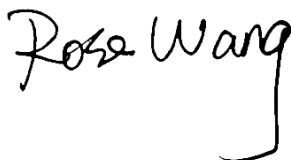


FCC SAR Test Report

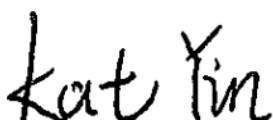
APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : XT2113-3
FCC ID : IHDT56ZF4
STANDARD : FCC 47 CFR Part 2 (2.1093)

The product was received on Sep. 08, 2020 and testing was started from Sep. 14, 2020 and completed on Sep. 28, 2020. We, Sporton International (Kunshan) Inc, would like to declare that the tested sample has been evaluated in accordance with the procedures and had 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 (Kunshan) Inc., the test report shall not be reproduced except in full.



Reviewed by: Rose Wang / Supervisor



Approved by: Kat Yin / Manager



Sporton International (Kunshan) Inc.

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



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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA082402-01	Rev. 01	Initial issue of report.	Oct. 16, 2020
FA082402-01	Rev. 02	Updated FCC ID information.	Oct. 21, 2020

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT2113-3**, are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Body-worn (Separation 5mm)	Hotspot (Separation 5mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	1.03	0.47	0.98	1.59
		GSM1900	<0.10	0.99	1.18	
	WCDMA	Band II	0.10	1.38	1.38	
		Band IV	<0.10	1.24	1.38	
		Band V	1.17	1.16	1.16	
	LTE	Band 2	<0.10	1.11	1.29	
		Band 7	0.43	1.21	1.30	
		Band 12	0.78	0.71	0.73	
		Band 26/Band 5	0.85	0.59	0.59	
		Band 66/Band 4	<0.10	1.41	1.41	
		Band 41/Band 38	0.10	1.10	1.22	
	5G NR	n5	0.60	0.57	0.57	
		n7	0.48	0.57	0.57	
		n66	<0.10	0.53	0.53	
DTS	WLAN	2.4GHz WLAN	0.59	0.65	0.65	1.56
NII		5GHz WLAN	0.24	1.17	1.17	1.57
DSS	2.4GHz Band	2.4GHz Bluetooth	0.27	0.21	0.21	1.59

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	GSM	GSM1900	3.35	3.63
		Band II	3.43	
	WCDMA	Band IV	3.50	
		Band 2	3.38	
	LTE	Band 7	1.71	
		Band 66/Band 4	3.50	
		Band 41/Band 38	2.16	
	5G NR	n7	1.60	
		n66	1.59	
NII	WLAN	5GHz WLAN	2.66	3.63

Date of Testing:

2020/09/14 ~ 2020/09/28

Remark:

This device supports LTE B4 / B5 / B38 and B66 / B26 / B41. Since the supported frequency span for LTE B4 / B5 / B38 falls completely within the supports frequency span for LTE B66 / B26 / 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 B66 / B26 / 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 (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Testing Laboratory		
Test Firm	Sporton International (Kunshan) Inc.	
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.	FCC Designation No.	FCC Test Firm Registration No.
	CN1257	314309

Applicant	
Company Name	Motorola Mobility LLC
Address	222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

Manufacturer	
Company Name	Motorola Mobility LLC
Address	222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

3. Guidance Applied

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

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2113-3
FCC ID	IHDT56ZF4
IMEI Code	SIM1: 355571110012896 SIM2: 355571110012904
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz 5G NR n5 : 826.5 MHz ~ 846.5 MHz 5G NR n7 : 2502.5 MHz ~ 2567.5 MHz 5G NR n66 : 1712.5 MHz ~ 1777.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC: 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is not supported) LTE: QPSK, 16QAM, 64QAM 5G NR : CP-OFDM / DFT-s-OFDM, PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC:ASK
HW Version	DVT2
SW Version	QZK30.Q4-23
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype
Remark: 802.11n-HT40 is not supported in 2.4GHz WLAN. - WLAN operation in 5600 MHz ~ 5650 MHz is notched - This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation. - This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications. - This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz	

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FCC ID : IHDT56ZF4

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Issued Date : Oct. 21, 2020

Form version. : 181113

- WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).
6. This device does not support DTM operation and supports GRPS/EGRPS mode up to multi-slot class 12.
 7. There are two different types of EUT. They are single SIM card mobile and dual SIM card mobile. The others are the same including circuit design, PCB board, structure and all components. It is special to declare. After pre-scan two types of EUT, we found test result of the sample that dual SIM was the worst, so we chose dual SIM card mobile to perform all tests.
 8. 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.
 9. The device implements Proximity sensors/receiver detect mechanism/hotspot trigger reduced power for the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity).
The device will invoke corresponding work scenarios power level, which are provided in the operational description.
 10. For Some WWAN bands, sensor on reduced power level higher than hotspot reduced power level, so front/back sensor on SAR can represent hotspot conservatively.
 11. For WLAN when transmit simultaneous with WWAN LAT or UAT, power reduction will be activated to head / hotspot / body-worn / extremity.
 12. The 2.4GHz/5GHz WLAN can transmit in MIMO antenna mode only and it has no SISO antenna mode.
 13. The device has four headsets, only supplier is different, so we chose headset 1 to perform full SAR testing, and headset 2/3/4 only verified the worst case of headset 1.
 14. This device implements antenna tuning techniques for several WWAN (cellular) operating modes and frequencies for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, these techniques are employed in the WCDMA, LTE and 5GNR modes. In this report SAR was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing. The detail descriptions of the antenna tuner and supplemental data for additional information on section16.
 15. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
 16. 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.
 17. 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.
 18. This device supports 5GNR FR1 bands as following table and NSA only.

<5G NR>

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
NSA	n5	FDD	15	5, 10, 15, 20
	n7	FDD	15	5, 10, 15, 20
	n66	FDD	15	5, 10, 15, 20

4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05									
FCC ID		IHDT56ZF4							
Equipment Name		Mobile Cellular Phone							
Operating Frequency Range of each LTE transmission band		LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 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 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz							
uplink modulations used		QPSK / 16QAM / 64QAM							
LTE Voice / Data requirements		Voice and Data							
LTE Release Version		R15, Cat12							
CA Support		Supported, 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, head/body-worn/ hotspot/extremity will trigger reduced power for some LTE bands, the detail please referred to section 13.							
LTE Carrier Aggregation Combinations		Inter-Band and Intra-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 7C with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance. 2. This device supports maximum of 4 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							

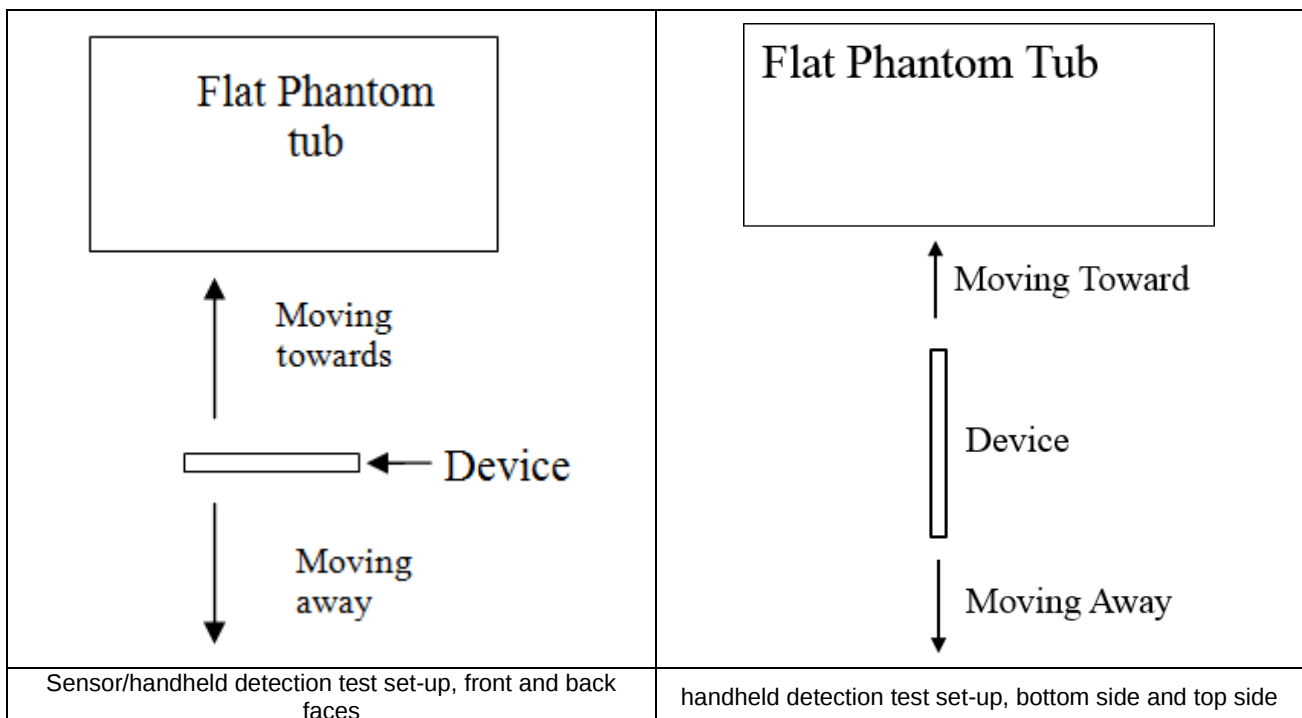


Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	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		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	20407	824.7	20415	825.5	20425	826.5	20450	829	20450	829	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844	20600	844	20600	844
LTE Band 7												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 20 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510	20850	2510	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560	21350	2560	21350	2560
LTE Band 12												
	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	23017	699.7	23025	700.5	23035	701.5	23060	704	23060	704	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711	23130	711	23130	711
LTE Band 26												
	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	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5	26965	841.5
LTE Band 38												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 20 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580	37850	2580	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610	38150	2610	38150	2610
LTE Band 41												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 20 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506	39750	2506	39750	2506
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5	40185	2549.5	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593	40620	2593	40620	2593
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5	41055	2636.5	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680	41490	2680	41490	2680
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

5. Proximity Sensor Triggering Test

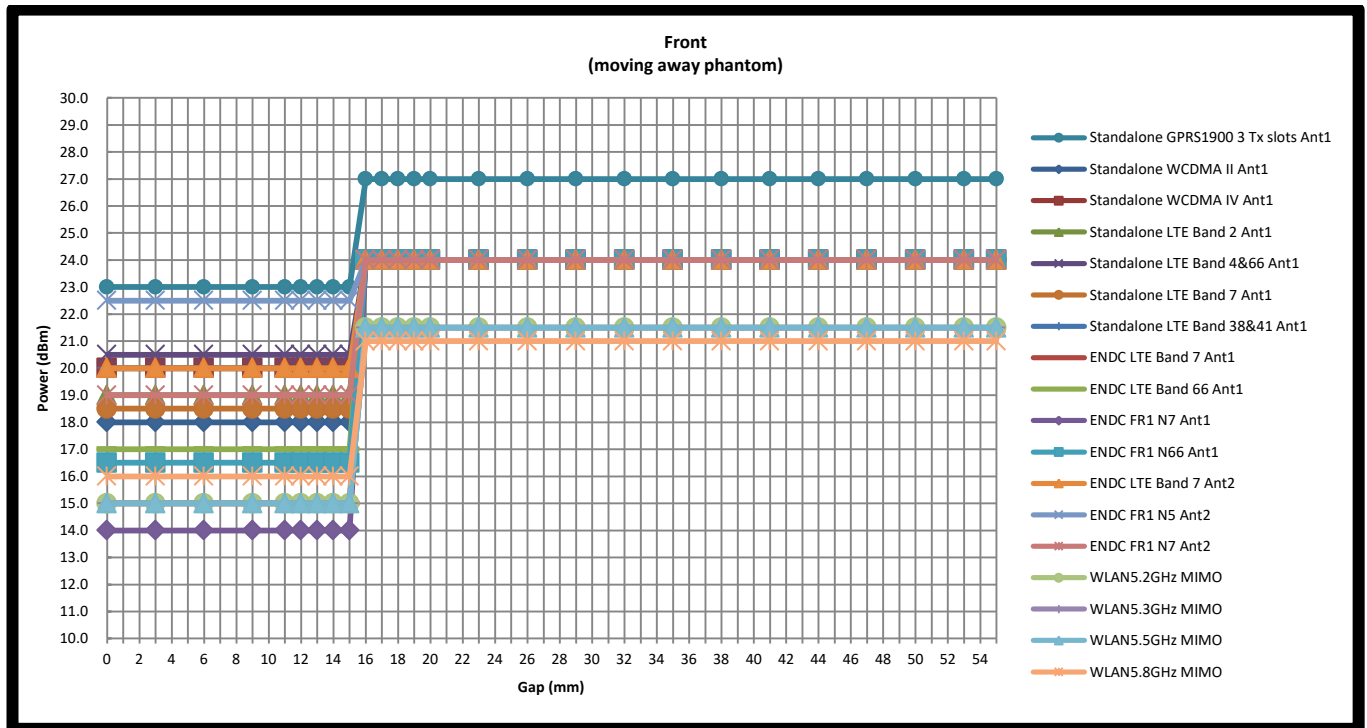
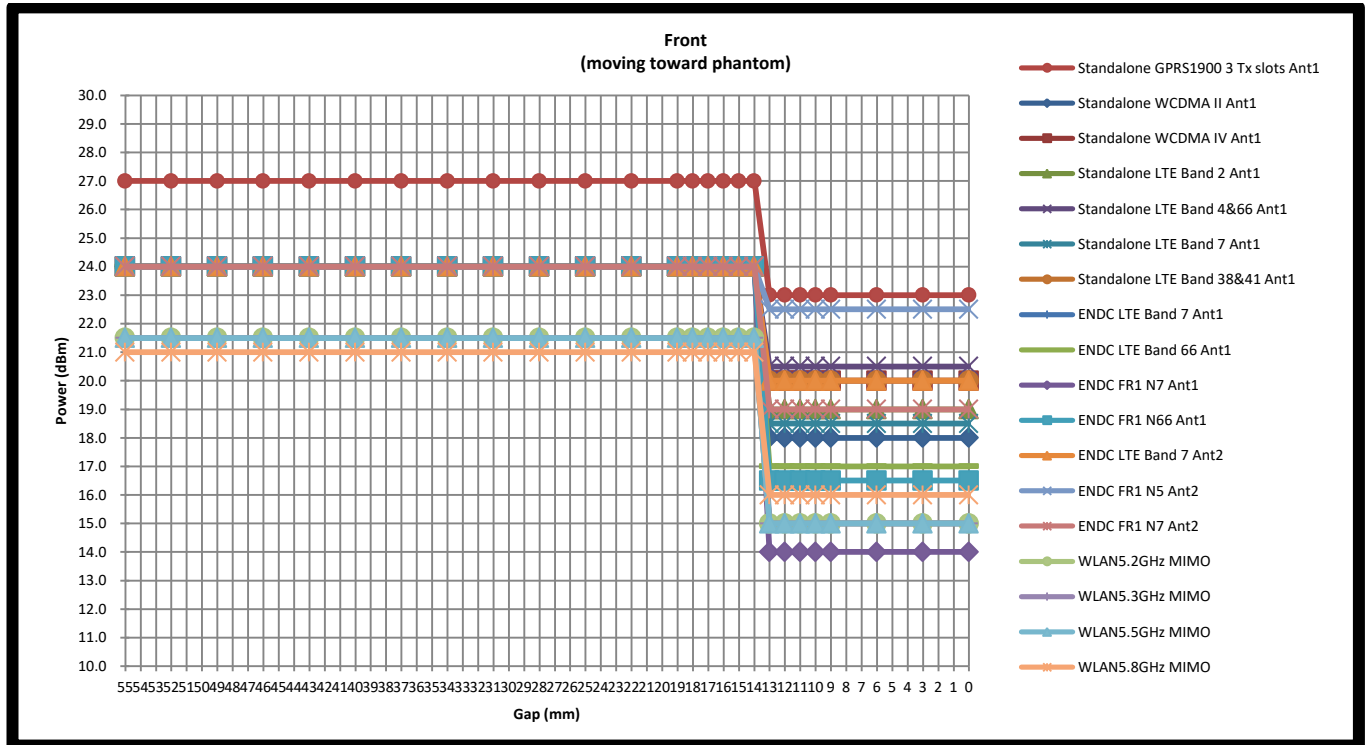
5.1 Proximity sensor triggering distances(Per KDB616217§6.2)

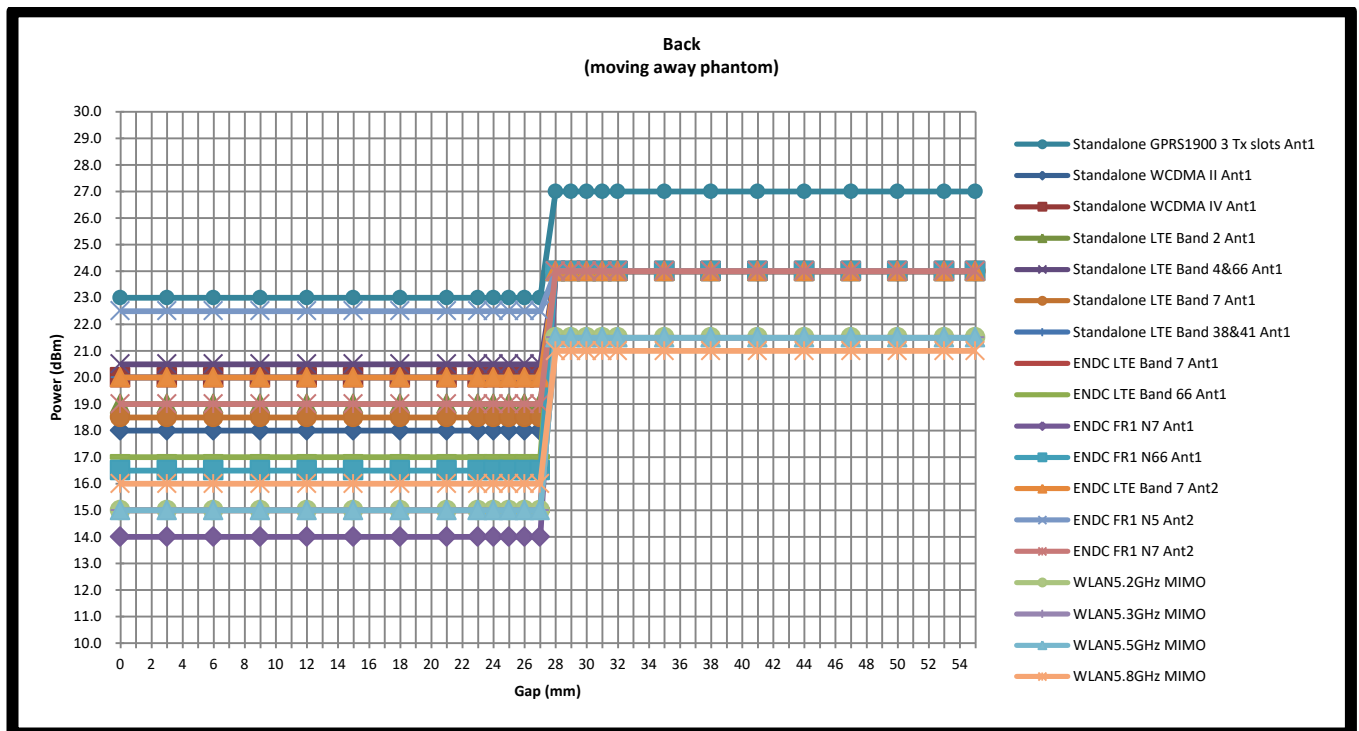
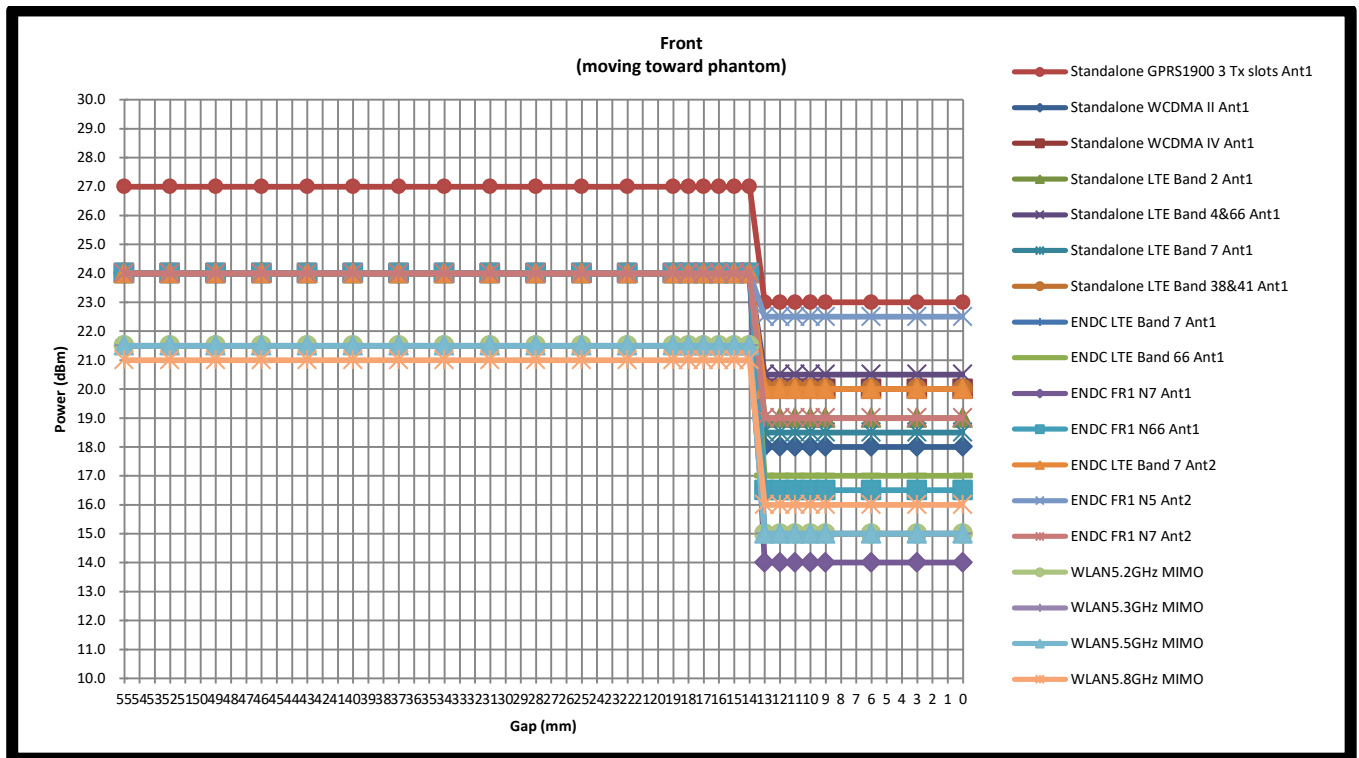
- Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency (5825MHz) and lowest (750MHz) frequency was used for proximity sensor triggering testing.
- Capacitive proximity sensor placed coincident with antenna elements at the bottom end of the phone are utilized to determine when the device comes in proximity of the user's body at the front or back or bottom or top side surface of the device. There is no need to do sensor coverage testing for the proximity sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the proximity sensor entirely covers the antenna.
- When the proximity sensor is active, GSM1900, WCDMA band II/IV, LTE band 2/4/7/66/38/41, 5GNR n5 / n7 / n66 and WLAN5.2GHz / 5.3GHz / 5.5GHz / 5.8GHz reduced power will be active for front/ back body worn SAR.
- P-sensor can detect handheld state, WCDMA band II/IV, LTE band 2/4/7/66/38/41 and 5GNR n7 / n66 for front/back/bottom/top sides of product specific 10g SAR condition reduced powers will be active for handheld SAR.
- The proximity sensors used to detect the proximity of the user's body at the front or back or bottom side surface of the device use a detection threshold distance. The data shown in the sections below shows the distance(s).
- For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed for body worn:
Front: [12 mm](#)
Back: [24 mm](#)
- For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed for handheld:
Front: [9 mm](#)
Back: [16 mm](#)
Bottom side: [17 mm](#)
Top Side: [17 mm](#)



<P-Sensor>

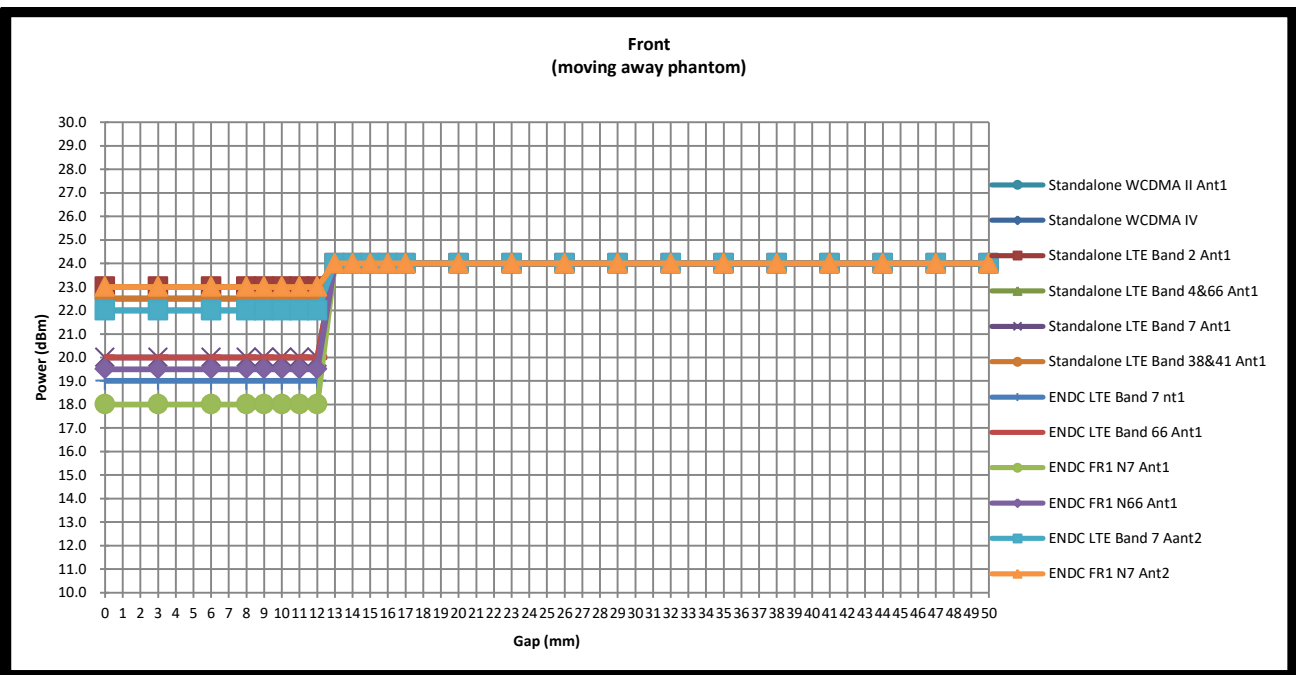
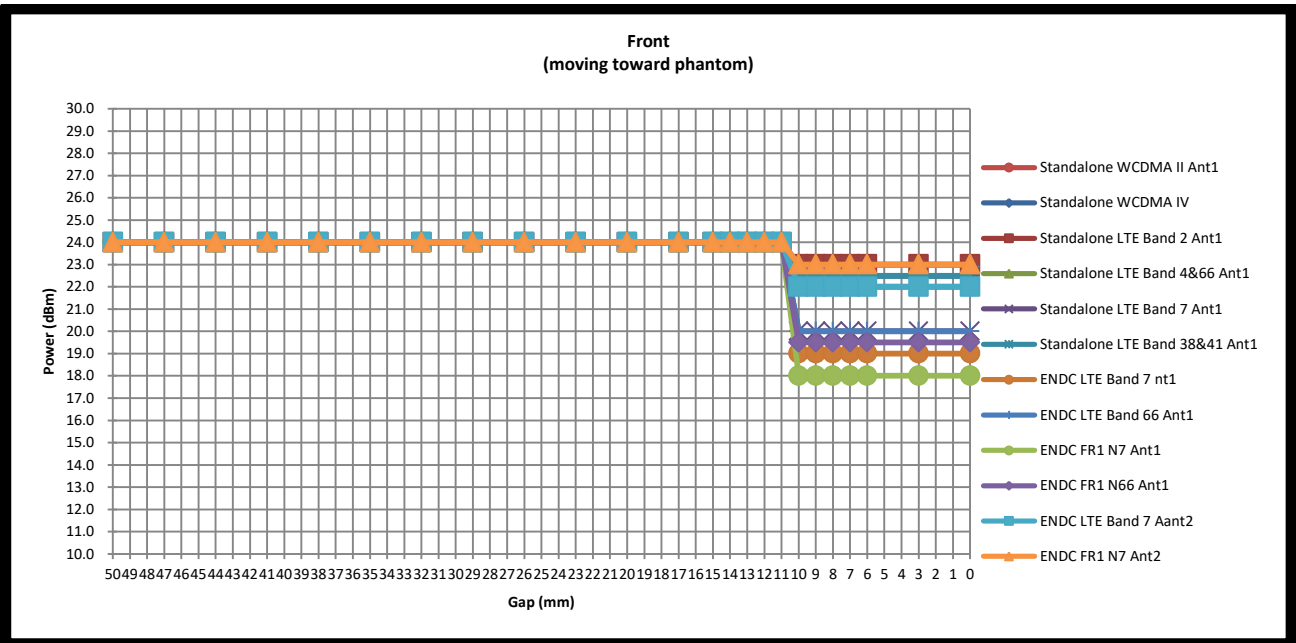
Position	Proximity Sensor Triggering Distance (mm)			
	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	13	15	25	27

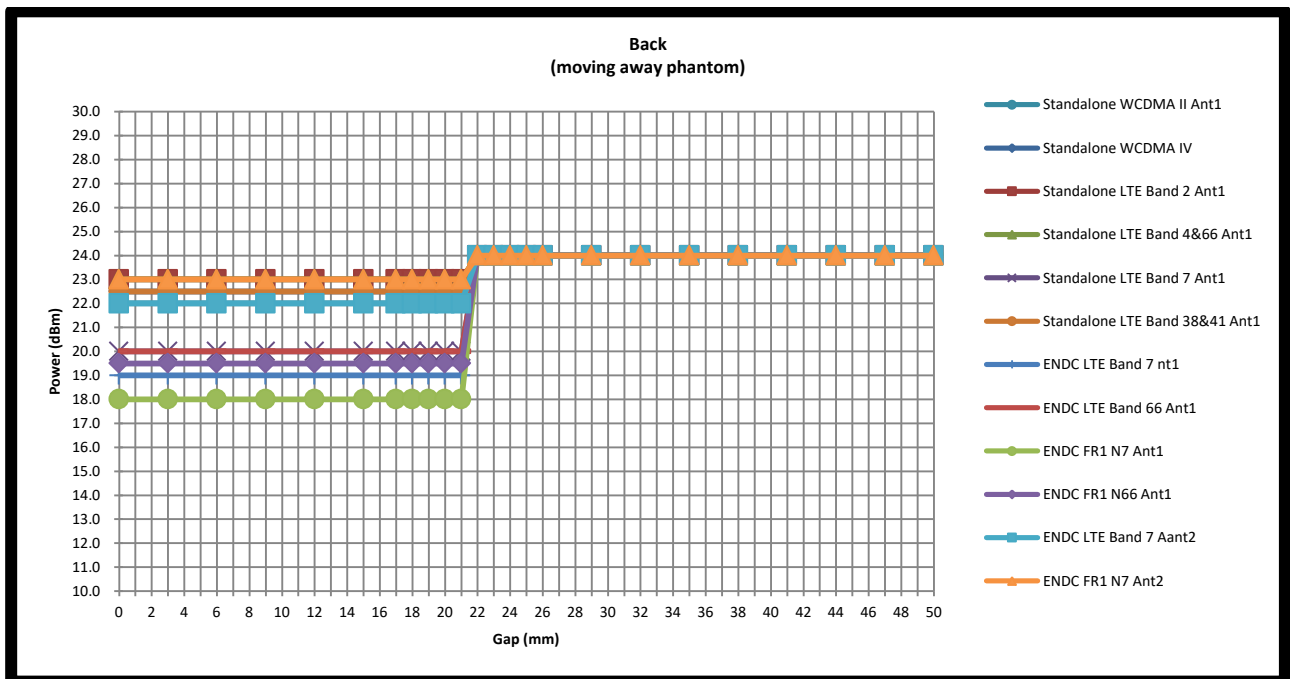
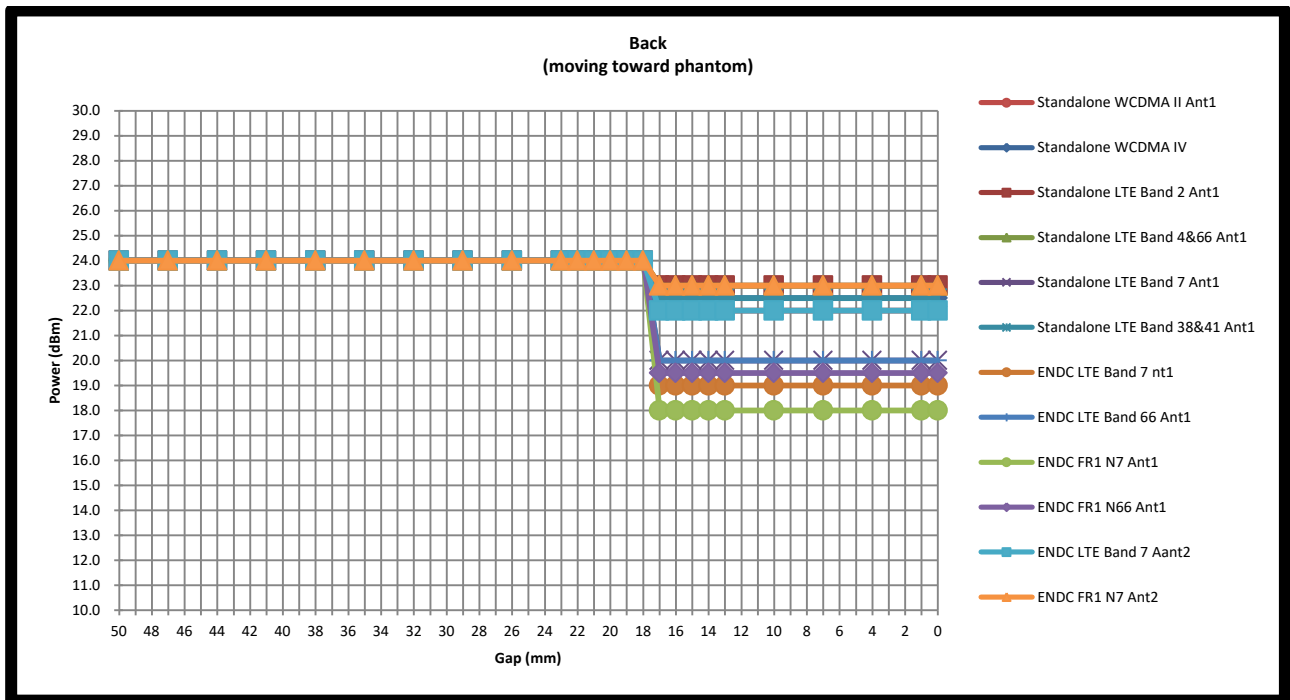


