

FCC SAR Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : XT2407-2
FCC ID : IHDT56AS3
STANDARD : FCC 47 CFR Part 2 (2.1093)

We, Sporton International Inc. (Shenzhen), would like to declare that the tested sample has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been in compliance with the applicable technical standards.

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



Approved by: Si Zhang

Sporton International Inc. (Shenzhen)
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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA441212	Rev. 01	Initial issue of report.	Jun. 03, 2024
FA441212	Rev. 02	Corrected the report typo on page 67/98.	Jun. 04, 2024
FA441212	Rev. 03	Added 5GNR n38 at ant0 Plimit and relevant data.	Jun. 07, 2024

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT2407-2**, 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	0.86	0.86	1.59
		GSM1900	<0.10	0.76	0.76	
	WCDMA	WCDMA V	0.78	1.13	1.13	
		WCDMA IV	0.75	1.19	1.10	
		WCDMA II	0.89	1.03	1.03	
	LTE	LTE Band 12/17	0.83	0.76	0.76	
		LTE Band 13	0.88	0.91	0.91	
		LTE Band 26/5	0.89	0.93	0.93	
		LTE Band 66/4	0.73	1.17	1.17	
		LTE Band 25/2	0.74	1.25	1.25	
		LTE Band 7	0.72	1.26	1.08	
		LTE Band 41/38	0.77	1.24	1.23	
		LTE Band 42	0.75	1.07	0.85	
	5G NR	FR1 n5	0.82	0.74	0.74	
		FR1 n66	0.84	1.26	1.26	
		FR1 n2	0.81	1.23	1.23	
		FR1 n7	0.89	1.22	1.11	
		FR1 n41/38	0.86	1.26	1.15	
		FR1 n78	0.82	1.10	0.81	
DTS	WLAN	2.4GHz WLAN	1.26	0.91	1.25	1.59
NII		5GHz WLAN	1.17	0.61	1.14	1.59
DSS	Bluetooth	2.4GHz Bluetooth	0.20	0.33	0.20	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	WCDMA	WCDMA IV	2.87	3.85
		WCDMA II	2.72	
	LTE	LTE Band 66/4	2.77	
		LTE Band 25/2	2.77	
		LTE Band 7	3.05	
		LTE Band 41/38	2.69	
		LTE Band 42	2.38	
	5G NR	FR1 n66	2.78	
		FR1 n2	2.54	
		FR1 n7	3.05	
		FR1 n41/38	3.12	
		FR1 n78	2.29	
DTS	WLAN	2.4GHz WLAN	2.98	3.85
NII		5GHz WLAN	2.96	3.85

Date of Testing:

2024/4/25 ~ 2024/5/26

Remark:

1. This device supports LTE B2 / B4 / B5 / B17 / B38 and B25 / B66 / B26 / B12 / B41. Since the supported frequency span for LTE B4 / B5 / B17 / B38 falls completely within the supports frequency span for LTE B25 / B66 / B26 / B12 / B41, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B25 / B66 / B26 / B12 / B41.
2. This device supports 5GNR n38 and n41. Since the supported frequency span for 5GNR n38 falls completely within the supports frequency span for n41, both 5GNR bands have the same target power, and both 5GNR bands share the same transmission path; therefore, SAR was only assessed for n41.

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

2. Administration Data

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

Testing Laboratory			
Test Firm	Sporton International Inc. (Shenzhen)		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR01-SZ	CN1256	421272

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

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

3. Guidance Applied

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

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



4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2407-2
FCC ID	IHDT56AS3
IMEI Code	Sample 1: IMEI1: 358858730016291 IMEI2: 358858730016309 Sample 2: IMEI1: 358858730025177 IMEI2: 358858730025185
Wireless Technology and Frequency Range	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3450 MHz ~ 3550 MHz LTE Band 66: 1710 MHz ~ 1780 MHz 5G NR n2: 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n38: 2570 MHz ~ 2620 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n78: 3450 MHz ~ 3550 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 ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz WLAN 6GHz U-NII-5: 5925 MHz ~ 6425 MHz WLAN 6GHz U-NII-6: 6425 MHz ~ 6525 MHz WLAN 6GHz U-NII-7: 6525 MHz ~ 6875 MHz WLAN 6GHz U-NII-8: 6875 MHz ~ 7125 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC: 13.56 MHz WPT: 115 kHz ~ 145 kHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA/HSUPA DC-HSDPA HSPA+(16QAM uplink is not supported) LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR : CP-OFDM / DFT-s-OFDM, PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ac/ax VHT20/VHT40/HE20/HE40

	WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac/ax VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160 WLAN 6GHz 802.11a/ax HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE NFC: ASK WPT: ASK
HW Version	DVT2
SW Version	U3UW34.46
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype
Remark:	
1. This device supports VoIP in GPRS, EGPRS, WCDMA, LTE and 5GNR (e.g. for 3rd-party VoIP), LTE supports VoLTE operation. 2. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications. 3. This device 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only). 4. This device does not support DTM operation and supports GPRS/EGPRS mode up to multi-slot class 12. 5. For dual SIM card mobile has single SIM slots + eSIM (electronic SIM) and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active). 6. 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. 7. For WLAN when transmit simultaneous with WWAN/BT, power reduction will be activated to head exposure condition. For WLAN when transmit simultaneous with WWAN and Proximity sensors trigger, power reduction will be activated to body-worn and extremity exposure conditions. 8. This device implements antenna tuning techniques for several WWAN (cellular) operating modes and frequencies for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, these techniques are employed in the WCDMA, LTE and 5GNR modes. In this report SAR was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing. The detail descriptions of the antenna tuner and supplemental data for additional information can be referred to section 18 and appendix G. 9. For 5G NR bands, using FTM to perform SAR with default 100% transmission. 10. There are two samples, the different between them refer to the XT2407-2_Operational Description of Product Equality Declaration which is exhibit separately. According to the differences, sample 1 was chosen to perform full SAR testing and sample 2 to verify the worst case of sample 1. 11. This device has NFC function and the NFC SAR report will be separately submitted. 12. RF exposure report for WPC (Wireless power charging) will be separately submitted. 13. This device supports 5GNR FR1 bands as following table, including NSA mode and SA mode. NSA and SA mode performed SAR separately.	

<5G NR>

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
NSA	n2	FDD	15	5, 10, 15, 20
	n7	FDD	15	5, 10, 15, 20, 25, 30, 40
	n66	FDD	15	5, 10, 15, 20, 30, 40
	n38	TDD	30	10, 15, 20, 30, 40
	n41	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100
	n78	TDD	30	10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100
SA	n2	FDD	15	5, 10, 15, 20
	n5	FDD	15	5, 10, 15, 20
	n7	FDD	15	5, 10, 15, 20, 25, 30, 40
	n66	FDD	15	5, 10, 15, 20, 30, 40
	n38	TDD	30	10, 15, 20, 30, 40
	n78	TDD	30	10, 15, 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	IHDT56AS3																																																																						
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 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3450 MHz ~3550 MHz LTE Band 66: 1710 MHz ~ 1780 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 17: 5MHz, 10MHz LTE Band 25:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 42: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz																																																																						
uplink modulations used	QPSK / 16QAM / 64QAM / 256QAM																																																																						
LTE Voice / Data requirements	Voice and Data																																																																						
LTE Release Version	R16, Cat18																																																																						
CA Support	Supported, Uplink and Downlink																																																																						
LTE MPR permanently built-in by design	<table><tr><th colspan="8">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</th></tr><tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr><tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr><tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr><tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr><tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr><tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr></table>	Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3								Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
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QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																																																
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																																																
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64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3																																																																
256 QAM	≥ 1						≤ 5																																																																
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																																																						
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																																						
Power reduction applied to satisfy SAR compliance	Yes, when operating in Proximity sensors/receiver/hotspot detect mechanism, head/body -worn /hotspot/extremity will trigger reduced power for some bands applied to satisfy SAR compliance, 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 intra-band and inter-band with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance. 2. This device supports maximum of 2 carriers in the downlink and 2 carriers in the uplink.																																																																						

