

FCC SAR Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : XT2141-2
FCC ID : IHDT56ZP2
STANDARD : FCC 47 CFR Part 2 (2.1093)

We, Sporton International (ShenZhen) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (ShenZhen) Inc., the test report shall not be reproduced except in full.

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA151701-01	Rev. 01	Initial issue of report.	Jul. 12, 2021
FA151701-01	Rev. 02	Updated the Supplemental Tuner SAR Results for WCDMA Bands.	Jul. 15, 2021



1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT2141-2**, are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 5mm)	Body-worn (Separation 5mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.17	0.73	0.73	1.59
		GSM1900	<0.10	1.24	1.16	
	WCDMA	Band V	1.11	1.14	1.14	
		Band IV	1.24	1.15	1.24	
		Band II	1.19	1.24	1.22	
	LTE	Band 71	1.00	0.71	0.71	
		Band 12/Band 17	1.13	0.79	0.79	
		Band 13	1.10	1.25	1.25	
		Band 14	1.16	1.00	0.89	
		Band 26/Band 5	1.23	1.22	1.22	
		Band 66/ Band 4	1.22	1.19	1.22	
		Band 25/ Band 2	1.25	1.12	1.24	
		Band 30	0.11	1.17	1.20	
		Band 7	0.12	1.08	1.24	
		Band 41/ Band 38	<0.10	1.25	1.25	
	5G NR	n71	0.91	0.49	0.49	
		n5	1.23	1.00	1.11	
		n66	1.24	1.25	1.21	
		n25/ n2	1.19	1.17	1.22	
n41		0.20	1.19	1.15		
n77/n78		1.16	1.00	1.16		
DTS	WLAN	2.4GHz WLAN	1.16	0.38	1.16	1.52
NII		5GHz WLAN	0.72	0.35	1.16	1.59
DSS	Bluetooth	2.4GHz Bluetooth	0.25	0.13	0.13	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	2.66	3.90
		WCDMA	Band V	
	Band IV		3.10	
	Band II		3.00	
	LTE	Band 13	1.78	
		Band 26/Band 5	2.24	
		Band 66/ Band 4	3.17	
		Band 25/ Band 2	3.11	
		Band 30	3.13	
		Band 7	2.94	
		Band 41/ Band 38	2.97	
	5G NR	n66	3.13	
		n25/ n2	3.07	
		n41	3.17	
n77/n78		3.12		
DTS	WLAN	2.4GHz WLAN	1.17	3.80
NII		5GHz WLAN	2.90	3.90
Date of Testing:			2021/5/26 ~ 2021/7/3	

Remark:

- This device supports both LTE B4/5/17/38/2 and B66/26/12/41/25. Since the supported frequency span for LTE B4/5/17/38/2 falls completely within the supports frequency span for LTE B66/26/12/41/25, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B66/26/12/41/25.
- This device supports both 5G NR n2/ n78 and 5G NR n25/ n77. Since the supported frequency span for 5G NR n2/ n78 falls completely within the supports frequency span for 5G NR n25/ n77, both NR bands have the same target power, and both NR bands share the same transmission path; therefore, SAR was only assessed for 5G NR n25/ n77.

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 (Shenzhen) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Table with 3 columns: Test Firm, Test Site Location, Test Site No., FCC Designation No., FCC Test Firm Registration No.

Table with 2 columns: Applicant, Company Name, Address

Table with 2 columns: Manufacturer, Company Name, Address

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	XT2141-2
FCC ID	IHDT56ZP2
IMEI Code	354398490013174
Wireless Technology and Frequency Range	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n71 : 663 MHz ~ 698 MHz 5G NR n77: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3980 MHz 5G NR n78: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3800 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 WLAN 6E U-NII-5: 5925 MHz ~ 6425 MHz WLAN 6E U-NII-6: 6425 MHz ~ 6525 MHz WLAN 6E U-NII-7: 6525 MHz ~ 6875 MHz WLAN 6E U-NII-8: 6875 MHz ~ 7125 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 2.4GHz: 802.11ac/ax VHT20/HE20 WLAN 5GHz: 802.11a/n HT20/HT40 WLAN 5GHz: 802.11ac VHT20/VHT40/VHT80/VHT160



	WLAN 5GHz: 802.11ax HE20/HE40/HE80/HE160 WLAN 6E : 802.11a/n HT20/HT40 WLAN 6E : 802.11ac VHT20/VHT40/VHT80/VHT160 WLAN 6E : 802.11ax HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE NFC:ASK
HW Version	DVT2
SW Version	RRM31.43
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 2.4G 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 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).
- The 2.4GHz/5GHz/6GHz WLAN can transmit in MIMO antenna mode only and it has no SISO antenna mode.
- This device does not support DTM operation and supports GPRS/EGPRS mode up to multi-slot class 12.
- The device implements the power management and proximity sensor /receiver detection/hotspot mode for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity) and the Qualcomm smart transmit will manage to ensure the power level not exceeding the associated power table. Details about the power management decision and sensor detection are provided in the operational description. And the device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to power table at appendix E.
- For WLAN when transmit simultaneous with WWAN, power reduction will be activated to head, body-worn, hotspot, extremity.
- For some WWAN bands, receiver off/sensor on reduced power level is higher than hotspot reduced power level, so front/back receiver off SAR can represent hotspot conservatively.
- 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 5G NR 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 can be referred to section 18 and appendix F.
- LTE Band 41 supports HPUE, HPUE power and SAR testing performed separately.
- For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
- 5G NR n41/ n77 supports HPUE, n41 HPUE only limit SA mode, HPUE power and SAR testing performed separately.
- NSA and SA mode should perform SAR separately. For the maximum power of NSA mode is the same as SA total power level, so SA SAR can represent NSA mode SAR.
- 5G NR NSA mode, the power level is the same as 5G NR SA mode, so 5G NR NSA mode and SA mode power table only show one time.
- 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.
- 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.
- This device supports 5G NR FR1 bands as following table, including NSA mode and SA mode.
- SAR Power density test report for WIFI 6E U-NII-5/6/7/8 will be separately submitted. About co-located SAR with WWAN/Bluetooth, always chose higher SAR of WLAN5G U-NII-1/2A/2C/3 and U-NII-5/6/7/8.



<5G NR>

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
NSA	n2	FDD	15	5, 10, 15, 20
	n5	FDD	15	5, 10, 15, 20
	n25	FDD	15	5, 10, 15, 20, 25, 30, 40
	n66	FDD	15	5, 10, 15, 20, 30, 40
	n71	FDD	15	5, 10, 15, 20
	n41	TDD	30	20, 30, 40, 50, 60, 80, 90, 100
	n77	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100
	n78	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100
SA	n2	FDD	15	5, 10, 15, 20
	n25	FDD	15	5, 10, 15, 20, 25, 30, 40
	n66	FDD	15	5, 10, 15, 20, 30, 40
	n71	FDD	15	5, 10, 15, 20
	n41	TDD	30	20, 30, 40, 50, 60, 80, 90, 100
		n77	TDD	30
	n78	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100



4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	IHDT56ZP2																																																														
Equipment Name	Mobile Cellular Phone																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 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 13: 5MHz, 10MHz LTE Band 14: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 25: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 30: 5MHz, 10MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 71: 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	<p align="center">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6" style="text-align: center;">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table>	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
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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 14.																																																														
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 14.																																																														
LTE Carrier Aggregation Additional Information	1. This device supports LTE Carrier Aggregation (CA) in the uplink for 41C 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 15 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 13																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23205		779.5		23230		782		23230		782		23230		782	
M	23230		782		23230		782		23230		782		23230		782	
H	23255		784.5		23230		782		23230		782		23230		782	
LTE Band 14																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Channel #		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23305		790.5		23330		793		23330		793		23330		793	
M	23330		793		23330		793		23330		793		23330		793	
H	23355		795.5		23330		793		23330		793		23330		793	
LTE Band 17																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)		Channel #		Freq. (MHz)		Channel #		Freq. (MHz)	
L	23755		706.5		23780		709		23780		709		23780		709	
M	23790		710		23790		710		23790		710		23790		710	
H	23825		713.5		23800		711		23800		711		23800		711	



LTE Band 25												
	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	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905
LTE Band 26												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5		
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5		
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5		
LTE Band 30												
	Bandwidth 5 MHz					Bandwidth 10 MHz						
	Channel #		Freq.(MHz)			Channel #		Freq.(MHz)				
L	27685		2307.5			27710		2310				
M	27710		2310									
H	27735		2312.5									
LTE Band 38												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580				
M	38000	2595	38000	2595	38000	2595	38000	2595				
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610				
LTE Band 41												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506				
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5				
M	40620	2593	40620	2593	40620	2593	40620	2593				
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5				
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680				
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770
LTE Band 71												
	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	133147	665.5	133172	668	133197	670.5	133222	673				
M	133247	675.5	133272	678	133297	680.5	133322	683				
H	133447	695.5	133422	693	133397	690.5	133372	688				



4.3 General 5G NR SAR Test and Reporting Considerations

5G NR Information	
Operating Frequency Range of each 5G NR transmission band	5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n71 : 663 MHz ~ 698 MHz 5G NR n77: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3980 MHz 5G NR n78: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3800 MHz
Channel Bandwidth	5G NR n2: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n5: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n25 : 5MHz, 10MHz, 15MHz, 20MHz, 25MHz, 30MHz, 40MHz 5G NR n41: 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 80MHz, 90MHz, 100MHz 5G NR n66: 5MHz, 10MHz, 15MHz, 20MHz, 30MHz, 40MHz 5G NR n71: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n77: 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 80MHz, 90MHz, 100MHz 5G NR n78: 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 80MHz, 90MHz, 100MHz
SCS	FDD: SCS15KHz, TDD: SCS30KHz
uplink modulations used	DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM
A-MPR (Additional MPR) disabled for SAR Testing?	Yes
LTE Anchor Bands for n2	LTE B5/7/12/13/71/66
LTE Anchor Bands for n5	LTE B2/7/66
LTE Anchor Bands for n25	LTE B12/66
LTE Anchor Bands for n66	LTE B2/5/7/12/13
LTE Anchor Bands for n71	LTE B2/7/66
LTE Anchor Bands for n41	LTE B2/25
LTE Anchor Bands for n77	LTE B2/5/13/66
LTE Anchor Bands for n78	LTE B2/5/7/13/66/71

NR Band 2														
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz							
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)						
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860						
M	376000	1880	376000	1880	376000	1880	376000	1880						
H	381500	1907.5	381000	1905	380500	1902.5	380000	1900						
NR Band 5														
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz							
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)						
L	165300	826.5	165800	829	166300	831.5	166800	834						
M	167300	836.5	167300	836.5	167300	836.5	167300	836.5						
H	169300	846.5	168800	844	168300	841.5	167800	839						
NR Band 25														
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860	372500	1862.5	373000	1865	374000	1870
M	376500	1882.5	376500	1882.5	376500	1882.5	376500	1882.5	376500	1882.5	376500	1882.5	376500	1882.5
H	382500	1912.5	382000	1910	381500	1907.5	381000	1905	380500	1902.5	380000	1900	379000	1895
NR Band 66														
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	342500	1712.5	343000	1715	343500	1717.5	344000	1720	345000	1725	346000	1730		
M	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745		
H	355500	1777.5	355000	1775	354500	1772.5	354000	1770	353000	1765	352000	1760		
NR Band 71														
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz							
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)						
L	133100	665.5	133600	668	134100	670.5	134600	673						
M	136100	680.5	136100	680.5	136100	680.5	136100	680.5						
H	139100	695.5	138600	693	138100	690.5	137600	688						



NR Band 41																
Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz		
Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	501204	2506.02	502200	2511	503202	2516.01	504204	2521.02	505200	2526	507204	2536.02	508200	2541	509202	2546.01
M	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99
H	535998	2679.99	534996	2674.98	534000	2670	532998	2664.99	531996	2659.98	529998	2649.99	528996	2644.98	528000	2640

NR Band 77																		
Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz		
Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	647334	3710.01	647668	3715.02	648000	3720	648334	3725.01	648668	3730.02	649000	3735	649334	3740.01	649668	3745.02	650000	3750
M	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840
H	664666	3969.99	664332	3964.98	664000	3960	663666	3954.99	663332	3949.98	663000	3945	662666	3939.99	662332	3934.98	662000	3930

NR Band 78																		
Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz		
Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	647334	3710.01	647668	3715.02	648000	3720	648334	3725.01	648668	3730.02	649000	3735	649334	3740.01	649668	3745.02		
M	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750
H	652668	3789.99	652332	3784.98	652000	3780	651666	3774.99	651332	3769.98	651000	3765	650666	3759.99	650332	3754.98		

For Par27Q

NR Band 77																		
Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz		
Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	630668	3460.02	631000	3465	631334	3470.01	631668	3475.02	632000	3480	632334	3485.01	632668	3490.02	633000	3495		
M	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98
H	636000	3540	635666	3534.99	635332	3529.98	635000	3525	634666	3519.99	634332	3514.98	634000	3510	633666	3504.99		

NR Band 78																		
Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz		
Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	630668	3460.02	631000	3465	631334	3470.01	631668	3475.02	632000	3480	632334	3485.01	632668	3490.02	633000	3495		
M	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98
H	636000	3540	635666	3534.99	635332	3529.98	635000	3525	634666	3519.99	634332	3514.98	634000	3510	633666	3504.99		

5. Smart Transmit feature for RF Exposure compliance

The RF exposure limit is defined based on time-averaged RF exposure. The product implements Qualcomm Smart Transmit feature which controls the instantaneous transmitting power for WWAN transmitter to ensure the product in compliance with RF exposure limit over a defined time window, for SAR (transmit frequency ≤ 6GHz). To control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is compliant to the regulation requirement.

This report describes the procedures for the SAR char generation, and the parameters obtained from SAR characterization (referred to as SAR char, respectively) will be used as input for Smart Transmit. SAR char will be entered via the Embedded File System (EFS) to enable the Smart Transmit Feature.

<Terminologies in this report>

P_{limit}	The time-averaged RF power which corresponds to SAR_design_target.
P_{max}	Maximum target power level
SAR_design_target:	The design target for SAR compliance. It should be less than regulatory SAR limit to account for all device design related uncertainty.
SAR char	P_{limit} for all the technologies/bands for all applicable DSI

<SAR Characterization>

SAR char must be generated to cover all radio configurations and usage scenarios that the wireless device supports for operating at 6 GHz or below. It will then be used as input for Smart Transmit to control and manage RF exposure for f < 6 GHz.

<SAR design target and uncertainty>

	Uncertainty dB (k=2)
Total uncertainty	1.5

To account for total uncertainty, SAR_design_target should be determined as:

$$SAR_{design_target} < SAR_{regulatory_limit} \times 10^{\frac{-total\ uncertainty}{10}}$$



The Smart Transmit algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of SAR_design_target, below the predefined time-averaged power limit, for each characterized technology and band.

Smart Transmit allows the device to transmit at higher power instantaneously, as high as Pmax, when needed, but enforces power limiting to maintain time-averaged transmit power to Plimit. Below table shows Plimit EFS settings and maximum tune up output power Pmax configured for this EUT for various transmit conditions (Device State Index DSI).

<P_{limit} for supported technologies and bands (P_{limit} in EFS file)>

Band	Antenna	Head Standalone	Head Simultaneous	Body Worn Standalone	Body Worn Simultaneous	Hotspot	Extremity Standalone	Extremity Simultaneous	sensor off/full power	P _{max} *
		DSI 2	DSI 2	DSI 3	DSI 3	DSI 3	DSI 6	DSI 6	DSI 4	
GSM850(3 Tx slots)**	0	32.8	32.8	26.5	26.5	26.5	23.2	23.2	23.2	23.2
GSM1900(3 Tx slots)**	0	35.5	35.5	17.7	15.2	15.2	21.2	21.2	21.2	21.2
WCDMA V	0	32.5	32.5	25.5	25.5	25.5	24.0	24.0	24.0	24.0
	1	21.0	20.0	23.0	21.5	21.5	25.9	24.9	23.0	23.0
WCDMA IV	0	33.6	33.6	18.5	16.5	16.5	20.5	20.5	23.0	23.0
	1	15.5	14.5	16.5	14.5	14.5	20.0	19.0	21.5	21.5
WCDMA II	0	33.3	33.3	17.5	15.0	15.0	20.0	20.0	23.0	23.0
	1	20.0	19.0	19.5	18.0	18.0	21.5	20.0	21.5	21.5
LTE B71	0	32.7	32.7	27.7	27.7	27.7	23.5	23.5	23.5	23.5
	1	23.0	23.0	26.4	25.4	25.4	23.0	23.0	23.0	23.0
LTE B12/17	0	31.9	31.9	26.7	26.7	26.7	23.5	23.5	23.5	23.5
	1	22.5	21.0	25.5	24.5	24.5	23.5	23.5	22.5	22.5
LTE B13	0	30.1	30.1	24.5	24.5	24.5	27.0	27.0	23.5	23.5
	1	21.5	20.5	24.8	23.6	23.6	22.5	22.5	22.5	22.5
LTE B14	0	31.0	31.0	26.0	26.0	26.0	23.5	23.5	23.5	23.5
	1	21.0	20.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
LTE B26/5	0	32.3	32.3	24.7	24.7	24.7	26.8	26.8	23.5	23.5
	1	21.5	20.5	22.5	21.5	21.5	25.0	23.9	22.5	22.5
LTE B66/4	0	33.6	33.6	18.0	15.5	15.5	20.5	20.5	23.0	23.0
	1	15.5	14.5	16.5	14.5	14.5	21.0	20.0	21.0	21.0
LTE B25/2	0	32.8	32.8	17.0	14.0	14.0	19.0	19.0	22.0	22.0
	1	15.0	14.0	16.0	14.0	14.0	19.0	17.5	20.0	20.0
LTE B30	0	33.1	33.1	17.5	16.5	16.5	20.5	20.5	21.5	21.5
LTE B7	0	34.1	34.1	20.5	19.0	19.0	22.0	22.0	23.0	23.0
LTE B41/38(PC3)**	0	35.8	35.8	21.0	18.9	18.9	23.2	23.2	21.0	21.0
LTE B41 (PC2)**	0								22.4	22.4
N71	0	34.3	34.3	29.5	29.5	29.5	23.0	23.0	23.0	23.0
	1	25.4	24.4	28.1	27.1	27.1	23.0	23.0	23.0	23.0
N5	0	33.5	33.5	26.5	26.5	26.5	23.0	23.0	23.0	23.0
	1	22.0	21.0	24.5	22.5	22.5	23.0	23.0	23.0	23.0
N66	0	35.9	35.9	19.0	16.5	16.5	21.5	21.5	23.0	23.0
	1	16.5	15.5	16.5	15.5	15.5	22.0	21.0	23.0	23.0
N25/2	0	35.9	35.9	18.5	15.0	15.0	20.5	20.5	23.0	23.0
	1	16.0	15.0	17.5	15.5	15.5	21.0	20.0	23.0	23.0
N41(PC3)**	0	34.6	34.6	21.0	19.5	19.5	22.0	22.0	23.0	23.0
N41(PC2)**	0								26.0	26.0
N77/78(PC3)**	3	20.0	19.0	15.5	15.0	15.0	18.5	18.0	23.0	23.0
N77(PC2)**	3								26.0	26.0

*P_{max} is used for RF tune up procedure. The maximum allowed output power is equal to P_{max} + 1.0 dB uncertainty.

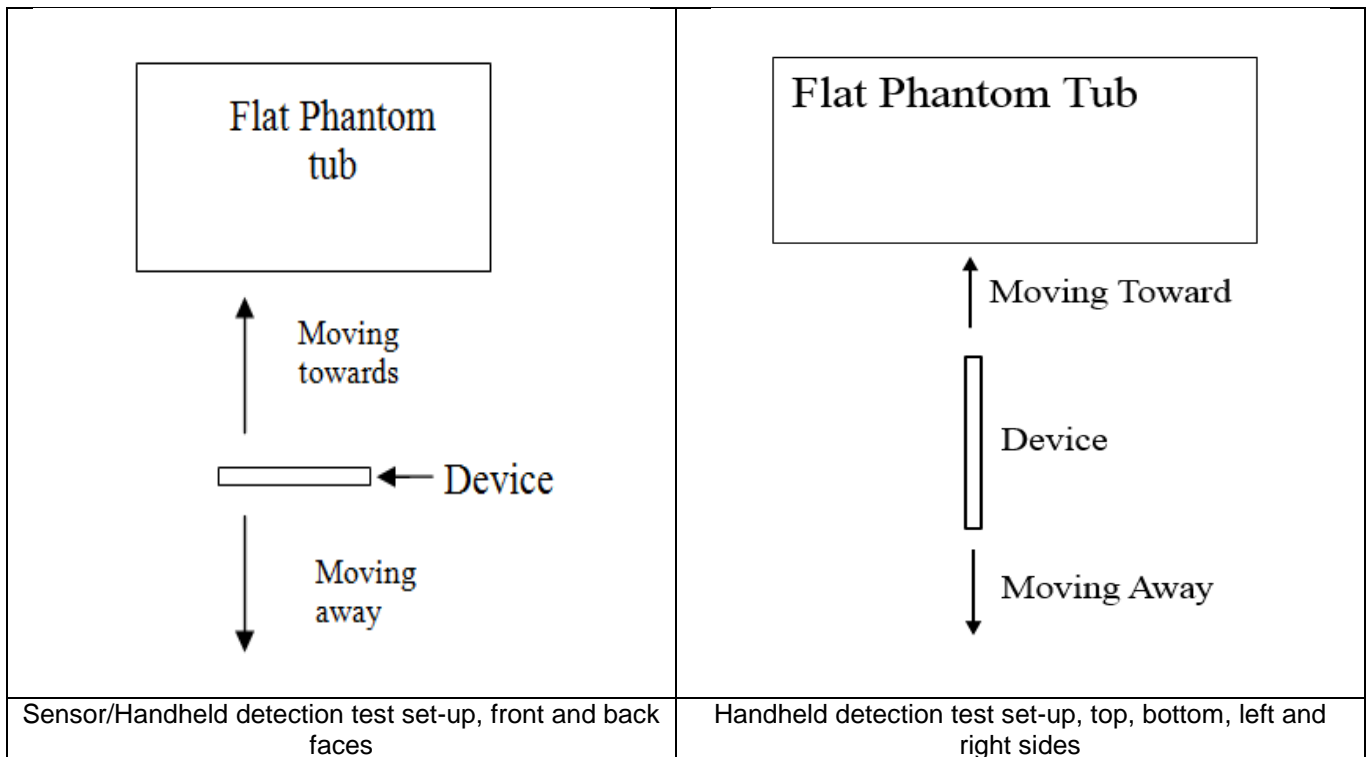
**All P_{limit} power levels entered in the Table correspond to average power levels after accounting for duty cycle in the case TDD modulation schemes (for e.g., GSM).

The max allowed output power is the P_{limit} + 1.0 dB device uncertainty, and if P_{limit} is higher than P_{max}, the device output power will be P_{max} instead.

6. Proximity Sensor Triggering Test

<Proximity Sensor Triggering Distance>:

1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed.
2. In the preliminary triggering distance testing, the tissue-equivalent medium for different frequency bands were used for verification; no other frequency bands tissue-equivalent medium was found to result in shortest triggering distance than that for 1900MHz, and the tissue-equivalent medium for 1900MHz was used for formal proximity sensor triggering testing.
3. Capacitive proximity sensors placed coincident with antenna elements at the top and bottom ends of the phone are utilized to determine when the device comes in proximity of the user's body at the front or back of the device.
4. The output power will reduce to body worn power level when top and bottom sensor pad be detected.
5. The sensors used to detect the proximity of the user's body at the front or back surface of the device use a detection threshold distance. The data shown in the sections below shows the distance(s). When front or back body worn condition is detected reduced power will be active.
6. The device employs proximity sensors also can detect the presence of the user's a finger or hand when handheld state at the front/back/top/bottom/left/right side of the device. When front/back/top/bottom/left/right side of handheld condition is detected reduced power will be active.
7. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance -1mm was performed:



<P-Sensor>

Proximity Sensor Triggering Distance (mm)				
Position	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	17	21	28	32

<Handheld for ANT0>

Proximity Sensor Triggering Distance (mm)						
Position	Front		Back		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	7	13	9	16	12	18

<Handheld for ANT1>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Right Side		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	7	11	9	18	6	8	10	18

<Handheld for ANT3>

Proximity Sensor Triggering Distance (mm)				
Position	Back		Left Side	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	13	16	6	7

<Handheld for ANT4>

Proximity Sensor Triggering Distance (mm)		
Position	Back	
	Moving towards	Moving away
Minimum	6	8

<Handheld for ANT12>

Proximity Sensor Triggering Distance (mm)		
Position	Back	
	Moving towards	Moving away
Minimum	7	9

7. RF Exposure Limits

7.1 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.

7.2 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.

8. Specific Absorption Rate (SAR)

8.1 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.

8.2 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:

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

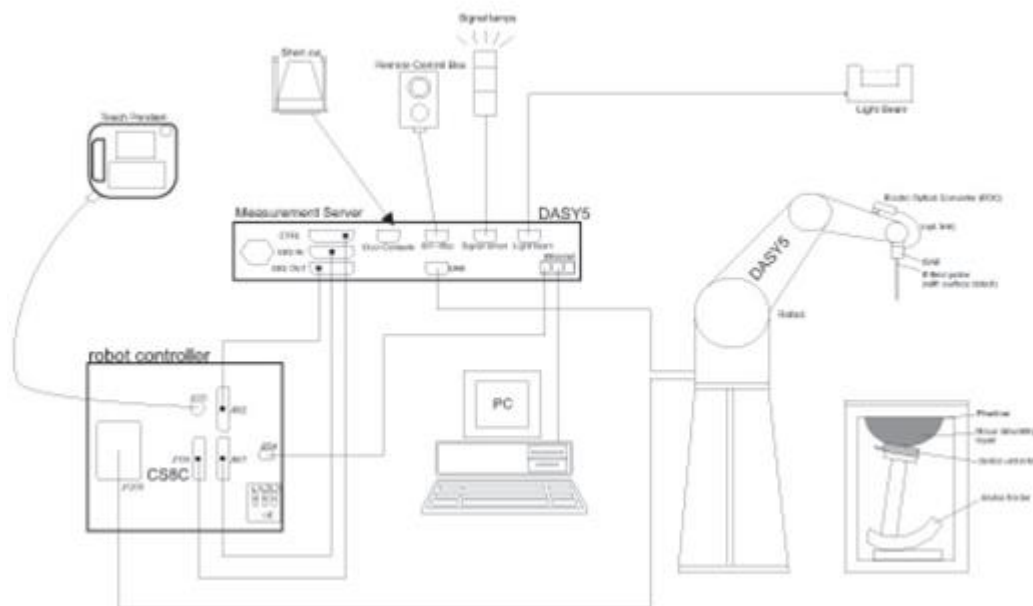
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

9. 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.

9.1 E-Field Probe

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

<EX3DV4 Probe>

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

9.2 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

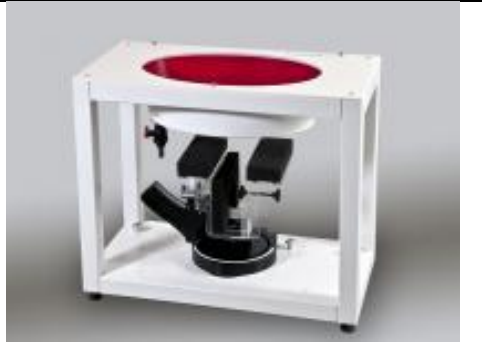
9.3 Phantom

<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.

9.4 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

10. 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

10.1 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

10.2 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.

10.3 Area Scan

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

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

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

10.4 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: Δx_{Zoom} , Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 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
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z	≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm	
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the <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.				

10.5 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.

10.6 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.



11. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1099	Dec. 06, 2018	Nov. 24, 2021
SPEAG	835MHz System Validation Kit	D835V2	4d162	Dec. 05, 2018	Nov. 24, 2021
SPEAG	1750MHz System Validation Kit	D1750V2	1137	Jul. 30, 2018	Jul. 22, 2021
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	Dec. 07, 2018	Nov. 24, 2021
SPEAG	2300MHz System Validation Kit	D2300V2	1056	Nov. 01, 2018	Oct. 31, 2021
SPEAG	2450MHz System Validation Kit	D2450V2	924	Sep. 02, 2020	Sep. 01, 2021
SPEAG	2600MHz System Validation Kit	D2600V2	1070	Dec. 07, 2018	Nov. 24, 2021
SPEAG	3500MHz System Validation Kit	D3500V2	1076	Apr. 29, 2019	Apr. 14, 2022
SPEAG	3700MHz System Validation Kit	D3700V2	1037	Apr. 29, 2019	Apr. 14, 2022
SPEAG	3900MHz System Validation Kit	D3900V2	1022	Jul. 11, 2019	Jul. 10, 2022
SPEAG	5000MHz System Validation Kit	D5GHzV2	1167	Aug. 03, 2018	Aug. 02, 2021
SPEAG	Data Acquisition Electronics	DAE4	918	Jun. 22, 2020	Jun. 21, 2021
SPEAG	Data Acquisition Electronics	DAE3	360	Nov. 06, 2020	Nov. 05, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	7375	Dec. 21, 2020	Dec. 20, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	7577	Sep. 30, 2020	Sep. 29, 2021
SPEAG	SAM Twin Phantom	QD 000 P40 CD	1795	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201300653	Jul. 21, 2020	Jul. 20, 2021
Anritsu	Radio communication analyzer	MT8821C	6201588577	Apr. 08, 2021	Apr. 07, 2022
Agilent	Wireless Communication Test Set	E5515C	MY50267224	Jul. 21, 2020	Jul. 20, 2021
Agilent	Network Analyzer	E5071C	MY46523671	Oct. 15, 2020	Oct. 14, 2021
Speag	Dielectric Assessment KIT	DAK-3.5	1071	Dec. 23, 2020	Dec. 22, 2021
Agilent	Signal Generator	N5181A	MY50145381	Dec. 25, 2020	Dec. 24, 2021
Anritsu	Power Sensor	MA2411B	1306099	Dec. 25, 2020	Dec. 24, 2021
Anritsu	Power Meter	ML2495A	1349001	Jul. 21, 2020	Jul. 20, 2021
Anritsu	Power Sensor	MA2411B	1207253	Dec. 25, 2020	Dec. 24, 2021
Anritsu	Power Meter	ML2495A	1218010	Dec. 25, 2020	Dec. 24, 2021
R&S	CBT BLUETOOTH TESTER	CBT	100963	Dec. 25, 2020	Dec. 24, 2021
R&S	Spectrum Analyzer	FSP7	100818	Jul. 21, 2020	Jul. 20, 2021
TES	Hygrometer	1310	200505600	Jul. 30, 2020	Jul. 29, 2021
Anymetre	Thermo-Hygrometer	JR593	2015030904	Jul. 21, 2020	Jul. 20, 2021
SPEAG	Device Holder	N/A	N/A	N/A	N/A
AR	Amplifier	5S1G4	0333096	Note 1	
mini-circuits	Amplifier	ZVE-3W-83+	599201528	Note 1	
ARRA	Power Divider	A3200-2	N/A	Note 1	
ET Industries	Dual Directional Coupler	C-058-10	N/A	Note 1	
Weinschel	Attenuator 2	3M-20	N/A	Note 1	

Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check
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.

12. System Verification

12.1 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.

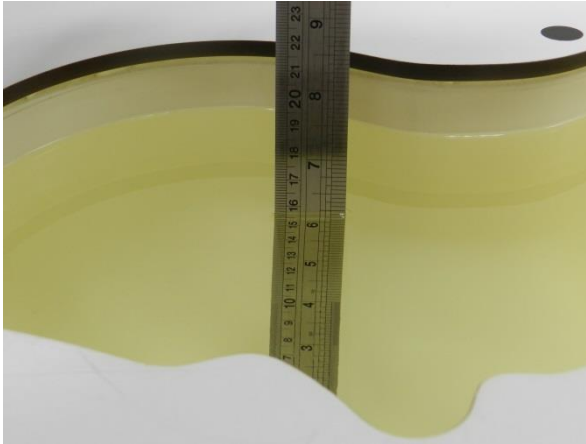


Fig 11.1 Photo of Liquid Height for Head SAR

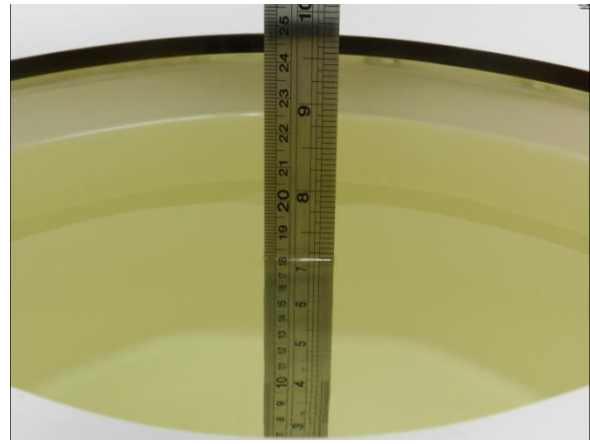


Fig 11.2 Photo of Liquid Height for Body SAR



12.2 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	22.4	0.880	40.797	0.89	41.90	-1.12	-2.63	±5	2021/5/30
750	Head	22.3	0.890	40.918	0.89	41.90	0.00	-2.34	±5	2021/6/18
835	Head	22.4	0.914	41.826	0.90	41.50	1.56	0.79	±5	2021/6/1
835	Head	22.3	0.875	40.675	0.90	41.50	-2.78	-1.99	±5	2021/6/17
835	Head	22.3	0.910	42.910	0.90	41.50	1.11	3.40	±5	2021/6/30
1750	Head	22.5	1.388	41.364	1.37	40.10	1.31	3.15	±5	2021/5/26
1750	Head	22.4	1.375	41.541	1.37	40.10	0.36	3.59	±5	2021/6/13
1750	Head	22.5	1.339	39.213	1.37	40.10	-2.26	-2.21	±5	2021/6/25
1900	Head	22.5	1.455	39.186	1.40	40.00	3.93	-2.04	±5	2021/5/28
1900	Head	22.4	1.446	39.090	1.40	40.00	3.29	-2.27	±5	2021/6/11
1900	Head	22.5	1.398	38.705	1.40	40.00	-0.14	-3.24	±5	2021/6/26
2300	Head	22.3	1.601	39.084	1.67	39.50	-4.13	-1.05	±5	2021/6/3
2300	Head	22.4	1.715	39.371	1.67	39.50	2.69	-0.33	±5	2021/6/27
2450	Head	22.5	1.850	38.466	1.80	39.20	2.78	-1.87	±5	2021/6/6
2450	Head	22.5	1.820	39.753	1.80	39.20	1.11	1.41	±5	2021/6/29
2600	Head	22.4	2.051	38.105	1.96	39.00	4.64	-2.29	±5	2021/6/4
2600	Head	22.5	1.899	39.208	1.96	39.00	-3.11	0.53	±5	2021/6/15
2600	Head	22.4	1.940	38.103	1.96	39.00	-1.02	-2.30	±5	2021/6/28
3500	Head	22.6	2.891	36.555	2.91	37.90	-0.65	-3.55	±5	2021/6/19
3500	Head	22.2	2.896	38.203	2.91	37.90	-0.48	0.80	±5	2021/7/1
3700	Head	22.6	3.041	36.281	3.12	37.70	-2.53	-3.76	±5	2021/6/20
3700	Head	22.3	3.011	36.767	3.12	37.70	-3.49	-2.47	±5	2021/7/2
3900	Head	22.7	3.198	36.062	3.33	37.51	-3.96	-3.86	±5	2021/6/21
3900	Head	22.4	3.322	39.126	3.33	37.51	-0.24	4.31	±5	2021/7/3
5250	Head	22.6	4.597	36.629	4.71	35.95	-2.40	1.89	±5	2021/6/8
5250	Head	22.6	4.565	35.648	4.71	35.95	-3.08	-0.84	±5	2021/6/22
5600	Head	22.7	5.006	36.080	5.07	35.50	-1.26	1.63	±5	2021/6/9
5600	Head	22.6	4.947	35.035	5.07	35.50	-2.43	-1.31	±5	2021/6/23
5750	Head	22.6	5.250	35.137	5.22	35.35	0.57	-0.60	±5	2021/6/10
5750	Head	22.5	5.100	34.768	5.22	35.35	-2.30	-1.65	±5	2021/6/24

12.3 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 (%)
2021/5/30	750	Head	250	1099	7375	918	2.17	8.52	8.68	1.88
2021/6/18	750	Head	250	1099	7577	360	2.13	8.52	8.52	0.00
2021/6/1	835	Head	250	4d162	7375	918	2.47	9.61	9.88	2.81
2021/6/17	835	Head	250	4d162	7577	360	2.41	9.61	9.64	0.31
2021/6/30	835	Head	250	4d162	7577	360	2.40	9.61	9.60	-0.10
2021/5/26	1750	Head	250	1137	7375	918	9.07	36.50	36.28	-0.60
2021/6/13	1750	Head	250	1137	7577	360	8.84	36.50	35.36	-3.12
2021/6/25	1750	Head	250	1137	7577	360	9.07	36.50	36.28	-0.60
2021/5/28	1900	Head	250	5d182	7375	918	9.92	39.60	39.68	0.20
2021/6/11	1900	Head	250	5d182	7577	360	9.87	39.60	39.48	-0.30
2021/6/26	1900	Head	250	5d182	7577	360	9.55	39.60	38.20	-3.54
2021/6/3	2300	Head	250	1056	7375	918	11.50	49.90	46.00	-7.82
2021/6/27	2300	Head	250	1056	7577	360	12.10	49.90	48.40	-3.01
2021/6/6	2450	Head	250	924	7375	918	12.50	51.40	50.00	-2.72
2021/6/29	2450	Head	250	924	7577	360	12.90	51.40	51.60	0.39
2021/6/4	2600	Head	250	1070	7375	918	14.40	58.10	57.60	-0.86
2021/6/15	2600	Head	250	1070	7577	360	14.20	58.10	56.80	-2.24
2021/6/28	2600	Head	250	1070	7577	360	13.80	58.10	55.20	-4.99
2021/6/19	3500	Head	100	1076	7577	360	6.61	67.90	66.10	-2.65
2021/7/1	3500	Head	100	1076	7577	360	6.27	67.90	62.70	-7.66
2021/6/20	3700	Head	100	1037	7577	360	6.59	68.50	65.90	-3.80
2021/7/2	3700	Head	100	1037	7577	360	6.38	68.50	63.80	-6.86
2021/6/21	3900	Head	100	1022	7577	360	6.46	70.50	64.60	-8.37
2021/7/3	3900	Head	100	1022	7577	360	6.65	70.50	66.50	-5.67
2021/6/8	5250	Head	100	1167	7375	918	7.27	77.00	72.70	-5.58
2021/6/22	5250	Head	100	1167	7577	360	7.42	77.00	74.20	-3.64
2021/6/9	5600	Head	100	1167	7575	918	7.80	80.80	78.00	-3.47
2021/6/23	5600	Head	100	1167	7577	360	7.99	80.80	79.90	-1.11
2021/6/10	5750	Head	100	1167	7375	918	7.48	76.90	74.80	-2.73
2021/6/24	5750	Head	100	1167	7577	360	7.74	76.90	77.40	0.65

<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 (%)
2021/5/30	750	Head	250	1099	7375	918	1.47	5.64	5.88	4.26
2021/6/18	750	Head	250	1099	7577	360	1.43	5.64	5.72	1.42
2021/6/1	835	Head	250	4d162	7375	918	1.63	6.35	6.52	2.68
2021/6/17	835	Head	250	4d162	7577	360	1.60	6.35	6.40	0.79
2021/6/30	835	Head	250	4d162	7577	360	1.58	6.35	6.32	-0.47
2021/5/26	1750	Head	250	1137	7375	918	4.88	19.50	19.52	0.10
2021/6/13	1750	Head	250	1137	7577	360	4.77	19.50	19.08	-2.15
2021/6/25	1750	Head	250	1137	7577	360	4.85	19.50	19.40	-0.51
2021/5/28	1900	Head	250	5d182	7375	918	5.11	20.70	20.44	-1.26
2021/6/11	1900	Head	250	5d182	7577	360	5.09	20.70	20.36	-1.64
2021/6/26	1900	Head	250	5d182	7577	360	4.92	20.70	19.68	-4.93
2021/6/3	2300	Head	250	1056	7375	918	5.40	23.80	21.60	-9.24
2021/6/27	2300	Head	250	1056	7577	360	5.68	23.80	22.72	-4.54
2021/6/6	2450	Head	250	924	7375	918	5.63	24.00	22.52	-6.17
2021/6/29	2450	Head	250	924	7577	360	5.84	24.00	23.36	-2.67
2021/6/4	2600	Head	250	1070	7375	918	6.22	26.10	24.88	-4.67
2021/6/15	2600	Head	250	1070	7577	360	6.19	26.10	24.76	-5.13
2021/6/28	2600	Head	250	1070	7577	360	6.05	26.10	24.20	-7.28
2021/6/19	3500	Head	100	1076	7577	360	2.50	25.30	25.00	-1.19
2021/7/1	3500	Head	100	1076	7577	360	2.38	25.30	23.80	-5.93
2021/6/20	3700	Head	100	1037	7577	360	2.41	24.80	24.10	-2.82
2021/7/2	3700	Head	100	1037	7577	360	2.32	24.80	23.20	-6.45
2021/6/21	3900	Head	100	1022	7577	360	2.24	24.60	22.40	-8.94
2021/7/3	3900	Head	100	1022	7577	360	2.33	24.60	23.30	-5.28
2021/6/8	5250	Head	100	1167	7375	918	2.05	22.00	20.50	-6.82
2021/6/22	5250	Head	100	1167	7577	360	2.12	22.00	21.20	-3.64
2021/6/9	5600	Head	100	1167	7575	918	2.12	23.20	21.20	-8.62
2021/6/23	5600	Head	100	1167	7577	360	2.28	23.20	22.80	-1.72
2021/6/10	5750	Head	100	1167	7375	918	2.01	21.60	20.10	-6.94
2021/6/24	5750	Head	100	1167	7577	360	2.21	21.60	22.10	2.31

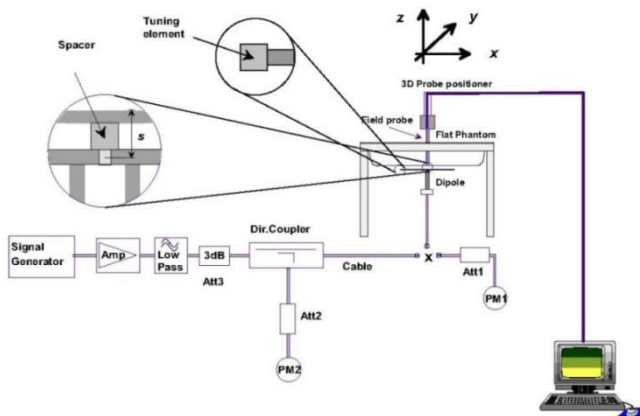


Fig 11.3.1 System Performance Check Setup



Fig 11.3.2 Setup Photo

13. RF Exposure Positions

13.1 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.