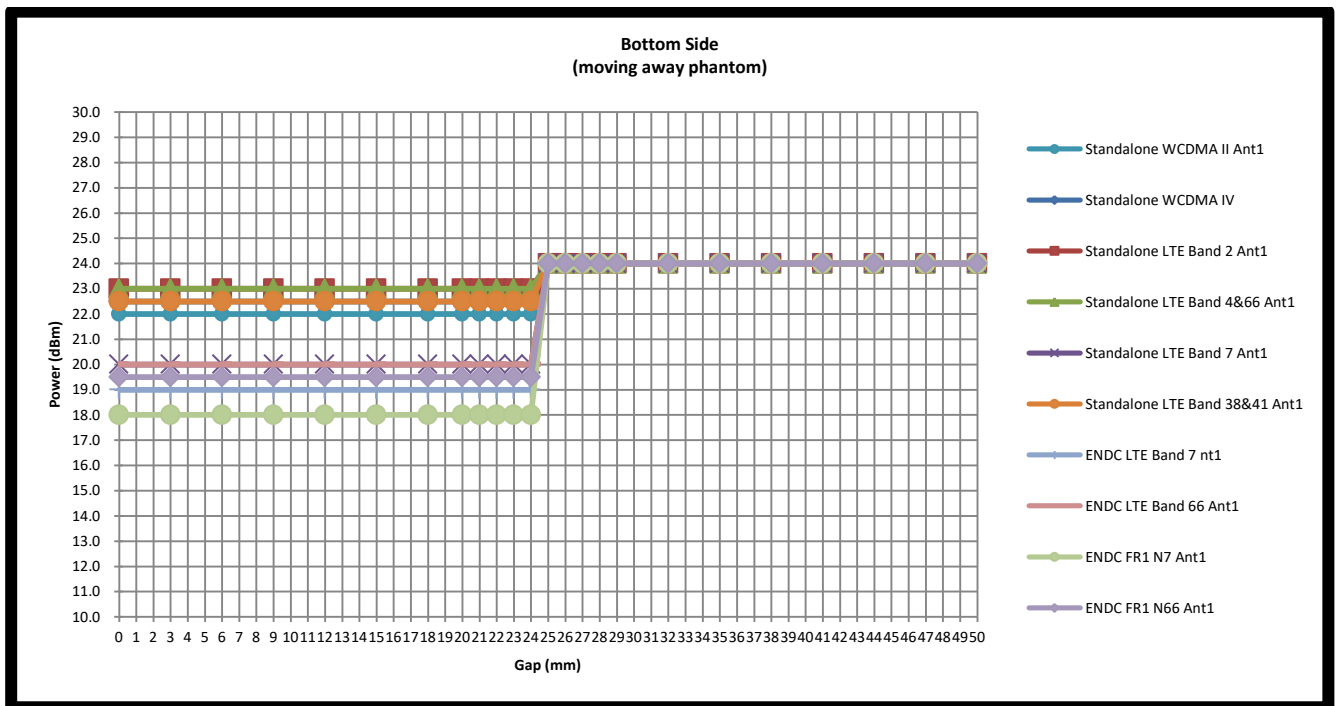
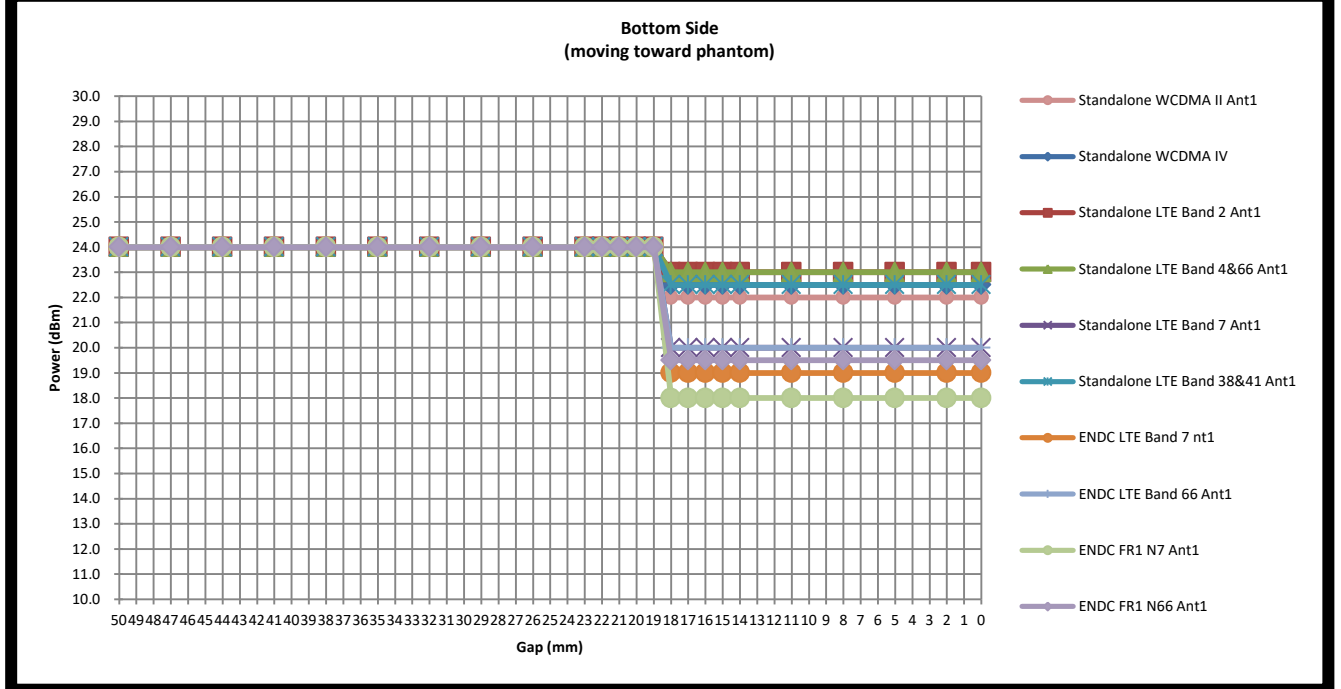


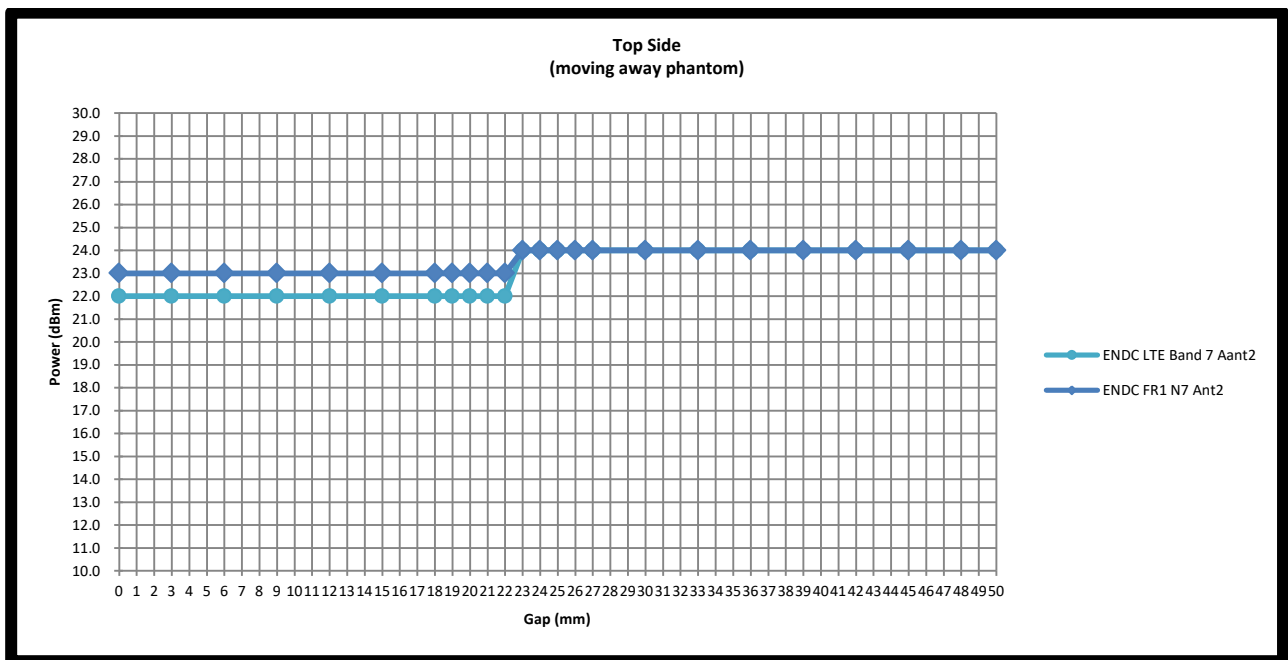
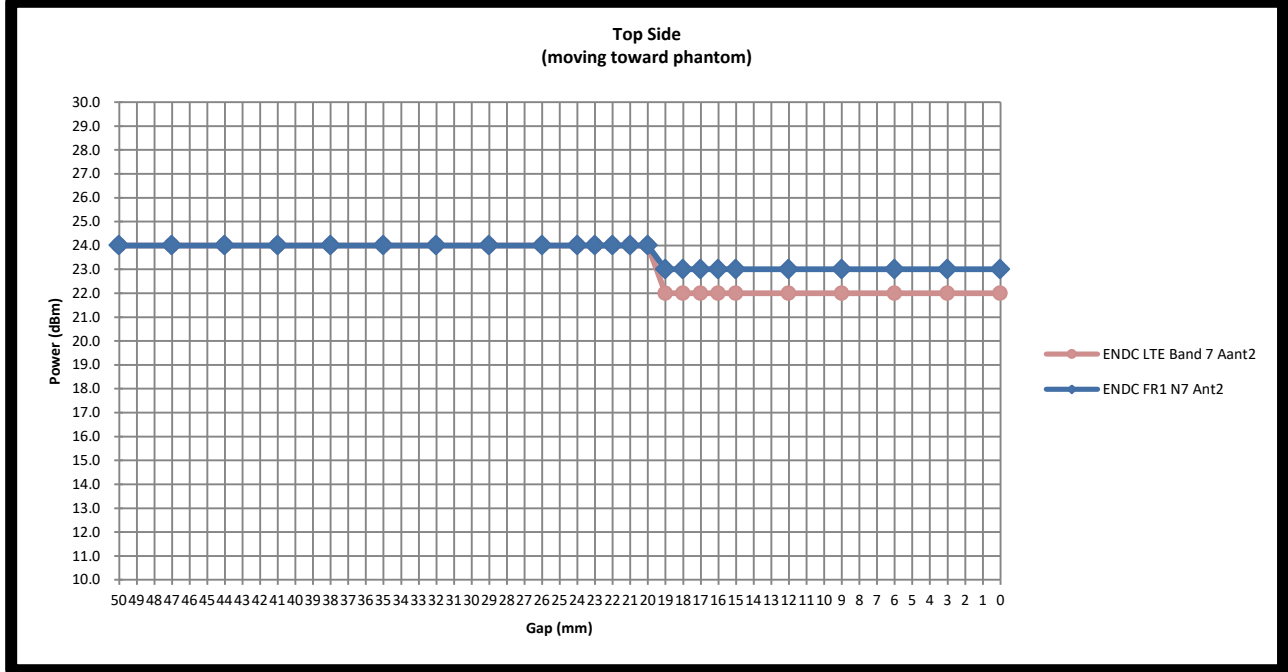
<Handheld>

Position	Front		Back		Bottom Side		Top Side	
	Moving towards	Moving away	Moving towards	Moving towards	Moving towards	Moving away	Moving towards	Moving away
Minimum	10	12	17	21	18	24	19	22









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:

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

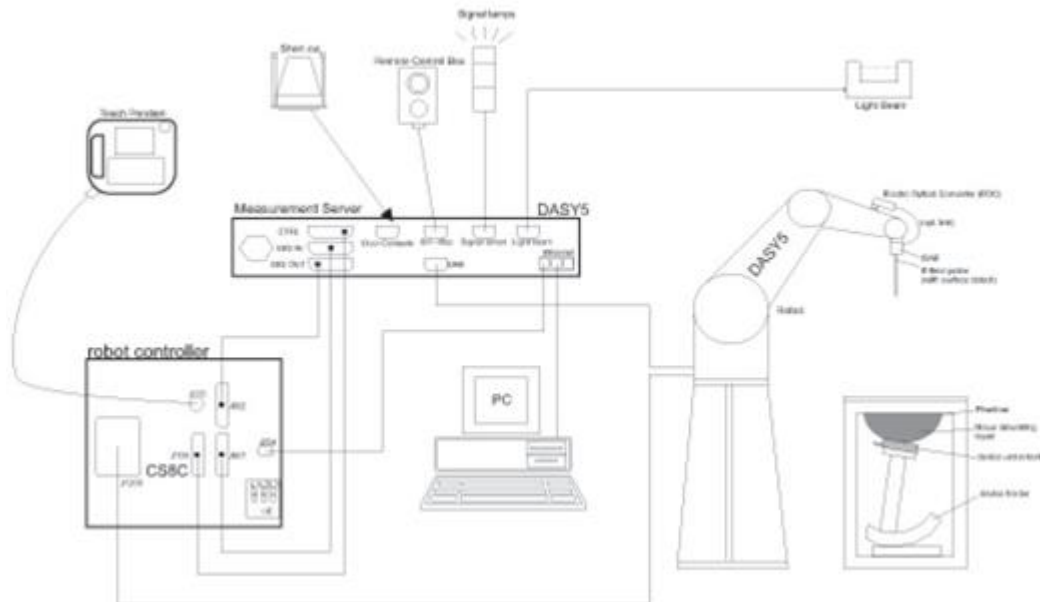
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

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.

<ES3DV3 Probe>

Construction	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – 4 GHz; Linearity: ± 0.2 dB (30 MHz – 4 GHz)	
Directivity	± 0.2 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)	
Dynamic Range	5 μ W/g – >100 mW/g; Linearity: ± 0.2 dB	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 3.9 mm (body: 12 mm) Distance from probe tip to dipole centers: 3.0 mm	

<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 μ W/g – >100 mW/g Linearity: ± 0.2 dB (noise: typically <1 μ W/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 from 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 dB) 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	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: $\Delta x_{\text{Area}}, \Delta y_{\text{Area}}$	≤ 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 $\leq$ 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 to 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 whose 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: $\Delta x_{\text{Zoom}}, \Delta y_{\text{Zoom}}$			≤ 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: $\Delta z_{\text{Zoom}}(n)$		≤ 5 mm	$3 - 4$ GHz: ≤ 4 mm $4 - 5$ GHz: ≤ 3 mm $5 - 6$ GHz: ≤ 2 mm
	graded grid	$\Delta z_{\text{Zoom}}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm	$3 - 4$ GHz: ≤ 3 mm $4 - 5$ GHz: ≤ 2.5 mm $5 - 6$ GHz: ≤ 2 mm
		$\Delta z_{\text{Zoom}}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{\text{Zoom}}(n-1)$	
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 <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> 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 to assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

9.6 Power Drift Monitoring

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

10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	2019/3/27	2022/3/26
SPEAG	835MHz System Validation Kit	D835V2	4d151	2019/3/27	2022/3/26
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2019/3/27	2022/3/26
SPEAG	1900MHz System Validation Kit	D1900V2	5d170	2019/3/26	2022/3/25
SPEAG	2450MHz System Validation Kit	D2450V2	908	2019/3/25	2022/3/24
SPEAG	2600MHz System Validation Kit	D2600V2	1061	2018/12/7	2021/12/6
SPEAG	5000MHz System Validation Kit	D5GHzV2	1128	2019/12/16	2020/12/15
SPEAG	Data Acquisition Electronics	DAE4	656	2019/12/17	2020/12/16
SPEAG	Data Acquisition Electronics	DAE4	1338	2019/11/20	2020/11/19
SPEAG	Data Acquisition Electronics	DAE4	1303	2020/7/7	2021/7/6
SPEAG	Dosimetric E-Field Probe	EX3DV4	7592	2020/5/22	2021/5/21
SPEAG	Dosimetric E-Field Probe	EX3DV4	3976	2020/1/27	2021/1/26
SPEAG	Dosimetric E-Field Probe	ES3DV3	3279	2020/6/2	2021/6/1
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1503	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1697	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio Communication Analyzer	MT8821C	6201432831	2020/4/14	2021/4/13
Agilent	Wireless Communication Test Set	E5515C	MY52102706	2020/5/19	2021/5/18
Agilent	ENA Series Network Analyzer	E5071C	MY46106933	2020/8/1	2021/7/31
SPEAG	Dielectric Probe Kit	DAK-3.5	1138	2020/5/19	2021/5/18
Anritsu	Vector Signal Generator	MG3710A	6201682672	2020/1/8	2021/1/7
Rohde & Schwarz	Power Meter	NRVD	102081	2020/8/13	2021/8/12
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2020/8/13	2021/8/12
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2020/8/13	2021/8/12
R&S	CBT BLUETOOTH TESTER	CBT	101246	2020/4/14	2021/4/13
EXA	Spectrum Analyzer	FSV7	101631	2020/1/8	2021/1/7
Testo	Hygrometer	608-H1	1241332088	2020/1/8	2021/1/7
FLUKE	DIGITAC THERMOMETER	51II	97240029	2020/8/14	2021/8/13
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note 1	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note 1	
ARRA	Power Divider	A3200-2	N/A	Note 1	
MCL	Attenuation1	BW-S10W5+	N/A	Note 1	
MCL	Attenuation2	BW-S10W5+	N/A	Note 1	
MCL	Attenuation3	BW-S10W5+	N/A	Note 1	
Agilent	Dual Directional Coupler	778D	20500	Note 1	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note 1	

Note:

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

11. System Verification

11.1 Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 11.1. 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. 11.2.

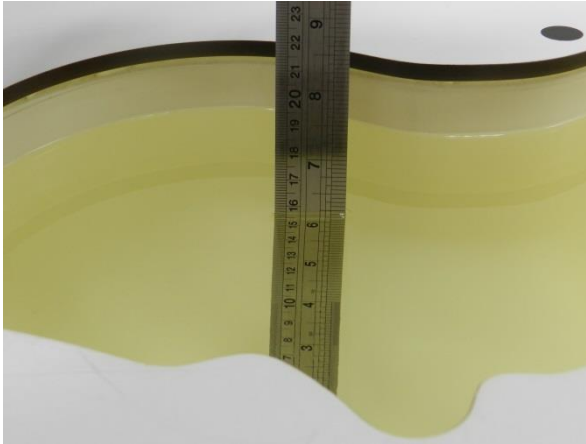


Fig 11.1 Photo of Liquid Height for Head SAR

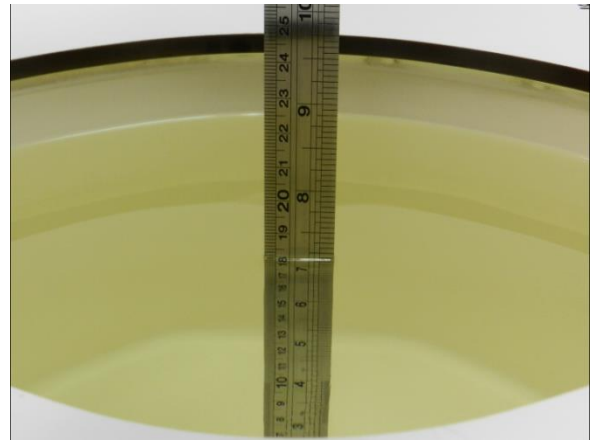


Fig 11.2 Photo of Liquid Height for Body SAR

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 (ϵ_r)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0

Simulating Liquid for 5GHz, Manufactured by SPEAG

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
750	Head	22.8	0.896	41.730	0.89	41.90	0.67	-0.41	±5	2020/9/14
835	Head	22.9	0.915	41.263	0.90	41.50	1.67	-0.57	±5	2020/9/14
1750	Head	22.6	1.351	39.345	1.37	40.10	-1.39	-1.88	±5	2020/9/15
1900	Head	22.8	1.373	39.730	1.40	40.00	-1.93	-0.68	±5	2020/9/15
2600	Head	22.7	2.034	38.016	1.96	39.00	3.78	-2.52	±5	2020/9/17
835	Head	22.6	0.914	42.877	0.90	41.50	1.56	3.32	±5	2020/9/16
1750	Head	22.8	1.370	40.851	1.37	40.10	0.00	1.87	±5	2020/9/17
2600	Head	22.7	2.058	37.512	1.96	39.00	5.00	-3.82	±5	2020/9/18
2450	Head	22.7	1.857	39.174	1.80	39.20	3.17	-0.07	±5	2020/9/22
5250	Head	22.9	4.478	35.245	4.71	35.90	-4.93	-1.82	±5	2020/9/24
5600	Head	22.8	4.845	34.701	5.07	35.50	-4.44	-2.25	±5	2020/9/26
5750	Head	22.6	4.960	34.278	5.22	35.40	-4.98	-3.17	±5	2020/9/28

11.3 System Performance Check Results

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

<1g SAR>

Date	Frequency (MHz)	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 (%)
2020/9/14	750	Head	250	1087	3279	1303	2.03	8.36	8.12	-2.87
2020/9/14	835	Head	250	4d151	3279	1303	2.48	9.30	9.92	6.67
2020/9/15	1750	Head	250	1090	3279	1303	8.87	36.40	35.48	-2.53
2020/9/15	1900	Head	250	5d170	3279	1303	9.67	39.00	38.68	-0.82
2020/9/17	2600	Head	250	1061	3279	1303	14.70	57.70	58.8	1.91
2020/9/16	835	Head	250	4d151	3976	1338	2.36	9.30	9.44	1.51
2020/9/17	1750	Head	250	1090	3976	1338	8.99	36.40	35.96	-1.21
2020/9/18	2600	Head	250	1061	3976	1338	14.70	57.70	58.8	1.91
2020/9/22	2450	Head	250	908	7592	656	12.80	52.80	51.2	-3.03
2020/9/24	5250	Head	100	1128	7592	656	7.39	80.00	73.9	-7.63
2020/9/26	5600	Head	100	1128	7592	656	8.24	82.40	82.4	0.00
2020/9/28	5750	Head	100	1128	7592	656	7.41	79.10	74.1	-6.32

<10g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2020/9/14	750	Head	250	1087	3279	1303	1.36	5.65	5.44	-3.72
2020/9/14	835	Head	250	4d151	3279	1303	1.63	6.16	6.52	5.84
2020/9/15	1750	Head	250	1090	3279	1303	4.81	19.20	19.24	0.21
2020/9/15	1900	Head	250	5d170	3279	1303	5.12	20.30	20.48	0.89
2020/9/17	2600	Head	250	1061	3279	1303	6.77	25.90	27.08	4.56
2020/9/16	835	Head	250	4d151	3976	1338	1.54	6.16	6.16	0.00
2020/9/17	1750	Head	250	1090	3976	1338	4.88	19.20	19.52	1.67
2020/9/18	2600	Head	250	1061	3976	1338	6.34	25.90	25.36	-2.08
2020/9/22	2450	Head	250	908	7592	656	6.01	24.20	24.04	-0.66
2020/9/24	5250	Head	100	1128	7592	656	2.15	22.90	21.5	-6.11
2020/9/26	5600	Head	100	1128	7592	656	2.38	23.60	23.8	0.85
2020/9/28	5750	Head	100	1128	7592	656	2.15	22.60	21.5	-4.87

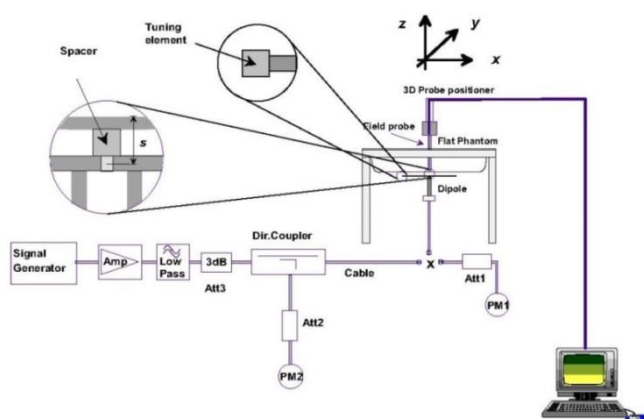


Fig 11.3.1 System Performance Check Setup



Fig 11.3.2 Setup Photo

12. RF Exposure Positions

12.1 Ear and handset reference point

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

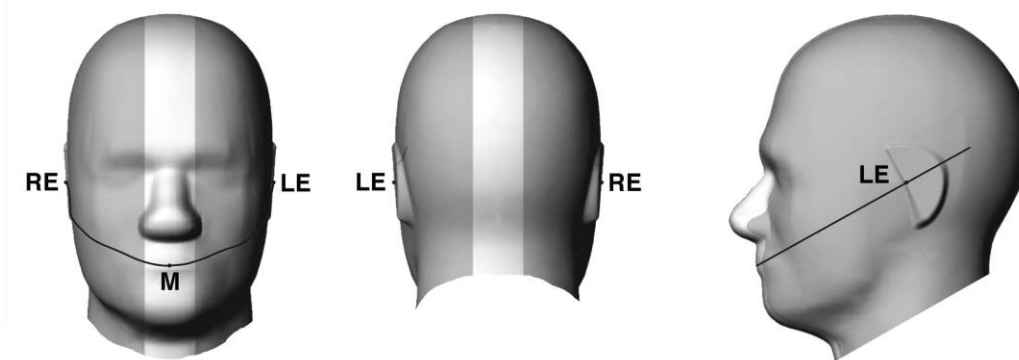


Fig 12.1.1 Front, back, and side views of SAM twin phantom

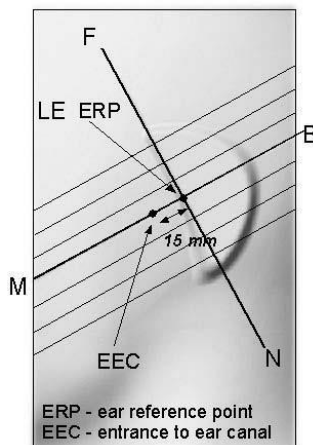


Fig 12.1.2 Close-up side view of phantom showing the ear region.

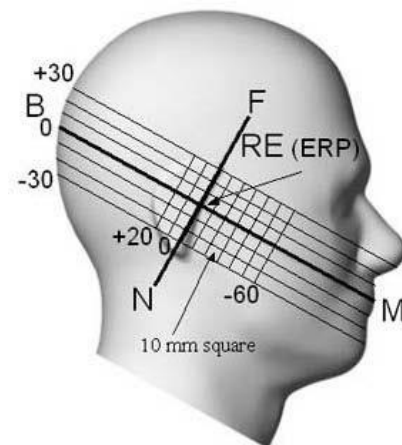


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

12.2 Definition of the cheek position

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

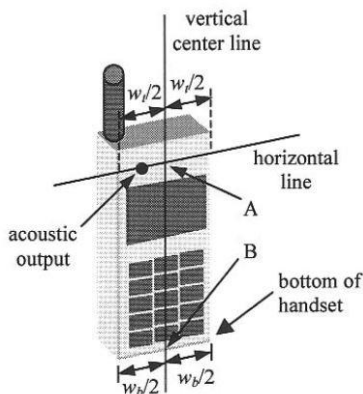


Fig 12.2.1 Handset vertical and horizontal reference lines—"fixed case"

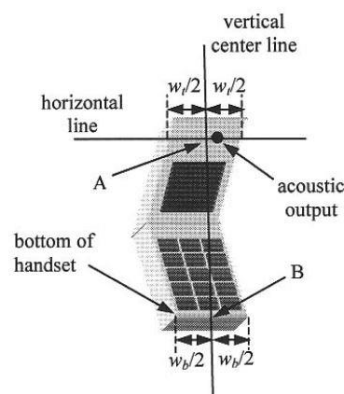


Fig 12.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

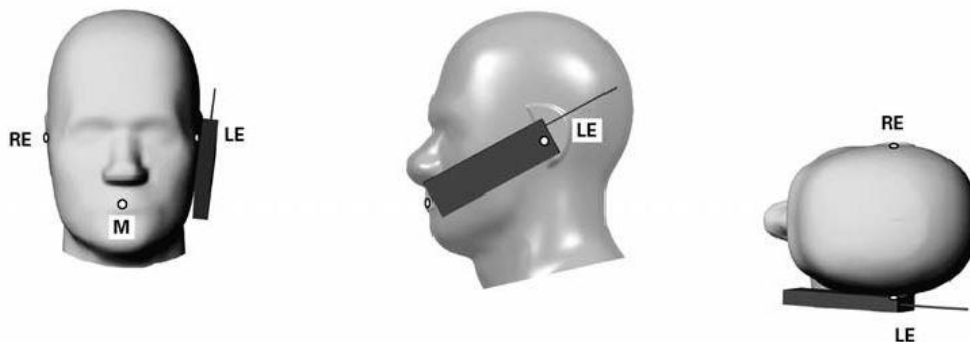


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

12.3 Definition of the tilt position

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

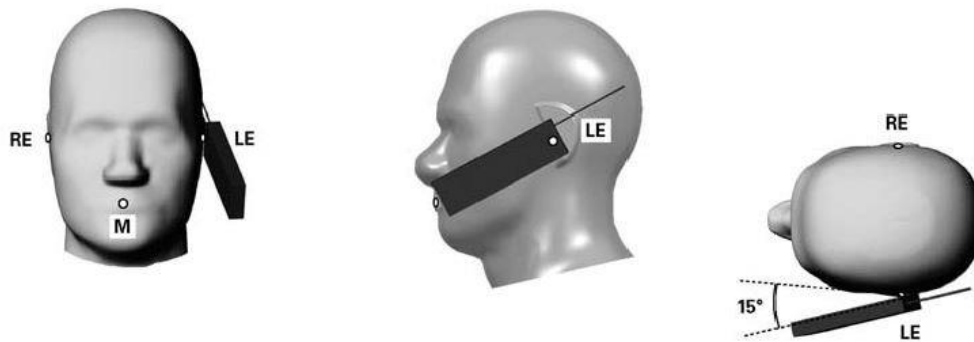


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

12.4 Body Worn Accessory

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

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

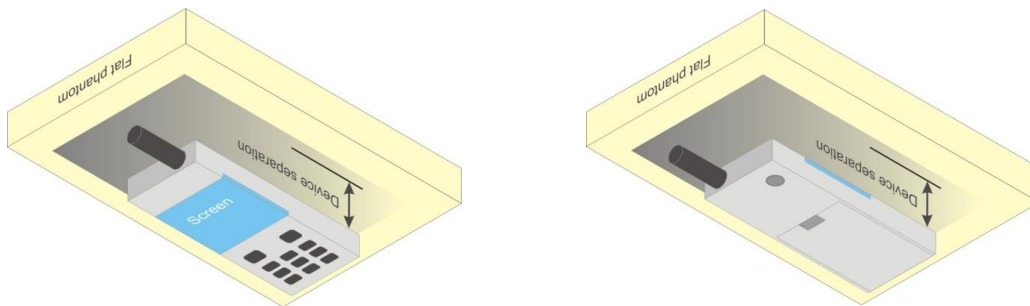


Fig 12.4 Body Worn Position

12.5 Product Specific 10g SAR Exposure

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that 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 ($L \times W \geq 9$ 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 from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

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

13. Conducted RF Output Power (Unit: dBm)

The detailed conducted power table can refer to Appendix E.

<GSM Conducted Power>

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS 3Tx slots for GSM850/GSM1900 are considered as the primary mode.
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 $\leq 1/4$ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

<WCDMA Conducted Power>

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

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

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

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

Sub-test	β_c	β_d	β_d (SF)	β_o/β_d	β_{HS} (Note 1, 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 $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$. Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$, and $\Delta_{CQI} = 24/15$ with $\beta_{HS} = 24/15 * \beta_c$. Note 3: CM = 1 for $\beta_o/\beta_d = 12/15$, $\beta_{HS}/\beta_c = 24/15$. For all other combinations of DPCCH, 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_o/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 $\beta_c = 11/15$ and $\beta_d = 15/15$.							

Setup Configuration

HSUPA Setup Configuration:

- The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- The RF path losses were compensated into the measurements.
- A call was established between EUT and Base Station with following setting * :
 - Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
 - 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
 - Set Cell Power = -86 dBm
 - Set Channel Type = 12.2k + HSPA
 - Set UE Target Power
 - Power Ctrl Mode= Alternating bits
 - Set and observe the E-TFCI
 - Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
- 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} (Note 1)	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	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1} : 47/15 β_{ed2} : 47/15	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 $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$. For sub-test 5, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 5/15$ with $\beta_{hs} = 5/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. 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 $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

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

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

- a. The EUT was connected to Base Station referred to the Setup Configuration below
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
 - i. Set RMC 12.2Kbps + HSDPA mode.
 - ii. Set Cell Power = -25 dBm
 - iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
 - iv. Select HSDPA Uplink Parameters
 - v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
 - a). Subtest 1: $\beta_c/\beta_d=2/15$
 - b). Subtest 2: $\beta_c/\beta_d=12/15$
 - c). Subtest 3: $\beta_c/\beta_d=15/8$
 - d). Subtest 4: $\beta_c/\beta_d=15/4$
 - 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.		

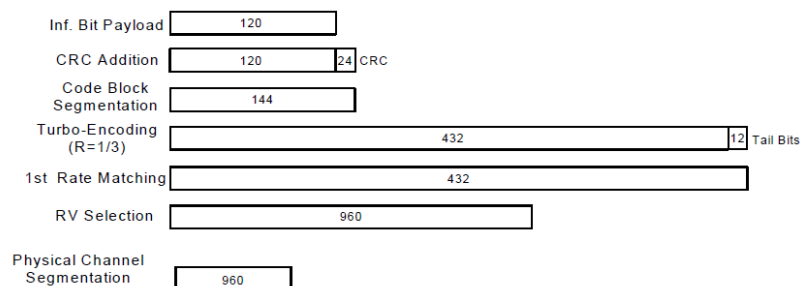


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

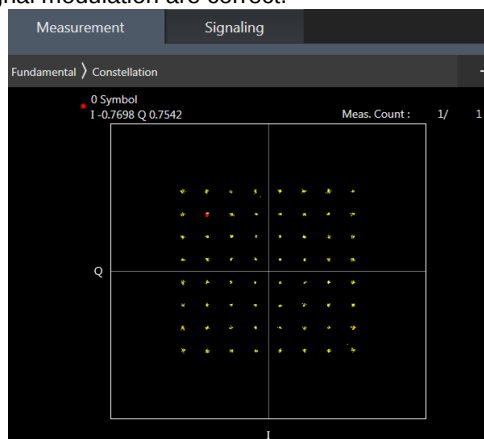
<WCDMA Conducted Power>**General Note:**

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is $\leq \frac{1}{4}$ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA) are less than $\frac{1}{4}$ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA

<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ 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 / B26 / B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE B4 / B5 / B38 SAR test was covered by B66 / B26 / 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 $\leq$ 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 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.

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

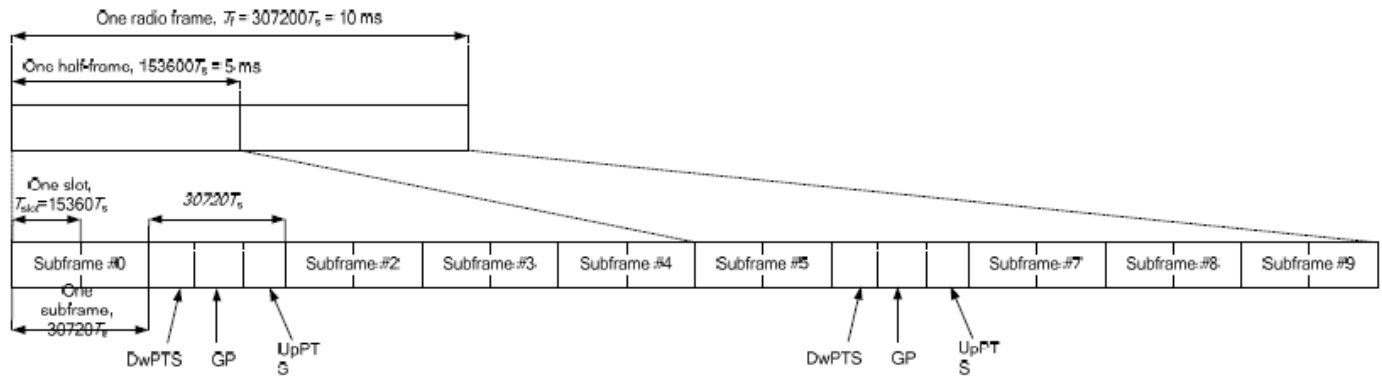


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

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	$26336 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$			$20480 \cdot T_s$		
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:

For LTE Band 41 Power class 3

- Uplink-downlink configuration: 0. In a half-frame consisted of 5 subframes, uplink operation is in 3 uplink subframes and 1 special subframe.
- special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink
- for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: $(3+0.167)/5 = 63.3\%$
- for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: $(3+0.143)/5 = 62.9\%$
- For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix $63.3\%/62.9\% = 1.006$ is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

<LTE Carrier Aggregation>
General Note:

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

2CC Downlink Carrier Aggregation			3CC Downlink Carrier Aggregation		
Number	Combination	Covered by Measurement Superset	Number	Combination	Covered by Measurement Superset
2CC #1	CA_2A_4A		3CC #1	CA_26A-41C	
2CC #2	CA_2A_5A		3CC #2	CA_7A-66A-66A	
2CC #3	CA_2A_7A		3CC #3	CA_7C-66A	4CC #1
2CC #4	CA_4A_4A				
2CC #5	CA_4A_5A				
2CC #6	CA_4A_7A				
2CC #7	CA_5A_7A				
2CC #8	CA_5A_38A				
2CC #9	CA_5A_41A				
2CC #10	CA_41C	3CC #1			
2CC #11	CA_41A_41A				
2CC #12	CA_7B				
2CC #13	CA_7C	4CC #1			
2CC #14	CA_7A_7A				
2CC #15	CA_26A_41A				
2CC #16	CA_66A_66A	3CC #2			
2CC #17	CA_7A_66A	3CC #2			
2CC #18	CA_38C				
2CC #19	CA_66B				
2CC #20	CA_66C				

4CC Downlink Carrier Aggregation		
Number	Combination	Covered by Measurement Superset
4CC #1	CA_7C-66A-66A	

4X4 MIMO	WWAN Band	
	LTE Band: B4 / B7 / B38 / B41	

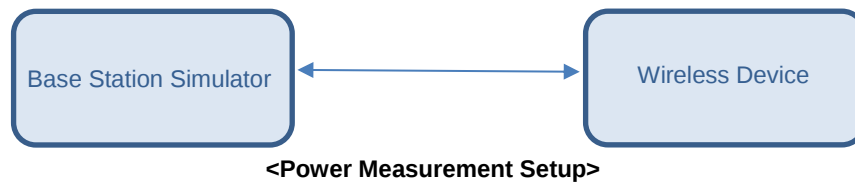
LTE Carrier Aggregation Conducted Power (Downlink)

- i. According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.
- ii. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.
- iii. The device supports downlink two carrier aggregation. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
- iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.
- v. For inter-band CA, the SCC selected highest bandwidth and near the middle of its transmission band. For SCC DL RB size and offset will base on the PCC corresponding RB allocation.
- vi. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.
- vii. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

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

LTE Carrier Aggregation Conducted Power (Uplink)

1. This device supports uplink carrier aggregation for LTE CA_7C 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. For the non-contiguously allocated resource blocks which the MPR level is determined by various RB separation and RB sizes requirement, and the allowed MPR levels, settings and the conducted powers are permanently implemented in this device per the 3GPP 36.36.101 section 6.2.3A.1.3 requirements.
2. According to FCC guidance, the output power with uplink CA active was measured for the high / middle / low channel configuration with the highest reported SAR for each exposure condition, the power was measured with wideband signal integration over both component carriers.
3. In applying the power measurement procedures of KDB 941225 D05A for DL CA to qualify for UL SAR test exclusion, power measurement is required only for the subset in each row with the largest combination of frequency bands and CCs
4. Maximum output power measurement is required for each UL CA configuration for the required test channels described in KDB 941225 D05. The required test channel should be associated with the UL PCC. For channels at the ends of a frequency band, the SCC and subsequent CCs are added to the side within the transmission band. Otherwise, the CCs should be added alternatively to either side of the PCC.



