FCC SAR Test Report

APPLICANT	**:**	**Xiaomi Communications Co., Ltd.**
EQUIPMENT	**:**	**Mobile Phone**
BRAND NAME	**:**	**Redmi**
MODEL NAME	**:**	**23028RA60L**
FCC ID	**:**	**2AFZZA60L**
STANDARD	**:**	**FCC 47 CFR PART 2 (2.1093)**

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been in 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. (Kunshan), the test report shall not be reproduced except in full.

Si Zhang

Approved by: Si Zhang

ACCREDITED Cert #5145.02

Sporton International Inc. (Kunshan)
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA2O2911	Rev. 01	Initial issue of report.	Dec. 13, 2022

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Xiaomi Communications Co., Ltd., Mobile Phone, 23028RA60L,** are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 10mm)	Body-worn (Separation 10mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.70	0.35	0.35	1.59
		GSM1900	1.02	0.78	0.66	
	WCDMA	Band II	**1.03**	1.05	0.95	
		Band IV	0.99	0.98	0.81	
		Band V	0.90	0.43	0.43	
	LTE	Band 2	0.92	**1.09**	0.88	
		Band 7	0.90	1.05	0.73	
		Band 12/17	0.64	0.33	0.33	
		Band 13	0.57	0.29	0.29	
		Band 26/5	0.87	0.35	0.35	
		Band 66/4	0.82	0.98	**0.98**	
		Band 41/38	0.99	0.80	0.76	
DTS	WLAN	2.4GHz WLAN	0.62	0.33	0.33	1.52
NII		5GHz WLAN	0.71	0.52	0.62	1.59
DSS	Bluetooth	2.4GHz Bluetooth	0.15	0.38	0.38	1.41

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
NII	WLAN	5GHz WLAN	**0.50**	-
Date of Testing:			2022/11/19 ~ 2022/12/5	

Remark:

1. This device supports LTE B5 / B17 / B4 / B38 and B26 / B12 / B66 / B41. Since the supported frequency span for LTE B4 / B38 falls completely within the supports frequency span for LTE B26 / B12 / B66 / B41, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B26 / B12 / B66 / B41.

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) 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 1528-2013 and FCC KDB publications.

2. Administration Data

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Testing Laboratory			
Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR01-KS	CN1257	314309

Applicant	
Company Name	Xiaomi Communications Co., Ltd.
Address	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

Manufacturer	
Company Name	Xiaomi Communications Co., Ltd.
Address	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

3. Guidance Applied

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 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Phone
Brand Name	Redmi
Model Name	23028RA60L
FCC ID	2AFZZA60L
IMEI Code	SIM1: 861736060060982 SIM2: 861736060060990
Wireless Technology and Frequency Range	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 1710 MHz ~ 1780 MHz 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	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is not supported) LTE: QPSK, 16QAM, 64QAM, 256QAM(Downlink only) WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
HW Version	P1.1
SW Version	MIUI14
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype

Remark:

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
2. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
3. This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).
4. This device does not support DTM operation and supports GPRS/EGPRS mode up to multi-slot class 33.
5. For dual SIM card mobile has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active). After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 slot to perform all tests.
6. The device implements Proximity sensors/receiver detect mechanism reduced power for the power management for

SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity). It uses the receiver to indicate whether the user is making a call in head scenario or not. The selection between head and body power levels is based on the receiver detection mechanism. It can determine proximity to head or body and set the relevant power level for 2G&3G&4G and Wi-Fi antennas accordingly. The device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to appendix E. power table. Full power table and reduced power table (DSI 1: receiver on reduced power for head; DSI 4: P-sensor on for hotspot/ body; DSI 2: receiver off /P-sensor off).

7. There are two samples with different storage capacity: sample 1 is 4+128G, sample 2 is 4+64G. According to the difference, we choose sample 1 to perform full test.
8. The device has two batteries. For battery 1/2 only suppliers are different, so we only choose battery 1 to perform full SAR testing.

4.2 General LTE SAR Test and Reporting Considerations

<table>
<tr><th colspan="2">Summarized necessary items addressed in KDB 941225 D05 v02r05</th></tr>
<tr><td>FCC ID</td><td>2AFZZA60L</td></tr>
<tr><td>Equipment Name</td><td>Mobile Phone</td></tr>
<tr><td>Operating Frequency Range of each LTE transmission band</td><td>LTE Band 2: 1850 MHz ~ 1910 MHz
LTE Band 4: 1710 MHz ~ 1755 MHz
LTE Band 5: 824 MHz ~ 849 MHz
LTE Band 7: 2500 MHz ~ 2570 MHz
LTE Band 12: 699 MHz ~ 716 MHz
LTE Band 13: 777 MHz ~ 787 MHz
LTE Band 17: 704 MHz ~ 716 MHz
LTE Band 26: 814 MHz ~ 849 MHz
LTE Band 38: 2570 MHz ~ 2620 MHz
LTE Band 41: 2496 MHz ~ 2690 MHz
LTE Band 66: 1710 MHz ~ 1780 MHz</td></tr>
<tr><td>Channel Bandwidth</td><td>LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 13: 5MHz, 10MHz
LTE Band 17: 5MHz, 10MHz
LTE Band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz
LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz</td></tr>
<tr><td>uplink modulations used</td><td>QPSK / 16QAM / 64QAM /256QAM(Downlink only)</td></tr>
<tr><td>LTE Voice / Data requirements</td><td>Voice and Data</td></tr>
<tr><td>LTE Release Version</td><td>R10, Cat13</td></tr>
<tr><td>CA Support</td><td>Supported, Uplink and Downlink</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{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>
<tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr>
<tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</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 and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)</td></tr>
<tr><td>Spectrum plots for RB configuration</td><td>A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.</td></tr>
<tr><td>Power reduction applied to satisfy SAR compliance</td><td>Yes, when operating in Proximity sensors/receiver detect mechanism; head/body -worn/hotspot/extremity will trigger reduced power for some bands applied to satisfy SAR compliance, the detail please referred to section 12.</td></tr>
<tr><td>LTE Carrier Aggregation Combinations</td><td>Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 12.</td></tr>
<tr><td>LTE Carrier Aggregation Additional Information</td><td>1. This device supports LTE Carrier Aggregation (CA) in the uplink for intra-band with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance.
2. This device supports maximum of 2 carriers in the downlink and 2 carriers in the uplink.</td></tr>
</table>

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

LTE Band 2

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900

LTE Band 4

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745

LTE Band 5

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844

LTE Band 7

	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	20775	2502.5	20800	2505	20825	2507.5	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560

LTE Band 12

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711

LTE Band 13

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

LTE Band 17

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

LTE Band 26

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5

LTE Band 38

	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	37775	2572.5	37800	2575	37825	2577.5	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595

H	38225	2617.5	38200	2615	38175	2612.5	38150	2610

LTE Band 41								
	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	39675	2498.5	39700	2501	39725	2503.5	39750	2506
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

<For LTE Overlap Bands Description>

1) LTE Bands BW

Band	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
LTE Band 4	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 66	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 5	Yes	Yes	Yes	Yes		
LTE Band 26	Yes	Yes	Yes	Yes	Yes	
LTE Band 12	Yes	Yes	Yes	Yes		
LTE Band 17			Yes	Yes		
LTE Band 38			Yes	Yes	Yes	Yes
LTE Band 41			Yes	Yes	Yes	Yes

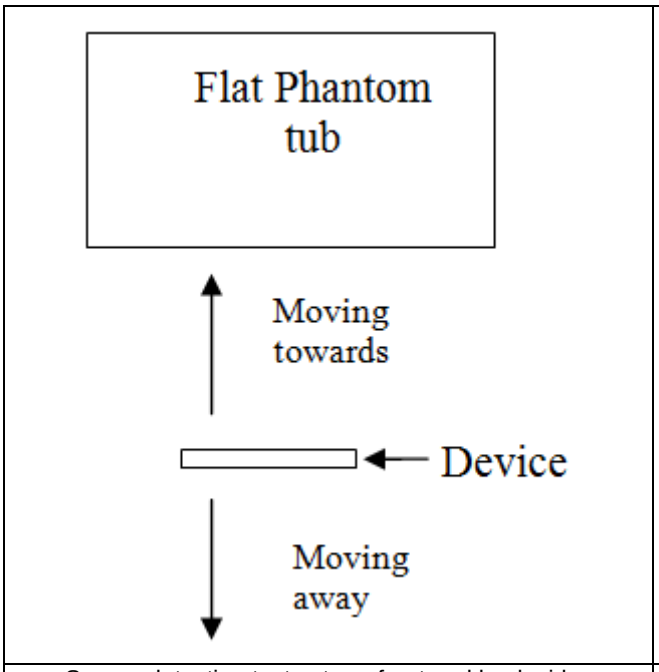
2) LTE Bands tune up:

Band	Antenna	Default	DSI-1	DSI-2	DSI-4
		Tune up Limit	Tune up Limit	Tune up Limit	Tune up Limit
LTE Band 4	Ant 0	25.00	25.00	25.00	22.00
LTE Band 66		25.00	25.00	25.00	22.00
LTE Band 4	Ant 1	25.00	17.00	25.00	20.00
LTE Band 66		25.00	17.00	25.00	20.00
LTE Band 5	Ant 0	25.50	25.50	25.50	25.50
LTE Band 26		25.50	25.50	25.50	25.50
LTE Band 5	Ant 1	25.50	25.50	25.50	25.50
LTE Band 26		25.50	25.50	25.50	25.50
LTE Band 12	Ant 0	25.50	25.50	25.50	25.50
LTE Band 17		25.50	25.50	25.50	25.50
LTE Band 12	Ant 1	25.50	25.50	25.50	25.50
LTE Band 17		25.50	25.50	25.50	25.50
LTE Band 38	Ant 0	25.50	25.50	25.50	21.00
LTE Band 41		25.50	25.50	25.50	21.00
LTE Band 38	Ant 1	25.50	18.00	25.50	20.00
LTE Band 41		25.50	18.00	25.50	20.00

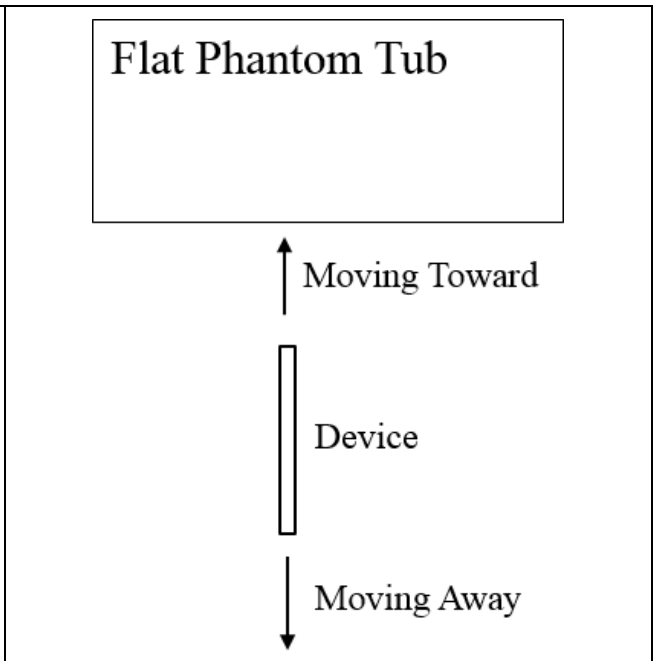
5. Proximity Sensor Triggering Test

5.1 Proximity sensor triggering distances(Per KDB616217§6.2)

1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed.
2. Proximity sensor triggering distance testing was performed according and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency (2600MHz) and lowest (1750MHz) frequency was used for proximity sensor triggering testing.
3. Capacitive proximity sensor placed coincident with antenna elements at the top/bottom end of the phone are utilized to determine when the device comes in proximity of the user's body or finger or hand at the front or back or bottom or left or top side of the device. There is no need to do sensor coverage testing for the proximity sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the proximity sensor entirely covers the antenna.
4. The sensors can use to detect the proximity of the user's body or handheld states at the front or back or bottom or top side of the device use a detection threshold distance. When front/back /top/bottom sides of body or handheld condition is detected reduced power will be active. The trigger distance shown in the sections below.
5. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance -1mm was performed.



Sensor detection test set-up, front and back sides



Sensor detection test set-up, top/bottom sides

<P-Sensor>

<Sensor on for Ant0 >

Proximity Sensor Triggering Distance (mm)						
Position	Front		Back		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	15	15	20	20	20	20

<Sensor on for Ant1 >

Proximity Sensor Triggering Distance (mm)						
Position	Front		Back		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	13	13	20	20	20	20

6. RF Exposure Limits

6.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

6.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

7. Specific Absorption Rate (SAR)

7.1 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.

7.2 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:

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

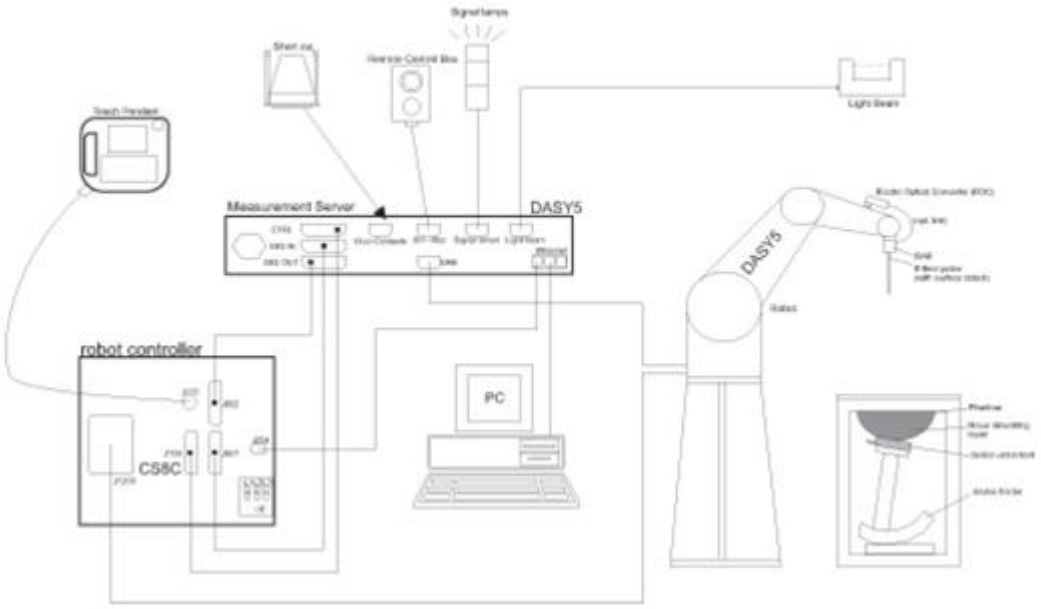
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

8. System Description and Setup

The DASY system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

8.1 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.

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – >6 GHz Linearity: ±0.2 dB (30 MHz – 6 GHz)	
Directivity	±0.3 dB in TSL (rotation around probe axis) ±0.5 dB in TSL (rotation normal to probe axis)	
Dynamic Range	10 µW/g – >100 mW/g Linearity: ±0.2 dB (noise: typically <1 µW/g)	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

8.2 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.

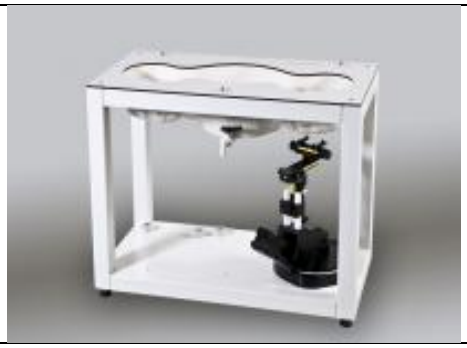
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Photo of DAE

8.3 Phantom

<SAM Twin Phantom>

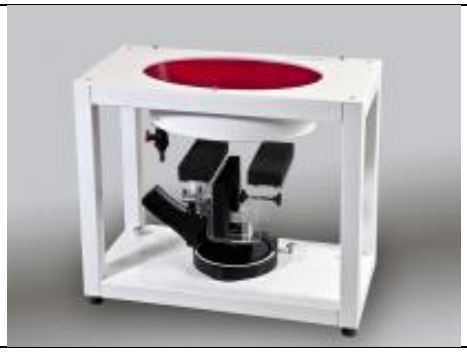
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



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.

<ELI Phantom>

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



The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices or for evaluating transmitters operating at low frequencies. ELI is fully compatible with standard and all known tissue simulating liquids.

8.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.

Mounting Device for Hand-Held Transmitters

Mounting Device Adaptor for Wide-Phones

<Mounting Device for Laptops and other Body-Worn Transmitters>

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.

Mounting Device for Laptops

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 Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	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 ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

9.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

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 *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 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.

9.5 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.

9.6 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. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	2022/2/24	2023/2/23
SPEAG	835MHz System Validation Kit	D835V2	4d162	2021/12/17	2022/12/16
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2022/2/24	2023/2/23
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	2021/12/20	2022/12/19
SPEAG	2450MHz System Validation Kit	D2450V2	1040	2020/5/6	2023/5/4
SPEAG	2600MHz System Validation Kit	D2600V2	1061	2020/11/26	2023/11/25
SPEAG	5000MHz System Validation Kit	D5GHzV2	1341	2021/12/13	2022/12/12
SPEAG	Data Acquisition Electronics	DAE4	1650	2022/8/5	2023/8/4
SPEAG	Dosimetric E-Field Probe	EX3DV4	7729	2022/5/30	2023/5/29
SPEAG	SAM Twin Phantom	SAM Twin	TP-1754	NCR	NCR
Testo	Thermo-Hygrometer	608-H1	1241332126	2022/1/6	2023/1/5
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Rohde & Schwarz	Vector Signal Generator	SMBV100A	258305	2022/1/5	2023/1/4
Anritsu	Radio Communication Analyzer	MT8821C	6262306175	2022/7/14	2023/7/13
Agilent	ENA Series Network Analyzer	E5071C	MY46104587	2022/5/24	2023/5/23
SPEAG	Dielectric Probe Kit	DAK-3.5	1071	2022/1/24	2023/1/23
Anritsu	Vector Signal Generator	MG3710A	6201682672	2022/1/6	2023/1/5
Rohde & Schwarz	Power Meter	NRVD	102081	2022/7/14	2023/7/13
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2022/7/14	2023/7/13
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2022/7/14	2023/7/13
R&S	CBT BLUETOOTH TESTER	CBT	100641	2022/1/5	2023/1/4
Rohde & Schwarz	Spectrum Analyzer	FSV7	101631	2022/10/12	2023/10/11
TES	DIGITAC THERMOMETER	1310	200505600	2022/7/12	2023/7/11
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note 1	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note 1	
Agilent	Dual Directional Coupler	778D	20500	Note 1	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note 1	
ARRA	Power Divider	A3200-2	N/A	Note 1	
MCL	Attenuation1	BW-S10W5+	N/A	Note 1	
MCL	Attenuation2	BW-S10W5+	N/A	Note 1	
MCL	Attenuation3	BW-S10W5+	N/A	Note 1	

Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check
2. Referring to KDB 865664 D01v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

11. System Verification

11.1 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. 12.1. 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. 12.2.