Transmission (H, M, L) channel numbers and frequencies in each LTE band														
LTE Band 2														
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860		
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880		
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900		
LTE Band 4														
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720		
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5		
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745		
LTE Band 5														
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz							
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	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							
	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							
	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									
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)							
L	23205		779.5		23230		782							
M	23230		782											
H	23255		784.5											
LTE Band 17														
	Bandwidth 5 MHz				Bandwidth 10 MHz									
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)							
L	23755		706.5		23780		709							
M	23790		710		23790		710							
H	23825		713.5		23800		711							
LTE Band 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	26765	821.5		
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5		
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5	26965	841.5		
LTE Band 38														
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz							
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580	37850	2580	37850	2580		
M	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595		
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610	38150	2610	38150	2610		

LTE Band 41												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	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 42												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	42115	3452.5	42140	3455	42165	3457.5	42190	3460				
M	42590	3500	42590	3500	42590	3500	42590	3500				
H	43065	3547.5	43040	3545	43015	3542.5	42990	3540				

<For LTE Overlap Bands Description>

1) LTE Bands BW

Band	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
LTE Band 2	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 25	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 4	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 66	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 5	Yes	Yes	Yes	Yes		
LTE Band 26	Yes	Yes	Yes	Yes	Yes	
LTE Band 12	Yes	Yes	Yes	Yes		
LTE Band 17			Yes	Yes		
LTE Band 38			Yes	Yes	Yes	Yes
LTE Band 41			Yes	Yes	Yes	Yes

2) LTE Bands tune up

TX. freq.		Ant	Full Power	DSI 2	DSI 3	DSI 4	DSI 6	DSI 7
			max.	max.	max.	max.	max.	max.
			tune up limit	tune up limit	tune up limit	tune up limit	tune up limit	tune up limit
			(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)
LTE	LTE Band 12/17	0	24.00	24.00	24.00	24.00	24.00	24.00
	LTE Band 12/17	1	24.00	24.00	24.00	24.00	24.00	23.50
	LTE Band 25/2	0	24.00	24.00	23.10	24.00	24.00	23.10
	LTE Band 25/2	1	24.00	17.20	17.20	24.00	22.20	15.70
	LTE Band 25/2	2	24.00	24.00	23.20	24.00	24.00	23.20
	LTE Band 26/5	0	24.00	24.00	24.00	24.00	24.00	24.00
	LTE Band 26/5	1	24.00	24.00	24.00	24.00	24.00	23.40
	LTE Band 66/4	0	24.00	24.00	22.60	24.00	24.00	22.60
	LTE Band 66/4	1	24.00	17.20	16.70	24.00	20.70	14.70
	LTE Band 66/4_Other PA	1	24.00	17.20	16.70	24.00	20.70	14.70
	LTE Band 66/4	2	24.00	24.00	22.70	24.00	24.00	22.70
	LTE Band 66/4_Other PA	2	24.00	24.00	22.70	24.00	24.00	22.70
	LTE Band 41/38	0	24.00	24.00	23.50	24.00	24.00	21.60
	LTE Band 41/38	1	24.00	19.30	21.30	24.00	23.30	17.30
	LTE Band 41/38	2	24.00	24.00	24.00	24.00	24.00	22.00

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 n7: 2500 MHz ~ 2570 MHz 5G NR n38: 2570 MHz ~ 2620 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n78: 3450 MHz ~ 3550 MHz											
Channel Bandwidth		The detail please refers to section 4.1 5GNR FR1 bands table.											
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 B4/5/66											
LTE Anchor Bands for n7		LTE B2/4/5/66											
LTE Anchor Bands for n38		LTE B4/66											
LTE Anchor Bands for n41		LTE B4/66											
LTE Anchor Bands for n66		LTE B2/5/7											
LTE Anchor Bands for n78		LTE B2/4/5/7/26/38/41/66											

Transmission (H, M, L) channel numbers and frequencies in each 5G NR band													
NR Band 2													
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 20MHz		Bandwidth 20MHz		
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Freq. (MHz)
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860	372000	1860	372000	1860	1860
M	376000	1880	376000	1880	376000	1880	376000	1880	376000	1880	376000	1880	1880
H	381500	1907.5	381000	1905	380500	1902.5	380000	1900	380000	1900	380000	1900	1900
NR Band 5													
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 20MHz		Bandwidth 20MHz		
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Freq. (MHz)
L	165300	826.5	165800	829	166300	831.5	166800	834	166800	834	166800	834	834
M	167300	836.5	167300	836.5	167300	836.5	167300	836.5	167300	836.5	167300	836.5	836.5
H	169300	846.5	168800	844	168300	841.5	167800	839	167800	839	167800	839	839
NR Band 7													
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Freq. (MHz)
L	500500	2502.5	501000	2505	501500	2507.5	502000	2510	502500	2512.5	503000	2515	504000
M	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000
H	513500	2567.5	513000	2565	512500	2562.5	512000	2560	511500	2557.5	511000	2555	510000
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)	Freq. (MHz)
L	342500	1712.5	343000	1715	343500	1717.5	344000	1720	345000	1725	346000	1730	1730
M	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	1745
H	355500	1777.5	355000	1775	354500	1772.5	354000	1770	353000	1765	352000	1760	1760
NR Band 38													
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 40MHz		
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Freq. (MHz)
L	515000	2575	515500	2577.5	516000	2580	517000	2585	518000	2590	518000	2590	2590
M	519000	2595	519000	2595	519000	2595	519000	2595	519000	2595	519000	2595	2595
H	523000	2615	522500	2612.5	522000	2610	521000	2605	520000	2600	520000	2600	2600

NR Band 41 SCS30KHz																	
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 501204	2506.02	502200	2511	503202	2516.01	504204	2521.02	505200	2526	500202	2501.01	507204	2536.02	508200	2541	509202	2546.01
M 518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99
H 535998	2679.99	534996	2674.98	534000	2670	532998	2664.99	531996	2659.98	537000	2685	529998	2649.99	528996	2644.98	528000	2640

NR Band 78 SCS30KHz																	
Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz	
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 630334	3455.01	630500	3457.5	630668	3460.02	631000	3465	631334	3470.01	631668	3475.02	632000	3480	632334	3485.01	632668	3490.02
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 636332	3544.98	636166	3542.49	636000	3540	635666	3534.99	635332	3529.98	635000	3525	634666	3519.99	634332	3514.98	634000	3510

<For NR Overlap Bands Description>

1) NR Bands BW

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
FR1 NR	n38	TDD	30	10,15,20,30,40
	n41	TDD	30	20,30,40,50,60,70,80,90,100

2) NR Bands SA Tune up:

TX. freq.		Ant	Full Power	DSI 2	DSI 3	DSI 4	DSI 6	DSI 7
			max.	max.	max.	max.	max.	max.
			tune up limit	tune up limit	tune up limit	tune up limit	tune up limit	tune up limit
			(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)
FR1	n41/38	1	24.00	17.50	19.50	24.00	22.50	16.00
	n41/38	2	24.00	24.00	22.50	24.00	22.50	20.00

5. Smart Transmit feature for RF Exposure compliance

The Qualcomm® Smart Transmit™ 3.0 of Smart Transmit (Gen2) Feature operates based on pre-defined sub6 antenna groups (AG). This Device is enabled with the Qualcomm® Smart Transmit Gen2 feature. The RF exposure limit is defined based on time-averaged RF exposure. 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.

Note that WLAN/BT operations are not enabled with Smart Transmit.

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) version 19 to enable the Smart Transmit Gen2 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.

