FCC SAR Test Report

APPLICANT	:	vivo Mobile Communication Co., Ltd.
EQUIPMENT	:	Mobile Phone
BRAND NAME	:	vivo
MODEL NAME	:	V2208
FCC ID	:	2AUCY-V2202V
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

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA281001	Rev. 01	Initial issue of report	Sep. 14, 2022

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **vivo Mobile Communication Co., Ltd., Mobile Phone, V2208,** are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 10mm)	Body-worn (Separation 15mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.74	0.49	0.37	1.39
		GSM1900	0.60	0.64	0.35	
	WCDMA	WCDMA II	0.75	0.55	0.52	
		WCDMA IV	0.75	0.47	0.35	
		WCDMA V	0.71	0.46	0.24	
	LTE	LTE Band 2	0.72	0.54	0.42	
		LTE Band 4	0.72	0.59	0.43	
		LTE Band 5	**0.83**	0.55	0.30	
		LTE Band 7	0.67	0.63	**0.94**	
		LTE Band 12/17	0.76	0.47	0.28	
		LTE Band 41/38	0.54	0.58	0.55	
	FR1	n5	0.13	0.28	0.30	
		n7	0.78	0.64	0.89	
		n41	0.80	**0.69**	0.92	
DTS	WLAN	2.4GHz WLAN	0.42	0.32	0.16	1.20
NII		5GHz WLAN	0.64	0.42	0.40	1.39
DSS	Bluetooth	2.4GHz Bluetooth	0.33	<0.10	<0.10	1.39

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	WCDMA	Band II	2.16	3.18
	LTE	LTE Band 2	2.23	
		LTE Band 7	2.11	
		LTE Band 41/38	2.15	
	FR1	FR1 n7	2.30	
		FR1 n41	**2.52**	
NII	WLAN	5GHz WLAN	1.89	3.18
DXX	NFC	13.56MHz	<0.10	3.18
Date of Testing:			2022/8/11 ~ 2022/9/4	

Remark:
This device supports LTE B17 / B38 and B12 / B41. Since the supported frequency span for LTE B17 / B38 falls completely within the supports frequency span for B12 / 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 B12 / 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	vivo Mobile Communication Co., Ltd.
Address	No.1, vivo Road, Chang'an, Dongguan,Guangdong,China

Manufacturer	
Company Name	vivo Mobile Communication Co., Ltd.
Address	No.1, vivo Road, Chang'an, Dongguan,Guangdong,China

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
- IEC/IEEE 62209-1528 2020
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- 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
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Phone
Brand Name	vivo
Model Name	V2208
FCC ID	2AUCY-V2202V
IMEI Code	SIM1: 861947060152147 SIM2: 861947060152154
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 17: 704 MHz ~ 716 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n41 : 2496 MHz ~ 2690 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 ~ 5720MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is supported) LTE: QPSK/ 16QAM / 64QAM / 256QAM(Downlink Only) 5G NR: DFT-s-OFDM (PI/2 BPSK/ QPSK / 16QAM / 64QAM / 256QAM) CP-OFDM (QPSK / 16QAM / 64QAM / 256QAM) WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ax HE20/HE40 WLAN 5GHz 802.11a/n/ac HT20/HT40/VHT20/VHT40/VHT80 WLAN 5GHz 802.11ax HE20/HE40/HE80 Bluetooth BR/EDR/LE NFC: ASK
HW Version	MP_0.1
SW Version	PD2215EF_EX_A_12.0.4.9.W30.V2403L6
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	Production Unit

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 does not support DTM operation and support GRPS/EGRPS mode up to multi-slot class 12.
3. This device WLAN 2.4GHz supports 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 WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).
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/hotspot detect mechanism trigger reduced power for the power management for SAR compliance at different exposure conditions (head, hotspot, body, and 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&5G 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 and the detail DSI descriptions of below table.

DSI	Trigger Conditions	Antenna No.	Exposure conditions	
DSI 2	Receiver on	all Ant	Head Standalone	Head all Position
DSI 3	Receiver on + WLAN	all Ant	Head Simultaneous	Head all Position
DSI 4	Receiver off/Sensor off	Ant 11/13	Sensor Trigger Distance -1mm	See by section 5
			Body-worn/Extremity Standalone	No Sensor Position
DSI 5	Receiver off/Sensor on	Ant 11/13	Body-worn/Extremity Standalone	See by section 5
	Receiver off	Ant 31/41	Body-worn/Extremity Standalone	Body all Position
DSI 8	Receiver off/Sensor on + WLAN	Ant 11/13	Body-worn/Extremity Simultaneous	See by section 5
	Receiver off + WLAN	Ant 31/41	Body-worn/Extremity Simultaneous	Body all Position
DSI 9	Receiver off/Sensor off + WLAN	Ant 11	Body-worn/Extremity Simultaneous	No Sensor Position
DSI 10	Receiver off/Sensor off + WLAN	Ant 13	Body-worn/Extremity Simultaneous	No Sensor Position
	Hotspot On	all Ant	Hotspot Standalone/ Simultaneous	Body all Position

7. For WLAN transmitter, while the device WWAN is transmitting simultaneously with the WLAN/Bluetooth antenna, the device power will be reduced power at body-worn and extremity conditions.
8. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
9. 5G NR supports CP-OFDM and DFT-s-OFDM modulation, for DFT-s-OFDM power is higher than CP-OFDM, so only show DFT-s-OFDM power table and chose DFT-s-OFDM to perform SAR testing.
10. For DFT-s-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for the CP-OFDM mode will not higher than DFT-s-OFDM mode, therefore, CP-OFDM measurement is unnecessary.
11. For 5GNR EN-DC modes, standalone SAR performed for 5GNR band with the maximum power, EN-DC SAR summed 5GNR standalone SAR and LTE standalone SAR, the result of EN-DC SAR is more conservatively.
12. For 5GNR FDD/TDD supports SCS15KHz and SCS30KHz, after verification for 30KHz at FDD power level is less than 15KHz at FDD power level, also verification for 15KHz at TDD power level is less than 30KHz at TDD power level, so only show 15KHz at FDD power and 30KHz at TDD power, and chose higher power which is SCS15KHz for FDD bands and SCS30KHz for TDD bands to perform SAR testing.
13. This device supports 5GNR FR1 bands as following table, including NSA mode and SA mode.

<5G NR>

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
NSA	n5	FDD	15	5, 10, 15, 20
			30	10, 15, 20
	n7	FDD	15	5, 10, 15, 20
			30	10, 15, 20
SA	n7	FDD	15	5, 10, 15, 20
			30	10, 15, 20
	n41	TDD	15	10, 15, 20, 30, 40, 50
			30	10, 15, 20, 30, 40, 50, 60, 80, 90, 100

4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05	
FCC ID	2AUCY-V2202V
Equipment Name	Mobile Phone
Operating Frequency Range of each LTE transmission band	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 17: 704 MHz ~ 716 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz
Channel Bandwidth	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 17: 5MHz, 10MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz
Uplink Modulations used	QPSK / 16QAM / 64QAM / 256 QAM (Downlink only)
LTE Voice / Data requirements	Voice and Data
LTE Release Version	R15, category 13
CA Support	Yes, Uplink and Downlink
LTE MPR permanently built-in by design	**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3**

Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

LTE A-MPR	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)
Spectrum plots for RB configuration	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.
Power reduction applied to satisfy SAR compliance	Yes, when operating in Proximity sensors/receiver/hotspot detect mechanism trigger reduction power applied to satisfy SAR compliance the detail please referred to section 13.
LTE Carrier Aggregation Combinations	Intra-Band and Inter-Band possible combinations and the detail power verification please referred to section 13.
LTE Carrier Aggregation Additional Information	(1) This device supports LTE Carrier Aggregation (CA) in the uplink for LTE 7C /38C/41C with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance. (2) This device supports maximum of 3 carriers in the downlink and 2 carriers in the uplink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.

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 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 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

<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 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	DSI 2	DSI 3	DSI 4	DSI 5	DSI 8	DSI 10	Default
LTE Band 12	Ant 13	24.00	22.50	24.50	24.50	24.50	24.50	24.50
LTE Band 17	Ant 13	24.00	22.50	24.50	24.50	24.50	24.50	24.50
LTE Band 38	Ant 13	16.40	14.40	23.40	20.90	18.90	18.90	23.40
LTE Band 41	Ant 13	16.40	14.40	23.40	20.90	18.90	18.90	23.40

Band	Antenna	DSI 2	DSI 3	DSI 5	DSI 8	DSI 10	Default
LTE Band 12	Ant 41	24.50	24.50	24.50	24.50	24.50	24.50
LTE Band 17	Ant 41	24.50	24.50	24.50	24.50	24.50	24.50
LTE Band 38	Ant 31	23.80	23.80	23.80	22.30	22.30	23.80
LTE Band 41	Ant 31	23.80	23.80	23.80	22.30	22.30	23.80

4.3 General 5G NR SAR Test and Reporting Considerations

5G NR Information	
Operating Frequency Range of each 5G NR transmission band	5G NR n5: 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz
Channel Bandwidth	The detail please refers to section 4.1 5GNR FR1 bands table.
SCS	FDD/ TDD: SCS15KHz, SCS30KHz
uplink modulations used	DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM QPSK / 16QAM / 64QAM / 256QAM
A-MPR (Additional MPR) disabled for SAR Testing?	Yes
LTE Anchor Bands for n5	LTE B7
LTE Anchor Bands for n7	LTE B2

Transmission (H, M, L) channel numbers and frequencies in each 5G NR band

NR Band 2 for SCS15KHz

	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860
M	376000	1880	376000	1880	376000	1880	376000	1880
H	381500	1907.5	381000	1905	380500	1902.5	380000	1900

NR Band 2 for SCS30KHz

	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	371000	1855	371500	1857.5	372000	1860
M	376000	1880	376000	1880	376000	1880
H	381000	1905	380500	1902.5	380000	1900

NR Band 5 for SCS15KHz

	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	165300	826.5	165800	829	166300	831.5	166800	834
M	167300	836.5	167300	836.5	167300	836.5	167300	836.5
H	169300	846.5	168800	844	168300	841.5	167800	839

NR Band 5 for SCS30KHz

	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	165800	829	166300	831.5	166800	834
M	167300	836.5	167300	836.5	167300	836.5
H	168800	844	168300	841.5	167800	839

NR Band 7 for SCS15KHz

	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	500500	2502.5	501000	2505	501500	2507.5	502000	2510
M	507000	2535	507000	2535	507000	2535	507000	2535
H	513500	2567.5	513000	2565	512500	2562.5	512000	2560

NR Band 7 for SCS30KHz

	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	501000	2505	501500	2507.5	502000	2510
M	507000	2535	507000	2535	507000	2535
H	513000	2565	512500	2562.5	512000	2560

NR Band 41 for SCS15KHz

	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	500202	2501.01	500700	2503.5	501204	2506.02	502200	2511	503202	2516.01	504204	2521.02
M	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99
H	537000	2685	536496	2682.48	535998	2679.99	534996	2674.98	534000	2670	532998	2664.99

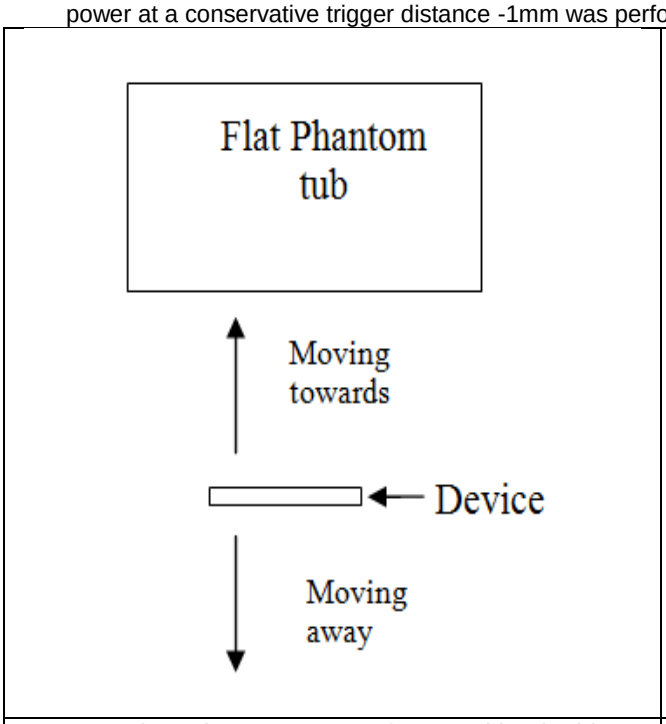
NR Band 41 for SCS30KHz

	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	500202	2501.01	500700	2503.5	501204	2506.02	502200	2511	503202	2516.01	504204	2521.02	505200	2526	507204	2536.02	508200	2541	509202	2546.01
M	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99
H	537000	2685	536496	2682.48	535998	2679.99	534996	2674.98	534000	2670	532998	2664.99	531996	2659.98	529998	2649.99	528996	2644.98	528000	2640

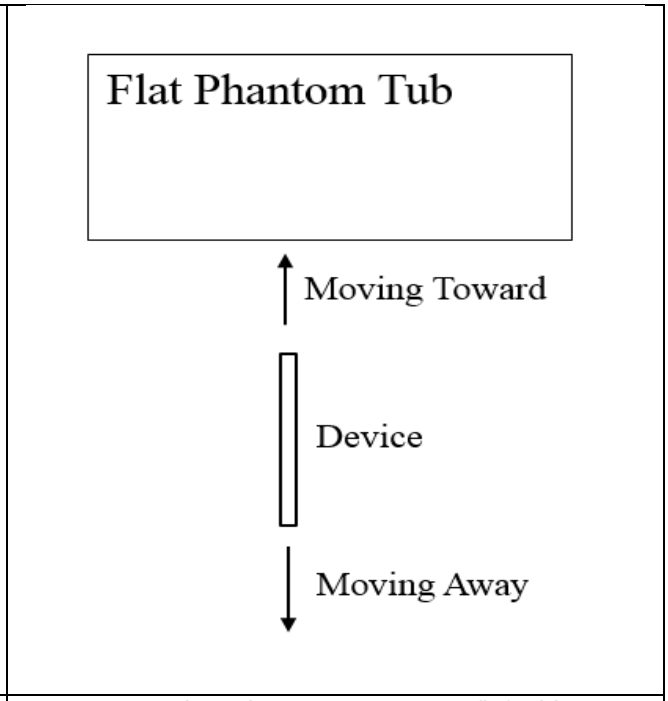
5. Proximity Sensor Triggering Test

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 and the tissue-equivalent medium for highest frequency (2600MHz) and lowest (1900MHz) frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensors placed coincident with antenna elements at the left and right corners of the top ends 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 top or left sides of the device. The output power will reduce to body worn power level when top and bottom sensor pad be detected.
3. The device employs proximity sensors that detect the presence of the user's body or handheld states at the front, back, top, left sides of the device. When front, back, top, left sides of body condition or handheld states are detected reduced power will be active. The data shown in the sections below shows the distance(s).
4. 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 /left sides

<P-Sensor>

Antenna 11

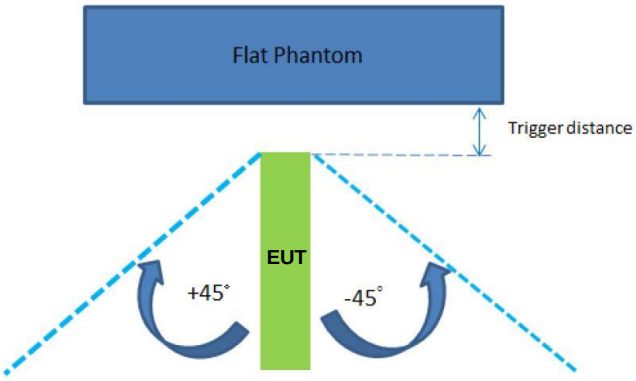
Proximity Sensor Trigger Distance (mm)						
Position	Front		Back		Left Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	4	4	11	11	14	14

Antenna 13

Proximity Sensor Trigger Distance (mm)						
Position	Front		Back		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	9	9	13	13	15	15

5.2 proximity sensor triggering (KDB 616217 D04 section 6.4):

The influence of Phone tilt angles to proximity sensor triggering was determined by positioning each Phone edge that contains a transmitting antenna, perpendicular to the flat phantom, at above separation distance.
Rotating the Phone around the edge next to the phantom in ≤ 10° increments until the Phone is ± 45° from the vertical position at 0°, and the maximum output power remains in the reduced mode.



The Sensor Trigger Distance (mm)		
Position	Left Side for Antenna 11	Top Side for Antenna 13
Minimum	14	15

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:

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

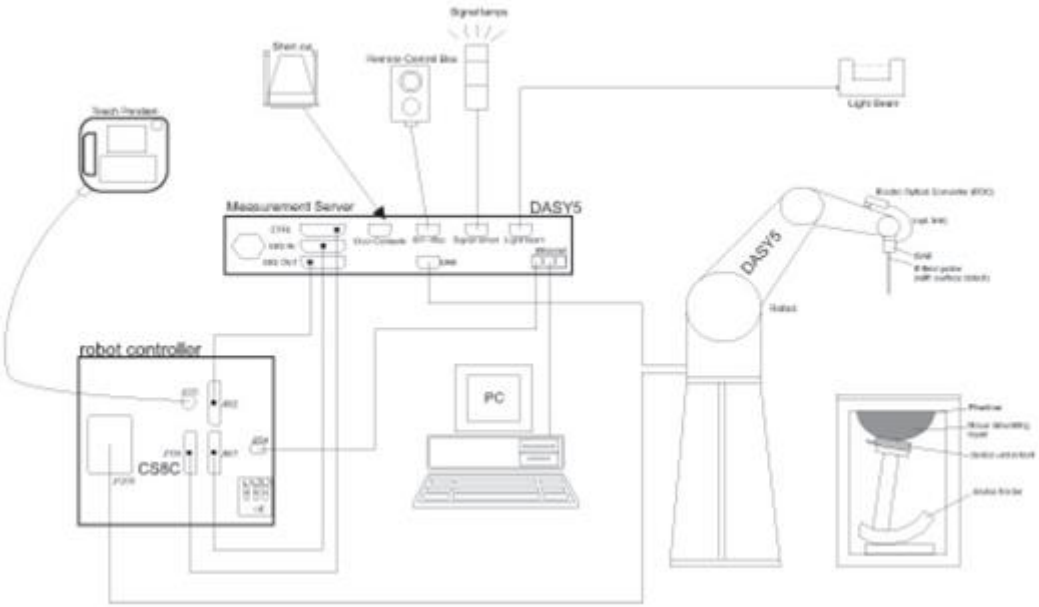
SAR is expressed in units of Watts per kilogram (W/kg)

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

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)

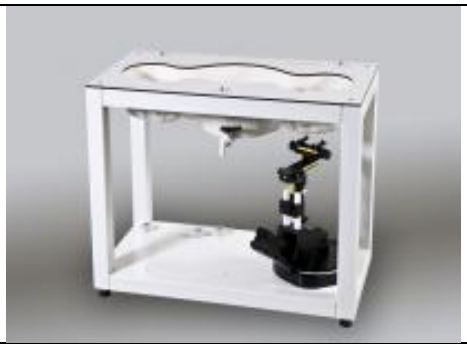
The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an 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

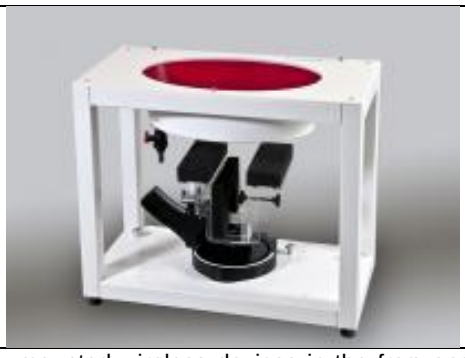
8.3 Phantom

<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 in the frequency range of 30 MHz to 6 GHz. ELI4 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	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
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	1099	Dec. 15, 2021	Dec. 14, 2022
SPEAG	835MHz System Validation Kit	D835V2	4d162	Dec. 17, 2021	Dec. 16, 2022
SPEAG	1750MHz System Validation Kit	D1750V2	1137	Oct. 19, 2021	Oct. 18, 2022
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	Dec. 20, 2021	Dec. 19, 2022
SPEAG	2450MHz System Validation Kit	D2450V2	924	Sep. 02, 2020	Sep. 01, 2023
SPEAG	2600MHz System Validation Kit	D2600V2	1070	Dec. 20, 2021	Dec. 19, 2022
SPEAG	5000MHz System Validation Kit	D5GHzV2	1341	Dec. 13, 2021	Dec. 12, 2022
SPEAG	13MHz System Validation Kit	CLA13	1020	Jun. 03, 2022	Jun. 02, 2023
SPEAG	Data Acquisition Electronics	DAE4	1386	Jun. 30, 2022	Jun. 29, 2023
SPEAG	Data Acquisition Electronics	DAE4	1338	Dec. 01, 2021	Nov. 30, 2022
SPEAG	Dosimetric E-Field Probe	EX3DV4	3935	Jun. 20, 2022	Jun. 19, 2023
SPEAG	Dosimetric E-Field Probe	EX3DV4	7641	Apr. 04, 2022	Apr. 03, 2023
SPEAG	SAM Twin Phantom	QD 000 P41 AA	2033	NCR	NCR
SPEAG	SAM Twin Phantom	SAM Twin	TP-1842	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201300653	Jul. 07, 2022	Jul. 06, 2023
Anritsu	Radio communication analyzer	MT8821C	6262314715	Jun. 27, 2022	Jun. 26, 2023
Agilent	Wireless Communication Test Set	E5515C	MY50267224	Jul. 07, 2022	Jul. 06, 2023
Agilent	ENA Series Network Analyzer	E5071C	MY46104587	May 24, 2022	May 23, 2023
Keysight	Network Analyzer	E5071C	MY46523671	Oct. 25, 2021	Oct. 24, 2022
Speag	Dielectric Assessment KIT	DAK-3.5	1071	Jan. 24, 2022	Jan. 23, 2023
SPEAG	Dielectric Probe Kit	DAK-12	1156	Jun. 03, 2022	Jun. 02, 2023
Agilent	Signal Generator	N5181A	MY50145381	Dec. 28, 2021	Dec. 27, 2022
Rohde & Schwarz	Vector Signal Generator	SMBV100A	258305	Jan. 05, 2022	Jan. 04, 2023
R&S	Power Meter	NRVD	102081	Jul. 14, 2022	Jul. 13, 2023
R&S	Power Sensor	NRV-Z5	100538	Jul. 14, 2022	Jul. 13, 2023
R&S	Power Sensor	NRV-Z5	100539	Jul. 14, 2022	Jul. 13, 2023
FLUKE	DIGITAC THERMOMETER	51II	97240029	Oct. 23, 2021	Oct. 22, 2022
R&S	CBT BLUETOOTH TESTER	CBT	100641	Jan. 05, 2022	Jan. 04, 2023
R&S	Spectrum Analyzer	FSP7	100818	Jul. 07, 2022	Jul. 06, 2023
EXA	Spectrum Analyzer	FSV7	101631	Oct. 14, 2021	Oct. 13, 2022
TES	Hygrometer	1310	200505600	Jul. 12, 2022	Jul. 11, 2023
Anymetre	Thermo-Hygrometer	JR593	2015102801	Dec. 30, 2021	Dec. 29, 2022
Testo	Thermo-Hygrometer	608-H1	1241332126	Jan. 06, 2022	Jan. 05, 2023
SPEAG	Device Holder	N/A	N/A	N/A	N/A
AR	Amplifier	5S1G4	0333096	Note 1	
Mini-Circuits	Amplifier	ZVE-3W-83+	599201528	Note 1	
ARRA	Power Divider	A3200-2	N/A	Note 1	
ET Industries	Dual Directional Coupler	C-058-10	N/A	Note 1	
MCL	Attenuation1	BW-S10W5+	MCL	Note 1	
Weinschel	Attenuator 2	3M-20	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 source.
2. The dipole calibration interval can be extended to 3 years with justification according to KDB 865664 D01. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.

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. 10.1. 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. 10.2.