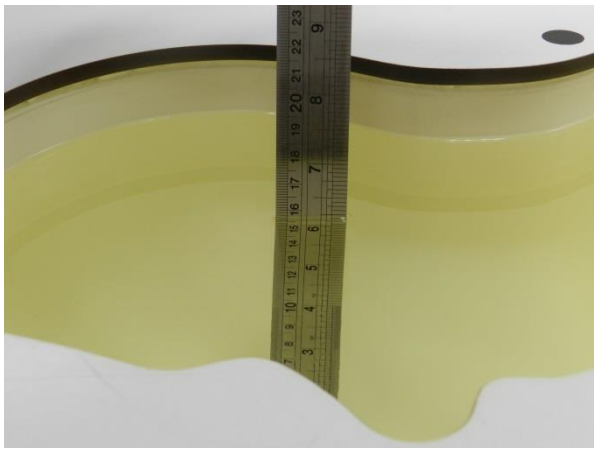


Fig 12.1 Photo of Liquid Height for Head SAR

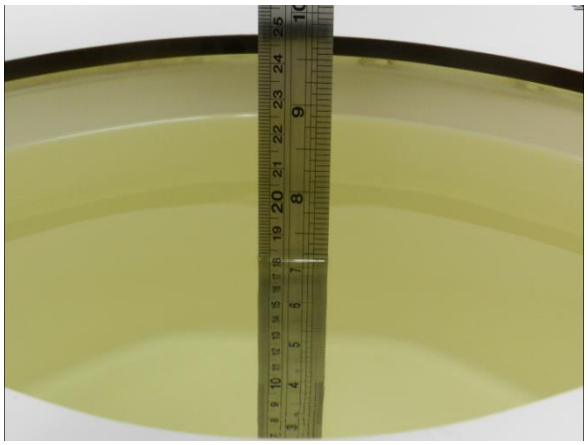


Fig 12.2 Photo of Liquid Height for Body SAR

11.2 Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
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
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
2600	54.8	0	0	0.1	0	45.1	1.96	39.0

Simulating Liquid for 5GHz, Manufactured by SPEAG

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Head	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Head	22.8	0.909	42.693	0.89	41.90	2.13	1.89	±5	2022/11/19
835	Head	22.9	0.938	42.449	0.90	41.50	4.22	2.29	±5	2022/11/20
1750	Head	22.8	1.345	39.490	1.37	40.10	-1.82	-1.52	±5	2022/11/21
1900	Head	22.8	1.422	38.963	1.40	40.00	1.57	-2.59	±5	2022/11/22
2600	Head	22.8	2.013	40.557	1.96	39.00	2.70	3.99	±5	2022/11/23
750	Head	22.7	0.888	42.263	0.89	41.90	-0.22	0.87	±5	2022/11/24
835	Head	22.8	0.911	41.929	0.90	41.50	1.22	1.03	±5	2022/11/25
1750	Head	22.7	1.315	40.193	1.37	40.10	-4.01	0.23	±5	2022/11/26
1900	Head	22.6	1.405	40.179	1.40	40.00	0.36	0.45	±5	2022/11/28
2600	Head	22.9	1.872	39.220	1.96	39.00	-4.49	0.56	±5	2022/11/29
2450	Head	22.7	1.744	39.267	1.80	39.20	-3.11	0.17	±5	2022/11/30
5250	Head	22.8	4.587	36.209	4.71	35.90	-2.61	0.86	±5	2022/12/1
5600	Head	22.7	4.964	35.704	5.07	35.50	-2.09	0.57	±5	2022/12/2
5750	Head	22.9	5.137	35.513	5.22	35.40	-1.59	0.32	±5	2022/12/5

11.3 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table 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.

<1g SAR>

Date	Frequency (MHz)	Head	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2022/11/19	750	Head	50	1087	7729	1650	0.417	8.58	8.34	-2.80
2022/11/20	835	Head	50	4d162	7729	1650	0.516	9.64	10.32	7.05
2022/11/21	1750	Head	50	1090	7729	1650	1.780	37.00	35.6	-3.78
2022/11/22	1900	Head	50	5d182	7729	1650	2.090	39.60	41.8	5.56
2022/11/23	2600	Head	50	1061	7729	1650	2.940	56.60	58.8	3.89
2022/11/24	750	Head	50	1087	7729	1650	0.415	8.58	8.3	-3.26
2022/11/25	835	Head	50	4d162	7729	1650	0.501	9.64	10.02	3.94
2022/11/26	1750	Head	50	1090	7729	1650	1.800	37.00	36	-2.70
2022/11/28	1900	Head	50	5d182	7729	1650	2.070	39.60	41.4	4.55
2022/11/29	2600	Head	50	1061	7729	1650	2.700	56.60	54	-4.59
2022/11/30	2450	Head	50	1040	7729	1650	2.540	51.80	50.8	-1.93
2022/12/1	5250	Head	50	1341	7729	1650	4.090	80.70	81.8	1.36
2022/12/2	5600	Head	50	1341	7729	1650	4.290	84.50	85.8	1.54
2022/12/5	5750	Head	50	1341	7729	1650	4.010	80.60	80.2	-0.50

<10g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2022/11/19	750	Head	50	1087	7729	1650	0.279	5.65	5.58	-1.24
2022/11/20	835	Head	50	4d162	7729	1650	0.334	6.26	6.68	6.71
2022/11/21	1750	Head	50	1090	7729	1650	0.974	19.50	19.48	-0.10
2022/11/22	1900	Head	50	5d182	7729	1650	1.080	20.20	21.6	6.93
2022/11/23	2600	Head	50	1061	7729	1650	1.350	25.10	27	7.57
2022/11/24	750	Head	50	1087	7729	1650	0.277	5.65	5.54	-1.95
2022/11/25	835	Head	50	4d162	7729	1650	0.333	6.26	6.66	6.39
2022/11/26	1750	Head	50	1090	7729	1650	0.983	19.50	19.66	0.82
2022/11/28	1900	Head	50	5d182	7729	1650	1.080	20.20	21.6	6.93
2022/11/29	2600	Head	50	1061	7729	1650	1.270	25.10	25.4	1.20
2022/11/30	2450	Head	50	1040	7729	1650	1.210	24.00	24.2	0.83
2022/12/1	5250	Head	50	1341	7729	1650	1.180	23.10	23.6	2.16
2022/12/2	5600	Head	50	1341	7729	1650	1.220	24.00	24.4	1.67
2022/12/5	5750	Head	50	1341	7729	1650	1.130	22.70	22.6	-0.44

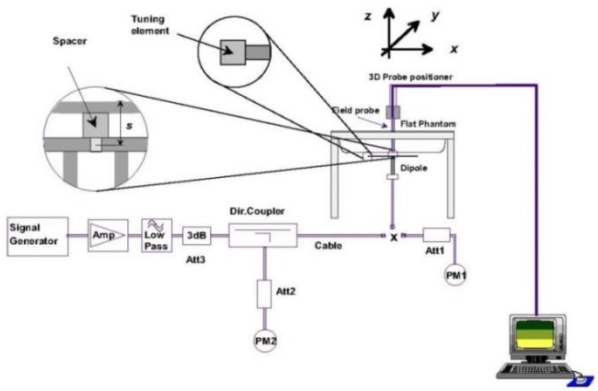


Fig 12.3.1 System Performance Check Setup

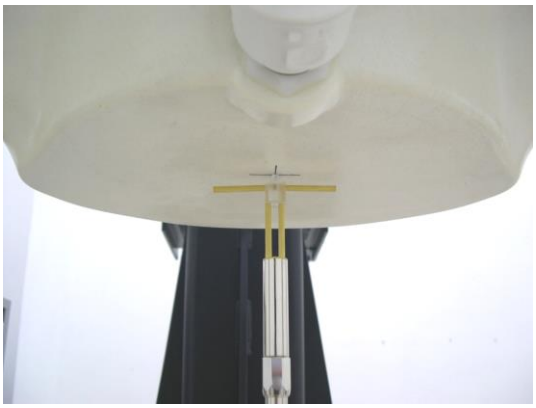


Fig 12.3.2 Setup Photo

12. RF Exposure Positions

12.1 Ear and handset reference point

Figure 12.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled “M,” the left ear reference point (ERP) is marked “LE,” and the right ERP is marked “RE.” Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 12.1.2 The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 12.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 12.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

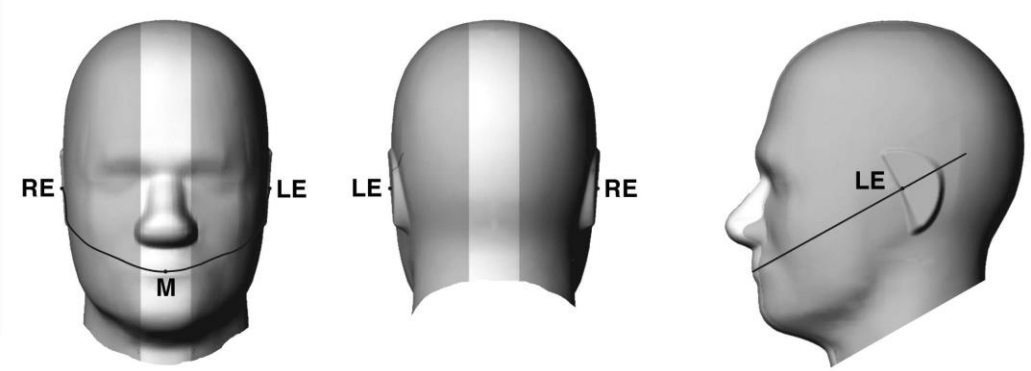


Fig 12.1.1 Front, back, and side views of SAM twin phantom

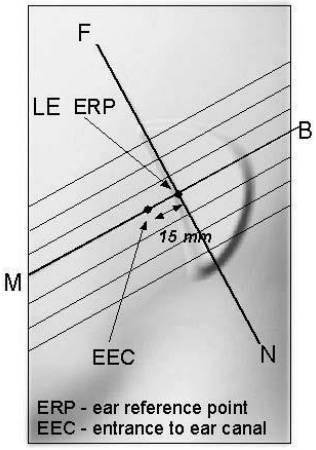


Fig 12.1.2 Close-up side view of phantom showing the ear region.

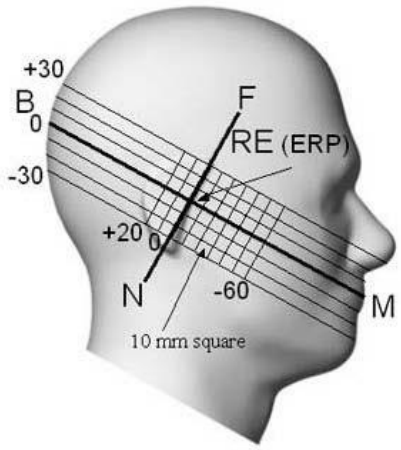


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

12.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width wt of the handset at the level of the acoustic output (point A in Figure 12.2.1 and Figure 12.2.2), and the midpoint of the width wb of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 12.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 12.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 12.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 12.2.3. The actual rotation angles should be documented in the test report.

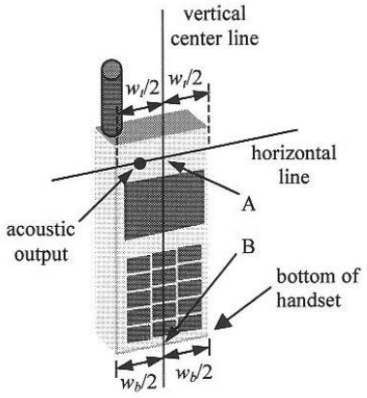


Fig 12.2.1 Handset vertical and horizontal reference lines—"fixed case

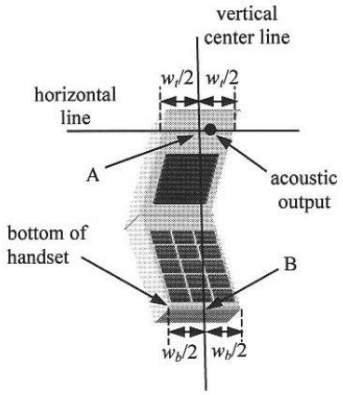


Fig 12.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

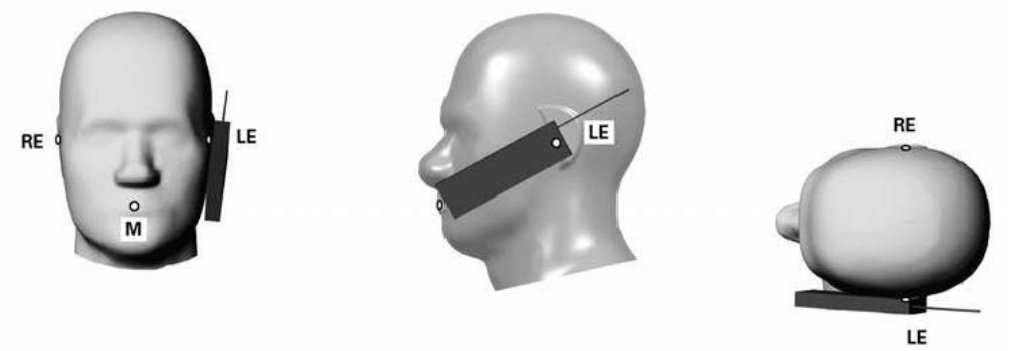


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

12.3 Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 12.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

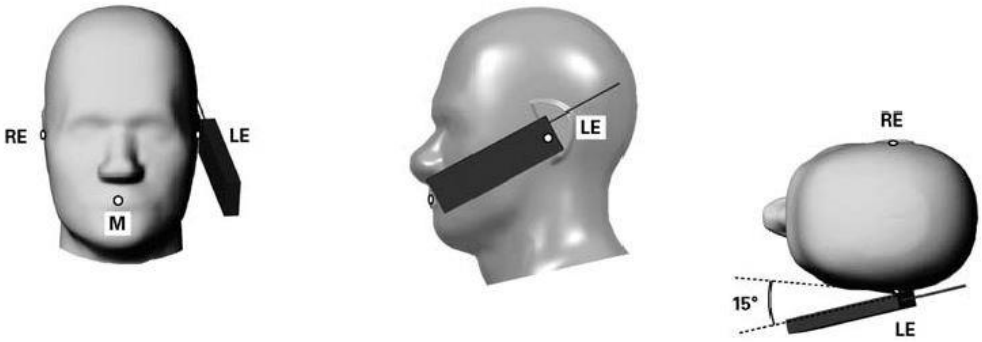


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

12.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 12.4). Per KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

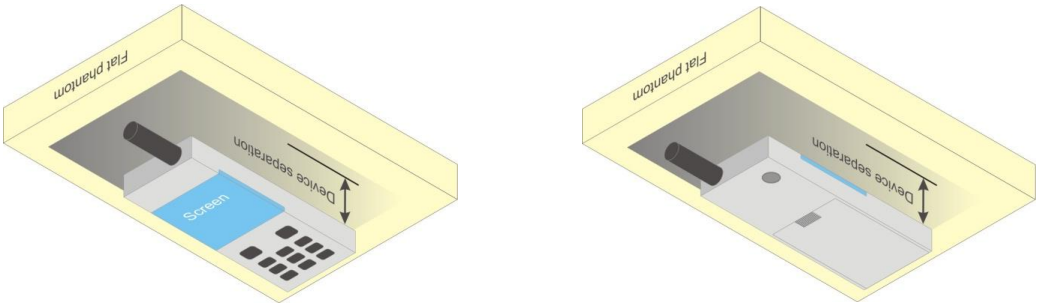


Fig 12.4 Body Worn Position

12.5 Product Specific 10g SAR Exposure

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, that can provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets and support voice calls next to the ear, According to KDB648474 D04v01r03, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.

2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions.6 The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

12.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

13. Conducted RF Output Power (Unit: dBm)

The detailed conducted power table can refer to Appendix E.

<GSM Conducted Power>

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

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 β_{hs} = 30/15 * β_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 β_{hs} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_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 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	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	$\beta_{ed}1$: 47/15 $\beta_{ed}2$: 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	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c. For sub-test 5, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 5/15 with β_{hs} = 5/15 * 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: 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 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

a. The EUT was connected to Base Station referred to the Setup Configuration below
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 RMC 12.2Kbps + HSDPA mode.
   ii. Set Cell Power = -25 dBm
   iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
   iv. Select HSDPA Uplink Parameters
   v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
      a). Subtest 1: β_c/β_d=2/15
      b). Subtest 2: β_c/β_d=12/15
      c). Subtest 3: β_c/β_d=15/8
      d). Subtest 4: β_c/β_d=15/4
   vi. Set Delta ACK, Delta NACK and Delta CQI = 8
   vii. Set Ack-Nack Repetition Factor to 3
   viii. Set CQI Feedback Cycle (k) to 4 ms
   ix. Set CQI Repetition Factor to 2
   x. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

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:

C.8.1.12 Fixed Reference Channel Definition H-Set 12

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Proces ses	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.		
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

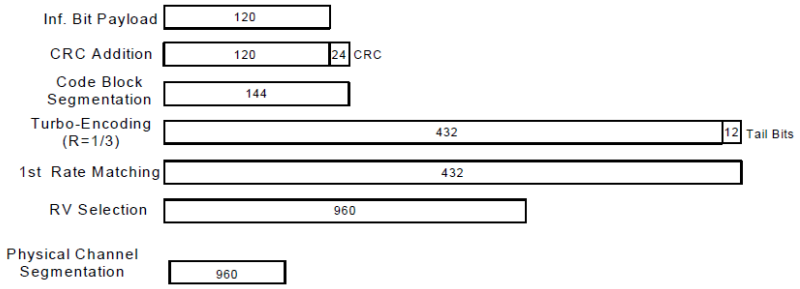


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<WCDMA Conducted Power>

General Note:

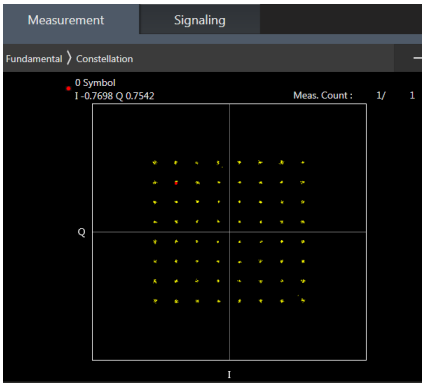
1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

<LTE Conducted Power>

General 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 D05v02r05, 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 D05v02r05, 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 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM/64QAM 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 D05v02r05, 16QAM/64QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, 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 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 / B17 / B26 / B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE B5 / B17 / B4 / B38 SAR test was covered by B26 / B12 / B66 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to May 2017 TCB workshop, for 16QAM and 64QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.

16QAM



64QAM

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

SAR was tested with a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by 3GPP.

a. 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations

b. "special subframe S" contains both uplink and downlink transmissions, it has been taken into consideration to determine the transmission duty factor according to the worst case uplink and downlink cyclic prefix requirements for UpPTS

c. Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Anritsu MT8820C (firmware: #22.52#004) was used for LTE output power measurements and SAR testing.

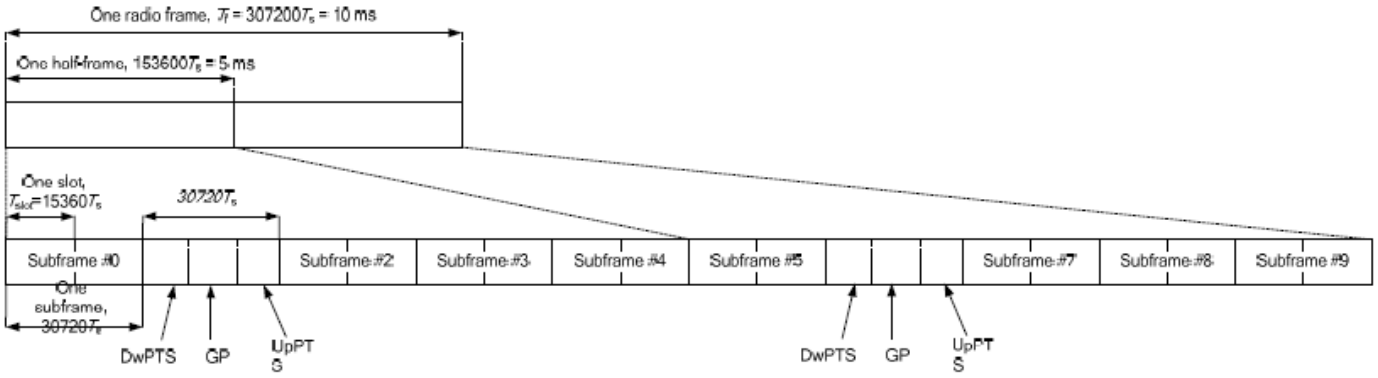


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Special subframe (30720·T_s): Normal cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~4**	7.13%	8.33%
	5~9	14.3%	16.7%

Special subframe(30720·T_s): Extended cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~3**	7.13%	8.33%
	4~7	14.3%	16.7%

The highest duty factor is resulted from:

i. Uplink-downlink configuration: 0. In a half-frame consisted of 5 subfames, uplink operation is in 3 uplink subframes and 1 special subframe.

ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink

iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.167)/5 = 63.3%

iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.143)/5 = 62.9%

v. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

<LTE Carrier Aggregation>

General Note:

1. This device supports Carrier Aggregation on downlink for inter and intra band. For the device supports bands and bandwidths and configurations are provided as follow table was according to 3GPP.
2. In applying the existing power measurement procedures of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of frequency bands and CCs in each row need combination, and for this device that all the configurations were choose to power measurement.
3. The gray color table is covered by other combinations and no need to verify power.
4. All permutations exist. No restrictions on Pcell & Scell combinations.

2CC Downlink Carrier Aggregation		
Number	Combination	Covered by Measurement Superset
1	CA_12A-66A	
2	CA_2A-4A	
3	CA_2A-5A	
4	CA_2A-7A	
5	CA_2C	
6	CA_38C	
7	CA_41A-41A	
8	CA_41C	
9	CA_66A-66A	
10	CA_7A-7A	
11	CA_7C	
12	CA_66C	
13	CA_5A-41A	
14	CA_2A-2A	
15	4A-5A,	
16	CA_4A-7A,	
17	CA_5A-7A,	
18	CA_66B,	

LTE Carrier Aggregation Conducted Power (Downlink)

i. According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.

ii. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.

iii. The device supports downlink two carrier aggregation. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.

iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.

v. For inter-band CA, the SCC selected highest bandwidth and near the middle of its transmission band. For SCC DL RB size and offset will base on the PCC corresponding RB allocation.

vi. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.

vii. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

$$\text{Nominal channel spacing} = \left\lfloor \frac{BW_{Channel(1)} + BW_{Channel(2)} - 0.1\left|BW_{Channel(1)} - BW_{Channel(2)}\right|}{0.6} \right\rfloor 0.3 \ \ [\text{MHz}]$$

LTE Carrier Aggregation Conducted Power (Uplink)

<Intra-band>

2CC Uplink Carrier Aggregation		
Number	Combination	Ant No.
1	7C	ANT0/1
2	38C	ANT0/1

General Note:

i. The device supports intra-band uplink carrier aggregation for LTE B7/B38 with a maximum of two 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre 3GPP requirement.

ii. The device supports uplink carrier aggregation with a maximum of two 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre the 3GPP requirement.

iii. According Nov. 2017 TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.

iv. Additional SAR measurement for LTE UL CA whit other DL CA combinations active were not required since the maximum output power for this configuration was not > 0.25dB higher than the maximum output power for UL CA active.

<WLAN Conducted Power>

General Note:

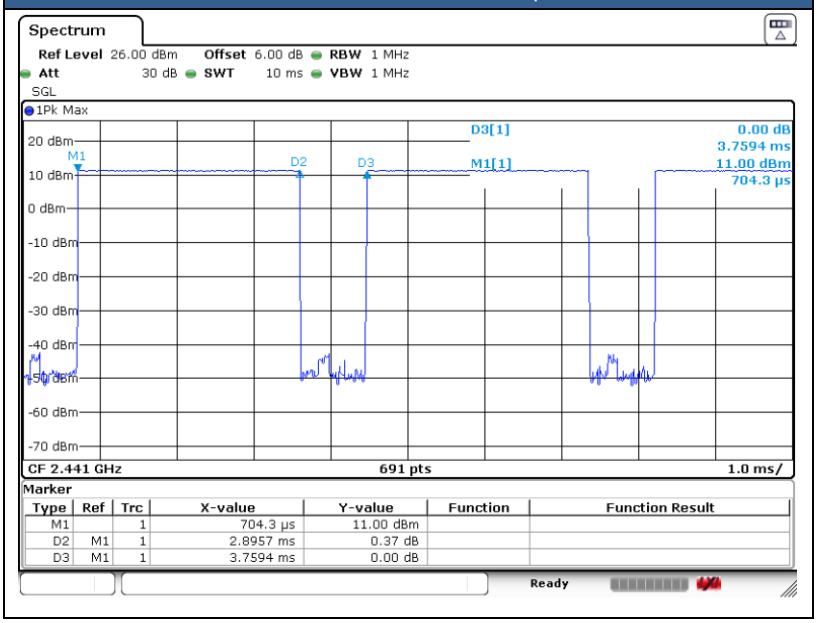
1. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
2. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
3. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
4. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
   a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
   b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
   c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

<2.4GHz Bluetooth>

General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle are 77.03 % as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the maximum duty cycle is 100%, therefore the actual duty cycle will be scaled up to100% for Bluetooth reported SAR calculation

Bluetooth time-domain plot



14. Antenna Location

The detailed antenna location information can refer to SAR Test Setup Photos.

15. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, 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 BT/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 BT/WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
   e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, 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. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8W/kg. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. For dual SIM card mobile has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active). After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 slot to perform all tests.
5. The device implements Proximity sensors/receiver detect mechanism reduced power for the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity). It uses the receiver to indicate whether the user is making a call in head scenario or not. The selection between head and body power levels is based on the receiver detection mechanism. It can determine proximity to head or body and set the relevant power level for 2G&3G&4G and Wi-Fi antennas accordingly. The device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to appendix E. power table. Full power table and reduced power table (DSI 1: receiver on reduced power for head; DSI 4: P-sensor on for hotspot/ body; DSI 2: receiver off /P-sensor off).
6. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold,
   a. WLAN 5.3/5.5GHz tested the product specific 10g SAR since it has no hotspot mode.
   b. When 10-g product specific 10g SAR is considered, SAR thresholds is specified in the procedures for SAR test reduction and exclusion should be multiplied by 2.5.

GSM Note:

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.
2. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

WCDMA Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

LTE Note:

1. Per KDB 941225 D05v02r05, 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.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM/64QAM/256QAM 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 D05v02r05, 16QAM/64QAM/256QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, 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 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B12 / B17 / B26/ B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE B5 / B17 / B4 / B38 SAR test was covered by B26 / B12 / B66 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, U-NII-1 SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

15.1 Head SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750MHz																				
	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI1	23095	707.5	24.47	25.50	1.268	-	-	-0.07	0.124	0.157
	LTE Band 12	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 0	DSI1	23095	707.5	23.35	24.50	1.303	-	-	0.07	0.101	0.132
	LTE Band 12	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI1	23095	707.5	24.47	25.50	1.268	-	-	0.17	0.067	0.085
	LTE Band 12	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 0	DSI1	23095	707.5	23.35	24.50	1.303	-	-	-0.06	0.000	0.000
	LTE Band 12	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI1	23095	707.5	24.47	25.50	1.268	-	-	0.07	0.112	0.142
	LTE Band 12	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 0	DSI1	23095	707.5	23.35	24.50	1.303	-	-	0.12	0.092	0.120
	LTE Band 12	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI1	23095	707.5	24.47	25.50	1.268	-	-	0.06	0.062	0.079
	LTE Band 12	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 0	DSI1	23095	707.5	23.35	24.50	1.303	-	-	0.02	0.001	0.001
	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI1	23095	707.5	24.50	25.50	1.259	-	-	-0.01	0.486	0.612
	LTE Band 12	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 1	DSI1	23095	707.5	23.37	24.50	1.297	-	-	-0.1	0.372	0.483
	LTE Band 12	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	23095	707.5	24.50	25.50	1.259	-	-	0.02	0.453	0.570
	LTE Band 12	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 1	DSI1	23095	707.5	23.37	24.50	1.297	-	-	-0.04	0.345	0.448
01	LTE Band 12	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI1	23095	707.5	24.50	25.50	1.259	-	-	-0.07	0.511	**0.643**
	LTE Band 12	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 1	DSI1	23095	707.5	23.37	24.50	1.297	-	-	0.05	0.395	0.512
	LTE Band 12	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	DSI1	23095	707.5	24.50	25.50	1.259	-	-	0.09	0.503	0.633
	LTE Band 12	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 1	DSI1	23095	707.5	23.37	24.50	1.297	-	-	-0.12	0.386	0.501
	LTE Band 13	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI1	23230	782	24.65	25.50	1.216	-	-	0.05	0.165	0.201
	LTE Band 13	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 0	DSI1	23230	782	23.52	24.50	1.253	-	-	-0.1	0.136	0.170
	LTE Band 13	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI1	23230	782	24.65	25.50	1.216	-	-	0.08	0.095	0.116
	LTE Band 13	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 0	DSI1	23230	782	23.52	24.50	1.253	-	-	0.02	0.078	0.098
	LTE Band 13	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI1	23230	782	24.65	25.50	1.216	-	-	0.06	0.152	0.185
	LTE Band 13	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 0	DSI1	23230	782	23.52	24.50	1.253	-	-	0.16	0.125	0.157
	LTE Band 13	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI1	23230	782	24.65	25.50	1.216	-	-	-0.13	0.092	0.112
	LTE Band 13	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 0	DSI1	23230	782	23.52	24.50	1.253	-	-	-0.12	0.074	0.093
	LTE Band 13	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI1	23230	782	24.50	25.50	1.259	-	-	-0.06	0.434	0.546
	LTE Band 13	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 1	DSI1	23230	782	23.43	24.50	1.279	-	-	0.02	0.343	0.439
	LTE Band 13	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	23230	782	24.50	25.50	1.259	-	-	0.07	0.360	0.453
	LTE Band 13	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 1	DSI1	23230	782	23.43	24.50	1.279	-	-	0.08	0.287	0.367
02	LTE Band 13	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI1	23230	782	24.50	25.50	1.259	-	-	0.11	0.455	**0.573**
	LTE Band 13	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 1	DSI1	23230	782	23.43	24.50	1.279	-	-	0.09	0.347	0.444
	LTE Band 13	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	DSI1	23230	782	24.50	25.50	1.259	-	-	0.06	0.427	0.538
	LTE Band 13	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 1	DSI1	23230	782	23.43	24.50	1.279	-	-	0.02	0.324	0.415
835MHz																				
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 0	DSI1	189	836.4	25.91	27.50	1.442	-	-	0.05	0.112	0.162
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 0	DSI1	189	836.4	25.91	27.50	1.442	-	-	-0.07	0.059	0.085
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Cheek	0mm	Ant 0	DSI1	189	836.4	25.91	27.50	1.442	-	-	-0.18	0.095	0.137
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Tilted	0mm	Ant 0	DSI1	189	836.4	25.91	27.50	1.442	-	-	0.1	0.052	0.075
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 1	DSI1	189	836.4	25.96	27.50	1.426	-	-	0.07	0.470	0.670
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 1	DSI1	189	836.4	25.96	27.50	1.426	-	-	-0.09	0.390	0.556
03	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Cheek	0mm	Ant 1	DSI1	189	836.4	25.96	27.50	1.426	-	-	-0.05	0.489	**0.697**
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Tilted	0mm	Ant 1	DSI1	189	836.4	25.96	27.50	1.426	-	-	-0.17	0.449	0.640
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	DSI1	4182	836.4	24.23	25.50	1.340	-	-	-0.07	0.188	0.252
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 0	DSI1	4182	836.4	24.23	25.50	1.340	-	-	0.04	0.095	0.127
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	DSI1	4182	836.4	24.23	25.50	1.340	-	-	0.07	0.165	0.221
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 0	DSI1	4182	836.4	24.23	25.50	1.340	-	-	-0.12	0.087	0.117
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI1	4182	836.4	24.23	25.50	1.340	-	-	0.09	0.621	0.832
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI1	4132	826.4	24.12	25.50	1.374	-	-	-0.03	0.605	0.831
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI1	4233	846.6	24.18	25.50	1.355	-	-	0.01	0.596	0.808
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	DSI1	4182	836.4	24.23	25.50	1.340	-	-	0.06	0.532	0.713
04	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	DSI1	4182	836.4	24.23	25.50	1.340	-	-	-0.02	0.674	**0.903**

	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	DSI1	4132	826.4	24.12	25.50	1.374	-	-	-0.02	0.635	0.873
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	DSI1	4233	846.6	24.18	25.50	1.355	-	-	-0.02	0.653	0.885
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 1	DSI1	4182	836.4	24.23	25.50	1.340	-	-	0.1	0.648	0.868
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 1	DSI1	4132	826.4	24.12	25.50	1.374	-	-	0.02	0.619	0.851
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 1	DSI1	4233	846.6	24.18	25.50	1.355	-	-	0.03	0.624	0.846
	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI1	26865	831.5	24.65	25.50	1.216	-	-	-0.04	0.163	0.198
	LTE Band 26	15M	QPSK	36	0	-	Right Cheek	0mm	Ant 0	DSI1	26865	831.5	23.59	24.50	1.233	-	-	-0.12	0.134	0.165
	LTE Band 26	15M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI1	26865	831.5	24.65	25.50	1.216	-	-	0.12	0.086	0.105
	LTE Band 26	15M	QPSK	36	0	-	Right Tilted	0mm	Ant 0	DSI1	26865	831.5	23.59	24.50	1.233	-	-	-0.02	0.074	0.091
	LTE Band 26	15M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI1	26865	831.5	24.65	25.50	1.216	-	-	0.04	0.152	0.185
	LTE Band 26	15M	QPSK	36	0	-	Left Cheek	0mm	Ant 0	DSI1	26865	831.5	23.59	24.50	1.233	-	-	0.03	0.126	0.155
	LTE Band 26	15M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI1	26865	831.5	24.65	25.50	1.216	-	-	-0.15	0.084	0.102
	LTE Band 26	15M	QPSK	36	0	-	Left Tilted	0mm	Ant 0	DSI1	26865	831.5	23.59	24.50	1.233	-	-	-0.15	0.069	0.085
	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI1	26865	831.5	24.66	25.50	1.213	-	-	-0.05	0.605	0.734
	LTE Band 26	15M	QPSK	36	0	-	Right Cheek	0mm	Ant 1	DSI1	26865	831.5	23.62	24.50	1.225	-	-	0.04	0.471	0.577
	LTE Band 26	15M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	26865	831.5	24.66	25.50	1.213	-	-	0.06	0.569	0.690
	LTE Band 26	15M	QPSK	36	0	-	Right Tilted	0mm	Ant 1	DSI1	26865	831.5	23.62	24.50	1.225	-	-	-0.14	0.465	0.569
05	LTE Band 26	15M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI1	26865	831.5	24.66	25.50	1.213	-	-	0.01	0.716	**0.869**
	LTE Band 26	15M	QPSK	36	0	-	Left Cheek	0mm	Ant 1	DSI1	26865	831.5	23.62	24.50	1.225	-	-	0.04	0.555	0.680
	LTE Band 26	15M	QPSK	75	0	-	Left Cheek	0mm	Ant 1	DSI1	26865	831.5	23.58	24.50	1.236	-	-	0.03	0.657	0.812
	LTE Band 26	15M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	DSI1	26865	831.5	24.66	25.50	1.213	-	-	0.1	0.645	0.783
	LTE Band 26	15M	QPSK	36	0	-	Left Tilted	0mm	Ant 1	DSI1	26865	831.5	23.62	24.50	1.225	-	-	0.01	0.524	0.642
1750MHz																				
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	DSI1	1413	1732.6	24.46	25.50	1.271	-	-	-0.05	0.126	0.160
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 0	DSI1	1413	1732.6	24.46	25.50	1.271	-	-	-0.06	0.072	0.091
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	DSI1	1413	1732.6	24.46	25.50	1.271	-	-	0.07	0.086	0.109
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 0	DSI1	1413	1732.6	24.46	25.50	1.271	-	-	-0.03	0.071	0.090
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI1	1413	1732.6	16.47	17.00	1.130	-	-	0.06	0.867	0.980
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI1	1312	1712.4	16.42	17.00	1.143	-	-	0.1	0.729	0.833
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI1	1513	1752.6	16.32	17.00	1.169	-	-	0.07	0.621	0.726
06	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	DSI1	1413	1732.6	16.47	17.00	1.130	-	-	-0.05	0.874	**0.987**
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	DSI1	1312	1712.4	16.42	17.00	1.143	-	-	0.09	0.821	0.938
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	DSI1	1513	1752.6	16.32	17.00	1.169	-	-	-0.15	0.795	0.930
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	DSI1	1413	1732.6	16.47	17.00	1.130	-	-	-0.12	0.502	0.567
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 1	DSI1	1413	1732.6	16.47	17.00	1.130	-	-	0.09	0.683	0.772
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI1	132322	1745	24.04	25.00	1.247	-	-	0.15	0.279	0.348
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	DSI1	132322	1745	22.96	24.00	1.271	-	-	-0.09	0.283	0.360
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI1	132322	1745	24.04	25.00	1.247	-	-	-0.04	0.001	0.001
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	DSI1	132322	1745	22.96	24.00	1.271	-	-	0.11	0.181	0.230
	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI1	132322	1745	24.04	25.00	1.247	-	-	-0.13	0.190	0.237
	LTE Band 66	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 0	DSI1	132322	1745	22.96	24.00	1.271	-	-	0.04	0.186	0.236
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI1	132322	1745	24.04	25.00	1.247	-	-	-0.03	0.292	0.364
	LTE Band 66	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 0	DSI1	132322	1745	22.96	24.00	1.271	-	-	-0.12	0.230	0.292
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI1	132322	1745	16.63	17.00	1.089	-	-	0.06	0.610	0.664
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI1	132322	1745	16.55	17.00	1.109	-	-	-0.13	0.550	0.610
07	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	132322	1745	16.63	17.00	1.089	-	-	-0.01	0.752	**0.819**
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	132072	1720	16.51	17.00	1.119	-	-	0.01	0.655	0.733
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	132572	1770	16.38	17.00	1.153	-	-	0.02	0.644	0.743
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI1	132322	1745	16.55	17.00	1.109	-	-	-0.03	0.692	0.768
	LTE Band 66	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 1	DSI1	132322	1745	16.50	17.00	1.122	-	-	0.13	0.670	0.752
	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI1	132322	1745	16.63	17.00	1.089	-	-	0.02	0.441	0.480
	LTE Band 66	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	DSI1	132322	1745	16.55	17.00	1.109	-	-	0.1	0.410	0.455
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	DSI1	132322	1745	16.63	17.00	1.089	-	-	-0.12	0.545	0.593
	LTE Band 66	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	DSI1	132322	1745	16.55	17.00	1.109	-	-	-0.03	0.519	0.576
1900MHz																				
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Right Cheek	0mm	Ant 0	DSI1	661	1880	29.61	30.50	1.227	-	-	-0.14	0.083	0.102