Antenna Group:

Antenna Group 0 (AG0)	ANT0 & ANT2 & ANT6
Antenna Group 1 (AG1)	ANT1 & ANT3 & ANT4 & ANT9

<SAR design target and uncertainty>

Item	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	Body Worn	Sensor off	Extremity	Hotspot	Pmax*
		DSI2	DSI3	DSI4	DSI6	DSI7	
GSM850**	Ant 0	33.5	25.9	24.2	24.2	25.9	24.2
GSM1900**	Ant 2	35.1	22.6	20.5	20.5	22.8	20.5
WCDMA II	Ant 2	32.3	21.7	23.0	23.7	21.7	23.0
WCDMA II	Ant 1	19.2	18.2	23.0	20.2	16.7	23.0
WCDMA IV	Ant 2	31.4	21.7	23.0	23.4	20.2	23.0
WCDMA IV	Ant 1	17.7	15.7	23.0	19.7	14.2	23.0
WCDMA V	Ant 0	30.4	23.5	23.0	23.0	23.5	23.0
WCDMA V	Ant 1	23.5	23.9	23.0	23.0	21.9	23.0
LTE Band 7	Ant 0	25.7	19.2	23.0	20.2	18.2	23.0
LTE Band 7	Ant 1	16.7	16.7	23.0	21.2	15.2	23.0
LTE Band 7	Ant 2	34.8	21.4	23.0	21.9	18.9	23.0
LTE Band 12/17	Ant 0	32.0	25.2	23.0	23.0	25.2	23.0
LTE Band 12/17	Ant 1	23.3	23.9	23.0	23.0	22.5	23.0
LTE Band 13	Ant 0	30.2	24.4	23.0	23.0	24.4	23.0
LTE Band 13	Ant 1	23.0	23.7	23.0	23.0	21.8	23.0
LTE Band 25/2	Ant 0	31.9	22.1	23.0	23.0	22.1	23.0
LTE Band 25/2	Ant 1	16.2	16.2	23.0	21.2	14.7	23.0
LTE Band 25/2	Ant 2	32.7	22.2	23.0	23.6	22.2	23.0
LTE Band 26/5	Ant 0	30.8	24.4	23.0	23.0	24.4	23.0
LTE Band 26/5	Ant 1	23.0	23.2	23.0	23.0	22.4	23.0
LTE Band 66/4	Ant 0	31.4	21.6	23.0	23.0	21.6	23.0
LTE Band 66/4	Ant 1	16.2	15.7	23.0	19.7	13.7	23.0
LTE Band 66/4_Other PA	Ant 1	16.2	15.7	23.0	19.7	13.7	23.0
LTE Band 66/4	Ant 2	31.4	21.7	23.0	23.9	21.7	23.0
LTE Band 66/4_Other PA	Ant 2	31.7	21.7	23.0	27.4	21.7	23.0
LTE Band 41/38	Ant 0	27.3	20.5	21.0	21.2	18.6	21.0
LTE Band 41/38	Ant 1	16.3	18.3	21.0	20.3	14.3	21.0
LTE Band 41/38	Ant 2	32.8	22.1	21.0	22.0	19.0	21.0
LTE Band 42	Ant 4	18.2	18.7	21.0	20.2	15.2	21.0
LTE Band 42	Ant 3	16.6	19.8	19.0	19.0	16.6	19.0
LTE Band 42	Ant 6	27.9	20.2	20.2	20.2	21.8	21.0
LTE Band 42	Ant 9	17.3	17.3	19.0	19.0	16.3	19.0
FR1 n2	Ant 0	31.9	21.0	23.0	22.0	21.0	23.0
FR1 n2	Ant 1	16.0	16.0	23.0	21.0	14.5	23.0
FR1 n2_Other PA	Ant 1	16.0	16.0	23.0	21.0	14.5	23.0
FR1 n2	Ant 2	32.5	23.7	23.0	24.0	19.5	23.0
FR1 n2_Other PA	Ant 2	32.8	23.0	23.0	24.4	19.5	23.0
FR1 n5	Ant 0	36.4	25.4	23.0	23.0	25.4	23.0
FR1 n5	Ant 1	22.5	24.0	23.0	23.0	22.0	23.0
FR1 n7	Ant 0	26.0	19.5	23.0	20.0	18.0	23.0
FR1 n7	Ant 1	17.5	17.5	23.0	21.5	16.0	23.0
FR1 n7	Ant 2	34.0	22.0	23.0	22.5	20.0	23.0
FR1 n66	Ant 0	31.9	20.0	23.0	23.7	20.0	23.0
FR1 n66	Ant 1	16.5	16.0	23.0	21.0	14.5	23.0
FR1 n66_Other PA	Ant 1	16.5	16.0	23.0	21.0	14.5	23.0
FR1 n66	Ant 2	34.6	23.0	23.0	22.0	23.0	23.0
FR1 n66_Other PA	Ant 2	34.5	23.3	23.0	22.0	23.1	23.0



FR1 n38	Ant 0	29.1	19.5	23.0	21.0	19.0	23.0
FR1 n41/38	Ant 1	16.5	18.5	23.0	21.5	15.0	23.0
FR1 n41/38	Ant 2	33.6	21.5	23.0	21.5	19.0	23.0
FR1 n78	Ant 4	18.5	18.5	23.0	19.5	14.5	23.0
FR1 n78	Ant 3	15.0	18.0	20.0	20.3	14.5	20.0
FR1 n78	Ant 6	32.1	20.0	20.0	20.0	21.0	23.0
FR1 n78	Ant 9	19.0	17.5	21.0	22.8	16.0	21.0

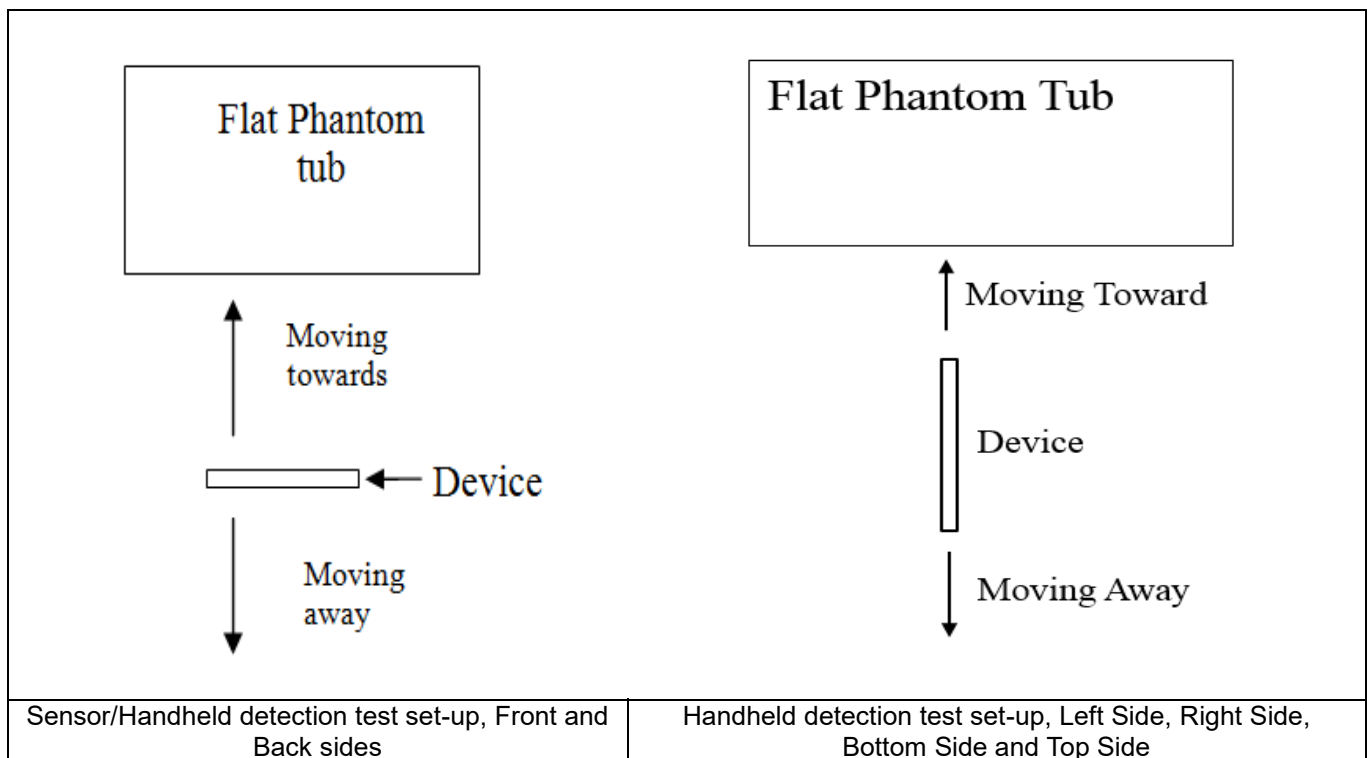
Note:

- 1) *Pmax is used for RF tune up procedure. The maximum allowed output power is equal to Pmax + 1.0 dB device uncertainty.
- 2) All Plimit 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 & LTE TDD & NR TDD).
- 3) The max allowed output power is the Plimit + 1.0 dB device uncertainty, and if Plimit is higher than Pmax, the device output power will be Pmax 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 and the tissue-equivalent medium for highest frequency (5850MHz) and lowest (1750MHz) frequency was used for proximity sensor triggering testing.
2. 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.
3. The output power will reduce to body worn power level when top and bottom sensor pad be detected.
4. 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.
5. 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 sides of the device. When front/back/top/bottom/left/right sides of handheld condition is detected reduced power will be active.
6. 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	15	15	20	20

<Handheld for ANT 0/2>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Left Side		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	4	4	7	7	6	6	7	7

<Handheld for ANT1/4>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Left Side		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	4	4	12	12	9	9	7	7

<Handheld for ANT3/7/8/9>

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	4	4	5	5	8	8	6	6

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:

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

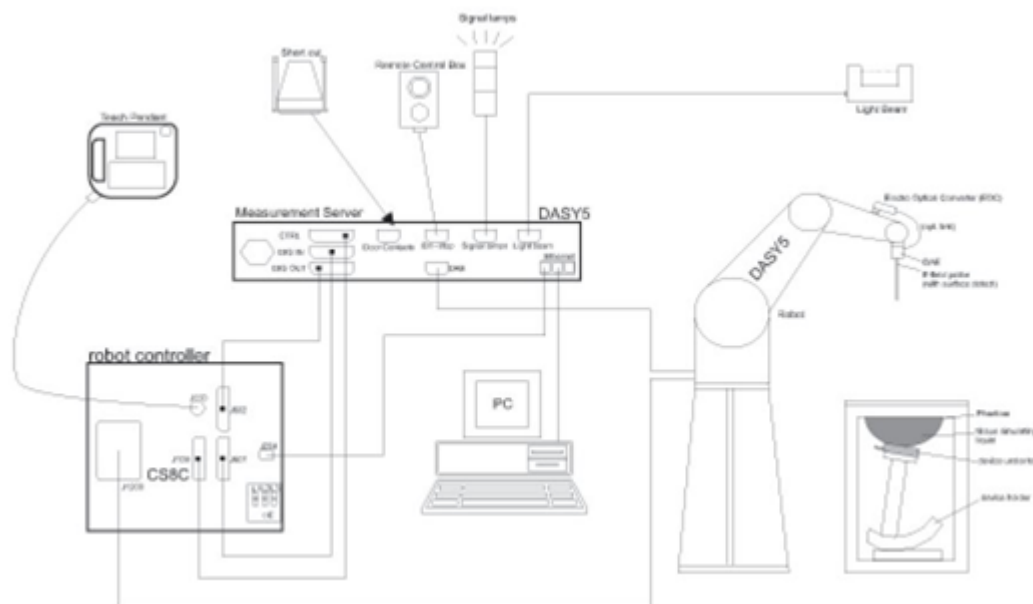
SAR is expressed in units of Watts per kilogram (W/kg)

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

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 μ W/g – >100 mW/g Linearity: ± 0.2 dB (noise: typically <1 μ W/g)	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

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 or for evaluating transmitters operating at low frequencies. ELI 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 dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

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

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

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: $\Delta x_{\text{Zoom}}, \Delta y_{\text{Zoom}}$			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm *	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{\text{Zoom}}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{\text{Zoom}}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{\text{Zoom}}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{\text{Zoom}}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.				
* When zoom scan is required and the <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

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. 15, 2021	Dec. 13, 2024
SPEAG	835MHz System Validation Kit	D835V2	4d162	Dec. 17, 2021	Dec. 15, 2024
SPEAG	1750MHz System Validation Kit	D1750V2	1137	Oct. 19, 2021	Oct. 17, 2024
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	Dec. 20, 2021	Dec. 18, 2024
SPEAG	2450MHz System Validation Kit	D2450V2	924	Nov. 03, 2023	Nov. 02, 2024
SPEAG	2600MHz System Validation Kit	D2600V2	1070	Dec. 20, 2021	Dec. 18, 2024
SPEAG	3500MHz System Validation Kit	D3500V2	1037	Nov. 20, 2023	Nov. 19, 2024
SPEAG	5000MHz System Validation Kit	D5GHzV2	1341	Dec. 13, 2021	Dec. 11, 2024
SPEAG	Data Acquisition Electronics	DAE4	1386	Jul. 17, 2023	Jul. 16, 2024
SPEAG	Dosimetric E-Field Probe	EX3DV4	7576	Aug. 23, 2023	Aug. 22, 2024
SPEAG	SAM Twin Phantom	QD 000 P40 CD	1671	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201300653	Jul. 05, 2023	Jul. 04, 2024
Anritsu	Radio communication analyzer	MT8820C	6201341952	Dec. 28, 2023	Dec. 27, 2024
Anritsu	Radio communication analyzer	MT8821C	6262314715	Jul. 05, 2023	Jul. 04, 2024
Anritsu	Radio communication analyzer	MT8821C	6272278319	Jul. 05, 2023	Jul. 04, 2024
Agilent	Wireless Communication Test Set	E5515C	MY50267224	Jul. 05, 2023	Jul. 04, 2024
Keysight	Network Analyzer	E5071C	MY46523671	Oct. 16, 2023	Oct. 15, 2024
Speag	Dielectric Assessment KIT	DAK-3.5	1071	Feb. 19, 2024	Feb. 18, 2025
Agilent	Signal Generator	N5181A	MY50145381	Dec. 28, 2023	Dec. 27, 2024
R&S	Signal Generator	SMB100A	175779	Dec. 28, 2023	Dec. 27, 2024
Anritsu	Power Sensor	MA2411B	1306099	Oct. 16, 2023	Oct. 15, 2024
Anritsu	Power Meter	ML2495A	1349001	Oct. 16, 2023	Oct. 15, 2024
Anritsu	Power Sensor	MA2411B	1542004	Dec. 28, 2023	Dec. 27, 2024
Anritsu	Power Meter	ML2495A	1339473	Dec. 28, 2023	Dec. 27, 2024
R&S	CBT BLUETOOTH TESTER	CBT	100963	Dec. 28, 2023	Dec. 27, 2024
R&S	Spectrum Analyzer	FSP7	100818	Jul. 05, 2023	Jul. 04, 2024
TES	Hygrometer	1310	200505600	Jul. 08, 2023	Jul. 07, 2024
Anymetre	Thermo-Hygrometer	JR593	2015030903	Jan. 02, 2024	Jan. 01, 2025
Anymetre	Thermo-Hygrometer	JR593	2015102801	Jan. 02, 2024	Jan. 01, 2025
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	
Mini-Circuits	Amplifier	ZVA-183W-S+	726202215	Note 1	
ARRA	Power Divider	A3200-2	N/A	Note 1	
ET Industries	Dual Directional Coupler	C-058-10	N/A	Note 1	
Jinkexinhua	Attenuator	10db-8G	N/A	Note 1	

Note:

- 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
- 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.
- 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.