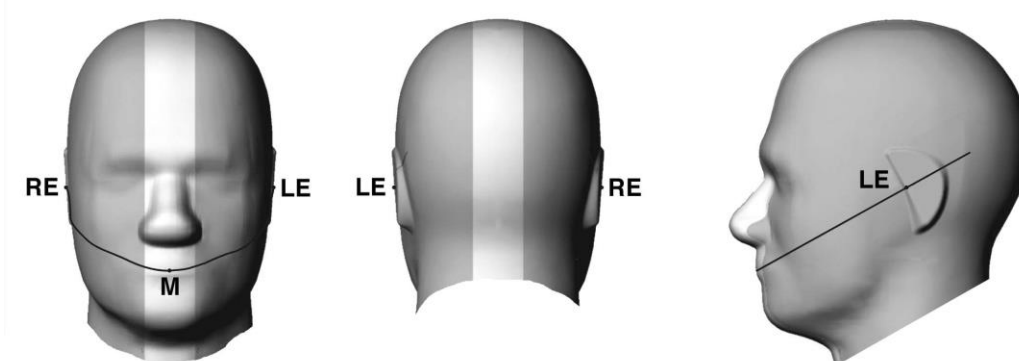


Fig 12.1.1 Front, back, and side views of SAM twin phantom

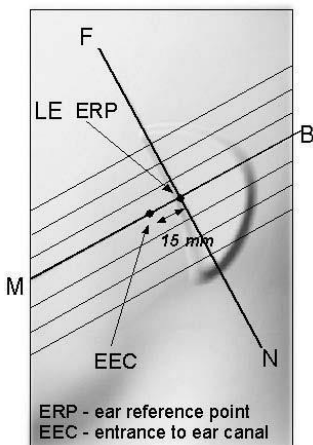


Fig 12.1.2 Close-up side view of phantom showing the ear region.

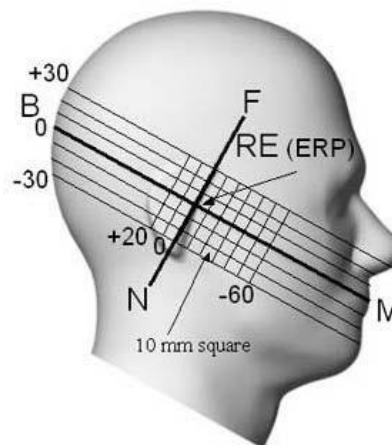


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

13.2 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 horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 12.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 12.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 12.2.3. The actual rotation angles should be documented in the test report.

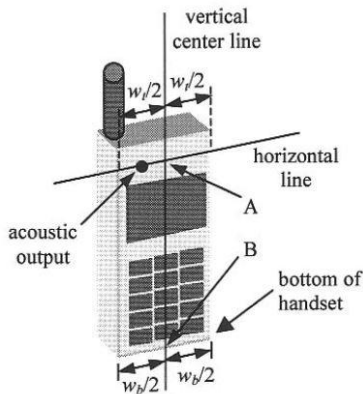


Fig 12.2.1 Handset vertical and horizontal reference lines—“fixed case”

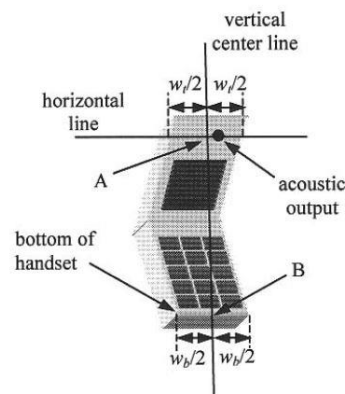


Fig 12.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

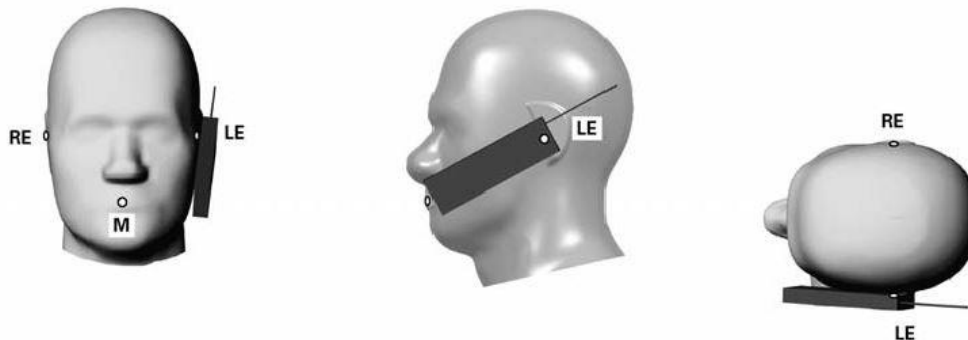


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

13.3 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

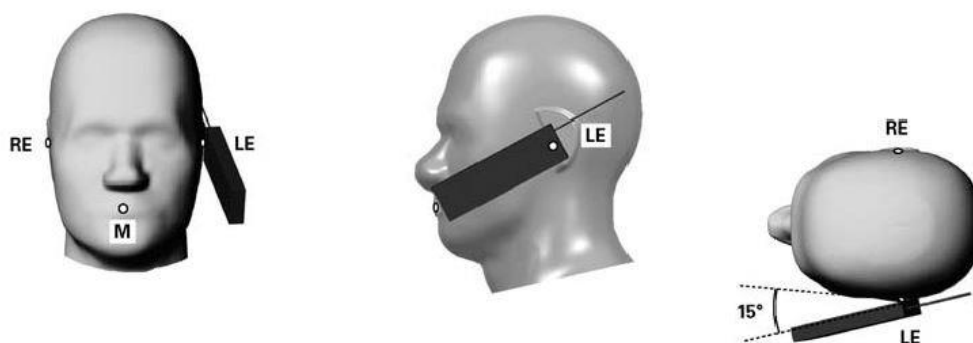


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

13.4 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 tested 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.

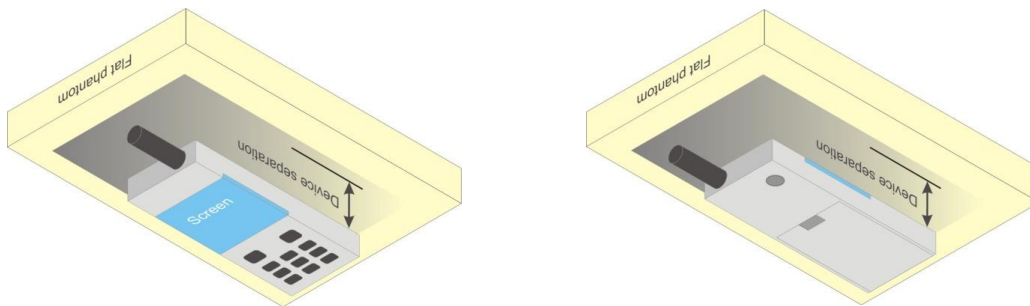


Fig 12.4 Body Worn Position



13.5 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.

13.6 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.

14. 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 and 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: $\Delta_{ACK}, \Delta_{NACK}$ 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 DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_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:

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

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	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 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, TF0) 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.		

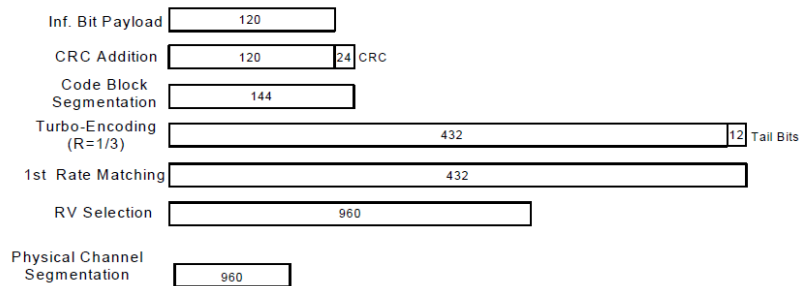


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration



<WCDMA Conducted Power>

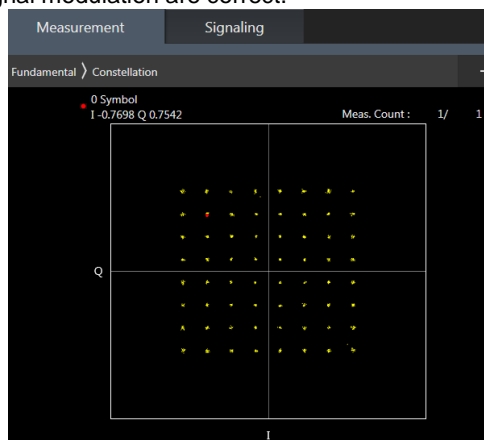
General Note:

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

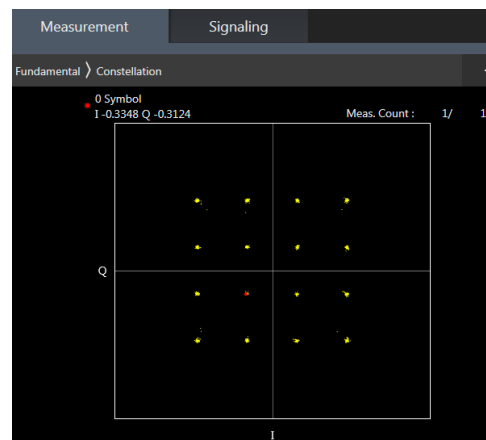
<LTE Conducted Power>

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 / B17 / B26 / B38 / B71 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 B2 /B4 / B5 / B17 / B38 SAR test was covered by LTE B25 /B66 / B26 / B12 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
 - a. the maximum output power, including tolerance, for the smaller band is \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.

- a. 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations
- b. "special subframe S" contains both uplink and downlink transmissions, it has been taken into consideration to determine the transmission duty factor according to the worst case uplink and downlink cyclic prefix requirements for UpPTS
- c. Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Anritsu MT8820C (firmware: #22.52#004) was used for LTE output power measurements and SAR testing.

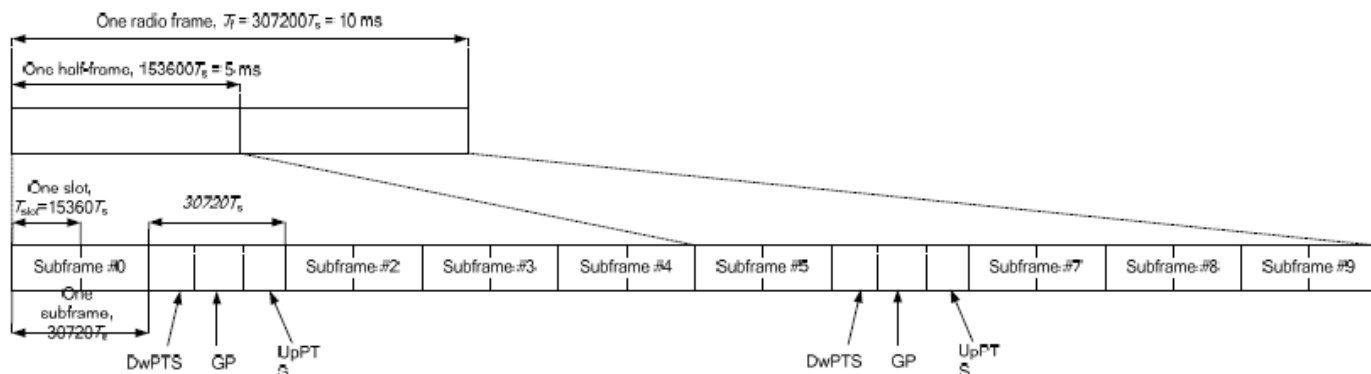


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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 2

- i. Uplink-downlink configuration: 1. In a half-frame consisted of 5 subframes, uplink operation is in 2 uplink subframes and 1 special subframe.
- ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink
- iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: $(2+0.167)/5 = 43.3\%$
- iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: $(2+0.143)/5 = 42.9\%$
- v. For TDD LTE SAR measurement, the duty cycle 1:2.33 (42.9 %) was used perform testing and considering the theoretical duty cycle of 43.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 42.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix $43.3\%/42.9\% = 1.009$ 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.

For LTE Band 41 Power class 3

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

The device can adjust uplink/downlink configuration automatically according to the transmitting power class level, as followings:

LTE TDD Band	Power Class level	support uplink/downlink configuration
LTE Band 41	> 23	1,2,3,4,5
	=23	0,1,2,3,4,5,6
	< 23	0,1,2,3,4,5,6



<LTE Carrier Aggregation>

General Note:

1. This device supports Carrier Aggregation on downlink for inter and intra band. For the device supports bands and bandwidths and configurations are provided as follow table was according to 3GPP.
2. In applying the existing power measurement procedures of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of frequency bands and CCs in each row need combination, and for this device that all the configurations were choose to power measurement.
3. All permutations exist. No restrictions on Pcell & Scell combinations. Only LTE Band 29A is limited to Scell.
4. The gray color table is covered by other combinations and no need to verify power.

2CC Downlink Carrier Aggregation					3CC Downlink Carrier Aggregation					4CC Downlink Carrier Aggregation				
Number	Combination	4X4 MIMO	Restriction	Covered by Measurement Superset	Number	Combination	4X4 MIMO	Restriction	Covered by Measurement Superset	Number	Combination	4X4 MIMO	Restriction	Covered by Measurement Superset
1	CA_2A-2A	All		3CC-1	1	CA_2A-2A-4A	2A-2A,2A-4A		4CC-1	1	CA_2A-2A-4A-12A	2A-2A,2A-4A		
2	CA_2A-4A	All		3CC-1	2	CA_2A-2A-5A	2A,2A-2A		4CC-3	2	CA_2A-2A-4A-71A	2A-2A,2A-4A		
3	CA_2A-5A	2A		3CC-2	3	CA_2A-2A-12A	2A,2A-2A		4CC-4	3	CA_2A-2A-5A-66A	2A,66A,2A-2A,2A-66A		
4	CA_2A-7A	All		3CC-12	4	CA_2A-2A-13A	2A-2A			4	CA_2A-2A-12A-66A	2A-2A		
5	CA_2A-12A	2A		3CC-3	5	CA_2A-2A-14A	2A-2A		4CC-5	5	CA_2A-2A-14A-66A	2A-2A		
6	CA_2A-13A	2A		3CC-4	6	CA_2A-2A-29A	2A-2A	B29 SCC Only		6	CA_2A-2A-66A-66A	2A-2A,2A-66A,66A-66A		
7	CA_2A-14A	2A		3CC-5	7	CA_2A-2A-30A	2A,30A,2A-2A,2A-30A			7	CA_2A-2A-66A-71A			
8	CA_2A-29A	2A	B29 SCC Only	3CC-6	8	CA_2A-2A-66A	2A,66A,2A-2A,2A-66A		4CC-5	8	CA_2A-4A-4A-12A			
9	CA_2A-30A	All		3CC-7	9	CA_2A-2A-71A	2A,2A-2A		4CC-7	9	CA_2A-4A-7A-7A	2A-4A,2A-7A,4A-7A,7A-7A		
10	CA_2A-66A	All		3CC-8	10	CA_2A-4A-4A	2A,4A,2A-4A,4A-4A		4CC-8	10	CA_2A-5A-66A-66A	2A,66A,2A-66A,66A-66A		
11	CA_2A-71A	2A		3CC-9	11	CA_2A-4A-5A	2A,4A,2A-4A			11	CA_2A-7A-7A-66A	2A-7A,2A-66A,7A-7A,7A-66A		
12	CA_2C	All		3CC-34	12	CA_2A-4A-7A	2A-4A,2A-7A,4A-7A		4CC-9	12	CA_2A-12A-66A-66A			
13	CA_4A-4A	All		3CC-36	13	CA_2A-4A-12A	2A,4A,2A-4A		4CC-8	13	CA_2A-66A-66A-71A			
14	CA_4A-5A	4A		3CC-36	14	CA_2A-4A-29A	2A,4A,2A-4A	B29 SCC Only		14	CA_2A-2A-66B	2A,2A-2A,66B		
15	CA_4A-7A	All		3CC-42	15	CA_2A-4A-30A	2A,4A			15	CA_2A-2A-66C	2A,2A-2A,66C		
16	CA_4A-12A	4A		3CC-37	16	CA_2A-4A-71A	2A,4A,2A-4A		4CC-2	16	CA_2A-12A-66C	2A,66A,66C		
17	CA_4A-29A	4A	B29 SCC Only	3CC-38	17	CA_2A-5A-7A	2A-7A			17	CA_2A-66C-71A	2A,66A,66C		
18	CA_4A-30A	All		3CC-39	18	CA_2A-5A-30A	2A,30A,2A-30A			18	CA_2C-66A-66A	66A,2C,66A-66A		
19	CA_4A-71A	4A		3CC-40	19	CA_2A-5A-66A	2A,66A,2A-66A		4CC-3	19	CA_14A-66A-66A-66A	66A-66A		
20	CA_5A-7A	7A		3CC-46	20	CA_2A-7A-7A	All		4CC-11	20	CA_25A-41D			
21	CA_5A-30A	30A		3CC-47	21	CA_2A-7A-12A	2A-7A			21	CA_41A-41D	41A		
22	CA_5A-41A	41A			22	CA_2A-7A-66A	2A-7A,2A-66A,7A-66A		4CC-11	22	CA_41C-41C	41A,41C		
23	CA_5A-66A	66A		3CC-48	23	CA_2A-12A-30A	2A,30A,2A-30A			23				
24	CA_5B			3CC-31	24	CA_2A-12A-66A	2A,66A,2A-66A		4CC-12	24				
25	CA_7A-7A	All		3CC-49	25	CA_2A-14A-30A	2A,30A,2A-30A			25				
26	CA_7A-12A	7A		3CC-51	26	CA_2A-14A-66A	2A,66A,2A-66A		4CC-5	26				
27	CA_7A-13A	7A		3CC-49	27	CA_2A-29A-30A	2A,30A,2A-30A	B29 SCC Only		27				
28	CA_7A-66A	All		3CC-50	28	CA_2A-30A-66A	2A,66A			28				
29	CA_12A-30A	30A		3CC-52	29	CA_2A-66A-66A	2A,66A,2A-66A,66A-66A		4CC-10	29				
30	CA_12A-66A	66A		3CC-53	30	CA_2A-66A-71A	2A,66A,2A-66A		4CC-7	30				
31	CA_13A-66A	66A		3CC-55	31	CA_2A-5B	2A			31				
32	CA_14A-30A	30A		3CC-56	32	CA_2A-66B	All		4CC-14	32				
33	CA_14A-66A	66A		3CC-56	33	CA_2A-66C	All		4CC-15	33				
34	CA_25A-25A	All		3CC-58	34	CA_2C-12A	2C			34				
35	CA_25A-26A	25A		3CC-58	35	CA_2C-66A	All		4CC-18	35				
36	CA_25A-41A				36	CA_4A-4A-5A	4A,4A-4A			36				
37	CA_26A-41A	41A			37	CA_4A-4A-12A	4A,4A-4A		4CC-8	37				
38	CA_29A-30A	30A	B29 SCC Only	3CC-45	38	CA_4A-4A-29A	4A-4A	B29 SCC Only		38				
39	CA_29A-66A	66A	B29 SCC Only	3CC-61	39	CA_4A-4A-30A	4A-4A,4A-30A			39				
40	CA_30A-66A	All		3CC-62	40	CA_4A-4A-71A	4A,4A-4A			40				
41	CA_41A-41A	All			41	CA_4A-5A-30A	4A,30A,4A-30A			41				
42	CA_41C	All		3CC-63	42	CA_4A-7A-7A	All		4CC-9	42				



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43	CA_66A-66A	All		3CC-65	43	CA_4A-7A-12A	4A-7A			43			
44	CA_66A-71A	66A		3CC-66	44	CA_4A-12A-30A	4A,30A,4A-30A			44			
45	CA_66B	All		3CC-67	45	CA_4A-29A-30A	4A,30A,4A-30A	B29 SCC Only		45			
46	CA_66C	All		3CC-68	46	CA_5A-7A-66A	7A-66A			46			
					47	CA_5A-30A-66A	30A,66A,30A-66A			47			
					48	CA_5A-66A-66A	66A-66A		4CC-10	48			
					49	CA_7A-7A-13A	7A-7A			49			
					50	CA_7A-7A-66A	All		4CC-11	50			
					51	CA_7A-12A-66A	7A-66A			51			
					52	CA_12A-30A-66A	30A,66A,30A-66A			52			
					53	CA_12A-66A-66A	66A,66A-66A		4CC-12	53			
					54	CA_12A-66C	66A,66C		4CC-16	54			
					55	CA_13A-66A-66A	66A-66A			55			
					56	CA_14A-30A-66A				56			
					57	CA_14A-66A-66A	66A-66A		4CC-19	57			
					58	CA_25A-25A-26A	25A,25A-25A			58			
					59	CA_25A-41C				59			
					60	CA_26A-41C	41C			60			
					61	CA_29A-66A-66A	66A-66A	B29 SCC Only		60			
					62	CA_30A-66A-66A	30A,66A			60			
					63	CA_41A-41C	All			60			
					64	CA_41D	All		4CC-20	60			
					65	CA_66A-66A-66A	66A,66A-66A		4CC-19	60			
					66	CA_66A-66A-71A	66A,66A-66A		4CC-13	60			
					67	CA_66A-66B	All			60			
					68	CA_66A-66C	All			60			
					69	CA_66C-71A	6A,66C		4CC-17	60			

LTE Carrier Aggregation Conducted Power (Downlink)

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

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

LTE 4x4 MIMO (Downlink)

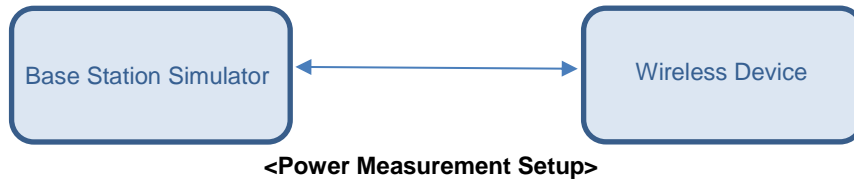
This device supports downlink 4x4 MIMO operations for LTE Bands 2/4/7/25/30/41/66 only. Uplink transmission is limited to a single output stream. Power measurements were performed with downlink 4x4 MIMO active for the configuration with highest measured maximum conducted power with 4x4 downlink MIMO inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

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

4X4 MIMO	WWAN Band
	LTE Band: B2 / B4/ B7 / B25 / B30 / B41 / B66

LTE Carrier Aggregation Conducted Power (Uplink)

1. This device supports uplink carrier aggregation for LTE CA_41C 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. 5G NR n2 / n5 / n25 / n66 / n71 / n41 / n77 / n78 is NSA mode.
2. 5G NR n2 / n25 / n66 / n71 / n41 / n77 / n78 is SA mode.
3. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
 - a. For DFT-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, the CP-OFDM mode will not higher than DFT-OFDM mode, therefore, similar FCC KDB 941225 D05 procedure for other modulation output power for each RB allocation configuration is > not ½ dB higher than the same configuration in DFT- PI/2 BPSK and the reported SAR for the DFT- PI/2 BPSK configuration is ≤ 1.45 W/kg; CP-OFDM testing is not required.
 - b. For DFT-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, for QPSK/16QAM/64QMA/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the QPSK/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 n41/ n77 supports HPUE, n41 HPUE only limit SA mode, HPUE power and SAR testing performed separately.
6. NSA and SA mode should perform SAR separately. For the maximum power of NSA mode is the same as SA total power level, so SA SAR can represent NSA mode SAR.
7. 5G NR NSA mode, the power level is the same as 5G NR SA mode, so 5G NR NSA mode and SA mode power table only show one time.
8. 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.
9. 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.

<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	$\leq 3.5^1$ $\leq 0.5^2$	$\leq 1.2^1$ $\leq 0.5^2$	$\leq 0.2^1$ 0^2
	QPSK		≤ 1	0
	16 QAM		≤ 2	≤ 1
	64 QAM		≤ 2.5	
	256 QAM		≤ 4.5	
CP-OFDM	QPSK		≤ 3	≤ 1.5
	16 QAM		≤ 3	≤ 2
	64 QAM		≤ 3.5	
	256 QAM		≤ 6.5	

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

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

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

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



EN-DC	LTE TX	NR TX
DC_5A_n2A	Ant1/ Ant0	Ant0/ Ant1
DC_7A_n2A	Ant0	Ant1
DC_12A_n2A	Ant1/ Ant0	Ant0/ Ant1
DC_13A_n2A	Ant1/ Ant0	Ant0/ Ant1
DC_71A_n2A	Ant1/ Ant0	Ant0/ Ant1
DC_66A_n2A	Ant0/ Ant1	Ant1/ Ant0
DC_2A_n5A	Ant0/ Ant1	Ant1/ Ant0
DC_66A_n5A	Ant0/ Ant1	Ant1/ Ant0
DC_7A_n5A	Ant1	Ant0/ Ant1
DC_12A_n25A	Ant1/ Ant0	Ant0/ Ant1
DC_66A_n25A	Ant0/ Ant1	Ant1/ Ant0
DC_2A_n41A	Ant1	Ant0
DC_25A_n41A	Ant1	Ant0
DC_2A_n66A	Ant0/ Ant1	Ant1/ Ant0
DC_5A_n66A	Ant1/ Ant0	Ant0/ Ant1
DC_7A_n66A	Ant0	Ant1
DC_12A_n66A	Ant1/ Ant0	Ant0/ Ant1
DC_13A_n66A	Ant1/ Ant0	Ant0/ Ant1
DC_2A_n71A	Ant0/ Ant1	Ant1/ Ant0
DC_7A_n71A	Ant0	Ant1
DC_66A_n71A	Ant0/ Ant1	Ant1/ Ant0
DC_2A_n77A	Ant0/ Ant1	Ant3
DC_5A_n77A	Ant1/ Ant0	Ant3
DC_13A_n77A	Ant1/ Ant0	Ant3
DC_66A_n77A	Ant0/ Ant1	Ant3
DC_2A_n78A	Ant0/ Ant1	Ant3
DC_5A_n78A	Ant1/ Ant0	Ant3
DC_7A_n78A	Ant0	Ant3
DC_13A_n78A	Ant1/ Ant0	Ant3
DC_66A_n78A	Ant0/ Ant1	Ant3
DC_71A_n78A	Ant1/ Ant0	Ant3



<WLAN Conducted Power>

General Note:

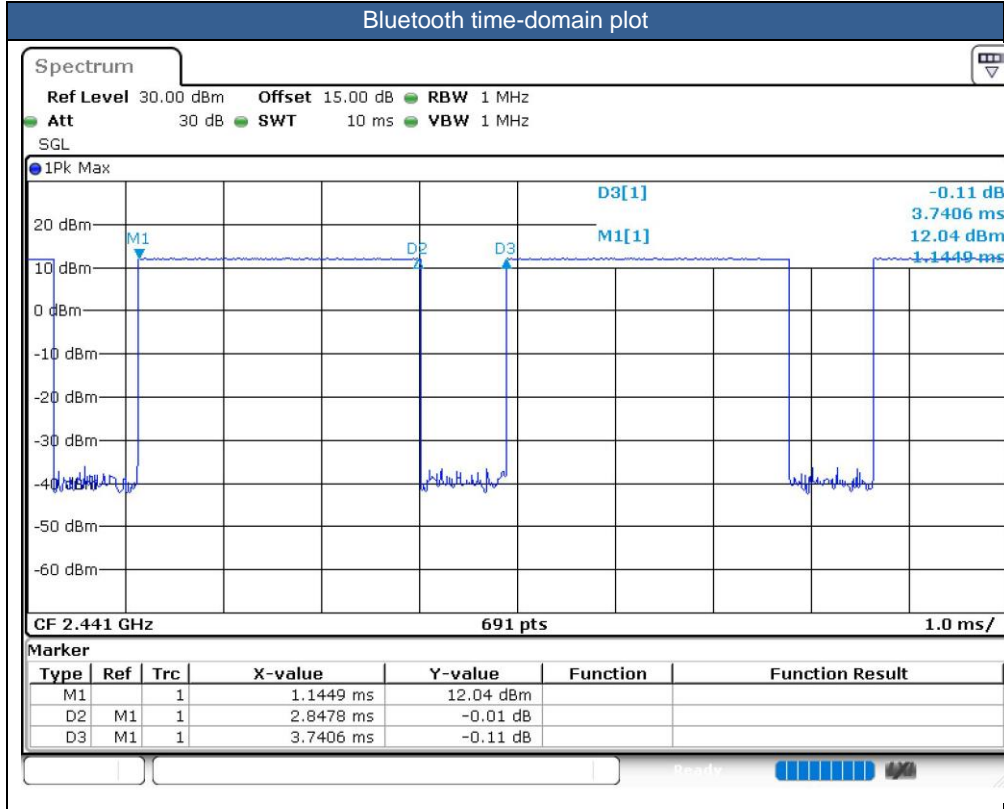
1. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. 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.
5. 802.11ax supports full tone size and partial tone size, for full tone size with higher power level, So only chose full tone size to perform SAR testing.



<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 76.13 % as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the maximum duty cycle is 100%, therefore the actual duty cycle will be scaled up to100% for Bluetooth reported SAR calculation





15. Antenna Location

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

16. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. For SAR testing of BT/WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
 - c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - d. For BT/WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
 - e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix $63.3\%/62.9\% = 1.006$ is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
 - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
 - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8 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. The device implements the power management and proximity sensor /receiver detection/hotspot mode for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity) and the Qualcomm smart transmit will manage to ensure the power level not exceeding the associated power table. Details about the power management decision and sensor detection are provided in the operational description. And the device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to power table at appendix E.
5. For WLAN when transmit simultaneous with WWAN, power reduction will be activated to head, body-worn, hotspot, extremity.
6. For some WWAN bands, receiver off/sensor on reduced power level is higher than hotspot reduced power level, so front/back receiver off SAR can represent hotspot conservatively.
7. 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 LTE and 5G NR 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 can be referred to section 18 and appendix F.
8. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
9. 5G NR n41/ n77 supports HPUE, n41 HPUE only limit SA mode, HPUE power and SAR testing performed separately.
10. NSA and SA mode should perform SAR separately. For the maximum power of NSA mode is the same as SA total power level, so SA SAR can represent NSA mode SAR.
11. 5G NR NSA mode, the power level is the same as 5G NR SA mode, so 5G NR NSA mode and SA mode power table only show one time.
12. 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.
13. 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.
14. This device supports 5G NR FR1 bands, including NSA mode and SA mode. NSA and SA mode performed SAR separately.
15. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
 - a. For this device SAR for WWAN/WLAN transmitter scaled to maximum output power mode for product specific 10g SAR is higher than 1.2 W/kg of GSM1900, WCDMA Band II/IV/V, LTE Band 2/4/5/7/13/25/26/30/66/38/41, 5G NR n2/n25/n41/n66/n77/n78, WLAN 2.4GHz/5.2GHz/5.8GHz, therefore product specific 10g SAR is necessary.
 - b. WLAN 5.3/5.5/6GHz 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.

16. The following table "n/a" means the measured SAR is too small to find the 1g/10g cube SAR.

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 and 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 ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

WCDMA Note:

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

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are \leq 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is $>$ 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is $>$ not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is \leq 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is $>$ not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is \leq 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B12 / B17 / B26 / B38 / B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE B2 / B4 / B5 / B17 / B38 SAR test was covered by LTE B25 / B66 / B26 / B12 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
 - a. the maximum output power, including tolerance, for the smaller band is \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

5G NR Note:

1. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
 - a. SAR testing start with the largest channel bandwidth and measure SAR for PI/2 BPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
 - b. 50% RB allocation for PI/2 BPSK SAR testing follows 1RB PI/2 BPSK allocation procedure.
 - c. PI/2 BPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
 - d. QPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not $\frac{1}{2}$ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK /16QAM/64QAM/256QAM SAR testing are not required.
 - e. Smaller bandwidth output power for each RB allocation configuration for this device will not $\frac{1}{2}$ 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, smaller bandwidth SAR testing is not required for this device
 - f. For 5G FR1 n5 /n66/n71/n77/n78 the maximum bandwidth does not support three non-overlapping channels, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

WLAN 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. The 2.4GHz/5GHz/6GHz WLAN can transmit in MIMO antenna mode only and it has no SISO antenna mode.

DSI status description:

The device has the following DSI state which used at different exposure condition.

This WWAN bands enabled with Qualcomm Smart Transmit feature which located at chapter 5. The default power is Pmax power, When Plimit power higher than Pmax power, the output power will be limited at Pmax, and so the SAR will use Pmax power to do the testing.