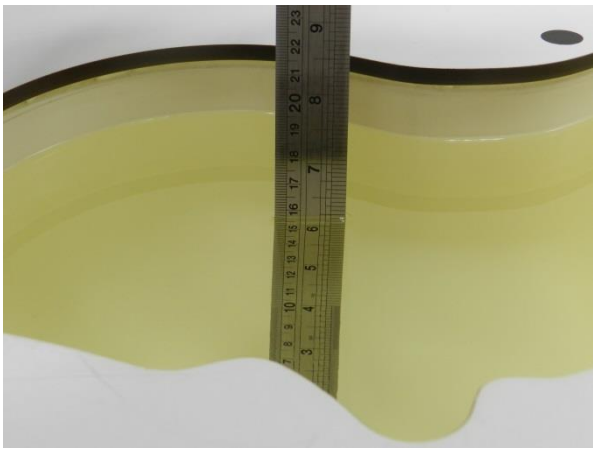


Fig 10.1Photo of Liquid Height for Head SAR

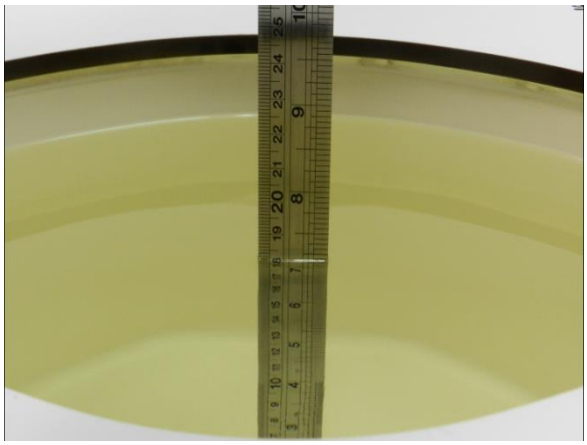


Fig 10.2 Photo of Liquid Height for Body SAR

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	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)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Head	22.6	0.880	40.752	0.89	41.90	-1.12	-2.74	±5	2022/8/11
750	Head	22.6	0.883	40.810	0.89	41.90	-0.79	-2.60	±5	2022/8/18
750	Head	22.4	0.896	40.991	0.89	41.90	0.67	-2.17	±5	2022/8/22
835	Head	22.3	0.928	42.730	0.90	41.50	3.11	2.96	±5	2022/8/12
835	Head	22.5	0.910	43.023	0.90	41.50	1.11	3.67	±5	2022/8/13
835	Head	22.7	0.938	42.518	0.90	41.50	4.22	2.45	±5	2022/8/23
1750	Head	22.5	1.375	41.541	1.37	40.10	0.36	3.59	±5	2022/8/13
1750	Head	22.4	1.392	40.573	1.37	40.10	1.61	1.18	±5	2022/8/15
1750	Head	22.6	1.373	41.392	1.37	40.10	0.22	3.22	±5	2022/8/24
1900	Head	22.5	1.352	40.677	1.40	40.00	-3.43	1.69	±5	2022/8/11
1900	Head	22.6	1.455	39.186	1.40	40.00	3.93	-2.04	±5	2022/8/17
1900	Head	22.3	1.427	40.881	1.40	40.00	1.93	2.20	±5	2022/8/25
2450	Head	22.4	1.821	37.950	1.80	39.20	1.17	-3.19	±5	2022/8/16
2450	Head	22.6	1.779	38.295	1.80	39.20	-1.17	-2.31	±5	2022/8/22
2450	Head	22.5	1.809	38.451	1.80	39.20	0.50	-1.91	±5	2022/8/29
2600	Head	22.8	1.953	38.335	1.96	39.00	-0.36	-1.71	±5	2022/8/17
2600	Head	22.3	1.938	37.938	1.96	39.00	-1.12	-2.72	±5	2022/8/19
2600	Head	22.5	1.995	40.438	1.96	39.00	1.79	3.69	±5	2022/8/30
5250	Head	22.7	4.748	36.881	4.71	35.95	0.81	2.59	±5	2022/8/12
5250	Head	22.6	4.803	37.045	4.71	35.95	1.97	3.05	±5	2022/9/2
5600	Head	22.3	5.189	36.130	5.07	35.50	2.35	1.77	±5	2022/8/18
5600	Head	22.6	5.238	36.275	5.07	35.50	3.31	2.18	±5	2022/9/3
5750	Head	22.4	5.364	35.845	5.22	35.35	2.76	1.40	±5	2022/8/18
5750	Head	22.6	5.413	35.968	5.22	35.35	3.70	1.75	±5	2022/9/4
13	Head	22.7	0.726	54.558	0.75	55.00	-3.20	-0.80	±5	2022/8/18

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>

Date	Frequency (MHz)	Tissue Type	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 (%)
2022/8/11	750	Head	250	1099	3935	1386	2.200	8.540	8.80	3.04
2022/8/18	750	Head	250	1099	3935	1386	2.110	8.540	8.44	-1.17
2022/8/22	750	Head	250	1099	3935	1386	2.140	8.540	8.56	0.23
2022/8/12	835	Head	250	4d162	3935	1386	2.600	9.640	10.40	7.88
2022/8/13	835	Head	250	4d162	3935	1386	2.540	9.640	10.16	5.39
2022/8/23	835	Head	250	4d162	3935	1386	2.470	9.640	9.88	2.49
2022/8/13	1750	Head	250	1137	3935	1386	9.270	36.500	37.08	1.59
2022/8/15	1750	Head	250	1137	3935	1386	9.460	36.500	37.84	3.67
2022/8/24	1750	Head	250	1137	3935	1386	9.260	36.500	37.04	1.48
2022/8/11	1900	Head	250	5d182	3935	1386	10.500	39.600	42.00	6.06
2022/8/17	1900	Head	250	5d182	3935	1386	10.100	39.600	40.40	2.02
2022/8/25	1900	Head	250	5d182	3935	1386	10.500	39.600	42.00	6.06
2022/8/16	2450	Head	250	924	3935	1386	13.100	51.400	52.40	1.95
2022/8/22	2450	Head	250	924	3935	1386	13.400	51.400	53.60	4.28
2022/8/29	2450	Head	250	924	3935	1386	13.000	51.400	52.00	1.17
2022/8/17	2600	Head	250	1070	3935	1386	14.400	56.200	57.60	2.49
2022/8/19	2600	Head	250	1070	3935	1386	13.900	56.200	55.60	-1.07
2022/8/30	2600	Head	250	1070	3935	1386	15.000	56.200	60.00	6.76
2022/8/12	5250	Head	100	1341	3935	1386	8.590	80.700	85.90	6.44
2022/9/2	5250	Head	100	1341	3935	1386	8.440	80.700	84.40	4.58
2022/8/18	5600	Head	100	1341	3935	1386	8.560	84.500	85.60	1.30
2022/9/3	5600	Head	100	1341	3935	1386	8.130	84.500	81.30	-3.79
2022/8/18	5750	Head	100	1341	3935	1386	8.340	80.600	83.40	3.47
2022/9/4	5750	Head	100	1341	3935	1386	8.560	80.600	85.60	6.20
2022/8/18	13	Head	250	1020	7641	1338	0.134	0.568	0.536	-5.96

<10g>

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 (%)
2022/8/11	750	Head	250	1099	3935	1386	1.450	5.650	5.80	2.65
2022/8/18	750	Head	250	1099	3935	1386	1.430	5.650	5.72	1.24
2022/8/22	750	Head	250	1099	3935	1386	1.410	5.650	5.64	-0.18
2022/8/12	835	Head	250	4d162	3935	1386	1.690	6.260	6.76	7.99
2022/8/13	835	Head	250	4d162	3935	1386	1.650	6.260	6.60	5.43
2022/8/23	835	Head	250	4d162	3935	1386	1.590	6.260	6.36	1.60
2022/8/13	1750	Head	250	1137	3935	1386	5.010	19.200	20.04	4.38
2022/8/15	1750	Head	250	1137	3935	1386	5.130	19.200	20.52	6.88
2022/8/24	1750	Head	250	1137	3935	1386	4.990	19.200	19.96	3.96
2022/8/11	1900	Head	250	5d182	3935	1386	5.430	20.200	21.72	7.52
2022/8/17	1900	Head	250	5d182	3935	1386	5.210	20.200	20.84	3.17
2022/8/25	1900	Head	250	5d182	3935	1386	5.320	20.200	21.28	5.35
2022/8/16	2450	Head	250	924	3935	1386	6.180	24.000	24.72	3.00
2022/8/22	2450	Head	250	924	3935	1386	6.030	24.000	24.12	0.50
2022/8/29	2450	Head	250	924	3935	1386	6.270	24.000	25.08	4.50
2022/8/17	2600	Head	250	1070	3935	1386	6.180	24.600	24.72	0.49
2022/8/19	2600	Head	250	1070	3935	1386	6.370	24.600	25.48	3.58
2022/8/30	2600	Head	250	1070	3935	1386	6.490	24.600	25.96	5.53
2022/8/12	5250	Head	100	1341	3935	1386	2.430	23.100	24.30	5.19
2022/9/2	5250	Head	100	1341	3935	1386	2.380	23.100	23.80	3.03
2022/8/18	5600	Head	100	1341	3935	1386	2.410	24.000	24.10	0.42
2022/9/3	5600	Head	100	1341	3935	1386	2.310	24.000	23.10	-3.75
2022/8/18	5750	Head	100	1341	3935	1386	2.260	22.700	22.60	-0.44
2022/9/4	5750	Head	100	1341	3935	1386	2.390	22.700	23.90	5.29
2022/8/18	13	Head	250	1020	7641	1338	0.083	0.353	0.332	-5.14

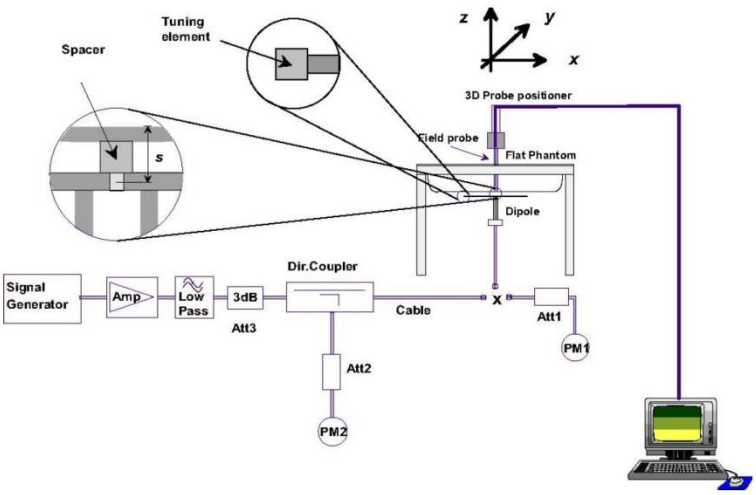


Fig 10.3.1 System Performance Check Setup

Fig 10.3.2 Setup Photo

12. RF Exposure Positions

12.1 Ear and handset reference point

Figure 11.1.1 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 11.1.2 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 11.1.3). 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 11.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

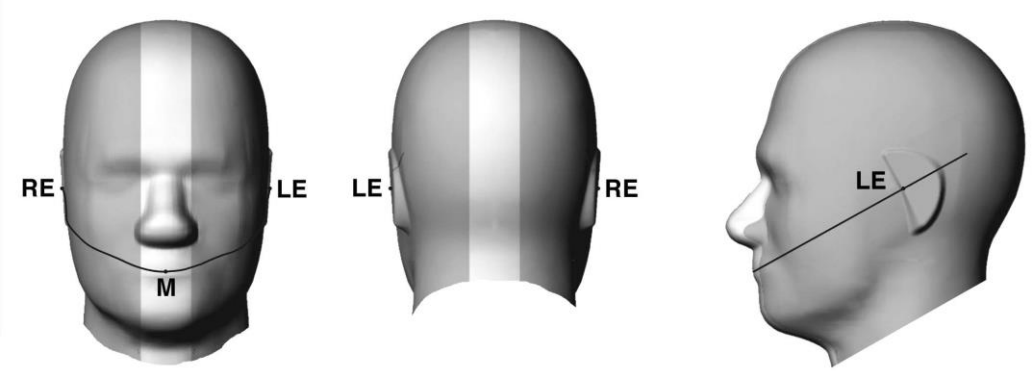


Fig 11.1.1 Front, back, and side views of SAM twin phantom

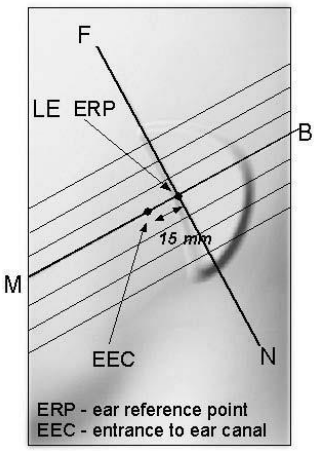


Fig 11.1.2 Close-up side view of phantom showing the ear region.

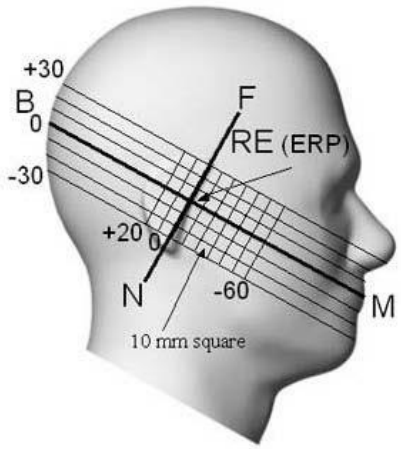


Fig 11.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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 11.2.1 and Figure 11.2.2), 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 11.2.1). 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 11.2.2), 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 11.2.3), 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 11.2.3. The actual rotation angles should be documented in the test report.

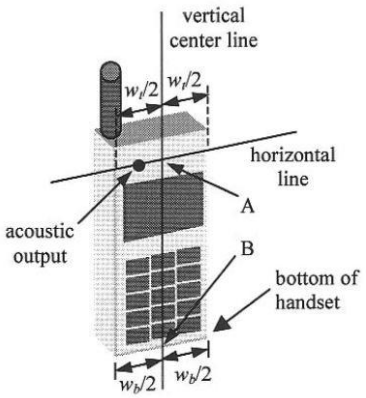


Fig 11.2.1 Handset vertical and horizontal reference lines—"fixed case

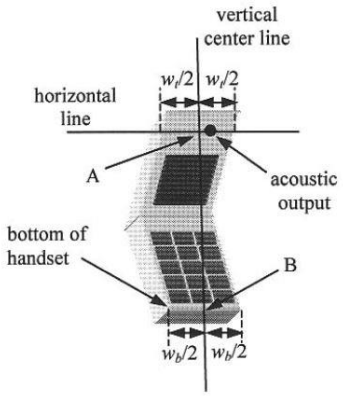


Fig 11.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

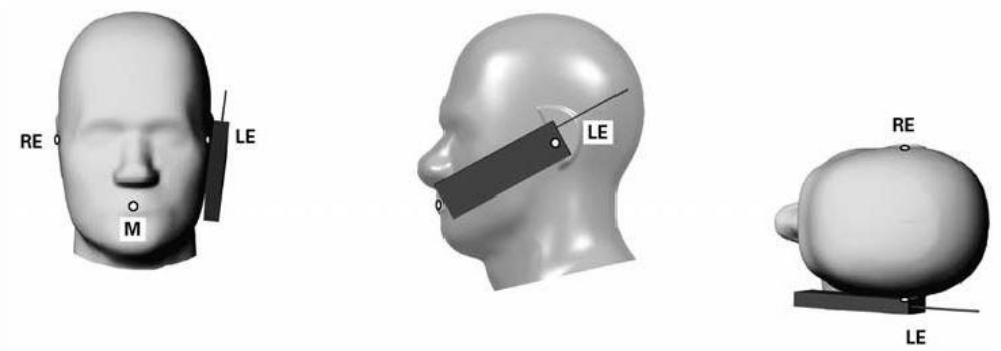


Fig 11.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

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 11.3.1. 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

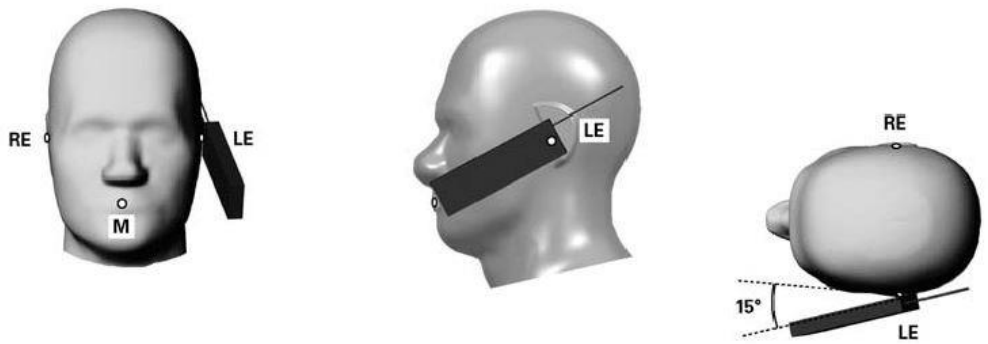


Fig 11.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

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 11.4). 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 D01 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 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.

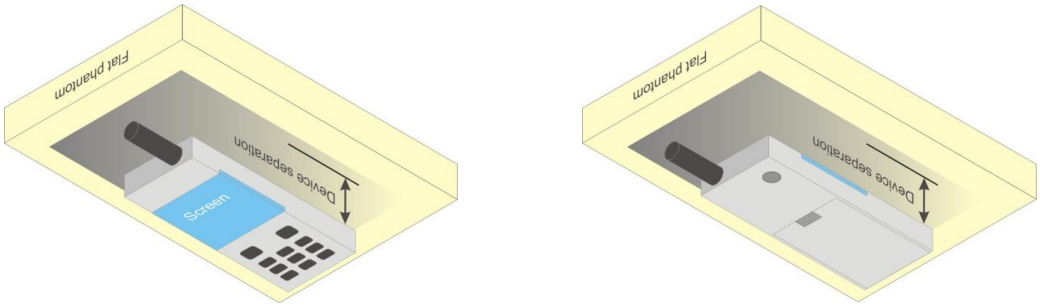


Fig 11.4 Body Worn Position

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 provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that 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 D01 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>

General Note:

1. Per KDB 447498 D01, 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 HSPA+ devices supporting 16 QAM in the uplink, power measurements procedure is according to the configurations in Table C.11.1.4 of 3GPP TS 34.121-1.
4. 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 Agilent E5515C 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	Processes	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.		

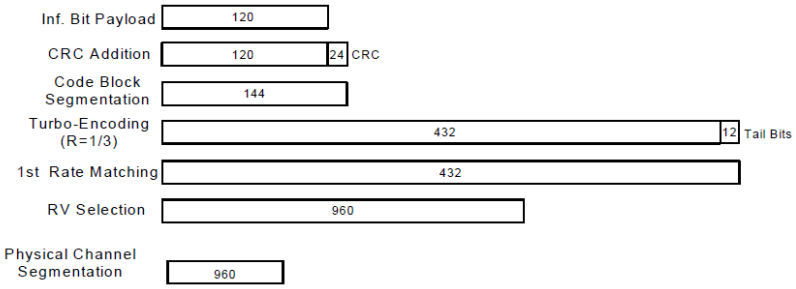


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

HSPA+ 3GPP release 7 (uplink category 7) 16QAM, 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 = 5.2E:HSPA+:UL with 16QAM
   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, C11.1.4, quoted from the TS 34.121-1 s5.2E
   iii. Set Channel Parms
   iv. Set Cell Power = -86 dBm
   v. Set Channel Type = HSPA
   vi. Set UE Target Power =21 dBm
   vii. Power Ctrl Mode= All Up Bits
   viii. Set Manual Uplink DPCH Bc/Bd = Manual
   ix. Set Manual Uplink DPCH Bc and Bd=15,15(for 34.121-1 v8.10.0 table C11.1.4 sub-test 1)
   x. Set HSPA Conn DL Channel Levels
   xi. Set HS-SCCH Configs
   xii. Set RB Test Mode Setup
   xiii. Set Common HSUPA Parameters
   xiv. Set Serving Grant
   xv. Confirm that E-TFCI is equal to the target E-TFCI of 105 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	$\beta_{ed}1$: 30/15 $\beta_{ed}2$: 30/15	$\beta_{ed}3$: 24/15 $\beta_{ed}4$: 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.
Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).
Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.
Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signaled to use the extrapolation algorithm.

Setup Configuration

<WCDMA Conducted Power>

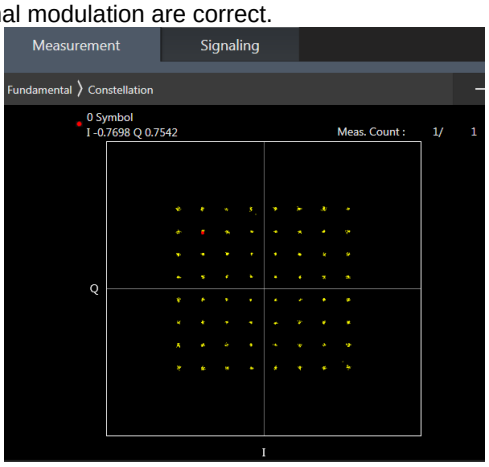
General Note:

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 / HSPA+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 / HSPA+ to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA / HSPA+) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+.

<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 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 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 / 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 B17 / B38 SAR test was covered by B12 / 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 64 QAM and 16 QAM 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.



64QAM

16QAM

<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.

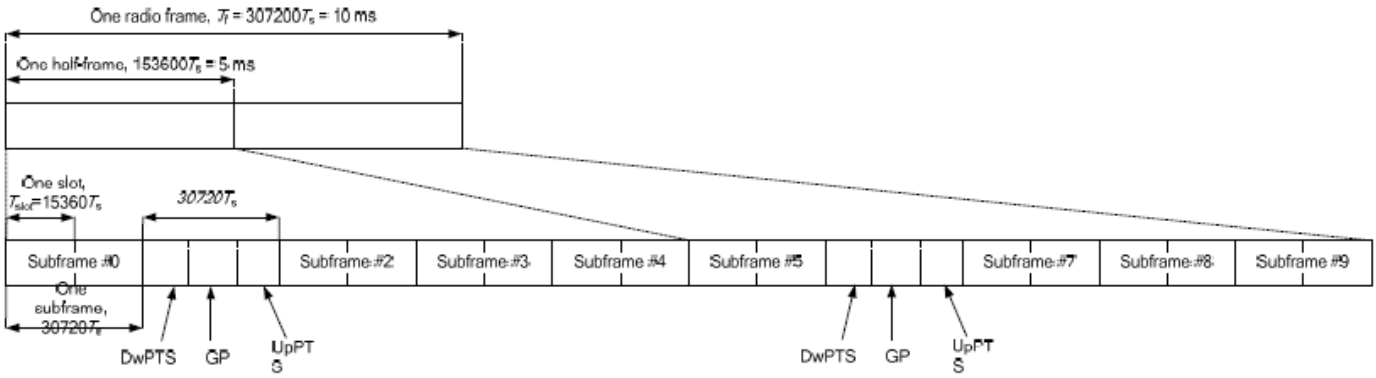


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

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. All permutations exist. No restrictions on Pcell & Scell combinations.

2CC Downlink Carrier Aggregation				3CC Downlink Carrier Aggregation			
Number	Combination	4X4 MIMO	Covered by Measurement Superset	Number	Combination	4X4 MIMO	Covered by Measurement Superset
1	CA_7C		2CC-2	1	CA_2A-7A-7A	2A	
2	CA_38C			2	CA_2A-7C	2A	
3	CA_41C			3	CA_4A-7C	4A	
4	CA_4A-4A	4A		4	CA_5A-7C		
5	CA_7A-7A		2CC-1	5	CA_41D		
6	CA_41A-41A			6			
7	CA_2A-5A	2A		7			
8	CA_2A-7A	2A	2CC-1	8			
9	CA_4A-5A	4A		9			
10	CA_4A-7A	4A		10			
11	CA_5A-7A			11			

LTE 4x4 MIMO (Downlink)

This device supports downlink 4x4 MIMO operations for LTE Bands 2/4 only. Uplink transmission is limited to a single output stream. Power measurements were performed with downlink 4x4 MIMO active for the configuration with highest measured maximum conducted power with 4x4 downlink MIMO inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

Per FCC Guidance, SAR for downlink 4x4 MIMO was not needed since the maximum average output power in 4x4 downlink MIMO mode was not > 0.25 dB higher than the maximum output power with downlink 4x4 MIMO inactive. When carrier aggregation is applicable, power measurements were performed with the downlink carrier aggregation and 4x4 DL MIMO active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

4X4 MIMO	Band
	LTE Band 2/4

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 four 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)

2CC Uplink Carrier Aggregation			
Number	Combination	Antenna	
1	7C	Ant13	Ant31
2	38C	Ant13	Ant31
3	41C	Ant13	Ant31

<Intra-band>

General Note:

i. The device supports intra-band uplink carrier aggregation for LTE B7/B38/B41 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 with 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

5G NR Output Power (Unit: dBm)

General Note:

1. 5G NR n5 / n7 is NSA mode.
2. 5G NR n7 / n41 is SA mode.
3. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
   a. For DFT-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, the CP-OFDM mode will not higher than DFT-OFDM mode, therefore, similar FCC KDB 941225 D05 procedure for other modulation output power for each RB allocation configuration is > not ½ dB higher than the same configuration in DFT-s PI/2 BPSK and the reported SAR for the DFT-s PI/2 BPSK configuration is ≤ 1.45 W/kg; CP-OFDM testing is not required.
   b. For DFT-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, for 16QAM/64QAM/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the 16QAM/64QAM/256QAM and smaller bandwidth output power will not ½ dB higher than the same configuration in the largest supported bandwidth.
   c. SAR testing start with the largest channel bandwidth and measure SAR for PI/2 BPSK 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
   d. 50% RB allocation for PI/2 BPSK SAR testing follows 1RB PI/2 BPSK allocation procedure
   e. PI/2 BPSK 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
   f. QPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
   g. Smaller bandwidth output power for each RB allocation configuration for this device will 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, smaller bandwidth SAR testing is not required for this device
4. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
5. For DFT-s-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for the CP-OFDM mode will not higher than DFT-s-OFDM mode, therefore, CP-OFDM measurement is unnecessary.
6. For 5GNR EN-DC modes, standalone SAR performed for 5GNR band with the maximum power, EN-DC SAR summed 5GNR standalone SAR and LTE standalone SAR, the result of EN-DC SAR is more conservatively.

<3GPP 38.101 MPR for EN-DC>

Table 6.2.2-1 Maximum power reduction (MPR) for power class 3

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	≤ 3.5[1]	≤ 1.2[1]	≤ 0.2[1]
		≤ 0.5[2]	≤ 0.5[2]	0[2]
	QPSK	≤ 1		0
	16 QAM	≤ 2		≤ 1
	64 QAM	≤ 2.5		
	256 QAM	≤ 4.5		
CP-OFDM	QPSK	≤ 3		≤ 1.5
	16 QAM	≤ 3		≤ 2
	64 QAM	≤ 3.5		
	256 QAM	≤ 6.5		

NOTE 1: Applicable for UE operating in TDD mode with Pi/2 BPSK modulation and UE indicates support for UE capability *powerBoosting-pi2BPSK* and if the IE *powerBoostPi2BPSK* is set to 1 and 40 % or less slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79. The reference power of 0 dB MPR is 26 dBm.

NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n40, n41, n77, n78 and n79 with Pi/2 BPSK modulation and if the IE *powerBoostPi2BPSK* is set to 0 and if more than 40 % of slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79.

Table 6.2.2-2 Maximum power reduction (MPR) for power class 2

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	≤ 3.5	≤ 0.5	0
	QPSK	≤ 3.5	≤ 1	0
	16 QAM	≤ 3.5	≤ 2	≤ 1
	64 QAM	≤ 3.5	≤ 2.5	
	256 QAM	≤ 4.5		
CP-OFDM	QPSK	≤ 3.5	≤ 3	≤ 1.5
	16 QAM	≤ 3.5	≤ 3	≤ 2
	64 QAM	≤ 3.5		
	256 QAM	≤ 6.5		

<EN-DC combination and combine Total Power>

EN-DC	LTE TX	NR TX
DC_7A_n5A	Ant 13/31	Ant 41
DC_2A_n7A	Ant 31	Ant 11/13

<WLAN Conducted Power>

General Note:

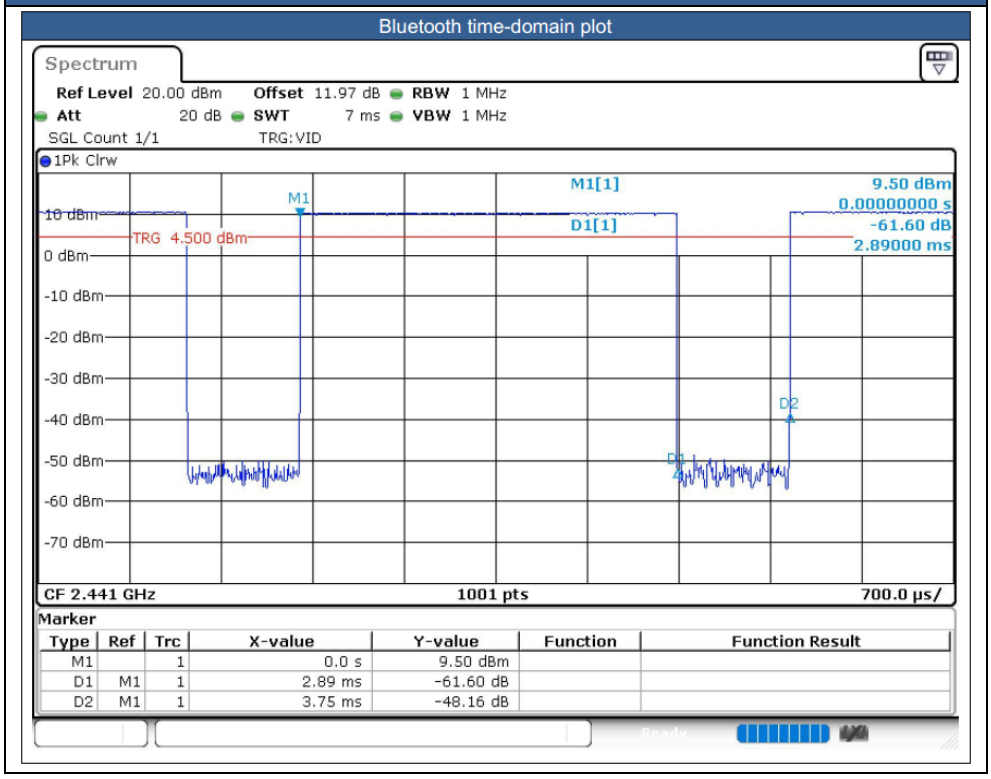
1. The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures. For “Not required”, SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) 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 in the initial test configuration, additional output power measurements were not necessary.
2. 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.
3. 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).
4. 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.
5. 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.
6. For modes with the same maximum output power, the guidance from section 5.3.2 a) of FCC KDB Publication 248227 D01 should be applied, with 802.11ax being considered as the highest 802.11 mode for the appropriate frequency bands
7. When SAR testing for 802.11ax is required
   a. If the maximum output power is highest for OFDMA scenarios, choose the tone size with the maximum number of tones and the highest maximum output power
   b. Otherwise, consider the fully allocated channel for SAR testing
   c. When SAR testing is required on RU sizes less than the fully allocated channel, use the RU number closest to the middle of the channel, choosing the higher RU number when two RUs are equidistant to the middle of the channel

<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 is 77.07%(Ant 22) see as following figure, according to Oct. 2016 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 Ant 22 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 D01, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN/Bluetooth signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN/Bluetooth: 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 (W/kg) = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01, 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 only when the measured SAR is ≥0.8W/kg.
4. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
5. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15cm or an overall diagonal dimension > 16cm, when hotspot mode applies, 10-g product specific SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, in this report all the hotspot mode results are < 1.2W/kg.
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 (for handheld on state, the maximum full power means reduced power), including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
   a. For this device SAR for WWAN transmitter scaled to maximum output power mode for product specific 10g SAR is higher than 1.2W/kg of WCDMA Band II, LTE Band 2/7/38/41, and 5GNR n2/7/41, therefore product specific 10g SAR is necessary.
   b. WLAN 5.3/5.5GHz tested the product specific 10g SAR since it has no hotspot mode.
   c. 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.
7. For distance SAR and non-distance SAR, always chose higher SAR to do co-located analysis.
8. NFC mainly operate in hand-held extremity exposure conditions, therefore Standalone 10-g extremity SAR testing for NFC was performed with active mode and max power mode by Test software with 100% duty cycle at 0mm separation distance.
9. SAR test tissue-simulating liquid parameter: refer to IEC/IEEE 62209-1528 2020.