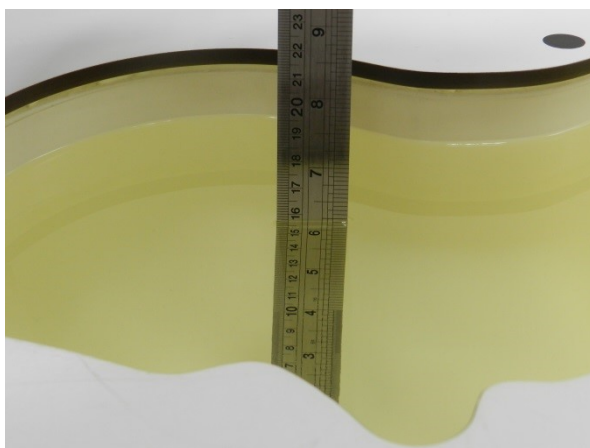


Fig 11.1 Photo of Liquid Height for Head SAR



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	22.3	0.912	42.087	0.89	41.90	2.47	0.45	±5	2024/4/25
750	Head	22.1	0.899	41.131	0.89	41.90	1.01	-1.84	±5	2024/5/14
835	Head	22.3	0.933	42.908	0.90	41.50	3.67	3.39	±5	2024/4/25
835	Head	22.6	0.944	42.219	0.90	41.50	4.89	1.73	±5	2024/5/15
1750	Head	22.2	1.349	39.741	1.37	40.10	-1.53	-0.90	±5	2024/5/6
1750	Head	22.5	1.341	38.638	1.37	40.10	-2.12	-3.65	±5	2024/5/21
1900	Head	22.3	1.449	39.333	1.40	40.00	3.50	-1.67	±5	2024/5/6
1900	Head	22.6	1.350	40.677	1.40	40.00	-3.57	1.69	±5	2024/5/22
2450	Head	22.3	1.790	38.844	1.80	39.20	-0.56	-0.91	±5	2024/5/7
2450	Head	22.2	1.828	39.832	1.80	39.20	1.56	1.61	±5	2024/5/18
2600	Head	22.4	1.908	38.327	1.96	39.00	-2.65	-1.73	±5	2024/5/10
2600	Head	22.6	1.946	39.409	1.96	39.00	-0.71	1.05	±5	2024/5/19
3500	Head	22.1	2.850	37.175	2.91	37.90	-2.06	-1.91	±5	2024/4/27
3500	Head	22.5	2.896	38.203	2.91	37.90	-0.48	0.80	±5	2024/5/17
5250	Head	22.3	4.521	35.916	4.71	35.95	-4.01	-0.09	±5	2024/5/4
5250	Head	22.2	4.590	35.763	4.71	35.95	-2.55	-0.52	±5	2024/5/24
5600	Head	22.3	4.866	34.444	5.07	35.50	-4.02	-2.97	±5	2024/5/12
5600	Head	22.2	4.953	35.269	5.07	35.50	-2.31	-0.65	±5	2024/5/25
5750	Head	22.3	5.020	34.242	5.22	35.35	-3.83	-3.13	±5	2024/5/18
5750	Head	22.1	5.112	35.065	5.22	35.35	-2.07	-0.81	±5	2024/5/26

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 (%)
2024/4/25	750	Head	250	1099	7576	1386	2.210	8.540	8.84	3.51
2024/5/14	750	Head	250	1099	7576	1386	2.050	8.540	8.2	-3.98
2024/4/25	835	Head	250	4d162	7576	1386	2.440	9.640	9.76	1.24
2024/5/15	835	Head	250	4d162	7576	1386	2.390	9.640	9.56	-0.83
2024/5/6	1750	Head	250	1137	7576	1386	8.990	36.500	35.96	-1.48
2024/5/21	1750	Head	250	1137	7576	1386	8.530	36.500	34.12	-6.52
2024/5/6	1900	Head	250	5d182	7576	1386	9.920	39.600	39.68	0.20
2024/5/22	1900	Head	250	5d182	7576	1386	9.320	39.600	37.28	-5.86
2024/5/7	2450	Head	250	924	7576	1386	12.800	52.300	51.2	-2.10
2024/5/18	2450	Head	250	924	7576	1386	12.500	52.300	50	-4.40
2024/5/10	2600	Head	250	1070	7576	1386	14.200	56.200	56.8	1.07
2024/5/19	2600	Head	250	1070	7576	1386	14.500	56.200	58	3.20
2024/4/27	3500	Head	100	1037	7576	1386	6.850	65.400	68.5	4.74
2024/5/17	3500	Head	100	1037	7576	1386	6.700	65.400	67	2.45
2024/5/4	5250	Head	100	1341	7576	1386	8.130	80.700	81.3	0.74
2024/5/24	5250	Head	100	1341	7576	1386	8.470	80.700	84.7	4.96
2024/5/12	5600	Head	100	1341	7576	1386	8.350	84.500	83.5	-1.18
2024/5/25	5600	Head	100	1341	7576	1386	7.960	84.500	79.6	-5.80
2024/5/18	5750	Head	100	1341	7576	1386	8.660	80.600	86.6	7.44
2024/5/26	5750	Head	100	1341	7576	1386	8.040	80.600	80.4	-0.25

<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 (%)
2024/4/25	750	Head	250	1099	7576	1386	1.470	5.650	5.88	4.07
2024/5/14	750	Head	250	1099	7576	1386	1.370	5.650	5.48	-3.01
2024/4/25	835	Head	250	4d162	7576	1386	1.600	6.260	6.4	2.24
2024/5/15	835	Head	250	4d162	7576	1386	1.580	6.260	6.32	0.96
2024/5/6	1750	Head	250	1137	7576	1386	4.920	19.200	19.68	2.50
2024/5/21	1750	Head	250	1137	7576	1386	4.610	19.200	18.44	-3.96
2024/5/6	1900	Head	250	5d182	7576	1386	5.140	20.200	20.56	1.78
2024/5/22	1900	Head	250	5d182	7576	1386	4.820	20.200	19.28	-4.55
2024/5/7	2450	Head	250	924	7576	1386	6.320	24.500	25.28	3.18
2024/5/18	2450	Head	250	924	7576	1386	5.770	24.500	23.08	-5.80
2024/5/10	2600	Head	250	1070	7576	1386	6.570	24.600	26.28	6.83
2024/5/19	2600	Head	250	1070	7576	1386	6.610	24.600	26.44	7.48
2024/4/27	3500	Head	100	1037	7576	1386	2.550	24.700	25.5	3.24
2024/5/17	3500	Head	100	1037	7576	1386	2.500	24.700	25	1.21
2024/5/4	5250	Head	100	1341	7576	1386	2.430	23.100	24.3	5.19
2024/5/24	5250	Head	100	1341	7576	1386	2.380	23.100	23.8	3.03
2024/5/12	5600	Head	100	1341	7576	1386	2.570	24.000	25.7	7.08
2024/5/25	5600	Head	100	1341	7576	1386	2.300	24.000	23	-4.17
2024/5/18	5750	Head	100	1341	7576	1386	2.370	22.700	23.7	4.41
2024/5/26	5750	Head	100	1341	7576	1386	2.250	22.700	22.5	-0.88

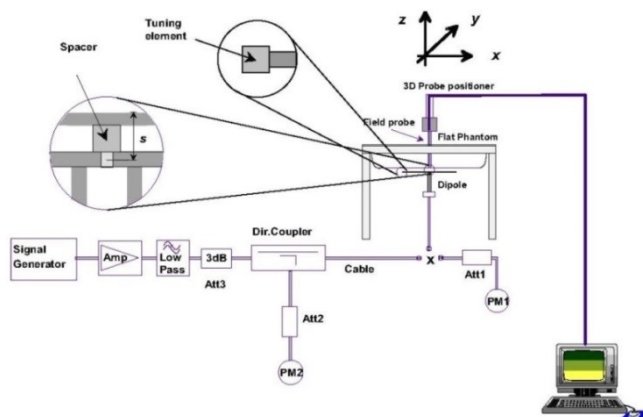


Fig 11.3.1 System Performance Check Setup



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.

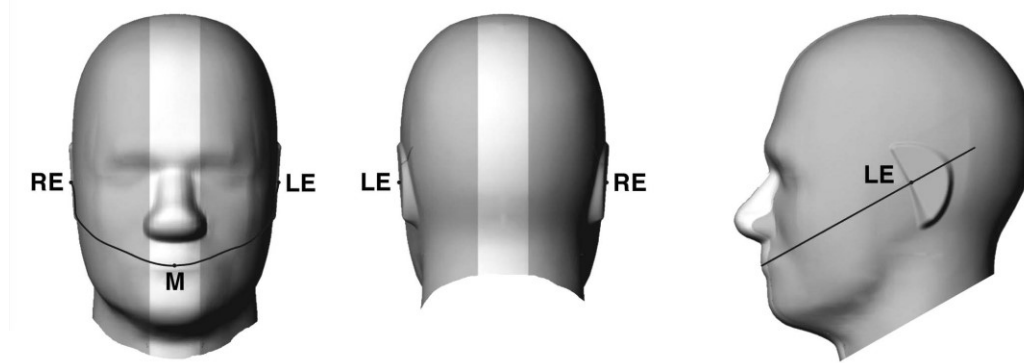


Fig 12.1.1 Front, back, and side views of SAM twin phantom

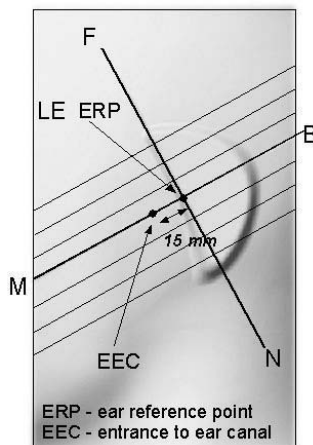


Fig 12.1.2 Close-up side view of phantom showing the ear region.