5G NR Output Power (Unit: dBm)**General Note:**

1. NR implementation of n5, n7, n66 is limited to EN-DC operations only (NSA), with LTE Bands 5/7/66 acting as anchor bands, SAR tests for NR Bands and LTE Anchors Bands were performed separately due to limitations in SAR probe calibration factors.
2. Following 5G NR n5/ n7/n66 support SCS 15KHz DFT/CP-OFDM, PI/2 BPSK/QPSK/16QAM/64QAM/ 256QAM, Bandwidth 5M/10M/15M/20M.
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-QPSK and the reported SAR for the DFT-QPSK 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/64QMA/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the 16QAM/64QMA/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. Due to test setup limitations, SAR testing for NR was performed using Factory Test Mode software to establish the connection and perform SAR with 100% transmission.
5. 5G NR NSA EN-DC mode, 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 conservative for LTE band standalone SAR (with higher power than correspondent LTE from NR (P LTE, P NR).

<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	$\leq 3.5^1$	$\leq 1.2^1$	$\leq 0.2^1$
		$\leq 0.5^2$	$\leq 0.5^2$	0 ²
	QPSK	≤ 1		0
	16 QAM	≤ 2		≤ 1
	64 QAM	≤ 2.5		
CP-OFDM	256 QAM	≤ 4.5		
	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 configuration	UL LTE UL LTE TX Ant	UL NR UL NR Ant
DC_5A_n7A	Ant 2	Ant 1
DC_5A_n66A	Ant 2	Ant 1
DC_7A_n5A	Ant 1	Ant 2
DC_7A_n66A	Ant 2	Ant 1
DC_66A_n7A	Ant 1	Ant 2

EDNC										
TX. freq.	ANT	Default	Head		Body worn		Hotspot		Handheld	
		max. tune up limit	max. tune up limit	power reduction (dB)	max. tune up limit	power reduction (dB)	max. tune up limit	power reduction (dB)	max. tune up limit	power reduction (dB)
LTE Band 7 ENDC	1	24.00	24.00		15.00	9.00	13.00	11.00	19.00	5.00
LTE Band 66 ENDC	1	24.00	24.00		17.00	7.00	16.00	8.00	20.00	4.00
FR1 N7 ENDC	1	24.00	24.00		14.00	10.00	11.50	12.50	18.00	6.00
FR1 N66- ENDC	1	24.00	24.00		16.50	7.50	14.50	9.50	19.50	4.50
LTE Band 5 ENDC	2	23.00	20.00	3.00	23.00		20.00	3.00	23.00	
LTE Band 7 ENDC	2	24.00	19.50	4.50	20.00	4.00	18.00	6.00	22.00	2.00
FR1 N5-ENDC	2	24.00	21.00	3.00	22.50	1.50	22.00	2.00	24.00	
FR1 N7-ENDC	2	24.00	18.50	5.50	19.00	5.00	17.00	7.00	23.00	1.00

Note: For EN-DC component, LTE band 7 for ANT 2(top antenna) is limited to EN-DC active and they will act as anchor mode. When EN-DC is not active, LTE band 7 will not transmit.

<WLAN Conducted Power>

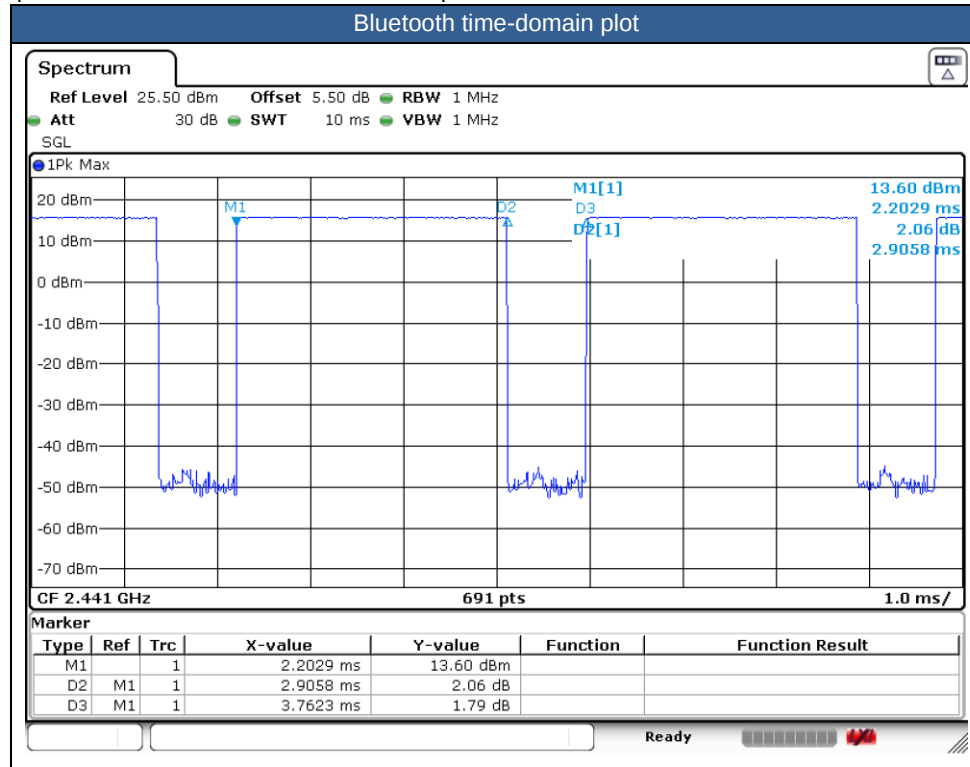
General Note:

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

<2.4GHz Bluetooth>

General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle is 77.23 % as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the theoretical duty cycle is 83.3%, therefore the actual duty cycle will be scaled up to the theoretical value of Bluetooth reported SAR calculation





14. Antenna Location

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

15. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
 - c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - d. For BT/WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
 - e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
 - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
 - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8 W/kg. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. Pre KDB648474 D04v01r03, when the reported SAR for a 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 headset attached to the handset. When headset SAR is less than or equal than without headset SAR, no need to verify the remaining channels for headset SAR.
5. The device implements Proximity sensors/receiver detect mechanism/hotspot trigger reduced power for the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity).
6. The device will invoke corresponding work scenarios power level, which are provided in the operational description.
7. For Some WWAN bands, sensor on reduced power level higher than hotspot reduced power level, so front/back sensor on SAR can represent hotspot conservatively.
8. For WLAN when transmit simultaneous with WWAN LAT or UAT, power reduction will be activated to head / hotspot / body-worn / extremity.
9. The device has four headsets, only supplier is different, so we chose headset 1 to perform full SAR testing, and headset 2/3/4 only verified the worst case of headset 1.
10. LTE 7C intra band contiguous link limited to WWAN antenna 1, so only evaluated intra band 7C SAR at ant.1.
11. 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/WLAN transmitter scaled to maximum output power mode for product specific 10g SAR is higher than 1.2W/kg of GSM1900, WCDMA Band II/IV, LTE Band 2/4/7/38/41/66, 5G NR n7/ n66 and WLAN 5.2/5.8GHz 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.
12. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed for body worn:
Front: [12 mm](#)
Back: [24 mm](#)
13. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed for handheld:
Front: [9 mm](#)
Back: [16 mm](#)
Bottom side: [17 mm](#)

**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. Therefore, the GPRS 3Tx slots for GSM850/GSM1900 are considered as the primary mode.
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 $\leq \frac{1}{4}$ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

WCDMA Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is $\leq \frac{1}{4}$ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA) are less than $\frac{1}{4}$ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is $> \frac{1}{2}$ 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 $> \frac{1}{2}$ 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. This device supports HPUE for LTE band 41 with class 2 level, so HPUE SAR has been performed.
7. For LTE B4 / B5 / B12 / B26 / B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
8. LTE B4 / B5 / B38 SAR test was covered by LTE B66 / B26 / 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 $\leq$ the larger band to qualify for the SAR test exclusion
 - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band

WLAN/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.
6. WLAN only supports MIMO mode and no SISO mode.
7. Based on WLAN 2.4GHz and Bluetooth share the same antenna, so Bluetooth RF exposure evaluation chose the worst position of WLAN 2.4GHz Ant to perform Bluetooth SAR test, and used this Bluetooth SAR value conservatively represent other position do co-located analysis with WWAN.

15.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Power Reduction	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)
	GSM850_Ant1	GPRS 3 Tx slots	Right Cheek	Full	189	836.4	28.46	29.00	1.132	-0.09	0.053	0.060
	GSM850_Ant1	GPRS 3 Tx slots	Right Tilted	Full	189	836.4	28.46	29.00	1.132	0.01	0.051	0.058
	GSM850_Ant1	GPRS 3 Tx slots	Left Cheek	Full	189	836.4	28.46	29.00	1.132	-0.09	0.063	0.071
	GSM850_Ant1	GPRS 3 Tx slots	Left Tilted	Full	189	836.4	28.46	29.00	1.132	-0.09	0.042	0.048
	GSM850_Ant2	GPRS 3 Tx slots	Right Cheek	Reduced	189	836.4	26.10	27.00	1.230	0.01	0.508	0.625
	GSM850_Ant2	GPRS 3 Tx slots	Right Tilted	Reduced	189	836.4	26.10	27.00	1.230	0.03	0.387	0.476
01	GSM850_Ant2	GPRS 3 Tx slots	Left Cheek	Reduced	189	836.4	26.10	27.00	1.230	0.03	0.834	1.026
	GSM850_Ant2	GPRS 3 Tx slots	Left Cheek	Reduced	128	824.2	25.87	27.00	1.297	0.01	0.623	0.808
	GSM850_Ant2	GPRS 3 Tx slots	Left Cheek	Reduced	251	848.8	25.75	27.00	1.334	0.02	0.710	0.947
	GSM850_Ant2	GPRS 3 Tx slots	Left Tilted	Reduced	189	836.4	26.10	27.00	1.230	0.05	0.551	0.678
	GSM1900_Ant1	GPRS 3 Tx slots	Right Cheek	Full	661	1880	26.08	27.00	1.236	0.03	0.073	0.090
	GSM1900_Ant1	GPRS 3 Tx slots	Right Tilted	Full	661	1880	26.08	27.00	1.236	-0.02	0.037	0.046
	GSM1900_Ant1	GPRS 3 Tx slots	Left Cheek	Full	661	1880	26.08	27.00	1.236	0.06	0.058	0.072
02	GSM1900_Ant1	GPRS 3 Tx slots	Left Tilted	Full	661	1880	26.08	27.00	1.236	0.09	0.075	0.092

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Power Reduction	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)
	WCDMA II_Ant1	RMC 12.2Kbps	Right Cheek	Full	9400	1880	22.94	24.00	1.276	0.05	0.052	0.066
	WCDMA II_Ant1	RMC 12.2Kbps	Right Tilted	Full	9400	1880	22.94	24.00	1.276	-0.09	0.049	0.063
03	WCDMA II_Ant1	RMC 12.2Kbps	Left Cheek	Full	9400	1880	22.94	24.00	1.276	0.06	0.079	0.101
	WCDMA II_Ant1	RMC 12.2Kbps	Left Tilted	Full	9400	1880	22.94	24.00	1.276	0.02	0.062	0.079
	WCDMA IV_Ant1	RMC 12.2Kbps	Right Cheek	Full	1413	1732.6	23.12	24.00	1.225	0.09	0.049	0.060
	WCDMA IV_Ant1	RMC 12.2Kbps	Right Tilted	Full	1413	1732.6	23.12	24.00	1.225	-0.01	0.047	0.058
04	WCDMA IV_Ant1	RMC 12.2Kbps	Left Cheek	Full	1413	1732.6	23.12	24.00	1.225	-0.01	0.071	0.087
	WCDMA IV_Ant1	RMC 12.2Kbps	Left Tilted	Full	1413	1732.6	23.12	24.00	1.225	0.06	0.060	0.073
	WCDMA V_Ant1	RMC 12.2Kbps	Right Cheek	Full	4182	836.4	22.60	24.00	1.380	0.02	0.097	0.134
	WCDMA V_Ant1	RMC 12.2Kbps	Right Tilted	Full	4182	836.4	22.60	24.00	1.380	0.03	0.054	0.075
	WCDMA V_Ant1	RMC 12.2Kbps	Left Cheek	Full	4182	836.4	22.60	24.00	1.380	0.05	0.150	0.207
	WCDMA V_Ant1	RMC 12.2Kbps	Left Tilted	Full	4182	836.4	22.60	24.00	1.380	0.09	0.095	0.131
	WCDMA V_Ant2	RMC 12.2Kbps	Right Cheek	Reduced	4182	836.4	22.50	23.00	1.122	0.02	0.710	0.797
	WCDMA V_Ant2	RMC 12.2Kbps	Right Tilted	Reduced	4182	836.4	22.50	23.00	1.122	0.03	0.690	0.774
	WCDMA V_Ant2	RMC 12.2Kbps	Left Cheek	Reduced	4182	836.4	22.50	23.00	1.122	-0.01	0.943	1.058
	WCDMA V_Ant2	RMC 12.2Kbps	Left Cheek	Reduced	4132	826.4	22.49	23.00	1.125	0.04	0.806	0.906
05	WCDMA V_Ant2	RMC 12.2Kbps	Left Cheek	Reduced	4233	846.6	22.38	23.00	1.153	0.1	1.010	1.165
	WCDMA V_Ant2	RMC 12.2Kbps	Left Tilted	Reduced	4182	836.4	22.50	23.00	1.122	0.02	0.908	1.019
	WCDMA V_Ant2	RMC 12.2Kbps	Left Tilted	Reduced	4132	826.4	22.49	23.00	1.125	0.03	0.826	0.929
	WCDMA V_Ant2	RMC 12.2Kbps	Left Tilted	Reduced	4233	846.6	22.38	23.00	1.153	-0.03	0.879	1.014



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Power Reduction	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)
06	LTE Band 2_Ant1	20M	QPSK	1	0	Right Cheek	Full	18900	1880	22.74	24.00	1.337	0.03	0.043	0.057
	LTE Band 2_Ant1	20M	QPSK	50	0	Right Cheek	Full	18900	1880	21.60	23.00	1.380	-0.01	0.028	0.039
	LTE Band 2_Ant1	20M	QPSK	1	0	Right Tilted	Full	18900	1880	22.74	24.00	1.337	0.04	0.036	0.048
	LTE Band 2_Ant1	20M	QPSK	50	0	Right Tilted	Full	18900	1880	21.60	23.00	1.380	0.04	0.021	0.029
	LTE Band 2_Ant1	20M	QPSK	1	0	Left Cheek	Full	18900	1880	22.74	24.00	1.337	0.03	0.046	0.061
	LTE Band 2_Ant1	20M	QPSK	50	0	Left Cheek	Full	18900	1880	21.60	23.00	1.380	-0.03	0.029	0.040
	LTE Band 2_Ant1	20M	QPSK	1	0	Left Tilted	Full	18900	1880	22.74	24.00	1.337	0.05	0.045	0.060
	LTE Band 2_Ant1	20M	QPSK	50	0	Left Tilted	Full	18900	1880	21.60	23.00	1.380	0.02	0.021	0.029
	LTE Band 7_Ant1	20M	QPSK	1	0	Right Cheek	Full	21100	2535	22.83	24.00	1.309	0.04	0.095	0.125
	LTE Band 7C_Ant1	20M	QPSK	1	0	Right Cheek	Full	21100+20902	2535+2515.2	22.63	24.00	1.371	0.03	0.081	0.111
	LTE Band 7_Ant1	20M	QPSK	50	0	Right Cheek	Full	21100	2535	21.80	23.00	1.318	0.01	0.056	0.074
	LTE Band 7_Ant1	20M	QPSK	1	0	Right Tilted	Full	21100	2535	22.83	24.00	1.309	0.09	0.068	0.089
07	LTE Band 7_Ant1	20M	QPSK	50	0	Right Tilted	Full	21100	2535	21.80	23.00	1.318	0.03	0.035	0.046
	LTE Band 7_Ant1	20M	QPSK	1	0	Left Cheek	Full	21100	2535	22.83	24.00	1.309	0.09	0.055	0.072
	LTE Band 7_Ant1	20M	QPSK	50	0	Left Cheek	Full	21100	2535	21.80	23.00	1.318	-0.01	0.046	0.061
	LTE Band 7_Ant1	20M	QPSK	1	0	Left Tilted	Full	21100	2535	22.83	24.00	1.309	0.01	0.055	0.072
	LTE Band 7_Ant1	20M	QPSK	50	0	Left Tilted	Full	21100	2535	21.80	23.00	1.318	0.03	0.044	0.058
	EN-DC														
	LTE Band 7_Ant2	20M	QPSK	1	0	Right Cheek	Reduced	21100	2535	19.33	19.50	1.040	0.02	0.194	0.202
	LTE Band 7_Ant2	20M	QPSK	50	0	Right Cheek	Reduced	21100	2535	19.21	19.50	1.069	0.06	0.205	0.219
	LTE Band 7_Ant2	20M	QPSK	1	0	Right Tilted	Reduced	21100	2535	19.33	19.50	1.040	0.01	0.228	0.237
	LTE Band 7_Ant2	20M	QPSK	50	0	Right Tilted	Reduced	21100	2535	19.21	19.50	1.069	0.09	0.244	0.261
	LTE Band 7_Ant2	20M	QPSK	1	0	Left Cheek	Reduced	21100	2535	19.33	19.50	1.040	0.01	0.389	0.405
	LTE Band 7_Ant2	20M	QPSK	50	0	Left Cheek	Reduced	21100	2535	19.21	19.50	1.069	0.06	0.340	0.363
	LTE Band 7_Ant2	20M	QPSK	1	0	Left Tilted	Reduced	21100	2535	19.33	19.50	1.040	0.05	0.378	0.393
	LTE Band 7_Ant2	20M	QPSK	50	0	Left Tilted	Reduced	21100	2535	19.21	19.50	1.069	-0.03	0.401	0.429
08	LTE Band 12_Ant1	10M	QPSK	1	0	Right Cheek	Full	23095	707.5	22.68	24.00	1.355	0.03	0.153	0.207
	LTE Band 12_Ant1	10M	QPSK	25	0	Right Cheek	Full	23095	707.5	21.75	23.00	1.334	0.02	0.095	0.127
	LTE Band 12_Ant1	10M	QPSK	1	0	Right Tilted	Full	23095	707.5	22.68	24.00	1.355	0.09	0.062	0.084
	LTE Band 12_Ant1	10M	QPSK	25	0	Right Tilted	Full	23095	707.5	21.75	23.00	1.334	0.02	0.052	0.069
	LTE Band 12_Ant1	10M	QPSK	1	0	Left Cheek	Full	23095	707.5	22.68	24.00	1.355	0.09	0.098	0.133
	LTE Band 12_Ant1	10M	QPSK	25	0	Left Cheek	Full	23095	707.5	21.75	23.00	1.334	0.08	0.086	0.115
	LTE Band 12_Ant1	10M	QPSK	1	0	Left Tilted	Full	23095	707.5	22.68	24.00	1.355	0.02	0.049	0.066
	LTE Band 12_Ant1	10M	QPSK	25	0	Left Tilted	Full	23095	707.5	21.75	23.00	1.334	0.06	0.028	0.037
	LTE Band 12_Ant2	10M	QPSK	1	0	Right Cheek	Full	23095	707.5	22.42	24.00	1.439	0.02	0.269	0.387
	LTE Band 12_Ant2	10M	QPSK	25	0	Right Cheek	Full	23095	707.5	21.44	23.00	1.432	0.09	0.224	0.321
	LTE Band 12_Ant2	10M	QPSK	1	0	Right Tilted	Full	23095	707.5	22.42	24.00	1.439	0.02	0.293	0.422
	LTE Band 12_Ant2	10M	QPSK	25	0	Right Tilted	Full	23095	707.5	21.44	23.00	1.432	0.09	0.240	0.344
08	LTE Band 12_Ant2	10M	QPSK	1	0	Left Cheek	Full	23095	707.5	22.42	24.00	1.439	-0.09	0.317	0.456
	LTE Band 12_Ant2	10M	QPSK	25	0	Left Cheek	Full	23095	707.5	21.44	23.00	1.432	-0.02	0.356	0.510
	LTE Band 12_Ant2	10M	QPSK	1	0	Left Tilted	Full	23095	707.5	22.42	24.00	1.439	-0.05	0.539	0.776
	LTE Band 12_Ant2	10M	QPSK	25	0	Left Tilted	Full	23095	707.5	21.44	23.00	1.432	0.01	0.317	0.454



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Power Reduction	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)
	LTE Band 26_Ant1	15M	QPSK	1	0	Right Cheek	Full	26865	831.5	22.53	24.00	1.403	0.09	0.159	0.223
	LTE Band 26_Ant1	15M	QPSK	36	0	Right Cheek	Full	26865	831.5	21.30	23.00	1.479	0.03	0.064	0.095
	LTE Band 26_Ant1	15M	QPSK	1	0	Right Tilted	Full	26865	831.5	22.53	24.00	1.403	0.01	0.045	0.063
	LTE Band 26_Ant1	15M	QPSK	36	0	Right Tilted	Full	26865	831.5	21.30	23.00	1.479	0.05	0.034	0.050
	LTE Band 26_Ant1	15M	QPSK	1	0	Left Cheek	Full	26865	831.5	22.53	24.00	1.403	0.07	0.064	0.090
	LTE Band 26_Ant1	15M	QPSK	36	0	Left Cheek	Full	26865	831.5	21.30	23.00	1.479	0.07	0.060	0.089
	LTE Band 26_Ant1	15M	QPSK	1	0	Left Tilted	Full	26865	831.5	22.53	24.00	1.403	0.02	0.041	0.058
	LTE Band 26_Ant1	15M	QPSK	36	0	Left Tilted	Full	26865	831.5	21.30	23.00	1.479	0.07	0.056	0.083
	LTE Band 26_Ant2	15M	QPSK	1	0	Right Cheek	Full	26865	831.5	21.99	23.00	1.262	-0.03	0.329	0.415
	LTE Band 26_Ant2	15M	QPSK	36	0	Right Cheek	Full	26865	831.5	20.79	22.00	1.321	0.01	0.284	0.375
	LTE Band 26_Ant2	15M	QPSK	1	0	Right Tilted	Full	26865	831.5	21.99	23.00	1.262	0.06	0.290	0.366
	LTE Band 26_Ant2	15M	QPSK	36	0	Right Tilted	Full	26865	831.5	20.79	22.00	1.321	0.02	0.247	0.326
09	LTE Band 26_Ant2	15M	QPSK	1	0	Left Cheek	Full	26865	831.5	21.99	23.00	1.262	-0.06	0.670	0.845
	LTE Band 26_Ant2	15M	QPSK	36	0	Left Cheek	Full	26865	831.5	20.79	22.00	1.321	0.02	0.560	0.740
	LTE Band 26_Ant2	15M	QPSK	75	0	Left Cheek	Full	26865	831.5	20.77	22.00	1.327	-0.06	0.553	0.734
	LTE Band 26_Ant2	15M	QPSK	1	0	Left Tilted	Full	26865	831.5	21.99	23.00	1.262	0.09	0.599	0.756
	LTE Band 26_Ant2	15M	QPSK	36	0	Left Tilted	Full	26865	831.5	20.79	22.00	1.321	0.03	0.511	0.675
EN-DC															
	LTE Band 5_Ant2	10M	QPSK	1	0	Right Cheek	Reduced	20525	836.5	19.55	20.00	1.109	-0.01	0.170	0.189
	LTE Band 5_Ant2	10M	QPSK	25	0	Right Cheek	Reduced	20525	836.5	19.43	20.00	1.140	0.02	0.182	0.208
	LTE Band 5_Ant2	10M	QPSK	1	0	Right Tilted	Reduced	20525	836.5	19.55	20.00	1.109	0.06	0.123	0.136
	LTE Band 5_Ant2	10M	QPSK	25	0	Right Tilted	Reduced	20525	836.5	19.43	20.00	1.140	0.01	0.186	0.212
	LTE Band 5_Ant2	10M	QPSK	1	0	Left Cheek	Reduced	20525	836.5	19.55	20.00	1.109	0.05	0.343	0.380
	LTE Band 5_Ant2	10M	QPSK	25	0	Left Cheek	Reduced	20525	836.5	19.43	20.00	1.140	0.02	0.357	0.407
	LTE Band 5_Ant2	10M	QPSK	1	0	Left Tilted	Reduced	20525	836.5	19.55	20.00	1.109	0.09	0.303	0.336
	LTE Band 5_Ant2	10M	QPSK	25	0	Left Tilted	Reduced	20525	836.5	19.43	20.00	1.140	0.09	0.314	0.358
10	LTE Band 66_Ant1	20M	QPSK	1	0	Right Cheek	Full	132322	1745	22.35	24.00	1.462	-0.04	0.045	0.066
	LTE Band 66_Ant1	20M	QPSK	50	0	Right Cheek	Full	132322	1745	21.73	23.00	1.340	-0.01	0.032	0.043
	LTE Band 66_Ant1	20M	QPSK	1	0	Right Tilted	Full	132322	1745	22.35	24.00	1.462	0.02	0.034	0.050
	LTE Band 66_Ant1	20M	QPSK	50	0	Right Tilted	Full	132322	1745	21.73	23.00	1.340	0.06	0.024	0.032
	LTE Band 66_Ant1	20M	QPSK	1	0	Left Cheek	Full	132322	1745	22.35	24.00	1.462	0.01	0.041	0.060
	LTE Band 66_Ant1	20M	QPSK	50	0	Left Cheek	Full	132322	1745	21.73	23.00	1.340	0.09	0.025	0.033
	LTE Band 66_Ant1	20M	QPSK	1	0	Left Tilted	Full	132322	1745	22.35	24.00	1.462	0.01	0.043	0.063
	LTE Band 66_Ant1	20M	QPSK	50	0	Left Tilted	Full	132322	1745	21.73	23.00	1.340	0.06	0.028	0.038

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Power Reduction	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)
11	LTE Band 41_Ant1	20M	QPSK	1	0	Right Cheek	Full	40620	2593	22.64	24.00	1.368	62.9	1.006	0.08	0.075	0.103
	LTE Band 41_Ant1	20M	QPSK	50	0	Right Cheek	Full	40620	2593	21.85	23.00	1.303	62.9	1.006	-0.01	0.060	0.078
	LTE Band 41_Ant1	20M	QPSK	1	0	Right Tilted	Full	40620	2593	22.64	24.00	1.368	62.9	1.006	0.02	0.044	0.060
	LTE Band 41_Ant1	20M	QPSK	50	0	Right Tilted	Full	40620	2593	21.85	23.00	1.303	62.9	1.006	0.06	0.039	0.051
	LTE Band 41_Ant1	20M	QPSK	1	0	Left Cheek	Full	40620	2593	22.64	24.00	1.368	62.9	1.006	0.01	0.059	0.081
	LTE Band 41_Ant1	20M	QPSK	50	0	Left Cheek	Full	40620	2593	21.85	23.00	1.303	62.9	1.006	0.05	0.051	0.067
	LTE Band 41_Ant1	20M	QPSK	1	0	Left Tilted	Full	40620	2593	22.64	24.00	1.368	62.9	1.006	0.02	0.053	0.073
	LTE Band 41_Ant1	20M	QPSK	50	0	Left Tilted	Full	40620	2593	21.85	23.00	1.303	62.9	1.006	0.09	0.049	0.064



<5G NR NSA SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Power Reduction	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)
	FR1 n5_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Right Cheek	Reduced	167300	836.5	19.77	21.00	1.327	0.08	0.304	0.404
	FR1 n5_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Right Cheek	Reduced	167300	836.5	19.64	21.00	1.368	0.01	0.324	0.443
	FR1 n5_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Right Tilted	Reduced	167300	836.5	19.77	21.00	1.327	0.06	0.270	0.358
	FR1 n5_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Right Tilted	Reduced	167300	836.5	19.64	21.00	1.368	0.12	0.329	0.450
12	FR1 n5_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Left Cheek	Reduced	167300	836.5	19.77	21.00	1.327	-0.08	0.450	0.597
	FR1 n5_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Left Cheek	Reduced	167300	836.5	19.64	21.00	1.368	0.03	0.400	0.547
	FR1 n5_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Left Tilted	Reduced	167300	836.5	19.77	21.00	1.327	-0.11	0.413	0.548
	FR1 n5_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Left Tilted	Reduced	167300	836.5	19.64	21.00	1.368	0.01	0.367	0.502
	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Right Cheek	Full	507000	2535	22.71	24.00	1.346	0.01	0.052	0.070
	FR1 n7_Ant 1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Right Cheek	Full	507000	2535	22.65	24.00	1.365	0.02	0.052	0.070
	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Right Tilted	Full	507000	2535	22.71	24.00	1.346	-0.09	0.027	0.037
	FR1 n7_Ant 1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Right Tilted	Full	507000	2535	22.65	24.00	1.365	0.06	0.022	0.030
	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Left Cheek	Full	507000	2535	22.71	24.00	1.346	0.07	0.044	0.060
	FR1 n7_Ant 1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Left Cheek	Full	507000	2535	22.65	24.00	1.365	0.06	0.042	0.057
	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Left Tilted	Full	507000	2535	22.71	24.00	1.346	0.07	0.035	0.048
	FR1 n7_Ant 1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Left Tilted	Full	507000	2535	22.65	24.00	1.365	0.03	0.035	0.047
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Right Cheek	Reduced	507000	2535	17.97	18.50	1.130	-0.09	0.209	0.236
	FR1 n7_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Right Cheek	Reduced	507000	2535	17.82	18.50	1.169	0.01	0.205	0.240
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Right Tilted	Reduced	507000	2535	17.97	18.50	1.130	-0.01	0.218	0.246
	FR1 n7_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Right Tilted	Reduced	507000	2535	17.82	18.50	1.169	0.05	0.220	0.257
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Left Cheek	Reduced	507000	2535	17.97	18.50	1.130	0.01	0.359	0.406
	FR1 n7_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Left Cheek	Reduced	507000	2535	17.82	18.50	1.169	-0.08	0.345	0.403
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Left Tilted	Reduced	507000	2535	17.97	18.50	1.130	-0.18	0.419	0.473
13	FR1 n7_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Left Tilted	Reduced	507000	2535	17.82	18.50	1.169	0.19	0.413	0.483
14	FR1 n66_Ant1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Right Cheek	Full	349000	1745	22.92	24.00	1.282	0.06	0.067	0.086
	FR1 n66_Ant1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Right Cheek	Full	349000	1745	22.27	24.00	1.489	-0.09	0.056	0.083
	FR1 n66_Ant1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Right Tilted	Full	349000	1745	22.92	24.00	1.282	0.02	0.040	0.051
	FR1 n66_Ant1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Right Tilted	Full	349000	1745	22.27	24.00	1.489	-0.15	0.037	0.056
	FR1 n66_Ant1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Left Cheek	Full	349000	1745	22.92	24.00	1.282	-0.19	0.051	0.065
	FR1 n66_Ant1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Left Cheek	Full	349000	1745	22.27	24.00	1.489	-0.06	0.051	0.076
	FR1 n66_Ant1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Left Tilted	Full	349000	1745	22.92	24.00	1.282	0.16	0.057	0.074
	FR1 n66_Ant1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Left Tilted	Full	349000	1745	22.27	24.00	1.489	-0.11	0.051	0.077

<WLAN2.4G SAR>

Plot No.	Band	Mode	Test Position	Antenna	Power Reduction	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)
15	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	Ant 1+2	Full	1	2412	22.35	23.00	1.161	100	1.000	-0.08	0.511	0.594
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	Ant 1+2	Full	1	2412	22.35	23.00	1.161	100	1.000	0.02	0.461	0.535
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	Ant 1+2	Full	1	2412	22.35	23.00	1.161	100	1.000	0.01	0.352	0.409
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	Ant 1+2	Full	1	2412	22.35	23.00	1.161	100	1.000	0.06	0.478	0.555
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	Ant 1+2	Simultaneous Reduced	1	2412	20.63	21.00	1.090	100	1.000	-0.15	0.296	0.323
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	Ant 1+2	Simultaneous Reduced	1	2412	20.63	21.00	1.090	100	1.000	-0.19	0.274	0.299
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	Ant 1+2	Simultaneous Reduced	1	2412	20.63	21.00	1.090	100	1.000	-0.06	0.186	0.203
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	Ant 1+2	Simultaneous Reduced	1	2412	20.63	21.00	1.090	100	1.000	0.12	0.203	0.221



<WLAN5G SAR>

Plot No.	Band	Mode	Test Position	Antenna	Power Reduction	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)
	WLAN5.3GHz	802.11a 6Mbps	Right Cheek	Ant 1+2	Full	52	5260	20.90	21.50	1.149	98.28	1.018	0.09	0.099	0.116
	WLAN5.3GHz	802.11a 6Mbps	Right Tilted	Ant 1+2	Full	52	5260	20.90	21.50	1.149	98.28	1.018	0.02	0.112	0.131
	WLAN5.3GHz	802.11a 6Mbps	Left Cheek	Ant 1+2	Full	52	5260	20.90	21.50	1.149	98.28	1.018	0.01	0.058	0.068
16	WLAN5.3GHz	802.11a 6Mbps	Left Tilted	Ant 1+2	Full	52	5260	20.90	21.50	1.149	98.28	1.018	0.09	0.117	0.137
	WLAN5.5GHz	802.11a 6Mbps	Right Cheek	Ant 1+2	Full	100	5500	20.67	21.50	1.210	98.28	1.018	0.09	0.140	0.172
17	WLAN5.5GHz	802.11a 6Mbps	Right Tilted	Ant 1+2	Full	100	5500	20.67	21.50	1.210	98.28	1.018	-0.15	0.192	0.237
	WLAN5.5GHz	802.11a 6Mbps	Left Cheek	Ant 1+2	Full	100	5500	20.67	21.50	1.210	98.28	1.018	-0.01	0.102	0.126
	WLAN5.5GHz	802.11a 6Mbps	Left Tilted	Ant 1+2	Full	100	5500	20.67	21.50	1.210	98.28	1.018	0.03	0.120	0.148
	WLAN5.8GHz	802.11a 6Mbps	Right Cheek	Ant 1+2	Full	157	5785	20.15	21.00	1.216	98.28	1.018	-0.01	0.059	0.073
18	WLAN5.8GHz	802.11a 6Mbps	Right Tilted	Ant 1+2	Full	157	5785	20.15	21.00	1.216	98.28	1.018	0.02	0.099	0.123
	WLAN5.8GHz	802.11a 6Mbps	Left Cheek	Ant 1+2	Full	157	5785	20.15	21.00	1.216	98.28	1.018	0.09	0.058	0.072
	WLAN5.8GHz	802.11a 6Mbps	Left Tilted	Ant 1+2	Full	157	5785	20.15	21.00	1.216	98.28	1.018	0.09	0.069	0.085

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Power Reduction	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)
19	Bluetooth	1Mbps	Right Cheek	Full	39	2441	16.95	17.00	1.011	77.23	1.079	-0.01	0.251	0.274