	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Right Tilted	0mm	Ant 0	DSI1	661	1880	29.61	30.50	1.227	-	-	-0.15	0.086	0.106
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Left Cheek	0mm	Ant 0	DSI1	661	1880	29.61	30.50	1.227	-	-	0.02	0.109	0.134
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Left Tilted	0mm	Ant 0	DSI1	661	1880	29.61	30.50	1.227	-	-	-0.05	0.115	0.141
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 1	DSI1	661	1880	19.32	20.50	1.312	-	-	-0.11	0.731	0.959
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 1	DSI1	512	1850.2	19.09	20.50	1.384	-	-	0.07	0.576	0.797
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 1	DSI1	810	1909.8	19.16	20.50	1.361	-	-	0.04	0.686	0.934
08	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 1	DSI1	661	1880	19.32	20.50	1.312	-	-	0.09	0.779	**1.022**
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 1	DSI1	512	1850.2	19.09	20.50	1.384	-	-	-0.18	0.678	0.938
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 1	DSI1	810	1909.8	19.16	20.50	1.361	-	-	0.04	0.696	0.948
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Cheek	0mm	Ant 1	DSI1	661	1880	19.32	20.50	1.312	-	-	0.03	0.485	0.636
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Tilted	0mm	Ant 1	DSI1	661	1880	19.32	20.50	1.312	-	-	0.13	0.669	0.878
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Tilted	0mm	Ant 1	DSI1	512	1850.2	19.09	20.50	1.384	-	-	0.05	0.555	0.768
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Tilted	0mm	Ant 1	DSI1	810	1909.8	19.16	20.50	1.361	-	-	-0.03	0.622	0.847
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	DSI1	9400	1880	24.45	25.50	1.274	-	-	0.02	0.199	0.253
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 0	DSI1	9400	1880	24.45	25.50	1.274	-	-	-0.17	0.203	0.259
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	DSI1	9400	1880	24.45	25.50	1.274	-	-	-0.04	0.280	0.357
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 0	DSI1	9400	1880	24.45	25.50	1.274	-	-	-0.09	0.244	0.311
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI1	9400	1880	15.04	16.00	1.247	-	-	0.04	0.677	0.844
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI1	9262	1852.4	15.00	16.00	1.259	-	-	0.08	0.534	0.672
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI1	9538	1907.6	14.85	16.00	1.303	-	-	0.19	0.666	0.868
09	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	DSI1	9400	1880	15.04	16.00	1.247	-	-	0.13	0.825	**1.029**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	DSI1	9262	1852.4	15.00	16.00	1.259	-	-	-0.13	0.683	0.860
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	DSI1	9538	1907.6	14.85	16.00	1.303	-	-	0.05	0.771	1.005
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	DSI1	9400	1880	15.04	16.00	1.247	-	-	0.11	0.464	0.579
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 1	DSI1	9400	1880	15.04	16.00	1.247	-	-	0.19	0.592	0.738
	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI1	18900	1880	24.13	25.00	1.222	-	-	0.05	0.194	0.237
	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	DSI1	18900	1880	23.07	24.00	1.239	-	-	0.17	0.138	0.171
	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI1	18900	1880	24.13	25.00	1.222	-	-	0.16	0.192	0.235
	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	DSI1	18900	1880	23.07	24.00	1.239	-	-	0.01	0.142	0.176
	LTE Band 2	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI1	18900	1880	24.13	25.00	1.222	-	-	0.02	0.242	0.296
	LTE Band 2	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 0	DSI1	18900	1880	23.07	24.00	1.239	-	-	-0.11	0.184	0.228
	LTE Band 2	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI1	18900	1880	24.13	25.00	1.222	-	-	0.03	0.217	0.265
	LTE Band 2	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 0	DSI1	18900	1880	23.07	24.00	1.239	-	-	0.19	0.165	0.204
	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI1	18900	1880	15.29	16.00	1.178	-	-	0.04	0.596	0.702
	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI1	18900	1880	15.24	16.00	1.191	-	-	-0.11	0.578	0.689
	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	18900	1880	15.29	16.00	1.178	-	-	0.07	0.721	0.849
	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	18700	1860	15.07	16.00	1.239	-	-	0.06	0.562	0.696
10	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	19100	1900	15.13	16.00	1.222	-	-	0.09	0.755	**0.922**
	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI1	18900	1880	15.24	16.00	1.191	-	-	0.05	0.608	0.724
	LTE Band 2	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 1	DSI1	18900	1880	15.21	16.00	1.199	-	-	-0.14	0.608	0.729
	LTE Band 2	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI1	18900	1880	15.29	16.00	1.178	-	-	-0.19	0.350	0.412
	LTE Band 2	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	DSI1	18900	1880	15.24	16.00	1.191	-	-	0.08	0.347	0.413
	LTE Band 2	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	DSI1	18900	1880	15.29	16.00	1.178	-	-	0.02	0.461	0.543
	LTE Band 2	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	DSI1	18900	1880	15.24	16.00	1.191	-	-	-0.1	0.457	0.544
2600MHz																				
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI1	21100	2535	23.87	25.00	1.297	-	-	-0.03	0.142	0.184
	LTE Band 7C	20M	QPSK	1	99	-	Right Cheek	0mm	Ant 0	DSI1	21100+21298	2535+2554.8	23.33	25.00	1.469	-	-	0.02	0.122	0.179
	LTE Band 7	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	DSI1	21100	2535	22.83	24.00	1.309	-	-	0.06	0.117	0.153
	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI1	21100	2535	23.87	25.00	1.297	-	-	0.12	0.045	0.058
	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	DSI1	21100	2535	22.83	24.00	1.309	-	-	0.09	0.001	0.001
	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI1	21100	2535	23.87	25.00	1.297	-	-	-0.17	0.001	0.001
	LTE Band 7	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 0	DSI1	21100	2535	22.83	24.00	1.309	-	-	-0.1	0.035	0.046
	LTE Band 7	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI1	21100	2535	23.87	25.00	1.297	-	-	0.06	0.000	0.000
	LTE Band 7	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 0	DSI1	21100	2535	22.83	24.00	1.309	-	-	0.08	0.039	0.051
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI1	21100	2535	16.20	17.00	1.202	-	-	-0.04	0.526	0.632
	LTE Band 7	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI1	21100	2535	16.18	17.00	1.208	-	-	-0.16	0.523	0.632

	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	21100	2535	16.20	17.00	1.202	-	-	0.05	0.652	0.784
	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI1	21100	2535	16.18	17.00	1.208	-	-	0.17	0.668	0.807
	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI1	20850	2510	16.07	17.00	1.239	-	-	0.03	0.539	0.668
11	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI1	21350	2560	15.94	17.00	1.276	-	-	0.05	0.701	**0.895**
	LTE Band 7C	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI1	21350+21152	2560+2540.2	15.91	17.00	1.285	-	-	0.03	0.688	0.884
	LTE Band 7	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 1	DSI1	21100	2535	16.09	17.00	1.233	-	-	-0.1	0.550	0.678
	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI1	21100	2535	16.20	17.00	1.202	-	-	0.11	0.039	0.047
	LTE Band 7	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	DSI1	21100	2535	16.18	17.00	1.208	-	-	0.05	0.040	0.048
	LTE Band 7	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	DSI1	21100	2535	16.20	17.00	1.202	-	-	0.03	0.049	0.059
	LTE Band 7	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	DSI1	21100	2535	16.18	17.00	1.208	-	-	0.03	0.053	0.064
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI1	40620	2593	24.29	25.50	1.321	62.9	1.006	0.08	0.001	0.001
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	DSI1	40620	2593	23.34	24.50	1.306	62.9	1.006	-0.11	0.001	0.001
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI1	40620	2593	24.29	25.50	1.321	62.9	1.006	0.06	0.001	0.001
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	DSI1	40620	2593	23.34	24.50	1.306	62.9	1.006	0.06	0.001	0.001
	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI1	40620	2593	24.29	25.50	1.321	62.9	1.006	0.07	0.001	0.001
	LTE Band 41	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 0	DSI1	40620	2593	23.34	24.50	1.306	62.9	1.006	0.08	0.001	0.001
	LTE Band 41	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI1	40620	2593	24.29	25.50	1.321	62.9	1.006	-0.01	0.070	0.093
	LTE Band 38C	20M	QPSK	1	99	-	Left Tilted	0mm	Ant 0	DSI1	37901+38099	2585.1+2604.9	24.21	25.50	1.346	62.9	1.006	0.03	0.056	0.076
	LTE Band 41	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 0	DSI1	40620	2593	23.34	24.50	1.306	62.9	1.006	0.16	0.053	0.070
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI1	40620	2593	17.17	18.00	1.211	62.9	1.006	0.08	0.630	0.767
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI1	39750	2506	16.96	18.00	1.271	62.9	1.006	0.04	0.485	0.620
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI1	40185	2549.5	17.11	18.00	1.227	62.9	1.006	0.04	0.654	0.808
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI1	41055	2636.5	17.06	18.00	1.242	62.9	1.006	0.06	0.502	0.627
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI1	41490	2680	17.12	18.00	1.225	62.9	1.006	-0.18	0.364	0.448
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI1	40620	2593	17.12	18.00	1.225	62.9	1.006	0.06	0.637	0.785
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI1	39750	2506	16.84	18.00	1.306	62.9	1.006	0.06	0.462	0.607
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI1	40185	2549.5	16.89	18.00	1.291	62.9	1.006	-0.18	0.650	0.844
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI1	41055	2636.5	16.86	18.00	1.300	62.9	1.006	0.06	0.485	0.634
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI1	41490	2680	17.05	18.00	1.245	62.9	1.006	-0.18	0.335	0.419
	LTE Band 41	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 1	DSI1	40620	2593	17.05	18.00	1.245	62.9	1.006	-0.17	0.571	0.715
12	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	40620	2593	17.17	18.00	1.211	62.9	1.006	-0.01	0.812	**0.989**
	LTE Band 38C	20M	QPSK	1	99	-	Right Tilted	0mm	Ant 1	DSI1	37901+38099	2585.1+2604.9	16.95	18.00	1.274	62.9	1.006	0.02	0.767	0.983
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	39750	2506	16.96	18.00	1.271	62.9	1.006	0.06	0.572	0.731
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	40185	2549.5	17.11	18.00	1.227	62.9	1.006	-0.19	0.035	0.043
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	41055	2636.5	17.06	18.00	1.242	62.9	1.006	0.03	0.626	0.782
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	41490	2680	17.12	18.00	1.225	62.9	1.006	-0.11	0.487	0.600
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI1	40620	2593	17.12	18.00	1.225	62.9	1.006	-0.02	0.795	0.979
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI1	39750	2506	16.84	18.00	1.306	62.9	1.006	0.05	0.039	0.051
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI1	40185	2549.5	16.89	18.00	1.291	62.9	1.006	0.02	0.033	0.043
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI1	41055	2636.5	16.86	18.00	1.300	62.9	1.006	-0.04	0.600	0.785
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI1	41490	2680	17.05	18.00	1.245	62.9	1.006	0.02	0.457	0.572
	LTE Band 41	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 1	DSI1	40620	2593	17.05	18.00	1.245	62.9	1.006	0.19	0.767	0.960
	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI1	40620	2593	17.17	18.00	1.211	62.9	1.006	-0.03	0.590	0.719
	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI1	39750	2506	16.96	18.00	1.271	62.9	1.006	-0.02	0.048	0.061
	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI1	40185	2549.5	17.11	18.00	1.227	62.9	1.006	0.02	0.056	0.069
	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI1	41055	2636.5	17.06	18.00	1.242	62.9	1.006	0.06	0.063	0.079
	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI1	41490	2680	17.12	18.00	1.225	62.9	1.006	0.04	0.084	0.103
	LTE Band 41	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	DSI1	40620	2593	17.12	18.00	1.225	62.9	1.006	0.09	0.576	0.710
	LTE Band 41	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	DSI1	39750	2506	16.84	18.00	1.306	62.9	1.006	0.03	0.041	0.054
	LTE Band 41	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	DSI1	40185	2549.5	16.89	18.00	1.291	62.9	1.006	0.04	0.038	0.049
	LTE Band 41	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	DSI1	41055	2636.5	16.86	18.00	1.300	62.9	1.006	0.17	0.050	0.065
	LTE Band 41	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	DSI1	41490	2680	17.05	18.00	1.245	62.9	1.006	0.03	0.071	0.089
	LTE Band 41	20M	QPSK	100	0	-	Left Cheek	0mm	Ant 1	DSI1	40620	2593	17.05	18.00	1.245	62.9	1.006	0.06	0.568	0.711
	LTE Band 41	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	DSI1	40620	2593	17.17	18.00	1.211	62.9	1.006	0.01	0.054	0.066
	LTE Band 41	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	DSI1	40620	2593	17.12	18.00	1.225	62.9	1.006	-0.18	0.039	0.048

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
2450MHz																
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 3	Receiver on	1	2412	17.34	18.50	1.306	97.8	1.022	0.01	0.181	0.242
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 3	Receiver on	1	2412	17.34	18.50	1.306	97.8	1.022	0.02	0.179	0.239
13	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 3	Receiver on	1	2412	17.34	18.50	1.306	97.8	1.022	0.01	0.464	**0.619**
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 3	Receiver on	1	2412	17.34	18.50	1.306	97.8	1.022	0.04	0.335	0.447
	Bluetooth	1Mbps	Right Cheek	0mm	Ant 3	Full power	39	2441	11.11	12.50	1.376	77.03	1.298	0.02	0.045	0.080
	Bluetooth	1Mbps	Right Tilted	0mm	Ant 3	Full power	39	2441	11.11	12.50	1.376	77.03	1.298	0.01	0.056	0.100
	Bluetooth	1Mbps	Left Cheek	0mm	Ant 3	Full power	39	2441	11.11	12.50	1.376	77.03	1.298	0.01	0.072	0.129
14	Bluetooth	1Mbps	Left Tilted	0mm	Ant 3	Full power	39	2441	11.11	12.50	1.376	77.03	1.298	0.07	0.084	**0.150**
5000MHz																
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 3	Receiver on	58	5290	13.48	14.50	1.265	89.24	1.121	0.09	0.269	0.381
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 3	Receiver on	58	5290	13.48	14.50	1.265	89.24	1.121	0.03	0.335	0.475
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 3	Receiver on	58	5290	13.48	14.50	1.265	89.24	1.121	0.04	0.437	0.620
15	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 3	Receiver on	58	5290	13.48	14.50	1.265	89.24	1.121	-0.01	0.502	**0.712**
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 3	Receiver on	122	5610	11.48	12.50	1.265	89.24	1.121	0.06	0.243	0.345
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 3	Receiver on	122	5610	11.48	12.50	1.265	89.24	1.121	0.01	0.298	0.422
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 3	Receiver on	122	5610	11.48	12.50	1.265	89.24	1.121	0.01	0.345	0.489
16	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 3	Receiver on	122	5610	11.48	12.50	1.265	89.24	1.121	-0.09	0.459	**0.651**
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 3	Receiver on	155	5775	12.32	13.00	1.169	89.24	1.121	0.01	0.254	0.333
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 3	Receiver on	155	5775	12.32	13.00	1.169	89.24	1.121	0.03	0.311	0.408
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 3	Receiver on	155	5775	12.32	13.00	1.169	89.24	1.121	0.02	0.359	0.471
17	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 3	Receiver on	155	5775	12.32	13.00	1.169	89.24	1.121	-0.05	0.494	**0.648**

15.2 Hotspot SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750MHz																				
	LTE Band 12	10M	QPSK	1	0	-	Front	10mm	Ant 0	DSI 4	23095	707.5	24.47	25.50	1.268	-	-	0.01	0.169	0.214
	LTE Band 12	10M	QPSK	25	0	-	Front	10mm	Ant 0	DSI 4	23095	707.5	23.35	24.50	1.303	-	-	-0.08	0.134	0.175
18	LTE Band 12	10M	QPSK	1	0	-	Back	10mm	Ant 0	DSI 4	23095	707.5	24.47	25.50	1.268	-	-	-0.09	0.256	**0.325**
	LTE Band 12	10M	QPSK	25	0	-	Back	10mm	Ant 0	DSI 4	23095	707.5	23.35	24.50	1.303	-	-	0.14	0.205	0.267
	LTE Band 12	10M	QPSK	1	0	-	Left Side	10mm	Ant 0	DSI 2	23095	707.5	24.47	25.50	1.268	-	-	-0.05	0.155	0.196
	LTE Band 12	10M	QPSK	25	0	-	Left Side	10mm	Ant 0	DSI 2	23095	707.5	23.35	24.50	1.303	-	-	0.06	0.122	0.159
	LTE Band 12	10M	QPSK	1	0	-	Right Side	10mm	Ant 0	DSI 2	23095	707.5	24.47	25.50	1.268	-	-	0.04	0.239	0.303
	LTE Band 12	10M	QPSK	25	0	-	Right Side	10mm	Ant 0	DSI 2	23095	707.5	23.35	24.50	1.303	-	-	0.05	0.187	0.244
	LTE Band 12	10M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	DSI 4	23095	707.5	24.47	25.50	1.268	-	-	0.07	0.079	0.100
	LTE Band 12	10M	QPSK	25	0	-	Bottom Side	10mm	Ant 0	DSI 4	23095	707.5	23.35	24.50	1.303	-	-	0.07	0.064	0.083
	LTE Band 12	10M	QPSK	1	0	-	Front	10mm	Ant 1	DSI 4	23095	707.5	24.50	25.50	1.259	-	-	-0.14	0.154	0.194
	LTE Band 12	10M	QPSK	25	0	-	Front	10mm	Ant 1	DSI 4	23095	707.5	23.37	24.50	1.297	-	-	0.09	0.122	0.158
	LTE Band 12	10M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	23095	707.5	24.50	25.50	1.259	-	-	-0.03	0.248	0.312
	LTE Band 12	10M	QPSK	25	0	-	Back	10mm	Ant 1	DSI 4	23095	707.5	23.37	24.50	1.297	-	-	-0.12	0.196	0.254
	LTE Band 12	10M	QPSK	1	0	-	Left Side	10mm	Ant 1	DSI 2	23095	707.5	24.50	25.50	1.259	-	-	0.01	0.153	0.193
	LTE Band 12	10M	QPSK	25	0	-	Left Side	10mm	Ant 1	DSI 2	23095	707.5	23.37	24.50	1.297	-	-	0.01	0.125	0.162
	LTE Band 12	10M	QPSK	1	0	-	Top Side	10mm	Ant 1	DSI 4	23095	707.5	24.50	25.50	1.259	-	-	0.08	0.151	0.190
	LTE Band 12	10M	QPSK	25	0	-	Top Side	10mm	Ant 1	DSI 4	23095	707.5	23.37	24.50	1.297	-	-	0.14	0.128	0.166
	LTE Band 13	10M	QPSK	1	0	-	Front	10mm	Ant 0	DSI 4	23230	782	24.65	25.50	1.216	-	-	0.07	0.167	0.203
	LTE Band 13	10M	QPSK	25	0	-	Front	10mm	Ant 0	DSI 4	23230	782	23.52	24.50	1.253	-	-	0.17	0.131	0.164
19	LTE Band 13	10M	QPSK	1	0	-	Back	10mm	Ant 0	DSI 4	23230	782	24.65	25.50	1.216	-	-	-0.05	0.238	**0.289**
	LTE Band 13	10M	QPSK	25	0	-	Back	10mm	Ant 0	DSI 4	23230	782	23.52	24.50	1.253	-	-	0.05	0.202	0.253
	LTE Band 13	10M	QPSK	1	0	-	Left Side	10mm	Ant 0	DSI 2	23230	782	24.65	25.50	1.216	-	-	0.18	0.135	0.164
	LTE Band 13	10M	QPSK	25	0	-	Left Side	10mm	Ant 0	DSI 2	23230	782	23.52	24.50	1.253	-	-	0.09	0.111	0.139
	LTE Band 13	10M	QPSK	1	0	-	Right Side	10mm	Ant 0	DSI 2	23230	782	24.65	25.50	1.216	-	-	-0.12	0.207	0.252
	LTE Band 13	10M	QPSK	25	0	-	Right Side	10mm	Ant 0	DSI 2	23230	782	23.52	24.50	1.253	-	-	0.06	0.170	0.213
	LTE Band 13	10M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	DSI 4	23230	782	24.65	25.50	1.216	-	-	0.17	0.152	0.185
	LTE Band 13	10M	QPSK	25	0	-	Bottom Side	10mm	Ant 0	DSI 4	23230	782	23.52	24.50	1.253	-	-	0.07	0.122	0.153
	LTE Band 13	10M	QPSK	1	0	-	Front	10mm	Ant 1	DSI 4	23230	782	24.50	25.50	1.259	-	-	0.04	0.109	0.137
	LTE Band 13	10M	QPSK	25	0	-	Front	10mm	Ant 1	DSI 4	23230	782	23.43	24.50	1.279	-	-	0.03	0.089	0.114
	LTE Band 13	10M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	23230	782	24.50	25.50	1.259	-	-	-0.01	0.180	0.227
	LTE Band 13	10M	QPSK	25	0	-	Back	10mm	Ant 1	DSI 4	23230	782	23.43	24.50	1.279	-	-	0.17	0.147	0.188
	LTE Band 13	10M	QPSK	1	0	-	Left Side	10mm	Ant 1	DSI 2	23230	782	24.50	25.50	1.259	-	-	0.01	0.100	0.126
	LTE Band 13	10M	QPSK	25	0	-	Left Side	10mm	Ant 1	DSI 2	23230	782	23.43	24.50	1.279	-	-	-0.14	0.084	0.107
	LTE Band 13	10M	QPSK	1	0	-	Top Side	10mm	Ant 1	DSI 4	23230	782	24.50	25.50	1.259	-	-	0.05	0.117	0.147
	LTE Band 13	10M	QPSK	25	0	-	Top Side	10mm	Ant 1	DSI 4	23230	782	23.43	24.50	1.279	-	-	0.08	0.098	0.125
835MHz																				
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	10mm	Ant 0	DSI 4	189	836.4	25.91	27.50	1.442	-	-	0.15	0.123	0.177
20	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	10mm	Ant 0	DSI 4	189	836.4	25.91	27.50	1.442	-	-	-0.08	0.242	**0.349**
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Side	10mm	Ant 0	DSI 2	189	836.4	25.91	27.50	1.442	-	-	0.02	0.080	0.115
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Side	10mm	Ant 0	DSI 2	189	836.4	25.91	27.50	1.442	-	-	0.07	0.133	0.192
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	10mm	Ant 0	DSI 4	189	836.4	25.91	27.50	1.442	-	-	0.17	0.129	0.186
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	10mm	Ant 1	DSI 4	189	836.4	25.96	27.50	1.426	-	-	-0.13	0.158	0.225
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	10mm	Ant 1	DSI 4	189	836.4	25.96	27.50	1.426	-	-	-0.08	0.242	0.345
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Side	10mm	Ant 1	DSI 2	189	836.4	25.96	27.50	1.426	-	-	0.06	0.080	0.114
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Top Side	10mm	Ant 1	DSI 4	189	836.4	25.96	27.50	1.426	-	-	0.06	0.144	0.205
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 0	DSI 4	4182	836.4	24.23	25.50	1.340	-	-	0.14	0.175	0.234
21	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 0	DSI 4	4182	836.4	24.23	25.50	1.340	-	-	-0.06	0.321	**0.430**
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant 0	DSI 2	4182	836.4	24.23	25.50	1.340	-	-	0.02	0.101	0.135
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Side	10mm	Ant 0	DSI 2	4182	836.4	24.23	25.50	1.340	-	-	-0.16	0.180	0.241