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 / HSPA+ 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 / HSPA+ to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA / HSPA+) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+.

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 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.
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 / 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 B17 / B38 SAR test was covered by B12 / 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

5G NR Note:

For 5G NR test procedure was following step similar FCC KDB 941225 D05:

a. SAR testing start with the largest channel bandwidth and measure SAR for PI/2 BPSK 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.
b. 50% RB allocation for PI/2 BPSK SAR testing follows 1RB PI/2 BPSK allocation procedure.
c. PI/2 BPSK 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.
d. QPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM /64QAM/256QAM SAR testing are not required.
e. Smaller bandwidth output power for each RB allocation configuration for this device will 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, smaller bandwidth SAR testing is not required for this device
f. For 5G FR1 n5/n41 the maximum bandwidth does not support three non-overlapping channels, 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.

WLAN/Bluetooth 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	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750MHz																		
01	LTE Band 12	10M	QPSK	1	25	-	Right Cheek	0mm	Ant 13	DSI 2	23095	707.5	22.95	24.00	1.274	0.08	0.598	**0.762**
	LTE Band 12	10M	QPSK	1	25	-	Right Tilted	0mm	Ant 13	DSI 2	23095	707.5	22.95	24.00	1.274	-0.02	0.531	0.676
	LTE Band 12	10M	QPSK	1	25	-	Left Cheek	0mm	Ant 13	DSI 2	23095	707.5	22.95	24.00	1.274	-0.06	0.417	0.531
	LTE Band 12	10M	QPSK	1	25	-	Left Tilted	0mm	Ant 13	DSI 2	23095	707.5	22.95	24.00	1.274	0.03	0.411	0.523
	LTE Band 12	10M	QPSK	25	12	-	Right Cheek	0mm	Ant 13	DSI 2	23095	707.5	22.54	23.50	1.247	-0.07	0.472	0.589
	LTE Band 12	10M	QPSK	25	12	-	Right Tilted	0mm	Ant 13	DSI 2	23095	707.5	22.54	23.50	1.247	0.06	0.436	0.544
	LTE Band 12	10M	QPSK	25	12	-	Left Cheek	0mm	Ant 13	DSI 2	23095	707.5	22.54	23.50	1.247	0.18	0.331	0.413
	LTE Band 12	10M	QPSK	25	12	-	Left Tilted	0mm	Ant 13	DSI 2	23095	707.5	22.54	23.50	1.247	0.14	0.312	0.389
	LTE Band 12	10M	QPSK	1	25	-	Right Cheek	0mm	Ant 13	DSI 3	23095	707.5	21.46	22.50	1.271	0.02	0.369	0.469
	LTE Band 12	10M	QPSK	1	25	-	Right Tilted	0mm	Ant 13	DSI 3	23095	707.5	21.46	22.50	1.271	0.18	0.350	0.445
	LTE Band 12	10M	QPSK	1	25	-	Left Cheek	0mm	Ant 13	DSI 3	23095	707.5	21.46	22.50	1.271	-0.18	0.279	0.354
	LTE Band 12	10M	QPSK	1	25	-	Left Tilted	0mm	Ant 13	DSI 3	23095	707.5	21.46	22.50	1.271	0.07	0.262	0.333
	LTE Band 12	10M	QPSK	25	12	-	Right Cheek	0mm	Ant 13	DSI 3	23095	707.5	21.45	22.50	1.274	-0.13	0.353	0.450
	LTE Band 12	10M	QPSK	25	12	-	Right Tilted	0mm	Ant 13	DSI 3	23095	707.5	21.45	22.50	1.274	-0.13	0.348	0.443
	LTE Band 12	10M	QPSK	25	12	-	Left Cheek	0mm	Ant 13	DSI 3	23095	707.5	21.45	22.50	1.274	-0.06	0.264	0.336
	LTE Band 12	10M	QPSK	25	12	-	Left Tilted	0mm	Ant 13	DSI 3	23095	707.5	21.45	22.50	1.274	-0.01	0.258	0.329
	LTE Band 12	10M	QPSK	1	25	-	Right Cheek	0mm	Ant 41	DSI 2/3	23095	707.5	23.54	24.50	1.247	0.06	0.099	0.123
	LTE Band 12	10M	QPSK	1	25	-	Right Tilted	0mm	Ant 41	DSI 2/3	23095	707.5	23.54	24.50	1.247	-0.07	0.045	0.056
	LTE Band 12	10M	QPSK	1	25	-	Left Cheek	0mm	Ant 41	DSI 2/3	23095	707.5	23.54	24.50	1.247	0.15	0.148	0.185
	LTE Band 12	10M	QPSK	1	25	-	Left Tilted	0mm	Ant 41	DSI 2/3	23095	707.5	23.54	24.50	1.247	0.08	0.072	0.090
	LTE Band 12	10M	QPSK	25	12	-	Right Cheek	0mm	Ant 41	DSI 2/3	23095	707.5	22.48	23.50	1.265	-0.15	0.078	0.099
	LTE Band 12	10M	QPSK	25	12	-	Right Tilted	0mm	Ant 41	DSI 2/3	23095	707.5	22.48	23.50	1.265	0.13	0.033	0.042
	LTE Band 12	10M	QPSK	25	12	-	Left Cheek	0mm	Ant 41	DSI 2/3	23095	707.5	22.48	23.50	1.265	-0.07	0.118	0.149
	LTE Band 12	10M	QPSK	25	12	-	Left Tilted	0mm	Ant 41	DSI 2/3	23095	707.5	22.48	23.50	1.265	-0.06	0.057	0.072
835MHz																		
02	GSM850	-	-	-	-	GPRS(1 Tx slots)	Right Cheek	0mm	Ant 13	DSI 2	189	836.4	29.59	30.50	1.233	-0.12	0.599	**0.739**
	GSM850	-	-	-	-	GPRS(1 Tx slots)	Right Tilted	0mm	Ant 13	DSI 2	189	836.4	29.59	30.50	1.233	-0.02	0.526	0.649
	GSM850	-	-	-	-	GPRS(1 Tx slots)	Left Cheek	0mm	Ant 13	DSI 2	189	836.4	29.59	30.50	1.233	0.02	0.432	0.533
	GSM850	-	-	-	-	GPRS(1 Tx slots)	Left Tilted	0mm	Ant 13	DSI 2	189	836.4	29.59	30.50	1.233	-0.1	0.420	0.518
	GSM850	-	-	-	-	GPRS(1 Tx slots)	Right Cheek	0mm	Ant 13	DSI 3	189	836.4	28.14	29.00	1.219	-0.13	0.456	0.556
	GSM850	-	-	-	-	GPRS(1 Tx slots)	Right Tilted	0mm	Ant 13	DSI 3	189	836.4	28.14	29.00	1.219	0.16	0.369	0.450
	GSM850	-	-	-	-	GPRS(1 Tx slots)	Left Cheek	0mm	Ant 13	DSI 3	189	836.4	28.14	29.00	1.219	0.13	0.311	0.379
	GSM850	-	-	-	-	GPRS(1 Tx slots)	Left Tilted	0mm	Ant 13	DSI 3	189	836.4	28.14	29.00	1.219	-0.13	0.295	0.360
	GSM850	-	-	-	-	GPRS(2 Tx slots)	Right Cheek	0mm	Ant 41	DSI 2/3	189	836.4	30.64	31.50	1.219	0.19	0.234	0.285
	GSM850	-	-	-	-	GPRS(2 Tx slots)	Right Tilted	0mm	Ant 41	DSI 2/3	189	836.4	30.64	31.50	1.219	-0.07	0.097	0.118
	GSM850	-	-	-	-	GPRS(2 Tx slots)	Left Cheek	0mm	Ant 41	DSI 2/3	189	836.4	30.64	31.50	1.219	-0.04	0.271	0.330
	GSM850	-	-	-	-	GPRS(2 Tx slots)	Left Tilted	0mm	Ant 41	DSI 2/3	189	836.4	30.64	31.50	1.219	0.02	0.141	0.172
03	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 13	DSI 2	4182	836.4	20.31	21.50	1.315	-0.13	0.537	**0.706**
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 13	DSI 2	4182	836.4	20.31	21.50	1.315	0.02	0.510	0.671
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 13	DSI 2	4182	836.4	20.31	21.50	1.315	0.01	0.427	0.562
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 13	DSI 2	4182	836.4	20.31	21.50	1.315	0.03	0.410	0.539
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 13	DSI 3	4182	836.4	18.93	20.00	1.279	0.08	0.383	0.490
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 13	DSI 3	4182	836.4	18.93	20.00	1.279	-0.1	0.360	0.461
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 13	DSI 3	4182	836.4	18.93	20.00	1.279	-0.19	0.302	0.386
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 13	DSI 3	4182	836.4	18.93	20.00	1.279	0.03	0.275	0.352
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 41	DSI 2/3	4182	836.4	23.09	24.00	1.233	-0.18	0.156	0.192
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 41	DSI 2/3	4182	836.4	23.09	24.00	1.233	-0.08	0.070	0.086
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 41	DSI 2/3	4182	836.4	23.09	24.00	1.233	0.15	0.188	0.232
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 41	DSI 2/3	4182	836.4	23.09	24.00	1.233	-0.11	0.098	0.121
04	LTE Band 5	10M	QPSK	1	25	-	Right Cheek	0mm	Ant 13	DSI 2	20525	836.5	20.85	22.00	1.303	-0.04	0.633	**0.825**
	LTE Band 5	10M	QPSK	1	25	-	Right Tilted	0mm	Ant 13	DSI 2	20525	836.5	20.85	22.00	1.303	-0.01	0.560	0.730

	LTE Band 5	10M	QPSK	1	25	-	Left Cheek	0mm	Ant 13	DSI 2	20525	836.5	20.85	22.00	1.303	-0.12	0.456	0.594
	LTE Band 5	10M	QPSK	1	25	-	Left Tilted	0mm	Ant 13	DSI 2	20525	836.5	20.85	22.00	1.303	-0.02	0.423	0.551
	LTE Band 5	10M	QPSK	25	12	-	Right Cheek	0mm	Ant 13	DSI 2	20525	836.5	20.83	22.00	1.309	0.1	0.618	0.809
	LTE Band 5	10M	QPSK	25	12	-	Right Tilted	0mm	Ant 13	DSI 2	20525	836.5	20.83	22.00	1.309	0.16	0.546	0.715
	LTE Band 5	10M	QPSK	25	12	-	Left Cheek	0mm	Ant 13	DSI 2	20525	836.5	20.83	22.00	1.309	-0.09	0.445	0.583
	LTE Band 5	10M	QPSK	25	12	-	Left Tilted	0mm	Ant 13	DSI 2	20525	836.5	20.83	22.00	1.309	-0.01	0.416	0.545
	LTE Band 5	10M	QPSK	50	0	-	Right Cheek	0mm	Ant 13	DSI 2	20525	836.5	20.80	22.00	1.318	-0.08	0.620	0.817
	LTE Band 5	10M	QPSK	1	25	-	Right Cheek	0mm	Ant 13	DSI 3	20525	836.5	19.29	20.50	1.321	-0.03	0.425	0.562
	LTE Band 5	10M	QPSK	1	25	-	Right Tilted	0mm	Ant 13	DSI 3	20525	836.5	19.29	20.50	1.321	-0.09	0.376	0.497
	LTE Band 5	10M	QPSK	1	25	-	Left Cheek	0mm	Ant 13	DSI 3	20525	836.5	19.29	20.50	1.321	0.03	0.316	0.418
	LTE Band 5	10M	QPSK	1	25	-	Left Tilted	0mm	Ant 13	DSI 3	20525	836.5	19.29	20.50	1.321	0.08	0.288	0.381
	LTE Band 5	10M	QPSK	25	12	-	Right Cheek	0mm	Ant 13	DSI 3	20525	836.5	19.27	20.50	1.327	-0.13	0.418	0.555
	LTE Band 5	10M	QPSK	25	12	-	Right Tilted	0mm	Ant 13	DSI 3	20525	836.5	19.27	20.50	1.327	0.04	0.366	0.486
	LTE Band 5	10M	QPSK	25	12	-	Left Cheek	0mm	Ant 13	DSI 3	20525	836.5	19.27	20.50	1.327	-0.12	0.317	0.421
	LTE Band 5	10M	QPSK	25	12	-	Left Tilted	0mm	Ant 13	DSI 3	20525	836.5	19.27	20.50	1.327	0.16	0.293	0.389
	LTE Band 5	10M	QPSK	1	25	-	Right Cheek	0mm	Ant 41	DSI 2/3	20525	836.5	23.33	24.50	1.309	0.13	0.161	0.211
	LTE Band 5	10M	QPSK	1	25	-	Right Tilted	0mm	Ant 41	DSI 2/3	20525	836.5	23.33	24.50	1.309	0.1	0.078	0.102
	LTE Band 5	10M	QPSK	1	25	-	Left Cheek	0mm	Ant 41	DSI 2/3	20525	836.5	23.33	24.50	1.309	0.12	0.189	0.247
	LTE Band 5	10M	QPSK	1	25	-	Left Tilted	0mm	Ant 41	DSI 2/3	20525	836.5	23.33	24.50	1.309	-0.1	0.103	0.135
	LTE Band 5	10M	QPSK	25	12	-	Right Cheek	0mm	Ant 41	DSI 2/3	20525	836.5	22.27	23.50	1.327	0.14	0.124	0.165
	LTE Band 5	10M	QPSK	25	12	-	Right Tilted	0mm	Ant 41	DSI 2/3	20525	836.5	22.27	23.50	1.327	-0.17	0.059	0.078
	LTE Band 5	10M	QPSK	25	12	-	Left Cheek	0mm	Ant 41	DSI 2/3	20525	836.5	22.27	23.50	1.327	0.11	0.152	0.202
	LTE Band 5	10M	QPSK	25	12	-	Left Tilted	0mm	Ant 41	DSI 2/3	20525	836.5	22.27	23.50	1.327	-0.17	0.079	0.105
1750MHz																		
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 13	DSI 2	1413	1732.6	16.66	17.80	1.300	-0.17	0.479	0.623
05	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 13	DSI 2	1413	1732.6	16.66	17.80	1.300	-0.04	0.579	**0.753**
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 13	DSI 2	1413	1732.6	16.66	17.80	1.300	-0.19	0.281	0.365
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 13	DSI 2	1413	1732.6	16.66	17.80	1.300	-0.16	0.334	0.434
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 13	DSI 3	1413	1732.6	14.67	15.80	1.297	-0.12	0.286	0.371
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 13	DSI 3	1413	1732.6	14.67	15.80	1.297	-0.03	0.349	0.453
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 13	DSI 3	1413	1732.6	14.67	15.80	1.297	0.15	0.177	0.230
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 13	DSI 3	1413	1732.6	14.67	15.80	1.297	-0.01	0.201	0.261
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 31	DSI 2/3	1413	1732.6	23.11	24.20	1.285	0.06	0.065	0.084
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 31	DSI 2/3	1413	1732.6	23.11	24.20	1.285	-0.08	0.026	0.033
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 31	DSI 2/3	1413	1732.6	23.11	24.20	1.285	-0.11	0.125	0.161
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 31	DSI 2/3	1413	1732.6	23.11	24.20	1.285	-0.03	0.033	0.042
	LTE Band 4	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 13	DSI 2	20175	1732.5	16.64	18.00	1.368	-0.11	0.433	0.592
	LTE Band 4	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 13	DSI 2	20175	1732.5	16.64	18.00	1.368	-0.06	0.512	0.700
	LTE Band 4	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 13	DSI 2	20175	1732.5	16.64	18.00	1.368	-0.08	0.274	0.375
	LTE Band 4	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 13	DSI 2	20175	1732.5	16.64	18.00	1.368	0.12	0.300	0.410
	LTE Band 4	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 13	DSI 2	20175	1732.5	16.62	18.00	1.374	0.05	0.441	0.606
06	LTE Band 4	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 13	DSI 2	20175	1732.5	16.62	18.00	1.374	-0.09	0.525	**0.721**
	LTE Band 4	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 13	DSI 2	20175	1732.5	16.62	18.00	1.374	0.01	0.270	0.371
	LTE Band 4	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 13	DSI 2	20175	1732.5	16.62	18.00	1.374	-0.06	0.303	0.416
	LTE Band 4	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 13	DSI 3	20175	1732.5	14.61	16.00	1.377	-0.16	0.283	0.390
	LTE Band 4	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 13	DSI 3	20175	1732.5	14.61	16.00	1.377	-0.08	0.316	0.435
	LTE Band 4	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 13	DSI 3	20175	1732.5	14.61	16.00	1.377	0.1	0.160	0.220
	LTE Band 4	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 13	DSI 3	20175	1732.5	14.61	16.00	1.377	-0.07	0.191	0.263
	LTE Band 4	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 13	DSI 3	20175	1732.5	14.57	16.00	1.390	-0.02	0.283	0.393
	LTE Band 4	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 13	DSI 3	20175	1732.5	14.57	16.00	1.390	0.05	0.324	0.450
	LTE Band 4	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 13	DSI 3	20175	1732.5	14.57	16.00	1.390	-0.07	0.166	0.231
	LTE Band 4	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 13	DSI 3	20175	1732.5	14.57	16.00	1.390	-0.09	0.190	0.264
	LTE Band 4	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 31	DSI 2/3	20175	1732.5	22.58	24.10	1.419	-0.09	0.062	0.088
	LTE Band 4	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 31	DSI 2/3	20175	1732.5	22.58	24.10	1.419	-0.06	0.028	0.040
	LTE Band 4	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 31	DSI 2/3	20175	1732.5	22.58	24.10	1.419	0.03	0.107	0.152
	LTE Band 4	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 31	DSI 2/3	20175	1732.5	22.58	24.10	1.419	-0.14	0.035	0.050

	LTE Band 4	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 31	DSI 2/3	20175	1732.5	21.58	23.10	1.419	-0.09	0.049	0.070
	LTE Band 4	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 31	DSI 2/3	20175	1732.5	21.58	23.10	1.419	-0.08	0.021	0.030
	LTE Band 4	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 31	DSI 2/3	20175	1732.5	21.58	23.10	1.419	-0.06	0.082	0.116
	LTE Band 4	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 31	DSI 2/3	20175	1732.5	21.58	23.10	1.419	-0.14	0.026	0.037
1900MHz																		
	GSM1900	-	-	-	-	GPRS(4 Tx slots)	Right Cheek	0mm	Ant 13	DSI 2	661	1880	19.44	20.00	1.138	0.01	0.456	0.519
07	GSM1900	-	-	-	-	GPRS(4 Tx slots)	Right Tilted	0mm	Ant 13	DSI 2	661	1880	19.44	20.00	1.138	-0.07	0.523	**0.595**
	GSM1900	-	-	-	-	GPRS(4 Tx slots)	Left Cheek	0mm	Ant 13	DSI 2	661	1880	19.44	20.00	1.138	0.01	0.263	0.299
	GSM1900	-	-	-	-	GPRS(4 Tx slots)	Left Tilted	0mm	Ant 13	DSI 2	661	1880	19.44	20.00	1.138	0.15	0.322	0.366
	GSM1900	-	-	-	-	GPRS(4 Tx slots)	Right Cheek	0mm	Ant 13	DSI 3	661	1880	17.74	18.50	1.191	0.19	0.309	0.368
	GSM1900	-	-	-	-	GPRS(4 Tx slots)	Right Tilted	0mm	Ant 13	DSI 3	661	1880	17.74	18.50	1.191	0.08	0.387	0.461
	GSM1900	-	-	-	-	GPRS(4 Tx slots)	Left Cheek	0mm	Ant 13	DSI 3	661	1880	17.74	18.50	1.191	-0.12	0.207	0.247
	GSM1900	-	-	-	-	GPRS(4 Tx slots)	Left Tilted	0mm	Ant 13	DSI 3	661	1880	17.74	18.50	1.191	0.13	0.243	0.289
	GSM1900	-	-	-	-	GPRS(2 Tx slots)	Right Cheek	0mm	Ant 31	DSI 2/3	661	1880	28.05	28.50	1.109	0.05	0.061	0.068
	GSM1900	-	-	-	-	GPRS(2 Tx slots)	Right Tilted	0mm	Ant 31	DSI 2/3	661	1880	28.05	28.50	1.109	0.13	0.072	0.080
	GSM1900	-	-	-	-	GPRS(2 Tx slots)	Left Cheek	0mm	Ant 31	DSI 2/3	661	1880	28.05	28.50	1.109	-0.1	0.094	0.104
	GSM1900	-	-	-	-	GPRS(2 Tx slots)	Left Tilted	0mm	Ant 31	DSI 2/3	661	1880	28.05	28.50	1.109	-0.08	0.049	0.054
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 13	DSI 2	9400	1880	15.01	16.30	1.346	-0.15	0.432	0.581
08	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 13	DSI 2	9400	1880	15.01	16.30	1.346	-0.05	0.557	**0.750**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 13	DSI 2	9400	1880	15.01	16.30	1.346	0.04	0.292	0.393
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 13	DSI 2	9400	1880	15.01	16.30	1.346	0.18	0.327	0.440
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 13	DSI 3	9400	1880	13.58	14.80	1.324	-0.18	0.316	0.418
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 13	DSI 3	9400	1880	13.58	14.80	1.324	0.09	0.391	0.518
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 13	DSI 3	9400	1880	13.58	14.80	1.324	-0.03	0.211	0.279
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 13	DSI 3	9400	1880	13.58	14.80	1.324	0.15	0.220	0.291
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 31	DSI 2/3	9400	1880	23.27	24.20	1.239	-0.02	0.071	0.088
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 31	DSI 2/3	9400	1880	23.27	24.20	1.239	0.01	0.087	0.108
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 31	DSI 2/3	9400	1880	23.27	24.20	1.239	0.14	0.114	0.141
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 31	DSI 2/3	9400	1880	23.27	24.20	1.239	-0.08	0.055	0.068
	LTE Band 2	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 13	DSI 2	18900	1880	15.71	16.50	1.199	-0.01	0.545	0.654
09	LTE Band 2	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 13	DSI 2	18900	1880	15.71	16.50	1.199	0.07	0.603	**0.723**
	LTE Band 2	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 13	DSI 2	18900	1880	15.71	16.50	1.199	0.02	0.296	0.355
	LTE Band 2	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 13	DSI 2	18900	1880	15.71	16.50	1.199	-0.03	0.352	0.422
	LTE Band 2	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 13	DSI 2	18900	1880	15.68	16.50	1.208	-0.11	0.532	0.643
	LTE Band 2	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 13	DSI 2	18900	1880	15.68	16.50	1.208	0.14	0.593	0.716
	LTE Band 2	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 13	DSI 2	18900	1880	15.68	16.50	1.208	0.15	0.285	0.344
	LTE Band 2	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 13	DSI 2	18900	1880	15.68	16.50	1.208	-0.04	0.343	0.414
	LTE Band 2	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 13	DSI 3	18900	1880	13.46	14.50	1.271	-0.08	0.311	0.395
	LTE Band 2	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 13	DSI 3	18900	1880	13.46	14.50	1.271	0.06	0.348	0.442
	LTE Band 2	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 13	DSI 3	18900	1880	13.46	14.50	1.271	0.09	0.183	0.233
	LTE Band 2	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 13	DSI 3	18900	1880	13.46	14.50	1.271	-0.05	0.216	0.274
	LTE Band 2	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 13	DSI 3	18900	1880	13.23	14.50	1.340	0.12	0.304	0.407
	LTE Band 2	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 13	DSI 3	18900	1880	13.23	14.50	1.340	-0.15	0.332	0.445
	LTE Band 2	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 13	DSI 3	18900	1880	13.23	14.50	1.340	0.14	0.182	0.244
	LTE Band 2	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 13	DSI 3	18900	1880	13.23	14.50	1.340	0.12	0.207	0.277
	LTE Band 2	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 31	DSI 2/3	18900	1880	23.03	24.00	1.250	-0.02	0.067	0.084
	LTE Band 2	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 31	DSI 2/3	18900	1880	23.03	24.00	1.250	0.1	0.084	0.105
	LTE Band 2	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 31	DSI 2/3	18900	1880	23.03	24.00	1.250	0.04	0.103	0.129
	LTE Band 2	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 31	DSI 2/3	18900	1880	23.03	24.00	1.250	-0.15	0.055	0.069
	LTE Band 2	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 31	DSI 2/3	18900	1880	22.02	23.00	1.253	0.19	0.052	0.065
	LTE Band 2	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 31	DSI 2/3	18900	1880	22.02	23.00	1.253	0.19	0.066	0.083
	LTE Band 2	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 31	DSI 2/3	18900	1880	22.02	23.00	1.253	0.05	0.085	0.107
	LTE Band 2	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 31	DSI 2/3	18900	1880	22.02	23.00	1.253	-0.16	0.043	0.054

