8 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						**± 22.0 %**	**± 21.5 %**

Table 15.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.55	Normal	1	1	1	± 6.55 %	± 6.55 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	2.0	Rectangular	√3	1	1	± 1.2 %	± 1.2 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Probe Positioning	9.9	Rectangular	√3	1	1	± 5.7 %	± 5.7 %
Max. SAR Eval.	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Test Sample Related							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
Phantom and Setup							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
Combined Standard Uncertainty						± 12.8 %	± 12.6 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						**± 25.6 %**	**± 25.2 %**

Table 15.3. Uncertainty Budget for frequency range 3 GHz to 6 GHz

15. References

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[4] SPEAG DASY System Handbook

[5] FCC KDB 248227 D01 v01r02, “SAR Measurement Procedures for 802.11 a/b/g Transmitters”, May 2007

[6] FCC KDB 447498 D01 v05r01, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, May 2013

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[12] FCC KDB 644545 D01 v01r02, "Guidance for IEEE 802.11ac and Pre-ac Device Emission Testing", Apr 2013.

[13] FCC KDB 865664 D01 v01r02, "SAR Measurement Requirements for 100 MHz to 6 GHz", Dec 2013.