Exposure Condition	DSI
Head SAR-Standalone	DSI 2
Head SAR-Simultaneous	DSI 2
Body worn Mode SAR-Standalone	DSI 3
Body worn Mode SAR- Simultaneous	DSI 3
Hotspot Mode SAR	DSI 3
Extremity(Handheld) SAR-Standalone	DSI 6
Extremity(Handheld) SAR- Simultaneous	DSI 6
Sensor off SAR	DSI 4

16.1 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)
01	GSM850_Ant0	GPRS(3 Tx slots)	Right Cheek	DSI2(Full)	189	836.4	27.51	28.50	1.256	-0.03	0.138	0.173
	GSM850_Ant0	GPRS(3 Tx slots)	Right Tilted	DSI2(Full)	189	836.4	27.51	28.50	1.256	0.12	0.061	0.077
	GSM850_Ant0	GPRS(3 Tx slots)	Left Cheek	DSI2(Full)	189	836.4	27.51	28.50	1.256	-0.12	0.080	0.100
	GSM850_Ant0	GPRS(3 Tx slots)	Left Tilted	DSI2(Full)	189	836.4	27.51	28.50	1.256	0.16	0.057	0.072
	GSM850_Ant0	GPRS(3 Tx slots)	Right Cheek	DSI2(Full)	128	824.2	27.50	28.50	1.259	0.11	0.108	0.136
	GSM850_Ant0	GPRS(3 Tx slots)	Right Cheek	DSI2(Full)	251	848.8	27.38	28.50	1.294	0.06	0.120	0.155
02	GSM1900_Ant0	GPRS(3 Tx slots)	Right Cheek	DSI2(Full)	810	1909.8	25.28	26.50	1.324	-0.17	0.044	0.058
	GSM1900_Ant0	GPRS(3 Tx slots)	Right Tilted	DSI2(Full)	810	1909.8	25.28	26.50	1.324	0.05	0.006	0.007
	GSM1900_Ant0	GPRS(3 Tx slots)	Left Cheek	DSI2(Full)	810	1909.8	25.28	26.50	1.324	0.02	0.019	0.025
	GSM1900_Ant0	GPRS(3 Tx slots)	Left Tilted	DSI2(Full)	810	1909.8	25.28	26.50	1.324	-0.01	0.003	0.004
	GSM1900_Ant0	GPRS(3 Tx slots)	Right Cheek	DSI2(Full)	512	1850.2	25.11	26.50	1.377	0.03	0.007	0.010
	GSM1900_Ant0	GPRS(3 Tx slots)	Right Cheek	DSI2(Full)	661	1880	25.25	26.50	1.334	0.09	0.019	0.026

<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 V_Ant1	RMC 12.2Kbps	Right Cheek	DSI2(Standalone)	4182	836.4	20.95	22.00	1.274	0.09	0.577	0.735
	WCDMA V_Ant1	RMC 12.2Kbps	Right Tilted	DSI2(Standalone)	4182	836.4	20.95	22.00	1.274	-0.02	0.626	0.797
03	WCDMA V_Ant1	RMC 12.2Kbps	Left Cheek	DSI2(Standalone)	4182	836.4	20.95	22.00	1.274	-0.12	0.874	1.113
	WCDMA V_Ant1	RMC 12.2Kbps	Left Tilted	DSI2(Standalone)	4182	836.4	20.95	22.00	1.274	0.07	0.812	1.034
	WCDMA V_Ant1	RMC 12.2Kbps	Left Cheek	DSI2(Standalone)	4132	826.4	20.87	22.00	1.297	0.02	0.842	1.092
	WCDMA V_Ant1	RMC 12.2Kbps	Left Cheek	DSI2(Standalone)	4233	846.6	20.91	22.00	1.285	0.12	0.861	1.107
	WCDMA V_Ant1	RMC 12.2Kbps	Left Tilted	DSI2(Standalone)	4132	826.4	20.87	22.00	1.297	-0.04	0.758	0.983
	WCDMA V_Ant1	RMC 12.2Kbps	Left Tilted	DSI2(Standalone)	4233	846.6	20.91	22.00	1.285	-0.05	0.812	1.044
	WCDMA V_Ant1	RMC 12.2Kbps	Right Cheek	DSI2(Simultaneous)	4182	836.4	19.98	21.00	1.265	-0.1	0.475	0.601
	WCDMA V_Ant1	RMC 12.2Kbps	Right Tilted	DSI2(Simultaneous)	4182	836.4	19.98	21.00	1.265	0.09	0.509	0.644
	WCDMA V_Ant1	RMC 12.2Kbps	Left Cheek	DSI2(Simultaneous)	4182	836.4	19.98	21.00	1.265	-0.12	0.701	0.887
	WCDMA V_Ant1	RMC 12.2Kbps	Left Tilted	DSI2(Simultaneous)	4182	836.4	19.98	21.00	1.265	-0.02	0.631	0.798
	WCDMA V_Ant1	RMC 12.2Kbps	Left Cheek	DSI2(Simultaneous)	4132	826.4	19.93	21.00	1.279	0.13	0.710	0.908
	WCDMA V_Ant1	RMC 12.2Kbps	Left Cheek	DSI2(Simultaneous)	4233	846.6	19.90	21.00	1.288	0.03	0.689	0.888
	WCDMA V_Ant0	RMC 12.2Kbps	Right Cheek	DSI2(Full)	4182	836.4	24.02	25.00	1.253	0.12	0.176	0.221
	WCDMA V_Ant0	RMC 12.2Kbps	Right Tilted	DSI2(Full)	4182	836.4	24.02	25.00	1.253	0.02	0.089	0.112
	WCDMA V_Ant0	RMC 12.2Kbps	Left Cheek	DSI2(Full)	4182	836.4	24.02	25.00	1.253	0.1	0.120	0.150
	WCDMA V_Ant0	RMC 12.2Kbps	Left Tilted	DSI2(Full)	4182	836.4	24.02	25.00	1.253	0.02	0.081	0.102
	WCDMA V_Ant0	RMC 12.2Kbps	Right Cheek	DSI2(Full)	4132	826.4	24.01	25.00	1.256	0.17	0.172	0.216
	WCDMA V_Ant0	RMC 12.2Kbps	Right Cheek	DSI2(Full)	4233	846.6	24.01	25.00	1.256	-0.08	0.175	0.220
	WCDMA IV_Ant1	RMC 12.2Kbps	Right Cheek	DSI2(Standalone)	1413	1732.6	15.83	16.50	1.167	-0.01	0.521	0.608
	WCDMA IV_Ant1	RMC 12.2Kbps	Right Tilted	DSI2(Standalone)	1413	1732.6	15.83	16.50	1.167	-0.03	0.631	0.736
	WCDMA IV_Ant1	RMC 12.2Kbps	Left Cheek	DSI2(Standalone)	1413	1732.6	15.83	16.50	1.167	0.09	0.823	0.960
	WCDMA IV_Ant1	RMC 12.2Kbps	Left Tilted	DSI2(Standalone)	1413	1732.6	15.83	16.50	1.167	0.11	0.972	1.134
	WCDMA IV_Ant1	RMC 12.2Kbps	Left Cheek	DSI2(Standalone)	1312	1712.4	15.73	16.50	1.194	0.02	0.885	1.057
	WCDMA IV_Ant1	RMC 12.2Kbps	Left Cheek	DSI2(Standalone)	1513	1752.6	15.62	16.50	1.225	-0.01	0.727	0.890
04	WCDMA IV_Ant1	RMC 12.2Kbps	Left Tilted	DSI2(Standalone)	1312	1712.4	15.73	16.50	1.194	0.04	1.040	1.242
	WCDMA IV_Ant1	RMC 12.2Kbps	Left Tilted	DSI2(Standalone)	1513	1752.6	15.62	16.50	1.225	-0.07	0.864	1.058
	WCDMA IV_Ant1	RMC 12.2Kbps	Right Cheek	DSI2(Simultaneous)	1413	1732.6	14.75	15.50	1.189	-0.12	0.401	0.477
	WCDMA IV_Ant1	RMC 12.2Kbps	Right Tilted	DSI2(Simultaneous)	1413	1732.6	14.75	15.50	1.189	0.1	0.461	0.548
	WCDMA IV_Ant1	RMC 12.3Kbps	Left Cheek	DSI2(Simultaneous)	1413	1732.6	14.75	15.50	1.189	0.09	0.651	0.774
	WCDMA IV_Ant1	RMC 12.4Kbps	Left Tilted	DSI2(Simultaneous)	1413	1732.6	14.75	15.50	1.189	-0.01	0.766	0.910
	WCDMA IV_Ant1	RMC 12.7Kbps	Left Tilted	DSI2(Simultaneous)	1312	1712.4	14.73	15.50	1.194	-0.05	0.836	0.998
	WCDMA IV_Ant1	RMC 12.8Kbps	Left Tilted	DSI2(Simultaneous)	1513	1752.6	14.70	15.50	1.202	0.01	0.690	0.830



FCC SAR Test Report

Report No. : FA151701-01

Table with columns: LTE Band, Antenna, Power, Modulation, Frequency, Duty Cycle, Location, Exposure Scenario, Frequency, Power, SAR1, SAR2, SAR3, SAR4, SAR5, SAR6, SAR7, SAR8. Includes rows 08 and 09 with highlighted SAR values.

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FCC SAR Test Report

Report No. : FA151701-01

Table with columns for LTE Band, Antenna, Modulation, Power, Frequency, Location, Exposure Type, SAR Value, and others. Row 10 is highlighted in yellow.

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Table with columns: Band, Modulation, Power, Frequency, Location, Exposure Type, SAR1, SAR2, SAR3, SAR4, SAR5, SAR6, SAR7, SAR8, SAR9, SAR10. Includes rows 12, 13, and 14 with highlighted maximum SAR values.



<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)
	LTE Band 41_Ant0	20M	QPSK	1	99	Right Cheek	DSI2(Full)	40620	2593	22.97	24.00	1.268	62.9	1.006	0.03	0.033	0.041
	LTE Band 41_Ant0	20M	QPSK	1	99	Right Tilted	DSI2(Full)	40620	2593	22.97	24.00	1.268	62.9	1.006	0.1	0.029	0.036
	LTE Band 41_Ant0	20M	QPSK	1	99	Left Cheek	DSI2(Full)	40620	2593	22.97	24.00	1.268	62.9	1.006	-0.1	0.041	0.053
	LTE Band 41_Ant0	20M	QPSK	1	99	Left Tilted	DSI2(Full)	40620	2593	22.97	24.00	1.268	62.9	1.006	-0.08	0.034	0.043
	LTE Band 41_Ant0	20M	QPSK	1	99	Left Cheek	DSI2(Full)	39750	2506	22.73	24.00	1.340	62.9	1.006	0.09	0.037	0.050
	LTE Band 41_Ant0	20M	QPSK	1	99	Left Cheek	DSI2(Full)	40185	2549.5	22.90	24.00	1.288	62.9	1.006	0.09	0.037	0.048
	LTE Band 41_Ant0	20M	QPSK	1	99	Left Cheek	DSI2(Full)	41055	2636.5	22.84	24.00	1.306	62.9	1.006	0.13	0.034	0.045
	LTE Band 41_Ant0	20M	QPSK	1	99	Left Cheek	DSI2(Full)	41490	2680	22.66	24.00	1.361	62.9	1.006	0.04	0.034	0.047
	LTE Band 41C_Ant0	20M	QPSK	1	99	Left Cheek	DSI2(Full)	40620+40818	2593+2612.8	20.75	21.90	1.303	62.9	1.006	0.04	0.025	0.032
	LTE Band 41_Ant0	20M	QPSK	50	24	Right Cheek	DSI2(Full)	40620	2593	22.15	23.00	1.216	62.9	1.006	0.18	0.029	0.035
	LTE Band 41_Ant0	20M	QPSK	50	24	Right Tilted	DSI2(Full)	40620	2593	22.15	23.00	1.216	62.9	1.006	0.02	0.024	0.029
	LTE Band 41_Ant0	20M	QPSK	50	24	Left Cheek	DSI2(Full)	40620	2593	22.15	23.00	1.216	62.9	1.006	-0.01	0.034	0.042
	LTE Band 41_Ant0	20M	QPSK	50	24	Left Tilted	DSI2(Full)	40620	2593	22.15	23.00	1.216	62.9	1.006	-0.11	0.032	0.039
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Right Cheek	DSI2(Full)	40620	2593	26.14	27.00	1.219	42.9	1.009	0.06	0.052	0.064
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Right Tilted	DSI2(Full)	40620	2593	26.14	27.00	1.219	42.9	1.009	-0.07	0.043	0.053
15	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Left Cheek	DSI2(Full)	40620	2593	26.14	27.00	1.219	42.9	1.009	-0.12	0.057	0.070
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Left Tilted	DSI2(Full)	40620	2593	26.14	27.00	1.219	42.9	1.009	0.09	0.052	0.064
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Left Cheek	DSI2(Full)	39750	2506	25.91	27.00	1.285	42.9	1.009	0.17	0.048	0.062
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Left Cheek	DSI2(Full)	40185	2549.5	26.02	27.00	1.253	42.9	1.009	0.09	0.050	0.063
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Left Cheek	DSI2(Full)	41055	2636.5	26.10	27.00	1.230	42.9	1.009	0.08	0.047	0.058
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Left Cheek	DSI2(Full)	41490	2680	25.87	27.00	1.297	42.9	1.009	0.11	0.044	0.057
	LTE Band 41(HPUE)_Ant0	20M	QPSK	50	24	Right Cheek	DSI2(Full)	40620	2593	24.49	26.00	1.416	42.9	1.009	0.16	0.035	0.049
	LTE Band 41(HPUE)_Ant0	20M	QPSK	50	24	Right Tilted	DSI2(Full)	40620	2593	24.49	26.00	1.416	42.9	1.009	-0.06	0.031	0.044
	LTE Band 41(HPUE)_Ant0	20M	QPSK	50	24	Left Cheek	DSI2(Full)	40620	2593	24.49	26.00	1.416	42.9	1.009	-0.08	0.040	0.057
	LTE Band 41(HPUE)_Ant0	20M	QPSK	50	24	Left Tilted	DSI2(Full)	40620	2593	24.49	26.00	1.416	42.9	1.009	0.04	0.039	0.056



<5G NR SAR>

Table with columns: 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). Contains rows for N71_Ant 1, N5_Ant 1, and N66_Ant 1.



FCC SAR Test Report

Report No. : FA151701-01

Table with 16 columns: Antenna ID, Power, Modulation, Channels, Frequency, Polarization, Orientation, Modulation, Power Spectral Density, Power Flux Density, Specific Absorption Rate (SAR), and other parameters.

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<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Antenna	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)
	Bluetooth	DH5 1Mbps	Right Cheek	Ant 2	39	2441	11.40	12.50	1.288	76.1	1.314	0.04	0.114	0.193
	Bluetooth	DH5 1Mbps	Right Tilted	Ant 2	39	2441	11.40	12.50	1.288	76.1	1.314	0.07	0.071	0.120
	Bluetooth	DH5 1Mbps	Left Cheek	Ant 2	39	2441	11.40	12.50	1.288	76.1	1.314	-0.09	0.047	0.080
	Bluetooth	DH5 1Mbps	Left Tilted	Ant 2	39	2441	11.40	12.50	1.288	76.1	1.314	0.15	0.044	0.074
	Bluetooth	DH5 1Mbps	Right Cheek	Ant 2	0	2402	11.30	12.50	1.318	76.1	1.314	0.06	0.144	0.249
27	Bluetooth	DH5 1Mbps	Right Cheek	Ant 2	78	2480	8.30	9.50	1.318	76.1	1.314	0.1	0.146	0.253

16.2 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_Ant0	GPRS(3 Tx slots)	Front	5mm	DSI3(Full)	189	836.4	27.51	28.50	1.256	0.16	0.527	0.662
	GSM850_Ant0	GPRS(3 Tx slots)	Back	5mm	DSI3(Full)	189	836.4	27.51	28.50	1.256	0.05	0.557	0.700
	GSM850_Ant0	GPRS(3 Tx slots)	Left Side	5mm	DSI3(Full)	189	836.4	27.51	28.50	1.256	0.02	0.064	0.080
	GSM850_Ant0	GPRS(3 Tx slots)	Right Side	5mm	DSI3(Full)	189	836.4	27.51	28.50	1.256	0.03	0.133	0.167
	GSM850_Ant0	GPRS(3 Tx slots)	Bottom Side	5mm	DSI3(Full)	189	836.4	27.51	28.50	1.256	-0.02	0.481	0.604
	GSM850_Ant0	GPRS(3 Tx slots)	Back	5mm	DSI3(Full)	128	824.2	27.50	28.50	1.259	0.18	0.524	0.660
28	GSM850_Ant0	GPRS(3 Tx slots)	Back	5mm	DSI3(Full)	251	848.8	27.38	28.50	1.294	-0.03	0.566	0.733
	GSM1900_Ant0	GPRS(3 Tx slots)	Front	5mm	DSI3(Simultaneous)	810	1909.8	19.14	20.50	1.368	0.17	0.369	0.505
	GSM1900_Ant0	GPRS(3 Tx slots)	Back	5mm	DSI3(Simultaneous)	810	1909.8	19.14	20.50	1.368	-0.1	0.436	0.596
	GSM1900_Ant0	GPRS(3 Tx slots)	Left Side	5mm	DSI3(Simultaneous)	810	1909.8	19.14	20.50	1.368	-	n/a	n/a
	GSM1900_Ant0	GPRS(3 Tx slots)	Right Side	5mm	DSI3(Simultaneous)	810	1909.8	19.14	20.50	1.368	-	n/a	n/a
	GSM1900_Ant0	GPRS(3 Tx slots)	Bottom Side	5mm	DSI3(Simultaneous)	810	1909.8	19.14	20.50	1.368	-0.11	0.866	1.184
29	GSM1900_Ant0	GPRS(3 Tx slots)	Bottom Side	5mm	DSI3(Simultaneous)	512	1850.2	18.93	20.50	1.435	0.11	0.863	1.239
	GSM1900_Ant0	GPRS(3 Tx slots)	Bottom Side	5mm	DSI3(Simultaneous)	661	1880	19.12	20.50	1.374	0.07	0.852	1.171

<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 V_Ant1	RMC 12.2Kbps	Front	5mm	DS13(Simultaneous)	4182	836.4	21.78	22.50	1.180	-0.12	0.562	0.663
	WCDMA V_Ant1	RMC 12.2Kbps	Back	5mm	DS13(Simultaneous)	4182	836.4	21.78	22.50	1.180	0.18	0.675	0.797
	WCDMA V_Ant1	RMC 12.2Kbps	Left Side	5mm	DS13(Simultaneous)	4182	836.4	21.78	22.50	1.180	0.01	0.156	0.184
	WCDMA V_Ant1	RMC 12.2Kbps	Right Side	5mm	DS13(Simultaneous)	4182	836.4	21.78	22.50	1.180	0.09	0.241	0.284
	WCDMA V_Ant1	RMC 12.2Kbps	Top Side	5mm	DS13(Simultaneous)	4182	836.4	21.78	22.50	1.180	-0.02	0.805	0.950
	WCDMA V_Ant1	RMC 12.2Kbps	Top Side	5mm	DS13(Simultaneous)	4132	826.4	21.71	22.50	1.199	-0.08	0.795	0.954
	WCDMA V_Ant1	RMC 12.2Kbps	Top Side	5mm	DS13(Simultaneous)	4233	846.6	21.77	22.50	1.183	-0.06	0.839	0.993
	WCDMA V_Ant0	RMC 12.2Kbps	Front	5mm	DS13(Full)	4182	836.4	24.02	25.00	1.253	-0.04	0.748	0.937
30	WCDMA V_Ant0	RMC 12.2Kbps	Back	5mm	DS13(Full)	4182	836.4	24.02	25.00	1.253	0.11	0.910	1.140
	WCDMA V_Ant0	RMC 12.2Kbps	Left Side	5mm	DS13(Full)	4182	836.4	24.02	25.00	1.253	-0.03	0.099	0.124
	WCDMA V_Ant0	RMC 12.2Kbps	Right Side	5mm	DS13(Full)	4182	836.4	24.02	25.00	1.253	-0.11	0.166	0.208
	WCDMA V_Ant0	RMC 12.2Kbps	Bottom Side	5mm	DS13(Full)	4182	836.4	24.02	25.00	1.253	0.07	0.712	0.892
	WCDMA V_Ant0	RMC 12.2Kbps	Bottom Side	5mm	DS13(Full)	4132	826.4	24.01	25.00	1.256	-0.02	0.702	0.882
	WCDMA V_Ant0	RMC 12.2Kbps	Bottom Side	5mm	DS13(Full)	4233	846.6	24.01	25.00	1.256	0.07	0.693	0.870
	WCDMA V_Ant0	RMC 12.2Kbps	Front	5mm	DS13(Full)	4132	826.4	24.01	25.00	1.256	0.18	0.723	0.908
	WCDMA V_Ant0	RMC 12.2Kbps	Front	5mm	DS13(Full)	4233	846.6	24.01	25.00	1.256	0.06	0.689	0.865
	WCDMA V_Ant0	RMC 12.2Kbps	Back	5mm	DS13(Full)	4132	826.4	24.01	25.00	1.256	0.03	0.840	1.055
	WCDMA V_Ant0	RMC 12.2Kbps	Back	5mm	DS13(Full)	4233	846.6	24.01	25.00	1.256	0.06	0.856	1.075
	WCDMA IV_Ant1	RMC 12.2Kbps	Front	5mm	DS13(Simultaneous)	1413	1732.6	14.55	15.50	1.245	0.06	0.445	0.554
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	DS13(Simultaneous)	1413	1732.6	14.55	15.50	1.245	-0.11	0.611	0.760
	WCDMA IV_Ant1	RMC 12.2Kbps	Left Side	5mm	DS13(Simultaneous)	1413	1732.6	14.55	15.50	1.245	0.07	n/a	n/a
	WCDMA IV_Ant1	RMC 12.2Kbps	Right Side	5mm	DS13(Simultaneous)	1413	1732.6	14.55	15.50	1.245	0.02	0.058	0.072
	WCDMA IV_Ant1	RMC 12.2Kbps	Top Side	5mm	DS13(Simultaneous)	1413	1732.6	14.55	15.50	1.245	-0.15	0.762	0.948
	WCDMA IV_Ant1	RMC 12.2Kbps	Top Side	5mm	DS13(Simultaneous)	1312	1712.4	14.53	15.50	1.250	0.12	0.739	0.924
	WCDMA IV_Ant1	RMC 12.2Kbps	Top Side	5mm	DS13(Simultaneous)	1513	1752.6	14.50	15.50	1.259	0.11	0.683	0.860
	WCDMA IV_Ant0	RMC 12.2Kbps	Front	5mm	DS13(Simultaneous)	1413	1732.6	16.30	17.50	1.318	-0.04	0.508	0.670
	WCDMA IV_Ant0	RMC 12.2Kbps	Back	5mm	DS13(Simultaneous)	1413	1732.6	16.30	17.50	1.318	-0.04	0.573	0.755
	WCDMA IV_Ant0	RMC 12.2Kbps	Left Side	5mm	DS13(Simultaneous)	1413	1732.6	16.30	17.50	1.318	-	n/a	n/a
	WCDMA IV_Ant0	RMC 12.2Kbps	Right Side	5mm	DS13(Simultaneous)	1413	1732.6	16.30	17.50	1.318	0.12	0.043	0.057
31	WCDMA IV_Ant0	RMC 12.2Kbps	Bottom Side	5mm	DS13(Simultaneous)	1413	1732.6	16.30	17.50	1.318	-0.15	0.874	1.152
	WCDMA IV_Ant0	RMC 12.2Kbps	Bottom Side	5mm	DS13(Simultaneous)	1312	1712.4	16.22	17.50	1.343	0.08	0.806	1.082
	WCDMA IV_Ant0	RMC 12.2Kbps	Bottom Side	5mm	DS13(Simultaneous)	1513	1752.6	16.29	17.50	1.321	0.13	0.837	1.106
	WCDMA II_Ant1	RMC 12.2Kbps	Front	5mm	DS13(Simultaneous)	9400	1880	18.25	19.00	1.189	-0.01	0.321	0.382
	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	DS13(Simultaneous)	9400	1880	18.25	19.00	1.189	-0.13	0.541	0.643
	WCDMA II_Ant1	RMC 12.2Kbps	Left Side	5mm	DS13(Simultaneous)	9400	1880	18.25	19.00	1.189	-	n/a	n/a
	WCDMA II_Ant1	RMC 12.2Kbps	Right Side	5mm	DS13(Simultaneous)	9400	1880	18.25	19.00	1.189	0.01	0.047	0.056
	WCDMA II_Ant1	RMC 12.2Kbps	Top Side	5mm	DS13(Simultaneous)	9400	1880	18.25	19.00	1.189	0.06	0.773	0.919
	WCDMA II_Ant1	RMC 12.2Kbps	Top Side	5mm	DS13(Simultaneous)	9262	1852.4	18.24	19.00	1.191	0.15	0.838	0.998
	WCDMA II_Ant1	RMC 12.2Kbps	Top Side	5mm	DS13(Simultaneous)	9538	1907.6	18.14	19.00	1.219	0.13	0.743	0.906
	WCDMA II_Ant0	RMC 12.2Kbps	Front	5mm	DS13(Simultaneous)	9400	1880	14.81	16.00	1.315	0.01	0.339	0.446
	WCDMA II_Ant0	RMC 12.2Kbps	Back	5mm	DS13(Simultaneous)	9400	1880	14.81	16.00	1.315	-0.15	0.468	0.616
	WCDMA II_Ant0	RMC 12.2Kbps	Left Side	5mm	DS13(Simultaneous)	9400	1880	14.81	16.00	1.315	-	n/a	n/a
	WCDMA II_Ant0	RMC 12.2Kbps	Right Side	5mm	DS13(Simultaneous)	9400	1880	14.81	16.00	1.315	-	n/a	n/a
	WCDMA II_Ant0	RMC 12.2Kbps	Bottom Side	5mm	DS13(Simultaneous)	9400	1880	14.81	16.00	1.315	-0.07	0.897	1.180
	WCDMA II_Ant0	RMC 12.2Kbps	Bottom Side	5mm	DS13(Simultaneous)	9262	1852.4	14.68	16.00	1.355	0.03	0.849	1.151
32	WCDMA II_Ant0	RMC 12.2Kbps	Bottom Side	5mm	DS13(Simultaneous)	9538	1907.6	14.78	16.00	1.324	-0.11	0.935	1.238



<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)
33	LTE Band 71_Ant1	20M	QPSK	1	0	Front	5mm	DSI3(Full)	133322	683	22.95	24.00	1.274	0.18	0.390	0.497
	LTE Band 71_Ant1	20M	QPSK	1	0	Back	5mm	DSI3(Full)	133322	683	22.95	24.00	1.274	-0.08	0.561	0.714
	LTE Band 71_Ant1	20M	QPSK	1	0	Left Side	5mm	DSI3(Full)	133322	683	22.95	24.00	1.274	0.16	0.281	0.358
	LTE Band 71_Ant1	20M	QPSK	1	0	Right Side	5mm	DSI3(Full)	133322	683	22.95	24.00	1.274	0.05	0.491	0.625
	LTE Band 71_Ant1	20M	QPSK	1	0	Top Side	5mm	DSI3(Full)	133322	683	22.95	24.00	1.274	0.02	0.412	0.525
	LTE Band 71_Ant1	20M	QPSK	50	0	Front	5mm	DSI3(Full)	133322	683	21.90	23.00	1.288	-0.02	0.233	0.300
	LTE Band 71_Ant1	20M	QPSK	50	0	Back	5mm	DSI3(Full)	133322	683	21.90	23.00	1.288	0.18	0.324	0.417
	LTE Band 71_Ant1	20M	QPSK	50	0	Left Side	5mm	DSI3(Full)	133322	683	21.90	23.00	1.288	0.1	0.158	0.204
	LTE Band 71_Ant1	20M	QPSK	50	0	Right Side	5mm	DSI3(Full)	133322	683	21.90	23.00	1.288	0.14	0.292	0.376
	LTE Band 71_Ant1	20M	QPSK	50	0	Top Side	5mm	DSI3(Full)	133322	683	21.90	23.00	1.288	0.09	0.246	0.317
	LTE Band 71_Ant0	20M	QPSK	1	0	Front	5mm	DSI3(Full)	133322	683	23.46	24.50	1.271	-0.09	0.320	0.407
	LTE Band 71_Ant0	20M	QPSK	1	0	Back	5mm	DSI3(Full)	133322	683	23.46	24.50	1.271	0.12	0.471	0.598
	LTE Band 71_Ant0	20M	QPSK	1	0	Left Side	5mm	DSI3(Full)	133322	683	23.46	24.50	1.271	0.05	0.201	0.255
	LTE Band 71_Ant0	20M	QPSK	1	0	Right Side	5mm	DSI3(Full)	133322	683	23.46	24.50	1.271	0.14	0.190	0.241
	LTE Band 71_Ant0	20M	QPSK	1	0	Bottom Side	5mm	DSI3(Full)	133322	683	23.46	24.50	1.271	0.06	0.325	0.413
	LTE Band 71_Ant0	20M	QPSK	50	0	Front	5mm	DSI3(Full)	133322	683	22.56	23.50	1.242	0.11	0.184	0.228
	LTE Band 71_Ant0	20M	QPSK	50	0	Back	5mm	DSI3(Full)	133322	683	22.56	23.50	1.242	-0.07	0.283	0.351
	LTE Band 71_Ant0	20M	QPSK	50	0	Left Side	5mm	DSI3(Full)	133322	683	22.56	23.50	1.242	0.04	0.117	0.145
	LTE Band 71_Ant0	20M	QPSK	50	0	Right Side	5mm	DSI3(Full)	133322	683	22.56	23.50	1.242	0.05	0.112	0.139
	LTE Band 71_Ant0	20M	QPSK	50	0	Bottom Side	5mm	DSI3(Full)	133322	683	22.56	23.50	1.242	0.07	0.079	0.098
34	LTE Band 12_Ant1	10M	QPSK	1	25	Front	5mm	DSI3(Full)	23095	707.5	22.55	23.50	1.245	0.03	0.531	0.661
	LTE Band 12_Ant1	10M	QPSK	1	25	Back	5mm	DSI3(Full)	23095	707.5	22.55	23.50	1.245	-0.05	0.636	0.792
	LTE Band 12_Ant1	10M	QPSK	1	25	Left Side	5mm	DSI3(Full)	23095	707.5	22.55	23.50	1.245	-0.04	0.282	0.351
	LTE Band 12_Ant1	10M	QPSK	1	25	Right Side	5mm	DSI3(Full)	23095	707.5	22.55	23.50	1.245	0.11	0.504	0.627
	LTE Band 12_Ant1	10M	QPSK	1	25	Top Side	5mm	DSI3(Full)	23095	707.5	22.55	23.50	1.245	-0.03	0.613	0.763
	LTE Band 12_Ant1	10M	QPSK	25	12	Front	5mm	DSI3(Full)	23095	707.5	21.66	22.50	1.213	0.07	0.286	0.347
	LTE Band 12_Ant1	10M	QPSK	25	12	Back	5mm	DSI3(Full)	23095	707.5	21.66	22.50	1.213	-0.02	0.375	0.455
	LTE Band 12_Ant1	10M	QPSK	25	12	Left Side	5mm	DSI3(Full)	23095	707.5	21.66	22.50	1.213	0.07	0.154	0.187
	LTE Band 12_Ant1	10M	QPSK	25	12	Right Side	5mm	DSI3(Full)	23095	707.5	21.66	22.50	1.213	0.18	0.281	0.341
	LTE Band 12_Ant1	10M	QPSK	25	12	Top Side	5mm	DSI3(Full)	23095	707.5	21.66	22.50	1.213	0.06	0.393	0.477
	LTE Band 12_Ant0	10M	QPSK	1	25	Front	5mm	DSI3(Full)	23095	707.5	23.75	24.50	1.189	0.06	0.424	0.504
	LTE Band 12_Ant0	10M	QPSK	1	25	Back	5mm	DSI3(Full)	23095	707.5	23.75	24.50	1.189	-0.01	0.625	0.743
	LTE Band 12_Ant0	10M	QPSK	1	25	Left Side	5mm	DSI3(Full)	23095	707.5	23.75	24.50	1.189	-0.04	0.221	0.263
	LTE Band 12_Ant0	10M	QPSK	1	25	Right Side	5mm	DSI3(Full)	23095	707.5	23.75	24.50	1.189	-0.13	0.192	0.228
	LTE Band 12_Ant0	10M	QPSK	1	25	Bottom Side	5mm	DSI3(Full)	23095	707.5	23.75	24.50	1.189	0.12	0.398	0.473
	LTE Band 12_Ant0	10M	QPSK	25	12	Front	5mm	DSI3(Full)	23095	707.5	22.78	23.50	1.180	0.08	0.228	0.269
	LTE Band 12_Ant0	10M	QPSK	25	12	Back	5mm	DSI3(Full)	23095	707.5	22.78	23.50	1.180	0.13	0.345	0.407
	LTE Band 12_Ant0	10M	QPSK	25	12	Left Side	5mm	DSI3(Full)	23095	707.5	22.78	23.50	1.180	0.09	0.120	0.142
	LTE Band 12_Ant0	10M	QPSK	25	12	Right Side	5mm	DSI3(Full)	23095	707.5	22.78	23.50	1.180	0.01	0.104	0.123
	LTE Band 12_Ant0	10M	QPSK	25	12	Bottom Side	5mm	DSI3(Full)	23095	707.5	22.78	23.50	1.180	-0.15	0.214	0.253
	LTE Band 13_Ant1	10M	QPSK	1	25	Front	5mm	DSI3(Full)	23230	782	22.34	23.50	1.306	0.08	0.673	0.879
	LTE Band 13_Ant1	10M	QPSK	1	25	Back	5mm	DSI3(Full)	23230	782	22.34	23.50	1.306	-0.07	0.713	0.931
	LTE Band 13_Ant1	10M	QPSK	1	25	Left Side	5mm	DSI3(Full)	23230	782	22.34	23.50	1.306	0.03	0.200	0.261
	LTE Band 13_Ant1	10M	QPSK	1	25	Right Side	5mm	DSI3(Full)	23230	782	22.34	23.50	1.306	0.02	0.593	0.775
	LTE Band 13_Ant1	10M	QPSK	1	25	Top Side	5mm	DSI3(Full)	23230	782	22.34	23.50	1.306	0.03	0.748	0.977
	LTE Band 13_Ant1	10M	QPSK	25	12	Front	5mm	DSI3(Full)	23230	782	21.82	22.50	1.169	0.18	0.408	0.477
	LTE Band 13_Ant1	10M	QPSK	25	12	Back	5mm	DSI3(Full)	23230	782	21.82	22.50	1.169	0.1	0.460	0.538
	LTE Band 13_Ant1	10M	QPSK	25	12	Left Side	5mm	DSI3(Full)	23230	782	21.82	22.50	1.169	0.14	0.147	0.172
	LTE Band 13_Ant1	10M	QPSK	25	12	Right Side	5mm	DSI3(Full)	23230	782	21.82	22.50	1.169	0.11	0.335	0.392
	LTE Band 13_Ant1	10M	QPSK	25	12	Top Side	5mm	DSI3(Full)	23230	782	21.82	22.50	1.169	0.06	0.503	0.588
	LTE Band 13_Ant1	10M	QPSK	50	0	Front	5mm	DSI3(Full)	23230	782	21.83	22.50	1.167	-0.09	0.415	0.484
	LTE Band 13_Ant1	10M	QPSK	50	0	Back	5mm	DSI3(Full)	23230	782	21.83	22.50	1.167	0.05	0.454	0.530



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	LTE Band 13_Ant1	10M	QPSK	50	0	Top Side	5mm	DSI3(Full)	23230	782	21.83	22.50	1.167	-0.09	0.521	0.608
	LTE Band 13_Ant0	10M	QPSK	1	25	Front	5mm	DSI3(Full)	23230	782	23.20	24.50	1.349	0.01	0.773	1.043
35	LTE Band 13_Ant0	10M	QPSK	1	25	Back	5mm	DSI3(Full)	23230	782	23.20	24.50	1.349	0.03	0.928	1.252
	LTE Band 13_Ant0	10M	QPSK	1	25	Left Side	5mm	DSI3(Full)	23230	782	23.20	24.50	1.349	0.14	0.249	0.336
	LTE Band 13_Ant0	10M	QPSK	1	25	Right Side	5mm	DSI3(Full)	23230	782	23.20	24.50	1.349	-0.03	0.445	0.600
	LTE Band 13_Ant0	10M	QPSK	1	25	Bottom Side	5mm	DSI3(Full)	23230	782	23.20	24.50	1.349	0.17	0.698	0.942
	LTE Band 13_Ant0	10M	QPSK	25	12	Front	5mm	DSI3(Full)	23230	782	22.54	23.50	1.247	0.13	0.461	0.575
	LTE Band 13_Ant0	10M	QPSK	25	12	Back	5mm	DSI3(Full)	23230	782	22.54	23.50	1.247	0.01	0.555	0.692
	LTE Band 13_Ant0	10M	QPSK	25	12	Left Side	5mm	DSI3(Full)	23230	782	22.54	23.50	1.247	0.04	0.134	0.167
	LTE Band 13_Ant0	10M	QPSK	25	12	Right Side	5mm	DSI3(Full)	23230	782	22.54	23.50	1.247	0.16	0.268	0.334
	LTE Band 13_Ant0	10M	QPSK	25	12	Bottom Side	5mm	DSI3(Full)	23230	782	22.54	23.50	1.247	0.04	0.409	0.510
	LTE Band 13_Ant0	10M	QPSK	50	0	Front	5mm	DSI3(Full)	23230	782	22.60	23.50	1.230	-0.02	0.471	0.579
	LTE Band 13_Ant0	10M	QPSK	50	0	Back	5mm	DSI3(Full)	23230	782	22.60	23.50	1.230	-0.08	0.561	0.690
	LTE Band 13_Ant0	10M	QPSK	50	0	Bottom Side	5mm	DSI3(Full)	23230	782	22.60	23.50	1.230	0.15	0.418	0.514
	LTE Band 14_Ant1	10M	QPSK	1	25	Front	5mm	DSI3(Full)	23330	793	22.99	24.00	1.262	0.01	0.586	0.739
	LTE Band 14_Ant1	10M	QPSK	1	25	Back	5mm	DSI3(Full)	23330	793	22.99	24.00	1.262	0.09	0.707	0.892
	LTE Band 14_Ant1	10M	QPSK	1	25	Left Side	5mm	DSI3(Full)	23330	793	22.99	24.00	1.262	-0.02	0.221	0.279
	LTE Band 14_Ant1	10M	QPSK	1	25	Right Side	5mm	DSI3(Full)	23330	793	22.99	24.00	1.262	-0.08	0.470	0.593
36	LTE Band 14_Ant1	10M	QPSK	1	25	Top Side	5mm	DSI3(Full)	23330	793	22.99	24.00	1.262	0.14	0.791	0.998
	LTE Band 14_Ant1	10M	QPSK	25	12	Front	5mm	DSI3(Full)	23330	793	21.95	23.00	1.274	-0.16	0.412	0.525
	LTE Band 14_Ant1	10M	QPSK	25	12	Back	5mm	DSI3(Full)	23330	793	21.95	23.00	1.274	0.14	0.483	0.615
	LTE Band 14_Ant1	10M	QPSK	25	12	Left Side	5mm	DSI3(Full)	23330	793	21.95	23.00	1.274	-0.04	0.155	0.197
	LTE Band 14_Ant1	10M	QPSK	25	12	Right Side	5mm	DSI3(Full)	23330	793	21.95	23.00	1.274	-0.11	0.329	0.419
	LTE Band 14_Ant1	10M	QPSK	25	12	Top Side	5mm	DSI3(Full)	23330	793	21.95	23.00	1.274	0.11	0.555	0.707
	LTE Band 14_Ant1	10M	QPSK	50	0	Back	5mm	DSI3(Full)	23330	793	21.92	23.00	1.282	0.13	0.480	0.616
	LTE Band 14_Ant1	10M	QPSK	50	0	Top Side	5mm	DSI3(Full)	23330	793	21.92	23.00	1.282	0.05	0.552	0.708
	LTE Band 14_Ant0	10M	QPSK	1	25	Front	5mm	DSI3(Full)	23330	793	23.72	24.50	1.197	0.11	0.624	0.747
	LTE Band 14_Ant0	10M	QPSK	1	25	Back	5mm	DSI3(Full)	23330	793	23.72	24.50	1.197	0.08	0.730	0.874
	LTE Band 14_Ant0	10M	QPSK	1	25	Left Side	5mm	DSI3(Full)	23330	793	23.72	24.50	1.197	0.14	0.208	0.249
	LTE Band 14_Ant0	10M	QPSK	1	25	Right Side	5mm	DSI3(Full)	23330	793	23.72	24.50	1.197	-0.11	0.370	0.443
	LTE Band 14_Ant0	10M	QPSK	1	25	Bottom Side	5mm	DSI3(Full)	23330	793	23.72	24.50	1.197	-0.11	0.442	0.529
	LTE Band 14_Ant0	10M	QPSK	25	12	Front	5mm	DSI3(Full)	23330	793	22.68	23.50	1.208	0.11	0.436	0.527
	LTE Band 14_Ant0	10M	QPSK	25	12	Back	5mm	DSI3(Full)	23330	793	22.68	23.50	1.208	0.01	0.517	0.624
	LTE Band 14_Ant0	10M	QPSK	25	12	Left Side	5mm	DSI3(Full)	23330	793	22.68	23.50	1.208	0.05	0.131	0.158
	LTE Band 14_Ant0	10M	QPSK	25	12	Right Side	5mm	DSI3(Full)	23330	793	22.68	23.50	1.208	0.09	0.246	0.297
	LTE Band 14_Ant0	10M	QPSK	25	12	Bottom Side	5mm	DSI3(Full)	23330	793	22.68	23.50	1.208	0.06	0.362	0.437
	LTE Band 14_Ant0	10M	QPSK	50	0	Back	5mm	DSI3(Full)	23330	793	22.66	23.50	1.213	0.07	0.523	0.635
	LTE Band 26_Ant1	15M	QPSK	1	0	Front	5mm	DSI3(Simultaneous)	26865	831.5	21.38	22.50	1.294	0.08	0.469	0.607
	LTE Band 26_Ant1	15M	QPSK	1	0	Back	5mm	DSI3(Simultaneous)	26865	831.5	21.38	22.50	1.294	-0.03	0.529	0.685
	LTE Band 26_Ant1	15M	QPSK	1	0	Left Side	5mm	DSI3(Simultaneous)	26865	831.5	21.38	22.50	1.294	0.09	0.143	0.185
	LTE Band 26_Ant1	15M	QPSK	1	0	Right Side	5mm	DSI3(Simultaneous)	26865	831.5	21.38	22.50	1.294	0.02	0.280	0.362
	LTE Band 26_Ant1	15M	QPSK	1	0	Top Side	5mm	DSI3(Simultaneous)	26865	831.5	21.38	22.50	1.294	0.14	0.681	0.881
	LTE Band 26_Ant1	15M	QPSK	1	0	Top Side	5mm	DSI3(Simultaneous)	26765	821.5	21.31	22.50	1.315	-0.06	0.707	0.930
	LTE Band 26_Ant1	15M	QPSK	1	0	Top Side	5mm	DSI3(Simultaneous)	26965	841.5	21.32	22.50	1.312	0.14	0.758	0.995
	LTE Band 26_Ant1	15M	QPSK	36	0	Front	5mm	DSI3(Simultaneous)	26865	831.5	21.36	22.50	1.300	-0.11	0.455	0.592
	LTE Band 26_Ant1	15M	QPSK	36	0	Back	5mm	DSI3(Simultaneous)	26865	831.5	21.36	22.50	1.300	-0.09	0.522	0.679
	LTE Band 26_Ant1	15M	QPSK	36	0	Left Side	5mm	DSI3(Simultaneous)	26865	831.5	21.36	22.50	1.300	0.05	0.133	0.173
	LTE Band 26_Ant1	15M	QPSK	36	0	Right Side	5mm	DSI3(Simultaneous)	26865	831.5	21.36	22.50	1.300	-0.09	0.268	0.348
	LTE Band 26_Ant1	15M	QPSK	36	0	Top Side	5mm	DSI3(Simultaneous)	26865	831.5	21.36	22.50	1.300	-0.05	0.652	0.848
	LTE Band 26_Ant1	15M	QPSK	36	0	Top Side	5mm	DSI3(Simultaneous)	26765	821.5	21.30	22.50	1.318	-0.02	0.690	0.910
	LTE Band 26_Ant1	15M	QPSK	36	0	Top Side	5mm	DSI3(Simultaneous)	26965	841.5	21.31	22.50	1.315	-0.03	0.752	0.989
	LTE Band 26_Ant1	15M	QPSK	75	0	Top Side	5mm	DSI3(Simultaneous)	26865	831.5	21.35	22.50	1.303	0.17	0.626	0.816
	LTE Band 26_Ant0	15M	QPSK	1	74	Front	5mm	DSI3(Full)	26865	831.5	23.63	24.50	1.222	0.05	0.787	0.962
	LTE Band 26_Ant0	15M	QPSK	1	74	Back	5mm	DSI3(Full)	26865	831.5	23.63	24.50	1.222	-0.11	0.824	1.007
	LTE Band 26_Ant0	15M	QPSK	1	74	Left Side	5mm	DSI3(Full)	26865	831.5	23.63	24.50	1.222	0.07	0.112	0.137
	LTE Band 26_Ant0	15M	QPSK	1	74	Right Side	5mm	DSI3(Full)	26865	831.5	23.63	24.50	1.222	-0.02	0.150	0.183



FCC SAR Test Report

Report No. : FA151701-01

Table with columns: LTE Band, Modulation, Power, Frequency, Position, Distance, Modulation, Power Spectral Density, Power Spectral Density, Power Spectral Density, Power Spectral Density, Power Spectral Density, Power Spectral Density, Power Spectral Density, Power Spectral Density, Power Spectral Density. Includes rows for LTE Bands 26 and 66.