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)
2600MHz																				
	LTE Band 7	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 13	DSI 2	21100	2535	12.87	14.00	1.297	-	-	-0.03	0.349	0.453
	LTE Band 7	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 13	DSI 2	21100	2535	12.87	14.00	1.297	-	-	-0.12	0.497	0.645
	LTE Band 7	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 13	DSI 2	21100	2535	12.87	14.00	1.297	-	-	0.01	0.142	0.184
	LTE Band 7	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 13	DSI 2	21100	2535	12.87	14.00	1.297	-	-	0.04	0.195	0.253
	LTE Band 7	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 13	DSI 2	21100	2535	12.78	14.00	1.324	-	-	0.04	0.356	0.471
10	LTE Band 7	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 13	DSI 2	21100	2535	12.78	14.00	1.324	-	-	-0.07	0.502	**0.665**
	LTE Band 7	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 13	DSI 2	21100	2535	12.78	14.00	1.324	-	-	0.01	0.153	0.203
	LTE Band 7	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 13	DSI 2	21100	2535	12.78	14.00	1.324	-	-	0.19	0.208	0.275
	LTE Band 7C	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 13	DSI 2	21100+ 21298	2535+ 2554.8	12.83	14.00	1.309	-	-	0.12	0.492	0.644
	LTE Band 7	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 13	DSI 3	21100	2535	10.89	12.00	1.291	-	-	-0.14	0.217	0.280
	LTE Band 7	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 13	DSI 3	21100	2535	10.89	12.00	1.291	-	-	-0.02	0.306	0.395
	LTE Band 7	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 13	DSI 3	21100	2535	10.89	12.00	1.291	-	-	-0.16	0.095	0.123
	LTE Band 7	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 13	DSI 3	21100	2535	10.89	12.00	1.291	-	-	-0.07	0.127	0.164
	LTE Band 7	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 13	DSI 3	21100	2535	10.85	12.00	1.303	-	-	-0.18	0.218	0.284
	LTE Band 7	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 13	DSI 3	21100	2535	10.85	12.00	1.303	-	-	0.18	0.311	0.405
	LTE Band 7	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 13	DSI 3	21100	2535	10.85	12.00	1.303	-	-	-0.1	0.099	0.129
	LTE Band 7	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 13	DSI 3	21100	2535	10.85	12.00	1.303	-	-	0.15	0.127	0.166
	LTE Band 7C	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 13	DSI 3	21100+ 21298	2535+ 2554.8	10.82	12.00	1.312	-	-	0.07	0.308	0.404
	LTE Band 7	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 31	DSI 2/3	21100	2535	22.29	23.50	1.321	-	-	-0.15	0.252	0.333
	LTE Band 7	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 31	DSI 2/3	21100	2535	22.29	23.50	1.321	-	-	0.04	0.130	0.172
	LTE Band 7	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 31	DSI 2/3	21100	2535	22.29	23.50	1.321	-	-	0.05	0.125	0.165
	LTE Band 7	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 31	DSI 2/3	21100	2535	22.29	23.50	1.321	-	-	-0.18	0.102	0.135
	LTE Band 7C	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 31	DSI 2/3	21100+ 21298	2535+ 2554.8	22.23	23.50	1.340	-	-	0.12	0.235	0.315
	LTE Band 7	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 31	DSI 2/3	21100	2535	21.23	22.50	1.340	-	-	0.15	0.192	0.257
	LTE Band 7	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 31	DSI 2/3	21100	2535	21.23	22.50	1.340	-	-	-0.01	0.102	0.137
	LTE Band 7	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 31	DSI 2/3	21100	2535	21.23	22.50	1.340	-	-	0.17	0.097	0.130
	LTE Band 7	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 31	DSI 2/3	21100	2535	21.23	22.50	1.340	-	-	-0.17	0.080	0.107
	LTE Band 41	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 13	DSI 2	40620	2593	15.79	16.40	1.151	62.90	1.006	0.07	0.358	0.414
	LTE Band 41	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 13	DSI 2	40620	2593	15.79	16.40	1.151	62.90	1.006	0.17	0.461	0.534
	LTE Band 41	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 13	DSI 2	40620	2593	15.79	16.40	1.151	62.90	1.006	-0.17	0.144	0.167
	LTE Band 41	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 13	DSI 2	40620	2593	15.79	16.40	1.151	62.90	1.006	-0.04	0.205	0.237
	LTE Band 41	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 13	DSI 2	40620	2593	15.77	16.40	1.156	62.90	1.006	0.19	0.358	0.416
11	LTE Band 41	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 13	DSI 2	40620	2593	15.77	16.40	1.156	62.90	1.006	-0.07	0.466	**0.542**
	LTE Band 41	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 13	DSI 2	40620	2593	15.77	16.40	1.156	62.90	1.006	-0.13	0.143	0.166
	LTE Band 41	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 13	DSI 2	40620	2593	15.77	16.40	1.156	62.90	1.006	0.19	0.211	0.245
	LTE Band 41C	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 13	DSI 2	40620+ 40818	2593+ 2612.8	15.77	16.40	1.156	62.90	1.006	-0.1	0.455	0.529
	LTE Band 41	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 13	DSI 3	40620	2593	13.53	14.40	1.222	62.90	1.006	0.12	0.227	0.279
	LTE Band 41	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 13	DSI 3	40620	2593	13.53	14.40	1.222	62.90	1.006	-0.07	0.286	0.352
	LTE Band 41	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 13	DSI 3	40620	2593	13.53	14.40	1.222	62.90	1.006	-0.13	0.090	0.111
	LTE Band 41	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 13	DSI 3	40620	2593	13.53	14.40	1.222	62.90	1.006	0.15	0.121	0.149
	LTE Band 41	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 13	DSI 3	40620	2593	13.49	14.40	1.233	62.90	1.006	0.04	0.226	0.280
	LTE Band 41	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 13	DSI 3	40620	2593	13.49	14.40	1.233	62.90	1.006	-0.14	0.294	0.365
	LTE Band 41	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 13	DSI 3	40620	2593	13.49	14.40	1.233	62.90	1.006	-0.15	0.092	0.114
	LTE Band 41	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 13	DSI 3	40620	2593	13.49	14.40	1.233	62.90	1.006	0.17	0.131	0.163
	LTE Band 41C	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 13	DSI 3	40620+ 40818	2593+ 2612.8	13.52	14.40	1.225	62.90	1.006	0.05	0.290	0.357
	LTE Band 41	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 31	DSI 2/3	40620	2593	22.82	23.80	1.253	62.90	1.006	-0.07	0.192	0.242
	LTE Band 41	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 31	DSI 2/3	40620	2593	22.82	23.80	1.253	62.90	1.006	-0.18	0.103	0.130
	LTE Band 41	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 31	DSI 2/3	40620	2593	22.82	23.80	1.253	62.90	1.006	-0.06	0.094	0.119
	LTE Band 41	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 31	DSI 2/3	40620	2593	22.82	23.80	1.253	62.90	1.006	0.04	0.070	0.088

	LTE Band 41C	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 31	DSI 2/3	40620+ 40818	2593+ 2612.8	22.79	23.80	1.262	62.90	1.006	0.09	0.182	0.231
	LTE Band 41	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 31	DSI 2/3	40620	2593	21.83	22.80	1.250	62.90	1.006	0.05	0.152	0.191
	LTE Band 41	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 31	DSI 2/3	40620	2593	21.83	22.80	1.250	62.90	1.006	-0.19	0.079	0.099
	LTE Band 41	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 31	DSI 2/3	40620	2593	21.83	22.80	1.250	62.90	1.006	0.06	0.080	0.101
	LTE Band 41	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 31	DSI 2/3	40620	2593	21.83	22.80	1.250	62.90	1.006	0.02	0.051	0.064
	FR1 n7	20M	BPSK	1	1	DFT-15	Right Cheek	0mm	Ant 11	DSI2	507000	2535	17.15	18.00	1.216	-	-	-0.03	0.470	0.572
	FR1 n7	20M	BPSK	1	1	DFT-15	Right Tilted	0mm	Ant 11	DSI2	507000	2535	17.15	18.00	1.216	-	-	0.12	0.103	0.125
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Cheek	0mm	Ant 11	DSI2	507000	2535	17.15	18.00	1.216	-	-	-0.07	0.304	0.370
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Tilted	0mm	Ant 11	DSI2	507000	2535	17.15	18.00	1.216	-	-	-0.13	0.057	0.069
	FR1 n7	20M	BPSK	50	28	DFT-15	Right Cheek	0mm	Ant 11	DSI2	507000	2535	17.03	18.00	1.250	-	-	-0.04	0.475	0.594
	FR1 n7	20M	BPSK	50	28	DFT-15	Right Tilted	0mm	Ant 11	DSI2	507000	2535	17.03	18.00	1.250	-	-	0.12	0.103	0.129
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Cheek	0mm	Ant 11	DSI2	507000	2535	17.03	18.00	1.250	-	-	0.05	0.299	0.374
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Tilted	0mm	Ant 11	DSI2	507000	2535	17.03	18.00	1.250	-	-	-0.03	0.060	0.075
	FR1 n7	20M	BPSK	1	1	DFT-15	Right Cheek	0mm	Ant 11	DSI3	507000	2535	15.17	16.00	1.211	-	-	0.05	0.286	0.346
	FR1 n7	20M	BPSK	1	1	DFT-15	Right Tilted	0mm	Ant 11	DSI3	507000	2535	15.17	16.00	1.211	-	-	0.12	0.064	0.077
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Cheek	0mm	Ant 11	DSI3	507000	2535	15.17	16.00	1.211	-	-	-0.07	0.175	0.212
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Tilted	0mm	Ant 11	DSI3	507000	2535	15.17	16.00	1.211	-	-	-0.13	0.039	0.047
	FR1 n7	20M	BPSK	50	28	DFT-15	Right Cheek	0mm	Ant 11	DSI3	507000	2535	15.14	16.00	1.219	-	-	0.16	0.298	0.363
	FR1 n7	20M	BPSK	50	28	DFT-15	Right Tilted	0mm	Ant 11	DSI3	507000	2535	15.14	16.00	1.219	-	-	0.09	0.065	0.079
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Cheek	0mm	Ant 11	DSI3	507000	2535	15.14	16.00	1.219	-	-	0.03	0.180	0.219
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Tilted	0mm	Ant 11	DSI3	507000	2535	15.14	16.00	1.219	-	-	-0.01	0.040	0.049
	FR1 n7	20M	BPSK	1	1	DFT-15	Right Cheek	0mm	Ant 13	DSI2	507000	2535	13.36	14.80	1.393	-	-	-0.08	0.396	0.552
	FR1 n7	20M	BPSK	1	1	DFT-15	Right Tilted	0mm	Ant 13	DSI2	507000	2535	13.36	14.80	1.393	-	-	0.12	0.548	0.763
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Cheek	0mm	Ant 13	DSI2	507000	2535	13.36	14.80	1.393	-	-	-0.07	0.168	0.234
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Tilted	0mm	Ant 13	DSI2	507000	2535	13.36	14.80	1.393	-	-	-0.13	0.197	0.274
	FR1 n7	20M	BPSK	50	28	DFT-15	Right Cheek	0mm	Ant 13	DSI2	507000	2535	13.35	14.80	1.396	-	-	0.08	0.414	0.578
12	FR1 n7	20M	BPSK	50	28	DFT-15	Right Tilted	0mm	Ant 13	DSI2	507000	2535	13.35	14.80	1.396	-	-	-0.16	0.559	**0.781**
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Cheek	0mm	Ant 13	DSI2	507000	2535	13.35	14.80	1.396	-	-	-0.02	0.180	0.251
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Tilted	0mm	Ant 13	DSI2	507000	2535	13.35	14.80	1.396	-	-	0.04	0.209	0.292
	FR1 n7	20M	BPSK	1	1	DFT-15	Right Cheek	0mm	Ant 13	DSI3	507000	2535	11.88	13.30	1.387	-	-	-0.11	0.293	0.406
	FR1 n7	20M	BPSK	1	1	DFT-15	Right Tilted	0mm	Ant 13	DSI3	507000	2535	11.88	13.30	1.387	-	-	0.12	0.385	0.534
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Cheek	0mm	Ant 13	DSI3	507000	2535	11.88	13.30	1.387	-	-	-0.07	0.117	0.162
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Tilted	0mm	Ant 13	DSI3	507000	2535	11.88	13.30	1.387	-	-	-0.13	0.141	0.196
	FR1 n7	20M	BPSK	50	28	DFT-15	Right Cheek	0mm	Ant 13	DSI3	507000	2535	11.85	13.30	1.396	-	-	-0.08	0.300	0.419
	FR1 n7	20M	BPSK	50	28	DFT-15	Right Tilted	0mm	Ant 13	DSI3	507000	2535	11.85	13.30	1.396	-	-	-0.16	0.392	0.547
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Cheek	0mm	Ant 13	DSI3	507000	2535	11.85	13.30	1.396	-	-	0.19	0.124	0.173
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Tilted	0mm	Ant 13	DSI3	507000	2535	11.85	13.30	1.396	-	-	0.13	0.148	0.207
	FR1 n41	100M	BPSK	1	137	DFT-30	Right Cheek	0mm	Ant 11	DSI2	518598	2592.99	16.71	18.00	1.346	-	-	0.12	0.506	0.681
	FR1 n41	100M	BPSK	1	137	DFT-30	Right Tilted	0mm	Ant 11	DSI2	518598	2592.99	16.71	18.00	1.346	-	-	-0.07	0.099	0.133
	FR1 n41	100M	BPSK	1	137	DFT-30	Left Cheek	0mm	Ant 11	DSI2	518598	2592.99	16.71	18.00	1.346	-	-	-0.13	0.288	0.388
	FR1 n41	100M	BPSK	1	137	DFT-30	Left Tilted	0mm	Ant 11	DSI2	518598	2592.99	16.71	18.00	1.346	-	-	0.15	0.049	0.066
	FR1 n41	100M	BPSK	135	69	DFT-30	Right Cheek	0mm	Ant 11	DSI2	518598	2592.99	16.69	18.00	1.352	-	-	-0.09	0.515	0.696
	FR1 n41	100M	BPSK	135	69	DFT-30	Right Tilted	0mm	Ant 11	DSI2	518598	2592.99	16.69	18.00	1.352	-	-	0.05	0.102	0.138
	FR1 n41	100M	BPSK	135	69	DFT-30	Left Cheek	0mm	Ant 11	DSI2	518598	2592.99	16.69	18.00	1.352	-	-	-0.07	0.285	0.385
	FR1 n41	100M	BPSK	135	69	DFT-30	Left Tilted	0mm	Ant 11	DSI2	518598	2592.99	16.69	18.00	1.352	-	-	-0.02	0.048	0.065
	FR1 n41	100M	BPSK	270	0	DFT-30	Right Cheek	0mm	Ant 11	DSI2	518598	2592.99	16.64	18.00	1.368	-	-	0.03	0.505	0.691
	FR1 n41	100M	BPSK	1	137	DFT-30	Right Cheek	0mm	Ant 11	DSI3	518598	2592.99	15.31	16.50	1.315	-	-	0.12	0.360	0.473
	FR1 n41	100M	BPSK	1	137	DFT-30	Right Tilted	0mm	Ant 11	DSI3	518598	2592.99	15.31	16.50	1.315	-	-	-0.07	0.069	0.091
	FR1 n41	100M	BPSK	1	137	DFT-30	Left Cheek	0mm	Ant 11	DSI3	518598	2592.99	15.31	16.50	1.315	-	-	-0.13	0.186	0.245
	FR1 n41	100M	BPSK	1	137	DFT-30	Left Tilted	0mm	Ant 11	DSI3	518598	2592.99	15.31	16.50	1.315	-	-	0.15	0.034	0.045
	FR1 n41	100M	BPSK	135	69	DFT-30	Right Cheek	0mm	Ant 11	DSI3	518598	2592.99	15.28	16.50	1.324	-	-	0.12	0.368	0.487
	FR1 n41	100M	BPSK	135	69	DFT-30	Right Tilted	0mm	Ant 11	DSI3	518598	2592.99	15.28	16.50	1.324	-	-	0.05	0.071	0.094
	FR1 n41	100M	BPSK	135	69	DFT-30	Left Cheek	0mm	Ant 11	DSI3	518598	2592.99	15.28	16.50	1.324	-	-	-0.01	0.198	0.262
	FR1 n41	100M	BPSK	135	69	DFT-30	Left Tilted	0mm	Ant 11	DSI3	518598	2592.99	15.28	16.50	1.324	-	-	-0.13	0.033	0.044
	FR1 n41	100M	BPSK	1	137	DFT-30	Right Cheek	0mm	Ant 13	DSI2	518598	2592.99	13.72	15.30	1.439	-	-	0.12	0.409	0.588
	FR1 n41	100M	BPSK	1	137	DFT-30	Right Tilted	0mm	Ant 13	DSI2	518598	2592.99	13.72	15.30	1.439	-	-	-0.07	0.532	0.765

	FR1 n41	100M	BPSK	1	137	DFT-30	Left Cheek	0mm	Ant 13	DSI2	518598	2592.99	13.72	15.30	1.439	-	-	-0.13	0.156	0.224
	FR1 n41	100M	BPSK	1	137	DFT-30	Left Tilted	0mm	Ant 13	DSI2	518598	2592.99	13.72	15.30	1.439	-	-	0.15	0.198	0.285
	FR1 n41	100M	BPSK	135	69	DFT-30	Right Cheek	0mm	Ant 13	DSI2	518598	2592.99	13.65	15.30	1.462	-	-	0.03	0.415	0.607
13	FR1 n41	100M	BPSK	135	69	DFT-30	Right Tilted	0mm	Ant 13	DSI2	518598	2592.99	13.65	15.30	1.462	-	-	-0.03	0.545	**0.797**
	FR1 n41	100M	BPSK	135	69	DFT-30	Left Cheek	0mm	Ant 13	DSI2	518598	2592.99	13.65	15.30	1.462	-	-	0.04	0.156	0.228
	FR1 n41	100M	BPSK	135	69	DFT-30	Left Tilted	0mm	Ant 13	DSI2	518598	2592.99	13.65	15.30	1.462	-	-	0.15	0.199	0.291
	FR1 n41	100M	BPSK	270	0	DFT-30	Right Cheek	0mm	Ant 13	DSI2	518598	2592.99	13.63	15.30	1.469	-	-	0.05	0.405	0.595
	FR1 n41	100M	BPSK	270	0	DFT-30	Right Tilted	0mm	Ant 13	DSI2	518598	2592.99	13.63	15.30	1.469	-	-	0.04	0.533	0.783
	FR1 n41	100M	BPSK	1	137	DFT-30	Right Cheek	0mm	Ant 13	DSI3	518598	2592.99	11.77	13.30	1.422	-	-	0.12	0.252	0.358
	FR1 n41	100M	BPSK	1	137	DFT-30	Right Tilted	0mm	Ant 13	DSI3	518598	2592.99	11.77	13.30	1.422	-	-	-0.07	0.338	0.481
	FR1 n41	100M	BPSK	1	137	DFT-30	Left Cheek	0mm	Ant 13	DSI3	518598	2592.99	11.77	13.30	1.422	-	-	-0.13	0.101	0.144
	FR1 n41	100M	BPSK	1	137	DFT-30	Left Tilted	0mm	Ant 13	DSI3	518598	2592.99	11.77	13.30	1.422	-	-	0.15	0.126	0.179
	FR1 n41	100M	BPSK	135	69	DFT-30	Right Cheek	0mm	Ant 13	DSI3	518598	2592.99	11.74	13.30	1.432	-	-	0.03	0.265	0.380
	FR1 n41	100M	BPSK	135	69	DFT-30	Right Tilted	0mm	Ant 13	DSI3	518598	2592.99	11.74	13.30	1.432	-	-	-0.16	0.345	0.494
	FR1 n41	100M	BPSK	135	69	DFT-30	Left Cheek	0mm	Ant 13	DSI3	518598	2592.99	11.74	13.30	1.432	-	-	-0.02	0.105	0.150
	FR1 n41	100M	BPSK	135	69	DFT-30	Left Tilted	0mm	Ant 13	DSI3	518598	2592.99	11.74	13.30	1.432	-	-	-0.17	0.129	0.185

<ENDC 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	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
835MHz																		
	FR1 n5	20M	BPSK	1	1	DFT-15	Right Cheek	0mm	Ant 41	DSI 2	167300	836.5	20.29	21.00	1.178	-0.1	0.077	0.091
	FR1 n5	20M	BPSK	1	1	DFT-15	Right Tilted	0mm	Ant 41	DSI 2	167300	836.5	20.29	21.00	1.178	-0.07	0.041	0.048
	FR1 n5	20M	BPSK	1	1	DFT-15	Left Cheek	0mm	Ant 41	DSI 2	167300	836.5	20.29	21.00	1.178	-0.08	0.102	0.120
	FR1 n5	20M	BPSK	1	1	DFT-15	Left Tilted	0mm	Ant 41	DSI 2	167300	836.5	20.29	21.00	1.178	-0.09	0.053	0.062
	FR1 n5	20M	BPSK	50	28	DFT-15	Right Cheek	0mm	Ant 41	DSI 2	167300	836.5	20.26	21.00	1.186	0.03	0.079	0.094
	FR1 n5	20M	BPSK	50	28	DFT-15	Right Tilted	0mm	Ant 41	DSI 2	167300	836.5	20.26	21.00	1.186	-0.08	0.040	0.047
14	FR1 n5	20M	BPSK	50	28	DFT-15	Left Cheek	0mm	Ant 41	DSI 2	167300	836.5	20.26	21.00	1.186	-0.09	0.107	**0.127**
	FR1 n5	20M	BPSK	50	28	DFT-15	Left Tilted	0mm	Ant 41	DSI 2	167300	836.5	20.26	21.00	1.186	0.11	0.052	0.062
	FR1 n5	20M	BPSK	1	1	DFT-15	Right Cheek	0mm	Ant 41	DSI 3	167300	836.5	17.71	18.50	1.199	0.03	0.044	0.053
	FR1 n5	20M	BPSK	1	1	DFT-15	Right Tilted	0mm	Ant 41	DSI 3	167300	836.5	17.71	18.50	1.199	0.05	0.023	0.028
	FR1 n5	20M	BPSK	1	1	DFT-15	Left Cheek	0mm	Ant 41	DSI 3	167300	836.5	17.71	18.50	1.199	0.01	0.050	0.060
	FR1 n5	20M	BPSK	1	1	DFT-15	Left Tilted	0mm	Ant 41	DSI 3	167300	836.5	17.71	18.50	1.199	-0.06	0.027	0.033
	FR1 n5	20M	BPSK	50	28	DFT-15	Right Cheek	0mm	Ant 41	DSI 3	167300	836.5	17.64	18.50	1.219	-0.12	0.047	0.057
	FR1 n5	20M	BPSK	50	28	DFT-15	Right Tilted	0mm	Ant 41	DSI 3	167300	836.5	17.64	18.50	1.219	0.05	0.024	0.029
	FR1 n5	20M	BPSK	50	28	DFT-15	Left Cheek	0mm	Ant 41	DSI 3	167300	836.5	17.64	18.50	1.219	0.04	0.062	0.076
	FR1 n5	20M	BPSK	50	28	DFT-15	Left Tilted	0mm	Ant 41	DSI 3	167300	836.5	17.64	18.50	1.219	0.07	0.029	0.035
2600MHz																		
	LTE Band 7	20M	QPSK	1	49		Right Cheek	0mm	Ant 13	DSI 3	21100	2535	8.16	9.00	1.213	0.04	0.123	0.149
	LTE Band 7	20M	QPSK	1	49		Right Tilted	0mm	Ant 13	DSI 3	21100	2535	8.16	9.00	1.213	0.16	0.162	0.197
	LTE Band 7	20M	QPSK	1	49		Left Cheek	0mm	Ant 13	DSI 3	21100	2535	8.16	9.00	1.213	0.15	0.057	0.069
	LTE Band 7	20M	QPSK	1	49		Left Tilted	0mm	Ant 13	DSI 3	21100	2535	8.16	9.00	1.213	-0.09	0.071	0.086
	LTE Band 7	20M	QPSK	50	24		Right Cheek	0mm	Ant 13	DSI 3	21100	2535	8.14	9.00	1.219	0.03	0.120	0.146
	LTE Band 7	20M	QPSK	50	24		Right Tilted	0mm	Ant 13	DSI 3	21100	2535	8.14	9.00	1.219	0.06	0.158	0.193
	LTE Band 7	20M	QPSK	50	24		Left Cheek	0mm	Ant 13	DSI 3	21100	2535	8.14	9.00	1.219	-0.12	0.055	0.067
	LTE Band 7	20M	QPSK	50	24		Left Tilted	0mm	Ant 13	DSI 3	21100	2535	8.14	9.00	1.219	0.07	0.069	0.084
	FR1 n7	20M	BPSK	1	1	DFT-15	Right Cheek	0mm	Ant 11	DSI 3	507000	2535	12.31	13.00	1.172	0.01	0.147	0.172
	FR1 n7	20M	BPSK	1	1	DFT-15	Right Tilted	0mm	Ant 11	DSI 3	507000	2535	12.31	13.00	1.172	0.05	0.032	0.038
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Cheek	0mm	Ant 11	DSI 3	507000	2535	12.31	13.00	1.172	0.1	0.086	0.101
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Tilted	0mm	Ant 11	DSI 3	507000	2535	12.31	13.00	1.172	0.18	0.022	0.026
	FR1 n7	20M	BPSK	50	28	DFT-15	Right Cheek	0mm	Ant 11	DSI 3	507000	2535	12.27	13.00	1.183	-0.09	0.150	0.177
	FR1 n7	20M	BPSK	50	28	DFT-15	Right Tilted	0mm	Ant 11	DSI 3	507000	2535	12.27	13.00	1.183	0.03	0.034	0.040
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Cheek	0mm	Ant 11	DSI 3	507000	2535	12.27	13.00	1.183	-0.13	0.089	0.105
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Tilted	0mm	Ant 11	DSI 3	507000	2535	12.27	13.00	1.183	-0.13	0.022	0.026
	FR1 n7	20M	BPSK	1	1	DFT-15	Right Cheek	0mm	Ant 13	DSI 3	507000	2535	8.79	10.30	1.416	0.12	0.151	0.214

	FR1 n7	20M	BPSK	1	1	DFT-15	Right Tilted	0mm	Ant 13	DSI 3	507000	2535	8.79	10.30	1.416	0.18	0.194	0.275
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Cheek	0mm	Ant 13	DSI 3	507000	2535	8.79	10.30	1.416	0.13	0.060	0.085
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Tilted	0mm	Ant 13	DSI 3	507000	2535	8.79	10.30	1.416	-0.14	0.076	0.108
	FR1 n7	20M	BPSK	50	28	DFT-15	Right Cheek	0mm	Ant 13	DSI 3	507000	2535	8.76	10.30	1.426	0.02	0.157	0.224
	FR1 n7	20M	BPSK	50	28	DFT-15	Right Tilted	0mm	Ant 13	DSI 3	507000	2535	8.76	10.30	1.426	0.09	0.201	0.287
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Cheek	0mm	Ant 13	DSI 3	507000	2535	8.76	10.30	1.426	0.07	0.061	0.087
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Tilted	0mm	Ant 13	DSI 3	507000	2535	8.76	10.30	1.426	0.1	0.079	0.113

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																
	Bluetooth	DH5 1Mbps	Right Cheek	0mm	Ant 22	Full Power	39	2441	11.35	12.50	1.303	77.07	1.298	-0.14	0.057	0.096
	Bluetooth	DH5 1Mbps	Right Tilted	0mm	Ant 22	Full Power	39	2441	11.35	12.50	1.303	77.07	1.298	0.16	0.064	0.108
15	Bluetooth	DH5 1Mbps	Left Cheek	0mm	Ant 22	Full Power	39	2441	11.35	12.50	1.303	77.07	1.298	-0.06	0.197	**0.333**
	Bluetooth	DH5 1Mbps	Left Tilted	0mm	Ant 22	Full Power	39	2441	11.35	12.50	1.303	77.07	1.298	0.06	0.184	0.311
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 22	Reduced	1	2412	12.86	14.00	1.300	99.41	1.006	0.17	0.126	0.165
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 22	Reduced	1	2412	12.86	14.00	1.300	99.41	1.006	-0.19	0.132	0.173
16	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 22	Reduced	1	2412	12.86	14.00	1.300	99.41	1.006	0.13	0.318	**0.416**
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 22	Reduced	1	2412	12.86	14.00	1.300	99.41	1.006	0.13	0.211	0.276
5000MHz--6000MHz																
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 22	Reduced	58	5290	10.94	12.00	1.276	88.89	1.125	-0.05	0.117	0.168
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 22	Reduced	58	5290	10.94	12.00	1.276	88.89	1.125	-0.13	0.133	0.191
17	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 22	Reduced	58	5290	10.94	12.00	1.276	88.89	1.125	0.15	0.445	**0.639**
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 22	Reduced	58	5290	10.94	12.00	1.276	88.89	1.125	-0.12	0.373	0.536
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 22	Reduced	122	5610	10.98	12.00	1.265	88.89	1.125	0.15	0.141	0.201
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 22	Reduced	122	5610	10.98	12.00	1.265	88.89	1.125	-0.1	0.165	0.235
18	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 22	Reduced	122	5610	10.98	12.00	1.265	88.89	1.125	0.13	0.387	**0.551**
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 22	Reduced	122	5610	10.98	12.00	1.265	88.89	1.125	0.03	0.350	0.498
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 22	Reduced	155	5775	10.62	12.00	1.374	88.89	1.125	-0.11	0.128	0.198
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 22	Reduced	155	5775	10.62	12.00	1.374	88.89	1.125	-0.12	0.163	0.252
19	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 22	Reduced	155	5775	10.62	12.00	1.374	88.89	1.125	-0.04	0.369	**0.570**
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 22	Reduced	155	5775	10.62	12.00	1.374	88.89	1.125	-0.15	0.323	0.499