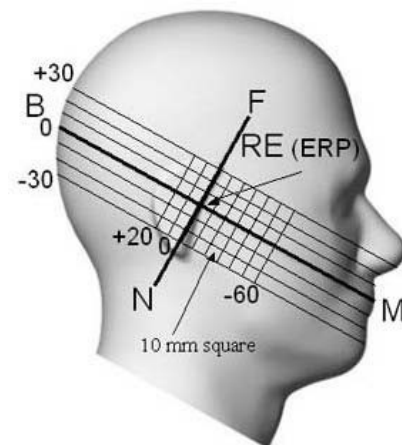


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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

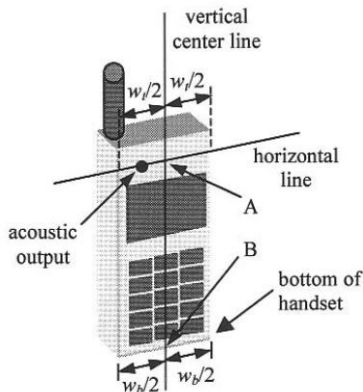


Fig 12.2.1 Handset vertical and horizontal reference lines—"fixed case"

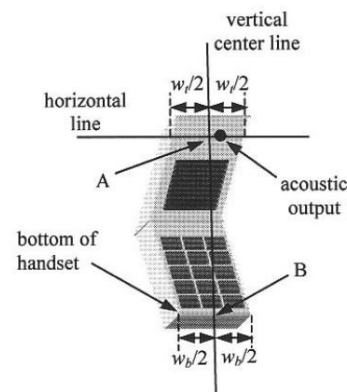


Fig 12.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

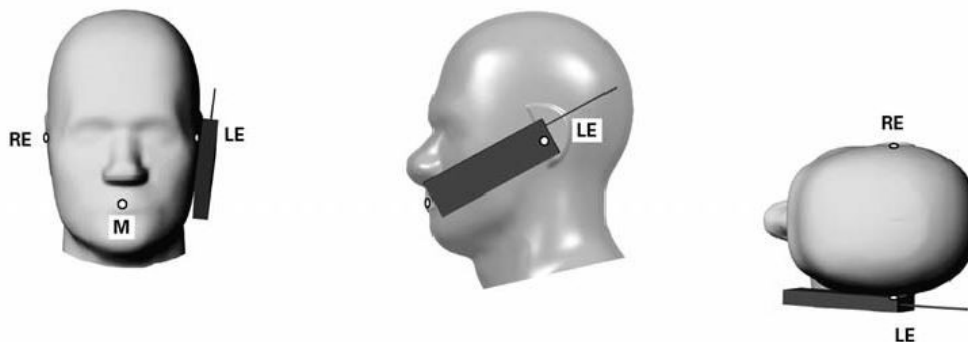


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

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

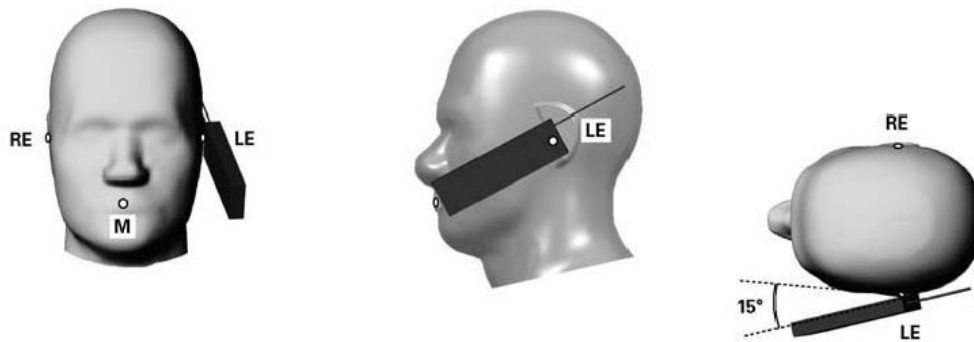


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

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 11.4). Per KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 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 handset attached to the handset.

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

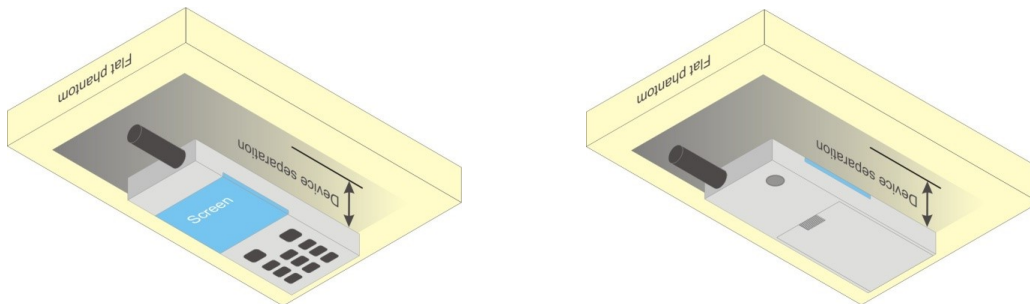


Fig 12.4 Body Worn Position

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

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

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.
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 $\leq \frac{1}{4}$ 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_c/β_d	β_{hs} (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

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

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

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

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

Setup Configuration

HSUPA Setup Configuration:

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

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1} : 47/15 β_{ed2} : 47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$. For sub-test 5, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 5/15$ with $\beta_{hs} = 5/15 * \beta_c$.

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

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

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

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

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

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
 - i. Set RMC 12.2Kbps + HSDPA mode.
 - ii. Set Cell Power = -25 dBm
 - iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
 - iv. Select HSDPA Uplink Parameters
 - v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
 - a). Subtest 1: $\beta_c/\beta_d=2/15$
 - 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.		

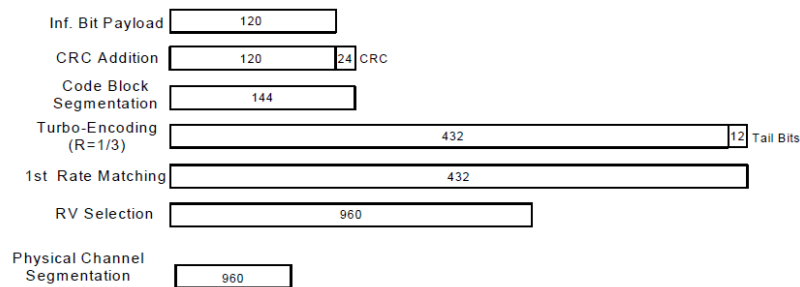


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

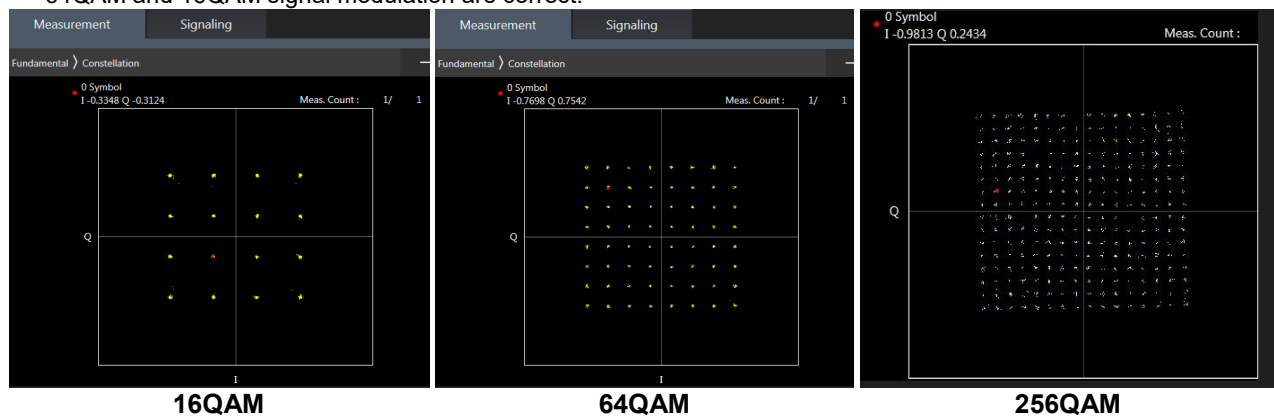
<WCDMA Conducted Power>**General Note:**

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/256QAM 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/256QAM 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 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 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 May 2017 TCB workshop, for 16QAM and 64QAM, 256QAM 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 256QAM, 64QAM and 16QAM signal modulation are correct.