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FCC SAR Test Report

Report No. : FA151701-01

	LTE Band 25_Ant1	20M	QPSK	50	24	Top Side	5mm	DSI3(Simultaneous)	26340	1880	13.84	15.00	1.306	-0.05	0.643	0.840
	LTE Band 25_Ant1	20M	QPSK	50	24	Top Side	5mm	DSI3(Simultaneous)	26140	1860	13.80	15.00	1.318	0.1	0.665	0.877
	LTE Band 25_Ant1	20M	QPSK	50	24	Top Side	5mm	DSI3(Simultaneous)	26590	1905	13.74	15.00	1.337	0.09	0.724	0.968
	LTE Band 25_Ant1	20M	QPSK	100	0	Top Side	5mm	DSI3(Simultaneous)	26340	1880	13.82	15.00	1.312	0.03	0.650	0.853
	LTE Band 25_Ant0	20M	QPSK	1	0	Front	5mm	DSI3(Simultaneous)	26340	1880	13.78	15.00	1.324	0.02	0.323	0.428
	LTE Band 25_Ant0	20M	QPSK	1	0	Back	5mm	DSI3(Simultaneous)	26340	1880	13.78	15.00	1.324	-0.09	0.391	0.518
	LTE Band 25_Ant0	20M	QPSK	1	0	Left Side	5mm	DSI3(Simultaneous)	26340	1880	13.78	15.00	1.324	-	n/a	n/a
	LTE Band 25_Ant0	20M	QPSK	1	0	Right Side	5mm	DSI3(Simultaneous)	26340	1880	13.78	15.00	1.324	-	n/a	n/a
	LTE Band 25_Ant0	20M	QPSK	1	0	Bottom Side	5mm	DSI3(Simultaneous)	26340	1880	13.78	15.00	1.324	-0.1	0.766	1.014
	LTE Band 25_Ant0	20M	QPSK	1	0	Bottom Side	5mm	DSI3(Simultaneous)	26140	1860	13.75	15.00	1.334	-0.05	0.776	1.035
	LTE Band 25_Ant0	20M	QPSK	1	0	Bottom Side	5mm	DSI3(Simultaneous)	26590	1905	13.70	15.00	1.349	-0.06	0.812	1.095
	LTE Band 25_Ant0	20M	QPSK	50	24	Front	5mm	DSI3(Simultaneous)	26340	1880	13.76	15.00	1.330	0.03	0.339	0.451
	LTE Band 25_Ant0	20M	QPSK	50	24	Back	5mm	DSI3(Simultaneous)	26340	1880	13.76	15.00	1.330	-0.07	0.394	0.524
	LTE Band 25_Ant0	20M	QPSK	50	24	Left Side	5mm	DSI3(Simultaneous)	26340	1880	13.76	15.00	1.330	-	n/a	n/a
	LTE Band 25_Ant0	20M	QPSK	50	24	Right Side	5mm	DSI3(Simultaneous)	26340	1880	13.76	15.00	1.330	-	n/a	n/a
	LTE Band 25_Ant0	20M	QPSK	50	24	Bottom Side	5mm	DSI3(Simultaneous)	26340	1880	13.76	15.00	1.330	-0.04	0.804	1.070
	LTE Band 25_Ant0	20M	QPSK	50	24	Bottom Side	5mm	DSI3(Simultaneous)	26140	1860	13.72	15.00	1.343	-0.08	0.814	1.093
39	LTE Band 25_Ant0	20M	QPSK	50	24	Bottom Side	5mm	DSI3(Simultaneous)	26590	1905	13.67	15.00	1.358	0.03	0.826	1.122
	LTE Band 25_Ant0	20M	QPSK	100	0	Bottom Side	5mm	DSI3(Simultaneous)	26340	1880	13.75	15.00	1.334	0.08	0.782	1.043
	LTE Band 30_Ant0	10M	QPSK	1	0	Front	5mm	DSI3(Simultaneous)	27710	2310	16.15	17.50	1.365	-0.1	0.494	0.674
	LTE Band 30_Ant0	10M	QPSK	1	0	Back	5mm	DSI3(Simultaneous)	27710	2310	16.15	17.50	1.365	0.12	0.669	0.913
	LTE Band 30_Ant0	10M	QPSK	1	0	Left Side	5mm	DSI3(Simultaneous)	27710	2310	16.15	17.50	1.365	-	n/a	n/a
	LTE Band 30_Ant0	10M	QPSK	1	0	Right Side	5mm	DSI3(Simultaneous)	27710	2310	16.15	17.50	1.365	-0.12	0.124	0.169
40	LTE Band 30_Ant0	10M	QPSK	1	0	Bottom Side	5mm	DSI3(Simultaneous)	27710	2310	16.15	17.50	1.365	-0.07	0.857	1.169
	LTE Band 30_Ant0	10M	QPSK	25	12	Front	5mm	DSI3(Simultaneous)	27710	2310	16.14	17.50	1.368	0.15	0.485	0.663
	LTE Band 30_Ant0	10M	QPSK	25	12	Back	5mm	DSI3(Simultaneous)	27710	2310	16.14	17.50	1.368	0.17	0.655	0.896
	LTE Band 30_Ant0	10M	QPSK	25	12	Left Side	5mm	DSI3(Simultaneous)	27710	2310	16.14	17.50	1.368	-	n/a	n/a
	LTE Band 30_Ant0	10M	QPSK	25	12	Right Side	5mm	DSI3(Simultaneous)	27710	2310	16.14	17.50	1.368	-0.08	0.122	0.167
	LTE Band 30_Ant0	10M	QPSK	25	12	Bottom Side	5mm	DSI3(Simultaneous)	27710	2310	16.14	17.50	1.368	-0.02	0.835	1.142
	LTE Band 30_Ant0	10M	QPSK	50	0	Back	5mm	DSI3(Simultaneous)	27710	2310	16.10	17.50	1.380	0.15	0.488	0.674
	LTE Band 30_Ant0	10M	QPSK	50	0	Bottom Side	5mm	DSI3(Simultaneous)	27710	2310	16.10	17.50	1.380	0.05	0.649	0.896
	LTE Band 7_Ant0	20M	QPSK	1	99	Front	5mm	DSI3(Simultaneous)	21350	2560	19.05	20.00	1.245	0.16	0.527	0.656
	LTE Band 7_Ant0	20M	QPSK	1	99	Back	5mm	DSI3(Simultaneous)	21350	2560	19.05	20.00	1.245	0.12	0.658	0.819
	LTE Band 7_Ant0	20M	QPSK	1	99	Left Side	5mm	DSI3(Simultaneous)	21350	2560	19.05	20.00	1.245	-0.05	0.160	0.199
	LTE Band 7_Ant0	20M	QPSK	1	99	Right Side	5mm	DSI3(Simultaneous)	21350	2560	19.05	20.00	1.245	0.16	0.163	0.203
	LTE Band 7_Ant0	20M	QPSK	1	99	Bottom Side	5mm	DSI3(Simultaneous)	21350	2560	19.05	20.00	1.245	0.17	0.839	1.044
41	LTE Band 7_Ant0	20M	QPSK	1	99	Bottom Side	5mm	DSI3(Simultaneous)	20850	2510	18.64	20.00	1.368	-0.04	0.790	1.081
	LTE Band 7_Ant0	20M	QPSK	1	99	Bottom Side	5mm	DSI3(Simultaneous)	21100	2535	18.72	20.00	1.343	-0.08	0.770	1.034
	LTE Band 7_Ant0	20M	QPSK	1	99	Back	5mm	DSI3(Simultaneous)	20850	2510	18.64	20.00	1.368	0.01	0.580	0.793
	LTE Band 7_Ant0	20M	QPSK	1	99	Back	5mm	DSI3(Simultaneous)	21100	2535	18.72	20.00	1.343	0.12	0.623	0.837
	LTE Band 7_Ant0	20M	QPSK	50	24	Front	5mm	DSI3(Simultaneous)	21350	2560	18.92	20.00	1.282	-0.08	0.511	0.655
	LTE Band 7_Ant0	20M	QPSK	50	24	Back	5mm	DSI3(Simultaneous)	21350	2560	18.92	20.00	1.282	-0.01	0.635	0.814
	LTE Band 7_Ant0	20M	QPSK	50	24	Left Side	5mm	DSI3(Simultaneous)	21350	2560	18.92	20.00	1.282	0.16	0.155	0.199
	LTE Band 7_Ant0	20M	QPSK	50	24	Right Side	5mm	DSI3(Simultaneous)	21350	2560	18.92	20.00	1.282	0.13	0.160	0.205
	LTE Band 7_Ant0	20M	QPSK	50	24	Bottom Side	5mm	DSI3(Simultaneous)	21350	2560	18.92	20.00	1.282	0.11	0.825	1.058
	LTE Band 7_Ant0	20M	QPSK	50	24	Bottom Side	5mm	DSI3(Simultaneous)	20850	2510	18.62	20.00	1.374	0.07	0.782	1.075
	LTE Band 7_Ant0	20M	QPSK	50	24	Bottom Side	5mm	DSI3(Simultaneous)	21100	2535	18.70	20.00	1.349	-0.09	0.758	1.023
	LTE Band 7_Ant0	20M	QPSK	50	24	Back	5mm	DSI3(Simultaneous)	20850	2510	18.62	20.00	1.374	0.17	0.579	0.796
	LTE Band 7_Ant0	20M	QPSK	50	24	Back	5mm	DSI3(Simultaneous)	21100	2535	18.70	20.00	1.349	-0.01	0.604	0.815
	LTE Band 7_Ant0	20M	QPSK	100	0	Back	5mm	DSI3(Simultaneous)	21350	2560	18.85	20.00	1.303	-0.04	0.627	0.817
	LTE Band 7_Ant0	20M	QPSK	100	0	Bottom Side	5mm	DSI3(Simultaneous)	21350	2560	18.85	20.00	1.303	0.06	0.798	1.040



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N77(HPUE)_Ant 3_Part 27Q	100M	BPSK	135	69	DFT-30	Left Side	5mm	DSI3(Simultaneous)	633332	3499.98	14.75	16.00	1.334	-0.04	0.242	0.323
N77(HPUE)_Ant 3_Part 27Q	100M	BPSK	135	69	DFT-30	Right Side	5mm	DSI3(Simultaneous)	633332	3499.98	14.75	16.00	1.334	-	n/a	n/a
N77(HPUE)_Ant 3_Part 27Q	100M	BPSK	135	69	DFT-30	Top Side	5mm	DSI3(Simultaneous)	633332	3499.98	14.75	16.00	1.334	-0.09	0.081	0.108
N77(HPUE)_Ant 3_Part 27Q	100M	BPSK	270	0	DFT-30	Back	5mm	DSI3(Simultaneous)	633332	3499.98	14.72	16.00	1.343	-0.11	0.730	0.980



<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 2+4	Reduced	1	2412	14.86	16.00	1.300	100	1.000	0.08	0.095	0.124
49	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 2+4	Reduced	1	2412	14.86	16.00	1.300	100	1.000	0.06	0.293	0.381
	WLAN2.4GHz	802.11b 1Mbps	Left Side	5mm	Ant 2+4	Reduced	1	2412	14.86	16.00	1.300	100	1.000	-	n/a	n/a
	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	Ant 2+4	Reduced	1	2412	14.86	16.00	1.300	100	1.000	-	n/a	n/a
	WLAN2.4GHz	802.11b 1Mbps	Top Side	5mm	Ant 2+4	Reduced	1	2412	14.86	16.00	1.300	100	1.000	-0.01	0.125	0.163
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 2+4	Reduced	6	2437	14.76	16.00	1.330	100	1.000	0.11	0.243	0.323
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 2+4	Reduced	11	2462	14.58	16.00	1.387	100	1.000	-0.06	0.198	0.275

<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	802.11ac-VHT80 MCS0	Front	5mm	Ant 4+12	Reduced	42	5210	12.66	14.00	1.361	100	1.000	0.03	0.006	0.008
50	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 4+12	Reduced	42	5210	12.66	14.00	1.361	100	1.000	-0.12	0.253	0.344
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Left Side	5mm	Ant 4+12	Reduced	42	5210	12.66	14.00	1.361	100	1.000	0.15	0.043	0.058
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 4+12	Reduced	42	5210	12.66	14.00	1.361	100	1.000	-	n/a	n/a
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 4+12	Reduced	42	5210	12.66	14.00	1.361	100	1.000	0.02	0.057	0.077
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 4+12	Reduced	155	5775	13.46	15.00	1.426	100	1.000	0.14	0.007	0.010
51	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 4+12	Reduced	155	5775	13.46	15.00	1.426	100	1.000	0.12	0.242	0.345
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Side	5mm	Ant 4+12	Reduced	155	5775	13.46	15.00	1.426	100	1.000	-0.05	0.083	0.119
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 4+12	Reduced	155	5775	13.46	15.00	1.426	100	1.000	0.08	0.000	0.000
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 4+12	Reduced	155	5775	13.46	15.00	1.426	100	1.000	0.12	0.059	0.085

<Bluetooth 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)
	Bluetooth	DH5 1Mbps	Front	5mm	Ant 2	Full	39	2441	11.40	12.50	1.288	76.13	1.314	0.05	0.039	0.066
	Bluetooth	DH5 1Mbps	Back	5mm	Ant 2	Full	39	2441	11.40	12.50	1.288	76.13	1.314	0.01	0.051	0.086
	Bluetooth	DH5 1Mbps	Left Side	5mm	Ant 2	Full	39	2441	11.40	12.50	1.288	76.13	1.314	-	n/a	n/a
	Bluetooth	DH5 1Mbps	Right Side	5mm	Ant 2	Full	39	2441	11.40	12.50	1.288	76.13	1.314	-	n/a	n/a
	Bluetooth	DH5 1Mbps	Top Side	5mm	Ant 2	Full	39	2441	11.40	12.50	1.288	76.13	1.314	0.06	0.048	0.081
	Bluetooth	DH5 1Mbps	Back	5mm	Ant 2	Full	0	2402	11.30	12.50	1.318	76.13	1.314	0.11	0.065	0.113
52	Bluetooth	DH5 1Mbps	Back	5mm	Ant 2	Full	78	2480	8.30	9.50	1.318	76.13	1.314	-0.14	0.0721	0.125



16.3 Body Worn Accessory SAR

<GSM 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)
	GSM850_Ant0	GPRS(3 Tx slots)	Front	5mm	-	DSI4(Full)	189	836.4	27.51	28.50	1.256	0.16	0.527	0.662
	GSM850_Ant0	GPRS(3 Tx slots)	Back	5mm	-	DSI4(Full)	189	836.4	27.51	28.50	1.256	0.05	0.557	0.700
	GSM850_Ant0	GPRS(3 Tx slots)	Back	5mm	-	DSI4(Full)	128	824.2	27.50	28.50	1.259	0.18	0.524	0.660
53	GSM850_Ant0	GPRS(3 Tx slots)	Back	5mm	-	DSI4(Full)	251	848.8	27.38	28.50	1.294	-0.03	0.566	0.733
	GSM1900_Ant0	GPRS(3 Tx slots)	Front	5mm	-	DSI3(Standalone)	810	1909.8	21.51	23.00	1.409	0.1	0.692	0.975
54	GSM1900_Ant0	GPRS(3 Tx slots)	Back	5mm	-	DSI3(Standalone)	810	1909.8	21.51	23.00	1.409	0.1	0.824	1.161
	GSM1900_Ant0	GPRS(3 Tx slots)	Front	5mm	-	DSI3(Standalone)	512	1850.2	21.43	23.00	1.435	-0.03	0.647	0.929
	GSM1900_Ant0	GPRS(3 Tx slots)	Front	5mm	-	DSI3(Standalone)	661	1880	21.44	23.00	1.432	0.17	0.609	0.872
	GSM1900_Ant0	GPRS(3 Tx slots)	Back	5mm	-	DSI3(Standalone)	512	1850.2	21.43	23.00	1.435	-0.04	0.770	1.105
	GSM1900_Ant0	GPRS(3 Tx slots)	Back	5mm	-	DSI3(Standalone)	661	1880	21.44	23.00	1.432	0.03	0.769	1.101
	GSM1900_Ant0	GPRS(3 Tx slots)	Front	16mm	-	DSI4(Full)	810	1909.8	25.28	26.50	1.324	0.16	0.293	0.388
	GSM1900_Ant0	GPRS(3 Tx slots)	Back	27mm	-	DSI4(Full)	810	1909.8	25.28	26.50	1.324	-0.04	0.235	0.311
	GSM1900_Ant0	GPRS(3 Tx slots)	Front	5mm	-	DSI3(Simultaneous)	810	1909.8	19.14	20.50	1.368	0.17	0.369	0.505
	GSM1900_Ant0	GPRS(3 Tx slots)	Back	5mm	-	DSI3(Simultaneous)	810	1909.8	19.14	20.50	1.368	-0.1	0.436	0.596
	GSM1900_Ant0	GPRS(3 Tx slots)	Back	5mm	-	DSI3(Simultaneous)	512	1850.2	18.93	20.50	1.435	-0.06	0.410	0.589
	GSM1900_Ant0	GPRS(3 Tx slots)	Back	5mm	-	DSI3(Simultaneous)	661	1880	19.12	20.50	1.374	0.12	0.415	0.570

<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 V_Ant1	RMC 12.2Kbps	Front	5mm	-	DSI4(Full)	4182	836.4	23.22	24.00	1.197	0.04	0.747	0.894
	WCDMA V_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI4(Full)	4182	836.4	23.22	24.00	1.197	-0.09	0.912	1.091
	WCDMA V_Ant1	RMC 12.2Kbps	Front	5mm	-	DSI4(Full)	4132	826.4	23.13	24.00	1.222	0.01	0.778	0.951
	WCDMA V_Ant1	RMC 12.2Kbps	Front	5mm	-	DSI4(Full)	4233	846.6	23.21	24.00	1.199	-0.11	0.828	0.993
	WCDMA V_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI4(Full)	4132	826.4	23.13	24.00	1.222	0.08	0.849	1.037
	WCDMA V_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI4(Full)	4233	846.6	23.21	24.00	1.199	-0.07	0.921	1.105
	WCDMA V_Ant1	RMC 12.2Kbps	Front	5mm	-	DSI3(Simultaneous)	4182	836.4	21.78	22.50	1.180	-0.12	0.562	0.663
	WCDMA V_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI3(Simultaneous)	4182	836.4	21.78	22.50	1.180	0.18	0.683	0.806
	WCDMA V_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI3(Simultaneous)	4132	826.4	21.71	22.50	1.199	0.03	0.652	0.782
	WCDMA V_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI3(Simultaneous)	4233	846.6	21.77	22.50	1.183	-0.02	0.709	0.839
	WCDMA V_Ant0	RMC 12.2Kbps	Front	5mm	-	DSI4(Full)	4182	836.4	24.02	25.00	1.253	-0.04	0.748	0.937
55	WCDMA V_Ant0	RMC 12.2Kbps	Back	5mm	-	DSI4(Full)	4182	836.4	24.02	25.00	1.253	0.11	0.910	1.140
	WCDMA V_Ant0	RMC 12.2Kbps	Front	5mm	-	DSI4(Full)	4132	826.4	24.01	25.00	1.256	0.18	0.723	0.908
	WCDMA V_Ant0	RMC 12.2Kbps	Front	5mm	-	DSI4(Full)	4233	846.6	24.01	25.00	1.256	0.06	0.689	0.865
	WCDMA V_Ant0	RMC 12.2Kbps	Back	5mm	-	DSI4(Full)	4132	826.4	24.01	25.00	1.256	0.03	0.840	1.055
	WCDMA V_Ant0	RMC 12.2Kbps	Back	5mm	-	DSI4(Full)	4233	846.6	24.01	25.00	1.256	0.06	0.856	1.075
	WCDMA IV_Ant1	RMC 12.2Kbps	Front	5mm	-	DSI3(Standalone)	1413	1732.6	16.71	17.50	1.199	-0.02	0.761	0.913
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI3(Standalone)	1413	1732.6	16.71	17.50	1.199	-0.08	0.989	1.186
	WCDMA IV_Ant1	RMC 12.2Kbps	Front	5mm	-	DSI3(Standalone)	1312	1712.4	16.69	17.50	1.205	-0.07	0.801	0.965
	WCDMA IV_Ant1	RMC 12.2Kbps	Front	5mm	-	DSI3(Standalone)	1513	1752.6	16.58	17.50	1.236	-0.12	0.675	0.834
56	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI3(Standalone)	1312	1712.4	16.69	17.50	1.205	-0.07	1.030	1.241
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI3(Standalone)	1513	1752.6	16.58	17.50	1.236	0.16	0.943	1.165
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	Headset	DSI3(Standalone)	1312	1712.4	16.69	17.50	1.205	0.05	0.980	1.181
	WCDMA IV_Ant1	RMC 12.2Kbps	Front	16mm	-	DSI4(Full)	1312	1712.4	21.51	22.50	1.256	0.02	0.477	0.599
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	27mm	-	DSI4(Full)	1312	1712.4	21.51	22.50	1.256	0.03	0.342	0.430
	WCDMA IV_Ant1	RMC 12.2Kbps	Front	5mm	-	DSI3(Simultaneous)	1413	1732.6	14.55	15.50	1.245	0.06	0.445	0.554
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI3(Simultaneous)	1413	1732.6	14.55	15.50	1.245	-0.11	0.611	0.760
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI3(Simultaneous)	1312	1712.4	14.53	15.50	1.250	0.01	0.617	0.771
	WCDMA IV_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI3(Simultaneous)	1513	1752.6	14.50	15.50	1.259	0.17	0.547	0.689



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	WCDMA IV_Ant0	RMC 12.2Kbps	Front	5mm	-	DSI3(Standalone)	1413	1732.6	18.38	19.50	1.294	0.12	0.850	1.100
	WCDMA IV_Ant0	RMC 12.2Kbps	Back	5mm	-	DSI3(Standalone)	1413	1732.6	18.38	19.50	1.294	0.08	0.953	1.233
	WCDMA IV_Ant0	RMC 12.2Kbps	Front	5mm	-	DSI3(Standalone)	1312	1712.4	18.29	19.50	1.321	-0.07	0.802	1.060
	WCDMA IV_Ant0	RMC 12.2Kbps	Front	5mm	-	DSI3(Standalone)	1513	1752.6	18.28	19.50	1.324	0.03	0.820	1.086
	WCDMA IV_Ant0	RMC 12.2Kbps	Back	5mm	-	DSI3(Standalone)	1312	1712.4	18.29	19.50	1.321	0.15	0.844	1.115
	WCDMA IV_Ant0	RMC 12.2Kbps	Back	5mm	-	DSI3(Standalone)	1513	1752.6	18.28	19.50	1.324	0.04	0.881	1.167
	WCDMA IV_Ant0	RMC 12.2Kbps	Back	5mm	Headset	DSI3(Standalone)	1413	1732.6	18.38	19.50	1.303	-0.09	0.725	0.938
	WCDMA IV_Ant0	RMC 12.2Kbps	Front	16mm	-	DSI4(Full)	1413	1732.6	23.10	24.00	1.230	0.01	0.532	0.655
	WCDMA IV_Ant0	RMC 12.2Kbps	Back	27mm	-	DSI4(Full)	1413	1732.6	23.10	24.00	1.230	-0.11	0.390	0.480
	WCDMA IV_Ant0	RMC 12.2Kbps	Front	5mm	-	DSI3(Simultaneous)	1413	1732.6	16.30	17.50	1.318	-0.04	0.508	0.670
	WCDMA IV_Ant0	RMC 12.2Kbps	Back	5mm	-	DSI3(Simultaneous)	1413	1732.6	16.30	17.50	1.318	-0.04	0.573	0.755
	WCDMA IV_Ant0	RMC 12.2Kbps	Back	5mm	-	DSI3(Simultaneous)	1312	1712.4	16.22	17.50	1.343	0.09	0.537	0.721
	WCDMA IV_Ant0	RMC 12.2Kbps	Back	5mm	-	DSI3(Simultaneous)	1513	1752.6	16.29	17.50	1.321	0.01	0.560	0.740
	WCDMA II_Ant1	RMC 12.2Kbps	Front	5mm	-	DSI3(Standalone)	9400	1880	19.35	20.50	1.303	0.1	0.398	0.519
	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI3(Standalone)	9400	1880	19.35	20.50	1.303	0.08	0.681	0.887
	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI3(Standalone)	9262	1852.4	19.13	20.50	1.371	0.11	0.812	1.113
	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI3(Standalone)	9538	1907.6	19.25	20.50	1.334	0.06	0.629	0.839
	WCDMA II_Ant1	RMC 12.2Kbps	Front	16mm	-	DSI4(Full)	9400	1880	21.52	22.50	1.253	-0.04	0.298	0.373
	WCDMA II_Ant1	RMC 12.2Kbps	Back	27mm	-	DSI4(Full)	9262	1852.4	21.46	22.50	1.271	0.13	0.096	0.122
	WCDMA II_Ant1	RMC 12.2Kbps	Front	5mm	-	DSI3(Simultaneous)	9400	1880	18.25	19.00	1.189	-0.01	0.321	0.382
	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI3(Simultaneous)	9400	1880	18.25	19.00	1.189	-0.13	0.541	0.643
	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI3(Simultaneous)	9262	1852.4	18.24	19.00	1.191	-0.02	0.746	0.889
	WCDMA II_Ant1	RMC 12.2Kbps	Back	5mm	-	DSI3(Simultaneous)	9538	1907.6	18.14	19.00	1.219	0.04	0.536	0.653
	WCDMA II_Ant0	RMC 12.2Kbps	Front	5mm	-	DSI3(Standalone)	9400	1880	17.26	18.50	1.330	0.18	0.644	0.857
	WCDMA II_Ant0	RMC 12.2Kbps	Back	5mm	-	DSI3(Standalone)	9400	1880	17.26	18.50	1.330	0.07	0.848	1.128
	WCDMA II_Ant0	RMC 12.2Kbps	Front	5mm	-	DSI3(Standalone)	9262	1852.4	17.15	18.50	1.365	-0.02	0.614	0.838
	WCDMA II_Ant0	RMC 12.2Kbps	Front	5mm	-	DSI3(Standalone)	9538	1907.6	17.21	18.50	1.346	0.16	0.683	0.919
	WCDMA II_Ant0	RMC 12.2Kbps	Back	5mm	-	DSI3(Standalone)	9262	1852.4	17.15	18.50	1.365	-0.11	0.804	1.097
57	WCDMA II_Ant0	RMC 12.2Kbps	Back	5mm	-	DSI3(Standalone)	9538	1907.6	17.21	18.50	1.346	0.12	0.909	1.223
	WCDMA II_Ant0	RMC 12.2Kbps	Back	5mm	Headset	DSI3(Standalone)	9538	1907.6	17.21	18.50	1.346	-0.09	0.654	0.880
	WCDMA II_Ant0	RMC 12.2Kbps	Front	16mm	-	DSI4(Full)	9538	1907.6	22.83	24.00	1.309	-0.05	0.555	0.727
	WCDMA II_Ant0	RMC 12.2Kbps	Back	27mm	-	DSI4(Full)	9538	1907.6	22.83	24.00	1.309	0.05	0.442	0.579
	WCDMA II_Ant0	RMC 12.2Kbps	Front	5mm	-	DSI3(Simultaneous)	9400	1880	14.81	16.00	1.315	0.01	0.339	0.446
	WCDMA II_Ant0	RMC 12.2Kbps	Back	5mm	-	DSI3(Simultaneous)	9400	1880	14.81	16.00	1.315	-0.15	0.468	0.616
	WCDMA II_Ant0	RMC 12.2Kbps	Back	5mm	-	DSI3(Simultaneous)	9262	1852.4	14.68	16.00	1.355	0.04	0.464	0.629
	WCDMA II_Ant0	RMC 12.2Kbps	Back	5mm	-	DSI3(Simultaneous)	9538	1907.6	14.78	16.00	1.324	0.11	0.486	0.644



<FDD LTE SAR>

Table with columns: 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). Rows include bands 71, 12, 13, 14, and 26.



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	LTE Band 30_Ant0	10M	QPSK	25	12	Back	5mm	-	DSI3(Standalone)	27710	2310	17.16	18.50	1.361	-0.02	0.874	1.190
	LTE Band 30_Ant0	10M	QPSK	25	12	Front	16mm	-	DSI4(Full)	27710	2310	20.95	22.50	1.429	-0.03	0.148	0.211
	LTE Band 30_Ant0	10M	QPSK	25	12	Back	27mm	-	DSI4(Full)	27710	2310	20.95	22.50	1.429	0.07	0.113	0.161
	LTE Band 30_Ant0	10M	QPSK	50	0	Front	5mm	-	DSI3(Standalone)	27710	2310	17.12	18.50	1.374	-0.12	0.611	0.840
	LTE Band 30_Ant0	10M	QPSK	50	0	Back	5mm	-	DSI3(Standalone)	27710	2310	17.12	18.50	1.374	-0.12	0.851	1.169
	LTE Band 30_Ant0	10M	QPSK	1	0	Front	5mm	-	DSI3(Simultaneous)	27710	2310	16.15	17.50	1.365	-0.1	0.494	0.674
	LTE Band 30_Ant0	10M	QPSK	1	0	Back	5mm	-	DSI3(Simultaneous)	27710	2310	16.15	17.50	1.365	0.12	0.669	0.913
	LTE Band 30_Ant0	10M	QPSK	25	12	Front	5mm	-	DSI3(Simultaneous)	27710	2310	16.14	17.50	1.368	0.15	0.485	0.663
	LTE Band 30_Ant0	10M	QPSK	25	12	Back	5mm	-	DSI3(Simultaneous)	27710	2310	16.14	17.50	1.368	0.17	0.655	0.896
	LTE Band 30_Ant0	10M	QPSK	50	0	Back	5mm	-	DSI3(Simultaneous)	27710	2310	16.10	17.50	1.380	0.15	0.488	0.674
	LTE Band 7_Ant0	20M	QPSK	1	99	Front	5mm	-	DSI3(Standalone)	21350	2560	20.41	21.50	1.285	-0.12	0.725	0.932
	LTE Band 7_Ant0	20M	QPSK	1	99	Back	5mm	-	DSI3(Standalone)	21350	2560	20.41	21.50	1.285	-0.03	0.928	1.193
	LTE Band 7_Ant0	20M	QPSK	1	99	Front	5mm	-	DSI3(Standalone)	20850	2510	20.20	21.50	1.349	0.15	0.663	0.894
	LTE Band 7_Ant0	20M	QPSK	1	99	Front	5mm	-	DSI3(Standalone)	21100	2535	20.20	21.50	1.349	-0.06	0.686	0.925
	LTE Band 7_Ant0	20M	QPSK	1	99	Back	5mm	-	DSI3(Standalone)	20850	2510	20.20	21.50	1.349	0.16	0.793	1.070
	LTE Band 7_Ant0	20M	QPSK	1	99	Back	5mm	-	DSI3(Standalone)	21100	2535	20.20	21.50	1.349	-0.11	0.865	1.167
	LTE Band 7_Ant0	20M	QPSK	1	99	Front	16mm	-	DSI4(Full)	21350	2560	23.03	24.00	1.250	0.07	0.403	0.504
	LTE Band 7_Ant0	20M	QPSK	1	99	Back	27mm	-	DSI4(Full)	21350	2560	23.03	24.00	1.250	0.09	0.255	0.319
	LTE Band 7_Ant0	20M	QPSK	50	24	Front	5mm	-	DSI3(Standalone)	21350	2560	20.37	21.50	1.297	0.03	0.748	0.970
66	LTE Band 7_Ant0	20M	QPSK	50	24	Back	5mm	-	DSI3(Standalone)	21350	2560	20.37	21.50	1.297	0.06	0.953	1.236
	LTE Band 7_Ant0	20M	QPSK	50	24	Front	5mm	-	DSI3(Standalone)	20850	2510	20.15	21.50	1.365	0.05	0.670	0.914
	LTE Band 7_Ant0	20M	QPSK	50	24	Front	5mm	-	DSI3(Standalone)	21100	2535	20.17	21.50	1.358	0.13	0.706	0.959
	LTE Band 7_Ant0	20M	QPSK	50	24	Back	5mm	-	DSI3(Standalone)	20850	2510	20.15	21.50	1.365	-0.04	0.825	1.126
	LTE Band 7_Ant0	20M	QPSK	50	24	Back	5mm	-	DSI3(Standalone)	21100	2535	20.17	21.50	1.358	0.02	0.891	1.210
	LTE Band 7_Ant0	20M	QPSK	50	24	Back	5mm	Headset	DSI3(Standalone)	21350	2560	20.37	21.50	1.297	0.14	0.903	1.171
	LTE Band 7_Ant0	20M	QPSK	50	24	Front	16mm	-	DSI4(Full)	21350	2560	22.15	23.00	1.216	0.05	0.229	0.279
	LTE Band 7_Ant0	20M	QPSK	50	24	Back	27mm	-	DSI4(Full)	21350	2560	22.15	23.00	1.216	-0.05	0.141	0.171
	LTE Band 7_Ant0	20M	QPSK	100	0	Front	5mm	-	DSI3(Standalone)	21350	2560	20.28	21.50	1.324	0.05	0.692	0.916
	LTE Band 7_Ant0	20M	QPSK	100	0	Back	5mm	-	DSI3(Standalone)	21350	2560	20.28	21.50	1.324	-0.06	0.905	1.199
	LTE Band 7_Ant0	20M	QPSK	1	99	Front	5mm	-	DSI3(Simultaneous)	21350	2560	19.05	20.00	1.245	0.16	0.527	0.656
	LTE Band 7_Ant0	20M	QPSK	1	99	Back	5mm	-	DSI3(Simultaneous)	21350	2560	19.05	20.00	1.245	0.12	0.658	0.819
	LTE Band 7_Ant0	20M	QPSK	1	99	Back	5mm	-	DSI3(Simultaneous)	20850	2510	18.64	20.00	1.368	0.01	0.580	0.793
	LTE Band 7_Ant0	20M	QPSK	1	99	Back	5mm	-	DSI3(Simultaneous)	21100	2535	18.72	20.00	1.343	0.12	0.623	0.837
	LTE Band 7_Ant0	20M	QPSK	50	24	Front	5mm	-	DSI3(Simultaneous)	21350	2560	18.92	20.00	1.282	-0.08	0.511	0.655
	LTE Band 7_Ant0	20M	QPSK	50	24	Back	5mm	-	DSI3(Simultaneous)	21350	2560	18.92	20.00	1.282	-0.01	0.635	0.814
	LTE Band 7_Ant0	20M	QPSK	50	24	Back	5mm	-	DSI3(Simultaneous)	20850	2510	18.62	20.00	1.374	0.17	0.579	0.796
	LTE Band 7_Ant0	20M	QPSK	50	24	Back	5mm	-	DSI3(Simultaneous)	21100	2535	18.70	20.00	1.349	-0.01	0.604	0.815
	LTE Band 7_Ant0	20M	QPSK	100	0	Back	5mm	-	DSI3(Simultaneous)	21350	2560	18.85	20.00	1.303	-0.04	0.627	0.817



Table with columns for antenna ID, power, modulation, frequency, time, location, distance, antenna type, antenna size, antenna orientation, antenna type, power, SAR value, SAR value, SAR value, SAR value, SAR value, SAR value, SAR value, SAR value.