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	25	-	Front	10mm	Ant 13	DSI 10	23095	707.5	23.45	24.50	1.274	-	-	-0.01	0.080	0.102
	LTE Band 12	10M	QPSK	1	25	-	Back	10mm	Ant 13	DSI 10	23095	707.5	23.45	24.50	1.274	-	-	-0.02	0.131	0.167
	LTE Band 12	10M	QPSK	1	25	-	Left Side	10mm	Ant 13	DSI 10	23095	707.5	23.45	24.50	1.274	-	-	-0.02	0.072	0.092
	LTE Band 12	10M	QPSK	1	25	-	Top Side	10mm	Ant 13	DSI 10	23095	707.5	23.45	24.50	1.274	-	-	-0.1	0.075	0.096
	LTE Band 12	10M	QPSK	25	12	-	Front	10mm	Ant 13	DSI 10	23095	707.5	22.48	23.50	1.265	-	-	-0.07	0.063	0.080
	LTE Band 12	10M	QPSK	25	12	-	Back	10mm	Ant 13	DSI 10	23095	707.5	22.48	23.50	1.265	-	-	-0.11	0.100	0.126
	LTE Band 12	10M	QPSK	25	12	-	Left Side	10mm	Ant 13	DSI 10	23095	707.5	22.48	23.50	1.265	-	-	0.12	0.055	0.070
	LTE Band 12	10M	QPSK	25	12	-	Top Side	10mm	Ant 13	DSI 10	23095	707.5	22.48	23.50	1.265	-	-	0.12	0.058	0.073
	LTE Band 12	10M	QPSK	1	25	-	Front	10mm	Ant 41	DSI 10	23095	707.5	23.54	24.50	1.247	-	-	0.14	0.165	0.206
	LTE Band 12	10M	QPSK	1	25	-	Back	10mm	Ant 41	DSI 10	23095	707.5	23.54	24.50	1.247	-	-	-0.12	0.197	0.246
20	LTE Band 12	10M	QPSK	1	25	-	Left Side	10mm	Ant 41	DSI 10	23095	707.5	23.54	24.50	1.247	-	-	-0.05	0.379	**0.473**
	LTE Band 12	10M	QPSK	1	25	-	Bottom Side	10mm	Ant 41	DSI 10	23095	707.5	23.54	24.50	1.247	-	-	0.15	0.052	0.065
	LTE Band 12	10M	QPSK	25	12	-	Front	10mm	Ant 41	DSI 10	23095	707.5	22.48	23.50	1.265	-	-	0.11	0.131	0.166
	LTE Band 12	10M	QPSK	25	12	-	Back	10mm	Ant 41	DSI 10	23095	707.5	22.48	23.50	1.265	-	-	-0.01	0.160	0.202
	LTE Band 12	10M	QPSK	25	12	-	Left Side	10mm	Ant 41	DSI 10	23095	707.5	22.48	23.50	1.265	-	-	-0.06	0.282	0.357
	LTE Band 12	10M	QPSK	25	12	-	Bottom Side	10mm	Ant 41	DSI 10	23095	707.5	22.48	23.50	1.265	-	-	0.09	0.041	0.052
835MHz																				
	GSM850	-	-	-	-	GPRS(4 Tx slots)	Front	10mm	Ant 13	DSI 10	189	836.4	27.25	28.00	1.189	-	-	-0.1	0.230	0.273
	GSM850	-	-	-	-	GPRS(4 Tx slots)	Back	10mm	Ant 13	DSI 10	189	836.4	27.25	28.00	1.189	-	-	0.14	0.401	0.477
	GSM850	-	-	-	-	GPRS(4 Tx slots)	Left Side	10mm	Ant 13	DSI 10	189	836.4	27.25	28.00	1.189	-	-	-0.07	0.107	0.127
	GSM850	-	-	-	-	GPRS(4 Tx slots)	Top Side	10mm	Ant 13	DSI 10	189	836.4	27.25	28.00	1.189	-	-	-0.04	0.231	0.275
	GSM850	-	-	-	-	GPRS(4 Tx slots)	Front	10mm	Ant 41	DSI 10	189	836.4	26.95	27.50	1.135	-	-	0.11	0.320	0.363
21	GSM850	-	-	-	-	GPRS(4 Tx slots)	Back	10mm	Ant 41	DSI 10	189	836.4	26.95	27.50	1.135	-	-	-0.04	0.431	**0.489**
	GSM850	-	-	-	-	GPRS(4 Tx slots)	Left Side	10mm	Ant 41	DSI 10	189	836.4	26.95	27.50	1.135	-	-	-0.01	0.206	0.234
	GSM850	-	-	-	-	GPRS(4 Tx slots)	Bottom Side	10mm	Ant 41	DSI 10	189	836.4	26.95	27.50	1.135	-	-	0.03	0.137	0.155
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 13	DSI 10	4182	836.4	22.97	24.00	1.268	-	-	-0.04	0.151	0.191
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 13	DSI 10	4182	836.4	22.97	24.00	1.268	-	-	0.01	0.292	0.370
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant 13	DSI 10	4182	836.4	22.97	24.00	1.268	-	-	-0.07	0.086	0.109
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant 13	DSI 10	4182	836.4	22.97	24.00	1.268	-	-	0.01	0.190	0.241
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 41	DSI 10	4182	836.4	23.09	24.00	1.233	-	-	-0.02	0.222	0.274
22	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 41	DSI 10	4182	836.4	23.09	24.00	1.233	-	-	0.14	0.372	**0.459**
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant 41	DSI 10	4182	836.4	23.09	24.00	1.233	-	-	0.08	0.197	0.243
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	Ant 41	DSI 10	4182	836.4	23.09	24.00	1.233	-	-	0.06	0.096	0.118
	LTE Band 5	10M	QPSK	1	25	-	Front	10mm	Ant 13	DSI 10	20525	836.5	23.37	24.50	1.297	-	-	-0.12	0.171	0.222
	LTE Band 5	10M	QPSK	1	25	-	Back	10mm	Ant 13	DSI 10	20525	836.5	23.37	24.50	1.297	-	-	0.1	0.336	0.436
	LTE Band 5	10M	QPSK	1	25	-	Left Side	10mm	Ant 13	DSI 10	20525	836.5	23.37	24.50	1.297	-	-	-0.01	0.086	0.112
	LTE Band 5	10M	QPSK	1	25	-	Top Side	10mm	Ant 13	DSI 10	20525	836.5	23.37	24.50	1.297	-	-	-0.12	0.189	0.245
	LTE Band 5	10M	QPSK	25	12	-	Front	10mm	Ant 13	DSI 10	20525	836.5	22.31	23.50	1.315	-	-	-0.02	0.135	0.178
	LTE Band 5	10M	QPSK	25	12	-	Back	10mm	Ant 13	DSI 10	20525	836.5	22.31	23.50	1.315	-	-	0.01	0.249	0.327
	LTE Band 5	10M	QPSK	25	12	-	Left Side	10mm	Ant 13	DSI 10	20525	836.5	22.31	23.50	1.315	-	-	-0.11	0.069	0.091
	LTE Band 5	10M	QPSK	25	12	-	Top Side	10mm	Ant 13	DSI 10	20525	836.5	22.31	23.50	1.315	-	-	0.02	0.145	0.191
	LTE Band 5	10M	QPSK	1	25	-	Front	10mm	Ant 41	DSI 10	20525	836.5	23.33	24.50	1.309	-	-	-0.07	0.290	0.380
23	LTE Band 5	10M	QPSK	1	25	-	Back	10mm	Ant 41	DSI 10	20525	836.5	23.33	24.50	1.309	-	-	-0.1	0.419	**0.549**
	LTE Band 5	10M	QPSK	1	25	-	Left Side	10mm	Ant 41	DSI 10	20525	836.5	23.33	24.50	1.309	-	-	-0.02	0.182	0.238
	LTE Band 5	10M	QPSK	1	25	-	Bottom Side	10mm	Ant 41	DSI 10	20525	836.5	23.33	24.50	1.309	-	-	-0.14	0.098	0.128
	LTE Band 5	10M	QPSK	25	12	-	Front	10mm	Ant 41	DSI 10	20525	836.5	22.27	23.50	1.327	-	-	0.14	0.223	0.296
	LTE Band 5	10M	QPSK	25	12	-	Back	10mm	Ant 41	DSI 10	20525	836.5	22.27	23.50	1.327	-	-	-0.05	0.325	0.431
	LTE Band 5	10M	QPSK	25	12	-	Left Side	10mm	Ant 41	DSI 10	20525	836.5	22.27	23.50	1.327	-	-	0.08	0.145	0.192
	LTE Band 5	10M	QPSK	25	12	-	Bottom Side	10mm	Ant 41	DSI 10	20525	836.5	22.27	23.50	1.327	-	-	0.1	0.074	0.098
1750MHz																				
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 13	DSI 10	1413	1732.6	18.82	19.80	1.253	-	-	0.01	0.141	0.177

	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 13	DSI 10	1413	1732.6	18.82	19.80	1.253	-	-	-0.01	0.218	0.273
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant 13	DSI 10	1413	1732.6	18.82	19.80	1.253	-	-	-0.12	0.040	0.050
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant 13	DSI 10	1413	1732.6	18.82	19.80	1.253	-	-	-0.09	0.299	0.375
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 31	DSI 10	1413	1732.6	19.34	20.20	1.219	-	-	0.02	0.233	0.284
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 31	DSI 10	1413	1732.6	19.34	20.20	1.219	-	-	-0.15	0.315	0.384
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Side	10mm	Ant 31	DSI 10	1413	1732.6	19.34	20.20	1.219	-	-	0.11	0.079	0.096
24	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	Ant 31	DSI 10	1413	1732.6	19.34	20.20	1.219	-	-	0.14	0.383	**0.467**
	LTE Band 4	20M	QPSK	1	49	-	Front	10mm	Ant 13	DSI 10	20175	1732.5	19.20	20.50	1.349	-	-	0.02	0.152	0.205
	LTE Band 4	20M	QPSK	1	49	-	Back	10mm	Ant 13	DSI 10	20175	1732.5	19.20	20.50	1.349	-	-	0.09	0.222	0.299
	LTE Band 4	20M	QPSK	1	49	-	Left Side	10mm	Ant 13	DSI 10	20175	1732.5	19.20	20.50	1.349	-	-	0.13	0.044	0.059
	LTE Band 4	20M	QPSK	1	49	-	Top Side	10mm	Ant 13	DSI 10	20175	1732.5	19.20	20.50	1.349	-	-	-0.15	0.284	0.383
	LTE Band 4	20M	QPSK	50	24	-	Front	10mm	Ant 13	DSI 10	20175	1732.5	19.18	20.50	1.355	-	-	0.02	0.150	0.203
	LTE Band 4	20M	QPSK	50	24	-	Back	10mm	Ant 13	DSI 10	20175	1732.5	19.18	20.50	1.355	-	-	0.1	0.207	0.281
	LTE Band 4	20M	QPSK	50	24	-	Left Side	10mm	Ant 13	DSI 10	20175	1732.5	19.18	20.50	1.355	-	-	-0.08	0.042	0.057
	LTE Band 4	20M	QPSK	50	24	-	Top Side	10mm	Ant 13	DSI 10	20175	1732.5	19.18	20.50	1.355	-	-	0.07	0.263	0.356
	LTE Band 4	20M	QPSK	1	49	-	Front	10mm	Ant 31	DSI 10	20175	1732.5	19.58	21.10	1.419	-	-	-0.11	0.254	0.360
	LTE Band 4	20M	QPSK	1	49	-	Back	10mm	Ant 31	DSI 10	20175	1732.5	19.58	21.10	1.419	-	-	-0.06	0.326	0.463
	LTE Band 4	20M	QPSK	1	49	-	Right Side	10mm	Ant 31	DSI 10	20175	1732.5	19.58	21.10	1.419	-	-	-0.09	0.088	0.125
	LTE Band 4	20M	QPSK	1	49	-	Bottom Side	10mm	Ant 31	DSI 10	20175	1732.5	19.58	21.10	1.419	-	-	-0.07	0.352	0.500
	LTE Band 4	20M	QPSK	50	24	-	Front	10mm	Ant 31	DSI 10	20175	1732.5	19.56	21.10	1.426	-	-	0.1	0.256	0.365
	LTE Band 4	20M	QPSK	50	24	-	Back	10mm	Ant 31	DSI 10	20175	1732.5	19.56	21.10	1.426	-	-	0.09	0.335	0.478
	LTE Band 4	20M	QPSK	50	24	-	Right Side	10mm	Ant 31	DSI 10	20175	1732.5	19.56	21.10	1.426	-	-	-0.15	0.090	0.128
25	LTE Band 4	20M	QPSK	50	24	-	Bottom Side	10mm	Ant 31	DSI 10	20175	1732.5	19.56	21.10	1.426	-	-	0.04	0.411	**0.586**
									1900MHz											
	GSM1900	-	-	-	-	GPRS(1Tx slots)	Front	10mm	Ant 13	DSI 10	661	1880	28.80	30.00	1.318	-	-	0.15	0.204	0.269
	GSM1900	-	-	-	-	GPRS(1Tx slots)	Back	10mm	Ant 13	DSI 10	661	1880	28.80	30.00	1.318	-	-	0.1	0.243	0.320
	GSM1900	-	-	-	-	GPRS(1Tx slots)	Left Side	10mm	Ant 13	DSI 10	661	1880	28.80	30.00	1.318	-	-	0.05	0.069	0.091
26	GSM1900	-	-	-	-	GPRS(1Tx slots)	Top Side	10mm	Ant 13	DSI 10	661	1880	28.80	30.00	1.318	-	-	-0.15	0.482	**0.635**
	GSM1900	-	-	-	-	GPRS(1Tx slots)	Front	10mm	Ant 31	DSI 10	661	1880	29.05	29.50	1.109	-	-	0.05	0.201	0.223
	GSM1900	-	-	-	-	GPRS(1Tx slots)	Back	10mm	Ant 31	DSI 10	661	1880	29.05	29.50	1.109	-	-	-0.03	0.262	0.291
	GSM1900	-	-	-	-	GPRS(1Tx slots)	Right Side	10mm	Ant 31	DSI 10	661	1880	29.05	29.50	1.109	-	-	0.11	0.103	0.114
	GSM1900	-	-	-	-	GPRS(1Tx slots)	Bottom Side	10mm	Ant 31	DSI 10	661	1880	29.05	29.50	1.109	-	-	-0.07	0.515	0.571
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 13	DSI 10	9400	1880	18.73	19.80	1.279	-	-	0.02	0.178	0.228
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 13	DSI 10	9400	1880	18.73	19.80	1.279	-	-	-0.06	0.205	0.262
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant 13	DSI 10	9400	1880	18.73	19.80	1.279	-	-	0.15	0.074	0.095
27	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant 13	DSI 10	9400	1880	18.73	19.80	1.279	-	-	0.03	0.431	**0.551**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 31	DSI 10	9400	1880	19.86	20.70	1.213	-	-	-0.14	0.190	0.231
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 31	DSI 10	9400	1880	19.86	20.70	1.213	-	-	-0.09	0.255	0.309
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Side	10mm	Ant 31	DSI 10	9400	1880	19.86	20.70	1.213	-	-	0.09	0.087	0.106
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	Ant 31	DSI 10	9400	1880	19.86	20.70	1.213	-	-	0.09	0.437	0.530
	LTE Band 2	20M	QPSK	1	49	-	Front	10mm	Ant 13	DSI 10	18900	1880	18.71	19.50	1.199	-	-	0.1	0.184	0.221
	LTE Band 2	20M	QPSK	1	49	-	Back	10mm	Ant 13	DSI 10	18900	1880	18.71	19.50	1.199	-	-	-0.07	0.263	0.315
	LTE Band 2	20M	QPSK	1	49	-	Left Side	10mm	Ant 13	DSI 10	18900	1880	18.71	19.50	1.199	-	-	0.09	0.074	0.089
	LTE Band 2	20M	QPSK	1	49	-	Top Side	10mm	Ant 13	DSI 10	18900	1880	18.71	19.50	1.199	-	-	0.04	0.435	0.522
	LTE Band 2	20M	QPSK	50	24	-	Front	10mm	Ant 13	DSI 10	18900	1880	18.69	19.50	1.205	-	-	-0.15	0.183	0.221
	LTE Band 2	20M	QPSK	50	24	-	Back	10mm	Ant 13	DSI 10	18900	1880	18.69	19.50	1.205	-	-	-0.08	0.261	0.315
	LTE Band 2	20M	QPSK	50	24	-	Left Side	10mm	Ant 13	DSI 10	18900	1880	18.69	19.50	1.205	-	-	-0.01	0.072	0.087
	LTE Band 2	20M	QPSK	50	24	-	Top Side	10mm	Ant 13	DSI 10	18900	1880	18.69	19.50	1.205	-	-	-0.02	0.423	0.510
	LTE Band 2	20M	QPSK	1	49	-	Front	10mm	Ant 31	DSI 10	18900	1880	19.81	20.50	1.172	-	-	0.02	0.174	0.204
	LTE Band 2	20M	QPSK	1	49	-	Back	10mm	Ant 31	DSI 10	18900	1880	19.81	20.50	1.172	-	-	0.08	0.243	0.285
	LTE Band 2	20M	QPSK	1	49	-	Right Side	10mm	Ant 31	DSI 10	18900	1880	19.81	20.50	1.172	-	-	0.1	0.080	0.094
	LTE Band 2	20M	QPSK	1	49	-	Bottom Side	10mm	Ant 31	DSI 10	18900	1880	19.81	20.50	1.172	-	-	0.09	0.433	0.508
	LTE Band 2	20M	QPSK	50	24	-	Front	10mm	Ant 31	DSI 10	18900	1880	19.79	20.50	1.178	-	-	-0.04	0.182	0.214
	LTE Band 2	20M	QPSK	50	24	-	Back	10mm	Ant 31	DSI 10	18900	1880	19.79	20.50	1.178	-	-	0.14	0.257	0.303
	LTE Band 2	20M	QPSK	50	24	-	Right Side	10mm	Ant 31	DSI 10	18900	1880	19.79	20.50	1.178	-	-	0.09	0.082	0.097
28	LTE Band 2	20M	QPSK	50	24	-	Bottom Side	10mm	Ant 31	DSI 10	18900	1880	19.79	20.50	1.178	-	-	0.14	0.457	**0.538**

										2600MHz										
	LTE Band 7	20M	QPSK	1	49	-	Front	10mm	Ant 13	DSI 10	21100	2535	15.04	16.00	1.247	-	-	-0.05	0.118	0.147
	LTE Band 7	20M	QPSK	1	49	-	Back	10mm	Ant 13	DSI 10	21100	2535	15.04	16.00	1.247	-	-	0.13	0.288	0.359
	LTE Band 7	20M	QPSK	1	49	-	Left Side	10mm	Ant 13	DSI 10	21100	2535	15.04	16.00	1.247	-	-	0.05	0.074	0.092
29	LTE Band 7	20M	QPSK	1	49	-	Top Side	10mm	Ant 13	DSI 10	21100	2535	15.04	16.00	1.247	-	-	0.09	0.503	**0.627**
	LTE Band 7C	20M	QPSK	1	49	-	Top Side	10mm	Ant 13	DSI 10	21100+ 21298	2535+ 2554.8	15.01	16.00	1.256	-	-	0.02	0.487	0.612
	LTE Band 7	20M	QPSK	50	24	-	Front	10mm	Ant 13	DSI 10	21100	2535	15.02	16.00	1.253	-	-	0.07	0.113	0.142
	LTE Band 7	20M	QPSK	50	24	-	Back	10mm	Ant 13	DSI 10	21100	2535	15.02	16.00	1.253	-	-	-0.01	0.286	0.358
	LTE Band 7	20M	QPSK	50	24	-	Left Side	10mm	Ant 13	DSI 10	21100	2535	15.02	16.00	1.253	-	-	-0.08	0.072	0.090
	LTE Band 7	20M	QPSK	50	24	-	Top Side	10mm	Ant 13	DSI 10	21100	2535	15.02	16.00	1.253	-	-	-0.14	0.492	0.617
	LTE Band 7	20M	QPSK	1	49	-	Front	10mm	Ant 31	DSI 10	21100	2535	18.91	20.00	1.285	-	-	0.02	0.165	0.212
	LTE Band 7	20M	QPSK	1	49	-	Back	10mm	Ant 31	DSI 10	21100	2535	18.91	20.00	1.285	-	-	-0.1	0.283	0.364
	LTE Band 7	20M	QPSK	1	49	-	Right Side	10mm	Ant 31	DSI 10	21100	2535	18.91	20.00	1.285	-	-	0.06	0.161	0.207
	LTE Band 7	20M	QPSK	1	49	-	Bottom Side	10mm	Ant 31	DSI 10	21100	2535	18.91	20.00	1.285	-	-	0.03	0.149	0.192
	LTE Band 7C	20M	QPSK			-	Back	10mm	Ant 31	DSI 10	21100+ 21298	2535+ 2554.8	18.85	20.00	1.303	-	-	0.11	0.260	0.339
	LTE Band 7	20M	QPSK	50	24	-	Front	10mm	Ant 31	DSI 10	21100	2535	18.89	20.00	1.291	-	-	-0.13	0.163	0.210
	LTE Band 7	20M	QPSK	50	24	-	Back	10mm	Ant 31	DSI 10	21100	2535	18.89	20.00	1.291	-	-	-0.14	0.271	0.350
	LTE Band 7	20M	QPSK	50	24	-	Right Side	10mm	Ant 31	DSI 10	21100	2535	18.89	20.00	1.291	-	-	-0.03	0.156	0.201
	LTE Band 7	20M	QPSK	50	24	-	Bottom Side	10mm	Ant 31	DSI 10	21100	2535	18.89	20.00	1.291	-	-	0.04	0.145	0.187
	LTE Band 41	20M	QPSK	1	49	-	Front	10mm	Ant 13	DSI 10	40620	2593	17.95	18.90	1.245	62.9	1.006	-0.12	0.121	0.151
	LTE Band 41	20M	QPSK	1	49	-	Back	10mm	Ant 13	DSI 10	40620	2593	17.95	18.90	1.245	62.9	1.006	0.06	0.242	0.303
	LTE Band 41	20M	QPSK	1	49	-	Left Side	10mm	Ant 13	DSI 10	40620	2593	17.95	18.90	1.245	62.9	1.006	-0.09	0.120	0.150
30	LTE Band 41	20M	QPSK	1	49	-	Top Side	10mm	Ant 13	DSI 10	40620	2593	17.95	18.90	1.245	62.9	1.006	-0.04	0.466	**0.583**
	LTE Band 41C	20M	QPSK	1	49	-	Top Side	10mm	Ant 13	DSI 10	40620+ 40422	2593+ 2573.2	17.91	18.90	1.256	62.9	1.006	-0.03	0.447	0.565
	LTE Band 41	20M	QPSK	50	24	-	Front	10mm	Ant 13	DSI 10	40620	2593	17.90	18.90	1.259	62.9	1.006	0.08	0.118	0.149
	LTE Band 41	20M	QPSK	50	24	-	Back	10mm	Ant 13	DSI 10	40620	2593	17.90	18.90	1.259	62.9	1.006	0.15	0.238	0.301
	LTE Band 41	20M	QPSK	50	24	-	Left Side	10mm	Ant 13	DSI 10	40620	2593	17.90	18.90	1.259	62.9	1.006	-0.09	0.110	0.139
	LTE Band 41	20M	QPSK	50	24	-	Top Side	10mm	Ant 13	DSI 10	40620	2593	17.90	18.90	1.259	62.9	1.006	-0.11	0.454	0.575
	LTE Band 41	20M	QPSK	1	49	-	Front	10mm	Ant 31	DSI 10	40620	2593	21.42	22.30	1.225	62.9	1.006	0.1	0.178	0.219
	LTE Band 41	20M	QPSK	1	49	-	Back	10mm	Ant 31	DSI 10	40620	2593	21.42	22.30	1.225	62.9	1.006	-0.02	0.233	0.287
	LTE Band 41	20M	QPSK	1	49	-	Right Side	10mm	Ant 31	DSI 10	40620	2593	21.42	22.30	1.225	62.9	1.006	-0.03	0.157	0.193
	LTE Band 41	20M	QPSK	1	49	-	Bottom Side	10mm	Ant 31	DSI 10	40620	2593	21.42	22.30	1.225	62.9	1.006	-0.02	0.151	0.186
	LTE Band 41C	20M	QPSK	1	49	-	Back	10mm	Ant 31	DSI 10	40620+ 40422	2593+ 2573.2	21.41	22.30	1.227	62.9	1.006	0.14	0.219	0.270
	LTE Band 41	20M	QPSK	50	24	-	Front	10mm	Ant 31	DSI 10	40620	2593	21.40	22.30	1.230	62.9	1.006	0.09	0.176	0.218
	LTE Band 41	20M	QPSK	50	24	-	Back	10mm	Ant 31	DSI 10	40620	2593	21.40	22.30	1.230	62.9	1.006	-0.03	0.212	0.262
	LTE Band 41	20M	QPSK	50	24	-	Right Side	10mm	Ant 31	DSI 10	40620	2593	21.40	22.30	1.230	62.9	1.006	0.12	0.166	0.205
	LTE Band 41	20M	QPSK	50	24	-	Bottom Side	10mm	Ant 31	DSI 10	40620	2593	21.40	22.30	1.230	62.9	1.006	-0.08	0.155	0.192
	FR1 n7	20M	BPSK	1	1	DFT-15	Front	10mm	Ant 11	DSI 10	507000	2535	18.66	19.50	1.213	-	-	-0.15	0.159	0.193
	FR1 n7	20M	BPSK	1	1	DFT-15	Back	10mm	Ant 11	DSI 10	507000	2535	18.66	19.50	1.213	-	-	-0.04	0.251	0.305
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Side	10mm	Ant 11	DSI 10	507000	2535	18.66	19.50	1.213	-	-	-0.08	0.386	0.468
	FR1 n7	20M	BPSK	1	1	DFT-15	Top Side	10mm	Ant 11	DSI 10	507000	2535	18.66	19.50	1.213	-	-	-0.05	0.061	0.074
	FR1 n7	20M	BPSK	50	28	DFT-15	Front	10mm	Ant 11	DSI 10	507000	2535	18.64	19.50	1.219	-	-	0.01	0.176	0.215
	FR1 n7	20M	BPSK	50	28	DFT-15	Back	10mm	Ant 11	DSI 10	507000	2535	18.64	19.50	1.219	-	-	0.03	0.269	0.328
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Side	10mm	Ant 11	DSI 10	507000	2535	18.64	19.50	1.219	-	-	0.06	0.397	0.484
	FR1 n7	20M	BPSK	50	28	DFT-15	Top Side	10mm	Ant 11	DSI 10	507000	2535	18.64	19.50	1.219	-	-	0.14	0.062	0.076
	FR1 n7	20M	BPSK	1	1	DFT-15	Front	10mm	Ant 13	DSI 10	507000	2535	15.35	16.80	1.396	-	-	-0.07	0.115	0.161
	FR1 n7	20M	BPSK	1	1	DFT-15	Back	10mm	Ant 13	DSI 10	507000	2535	15.35	16.80	1.396	-	-	-0.07	0.279	0.390
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Side	10mm	Ant 13	DSI 10	507000	2535	15.35	16.80	1.396	-	-	0.05	0.087	0.121
	FR1 n7	20M	BPSK	1	1	DFT-15	Top Side	10mm	Ant 13	DSI 10	507000	2535	15.35	16.80	1.396	-	-	0.01	0.443	0.619
	FR1 n7	20M	BPSK	50	28	DFT-15	Front	10mm	Ant 13	DSI 10	507000	2535	15.30	16.80	1.413	-	-	0.15	0.118	0.167
	FR1 n7	20M	BPSK	50	28	DFT-15	Back	10mm	Ant 13	DSI 10	507000	2535	15.30	16.80	1.413	-	-	-0.06	0.281	0.397
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Side	10mm	Ant 13	DSI 10	507000	2535	15.30	16.80	1.413	-	-	-0.04	0.090	0.127
31	FR1 n7	20M	BPSK	50	28	DFT-15	Top Side	10mm	Ant 13	DSI 10	507000	2535	15.30	16.80	1.413	-	-	0.01	0.450	**0.636**
	FR1 n41	100M	BPSK	1	137	DFT-30	Front	10mm	Ant 11	DSI 10	518598	2592.99	17.86	19.00	1.300	-	-	0.08	0.173	0.225