15.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	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)
	GSM850_Ant1	GPRS 3 Tx slots	Front	5mm	Full	189	836.4	28.46	29.00	1.132	-0.02	0.074	0.084
	GSM850_Ant1	GPRS 3 Tx slots	Back	5mm	Full	189	836.4	28.46	29.00	1.132	0.09	0.404	0.457
	GSM850_Ant1	GPRS 3 Tx slots	Left Side	5mm	Full	189	836.4	28.46	29.00	1.132	-0.01	0.092	0.104
	GSM850_Ant1	GPRS 3 Tx slots	Right Side	5mm	Full	189	836.4	28.46	29.00	1.132	0.05	0.101	0.114
	GSM850_Ant1	GPRS 3 Tx slots	Bottom Side	5mm	Full	189	836.4	28.46	29.00	1.132	0.03	0.394	0.446
	GSM850_Ant2	GPRS 3 Tx slots	Front	5mm	Full	189	836.4	28.05	28.50	1.109	0.03	0.419	0.465
	GSM850_Ant2	GPRS 3 Tx slots	Back	5mm	Full	189	836.4	28.05	28.50	1.109	0.02	0.362	0.402
	GSM850_Ant2	GPRS 3 Tx slots	Left Side	5mm	Full	189	836.4	28.05	28.50	1.109	-0.01	0.156	0.173
	GSM850_Ant2	GPRS 3 Tx slots	Right Side	5mm	Full	189	836.4	28.05	28.50	1.109	-0.02	0.080	0.089
	GSM850_Ant2	GPRS 3 Tx slots	Top Side	5mm	Full	189	836.4	28.05	28.50	1.109	0.09	0.641	0.711
	GSM850_Ant2	GPRS 3 Tx slots	Top Side	5mm	Full	128	824.2	27.83	28.50	1.167	0.05	0.710	0.828
20	GSM850_Ant2	GPRS 3 Tx slots	Top Side	5mm	Full	251	848.8	27.86	28.50	1.159	0.05	0.841	0.975
	GSM1900_Ant1	GPRS 3 Tx slots	Front	5mm	Reduced	661	1880	22.10	23.00	1.230	0.01	0.422	0.519
	GSM1900_Ant1	GPRS 3 Tx slots	Front	5mm	Reduced	512	1850.2	21.70	23.00	1.349	0.09	0.442	0.596
	GSM1900_Ant1	GPRS 3 Tx slots	Front	5mm	Reduced	810	1909.8	21.93	23.00	1.279	0.03	0.438	0.560
	GSM1900_Ant1	GPRS 3 Tx slots	Back	5mm	Reduced	661	1880	22.10	23.00	1.230	0.11	0.804	0.989
	GSM1900_Ant1	GPRS 3 Tx slots	Back	5mm	Reduced	512	1850.2	21.70	23.00	1.349	-0.01	0.729	0.983
	GSM1900_Ant1	GPRS 3 Tx slots	Back	5mm	Reduced	810	1909.8	21.93	23.00	1.279	0.09	0.526	0.673
	GSM1900_Ant1	GPRS 3 Tx slots	Left Side	5mm	Reduced	661	1880	21.17	22.00	1.211	-0.01	0.038	0.046
	GSM1900_Ant1	GPRS 3 Tx slots	Right Side	5mm	Reduced	661	1880	21.17	22.00	1.211	-0.03	0.081	0.098
	GSM1900_Ant1	GPRS 3 Tx slots	Bottom Side	5mm	Reduced	661	1880	21.17	22.00	1.211	0.01	0.856	1.036
21	GSM1900_Ant1	GPRS 3 Tx slots	Bottom Side	5mm	Reduced	512	1850.2	20.83	22.00	1.309	0.03	0.904	1.184
	GSM1900_Ant1	GPRS 3 Tx slots	Bottom Side	5mm	Reduced	810	1909.8	21.05	22.00	1.245	0.03	0.752	0.936

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	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)
	WCDMA II_Ant1	RMC 12.2Kbps	Front	5mm	Reduced	9400	1880	17.21	18.00	1.199	0.03	0.739	0.886
	WCDMA II_Ant1	RMC 12.2Kbps	Front	5mm	Reduced	9262	1852.4	17.08	18.00	1.236	-0.04	0.712	0.880
	WCDMA II_Ant1	RMC 12.2Kbps	Front	5mm	Reduced	9538	1907.6	17.18	18.00	1.208	0.01	0.741	0.895
22	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	Reduced	9400	1880	17.21	18.00	1.199	0.01	1.150	1.379
	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	Reduced	9262	1852.4	17.08	18.00	1.236	-0.04	1.060	1.310
	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	Reduced	9538	1907.6	17.18	18.00	1.208	-0.03	1.020	1.232
	WCDMA II_Ant1	RMC 12.2Kbps	Left Side	5mm	Reduced	9400	1880	16.35	17.00	1.161	0.12	0.056	0.065
	WCDMA II_Ant1	RMC 12.2Kbps	Right Side	5mm	Reduced	9400	1880	16.35	17.00	1.161	0.03	0.074	0.086
	WCDMA II_Ant1	RMC 12.2Kbps	Bottom Side	5mm	Reduced	9400	1880	16.35	17.00	1.161	-0.04	1.150	1.336
	WCDMA II_Ant1	RMC 12.2Kbps	Bottom Side	5mm	Reduced	9262	1852.4	16.11	17.00	1.227	-0.06	0.852	1.046
	WCDMA II_Ant1	RMC 12.2Kbps	Bottom Side	5mm	Reduced	9538	1907.6	16.13	17.00	1.222	0.16	1.100	1.344
	WCDMA IV_Ant1	RMC 12.2Kbps	Front	5mm	Reduced	1413	1732.6	19.42	20.00	1.143	0.01	0.782	0.894
	WCDMA IV_Ant1	RMC 12.2Kbps	Front	5mm	Reduced	1312	1712.4	19.16	20.00	1.213	-0.06	0.598	0.726
	WCDMA IV_Ant1	RMC 12.2Kbps	Front	5mm	Reduced	1513	1752.6	19.37	20.00	1.156	0.16	0.874	1.010
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	Reduced	1413	1732.6	19.42	20.00	1.143	-0.11	1.040	1.189
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	Reduced	1312	1712.4	19.16	20.00	1.213	0.04	1.020	1.238
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	Reduced	1513	1752.6	19.37	20.00	1.156	-0.14	1.030	1.191
	WCDMA IV_Ant1	RMC 12.2Kbps	Left Side	5mm	Reduced	1413	1732.6	18.41	19.00	1.146	0.02	0.052	0.060
	WCDMA IV_Ant1	RMC 12.2Kbps	Right Side	5mm	Reduced	1413	1732.6	18.41	19.00	1.146	-0.15	0.106	0.121
	WCDMA IV_Ant1	RMC 12.2Kbps	Bottom Side	5mm	Reduced	1413	1732.6	18.41	19.00	1.146	-0.19	1.140	1.306
	WCDMA IV_Ant1	RMC 12.2Kbps	Bottom Side	5mm	Reduced	1312	1712.4	18.15	19.00	1.216	-0.06	0.822	1.000
23	WCDMA IV_Ant1	RMC 12.2Kbps	Bottom Side	5mm	Reduced	1513	1752.6	18.33	19.00	1.167	0.12	1.180	1.377
	WCDMA V_Ant1	RMC 12.2Kbps	Front	5mm	Full	4182	836.4	22.60	24.00	1.380	0.01	0.538	0.743
	WCDMA V_Ant1	RMC 12.2Kbps	Back	5mm	Full	4182	836.4	22.60	24.00	1.380	0.03	0.690	0.952
	WCDMA V_Ant1	RMC 12.2Kbps	Back	5mm	Full	4132	826.4	22.59	24.00	1.384	0.01	0.527	0.729
24	WCDMA V_Ant1	RMC 12.2Kbps	Back	5mm	Full	4233	846.6	22.51	24.00	1.409	0.02	0.826	1.164
	WCDMA V_Ant1	RMC 12.2Kbps	Left Side	5mm	Full	4182	836.4	22.60	24.00	1.380	0.03	0.088	0.121
	WCDMA V_Ant1	RMC 12.2Kbps	Right Side	5mm	Full	4182	836.4	22.60	24.00	1.380	0.06	0.216	0.298
	WCDMA V_Ant1	RMC 12.2Kbps	Bottom Side	5mm	Full	4182	836.4	22.60	24.00	1.380	-0.03	0.650	0.897
	WCDMA V_Ant1	RMC 12.2Kbps	Bottom Side	5mm	Full	4132	826.4	22.59	24.00	1.384	-0.05	0.548	0.758
	WCDMA V_Ant1	RMC 12.2Kbps	Bottom Side	5mm	Full	4233	846.6	22.51	24.00	1.409	0.04	0.768	1.082
	WCDMA V_Ant2	RMC 12.2Kbps	Front	5mm	Full	4182	836.4	23.09	24.00	1.233	-0.05	0.301	0.371
	WCDMA V_Ant2	RMC 12.2Kbps	Back	5mm	Full	4182	836.4	23.09	24.00	1.233	-0.12	0.352	0.434
	WCDMA V_Ant2	RMC 12.2Kbps	Left Side	5mm	Full	4182	836.4	23.09	24.00	1.233	0.01	0.118	0.146
	WCDMA V_Ant2	RMC 12.2Kbps	Right Side	5mm	Full	4182	836.4	23.09	24.00	1.233	0.02	0.214	0.264
	WCDMA V_Ant2	RMC 12.2Kbps	Top Side	5mm	Full	4182	836.4	23.09	24.00	1.233	0.03	0.732	0.903
	WCDMA V_Ant2	RMC 12.2Kbps	Top Side	5mm	Full	4132	826.4	23.08	24.00	1.236	0.06	0.747	0.923
	WCDMA V_Ant2	RMC 12.2Kbps	Top Side	5mm	Full	4233	846.6	23.01	24.00	1.256	-0.03	0.749	0.941



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	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)
	LTE Band 2_Ant1	20M	QPSK	1	0	Front	5mm	Reduced	18900	1880	18.42	19.00	1.143	0.04	0.579	0.662
	LTE Band 2_Ant1	20M	QPSK	50	0	Front	5mm	Reduced	18900	1880	18.38	19.00	1.153	0.02	0.594	0.685
	LTE Band 2_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	18900	1880	18.42	19.00	1.143	0.01	0.947	1.082
	LTE Band 2_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	18700	1860	18.35	19.00	1.161	0.09	0.932	1.082
	LTE Band 2_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	19100	1900	18.34	19.00	1.164	0.08	0.932	1.085
	LTE Band 2_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	18900	1880	18.38	19.00	1.153	0.12	0.917	1.058
	LTE Band 2_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	18700	1860	18.33	19.00	1.167	-0.01	0.942	1.099
	LTE Band 2_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	19100	1900	18.35	19.00	1.161	-0.04	0.956	1.110
	LTE Band 2_Ant1	20M	QPSK	100	0	Back	5mm	Reduced	18900	1880	18.37	19.00	1.156	0.150	0.920	1.064
	LTE Band 2_Ant1	20M	QPSK	1	0	Left Side	5mm	Reduced	18900	1880	17.44	18.00	1.138	0.030	0.052	0.059
	LTE Band 2_Ant1	20M	QPSK	50	0	Left Side	5mm	Reduced	18900	1880	17.30	18.00	1.175	0.06	0.050	0.059
	LTE Band 2_Ant1	20M	QPSK	1	0	Right Side	5mm	Reduced	18900	1880	17.44	18.00	1.138	0.03	0.063	0.072
	LTE Band 2_Ant1	20M	QPSK	50	0	Right Side	5mm	Reduced	18900	1880	17.30	18.00	1.175	0.01	0.064	0.075
	LTE Band 2_Ant1	20M	QPSK	1	0	Bottom Side	5mm	Reduced	18900	1880	17.44	18.00	1.138	-0.06	1.060	1.206
	LTE Band 2_Ant1	20M	QPSK	1	0	Bottom Side	5mm	Reduced	18700	1860	17.23	18.00	1.194	0.01	1.030	1.230
	LTE Band 2_Ant1	20M	QPSK	1	0	Bottom Side	5mm	Reduced	19100	1900	17.19	18.00	1.205	0.02	1.040	1.253
	LTE Band 2_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	18900	1880	17.30	18.00	1.175	0.12	1.080	1.269
	LTE Band 2_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	18700	1860	17.20	18.00	1.202	0.05	1.010	1.214
25	LTE Band 2_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	19100	1900	17.28	18.00	1.180	0.03	1.090	1.287
	LTE Band 2_Ant1	20M	QPSK	100	0	Bottom Side	5mm	Reduced	18900	1880	17.28	18.00	1.180	-0.04	1.010	1.192
	LTE Band 7_Ant1	20M	QPSK	1	0	Front	5mm	Reduced	21100	2535	17.99	18.50	1.125	0.09	0.454	0.511
	LTE Band 7_Ant1	20M	QPSK	50	0	Front	5mm	Reduced	21100	2535	17.81	18.50	1.172	0.08	0.502	0.588
	LTE Band 7_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	21100	2535	17.99	18.50	1.125	-0.02	0.835	0.939
	LTE Band 7_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	20850	2510	17.96	18.50	1.132	0.11	0.888	1.006
	LTE Band 7_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	21350	2560	17.89	18.50	1.151	0.09	0.936	1.077
	LTE Band 7_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	21100	2535	17.81	18.50	1.172	0.02	1.010	1.184
	LTE Band 7C_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	20850+21048	2510+2529.8	17.56	18.50	1.242	0.03	0.931	1.156
	LTE Band 7_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	20850	2510	17.77	18.50	1.183	-0.03	1.020	1.207
	LTE Band 7_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	21350	2560	17.72	18.50	1.197	-0.15	0.988	1.182
	LTE Band 7_Ant1	20M	QPSK	100	0	Back	5mm	Reduced	21100	2535	17.82	18.50	1.169	0.01	1.000	1.169
	LTE Band 7_Ant1	20M	QPSK	1	0	Left Side	5mm	Reduced	21100	2535	15.78	16.50	1.180	0.03	0.000	0.000
	LTE Band 7_Ant1	20M	QPSK	50	0	Left Side	5mm	Reduced	21100	2535	15.58	16.50	1.236	0.03	0.000	0.000
	LTE Band 7_Ant1	20M	QPSK	1	0	Right Side	5mm	Reduced	21100	2535	15.78	16.50	1.180	0.16	0.118	0.139
	LTE Band 7_Ant1	20M	QPSK	50	0	Right Side	5mm	Reduced	21100	2535	15.58	16.50	1.236	0.01	0.117	0.145
	LTE Band 7_Ant1	20M	QPSK	1	0	Bottom Side	5mm	Reduced	21100	2535	15.78	16.50	1.180	0.09	0.947	1.118
	LTE Band 7_Ant1	20M	QPSK	1	0	Bottom Side	5mm	Reduced	20850	2510	15.47	16.50	1.268	0.02	1.020	1.293
	LTE Band 7_Ant1	20M	QPSK	1	0	Bottom Side	5mm	Reduced	21350	2560	15.44	16.50	1.276	-0.03	0.986	1.259
26	LTE Band 7_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	21100	2535	15.58	16.50	1.236	0.01	1.050	1.298
	LTE Band 7C_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	21100+20902	2535+2515.2	15.65	16.50	1.216	0.01	0.985	1.198
	LTE Band 7_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	20850	2510	15.51	16.50	1.256	0.03	1.010	1.269
	LTE Band 7_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	21350	2560	15.46	16.50	1.271	0.03	0.972	1.235
	LTE Band 7_Ant1	20M	QPSK	100	0	Bottom Side	5mm	Reduced	21100	2535	15.55	16.50	1.245	0.09	0.982	1.222
EN-DC																
	LTE Band 7_Ant1	20M	QPSK	1	0	Front	5mm	Reduced	21100	2535	14.18	15.00	1.208	0.02	0.206	0.249
	LTE Band 7_Ant1	20M	QPSK	50	0	Front	5mm	Reduced	21100	2535	14.01	15.00	1.256	0.03	0.208	0.261
	LTE Band 7_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	21100	2535	14.18	15.00	1.208	0.03	0.452	0.546
	LTE Band 7_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	21100	2535	14.01	15.00	1.256	0.03	0.473	0.594
	LTE Band 7_Ant1	20M	QPSK	1	0	Left Side	5mm	Reduced	21100	2535	12.39	13.00	1.151	0.02	0.042	0.048
	LTE Band 7_Ant1	20M	QPSK	50	0	Left Side	5mm	Reduced	21100	2535	12.34	13.00	1.164	-0.03	0.023	0.027
	LTE Band 7_Ant1	20M	QPSK	1	0	Right Side	5mm	Reduced	21100	2535	12.39	13.00	1.151	0.01	0.059	0.068
	LTE Band 7_Ant1	20M	QPSK	50	0	Right Side	5mm	Reduced	21100	2535	12.34	13.00	1.164	0.09	0.054	0.063
	LTE Band 7_Ant1	20M	QPSK	1	0	Bottom Side	5mm	Reduced	21100	2535	12.39	13.00	1.151	0.03	0.513	0.590



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	LTE Band 7_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	21100	2535	12.34	13.00	1.164	-0.15	0.470	0.547
	LTE Band 7_Ant2	20M	QPSK	1	0	Front	5mm	Reduced	21100	2535	19.67	20.00	1.079	0.03	0.528	0.570
	LTE Band 7_Ant2	20M	QPSK	50	0	Front	5mm	Reduced	21100	2535	19.55	20.00	1.109	0.03	0.478	0.530
	LTE Band 7_Ant2	20M	QPSK	1	0	Back	5mm	Reduced	21100	2535	19.67	20.00	1.079	0.16	0.392	0.423
	LTE Band 7_Ant2	20M	QPSK	50	0	Back	5mm	Reduced	21100	2535	19.55	20.00	1.109	0.03	0.394	0.437
	LTE Band 7_Ant2	20M	QPSK	1	0	Left Side	5mm	Reduced	21100	2535	17.60	18.00	1.096	0.11	0.021	0.023
	LTE Band 7_Ant2	20M	QPSK	50	0	Left Side	5mm	Reduced	21100	2535	17.59	18.00	1.099	0.07	0.025	0.027
	LTE Band 7_Ant2	20M	QPSK	1	0	Right Side	5mm	Reduced	21100	2535	17.60	18.00	1.096	0.09	0.033	0.036
	LTE Band 7_Ant2	20M	QPSK	50	0	Right Side	5mm	Reduced	21100	2535	17.59	18.00	1.099	0.09	0.032	0.035
	LTE Band 7_Ant2	20M	QPSK	1	0	Top Side	5mm	Reduced	21100	2535	17.60	18.00	1.096	0.11	0.480	0.526
	LTE Band 7_Ant2	20M	QPSK	50	0	Top Side	5mm	Reduced	21100	2535	17.59	18.00	1.099	0.03	0.500	0.550
	LTE Band 12_Ant1	10M	QPSK	1	0	Front	5mm	Full	23095	707.5	22.68	24.00	1.355	0.03	0.324	0.439
	LTE Band 12_Ant1	10M	QPSK	25	0	Front	5mm	Full	23095	707.5	21.75	23.00	1.334	0.02	0.259	0.345
	LTE Band 12_Ant1	10M	QPSK	1	0	Back	5mm	Full	23095	707.5	22.68	24.00	1.355	0.03	0.520	0.705
	LTE Band 12_Ant1	10M	QPSK	25	0	Back	5mm	Full	23095	707.5	21.75	23.00	1.334	0.03	0.383	0.511
	LTE Band 12_Ant1	10M	QPSK	1	0	Left Side	5mm	Full	23095	707.5	22.68	24.00	1.355	0.03	0.172	0.233
	LTE Band 12_Ant1	10M	QPSK	25	0	Left Side	5mm	Full	23095	707.5	21.75	23.00	1.334	0.02	0.142	0.189
	LTE Band 12_Ant1	10M	QPSK	1	0	Right Side	5mm	Full	23095	707.5	22.68	24.00	1.355	-0.03	0.185	0.251
	LTE Band 12_Ant1	10M	QPSK	25	0	Right Side	5mm	Full	23095	707.5	21.75	23.00	1.334	0.01	0.155	0.207
	LTE Band 12_Ant1	10M	QPSK	1	0	Bottom Side	5mm	Full	23095	707.5	22.68	24.00	1.355	0.09	0.410	0.556
	LTE Band 12_Ant1	10M	QPSK	25	0	Bottom Side	5mm	Full	23095	707.5	21.75	23.00	1.334	0.03	0.331	0.441
	LTE Band 12_Ant2	10M	QPSK	1	0	Front	5mm	Full	23095	707.5	22.42	24.00	1.439	0.09	0.274	0.394
	LTE Band 12_Ant2	10M	QPSK	25	0	Front	5mm	Full	23095	707.5	21.44	23.00	1.432	0.01	0.149	0.213
	LTE Band 12_Ant2	10M	QPSK	1	0	Back	5mm	Full	23095	707.5	22.42	24.00	1.439	-0.09	0.301	0.433
	LTE Band 12_Ant2	10M	QPSK	25	0	Back	5mm	Full	23095	707.5	21.44	23.00	1.432	-0.15	0.283	0.405
	LTE Band 12_Ant2	10M	QPSK	1	0	Left Side	5mm	Full	23095	707.5	22.42	24.00	1.439	0.01	0.185	0.266
	LTE Band 12_Ant2	10M	QPSK	25	0	Left Side	5mm	Full	23095	707.5	21.44	23.00	1.432	0.03	0.150	0.215
	LTE Band 12_Ant2	10M	QPSK	1	0	Right Side	5mm	Full	23095	707.5	22.42	24.00	1.439	0.02	0.313	0.450
	LTE Band 12_Ant2	10M	QPSK	25	0	Right Side	5mm	Full	23095	707.5	21.44	23.00	1.432	0.03	0.252	0.361
27	LTE Band 12_Ant2	10M	QPSK	1	0	Top Side	5mm	Full	23095	707.5	22.42	24.00	1.439	0.03	0.507	0.729
	LTE Band 12_Ant2	10M	QPSK	25	0	Top Side	5mm	Full	23095	707.5	21.44	23.00	1.432	0.16	0.433	0.620



FCC SAR Test Report

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Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Reduction	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)
	LTE Band 26_Ant1	15M	QPSK	1	0	Front	5mm	Full	26865	831.5	22.53	24.00	1.403	0.09	0.256	0.359
	LTE Band 26_Ant1	15M	QPSK	36	0	Front	5mm	Full	26865	831.5	21.30	23.00	1.479	0.09	0.223	0.330
	LTE Band 26_Ant1	15M	QPSK	1	0	Back	5mm	Full	26865	831.5	22.53	24.00	1.403	0.11	0.351	0.492
	LTE Band 26_Ant1	15M	QPSK	36	0	Back	5mm	Full	26865	831.5	21.30	23.00	1.479	0.07	0.291	0.430
	LTE Band 26_Ant1	15M	QPSK	1	0	Left Side	5mm	Full	26865	831.5	22.53	24.00	1.403	0.09	0.073	0.102
	LTE Band 26_Ant1	15M	QPSK	36	0	Left Side	5mm	Full	26865	831.5	21.30	23.00	1.479	0.09	0.060	0.089
	LTE Band 26_Ant1	15M	QPSK	1	0	Right Side	5mm	Full	26865	831.5	22.53	24.00	1.403	0.11	0.105	0.147
	LTE Band 26_Ant1	15M	QPSK	36	0	Right Side	5mm	Full	26865	831.5	21.30	23.00	1.479	0.03	0.090	0.133
	LTE Band 26_Ant1	15M	QPSK	1	0	Bottom Side	5mm	Full	26865	831.5	22.53	24.00	1.403	-0.04	0.330	0.463
	LTE Band 26_Ant1	15M	QPSK	36	0	Bottom Side	5mm	Full	26865	831.5	21.30	23.00	1.479	0.01	0.241	0.356
	LTE Band 26_Ant2	15M	QPSK	1	0	Front	5mm	Full	26865	831.5	21.99	23.00	1.262	0.09	0.220	0.278
	LTE Band 26_Ant2	15M	QPSK	36	0	Front	5mm	Full	26865	831.5	20.79	22.00	1.321	0.09	0.188	0.248
	LTE Band 26_Ant2	15M	QPSK	1	0	Back	5mm	Full	26865	831.5	21.99	23.00	1.262	0.08	0.332	0.419
	LTE Band 26_Ant2	15M	QPSK	36	0	Back	5mm	Full	26865	831.5	20.79	22.00	1.321	-0.09	0.195	0.258
	LTE Band 26_Ant2	15M	QPSK	1	0	Left Side	5mm	Full	26865	831.5	21.99	23.00	1.262	0.03	0.080	0.101
	LTE Band 26_Ant2	15M	QPSK	36	0	Left Side	5mm	Full	26865	831.5	20.79	22.00	1.321	0.05	0.065	0.086
	LTE Band 26_Ant2	15M	QPSK	1	0	Right Side	5mm	Full	26865	831.5	21.99	23.00	1.262	-0.03	0.109	0.138
	LTE Band 26_Ant2	15M	QPSK	36	0	Right Side	5mm	Full	26865	831.5	20.79	22.00	1.321	0.06	0.092	0.122
	LTE Band 26_Ant2	15M	QPSK	1	0	Top Side	5mm	Full	26865	831.5	21.99	23.00	1.262	0.01	0.330	0.416
	LTE Band 26_Ant2	15M	QPSK	36	0	Top Side	5mm	Full	26865	831.5	20.79	22.00	1.321	0.03	0.265	0.350
EN-DC																
	LTE Band 5_Ant2	10M	QPSK	1	0	Front	5mm	Full	20525	836.5	21.89	23.00	1.291	0.01	0.449	0.580
	LTE Band 5_Ant2	10M	QPSK	25	0	Front	5mm	Full	20525	836.5	21.04	22.00	1.247	-0.09	0.381	0.475
28	LTE Band 5_Ant2	10M	QPSK	1	0	Back	5mm	Full	20525	836.5	21.89	23.00	1.291	0.03	0.456	0.589
	LTE Band 5_Ant2	10M	QPSK	25	0	Back	5mm	Full	20525	836.5	21.04	22.00	1.247	0.09	0.414	0.516
	LTE Band 5_Ant2	10M	QPSK	1	0	Left Side	5mm	Reduced	20525	836.5	19.55	20.00	1.109	0.11	0.064	0.071
	LTE Band 5_Ant2	10M	QPSK	25	0	Left Side	5mm	Reduced	20525	836.5	19.43	20.00	1.140	0.09	0.062	0.071
	LTE Band 5_Ant2	10M	QPSK	1	0	Right Side	5mm	Reduced	20525	836.5	19.55	20.00	1.109	0.02	0.107	0.119
	LTE Band 5_Ant2	10M	QPSK	25	0	Right Side	5mm	Reduced	20525	836.5	19.43	20.00	1.140	-0.03	0.103	0.117
	LTE Band 5_Ant2	10M	QPSK	1	0	Top Side	5mm	Reduced	20525	836.5	19.55	20.00	1.109	-0.15	0.299	0.332
	LTE Band 5_Ant2	10M	QPSK	25	0	Top Side	5mm	Reduced	20525	836.5	19.43	20.00	1.140	0.01	0.314	0.358
	LTE Band 66_Ant1	20M	QPSK	1	0	Front	5mm	Reduced	132322	1745	19.53	20.50	1.250	0.03	0.553	0.691
	LTE Band 66_Ant1	20M	QPSK	50	0	Front	5mm	Reduced	132322	1745	19.35	20.50	1.303	-0.02	0.604	0.787
	LTE Band 66_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	132322	1745	19.53	20.50	1.250	0.01	0.974	1.218
	LTE Band 66_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	132072	1720	19.48	20.50	1.265	0.02	0.822	1.040
	LTE Band 66_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	132572	1770	19.50	20.50	1.259	0.05	1.030	1.297
	LTE Band 66_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	132322	1745	19.35	20.50	1.303	0.06	0.970	1.264
	LTE Band 66_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	132072	1720	19.27	20.50	1.327	0.03	0.856	1.136
29	LTE Band 66_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	132572	1770	19.21	20.50	1.346	-0.02	1.050	1.413
	LTE Band 66_Ant1	20M	QPSK	100	0	Back	5mm	Reduced	132322	1745	19.38	20.50	1.294	0.06	0.959	1.241
	LTE Band 66_Ant1	20M	QPSK	1	0	Left Side	5mm	Reduced	132322	1745	18.45	19.50	1.274	-0.09	0.028	0.036
	LTE Band 66_Ant1	20M	QPSK	50	0	Left Side	5mm	Reduced	132322	1745	18.32	19.50	1.312	-0.02	0.023	0.030
	LTE Band 66_Ant1	20M	QPSK	1	0	Right Side	5mm	Reduced	132322	1745	18.45	19.50	1.274	0.02	0.079	0.101
	LTE Band 66_Ant1	20M	QPSK	50	0	Right Side	5mm	Reduced	132322	1745	18.32	19.50	1.312	0.03	0.075	0.098
	LTE Band 66_Ant1	20M	QPSK	1	0	Bottom Side	5mm	Reduced	132322	1745	18.45	19.50	1.274	0.09	1.050	1.337
	LTE Band 66_Ant1	20M	QPSK	1	0	Bottom Side	5mm	Reduced	132072	1720	18.23	19.50	1.340	-0.01	0.768	1.029
	LTE Band 66_Ant1	20M	QPSK	1	0	Bottom Side	5mm	Reduced	132572	1770	18.24	19.50	1.337	0.01	0.942	1.259
	LTE Band 66_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	132322	1745	18.32	19.50	1.312	0.06	1.000	1.312
	LTE Band 66_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	132072	1720	18.29	19.50	1.321	0.09	0.730	0.965
	LTE Band 66_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	132572	1770	18.20	19.50	1.349	0.02	1.010	1.362
	LTE Band 66_Ant1	20M	QPSK	100	0	Bottom Side	5mm	Reduced	132322	1745	18.30	19.50	1.318	0.03	0.962	1.268
EN-DC																
	LTE Band 66_Ant1	20M	QPSK	1	0	Front	5mm	Reduced	132322	1745	15.71	17.00	1.346	0.06	0.292	0.393
	LTE Band 66_Ant1	20M	QPSK	50	0	Front	5mm	Reduced	132322	1745	15.65	17.00	1.365	0.01	0.295	0.403

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LTE Band 66_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	132322	1745	15.71	17.00	1.346	0.09	0.338	0.455
LTE Band 66_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	132322	1745	15.65	17.00	1.365	0.03	0.393	0.536
LTE Band 66_Ant1	20M	QPSK	1	0	Left Side	5mm	Reduced	132322	1745	14.76	16.00	1.330	0.03	0.023	0.031
LTE Band 66_Ant1	20M	QPSK	50	0	Left Side	5mm	Reduced	132322	1745	14.61	16.00	1.377	-0.03	0.026	0.036
LTE Band 66_Ant1	20M	QPSK	1	0	Right Side	5mm	Reduced	132322	1745	14.76	16.00	1.330	0.01	0.054	0.072
LTE Band 66_Ant1	20M	QPSK	50	0	Right Side	5mm	Reduced	132322	1745	14.61	16.00	1.377	0.17	0.043	0.059
LTE Band 66_Ant1	20M	QPSK	1	0	Bottom Side	5mm	Reduced	132322	1745	14.76	16.00	1.330	0.02	0.402	0.535
LTE Band 66_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	132322	1745	14.61	16.00	1.377	0.01	0.417	0.574

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	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)
	LTE Band 41_Ant1	20M	QPSK	1	0	Front	5mm	Reduced	40620	2593	19.29	20.00	1.178	62.9	1.006	0.01	0.472	0.559
	LTE Band 41_Ant1	20M	QPSK	50	0	Front	5mm	Reduced	40620	2593	19.26	20.00	1.186	62.9	1.006	0.17	0.479	0.571
	LTE Band 41_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	40620	2593	19.29	20.00	1.178	62.9	1.006	0.02	0.804	0.952
	LTE Band 41_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	39750	2506	19.11	20.00	1.227	62.9	1.006	0.01	0.813	1.004
	LTE Band 41_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	40185	2549.5	18.99	20.00	1.262	62.9	1.006	0.04	0.806	1.023
	LTE Band 41_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	41055	2636.5	19.12	20.00	1.225	62.9	1.006	0.13	0.894	1.101
	LTE Band 41_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	41490	2680	19.22	20.00	1.197	62.9	1.006	0.15	0.841	1.012
	LTE Band 41_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	40620	2593	19.26	20.00	1.186	62.9	1.006	0.08	0.823	0.982
	LTE Band 41_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	39750	2506	19.23	20.00	1.194	62.9	1.006	-0.03	0.864	1.038
	LTE Band 41_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	40185	2549.5	19.16	20.00	1.213	62.9	1.006	0.01	0.834	1.018
	LTE Band 41_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	41055	2636.5	19.12	20.00	1.225	62.9	1.006	0.03	0.822	1.013
	LTE Band 41_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	41490	2680	19.20	20.00	1.202	62.9	1.006	0.09	0.856	1.035
	LTE Band 41_Ant1	20M	QPSK	100	0	Back	5mm	Reduced	40620	2593	19.24	20.00	1.191	62.9	1.006	0.11	0.829	0.993
	LTE Band 41_Ant1	20M	QPSK	1	0	Left Side	5mm	Reduced	40620	2593	16.59	17.00	1.099	62.9	1.006	0.07	0.029	0.032
	LTE Band 41_Ant1	20M	QPSK	50	0	Left Side	5mm	Reduced	40620	2593	16.52	17.00	1.117	62.9	1.006	0.09	0.022	0.025
	LTE Band 41_Ant1	20M	QPSK	1	0	Right Side	5mm	Reduced	40620	2593	16.59	17.00	1.099	62.9	1.006	0.03	0.097	0.107
	LTE Band 41_Ant1	20M	QPSK	50	0	Right Side	5mm	Reduced	40620	2593	16.52	17.00	1.117	62.9	1.006	0.05	0.101	0.113
	LTE Band 41_Ant1	20M	QPSK	1	0	Bottom Side	5mm	Reduced	40620	2593	16.59	17.00	1.099	62.9	1.006	0.02	0.996	1.101
	LTE Band 41_Ant1	20M	QPSK	1	0	Bottom Side	5mm	Reduced	39750	2506	16.31	17.00	1.172	62.9	1.006	0.03	1.020	1.203
	LTE Band 41_Ant1	20M	QPSK	1	0	Bottom Side	5mm	Reduced	40185	2549.5	16.19	17.00	1.205	62.9	1.006	0.01	0.881	1.068
	LTE Band 41_Ant1	20M	QPSK	1	0	Bottom Side	5mm	Reduced	41055	2636.5	16.30	17.00	1.175	62.9	1.006	0.03	0.947	1.119
	LTE Band 41_Ant1	20M	QPSK	1	0	Bottom Side	5mm	Reduced	41490	2680	16.22	17.00	1.197	62.9	1.006	0.03	0.889	1.070
	LTE Band 41_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	40620	2593	16.52	17.00	1.117	62.9	1.006	0.02	0.991	1.113
	LTE Band 41_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	39750	2506	16.47	17.00	1.130	62.9	1.006	0.03	1.070	1.216
	LTE Band 41_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	40185	2549.5	16.39	17.00	1.151	62.9	1.006	-0.01	0.881	1.020
	LTE Band 41_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	41055	2636.5	16.32	17.00	1.169	62.9	1.006	0.04	0.923	1.086
	LTE Band 41_Ant1	20M	QPSK	50	0	Bottom Side	5mm	Reduced	41490	2680	16.26	17.00	1.186	62.9	1.006	0.04	0.953	1.137
30	LTE Band 41_Ant1	20M	QPSK	100	0	Bottom Side	5mm	Reduced	40620	2593	16.50	17.00	1.122	62.9	1.006	0.04	1.080	1.219