N77(HPUE)_Ant 3_Part 27Q	100M	BPSK	135	69	DFT-30	Back	5mm	-	DS13(Simultaneous)	633332	3499.98	14.75	16.00	1.334	-0.08	0.739	0.985
N77(HPUE)_Ant 3_Part 27Q	100M	BPSK	270	0	DFT-30	Back	5mm	-	DS13(Simultaneous)	633332	3499.98	14.72	16.00	1.343	-0.11	0.730	0.980

<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 2+4	Standalone	1	2412	20.51	21.50	1.256	100	1.000	-0.06	0.276	0.347
74	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 2+4	Standalone	1	2412	20.51	21.50	1.256	100	1.000	-0.13	0.924	1.161
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 2+4	Standalone	6	2437	20.46	21.50	1.271	100	1.000	0.05	0.743	0.944
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 2+4	Standalone	11	2462	20.37	21.50	1.297	100	1.000	0.06	0.522	0.677
	WLAN2.4GHz	802.11b 1Mbps	Front	16mm	Ant 2+4	Full	1	2412	21.66	22.50	1.213	100	1.000	0.01	0.079	0.096
	WLAN2.4GHz	802.11b 1Mbps	Back	27mm	Ant 2+4	Full	1	2412	21.66	22.50	1.213	100	1.000	0.02	0.085	0.103
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 2+4	Simultaneous	1	2412	14.86	16.00	1.300	100	1.000	0.08	0.095	0.124
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 2+4	Simultaneous	1	2412	14.86	16.00	1.300	100	1.000	0.06	0.293	0.381
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 2+4	Simultaneous	6	2437	14.76	16.00	1.330	100	1.000	0.11	0.243	0.323
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 2+4	Simultaneous	11	2462	14.58	16.00	1.387	100	1.000	-0.06	0.198	0.275

<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)
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 4+12	Standalone	58	5290	18.48	20.00	1.419	100	1.000	-	n/a	n/a
75	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 4+12	Standalone	58	5290	18.48	20.00	1.419	100	1.000	-0.07	0.751	1.066
	WLAN5.3GHz	802.11a 6Mbps	Front	16mm	Ant 4+12	Full	64	5320	20.17	21.50	1.358	99.32	1.007	-	n/a	n/a
	WLAN5.3GHz	802.11a 6Mbps	Back	27mm	Ant 4+12	Full	64	5320	20.17	21.50	1.358	99.32	1.007	-0.12	0.193	0.264
	WLAN5.3GHz	802.11ac-VHT160 MCS0	Front	5mm	Ant 4+12	Simultaneous	50	5250	13.09	14.50	1.384	100	1.000	0.17	0.067	0.093
	WLAN5.3GHz	802.11ac-VHT160 MCS0	Back	5mm	Ant 4+12	Simultaneous	50	5250	12.89	14.00	1.291	100	1.000	-0.12	0.255	0.329
	WLAN5.5GHz	802.11a 6Mbps	Front	5mm	Ant 4+12	Full	100	5500	20.38	21.50	1.294	99.32	1.007	0.05	0.083	0.108
	WLAN5.5GHz	802.11a 6Mbps	Back	5mm	Ant 4+12	Full	100	5500	20.38	21.50	1.294	99.32	1.007	-0.07	0.449	0.585
	WLAN5.5GHz	802.11a 6Mbps	Back	5mm	Ant 4+12	Full	116	5580	19.93	21.50	1.435	99.32	1.007	0.07	0.529	0.765
76	WLAN5.5GHz	802.11a 6Mbps	Back	5mm	Ant 4+12	Full	132	5660	20.05	21.50	1.396	99.32	1.007	-0.11	0.776	1.091
	WLAN5.5GHz	802.11a 6Mbps	Back	5mm	Ant 4+12	Full	140	5700	20.26	21.50	1.330	99.32	1.007	-0.09	0.696	0.932
	WLAN5.5GHz	802.11a 6Mbps	Back	27mm	Ant 4+12	Full	132	5660	20.05	21.50	1.396	99.32	1.007	0.12	0.163	0.229
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 4+12	Simultaneous	106	5530	16.18	17.50	1.355	100	1.000	0.05	0.033	0.045
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 4+12	Simultaneous	106	5530	16.18	17.50	1.355	100	1.000	0.07	0.285	0.386
	WLAN5.8GHz	802.11a 6Mbps	Front	5mm	Ant 4+12	Full	157	5785	20.03	21.50	1.403	99.32	1.007	-0.1	0.092	0.129
77	WLAN5.8GHz	802.11a 6Mbps	Back	5mm	Ant 4+12	Full	157	5785	20.03	21.50	1.403	99.32	1.007	-0.12	0.818	1.156
	WLAN5.8GHz	802.11a 6Mbps	Back	5mm	Ant 4+12	Full	149	5745	19.99	21.50	1.416	99.32	1.007	0.09	0.637	0.908
	WLAN5.8GHz	802.11a 6Mbps	Back	5mm	Ant 4+12	Full	165	5825	19.98	21.50	1.419	99.32	1.007	0.13	0.782	1.117
	WLAN5.8GHz	802.11a 6Mbps	Back	27mm	Ant 4+12	Full	157	5785	20.03	21.50	1.403	99.32	1.007	-0.06	0.184	0.260
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 4+12	Simultaneous	155	5775	13.46	15.00	1.426	100	1.000	0.05	0.007	0.010
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 4+12	Simultaneous	155	5775	13.46	15.00	1.426	100	1.000	0.13	0.242	0.345

<Bluetooth 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)
	Bluetooth	DH5 1Mbps	Front	5mm	Ant 2	Full	39	2441	11.40	12.50	1.288	76.13	1.314	0.05	0.039	0.066
	Bluetooth	DH5 1Mbps	Back	5mm	Ant 2	Full	39	2441	11.40	12.50	1.288	76.13	1.314	0.01	0.051	0.086
	Bluetooth	DH5 1Mbps	Back	5mm	Ant 2	Full	0	2402	11.30	12.50	1.318	76.13	1.314	0.11	0.065	0.113
79	Bluetooth	DH5 1Mbps	Back	5mm	Ant 2	Full	78	2480	8.30	9.50	1.318	76.13	1.314	-0.14	0.0721	0.125



16.4 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_Ant0	GPRS(3 Tx slots)	Front	0mm	DSI4(Full)	810	1909.8	25.28	26.50	1.324	0.04	1.860	2.463
	GSM1900_Ant0	GPRS(3 Tx slots)	Back	0mm	DSI4(Full)	810	1909.8	25.28	26.50	1.324	0.03	1.990	2.635
	GSM1900_Ant0	GPRS(3 Tx slots)	Bottom Side	0mm	DSI4(Full)	810	1909.8	25.28	26.50	1.324	-0.18	1.740	2.304
	GSM1900_Ant0	GPRS(3 Tx slots)	Front	0mm	DSI4(Full)	512	1850.2	25.11	26.50	1.377	-0.11	1.510	2.080
	GSM1900_Ant0	GPRS(3 Tx slots)	Front	0mm	DSI4(Full)	661	1880	25.25	26.50	1.334	-0.16	1.490	1.987
	GSM1900_Ant0	GPRS(3 Tx slots)	Back	0mm	DSI4(Full)	512	1850.2	25.11	26.50	1.377	0.14	1.680	2.314
	GSM1900_Ant0	GPRS(3 Tx slots)	Back	0mm	DSI4(Full)	661	1880	25.25	26.50	1.334	-0.19	1.630	2.174
80	GSM1900_Ant0	GPRS(3 Tx slots)	Bottom Side	0mm	DSI4(Full)	512	1850.2	25.11	26.50	1.377	-0.13	1.930	2.658
	GSM1900_Ant0	GPRS(3 Tx slots)	Bottom Side	0mm	DSI4(Full)	661	1880	25.25	26.50	1.334	0.14	1.550	2.067



<WCDMA SAR>

Table with columns: 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). Rows include various antenna configurations (Ant1, Ant0) and power reduction methods (DSI4, DSI6).



<FDD LTE SAR>

Table with columns: 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)



FCC SAR Test Report

Report No. : FA151701-01

Table with columns: Band, Power, Modulation, Power Spectral Density, Frequency, Direction, Distance, Modulation, Power Spectral Density, Power Spectral Density, Power Spectral Density, Power Spectral Density, Power Spectral Density, Power Spectral Density, Power Spectral Density, Power Spectral Density, Power Spectral Density. Row 87 is highlighted with a yellow background.

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FCC ID : IHDT56ZP2

Issued Date : Jul. 15, 2021

Form version. : 200414



	LTE Band 25_Ant0	20M	QPSK	50	24	Bottom Side	0mm	DSI6(Standalone/Simultaneous)	26590	1905	18.69	20.00	1.352	0.08	2.040	2.758
	LTE Band 25_Ant0	20M	QPSK	50	24	Front	6mm	DSI4(Full)	26590	1905	20.55	22.00	1.396	0.05	0.683	0.954
	LTE Band 25_Ant0	20M	QPSK	50	24	Back	8mm	DSI4(Full)	26590	1905	20.55	22.00	1.396	0.06	0.605	0.845
	LTE Band 25_Ant0	20M	QPSK	50	24	Bottom Side	11mm	DSI4(Full)	26590	1905	20.55	22.00	1.396	-0.12	1.010	1.410
	LTE Band 25_Ant0	20M	QPSK	100	0	Front	0mm	DSI6(Standalone/Simultaneous)	26340	1880	18.84	20.00	1.306	-0.08	1.600	2.090
	LTE Band 25_Ant0	20M	QPSK	100	0	Back	0mm	DSI6(Standalone/Simultaneous)	26340	1880	18.84	20.00	1.306	-0.11	1.720	2.247
	LTE Band 25_Ant0	20M	QPSK	100	0	Bottom Side	0mm	DSI6(Standalone/Simultaneous)	26340	1880	18.84	20.00	1.306	0.06	2.010	2.625
	LTE Band 30_Ant0	10M	QPSK	1	0	Front	0mm	DSI6(Standalone/Simultaneous)	27710	2310	20.15	21.50	1.365	0.09	1.830	2.497
88	LTE Band 30_Ant0	10M	QPSK	1	0	Back	0mm	DSI6(Standalone/Simultaneous)	27710	2310	20.15	21.50	1.365	0.05	2.290	3.125
	LTE Band 30_Ant0	10M	QPSK	1	0	Bottom Side	0mm	DSI6(Standalone/Simultaneous)	27710	2310	20.15	21.50	1.365	0.05	1.560	2.129
	LTE Band 30_Ant0	10M	QPSK	1	0	Front	6mm	DSI4(Full)	27710	2310	21.11	22.50	1.377	-0.11	1.150	1.584
	LTE Band 30_Ant0	10M	QPSK	1	0	Back	8mm	DSI4(Full)	27710	2310	21.11	22.50	1.377	-0.01	0.852	1.173
	LTE Band 30_Ant0	10M	QPSK	1	0	Bottom Side	11mm	DSI4(Full)	27710	2310	21.11	22.50	1.377	0.17	0.961	1.323
	LTE Band 30_Ant0	10M	QPSK	25	12	Front	0mm	DSI6(Standalone/Simultaneous)	27710	2310	20.13	21.50	1.371	0.12	1.800	2.468
	LTE Band 30_Ant0	10M	QPSK	25	12	Back	0mm	DSI6(Standalone/Simultaneous)	27710	2310	20.13	21.50	1.371	-0.04	2.210	3.030
	LTE Band 30_Ant0	10M	QPSK	25	12	Bottom Side	0mm	DSI6(Standalone/Simultaneous)	27710	2310	20.13	21.50	1.371	-0.03	1.520	2.084
	LTE Band 30_Ant0	10M	QPSK	25	12	Front	6mm	DSI4(Full)	27710	2310	20.95	22.50	1.429	0.13	0.615	0.879
	LTE Band 30_Ant0	10M	QPSK	25	12	Back	8mm	DSI4(Full)	27710	2310	20.95	22.50	1.429	-0.12	0.452	0.646
	LTE Band 30_Ant0	10M	QPSK	25	12	Bottom Side	11mm	DSI4(Full)	27710	2310	20.95	22.50	1.429	0.15	0.518	0.740
	LTE Band 30_Ant0	10M	QPSK	50	0	Front	0mm	DSI6(Standalone/Simultaneous)	27710	2310	20.11	21.50	1.377	0.08	1.710	2.355
	LTE Band 30_Ant0	10M	QPSK	50	0	Back	0mm	DSI6(Standalone/Simultaneous)	27710	2310	20.11	21.50	1.377	0.04	2.170	2.989
	LTE Band 30_Ant0	10M	QPSK	50	0	Bottom Side	0mm	DSI6(Standalone/Simultaneous)	27710	2310	20.11	21.50	1.377	0.09	1.530	2.107
	LTE Band 7_Ant0	20M	QPSK	1	99	Front	0mm	DSI6(Standalone/Simultaneous)	21350	2560	21.99	23.00	1.262	-0.01	1.110	1.401
	LTE Band 7_Ant0	20M	QPSK	1	99	Back	0mm	DSI6(Standalone/Simultaneous)	21350	2560	21.99	23.00	1.262	0.13	1.230	1.552
	LTE Band 7_Ant0	20M	QPSK	1	99	Bottom Side	0mm	DSI6(Standalone/Simultaneous)	21350	2560	21.99	23.00	1.262	0.1	2.290	2.890
	LTE Band 7_Ant0	20M	QPSK	1	99	Bottom Side	0mm	DSI6(Standalone/Simultaneous)	20850	2510	21.66	23.00	1.361	0.15	2.030	2.764
	LTE Band 7_Ant0	20M	QPSK	1	99	Bottom Side	0mm	DSI6(Standalone/Simultaneous)	21100	2535	21.75	23.00	1.334	0.01	2.100	2.800
	LTE Band 7_Ant0	20M	QPSK	1	99	Front	6mm	DSI4(Full)	21350	2560	23.03	24.00	1.250	0.08	0.736	0.920
	LTE Band 7_Ant0	20M	QPSK	1	99	Back	8mm	DSI4(Full)	21350	2560	23.03	24.00	1.250	0.01	0.679	0.849
	LTE Band 7_Ant0	20M	QPSK	1	99	Bottom Side	11mm	DSI4(Full)	21350	2560	23.03	24.00	1.250	-0.02	0.546	0.683
	LTE Band 7_Ant0	20M	QPSK	50	24	Front	0mm	DSI6(Standalone/Simultaneous)	21350	2560	21.96	23.00	1.271	0.14	1.150	1.461
	LTE Band 7_Ant0	20M	QPSK	50	24	Back	0mm	DSI6(Standalone/Simultaneous)	21350	2560	21.96	23.00	1.271	0.14	1.290	1.639
89	LTE Band 7_Ant0	20M	QPSK	50	24	Bottom Side	0mm	DSI6(Standalone/Simultaneous)	21350	2560	21.96	23.00	1.271	0.06	2.310	2.935
	LTE Band 7_Ant0	20M	QPSK	50	24	Bottom Side	0mm	DSI6(Standalone/Simultaneous)	20850	2510	21.64	23.00	1.368	-0.06	2.080	2.845
	LTE Band 7_Ant0	20M	QPSK	50	24	Bottom Side	0mm	DSI6(Standalone/Simultaneous)	21100	2535	21.74	23.00	1.337	-0.05	2.170	2.900
	LTE Band 7_Ant0	20M	QPSK	50	24	Front	6mm	DSI4(Full)	21350	2560	22.15	23.00	1.216	0.06	0.418	0.508
	LTE Band 7_Ant0	20M	QPSK	50	24	Back	8mm	DSI4(Full)	21350	2560	22.15	23.00	1.216	-0.11	0.378	0.460
	LTE Band 7_Ant0	20M	QPSK	50	24	Bottom Side	11mm	DSI4(Full)	21350	2560	22.15	23.00	1.216	0.06	0.300	0.365
	LTE Band 7_Ant0	20M	QPSK	100	0	Bottom Side	0mm	DSI6(Standalone/Simultaneous)	21350	2560	21.96	23.00	1.271	0.15	2.220	2.821



<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_Ant0	20M	QPSK	1	99	Front	0mm	DSI4(Full)	40620	2593	22.97	24.00	1.268	62.9	1.006	-0.07	0.932	1.189
	LTE Band 41_Ant0	20M	QPSK	1	99	Back	0mm	DSI4(Full)	40620	2593	22.97	24.00	1.268	62.9	1.006	0.02	1.160	1.479
	LTE Band 41_Ant0	20M	QPSK	1	99	Bottom Side	0mm	DSI4(Full)	40620	2593	22.97	24.00	1.268	62.9	1.006	-0.06	1.690	2.155
	LTE Band 41_Ant0	20M	QPSK	1	99	Bottom Side	0mm	DSI4(Full)	39750	2506	22.73	24.00	1.340	62.9	1.006	0.15	1.650	2.224
	LTE Band 41_Ant0	20M	QPSK	1	99	Bottom Side	0mm	DSI4(Full)	40185	2549.5	22.90	24.00	1.288	62.9	1.006	-0.1	1.800	2.333
	LTE Band 41_Ant0	20M	QPSK	1	99	Bottom Side	0mm	DSI4(Full)	41055	2636.5	22.84	24.00	1.306	62.9	1.006	-0.05	1.830	2.405
	LTE Band 41_Ant0	20M	QPSK	1	99	Bottom Side	0mm	DSI4(Full)	41490	2680	22.66	24.00	1.361	62.9	1.006	0.01	1.590	2.178
	LTE Band 41C_Ant0	20M	QPSK	1	99	Bottom Side	0mm	DSI4(Full)	41055+41253	2636.5+2656.3	20.74	21.90	1.306	62.9	1.006	-0.02	1.230	1.616
	LTE Band 41_Ant0	20M	QPSK	50	24	Front	0mm	DSI4(Full)	40620	2593	22.15	23.00	1.216	62.9	1.006	-0.12	0.779	0.953
	LTE Band 41_Ant0	20M	QPSK	50	24	Back	0mm	DSI4(Full)	40620	2593	22.15	23.00	1.216	62.9	1.006	-0.12	0.968	1.184
	LTE Band 41_Ant0	20M	QPSK	50	24	Bottom Side	0mm	DSI4(Full)	40620	2593	22.15	23.00	1.216	62.9	1.006	-0.1	1.430	1.750
	LTE Band 41_Ant0	20M	QPSK	50	24	Bottom Side	0mm	DSI4(Full)	39750	2506	21.91	23.00	1.285	62.9	1.006	-0.02	1.400	1.810
	LTE Band 41_Ant0	20M	QPSK	50	24	Bottom Side	0mm	DSI4(Full)	40185	2549.5	22.13	23.00	1.222	62.9	1.006	0.05	1.500	1.844
	LTE Band 41_Ant0	20M	QPSK	50	24	Bottom Side	0mm	DSI4(Full)	41055	2636.5	21.98	23.00	1.265	62.9	1.006	0.05	1.520	1.934
	LTE Band 41_Ant0	20M	QPSK	50	24	Bottom Side	0mm	DSI4(Full)	41490	2680	21.93	23.00	1.279	62.9	1.006	-0.11	1.350	1.738
	LTE Band 41_Ant0	20M	QPSK	100	0	Bottom Side	0mm	DSI4(Full)	40620	2593	22.10	23.00	1.230	62.9	1.006	0.09	1.480	1.832
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Front	0mm	DSI4(Full)	40620	2593	26.14	27.00	1.219	42.9	1.009	-0.08	1.070	1.316
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Back	0mm	DSI4(Full)	40620	2593	26.14	27.00	1.219	42.9	1.009	-0.01	1.440	1.771
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Bottom Side	0mm	DSI4(Full)	40620	2593	26.14	27.00	1.219	42.9	1.009	-0.12	1.950	2.398
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Back	0mm	DSI4(Full)	39750	2506	25.91	27.00	1.285	42.9	1.009	-0.06	1.490	1.932
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Back	0mm	DSI4(Full)	40185	2549.5	26.02	27.00	1.253	42.9	1.009	-0.05	1.540	1.947
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Back	0mm	DSI4(Full)	41055	2636.5	26.10	27.00	1.230	42.9	1.009	-0.02	1.500	1.862
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Back	0mm	DSI4(Full)	41490	2680	25.87	27.00	1.297	42.9	1.009	-0.11	1.410	1.845
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Bottom Side	0mm	DSI4(Full)	39750	2506	25.91	27.00	1.285	42.9	1.009	-0.12	2.160	2.801
90	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Bottom Side	0mm	DSI4(Full)	40185	2549.5	26.02	27.00	1.253	42.9	1.009	-0.12	2.350	2.971
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Bottom Side	0mm	DSI4(Full)	41055	2636.5	26.10	27.00	1.230	42.9	1.009	0.15	2.250	2.793
	LTE Band 41(HPUE)_Ant0	20M	QPSK	1	99	Bottom Side	0mm	DSI4(Full)	41490	2680	25.87	27.00	1.297	42.9	1.009	0.09	1.880	2.461
	LTE Band 41(HPUE)_Ant0	20M	QPSK	50	24	Front	0mm	DSI4(Full)	40620	2593	24.49	26.00	1.416	42.9	1.009	-0.07	0.805	1.150
	LTE Band 41(HPUE)_Ant0	20M	QPSK	50	24	Back	0mm	DSI4(Full)	40620	2593	24.49	26.00	1.416	42.9	1.009	0.05	1.040	1.486
	LTE Band 41(HPUE)_Ant0	20M	QPSK	50	24	Bottom Side	0mm	DSI4(Full)	40620	2593	24.49	26.00	1.416	42.9	1.009	0.14	1.140	1.629
	LTE Band 41(HPUE)_Ant0	20M	QPSK	50	24	Bottom Side	0mm	DSI4(Full)	39750	2506	24.28	26.00	1.486	42.9	1.009	-0.09	1.190	1.784
	LTE Band 41(HPUE)_Ant0	20M	QPSK	50	24	Bottom Side	0mm	DSI4(Full)	40185	2549.5	24.42	26.00	1.439	42.9	1.009	-0.04	1.120	1.626
	LTE Band 41(HPUE)_Ant0	20M	QPSK	50	24	Bottom Side	0mm	DSI4(Full)	41055	2636.5	24.47	26.00	1.422	42.9	1.009	-0.11	1.080	1.550
	LTE Band 41(HPUE)_Ant0	20M	QPSK	50	24	Bottom Side	0mm	DSI4(Full)	41490	2680	24.28	26.00	1.486	42.9	1.009	-0.04	0.971	1.456
	LTE Band 41(HPUE)_Ant0	20M	QPSK	100	0	Back	0mm	DSI4(Full)	40620	2593	24.40	26.00	1.445	42.9	1.009	0.05	1.010	1.473
	LTE Band 41(HPUE)_Ant0	20M	QPSK	100	0	Bottom Side	0mm	DSI4(Full)	40620	2593	24.40	26.00	1.445	42.9	1.009	-0.06	1.250	1.823



<5G NR SAR>

Table with columns: 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 10g SAR (W/kg), Reported 10g SAR (W/kg). Row 91 is highlighted in yellow.



FCC SAR Test Report

Report No. : FA151701-01

Table with columns for antenna ID, power, modulation, frequency, polarization, distance, SAR value, and other parameters. Row 93 is highlighted in yellow.



Table with columns for antenna ID, power, modulation, frequency, polarization, distance, SAR values, etc. Row 94 is highlighted with a yellow background.



Table with 17 columns: Plot No., Band, Mode, Test Position, Gap, Antenna, Power Reduction, Ch., Freq., Average Power, Tune-Up Limit, Tune-up Scaling Factor, Duty Cycle, Duty Cycle Scaling Factor, Power Drift, Measured 10g SAR, Reported 10g SAR. Contains multiple rows for various antenna configurations and test conditions.

<WLAN2.4G SAR>

Summary table for WLAN2.4G SAR with 17 columns: Plot No., Band, Mode, Test Position, Gap, Antenna, Power Reduction, Ch., Freq., Average Power, Tune-Up Limit, Tune-up Scaling Factor, Duty Cycle, Duty Cycle Scaling Factor, Power Drift, Measured 10g SAR, Reported 10g SAR. Includes 3 rows of data.



<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)
	WLAN5.2GHz	802.11a 6Mbps	Back	0mm	Ant 4+12	Full	44	5220	20.11	21.50	1.377	99.32	1.007	-0.09	1.350	1.872
	WLAN5.2GHz	802.11a 6Mbps	Back	0mm	Ant 4+12	Full	36	5180	20.02	21.50	1.406	99.32	1.007	0.16	1.040	1.473
	WLAN5.2GHz	802.11a 6Mbps	Back	0mm	Ant 4+12	Full	40	5200	20.07	21.50	1.390	99.32	1.007	-0.05	1.160	1.624
96	WLAN5.2GHz	802.11a 6Mbps	Back	0mm	Ant 4+12	Full	48	5240	19.94	21.50	1.432	99.32	1.007	0.05	1.360	1.961
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 4+12	Simultaneous	42	5210	17.61	19.00	1.377	100	1.000	0.12	0.825	1.136
	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	Ant 4+12	Full	64	5320	20.17	21.50	1.358	99.32	1.007	0.08	0.183	0.250
	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 4+12	Full	64	5320	20.17	21.50	1.358	99.32	1.007	-0.06	1.240	1.696
	WLAN5.3GHz	802.11a 6Mbps	Left Side	0mm	Ant 4+12	Full	64	5320	20.17	21.50	1.358	99.32	1.007	0.04	0.182	0.249
	WLAN5.3GHz	802.11a 6Mbps	Right Side	0mm	Ant 4+12	Full	64	5320	20.17	21.50	1.358	99.32	1.007	0.15	0.011	0.014
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 4+12	Full	64	5320	20.17	21.50	1.358	99.32	1.007	0.1	0.237	0.324
97	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 4+12	Full	52	5260	20.07	21.50	1.390	99.32	1.007	0.06	1.440	2.016
	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 4+12	Full	56	5280	20.07	21.50	1.390	99.32	1.007	-0.11	1.420	1.988
	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 4+12	Full	60	5300	20.08	21.50	1.387	99.32	1.007	0.05	1.290	1.801
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 4+12	Simultaneous	58	5290	18.48	20.00	1.419	100	1.000	0.05	0.148	0.210
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 4+12	Simultaneous	58	5290	18.48	20.00	1.419	100	1.000	0.04	0.894	1.269
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 4+12	Simultaneous	58	5290	18.48	20.00	1.419	100	1.000	0.14	0.133	0.189
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Ant 4+12	Simultaneous	58	5290	18.48	20.00	1.419	100	1.000	0.01	0.005	0.007
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 4+12	Simultaneous	58	5290	18.48	20.00	1.419	100	1.000	0.05	0.194	0.275
	WLAN5.5GHz	802.11a 6Mbps	Front	0mm	Ant 4+12	Full	100	5500	20.38	21.50	1.294	99.32	1.007	0.05	0.106	0.138
	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 4+12	Full	100	5500	20.38	21.50	1.294	99.32	1.007	0.04	0.936	1.220
	WLAN5.5GHz	802.11a 6Mbps	Left Side	0mm	Ant 4+12	Full	100	5500	20.38	21.50	1.294	99.32	1.007	-0.11	0.124	0.162
	WLAN5.5GHz	802.11a 6Mbps	Right Side	0mm	Ant 4+12	Full	100	5500	20.38	21.50	1.294	99.32	1.007	-0.09	0.007	0.009
	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 4+12	Full	100	5500	20.38	21.50	1.294	99.32	1.007	-0.01	0.136	0.177
	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 4+12	Full	116	5580	19.93	21.50	1.435	99.32	1.007	-0.06	0.841	1.216
	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 4+12	Full	132	5660	20.05	21.50	1.396	99.32	1.007	0.12	1.110	1.561
98	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 4+12	Full	140	5700	20.26	21.50	1.330	99.32	1.007	0.03	1.370	1.835
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 4+12	Simultaneous	106	5530	18.63	20.00	1.371	100	1.000	-0.09	0.051	0.070
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 4+12	Simultaneous	106	5530	18.63	20.00	1.371	100	1.000	-0.06	0.722	0.990
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 4+12	Simultaneous	106	5530	18.63	20.00	1.371	100	1.000	0.04	0.060	0.082
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Ant 4+12	Simultaneous	106	5530	18.63	20.00	1.371	100	1.000	0.08	0.000	0.001
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 4+12	Simultaneous	106	5530	18.63	20.00	1.371	100	1.000	0.08	0.075	0.103
99	WLAN5.8GHz	802.11a 6Mbps	Back	0mm	Ant 4+12	Full	157	5785	20.03	21.50	1.403	99.32	1.007	-0.12	2.050	2.896
	WLAN5.8GHz	802.11a 6Mbps	Back	0mm	Ant 4+12	Full	149	5745	19.99	21.50	1.416	99.32	1.007	-0.1	1.840	2.623
	WLAN5.8GHz	802.11a 6Mbps	Back	0mm	Ant 4+12	Full	165	5825	19.98	21.50	1.419	99.32	1.007	-0.03	1.780	2.544
	WLAN5.8GHz	802.11a 6Mbps	Back	5mm	Ant 4+12	Full	157	5785	20.03	21.50	1.403	99.32	1.007	0.03	1.160	1.639
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 4+12	Simultaneous	155	5775	16.36	18.00	1.459	100	1.000	0.01	0.797	1.163



16.5 Repeated SAR Measurement

<1g>

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	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA IV_Ant1					RMC 12.2Kbps	Left Tilted	0mm	DSI2(Standalone)	1312	1712.4	15.73	16.50	1.194	-	-	0.04	1.040	1	1.242
2nd	WCDMA IV_Ant1					RMC 12.2Kbps	Left Tilted	0mm	DSI2(Standalone)	1312	1712.4	15.73	16.50	1.194	-	-	0.02	0.998	1.042	1.192
1st	LTE Band 25_Ant1	20M	QPSK	50	24		Left Tilted	0mm	DSI2(Standalone)	26590	1905	15.21	16.00	1.199	-	-	0.04	1.040	1	1.247
2nd	LTE Band 25_Ant1	20M	QPSK	50	24		Left Tilted	0mm	DSI2(Standalone)	26590	1905	15.21	16.00	1.199	-	-	0.09	0.995	1.045	1.194
1st	WLAN2.4GHz_Ant 2+4					802.11b 1Mbps	Right Cheek	0mm	Full	6	2437	21.56	22.50	1.242	100	1.000	-0.19	0.930	1	1.155
2nd	WLAN2.4GHz_Ant 2+4					802.11b 1Mbps	Right Cheek	0mm	Full	6	2437	21.56	22.50	1.242	100	1.000	-0.02	0.912	1.020	1.132
1st	N5_Ant 1	20M	BPSK	1	1	DFT-15	Left Cheek	0mm	DSI2(Standalone)	167300	836.5	22.20	23.00	1.202	-	-	0.03	1.020	1	1.226
2nd	N5_Ant 1	20M	BPSK	1	1	DFT-15	Left Cheek	0mm	DSI2(Standalone)	167300	836.5	22.20	23.00	1.202	-	-	0.05	1.000	1.020	1.202
1st	N77(HPUE)_Ant 3	100M	BPSK	135	69	DFT-30	Right Cheek	0mm	DSI2(Standalone)	656000	3840	19.78	21.00	1.324	-	-	-0.09	0.878	1	1.163
2nd	N77(HPUE)_Ant 3	100M	BPSK	135	69	DFT-30	Right Cheek	0mm	DSI2(Standalone)	656000	3840	19.78	21.00	1.324	-	-	0.06	0.856	1.026	1.134
1st	LTE Band 41_Ant0	20M	QPSK	50	24		Bottom Side	5mm	DSI3(Simultaneous)	41055	2636.5	21.05	21.90	1.216	62.9	1.006	0.17	1.020	1	1.248
2nd	LTE Band 41_Ant0	20M	QPSK	50	24		Bottom Side	5mm	DSI3(Simultaneous)	41055	2636.5	21.05	21.90	1.216	62.9	1.006	0.12	0.987	1.033	1.208
1st	LTE Band 13_Ant0	10M	QPSK	1	25		Back	5mm	DSI 4(Full)	23230	782	23.20	24.50	1.349	-	-	0.03	0.928	1	1.252
2nd	LTE Band 13_Ant0	10M	QPSK	1	25		Back	5mm	DSI 4(Full)	23230	782	23.20	24.50	1.349	-	-	0.11	0.911	1.019	1.229
1st	LTE Band 30_Ant0	10M	QPSK	1	0		Back	5mm	DSI3(Standalone)	27710	2310	17.18	18.50	1.355	-	-	0.12	0.888	1	1.203
2nd	LTE Band 30_Ant0	10M	QPSK	1	0		Back	5mm	DSI3(Standalone)	27710	2310	17.18	18.50	1.355	-	-	0.12	0.852	1.042	1.155
1st	WLAN5GHz_Ant 4+12					802.11a 6Mbps	Back	5mm	Full	157	5785	20.03	21.50	1.403	99.32	1.007	-0.12	0.818	1	1.156
2nd	WLAN5GHz_Ant 4+12					802.11a 6Mbps	Back	5mm	Full	157	5785	20.03	21.50	1.403	99.32	1.007	-0.03	0.802	1.020	1.133

<10g>

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	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	LTE Band 30_Ant0	10M	QPSK	1	0		Back	0mm	DSI6(Standalone/Simultaneous)	27710	2310	20.15	21.50	1.365	-	-	0.05	2.290	1	3.125
2nd	LTE Band 30_Ant0	10M	QPSK	1	0		Back	0mm	DSI6(Standalone/Simultaneous)	27710	2310	20.15	21.50	1.365	-	-	0.01	2.150	1.065	2.934
1st	WLAN5GHz_Ant 4+12					802.11a 6Mbps	Back	0mm	Full	157	5785	20.03	21.50	1.403	99.32	1.007	-0.12	2.050	1	2.896
2nd	WLAN5GHz_Ant 4+12					802.11a 6Mbps	Back	0mm	Full	157	5785	20.03	21.50	1.403	99.32	1.007	-0.05	1.970	1.041	2.783
1st	N66_Ant 1	40M	BPSK	1	1	DFT-15	Top Side	0mm	DSI6(Standalone)	349000	1745	22.14	23.00	1.219	-	-	-0.06	2.570	1	3.133
2nd	N66_Ant 1	40M	BPSK	1	1	DFT-15	Top Side	0mm	DSI6(Standalone)	349000	1745	22.14	23.00	1.219	-	-	-0.11	2.490	1.032	3.035
1st	N25_Ant 1	40M	BPSK	108	54	DFT-15	Top Side	0mm	DSI6(Standalone)	379000	1895	21.11	22.00	1.227	-	-	0.08	2.500	1	3.069
2nd	N25_Ant 1	40M	BPSK	108	54	DFT-15	Top Side	0mm	DSI6(Standalone)	379000	1895	21.11	22.00	1.227	-	-	0.09	2.420	1.033	2.970
1st	N41(HPUE)_Ant 0	100M	BPSK	1	1	DFT-30	Bottom Side	0mm	DSI6(Standalone/Simultaneous)	528000	2640	21.94	23.00	1.276	-	-	-0.11	2.480	1	3.166
2nd	N41(HPUE)_Ant 0	100M	BPSK	1	1	DFT-30	Bottom Side	0mm	DSI6(Standalone/Simultaneous)	528000	2640	21.94	23.00	1.276	-	-	-0.03	2.380	1.042	3.038
1st	N77(HPUE)_Ant 3	100M	BPSK	135	69	DFT-30	Left Side	5mm	DSI 4(Full)	656000	3840	25.95	27.00	1.274	-	-	0.01	2.450	1	3.120
2nd	N77(HPUE)_Ant 3	100M	BPSK	135	69	DFT-30	Left Side	5mm	DSI 4(Full)	656000	3840	25.95	27.00	1.274	-	-	0.03	2.330	1.052	2.967

General Note:

- Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is $\geq 0.8W/kg$.
- Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR $< 1.45W/kg$, only one repeated measurement is required.
- 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.
- The ratio is the difference in percentage between original and repeated *measured SAR*.
- All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

17. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product specific 10g SAR
1.	WWAN + WLAN2.4GHz	Yes	Yes	Yes	Yes
2.	WWAN + WLAN5GHz	Yes	Yes	Yes	Yes
3.	WWAN + WLAN6E	Yes	Yes		Yes
4.	WWAN + Bluetooth	Yes	Yes	Yes	Yes
5.	Bluetooth + WLAN5GHz	Yes	Yes	Yes	Yes
6.	Bluetooth + WLAN6E	Yes	Yes		Yes
7.	WWAN + Bluetooth + WLAN5GHz	Yes	Yes	Yes	Yes
8.	WWAN + Bluetooth + WLAN6E	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.
- WWAN above includes 5G NR bands.
- EUT will choose each GSM, WCDMA, LTE and 5GNR according to the network signal condition; therefore, they will not operate simultaneously at any moment.
- For EN-DC mode, Qualcomm Smart Transmit algorithm in WWAN adds directly the time-averaged RF exposure from 4G(LTE) and time-averaged RF exposure from 5G NR. Smart Transmit algorithm controls the total RF exposure from both 4G and 5G NR to not exceed FCC limit. Therefore, simultaneous transmission compliance between 4G+5G NR operation is demonstrated in the Part 2 Report during algorithm validation. In Part 1 Report, simultaneous transmission compliance was evaluated individually with other Radios (WLAN or BT) using one of 4G or 5G NR.
- This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
- This device 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).
- WIFI 6E has no hotspot function.
- WIFI 6E can transmit simultaneously with Bluetooth.
- The 2.4GHz/5GHz/6GHz WLAN can transmit in MIMO antenna mode only and it has no SISO antenna mode.
- The worst case 5 GHz WLAN SAR for each configuration was used for SAR summation.
- WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
- According to the EUT characteristic, WLAN 5GHz/ WLAN6E and Bluetooth can transmit simultaneously.
- According to the EUT characteristic, WLAN 5GHz /WLAN6E and WLAN 2.4GHz can't transmit simultaneously.
- The maximum SAR summation is calculated based on the same configuration and test position.
- SAR test report for WLAN6E U-NII-5/6/7/8 will be separately submitted. About co-located SAR with WWAN/Bluetooth, always chose higher SAR of WLAN5G U-NII-1/2A/2C/3 and U-NII-5/6/7/8.
- 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 17.6.

17.1 5G NR + LTE + WLAN + BT Sim-Tx analysis

In 5G NR + LTE + WLAN + BT simultaneous transmission, 5G NR and LTE transmission are managed and controlled by Qualcomm® Smart Transmit, while the RF exposure from WLAN and BT radios is managed using legacy approach, i.e., through a fixed power back-off if needed.

Since WLAN and BT do not employ time-averaging, 1gSAR and 10gSAR measurement for WLAN and BT need to be conducted at their corresponding rated power following current FCC test procedures to determine reported SAR values. Smart Transmit current implementation assumes hotspots from 5G NR and LTE are collocated. Therefore, for a total of 100% exposure margin, if LTE uses x%, then the exposure margin left for 5G NR is capped to (100-x)%. Thus, the compliance equation for LTE + 5G NR is

$$x\% * A + (100-x)\% * B \leq 1.0,$$

Where, A is normalized reported time-averaged SAR exposure ratio from LTE, and $A \leq 1.0$; B is normalized reported time-averaged exposure ratio from 5G NR (i.e. SAR exposure for 5G FR1), and $B \leq 1.0$.

Let C = normalized reported SAR exposure ratio from WLAN+BT, then for compliance,

$$x\% * A + (100-x)\% * B + C \leq 1.0 \quad (1)$$

$$x\% * A + (100-x)\% * B \leq x\% * \max(A, B) + (100-x)\% * \max(A, B) \leq \max(A, B)$$

$$x\% * A + (100-x)\% * B + C \leq \max(A, B) + C \leq 1.0 \quad (2)$$

if $A + C \leq 1.0$ and $B + C \leq 1.0$ can be proven, then “ $x\% * A + (100-x)\% * B + C \leq 1.0$ ”. Therefore simultaneous transmission analysis for 5G NR + LTE + WLAN + BT can be performed in two steps

Step 1: Prove total exposure ratio (TER) of LTE + WLAN + BT < 1

Step 2: Prove total exposure ratio (TER) of 5G NR + WLAN + BT < 1

Above analysis is also apply to LTE inter band uplink, LTE + LTE + WLAN + BT simultaneous transmission, So inter band CA uplink no need to do additional simultaneously analysis again. Only required comply with total exposure ratio (TER) of LTE + WLAN + BT < 1.