<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

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

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

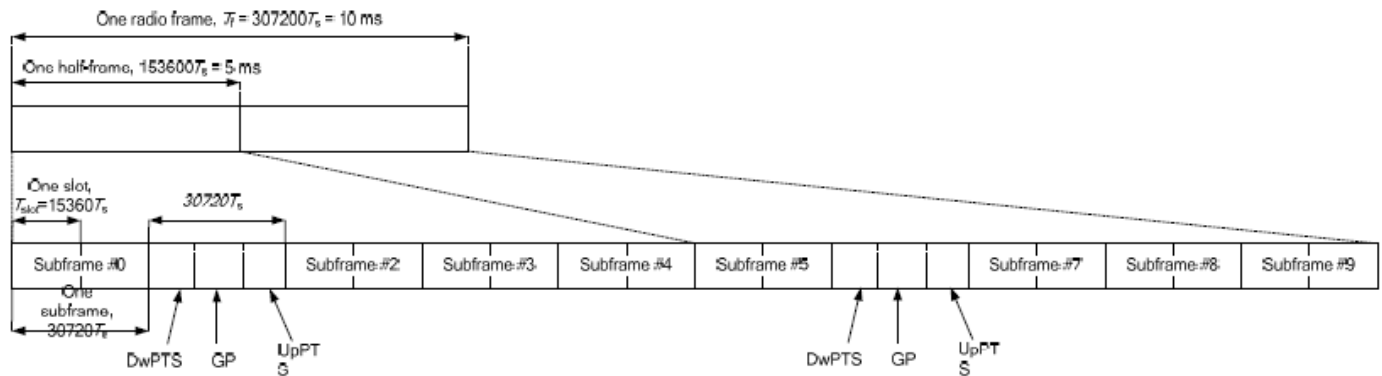


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

For LTE TDD 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.

<LTE Carrier Aggregation>

The detailed LTE Carrier Aggregation conducted power table can refer to Appendix F.

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.

2CC Downlink Carrier Aggregation			
Number	Combination	4X4 MIMO	Covered by
			Measurement Superset
1	CA_2A-5A	2A	
2	CA_38C	38C, 38A	
3	CA_41A-41A	41A-41A, 41A	
4	CA_41C	41C, 41A	
5	CA_5A-7A	7A	
6	CA_66A-66A	66A-66A, 66A	
7	CA_66B	66B, 66A	
8	CA_66C	66C, 66A	
9	CA_7A-7A	7A-7A, 7A	
10	CA_7C	7C, 7A	

LTE Carrier Aggregation Conducted Power (Downlink)

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

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

LTE 4x4 MIMO (Downlink)

This device supports downlink 4x4 MIMO operations for LTE Band 2/7/66/38/41 only. Uplink transmission is limited to a single output stream. Power measurements were performed with downlink 4x4 MIMO active for the configuration with highest measured maximum conducted power with 4x4 downlink MIMO inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

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

4X4 MIMO	Band
	LTE Band 2/7/66/38/41

LTE Carrier Aggregation Conducted Power (Uplink)

LTE Uplink CA	2CC Uplink Carrier Aggregation
Intra-band	
CA_7C	Ant 0/1/2
CA_38C	Ant 0/1/2
CA_41C	Ant 0/1/2

<Intra-band>
General Note:

- i. The device supports intra-band uplink carrier aggregation for LTE B7/38/41 with a maximum of two uplink component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre 3GPP requirement.
- ii. The device supports uplink carrier aggregation with a maximum of two uplink component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre the 3GPP requirement.
- iii. According Nov. 2017 TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.
- iv. Additional SAR measurement for LTE UL CA with other DL CA combinations active were not required since the maximum output power for this configuration was not > 0.25dB higher than the maximum output power for UL CA active.

<Inter-band uplink carrier aggregation consideration>

LTE Inter CA	LTE Band	Main TX	Asdiv TX
CA_4A-5A	LTE B4	Ant 1	Ant 2
	LTE B5	Ant 0	Ant 1
CA_4A-7A	LTE B4	Ant 1	Ant 2
	LTE B7	Ant 2	Ant 1
CA_5A-7A	LTE B5	Ant 0	Ant 1
	LTE B7	Ant 1	Ant 2
CA_5A-66A	LTE B5	Ant 0	Ant 1
	LTE B66	Ant 1	Ant 2
CA_2A-4A	LTE B2	Ant 2	Ant 1
	LTE B4	Ant 1	Ant 2
CA_2A-7A	LTE B2	Ant 1	Ant 2
	LTE B7	Ant 2	Ant 1
CA_2A-66A	LTE B2	Ant 2	Ant 1
	LTE B66	Ant 1	Ant 2

General Note:

1. The single carrier of inter band CA uplink power level is the same as Non-CA standalone LTE power level.
2. The product implements Qualcomm Smart Transmit feature which controls the instantaneous transmitting power for WWAN transmitter to ensure the product in compliance with FCC RF exposure limit over a defined time window, for SAR (transmit frequency $\leq 6\text{GHz}$). 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.
3. For LTE inter-band CA mode, Qualcomm Smart Transmit algorithm in WWAN adds directly the time-averaged RF exposure between two LTE bands. Smart Transmit algorithm controls the total RF exposure base on LTE inter CA bands to not exceed FCC limit. In Part 1 Report, simultaneous transmission compliance was evaluated with other Radios (WLAN or BT) using standalone LTE SAR mode.

5G NR Output Power (Unit: dBm)

General Note:

1. 5G NR n2/n5/n7/n66/n38/n78 is SA mode.
2. 5G NR n2/n7/n66/n38/n41/n78 is NSA mode.
3. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
 - a. For DFT-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, the CP-OFDM mode will not higher than DFT-OFDM mode, therefore, similar FCC KDB 941225 D05 procedure for other modulation output power for each RB allocation configuration is > not ½ dB higher than the same configuration in DFT-s QPSK and the reported SAR for the DFT-s QPSK configuration is ≤ 1.45 W/kg; CP-OFDM testing is not required.
 - b. For DFT-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, for 16QAM/64QAM/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the 16QAM/64QAM/256QAM and smaller bandwidth output power will not ½ dB higher than the same configuration in the largest supported bandwidth.
 - c. SAR testing start with the largest channel bandwidth and measure SAR for 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
 - d. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
 - e. 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
 - f. PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, PI/2 BPSK /16QAM/64QAM/256QAM SAR testing are not required.
 - g. Smaller bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
4. For 5G NR bands, using FTM to perform SAR with default 100% transmission.
5. 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.
6. 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.
7. 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.
8. 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	$\leq 3.5^1$	$\leq 1.2^1$	$\leq 0.2^1$
		$\leq 0.5^2$	$\leq 0.5^2$	0 ²
	QPSK	≤ 1		0
	16 QAM	≤ 2		≤ 1
	64 QAM	≤ 2.5		
CP-OFDM	256 QAM	≤ 4.5		
	QPSK	≤ 3		≤ 1.5
	16 QAM	≤ 3		≤ 2
	64 QAM	≤ 3.5		
	256 QAM	≤ 6.5		