<5G NR NSA SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Power Reduction	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)
	FR1 n5_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Front	5mm	Reduced	167300	836.5	21.47	22.50	1.268	0.09	0.300	0.380
	FR1 n5_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Front	5mm	Reduced	167300	836.5	21.39	22.50	1.291	0.11	0.278	0.359
31	FR1 n5_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	5mm	Reduced	167300	836.5	21.47	22.50	1.268	0.03	0.450	0.570
	FR1 n5_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Back	5mm	Reduced	167300	836.5	21.39	22.50	1.291	-0.04	0.304	0.393
	FR1 n5_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Left Side	5mm	Reduced	167300	836.5	20.94	22.00	1.276	0.03	0.107	0.137
	FR1 n5_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Left Side	5mm	Reduced	167300	836.5	20.85	22.00	1.303	0.05	0.093	0.121
	FR1 n5_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Right Side	5mm	Reduced	167300	836.5	20.94	22.00	1.276	0.02	0.211	0.269
	FR1 n5_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Right Side	5mm	Reduced	167300	836.5	20.85	22.00	1.303	0.03	0.171	0.223
	FR1 n5_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Top Side	5mm	Reduced	167300	836.5	20.94	22.00	1.276	0.01	0.444	0.567
	FR1 n5_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Top Side	5mm	Reduced	167300	836.5	20.85	22.00	1.303	0.03	0.400	0.521
	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Front	5mm	Reduced	507000	2535	12.87	14.00	1.297	0.02	0.198	0.257
	FR1 n7_Ant 1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Front	5mm	Reduced	507000	2535	12.81	14.00	1.315	0.03	0.198	0.260
32	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	5mm	Reduced	507000	2535	12.87	14.00	1.297	-0.01	0.440	0.571
	FR1 n7_Ant 1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Back	5mm	Reduced	507000	2535	12.81	14.00	1.315	0.04	0.377	0.496
	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Left Side	5mm	Reduced	507000	2535	10.50	11.50	1.259	0.05	0.003	0.004
	FR1 n7_Ant 1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Left Side	5mm	Reduced	507000	2535	10.38	11.50	1.294	-0.03	0.008	0.011
	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Right Side	5mm	Reduced	507000	2535	10.50	11.50	1.259	0.01	0.036	0.045
	FR1 n7_Ant 1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Right Side	5mm	Reduced	507000	2535	10.38	11.50	1.294	0.06	0.030	0.038
	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Bottom Side	5mm	Reduced	507000	2535	10.50	11.50	1.259	0.03	0.432	0.544
	FR1 n7_Ant 1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Bottom Side	5mm	Reduced	507000	2535	10.38	11.50	1.294	0.01	0.385	0.498
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Front	5mm	Reduced	507000	2535	18.34	19.00	1.164	-0.05	0.213	0.248
	FR1 n7_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Front	5mm	Reduced	507000	2535	18.25	19.00	1.189	-0.09	0.203	0.241
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	5mm	Reduced	507000	2535	18.34	19.00	1.164	0.03	0.430	0.501
	FR1 n7_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Back	5mm	Reduced	507000	2535	18.25	19.00	1.189	-0.02	0.388	0.461
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Left Side	5mm	Reduced	507000	2535	16.12	17.00	1.225	0.05	0.007	0.008
	FR1 n7_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Left Side	5mm	Reduced	507000	2535	16.08	17.00	1.236	0.06	0.008	0.009
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Right Side	5mm	Reduced	507000	2535	16.12	17.00	1.225	0.03	0.040	0.049
	FR1 n7_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Right Side	5mm	Reduced	507000	2535	16.08	17.00	1.236	-0.02	0.042	0.052
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Top Side	5mm	Reduced	507000	2535	16.12	17.00	1.225	0.06	0.416	0.509
	FR1 n7_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Top Side	5mm	Reduced	507000	2535	16.08	17.00	1.236	0.09	0.437	0.540
	FR1 n66_Ant1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Front	5mm	Reduced	349000	1745	15.58	16.50	1.236	-0.01	0.299	0.370
	FR1 n66_Ant1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Front	5mm	Reduced	349000	1745	15.48	16.50	1.265	0.01	0.235	0.297
33	FR1 n66_Ant1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	5mm	Reduced	349000	1745	15.58	16.50	1.236	0.06	0.425	0.525
	FR1 n66_Ant1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Back	5mm	Reduced	349000	1745	15.48	16.50	1.265	0.09	0.393	0.497
	FR1 n66_Ant1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Left Side	5mm	Reduced	349000	1745	13.50	14.50	1.259	-0.02	0.016	0.020
	FR1 n66_Ant1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Left Side	5mm	Reduced	349000	1745	13.36	14.50	1.300	0.03	0.015	0.019
	FR1 n66_Ant1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Right Side	5mm	Reduced	349000	1745	13.50	14.50	1.259	0.03	0.029	0.036
	FR1 n66_Ant1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Right Side	5mm	Reduced	349000	1745	13.36	14.50	1.300	0.02	0.023	0.030
	FR1 n66_Ant1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Bottom Side	5mm	Reduced	349000	1745	13.50	14.50	1.259	0.03	0.404	0.509
	FR1 n66_Ant1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Bottom Side	5mm	Reduced	349000	1745	13.36	14.50	1.300	-0.01	0.354	0.460



<WLAN2.4G SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	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)
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 1+2	Full	1	2412	22.35	23.00	1.161	100	1.000	0.01	0.265	0.308
34	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 1+2	Full	1	2412	22.35	23.00	1.161	100	1.000	0.09	0.561	0.652
	WLAN2.4GHz	802.11b 1Mbps	Left Side	5mm	Ant 1+2	Full	1	2412	22.35	23.00	1.161	100	1.000	0.03	0.152	0.177
	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	Ant 1+2	Full	1	2412	22.35	23.00	1.161	100	1.000	0.09	0.166	0.193
	WLAN2.4GHz	802.11b 1Mbps	Top Side	5mm	Ant 1+2	Full	1	2412	22.35	23.00	1.161	100	1.000	-0.01	0.513	0.596
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 1+2	Simultaneous Reduced	1	2412	18.08	18.50	1.102	100	1.000	0.01	0.071	0.078
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 1+2	Simultaneous Reduced	1	2412	18.08	18.50	1.102	100	1.000	0.02	0.294	0.324
	WLAN2.4GHz	802.11b 1Mbps	Left Side	5mm	Ant 1+2	Simultaneous Reduced	1	2412	18.08	18.50	1.102	100	1.000	0.12	0.055	0.061
	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	Ant 1+2	Simultaneous Reduced	1	2412	18.08	18.50	1.102	100	1.000	0.05	0.057	0.063
	WLAN2.4GHz	802.11b 1Mbps	Top Side	5mm	Ant 1+2	Simultaneous Reduced	1	2412	18.08	18.50	1.102	100	1.000	0.03	0.161	0.177

<WLAN5G SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	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)
	WLAN5.2GHz	802.11a 6Mbps	Front	5mm	Ant 1+2	Reduced	44	5220	14.50	15.00	1.122	98.28	1.018	0.02	0.019	0.022
35	WLAN5.2GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Reduced	44	5220	14.50	15.00	1.122	98.28	1.018	0.02	1.020	1.166
	WLAN5.2GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Reduced	48	5240	14.36	15.00	1.158	98.28	1.018	0.02	0.893	1.053
	WLAN5.2GHz	802.11a 6Mbps	Left Side	5mm	Ant 1+2	Reduced	44	5220	14.50	15.00	1.122	98.28	1.018	0.09	0.027	0.031
	WLAN5.2GHz	802.11a 6Mbps	Right Side	5mm	Ant 1+2	Reduced	44	5220	14.50	15.00	1.122	98.28	1.018	0.08	0.045	0.052
	WLAN5.2GHz	802.11a 6Mbps	Top Side	5mm	Ant 1+2	Reduced	44	5220	14.50	15.00	1.122	98.28	1.018	0.02	0.083	0.094
	WLAN5.2GHz	802.11a 6Mbps	Front	5mm	Ant 1+2	Simultaneous Reduced	44	5220	9.11	10.00	1.228	98.28	1.018	-0.03	0.007	0.009
	WLAN5.2GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Simultaneous Reduced	44	5220	9.11	10.00	1.228	98.28	1.018	0.01	0.323	0.404
	WLAN5.2GHz	802.11a 6Mbps	Left Side	5mm	Ant 1+2	Simultaneous Reduced	44	5220	9.11	10.00	1.228	98.28	1.018	0.02	0.008	0.010
	WLAN5.2GHz	802.11a 6Mbps	Right Side	5mm	Ant 1+2	Simultaneous Reduced	44	5220	9.11	10.00	1.228	98.28	1.018	0.08	0.008	0.010
	WLAN5.2GHz	802.11a 6Mbps	Top Side	5mm	Ant 1+2	Simultaneous Reduced	44	5220	9.11	10.00	1.228	98.28	1.018	0.15	0.022	0.028
	WLAN5.8GHz	802.11a 6Mbps	Front	5mm	Ant 1+2	Reduced	165	5825	15.60	16.00	1.097	98.28	1.018	0.04	0.016	0.018
36	WLAN5.8GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Reduced	165	5825	15.60	16.00	1.097	98.28	1.018	0.03	1.020	1.139
	WLAN5.8GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Reduced	157	5785	15.15	16.00	1.216	98.28	1.018	0.05	0.911	1.128
	WLAN5.8GHz	802.11a 6Mbps	Left Side	5mm	Ant 1+2	Reduced	165	5825	15.60	16.00	1.097	98.28	1.018	0.07	0.023	0.026
	WLAN5.8GHz	802.11a 6Mbps	Right Side	5mm	Ant 1+2	Reduced	165	5825	15.60	16.00	1.097	98.28	1.018	0.07	0.119	0.133
	WLAN5.8GHz	802.11a 6Mbps	Top Side	5mm	Ant 1+2	Reduced	165	5825	15.60	16.00	1.097	98.28	1.018	0.02	0.147	0.164
	WLAN5.8GHz	802.11a 6Mbps	Front	5mm	Ant 1+2	Simultaneous Reduced	165	5825	11.00	11.50	1.123	98.28	1.018	-0.15	0.017	0.019
	WLAN5.8GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Simultaneous Reduced	165	5825	11.00	11.50	1.123	98.28	1.018	-0.19	0.351	0.401
	WLAN5.8GHz	802.11a 6Mbps	Left Side	5mm	Ant 1+2	Simultaneous Reduced	165	5825	11.00	11.50	1.123	98.28	1.018	-0.06	0.015	0.017
	WLAN5.8GHz	802.11a 6Mbps	Right Side	5mm	Ant 1+2	Simultaneous Reduced	165	5825	11.00	11.50	1.123	98.28	1.018	0.12	0.059	0.067
	WLAN5.8GHz	802.11a 6Mbps	Top Side	5mm	Ant 1+2	Simultaneous Reduced	165	5825	11.00	11.50	1.123	98.28	1.018	-0.19	0.048	0.055

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	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)
37	Bluetooth	1Mbps	Back	5mm	Full	39	2441	16.95	17.00	1.011	77.23	1.079	0.09	0.192	0.209

15.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	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)
	GSM850_Ant1	GPRS 3 Tx slots	Front	5mm	Full	189	836.4	28.46	29.00	1.132	-0.02	0.074	0.084
	GSM850_Ant1	GPRS 3 Tx slots	Back	5mm	Full	189	836.4	28.46	29.00	1.132	0.09	0.404	0.457
38	GSM850_Ant2	GPRS 3 Tx slots	Front	5mm	Full	189	836.4	28.05	28.50	1.109	0.03	0.419	0.465
	GSM850_Ant2	GPRS 3 Tx slots	Back	5mm	Full	189	836.4	28.05	28.50	1.109	0.02	0.362	0.402
	GSM1900_Ant1	GPRS 3 Tx slots	Front	5mm	Reduced	661	1880	22.10	23.00	1.230	0.01	0.422	0.519
	GSM1900_Ant1	GPRS 3 Tx slots	Front	5mm	Reduced	512	1850.2	21.70	23.00	1.349	0.09	0.442	0.596
	GSM1900_Ant1	GPRS 3 Tx slots	Front	5mm	Reduced	810	1909.8	21.93	23.00	1.279	0.03	0.438	0.560
39	GSM1900_Ant1	GPRS 3 Tx slots	Back	5mm	Reduced	661	1880	22.10	23.00	1.230	0.11	0.804	0.989
	GSM1900_Ant1	GPRS 3 Tx slots	Back	5mm	Reduced	512	1850.2	21.70	23.00	1.349	-0.01	0.729	0.983
	GSM1900_Ant1	GPRS 3 Tx slots	Back	5mm	Reduced	810	1909.8	21.93	23.00	1.279	0.09	0.526	0.673
	GSM1900_Ant1	GPRS 3 Tx slots	Front	12mm	Full	512	1850.2	25.64	27.00	1.368	0.03	0.312	0.427
	GSM1900_Ant1	GPRS 3 Tx slots	Back	24mm	Full	661	1880	26.08	27.00	1.236	0.11	0.253	0.313

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Power Reduction	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)
	WCDMA II_Ant1	RMC 12.2Kbps	Front	5mm	-	Reduced	9400	1880	17.21	18.00	1.199	0.03	0.739	0.886
	WCDMA II_Ant1	RMC 12.2Kbps	Front	5mm	-	Reduced	9262	1852.4	17.08	18.00	1.236	-0.04	0.712	0.880
	WCDMA II_Ant1	RMC 12.2Kbps	Front	5mm	-	Reduced	9538	1907.6	17.18	18.00	1.208	0.01	0.741	0.895
40	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	-	Reduced	9400	1880	17.21	18.00	1.199	0.01	1.150	1.379
	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	-	Reduced	9262	1852.4	17.08	18.00	1.236	-0.04	1.060	1.310
	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	-	Reduced	9538	1907.6	17.18	18.00	1.208	-0.03	1.020	1.232
	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	Headset 1	Reduced	9400	1880	17.21	18.00	1.199	0.08	1.000	1.199
	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	Headset 2	Reduced	9400	1880	17.21	18.00	1.199	0.03	0.962	1.154
	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	Headset 3	Reduced	9400	1880	17.21	18.00	1.199	-0.02	0.983	1.179
	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	Headset 4	Reduced	9400	1880	17.21	18.00	1.199	0.07	0.926	1.111
	WCDMA II_Ant1	RMC 12.2Kbps	Front	12mm		Full	9538	1907.6	22.87	24.00	1.297	0.01	0.652	0.846
	WCDMA II_Ant1	RMC 12.2Kbps	Back	24mm		Full	9400	1880	22.94	24.00	1.276	0.06	0.306	0.391
	WCDMA IV_Ant1	RMC 12.2Kbps	Front	5mm	-	Reduced	1413	1732.6	19.42	20.00	1.143	0.01	0.782	0.894
	WCDMA IV_Ant1	RMC 12.2Kbps	Front	5mm	-	Reduced	1312	1712.4	19.16	20.00	1.213	-0.06	0.598	0.726
	WCDMA IV_Ant1	RMC 12.2Kbps	Front	5mm	-	Reduced	1513	1752.6	19.37	20.00	1.156	0.16	0.874	1.010
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	-	Reduced	1413	1732.6	19.42	20.00	1.143	-0.11	1.040	1.189
41	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	-	Reduced	1312	1712.4	19.16	20.00	1.213	0.04	1.020	1.238
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	-	Reduced	1513	1752.6	19.37	20.00	1.156	-0.14	1.030	1.191
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	Headset 1	Reduced	1312	1712.4	19.16	20.00	1.213	0.04	0.926	1.124
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	Headset 2	Reduced	1312	1712.4	19.16	20.00	1.213	0.08	0.953	1.156
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	Headset 3	Reduced	1312	1712.4	19.16	20.00	1.213	-0.05	0.981	1.190
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	Headset 4	Reduced	1312	1712.4	19.16	20.00	1.213	0.06	0.936	1.136
	WCDMA IV_Ant1	RMC 12.2Kbps	Front	12mm	-	Full	1513	1752.6	23.07	24.00	1.239	0.02	0.369	0.457
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	24mm	-	Full	1312	1712.4	22.85	24.00	1.303	-0.09	0.293	0.382
	WCDMA V_Ant1	RMC 12.2Kbps	Front	5mm	-	Full	4182	836.4	22.60	24.00	1.380	0.01	0.538	0.743
	WCDMA V_Ant1	RMC 12.2Kbps	Back	5mm	-	Full	4182	836.4	22.60	24.00	1.380	0.03	0.690	0.952
	WCDMA V_Ant1	RMC 12.2Kbps	Back	5mm	-	Full	4132	826.4	22.59	24.00	1.384	0.01	0.527	0.729
42	WCDMA V_Ant1	RMC 12.2Kbps	Back	5mm	-	Full	4233	846.6	22.51	24.00	1.409	0.02	0.826	1.164
	WCDMA V_Ant2	RMC 12.2Kbps	Front	5mm	-	Full	4182	836.4	23.09	24.00	1.233	-0.05	0.301	0.371
	WCDMA V_Ant2	RMC 12.2Kbps	Back	5mm	-	Full	4182	836.4	23.09	24.00	1.233	-0.12	0.352	0.434



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Headset	Power Reduction	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)
	LTE Band 2_Ant1	20M	QPSK	1	0	Front	5mm	-	Reduced	18900	1880	18.42	19.00	1.143	0.04	0.579	0.662
	LTE Band 2_Ant1	20M	QPSK	50	0	Front	5mm	-	Reduced	18900	1880	18.38	19.00	1.153	0.02	0.594	0.685
	LTE Band 2_Ant1	20M	QPSK	1	0	Back	5mm	-	Reduced	18900	1880	18.42	19.00	1.143	0.01	0.947	1.082
	LTE Band 2_Ant1	20M	QPSK	1	0	Back	5mm	-	Reduced	18700	1860	18.35	19.00	1.161	0.09	0.932	1.082
	LTE Band 2_Ant1	20M	QPSK	1	0	Back	5mm	-	Reduced	19100	1900	18.34	19.00	1.164	0.08	0.932	1.085
	LTE Band 2_Ant1	20M	QPSK	50	0	Back	5mm	-	Reduced	18900	1880	18.38	19.00	1.153	0.12	0.917	1.058
	LTE Band 2_Ant1	20M	QPSK	50	0	Back	5mm	-	Reduced	18700	1860	18.33	19.00	1.167	-0.01	0.942	1.099
43	LTE Band 2_Ant1	20M	QPSK	50	0	Back	5mm	-	Reduced	19100	1900	18.35	19.00	1.161	-0.04	0.956	1.110
	LTE Band 2_Ant1	20M	QPSK	100	0	Back	5mm	-	Reduced	18900	1880	18.37	19.00	1.156	0.150	0.920	1.064
	LTE Band 2_Ant1	20M	QPSK	1	0	Front	12mm	-	Full	18900	1880	22.74	24.00	1.337	0.030	0.458	0.612
	LTE Band 2_Ant1	20M	QPSK	1	0	Back	24mm	-	Full	19100	1900	22.67	24.00	1.358	-0.030	0.226	0.307
	LTE Band 7_Ant1	20M	QPSK	1	0	Front	5mm	-	Reduced	21100	2535	17.99	18.50	1.125	0.09	0.454	0.511
	LTE Band 7_Ant1	20M	QPSK	50	0	Front	5mm	-	Reduced	21100	2535	17.81	18.50	1.172	0.08	0.502	0.588
	LTE Band 7_Ant1	20M	QPSK	1	0	Back	5mm	-	Reduced	21100	2535	17.99	18.50	1.125	-0.02	0.835	0.939
	LTE Band 7_Ant1	20M	QPSK	1	0	Back	5mm	-	Reduced	20850	2510	17.96	18.50	1.132	0.11	0.888	1.006
	LTE Band 7_Ant1	20M	QPSK	1	0	Back	5mm	-	Reduced	21350	2560	17.89	18.50	1.151	0.09	0.936	1.077
	LTE Band 7_Ant1	20M	QPSK	50	0	Back	5mm	-	Reduced	21100	2535	17.81	18.50	1.172	0.02	1.010	1.184
	LTE Band 7C_Ant1	20M	QPSK	50	0	Back	5mm	-	Reduced	20850+21048	2510+2529.8	17.56	18.50	1.242	0.03	0.931	1.156
44	LTE Band 7_Ant1	20M	QPSK	50	0	Back	5mm	-	Reduced	20850	2510	17.77	18.50	1.183	-0.03	1.020	1.207
	LTE Band 7_Ant1	20M	QPSK	50	0	Back	5mm	-	Reduced	21350	2560	17.72	18.50	1.197	-0.15	0.988	1.182
	LTE Band 7_Ant1	20M	QPSK	100	0	Back	5mm	-	Reduced	20850	2510	17.82	18.50	1.169	0.01	1.000	1.169
	LTE Band 7_Ant1	20M	QPSK	50	0	Back	5mm	Headset 1	Reduced	20850	2510	17.77	18.50	1.183	-0.05	0.912	1.079
	LTE Band 7_Ant1	20M	QPSK	50	0	Back	5mm	Headset 2	Reduced	20850	2510	17.77	18.50	1.183	0.01	0.963	1.139
	LTE Band 7_Ant1	20M	QPSK	50	0	Back	5mm	Headset 3	Reduced	20850	2510	17.77	18.50	1.183	0.03	0.955	1.130
	LTE Band 7_Ant1	20M	QPSK	50	0	Back	5mm	Headset 4	Reduced	20850	2510	17.77	18.50	1.183	0.08	0.911	1.078
	LTE Band 7_Ant1	20M	QPSK	50	0	Front	12mm	-	Full	21100	2535	22.83	24.00	1.309	0.03	0.409	0.535
	LTE Band 7_Ant1	20M	QPSK	50	0	Back	24mm	-	Full	20850	2510	22.65	24.00	1.365	0.02	0.225	0.307
EN-DC																	
	LTE Band 7_Ant1	20M	QPSK	1	0	Front	5mm		Reduced	21100	2535	14.18	15.00	1.208	0.02	0.206	0.249
	LTE Band 7_Ant1	20M	QPSK	50	0	Front	5mm		Reduced	21100	2535	14.01	15.00	1.256	0.03	0.208	0.261
	LTE Band 7_Ant1	20M	QPSK	1	0	Back	5mm		Reduced	21100	2535	14.18	15.00	1.208	0.03	0.452	0.546
	LTE Band 7_Ant1	20M	QPSK	50	0	Back	5mm		Reduced	21100	2535	14.01	15.00	1.256	0.03	0.473	0.594
	LTE Band 7_Ant2	20M	QPSK	1	0	Front	5mm		Reduced	21100	2535	19.67	20.00	1.079	0.03	0.528	0.570
	LTE Band 7_Ant2	20M	QPSK	50	0	Front	5mm		Reduced	21100	2535	19.55	20.00	1.109	0.03	0.478	0.530
	LTE Band 7_Ant2	20M	QPSK	1	0	Back	5mm		Reduced	21100	2535	19.67	20.00	1.079	0.16	0.392	0.423
	LTE Band 7_Ant2	20M	QPSK	50	0	Back	5mm		Reduced	21100	2535	19.55	20.00	1.109	0.03	0.394	0.437
	LTE Band 7_Ant2	20M	QPSK	1	0	Front	12mm		Full	21100	2535	23.67	24.00	1.079	0.09	0.256	0.276
	LTE Band 7_Ant2	20M	QPSK	1	0	Back	24mm		Full	21100	2535	23.67	24.00	1.079	0.09	0.118	0.127
	LTE Band 12_Ant1	10M	QPSK	1	0	Front	5mm	-	Full	23095	707.5	22.68	24.00	1.355	0.03	0.324	0.439
	LTE Band 12_Ant1	10M	QPSK	25	0	Front	5mm	-	Full	23095	707.5	21.75	23.00	1.334	0.02	0.259	0.345
45	LTE Band 12_Ant1	10M	QPSK	1	0	Back	5mm	-	Full	23095	707.5	22.68	24.00	1.355	0.03	0.520	0.705
	LTE Band 12_Ant1	10M	QPSK	25	0	Back	5mm	-	Full	23095	707.5	21.75	23.00	1.334	0.03	0.383	0.511
	LTE Band 12_Ant2	10M	QPSK	1	0	Front	5mm	-	Full	23095	707.5	22.42	24.00	1.439	0.09	0.274	0.394
	LTE Band 12_Ant2	10M	QPSK	25	0	Front	5mm	-	Full	23095	707.5	21.44	23.00	1.432	0.01	0.149	0.213
	LTE Band 12_Ant2	10M	QPSK	1	0	Back	5mm	-	Full	23095	707.5	22.42	24.00	1.439	-0.09	0.301	0.433
	LTE Band 12_Ant2	10M	QPSK	25	0	Back	5mm	-	Full	23095	707.5	21.44	23.00	1.432	-0.15	0.283	0.405
	LTE Band 26_Ant1	15M	QPSK	1	0	Front	5mm	-	Full	26865	831.5	22.53	24.00	1.403	0.09	0.256	0.359
	LTE Band 26_Ant1	15M	QPSK	36	0	Front	5mm	-	Full	26865	831.5	21.30	23.00	1.479	0.09	0.223	0.330
	LTE Band 26_Ant1	15M	QPSK	1	0	Back	5mm	-	Full	26865	831.5	22.53	24.00	1.403	0.11	0.351	0.492
	LTE Band 26_Ant1	15M	QPSK	36	0	Back	5mm	-	Full	26865	831.5	21.30	23.00	1.479	0.07	0.291	0.430
	LTE Band 26_Ant2	15M	QPSK	1	0	Front	5mm	-	Full	26865	831.5	21.99	23.00	1.262	0.09	0.220	0.278
	LTE Band 26_Ant2	15M	QPSK	36	0	Front	5mm	-	Full	26865	831.5	20.79	22.00	1.321	0.09	0.188	0.248

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FCC SAR Test Report

Report No. : FA082402-01

	LTE Band 26_Ant2	15M	QPSK	1	0	Back	5mm	-	Full	26865	831.5	21.99	23.00	1.262	0.08	0.332	0.419
	LTE Band 26_Ant2	15M	QPSK	36	0	Back	5mm	-	Full	26865	831.5	20.79	22.00	1.321	-0.09	0.195	0.258
EN-DC																	
	LTE Band 5_Ant2	10M	QPSK	1	0	Front	5mm		Full	20525	836.5	21.89	23.00	1.291	0.01	0.449	0.580
	LTE Band 5_Ant2	10M	QPSK	25	0	Front	5mm		Full	20525	836.5	21.04	22.00	1.247	-0.09	0.381	0.475
46	LTE Band 5_Ant2	10M	QPSK	1	0	Back	5mm		Full	20525	836.5	21.89	23.00	1.291	0.03	0.456	0.589
	LTE Band 5_Ant2	10M	QPSK	25	0	Back	5mm		Full	20525	836.5	21.04	22.00	1.247	0.09	0.414	0.516

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Headset	Power Reduction	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)
	LTE Band 66_Ant1	20M	QPSK	1	0	Front	5mm	-	Reduced	132322	1745	19.53	20.50	1.250	0.03	0.553	0.691
	LTE Band 66_Ant1	20M	QPSK	50	0	Front	5mm	-	Reduced	132322	1745	19.35	20.50	1.303	-0.02	0.604	0.787
	LTE Band 66_Ant1	20M	QPSK	1	0	Back	5mm	-	Reduced	132322	1745	19.53	20.50	1.250	0.01	0.974	1.218
	LTE Band 66_Ant1	20M	QPSK	1	0	Back	5mm	-	Reduced	132072	1720	19.48	20.50	1.265	0.02	0.822	1.040
	LTE Band 66_Ant1	20M	QPSK	1	0	Back	5mm	-	Reduced	132572	1770	19.50	20.50	1.259	0.05	1.030	1.297
	LTE Band 66_Ant1	20M	QPSK	50	0	Back	5mm	-	Reduced	132322	1745	19.35	20.50	1.303	0.06	0.970	1.264
	LTE Band 66_Ant1	20M	QPSK	50	0	Back	5mm	-	Reduced	132072	1720	19.27	20.50	1.327	0.03	0.856	1.136
47	LTE Band 66_Ant1	20M	QPSK	50	0	Back	5mm	-	Reduced	132572	1770	19.21	20.50	1.346	-0.02	1.050	1.413
	LTE Band 66_Ant1	20M	QPSK	100	0	Back	5mm	-	Reduced	132322	1745	19.38	20.50	1.294	0.06	0.959	1.241
	LTE Band 66_Ant1	20M	QPSK	50	0	Back	5mm	Headset 1	Reduced	132572	1770	19.21	20.50	1.346	0.09	0.920	1.238
	LTE Band 66_Ant1	20M	QPSK	50	0	Back	5mm	Headset 2	Reduced	132572	1770	19.21	20.50	1.346	0.01	0.911	1.226
	LTE Band 66_Ant1	20M	QPSK	50	0	Back	5mm	Headset 3	Reduced	132572	1770	19.21	20.50	1.346	-0.05	0.906	1.219
	LTE Band 66_Ant1	20M	QPSK	50	0	Back	5mm	Headset 4	Reduced	132572	1770	19.21	20.50	1.346	0.08	0.892	1.201
	LTE Band 66_Ant1	20M	QPSK	1	0	Front	12mm	-	Full	132322	1745	22.35	24.00	1.462	0.01	0.509	0.744
	LTE Band 66_Ant1	20M	QPSK	1	0	Back	24mm	-	Full	132572	1770	22.23	24.00	1.503	0.05	0.202	0.304
EN-DC																	
	LTE Band 66_Ant1	20M	QPSK	1	0	Front	5mm		Reduced	132322	1745	15.71	17.00	1.346	0.06	0.292	0.393
	LTE Band 66_Ant1	20M	QPSK	50	0	Front	5mm		Reduced	132322	1745	15.65	17.00	1.365	0.01	0.295	0.403
	LTE Band 66_Ant1	20M	QPSK	1	0	Back	5mm		Reduced	132322	1745	15.71	17.00	1.346	0.09	0.338	0.455
	LTE Band 66_Ant1	20M	QPSK	50	0	Back	5mm		Reduced	132322	1745	15.65	17.00	1.365	0.03	0.393	0.536
	LTE Band 66_Ant1	20M	QPSK	1	0	Front	12mm	-	Full	132322	1745	22.35	24.00	1.462	0.01	0.509	0.744
	LTE Band 66_Ant1	20M	QPSK	1	0	Back	24mm	-	Full	132322	1745	22.35	24.00	1.462	0.05	0.202	0.295

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	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)
	LTE Band 41_Ant1	20M	QPSK	1	0	Front	5mm	Reduced	40620	2593	19.29	20.00	1.178	62.9	1.006	0.01	0.472	0.559
	LTE Band 41_Ant1	20M	QPSK	50	0	Front	5mm	Reduced	40620	2593	19.26	20.00	1.186	62.9	1.006	0.17	0.479	0.571
	LTE Band 41_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	40620	2593	19.29	20.00	1.178	62.9	1.006	0.02	0.804	0.952
	LTE Band 41_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	39750	2506	19.11	20.00	1.227	62.9	1.006	0.01	0.813	1.004
	LTE Band 41_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	40185	2549.5	18.99	20.00	1.262	62.9	1.006	0.04	0.806	1.023
48	LTE Band 41_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	41055	2636.5	19.12	20.00	1.225	62.9	1.006	0.13	0.894	1.101
	LTE Band 41_Ant1	20M	QPSK	1	0	Back	5mm	Reduced	41490	2680	19.22	20.00	1.197	62.9	1.006	0.15	0.841	1.012
	LTE Band 41_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	40620	2593	19.26	20.00	1.186	62.9	1.006	0.08	0.823	0.982
	LTE Band 41_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	39750	2506	19.23	20.00	1.194	62.9	1.006	-0.03	0.864	1.038
	LTE Band 41_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	40185	2549.5	19.16	20.00	1.213	62.9	1.006	0.01	0.834	1.018
	LTE Band 41_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	41055	2636.5	19.12	20.00	1.225	62.9	1.006	0.03	0.822	1.013
	LTE Band 41_Ant1	20M	QPSK	50	0	Back	5mm	Reduced	41490	2680	19.20	20.00	1.202	62.9	1.006	0.09	0.856	1.035
	LTE Band 41_Ant1	20M	QPSK	100	0	Back	5mm	Reduced	40620	2593	19.24	20.00	1.191	62.9	1.006	0.11	0.829	0.993
	LTE Band 41_Ant1	20M	QPSK	1	0	Front	12mm	Full	40620	2593	22.64	24.00	1.368	62.9	1.006	0.03	0.335	0.461
	LTE Band 41_Ant1	20M	QPSK	1	0	Back	24mm	Full	41055	2636.5	22.54	24.00	1.400	62.9	1.006	-0.04	0.163	0.230

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Issued Date : Oct. 21, 2020

Form version. : 181113



<5G NR NSA SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Power Reduction	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)
	FR1 n5_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Front	5mm	Reduced	167300	836.5	21.47	22.50	1.268	0.09	0.300	0.380
	FR1 n5_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Front	5mm	Reduced	167300	836.5	21.39	22.50	1.291	0.11	0.278	0.359
49	FR1 n5_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	5mm	Reduced	167300	836.5	21.47	22.50	1.268	0.03	0.450	0.570
	FR1 n5_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Back	5mm	Reduced	167300	836.5	21.39	22.50	1.291	-0.04	0.304	0.393
	FR1 n5_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Front	12mm	Full	167300	836.5	22.98	24.00	1.265	0.07	0.222	0.281
	FR1 n5_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	24mm	Full	167300	836.5	22.98	24.00	1.265	0.09	0.100	0.126
	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Front	5mm	Reduced	507000	2535	12.87	14.00	1.297	0.02	0.198	0.257
	FR1 n7_Ant 1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Front	5mm	Reduced	507000	2535	12.81	14.00	1.315	0.03	0.198	0.260
50	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	5mm	Reduced	507000	2535	12.87	14.00	1.297	-0.01	0.440	0.571
	FR1 n7_Ant 1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Back	5mm	Reduced	507000	2535	12.81	14.00	1.315	0.04	0.377	0.496
	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Front	12mm	Full	507000	2535	22.71	24.00	1.346	0.04	0.410	0.552
	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	24mm	Full	507000	2535	22.71	24.00	1.346	0.04	0.261	0.351
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Front	5mm	Reduced	507000	2535	18.34	19.00	1.164	-0.05	0.213	0.248
	FR1 n7_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Front	5mm	Reduced	507000	2535	18.25	19.00	1.189	-0.09	0.203	0.241
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	5mm	Reduced	507000	2535	18.34	19.00	1.164	0.03	0.430	0.501
	FR1 n7_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Back	5mm	Reduced	507000	2535	18.25	19.00	1.189	-0.02	0.388	0.461
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Front	12mm	Full	507000	2535	23.30	24.00	1.175	0.01	0.171	0.201
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	24mm	Full	507000	2535	23.30	24.00	1.175	0.02	0.082	0.096
	FR1 n66_Ant1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Front	5mm	Reduced	349000	1745	15.58	16.50	1.236	-0.01	0.299	0.370
	FR1 n66_Ant1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Front	5mm	Reduced	349000	1745	15.48	16.50	1.265	0.01	0.235	0.297
51	FR1 n66_Ant1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	5mm	Reduced	349000	1745	15.58	16.50	1.236	0.06	0.425	0.525
	FR1 n66_Ant1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Back	5mm	Reduced	349000	1745	15.48	16.50	1.265	0.09	0.393	0.497
	FR1 n66_Ant1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Front	12mm	Full	349000	1745	22.92	24.00	1.282	0.02	0.402	0.515
	FR1 n66_Ant1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	24mm	Full	349000	1745	22.92	24.00	1.282	0.03	0.284	0.364

<WLAN2.4G SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	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)
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 1+2	Full	1	2412	22.35	23.00	1.161	100	1.000	0.01	0.265	0.308
52	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 1+2	Full	1	2412	22.35	23.00	1.161	100	1.000	0.09	0.561	0.652
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 1+2	Simultaneous Reduced	1	2412	18.08	18.50	1.102	100	1.000	0.01	0.071	0.078
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 1+2	Simultaneous Reduced	1	2412	18.08	18.50	1.102	100	1.000	0.02	0.294	0.324



<WLAN5G SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	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)
	WLAN5.2GHz	802.11a 6Mbps	Front	5mm	Ant 1+2	Reduced	44	5220	14.50	15.00	1.122	98.28	1.018	0.02	0.019	0.022
53	WLAN5.2GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Reduced	44	5220	14.50	15.00	1.122	98.28	1.018	0.02	1.020	1.166
	WLAN5.2GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Reduced	48	5240	14.36	15.00	1.158	98.28	1.018	0.02	0.893	1.053
	WLAN5.2GHz	802.11a 6Mbps	Front	12mm	Ant 1+2	Full	44	5220	20.95	21.50	1.135	98.28	1.018	0.06	0.014	0.016
	WLAN5.2GHz	802.11a 6Mbps	Back	24mm	Ant 1+2	Full	44	5220	20.95	21.50	1.135	98.28	1.018	0.01	0.492	0.568
	WLAN5.2GHz	802.11a 6Mbps	Front	5mm	Ant 1+2	Simultaneous Reduced	44	5220	9.11	10.00	1.228	98.28	1.018	-0.03	0.007	0.009
	WLAN5.2GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Simultaneous Reduced	44	5220	9.11	10.00	1.228	98.28	1.018	0.01	0.323	0.404
	WLAN5.3GHz	802.11a 6Mbps	Front	5mm	Ant 1+2	Reduced	56	5280	14.80	15.00	1.047	98.28	1.018	0.02	0.011	0.012
54	WLAN5.3GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Reduced	56	5280	14.80	15.00	1.047	98.28	1.018	0.03	1.010	1.076
	WLAN5.3GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Reduced	60	5300	14.80	15.00	1.047	98.28	1.018	0.03	0.925	0.986
	WLAN5.3GHz	802.11a 6Mbps	Front	12mm	Ant 1+2	Full	56	5280	20.76	21.50	1.186	98.28	1.018	0.01	0.019	0.023
	WLAN5.3GHz	802.11a 6Mbps	Back	24mm	Ant 1+2	Full	56	5280	20.76	21.50	1.186	98.28	1.018	0.05	0.657	0.794
	WLAN5.3GHz	802.11a 6Mbps	Front	5mm	Ant 1+2	Simultaneous Reduced	56	5280	9.69	10.00	1.073	98.28	1.018	0.03	0.001	0.001
	WLAN5.3GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Simultaneous Reduced	56	5280	9.69	10.00	1.073	98.28	1.018	-0.04	0.324	0.354
	WLAN5.5GHz	802.11a 6Mbps	Front	5mm	Ant 1+2	Reduced	100	5500	14.72	15.00	1.067	98.28	1.018	0.02	0.030	0.033
55	WLAN5.5GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Reduced	100	5500	14.72	15.00	1.067	98.28	1.018	0.05	0.974	1.058
	WLAN5.5GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Reduced	116	5580	14.59	15.00	1.099	98.28	1.018	0.02	0.902	1.009
	WLAN5.5GHz	802.11a 6Mbps	Front	12mm	Ant 1+2	Full	100	5500	20.67	21.50	1.210	98.28	1.018	0.09	0.039	0.048
	WLAN5.5GHz	802.11a 6Mbps	Back	24mm	Ant 1+2	Full	100	5500	20.67	21.50	1.210	98.28	1.018	0.03	0.695	0.856
	WLAN5.5GHz	802.11a 6Mbps	Front	5mm	Ant 1+2	Simultaneous Reduced	100	5500	10.00	10.50	1.122	98.28	1.018	0.16	0.001	0.001
	WLAN5.5GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Simultaneous Reduced	100	5500	10.00	10.50	1.122	98.28	1.018	-0.11	0.272	0.311
	WLAN5.8GHz	802.11a 6Mbps	Front	5mm	Ant 1+2	Reduced	165	5825	15.60	16.00	1.097	98.28	1.018	0.04	0.016	0.018
56	WLAN5.8GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Reduced	165	5825	15.60	16.00	1.097	98.28	1.018	0.03	1.020	1.139
	WLAN5.8GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Reduced	157	5785	15.15	16.00	1.216	98.28	1.018	0.05	0.911	1.128
	WLAN5.8GHz	802.11a 6Mbps	Front	12mm	Ant 1+2	Full	165	5825	19.98	21.00	1.266	98.28	1.018	-0.06	0.015	0.019
	WLAN5.8GHz	802.11a 6Mbps	Back	24mm	Ant 1+2	Full	165	5825	19.98	21.00	1.266	98.28	1.018	0.1	0.383	0.494
	WLAN5.8GHz	802.11a 6Mbps	Front	5mm	Ant 1+2	Simultaneous Reduced	165	5825	11.00	11.50	1.123	98.28	1.018	-0.15	0.017	0.019
	WLAN5.8GHz	802.11a 6Mbps	Back	5mm	Ant 1+2	Simultaneous Reduced	165	5825	11.00	11.50	1.123	98.28	1.018	-0.19	0.351	0.401