17.2 Head Exposure Conditions

WWAN Band	Exposure Position	1	3	6	7	9	1+9	6+9	7+9
		WWAN	2.4GHz WLAN Ant 2+4	5GHz WLAN Ant 4+12	6GHz WLAN Ant 4+12	Bluetooth 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)
WCDMA V_Ant1	Right Cheek	0.735	1.155	0.717	0.025	0.253	0.99	0.97	0.28
	Right Tilted	0.797	0.709	0.514	0.035	0.120	0.92	0.63	0.16
	Left Cheek	1.113	0.496	0.319	0.022	0.080	1.19	0.40	0.10
	Left Tilted	1.044	0.533	0.339	0.026	0.074	1.12	0.41	0.10
WCDMA IV_Ant1	Right Cheek	0.608	1.155	0.717	0.025	0.253	0.86	0.97	0.28
	Right Tilted	0.736	0.709	0.514	0.035	0.120	0.86	0.63	0.16
	Left Cheek	1.057	0.496	0.319	0.022	0.080	1.14	0.40	0.10
	Left Tilted	1.242	0.533	0.339	0.026	0.074	1.32	0.41	0.10
WCDMA II_Ant1	Right Cheek	0.583	1.155	0.717	0.025	0.253	0.84	0.97	0.28
	Right Tilted	0.605	0.709	0.514	0.035	0.120	0.73	0.63	0.16
	Left Cheek	0.999	0.496	0.319	0.022	0.080	1.08	0.40	0.10
	Left Tilted	1.191	0.533	0.339	0.026	0.074	1.27	0.41	0.10
LTE Band 71_Ant1	Right Cheek	0.754	1.155	0.717	0.025	0.253	1.01	0.97	0.28
	Right Tilted	0.634	0.709	0.514	0.035	0.120	0.75	0.63	0.16
	Left Cheek	0.997	0.496	0.319	0.022	0.080	1.08	0.40	0.10
	Left Tilted	0.872	0.533	0.339	0.026	0.074	0.95	0.41	0.10
LTE Band 12_Ant1	Right Cheek	0.869	1.155	0.717	0.025	0.253	1.12	0.97	0.28
	Right Tilted	0.742	0.709	0.514	0.035	0.120	0.86	0.63	0.16
	Left Cheek	1.128	0.496	0.319	0.022	0.080	1.21	0.40	0.10
	Left Tilted	1.024	0.533	0.339	0.026	0.074	1.10	0.41	0.10
LTE Band 13_Ant1	Right Cheek	0.846	1.155	0.717	0.025	0.253	1.10	0.97	0.28
	Right Tilted	0.776	0.709	0.514	0.035	0.120	0.90	0.63	0.16
	Left Cheek	1.101	0.496	0.319	0.022	0.080	1.18	0.40	0.10
	Left Tilted	0.960	0.533	0.339	0.026	0.074	1.03	0.41	0.10
LTE Band 14_Ant1	Right Cheek	0.858	1.155	0.717	0.025	0.253	1.11	0.97	0.28
	Right Tilted	0.772	0.709	0.514	0.035	0.120	0.89	0.63	0.16
	Left Cheek	1.162	0.496	0.319	0.022	0.080	1.24	0.40	0.10
	Left Tilted	0.983	0.533	0.339	0.026	0.074	1.06	0.41	0.10
LTE Band 26_Ant1	Right Cheek	1.107	1.155	0.717	0.025	0.253	1.36	0.97	0.28
	Right Tilted	1.085	0.709	0.514	0.035	0.120	1.21	0.63	0.16
	Left Cheek	1.231	0.496	0.319	0.022	0.080	1.31	0.40	0.10
	Left Tilted	1.142	0.533	0.339	0.026	0.074	1.22	0.41	0.10
LTE Band 66_Ant1	Right Cheek	0.537	1.155	0.717	0.025	0.253	0.79	0.97	0.28
	Right Tilted	0.661	0.709	0.514	0.035	0.120	0.78	0.63	0.16
	Left Cheek	1.030	0.496	0.319	0.022	0.080	1.11	0.40	0.10
	Left Tilted	1.223	0.533	0.339	0.026	0.074	1.30	0.41	0.10
LTE Band 25_Ant1	Right Cheek	0.525	1.155	0.717	0.025	0.253	0.78	0.97	0.28
	Right Tilted	0.660	0.709	0.514	0.035	0.120	0.78	0.63	0.16
	Left Cheek	1.026	0.496	0.319	0.022	0.080	1.11	0.40	0.10
	Left Tilted	1.247	0.533	0.339	0.026	0.074	1.32	0.41	0.10
N71_Ant 1	Right Cheek	0.656	1.155	0.717	0.025	0.253	0.91	0.97	0.28
	Right Tilted	0.630	0.709	0.514	0.035	0.120	0.75	0.63	0.16
	Left Cheek	0.906	0.496	0.319	0.022	0.080	0.99	0.40	0.10
	Left Tilted	0.639	0.533	0.339	0.026	0.074	0.71	0.41	0.10
N5_Ant 1	Right Cheek	1.081	1.155	0.717	0.025	0.253	1.33	0.97	0.28
	Right Tilted	1.029	0.709	0.514	0.035	0.120	1.15	0.63	0.16
	Left Cheek	1.226	0.496	0.319	0.022	0.080	1.31	0.40	0.10
	Left Tilted	1.154	0.533	0.339	0.026	0.074	1.23	0.41	0.10
N66_Ant 1	Right Cheek	0.551	1.155	0.717	0.025	0.253	0.80	0.97	0.28



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14_Ant1	Right Tilted	0.563	0.224	0.292	0.035	0.120	0.79	0.86	0.60	0.98	0.72
	Left Cheek	0.910	0.157	0.239	0.022	0.080	1.07	1.15	0.93	1.23	1.01
	Left Tilted	0.726	0.170	0.208	0.026	0.074	0.90	0.93	0.75	1.01	0.83
LTE Band 26_Ant1	Right Cheek	0.795	0.381	0.394	0.025	0.253	1.18	1.19	0.82	1.44	1.07
	Right Tilted	0.756	0.224	0.292	0.035	0.120	0.98	1.05	0.79	1.17	0.91
	Left Cheek	0.929	0.157	0.239	0.022	0.080	1.09	1.17	0.95	1.25	1.03
	Left Tilted	0.880	0.170	0.208	0.026	0.074	1.05	1.09	0.91	1.16	0.98
LTE Band 66_Ant1	Right Cheek	0.424	0.381	0.394	0.025	0.253	0.81	0.82	0.45	1.07	0.70
	Right Tilted	0.520	0.224	0.292	0.035	0.120	0.74	0.81	0.56	0.93	0.68
	Left Cheek	0.777	0.157	0.239	0.022	0.080	0.93	1.02	0.80	1.10	0.88
	Left Tilted	0.976	0.170	0.208	0.026	0.074	1.15	1.18	1.00	1.26	1.08
LTE Band 25_Ant1	Right Cheek	0.435	0.381	0.394	0.025	0.253	0.82	0.83	0.46	1.08	0.71
	Right Tilted	0.545	0.224	0.292	0.035	0.120	0.77	0.84	0.58	0.96	0.70
	Left Cheek	0.758	0.157	0.239	0.022	0.080	0.92	1.00	0.78	1.08	0.86
	Left Tilted	0.997	0.170	0.208	0.026	0.074	1.17	1.21	1.02	1.28	1.10
N71_Ant 1	Right Cheek	0.656	0.381	0.394	0.025	0.253	1.04	1.05	0.68	1.30	0.93
	Right Tilted	0.630	0.224	0.292	0.035	0.120	0.85	0.92	0.67	1.04	0.79
	Left Cheek	0.906	0.157	0.239	0.022	0.080	1.06	1.15	0.93	1.23	1.01
	Left Tilted	0.639	0.170	0.208	0.026	0.074	0.81	0.85	0.67	0.92	0.74
N5_Ant 1	Right Cheek	0.850	0.381	0.394	0.025	0.253	1.23	1.24	0.88	1.50	1.13
	Right Tilted	0.811	0.224	0.292	0.035	0.120	1.04	1.10	0.85	1.22	0.97
	Left Cheek	0.984	0.157	0.239	0.022	0.080	1.14	1.22	1.01	1.30	1.09
	Left Tilted	0.942	0.170	0.208	0.026	0.074	1.11	1.15	0.97	1.22	1.04
N66_Ant 1	Right Cheek	0.445	0.381	0.394	0.025	0.253	0.83	0.84	0.47	1.09	0.72
	Right Tilted	0.539	0.224	0.292	0.035	0.120	0.76	0.83	0.57	0.95	0.69
	Left Cheek	0.795	0.157	0.239	0.022	0.080	0.95	1.03	0.82	1.11	0.90
	Left Tilted	0.997	0.170	0.208	0.026	0.074	1.17	1.21	1.02	1.28	1.10
N25_Ant 1	Right Cheek	0.496	0.381	0.394	0.025	0.253	0.88	0.89	0.52	1.14	0.77
	Right Tilted	0.605	0.224	0.292	0.035	0.120	0.83	0.90	0.64	1.02	0.76
	Left Cheek	0.889	0.157	0.239	0.022	0.080	1.05	1.13	0.91	1.21	0.99
	Left Tilted	0.970	0.170	0.208	0.026	0.074	1.14	1.18	1.00	1.25	1.07
N77_Ant 3_FCC	Right Cheek	0.943	0.381	0.394	0.025	0.253	1.32	1.34	0.97	1.59	1.22
	Right Tilted	0.476	0.224	0.292	0.035	0.120	0.70	0.77	0.51	0.89	0.63
	Left Cheek	0.228	0.157	0.239	0.022	0.080	0.39	0.47	0.25	0.55	0.33
	Left Tilted	0.185	0.170	0.208	0.026	0.074	0.36	0.39	0.21	0.47	0.29
N77_Ant 3_Part 27Q	Right Cheek	0.560	0.381	0.394	0.025	0.253	0.94	0.95	0.59	1.21	0.84
	Right Tilted	0.303	0.224	0.292	0.035	0.120	0.53	0.60	0.34	0.72	0.46
	Left Cheek	0.275	0.157	0.239	0.022	0.080	0.43	0.51	0.30	0.59	0.38
	Left Tilted	0.173	0.170	0.208	0.026	0.074	0.34	0.38	0.20	0.46	0.27
N77(HPUE)_Ant 3_FCC	Right Cheek	0.943	0.381	0.394	0.025	0.253	1.32	1.34	0.97	1.59	1.22
	Right Tilted	0.476	0.224	0.292	0.035	0.120	0.70	0.77	0.51	0.89	0.63
	Left Cheek	0.228	0.157	0.239	0.022	0.080	0.39	0.47	0.25	0.55	0.33
	Left Tilted	0.185	0.170	0.208	0.026	0.074	0.36	0.39	0.21	0.47	0.29
N77(HPUE)_Ant 3_Part 27Q	Right Cheek	0.560	0.381	0.394	0.025	0.253	0.94	0.95	0.59	1.21	0.84
	Right Tilted	0.303	0.224	0.292	0.035	0.120	0.53	0.60	0.34	0.72	0.46
	Left Cheek	0.275	0.157	0.239	0.022	0.080	0.43	0.51	0.30	0.59	0.38
	Left Tilted	0.173	0.170	0.208	0.026	0.074	0.34	0.38	0.20	0.46	0.27



WWAN Band	Exposure Position	1	3	6	7	9	1+9	6+9	7+9
		WWAN	2.4GHz WLAN Ant 2+4	5GHz WLAN Ant 4+12	6GHz WLAN Ant 4+12	Bluetooth 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)
GSM850_Ant0	Right Cheek	0.173	1.155	0.717	0.025	0.253	0.43	0.97	0.28
	Right Tilted	0.077	0.709	0.514	0.035	0.120	0.20	0.63	0.16
	Left Cheek	0.100	0.496	0.319	0.022	0.080	0.18	0.40	0.10
	Left Tilted	0.072	0.533	0.339	0.026	0.074	0.15	0.41	0.10
GSM1900_Ant0	Right Cheek	0.058	1.155	0.717	0.025	0.253	0.31	0.97	0.28
	Right Tilted	0.007	0.709	0.514	0.035	0.120	0.13	0.63	0.16
	Left Cheek	0.025	0.496	0.319	0.022	0.080	0.11	0.40	0.10
	Left Tilted	0.004	0.533	0.339	0.026	0.074	0.08	0.41	0.10
WCDMA_V_Ant0	Right Cheek	0.221	1.155	0.717	0.025	0.253	0.47	0.97	0.28
	Right Tilted	0.112	0.709	0.514	0.035	0.120	0.23	0.63	0.16
	Left Cheek	0.150	0.496	0.319	0.022	0.080	0.23	0.40	0.10
	Left Tilted	0.102	0.533	0.339	0.026	0.074	0.18	0.41	0.10
WCDMA_IV_Ant0	Right Cheek	0.136	1.155	0.717	0.025	0.253	0.39	0.97	0.28
	Right Tilted	0.049	0.709	0.514	0.035	0.120	0.17	0.63	0.16
	Left Cheek	0.082	0.496	0.319	0.022	0.080	0.16	0.40	0.10
	Left Tilted	0.053	0.533	0.339	0.026	0.074	0.13	0.41	0.10
WCDMA_II_Ant0	Right Cheek	0.147	1.155	0.717	0.025	0.253	0.40	0.97	0.28
	Right Tilted	0.058	0.709	0.514	0.035	0.120	0.18	0.63	0.16
	Left Cheek	0.080	0.496	0.319	0.022	0.080	0.16	0.40	0.10
	Left Tilted	0.065	0.533	0.339	0.026	0.074	0.14	0.41	0.10
LTE Band 71_Ant0	Right Cheek	0.191	1.155	0.717	0.025	0.253	0.44	0.97	0.28
	Right Tilted	0.083	0.709	0.514	0.035	0.120	0.20	0.63	0.16
	Left Cheek	0.119	0.496	0.319	0.022	0.080	0.20	0.40	0.10
	Left Tilted	0.028	0.533	0.339	0.026	0.074	0.10	0.41	0.10
LTE Band 12_Ant0	Right Cheek	0.225	1.155	0.717	0.025	0.253	0.48	0.97	0.28
	Right Tilted	0.086	0.709	0.514	0.035	0.120	0.21	0.63	0.16
	Left Cheek	0.191	0.496	0.319	0.022	0.080	0.27	0.40	0.10
	Left Tilted	0.097	0.533	0.339	0.026	0.074	0.17	0.41	0.10
LTE Band 13_Ant0	Right Cheek	0.340	1.155	0.717	0.025	0.253	0.59	0.97	0.28
	Right Tilted	0.159	0.709	0.514	0.035	0.120	0.28	0.63	0.16
	Left Cheek	0.264	0.496	0.319	0.022	0.080	0.34	0.40	0.10
	Left Tilted	0.124	0.533	0.339	0.026	0.074	0.20	0.41	0.10
LTE Band 14_Ant0	Right Cheek	0.276	1.155	0.717	0.025	0.253	0.53	0.97	0.28
	Right Tilted	0.142	0.709	0.514	0.035	0.120	0.26	0.63	0.16
	Left Cheek	0.205	0.496	0.319	0.022	0.080	0.29	0.40	0.10
	Left Tilted	0.115	0.533	0.339	0.026	0.074	0.19	0.41	0.10
LTE Band 26_Ant0	Right Cheek	0.205	1.155	0.717	0.025	0.253	0.46	0.97	0.28
	Right Tilted	0.104	0.709	0.514	0.035	0.120	0.22	0.63	0.16
	Left Cheek	0.158	0.496	0.319	0.022	0.080	0.24	0.40	0.10
	Left Tilted	0.125	0.533	0.339	0.026	0.074	0.20	0.41	0.10
LTE Band 66_Ant0	Right Cheek	0.137	1.155	0.717	0.025	0.253	0.39	0.97	0.28
	Right Tilted	0.059	0.709	0.514	0.035	0.120	0.18	0.63	0.16
	Left Cheek	0.094	0.496	0.319	0.022	0.080	0.17	0.40	0.10
	Left Tilted	0.074	0.533	0.339	0.026	0.074	0.15	0.41	0.10
LTE Band 25_Ant0	Right Cheek	0.132	1.155	0.717	0.025	0.253	0.39	0.97	0.28
	Right Tilted	0.052	0.709	0.514	0.035	0.120	0.17	0.63	0.16
	Left Cheek	0.106	0.496	0.319	0.022	0.080	0.19	0.40	0.10
	Left Tilted	0.080	0.533	0.339	0.026	0.074	0.15	0.41	0.10
LTE Band 30_Ant0	Right Cheek	0.107	1.155	0.717	0.025	0.253	0.36	0.97	0.28
	Right Tilted	0.091	0.709	0.514	0.035	0.120	0.21	0.63	0.16
	Left Cheek	0.101	0.496	0.319	0.022	0.080	0.18	0.40	0.10



	Left Tilted	0.094	0.533	0.339	0.026	0.074	0.17	0.41	0.10
LTE Band 7_Ant0	Right Cheek	0.101	1.155	0.717	0.025	0.253	0.35	0.97	0.28
	Right Tilted	0.084	0.709	0.514	0.035	0.120	0.20	0.63	0.16
	Left Cheek	0.122	0.496	0.319	0.022	0.080	0.20	0.40	0.10
	Left Tilted	0.093	0.533	0.339	0.026	0.074	0.17	0.41	0.10
LTE Band 41_Ant0	Right Cheek	0.041	1.155	0.717	0.025	0.253	0.29	0.97	0.28
	Right Tilted	0.036	0.709	0.514	0.035	0.120	0.16	0.63	0.16
	Left Cheek	0.053	0.496	0.319	0.022	0.080	0.13	0.40	0.10
	Left Tilted	0.043	0.533	0.339	0.026	0.074	0.12	0.41	0.10
LTE Band 41(HPUE)_Ant0	Right Cheek	0.064	1.155	0.717	0.025	0.253	0.32	0.97	0.28
	Right Tilted	0.053	0.709	0.514	0.035	0.120	0.17	0.63	0.16
	Left Cheek	0.070	0.496	0.319	0.022	0.080	0.15	0.40	0.10
	Left Tilted	0.064	0.533	0.339	0.026	0.074	0.14	0.41	0.10
N71_Ant 0	Right Cheek	0.115	1.155	0.717	0.025	0.253	0.37	0.97	0.28
	Right Tilted	0.030	0.709	0.514	0.035	0.120	0.15	0.63	0.16
	Left Cheek	0.068	0.496	0.319	0.022	0.080	0.15	0.40	0.10
	Left Tilted	0.032	0.533	0.339	0.026	0.074	0.11	0.41	0.10
N5_Ant 0	Right Cheek	0.172	1.155	0.717	0.025	0.253	0.43	0.97	0.28
	Right Tilted	0.070	0.709	0.514	0.035	0.120	0.19	0.63	0.16
	Left Cheek	0.087	0.496	0.319	0.022	0.080	0.17	0.40	0.10
	Left Tilted	0.080	0.533	0.339	0.026	0.074	0.15	0.41	0.10
N66_Ant 0	Right Cheek	0.098	1.155	0.717	0.025	0.253	0.35	0.97	0.28
	Right Tilted	0.020	0.709	0.514	0.035	0.120	0.14	0.63	0.16
	Left Cheek	0.064	0.496	0.319	0.022	0.080	0.14	0.40	0.10
	Left Tilted	0.013	0.533	0.339	0.026	0.074	0.09	0.41	0.10
N25_Ant 0	Right Cheek	0.081	1.155	0.717	0.025	0.253	0.33	0.97	0.28
	Right Tilted	0.021	0.709	0.514	0.035	0.120	0.14	0.63	0.16
	Left Cheek	0.064	0.496	0.319	0.022	0.080	0.14	0.40	0.10
	Left Tilted	0.017	0.533	0.339	0.026	0.074	0.09	0.41	0.10
N41_Ant 0	Right Cheek	0.080	1.155	0.717	0.025	0.253	0.33	0.97	0.28
	Right Tilted	0.049	0.709	0.514	0.035	0.120	0.17	0.63	0.16
	Left Cheek	0.108	0.496	0.319	0.022	0.080	0.19	0.40	0.10
	Left Tilted	0.060	0.533	0.339	0.026	0.074	0.13	0.41	0.10
N41(HPUE)_Ant 0	Right Cheek	0.158	1.155	0.717	0.025	0.253	0.41	0.97	0.28
	Right Tilted	0.100	0.709	0.514	0.035	0.120	0.22	0.63	0.16
	Left Cheek	0.195	0.496	0.319	0.022	0.080	0.28	0.40	0.10
	Left Tilted	0.114	0.533	0.339	0.026	0.074	0.19	0.41	0.10



	Left Cheek	0.101	0.157	0.239	0.022	0.080	0.26	0.34	0.12	0.42	0.20
	Left Tilted	0.094	0.170	0.208	0.026	0.074	0.26	0.30	0.12	0.38	0.19
LTE Band 7_Ant0	Right Cheek	0.101	0.381	0.394	0.025	0.253	0.48	0.50	0.13	0.75	0.38
	Right Tilted	0.084	0.224	0.292	0.035	0.120	0.31	0.38	0.12	0.50	0.24
	Left Cheek	0.122	0.157	0.239	0.022	0.080	0.28	0.36	0.14	0.44	0.22
	Left Tilted	0.093	0.170	0.208	0.026	0.074	0.26	0.30	0.12	0.38	0.19
LTE Band 41_Ant0	Right Cheek	0.041	0.381	0.394	0.025	0.253	0.42	0.44	0.07	0.69	0.32
	Right Tilted	0.036	0.224	0.292	0.035	0.120	0.26	0.33	0.07	0.45	0.19
	Left Cheek	0.053	0.157	0.239	0.022	0.080	0.21	0.29	0.08	0.37	0.16
	Left Tilted	0.043	0.170	0.208	0.026	0.074	0.21	0.25	0.07	0.33	0.14
LTE Band 41(HPUE)_Ant0	Right Cheek	0.064	0.381	0.394	0.025	0.253	0.45	0.46	0.09	0.71	0.34
	Right Tilted	0.053	0.224	0.292	0.035	0.120	0.28	0.35	0.09	0.47	0.21
	Left Cheek	0.070	0.157	0.239	0.022	0.080	0.23	0.31	0.09	0.39	0.17
	Left Tilted	0.064	0.170	0.208	0.026	0.074	0.23	0.27	0.09	0.35	0.16
N71_Ant 0	Right Cheek	0.115	0.381	0.394	0.025	0.253	0.50	0.51	0.14	0.76	0.39
	Right Tilted	0.030	0.224	0.292	0.035	0.120	0.25	0.32	0.07	0.44	0.19
	Left Cheek	0.068	0.157	0.239	0.022	0.080	0.23	0.31	0.09	0.39	0.17
	Left Tilted	0.032	0.170	0.208	0.026	0.074	0.20	0.24	0.06	0.31	0.13
N5_Ant 0	Right Cheek	0.172	0.381	0.394	0.025	0.253	0.55	0.57	0.20	0.82	0.45
	Right Tilted	0.070	0.224	0.292	0.035	0.120	0.29	0.36	0.11	0.48	0.23
	Left Cheek	0.087	0.157	0.239	0.022	0.080	0.24	0.33	0.11	0.41	0.19
	Left Tilted	0.080	0.170	0.208	0.026	0.074	0.25	0.29	0.11	0.36	0.18
N66_Ant 0	Right Cheek	0.098	0.381	0.394	0.025	0.253	0.48	0.49	0.12	0.75	0.38
	Right Tilted	0.020	0.224	0.292	0.035	0.120	0.24	0.31	0.06	0.43	0.18
	Left Cheek	0.064	0.157	0.239	0.022	0.080	0.22	0.30	0.09	0.38	0.17
	Left Tilted	0.013	0.170	0.208	0.026	0.074	0.18	0.22	0.04	0.30	0.11
N25_Ant 0	Right Cheek	0.081	0.381	0.394	0.025	0.253	0.46	0.48	0.11	0.73	0.36
	Right Tilted	0.021	0.224	0.292	0.035	0.120	0.25	0.31	0.06	0.43	0.18
	Left Cheek	0.064	0.157	0.239	0.022	0.080	0.22	0.30	0.09	0.38	0.17
	Left Tilted	0.017	0.170	0.208	0.026	0.074	0.19	0.23	0.04	0.30	0.12
N41_Ant 0	Right Cheek	0.080	0.381	0.394	0.025	0.253	0.46	0.47	0.11	0.73	0.36
	Right Tilted	0.049	0.224	0.292	0.035	0.120	0.27	0.34	0.08	0.46	0.20
	Left Cheek	0.108	0.157	0.239	0.022	0.080	0.27	0.35	0.13	0.43	0.21
	Left Tilted	0.060	0.170	0.208	0.026	0.074	0.23	0.27	0.09	0.34	0.16
N41(HPUE)_Ant 0	Right Cheek	0.158	0.381	0.394	0.025	0.253	0.54	0.55	0.18	0.81	0.44
	Right Tilted	0.100	0.224	0.292	0.035	0.120	0.32	0.39	0.14	0.51	0.26
	Left Cheek	0.195	0.157	0.239	0.022	0.080	0.35	0.43	0.22	0.51	0.30
	Left Tilted	0.114	0.170	0.208	0.026	0.074	0.284	0.322	0.140	0.396	0.214



17.3 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	3	6	9	1+9	6+9
		WWAN 1g SAR (W/kg)	2.4GHz WLAN Ant 2+4 1g SAR (W/kg)	5GHz WLAN Ant 4+12 1g SAR (W/kg)	Bluetooth Ant 2 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)
WCDMA V_Ant1	Front	0.663	0.124	0.010	0.066	0.73	0.08
	Back	0.797	0.381	0.345	0.125	0.92	0.47
	Left side	0.184		0.119		0.18	0.12
	Right side	0.284				0.28	0.00
	Top side	0.993	0.163	0.085	0.081	1.07	0.17
	Bottom side					0.00	0.00
WCDMA IV_Ant1	Front	0.554	0.124	0.010	0.066	0.62	0.08
	Back	0.760	0.381	0.345	0.125	0.89	0.47
	Left side			0.119		0.00	0.12
	Right side	0.072				0.07	0.00
	Top side	0.948	0.163	0.085	0.081	1.03	0.17
	Bottom side					0.00	0.00
WCDMA II_Ant1	Front	0.382	0.124	0.010	0.066	0.45	0.08
	Back	0.643	0.381	0.345	0.125	0.77	0.47
	Left side			0.119		0.00	0.12
	Right side	0.056				0.06	0.00
	Top side	0.998	0.163	0.085	0.081	1.08	0.17
	Bottom side					0.00	0.00
LTE Band 71_Ant1	Front	0.497	0.124	0.010	0.066	0.56	0.08
	Back	0.714	0.381	0.345	0.125	0.84	0.47
	Left side	0.358		0.119		0.36	0.12
	Right side	0.625				0.63	0.00
	Top side	0.525	0.163	0.085	0.081	0.61	0.17
	Bottom side					0.00	0.00
LTE Band 12_Ant1	Front	0.661	0.124	0.010	0.066	0.73	0.08
	Back	0.792	0.381	0.345	0.125	0.92	0.47
	Left side	0.351		0.119		0.35	0.12
	Right side	0.627				0.63	0.00
	Top side	0.763	0.163	0.085	0.081	0.84	0.17
	Bottom side					0.00	0.00
LTE Band 13_Ant1	Front	0.879	0.124	0.010	0.066	0.95	0.08
	Back	0.931	0.381	0.345	0.125	1.06	0.47
	Left side	0.261		0.119		0.26	0.12
	Right side	0.775				0.78	0.00
	Top side	0.977	0.163	0.085	0.081	1.06	0.17
	Bottom side					0.00	0.00
LTE Band 14_Ant1	Front	0.739	0.124	0.010	0.066	0.81	0.08
	Back	0.892	0.381	0.345	0.125	1.02	0.47
	Left side	0.279		0.119		0.28	0.12
	Right side	0.593				0.59	0.00
	Top side	0.998	0.163	0.085	0.081	1.08	0.17
	Bottom side					0.00	0.00
LTE Band 26_Ant1	Front	0.607	0.124	0.010	0.066	0.67	0.08
	Back	0.685	0.381	0.345	0.125	0.81	0.47
	Left side	0.185		0.119		0.19	0.12
	Right side	0.362				0.36	0.00
	Top side	0.995	0.163	0.085	0.081	1.08	0.17
	Bottom side					0.00	0.00
LTE Band 66_Ant1	Front	0.520	0.124	0.010	0.066	0.59	0.08
	Back	0.795	0.381	0.345	0.125	0.92	0.47
	Left side			0.119		0.00	0.12



	Right side	0.082				0.08	0.00
	Top side	0.924	0.163	0.085	0.081	1.01	0.17
	Bottom side					0.00	0.00
LTE Band 25_Ant1	Front	0.455	0.124	0.010	0.066	0.52	0.08
	Back	0.623	0.381	0.345	0.125	0.75	0.47
	Left side			0.119		0.00	0.12
	Right side	0.102				0.10	0.00
	Top side	0.998	0.163	0.085	0.081	1.08	0.17
	Bottom side					0.00	0.00
N71_Ant 1	Front	0.385	0.124	0.010	0.066	0.45	0.08
	Back	0.489	0.381	0.345	0.125	0.61	0.47
	Left side	0.234		0.119		0.23	0.12
	Right side	0.448				0.45	0.00
	Top side	0.458	0.163	0.085	0.081	0.54	0.17
	Bottom side					0.00	0.00
N5_Ant 1	Front	0.847	0.124	0.010	0.066	0.91	0.08
	Back	0.895	0.381	0.345	0.125	1.02	0.47
	Left side	0.195		0.119		0.20	0.12
	Right side	0.412				0.41	0.00
	Top side	0.997	0.163	0.085	0.081	1.08	0.17
	Bottom side					0.00	0.00
N66_Ant 1	Front	0.562	0.124	0.010	0.066	0.63	0.08
	Back	0.782	0.381	0.345	0.125	0.91	0.47
	Left side			0.119		0.00	0.12
	Right side	0.076				0.08	0.00
	Top side	0.999	0.163	0.085	0.081	1.08	0.17
	Bottom side					0.00	0.00
N25_Ant 1	Front	0.563	0.124	0.010	0.066	0.63	0.08
	Back	0.693	0.381	0.345	0.125	0.82	0.47
	Left side			0.119		0.00	0.12
	Right side	0.098				0.10	0.00
	Top side	0.947	0.163	0.085	0.081	1.03	0.17
	Bottom side					0.00	0.00
N77_Ant 3_FCC	Front	0.159	0.124	0.010	0.066	0.23	0.08
	Back	0.924	0.381	0.345	0.125	1.05	0.47
	Left side	0.516		0.119		0.52	0.12
	Right side					0.00	0.00
	Top side	0.108	0.163	0.085	0.081	0.19	0.17
	Bottom side					0.00	0.00
N77_Ant 3_Part 27Q	Front	0.117	0.124	0.010	0.066	0.18	0.08
	Back	0.997	0.381	0.345	0.125	1.12	0.47
	Left side	0.345		0.119		0.35	0.12
	Right side					0.00	0.00
	Top side	0.110	0.163	0.085	0.081	0.19	0.17
	Bottom side					0.00	0.00
N77(HPUE)_Ant 3_FCC	Front	0.159	0.124	0.010	0.066	0.23	0.08
	Back	0.924	0.381	0.345	0.125	1.05	0.47
	Left side	0.516		0.119		0.52	0.12
	Right side					0.00	0.00
	Top side	0.108	0.163	0.085	0.081	0.19	0.17
	Bottom side					0.00	0.00
N77(HPUE)_Ant 3_Part 27Q	Front	0.117	0.124	0.010	0.066	0.18	0.08
	Back	0.997	0.381	0.345	0.125	1.12	0.47
	Left side	0.345		0.119		0.35	0.12
	Right side					0.00	0.00
	Top side	0.110	0.163	0.085	0.081	0.19	0.17
	Bottom side					0.00	0.00



WWAN Band	Exposure Position	1	3	6	9	1+3	1+6	1+6+9
		WWAN	2.4GHz WLAN Ant 2+4	5GHz WLAN Ant 4+12	Bluetooth 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)
WCDMA V_Ant1	Front	0.663	0.124	0.010	0.066	0.79	0.67	0.74
	Back	0.797	0.381	0.345	0.125	1.18	1.14	1.27
	Left side	0.184		0.119		0.18	0.30	0.30
	Right side	0.284				0.28	0.28	0.28
	Top side	0.993	0.163	0.085	0.081	1.16	1.08	1.16
	Bottom side					0.00	0.00	0.00
WCDMA IV_Ant1	Front	0.554	0.124	0.010	0.066	0.68	0.56	0.63
	Back	0.760	0.381	0.345	0.125	1.14	1.11	1.23
	Left side			0.119		0.00	0.12	0.12
	Right side	0.072				0.07	0.07	0.07
	Top side	0.948	0.163	0.085	0.081	1.11	1.03	1.11
	Bottom side					0.00	0.00	0.00
WCDMA II_Ant1	Front	0.382	0.124	0.010	0.066	0.51	0.39	0.46
	Back	0.643	0.381	0.345	0.125	1.02	0.99	1.11
	Left side			0.119		0.00	0.12	0.12
	Right side	0.056				0.06	0.06	0.06
	Top side	0.998	0.163	0.085	0.081	1.16	1.08	1.16
	Bottom side					0.00	0.00	0.00
LTE Band 71_Ant1	Front	0.497	0.124	0.010	0.066	0.62	0.51	0.57
	Back	0.714	0.381	0.345	0.125	1.10	1.06	1.18
	Left side	0.358		0.119		0.36	0.48	0.48
	Right side	0.625				0.63	0.63	0.63
	Top side	0.525	0.163	0.085	0.081	0.69	0.61	0.69
	Bottom side					0.00	0.00	0.00
LTE Band 12_Ant1	Front	0.661	0.124	0.010	0.066	0.79	0.67	0.74
	Back	0.792	0.381	0.345	0.125	1.17	1.14	1.26
	Left side	0.351		0.119		0.35	0.47	0.47
	Right side	0.627				0.63	0.63	0.63
	Top side	0.763	0.163	0.085	0.081	0.93	0.85	0.93
	Bottom side					0.00	0.00	0.00
LTE Band 13_Ant1	Front	0.879	0.124	0.010	0.066	1.00	0.89	0.96
	Back	0.931	0.381	0.345	0.125	1.31	1.28	1.40
	Left side	0.261		0.119		0.26	0.38	0.38
	Right side	0.775				0.78	0.78	0.78
	Top side	0.977	0.163	0.085	0.081	1.14	1.06	1.14
	Bottom side					0.00	0.00	0.00
LTE Band 14_Ant1	Front	0.739	0.124	0.010	0.066	0.86	0.75	0.82
	Back	0.892	0.381	0.345	0.125	1.27	1.24	1.36
	Left side	0.279		0.119		0.28	0.40	0.40
	Right side	0.593				0.59	0.59	0.59
	Top side	0.998	0.163	0.085	0.081	1.16	1.08	1.16
	Bottom side					0.00	0.00	0.00
LTE Band 26_Ant1	Front	0.607	0.124	0.010	0.066	0.73	0.62	0.68
	Back	0.685	0.381	0.345	0.125	1.07	1.03	1.16
	Left side	0.185		0.119		0.19	0.30	0.30
	Right side	0.362				0.36	0.36	0.36
	Top side	0.995	0.163	0.085	0.081	1.16	1.08	1.16
	Bottom side					0.00	0.00	0.00
LTE Band 66_Ant1	Front	0.520	0.124	0.010	0.066	0.64	0.53	0.60
	Back	0.795	0.381	0.345	0.125	1.18	1.14	1.27
	Left side			0.119		0.00	0.12	0.12



	Right side	0.082				0.08	0.08	0.08
	Top side	0.924	0.163	0.085	0.081	1.09	1.01	1.09
	Bottom side					0.00	0.00	0.00
LTE Band 25_Ant1	Front	0.455	0.124	0.010	0.066	0.58	0.47	0.53
	Back	0.623	0.381	0.345	0.125	1.00	0.97	1.09
	Left side			0.119		0.00	0.12	0.12
	Right side	0.102				0.10	0.10	0.10
	Top side	0.998	0.163	0.085	0.081	1.16	1.08	1.16
	Bottom side					0.00	0.00	0.00
N71_Ant 1	Front	0.385	0.124	0.010	0.066	0.51	0.40	0.46
	Back	0.489	0.381	0.345	0.125	0.87	0.83	0.96
	Left side	0.234		0.119		0.23	0.35	0.35
	Right side	0.448				0.45	0.45	0.45
	Top side	0.458	0.163	0.085	0.081	0.62	0.54	0.62
	Bottom side					0.00	0.00	0.00
N5_Ant 1	Front	0.847	0.124	0.010	0.066	0.97	0.86	0.92
	Back	0.895	0.381	0.345	0.125	1.28	1.24	1.37
	Left side	0.195		0.119		0.20	0.31	0.31
	Right side	0.412				0.41	0.41	0.41
	Top side	0.997	0.163	0.085	0.081	1.16	1.08	1.16
	Bottom side					0.00	0.00	0.00
N66_Ant 1	Front	0.562	0.124	0.010	0.066	0.69	0.57	0.64
	Back	0.782	0.381	0.345	0.125	1.16	1.13	1.25
	Left side			0.119		0.00	0.12	0.12
	Right side	0.076				0.08	0.08	0.08
	Top side	0.999	0.163	0.085	0.081	1.16	1.08	1.17
	Bottom side					0.00	0.00	0.00
N25_Ant 1	Front	0.563	0.124	0.010	0.066	0.69	0.57	0.64
	Back	0.693	0.381	0.345	0.125	1.07	1.04	1.16
	Left side			0.119		0.00	0.12	0.12
	Right side	0.098				0.10	0.10	0.10
	Top side	0.947	0.163	0.085	0.081	1.11	1.03	1.11
	Bottom side					0.00	0.00	0.00
N77_Ant 3_FCC	Front	0.159	0.124	0.010	0.066	0.28	0.17	0.24
	Back	0.924	0.381	0.345	0.125	1.31	1.27	1.39
	Left side	0.516		0.119		0.52	0.64	0.64
	Right side					0.00	0.00	0.00
	Top side	0.108	0.163	0.085	0.081	0.27	0.19	0.27
	Bottom side					0.00	0.00	0.00
N77_Ant 3_Part 27Q	Front	0.117	0.124	0.010	0.066	0.24	0.13	0.19
	Back	0.997	0.381	0.345	0.125	1.38	1.34	1.47
	Left side	0.345		0.119		0.35	0.46	0.46
	Right side					0.00	0.00	0.00
	Top side	0.110	0.163	0.085	0.081	0.27	0.20	0.28
	Bottom side					0.00	0.00	0.00
N77(HPUE)_Ant 3_FCC	Front	0.159	0.124	0.010	0.066	0.28	0.17	0.24
	Back	0.924	0.381	0.345	0.125	1.31	1.27	1.39
	Left side	0.516		0.119		0.52	0.64	0.64
	Right side					0.00	0.00	0.00
	Top side	0.108	0.163	0.085	0.081	0.27	0.19	0.27
	Bottom side					0.00	0.00	0.00
N77(HPUE)_Ant 3_Part 27Q	Front	0.117	0.124	0.010	0.066	0.24	0.13	0.19
	Back	0.997	0.381	0.345	0.125	1.38	1.34	1.47
	Left side	0.345		0.119		0.35	0.46	0.46
	Right side					0.00	0.00	0.00
	Top side	0.110	0.163	0.085	0.081	0.27	0.20	0.28
	Bottom side					0.00	0.00	0.00