	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	Ant 0	DSI 4	4182	836.4	24.23	25.50	1.340	-	-	0.05	0.203	0.272
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 1	DSI 4	4182	836.4	24.23	25.50	1.340	-	-	0.02	0.212	0.284
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 1	DSI 4	4182	836.4	24.23	25.50	1.340	-	-	-0.05	0.316	0.423
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant 1	DSI 2	4182	836.4	24.23	25.50	1.340	-	-	0.15	0.132	0.177
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant 1	DSI 4	4182	836.4	24.23	25.50	1.340	-	-	0.07	0.211	0.283
	LTE Band 26	15M	QPSK	1	0	-	Front	10mm	Ant 0	DSI 4	26865	831.5	24.65	25.50	1.216	-	-	0.18	0.146	0.178
	LTE Band 26	15M	QPSK	36	0	-	Front	10mm	Ant 0	DSI 4	26865	831.5	23.59	24.50	1.233	-	-	0.15	0.122	0.150
	LTE Band 26	15M	QPSK	1	0	-	Back	10mm	Ant 0	DSI 4	26865	831.5	24.65	25.50	1.216	-	-	0.01	0.279	0.339
	LTE Band 26	15M	QPSK	36	0	-	Back	10mm	Ant 0	DSI 4	26865	831.5	23.59	24.50	1.233	-	-	0.06	0.223	0.275
	LTE Band 26	15M	QPSK	1	0	-	Left Side	10mm	Ant 0	DSI 2	26865	831.5	24.65	25.50	1.216	-	-	0.03	0.109	0.133
	LTE Band 26	15M	QPSK	36	0	-	Left Side	10mm	Ant 0	DSI 2	26865	831.5	23.59	24.50	1.233	-	-	-0.14	0.091	0.112
	LTE Band 26	15M	QPSK	1	0	-	Right Side	10mm	Ant 0	DSI 2	26865	831.5	24.65	25.50	1.216	-	-	0.05	0.164	0.199
	LTE Band 26	15M	QPSK	36	0	-	Right Side	10mm	Ant 0	DSI 2	26865	831.5	23.59	24.50	1.233	-	-	0.07	0.126	0.155
	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	DSI 4	26865	831.5	24.65	25.50	1.216	-	-	0.09	0.149	0.181
	LTE Band 26	15M	QPSK	36	0	-	Bottom Side	10mm	Ant 0	DSI 4	26865	831.5	23.59	24.50	1.233	-	-	0.09	0.098	0.121
	LTE Band 26	15M	QPSK	1	0	-	Front	10mm	Ant 1	DSI 4	26865	831.5	24.66	25.50	1.213	-	-	0.17	0.194	0.235
	LTE Band 26	15M	QPSK	36	0	-	Front	10mm	Ant 1	DSI 4	26865	831.5	23.62	24.50	1.225	-	-	0.03	0.154	0.189
22	LTE Band 26	15M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	26865	831.5	24.66	25.50	1.213	-	-	0.01	0.289	**0.351**
	LTE Band 26	15M	QPSK	36	0	-	Back	10mm	Ant 1	DSI 4	26865	831.5	23.62	24.50	1.225	-	-	-0.1	0.229	0.280
	LTE Band 26	15M	QPSK	1	0	-	Left Side	10mm	Ant 1	DSI 2	26865	831.5	24.66	25.50	1.213	-	-	-0.08	0.117	0.142
	LTE Band 26	15M	QPSK	36	0	-	Left Side	10mm	Ant 1	DSI 2	26865	831.5	23.62	24.50	1.225	-	-	0.03	0.093	0.114
	LTE Band 26	15M	QPSK	1	0	-	Top Side	10mm	Ant 1	DSI 4	26865	831.5	24.66	25.50	1.213	-	-	-0.18	0.209	0.254
	LTE Band 26	15M	QPSK	36	0	-	Top Side	10mm	Ant 1	DSI 4	26865	831.5	23.62	24.50	1.225	-	-	0.03	0.172	0.211
	1750MHz																			
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 0	DSI 4	1413	1732.6	21.54	22.50	1.247	-	-	0.18	0.202	0.252
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 0	DSI 4	1413	1732.6	21.54	22.50	1.247	-	-	0.02	0.327	0.408
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant 0	DSI 2	1413	1732.6	24.46	25.50	1.271	-	-	-0.13	0.185	0.235
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Side	10mm	Ant 0	DSI 2	1413	1732.6	24.46	25.50	1.271	-	-	0.08	0.108	0.137
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	Ant 0	DSI 4	1413	1732.6	21.54	22.50	1.247	-	-	-0.07	0.594	0.741
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	14mm	Ant 0	DSI 2	1413	1732.6	24.46	25.50	1.271	-	-	0.09	0.460	0.584
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	19mm	Ant 0	DSI 2	1413	1732.6	24.46	25.50	1.271	-	-	-0.15	0.381	0.484
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	19mm	Ant 0	DSI 2	1413	1732.6	24.46	25.50	1.271	-	-	0.05	0.331	0.421
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 1	DSI 4	1413	1732.6	19.34	20.00	1.164	-	-	0.15	0.340	0.396
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 1	DSI 4	1413	1732.6	19.34	20.00	1.164	-	-	-0.06	0.694	0.808
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 1	DSI 4	1312	1712.4	19.25	20.00	1.189	-	-	-0.18	0.602	0.715
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 1	DSI 4	1513	1752.6	19.13	20.00	1.222	-	-	0.05	0.571	0.698
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant 1	DSI 2	1413	1732.6	24.75	25.50	1.189	-	-	-0.07	0.174	0.207
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant 1	DSI 4	1413	1732.6	19.34	20.00	1.164	-	-	0.01	0.734	0.854
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant 1	DSI 4	1312	1712.4	19.25	20.00	1.189	-	-	-0.04	0.724	0.860
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant 1	DSI 4	1513	1752.6	19.13	20.00	1.222	-	-	-0.07	0.777	0.949
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	12mm	Ant 1	DSI 2	1413	1732.6	24.75	25.50	1.189	-	-	-0.16	0.679	0.807
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	12mm	Ant 1	DSI 2	1312	1712.4	24.67	25.50	1.211	-	-	-0.12	0.661	0.800
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	12mm	Ant 1	DSI 2	1513	1752.6	24.58	25.50	1.236	-	-	0.07	0.590	0.729
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	19mm	Ant 1	DSI 2	1413	1732.6	24.75	25.50	1.189	-	-	0.02	0.673	0.800
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	19mm	Ant 1	DSI 2	1312	1712.4	24.67	25.50	1.211	-	-	-0.04	0.562	0.680
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	19mm	Ant 1	DSI 2	1513	1752.6	24.58	25.50	1.236	-	-	-0.11	0.650	0.803
23	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	19mm	Ant 1	DSI 2	1413	1732.6	24.75	25.50	1.189	-	-	0.09	0.827	**0.983**
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	19mm	Ant 1	DSI 2	1312	1712.4	24.67	25.50	1.211	-	-	0.03	0.747	0.904
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	19mm	Ant 1	DSI 2	1513	1752.6	24.58	25.50	1.236	-	-	-0.01	0.679	0.839
	LTE Band 66	20M	QPSK	1	0	-	Front	10mm	Ant 0	DSI 4	132322	1745	21.17	22.00	1.211	-	-	0.03	0.200	0.242
	LTE Band 66	20M	QPSK	50	0	-	Front	10mm	Ant 0	DSI 4	132322	1745	21.13	22.00	1.222	-	-	0.03	0.194	0.237
	LTE Band 66	20M	QPSK	1	0	-	Back	10mm	Ant 0	DSI 4	132322	1745	21.17	22.00	1.211	-	-	0.15	0.313	0.379
	LTE Band 66	20M	QPSK	50	0	-	Back	10mm	Ant 0	DSI 4	132322	1745	21.13	22.00	1.222	-	-	-0.04	0.315	0.385
	LTE Band 66	20M	QPSK	1	0	-	Left Side	10mm	Ant 0	DSI 2	132322	1745	24.04	25.00	1.247	-	-	-0.01	0.071	0.089
	LTE Band 66	20M	QPSK	50	0	-	Left Side	10mm	Ant 0	DSI 2	132322	1745	22.96	24.00	1.271	-	-	0.13	0.070	0.089
	LTE Band 66	20M	QPSK	1	0	-	Right Side	10mm	Ant 0	DSI 2	132322	1745	24.04	25.00	1.247	-	-	0.09	0.047	0.059

	LTE Band 66	20M	QPSK	50	0	-	Right Side	10mm	Ant 0	DSI 2	132322	1745	22.96	24.00	1.271	-	-	-0.19	0.048	0.061
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	DSI 4	132322	1745	21.17	22.00	1.211	-	-	0.05	0.592	0.717
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 0	DSI 4	132322	1745	21.13	22.00	1.222	-	-	0.07	0.581	0.710
	LTE Band 66	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	132322	1745	24.04	25.00	1.247	-	-	0.07	0.211	0.263
	LTE Band 66	20M	QPSK	50	0	-	Front	14mm	Ant 0	DSI 2	132322	1745	22.96	24.00	1.271	-	-	-0.11	0.207	0.263
	LTE Band 66	20M	QPSK	1	0	-	Back	19mm	Ant 0	DSI 2	132322	1745	24.04	25.00	1.247	-	-	0.11	0.195	0.243
	LTE Band 66	20M	QPSK	50	0	-	Back	19mm	Ant 0	DSI 2	132322	1745	22.96	24.00	1.271	-	-	0.07	0.194	0.246
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	19mm	Ant 0	DSI 2	132322	1745	24.04	25.00	1.247	-	-	0.08	0.370	0.462
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	19mm	Ant 0	DSI 2	132322	1745	22.96	24.00	1.271	-	-	0.08	0.283	0.360
	LTE Band 66	20M	QPSK	1	0	-	Front	10mm	Ant 1	DSI 4	132322	1745	19.66	20.00	1.081	-	-	0.02	0.281	0.304
	LTE Band 66	20M	QPSK	50	0	-	Front	10mm	Ant 1	DSI 4	132322	1745	19.57	20.00	1.104	-	-	-0.08	0.265	0.293
	LTE Band 66	20M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	132322	1745	19.66	20.00	1.081	-	-	-0.03	0.661	0.715
	LTE Band 66	20M	QPSK	50	0	-	Back	10mm	Ant 1	DSI 4	132322	1745	19.57	20.00	1.104	-	-	0.02	0.598	0.660
	LTE Band 66	20M	QPSK	1	0	-	Left Side	10mm	Ant 1	DSI 2	132322	1745	24.36	25.00	1.159	-	-	0.02	0.204	0.236
	LTE Band 66	20M	QPSK	50	0	-	Left Side	10mm	Ant 1	DSI 2	132322	1745	23.42	24.00	1.143	-	-	0.06	0.150	0.171
	LTE Band 66	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	DSI 4	132322	1745	19.66	20.00	1.081	-	-	0.05	0.807	0.873
	LTE Band 66	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	DSI 4	132072	1720	19.57	20.00	1.104	-	-	0.02	0.760	0.839
	LTE Band 66	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	DSI 4	132572	1770	19.51	20.00	1.119	-	-	0.17	0.737	0.825
	LTE Band 66	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	DSI 4	132322	1745	19.57	20.00	1.104	-	-	0.08	0.766	0.846
	LTE Band 66	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	DSI 4	132072	1720	19.42	20.00	1.143	-	-	0.18	0.732	0.837
	LTE Band 66	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	DSI 4	132572	1770	19.29	20.00	1.178	-	-	-0.16	0.670	0.789
	LTE Band 66	20M	QPSK	100	0	-	Top Side	10mm	Ant 1	DSI 4	132322	1745	19.61	20.00	1.094	-	-	-0.14	0.725	0.793
24	LTE Band 66	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	132322	1745	24.36	25.00	1.159	-	-	0.08	0.843	**0.977**
	LTE Band 66	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	132072	1720	24.23	25.00	1.194	-	-	0.06	0.812	0.970
	LTE Band 66	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	132572	1770	24.17	25.00	1.211	-	-	0.01	0.668	0.809
	LTE Band 66	20M	QPSK	50	0	-	Front	12mm	Ant 1	DSI 2	132322	1745	23.42	24.00	1.143	-	-	-0.16	0.636	0.727
	LTE Band 66	20M	QPSK	100	0	-	Front	12mm	Ant 1	DSI 2	132322	1745	23.39	24.00	1.151	-	-	0.09	0.583	0.671
	LTE Band 66	20M	QPSK	1	0	-	Back	19mm	Ant 1	DSI 2	132322	1745	24.36	25.00	1.159	-	-	-0.02	0.676	0.783
	LTE Band 66	20M	QPSK	50	0	-	Back	19mm	Ant 1	DSI 2	132322	1745	23.42	24.00	1.143	-	-	0.08	0.526	0.601
	LTE Band 66	20M	QPSK	1	0	-	Top Side	19mm	Ant 1	DSI 2	132322	1745	24.36	25.00	1.159	-	-	-0.04	0.633	0.734
	LTE Band 66	20M	QPSK	50	0	-	Top Side	19mm	Ant 1	DSI 2	132322	1745	23.42	24.00	1.143	-	-	0.14	0.496	0.567
1900MHz																				
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Front	10mm	Ant 0	DSI 4	661	1880	27.70	28.50	1.202	-	-	0.06	0.185	0.222
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	10mm	Ant 0	DSI 4	661	1880	27.70	28.50	1.202	-	-	-0.08	0.285	0.343
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Left Side	10mm	Ant 0	DSI 2	661	1880	29.61	30.50	1.227	-	-	-0.09	0.112	0.137
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Right Side	10mm	Ant 0	DSI 2	661	1880	29.61	30.50	1.227	-	-	-0.07	0.049	0.060
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Bottom Side	10mm	Ant 0	DSI 4	661	1880	27.70	28.50	1.202	-	-	-0.17	0.283	0.340
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Front	14mm	Ant 0	DSI 2	661	1880	29.61	30.50	1.227	-	-	-0.05	0.300	0.368
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	19mm	Ant 0	DSI 2	661	1880	29.61	30.50	1.227	-	-	0.01	0.228	0.280
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Bottom Side	19mm	Ant 0	DSI 2	661	1880	29.61	30.50	1.227	-	-	0.18	0.217	0.266
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Front	10mm	Ant 1	DSI 4	661	1880	28.12	28.50	1.091	-	-	-0.01	0.240	0.262
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	10mm	Ant 1	DSI 4	661	1880	28.12	28.50	1.091	-	-	0.04	0.608	0.664
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Left Side	10mm	Ant 1	DSI 2	661	1880	29.98	30.50	1.127	-	-	0.03	0.064	0.072
25	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Top Side	10mm	Ant 1	DSI 4	661	1880	28.12	28.50	1.091	-	-	-0.07	0.711	**0.776**
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Front	12mm	Ant 1	DSI 2	661	1880	29.98	30.50	1.127	-	-	-0.08	0.343	0.387
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	19mm	Ant 1	DSI 2	661	1880	29.98	30.50	1.127	-	-	0.01	0.380	0.428
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Top Side	19mm	Ant 1	DSI 2	661	1880	29.98	30.50	1.127	-	-	0.08	0.315	0.355
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 0	DSI 4	9400	1880	20.58	21.50	1.236	-	-	-0.13	0.256	0.316
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 0	DSI 4	9400	1880	20.58	21.50	1.236	-	-	-0.08	0.364	0.450
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant 0	DSI 2	9400	1880	24.45	25.50	1.274	-	-	0.04	0.371	0.472
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Side	10mm	Ant 0	DSI 2	9400	1880	24.45	25.50	1.274	-	-	0.05	0.143	0.182
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	Ant 0	DSI 4	9400	1880	20.58	21.50	1.236	-	-	-0.06	0.503	0.622
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	14mm	Ant 0	DSI 2	9400	1880	24.45	25.50	1.274	-	-	-0.05	0.743	0.946
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	14mm	Ant 0	DSI 2	9262	1852.4	24.33	25.50	1.309	-	-	-0.01	0.725	0.949
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	14mm	Ant 0	DSI 2	9538	1907.6	24.40	25.50	1.288	-	-	-0.07	0.701	0.903
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	19mm	Ant 0	DSI 2	9400	1880	24.45	25.50	1.274	-	-	0.12	0.524	0.667