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	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)
57	Bluetooth	1Mbps	Back	5mm	Full	39	2441	16.95	17.00	1.011	77.23	1.079	0.09	0.192	0.209

15.4 Product specific 10g SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	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)
	GSM1900_Ant1	GPRS 3 Tx slots	Front	0mm	Full	661	1880	26.08	27.00	1.236	0.05	1.630	2.015
	GSM1900_Ant1	GPRS 3 Tx slots	Front	0mm	Full	512	1850.2	25.64	27.00	1.368	0.02	1.440	1.970
	GSM1900_Ant1	GPRS 3 Tx slots	Front	0mm	Full	810	1909.8	26.07	27.00	1.239	0.03	1.420	1.759
58	GSM1900_Ant1	GPRS 3 Tx slots	Back	0mm	Full	661	1880	26.08	27.00	1.236	0.01	2.710	3.349
	GSM1900_Ant1	GPRS 3 Tx slots	Back	0mm	Full	512	1850.2	25.64	27.00	1.368	-0.04	2.290	3.132
	GSM1900_Ant1	GPRS 3 Tx slots	Back	0mm	Full	810	1909.8	26.07	27.00	1.239	0.01	2.250	2.787
	GSM1900_Ant1	GPRS 3 Tx slots	Bottom Side	0mm	Full	661	1880	26.08	27.00	1.236	0.01	2.170	2.682
	GSM1900_Ant1	GPRS 3 Tx slots	Bottom Side	0mm	Full	512	1850.2	25.64	27.00	1.368	0.03	2.420	3.310
	GSM1900_Ant1	GPRS 3 Tx slots	Bottom Side	0mm	Full	810	1909.8	26.07	27.00	1.239	0.05	1.930	2.391

<WCDMA SAR>

Plot No.	Band	Test Position	Gap (mm)	Power Reduction	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)
	WCDMA II_Ant1	Front	0mm	Reduced	9400	1880	21.13	22.00	1.222	-0.11	1.830	2.236
	WCDMA II_Ant1	Front	0mm	Reduced	9262	1852.4	20.99	22.00	1.262	0.04	1.800	2.271
	WCDMA II_Ant1	Front	0mm	Reduced	9538	1907.6	21.10	22.00	1.230	-0.14	2.130	2.620
59	WCDMA II_Ant1	Back	0mm	Reduced	9400	1880	21.13	22.00	1.222	0.02	2.810	3.433
	WCDMA II_Ant1	Back	0mm	Reduced	9262	1852.4	20.99	22.00	1.262	0.03	2.470	3.117
	WCDMA II_Ant1	Back	0mm	Reduced	9538	1907.6	21.10	22.00	1.230	-0.04	2.280	2.805
	WCDMA II_Ant1	Bottom Side	0mm	Reduced	9400	1880	21.13	22.00	1.222	0.02	2.250	2.749
	WCDMA II_Ant1	Bottom Side	0mm	Reduced	9262	1852.4	20.99	22.00	1.262	-0.09	1.980	2.498
	WCDMA II_Ant1	Bottom Side	0mm	Reduced	9538	1907.6	21.10	22.00	1.230	0.06	2.640	3.248
	WCDMA II_Ant1	Front	9mm	Full	9538	1907.6	22.87	24.00	1.297	0.07	0.482	0.625
	WCDMA II_Ant1	Back	16mm	Full	9400	1880	22.94	24.00	1.276	0.06	0.471	0.601
	WCDMA II_Ant1	Bottom Side	17mm	Full	9538	1907.6	22.87	24.00	1.297	0.07	0.529	0.686
	WCDMA IV_Ant1	Front	0mm	Reduced	1413	1732.6	22.19	22.50	1.074	0.01	1.900	2.041
	WCDMA IV_Ant1	Front	0mm	Reduced	1312	1712.4	21.89	22.50	1.151	-0.05	1.160	1.335
	WCDMA IV_Ant1	Front	0mm	Reduced	1513	1752.6	22.13	22.50	1.089	0.05	1.970	2.145
	WCDMA IV_Ant1	Back	0mm	Reduced	1413	1732.6	22.19	22.50	1.074	0.02	3.120	3.351
	WCDMA IV_Ant1	Back	0mm	Reduced	1312	1712.4	21.89	22.50	1.151	0.02	2.320	2.670
60	WCDMA IV_Ant1	Back	0mm	Reduced	1513	1752.6	22.13	22.50	1.089	-0.09	3.210	3.495
	WCDMA IV_Ant1	Bottom Side	0mm	Reduced	1413	1732.6	22.19	22.50	1.074	-0.15	2.380	2.556
	WCDMA IV_Ant1	Bottom Side	0mm	Reduced	1312	1712.4	21.89	22.50	1.151	0.02	2.350	2.704
	WCDMA IV_Ant1	Bottom Side	0mm	Reduced	1513	1752.6	22.13	22.50	1.089	-0.15	2.650	2.886
	WCDMA IV_Ant1	Front	9mm	Full	1513	1752.6	23.07	24.00	1.239	-0.19	0.472	0.585
	WCDMA IV_Ant1	Back	16mm	Full	1513	1752.6	23.07	24.00	1.239	-0.06	0.451	0.559
	WCDMA IV_Ant1	Bottom Side	17mm	Full	1513	1752.6	23.07	24.00	1.239	0.12	0.450	0.557



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	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)
	LTE Band 2_Ant1	20M	QPSK	1	0	Front	0mm	Reduced	18900	1880	21.94	23.00	1.276	0.02	1.500	1.915
	LTE Band 2_Ant1	20M	QPSK	50	0	Front	0mm	Reduced	18900	1880	21.91	23.00	1.285	-0.05	1.520	1.954
	LTE Band 2_Ant1	20M	QPSK	1	0	Back	0mm	Reduced	18900	1880	21.94	23.00	1.276	0.03	2.430	3.102
	LTE Band 2_Ant1	20M	QPSK	1	0	Back	0mm	Reduced	18700	1860	21.91	23.00	1.285	0.06	2.610	3.355
	LTE Band 2_Ant1	20M	QPSK	1	0	Back	0mm	Reduced	19100	1900	21.84	23.00	1.306	-0.03	2.510	3.278
	LTE Band 2_Ant1	20M	QPSK	50	0	Back	0mm	Reduced	18900	1880	21.91	23.00	1.285	0.01	2.470	3.175
61	LTE Band 2_Ant1	20M	QPSK	50	0	Back	0mm	Reduced	18700	1860	21.88	23.00	1.294	0.02	2.610	3.378
	LTE Band 2_Ant1	20M	QPSK	50	0	Back	0mm	Reduced	19100	1900	21.90	23.00	1.288	0.08	2.540	3.272
	LTE Band 2_Ant1	20M	QPSK	100	0	Back	0mm	Reduced	18900	1880	21.90	23.00	1.288	0.15	2.530	3.259
	LTE Band 2_Ant1	20M	QPSK	1	0	Bottom Side	0mm	Reduced	18900	1880	21.94	23.00	1.276	-0.07	2.010	2.566
	LTE Band 2_Ant1	20M	QPSK	1	0	Bottom Side	0mm	Reduced	18700	1860	21.91	23.00	1.285	-0.06	1.760	2.262
	LTE Band 2_Ant1	20M	QPSK	1	0	Bottom Side	0mm	Reduced	19100	1900	21.84	23.00	1.306	0.13	2.010	2.625
	LTE Band 2_Ant1	20M	QPSK	50	0	Bottom Side	0mm	Reduced	18900	1880	21.91	23.00	1.285	0.06	2.090	2.686
	LTE Band 2_Ant1	20M	QPSK	50	0	Bottom Side	0mm	Reduced	18700	1860	21.88	23.00	1.294	-0.17	1.750	2.265
	LTE Band 2_Ant1	20M	QPSK	50	0	Bottom Side	0mm	Reduced	19100	1900	21.90	23.00	1.288	-0.08	2.130	2.744
	LTE Band 2_Ant1	20M	QPSK	100	0	Bottom Side	0mm	Reduced	18900	1880	21.90	23.00	1.288	-0.08	1.860	2.396
	LTE Band 2_Ant1	20M	QPSK	1	0	Front	9mm	Full	18900	1880	22.74	24.00	1.337	-0.03	0.333	0.445
	LTE Band 2_Ant1	20M	QPSK	1	0	Back	16mm	Full	18700	1860	22.62	24.00	1.374	0.06	0.345	0.474
	LTE Band 2_Ant1	20M	QPSK	1	0	Bottom Side	17mm	Full	19100	1900	22.67	24.00	1.358	0.02	0.414	0.562
	LTE Band 7_Ant1	20M	QPSK	1	0	Front	0mm	Reduced	21100	2535	18.75	20.00	1.334	0.01	1.010	1.347
	LTE Band 7_Ant1	20M	QPSK	50	0	Front	0mm	Reduced	21100	2535	18.74	20.00	1.337	-0.09	1.020	1.363
62	LTE Band 7_Ant1	20M	QPSK	1	0	Back	0mm	Reduced	21100	2535	18.75	20.00	1.334	0.03	1.280	1.707
	LTE Band 7C_Ant1	20M	QPSK	1	0	Back	0mm	Reduced	21100+20902	2535+2515.2	18.30	20.00	1.479	0.03	1.110	1.642
	LTE Band 7_Ant1	20M	QPSK	50	0	Back	0mm	Reduced	21100	2535	18.74	20.00	1.337	0.09	1.240	1.657
	LTE Band 7_Ant1	20M	QPSK	1	0	Bottom Side	0mm	Reduced	21100	2535	18.75	20.00	1.334	0.11	1.070	1.427
	LTE Band 7_Ant1	20M	QPSK	50	0	Bottom Side	0mm	Reduced	21100	2535	18.74	20.00	1.337	0.09	1.110	1.484
	LTE Band 7_Ant1	20M	QPSK	1	0	Front	9mm	Full	21100	2535	22.83	24.00	1.309	0.02	0.347	0.454
	LTE Band 7_Ant1	20M	QPSK	1	0	Back	16mm	Full	21100	2535	22.83	24.00	1.309	-0.03	0.380	0.497
	LTE Band 7_Ant1	20M	QPSK	1	0	Bottom Side	17mm	Full	21100	2535	22.83	24.00	1.309	-0.15	0.457	0.598
EN-DC																
	LTE Band 7_Ant1	20M	QPSK	1	0	Front	0mm	Reduced	21100	2535	17.72	19.00	1.343	0.09	0.748	1.004
	LTE Band 7_Ant1	20M	QPSK	50	0	Front	0mm	Reduced	21100	2535	17.70	19.00	1.349	0.01	0.788	1.063
	LTE Band 7_Ant1	20M	QPSK	1	0	Back	0mm	Reduced	21100	2535	17.72	19.00	1.343	-0.09	1.010	1.356
	LTE Band 7_Ant1	20M	QPSK	50	0	Back	0mm	Reduced	21100	2535	17.70	19.00	1.349	-0.15	1.050	1.416
	LTE Band 7_Ant1	20M	QPSK	1	0	Bottom Side	0mm	Reduced	21100	2535	17.72	19.00	1.343	0.01	0.897	1.204
	LTE Band 7_Ant1	20M	QPSK	50	0	Bottom Side	0mm	Reduced	21100	2535	17.70	19.00	1.349	0.03	0.933	1.259
	LTE Band 7_Ant1	20M	QPSK	1	0	Front	9mm	Full	21100	2535	22.83	24.00	1.309	0.02	0.347	0.454
	LTE Band 7_Ant1	20M	QPSK	1	0	Back	16mm	Full	21100	2535	22.83	24.00	1.309	-0.03	0.380	0.497
	LTE Band 7_Ant1	20M	QPSK	1	0	Bottom Side	17mm	Full	21100	2535	22.83	24.00	1.309	-0.15	0.457	0.598
	LTE Band 7_Ant2	20M	QPSK	1	0	Front	0mm	Reduced	21100	2535	21.71	22.00	1.069	-0.04	0.920	0.984
	LTE Band 7_Ant2	20M	QPSK	50	0	Front	0mm	Reduced	21100	2535	21.59	22.00	1.099	0.01	0.931	1.023
	LTE Band 7_Ant2	20M	QPSK	1	0	Back	0mm	Reduced	21100	2535	21.71	22.00	1.069	0.02	1.260	1.347
	LTE Band 7_Ant2	20M	QPSK	50	0	Back	0mm	Reduced	21100	2535	21.59	22.00	1.099	0.09	1.180	1.297
	LTE Band 7_Ant2	20M	QPSK	1	0	Top Side	0mm	Reduced	21100	2535	21.71	22.00	1.069	0.09	1.120	1.197
	LTE Band 7_Ant2	20M	QPSK	50	0	Top Side	0mm	Reduced	21100	2535	21.59	22.00	1.099	0.08	1.210	1.330
	LTE Band 7_Ant2	20M	QPSK	1	0	Front	9mm	Full	21100	2535	23.67	24.00	1.079	-0.09	0.466	0.503
	LTE Band 7_Ant2	20M	QPSK	1	0	Back	16mm	Full	21100	2535	23.67	24.00	1.079	0.03	0.328	0.354
	LTE Band 7_Ant2	20M	QPSK	1	0	Top Side	17mm	Full	21100	2535	23.67	24.00	1.079	0.05	0.369	0.398



FCC SAR Test Report

Report No. : FA082402-01

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	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)
	LTE Band 66_Ant1	20M	QPSK	1	0	Front	0mm	Reduced	132322	1745	21.90	23.00	1.288	-0.02	1.580	2.035
	LTE Band 66_Ant1	20M	QPSK	1	0	Front	0mm	Reduced	132072	1720	21.65	23.00	1.365	0.03	1.340	1.829
	LTE Band 66_Ant1	20M	QPSK	1	0	Front	0mm	Reduced	132572	1770	21.68	23.00	1.355	0.03	1.470	1.992
	LTE Band 66_Ant1	20M	QPSK	50	0	Front	0mm	Reduced	132322	1745	21.47	23.00	1.422	0.02	1.550	2.205
	LTE Band 66_Ant1	20M	QPSK	50	0	Front	0mm	Reduced	132072	1720	21.42	23.00	1.439	0.03	1.400	2.014
	LTE Band 66_Ant1	20M	QPSK	50	0	Front	0mm	Reduced	132572	1770	21.36	23.00	1.459	-0.01	1.430	2.086
	LTE Band 66_Ant1	20M	QPSK	100	0	Front	0mm	Reduced	132322	1745	21.45	23.00	1.429	0.04	1.530	2.186
	LTE Band 66_Ant1	20M	QPSK	1	0	Back	0mm	Reduced	132322	1745	21.90	23.00	1.288	0.04	2.430	3.130
	LTE Band 66_Ant1	20M	QPSK	1	0	Back	0mm	Reduced	132072	1720	21.65	23.00	1.365	0.04	1.880	2.565
	LTE Band 66_Ant1	20M	QPSK	1	0	Back	0mm	Reduced	132572	1770	21.68	23.00	1.355	0.05	2.380	3.225
63	LTE Band 66_Ant1	20M	QPSK	50	0	Back	0mm	Reduced	132322	1745	21.47	23.00	1.422	0.05	2.460	3.499
	LTE Band 66_Ant1	20M	QPSK	50	0	Back	0mm	Reduced	132072	1720	21.42	23.00	1.439	0.05	2.160	3.108
	LTE Band 66_Ant1	20M	QPSK	50	0	Back	0mm	Reduced	132572	1770	21.36	23.00	1.459	0.02	2.380	3.472
	LTE Band 66_Ant1	20M	QPSK	100	0	Back	0mm	Reduced	132322	1745	21.45	23.00	1.429	0.03	2.160	3.086
	LTE Band 66_Ant1	20M	QPSK	1	0	Bottom Side	0mm	Reduced	132322	1745	21.90	23.00	1.288	-0.03	2.300	2.963
	LTE Band 66_Ant1	20M	QPSK	1	0	Bottom Side	0mm	Reduced	132072	1720	21.65	23.00	1.365	0.05	1.880	2.565
	LTE Band 66_Ant1	20M	QPSK	1	0	Bottom Side	0mm	Reduced	132572	1770	21.68	23.00	1.355	0.02	2.400	3.252
	LTE Band 66_Ant1	20M	QPSK	50	0	Bottom Side	0mm	Reduced	132322	1745	21.47	23.00	1.422	-0.09	2.210	3.143
	LTE Band 66_Ant1	20M	QPSK	50	0	Bottom Side	0mm	Reduced	132072	1720	21.42	23.00	1.439	0.02	2.000	2.878
	LTE Band 66_Ant1	20M	QPSK	50	0	Bottom Side	0mm	Reduced	132572	1770	21.36	23.00	1.459	0.08	2.210	3.224
	LTE Band 66_Ant1	20M	QPSK	100	0	Bottom Side	0mm	Reduced	132322	1745	21.45	23.00	1.429	0.01	2.310	3.301
	LTE Band 66_Ant1	20M	QPSK	1	0	Front	9mm	Full	132322	1745	22.35	24.00	1.462	0.06	0.334	0.488
	LTE Band 66_Ant1	20M	QPSK	1	0	Back	16mm	Full	132322	1745	22.35	24.00	1.462	0.03	0.244	0.357
	LTE Band 66_Ant1	20M	QPSK	1	0	Bottom Side	17mm	Full	132322	1745	22.35	24.00	1.462	0.02	0.319	0.466
EN-DC																
	LTE Band 66_Ant1	20M	QPSK	1	0	Front	0mm	Reduced	132322	1745	18.80	20.00	1.318	0.04	0.745	0.982
	LTE Band 66_Ant1	20M	QPSK	50	0	Front	0mm	Reduced	132322	1745	18.76	20.00	1.330	0.13	0.759	1.010
	LTE Band 66_Ant1	20M	QPSK	1	0	Back	0mm	Reduced	132322	1745	18.80	20.00	1.318	0.15	1.170	1.542
	LTE Band 66_Ant1	20M	QPSK	50	0	Back	0mm	Reduced	132322	1745	18.76	20.00	1.330	0.08	1.160	1.543
	LTE Band 66_Ant1	20M	QPSK	1	0	Bottom Side	0mm	Reduced	132322	1745	18.80	20.00	1.318	-0.03	1.110	1.463
	LTE Band 66_Ant1	20M	QPSK	50	0	Bottom Side	0mm	Reduced	132322	1745	18.76	20.00	1.330	0.01	1.160	1.543
	LTE Band 66_Ant1	20M	QPSK	1	0	Front	9mm	Full	132322	1745	22.35	24.00	1.462	0.06	0.334	0.488
	LTE Band 66_Ant1	20M	QPSK	1	0	Back	16mm	Full	132322	1745	22.35	24.00	1.462	0.03	0.244	0.357
	LTE Band 66_Ant1	20M	QPSK	1	0	Bottom Side	17mm	Full	132322	1745	22.35	24.00	1.462	0.02	0.319	0.466

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	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)
	LTE Band 41_Ant1	20M	QPSK	1	0	Front	0mm	Reduced	40620	2593	21.27	22.50	1.327	62.9	1.006	0.05	0.942	1.258
	LTE Band 41_Ant1	20M	QPSK	50	0	Front	0mm	Reduced	40620	2593	21.20	22.50	1.349	62.9	1.006	-0.03	0.814	1.105
64	LTE Band 41_Ant1	20M	QPSK	1	0	Back	0mm	Reduced	40620	2593	21.27	22.50	1.327	62.9	1.006	0.01	1.620	2.163
	LTE Band 41_Ant1	20M	QPSK	1	0	Back	0mm	Reduced	39750	2506	20.99	22.50	1.416	62.9	1.006	0.06	1.120	1.595
	LTE Band 41_Ant1	20M	QPSK	1	0	Back	0mm	Reduced	40185	2549.5	20.87	22.50	1.455	62.9	1.006	0.03	1.370	2.006
	LTE Band 41_Ant1	20M	QPSK	1	0	Back	0mm	Reduced	41055	2636.5	20.98	22.50	1.419	62.9	1.006	0.01	1.250	1.784
	LTE Band 41_Ant1	20M	QPSK	1	0	Back	0mm	Reduced	41490	2680	20.90	22.50	1.445	62.9	1.006	0.09	1.180	1.716
	LTE Band 41_Ant1	20M	QPSK	50	0	Back	0mm	Reduced	40620	2593	21.20	22.50	1.349	62.9	1.006	0.03	1.080	1.466
	LTE Band 41_Ant1	20M	QPSK	100	0	Back	0mm	Reduced	40620	2593	21.18	22.50	1.355	62.9	1.006	0.09	1.270	1.731
	LTE Band 41_Ant1	20M	QPSK	1	0	Bottom Side	0mm	Reduced	40620	2593	21.27	22.50	1.327	62.9	1.006	-0.02	0.927	1.238
	LTE Band 41_Ant1	20M	QPSK	50	0	Bottom Side	0mm	Reduced	40620	2593	21.20	22.50	1.349	62.9	1.006	0.02	0.722	0.980
	LTE Band 41_Ant1	20M	QPSK	1	0	Front	9mm	Full	40620	2593	22.64	24.00	1.368	62.9	1.006	0.05	0.165	0.227
	LTE Band 41_Ant1	20M	QPSK	1	0	Back	16mm	Full	40620	2593	22.64	24.00	1.368	62.9	1.006	-0.09	0.231	0.318
	LTE Band 41_Ant1	20M	QPSK	1	0	Bottom Side	17mm	Full	40620	2593	22.64	24.00	1.368	62.9	1.006	-0.05	0.211	0.290

<5G NR NSA SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	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)
	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	0mm	Ant 1	Reduced	507000	2535	17.13	18.00	1.222	0.09	1.060	1.295
	FR1 n7_Ant 1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Back	0mm	Ant 1	Reduced	507000	2535	16.97	18.00	1.268	0.03	1.070	1.356
	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Bottom Side	0mm	Ant 1	Reduced	507000	2535	17.13	18.00	1.222	0.09	0.697	0.852
	FR1 n7_Ant 1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Bottom Side	0mm	Ant 1	Reduced	507000	2535	16.97	18.00	1.268	-0.02	0.631	0.800
	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	16mm	Ant 1	Full	507000	2535	22.71	24.00	1.346	0.02	0.401	0.540
	FR1 n7_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Bottom Side	17mm	Ant 1	Full	507000	2535	22.71	24.00	1.346	0.05	0.567	0.763
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	0mm	Ant 2	Reduced	507000	2535	22.16	23.00	1.213	0.01	1.110	1.347
	FR1 n7_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Back	0mm	Ant 2	Reduced	507000	2535	22.14	23.00	1.219	0.05	1.100	1.341
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Top Side	0mm	Ant 2	Reduced	507000	2535	22.16	23.00	1.213	-0.09	1.300	1.577
65	FR1 n7_Ant 2	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Top Side	0mm	Ant 2	Reduced	507000	2535	22.14	23.00	1.219	-0.02	1.310	1.597
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	16mm	Ant 2	Full	507000	2535	23.30	24.00	1.175	0.02	0.090	0.106
	FR1 n7_Ant 2	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Top Side	17mm	Ant 2	Full	507000	2535	23.30	24.00	1.175	0.03	0.117	0.137
	FR1 n66_Ant1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Front	0mm	Ant 1	Reduced	349000	1745	18.52	19.50	1.253	0.04	0.715	0.896
	FR1 n66_Ant1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Front	0mm	Ant 1	Reduced	349000	1745	18.46	19.50	1.271	0.04	0.721	0.916
	FR1 n66_Ant1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	0mm	Ant 1	Reduced	349000	1745	18.52	19.50	1.253	0.04	1.200	1.504
66	FR1 n66_Ant1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Back	0mm	Ant 1	Reduced	349000	1745	18.46	19.50	1.271	0.05	1.250	1.588
	FR1 n66_Ant1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Bottom Side	0mm	Ant 1	Reduced	349000	1745	18.52	19.50	1.253	0.05	1.060	1.328
	FR1 n66_Ant1	20M	QPSK	50	28	DFT-s-OFDM SCS15KHz	Bottom Side	0mm	Ant 1	Reduced	349000	1745	18.46	19.50	1.271	0.05	1.130	1.436
	FR1 n66_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Front	9mm	Ant 1	Full	349000	1745	22.92	24.00	1.282	0.02	0.510	0.654
	FR1 n66_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Back	16mm	Ant 1	Full	349000	1745	22.92	24.00	1.282	0.03	0.356	0.457
	FR1 n66_Ant 1	20M	QPSK	1	1	DFT-s-OFDM SCS15KHz	Bottom Side	17mm	Ant 1	Full	349000	1745	22.92	24.00	1.282	0.01	0.415	0.532



<WLAN5G SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	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)
67	WLAN5.2GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Full	40	5200	20.97	21.50	1.130	98.28	1.018	0.02	2.230	2.565
	WLAN5.2GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Full	44	5220	20.95	21.50	1.135	98.28	1.018	0.04	1.880	2.172
	WLAN5.2GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Simultaneous Reduced	44	5220	16.14	16.50	1.085	98.28	1.018	0.04	0.625	0.691
	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	Ant 1+2	Full	52	5260	20.90	21.50	1.149	98.28	1.018	0.07	0.056	0.066
68	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Full	52	5260	20.90	21.50	1.149	98.28	1.018	0.07	2.270	2.656
	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Full	56	5280	20.76	21.50	1.186	98.28	1.018	0.09	2.080	2.512
	WLAN5.3GHz	802.11a 6Mbps	Left Side	0mm	Ant 1+2	Full	52	5260	20.90	21.50	1.149	98.28	1.018	0.03	0.091	0.106
	WLAN5.3GHz	802.11a 6Mbps	Right Side	0mm	Ant 1+2	Full	52	5260	20.90	21.50	1.149	98.28	1.018	-0.03	0.108	0.126
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 1+2	Full	52	5260	20.90	21.50	1.149	98.28	1.018	0.01	0.275	0.322
	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	Ant 1+2	Simultaneous Reduced	52	5260	16.27	16.50	1.055	98.28	1.018	0.02	0.027	0.029
	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Simultaneous Reduced	52	5260	16.27	16.50	1.055	98.28	1.018	-0.09	0.637	0.684
	WLAN5.3GHz	802.11a 6Mbps	Left Side	0mm	Ant 1+2	Simultaneous Reduced	52	5260	16.27	16.50	1.055	98.28	1.018	0.06	0.046	0.049
	WLAN5.3GHz	802.11a 6Mbps	Right Side	0mm	Ant 1+2	Simultaneous Reduced	52	5260	16.27	16.50	1.055	98.28	1.018	0.07	0.036	0.039
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 1+2	Simultaneous Reduced	52	5260	16.27	16.50	1.055	98.28	1.018	0.06	0.114	0.122
	WLAN5.5GHz	802.11a 6Mbps	Front	0mm	Ant 1+2	Full	100	5500	20.67	21.50	1.210	98.28	1.018	0.01	0.087	0.107
69	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Full	100	5500	20.67	21.50	1.210	98.28	1.018	0.02	1.440	1.774
	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Full	116	5580	20.23	21.50	1.340	98.28	1.018	0.03	1.230	1.677
	WLAN5.5GHz	802.11a 6Mbps	Left Side	0mm	Ant 1+2	Full	100	5500	20.67	21.50	1.210	98.28	1.018	0.02	0.100	0.123
	WLAN5.5GHz	802.11a 6Mbps	Right Side	0mm	Ant 1+2	Full	100	5500	20.67	21.50	1.210	98.28	1.018	0.01	0.098	0.121
	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 1+2	Full	100	5500	20.67	21.50	1.210	98.28	1.018	0.05	0.411	0.506
	WLAN5.5GHz	802.11a 6Mbps	Front	0mm	Ant 1+2	Simultaneous Reduced	100	5500	17.37	17.50	1.031	98.28	1.018	0.04	0.055	0.058
	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Simultaneous Reduced	100	5500	17.37	17.50	1.031	98.28	1.018	-0.14	0.645	0.677
	WLAN5.5GHz	802.11a 6Mbps	Left Side	0mm	Ant 1+2	Simultaneous Reduced	100	5500	17.37	17.50	1.031	98.28	1.018	0.02	0.027	0.028
	WLAN5.5GHz	802.11a 6Mbps	Right Side	0mm	Ant 1+2	Simultaneous Reduced	100	5500	17.37	17.50	1.031	98.28	1.018	-0.09	0.053	0.056
	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 1+2	Simultaneous Reduced	100	5500	17.37	17.50	1.031	98.28	1.018	0.02	0.204	0.214
70	WLAN5.8GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Full	157	5785	20.15	20.50	1.084	98.28	1.018	0.03	1.990	2.196
	WLAN5.8GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Full	165	5825	19.98	20.50	1.128	98.28	1.018	-0.01	1.830	2.102
	WLAN5.8GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Simultaneous Reduced	165	5825	14.84	15.00	1.037	98.28	1.018	-0.06	0.655	0.691

15.5 Repeated SAR Measurement

<1g>

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA V_Ant2					RMC 12.2Kbps	Left Cheek	0mm	Reduced	4233	846.6	22.38	23.00	1.153		1.000	0.1	1.010	1	1.165
2nd	WCDMA V_Ant2					RMC 12.2Kbps	Left Cheek	0mm	Reduced	4233	846.6	22.38	23.00	1.153		1.000	0.03	0.997	1.013	1.150
1st	WCDMA II_Ant1					RMC 12.2Kbps	Bottom Side	5mm	Reduced	9400	1880	16.35	17.00	1.161		1.000	-0.04	1.150	1	1.336
2nd	WCDMA II_Ant1					RMC 12.2Kbps	Bottom Side	5mm	Reduced	9400	1880	16.35	17.00	1.161		1.000	0.02	1.120	1.027	1.301
1st	WCDMA IV_Ant1					RMC 12.2Kbps	Bottom Side	5mm	Reduced	1513	1752.6	18.33	19.00	1.167		1.000	0.12	1.180	1	1.377
2nd	WCDMA IV_Ant1					RMC 12.2Kbps	Bottom Side	5mm	Reduced	1513	1752.6	18.33	19.00	1.167		1.000	0.02	1.167	1.011	1.362
1st	LTE Band 41_Ant1	20M	QPSK	100	0		Bottom Side	5mm	Reduced	40620	2593	16.50	17.00	1.122	62.9	1.006	0.04	1.080	1	1.219
2nd	LTE Band 41_Ant1	20M	QPSK	100	0		Bottom Side	5mm	Reduced	40620	2593	16.50	17.00	1.122	62.9	1.006	0.04	1.060	1.019	1.196
1st	WLAN5.2GHz	-	-	-	-	802.11a 6Mbps	Back	5mm	Reduced	44	5220	14.50	15.00	1.122	98.28	1.018	0.02	1.020	1	1.166
2nd	WLAN5.2GHz	-	-	-	-	802.11a 6Mbps	Back	5mm	Reduced	44	5220	14.50	15.00	1.122	98.28	1.018	0.09	0.988	1.032	1.129
1st	WLAN5.5GHz	-	-	-	-	802.11a 6Mbps	Back	5mm	Reduced	100	5500	14.72	15.00	1.067	98.28	1.018	0.05	0.974	1	1.058
2nd	WLAN5.5GHz	-	-	-	-	802.11a 6Mbps	Back	5mm	Reduced	100	5500	14.72	15.00	1.067	98.28	1.018	0.02	0.961	1.014	1.044
1st	WLAN5.8GHz	-	-	-	-	802.11a 6Mbps	Back	5mm	Reduced	165	5825	15.60	16.00	1.097	98.28	1.018	0.03	1.020	1	1.139
2nd	WLAN5.8GHz	-	-	-	-	802.11a 6Mbps	Back	5mm	Reduced	165	5825	15.60	16.00	1.097	98.28	1.018	0.01	1.000	1.020	1.117

<10g>

No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	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)	Ratio	Reported 10g SAR (W/kg)
1st	WCDMA II_Ant1	RMC 12.2Kbps	Back	0mm	Reduced	9400	1880	21.13	22.00	1.222		1.000	0.02	2.810	1	3.433
2nd	WCDMA II_Ant1	RMC 12.2Kbps	Back	0mm	Reduced	9400	1880	21.13	22.00	1.222		1.000	0.12	2.792	1.006	3.411
1st	WCDMA IV_Ant1	RMC 12.2Kbps	Back	0mm	Reduced	1513	1752.6	22.13	22.50	1.089		1.000	-0.09	3.210	1	3.495
2nd	WCDMA IV_Ant1	RMC 12.2Kbps	Back	0mm	Reduced	1513	1752.6	22.13	22.50	1.089		1.000	0.02	3.190	1.006	3.474
1st	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Full	52	5260	20.90	21.50	1.149	98.28	1.018	0.07	2.270	1	2.656
2nd	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Full	52	5260	20.90	21.50	1.149	98.28	1.018	0.02	2.254	1.007	2.637

General Note:

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

16. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product specific 10g SAR
1.	GSM Voice + 2.4GHz WLAN MIMO	Yes	Yes		Yes
2.	GPRS/EDGE + 2.4GHz WLAN MIMO	Yes	Yes	Yes	Yes
3.	WCDMA + 2.4GHz WLAN MIMO	Yes	Yes	Yes	Yes
4.	LTE + 2.4GHz WLAN MIMO	Yes	Yes	Yes	Yes
5.	GSM Voice + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
6.	GPRS/EDGE + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
7.	WCDMA + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
8.	LTE + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
9.	GSM Voice + WLAN5.2/5.8GHz MIMO	Yes	Yes		Yes
10.	GPRS/EDGE + WLAN5.2/5.8GHz MIMO	Yes	Yes	Yes	Yes
11.	WCDMA + WLAN5.2/5.8GHz MIMO	Yes	Yes	Yes	Yes
12.	LTE + WLAN5.2/5.8GHz MIMO	Yes	Yes	Yes	Yes
13.	GSM Voice + Bluetooth	Yes	Yes		Yes
14.	GPRS/EDGE + Bluetooth	Yes	Yes	Yes	Yes
15.	WCDMA + Bluetooth	Yes	Yes	Yes	Yes
16.	LTE + Bluetooth	Yes	Yes	Yes	Yes
17.	5G NR + 2.4GHz WLAN MIMO	Yes	Yes	Yes	Yes
18.	LTE + 5G NR + 2.4GHz WLAN MIMO	Yes	Yes	Yes	Yes
19.	5G NR + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
20.	LTE + 5G NR + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
21.	5G NR + WLAN5.2/5.8GHz MIMO	Yes	Yes	Yes	Yes
22.	LTE + 5G NR + WLAN5.2/5.8GHz MIMO	Yes	Yes	Yes	Yes
23.	5G NR + Bluetooth	Yes	Yes	Yes	Yes
24.	LTE + 5G NR + Bluetooth	Yes	Yes	Yes	Yes

General Note:

- This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
- EUT will choose each GSM, WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
- This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
- 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).
- EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment though they have independent antenna.
- WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
- According to the EUT character, WLAN 5GHz and Bluetooth can't transmit simultaneously.
- Chose the worst zoom scan SAR of WLAN correspondingly for co-located with WWAN analysis.
- The reported SAR summation is calculated based on the same configuration and test position.
- Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
 - $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$, 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.
 - If $SPLSR \leq 0.04$ for 1g SAR and $SPLSR \leq 0.10$ for 10g SAR, simultaneously transmission SAR measurement is not necessary.
 - Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.
 - The SPLSR calculated results please refer to section 16.5.