	Bottom side					0.00	0.00	0.00
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WWAN Band	Exposure Position	1	3	6	9	1+9	6+9
		WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed	Summed
		1g SAR (W/kg)	Ant 2+4 1g SAR (W/kg)	Ant 4+12 1g SAR (W/kg)	Ant 2 1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM850_Ant0	Front	0.662	0.124	0.010	0.066	0.73	0.08
	Back	0.733	0.381	0.345	0.125	0.86	0.47
	Left side	0.080		0.119		0.08	0.12
	Right side	0.167				0.17	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	0.604				0.60	0.00
GSM1900_Ant0	Front	0.505	0.124	0.010	0.066	0.57	0.08
	Back	0.596	0.381	0.345	0.125	0.72	0.47
	Left side			0.119		0.00	0.12
	Right side					0.00	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	1.239				1.24	0.00
WCDMA V_Ant0	Front	0.937	0.124	0.010	0.066	1.00	0.08
	Back	1.140	0.381	0.345	0.125	1.27	0.47
	Left side	0.124		0.119		0.12	0.12
	Right side	0.208				0.21	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	0.892				0.89	0.00
WCDMA IV_Ant0	Front	0.670	0.124	0.010	0.066	0.74	0.08
	Back	0.755	0.381	0.345	0.125	0.88	0.47
	Left side			0.119		0.00	0.12
	Right side	0.057				0.06	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	1.152				1.15	0.00
WCDMA II_Ant0	Front	0.446	0.124	0.010	0.066	0.51	0.08
	Back	0.616	0.381	0.345	0.125	0.74	0.47
	Left side			0.119		0.00	0.12
	Right side					0.00	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	1.238				1.24	0.00
LTE Band 71_Ant0	Front	0.407	0.124	0.010	0.066	0.47	0.08
	Back	0.598	0.381	0.345	0.125	0.72	0.47
	Left side	0.255		0.119		0.26	0.12
	Right side	0.241				0.24	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	0.413				0.41	0.00
LTE Band 12_Ant0	Front	0.504	0.124	0.010	0.066	0.57	0.08
	Back	0.743	0.381	0.345	0.125	0.87	0.47
	Left side	0.263		0.119		0.26	0.12
	Right side	0.228				0.23	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	0.473				0.47	0.00
LTE Band 13_Ant0	Front	1.043	0.124	0.010	0.066	1.11	0.08
	Back	1.252	0.381	0.345	0.125	1.38	0.47
	Left side	0.336		0.119		0.34	0.12
	Right side	0.600				0.60	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	0.942				0.94	0.00
LTE Band 14_Ant0	Front	0.747	0.124	0.010	0.066	0.81	0.08
	Back	0.874	0.381	0.345	0.125	1.00	0.47



	Left side	0.249		0.119		0.25	0.12
	Right side	0.443				0.44	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	0.529				0.53	0.00
LTE Band 26_Ant0	Front	1.086	0.124	0.010	0.066	1.15	0.08
	Back	1.224	0.381	0.345	0.125	1.35	0.47
	Left side	0.137		0.119		0.14	0.12
	Right side	0.183				0.18	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	1.011				1.01	0.00
LTE Band 66_Ant0	Front	0.551	0.124	0.010	0.066	0.62	0.08
	Back	0.590	0.381	0.345	0.125	0.72	0.47
	Left side			0.119		0.00	0.12
	Right side					0.00	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	1.185				1.19	0.00
LTE Band 25_Ant0	Front	0.451	0.124	0.010	0.066	0.52	0.08
	Back	0.524	0.381	0.345	0.125	0.65	0.47
	Left side			0.119		0.00	0.12
	Right side					0.00	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	1.122				1.12	0.00
LTE Band 30_Ant0	Front	0.674	0.124	0.010	0.066	0.74	0.08
	Back	0.913	0.381	0.345	0.125	1.04	0.47
	Left side			0.119		0.00	0.12
	Right side	0.169				0.17	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	1.169				1.17	0.00
LTE Band 7_Ant0	Front	0.656	0.124	0.010	0.066	0.72	0.08
	Back	0.837	0.381	0.345	0.125	0.96	0.47
	Left side	0.199		0.119		0.20	0.12
	Right side	0.205				0.21	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	1.081				1.08	0.00
LTE Band 41_Ant0	Front	0.695	0.124	0.010	0.066	0.76	0.08
	Back	0.878	0.381	0.345	0.125	1.00	0.47
	Left side	0.220		0.119		0.22	0.12
	Right side	0.207				0.21	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	1.248				1.25	0.00
LTE Band 41(HPUE)_Ant0	Front	0.686	0.124	0.010	0.066	0.75	0.08
	Back	0.745	0.381	0.345	0.125	0.87	0.47
	Left side	0.235		0.119		0.24	0.12
	Right side	0.207				0.21	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	1.213				1.21	0.00
N71_Ant 0	Front	0.260	0.124	0.010	0.066	0.33	0.08
	Back	0.353	0.381	0.345	0.125	0.48	0.47
	Left side	0.138		0.119		0.14	0.12
	Right side	0.134				0.13	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	0.219				0.22	0.00
N5_Ant 0	Front	0.550	0.124	0.010	0.066	0.62	0.08
	Back	0.693	0.381	0.345	0.125	0.82	0.47
	Left side	0.076		0.119		0.08	0.12
	Right side	0.120				0.12	0.00



	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	0.496				0.50	0.00
N66_Ant 0	Front	0.590	0.124	0.010	0.066	0.66	0.08
	Back	0.669	0.381	0.345	0.125	0.79	0.47
	Left side			0.119		0.00	0.12
	Right side					0.00	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	1.253				1.25	0.00
N25_Ant 0	Front	0.497	0.124	0.010	0.066	0.56	0.08
	Back	0.559	0.381	0.345	0.125	0.68	0.47
	Left side			0.119		0.00	0.12
	Right side					0.00	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	1.168				1.17	0.00
N41_Ant 0	Front	0.670	0.124	0.010	0.066	0.74	0.08
	Back	0.880	0.381	0.345	0.125	1.01	0.47
	Left side	0.214		0.119		0.21	0.12
	Right side	0.205				0.21	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	1.191				1.19	0.00
N41(HPUE)_Ant 0	Front	0.670	0.124	0.010	0.066	0.74	0.08
	Back	0.880	0.381	0.345	0.125	1.01	0.47
	Left side	0.214		0.119		0.21	0.12
	Right side	0.205				0.21	0.00
	Top side		0.163	0.085	0.081	0.08	0.17
	Bottom side	1.191				1.19	0.00



WWAN Band	Exposure Position	1	3	6	9	1+3	1+6	1+6+9	Case No.
		WWAN 1g SAR (W/kg)	2.4GHz WLAN Ant 2+4 1g SAR (W/kg)	5GHz WLAN Ant 4+12 1g SAR (W/kg)	Bluetooth Ant 2 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	
GSM850_Ant0	Front	0.662	0.124	0.010	0.066	0.79	0.67	0.74	
	Back	0.733	0.381	0.345	0.125	1.11	1.08	1.20	
	Left side	0.080		0.119		0.08	0.20	0.20	
	Right side	0.167				0.17	0.17	0.17	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
	Bottom side	0.604				0.60	0.60	0.60	
GSM1900_Ant0	Front	0.505	0.124	0.010	0.066	0.63	0.52	0.58	
	Back	0.596	0.381	0.345	0.125	0.98	0.94	1.07	
	Left side			0.119		0.00	0.12	0.12	
	Right side					0.00	0.00	0.00	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
	Bottom side	1.239				1.24	1.24	1.24	
WCDMA V_Ant0	Front	0.937	0.124	0.010	0.066	1.06	0.95	1.01	
	Back	1.140	0.381	0.345	0.125	1.52	1.49	1.61	01
	Left side	0.124		0.119		0.12	0.24	0.24	
	Right side	0.208				0.21	0.21	0.21	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
	Bottom side	0.892				0.89	0.89	0.89	
WCDMA IV_Ant0	Front	0.670	0.124	0.010	0.066	0.79	0.68	0.75	
	Back	0.755	0.381	0.345	0.125	1.14	1.10	1.23	
	Left side			0.119		0.00	0.12	0.12	
	Right side	0.057				0.06	0.06	0.06	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
	Bottom side	1.152				1.15	1.15	1.15	
WCDMA II_Ant0	Front	0.446	0.124	0.010	0.066	0.57	0.46	0.52	
	Back	0.616	0.381	0.345	0.125	1.00	0.96	1.09	
	Left side			0.119		0.00	0.12	0.12	
	Right side					0.00	0.00	0.00	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
	Bottom side	1.238				1.24	1.24	1.24	
LTE Band 71_Ant0	Front	0.407	0.124	0.010	0.066	0.53	0.42	0.48	
	Back	0.598	0.381	0.345	0.125	0.98	0.94	1.07	
	Left side	0.255		0.119		0.26	0.37	0.37	
	Right side	0.241				0.24	0.24	0.24	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
	Bottom side	0.413				0.41	0.41	0.41	
LTE Band 12_Ant0	Front	0.504	0.124	0.010	0.066	0.63	0.51	0.58	
	Back	0.743	0.381	0.345	0.125	1.12	1.09	1.21	
	Left side	0.263		0.119		0.26	0.38	0.38	
	Right side	0.228				0.23	0.23	0.23	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
	Bottom side	0.473				0.47	0.47	0.47	
LTE Band 13_Ant0	Front	1.043	0.124	0.010	0.066	1.17	1.05	1.12	
	Back	1.252	0.381	0.345	0.125	1.63	1.60	1.72	02&03
	Left side	0.336		0.119		0.34	0.46	0.46	
	Right side	0.600				0.60	0.60	0.60	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
	Bottom side	0.942				0.94	0.94	0.94	
LTE Band 14_Ant0	Front	0.747	0.124	0.010	0.066	0.87	0.76	0.82	
	Back	0.874	0.381	0.345	0.125	1.26	1.22	1.34	
	Left side	0.249		0.119		0.25	0.37	0.37	



	Right side	0.443				0.44	0.44	0.44	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
	Bottom side	0.529				0.53	0.53	0.53	
LTE Band 26_Ant0	Front	1.086	0.124	0.010	0.066	1.21	1.10	1.16	
	Back	1.224	0.381	0.345	0.125	1.61	1.57	1.69	04&05
	Left side	0.137		0.119		0.14	0.26	0.26	
	Right side	0.183				0.18	0.18	0.18	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
	Bottom side	1.011				1.01	1.01	1.01	
LTE Band 66_Ant0	Front	0.551	0.124	0.010	0.066	0.68	0.56	0.63	
	Back	0.590	0.381	0.345	0.125	0.97	0.94	1.06	
	Left side			0.119		0.00	0.12	0.12	
	Right side					0.00	0.00	0.00	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
LTE Band 25_Ant0	Bottom side	1.185				1.19	1.19	1.19	
	Front	0.451	0.124	0.010	0.066	0.58	0.46	0.53	
	Back	0.524	0.381	0.345	0.125	0.91	0.87	0.99	
	Left side			0.119		0.00	0.12	0.12	
	Right side					0.00	0.00	0.00	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
LTE Band 30_Ant0	Bottom side	1.122				1.12	1.12	1.12	
	Front	0.674	0.124	0.010	0.066	0.80	0.68	0.75	
	Back	0.913	0.381	0.345	0.125	1.29	1.26	1.38	
	Left side			0.119		0.00	0.12	0.12	
	Right side	0.169				0.17	0.17	0.17	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
LTE Band 7_Ant0	Bottom side	1.169				1.17	1.17	1.17	
	Front	0.656	0.124	0.010	0.066	0.78	0.67	0.73	
	Back	0.837	0.381	0.345	0.125	1.22	1.18	1.31	
	Left side	0.199		0.119		0.20	0.32	0.32	
	Right side	0.205				0.21	0.21	0.21	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
LTE Band 41_Ant0	Bottom side	1.081				1.08	1.08	1.08	
	Front	0.695	0.124	0.010	0.066	0.82	0.71	0.77	
	Back	0.878	0.381	0.345	0.125	1.26	1.22	1.35	
	Left side	0.220		0.119		0.22	0.34	0.34	
	Right side	0.207				0.21	0.21	0.21	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
LTE Band 41(HPUE)_Ant0	Bottom side	1.248				1.25	1.25	1.25	
	Front	0.686	0.124	0.010	0.066	0.81	0.70	0.76	
	Back	0.745	0.381	0.345	0.125	1.13	1.09	1.22	
	Left side	0.235		0.119		0.24	0.35	0.35	
	Right side	0.207				0.21	0.21	0.21	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
N71_Ant 0	Bottom side	1.213				1.21	1.21	1.21	
	Front	0.260	0.124	0.010	0.066	0.38	0.27	0.34	
	Back	0.353	0.381	0.345	0.125	0.73	0.70	0.82	
	Left side	0.138		0.119		0.14	0.26	0.26	
	Right side	0.134				0.13	0.13	0.13	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
N5_Ant 0	Bottom side	0.219				0.22	0.22	0.22	
	Front	0.550	0.124	0.010	0.066	0.67	0.56	0.63	
	Back	0.693	0.381	0.345	0.125	1.07	1.04	1.16	
	Left side	0.076		0.119		0.08	0.20	0.20	
	Right side	0.120				0.12	0.12	0.12	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	



N66_Ant 0	Bottom side	0.496				0.50	0.50	0.50	
	Front	0.590	0.124	0.010	0.066	0.71	0.60	0.67	
	Back	0.669	0.381	0.345	0.125	1.05	1.01	1.14	
	Left side			0.119		0.00	0.12	0.12	
	Right side					0.00	0.00	0.00	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
N25_Ant 0	Bottom side	1.253				1.25	1.25	1.25	
	Front	0.497	0.124	0.010	0.066	0.62	0.51	0.57	
	Back	0.559	0.381	0.345	0.125	0.94	0.90	1.03	
	Left side			0.119		0.00	0.12	0.12	
	Right side					0.00	0.00	0.00	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
N41_Ant 0	Bottom side	1.168				1.17	1.17	1.17	
	Front	0.670	0.124	0.010	0.066	0.79	0.68	0.75	
	Back	0.880	0.381	0.345	0.125	1.26	1.23	1.35	
	Left side	0.214		0.119		0.21	0.33	0.33	
	Right side	0.205				0.21	0.21	0.21	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	
N41(HPUE)_Ant 0	Bottom side	1.191				1.19	1.19	1.19	
	Front	0.670	0.124	0.010	0.066	0.79	0.68	0.75	
	Back	0.880	0.381	0.345	0.125	1.26	1.23	1.35	
	Left side	0.214		0.119		0.21	0.33	0.33	
	Right side	0.205				0.21	0.21	0.21	
	Top side		0.163	0.085	0.081	0.16	0.09	0.17	



17.4 Body-Worn Accessory Exposure Conditions

WWAN Band	Exposure Position	1	3	6	7	9	1+9	6+9	7+9
		WWAN	2.4GHz WLAN Ant 2+4	5GHz WLAN Ant 4+12	6GHz WLAN Ant 4+12	Bluetooth 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)
WCDMA V_Ant1	Front	0.993	0.347	0.129	0.013	0.066	1.06	0.20	0.08
	Back	1.105	1.161	1.156	1.170	0.125	1.23	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
WCDMA IV_Ant1	Front	0.965	0.347	0.129	0.013	0.066	1.03	0.20	0.08
	Back	1.241	1.161	1.156	1.170	0.125	1.37	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset	1.181					1.18	0.00	0.00
WCDMA II_Ant1	Front	0.519	0.347	0.129	0.013	0.066	0.59	0.20	0.08
	Back	1.113	1.161	1.156	1.170	0.125	1.24	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
LTE Band 71_Ant1	Front	0.497	0.347	0.129	0.013	0.066	0.56	0.20	0.08
	Back	0.714	1.161	1.156	1.170	0.125	0.84	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
LTE Band 12_Ant1	Front	0.661	0.347	0.129	0.013	0.066	0.73	0.20	0.08
	Back	0.792	1.161	1.156	1.170	0.125	0.92	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
LTE Band 13_Ant1	Front	0.879	0.347	0.129	0.013	0.066	0.95	0.20	0.08
	Back	0.931	1.161	1.156	1.170	0.125	1.06	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
LTE Band 14_Ant1	Front	0.739	0.347	0.129	0.013	0.066	0.81	0.20	0.08
	Back	0.892	1.161	1.156	1.170	0.125	1.02	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
LTE Band 26_Ant1	Front	0.961	0.347	0.129	0.013	0.066	1.03	0.20	0.08
	Back	1.101	1.161	1.156	1.170	0.125	1.23	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
LTE Band 66_Ant1	Front	0.782	0.347	0.129	0.013	0.066	0.85	0.20	0.08
	Back	1.220	1.161	1.156	1.170	0.125	1.35	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset	1.188					1.19	0.00	0.00
LTE Band 25_Ant1	Front	0.726	0.347	0.129	0.013	0.066	0.79	0.20	0.08
	Back	1.113	1.161	1.156	1.170	0.125	1.24	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
N71_Ant 1	Front	0.385	0.347	0.129	0.013	0.066	0.45	0.20	0.08
	Back	0.489	1.161	1.156	1.170	0.125	0.61	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
N5_Ant 1	Front	1.016	0.347	0.129	0.013	0.066	1.08	0.20	0.08
	Back	1.108	1.161	1.156	1.170	0.125	1.23	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
N66_Ant 1	Front	0.761	0.347	0.129	0.013	0.066	0.83	0.20	0.08



	Back	1.147	1.161	1.156	1.170	0.125	1.27	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
N25_Ant 1	Front	0.956	0.347	0.129	0.013	0.066	1.02	0.20	0.08
	Back	1.216	1.161	1.156	1.170	0.125	1.34	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset	1.169					1.17	0.00	0.00
N77_Ant 3_FCC	Front	0.192	0.347	0.129	0.013	0.066	0.26	0.20	0.08
	Back	1.022	1.161	1.156	1.170	0.125	1.15	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
N77_Ant 3_Part 27Q	Front	0.112	0.347	0.129	0.013	0.066	0.18	0.20	0.08
	Back	1.157	1.161	1.156	1.170	0.125	1.28	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
N77(HPUE)_Ant 3_FCC	Front	0.192	0.347	0.129	0.013	0.066	0.26	0.20	0.08
	Back	1.022	1.161	1.156	1.170	0.125	1.15	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
N77(HPUE)_Ant 3_Part 27Q	Front	0.112	0.347	0.129	0.013	0.066	0.18	0.20	0.08
	Back	1.157	1.161	1.156	1.170	0.125	1.28	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00



WWAN Band	Exposure Position	1	3	6	7	9	1+3	1+6	1+7	1+6+9	1+7+9
		WWAN	2.4GHz WLAN Ant 2+4	5GHz WLAN Ant 4+12	6GHz WLAN Ant 4+12	Bluetooth Ant 2	Summed	Summed	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)	1g SAR (W/kg)	1g SAR (W/kg)
WCDMA V_Ant1	Front	0.663	0.124	0.093	0.005	0.066	0.79	0.76	0.67	0.82	0.73
	Back	0.839	0.381	0.386	0.344	0.125	1.22	1.23	1.18	1.35	1.31
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
WCDMA IV_Ant1	Front	0.554	0.124	0.093	0.005	0.066	0.68	0.65	0.56	0.71	0.63
	Back	0.771	0.381	0.386	0.344	0.125	1.15	1.16	1.12	1.28	1.24
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
WCDMA II_Ant1	Front	0.382	0.124	0.093	0.005	0.066	0.51	0.48	0.39	0.54	0.45
	Back	0.889	0.381	0.386	0.344	0.125	1.27	1.28	1.23	1.40	1.36
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
LTE Band 71_Ant1	Front	0.497	0.124	0.093	0.005	0.066	0.62	0.59	0.50	0.66	0.57
	Back	0.714	0.381	0.386	0.344	0.125	1.10	1.10	1.06	1.23	1.18
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
LTE Band 12_Ant1	Front	0.661	0.124	0.093	0.005	0.066	0.79	0.75	0.67	0.82	0.73
	Back	0.792	0.381	0.386	0.344	0.125	1.17	1.18	1.14	1.30	1.26
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
LTE Band 13_Ant1	Front	0.879	0.124	0.093	0.005	0.066	1.00	0.97	0.88	1.04	0.95
	Back	0.931	0.381	0.386	0.344	0.125	1.31	1.32	1.28	1.44	1.40
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
LTE Band 14_Ant1	Front	0.739	0.124	0.093	0.005	0.066	0.86	0.83	0.74	0.90	0.81
	Back	0.892	0.381	0.386	0.344	0.125	1.27	1.28	1.24	1.40	1.36
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
LTE Band 26_Ant1	Front	0.607	0.124	0.093	0.005	0.066	0.73	0.70	0.61	0.77	0.68
	Back	0.798	0.381	0.386	0.344	0.125	1.18	1.18	1.14	1.31	1.27
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
LTE Band 66_Ant1	Front	0.520	0.124	0.093	0.005	0.066	0.64	0.61	0.53	0.68	0.59
	Back	0.803	0.381	0.386	0.344	0.125	1.18	1.19	1.15	1.31	1.27
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
LTE Band 25_Ant1	Front	0.455	0.124	0.093	0.005	0.066	0.58	0.55	0.46	0.61	0.53
	Back	0.760	0.381	0.386	0.344	0.125	1.14	1.15	1.10	1.27	1.23
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
N71_Ant 1	Front	0.385	0.124	0.093	0.005	0.066	0.51	0.48	0.39	0.54	0.46
	Back	0.489	0.381	0.386	0.344	0.125	0.87	0.88	0.83	1.00	0.96
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
N5_Ant 1	Front	0.847	0.124	0.093	0.005	0.066	0.97	0.94	0.85	1.01	0.92
	Back	0.895	0.381	0.386	0.344	0.125	1.28	1.28	1.24	1.41	1.36
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
N66_Ant 1	Front	0.562	0.124	0.093	0.005	0.066	0.69	0.66	0.57	0.72	0.63
	Back	0.854	0.381	0.386	0.344	0.125	1.24	1.24	1.20	1.37	1.32



	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
N25_Ant 1	Front	0.563	0.124	0.093	0.005	0.066	0.69	0.66	0.57	0.72	0.63
	Back	0.779	0.381	0.386	0.344	0.125	1.16	1.17	1.12	1.29	1.25
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
N77_Ant 3_FCC	Front	0.159	0.124	0.093	0.005	0.066	0.28	0.25	0.16	0.32	0.23
	Back	0.924	0.381	0.386	0.344	0.125	1.31	1.31	1.27	1.44	1.39
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
N77_Ant 3_Part 27Q	Front	0.076	0.124	0.093	0.005	0.066	0.20	0.17	0.08	0.24	0.15
	Back	0.997	0.381	0.386	0.344	0.125	1.38	1.38	1.34	1.51	1.47
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
N77(HPUE)_Ant 3_FCC	Front	0.159	0.124	0.093	0.005	0.066	0.28	0.25	0.16	0.32	0.23
	Back	0.924	0.381	0.386	0.344	0.125	1.31	1.31	1.27	1.44	1.39
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00
N77(HPUE)_Ant 3_Part 27Q	Front	0.076	0.124	0.093	0.005	0.066	0.20	0.17	0.08	0.24	0.15
	Back	0.997	0.381	0.386	0.344	0.125	1.38	1.38	1.34	1.51	1.47
	Front with Headset						0.00	0.00	0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00	0.00	0.00



WWAN Band	Exposure Position	1	3	6	7	9	1+9	6+9	7+9
		WWAN	2.4GHz WLAN Ant 2+4	5GHz WLAN Ant 4+12	6GHz WLAN Ant 4+12	Bluetooth 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)
GSM850_Ant0	Front	0.662	0.347	0.129	0.013	0.066	0.73	0.20	0.08
	Back	0.733	1.161	1.156	1.170	0.125	0.86	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
GSM1900_Ant0	Front	0.975	0.347	0.129	0.013	0.066	1.04	0.20	0.08
	Back	1.161	1.161	1.156	1.170	0.125	1.29	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
WCDMA V_Ant0	Front	0.937	0.347	0.129	0.013	0.066	1.00	0.20	0.08
	Back	1.140	1.161	1.156	1.170	0.125	1.27	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
WCDMA IV_Ant0	Front	1.100	0.347	0.129	0.013	0.066	1.17	0.20	0.08
	Back	1.233	1.161	1.156	1.170	0.125	1.36	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset	0.938					0.94	0.00	0.00
WCDMA II_Ant0	Front	0.919	0.347	0.129	0.013	0.066	0.99	0.20	0.08
	Back	1.223	1.161	1.156	1.170	0.125	1.35	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset	0.880					0.88	0.00	0.00
LTE Band 71_Ant0	Front	0.407	0.347	0.129	0.013	0.066	0.47	0.20	0.08
	Back	0.598	1.161	1.156	1.170	0.125	0.72	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
LTE Band 12_Ant0	Front	0.504	0.347	0.129	0.013	0.066	0.57	0.20	0.08
	Back	0.743	1.161	1.156	1.170	0.125	0.87	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
LTE Band 13_Ant0	Front	1.043	0.347	0.129	0.013	0.066	1.11	0.20	0.08
	Back	1.252	1.161	1.156	1.170	0.125	1.38	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
LTE Band 14_Ant0	Front	0.747	0.347	0.129	0.013	0.066	0.81	0.20	0.08
	Back	0.874	1.161	1.156	1.170	0.125	1.00	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
LTE Band 26_Ant0	Front	1.086	0.347	0.129	0.013	0.066	1.15	0.20	0.08
	Back	1.224	1.161	1.156	1.170	0.125	1.35	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset	1.038					1.04	0.00	0.00
LTE Band 66_Ant0	Front	0.943	0.347	0.129	0.013	0.066	1.01	0.20	0.08
	Back	1.125	1.161	1.156	1.170	0.125	1.25	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
LTE Band 25_Ant0	Front	0.967	0.347	0.129	0.013	0.066	1.03	0.20	0.08
	Back	1.237	1.161	1.156	1.170	0.125	1.36	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset	1.027					1.03	0.00	0.00
LTE Band 30_Ant0	Front	0.859	0.347	0.129	0.013	0.066	0.93	0.20	0.08
	Back	1.203	1.161	1.156	1.170	0.125	1.33	1.28	1.30



	Front with Headset						0.00	0.00	0.00
	Back with Headset	1.186					1.19	0.00	0.00
LTE Band 7_Ant0	Front	0.970	0.347	0.129	0.013	0.066	1.04	0.20	0.08
	Back	1.236	1.161	1.156	1.170	0.125	1.36	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset	1.171					1.17	0.00	0.00
LTE Band 41_Ant0	Front	1.100	0.347	0.129	0.013	0.066	1.17	0.20	0.08
	Back	1.253	1.161	1.156	1.170	0.125	1.38	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset	1.213					1.21	0.00	0.00
LTE Band 41(HPUE)_Ant0	Front	1.090	0.347	0.129	0.013	0.066	1.16	0.20	0.08
	Back	1.200	1.161	1.156	1.170	0.125	1.33	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset	1.178					1.18	0.00	0.00
N71_Ant 0	Front	0.260	0.347	0.129	0.013	0.066	0.33	0.20	0.08
	Back	0.353	1.161	1.156	1.170	0.125	0.48	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
N5_Ant 0	Front	0.550	0.347	0.129	0.013	0.066	0.62	0.20	0.08
	Back	0.693	1.161	1.156	1.170	0.125	0.82	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
N66_Ant 0	Front	1.053	0.347	0.129	0.013	0.066	1.12	0.20	0.08
	Back	1.209	1.161	1.156	1.170	0.125	1.33	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset	1.094					1.09	0.00	0.00
N25_Ant 0	Front	1.094	0.347	0.129	0.013	0.066	1.16	0.20	0.08
	Back	1.197	1.161	1.156	1.170	0.125	1.32	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
N41_Ant 0	Front	0.913	0.347	0.129	0.013	0.066	0.98	0.20	0.08
	Back	1.149	1.161	1.156	1.170	0.125	1.27	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00
N41(HPUE)_Ant 0	Front	0.913	0.347	0.129	0.013	0.066	0.98	0.20	0.08
	Back	1.149	1.161	1.156	1.170	0.125	1.27	1.28	1.30
	Front with Headset						0.00	0.00	0.00
	Back with Headset						0.00	0.00	0.00



WWAN Band	Exposure Position	1	3	6	7	9	1+3	1+6	1+7	1+6+9	1+7+9	Case No
		WWAN	2.4GHz WLAN Ant 2+4	5GHz WLAN Ant 4+12	6GHz WLAN Ant 4+12	Bluetooth Ant 2	Summed	Summed	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)	1g SAR (W/kg)	1g SAR (W/kg)	
GSM850_Ant0	Front	0.662	0.124	0.093	0.005	0.066	0.79	0.76	0.67	0.82	0.73	
	Back	0.733	0.381	0.386	0.344	0.125	1.11	1.12	1.08	1.24	1.20	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
GSM1900_Ant0	Front	0.505	0.124	0.093	0.005	0.066	0.63	0.60	0.51	0.66	0.58	
	Back	0.596	0.381	0.386	0.344	0.125	0.98	0.98	0.94	1.11	1.07	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
WCDMA V_Ant0	Front	0.937	0.124	0.093	0.005	0.066	1.06	1.03	0.94	1.10	1.01	
	Back	1.140	0.381	0.386	0.344	0.125	1.52	1.53	1.48	1.65	1.61	06&07
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
WCDMA IV_Ant0	Front	0.670	0.124	0.093	0.005	0.066	0.79	0.76	0.68	0.83	0.74	
	Back	0.755	0.381	0.386	0.344	0.125	1.14	1.14	1.10	1.27	1.22	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
WCDMA II_Ant0	Front	0.446	0.124	0.093	0.005	0.066	0.57	0.54	0.45	0.61	0.52	
	Back	0.644	0.381	0.386	0.344	0.125	1.03	1.03	0.99	1.16	1.11	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
LTE Band 71_Ant0	Front	0.407	0.124	0.093	0.005	0.066	0.53	0.50	0.41	0.57	0.48	
	Back	0.598	0.381	0.386	0.344	0.125	0.98	0.98	0.94	1.11	1.07	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
LTE Band 12_Ant0	Front	0.504	0.124	0.093	0.005	0.066	0.63	0.60	0.51	0.66	0.58	
	Back	0.743	0.381	0.386	0.344	0.125	1.12	1.13	1.09	1.25	1.21	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
LTE Band 13_Ant0	Front	1.043	0.124	0.093	0.005	0.066	1.17	1.14	1.05	1.20	1.11	
	Back	1.252	0.381	0.386	0.344	0.125	1.63	1.64 *	1.60 *	1.76	1.72	02&08&09
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
LTE Band 14_Ant0	Front	0.747	0.124	0.093	0.005	0.066	0.87	0.84	0.75	0.91	0.82	
	Back	0.874	0.381	0.386	0.344	0.125	1.26	1.26	1.22	1.39	1.34	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
LTE Band 26_Ant0	Front	1.086	0.124	0.093	0.005	0.066	1.21	1.18	1.09	1.25	1.16	
	Back	1.224	0.381	0.386	0.344	0.125	1.61	1.61 *	1.57	1.74	1.69	04&10&11
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset	1.038					1.04	1.04	1.04	1.04	1.04	
LTE Band 66_Ant0	Front	0.551	0.124	0.093	0.005	0.066	0.68	0.64	0.56	0.71	0.62	
	Back	0.624	0.381	0.386	0.344	0.125	1.01	1.01	0.97	1.14	1.09	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
LTE Band 25_Ant0	Front	0.451	0.124	0.093	0.005	0.066	0.58	0.54	0.46	0.61	0.52	
	Back	0.610	0.381	0.386	0.344	0.125	0.99	1.00	0.95	1.12	1.08	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
LTE Band 30_Ant0	Front	0.674	0.124	0.093	0.005	0.066	0.80	0.77	0.68	0.83	0.75	
	Back	0.913	0.381	0.386	0.344	0.125	1.29	1.30	1.26	1.42	1.38	



	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
LTE Band 7_Ant0	Front	0.656	0.124	0.093	0.005	0.066	0.78	0.75	0.66	0.82	0.73	
	Back	0.837	0.381	0.386	0.344	0.125	1.22	1.22	1.18	1.35	1.31	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
LTE Band 41_Ant0	Front	0.695	0.124	0.093	0.005	0.066	0.82	0.79	0.70	0.85	0.77	
	Back	1.006	0.381	0.386	0.344	0.125	1.39	1.39	1.35	1.52	1.48	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
LTE Band 41(HPUE)_Ant0	Front	0.686	0.124	0.093	0.005	0.066	0.81	0.78	0.69	0.85	0.76	
	Back	0.745	0.381	0.386	0.344	0.125	1.13	1.13	1.09	1.26	1.21	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
N71_Ant 0	Front	0.260	0.124	0.093	0.005	0.066	0.38	0.35	0.27	0.42	0.33	
	Back	0.353	0.381	0.386	0.344	0.125	0.73	0.74	0.70	0.86	0.82	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
N5_Ant 0	Front	0.550	0.124	0.093	0.005	0.066	0.67	0.64	0.56	0.71	0.62	
	Back	0.693	0.381	0.386	0.344	0.125	1.07	1.08	1.04	1.20	1.16	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
N66_Ant 0	Front	0.590	0.124	0.093	0.005	0.066	0.71	0.68	0.60	0.75	0.66	
	Back	0.669	0.381	0.386	0.344	0.125	1.05	1.06	1.01	1.18	1.14	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
N25_Ant 0	Front	0.497	0.124	0.093	0.005	0.066	0.62	0.59	0.50	0.66	0.57	
	Back	0.574	0.381	0.386	0.344	0.125	0.96	0.96	0.92	1.09	1.04	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
N41_Ant 0	Front	0.670	0.124	0.093	0.005	0.066	0.79	0.76	0.68	0.83	0.74	
	Back	0.880	0.381	0.386	0.344	0.125	1.26	1.27	1.22	1.39	1.35	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	
N41(HPUE)_Ant 0	Front	0.670	0.124	0.093	0.005	0.066	0.79	0.76	0.68	0.83	0.74	
	Back	0.880	0.381	0.386	0.344	0.125	1.26	1.27	1.22	1.39	1.35	
	Front with Headset						0.00	0.00	0.00	0.00	0.00	
	Back with Headset						0.00	0.00	0.00	0.00	0.00	

*** means sum SAR value is higher than 1.6W/Kg for 2 transmitters at body, the multi-band analysis is included at 3 transmitters, for those bands with the same SAR value used for 3 transmitters. Due to 3 transmitters value is more conservatively than 2 transmitters, so multi-band analysis for 3 transmitters can represent 2 transmitters.

Sensor off

WWAN Band	Exposure Position	1	3	6	7	1+3	1+6	1+7
		WWAN	2.4GHz WLAN Ant 2+4	5GHz WLAN Ant 4+12	6GHz WLAN Ant 4+12	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)
N77_Ant 3_FCC	Front at 16mm	0.359	0.096	0.129	0.013	0.46	0.49	0.37
	Back at 27mm	0.549	0.103	0.264	0.070	0.65	0.81	0.62
N77_Ant 3_Part 27Q	Front at 16mm	0.261	0.096	0.129	0.013	0.36	0.39	0.27
	Back at 27mm	0.632	0.103	0.264	0.070	0.74	0.90	0.70
N77(HPUE)_Ant 3_FCC	Front at 16mm	0.665	0.096	0.129	0.013	0.76	0.79	0.68
	Back at 27mm	1.021	0.103	0.264	0.070	1.12	1.29	1.09
N77(HPUE)_Ant 3_Part 27Q	Front at 16mm	0.516	0.096	0.129	0.013	0.61	0.65	0.53
	Back at 27mm	1.019	0.103	0.264	0.070	1.12	1.28	1.09

Note: We only chose higher sensor off distance SAR to do co-located analysis.



17.5 Product specific 10g SAR Exposure Conditions

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.