	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	19mm	Ant 0	DSI 2	9400	1880	24.45	25.50	1.274	-	-	-0.02	0.419	0.534
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 1	DSI 4	9400	1880	16.97	18.00	1.268	-	-	-0.12	0.195	0.247
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 1	DSI 4	9400	1880	16.97	18.00	1.268	-	-	-0.03	0.599	0.759
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant 1	DSI 2	9400	1880	23.46	24.50	1.271	-	-	-0.08	0.148	0.188
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant 1	DSI 4	9400	1880	16.97	18.00	1.268	-	-	0.08	0.595	0.754
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	12mm	Ant 1	DSI 2	9400	1880	23.46	24.50	1.271	-	-	-0.05	0.525	0.667
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	19mm	Ant 1	DSI 2	9400	1880	23.46	24.50	1.271	-	-	-0.07	0.746	0.948
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	19mm	Ant 1	DSI 2	9262	1852.4	23.41	24.50	1.285	-	-	-0.03	0.566	0.727
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	19mm	Ant 1	DSI 2	9538	1907.6	23.39	24.50	1.291	-	-	-0.06	0.687	0.887
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	19mm	Ant 1	DSI 2	9400	1880	23.46	24.50	1.271	-	-	0.11	0.748	0.950
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	19mm	Ant 1	DSI 2	9262	1852.4	23.41	24.50	1.285	-	-	0.12	0.688	0.884
26	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	19mm	Ant 1	DSI 2	9538	1907.6	23.39	24.50	1.291	-	-	0.17	0.815	**1.052**
	LTE Band 2	20M	QPSK	1	0	-	Front	10mm	Ant 0	DSI 4	18900	1880	20.74	21.50	1.191	-	-	0.06	0.310	0.369
	LTE Band 2	20M	QPSK	50	0	-	Front	10mm	Ant 0	DSI 4	18900	1880	20.71	21.50	1.199	-	-	-0.15	0.280	0.336
	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant 0	DSI 4	18900	1880	20.74	21.50	1.191	-	-	-0.19	0.442	0.527
	LTE Band 2	20M	QPSK	50	0	-	Back	10mm	Ant 0	DSI 4	18900	1880	20.71	21.50	1.199	-	-	0.16	0.391	0.469
	LTE Band 2	20M	QPSK	1	0	-	Left Side	10mm	Ant 0	DSI 2	18900	1880	24.13	25.00	1.222	-	-	0.1	0.471	0.575
	LTE Band 2	20M	QPSK	50	0	-	Left Side	10mm	Ant 0	DSI 2	18900	1880	23.07	24.00	1.239	-	-	0.02	0.356	0.441
	LTE Band 2	20M	QPSK	1	0	-	Right Side	10mm	Ant 0	DSI 2	18900	1880	24.13	25.00	1.222	-	-	0.02	0.227	0.277
	LTE Band 2	20M	QPSK	50	0	-	Right Side	10mm	Ant 0	DSI 2	18900	1880	23.07	24.00	1.239	-	-	-0.14	0.160	0.198
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	DSI 4	18900	1880	20.74	21.50	1.191	-	-	0.16	0.812	0.967
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	DSI 4	18700	1860	20.58	21.50	1.236	-	-	0.1	0.774	0.957
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	DSI 4	19100	1900	20.66	21.50	1.213	-	-	0.02	0.795	0.965
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 0	DSI 4	18900	1880	20.71	21.50	1.199	-	-	0.04	0.741	0.889
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 0	DSI 4	18700	1860	20.43	21.50	1.279	-	-	0.01	0.684	0.875
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 0	DSI 4	19100	1900	20.51	21.50	1.256	-	-	-0.01	0.676	0.849
	LTE Band 2	20M	QPSK	100	0	-	Bottom Side	10mm	Ant 0	DSI 4	18900	1880	20.68	21.50	1.208	-	-	0.04	0.705	0.852
	LTE Band 2	20M	QPSK	1	0	-	14mm	10mm	Ant 0	DSI 2	18900	1880	24.13	25.00	1.222	-	-	0.02	0.682	0.833
	LTE Band 2	20M	QPSK	1	0	-	14mm	10mm	Ant 0	DSI 2	18700	1860	23.98	25.00	1.265	-	-	0.06	0.653	0.826
	LTE Band 2	20M	QPSK	1	0	-	14mm	10mm	Ant 0	DSI 2	19100	1900	24.06	25.00	1.242	-	-	0.14	0.596	0.740
	LTE Band 2	20M	QPSK	50	0	-	14mm	10mm	Ant 0	DSI 2	18900	1880	23.07	24.00	1.239	-	-	0.09	0.517	0.640
	LTE Band 2	20M	QPSK	100	0	-	14mm	10mm	Ant 0	DSI 2	18900	1880	22.98	24.00	1.265	-	-	-0.03	0.526	0.665
	LTE Band 2	20M	QPSK	1	0	-	Back	19mm	Ant 0	DSI 2	18900	1880	24.13	25.00	1.222	-	-	0.06	0.494	0.604
	LTE Band 2	20M	QPSK	50	0	-	Back	19mm	Ant 0	DSI 2	18900	1880	23.07	24.00	1.239	-	-	-0.12	0.369	0.457
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	19mm	Ant 0	DSI 2	18900	1880	24.13	25.00	1.222	-	-	0.02	0.426	0.520
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	19mm	Ant 0	DSI 2	18900	1880	23.07	24.00	1.239	-	-	0.07	0.321	0.398
	LTE Band 2	20M	QPSK	1	0	-	Front	10mm	Ant 1	DSI 4	18900	1880	17.31	18.00	1.172	-	-	-0.09	0.223	0.261
	LTE Band 2	20M	QPSK	50	0	-	Front	10mm	Ant 1	DSI 4	18900	1880	17.25	18.00	1.189	-	-	0.06	0.218	0.259
	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	18900	1880	17.31	18.00	1.172	-	-	-0.01	0.747	0.876
	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	18700	1860	17.28	18.00	1.180	-	-	0.01	0.440	0.519
	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	19100	1900	17.12	18.00	1.225	-	-	0.16	0.626	0.767
	LTE Band 2	20M	QPSK	50	0	-	Back	10mm	Ant 1	DSI 4	18900	1880	17.25	18.00	1.189	-	-	-0.14	0.586	0.696
	LTE Band 2	20M	QPSK	100	0	-	Back	10mm	Ant 1	DSI 4	18900	1880	17.06	18.00	1.242	-	-	0.01	0.511	0.634
	LTE Band 2	20M	QPSK	1	0	-	Left Side	10mm	Ant 1	DSI 2	18900	1880	23.30	24.00	1.175	-	-	-0.07	0.201	0.236
	LTE Band 2	20M	QPSK	50	0	-	Left Side	10mm	Ant 1	DSI 2	18900	1880	23.19	24.00	1.205	-	-	0.03	0.170	0.205
	LTE Band 2	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	DSI 4	18900	1880	17.31	18.00	1.172	-	-	-0.08	0.701	0.822
	LTE Band 2	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	DSI 4	18700	1860	17.28	18.00	1.180	-	-	0.07	0.601	0.709
	LTE Band 2	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	DSI 4	19100	1900	17.12	18.00	1.225	-	-	0.09	0.764	0.936
	LTE Band 2	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	DSI 4	18900	1880	17.25	18.00	1.189	-	-	0.07	0.691	0.821
	LTE Band 2	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	DSI 4	18700	1860	17.01	18.00	1.256	-	-	0.02	0.507	0.637
	LTE Band 2	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	DSI 4	19100	1900	17.02	18.00	1.253	-	-	0.09	0.685	0.858
	LTE Band 2	20M	QPSK	100	0	-	Top Side	10mm	Ant 1	DSI 4	18900	1880	17.06	18.00	1.242	-	-	0.03	0.703	0.873
	LTE Band 2	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	18900	1880	23.30	24.00	1.175	-	-	-0.11	0.680	0.799
	LTE Band 2	20M	QPSK	50	0	-	Front	12mm	Ant 1	DSI 2	18900	1880	23.19	24.00	1.205	-	-	0.14	0.540	0.651
	LTE Band 2	20M	QPSK	1	0	-	Back	19mm	Ant 1	DSI 2	18900	1880	23.30	24.00	1.175	-	-	0.18	0.640	0.752
	LTE Band 2	20M	QPSK	50	0	-	Back	19mm	Ant 1	DSI 2	18900	1880	23.19	24.00	1.205	-	-	0.1	0.536	0.646

	LTE Band 2	20M	QPSK	1	0	-	Top Side	19mm	Ant 1	DSI 2	18900	1880	23.30	24.00	1.175	-	-	-0.11	0.851	1.000
	LTE Band 2	20M	QPSK	1	0	-	Top Side	19mm	Ant 1	DSI 2	18700	1860	23.23	24.00	1.194	-	-	0.05	0.768	0.917
27	LTE Band 2	20M	QPSK	1	0	-	Top Side	19mm	Ant 1	DSI 2	19100	1900	23.14	24.00	1.219	-	-	0.01	0.896	**1.092**
	LTE Band 2	20M	QPSK	50	0	-	Top Side	19mm	Ant 1	DSI 2	18900	1880	23.19	24.00	1.205	-	-	0.02	0.710	0.856
	LTE Band 2	20M	QPSK	50	0	-	Top Side	19mm	Ant 1	DSI 2	18700	1860	23.13	24.00	1.222	-	-	0.18	0.595	0.727
	LTE Band 2	20M	QPSK	50	0	-	Top Side	19mm	Ant 1	DSI 2	19100	1900	23.09	24.00	1.233	-	-	-0.18	0.666	0.821
	LTE Band 2	20M	QPSK	100	0	-	Top Side	19mm	Ant 1	DSI 2	18900	1880	23.14	24.00	1.219	-	-	0.02	0.691	0.842
2600MHz																				
	LTE Band 7	20M	QPSK	1	0	-	Front	10mm	Ant 0	DSI 4	21100	2535	17.81	19.00	1.315	-	-	0.14	0.250	0.329
	LTE Band 7	20M	QPSK	50	0	-	Front	10mm	Ant 0	DSI 4	21100	2535	17.77	19.00	1.327	-	-	0.12	0.248	0.329
	LTE Band 7	20M	QPSK	1	0	-	Back	10mm	Ant 0	DSI 4	21100	2535	17.81	19.00	1.315	-	-	0.02	0.413	0.543
	LTE Band 7	20M	QPSK	50	0	-	Back	10mm	Ant 0	DSI 4	21100	2535	17.77	19.00	1.327	-	-	-0.15	0.401	0.532
	LTE Band 7	20M	QPSK	1	0	-	Left Side	10mm	Ant 0	DSI 2	21100	2535	22.89	24.00	1.291	-	-	-0.11	0.133	0.172
	LTE Band 7	20M	QPSK	50	0	-	Left Side	10mm	Ant 0	DSI 2	21100	2535	22.85	24.00	1.303	-	-	0.07	0.110	0.143
	LTE Band 7	20M	QPSK	1	0	-	Right Side	10mm	Ant 0	DSI 2	21100	2535	22.89	24.00	1.291	-	-	0.09	0.222	0.287
	LTE Band 7	20M	QPSK	50	0	-	Right Side	10mm	Ant 0	DSI 2	21100	2535	22.85	24.00	1.303	-	-	0.07	0.174	0.227
28	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	DSI 4	21100	2535	17.81	19.00	1.315	-	-	-0.05	0.796	**1.047**
	LTE Band 7C	20M	QPSK	1	99	-	Bottom Side	10mm	Ant 0	DSI 4	21100+21298	2535+2554.8	17.60	19.00	1.380	-	-	0.02	0.758	1.046
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	DSI 4	20850	2510	17.58	19.00	1.387	-	-	-0.03	0.725	1.005
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	DSI 4	21350	2560	17.69	19.00	1.352	-	-	0.05	0.711	0.961
	LTE Band 7	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 0	DSI 4	21100	2535	17.77	19.00	1.327	-	-	-0.02	0.710	0.942
	LTE Band 7	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 0	DSI 4	20850	2510	17.47	19.00	1.422	-	-	0.05	0.625	0.889
	LTE Band 7	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 0	DSI 4	21350	2560	17.71	19.00	1.346	-	-	-0.01	0.661	0.890
	LTE Band 7	20M	QPSK	100	0	-	Bottom Side	10mm	Ant 0	DSI 4	21100	2535	17.68	19.00	1.355	-	-	-0.03	0.634	0.859
	LTE Band 7	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	21100	2535	22.89	24.00	1.291	-	-	-0.09	0.563	0.727
	LTE Band 7	20M	QPSK	50	0	-	Front	14mm	Ant 0	DSI 2	21100	2535	22.85	24.00	1.303	-	-	0.04	0.393	0.512
	LTE Band 7	20M	QPSK	1	0	-	Back	19mm	Ant 0	DSI 2	21100	2535	22.89	24.00	1.291	-	-	0.09	0.358	0.462
	LTE Band 7	20M	QPSK	50	0	-	Back	19mm	Ant 0	DSI 2	21100	2535	22.85	24.00	1.303	-	-	0.06	0.264	0.344
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	19mm	Ant 0	DSI 2	21100	2535	22.89	24.00	1.291	-	-	0.09	0.643	0.830
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	19mm	Ant 0	DSI 2	20850	2510	22.83	24.00	1.309	-	-	0.07	0.784	1.026
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	19mm	Ant 0	DSI 2	21350	2560	22.77	24.00	1.327	-	-	-0.08	0.578	0.767
	LTE Band 7	20M	QPSK	50	0	-	Bottom Side	19mm	Ant 0	DSI 2	21100	2535	22.85	24.00	1.303	-	-	-0.09	0.566	0.738
	LTE Band 7	20M	QPSK	100	0	-	Bottom Side	19mm	Ant 0	DSI 2	21100	2535	22.74	24.00	1.337	-	-	0.18	0.532	0.711
	LTE Band 7	20M	QPSK	1	0	-	Front	10mm	Ant 1	DSI 4	21100	2535	18.10	19.00	1.230	-	-	-0.13	0.168	0.207
	LTE Band 7	20M	QPSK	50	0	-	Front	10mm	Ant 1	DSI 4	21100	2535	17.99	19.00	1.262	-	-	-0.11	0.177	0.223
	LTE Band 7	20M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	21100	2535	18.10	19.00	1.230	-	-	0.01	0.339	0.417
	LTE Band 7	20M	QPSK	50	0	-	Back	10mm	Ant 1	DSI 4	21100	2535	17.99	19.00	1.262	-	-	-0.01	0.353	0.445
	LTE Band 7	20M	QPSK	1	0	-	Left Side	10mm	Ant 1	DSI 2	21100	2535	23.99	25.00	1.262	-	-	0.04	0.307	0.387
	LTE Band 7	20M	QPSK	50	0	-	Left Side	10mm	Ant 1	DSI 2	21100	2535	23.09	24.00	1.233	-	-	-0.16	0.347	0.428
	LTE Band 7	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	DSI 4	21100	2535	18.10	19.00	1.230	-	-	0.08	0.478	0.588
	LTE Band 7	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	DSI 4	21100	2535	17.99	19.00	1.262	-	-	0.07	0.497	0.627
	LTE Band 7C	20M	QPSK	50	50	-	Top Side	10mm	Ant 1	DSI 4	21100+21298	2535+2554.8	18.00	19.00	1.259	-	-	0.03	0.483	0.608
	LTE Band 7	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	21100	2535	23.99	25.00	1.262	-	-	0.06	0.331	0.418
	LTE Band 7	20M	QPSK	50	0	-	Front	12mm	Ant 1	DSI 2	21100	2535	23.09	24.00	1.233	-	-	-0.09	0.377	0.465
	LTE Band 7	20M	QPSK	1	0	-	Back	19mm	Ant 1	DSI 2	21100	2535	23.99	25.00	1.262	-	-	0.03	0.168	0.212
	LTE Band 7	20M	QPSK	50	0	-	Back	19mm	Ant 1	DSI 2	21100	2535	23.09	24.00	1.233	-	-	-0.06	0.184	0.227
	LTE Band 7	20M	QPSK	1	0	-	Top Side	19mm	Ant 1	DSI 2	21100	2535	23.99	25.00	1.262	-	-	0.19	0.338	0.426
	LTE Band 7	20M	QPSK	50	0	-	Top Side	19mm	Ant 1	DSI 2	21100	2535	23.09	24.00	1.233	-	-	-0.14	0.376	0.464
	LTE Band 41	20M	QPSK	1	0	-	Front	10mm	Ant 0	DSI 4	40620	2593	19.92	21.00	1.282	62.9	1.006	0.13	0.155	0.200
	LTE Band 41	20M	QPSK	50	0	-	Front	10mm	Ant 0	DSI 4	40620	2593	19.86	21.00	1.300	62.9	1.006	0.08	0.158	0.207
	LTE Band 41	20M	QPSK	1	0	-	Back	10mm	Ant 0	DSI 4	40620	2593	19.92	21.00	1.282	62.9	1.006	0.09	0.244	0.315
	LTE Band 41	20M	QPSK	50	0	-	Back	10mm	Ant 0	DSI 4	40620	2593	19.86	21.00	1.300	62.9	1.006	-0.08	0.245	0.320
	LTE Band 41	20M	QPSK	1	0	-	Left Side	10mm	Ant 0	DSI 2	40620	2593	24.29	25.50	1.321	62.9	1.006	0.04	0.072	0.096
	LTE Band 41	20M	QPSK	50	0	-	Left Side	10mm	Ant 0	DSI 2	40620	2593	23.34	24.50	1.306	62.9	1.006	0.13	0.065	0.085
	LTE Band 41	20M	QPSK	1	0	-	Right Side	10mm	Ant 0	DSI 2	40620	2593	24.29	25.50	1.321	62.9	1.006	0.09	0.083	0.110
	LTE Band 41	20M	QPSK	50	0	-	Right Side	10mm	Ant 0	DSI 2	40620	2593	23.34	24.50	1.306	62.9	1.006	0.01	0.067	0.088