16.1 Head Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2	1+3	1+4
			WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM	GSM850_Ant1	Right Cheek	0.060	0.323	0.172	0.274	0.38	0.23	0.33
		Right Tilted	0.058	0.299	0.237	0.274	0.36	0.30	0.33
		Left Cheek	0.071	0.203	0.126	0.274	0.27	0.20	0.35
		Left Tilted	0.048	0.221	0.148	0.274	0.27	0.20	0.32
	GSM850_Ant2	Right Cheek	0.625	0.323	0.172	0.274	0.95	0.80	0.90
		Right Tilted	0.476	0.299	0.237	0.274	0.78	0.71	0.75
		Left Cheek	1.026	0.203	0.126	0.274	1.23	1.15	1.30
		Left Tilted	0.678	0.221	0.148	0.274	0.90	0.83	0.95
	GSM1900_Ant1	Right Cheek	0.090	0.323	0.172	0.274	0.41	0.26	0.36
		Right Tilted	0.046	0.299	0.237	0.274	0.35	0.28	0.32
		Left Cheek	0.072	0.203	0.126	0.274	0.28	0.20	0.35
		Left Tilted	0.092	0.221	0.148	0.274	0.31	0.24	0.37
WCDMA	WCDMA II_Ant1	Right Cheek	0.066	0.323	0.172	0.274	0.39	0.24	0.34
		Right Tilted	0.063	0.299	0.237	0.274	0.36	0.30	0.34
		Left Cheek	0.101	0.203	0.126	0.274	0.30	0.23	0.38
		Left Tilted	0.079	0.221	0.148	0.274	0.30	0.23	0.35
	WCDMA IV_Ant1	Right Cheek	0.060	0.323	0.172	0.274	0.38	0.23	0.33
		Right Tilted	0.058	0.299	0.237	0.274	0.36	0.30	0.33
		Left Cheek	0.087	0.203	0.126	0.274	0.29	0.21	0.36
		Left Tilted	0.073	0.221	0.148	0.274	0.29	0.22	0.35
	WCDMA V_Ant1	Right Cheek	0.134	0.323	0.172	0.274	0.46	0.31	0.41
		Right Tilted	0.075	0.299	0.237	0.274	0.37	0.31	0.35
		Left Cheek	0.207	0.203	0.126	0.274	0.41	0.33	0.48
		Left Tilted	0.131	0.221	0.148	0.274	0.35	0.28	0.41
	WCDMA V_Ant2	Right Cheek	0.797	0.323	0.172	0.274	1.12	0.97	1.07
		Right Tilted	0.774	0.299	0.237	0.274	1.07	1.01	1.05
		Left Cheek	1.165	0.203	0.126	0.274	1.37	1.29	1.44
		Left Tilted	1.019	0.221	0.148	0.274	1.24	1.17	1.29
LTE	LTE Band 2_Ant1	Right Cheek	0.057	0.323	0.172	0.274	0.38	0.23	0.33
		Right Tilted	0.048	0.299	0.237	0.274	0.35	0.29	0.32
		Left Cheek	0.061	0.203	0.126	0.274	0.26	0.19	0.34
		Left Tilted	0.060	0.221	0.148	0.274	0.28	0.21	0.33
	LTE Band 7_Ant1	Right Cheek	0.125	0.323	0.172	0.274	0.45	0.30	0.40
		Right Tilted	0.089	0.299	0.237	0.274	0.39	0.33	0.36
		Left Cheek	0.072	0.203	0.126	0.274	0.28	0.20	0.35
		Left Tilted	0.072	0.221	0.148	0.274	0.29	0.22	0.35
	LTE Band 12_Ant1	Right Cheek	0.207	0.323	0.172	0.274	0.53	0.38	0.48
		Right Tilted	0.084	0.299	0.237	0.274	0.38	0.32	0.36
		Left Cheek	0.133	0.203	0.126	0.274	0.34	0.26	0.41
		Left Tilted	0.066	0.221	0.148	0.274	0.29	0.21	0.34
	LTE Band 12_Ant2	Right Cheek	0.387	0.323	0.172	0.274	0.71	0.56	0.66
		Right Tilted	0.422	0.299	0.237	0.274	0.72	0.66	0.70
		Left Cheek	0.510	0.203	0.126	0.274	0.71	0.64	0.78
		Left Tilted	0.776	0.221	0.148	0.274	1.00	0.92	1.05
	LTE Band 26_Ant1	Right Cheek	0.223	0.323	0.172	0.274	0.55	0.40	0.50
		Right Tilted	0.063	0.299	0.237	0.274	0.36	0.30	0.34
		Left Cheek	0.090	0.203	0.126	0.274	0.29	0.22	0.36
		Left Tilted	0.083	0.221	0.148	0.274	0.30	0.23	0.36
	LTE Band	Right Cheek	0.415	0.323	0.172	0.274	0.74	0.59	0.69



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	26_Ant2	Right Tilted	0.366	0.299	0.237	0.274	0.67	0.60	0.64
		Left Cheek	0.845	0.203	0.126	0.274	1.05	0.97	1.12
		Left Tilted	0.756	0.221	0.148	0.274	0.98	0.90	1.03
	LTE Band 41_Ant1	Right Cheek	0.103	0.323	0.172	0.274	0.43	0.28	0.38
		Right Tilted	0.060	0.299	0.237	0.274	0.36	0.30	0.33
		Left Cheek	0.081	0.203	0.126	0.274	0.28	0.21	0.36
		Left Tilted	0.073	0.221	0.148	0.274	0.29	0.22	0.35
	LTE Band 66_Ant1	Right Cheek	0.066	0.323	0.172	0.274	0.39	0.24	0.34
		Right Tilted	0.050	0.299	0.237	0.274	0.35	0.29	0.32
		Left Cheek	0.060	0.203	0.126	0.274	0.26	0.19	0.33
		Left Tilted	0.063	0.221	0.148	0.274	0.28	0.21	0.34



WWAN Band		Exposure Position	1	2	3	4	5	1+2+5	1+3+5	1+4+5
			WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	FR1 N5 Ant 2	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE	LTE Band 7_Ant1	Right Cheek	0.125	0.323	0.172	0.307	0.443	0.89	0.74	0.88
		Right Tilted	0.089	0.299	0.237	0.307	0.450	0.84	0.78	0.85
		Left Cheek	0.072	0.203	0.126	0.307	0.597	0.87	0.80	0.98
		Left Tilted	0.072	0.221	0.148	0.307	0.548	0.84	0.77	0.93

WWAN Band		Exposure Position	1	2	3	4	5	1+2+5	1+3+5	1+4+5
			WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	FR1 N7 Ant 1	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE	LTE Band 5_Ant2	Right Cheek	0.208	0.323	0.172	0.307	0.070	0.60	0.45	0.59
		Right Tilted	0.212	0.299	0.237	0.307	0.037	0.55	0.49	0.56
		Left Cheek	0.407	0.203	0.126	0.307	0.060	0.67	0.59	0.77
		Left Tilted	0.358	0.221	0.148	0.307	0.048	0.63	0.55	0.71

WWAN Band		Exposure Position	1	2	3	4	5	1+2+5	1+3+5	1+4+5
			WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	FR1 N7 Ant 2	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE	LTE Band 66_Ant1	Right Cheek	0.066	0.323	0.172	0.307	0.240	0.63	0.48	0.61
		Right Tilted	0.050	0.299	0.237	0.307	0.257	0.61	0.54	0.61
		Left Cheek	0.060	0.203	0.126	0.307	0.406	0.67	0.59	0.77
		Left Tilted	0.063	0.221	0.148	0.307	0.483	0.77	0.69	0.85

WWAN Band		Exposure Position	1	2	3	4	5	1+2+5	1+3+5	1+4+5
			WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	FR1 N66 Ant 1	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE	LTE Band 5_Ant2	Right Cheek	0.208	0.323	0.172	0.307	0.086	0.62	0.47	0.60
		Right Tilted	0.212	0.299	0.237	0.307	0.056	0.57	0.51	0.58
		Left Cheek	0.407	0.203	0.126	0.307	0.076	0.69	0.61	0.79
		Left Tilted	0.358	0.221	0.148	0.307	0.077	0.66	0.58	0.74
	LTE Band 7_Ant2	Right Cheek	0.219	0.323	0.172	0.307	0.086	0.63	0.48	0.61
		Right Tilted	0.261	0.299	0.237	0.307	0.056	0.62	0.55	0.62
		Left Cheek	0.405	0.203	0.126	0.307	0.076	0.68	0.61	0.79
		Left Tilted	0.429	0.221	0.148	0.307	0.077	0.73	0.65	0.81



16.2 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	Case No	SPLSR	1+3 Summed 1g SAR (W/kg)	Case No	SPLSR	1+4 Summed 1g SAR (W/kg)	Case No	SPLSR
		WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1									
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)									
GSM	GSM850_Ant1	Front	0.084	0.078	0.019	0.209	0.16		0.10			0.29		
		Back	0.457	0.324	0.404	0.209	0.78		0.86			0.67		
		Left side	0.104	0.061	0.017	0.209	0.17		0.12			0.31		
		Right side	0.114	0.063	0.067	0.209	0.18		0.18			0.32		
		Top side		0.177	0.055	0.209	0.18		0.06			0.21		
		Bottom side	0.446			0.209	0.45		0.45			0.66		
	GSM850_Ant2	Front	0.465	0.078	0.019	0.209	0.54		0.48			0.67		
		Back	0.402	0.324	0.404	0.209	0.73		0.81			0.61		
		Left side	0.173	0.061	0.017	0.209	0.23		0.19			0.38		
		Right side	0.089	0.063	0.067	0.209	0.15		0.16			0.30		
		Top side	0.975	0.177	0.055	0.209	1.15		1.03			1.18		
		Bottom side				0.209	0.00		0.00			0.21		
	GSM1900_Ant1	Front	0.596	0.078	0.019	0.209	0.67		0.62			0.81		
		Back	0.989	0.324	0.404	0.209	1.31		1.39			1.20		
		Left side	0.046	0.061	0.017	0.209	0.11		0.06			0.26		
		Right side	0.098	0.063	0.067	0.209	0.16		0.17			0.31		
		Top side		0.177	0.055	0.209	0.18		0.06			0.21		
		Bottom side	1.184			0.209	1.18		1.18			1.39		
WCDMA	WCDMA II_Ant1	Front	0.895	0.078	0.019	0.209	0.97		0.91			1.10		
		Back	1.379	0.324	0.404	0.209	1.70	#01	0.01	1.78	#02	0.02	1.59	
		Left side	0.065	0.061	0.017	0.209	0.13		0.08			0.27		
		Right side	0.086	0.063	0.067	0.209	0.15		0.15			0.30		
		Top side		0.177	0.055	0.209	0.18		0.06			0.21		
		Bottom side	1.344			0.209	1.34		1.34			1.55		
	WCDMA IV_Ant1	Front	1.010	0.078	0.019	0.209	1.09		1.03			1.22		
		Back	1.238	0.324	0.404	0.209	1.56		1.64	#03	0.01	1.45		
		Left side	0.060	0.061	0.017	0.209	0.12		0.08			0.27		
		Right side	0.121	0.063	0.067	0.209	0.18		0.19			0.33		
		Top side		0.177	0.055	0.209	0.18		0.06			0.21		
		Bottom side	1.377			0.209	1.38		1.38			1.59		
	WCDMA V_Ant1	Front	0.743	0.078	0.019	0.209	0.82		0.76			0.95		
		Back	1.164	0.324	0.404	0.209	1.49		1.57			1.37		
		Left side	0.121	0.061	0.017	0.209	0.18		0.14			0.33		
		Right side	0.298	0.063	0.067	0.209	0.36		0.37			0.51		
		Top side		0.177	0.055	0.209	0.18		0.06			0.21		
		Bottom side	1.082			0.209	1.08		1.08			1.29		
	WCDMA V_Ant2	Front	0.371	0.078	0.019	0.209	0.45		0.39			0.58		
		Back	0.434	0.324	0.404	0.209	0.76		0.84			0.64		
		Left side	0.146	0.061	0.017	0.209	0.21		0.16			0.36		
		Right side	0.264	0.063	0.067	0.209	0.33		0.33			0.47		
		Top side	0.941	0.177	0.055	0.209	1.12		1.00			1.15		
		Bottom side				0.209	0.00		0.00			0.21		
LTE	LTE Band 2_Ant1	Front	0.685	0.078	0.019	0.209	0.76		0.70			0.89		
		Back	1.110	0.324	0.404	0.209	1.43		1.51			1.32		
		Left side	0.059	0.061	0.017	0.209	0.12		0.08			0.27		
		Right side	0.075	0.063	0.067	0.209	0.14		0.14			0.28		
		Top side		0.177	0.055	0.209	0.18		0.06			0.21		
		Bottom side	1.287			0.209	1.29		1.29			1.50		
	LTE Band	Front	0.588	0.078	0.019	0.209	0.67		0.61			0.80		



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	7_Ant1	Back	1.207	0.324	0.404	0.209	1.53			1.61	#04	0.01	1.42		
		Left side		0.061	0.017	0.209	0.06			0.02			0.21		
		Right side	0.145	0.063	0.067	0.209	0.21			0.21			0.35		
		Top side		0.177	0.055	0.209	0.18			0.06			0.21		
		Bottom side	1.298			0.209	1.30			1.30			1.51		
	LTE Band 12_Ant1	Front	0.439	0.078	0.019	0.209	0.52			0.46			0.65		
		Back	0.705	0.324	0.404	0.209	1.03			1.11			0.91		
		Left side	0.233	0.061	0.017	0.209	0.29			0.25			0.44		
		Right side	0.251	0.063	0.067	0.209	0.31			0.32			0.46		
		Top side		0.177	0.055	0.209	0.18			0.06			0.21		
	LTE Band 12_Ant2	Bottom side	0.556			0.209	0.56			0.56			0.77		
		Front	0.394	0.078	0.019	0.209	0.47			0.41			0.60		
		Back	0.433	0.324	0.404	0.209	0.76			0.84			0.64		
		Left side	0.266	0.061	0.017	0.209	0.33			0.28			0.48		
		Right side	0.450	0.063	0.067	0.209	0.51			0.52			0.66		
	LTE Band 26_Ant1	Top side	0.729	0.177	0.055	0.209	0.91			0.78			0.94		
		Bottom side				0.209	0.00			0.00			0.21		
		Front	0.359	0.078	0.019	0.209	0.44			0.38			0.57		
		Back	0.492	0.324	0.404	0.209	0.82			0.90			0.70		
		Left side	0.102	0.061	0.017	0.209	0.16			0.12			0.31		
	LTE Band 26_Ant2	Right side	0.147	0.063	0.067	0.209	0.21			0.21			0.36		
		Top side		0.177	0.055	0.209	0.18			0.06			0.21		
		Bottom side	0.463			0.209	0.46			0.46			0.67		
		Front	0.278	0.078	0.019	0.209	0.36			0.30			0.49		
		Back	0.419	0.324	0.404	0.209	0.74			0.82			0.63		
	LTE Band 41_Ant1	Left side	0.101	0.061	0.017	0.209	0.16			0.12			0.31		
		Right side	0.138	0.063	0.067	0.209	0.20			0.21			0.35		
		Top side	0.416	0.177	0.055	0.209	0.59			0.47			0.63		
		Bottom side				0.209	0.00			0.00			0.21		
		Front	0.571	0.078	0.019	0.209	0.65			0.59			0.78		
	LTE Band 66_Ant1	Back	1.101	0.324	0.404	0.209	1.43			1.51			1.31		
		Left side	0.032	0.061	0.017	0.209	0.09			0.05			0.24		
		Right side	0.113	0.063	0.067	0.209	0.18			0.18			0.32		
		Top side		0.177	0.055	0.209	0.18			0.06			0.21		
		Bottom side	1.219			0.209	1.22			1.22			1.43		
	LTE Band 66_Ant1	Front	0.787	0.078	0.019	0.209	0.87			0.81			1.00		
		Back	1.413	0.324	0.404	0.209	1.74	#05	0.01	1.82	#06	0.02	1.62	#07	0.01
		Left side	0.036	0.061	0.017	0.209	0.10			0.05			0.25		
		Right side	0.101	0.063	0.067	0.209	0.16			0.17			0.31		
		Top side		0.177	0.055	0.209	0.18			0.06			0.21		
		Bottom side	1.362			0.209	1.36			1.36			1.57		

WWAN Band		Exposure Position	1	2	4	6	5	1+2+5 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+6+5 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	FR1 N5 Ant 2			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
LTE	LTE Band 7_Ant1	Front	0.261	0.078	0.019	0.235	0.380	0.72	0.66	0.88
		Back	0.594	0.324	0.404	0.235	0.570	1.49	1.57	1.40
		Left side	0.048	0.061	0.017	0.235	0.137	0.25	0.20	0.42
		Right side	0.068	0.063	0.067	0.235	0.269	0.40	0.40	0.57
		Top side		0.177	0.055	0.235	0.567	0.74	0.62	0.80
		Bottom side	0.590			0.235		0.59	0.59	0.83

WWAN Band		Exposure Position	1	2	4	6	5	1+2+5 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+6+5 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	FR1 N7 Ant 1			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
LTE	LTE Band 5_Ant2	Front	0.580	0.078	0.019	0.235	0.260	0.92	0.86	1.08
		Back	0.589	0.324	0.404	0.235	0.571	1.48	1.56	1.40
		Left side	0.071	0.061	0.017	0.235	0.011	0.14	0.10	0.32
		Right side	0.119	0.063	0.067	0.235	0.045	0.23	0.23	0.40
		Top side	0.358	0.177	0.055	0.235		0.54	0.41	0.59
		Bottom side				0.235	0.544	0.54	0.54	0.78

WWAN Band		Exposure Position	1	2	4	6	5	1+2+5 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+6+5 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	FR1 N7 Ant 2			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
LTE	LTE Band 66_Ant1	Front	0.403	0.078	0.019	0.235	0.248	0.73	0.67	0.89
		Back	0.536	0.324	0.404	0.235	0.501	1.36	1.44	1.27
		Left side	0.036	0.061	0.017	0.235	0.009	0.11	0.06	0.28
		Right side	0.072	0.063	0.067	0.235	0.052	0.19	0.19	0.36
		Top side		0.177	0.055	0.235	0.540	0.72	0.60	0.78
		Bottom side	0.574			0.235		0.57	0.57	0.81

WWAN Band		Exposure Position	1	2	4	6	5	1+2+5 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+6+5 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	FR1 N66 Ant 1			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
LTE	LTE Band 5_Ant2	Front	0.580	0.078	0.019	0.235	0.370	1.03	0.97	1.19
		Back	0.589	0.324	0.404	0.235	0.525	1.44	1.52	1.35
		Left side	0.071	0.061	0.017	0.235	0.020	0.15	0.11	0.33
		Right side	0.119	0.063	0.067	0.235	0.036	0.22	0.22	0.39
		Top side	0.358	0.177	0.055	0.235		0.54	0.41	0.59
		Bottom side				0.235	0.509	0.51	0.51	0.74
	LTE Band 7_Ant2	Front	0.570	0.078	0.019	0.235	0.370	1.02	0.96	1.18
		Back	0.437	0.324	0.404	0.235	0.525	1.29	1.37	1.20
		Left side	0.027	0.061	0.017	0.235	0.020	0.11	0.06	0.28
		Right side	0.036	0.063	0.067	0.235	0.036	0.14	0.14	0.31
		Top side	0.550	0.177	0.055	0.235		0.73	0.61	0.79
		Bottom side				0.235	0.509	0.51	0.51	0.74



16.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	Case No	SPLSR	1+3 Summed 1g SAR (W/kg)	Case No	SPLSR	1+6 Summed 1g SAR (W/kg)	Case No	SPLSR
			WWAN 1g SAR (W/kg)	2.4GHz WLAN Ant 1+2 1g SAR (W/kg)	5GHz WLAN Ant 1+2 1g SAR (W/kg)	Bluetooth Ant 1 1g SAR (W/kg)									
GSM	GSM850_Ant1	Front	0.084	0.078	0.019	0.209	0.16			0.10			0.29		
		Back	0.457	0.324	0.404	0.209	0.78			0.86			0.67		
		Front with Headset					0.00			0.00			0.00		
		Back with Headset					0.00			0.00			0.00		
	GSM850_Ant2	Front	0.465	0.078	0.019	0.209	0.54			0.48			0.67		
		Back	0.402	0.324	0.404	0.209	0.73			0.81			0.61		
		Front with Headset					0.00			0.00			0.00		
		Back with Headset					0.00			0.00			0.00		
	GSM1900_Ant1	Front	0.596	0.078	0.019	0.209	0.67			0.62			0.81		
		Back	0.989	0.324	0.404	0.209	1.31			1.39			1.20		
		Front with Headset					0.00			0.00			0.00		
		Back with Headset					0.00			0.00			0.00		
WCDMA	WCDMA II_Ant1	Front	0.895	0.078	0.019	0.209	0.97			0.91			1.10		
		Back	1.379	0.324	0.404	0.209	1.70	#01	0.01	1.78	#02	0.02	1.59		
		Front with Headset					0.00			0.00			0.00		
		Back with Headset					0.00			0.00			0.00		
	WCDMA IV_Ant1	Front	1.010	0.078	0.019	0.209	1.09			1.03			1.22		
		Back	1.234	0.324	0.404	0.209	1.56			1.64	#03	0.01	1.44		
		Front with Headset					0.00			0.00			0.00		
		Back with Headset					0.00			0.00			0.00		
	WCDMA V_Ant1	Front	0.743	0.078	0.019	0.209	0.82			0.76			0.95		
		Back	1.164	0.324	0.404	0.209	1.49			1.57			1.37		
		Front with Headset					0.00			0.00			0.00		
		Back with Headset					0.00			0.00			0.00		
	WCDMA V_Ant2	Front	0.371	0.078	0.019	0.209	0.45			0.39			0.58		
		Back	0.434	0.324	0.404	0.209	0.76			0.84			0.64		
		Front with Headset					0.00			0.00			0.00		
		Back with Headset					0.00			0.00			0.00		
LTE	LTE Band 2_Ant1	Front	0.685	0.078	0.019	0.209	0.76			0.70			0.89		
		Back	1.110	0.324	0.404	0.209	1.43			1.51			1.32		
		Front with Headset					0.00			0.00			0.00		
		Back with Headset					0.00			0.00			0.00		
	LTE Band 7_Ant1	Front	0.588	0.078	0.019	0.209	0.67			0.61			0.80		
		Back	1.207	0.324	0.404	0.209	1.53			1.61	#04	0.01	1.42		
		Front with Headset					0.00			0.00			0.00		
		Back with Headset	1.139				1.14			1.14			1.14		
	LTE Band 12_Ant1	Front	0.439	0.078	0.019	0.209	0.52			0.46			0.65		
		Back	0.705	0.324	0.404	0.209	1.03			1.11			0.91		
		Front with Headset					0.00			0.00			0.00		
		Back with Headset					0.00			0.00			0.00		
	LTE Band 12_Ant2	Front	0.394	0.078	0.019	0.209	0.47			0.41			0.60		
		Back	0.433	0.324	0.404	0.209	0.76			0.84			0.64		
		Front with Headset					0.00			0.00			0.00		
		Back with Headset					0.00			0.00			0.00		
	LTE Band 26_Ant1	Front	0.359	0.078	0.019	0.209	0.44			0.38			0.57		
		Back	0.492	0.324	0.404	0.209	0.82			0.90			0.70		
		Front with Headset					0.00			0.00			0.00		
		Back with Headset					0.00			0.00			0.00		



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	LTE Band 26_Ant2	Front	0.278	0.078	0.019	0.209	0.36			0.30			0.49		
		Back	0.419	0.324	0.404	0.209	0.74			0.82			0.63		
		Front with Headset					0.00			0.00			0.00		
		Back with Headset					0.00			0.00			0.00		
	LTE Band 41_Ant1	Front	0.571	0.078	0.019	0.209	0.65			0.59			0.78		
		Back	1.101	0.324	0.404	0.209	1.43			1.51			1.31		
		Front with Headset					0.00			0.00			0.00		
		Back with Headset					0.00			0.00			0.00		
	LTE Band 66_Ant1	Front	0.787	0.078	0.019	0.209	0.87			0.81			1.00		
		Back	1.413	0.324	0.404	0.209	1.74	#05	0.01	1.82	#06	0.02	1.62	#07	0.01
		Front with Headset					0.00			0.00			0.00		
		Back with Headset	1.238				1.24			1.24			1.24		



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WWAN Band		Exposure Position	1	2	4	6	5	1+2+5 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+6+5 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	FR1 N5 Ant 2			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
LTE	LTE Band 7_Ant1	Front	0.261	0.078	0.019	0.235	0.380	0.72	0.66	0.88
		Back	0.594	0.324	0.404	0.235	0.570	1.49	1.57	1.40
		Front with Headset						0.00	0.00	0.00
		Back with Headset						0.00	0.00	0.00

WWAN Band		Exposure Position	1	2	4	6	5	1+2+5 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+6+5 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	FR1 N7 Ant 1			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
LTE	LTE Band 5_Ant2	Front	0.580	0.078	0.019	0.235	0.260	0.92	0.86	1.08
		Back	0.589	0.324	0.404	0.235	0.571	1.48	1.56	1.40
		Front with Headset						0.00	0.00	0.00
		Back with Headset						0.00	0.00	0.00

WWAN Band		Exposure Position	1	2	4	6	5	1+2+5 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+6+5 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	FR1 N7 Ant 2			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
LTE	LTE Band 66_Ant1	Front	0.403	0.078	0.019	0.235	0.248	0.73	0.67	0.89
		Back	0.536	0.324	0.404	0.235	0.501	1.36	1.44	1.27
		Front with Headset						0.00	0.00	0.00
		Back with Headset						0.00	0.00	0.00

WWAN Band		Exposure Position	1	2	4	6	5	1+2+5 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+6+5 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	FR1 N66 Ant 1			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
LTE	LTE Band 5_Ant2	Front	0.580	0.078	0.019	0.235	0.370	1.03	0.97	1.19
		Back	0.589	0.324	0.404	0.235	0.525	1.44	1.52	1.35
		Front with Headset						0.00	0.00	0.00
		Back with Headset						0.00	0.00	0.00
	LTE Band 7_Ant2	Front	0.570	0.078	0.019	0.235	0.370	1.02	0.96	1.18
		Back	0.437	0.324	0.404	0.235	0.525	1.29	1.37	1.20
		Front with Headset						0.00	0.00	0.00
		Back with Headset						0.00	0.00	0.00

Note: For Front/Back, always chose higher SAR between 5mm SAR and sensor off distance SAR to do co-located analysis.

16.4 Product specific 10g SAR Exposure Conditions

WWAN Band		Exposure Position	1	3	1+3 Summed 10g SAR (W/kg)	Case No	SPLSR
			WWAN 10g SAR (W/kg)	5GHz WLAN Ant 1+2 10g SAR (W/kg)			
GSM	GSM1900_Ant1	Front	2.015	0.058	2.07		
		Back	3.349	0.691	4.04	#8	0.07
		Left side		0.049	0.05		
		Right side		0.056	0.06		
		Top side		0.214	0.21		
		Bottom side	3.310		3.31		
WCDMA	WCDMA II_Ant1	Front	2.620	0.058	2.68		
		Back	3.433	0.691	4.12	#9	0.07
		Left side		0.049	0.05		
		Right side		0.056	0.06		
		Top side		0.214	0.21		
		Bottom side	3.248		3.25		
	WCDMA IV_Ant1	Front	2.145	0.058	2.20		
		Back	3.495	0.691	4.19	#10	0.07
		Left side		0.049	0.05		
		Right side		0.056	0.06		
		Top side		0.214	0.21		
		Bottom side	2.886		2.89		
LTE	LTE Band 2_Ant1	Front	1.954	0.058	2.01		
		Back	3.378	0.691	4.07	#11	0.07
		Left side		0.049	0.05		
		Right side		0.056	0.06		
		Top side		0.214	0.21		
		Bottom side	2.738		2.74		
	LTE Band 7_Ant1	Front	1.363	0.058	1.42		
		Back	1.657	0.691	2.35		
		Left side		0.049	0.05		
		Right side		0.056	0.06		
		Top side		0.214	0.21		
		Bottom side			0.00		
	LTE Band 41_Ant1	Front	1.258	0.058	1.32		
		Back	2.163	0.691	2.85		
		Left side		0.049	0.05		
		Right side		0.056	0.06		
		Top side		0.214	0.21		
		Bottom side	1.238		1.24		
	LTE Band 66_Ant1	Front	2.205	0.058	2.26		
		Back	3.499	0.691	4.19	#12	0.07
		Left side		0.049	0.05		
		Right side		0.056	0.06		
		Top side		0.214	0.21		
		Bottom side	3.301		3.30		

WWAN Band		Exposure Position	1	3	5	1+3+5 Summed 10g SAR (W/kg)
			WWAN	5GHz WLAN Ant 1	FR1 N5 Ant 2	
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	
LTE	LTE Band 7_Ant1	Front	1.063	0.058		1.12
		Back	1.416	0.691		2.11
		Left side		0.049		0.05
		Right side		0.056		0.06
		Top side		0.214		0.21
		Bottom side	1.259			1.26

WWAN Band		Exposure Position	1	3	5	1+3+5 Summed 10g SAR (W/kg)
			WWAN	5GHz WLAN Ant 1	FR1 N7 Ant 1	
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	
LTE	LTE Band 5_Ant2	Front		0.058		0.06
		Back		0.691	1.356	2.05
		Left side		0.049		0.05
		Right side		0.056		0.06
		Top side		0.214		0.21
		Bottom side			0.852	0.85

WWAN Band		Exposure Position	1	3	5	1+3+5 Summed 10g SAR (W/kg)
			WWAN	5GHz WLAN Ant 1	FR1 N7 Ant 2	
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	
LTE	LTE Band 66_Ant1	Front	1.010	0.058		1.07
		Back	1.543	0.691	1.347	3.58
		Left side		0.049		0.05
		Right side		0.056		0.06
		Top side		0.214	1.597	1.81
		Bottom side	1.543			1.54

WWAN Band		Exposure Position	1	3	5	1+3+5 Summed 10g SAR (W/kg)
			WWAN	5GHz WLAN Ant 1	FR1 N66 Ant 1	
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	
LTE	LTE Band 5_Ant2	Front		0.058	0.916	0.97
		Back		0.691	1.588	2.28
		Left side		0.049		0.05
		Right side		0.056		0.06
		Top side		0.214		0.21
		Bottom side			1.436	1.44
	LTE Band 7_Ant2	Front	1.023	0.058	0.916	2.00
		Back	1.347	0.691	1.588	3.63
		Left side		0.049		0.05
		Right side		0.056		0.06
		Top side	1.440	0.214		1.65
		Bottom side			1.436	1.44

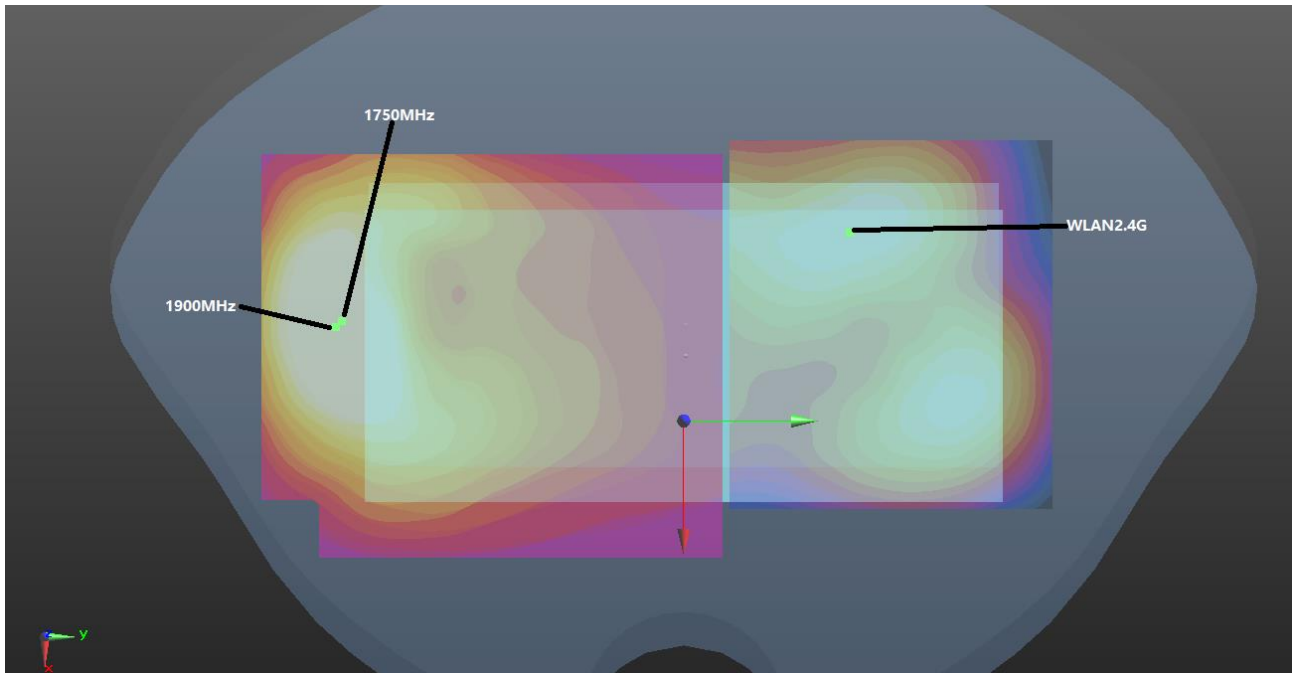
Remark:

1. For Bluetooth Product specific 10g stand-alone SAR is not required for a transmitter or antenna, due to 1g hotspot SAR is <1.2W/kg.
2. If SPLSR $\leq$ 0.10 for 10g SAR, simultaneously transmission SAR measurement is not necessary.
3. For Front/Back/Top/Bottom side, always chose higher SAR between 0mm 10g SAR and sensor off distance SAR to do co-located analysis.

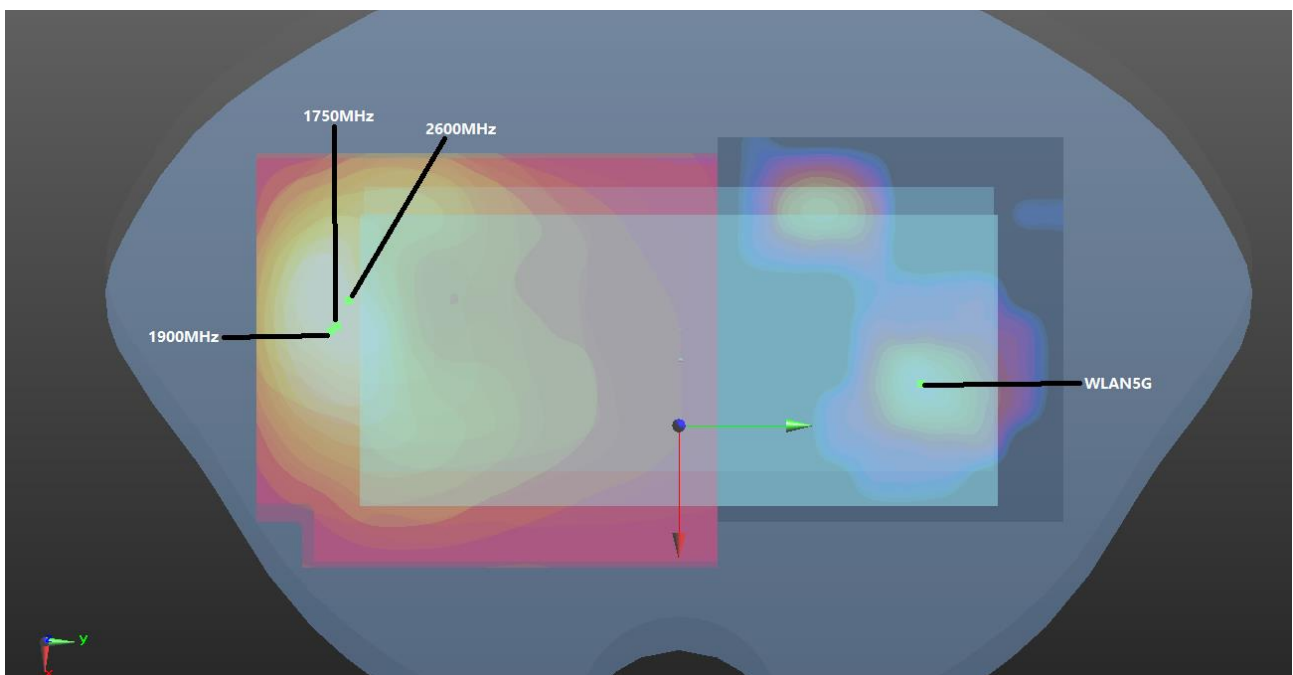
16.5 SPLSR Evaluation and Analysis

General Note:

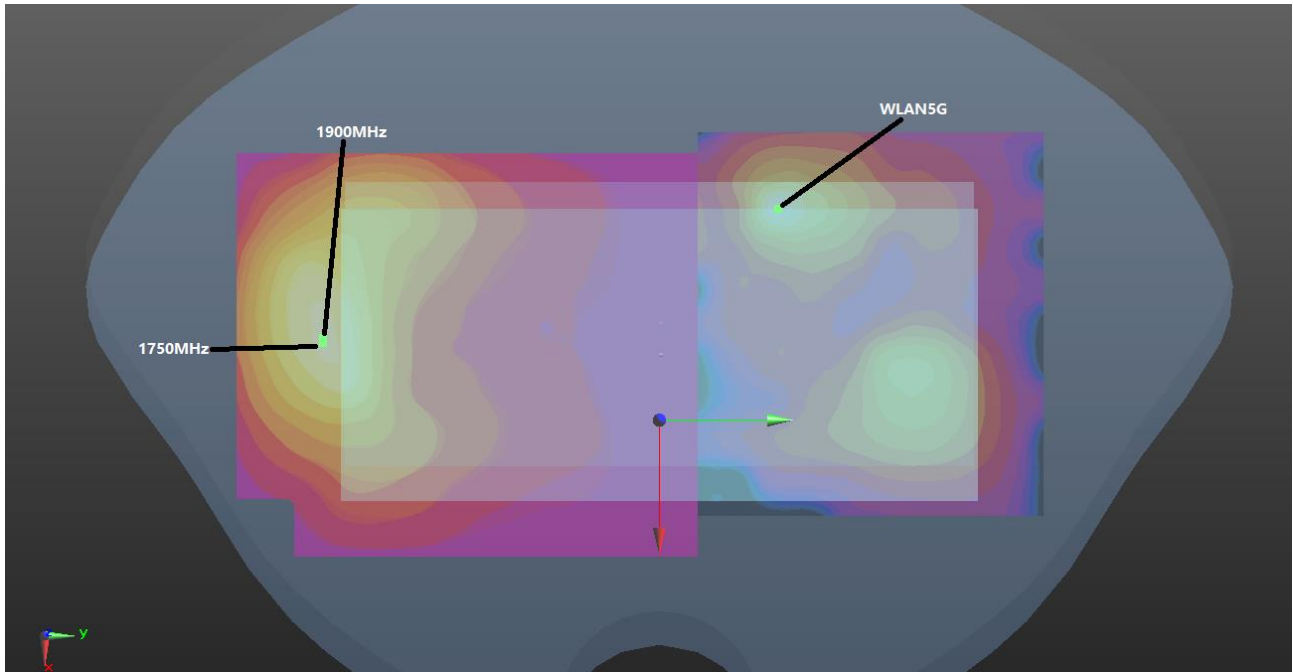
1. When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where $(x1, y1, z1)$ and $(x2, y2, z2)$ are the coordinates in the area scans or extrapolated peak SAR locations in the zoom scans, as appropriate.
2. $SPLSR = (SAR1 + SAR2)1.5 / (\text{min. separation distance, mm})$. If $SPLSR \leq 0.04$ for 1g SAR and $SPLSR \leq 0.10$ for 10g SAR, simultaneously transmission SAR measurement is not necessary.