WWAN Band	Exposure Position	1	2	5	6	1+2	1+5	1+6
		WWAN	2.4GHz WLAN Ant 2+4	5GHz WLAN Ant 4+12	6GHz WLAN Ant 4+12	Summed	Summed	Summed
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
WCDMA V_Ant1	Front			0.210	0.010	0.00	0.21	0.01
	Back		1.166	1.269	0.381	1.17	1.27	0.38
	Left side			0.189	0.013	0.00	0.19	0.01
	Right side			0.007		0.00	0.01	0.00
	Top side	2.028		0.275	0.022	2.03	2.30	2.05
	Bottom side					0.00	0.00	0.00
WCDMA IV_Ant1	Front	1.717		0.210	0.010	1.72	1.93	1.73
	Back	1.466	1.166	1.269	0.381	2.63	2.74	1.85
	Left side			0.189	0.013	0.00	0.19	0.01
	Right side			0.007		0.00	0.01	0.00
	Top side	2.340		0.275	0.022	2.34	2.62	2.36
	Bottom side					0.00	0.00	0.00
WCDMA II_Ant1	Front			0.210	0.010	0.00	0.21	0.01
	Back	0.759	1.166	1.269	0.381	1.93	2.03	1.14
	Left side			0.189	0.013	0.00	0.19	0.01
	Right side			0.007		0.00	0.01	0.00
	Top side	2.409		0.275	0.022	2.41	2.68	2.43
	Bottom side					0.00	0.00	0.00
LTE Band 26_Ant1	Front			0.210	0.010	0.00	0.21	0.01
	Back		1.166	1.269	0.381	1.17	1.27	0.38
	Left side			0.189	0.013	0.00	0.19	0.01
	Right side			0.007		0.00	0.01	0.00
	Top side	2.244		0.275	0.022	2.24	2.52	2.27
	Bottom side					0.00	0.00	0.00
LTE Band 66_Ant1	Front	1.941		0.210	0.010	1.94	2.15	1.95
	Back	1.851	1.166	1.269	0.381	3.02	3.12	2.23
	Left side			0.189	0.013	0.00	0.19	0.01
	Right side			0.007		0.00	0.01	0.00
	Top side	2.496		0.275	0.022	2.50	2.77	2.52
	Bottom side					0.00	0.00	0.00
LTE Band 25_Ant1	Front	1.546		0.210	0.010	1.55	1.76	1.56
	Back	1.159	1.166	1.269	0.381	2.33	2.43	1.54
	Left side			0.189	0.013	0.00	0.19	0.01
	Right side			0.007		0.00	0.01	0.00
	Top side	2.357		0.275	0.022	2.36	2.63	2.38
	Bottom side					0.00	0.00	0.00
N66_Ant 1	Front	2.308		0.210	0.010	2.31	2.52	2.32
	Back	1.956	1.166	1.269	0.381	3.12	3.23	2.34
	Left side			0.189	0.013	0.00	0.19	0.01
	Right side			0.007		0.00	0.01	0.00
	Top side	2.495		0.275	0.022	2.50	2.77	2.52
	Bottom side					0.00	0.00	0.00
N25_Ant 1	Front	1.893		0.210	0.010	1.89	2.10	1.90
	Back	1.408	1.166	1.269	0.381	2.57	2.68	1.79
	Left side			0.189	0.013	0.00	0.19	0.01
	Right side			0.007		0.00	0.01	0.00
	Top side	2.430		0.275	0.022	2.43	2.71	2.45



	Bottom side					0.00	0.00	0.00
N77_Ant 3_FCC	Front			0.210	0.010	0.00	0.21	0.01
	Back	2.136	1.166	1.269	0.381	3.30	3.41	2.52
	Left side	1.327		0.189	0.013	1.33	1.52	1.34
	Right side			0.007		0.00	0.01	0.00
	Top side			0.275	0.022	0.00	0.28	0.02
	Bottom side					0.00	0.00	0.00
N77_Ant 3_Part 27Q	Front			0.210	0.010	0.00	0.21	0.01
	Back	2.499	1.166	1.269	0.381	3.67	3.77	2.88
	Left side	1.443		0.189	0.013	1.44	1.63	1.46
	Right side			0.007		0.00	0.01	0.00
	Top side			0.275	0.022	0.00	0.28	0.02
	Bottom side					0.00	0.00	0.00
N77(HPUE)_Ant 3_FCC	Front	0.686		0.210	0.010	0.69	0.90	0.70
	Back	2.136	1.166	1.269	0.381	3.30	3.41	2.52
	Left side	1.327		0.189	0.013	1.33	1.52	1.34
	Right side			0.007		0.00	0.01	0.00
	Top side	0.533		0.275	0.022	0.53	0.81	0.56
	Bottom side					0.00	0.00	0.00
N77(HPUE)_Ant 3_Part 27Q	Front	0.335		0.210	0.010	0.34	0.55	0.35
	Back	2.499	1.166	1.269	0.381	3.67	3.77	2.88
	Left side	1.443		0.189	0.013	1.44	1.63	1.46
	Right side			0.007		0.00	0.01	0.00
	Top side	0.321		0.275	0.022	0.32	0.60	0.34
	Bottom side					0.00	0.00	0.00



WWAN Band	Exposure Position	1	2	5	6	1+2	1+5	1+6	Case No
		WWAN	2.4GHz WLAN Ant 2+4	5GHz WLAN Ant 4+12	6GHz WLAN Ant 4+12	Summed	Summed	Summed	
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	
GSM1900_Ant0	Front	2.463		0.210	0.010	2.46	2.67	2.47	
	Back	2.635	1.166	1.269	0.381	3.80	3.90	3.02	
	Left side			0.189	0.013	0.00	0.19	0.01	
	Right side			0.007		0.00	0.01	0.00	
	Top side			0.275	0.022	0.00	0.28	0.02	
	Bottom side	2.658				2.66	2.66	2.66	
WCDMA IV_Ant0	Front	1.841		0.210	0.010	1.84	2.05	1.85	
	Back	2.150	1.166	1.269	0.381	3.32	3.42	2.53	
	Left side			0.189	0.013	0.00	0.19	0.01	
	Right side			0.007		0.00	0.01	0.00	
	Top side			0.275	0.022	0.00	0.28	0.02	
	Bottom side	2.976				2.98	2.98	2.98	
WCDMA II_Ant0	Front	1.972		0.210	0.010	1.97	2.18	1.98	
	Back	2.251	1.166	1.269	0.381	3.42	3.52	2.63	
	Left side			0.189	0.013	0.00	0.19	0.01	
	Right side			0.007		0.00	0.01	0.00	
	Top side			0.275	0.022	0.00	0.28	0.02	
	Bottom side	2.998				3.00	3.00	3.00	
LTE Band 13_Ant0	Front			0.210	0.010	0.00	0.21	0.01	
	Back	1.781	1.166	1.269	0.381	2.95	3.05	2.16	
	Left side			0.189	0.013	0.00	0.19	0.01	
	Right side			0.007		0.00	0.01	0.00	
	Top side			0.275	0.022	0.00	0.28	0.02	
	Bottom side					0.00	0.00	0.00	
LTE Band 26_Ant0	Front			0.210	0.010	0.00	0.21	0.01	
	Back	1.845	1.166	1.269	0.381	3.01	3.11	2.23	
	Left side			0.189	0.013	0.00	0.19	0.01	
	Right side			0.007		0.00	0.01	0.00	
	Top side			0.275	0.022	0.00	0.28	0.02	
	Bottom side					0.00	0.00	0.00	
LTE Band 66_Ant0	Front	1.846		0.210	0.010	1.85	2.06	1.86	
	Back	1.950	1.166	1.269	0.381	3.12	3.22	2.33	
	Left side			0.189	0.013	0.00	0.19	0.01	
	Right side			0.007		0.00	0.01	0.00	
	Top side			0.275	0.022	0.00	0.28	0.02	
	Bottom side	2.932				2.93	2.93	2.93	
LTE Band 25_Ant0	Front	2.310		0.210	0.010	2.31	2.52	2.32	
	Back	2.417	1.166	1.269	0.381	3.58	3.69	2.80	
	Left side			0.189	0.013	0.00	0.19	0.01	
	Right side			0.007		0.00	0.01	0.00	
	Top side			0.275	0.022	0.00	0.28	0.02	
	Bottom side	2.914				2.91	2.91	2.91	
LTE Band 30_Ant0	Front	2.497		0.210	0.010	2.50	2.71	2.51	
	Back	3.125	1.166	1.269	0.381	4.29	4.39	3.51	12&13
	Left side			0.189	0.013	0.00	0.19	0.01	
	Right side			0.007		0.00	0.01	0.00	
	Top side			0.275	0.022	0.00	0.28	0.02	
	Bottom side	2.129				2.13	2.13	2.13	
LTE Band 7_Ant0	Front	1.461		0.210	0.010	1.46	1.67	1.47	
	Back	1.639	1.166	1.269	0.381	2.81	2.91	2.02	
	Left side			0.189	0.013	0.00	0.19	0.01	



	Right side			0.007		0.00	0.01	0.00	
	Top side			0.275	0.022	0.00	0.28	0.02	
	Bottom side	2.935				2.94	2.94	2.94	
LTE Band 41_Ant0	Front	1.189		0.210	0.010	1.19	1.40	1.20	
	Back	1.479	1.166	1.269	0.381	2.65	2.75	1.86	
	Left side			0.189	0.013	0.00	0.19	0.01	
	Right side			0.007		0.00	0.01	0.00	
	Top side			0.275	0.022	0.00	0.28	0.02	
	Bottom side	2.405				2.41	2.41	2.41	
LTE Band 41(HPUE)_Ant0	Front	1.316		0.210	0.010	1.32	1.53	1.33	
	Back	1.947	1.166	1.269	0.381	3.11	3.22	2.33	
	Left side			0.189	0.013	0.00	0.19	0.01	
	Right side			0.007		0.00	0.01	0.00	
	Top side			0.275	0.022	0.00	0.28	0.02	
	Bottom side	2.971				2.97	2.97	2.97	
N66_Ant 0	Front	2.422		0.210	0.010	2.42	2.63	2.43	
	Back	2.605	1.166	1.269	0.381	3.77	3.87	2.99	
	Left side			0.189	0.013	0.00	0.19	0.01	
	Right side			0.007		0.00	0.01	0.00	
	Top side			0.275	0.022	0.00	0.28	0.02	
	Bottom side	3.129				3.13	3.13	3.13	
N25_Ant 0	Front	2.509		0.210	0.010	2.51	2.72	2.52	
	Back	2.572	1.166	1.269	0.381	3.74	3.84	2.95	
	Left side			0.189	0.013	0.00	0.19	0.01	
	Right side			0.007		0.00	0.01	0.00	
	Top side			0.275	0.022	0.00	0.28	0.02	
	Bottom side	2.930				2.93	2.93	2.93	
N41_Ant 0	Front	1.417		0.210	0.010	1.42	1.63	1.43	
	Back	1.889	1.166	1.269	0.381	3.06	3.16	2.27	
	Left side			0.189	0.013	0.00	0.19	0.01	
	Right side			0.007		0.00	0.01	0.00	
	Top side			0.275	0.022	0.00	0.28	0.02	
	Bottom side	3.166				3.17	3.17	3.17	
N41(HPUE)_Ant 0	Front	1.417		0.210	0.010	1.42	1.63	1.43	
	Back	1.889	1.166	1.269	0.381	3.06	3.16	2.27	
	Left side			0.189	0.013	0.00	0.19	0.01	
	Right side			0.007		0.00	0.01	0.00	
	Top side			0.275	0.022	0.00	0.28	0.02	
	Bottom side	3.166				3.17	3.17	3.17	



Sensor off

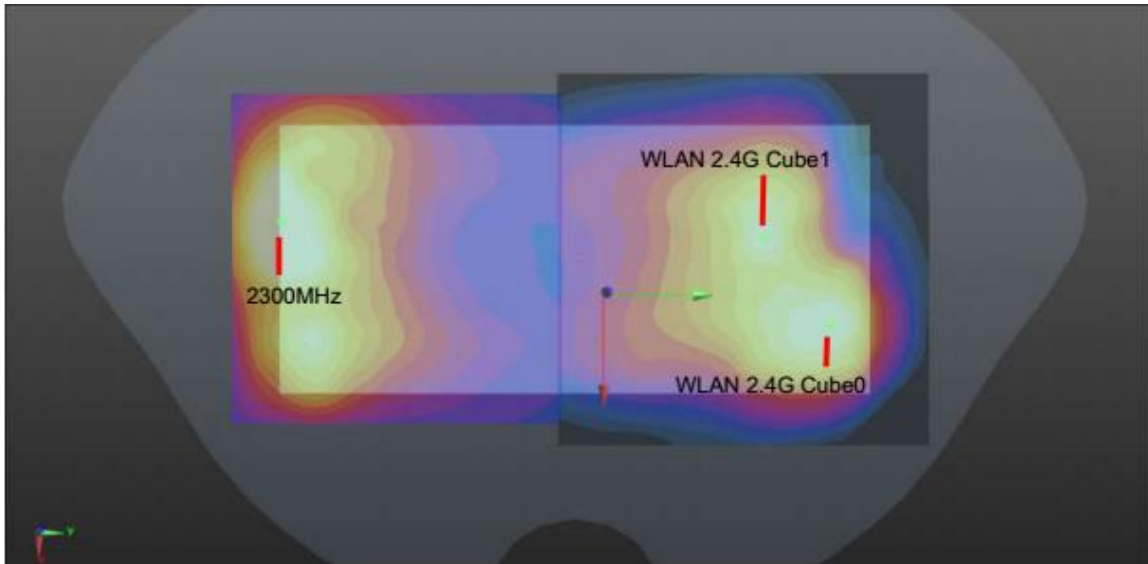
WWAN Band	Exposure Position	1	2	5	6	1+2	1+5	1+6
		WWAN	2.4GHz WLAN Ant 2+4	5GHz WLAN Ant 4+12	6GHz WLAN Ant 4+12	Summed	Summed	Summed
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
N77_Ant 3_FCC	Front					0.00	0.00	0.00
	Back	0.776	1.166	2.016	0.381	1.94	2.79	1.16
	Left side	1.680		0.249	0.013	1.68	1.93	1.69
	Right side					0.00	0.00	0.00
	Top side					0.00	0.00	0.00
	Bottom side					0.00	0.00	0.00
N77_Ant 3_Part 27Q	Front					0.00	0.00	0.00
	Back	0.907	1.166	2.016	0.381	2.07	2.92	1.29
	Left side	1.567		0.249	0.013	1.57	1.82	1.58
	Right side					0.00	0.00	0.00
	Top side					0.00	0.00	0.00
	Bottom side					0.00	0.00	0.00
N77(HPUE)_Ant 3_FCC	Front					0.00	0.00	0.00
	Back	1.503	1.166	2.016	0.381	2.67	3.52	1.88
	Left side	3.120		0.249	0.013	3.12	3.37	3.13
	Right side					0.00	0.00	0.00
	Top side					0.00	0.00	0.00
	Bottom side					0.00	0.00	0.00
N77(HPUE)_Ant 3_Part 27Q	Front					0.00	0.00	0.00
	Back	1.780	1.166	2.016	0.381	2.95	3.80	2.16
	Left side	2.723		0.249	0.013	2.72	2.97	2.74
	Right side					0.00	0.00	0.00
	Top side					0.00	0.00	0.00
	Bottom side					0.00	0.00	0.00

Note: We only chose higher sensor off distance SAR to do co-located analysis.

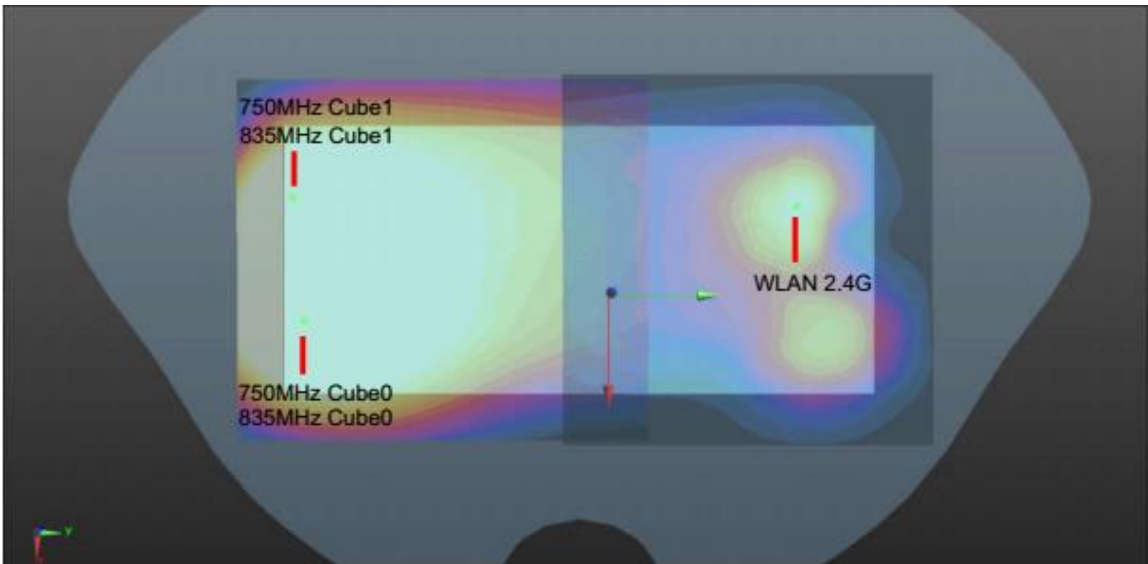
17.6 SPLSR Evaluation and Analysis

General Note:

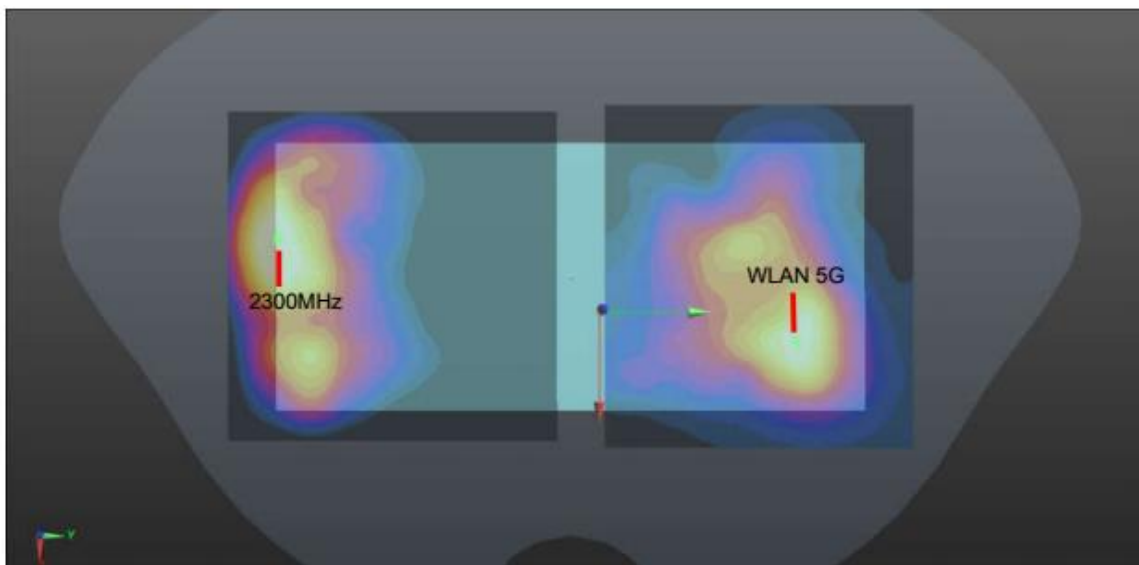
1. When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where $(x1, y1, z1)$ and $(x2, y2, z2)$ are the coordinates in the area scans or extrapolated peak SAR locations in the zoom 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.



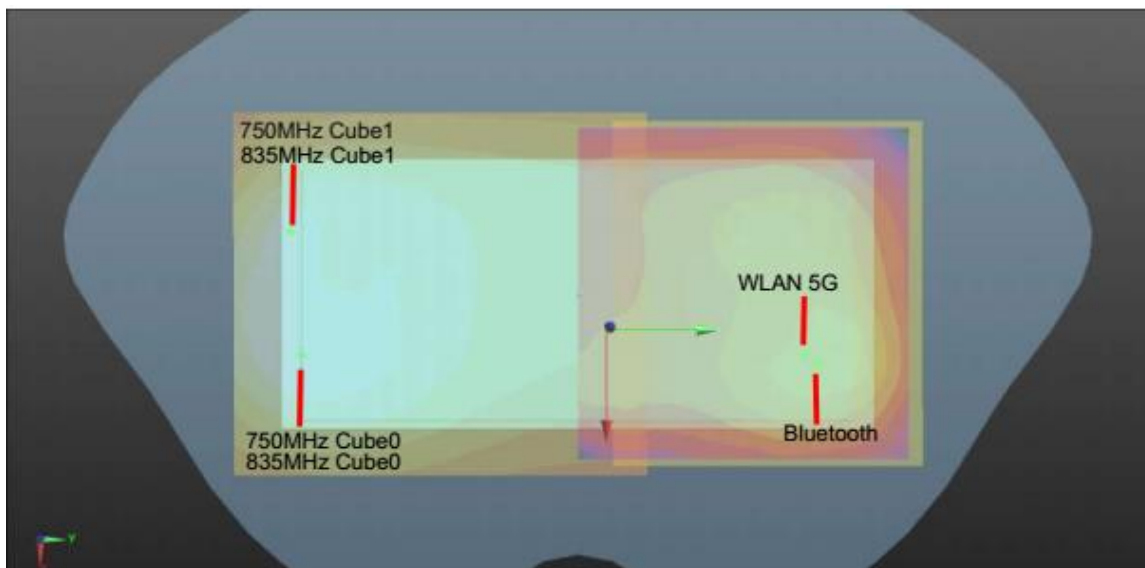
WWAN+WLAN2.4GHz_Back 0mm



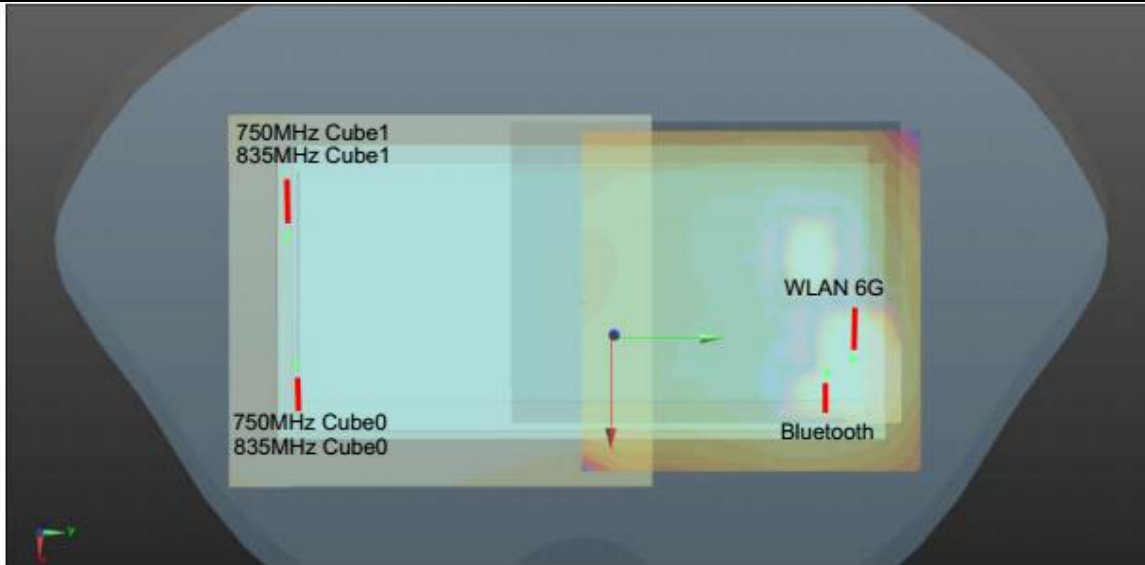
WWAN+WLAN2.4GHz_Back 5mm



WWAN+WLAN5GHz_Back 0mm



WWAN+WLAN5GHz+Bluetooth_Back 5mm



WWAN+WLAN6GHz+Bluetooth_Back 5mm

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 01	WCDMA V_Ant0 Cube0	Back	1.107	5mm	0.004	-0.0835	-0.206	138.5	1.45	0.01	Not required
	WLAN5GHz		0.345	5mm	0.004	0.055	-0.206				
	WCDMA V_Ant0 Cube1	Back	1.14	5mm	-0.0015	-0.092	-0.206	147.1	1.49	0.01	Not required
	WLAN5GHz		0.345	5mm	0.004	0.055	-0.206				
	WCDMA V_Ant0 Cube0	Back	1.107	5mm	0.004	-0.0835	-0.206	153.1	1.23	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
	WCDMA V_Ant0 Cube1	Back	1.14	5mm	-0.0015	-0.092	-0.206	161.7	1.27	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
	WLAN5GHz	Back	0.345	5mm	0.004	0.055	-0.206	14.6	0.47	0.02	Not required
Bluetooth	0.125		5mm	0.0034	0.0696	-0.206					
Case 02	LTE Band 13_Ant0 Cube0	Back	1.252	5mm	0.0025	-0.0835	-0.206	150.0	1.63	0.01	Not required
	WLAN2.4GHz		0.381	5mm	-0.0276	0.0634	-0.206				
	LTE Band 13_Ant0 Cube1	Back	1.197	5mm	0.005	-0.084	-0.206	151.0	1.58	0.01	Not required
	WLAN2.4GHz		0.381	5mm	-0.0276	0.0634	-0.206				
Case 03	LTE Band 13_Ant0 Cube0	Back	1.252	5mm	0.0025	-0.0835	-0.206	138.5	1.60	0.01	Not required
	WLAN5GHz		0.345	5mm	0.004	0.055	-0.206				
	LTE Band 13_Ant0 Cube1	Back	1.197	5mm	0.005	-0.084	-0.206	139.0	1.54	0.01	Not required
	WLAN5GHz		0.345	5mm	0.004	0.055	-0.206				
	LTE Band 13_Ant0 Cube0	Back	1.252	5mm	0.0025	-0.0835	-0.206	153.1	1.38	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
	LTE Band 13_Ant0 Cube1	Back	1.197	5mm	0.005	-0.084	-0.206	153.6	1.32	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
	WLAN5GHz	Back	0.345	5mm	0.004	0.055	-0.206	14.6	0.47	0.02	Not required
Bluetooth	0.125		5mm	0.0034	0.0696	-0.206					



Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 04	LTE Band 26_Ant0 Cube0	Back	1.224	5mm	-0.007	-0.0885	-0.206	153.3	1.61	0.01	Not required
	WLAN2.4GHz		0.381	5mm	-0.0276	0.0634	-0.206				
	LTE Band 26_Ant0 Cube1	Back	0.957	5mm	-0.019	-0.0915	-0.206	155.1	1.34	0.01	Not required
	WLAN2.4GHz		0.381	5mm	-0.0276	0.0634	-0.206				
Case 05	LTE Band 26_Ant0 Cube0	Back	1.224	5mm	-0.007	-0.0885	-0.206	143.9	1.57	0.01	Not required
	WLAN5GHz		0.345	5mm	0.004	0.055	-0.206				
	LTE Band 26_Ant0 Cube1	Back	0.957	5mm	-0.019	-0.0915	-0.206	148.3	1.30	0.01	Not required
	WLAN5GHz		0.345	5mm	0.004	0.055	-0.206				
	LTE Band 26_Ant0 Cube0	Back	1.224	5mm	-0.007	-0.0885	-0.206	158.4	1.35	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
	LTE Band 26_Ant0 Cube1	Back	0.957	5mm	-0.019	-0.0915	-0.206	162.6	1.08	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
	WLAN5GHz	Back	0.345	5mm	0.004	0.055	-0.206	14.6	0.47	0.02	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
Case 06	WCDMA V_Ant0 Cube0	Back	1.107	5mm	0.004	-0.0835	-0.206	141.5	1.49	0.01	Not required
	WLAN5GHz		0.386	5mm	0.005	0.058	-0.206				
	WCDMA V_Ant0 Cube1	Back	1.14	5mm	-0.0015	-0.092	-0.206	150.1	1.53	0.01	Not required
	WLAN5GHz		0.386	5mm	0.005	0.058	-0.206				
	WCDMA V_Ant0 Cube0	Back	1.107	5mm	0.004	-0.0835	-0.206	153.1	1.23	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
	WCDMA V_Ant0 Cube1	Back	1.14	5mm	-0.0015	-0.092	-0.206	161.7	1.27	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
	WLAN5GHz	Back	0.386	5mm	0.005	0.058	-0.206	11.7	0.51	0.03	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
Case 07	WCDMA V_Ant0 Cube0	Back	1.107	5mm	0.004	-0.0835	-0.206	158.8	1.45	0.01	Not required
	WLAN6GHz		0.344	5mm	-0.00205	0.0752	-0.207				
	WCDMA V_Ant0 Cube1	Back	1.14	5mm	-0.0015	-0.092	-0.206	167.2	1.48	0.01	Not required
	WLAN6GHz		0.344	5mm	-0.00205	0.0752	-0.207				
	WCDMA V_Ant0 Cube0	Back	1.107	5mm	0.004	-0.0835	-0.206	153.1	1.23	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
	WCDMA V_Ant0 Cube1	Back	1.14	5mm	-0.0015	-0.092	-0.206	161.7	1.27	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
	WLAN6GHz	Back	0.344	5mm	-0.00205	0.0752	-0.207	7.9	0.47	0.04	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
Case 08	LTE Band 13_Ant0 Cube0	Back	1.252	5mm	0.0025	-0.0835	-0.206	141.5	1.64	0.01	Not required
	WLAN5GHz		0.386	5mm	0.005	0.058	-0.206				
	LTE Band 13_Ant0 Cube1	Back	1.197	5mm	0.005	-0.084	-0.206	142.0	1.58	0.01	Not required
	WLAN5GHz		0.386	5mm	0.005	0.058	-0.206				
	LTE Band 13_Ant0 Cube0	Back	1.252	5mm	0.0025	-0.0835	-0.206	153.1	1.38	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
LTE Band 13_Ant0 Cube1	Back	1.197	5mm	0.005	-0.084	-0.206	153.6	1.32	0.01	Not required	
Bluetooth		0.125	5mm	0.0034	0.0696	-0.206					



	WLAN5GHz	Back	0.386	5mm	0.005	0.058	-0.206	11.7	0.51	0.03	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
Case 09	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 13_Ant0 Cube0	Back	1.252	5mm	0.0025	-0.0835	-0.206	158.8	1.60	0.01	Not required
	WLAN6GHz		0.344	5mm	-0.00205	0.0752	-0.207				
	LTE Band 13_Ant0 Cube1	Back	1.197	5mm	0.005	-0.084	-0.206	159.4	1.54	0.01	Not required
	WLAN6GHz		0.344	5mm	-0.00205	0.0752	-0.207				
	LTE Band 13_Ant0 Cube0	Back	1.252	5mm	0.0025	-0.0835	-0.206	153.1	1.38	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
	LTE Band 13_Ant0 Cube1	Back	1.197	5mm	0.005	-0.084	-0.206	153.6	1.32	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
WLAN6GHz	Back	0.344	5mm	-0.00205	0.0752	-0.207	7.9	0.47	0.04	Not required	
Bluetooth		0.125	5mm	0.0034	0.0696	-0.206					
Case 10	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 26_Ant0 Cube0	Back	1.224	5mm	-0.007	-0.0885	-0.206	147.0	1.61	0.01	Not required
	WLAN5GHz		0.386	5mm	0.005	0.058	-0.206				
	LTE Band 26_Ant0 Cube1	Back	0.957	5mm	-0.019	-0.0915	-0.206	151.4	1.34	0.01	Not required
	WLAN5GHz		0.386	5mm	0.005	0.058	-0.206				
	LTE Band 26_Ant0 Cube0	Back	1.224	5mm	-0.007	-0.0885	-0.206	158.4	1.35	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
	LTE Band 26_Ant0 Cube1	Back	0.957	5mm	-0.019	-0.0915	-0.206	162.6	1.08	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
WLAN5GHz	Back	0.386	5mm	0.005	0.058	-0.206	11.7	0.51	0.03	Not required	
Bluetooth		0.125	5mm	0.0034	0.0696	-0.206					
Case 11	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 26_Ant0 Cube0	Back	1.224	5mm	-0.007	-0.0885	-0.206	163.8	1.57	0.01	Not required
	WLAN6GHz		0.344	5mm	-0.00205	0.0752	-0.207				
	LTE Band 26_Ant0 Cube1	Back	0.957	5mm	-0.019	-0.0915	-0.206	167.6	1.30	0.01	Not required
	WLAN6GHz		0.344	5mm	-0.00205	0.0752	-0.207				
	LTE Band 26_Ant0 Cube0	Back	1.224	5mm	-0.007	-0.0885	-0.206	158.4	1.35	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
	LTE Band 26_Ant0 Cube1	Back	0.957	5mm	-0.019	-0.0915	-0.206	162.6	1.08	0.01	Not required
	Bluetooth		0.125	5mm	0.0034	0.0696	-0.206				
WLAN6GHz	Back	0.344	5mm	-0.00205	0.0752	-0.207	7.9	0.47	0.04	Not required	
Bluetooth		0.125	5mm	0.0034	0.0696	-0.206					
Case 12	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 30_Ant0 Cube0	Back	3.125	0mm	0.0668	-0.275	-0.175	356.5	4.29	0.02	Not required
	WLAN2.4GHz		1.166	0mm	0.0022	0.0742	-0.206				
	LTE Band 30_Ant0 Cube1	Back	3.125	0mm	0.0668	-0.275	-0.175	344.7	4.03	0.02	Not required
WLAN2.4GHz	0.906		0mm	-0.028	0.055	-0.206					
Case 13	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 30_Ant0	Back	3.125	0mm	0.0668	-0.275	-0.175	353.6	4.39	0.03	Not required
WLAN5GHz	1.269		0mm	0.001	0.071	-0.206					

18. Supplemental tuner tests results

General Note:

1. This device implements impedance tuner (144 status) antenna tuning techniques in the WCDMA Band II/IV/V, LTE B2/4/5/17/38/71/12/13/14/26/66/25/30/7/41/41-HPUE, n2/71/5/66/25/41/41-HPUE for ANT0.
2. This device implements impedance tuner (144 status) antenna tuning techniques in the WCDMA Band II/IV/V, LTE B2/4/5/71/12/13/14/26/66/25, n2/71/5/66/25 for ANT1.
3. LTE B2 / B4 / B5 / B17 / B38 /5G NR n2 SAR test was covered by LTE B25 / B66 / B26 / B12 / B41/5G NR n25; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced.
4. SAR test proposal was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing and this design will provide the highest power at different user scenarios and would not influence to the antenna characteristics other than impedance matching.
5. 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.
6. To evaluate all of the tuner states, the 144 tuner states are divided evenly among band, 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.
7. According to TCBC 201904 workshop, total number tuner states divided evenly among each supported band / air interface and exposure condition combination.
8. The tuner state was established remotely through Wi-Fi so that the device is not moved for the entire series of single point SAR for the tuner states in each combination (band, mode, exposure conditions).

18.1 Supplemental Tuner Head & Body SAR Results

Please refer to Appendix F.

Test Engineer : Hank Huang, Bin He, David Dai



19. 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.

20. 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:1099

Communication System: UID 0, CW (0); Frequency: 750 MHz; Duty Cycle: 1:1
Medium: HSL_750_210530 Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.88 \text{ S/m}$; $\epsilon_r = 40.797$; $\rho = 1000 \text{ kg/m}^3$

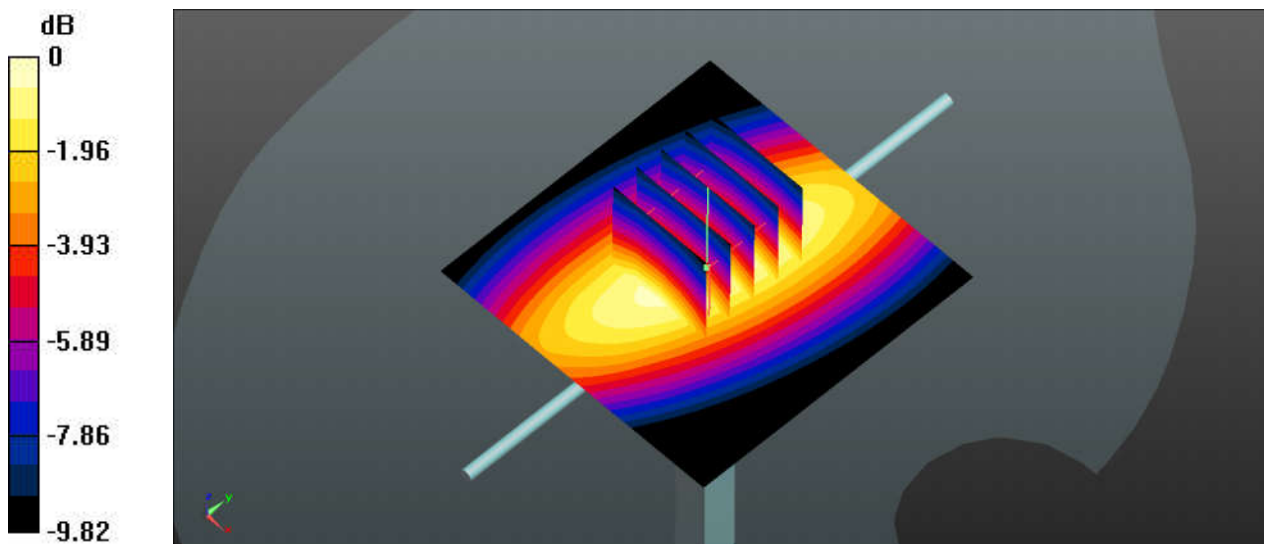
Ambient Temperature : 23.3 °C; Liquid Temperature : 22.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7375; ConvF(10.23, 10.23, 10.23); Calibrated: 2020/12/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn918; Calibrated: 2020/6/22
- Phantom: SAM (Front) with CRP v5.0; Type: QD000P40CD; Serial: TP:1795
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
Maximum value of SAR (interpolated) = 2.72 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 56.81 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.14 W/kg
SAR(1 g) = 2.17 W/kg; SAR(10 g) = 1.47 W/kg
Maximum value of SAR (measured) = 2.71 W/kg



0 dB = 2.71 W/kg

System Check_Head_750MHz

DUT: D750V3-SN:1099

Communication System: UID 0, CW (0); Frequency: 750 MHz; Duty Cycle: 1:1
Medium: HSL_750_210618 Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.89 \text{ S/m}$; $\epsilon_r = 40.918$; $\rho = 1000 \text{ kg/m}^3$

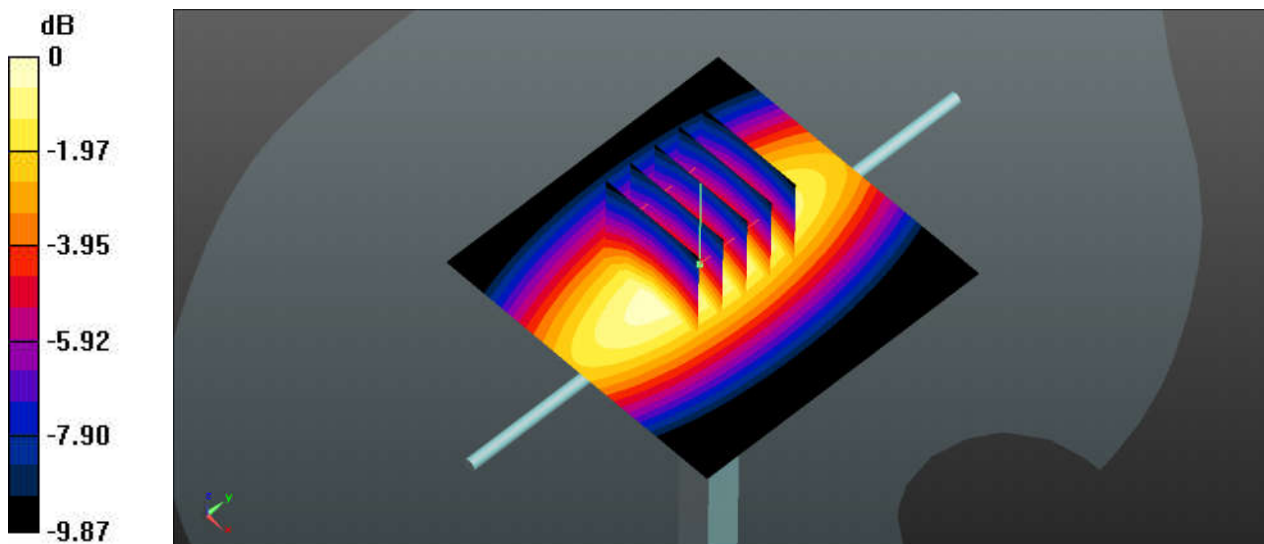
Ambient Temperature : 23.5 °C; Liquid Temperature : 22.3 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7577; ConvF(9.85, 9.85, 9.85); Calibrated: 2020/9/30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn360; Calibrated: 2020/11/6
- Phantom: SAM (Front) with CRP v5.0; Type: QD000P40CD; Serial: TP:1795
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
Maximum value of SAR (interpolated) = 2.64 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 55.49 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 3.07 W/kg
SAR(1 g) = 2.13 W/kg; SAR(10 g) = 1.43 W/kg
Maximum value of SAR (measured) = 2.65 W/kg



0 dB = 2.65 W/kg

System Check_Head_835MHz

DUT: D835V2-SN:4d162

Communication System: UID 0, CW (0); Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL_835_210601 Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.914 \text{ S/m}$; $\epsilon_r = 41.826$; $\rho = 1000 \text{ kg/m}^3$

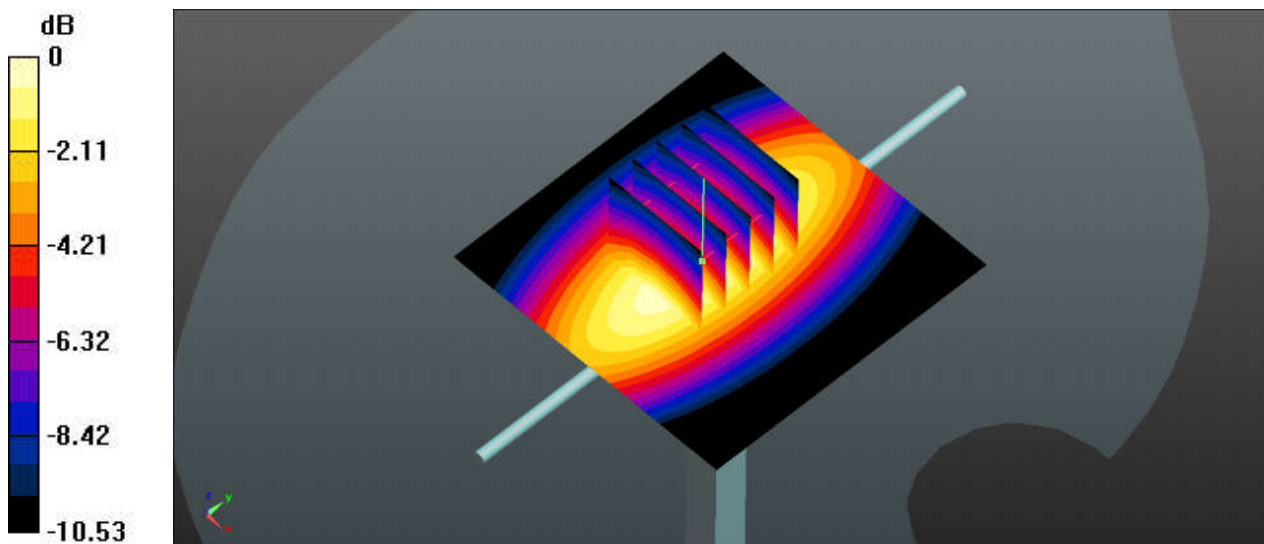
Ambient Temperature : 23.3 °C; Liquid Temperature : 22.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7375; ConvF(9.94, 9.94, 9.94); Calibrated: 2020/12/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn918; Calibrated: 2020/6/22
- Phantom: SAM (Front) with CRP v5.0; Type: QD000P40CD; Serial: TP:1795
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
Maximum value of SAR (interpolated) = 3.08 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 59.22 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.61 W/kg
SAR(1 g) = 2.47 W/kg; SAR(10 g) = 1.63 W/kg
Maximum value of SAR (measured) = 3.11 W/kg



0 dB = 3.11 W/kg