29	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	DSI 4	40620	2593	19.92	21.00	1.282	62.9	1.006	0.01	0.618	**0.797**
	LTE Band 38C	20M	QPSK	1	99	-	Bottom Side	10mm	Ant 0	DSI 4	37901+38099	2585.1+2604.9	19.87	21.00	1.297	62.9	1.006	0.03	0.600	0.783
	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	DSI 4	39750	2506	19.83	21.00	1.309	62.9	1.006	-0.09	0.557	0.734
	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	DSI 4	40185	2549.5	19.78	21.00	1.324	62.9	1.006	0.03	0.569	0.758
	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	DSI 4	41055	2636.5	19.72	21.00	1.343	62.9	1.006	-0.06	0.531	0.717
	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	DSI 4	41490	2680	19.88	21.00	1.294	62.9	1.006	0.02	0.524	0.682
	LTE Band 41	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 0	DSI 4	40620	2593	19.86	21.00	1.300	62.9	1.006	0.03	0.449	0.587
	LTE Band 41	20M	QPSK	100	0	-	Bottom Side	10mm	Ant 0	DSI 4	40620	2593	19.81	21.00	1.315	62.9	1.006	0.03	0.436	0.577
	LTE Band 41	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	40620	2593	24.29	25.50	1.321	62.9	1.006	0.06	0.573	0.762
	LTE Band 41	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	39750	2506	24.06	25.50	1.393	62.9	1.006	-0.04	0.532	0.746
	LTE Band 41	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	40185	2549.5	24.22	25.50	1.343	62.9	1.006	0.02	0.517	0.698
	LTE Band 41	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	41055	2636.5	24.26	25.50	1.330	62.9	1.006	-0.01	0.525	0.703
	LTE Band 41	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	41490	2680	24.20	25.50	1.349	62.9	1.006	-0.13	0.498	0.676
	LTE Band 41	20M	QPSK	50	0	-	Front	14mm	Ant 0	DSI 2	40620	2593	23.34	24.50	1.306	62.9	1.006	0.03	0.383	0.503
	LTE Band 41	20M	QPSK	100	0	-	Front	14mm	Ant 0	DSI 2	40620	2593	23.38	24.50	1.294	62.9	1.006	0.06	0.362	0.471
	LTE Band 41	20M	QPSK	1	0	-	Back	19mm	Ant 0	DSI 2	40620	2593	24.29	25.50	1.321	62.9	1.006	0.04	0.242	0.322
	LTE Band 41	20M	QPSK	50	0	-	Back	19mm	Ant 0	DSI 2	40620	2593	23.34	24.50	1.306	62.9	1.006	0.03	0.186	0.244
	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	19mm	Ant 0	DSI 2	40620	2593	24.29	25.50	1.321	62.9	1.006	0.03	0.319	0.424
	LTE Band 41	20M	QPSK	50	0	-	Bottom Side	19mm	Ant 0	DSI 2	40620	2593	23.34	24.50	1.306	62.9	1.006	0.04	0.256	0.336
	LTE Band 41	20M	QPSK	1	0	-	Front	10mm	Ant 1	DSI 4	40620	2593	19.06	20.00	1.242	62.9	1.006	-0.04	0.192	0.240
	LTE Band 41	20M	QPSK	50	0	-	Front	10mm	Ant 1	DSI 4	40620	2593	18.89	20.00	1.291	62.9	1.006	0.02	0.193	0.251
	LTE Band 41	20M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	40620	2593	19.06	20.00	1.242	62.9	1.006	-0.01	0.357	0.446
	LTE Band 41	20M	QPSK	50	0	-	Back	10mm	Ant 1	DSI 4	40620	2593	18.89	20.00	1.291	62.9	1.006	-0.13	0.343	0.446
	LTE Band 41	20M	QPSK	1	0	-	Left Side	10mm	Ant 1	DSI 2	40620	2593	24.46	25.50	1.271	62.9	1.006	0.14	0.468	0.598
	LTE Band 41	20M	QPSK	50	0	-	Left Side	10mm	Ant 1	DSI 2	40620	2593	23.43	24.50	1.279	62.9	1.006	-0.12	0.431	0.555
	LTE Band 41	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	DSI 4	40620	2593	19.06	20.00	1.242	62.9	1.006	0.03	0.534	0.667
	LTE Band 41	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	DSI 4	39750	2506	18.79	20.00	1.321	62.9	1.006	0.03	0.515	0.685
	LTE Band 41	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	DSI 4	40185	2549.5	18.82	20.00	1.312	62.9	1.006	0.06	0.526	0.694
	LTE Band 41	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	DSI 4	41055	2636.5	18.95	20.00	1.274	62.9	1.006	0.04	0.476	0.610
	LTE Band 41	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	DSI 4	41490	2680	19.01	20.00	1.256	62.9	1.006	0.03	0.449	0.567
	LTE Band 41	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	DSI 4	40620	2593	18.89	20.00	1.291	62.9	1.006	0.05	0.545	0.708
	LTE Band 41	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	DSI 4	39750	2506	18.67	20.00	1.358	62.9	1.006	0.01	0.504	0.689
	LTE Band 41	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	DSI 4	40185	2549.5	18.72	20.00	1.343	62.9	1.006	0.06	0.495	0.669
	LTE Band 41	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	DSI 4	41055	2636.5	18.84	20.00	1.306	62.9	1.006	-0.09	0.488	0.641
	LTE Band 41	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	DSI 4	41490	2680	18.83	20.00	1.309	62.9	1.006	0.03	0.503	0.662
	LTE Band 41	20M	QPSK	100	0	-	Top Side	10mm	Ant 1	DSI 4	40620	2593	18.76	20.00	1.330	62.9	1.006	0.02	0.502	0.672
	LTE Band 41	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	40620	2593	24.46	25.50	1.271	62.9	1.006	0.04	0.556	0.711
	LTE Band 41	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	39750	2506	24.35	25.50	1.303	62.9	1.006	0.03	0.523	0.686
	LTE Band 41	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	40185	2549.5	24.38	25.50	1.294	62.9	1.006	0.06	0.515	0.671
	LTE Band 41	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	41055	2636.5	24.43	25.50	1.279	62.9	1.006	0.04	0.486	0.626
	LTE Band 41	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	41490	2680	24.32	25.50	1.312	62.9	1.006	0.03	0.499	0.659
	LTE Band 41	20M	QPSK	50	0	-	Front	12mm	Ant 1	DSI 2	40620	2593	23.43	24.50	1.279	62.9	1.006	0.05	0.458	0.589
	LTE Band 41	20M	QPSK	100	0	-	Front	12mm	Ant 1	DSI 2	40620	2593	23.35	24.50	1.303	62.9	1.006	0.01	0.436	0.572
	LTE Band 41	20M	QPSK	1	0	-	Back	19mm	Ant 1	DSI 2	40620	2593	24.46	25.50	1.271	62.9	1.006	-0.14	0.348	0.445
	LTE Band 41	20M	QPSK	50	0	-	Back	19mm	Ant 1	DSI 2	40620	2593	23.43	24.50	1.279	62.9	1.006	-0.02	0.296	0.381
	LTE Band 41	20M	QPSK	1	0	-	Top Side	19mm	Ant 1	DSI 2	40620	2593	24.46	25.50	1.271	62.9	1.006	0.08	0.582	0.744
	LTE Band 38C	20M	QPSK	1	99	-	Top Side	19mm	Ant 1	DSI 2	37901+38099	2585.1+2604.9	24.25	25.50	1.334	62.9	1.006	0.03	0.551	0.739
	LTE Band 41	20M	QPSK	1	0	-	Top Side	19mm	Ant 1	DSI 2	39750	2506	24.35	25.50	1.303	62.9	1.006	0.06	0.552	0.724
	LTE Band 41	20M	QPSK	1	0	-	Top Side	19mm	Ant 1	DSI 2	40185	2549.5	24.38	25.50	1.294	62.9	1.006	0.01	0.554	0.721
	LTE Band 41	20M	QPSK	1	0	-	Top Side	19mm	Ant 1	DSI 2	41055	2636.5	24.43	25.50	1.279	62.9	1.006	0.19	0.483	0.622
	LTE Band 41	20M	QPSK	1	0	-	Top Side	19mm	Ant 1	DSI 2	41490	2680	24.32	25.50	1.312	62.9	1.006	0.04	0.496	0.655
	LTE Band 41	20M	QPSK	50	0	-	Top Side	19mm	Ant 1	DSI 2	40620	2593	23.43	24.50	1.279	62.9	1.006	0.05	0.462	0.595
	LTE Band 41	20M	QPSK	100	0	-	Top Side	19mm	Ant 1	DSI 2	40620	2593	23.35	24.50	1.303	62.9	1.006	-0.05	0.468	0.614

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
2450MHz																
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 3	Receiver Off	1	2412	18.83	20.00	1.309	97.8	1.022	-0.09	0.043	0.058
30	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 3	Receiver Off	1	2412	18.83	20.00	1.309	97.8	1.022	-0.03	0.244	**0.326**
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 3	Receiver Off	1	2412	18.83	20.00	1.309	97.8	1.022	0.07	0.146	0.195
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 3	Receiver Off	1	2412	18.83	20.00	1.309	97.8	1.022	0.03	0.188	0.252
	Bluetooth	1Mbps	Front	10mm	Ant 3	Full power	39	2441	11.11	12.50	1.376	77.03	1.298	-0.15	0.061	0.109
31	Bluetooth	1Mbps	Back	10mm	Ant 3	Full power	39	2441	11.11	12.50	1.376	77.03	1.298	0.01	0.210	**0.375**
	Bluetooth	1Mbps	Right Side	10mm	Ant 3	Full power	39	2441	11.11	12.50	1.376	77.03	1.298	-0.03	0.090	0.161
	Bluetooth	1Mbps	Top Side	10mm	Ant 3	Full power	39	2441	11.11	12.50	1.376	77.03	1.298	-0.11	0.179	0.320
5000MHz																
	WLAN5.2GHz	802.11n-HT40 MCS0	Front	10mm	Ant 3	Receiver Off	38	5190	13.96	15.00	1.271	94.68	1.056	-0.1	0.114	0.153
32	WLAN5.2GHz	802.11n-HT40 MCS0	Back	10mm	Ant 3	Receiver Off	38	5190	13.96	15.00	1.271	94.68	1.056	0.01	0.386	**0.518**
	WLAN5.2GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 3	Receiver Off	38	5190	13.96	15.00	1.271	94.68	1.056	0.19	0.146	0.196
	WLAN5.2GHz	802.11n-HT40 MCS0	Top Side	10mm	Ant 3	Receiver Off	38	5190	13.96	15.00	1.271	94.68	1.056	0.04	0.372	0.499
	WLAN5.8GHz	802.11n-HT40 MCS0	Front	10mm	Ant 3	Receiver Off	151	5755	14.08	15.00	1.236	94.68	1.056	0.05	0.120	0.157
	WLAN5.8GHz	802.11n-HT40 MCS0	Back	10mm	Ant 3	Receiver Off	151	5755	14.08	15.00	1.236	94.68	1.056	0.01	0.321	0.419
	WLAN5.8GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 3	Receiver Off	151	5755	14.08	15.00	1.236	94.68	1.056	-0.04	0.131	0.171
33	WLAN5.8GHz	802.11n-HT40 MCS0	Top Side	10mm	Ant 3	Receiver Off	151	5755	14.08	15.00	1.236	94.68	1.056	0.07	0.334	**0.436**

15.3 Body Worn Accessory SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750MHz																				
	LTE Band 12	10M	QPSK	1	0	-	Front	10mm	Ant 0	DSI 4	23095	707.5	24.47	25.50	1.268	-	-	0.01	0.169	0.214
	LTE Band 12	10M	QPSK	25	0	-	Front	10mm	Ant 0	DSI 4	23095	707.5	23.35	24.50	1.303	-	-	-0.08	0.134	0.175
34	LTE Band 12	10M	QPSK	1	0	-	Back	10mm	Ant 0	DSI 4	23095	707.5	24.47	25.50	1.268	-	-	-0.09	0.256	**0.325**
	LTE Band 12	10M	QPSK	25	0	-	Back	10mm	Ant 0	DSI 4	23095	707.5	23.35	24.50	1.303	-	-	0.14	0.205	0.267
	LTE Band 12	10M	QPSK	1	0	-	Front	10mm	Ant 1	DSI 4	23095	707.5	24.50	25.50	1.259	-	-	-0.14	0.154	0.194
	LTE Band 12	10M	QPSK	25	0	-	Front	10mm	Ant 1	DSI 4	23095	707.5	23.37	24.50	1.297	-	-	0.09	0.122	0.158
	LTE Band 12	10M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	23095	707.5	24.50	25.50	1.259	-	-	-0.03	0.248	0.312
	LTE Band 12	10M	QPSK	25	0	-	Back	10mm	Ant 1	DSI 4	23095	707.5	23.37	24.50	1.297	-	-	-0.12	0.196	0.254
	LTE Band 13	10M	QPSK	1	0	-	Front	10mm	Ant 0	DSI 4	23230	782	24.65	25.50	1.216	-	-	0.07	0.167	0.203
	LTE Band 13	10M	QPSK	25	0	-	Front	10mm	Ant 0	DSI 4	23230	782	23.52	24.50	1.253	-	-	0.17	0.131	0.164
35	LTE Band 13	10M	QPSK	1	0	-	Back	10mm	Ant 0	DSI 4	23230	782	24.65	25.50	1.216	-	-	-0.05	0.238	**0.289**
	LTE Band 13	10M	QPSK	25	0	-	Back	10mm	Ant 0	DSI 4	23230	782	23.52	24.50	1.253	-	-	0.05	0.202	0.253
	LTE Band 13	10M	QPSK	1	0	-	Front	10mm	Ant 1	DSI 4	23230	782	24.50	25.50	1.259	-	-	0.04	0.109	0.137
	LTE Band 13	10M	QPSK	25	0	-	Front	10mm	Ant 1	DSI 4	23230	782	23.43	24.50	1.279	-	-	0.03	0.089	0.114
	LTE Band 13	10M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	23230	782	24.50	25.50	1.259	-	-	-0.01	0.180	0.227
	LTE Band 13	10M	QPSK	25	0	-	Back	10mm	Ant 1	DSI 4	23230	782	23.43	24.50	1.279	-	-	0.17	0.147	0.188
835MHz																				
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	10mm	Ant 0	DSI 4	189	836.4	25.91	27.50	1.442	-	-	0.15	0.123	0.177
36	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	10mm	Ant 0	DSI 4	189	836.4	25.91	27.50	1.442	-	-	-0.08	0.242	**0.349**
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	10mm	Ant 1	DSI 4	189	836.4	25.96	27.50	1.426	-	-	-0.13	0.158	0.225
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	10mm	Ant 1	DSI 4	189	836.4	25.96	27.50	1.426	-	-	-0.08	0.242	0.345
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 0	DSI 4	4182	836.4	24.23	25.50	1.340	-	-	0.14	0.175	0.234
37	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 0	DSI 4	4182	836.4	24.23	25.50	1.340	-	-	-0.06	0.321	**0.430**
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 1	DSI 4	4182	836.4	24.23	25.50	1.340	-	-	0.02	0.212	0.284
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 1	DSI 4	4182	836.4	24.23	25.50	1.340	-	-	-0.05	0.316	0.423
	LTE Band 26	15M	QPSK	1	0	-	Front	10mm	Ant 0	DSI 4	26865	831.5	24.65	25.50	1.216	-	-	0.18	0.146	0.178
	LTE Band 26	15M	QPSK	36	0	-	Front	10mm	Ant 0	DSI 4	26865	831.5	23.59	24.50	1.233	-	-	0.15	0.122	0.150
	LTE Band 26	15M	QPSK	1	0	-	Back	10mm	Ant 0	DSI 4	26865	831.5	24.65	25.50	1.216	-	-	0.01	0.279	0.339
	LTE Band 26	15M	QPSK	36	0	-	Back	10mm	Ant 0	DSI 4	26865	831.5	23.59	24.50	1.233	-	-	0.06	0.223	0.275
	LTE Band 26	15M	QPSK	1	0	-	Front	10mm	Ant 1	DSI 4	26865	831.5	24.66	25.50	1.213	-	-	0.17	0.194	0.235
	LTE Band 26	15M	QPSK	36	0	-	Front	10mm	Ant 1	DSI 4	26865	831.5	23.62	24.50	1.225	-	-	0.03	0.154	0.189
38	LTE Band 26	15M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	26865	831.5	24.66	25.50	1.213	-	-	0.01	0.289	**0.351**
	LTE Band 26	15M	QPSK	36	0	-	Back	10mm	Ant 1	DSI 4	26865	831.5	23.62	24.50	1.225	-	-	-0.1	0.229	0.280
1750MHz																				
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 0	DSI 4	1413	1732.6	21.54	22.50	1.247	-	-	0.18	0.202	0.252
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 0	DSI 4	1413	1732.6	21.54	22.50	1.247	-	-	0.02	0.327	0.408
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	14mm	Ant 0	DSI 2	1413	1732.6	24.46	25.50	1.271	-	-	0.09	0.460	0.584
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	19mm	Ant 0	DSI 2	1413	1732.6	24.46	25.50	1.271	-	-	-0.15	0.381	0.484
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 1	DSI 4	1413	1732.6	19.34	20.00	1.164	-	-	0.15	0.340	0.396
39	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 1	DSI 4	1413	1732.6	19.34	20.00	1.164	-	-	-0.06	0.694	**0.808**
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 1	DSI 4	1312	1712.4	19.25	20.00	1.189	-	-	-0.18	0.602	0.715
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 1	DSI 4	1513	1752.6	19.13	20.00	1.222	-	-	0.05	0.571	0.698
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	12mm	Ant 1	DSI 2	1413	1732.6	24.75	25.50	1.189	-	-	-0.16	0.679	0.807
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	12mm	Ant 1	DSI 2	1312	1712.4	24.67	25.50	1.211	-	-	-0.12	0.661	0.800
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	12mm	Ant 1	DSI 2	1513	1752.6	24.58	25.50	1.236	-	-	0.07	0.590	0.729
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	19mm	Ant 1	DSI 2	1413	1732.6	24.75	25.50	1.189	-	-	0.02	0.673	0.800
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	19mm	Ant 1	DSI 2	1312	1712.4	24.67	25.50	1.211	-	-	-0.04	0.562	0.680
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	19mm	Ant 1	DSI 2	1513	1752.6	24.58	25.50	1.236	-	-	-0.11	0.650	0.803
	LTE Band 66	20M	QPSK	1	0	-	Front	10mm	Ant 0	DSI 4	132322	1745	21.17	22.00	1.211	-	-	0.03	0.200	0.242
	LTE Band 66	20M	QPSK	50	0	-	Front	10mm	Ant 0	DSI 4	132322	1745	21.13	22.00	1.222	-	-	0.03	0.194	0.237

	LTE Band 66	20M	QPSK	1	0	-	Back	10mm	Ant 0	DSI 4	132322	1745	21.17	22.00	1.211	-	-	0.15	0.313	0.379
	LTE Band 66	20M	QPSK	50	0	-	Back	10mm	Ant 0	DSI 4	132322	1745	21.13	22.00	1.222	-	-	-0.04	0.315	0.385
	LTE Band 66	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	132322	1745	24.04	25.00	1.247	-	-	0.07	0.211	0.263
	LTE Band 66	20M	QPSK	50	0	-	Front	14mm	Ant 0	DSI 2	132322	1745	22.96	24.00	1.271	-	-	-0.11	0.207	0.263
	LTE Band 66	20M	QPSK	1	0	-	Back	19mm	Ant 0	DSI 2	132322	1745	24.04	25.00	1.247	-	-	0.11	0.195	0.243
	LTE Band 66	20M	QPSK	50	0	-	Back	19mm	Ant 0	DSI 2	132322	1745	22.96	24.00	1.271	-	-	0.07	0.194	0.246
	LTE Band 66	20M	QPSK	1	0	-	Front	10mm	Ant 1	DSI 4	132322	1745	19.66	20.00	1.081	-	-	0.02	0.281	0.304
	LTE Band 66	20M	QPSK	50	0	-	Front	10mm	Ant 1	DSI 4	132322	1745	19.57	20.00	1.104	-	-	-0.08	0.265	0.293
	LTE Band 66	20M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	132322	1745	19.66	20.00	1.081	-	-	-0.03	0.661	0.715
	LTE Band 66	20M	QPSK	50	0	-	Back	10mm	Ant 1	DSI 4	132322	1745	19.57	20.00	1.104	-	-	0.02	0.598	0.660
40	LTE Band 66	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	132322	1745	24.36	25.00	1.159	-	-	0.08	0.843	**0.977**
	LTE Band 66	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	132072	1720	24.23	25.00	1.194	-	-	0.06	0.812	0.970
	LTE Band 66	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	132572	1770	24.17	25.00	1.211	-	-	0.01	0.668	0.809
	LTE Band 66	20M	QPSK	50	0	-	Front	12mm	Ant 1	DSI 2	132322	1745	23.42	24.00	1.143	-	-	-0.16	0.636	0.727
	LTE Band 66	20M	QPSK	100	0	-	Front	12mm	Ant 1	DSI 2	132322	1745	23.39	24.00	1.151	-	-	0.09	0.583	0.671
	LTE Band 66	20M	QPSK	1	0	-	Back	19mm	Ant 1	DSI 2	132322	1745	24.36	25.00	1.159	-	-	-0.02	0.676	0.783
	LTE Band 66	20M	QPSK	50	0	-	Back	19mm	Ant 1	DSI 2	132322	1745	23.42	24.00	1.143	-	-	0.08	0.526	0.601
1900MHz																				
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Front	10mm	Ant 0	DSI 4	661	1880	27.70	28.50	1.202	-	-	0.06	0.185	0.222
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	10mm	Ant 0	DSI 4	661	1880	27.70	28.50	1.202	-	-	-0.08	0.285	0.343
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Front	14mm	Ant 0	DSI 2	661	1880	29.61	30.50	1.227	-	-	-0.05	0.300	0.368
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	19mm	Ant 0	DSI 2	661	1880	29.61	30.50	1.227	-	-	0.01	0.228	0.280
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Front	10mm	Ant 1	DSI 4	661	1880	28.12	28.50	1.091	-	-	-0.01	0.240	0.262
41	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	10mm	Ant 1	DSI 4	661	1880	28.12	28.50	1.091	-	-	0.04	0.608	**0.664**
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Front	12mm	Ant 1	DSI 2	661	1880	29.98	30.50	1.127	-	-	-0.08	0.343	0.387
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	19mm	Ant 1	DSI 2	661	1880	29.98	30.50	1.127	-	-	0.01	0.380	0.428
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 0	DSI 4	9400	1880	20.58	21.50	1.236	-	-	-0.13	0.256	0.316
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 0	DSI 4	9400	1880	20.58	21.50	1.236	-	-	-0.08	0.364	0.450
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	14mm	Ant 0	DSI 2	9400	1880	24.45	25.50	1.274	-	-	-0.05	0.743	0.946
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	14mm	Ant 0	DSI 2	9262	1852.4	24.33	25.50	1.309	-	-	-0.01	0.715	0.936
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	14mm	Ant 0	DSI 2	9538	1907.6	24.40	25.50	1.288	-	-	-0.07	0.701	0.903
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	19mm	Ant 0	DSI 2	9400	1880	24.45	25.50	1.274	-	-	0.12	0.524	0.667
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 1	DSI 4	9400	1880	16.97	18.00	1.268	-	-	-0.12	0.195	0.247
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 1	DSI 4	9400	1880	16.97	18.00	1.268	-	-	-0.03	0.599	0.759
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	12mm	Ant 1	DSI 2	9400	1880	23.46	24.50	1.271	-	-	-0.05	0.525	0.667
42	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	19mm	Ant 1	DSI 2	9400	1880	23.46	24.50	1.271	-	-	-0.07	0.746	**0.948**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	19mm	Ant 1	DSI 2	9262	1852.4	23.41	24.50	1.285	-	-	-0.03	0.566	0.727
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	19mm	Ant 1	DSI 2	9538	1907.6	23.39	24.50	1.291	-	-	-0.06	0.687	0.887
	LTE Band 2	20M	QPSK	1	0	-	Front	10mm	Ant 0	DSI 4	18900	1880	20.74	21.50	1.191	-	-	0.06	0.310	0.369
	LTE Band 2	20M	QPSK	50	0	-	Front	10mm	Ant 0	DSI 4	18900	1880	20.71	21.50	1.199	-	-	-0.15	0.280	0.336
	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant 0	DSI 4	18900	1880	20.74	21.50	1.191	-	-	-0.19	0.442	0.527
	LTE Band 2	20M	QPSK	50	0	-	Back	10mm	Ant 0	DSI 4	18900	1880	20.71	21.50	1.199	-	-	0.16	0.391	0.469
	LTE Band 2	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	18900	1880	24.13	25.00	1.222	-	-	0.02	0.682	0.833
	LTE Band 2	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	18700	1860	23.98	25.00	1.265	-	-	0.06	0.653	0.826
	LTE Band 2	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	19100	1900	24.06	25.00	1.242	-	-	0.14	0.596	0.740
	LTE Band 2	20M	QPSK	50	0	-	Front	14mm	Ant 0	DSI 2	18900	1880	23.07	24.00	1.239	-	-	0.09	0.517	0.640
	LTE Band 2	20M	QPSK	100	0	-	Front	14mm	Ant 0	DSI 2	18900	1880	22.98	24.00	1.265	-	-	-0.03	0.526	0.665
	LTE Band 2	20M	QPSK	1	0	-	Back	19mm	Ant 0	DSI 2	18900	1880	24.13	25.00	1.222	-	-	0.06	0.494	0.604
	LTE Band 2	20M	QPSK	50	0	-	Back	19mm	Ant 0	DSI 2	18900	1880	23.07	24.00	1.239	-	-	-0.12	0.369	0.457
	LTE Band 2	20M	QPSK	1	0	-	Front	10mm	Ant 1	DSI 4	18900	1880	17.31	18.00	1.172	-	-	-0.09	0.223	0.261
	LTE Band 2	20M	QPSK	50	0	-	Front	10mm	Ant 1	DSI 4	18900	1880	17.25	18.00	1.189	-	-	0.06	0.218	0.259
43	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	18900	1880	17.31	18.00	1.172	-	-	-0.01	0.747	**0.876**
	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	18700	1860	17.28	18.00	1.180	-	-	0.01	0.440	0.519
	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	19100	1900	17.12	18.00	1.225	-	-	0.16	0.626	0.767
	LTE Band 2	20M	QPSK	50	0	-	Back	10mm	Ant 1	DSI 4	18900	1880	17.25	18.00	1.189	-	-	-0.14	0.586	0.696
	LTE Band 2	20M	QPSK	100	0	-	Back	10mm	Ant 1	DSI 4	18900	1880	17.06	18.00	1.242	-	-	0.01	0.511	0.634