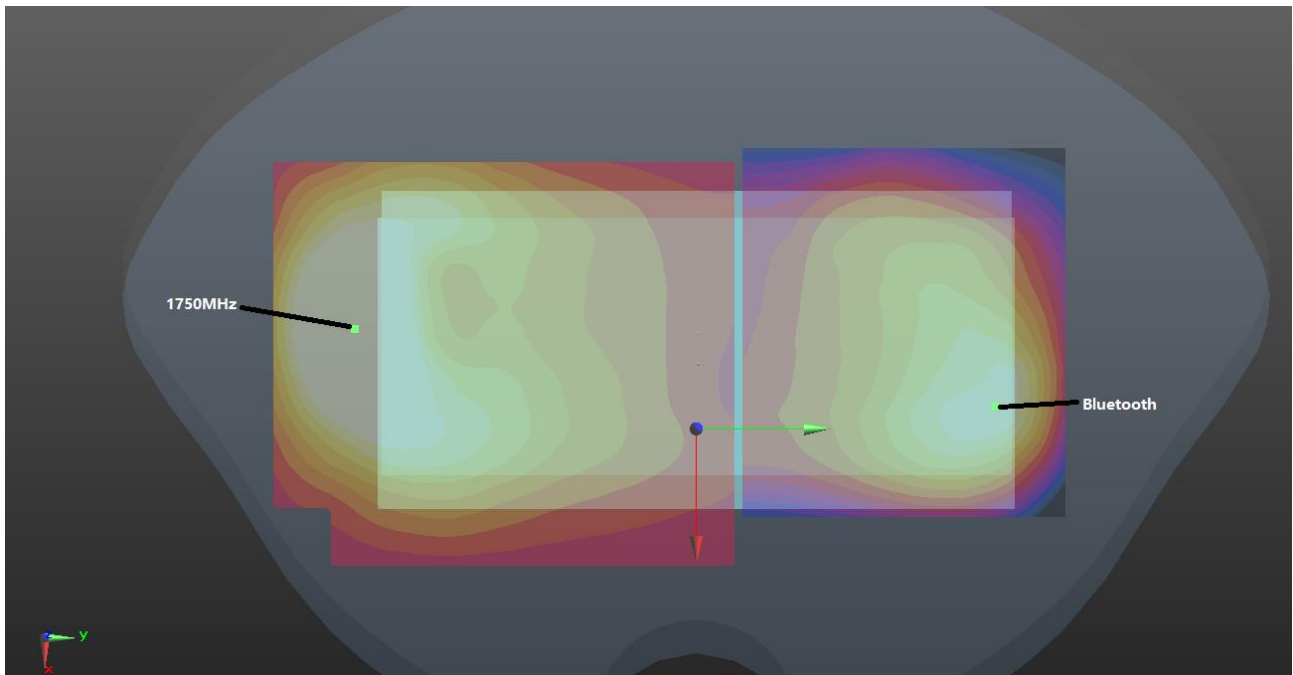
WWAN (5mm)+WLAN2.4G(5mm) Back



WWAN(5mm)+ WLAN5G(5mm) Back



WWAN(0mm)+ WLAN5G(0mm) Back



WWAN(5mm)+BT(5mm) Back

Case01	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA II_Ant1	Back	1.379	5mm	-12.3	-90.5	-0.74	171.8	1.70	0.01	Not required
	WLAN2.4GHz		0.324	5mm	14	79.2	2.15				
Case 02	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA II_Ant1	Back	1.379	5mm	-12.3	-90.5	-0.74	156.7	1.78	0.02	Not required
	WLAN5GHz		0.404	5mm	14.8	63.8	2.11				
Case 03	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA IV_Ant1	Back	1.238	5mm	-7.8	-85.9	-0.36	151.4	1.64	0.01	Not required
	WLAN5GHz		0.404	5mm	14.8	63.8	2.11				
Case04	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 7_Ant1	Back	1.207	5mm	-17.6	-87	-0.77	154.3	1.61	0.01	Not required
	WLAN5GHz		0.404	5mm	14.8	63.8	2.11				
Case 05	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 66_Ant1	Back	1.413	5mm	-12.2	-87.4	-0.72	168.7	1.74	0.01	Not required
	WLAN2.4GHz		0.324	5mm	14	79.2	2.15				
Case06	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 66_Ant1	Back	1.413	5mm	-12.2	-87.4	-0.72	153.6	1.82	0.02	Not required
	WLAN5GHz		0.404	5mm	14.8	63.8	2.11				
Case 07	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 66_Ant1	Back	1.413	5mm	-12.2	-87.4	-0.72	166.8	1.62	0.01	Not required
	Bluetooth		0.209	5mm	21.2	76	2.43				
Case 08	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM1900_Ant1	Back	3.349	0mm	-13.4	-86.3	-0.74	120.9	4.04	0.07	Not required
	WLAN5GHz		0.691	0mm	-30	33.4	2.75				

Case 09	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA II_Ant1	Back	3.433	0mm	-12.5	-87.5	-0.71	122.2	4.12	0.07	Not required
	WLAN5GHz		0.691	0mm	-30	33.4	2.75				
Case 10	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA IV_Ant1	Back	3.495	0mm	-10.9	-89	-0.68	123.9	4.19	0.07	Not required
	WLAN5GHz		0.691	0mm	-30	33.4	2.75				
Case 11	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 2_Ant1	Back	3.378	0mm	-11	-87.5	-0.78	122.4	4.07	0.07	Not required
	WLAN5GHz		0.691	0mm	-30	33.4	2.75				
Case 12	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 66_Ant1	Back	3.499	0mm	-11	-87.5	-0.73	122.4	4.19	0.07	Not required
	WLAN5GHz		0.691	0mm	-30	33.4	2.75				

17. Supplemental Tuner Tests Results

General Note:

1. The following test procedure was followed to demonstrate that the SAR results in this report represent the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR will be measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Additional single point SAR time-sweep measurements will be evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values. The additional tuner hardware has no influence to the antenna characteristics, other than impedance matching.
2. To evaluate all of the tuner states, the 144 tuner states are divided evenly among bands (except for GSM850/1900, 5GNR n5 and 5GNR n7_ant 2), mode and exposure combinations so that at least one single point SAR measurement is measured in each configuration. Single point time-sweep measurements will be performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state will be established remotely so that the device is not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe will remain stationary at the same position throughout the entire series of single point measurements for each combination.
3. This device supports LTE B4 / B5 / B38 and B66 / B26 / B41. Since the supported frequency span for LTE B4 / B5 / B38 falls completely within the supports frequency span for LTE B66 / B26 / B41, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, chose LTE B66 / B26 / B41 for dynamic antenna analysis.
4. According to workshop 2019, if any single point SAR measurement result is $> 1.2 \text{ W/kg}$ for a band/exposure condition combination set, all supported tuner states are evaluated with single point SAR measurements for the combination. So we verified the single point SAR that bands with SAR value high than 1.2 W/Kg .
5. The operational decryption contains more information about the design and implementation of the dynamic antenna tuning.

17.1 Supplemental Tuner Head & Body SAR Results

Please refer to Appendix F.

Test Engineer : Nick Hu, Tony Zhang, Hank Chang, Yuankai Kong

18. 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 $\leq 30\%$, 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.

19. References

- [1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"
- [2] ANSI/IEEE Std. C95.1-1992, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz", September 1992
- [3] IEEE Std. 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", Sep 2013
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.
- [6] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.
- [7] FCC KDB 447498 D01 v06, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", Oct 2015
- [8] FCC KDB 648474 D04 v01r03, "SAR Evaluation Considerations for Wireless Handsets", Oct 2015.
- [9] FCC KDB 248227 D01 v02r02, "SAR Guidance for IEEE 802.11 (WiFi) Transmitters", Oct 2015.
- [10] FCC KDB 616217 D04 v01r02, "SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers", Oct 2015
- [11] FCC KDB 941225 D01 v03r01, "3G SAR MEAUREMENT PROCEDURES", Oct 2015
- [12] FCC KDB 941225 D05 v02r05, "SAR Evaluation Considerations for LTE Devices", Dec 2015
- [13] FCC KDB 941225 D05A v01r02, "Rel. 10 LTE SAR Test Guidance and KDB Inquiries", Oct 2015
- [14] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.

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



Appendix A. Plots of System Performance Check

The plots are shown as follows.

System Check_Head_750MHz**DUT: D750V3 - SN:1087**

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: HSL_750 Medium parameters used: $f = 750$ MHz; $\sigma = 0.896$ S/m; $\epsilon_r = 41.73$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.3 °C; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(6.44, 6.44, 6.44); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 2.58 W/kg

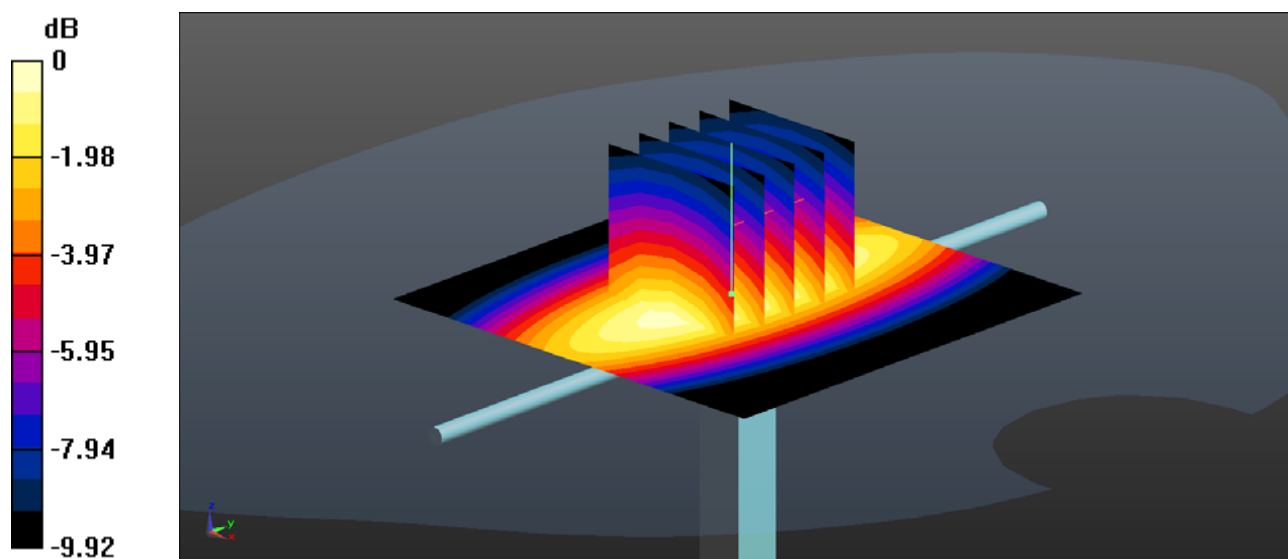
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 50.04 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 2.96 W/kg

SAR(1 g) = 2.03 W/kg; SAR(10 g) = 1.36 W/kg

Maximum value of SAR (measured) = 2.55 W/kg



0 dB = 2.55 W/kg = 4.07 dBW/kg

System Check_Head_835MHz**DUT: D835V2 - SN:4d151**

Communication System: UID 0, CW (0); Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL_850 Medium parameters used: $f = 835$ MHz; $\sigma = 0.915$ S/m; $\epsilon_r = 41.263$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5 °C; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(6.25, 6.25, 6.25); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 3.38 W/kg

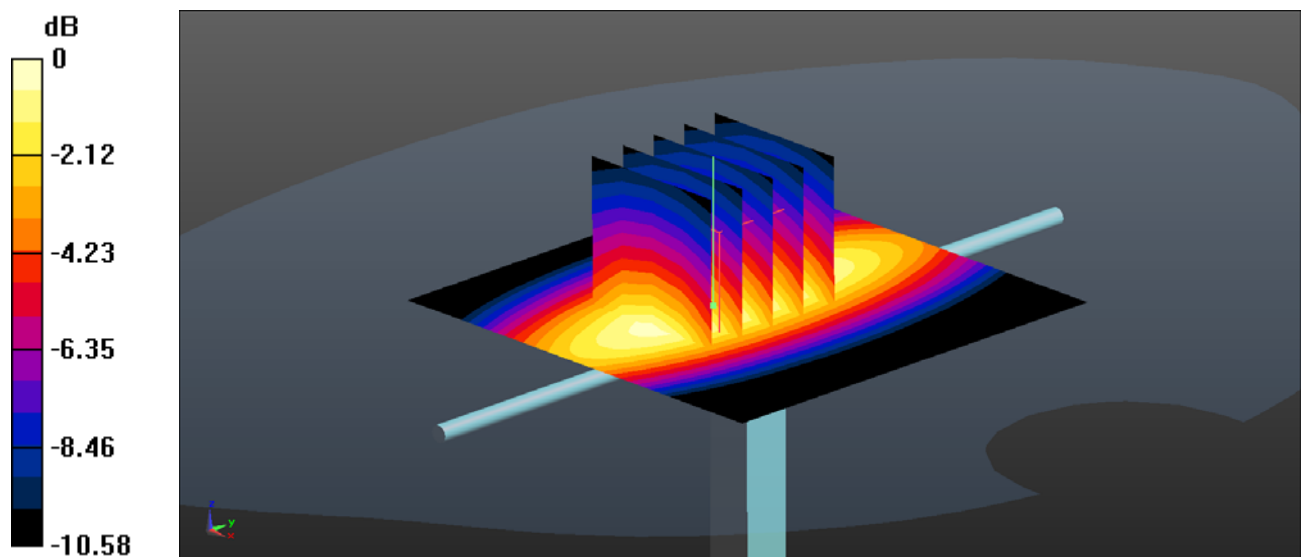
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 62.32 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 3.91 W/kg

SAR(1 g) = 2.48 W/kg; SAR(10 g) = 1.63 W/kg

Maximum value of SAR (measured) = 3.38 W/kg



0 dB = 3.38 W/kg = 5.29 dBW/kg

System Check_Head_1750MHz**DUT: D1750V2 - SN:1090**

Communication System: UID 0, CW (0); Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: HSL_1750 Medium parameters used: $f = 1750$ MHz; $\sigma = 1.351$ S/m; $\epsilon_r = 39.345$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.1 °C; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.4, 5.4, 5.4); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 12.5 W/kg

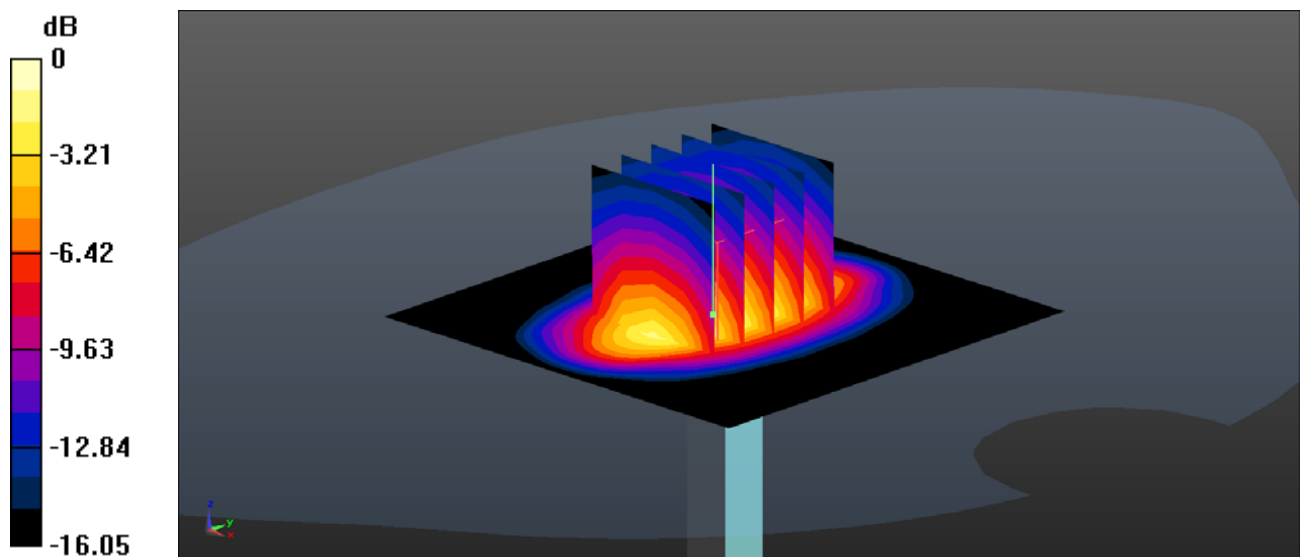
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 85.02 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 15.5 W/kg

SAR(1 g) = 8.87 W/kg; SAR(10 g) = 4.81 W/kg

Maximum value of SAR (measured) = 12.4 W/kg



0 dB = 12.4 W/kg = 10.93 dBW/kg

System Check_Head_1900MHz**DUT: D1900V2 - SN:5d170**

Communication System: UID 0, CW (0); Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL_1900 Medium parameters used: $f = 1900$ MHz; $\sigma = 1.373$ S/m; $\epsilon_r = 39.73$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.16, 5.16, 5.16); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 12.4 W/kg

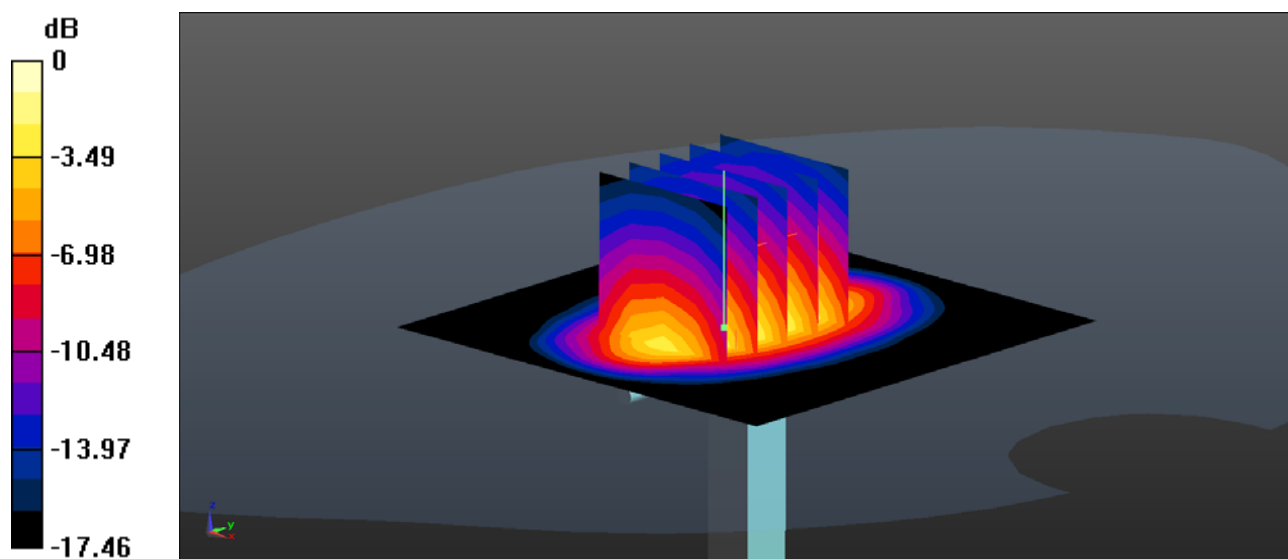
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 94.27 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 17.2 W/kg

SAR(1 g) = 9.67 W/kg; SAR(10 g) = 5.12 W/kg

Maximum value of SAR (measured) = 12.1 W/kg



0 dB = 12.1 W/kg = 10.83 dBW/kg

System Check_Head_2600MHz**DUT: D2600V2 - SN:1061**

Communication System: UID 0, CW (0); Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: HSL_2600 Medium parameters used: $f = 2600$ MHz; $\sigma = 2.034$ S/m; $\epsilon_r = 38.016$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.1 °C; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(4.54, 4.54, 4.54); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 19.6 W/kg

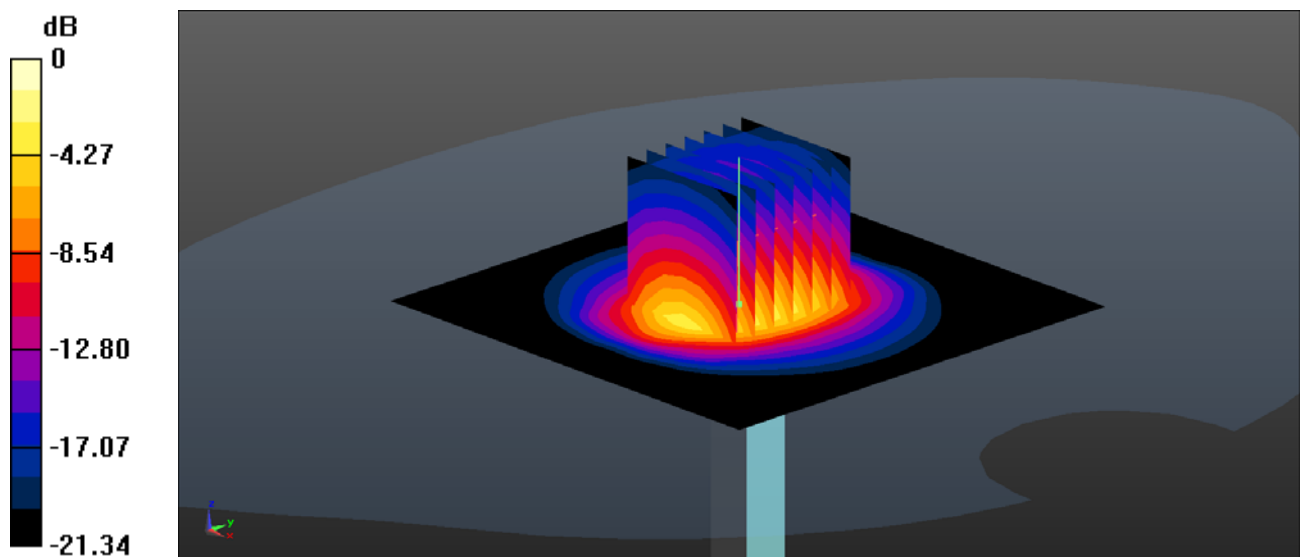
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.84 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 30.5 W/kg

SAR(1 g) = 14.7 W/kg; SAR(10 g) = 6.77 W/kg

Maximum value of SAR (measured) = 19.6 W/kg



0 dB = 19.6 W/kg = 12.92 dBW/kg

System Check_Head_850MHz

DUT: D835V2 - SN:4d151

Communication System: UID 0, CW (0); Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL_850 Medium parameters used: $f = 835$ MHz; $\sigma = 0.914$ S/m; $\epsilon_r = 42.877$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.3 °C; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3976; ConvF(10.16, 10.16, 10.16); Calibrated: 2020.1.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2019.11.20
- Phantom: SAM1; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 3.01 W/kg

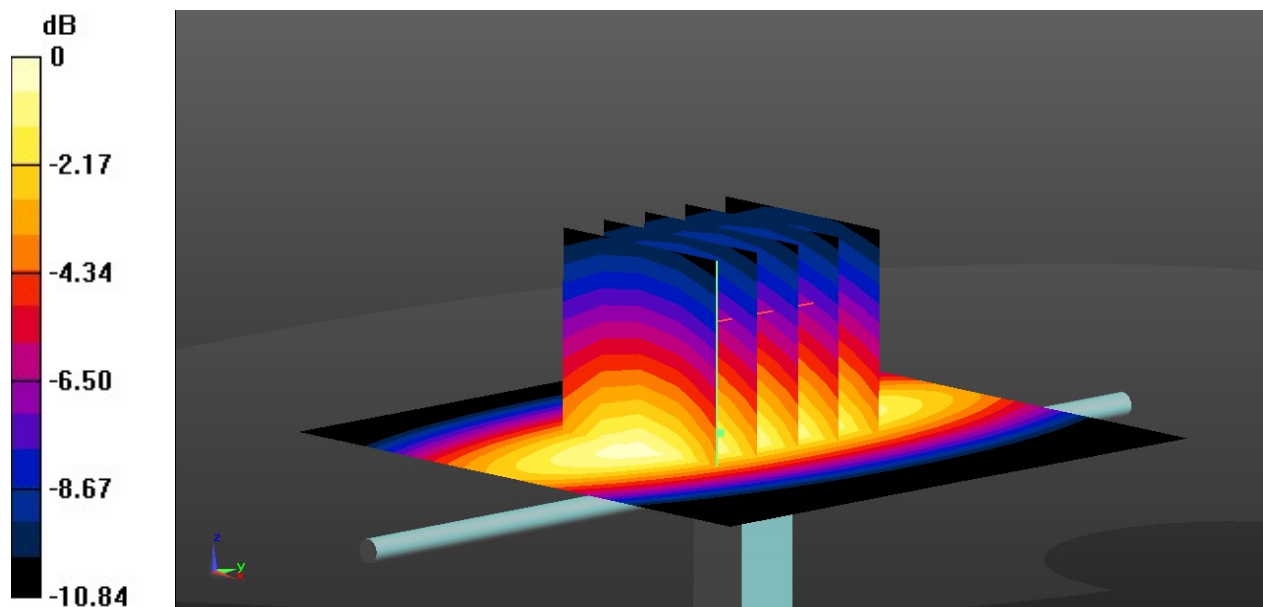
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 52.32 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 3.57 W/kg

SAR(1 g) = 2.36 W/kg; SAR(10 g) = 1.54 W/kg

Maximum value of SAR (measured) = 3.01 W/kg



0 dB = 3.01 W/kg = 4.79 dBW/kg

System Check_Head_1750MHz**DUT: D1750V2 - SN:1090**

Communication System: UID 0, CW (0); Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: HSL_1750 Medium parameters used: $f = 1750$ MHz; $\sigma = 1.37$ S/m; $\epsilon_r = 40.851$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3976; ConvF(8.63, 8.63, 8.63); Calibrated: 2020.1.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2019.11.20
- Phantom: SAM1; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 12.7 W/kg

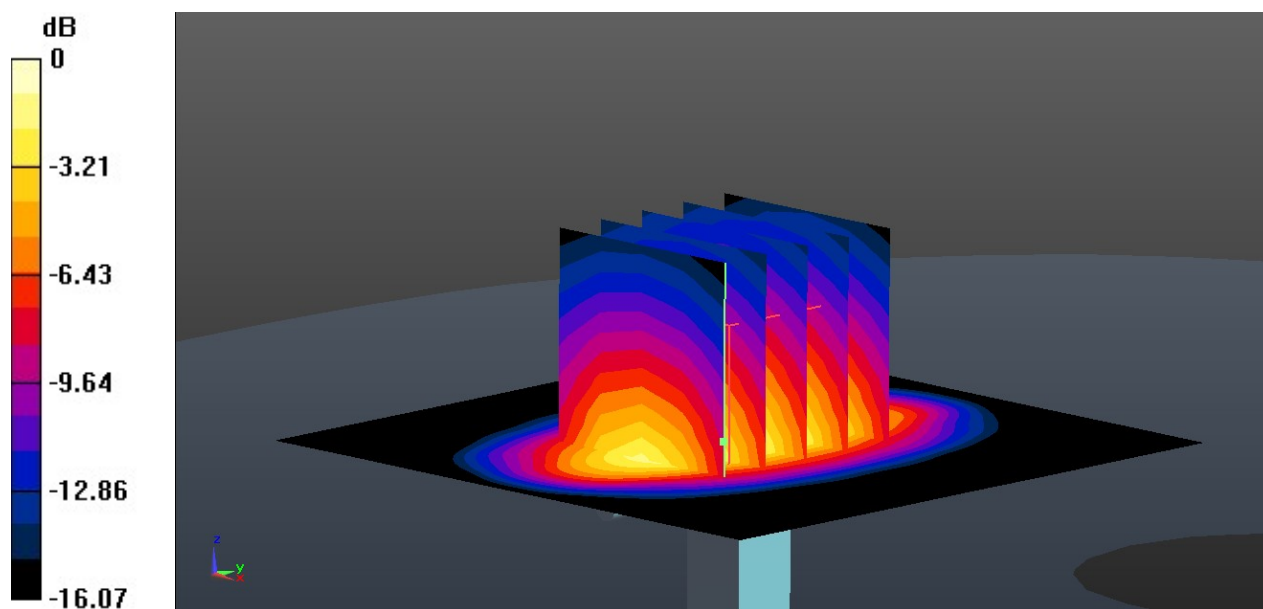
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 85.02 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 15.7 W/kg

SAR(1 g) = 8.99 W/kg; SAR(10 g) = 4.88 W/kg

Maximum value of SAR (measured) = 12.6 W/kg



0 dB = 12.6 W/kg = 11.00 dBW/kg

System Check_Head_2600MHz**DUT: D2600V2 - SN:1061**

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: HSL_2600 Medium parameters used: $f = 2600$ MHz; $\sigma = 2.058$ S/m; $\epsilon_r = 37.512$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3976; ConvF(7.48, 7.48, 7.48); Calibrated: 2020.1.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2019.11.20
- Phantom: SAM1; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 20.4 W/kg

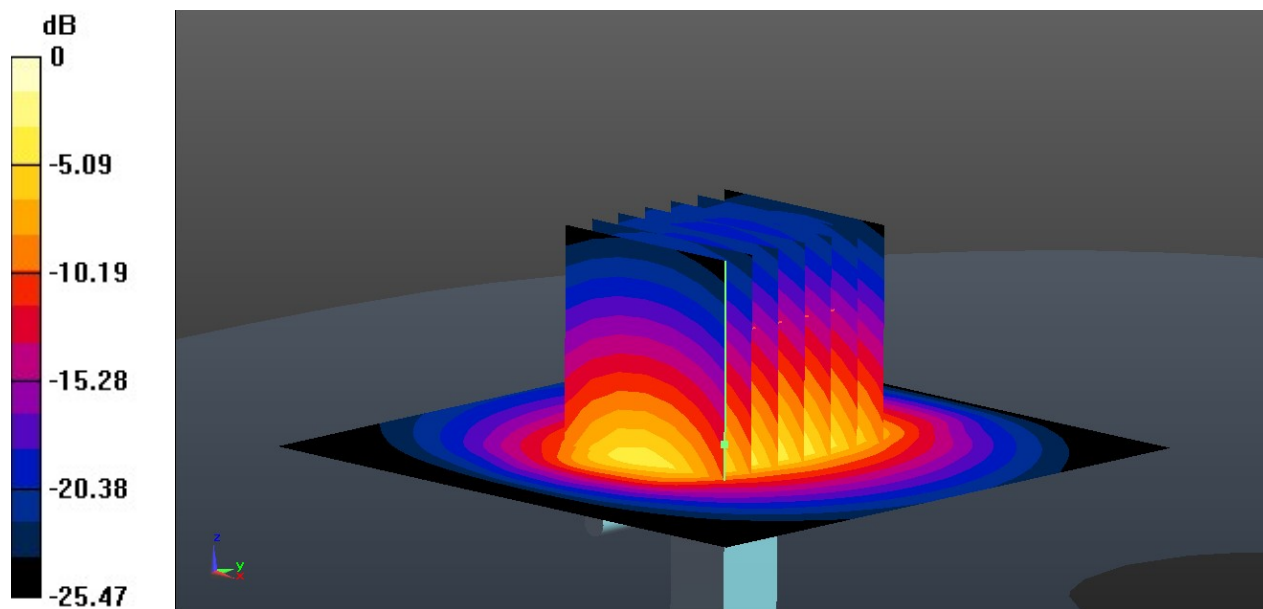
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 90.78 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 33.2 W/kg

SAR(1 g) = 14.7 W/kg; SAR(10 g) = 6.34 W/kg

Maximum value of SAR (measured) = 19.8 W/kg



0 dB = 19.8 W/kg = 12.97 dBW/kg

System Check_Head_2450MHz**DUT: D2450V2 - SN:908**

Communication System: UID 0, CW (0); Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL_2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.857$ S/m; $\epsilon_r = 39.174$; $\rho = 1000$ kg/m³

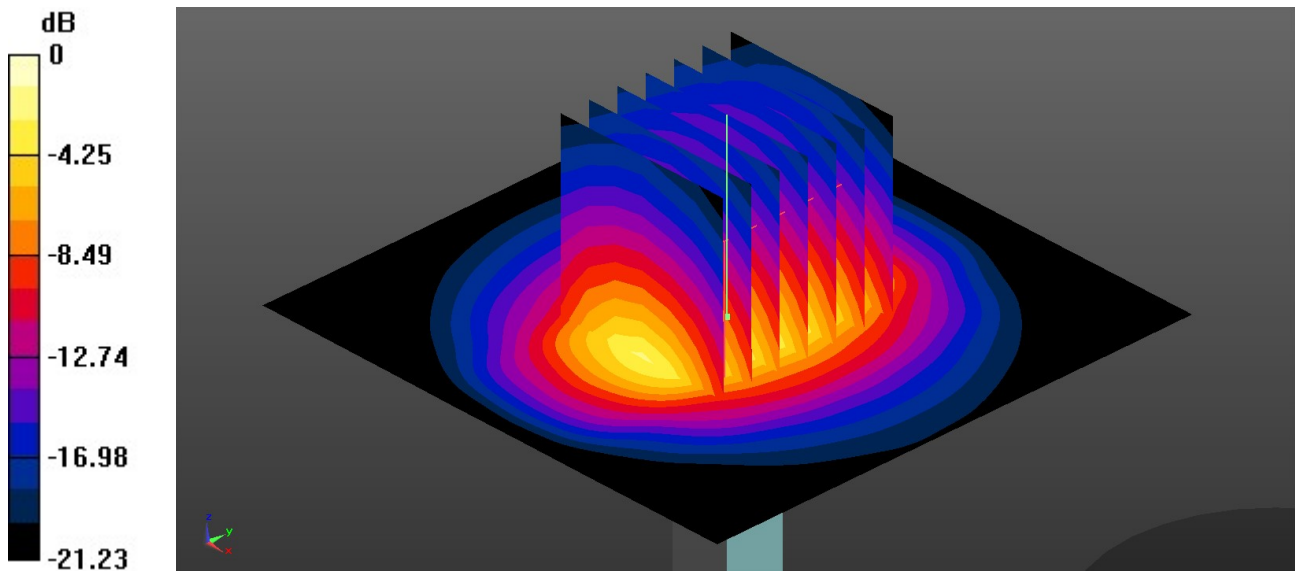
Ambient Temperature : 23.1 °C; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7592; ConvF(7.57, 7.57, 7.57); Calibrated: 2020.5.22
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 2019.12.17
- Phantom: SAM1; Type: SAM; Serial: 1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: $dx=1.200$ mm, $dy=1.200$ mm
Maximum value of SAR (interpolated) = 21.3 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm
Reference Value = 109.5 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 26.1 W/kg
SAR(1 g) = 12.8 W/kg; SAR(10 g) = 6.01 W/kg
Maximum value of SAR (measured) = 21.4 W/kg



0 dB = 21.4 W/kg = 13.30 dBW/kg