	FR1 n41	100M	BPSK	1	137	DFT-30	Back	10mm	Ant 11	DSI 10	518598	2592.99	17.86	19.00	1.300	-	-	0.01	0.360	0.468
	FR1 n41	100M	BPSK	1	137	DFT-30	Left Side	10mm	Ant 11	DSI 10	518598	2592.99	17.86	19.00	1.300	-	-	0.1	0.509	0.662
	FR1 n41	100M	BPSK	1	137	DFT-30	Top Side	10mm	Ant 11	DSI 10	518598	2592.99	17.86	19.00	1.300	-	-	-0.13	0.060	0.078
	FR1 n41	100M	BPSK	135	69	DFT-30	Front	10mm	Ant 11	DSI 10	518598	2592.99	17.82	19.00	1.312	-	-	-0.15	0.186	0.244
	FR1 n41	100M	BPSK	135	69	DFT-30	Back	10mm	Ant 11	DSI 10	518598	2592.99	17.82	19.00	1.312	-	-	-0.13	0.367	0.482
32	FR1 n41	100M	BPSK	135	69	DFT-30	Left Side	10mm	Ant 11	DSI 10	518598	2592.99	17.82	19.00	1.312	-	-	-0.01	0.528	**0.693**
	FR1 n41	100M	BPSK	135	69	DFT-30	Top Side	10mm	Ant 11	DSI 10	518598	2592.99	17.82	19.00	1.312	-	-	0.03	0.063	0.083
	FR1 n41	100M	BPSK	270	0	DFT-30	Left Side	10mm	Ant 11	DSI 10	518598	2592.99	17.81	19.00	1.315	-	-	0.03	0.520	0.684
	FR1 n41	100M	BPSK	1	137	DFT-30	Front	10mm	Ant 13	DSI 10	518598	2592.99	15.79	17.30	1.416	-	-	0.13	0.131	0.185
	FR1 n41	100M	BPSK	1	137	DFT-30	Back	10mm	Ant 13	DSI 10	518598	2592.99	15.79	17.30	1.416	-	-	0.09	0.296	0.419
	FR1 n41	100M	BPSK	1	137	DFT-30	Left Side	10mm	Ant 13	DSI 10	518598	2592.99	15.79	17.30	1.416	-	-	0.13	0.111	0.157
	FR1 n41	100M	BPSK	1	137	DFT-30	Top Side	10mm	Ant 13	DSI 10	518598	2592.99	15.79	17.30	1.416	-	-	-0.12	0.402	0.569
	FR1 n41	100M	BPSK	135	69	DFT-30	Front	10mm	Ant 13	DSI 10	518598	2592.99	15.71	17.30	1.442	-	-	-0.02	0.126	0.182
	FR1 n41	100M	BPSK	135	69	DFT-30	Back	10mm	Ant 13	DSI 10	518598	2592.99	15.71	17.30	1.442	-	-	0.12	0.291	0.420
	FR1 n41	100M	BPSK	135	69	DFT-30	Left Side	10mm	Ant 13	DSI 10	518598	2592.99	15.71	17.30	1.442	-	-	-0.05	0.104	0.150
	FR1 n41	100M	BPSK	135	69	DFT-30	Top Side	10mm	Ant 13	DSI 10	518598	2592.99	15.71	17.30	1.442	-	-	-0.1	0.385	0.555

<ENDC 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	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
									835MHz									
	FR1 n5	20M	BPSK	1	1	DFT-15	Front	10mm	Ant 41	DSI 10	167300	836.5	21.25	22.00	1.189	-0.02	0.133	0.158
	FR1 n5	20M	BPSK	1	1	DFT-15	Back	10mm	Ant 41	DSI 10	167300	836.5	21.25	22.00	1.189	0.03	0.226	0.269
	FR1 n5	20M	BPSK	1	1	DFT-15	Left Side	10mm	Ant 41	DSI 10	167300	836.5	21.25	22.00	1.189	0.14	0.120	0.143
	FR1 n5	20M	BPSK	1	1	DFT-15	Bottom Side	10mm	Ant 41	DSI 10	167300	836.5	21.25	22.00	1.189	0.12	0.062	0.074
	FR1 n5	20M	BPSK	50	28	DFT-15	Front	10mm	Ant 41	DSI 10	167300	836.5	21.24	22.00	1.191	0.05	0.139	0.166
33	FR1 n5	20M	BPSK	50	28	DFT-15	Back	10mm	Ant 41	DSI 10	167300	836.5	21.24	22.00	1.191	0.07	0.238	**0.284**
	FR1 n5	20M	BPSK	50	28	DFT-15	Left Side	10mm	Ant 41	DSI 10	167300	836.5	21.24	22.00	1.191	0.09	0.117	0.139
	FR1 n5	20M	BPSK	50	28	DFT-15	Bottom Side	10mm	Ant 41	DSI 10	167300	836.5	21.24	22.00	1.191	-0.12	0.064	0.076
									1900MHz									
	LTE Band 2	20M	QPSK	1	49	-	Front	10mm	Ant 31	DSI 10	18900	1880	16.81	17.50	1.172	0.1	0.099	0.116
	LTE Band 2	20M	QPSK	1	49	-	Back	10mm	Ant 31	DSI 10	18900	1880	16.81	17.50	1.172	-0.01	0.135	0.158
	LTE Band 2	20M	QPSK	1	49	-	Right Side	10mm	Ant 31	DSI 10	18900	1880	16.81	17.50	1.172	0.11	0.040	0.047
	LTE Band 2	20M	QPSK	1	49	-	Bottom Side	10mm	Ant 31	DSI 10	18900	1880	16.81	17.50	1.172	0.13	0.241	0.282
	LTE Band 2	20M	QPSK	50	24	-	Front	10mm	Ant 31	DSI 10	18900	1880	16.78	17.50	1.180	-0.07	0.105	0.124
	LTE Band 2	20M	QPSK	50	24	-	Back	10mm	Ant 31	DSI 10	18900	1880	16.78	17.50	1.180	0.08	0.140	0.165
	LTE Band 2	20M	QPSK	50	24	-	Right Side	10mm	Ant 31	DSI 10	18900	1880	16.78	17.50	1.180	-0.13	0.042	0.050
	LTE Band 2	20M	QPSK	50	24	-	Bottom Side	10mm	Ant 31	DSI 10	18900	1880	16.78	17.50	1.180	0.13	0.248	0.293
									2600MHz									
	LTE Band 7	20M	QPSK	1	49	-	Front	10mm	Ant 13	DSI 10	21100	2535	12.17	13.00	1.211	-0.04	0.063	0.076
	LTE Band 7	20M	QPSK	1	49	-	Back	10mm	Ant 13	DSI 10	21100	2535	12.17	13.00	1.211	0.03	0.148	0.179
	LTE Band 7	20M	QPSK	1	49	-	Left Side	10mm	Ant 13	DSI 10	21100	2535	12.17	13.00	1.211	-0.09	0.053	0.064
	LTE Band 7	20M	QPSK	1	49	-	Top Side	10mm	Ant 13	DSI 10	21100	2535	12.17	13.00	1.211	-0.04	0.221	0.268
	LTE Band 7	20M	QPSK	50	24	-	Front	10mm	Ant 13	DSI 10	21100	2535	12.15	13.00	1.216	-0.11	0.063	0.077
	LTE Band 7	20M	QPSK	50	24	-	Back	10mm	Ant 13	DSI 10	21100	2535	12.15	13.00	1.216	-0.03	0.157	0.191
	LTE Band 7	20M	QPSK	50	24	-	Left Side	10mm	Ant 13	DSI 10	21100	2535	12.15	13.00	1.216	0.1	0.055	0.067
	LTE Band 7	20M	QPSK	50	24	-	Top Side	10mm	Ant 13	DSI 10	21100	2535	12.15	13.00	1.216	-0.05	0.237	0.288
	LTE Band 7	20M	QPSK	1	49	-	Front	10mm	Ant 31	DSI 10	21100	2535	15.96	17.00	1.271	-0.01	0.087	0.111
	LTE Band 7	20M	QPSK	1	49	-	Back	10mm	Ant 31	DSI 10	21100	2535	15.96	17.00	1.271	0.12	0.152	0.193
	LTE Band 7	20M	QPSK	1	49	-	Right Side	10mm	Ant 31	DSI 10	21100	2535	15.96	17.00	1.271	-0.08	0.082	0.104
	LTE Band 7	20M	QPSK	1	49	-	Bottom Side	10mm	Ant 31	DSI 10	21100	2535	15.96	17.00	1.271	-0.09	0.078	0.099
	LTE Band 7	20M	QPSK	50	24	-	Front	10mm	Ant 31	DSI 10	21100	2535	15.93	17.00	1.279	-0.1	0.085	0.109
	LTE Band 7	20M	QPSK	50	24	-	Back	10mm	Ant 31	DSI 10	21100	2535	15.93	17.00	1.279	0.09	0.142	0.182
	LTE Band 7	20M	QPSK	50	24	-	Right Side	10mm	Ant 31	DSI 10	21100	2535	15.93	17.00	1.279	0.02	0.079	0.101
	LTE Band 7	20M	QPSK	50	24	-	Bottom Side	10mm	Ant 31	DSI 10	21100	2535	15.93	17.00	1.279	0.11	0.075	0.096

	FR1 n7	20M	BPSK	1	1	DFT-15	Front	10mm	Ant 11	DSI 10	507000	2535	15.85	16.50	1.161	-0.11	0.085	0.099
	FR1 n7	20M	BPSK	1	1	DFT-15	Back	10mm	Ant 11	DSI 10	507000	2535	15.85	16.50	1.161	0.04	0.146	0.170
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Side	10mm	Ant 11	DSI 10	507000	2535	15.85	16.50	1.161	0.08	0.221	0.257
	FR1 n7	20M	BPSK	1	1	DFT-15	Top Side	10mm	Ant 11	DSI 10	507000	2535	15.85	16.50	1.161	0.13	0.030	0.035
	FR1 n7	20M	BPSK	50	28	DFT-15	Front	10mm	Ant 11	DSI 10	507000	2535	15.78	16.50	1.180	0.12	0.089	0.105
	FR1 n7	20M	BPSK	50	28	DFT-15	Back	10mm	Ant 11	DSI 10	507000	2535	15.78	16.50	1.180	-0.11	0.153	0.181
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Side	10mm	Ant 11	DSI 10	507000	2535	15.78	16.50	1.180	0.12	0.230	0.271
	FR1 n7	20M	BPSK	50	28	DFT-15	Top Side	10mm	Ant 11	DSI 10	507000	2535	15.78	16.50	1.180	0.07	0.031	0.037
	FR1 n7	20M	BPSK	1	1	DFT-15	Front	10mm	Ant 13	DSI 10	507000	2535	12.27	13.80	1.422	-0.01	0.059	0.084
	FR1 n7	20M	BPSK	1	1	DFT-15	Back	10mm	Ant 13	DSI 10	507000	2535	12.27	13.80	1.422	0.09	0.138	0.196
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Side	10mm	Ant 13	DSI 10	507000	2535	12.27	13.80	1.422	0.02	0.041	0.058
	FR1 n7	20M	BPSK	1	1	DFT-15	Top Side	10mm	Ant 13	DSI 10	507000	2535	12.27	13.80	1.422	0.06	0.215	0.306
	FR1 n7	20M	BPSK	50	28	DFT-15	Front	10mm	Ant 13	DSI 10	507000	2535	12.23	13.80	1.435	-0.06	0.060	0.086
	FR1 n7	20M	BPSK	50	28	DFT-15	Back	10mm	Ant 13	DSI 10	507000	2535	12.23	13.80	1.435	0.13	0.141	0.202
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Side	10mm	Ant 13	DSI 10	507000	2535	12.23	13.80	1.435	-0.13	0.044	0.063
	FR1 n7	20M	BPSK	50	28	DFT-15	Top Side	10mm	Ant 13	DSI 10	507000	2535	12.23	13.80	1.435	-0.03	0.221	0.317

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																
	Bluetooth	DH5 1Mbps	Front	10mm	Ant 22	Full Power	39	2441	11.35	12.50	1.303	77.07	1.298	0.07	0.022	0.037
34	Bluetooth	DH5 1Mbps	Back	10mm	Ant 22	Full Power	39	2441	11.35	12.50	1.303	77.07	1.298	0.01	0.055	**0.093**
	Bluetooth	DH5 1Mbps	Right Side	10mm	Ant 22	Full Power	39	2441	11.35	12.50	1.303	77.07	1.298	-0.05	0.027	0.045
	Bluetooth	DH5 1Mbps	Top Side	10mm	Ant 22	Full Power	39	2441	11.35	12.50	1.303	77.07	1.298	0.05	0.029	0.048
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 22	Reduced	1	2412	17.84	19.00	1.306	99.41	1.006	0.07	0.121	0.159
35	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 22	Reduced	1	2412	17.84	19.00	1.306	99.41	1.006	-0.18	0.240	**0.315**
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 22	Reduced	1	2412	17.84	19.00	1.306	99.41	1.006	-0.07	0.096	0.126
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 22	Reduced	1	2412	17.84	19.00	1.306	99.41	1.006	0.1	0.129	0.170
5000MHz--6000MHz																
	WLAN5.2GHz	802.11n-HT40 MCS0	Front	10mm	Ant 22	Reduced	46	5230	15.86	17.00	1.300	92.75	1.078	-0.17	0.225	0.315
	WLAN5.2GHz	802.11n-HT40 MCS0	Back	10mm	Ant 22	Reduced	46	5230	15.86	17.00	1.300	92.75	1.078	0.16	0.287	0.402
	WLAN5.2GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 22	Reduced	46	5230	15.86	17.00	1.300	92.75	1.078	0.03	0.262	0.367
36	WLAN5.2GHz	802.11n-HT40 MCS0	Top Side	10mm	Ant 22	Reduced	46	5230	15.86	17.00	1.300	92.75	1.078	0.12	0.300	**0.420**
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 22	Reduced	155	5775	15.58	17.00	1.387	88.89	1.125	-0.04	0.175	0.273
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 22	Reduced	155	5775	15.58	17.00	1.387	88.89	1.125	0.12	0.177	0.276
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	10mm	Ant 22	Reduced	155	5775	15.58	17.00	1.387	88.89	1.125	-0.06	0.183	0.285
37	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 22	Reduced	155	5775	15.58	17.00	1.387	88.89	1.125	0.04	0.264	**0.412**

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	25	-	Front	15mm	Ant 13	DSI 4	23095	707.5	23.45	24.50	1.274	-	-	-0.11	0.075	0.096
	LTE Band 12	10M	QPSK	1	25	-	Back	15mm	Ant 13	DSI 4	23095	707.5	23.45	24.50	1.274	-	-	0.13	0.079	0.100
	LTE Band 12	10M	QPSK	25	12	-	Front	15mm	Ant 13	DSI 4	23095	707.5	22.48	23.50	1.265	-	-	-0.15	0.057	0.072
	LTE Band 12	10M	QPSK	25	12	-	Back	15mm	Ant 13	DSI 4	23095	707.5	22.48	23.50	1.265	-	-	-0.07	0.063	0.080
	LTE Band 12	10M	QPSK	1	25	-	Front	15mm	Ant 41	DSI 5	23095	707.5	23.54	24.50	1.247	-	-	-0.07	0.159	0.198
38	LTE Band 12	10M	QPSK	1	25	-	Back	15mm	Ant 41	DSI 5	23095	707.5	23.54	24.50	1.247	-	-	0.13	0.227	**0.283**
	LTE Band 12	10M	QPSK	25	12	-	Front	15mm	Ant 41	DSI 5	23095	707.5	22.48	23.50	1.265	-	-	0.02	0.119	0.151
	LTE Band 12	10M	QPSK	25	12	-	Back	15mm	Ant 41	DSI 5	23095	707.5	22.48	23.50	1.265	-	-	-0.13	0.182	0.230
835MHz																				
	GSM850	-	-	-	-	GPRS(2 Tx slots)	Front	15mm	Ant 13	DSI 4	189	836.4	30.66	31.50	1.213	-	-	-0.15	0.150	0.182
	GSM850	-	-	-	-	GPRS(2 Tx slots)	Back	15mm	Ant 13	DSI 4	189	836.4	30.66	31.50	1.213	-	-	-0.13	0.218	0.265
	GSM850	-	-	-	-	GPRS(2 Tx slots)	Front	15mm	Ant 41	DSI 5	189	836.4	30.64	31.50	1.219	-	-	0.09	0.222	0.271
39	GSM850	-	-	-	-	GPRS(2 Tx slots)	Back	15mm	Ant 41	DSI 5	189	836.4	30.64	31.50	1.219	-	-	0.03	0.304	**0.371**
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	15mm	Ant 13	DSI 4	4182	836.4	22.97	24.00	1.268	-	-	-0.05	0.110	0.139
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 13	DSI 4	4182	836.4	22.97	24.00	1.268	-	-	-0.03	0.138	0.175
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	15mm	Ant 41	DSI 5	4182	836.4	23.09	24.00	1.233	-	-	0.05	0.151	0.186
40	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 41	DSI 5	4182	836.4	23.09	24.00	1.233	-	-	-0.09	0.191	**0.236**
	LTE Band 5	10M	QPSK	1	25	-	Front	15mm	Ant 13	DSI 4	20525	836.5	23.37	24.50	1.297	-	-	-0.11	0.114	0.148
	LTE Band 5	10M	QPSK	1	25	-	Back	15mm	Ant 13	DSI 4	20525	836.5	23.37	24.50	1.297	-	-	-0.03	0.142	0.184
	LTE Band 5	10M	QPSK	25	12	-	Front	15mm	Ant 13	DSI 4	20525	836.5	22.31	23.50	1.315	-	-	0.1	0.090	0.118
	LTE Band 5	10M	QPSK	25	12	-	Back	15mm	Ant 13	DSI 4	20525	836.5	22.31	23.50	1.315	-	-	0.04	0.106	0.139
	LTE Band 5	10M	QPSK	1	25	-	Front	15mm	Ant 41	DSI 5	20525	836.5	23.33	24.50	1.309	-	-	-0.03	0.160	0.209
41	LTE Band 5	10M	QPSK	1	25	-	Back	15mm	Ant 41	DSI 5	20525	836.5	23.33	24.50	1.309	-	-	0.1	0.227	**0.297**
	LTE Band 5	10M	QPSK	25	12	-	Front	15mm	Ant 41	DSI 5	20525	836.5	22.27	23.50	1.327	-	-	-0.01	0.121	0.161
	LTE Band 5	10M	QPSK	25	12	-	Back	15mm	Ant 41	DSI 5	20525	836.5	22.27	23.50	1.327	-	-	-0.06	0.177	0.235
1750MHz																				
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	15mm	Ant 13	DSI 4	1413	1732.6	22.63	23.80	1.309	-	-	0.13	0.173	0.226
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 13	DSI 4	1413	1732.6	22.63	23.80	1.309	-	-	-0.09	0.268	0.351
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	15mm	Ant 31	DSI 5	1413	1732.6	20.71	21.70	1.256	-	-	0.02	0.205	0.257
42	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 31	DSI 5	1413	1732.6	20.71	21.70	1.256	-	-	0.06	0.280	**0.352**
	LTE Band 4	20M	QPSK	1	49	-	Front	15mm	Ant 13	DSI 4	20175	1732.5	22.11	23.50	1.377	-	-	-0.06	0.144	0.198
	LTE Band 4	20M	QPSK	1	49	-	Back	15mm	Ant 13	DSI 4	20175	1732.5	22.11	23.50	1.377	-	-	0.14	0.200	0.275
	LTE Band 4	20M	QPSK	50	24	-	Front	15mm	Ant 13	DSI 4	20175	1732.5	21.17	22.50	1.358	-	-	-0.01	0.119	0.162
	LTE Band 4	20M	QPSK	50	24	-	Back	15mm	Ant 13	DSI 4	20175	1732.5	21.17	22.50	1.358	-	-	0.03	0.164	0.223
	LTE Band 4	20M	QPSK	1	49	-	Front	15mm	Ant 31	DSI 5	20175	1732.5	21.13	22.60	1.403	-	-	0.1	0.211	0.296
	LTE Band 4	20M	QPSK	1	49	-	Back	15mm	Ant 31	DSI 5	20175	1732.5	21.13	22.60	1.403	-	-	0.1	0.299	0.419
	LTE Band 4	20M	QPSK	50	24	-	Front	15mm	Ant 31	DSI 5	20175	1732.5	21.11	22.60	1.409	-	-	0.09	0.218	0.307
43	LTE Band 4	20M	QPSK	50	24	-	Back	15mm	Ant 31	DSI 5	20175	1732.5	21.11	22.60	1.409	-	-	0.05	0.302	**0.426**
1900MHz																				
	GSM1900	-	-	-	-	GPRS(2 Tx slots)	Front	15mm	Ant 13	DSI 4	661	1880	27.64	28.50	1.219	-	-	-0.09	0.186	0.227
44	GSM1900	-	-	-	-	GPRS(2 Tx slots)	Back	15mm	Ant 13	DSI 4	661	1880	27.64	28.50	1.219	-	-	-0.09	0.287	**0.350**
	GSM1900	-	-	-	-	GPRS(1 Tx slots)	Front	15mm	Ant 31	DSI 5	661	1880	29.73	30.50	1.194	-	-	-0.02	0.181	0.216
	GSM1900	-	-	-	-	GPRS(1 Tx slots)	Back	15mm	Ant 31	DSI 5	661	1880	29.73	30.50	1.194	-	-	-0.03	0.259	0.309
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	15mm	Ant 13	DSI 4	9400	1880	22.53	23.80	1.340	-	-	-0.14	0.234	0.313
45	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 13	DSI 4	9400	1880	22.53	23.80	1.340	-	-	-0.15	0.389	**0.521**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	15mm	Ant 31	DSI 5	9400	1880	21.41	22.20	1.199	-	-	0.06	0.166	0.199
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 31	DSI 5	9400	1880	21.41	22.20	1.199	-	-	0.13	0.205	0.246
	LTE Band 2	20M	QPSK	1	49	-	Front	15mm	Ant 13	DSI 4	18900	1880	22.53	23.50	1.250	-	-	-0.04	0.227	0.284
46	LTE Band 2	20M	QPSK	1	49	-	Back	15mm	Ant 13	DSI 4	18900	1880	22.53	23.50	1.250	-	-	0.12	0.334	**0.418**
	LTE Band 2	20M	QPSK	50	24	-	Front	15mm	Ant 13	DSI 4	18900	1880	21.52	22.50	1.253	-	-	-0.04	0.185	0.232