	LTE Band 2	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	18900	1880	23.30	24.00	1.175	-	-	-0.11	0.680	0.799
	LTE Band 2	20M	QPSK	50	0	-	Front	12mm	Ant 1	DSI 2	18900	1880	23.19	24.00	1.205	-	-	0.14	0.540	0.651
	LTE Band 2	20M	QPSK	1	0	-	Back	19mm	Ant 1	DSI 2	18900	1880	23.30	24.00	1.175	-	-	0.18	0.640	0.752
	LTE Band 2	20M	QPSK	50	0	-	Back	19mm	Ant 1	DSI 2	18900	1880	23.19	24.00	1.205	-	-	0.1	0.536	0.646
2600MHz																				
	LTE Band 7	20M	QPSK	1	0	-	Front	10mm	Ant 0	DSI 4	21100	2535	17.81	19.00	1.315	-	-	0.14	0.250	0.329
	LTE Band 7	20M	QPSK	50	0	-	Front	10mm	Ant 0	DSI 4	21100	2535	17.77	19.00	1.327	-	-	0.12	0.248	0.329
	LTE Band 7	20M	QPSK	1	0	-	Back	10mm	Ant 0	DSI 4	21100	2535	17.81	19.00	1.315	-	-	0.02	0.413	0.543
	LTE Band 7	20M	QPSK	50	0	-	Back	10mm	Ant 0	DSI 4	21100	2535	17.77	19.00	1.327	-	-	-0.15	0.401	0.532
44	LTE Band 7	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	21100	2535	22.89	24.00	1.291	-	-	-0.09	0.563	**0.727**
	LTE Band 7C	20M	QPSK	1	99	-	Front	14mm	Ant 0	DSI 2	21100+21298	2535+2554.8	22.68	24.00	1.355	-	-	0.02	0.532	0.721
	LTE Band 7	20M	QPSK	50	0	-	Front	14mm	Ant 0	DSI 2	21100	2535	22.85	24.00	1.303	-	-	0.04	0.393	0.512
	LTE Band 7	20M	QPSK	1	0	-	Back	19mm	Ant 0	DSI 2	21100	2535	22.89	24.00	1.291	-	-	0.09	0.358	0.462
	LTE Band 7	20M	QPSK	50	0	-	Back	19mm	Ant 0	DSI 2	21100	2535	22.85	24.00	1.303	-	-	0.06	0.264	0.344
	LTE Band 7	20M	QPSK	1	0	-	Front	10mm	Ant 1	DSI 4	21100	2535	18.10	19.00	1.230	-	-	-0.13	0.168	0.207
	LTE Band 7	20M	QPSK	50	0	-	Front	10mm	Ant 1	DSI 4	21100	2535	17.99	19.00	1.262	-	-	-0.11	0.177	0.223
	LTE Band 7	20M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	21100	2535	18.10	19.00	1.230	-	-	0.01	0.339	0.417
	LTE Band 7	20M	QPSK	50	0	-	Back	10mm	Ant 1	DSI 4	21100	2535	17.99	19.00	1.262	-	-	-0.01	0.353	0.445
	LTE Band 7	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	21100	2535	23.99	25.00	1.262	-	-	0.06	0.331	0.418
	LTE Band 7	20M	QPSK	50	0	-	Front	12mm	Ant 1	DSI 2	21100	2535	23.09	24.00	1.233	-	-	-0.09	0.377	0.465
	LTE Band 7C	20M	QPSK	50	50	-	Front	12mm	Ant 1	DSI 2	21100+21298	2535+2554.8	23.51	25.00	1.409	-	-	0.03	0.321	0.452
	LTE Band 7	20M	QPSK	1	0	-	Back	19mm	Ant 1	DSI 2	21100	2535	23.99	25.00	1.262	-	-	0.03	0.168	0.212
	LTE Band 7	20M	QPSK	50	0	-	Back	19mm	Ant 1	DSI 2	21100	2535	23.09	24.00	1.233	-	-	-0.06	0.184	0.227
	LTE Band 41	20M	QPSK	1	0	-	Front	10mm	Ant 0	DSI 4	40620	2593	19.92	21.00	1.282	62.9	1.006	0.13	0.155	0.200
	LTE Band 41	20M	QPSK	50	0	-	Front	10mm	Ant 0	DSI 4	40620	2593	19.86	21.00	1.300	62.9	1.006	0.08	0.158	0.207
	LTE Band 41	20M	QPSK	1	0	-	Back	10mm	Ant 0	DSI 4	40620	2593	19.92	21.00	1.282	62.9	1.006	0.09	0.244	0.315
	LTE Band 41	20M	QPSK	50	0	-	Back	10mm	Ant 0	DSI 4	40620	2593	19.86	21.00	1.300	62.9	1.006	-0.08	0.245	0.320
45	LTE Band 41	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	40620	2593	24.29	25.50	1.321	62.9	1.006	0.06	0.573	**0.762**
	LTE Band 38C	20M	QPSK	1	99	-	Front	14mm	Ant 0	DSI 2	37901+38099	2585.1+2604.9	24.21	25.50	1.346	62.9	1.006	0.02	0.562	0.761
	LTE Band 41	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	39750	2506	24.06	25.50	1.393	62.9	1.006	-0.04	0.532	0.746
	LTE Band 41	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	40185	2549.5	24.22	25.50	1.343	62.9	1.006	0.02	0.517	0.698
	LTE Band 41	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	41055	2636.5	24.26	25.50	1.330	62.9	1.006	-0.01	0.525	0.703
	LTE Band 41	20M	QPSK	1	0	-	Front	14mm	Ant 0	DSI 2	41490	2680	24.20	25.50	1.349	62.9	1.006	-0.13	0.498	0.676
	LTE Band 41	20M	QPSK	50	0	-	Front	14mm	Ant 0	DSI 2	40620	2593	23.34	24.50	1.306	62.9	1.006	0.03	0.383	0.503
	LTE Band 41	20M	QPSK	100	0	-	Front	14mm	Ant 0	DSI 2	40620	2593	23.38	24.50	1.294	62.9	1.006	0.06	0.362	0.471
	LTE Band 41	20M	QPSK	1	0	-	Back	19mm	Ant 0	DSI 2	40620	2593	24.29	25.50	1.321	62.9	1.006	0.04	0.242	0.322
	LTE Band 41	20M	QPSK	50	0	-	Back	19mm	Ant 0	DSI 2	40620	2593	23.34	24.50	1.306	62.9	1.006	0.03	0.186	0.244
	LTE Band 41	20M	QPSK	1	0	-	Front	10mm	Ant 1	DSI 4	40620	2593	19.06	20.00	1.242	62.9	1.006	-0.04	0.192	0.240
	LTE Band 41	20M	QPSK	50	0	-	Front	10mm	Ant 1	DSI 4	40620	2593	18.89	20.00	1.291	62.9	1.006	0.02	0.193	0.251
	LTE Band 41	20M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 4	40620	2593	19.06	20.00	1.242	62.9	1.006	-0.01	0.357	0.446
	LTE Band 41	20M	QPSK	50	0	-	Back	10mm	Ant 1	DSI 4	40620	2593	18.89	20.00	1.291	62.9	1.006	-0.13	0.343	0.446
	LTE Band 41	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	40620	2593	24.46	25.50	1.271	62.9	1.006	0.04	0.556	0.711
	LTE Band 38C	20M	QPSK	1	99	-	Front	12mm	Ant 1	DSI 2	37901+38099	2585.1+2604.9	24.25	25.50	1.334	62.9	1.006	0.03	0.528	0.708
	LTE Band 41	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	39750	2506	24.35	25.50	1.303	62.9	1.006	0.03	0.523	0.686
	LTE Band 41	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	40185	2549.5	24.38	25.50	1.294	62.9	1.006	0.06	0.515	0.671
	LTE Band 41	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	41055	2636.5	24.43	25.50	1.279	62.9	1.006	0.04	0.486	0.626
	LTE Band 41	20M	QPSK	1	0	-	Front	12mm	Ant 1	DSI 2	41490	2680	24.32	25.50	1.312	62.9	1.006	0.03	0.499	0.659
	LTE Band 41	20M	QPSK	50	0	-	Front	12mm	Ant 1	DSI 2	40620	2593	23.43	24.50	1.279	62.9	1.006	0.05	0.458	0.589
	LTE Band 41	20M	QPSK	100	0	-	Front	12mm	Ant 1	DSI 2	40620	2593	23.35	24.50	1.303	62.9	1.006	0.01	0.436	0.572
	LTE Band 41	20M	QPSK	1	0	-	Back	19mm	Ant 1	DSI 2	40620	2593	24.46	25.50	1.271	62.9	1.006	-0.14	0.348	0.445
	LTE Band 41	20M	QPSK	50	0	-	Back	19mm	Ant 1	DSI 2	40620	2593	23.43	24.50	1.279	62.9	1.006	-0.02	0.296	0.381

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
2450MHz																
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 3	Receiver Off	1	2412	18.83	20.00	1.309	97.8	1.022	-0.09	0.043	0.058
46	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 3	Receiver Off	1	2412	18.83	20.00	1.309	97.8	1.022	-0.03	0.244	**0.326**
	Bluetooth	1Mbps	Front	10mm	Ant 3	Full power	39	2441	11.11	12.50	1.376	77.03	1.298	-0.15	0.061	0.109
47	Bluetooth	1Mbps	Back	10mm	Ant 3	Full power	39	2441	11.11	12.50	1.376	77.03	1.298	0.01	0.210	**0.375**
5000MHz																
	WLAN 5.3GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 3	Receiver Off	58	5290	13.63	15.00	1.371	89.24	1.121	-0.08	0.151	0.232
48	WLAN 5.3GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 3	Receiver Off	58	5290	13.63	15.00	1.371	89.24	1.121	0.01	0.406	**0.624**
	WLAN 5.5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 3	Receiver Off	102	5510	12.97	14.00	1.268	94.68	1.056	0.04	0.169	0.226
49	WLAN 5.5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 3	Receiver Off	102	5510	12.97	14.00	1.268	94.68	1.056	0.01	0.463	**0.620**
	WLAN 5.8GHz	802.11n-HT40 MCS0	Front	10mm	Ant 3	Receiver Off	151	5755	14.08	15.00	1.236	94.68	1.056	0.05	0.120	0.157
50	WLAN 5.8GHz	802.11n-HT40 MCS0	Back	10mm	Ant 3	Receiver Off	151	5755	14.08	15.00	1.236	94.68	1.056	0.01	0.321	**0.419**

15.4 Product Specific SAR

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
5000MHz																
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 3	Receiver Off	58	5290	13.63	15.00	1.371	89.24	1.121	0.01	0.144	0.221
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 3	Receiver Off	58	5290	13.63	15.00	1.371	89.24	1.121	0.19	0.204	0.313
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Ant 3	Receiver Off	58	5290	13.63	15.00	1.371	89.24	1.121	0.01	0.123	0.189
51	WLAN5.3GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 3	Receiver Off	58	5290	13.63	15.00	1.371	89.24	1.121	0.06	0.328	**0.504**
	WLAN5.5GHz	802.11n-HT40 MCS0	Front	0mm	Ant 3	Receiver Off	102	5510	12.97	14.00	1.268	94.68	1.056	0.02	0.160	0.214
	WLAN5.5GHz	802.11n-HT40 MCS0	Back	0mm	Ant 3	Receiver Off	102	5510	12.97	14.00	1.268	94.68	1.056	0.01	0.224	0.300
	WLAN5.5GHz	802.11n-HT40 MCS0	Right Side	0mm	Ant 3	Receiver Off	102	5510	12.97	14.00	1.268	94.68	1.056	0.02	0.079	0.106
52	WLAN5.5GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 3	Receiver Off	102	5510	12.97	14.00	1.268	94.68	1.056	-0.03	0.313	**0.419**

15.5 Repeated SAR Measurement

<1g>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	DSI1	1413	1732.6	16.47	17.00	1.130	-	-	-0.05	0.874	1	0.987
2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	DSI1	1413	1732.6	16.47	17.00	1.130	-	-	0.02	0.871	1.010	0.984
1st	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	40620	2593	17.17	18.00	1.211	62.9	1.006	-0.01	0.812	1	0.989
2nd	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI1	40620	2593	17.17	18.00	1.211	62.9	1.006	-0.01	0.805	1.009	0.980
1st	LTE Band 2	20M	QPSK	1	0	-	Top Side	19mm	Ant 1	DSI 2	19100	1900	23.14	24.00	1.219	-	-	0.01	0.896	1	1.092
2nd	LTE Band 2	20M	QPSK	1	0	-	Top Side	19mm	Ant 1	DSI 2	19100	1900	23.14	24.00	1.219	-	-	0.03	0.887	1.010	1.081

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. The ratio is the difference in percentage between original and repeated *measured SAR*.
5. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

16. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product Specific
1.	WWAN + WLAN2.4GHz	Yes	Yes	Yes	Yes
2.	WWAN + WLAN5GHz	Yes	Yes	Yes	Yes
3.	WWAN + Bluetooth	Yes	Yes	Yes	Yes

General Note:

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
2. EUT will choose each GSM, WCDMA, and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
3. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
4. This device 2.4GHz WLAN/ 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WLAN Direct (GC/GO), and 5.3GHz / 5.5GHz supports WLAN Direct (GC only).
5. According to the EUT characteristic, WLAN 5GHz and Bluetooth can't transmit simultaneously.
6. According to the EUT characteristic, WLAN 2.4GHz and Bluetooth at the same antenna cannot transmit simultaneously.
7. According to the EUT characteristic, WLAN 5GHz and WLAN 2.4GHz at the same antenna cannot transmit simultaneously.
8. The worst case 5 GHz WLAN SAR for each configuration was used for SAR summation.
9. Chose the worst zoom scan SAR of WLAN correspondingly for co-located with WWAN analysis.
10. The reported SAR summation is calculated based on the same configuration and test position.
11. For distance SAR and non-distance SAR always chose higher SAR to do co-located analysis.
12. For standalone WWAN, always choose the highest SAR among all WWAN bands within the selected antenna for each exposure position to perform simultaneous transmission analysis with WLAN/BT. This is the worst co-located analysis and can represent each bands.
13. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
    i) 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
    ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
    iii) If SPLSR ≤ 0.04 for 1g SAR and SPLSR≤ 0.10 for 10g SAR , simultaneously transmission SAR measurement is not necessary.
    iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.

16.1 Head Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2	1+3	1+4
		WWAN	WLAN2.4GHz Ant 3	WLAN5GHz Ant 3	Bluetooth Ant 3	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
WWAN All Bands Ant 0	Right Cheek	0.360	0.242	0.381	0.080	0.60	0.74	0.44
	Right Tilted	0.259	0.239	0.475	0.100	0.50	0.73	0.36
	Left Cheek	0.357	0.619	0.620	0.129	0.98	0.98	0.49
	Left Tilted	0.364	0.447	0.712	0.150	0.81	1.08	0.51
WWAN All Bands Ant1	Right Cheek	0.980	0.242	0.381	0.080	1.22	1.36	1.06
	Right Tilted	1.029	0.239	0.475	0.100	1.27	1.50	1.13
	Left Cheek	0.903	0.619	0.620	0.129	**1.52**	1.52	1.03
	Left Tilted	0.878	0.447	0.712	0.150	1.33	**1.59**	1.03

16.2 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2	1+3	1+4
		WWAN	WLAN2.4GHz Ant 3	WLAN5GHz Ant 3	Bluetooth Ant 3	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
WWAN All Bands (Ant 0)	Front	0.949	0.058	0.157	0.109	1.01	1.11	1.06
	Back	0.667	0.326	0.518	0.375	0.99	1.19	1.04
	Left side	0.575				0.58	0.58	0.58
	Right side	0.303	0.195	0.196	0.161	0.50	0.50	0.46
	Top side		0.252	0.499	0.320	0.25	0.50	0.32
	Bottom side	1.047				1.05	1.05	1.05
WWAN All Bands (Ant 1)	Front	0.977	0.058	0.157	0.109	1.04	1.13	1.09
	Back	0.948	0.326	0.518	0.375	1.27	1.47	1.32
	Left side	0.598				0.60	0.60	0.60
	Right side		0.195	0.196	0.161	0.20	0.20	0.16
	Top side	1.092	0.252	0.499	0.320	1.34	1.59	**1.41**

16.3 Body-Worn Accessory Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2	1+3	1+4
		WWAN	WLAN2.4GHz Ant 3	WLAN5GHz Ant 3	Bluetooth Ant 3	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
WWAN All Bands (Ant 0)	Front	0.949	0.058	0.232	0.109	1.01	1.18	1.06
	Back	0.667	0.326	0.624	0.375	0.99	1.29	1.04
WWAN All Bands (Ant 1)	Front	0.977	0.058	0.232	0.109	1.04	1.21	1.09
	Back	0.948	0.326	0.624	0.375	1.27	1.57	1.32

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17. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.

18. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013

[4] SPEAG DASY System Handbook

[5] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[6] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.

[7] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

[8] FCC KDB 648474 D04 v01r03, “SAR Evaluation Considerations for Wireless Handsets”, Oct 2015.

[9] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

[10] FCC KDB 616217 D04 v01r02, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, Oct 2015

[11] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015

[12] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015

[13] FCC KDB 941225 D05A v01r02, “Rel. 10 LTE SAR Test Guidance and KDB Inquiries”, Oct 2015

[14] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.

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