	LTE Band 2	20M	QPSK	50	24	-	Back	15mm	Ant 13	DSI 4	18900	1880	21.52	22.50	1.253	-	-	0.12	0.263	0.330
	LTE Band 2	20M	QPSK	1	49	-	Front	15mm	Ant 31	DSI 5	18900	1880	20.55	21.50	1.245	-	-	0.1	0.156	0.194
	LTE Band 2	20M	QPSK	1	49	-	Back	15mm	Ant 31	DSI 5	18900	1880	20.55	21.50	1.245	-	-	0.03	0.221	0.275
	LTE Band 2	20M	QPSK	50	24	-	Front	15mm	Ant 31	DSI 5	18900	1880	20.53	21.50	1.250	-	-	0.1	0.161	0.201
	LTE Band 2	20M	QPSK	50	24	-	Back	15mm	Ant 31	DSI 5	18900	1880	20.53	21.50	1.250	-	-	0.08	0.237	0.296
2600MHz																				
	LTE Band 7	20M	QPSK	1	49	-	Front	15mm	Ant 13	DSI 4	21100	2535	21.96	23.00	1.271	-	-	0.15	0.296	0.376
47	LTE Band 7	20M	QPSK	1	49	-	Back	15mm	Ant 13	DSI 4	21100	2535	21.96	23.00	1.271	-	-	0.02	0.740	**0.940**
	LTE Band 7	20M	QPSK	1	49	-	Back	15mm	Ant 13	DSI 4	20850	2510	21.61	23.00	1.377	-	-	0.03	0.620	0.854
	LTE Band 7	20M	QPSK	1	49	-	Back	15mm	Ant 13	DSI 4	21350	2560	21.80	23.00	1.318	-	-	-0.15	0.530	0.699
	LTE Band 7C	20M	QPSK	1	49	-	Back	15mm	Ant 13	DSI 4	21100+ 21298	2535+ 2554.8	21.91	23.00	1.285	-	-	-0.03	0.689	0.886
	LTE Band 7	20M	QPSK	50	24	-	Front	15mm	Ant 13	DSI 4	21100	2535	20.88	22.00	1.294	-	-	0.08	0.245	0.317
	LTE Band 7	20M	QPSK	50	24	-	Back	15mm	Ant 13	DSI 4	21100	2535	20.88	22.00	1.294	-	-	-0.14	0.576	0.745
	LTE Band 7	20M	QPSK	100	0	-	Back	15mm	Ant 13	DSI 4	21100	2535	20.87	22.00	1.297	-	-	-0.01	0.565	0.733
	LTE Band 7	20M	QPSK	1	49	-	Front	15mm	Ant 31	DSI 5	21100	2535	20.34	21.50	1.306	-	-	-0.03	0.123	0.161
	LTE Band 7	20M	QPSK	1	49	-	Back	15mm	Ant 31	DSI 5	21100	2535	20.34	21.50	1.306	-	-	0.01	0.209	0.273
	LTE Band 7C	20M	QPSK	1	49	-	Back	15mm	Ant 31	DSI 5	21100+ 21298	2535+ 2554.8	20.28	21.50	1.324	-	-	-0.03	0.186	0.246
	LTE Band 7	20M	QPSK	50	24	-	Front	15mm	Ant 31	DSI 5	21100	2535	20.32	21.50	1.312	-	-	0.08	0.121	0.159
	LTE Band 7	20M	QPSK	50	24	-	Back	15mm	Ant 31	DSI 5	21100	2535	20.32	21.50	1.312	-	-	0.15	0.201	0.264
	LTE Band 41	20M	QPSK	1	49	-	Front	15mm	Ant 13	DSI 4	40620	2593	22.47	23.40	1.239	62.9	1.006	0.11	0.181	0.226
48	LTE Band 41	20M	QPSK	1	49	-	Back	15mm	Ant 13	DSI 4	40620	2593	22.47	23.40	1.239	62.9	1.006	0.07	0.442	**0.551**
	LTE Band 41C	20M	QPSK	1	49	-	Back	15mm	Ant 13	DSI 4	40620+ 40422	2593+ 2573.2	22.44	23.40	1.247	62.9	1.006	-0.13	0.402	0.504
	LTE Band 41	20M	QPSK	50	24	-	Front	15mm	Ant 13	DSI 4	40620	2593	21.55	22.40	1.216	62.9	1.006	-0.11	0.143	0.175
	LTE Band 41	20M	QPSK	50	24	-	Back	15mm	Ant 13	DSI 4	40620	2593	21.55	22.40	1.216	62.9	1.006	-0.04	0.350	0.428
	LTE Band 41	20M	QPSK	1	49	-	Front	15mm	Ant 31	DSI 5	40620	2593	22.82	23.80	1.253	62.9	1.006	0.02	0.140	0.176
	LTE Band 41	20M	QPSK	1	49	-	Back	15mm	Ant 31	DSI 5	40620	2593	22.82	23.80	1.253	62.9	1.006	-0.05	0.210	0.265
	LTE Band 41C	20M	QPSK	1	49	-	Back	15mm	Ant 31	DSI 5	40620+ 40422	2593+ 2573.2	22.79	23.80	1.262	62.9	1.006	0.12	0.194	0.246
	LTE Band 41	20M	QPSK	50	24	-	Front	15mm	Ant 31	DSI 5	40620	2593	21.83	22.80	1.250	62.9	1.006	0.04	0.104	0.131
	LTE Band 41	20M	QPSK	50	24	-	Back	15mm	Ant 31	DSI 5	40620	2593	21.83	22.80	1.250	62.9	1.006	0.07	0.164	0.206
	FR1 n7	20M	BPSK	1	1	DFT-15	Front	15mm	Ant 11	DSI 4	507000	2535	23.12	24.00	1.225	-	-	-0.12	0.294	0.360
	FR1 n7	20M	BPSK	1	1	DFT-15	Back	15mm	Ant 11	DSI 4	507000	2535	23.12	24.00	1.225	-	-	-0.04	0.598	0.732
	FR1 n7	20M	BPSK	50	28	DFT-15	Front	15mm	Ant 11	DSI 4	507000	2535	23.11	24.00	1.227	-	-	-0.07	0.308	0.378
	FR1 n7	20M	BPSK	50	28	DFT-15	Back	15mm	Ant 11	DSI 4	507000	2535	23.11	24.00	1.227	-	-	0.14	0.610	0.749
	FR1 n7	20M	BPSK	1	1	DFT-15	Front	15mm	Ant 13	DSI 4	507000	2535	21.38	22.80	1.387	-	-	0.07	0.222	0.308
	FR1 n7	20M	BPSK	1	1	DFT-15	Back	15mm	Ant 13	DSI 4	507000	2535	21.38	22.80	1.387	-	-	0.07	0.621	0.861
	FR1 n7	20M	BPSK	1	1	DFT-15	Back	15mm	Ant 13	DSI 4	502000	2510	21.28	22.80	1.419	-	-	0.03	0.584	0.829
	FR1 n7	20M	BPSK	1	1	DFT-15	Back	15mm	Ant 13	DSI 4	512000	2560	21.31	22.80	1.409	-	-	0.11	0.585	0.824
	FR1 n7	20M	BPSK	50	28	DFT-15	Front	15mm	Ant 13	DSI 4	507000	2535	21.30	22.80	1.413	-	-	-0.14	0.236	0.333
49	FR1 n7	20M	BPSK	50	28	DFT-15	Back	15mm	Ant 13	DSI 4	507000	2535	21.30	22.80	1.413	-	-	-0.11	0.633	**0.894**
	FR1 n7	20M	BPSK	50	28	DFT-15	Back	15mm	Ant 13	DSI 4	502000	2510	21.18	22.80	1.452	-	-	0.03	0.591	0.858
	FR1 n7	20M	BPSK	50	28	DFT-15	Back	15mm	Ant 13	DSI 4	512000	2560	21.27	22.80	1.422	-	-	0.09	0.595	0.846
	FR1 n7	20M	BPSK	100	0	DFT-15	Back	15mm	Ant 13	DSI 4	507000	2535	21.22	22.80	1.439	-	-	0.05	0.601	0.865
	FR1 n41	100M	BPSK	1	137	DFT-30	Front	15mm	Ant 11	DSI 4	518598	2592.99	23.84	25.00	1.306	-	-	-0.13	0.347	0.453
	FR1 n41	100M	BPSK	1	137	DFT-30	Back	15mm	Ant 11	DSI 4	518598	2592.99	23.84	25.00	1.306	-	-	0.03	0.657	0.858
	FR1 n41	100M	BPSK	135	69	DFT-30	Front	15mm	Ant 11	DSI 4	518598	2592.99	23.83	25.00	1.309	-	-	-0.06	0.350	0.458
	FR1 n41	100M	BPSK	135	69	DFT-30	Back	15mm	Ant 11	DSI 4	518598	2592.99	23.83	25.00	1.309	-	-	-0.1	0.671	0.878
	FR1 n41	100M	BPSK	270	0	DFT-30	Back	15mm	Ant 11	DSI 4	518598	2592.99	23.12	24.50	1.374	-	-	-0.03	0.637	0.875
	FR1 n41	100M	BPSK	1	137	DFT-30	Front	15mm	Ant 13	DSI 4	518598	2592.99	21.21	22.80	1.442	-	-	-0.1	0.264	0.381
	FR1 n41	100M	BPSK	1	137	DFT-30	Back	15mm	Ant 13	DSI 4	518598	2592.99	21.21	22.80	1.442	-	-	-0.11	0.612	0.883
	FR1 n41	100M	BPSK	135	69	DFT-30	Front	15mm	Ant 13	DSI 4	518598	2592.99	21.20	22.80	1.445	-	-	-0.13	0.272	0.393
50	FR1 n41	100M	BPSK	135	69	DFT-30	Back	15mm	Ant 13	DSI 4	518598	2592.99	21.20	22.80	1.445	-	-	0.12	0.635	**0.918**
	FR1 n41	100M	BPSK	270	0	DFT-30	Back	15mm	Ant 13	DSI 4	518598	2592.99	21.19	22.80	1.449	-	-	-0.15	0.615	0.891

<ENDC 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	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
835MHz																		
	FR1 n5	20M	BPSK	1	1	DFT-15	Front	15mm	Ant 41	DSI 5	167300	836.5	23.46	24.50	1.271	-0.06	0.152	0.193
	FR1 n5	20M	BPSK	1	1	DFT-15	Back	15mm	Ant 41	DSI 5	167300	836.5	23.46	24.50	1.271	-0.02	0.231	0.294
	FR1 n5	20M	BPSK	50	28	DFT-15	Front	15mm	Ant 41	DSI 5	167300	836.5	23.42	24.50	1.282	0.06	0.156	0.200
51	FR1 n5	20M	BPSK	50	28	DFT-15	Back	15mm	Ant 41	DSI 5	167300	836.5	23.42	24.50	1.282	0.14	0.233	**0.299**
1900MHz																		
	LTE Band 2	20M	QPSK	1	49	-	Front	15mm	Ant 31	DSI 5	18900	1880	20.13	21.00	1.222	0.06	0.140	0.171
	LTE Band 2	20M	QPSK	1	49	-	Back	15mm	Ant 31	DSI 5	18900	1880	20.13	21.00	1.222	0.08	0.205	0.250
	LTE Band 2	20M	QPSK	50	24	-	Front	15mm	Ant 31	DSI 5	18900	1880	20.11	21.00	1.227	-0.13	0.142	0.174
	LTE Band 2	20M	QPSK	50	24	-	Back	15mm	Ant 31	DSI 5	18900	1880	20.11	21.00	1.227	-0.03	0.217	0.266
2600MHz																		
	LTE Band 7	20M	QPSK	1	49	-	Front	15mm	Ant 13	DSI 4	21100	2535	19.99	21.00	1.262	0.03	0.200	0.252
	LTE Band 7	20M	QPSK	1	49	-	Back	15mm	Ant 13	DSI 4	21100	2535	19.99	21.00	1.262	-0.02	0.441	0.556
	LTE Band 7	20M	QPSK	50	24	-	Front	15mm	Ant 13	DSI 4	21100	2535	19.97	21.00	1.268	-0.04	0.204	0.259
	LTE Band 7	20M	QPSK	50	24	-	Back	15mm	Ant 13	DSI 4	21100	2535	19.97	21.00	1.268	-0.01	0.458	0.581
	LTE Band 7	20M	QPSK	1	49	-	Front	15mm	Ant 31	DSI 5	21100	2535	18.98	20.00	1.265	-0.11	0.081	0.102
	LTE Band 7	20M	QPSK	1	49	-	Back	15mm	Ant 31	DSI 5	21100	2535	18.98	20.00	1.265	0.14	0.142	0.180
	LTE Band 7	20M	QPSK	50	24	-	Front	15mm	Ant 31	DSI 5	21100	2535	18.96	20.00	1.271	-0.12	0.084	0.107
	LTE Band 7	20M	QPSK	50	24	-	Back	15mm	Ant 31	DSI 5	21100	2535	18.96	20.00	1.271	0.12	0.145	0.184
	FR1 n7	20M	BPSK	1	1	DFT-15	Front	15mm	Ant 11	DSI 4	507000	2535	23.12	24.00	1.225	-0.12	0.294	0.360
	FR1 n7	20M	BPSK	1	1	DFT-15	Back	15mm	Ant 11	DSI 4	507000	2535	23.12	24.00	1.225	-0.04	0.598	0.732
	FR1 n7	20M	BPSK	50	28	DFT-15	Front	15mm	Ant 11	DSI 4	507000	2535	23.11	24.00	1.227	-0.07	0.308	0.378
	FR1 n7	20M	BPSK	50	28	DFT-15	Back	15mm	Ant 11	DSI 4	507000	2535	23.11	24.00	1.227	0.14	0.610	0.749
	FR1 n7	20M	BPSK	1	1	DFT-15	Front	15mm	Ant 13	DSI 4	507000	2535	20.75	22.30	1.429	-0.1	0.212	0.303
	FR1 n7	20M	BPSK	1	1	DFT-15	Back	15mm	Ant 13	DSI 4	507000	2535	20.75	22.30	1.429	-0.02	0.544	0.777
	FR1 n7	20M	BPSK	50	28	DFT-15	Front	15mm	Ant 13	DSI 4	507000	2535	20.74	22.30	1.432	-0.08	0.218	0.312
	FR1 n7	20M	BPSK	50	28	DFT-15	Back	15mm	Ant 13	DSI 4	507000	2535	20.74	22.30	1.432	0.04	0.546	0.782

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																
	Bluetooth	DH5 1Mbps	Front	15mm	Ant 22	Full Power	39	2441	11.35	12.50	1.303	77.07	1.298	-0.09	0.008	0.014
52	Bluetooth	DH5 1Mbps	Back	15mm	Ant 22	Full Power	39	2441	11.35	12.50	1.303	77.07	1.298	-0.13	0.016	**0.027**
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Ant 22	Full Power	1	2412	18.91	20.00	1.285	99.41	1.006	-0.01	0.105	0.136
53	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 22	Full Power	1	2412	18.91	20.00	1.285	99.41	1.006	-0.14	0.120	**0.155**
5000MH--6000MHz																
	WLAN5.3GHz	802.11a 6Mbps	Front	15mm	Ant 22	Full Power	60	5300	17.92	19.00	1.282	97.2	1.029	0.05	0.249	0.329
54	WLAN5.3GHz	802.11a 6Mbps	Back	15mm	Ant 22	Full Power	60	5300	17.92	19.00	1.282	97.2	1.029	0.08	0.306	**0.404**
	WLAN5.3GHz	802.11n-HT40 MCS0	Front	15mm	Ant 22	Reduced-Simultaneous	54	5270	15.78	17.00	1.324	92.75	1.078	0.03	0.160	0.228
	WLAN5.3GHz	802.11n-HT40 MCS0	Back	15mm	Ant 22	Reduced-Simultaneous	54	5270	15.78	17.00	1.324	92.75	1.078	0.18	0.197	0.281
	WLAN5.5GHz	802.11a 6Mbps	Front	15mm	Ant 22	Full Power	116	5580	17.78	19.00	1.324	97.2	1.029	0.13	0.222	0.303
55	WLAN5.5GHz	802.11a 6Mbps	Back	15mm	Ant 22	Full Power	116	5580	17.78	19.00	1.324	97.2	1.029	-0.01	0.256	**0.349**
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	15mm	Ant 22	Reduced-Simultaneous	138	5690	15.14	16.50	1.368	88.89	1.125	0.06	0.117	0.180
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	15mm	Ant 22	Reduced-Simultaneous	138	5690	15.14	16.50	1.368	88.89	1.125	0.11	0.128	0.197
	WLAN5.8GHz	802.11a 6Mbps	Front	15mm	Ant 22	Full Power	157	5785	17.83	19.00	1.309	97.2	1.029	-0.16	0.188	0.253
56	WLAN5.8GHz	802.11a 6Mbps	Back	15mm	Ant 22	Full Power	157	5785	17.83	19.00	1.309	97.2	1.029	0.05	0.195	**0.263**
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	15mm	Ant 22	Reduced-Simultaneous	155	5775	15.58	17.00	1.387	88.89	1.125	0.07	0.142	0.222
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	15mm	Ant 22	Reduced-Simultaneous	155	5775	15.58	17.00	1.387	88.89	1.125	0.05	0.148	0.231

15.4 Product specific 10g 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 10g SAR (W/kg)	Reported 10g SAR (W/kg)
										1900MHz										
57	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	0mm	Ant 13	DSI 5	9400	1880	20.29	21.30	1.262	-	-	-0.15	1.710	**2.158**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	0mm	Ant 13	DSI 5	9262	1852.4	20.26	21.30	1.271	-	-	0.03	1.650	2.096
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	0mm	Ant 13	DSI 5	9538	1907.6	20.12	21.30	1.312	-	-	0.02	1.620	2.126
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	14mm	Ant 13	DSI 4	9400	1880	22.53	23.80	1.340	-	-	-0.14	0.310	0.415
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	0mm	Ant 13	DSI 8	9400	1880	18.73	19.80	1.279	-	-	-0.14	1.210	1.548
58	LTE Band 2	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 5	18900	1880	20.55	21.50	1.245	-	-	0.11	1.790	**2.228**
	LTE Band 2	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 5	18700	1860	20.50	21.50	1.259	-	-	0.15	1.650	2.077
	LTE Band 2	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 5	19100	1900	20.41	21.50	1.285	-	-	0.09	1.580	2.031
	LTE Band 2	20M	QPSK	1	49	-	Top Side	14mm	Ant 13	DSI 4	18900	1880	22.53	23.50	1.250	-	-	0.13	0.328	0.410
	LTE Band 2	20M	QPSK	50	24	-	Top Side	0mm	Ant 13	DSI 5	18900	1880	20.53	21.50	1.250	-	-	-0.04	1.750	2.188
	LTE Band 2	20M	QPSK	50	24	-	Top Side	0mm	Ant 13	DSI 5	18700	1860	20.48	21.50	1.265	-	-	-0.12	1.630	2.062
	LTE Band 2	20M	QPSK	50	24	-	Top Side	0mm	Ant 13	DSI 5	19100	1900	20.38	21.50	1.294	-	-	0.15	1.530	1.980
	LTE Band 2	20M	QPSK	50	24	-	Top Side	14mm	Ant 13	DSI 4	18900	1880	21.52	22.50	1.253	-	-	0.13	0.260	0.326
	LTE Band 2	20M	QPSK	100	0	-	Top Side	0mm	Ant 13	DSI 5	18900	1880	20.53	21.50	1.250	-	-	0.03	1.570	1.963
	LTE Band 2	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 8	18900	1880	18.71	19.50	1.199	-	-	0.11	1.110	1.331
	LTE Band 2	20M	QPSK	50	24	-	Top Side	0mm	Ant 13	DSI 8	18900	1880	18.69	19.50	1.205	-	-	-0.04	1.070	1.289
	LTE Band 7	20M	QPSK	1	49	-	Back	0mm	Ant 13	DSI 5	21100	2535	17.45	18.50	1.274	-	-	0.04	1.390	1.770
59	LTE Band 7	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 5	21100	2535	17.45	18.50	1.274	-	-	0.02	1.660	**2.114**
	LTE Band 7	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 5	20850	2510	17.25	18.50	1.334	-	-	0.05	1.580	2.107
	LTE Band 7	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 5	21350	2560	17.32	18.50	1.312	-	-	0.02	1.560	2.047
	LTE Band 7C	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 5	21100+ 21298	2535+ 2554.8	17.42	18.50	1.282	-	-	0.08	1.550	1.988
	LTE Band 7	20M	QPSK	1	49	-	Back	12mm	Ant 13	DSI 4	21100	2535	21.96	23.00	1.271	-	-	-0.08	0.484	0.615
	LTE Band 7	20M	QPSK	1	49	-	Top Side	14mm	Ant 13	DSI 4	21100	2535	21.96	23.00	1.271	-	-	0.02	0.455	0.578
	LTE Band 7	20M	QPSK	50	24	-	Back	0mm	Ant 13	DSI 5	21100	2535	17.43	18.50	1.279	-	-	0.14	1.360	1.740
	LTE Band 7	20M	QPSK	50	24	-	Top Side	0mm	Ant 13	DSI 5	21100	2535	17.43	18.50	1.279	-	-	-0.04	1.550	1.983
	LTE Band 7	20M	QPSK	50	24	-	Back	12mm	Ant 13	DSI 4	21100	2535	20.88	22.00	1.294	-	-	-0.08	0.382	0.494
	LTE Band 7	20M	QPSK	50	24	-	Top Side	14mm	Ant 13	DSI 4	21100	2535	20.88	22.00	1.294	-	-	0.02	0.356	0.461
	LTE Band 7	20M	QPSK	100	0	-	Top Side	0mm	Ant 13	DSI 5	21100	2535	17.40	18.50	1.288	-	-	0.14	1.520	1.958
	LTE Band 7	20M	QPSK	1	49	-	Back	0mm	Ant 13	DSI 8	21100	2535	15.04	16.00	1.247	-	-	-0.04	0.762	0.951
	LTE Band 7	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 8	21100	2535	15.04	16.00	1.247	-	-	-0.04	0.805	1.004
	LTE Band 7C	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 8	21100+ 21298	2535+ 2554.8	15.01	16.00	1.256	-	-	0.13	0.781	0.981
	LTE Band 7	20M	QPSK	50	24	-	Back	0mm	Ant 13	DSI 8	21100	2535	15.02	16.00	1.253	-	-	-0.05	0.753	0.944
	LTE Band 7	20M	QPSK	50	24	-	Top Side	0mm	Ant 13	DSI 8	21100	2535	15.02	16.00	1.253	-	-	0.12	0.790	0.990
	LTE Band 41	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 5	40620	2593	19.99	20.90	1.233	62.9	1.006	0.07	1.450	1.799
	LTE Band 41	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 5	39750	2506	19.92	20.90	1.253	62.9	1.006	0.05	1.660	2.093
	LTE Band 41	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 5	40185	2549.5	19.91	20.90	1.256	62.9	1.006	-0.13	1.380	1.744
	LTE Band 41	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 5	41055	2636.5	19.88	20.90	1.265	62.9	1.006	0.05	1.350	1.718
	LTE Band 41	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 5	41490	2680	19.82	20.90	1.282	62.9	1.006	-0.06	1.390	1.793
	LTE Band 41	20M	QPSK	1	49	-	Top Side	14mm	Ant 13	DSI 4	39750	2506	22.18	23.40	1.324	62.9	1.006	0.04	0.247	0.329
	LTE Band 41	20M	QPSK	50	24	-	Top Side	0mm	Ant 13	DSI 5	40620	2593	19.97	20.90	1.239	62.9	1.006	-0.06	1.510	1.882
60	LTE Band 41	20M	QPSK	50	24	-	Top Side	0mm	Ant 13	DSI 5	39750	2506	19.90	20.90	1.259	62.9	1.006	0.08	1.700	**2.153**
	LTE Band 41	20M	QPSK	50	24	-	Top Side	0mm	Ant 13	DSI 5	40185	2549.5	19.89	20.90	1.262	62.9	1.006	-0.01	1.430	1.815
	LTE Band 41	20M	QPSK	50	24	-	Top Side	0mm	Ant 13	DSI 5	41055	2636.5	19.86	20.90	1.271	62.9	1.006	-0.15	1.440	1.841
	LTE Band 41	20M	QPSK	50	24	-	Top Side	0mm	Ant 13	DSI 5	41490	2680	19.80	20.90	1.288	62.9	1.006	0.02	1.390	1.801
	LTE Band 41C	20M	QPSK	50	24	-	Top Side	0mm	Ant 13	DSI 5	40620+ 40422	2593+ 2573.2	19.95	20.90	1.245	62.9	1.006	0.01	1.620	2.028
	LTE Band 41	20M	QPSK	50	24	-	Top Side	14mm	Ant 13	DSI 4	39750	2506	21.31	22.40	1.285	62.9	1.006	-0.06	0.203	0.262
	LTE Band 41	20M	QPSK	100	0	-	Top Side	0mm	Ant 13	DSI 5	40620	2593	19.95	20.90	1.245	62.9	1.006	0.03	1.460	1.828
	LTE Band 41	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 8	40620	2593	17.95	18.90	1.245	62.9	1.006	-0.03	0.855	1.070
	LTE Band 41C	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 8	40620+ 40422	2593+ 2573.2	17.91	18.90	1.256	62.9	1.006	0.07	0.811	1.025

	LTE Band 41	20M	QPSK	50	24	-	Top Side	0mm	Ant 13	DSI 8	40620	2593	17.90	18.90	1.259	62.9	1.006	0.08	0.838	1.061
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Side	0mm	Ant 11	DSI 5	507000	2535	20.64	21.50	1.219	-	-	-0.11	1.760	2.145
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Side	0mm	Ant 11	DSI 5	502000	2510	20.62	21.50	1.225	-	-	-0.13	1.540	1.886
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Side	0mm	Ant 11	DSI 5	512000	2560	20.61	21.50	1.227	-	-	0.13	1.750	2.148
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Side	13mm	Ant 11	DSI 4	512000	2560	23.05	24.00	1.245	-	-	0.03	0.313	0.390
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Side	0mm	Ant 11	DSI 5	507000	2535	20.63	21.50	1.222	-	-	0.01	1.810	2.211
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Side	0mm	Ant 11	DSI 5	502000	2510	20.59	21.50	1.233	-	-	0.13	1.600	1.973
61	FR1 n7	20M	BPSK	50	28	DFT-15	Left Side	0mm	Ant 11	DSI 5	512000	2560	20.55	21.50	1.245	-	-	-0.13	1.850	**2.302**
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Side	13mm	Ant 11	DSI 4	512000	2560	23.00	24.00	1.259	-	-	0.03	0.335	0.422
	FR1 n7	20M	BPSK	100	0	DFT-15	Left Side	0mm	Ant 11	DSI 5	507000	2535	20.59	21.50	1.233	-	-	0.14	1.790	2.207
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Side	0mm	Ant 11	DSI 8	507000	2535	18.66	19.50	1.213	-	-	-0.05	1.040	1.262
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Side	0mm	Ant 11	DSI 8	507000	2535	18.64	19.50	1.219	-	-	0.14	1.130	1.377
	FR1 n7	20M	BPSK	1	1	DFT-15	Back	0mm	Ant 13	DSI 5	507000	2535	16.87	18.30	1.390	-	-	0.06	1.180	1.640
	FR1 n7	20M	BPSK	1	1	DFT-15	Top Side	0mm	Ant 13	DSI 5	507000	2535	16.87	18.30	1.390	-	-	-0.09	1.270	1.765
	FR1 n7	20M	BPSK	1	1	DFT-15	Back	12mm	Ant 13	DSI 4	507000	2535	21.38	22.80	1.387	-	-	-0.15	0.386	0.535
	FR1 n7	20M	BPSK	1	1	DFT-15	Top Side	14mm	Ant 13	DSI 4	507000	2535	21.38	22.80	1.387	-	-	-0.09	0.348	0.483
	FR1 n7	20M	BPSK	50	28	DFT-15	Back	0mm	Ant 13	DSI 5	507000	2535	16.82	18.30	1.406	-	-	-0.01	1.190	1.673
	FR1 n7	20M	BPSK	50	28	DFT-15	Top Side	0mm	Ant 13	DSI 5	507000	2535	16.82	18.30	1.406	-	-	-0.15	1.310	1.842
	FR1 n7	20M	BPSK	50	28	DFT-15	Back	12mm	Ant 13	DSI 4	507000	2535	21.30	22.80	1.413	-	-	0.02	0.390	0.551
	FR1 n7	20M	BPSK	50	28	DFT-15	Top Side	14mm	Ant 13	DSI 4	507000	2535	21.30	22.80	1.413	-	-	0.08	0.350	0.494
	FR1 n7	20M	BPSK	1	1	DFT-15	Back	0mm	Ant 13	DSI 8	507000	2535	15.35	16.80	1.396	-	-	0.06	0.777	1.085
	FR1 n7	20M	BPSK	1	1	DFT-15	Top Side	0mm	Ant 13	DSI 8	507000	2535	15.35	16.80	1.396	-	-	0.15	0.867	1.211
	FR1 n7	20M	BPSK	50	28	DFT-15	Back	0mm	Ant 13	DSI 8	507000	2535	15.30	16.80	1.413	-	-	0.09	0.799	1.129
	FR1 n7	20M	BPSK	50	28	DFT-15	Top Side	0mm	Ant 13	DSI 8	507000	2535	15.30	16.80	1.413	-	-	-0.09	0.889	1.256
	FR1 n41	100M	BPSK	1	137	DFT-30	Back	0mm	Ant 11	DSI 5	518598	2592.99	19.36	20.50	1.300	-	-	0.04	1.710	2.223
	FR1 n41	100M	BPSK	1	137	DFT-30	Left Side	0mm	Ant 11	DSI 5	518598	2592.99	19.36	20.50	1.300	-	-	0.06	1.880	2.444
	FR1 n41	100M	BPSK	1	137	DFT-30	Back	10mm	Ant 11	DSI 4	518598	2592.99	23.84	25.00	1.306	-	-	0.03	0.618	0.807
	FR1 n41	100M	BPSK	1	137	DFT-30	Left Side	13mm	Ant 11	DSI 4	518598	2592.99	23.84	25.00	1.306	-	-	0.14	0.478	0.624
	FR1 n41	100M	BPSK	135	69	DFT-30	Back	0mm	Ant 11	DSI 5	518598	2592.99	19.30	20.50	1.318	-	-	0.13	1.800	2.373
62	FR1 n41	100M	BPSK	135	69	DFT-30	Left Side	0mm	Ant 11	DSI 5	518598	2592.99	19.30	20.50	1.318	-	-	0.15	1.910	**2.518**
	FR1 n41	100M	BPSK	135	69	DFT-30	Back	10mm	Ant 11	DSI 4	518598	2592.99	23.83	25.00	1.309	-	-	-0.02	0.624	0.817
	FR1 n41	100M	BPSK	135	69	DFT-30	Left Side	13mm	Ant 11	DSI 4	518598	2592.99	23.83	25.00	1.309	-	-	0.1	0.490	0.641
	FR1 n41	100M	BPSK	270	0	DFT-30	Back	0mm	Ant 11	DSI 5	518598	2592.99	19.26	20.50	1.330	-	-	0.14	1.650	2.195
	FR1 n41	100M	BPSK	270	0	DFT-30	Left Side	0mm	Ant 11	DSI 5	518598	2592.99	19.26	20.50	1.330	-	-	0.02	1.810	2.408
	FR1 n41	100M	BPSK	1	137	DFT-30	Back	0mm	Ant 11	DSI 8	518598	2592.99	17.86	19.00	1.300	-	-	-0.13	1.210	1.573
	FR1 n41	100M	BPSK	1	137	DFT-30	Left Side	0mm	Ant 11	DSI 8	518598	2592.99	17.86	19.00	1.300	-	-	-0.03	1.310	1.703
	FR1 n41	100M	BPSK	135	69	DFT-30	Back	0mm	Ant 11	DSI 8	518598	2592.99	17.82	19.00	1.312	-	-	0.09	1.230	1.614
	FR1 n41	100M	BPSK	135	69	DFT-30	Left Side	0mm	Ant 11	DSI 8	518598	2592.99	17.82	19.00	1.312	-	-	0.04	1.330	1.745
	FR1 n41	100M	BPSK	270	0	DFT-30	Back	0mm	Ant 11	DSI 8	518598	2592.99	17.81	19.00	1.315	-	-	-0.12	1.150	1.513
	FR1 n41	100M	BPSK	270	0	DFT-30	Left Side	0mm	Ant 11	DSI 8	518598	2592.99	17.81	19.00	1.315	-	-	0.05	1.220	1.605
	FR1 n41	100M	BPSK	1	137	DFT-30	Back	0mm	Ant 13	DSI 5	518598	2592.99	17.74	19.30	1.432	-	-	0.1	1.290	1.848
	FR1 n41	100M	BPSK	1	137	DFT-30	Top Side	0mm	Ant 13	DSI 5	518598	2592.99	17.74	19.30	1.432	-	-	-0.14	1.340	1.919
	FR1 n41	100M	BPSK	1	137	DFT-30	Back	12mm	Ant 13	DSI 4	518598	2592.99	21.21	22.80	1.442	-	-	-0.06	0.361	0.521
	FR1 n41	100M	BPSK	1	137	DFT-30	Top Side	14mm	Ant 13	DSI 4	518598	2592.99	21.21	22.80	1.442	-	-	-0.01	0.327	0.472
	FR1 n41	100M	BPSK	135	69	DFT-30	Back	0mm	Ant 13	DSI 5	518598	2592.99	17.71	19.30	1.442	-	-	-0.04	1.250	1.803
	FR1 n41	100M	BPSK	135	69	DFT-30	Top Side	0mm	Ant 13	DSI 5	518598	2592.99	17.71	19.30	1.442	-	-	-0.08	1.300	1.875
	FR1 n41	100M	BPSK	135	69	DFT-30	Back	12mm	Ant 13	DSI 4	518598	2592.99	21.20	22.80	1.445	-	-	-0.06	0.367	0.530
	FR1 n41	100M	BPSK	135	69	DFT-30	Top Side	14mm	Ant 13	DSI 4	518598	2592.99	21.20	22.80	1.445	-	-	-0.01	0.325	0.470
	FR1 n41	100M	BPSK	270	0	DFT-30	Back	0mm	Ant 13	DSI 5	518598	2592.99	17.69	19.30	1.449	-	-	-0.01	1.210	1.753
	FR1 n41	100M	BPSK	270	0	DFT-30	Top Side	0mm	Ant 13	DSI 5	518598	2592.99	17.69	19.30	1.449	-	-	-0.03	1.250	1.811
	FR1 n41	100M	BPSK	1	137	DFT-30	Back	0mm	Ant 13	DSI 8	518598	2592.99	15.79	17.30	1.416	-	-	-0.02	0.838	1.186
	FR1 n41	100M	BPSK	1	137	DFT-30	Top Side	0mm	Ant 13	DSI 8	518598	2592.99	15.79	17.30	1.416	-	-	-0.02	0.865	1.225
	FR1 n41	100M	BPSK	135	69	DFT-30	Back	0mm	Ant 13	DSI 8	518598	2592.99	15.71	17.30	1.442	-	-	0.02	0.821	1.184
	FR1 n41	100M	BPSK	135	69	DFT-30	Top Side	0mm	Ant 13	DSI 8	518598	2592.99	15.71	17.30	1.442	-	-	-0.13	0.841	1.213

<ENDC 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	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
2600MHz																		
	LTE Band 7	20M	QPSK	1	49	-	Back	0mm	Ant 13	DSI 5	21100	2535	16.07	17.00	1.239	0.1	0.957	1.186
	LTE Band 7	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 5	21100	2535	16.07	17.00	1.239	0.06	1.170	1.449
	LTE Band 7	20M	QPSK	1	49	-	Back	12mm	Ant 13	DSI 4	21100	2535	19.99	21.00	1.262	-0.12	0.308	0.389
	LTE Band 7	20M	QPSK	1	49	-	Top Side	14mm	Ant 13	DSI 4	21100	2535	19.99	21.00	1.262	-0.05	0.290	0.366
	LTE Band 7	20M	QPSK	50	24	-	Back	0mm	Ant 13	DSI 5	21100	2535	16.05	17.00	1.245	-0.09	0.931	1.159
	LTE Band 7	20M	QPSK	50	24	-	Top Side	0mm	Ant 13	DSI 5	21100	2535	16.05	17.00	1.245	-0.13	1.080	1.344
	LTE Band 7	20M	QPSK	50	24	-	Back	12mm	Ant 13	DSI 4	21100	2535	19.97	21.00	1.268	-0.12	0.294	0.373
	LTE Band 7	20M	QPSK	50	24	-	Top Side	14mm	Ant 13	DSI 4	21100	2535	19.97	21.00	1.268	-0.05	0.284	0.360
	LTE Band 7	20M	QPSK	1	49	-	Back	0mm	Ant 13	DSI 8	21100	2535	12.17	13.00	1.211	0.07	0.400	0.484
	LTE Band 7	20M	QPSK	1	49	-	Top Side	0mm	Ant 13	DSI 8	21100	2535	12.17	13.00	1.211	0.07	0.462	0.559
	LTE Band 7	20M	QPSK	50	24	-	Back	0mm	Ant 13	DSI 8	21100	2535	12.15	13.00	1.216	-0.05	0.381	0.463
	LTE Band 7	20M	QPSK	50	24	-	Top Side	0mm	Ant 13	DSI 8	21100	2535	12.15	13.00	1.216	-0.09	0.441	0.536
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Side	0mm	Ant 11	DSI 5	507000	2535	18.66	19.50	1.213	-0.05	1.040	1.262
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Side	13mm	Ant 11	DSI 4	507000	2535	23.12	24.00	1.225	0.03	0.308	0.377
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Side	0mm	Ant 11	DSI 5	507000	2535	18.64	19.50	1.219	0.14	1.130	1.377
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Side	13mm	Ant 11	DSI 4	507000	2535	23.11	24.00	1.227	0.03	0.327	0.401
	FR1 n7	20M	BPSK	1	1	DFT-15	Left Side	0mm	Ant 11	DSI 8	507000	2535	15.85	16.50	1.161	0.07	0.542	0.630
	FR1 n7	20M	BPSK	50	28	DFT-15	Left Side	0mm	Ant 11	DSI 8	507000	2535	15.78	16.50	1.180	-0.13	0.604	0.713
	FR1 n7	20M	BPSK	1	1	DFT-15	Back	0mm	Ant 13	DSI 5	507000	2535	15.35	16.80	1.396	0.06	0.777	1.085
	FR1 n7	20M	BPSK	1	1	DFT-15	Top Side	0mm	Ant 13	DSI 5	507000	2535	15.35	16.80	1.396	0.15	0.867	1.211
	FR1 n7	20M	BPSK	1	1	DFT-15	Back	12mm	Ant 13	DSI 4	507000	2535	20.75	22.30	1.429	0.12	0.334	0.477
	FR1 n7	20M	BPSK	1	1	DFT-15	Top Side	14mm	Ant 13	DSI 4	507000	2535	20.75	22.30	1.429	-0.11	0.298	0.426
	FR1 n7	20M	BPSK	50	28	DFT-15	Back	0mm	Ant 13	DSI 5	507000	2535	15.30	16.80	1.413	0.09	0.799	1.129
	FR1 n7	20M	BPSK	50	28	DFT-15	Top Side	0mm	Ant 13	DSI 5	507000	2535	15.30	16.80	1.413	-0.09	0.889	1.256
	FR1 n7	20M	BPSK	50	28	DFT-15	Back	12mm	Ant 13	DSI 4	507000	2535	20.74	22.30	1.432	0.07	0.338	0.484
	FR1 n7	20M	BPSK	50	28	DFT-15	Top Side	14mm	Ant 13	DSI 4	507000	2535	20.74	22.30	1.432	0.01	0.301	0.431
	FR1 n7	20M	BPSK	1	1	DFT-15	Back	0mm	Ant 13	DSI 8	507000	2535	12.27	13.80	1.422	0.14	0.376	0.535
	FR1 n7	20M	BPSK	1	1	DFT-15	Top Side	0mm	Ant 13	DSI 8	507000	2535	12.27	13.80	1.422	-0.05	0.431	0.613
	FR1 n7	20M	BPSK	50	28	DFT-15	Back	0mm	Ant 13	DSI 8	507000	2535	12.23	13.80	1.435	0.11	0.386	0.554
	FR1 n7	20M	BPSK	50	28	DFT-15	Top Side	0mm	Ant 13	DSI 8	507000	2535	12.23	13.80	1.435	-0.05	0.434	0.623

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)
5000MH--6000MHz																
63	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	Ant 22	Full Power	60	5300	17.92	19.00	1.282	97.2	1.029	-0.05	1.430	**1.887**
	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 22	Full Power	60	5300	17.92	19.00	1.282	97.2	1.029	0.19	0.750	0.990
	WLAN5.3GHz	802.11a 6Mbps	Right Side	0mm	Ant 22	Full Power	60	5300	17.92	19.00	1.282	97.2	1.029	-0.11	0.970	1.280
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 22	Full Power	60	5300	17.92	19.00	1.282	97.2	1.029	-0.13	0.939	1.239
64	WLAN5.5GHz	802.11a 6Mbps	Front	0mm	Ant 22	Full Power	116	5580	17.78	19.00	1.324	97.2	1.029	-0.02	1.320	**1.799**
	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 22	Full Power	116	5580	17.78	19.00	1.324	97.2	1.029	-0.1	0.669	0.912
	WLAN5.5GHz	802.11a 6Mbps	Right Side	0mm	Ant 22	Full Power	116	5580	17.78	19.00	1.324	97.2	1.029	0.19	0.966	1.316
	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 22	Full Power	116	5580	17.78	19.00	1.324	97.2	1.029	0.16	1.200	1.635

Plot No.	Band	Mode	Test Position	Gap (mm)	Freq. (MHz)	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)
	NFC	ASK	Front	0mm	13.56	100	1.000	0.05	0.001
65	NFC	ASK	Back	0mm	13.56	100	1.000	0.01	**0.032**
	NFC	ASK	Left Side	0mm	13.56	100	1.000	-0.08	0.001
	NFC	ASK	Right Side	0mm	13.56	100	1.000	0.02	0.001
	NFC	ASK	Top Side	0mm	13.56	100	1.000	0.09	0.001
	NFC	ASK	Bottom Side	0mm	13.56	100	1.000	0.01	0.001

16. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product specific 10g SAR
1.	WWAN + 2.4GHz WLAN	Yes	Yes	Yes	Yes
2.	WWAN + 5GHz WLAN	Yes	Yes	Yes	Yes
3.	WWAN + Bluetooth	Yes	Yes	Yes	Yes
4.	WWAN + 5GHz WLAN + Bluetooth	Yes	Yes	Yes	Yes
5.	5GHz WLAN + Bluetooth	Yes	Yes	Yes	Yes
6.	WWAN + 2.4GHz WLAN + NFC				Yes
7.	WWAN + 5GHz WLAN + NFC				Yes
8.	WWAN + Bluetooth + NFC				Yes
9.	WWAN + 5GHz WLAN + Bluetooth + NFC				Yes
10.	5GHz WLAN + Bluetooth + NFC				Yes

General Note:

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), and LTE supports VoLTE function.
2. EUT will choose each GSM, WCDM, LTE and 5G NR according to the network signal condition; therefore, they will not operate simultaneously at any moment.
3. The above WWAN includes 5G NR mode and EN-DC combination.
4. This device WLAN 2.4GHz supports hotspot operation and Bluetooth support tethering applications.
5. 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).
6. The worst case 5 GHz WLAN SAR for each configuration was used for SAR summation.
7. WLAN 2.4GHz and Bluetooth share the same antenna, and cannot transmit simultaneously.
8. According to the EUT characteristic, 5GHz and Bluetooth can transmit simultaneously.
9. According to the EUT characteristic, WLAN 2.4GHz and WLAN 5GHz cannot transmit simultaneously.
10. According to the EUT characteristic, WLAN 2.4GHz/WLAN 5GHz/Bluetooth and NFC can transmit simultaneously.
11. For simultaneously analysis, since the SAR summation of 3 transmitters can cover others combination of 2 transmitters, therefore in this section did not additional to evaluate 2TX combination of simultaneously transmission.
12. For standalone WWAN, always choose the highest SAR among all WWAN bands within all antennas for each test exposure position to perform simultaneous transmission analysis with WLAN/BT. This is the worst co-located analysis and can represent each bands.
13. For distance SAR and non-distance SAR, always chose higher SAR to do co-located analysis.
14. The reported SAR summation is calculated based on the same configuration and test position
15. Per KDB 447498 D01, 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+4
		WWAN	WLAN2.4GHz Ant 22	WLAN5GHz Ant 22	Bluetooth Ant 22	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)
All Bands (All Antenna)	Right Cheek	0.562	0.165	0.201	0.096	0.73	0.86
	Right Tilted	0.547	0.173	0.252	0.108	0.72	0.91
	Left Cheek	0.421	0.416	0.639	0.333	0.84	**1.39**
	Left Tilted	0.389	0.276	0.536	0.311	0.67	1.24

<ENDC>

WWAN Band	FR1 Band	Exposure Position	1	2	1+2
			WWAN	FR1	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE Band 2 Ant 31	FR1 n7 Ant 11	Right Cheek	0.084	0.363	0.45
		Right Tilted	0.105	0.079	0.18
		Left Cheek	0.129	0.219	0.35
		Left Tilted	0.069	0.049	0.12
LTE Band 2 Ant 31	FR1 n7 Ant 13	Right Cheek	0.084	0.419	0.50
		Right Tilted	0.105	0.547	0.65
		Left Cheek	0.129	0.173	0.30
		Left Tilted	0.069	0.207	0.28
LTE Band 7 Ant 13	FR1 n5 Ant 41	Right Cheek	0.284	0.094	0.38
		Right Tilted	0.405	0.048	0.45
		Left Cheek	0.129	0.127	0.26
		Left Tilted	0.166	0.062	0.23
LTE Band 7 Ant 31	FR1 n5 Ant 41	Right Cheek	0.333	0.094	0.43
		Right Tilted	0.172	0.048	0.22
		Left Cheek	0.165	0.127	0.29
		Left Tilted	0.135	0.062	0.20

WWAN Band	FR1 Band	Exposure Position	1	2	3	4	5	1+2+3	1+2+4+5
			WWAN	FR1	WLAN2.4GHz Ant 22	WLAN5GHz Ant 22	Bluetooth Ant 22	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)
LTE Band 2 Ant 31	FR1 n7 Ant 11	Right Cheek	0.084	0.177	0.165	0.201	0.096	0.43	0.56
		Right Tilted	0.105	0.040	0.173	0.252	0.108	0.32	0.51
		Left Cheek	0.129	0.105	0.416	0.639	0.333	0.65	1.21
		Left Tilted	0.069	0.026	0.276	0.536	0.311	0.37	0.94
LTE Band 2 Ant 31	FR1 n7 Ant 13	Right Cheek	0.084	0.224	0.165	0.201	0.096	0.47	0.61
		Right Tilted	0.105	0.287	0.173	0.252	0.108	0.57	0.75
		Left Cheek	0.129	0.087	0.416	0.639	0.333	0.63	1.19
		Left Tilted	0.069	0.113	0.276	0.536	0.311	0.46	1.03
LTE Band 7 Ant 13	FR1 n5 Ant 41	Right Cheek	0.149	0.094	0.165	0.201	0.096	0.41	0.54
		Right Tilted	0.197	0.048	0.173	0.252	0.108	0.42	0.61
		Left Cheek	0.069	0.127	0.416	0.639	0.333	0.61	1.17
		Left Tilted	0.086	0.062	0.276	0.536	0.311	0.42	1.00
LTE Band 7 Ant 31	FR1 n5 Ant 41	Right Cheek	0.333	0.094	0.165	0.201	0.096	0.59	0.72
		Right Tilted	0.172	0.048	0.173	0.252	0.108	0.39	0.58
		Left Cheek	0.165	0.127	0.416	0.639	0.333	0.71	1.26
		Left Tilted	0.135	0.062	0.276	0.536	0.311	0.47	1.04

16.2 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2	1+3+4
		WWAN	WLAN2.4GHz Ant 22	WLAN5GHz Ant 22	Bluetooth Ant 22	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)
All Bands (All Antenna)	Front	0.380	0.159	0.315	0.037	0.54	0.73
	Back	0.549	0.315	0.402	0.093	0.86	1.04
	Left side	0.693				0.69	0.69
	Right side	0.367	0.126	0.367	0.045	0.49	0.78
	Top side	0.636	0.170	0.420	0.048	0.81	1.10
	Bottom side	0.586				0.59	0.59

<ENDC>

WWAN Band	FR1 Band	Exposure Position	1	2	1+2
			WWAN	FR1	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE Band 2 Ant 31	FR1 n7 Ant 11	Front	0.124	0.105	0.23
		Back	0.165	0.181	0.35
		Left side		0.271	0.27
		Right side	0.050		0.05
		Top side		0.037	0.04
		Bottom side	0.293		0.29
LTE Band 2 Ant 31	FR1 n7 Ant 13	Front	0.124	0.086	0.21
		Back	0.165	0.202	0.37
		Left side		0.063	0.06
		Right side	0.050		0.05
		Top side		0.317	0.32
		Bottom side	0.293		0.29
LTE Band 7 Ant 13	FR1 n5 Ant 41	Front	0.077	0.166	0.24
		Back	0.191	0.284	0.48
		Left side	0.067	0.143	0.21
		Right side			0.00
		Top side	0.288		0.29
		Bottom side		0.076	0.08
LTE Band 7 Ant 31	FR1 n5 Ant 41	Front	0.111	0.166	0.28
		Back	0.193	0.284	0.48
		Left side		0.143	0.14
		Right side	0.104		0.10
		Top side			0.00
		Bottom side	0.099	0.076	0.18

WWAN Band	FR1 Band	Exposure Position	1	2	3	4	5	1+2+3	1+2+4+5
			WWAN	FR1	WLAN2.4GHz Ant 22	WLAN5GHz Ant 22	Bluetooth Ant 22	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)
LTE Band 2 Ant 31	FR1 n7 Ant 11	Front	0.124	0.105	0.159	0.315	0.037	0.39	0.58
		Back	0.165	0.181	0.315	0.402	0.093	0.66	0.84
		Left side		0.271				0.27	0.27
		Right side	0.050		0.126	0.367	0.045	0.18	0.46
		Top side		0.037	0.170	0.420	0.048	0.21	0.51
		Bottom side	0.293					0.29	0.29
LTE Band 2 Ant 31	FR1 n7 Ant 13	Front	0.124	0.086	0.159	0.315	0.037	0.37	0.56
		Back	0.165	0.202	0.315	0.402	0.093	0.68	0.86
		Left side		0.063				0.06	0.06
		Right side	0.050		0.126	0.367	0.045	0.18	0.46
		Top side		0.317	0.170	0.420	0.048	0.49	0.79
		Bottom side	0.293					0.29	0.29
LTE Band 7 Ant 13	FR1 n5 Ant 41	Front	0.077	0.166	0.159	0.315	0.037	0.40	0.60
		Back	0.191	0.284	0.315	0.402	0.093	0.79	0.97
		Left side	0.067	0.143				0.21	0.21
		Right side			0.126	0.367	0.045	0.13	0.41
		Top side	0.288		0.170	0.420	0.048	0.46	0.76
		Bottom side		0.076				0.08	0.08
LTE Band 7 Ant 31	FR1 n5 Ant 41	Front	0.111	0.166	0.159	0.315	0.037	0.44	0.63
		Back	0.193	0.284	0.315	0.402	0.093	0.79	0.97
		Left side		0.143				0.14	0.14
		Right side	0.104		0.126	0.367	0.045	0.23	0.52
		Top side			0.170	0.420	0.048	0.17	0.47
		Bottom side	0.099	0.076				0.18	0.18

16.3 Body-Worn Accessory Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2	1+3+4
		WWAN	WLAN2.4GHz Ant 22	WLAN5GHz Ant 22	Bluetooth Ant 22	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)
All Bands (All Antenna)	Front	0.458	0.136	0.228	0.014	0.59	0.70
	Back	0.940	0.155	0.281	0.027	1.10	1.25

<ENDC>

WWAN Band	FR1 Band	Exposure Position	1	2	1+2
			WWAN	FR1	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE Band 2 Ant 31	FR1 n7 Ant 11	Front	0.174	0.378	0.55
		Back	0.266	0.749	1.02
LTE Band 2 Ant 31	FR1 n7 Ant 13	Front	0.174	0.312	0.49
		Back	0.266	0.782	1.05
LTE Band 7 Ant 13	FR1 n5 Ant 41	Front	0.259	0.200	0.46
		Back	0.581	0.299	0.88
LTE Band 7 Ant 31	FR1 n5 Ant 41	Front	0.107	0.200	0.31
		Back	0.184	0.299	0.48

WWAN Band	FR1 Band	Exposure Position	1	2	3	4	5	1+2+3	1+2+4+5
			WWAN	FR1	WLAN2.4GHz Ant 22	WLAN5GHz Ant 22	Bluetooth Ant 22	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)
LTE Band 2 Ant 31	FR1 n7 Ant 11	Front	0.174	0.378	0.136	0.228	0.014	0.69	0.79
		Back	0.266	0.749	0.155	0.281	0.027	1.17	1.32
LTE Band 2 Ant 31	FR1 n7 Ant 13	Front	0.174	0.312	0.136	0.228	0.014	0.62	0.73
		Back	0.266	0.782	0.155	0.281	0.027	**1.20**	1.36
LTE Band 7 Ant 13	FR1 n5 Ant 41	Front	0.259	0.200	0.136	0.228	0.014	0.60	0.70
		Back	0.581	0.299	0.155	0.281	0.027	1.04	1.19
LTE Band 7 Ant 31	FR1 n5 Ant 41	Front	0.107	0.200	0.136	0.228	0.014	0.44	0.55
		Back	0.184	0.299	0.155	0.281	0.027	0.64	0.79

16.4 Product specific 10g SAR Exposure Conditions

Note: For WLAN2.4GHz /Bluetooth Product specific 10g stand-alone SAR is not required for a transmitter or antenna, due to 1g hotspot SAR is <1.2W/kg.

WWAN Band	Exposure Position	1	3	5	1+3+5
		WWAN	WLAN5GHz Ant 22	NFC	Summed
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
All Band (All Antenna)	Front		1.887	0.001	1.89
	Back	1.614	0.990	0.032	2.64
	Left side	1.745		0.001	1.75
	Right side		1.316	0.001	1.32
	Top side	1.548	1.635	0.001	**3.18**
	Bottom side			0.001	0.00

<ENDC>

WWAN Band	FR1 Band	Exposure Position	1	2	1+2
			WWAN	FR1	Summed
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
LTE Band 2 Ant 31	FR1 n7 Ant 11	Front			0.00
		Back			0.00
		Left side		1.377	1.38
		Right side			0.00
		Top side			0.00
		Bottom side			0.00
LTE Band 2 Ant 31	FR1 n7 Ant 13	Front			0.00
		Back		1.129	1.13
		Left side			0.00
		Right side			0.00
		Top side		1.256	1.26
		Bottom side			0.00
LTE Band 7 Ant 13	FR1 n5 Ant 41	Front			0.00
		Back	1.186		1.19
		Left side			0.00
		Right side			0.00
		Top side	1.449		1.45
		Bottom side			0.00

WWAN Band	FR1 Band	Exposure Position	1	2	3	4	1+2+3+4
			WWAN	FR1	WLAN5GHz Ant 22	NFC	Summed
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
LTE Band 2 Ant 31	FR1 n7 Ant 11	Front			1.887	0.001	1.89
		Back			0.990	0.032	1.02
		Left side		0.713		0.001	0.71
		Right side			1.316	0.001	1.32
		Top side			1.635	0.001	1.64
		Bottom side				0.001	0.00
LTE Band 2 Ant 31	FR1 n7 Ant 13	Front			1.887	0.001	1.89
		Back		0.554	0.990	0.032	1.58
		Left side				0.001	0.00
		Right side			1.316	0.001	1.32
		Top side		0.623	1.635	0.001	2.26
		Bottom side				0.001	0.00
LTE Band 7 Ant 13	FR1 n5 Ant 41	Front			1.887	0.001	1.89
		Back	0.484		0.990	0.032	1.51
		Left side				0.001	0.00
		Right side			1.316	0.001	1.32
		Top side	0.559		1.635	0.001	2.20
		Bottom side				0.001	0.00

Test Engineer： Martin Li, Varus Wang, Light Wang, Ricky Gu

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.

Declaration of Conformity:
The test results with all measurement uncertainty excluded is 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.

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

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

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

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

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

(b) κ is the coverage factor

Standard Uncertainty for Assumed Distribution

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

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

The judgment of conformity in the report is based on the measurement results excluding the measurement uncertainty.

Uncertainty Budget (Frequency band: 4 MHz - 10 GHz range)							
Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	7.0	N	1	1	1	7.0	7.0
Axial Isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9
Linearity	4.7	R	1.732	1	1	2.7	2.7
Modulation Response	3.2	R	1.732	1	1	1.8	1.8
System Detection Limits	1.0	R	1.732	1	1	0.6	0.6
Boundary Effects	2.0	R	1.732	1	1	1.2	1.2
Readout Electronics	0.3	N	1	1	1	0.3	0.3
Response Time	0.0	R	1.732	1	1	0.0	0.0
Integration Time	2.6	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7
Probe Positioner	0.4	R	1.732	1	1	0.2	0.2
Probe Positioning	6.7	R	1.732	1	1	3.9	3.9
Post-processing	4.0	R	1.732	1	1	2.3	2.3
Test Sample Related							
Device Holder	3.6	N	1	1	1	3.6	3.6
Test sample Positioning	3.0	N	1	1	1	3.0	3.0
Power Scaling	0.0	R	1.732	1	1	0.0	0.0
Power Drift	5.0	R	1.732	1	1	2.9	2.9
Phantom and Setup							
Phantom Uncertainty	7.6	R	1.732	1	1	4.4	4.4
SAR correction	0.0	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.2	N	1	0.78	0.71	0.1	0.1
Liquid Conductivity (target)	5.0	R	1.732	0.78	0.71	2.3	2.0
Liquid Conductivity (mea.)	2.5	R	1.732	0.78	0.71	1.1	1.0
Temp. unc. - Conductivity	3.4	R	1.732	0.78	0.71	1.5	1.4
Liquid Permittivity Repeatability	0.15	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.0	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.5	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.83	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						12.9%	12.8%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						25.9%	25.5%

Uncertainty Budget for frequency range 30 MHz to 6 GHz

IEC/IEEE 62209-1528:2020

18. References

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

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[15] IEC/IEEE 62209-1528:2020, “Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz)”, Oct. 2020

------THE END------