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

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

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

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

<EN-DC combination>

ENDC	Main TX		Asdiv TX	
	LTE TX	NR TX	LTE TX	NR TX
DC_2A_n7A	Ant 2	Ant 1	Ant 1	Ant 2
DC_4A_n7A	Ant 2	Ant 1	Ant 1	Ant 2
DC_5A_n7A	Ant 0	Ant 1	Ant 1	Ant 2
DC_66A_n7A	Ant 2	Ant 1	Ant 1	Ant 2
DC_2A_n66A	Ant 2	Ant 1	Ant 1	Ant 2
DC_5A_n66A	Ant 0	Ant 1	Ant 1	Ant 2
DC_7A_n66A	Ant 2	Ant 1	Ant 1	Ant 2
DC_4A_n38A	Ant 2	Ant 1	Ant 1	Ant 2
DC_66A_n38A	Ant 2	Ant 1	Ant 1	Ant 2
DC_4A_n41A	Ant 2	Ant 1	Ant 1	Ant 2
DC_66A_n41A	Ant 2	Ant 1	Ant 1	Ant 2
DC_2A_n78A	Ant 2	Ant 4/3/6/9	Ant 1	Ant 4/3/6/9
DC_4A_n78A	Ant 2	Ant 4/3/6/9	Ant 1	Ant 4/3/6/9
DC_5A_n78A	Ant 0	Ant 4/3/6/9	Ant 1	Ant 4/3/6/9
DC_7A_n78A	Ant 2	Ant 4/3/6/9	Ant 1	Ant 4/3/6/9
DC_26A_n78A	Ant 0	Ant 4/3/6/9	Ant 1	Ant 4/3/6/9
DC_38A_n78A	Ant 2	Ant 4/3/6/9	Ant 1	Ant 4/3/6/9
DC_41A_n78A	Ant 2	Ant 4/3/6/9	Ant 1	Ant 4/3/6/9
DC_66A_n78A	Ant 2	Ant 4/3/6/9	Ant 1	Ant 4/3/6/9
DC_4A_n2A	Ant 2	Ant 1	Ant 1	Ant 2
DC_5A_n2A	Ant 0	Ant 1	Ant 1	Ant 2
DC_66A_n2A	Ant 2	Ant 1	Ant 1	Ant 2

<WLAN Conducted Power>

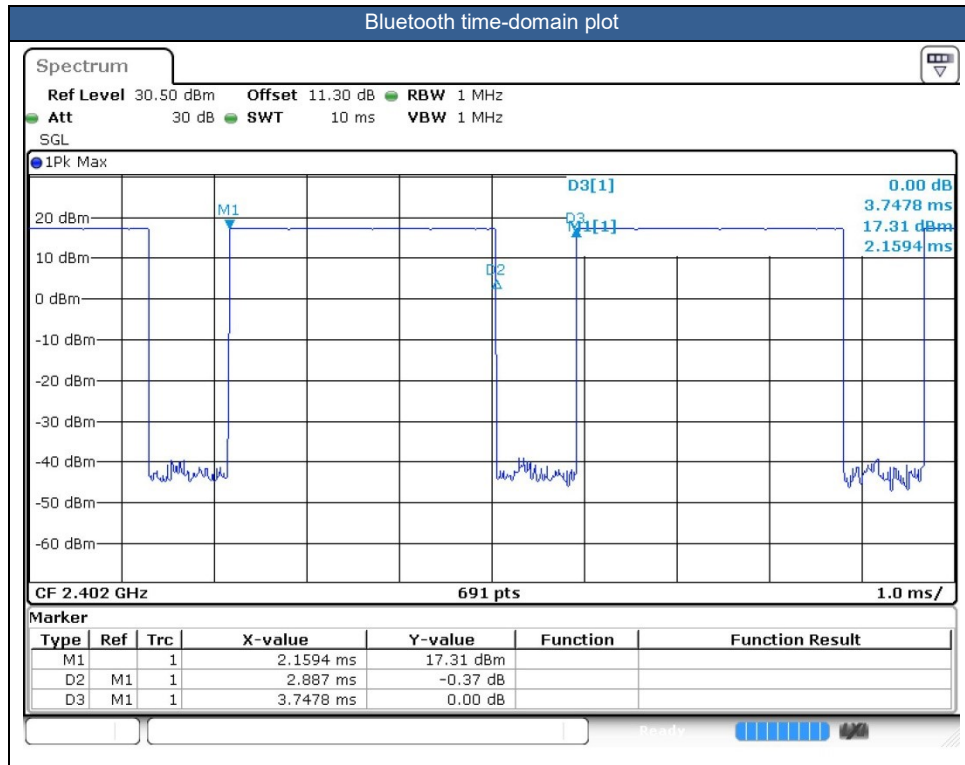
General Note:

1. The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures. For "Not required", SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration. Additional output power measurements were not necessary.
2. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
3. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
4. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
5. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
 - a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
 - b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
 - c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
6. The 2.4GHz/5GHz WLAN can transmit in MIMO antenna mode only and it has no SISO antenna mode.
7. 802.11 ax supports both full tone size mode and partial tone size mode, after verification on partial tone size mode that partial size tone mode power will not be higher than full tone size mode, therefore, full tone mode power was chosen to be measured in this report.
8. For the conducted power measurement is MIMO chains transmitting simultaneously and measured the separately conducted power for both chains and then based on the conducted power of SISO antenna respectively to calculate sum of the power for MIMO mode.

<2.4GHz Bluetooth>

General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle are 77.03% as following figure, for Bluetooth SAR scaling need further consideration and the theoretical duty cycle is 100%, therefore the actual duty cycle will be scaled up to 100% 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 WLAN/Bluetooth signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
 - c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
 - e. For TDD LTE SAR measurement of power class 3, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The reported TDD LTE SAR (W/kg) = Measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 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/BT, power reduction will be activated to head exposure condition. For WLAN when transmit simultaneous with WWAN and Proximity sensors trigger, power reduction will be activated to body-worn and extremity exposure conditions.
6. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
 - a. For this device SAR for WWAN/WLAN transmitter scaled to maximum output power mode for product specific 10g SAR is higher than 1.2W/kg of WCDMA Band II/IV, LTE Band 2/4/7/25/66/38/41/42, 5GNR n2/n7/n66/n38/n41/n78, WLAN2.4/5.2/5.8GHz, therefore product specific 10g SAR is necessary.
 - b. WLAN 5.3/5.5GHz tested the product specific 10g SAR since it has no hotspot mode.
 - c. When 10-g product specific 10g SAR is considered, SAR thresholds is specified in the procedures for SAR test reduction and exclusion should be multiplied by 2.5.
7. Although the headset SAR is greater than 0.8 W/kg, the headset SAR verified the worst of the non-headset SAR and less than non-headset SAR, so there is no need to be tested other channels.
8. According to Nov. 2017 TCB workshop, when the reported 1gSAR for UL CA configuration is <1.2 W/kg, UL CA 1gSAR is not required for all required test channels (PCC based).
9. LTE Band 4/66 at ant1/2, and 5GNR n2/n66 at ant1/2 support different PAs for some antennas, and LTE/NR bands support Other PA only under ENDC & UL CA. Some LTE/NR bands support different PAs for some antennas, whether it is the maximum power of Main PA is higher than and very close to the other PA, for RF exposure, after verification all PAs in a same position, so the worst-case PA was chosen to perform full SAR testing to ensure the RF exposure is compliance and other PAs verified the worst case.

GSM Note:

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.
2. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

WCDMA Note:

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

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM/64QAM/256QAM 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/256QAM SAR testing is not required.
5. 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.
6. For LTE B4 / B5 / B12 / B17 / B26 / B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE B2 / B4 / B5 / B17 / B38 SAR test was covered by 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 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.
 - b. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
 - c. 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.
 - d. PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not $\frac{1}{2}$ dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, PI/2 BPSK /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 /n7/ n66/n38/n41 the maximum bandwidth does not support three non-overlapping channels, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

WLAN/Bluetooth Note:

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

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	Trigger Conditions
Head SAR	DSI 2	Receiver on
Body worn SAR	DSI 3	Sensor On
Hotspot SAR	DSI 7	Hotspot On
Extremity (Handheld) SAR	DSI 6	Sensor On
Sensor Off SAR	DSI 4	Sensor Off



16.1 Head SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750Mhz																					
	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	23095	707.5	1	23.07	24.00	1.239	-	-	-0.04	0.075	0.093
	LTE Band 12	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI2	23095	707.5	1	23.07	24.00	1.239	-	-	0.18	0.045	0.056
	LTE Band 12	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI2	23095	707.5	1	23.07	24.00	1.239	-	-	0.15	0.131	0.162
	LTE Band 12	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI2	23095	707.5	1	23.07	24.00	1.239	-	-	-0.15	0.067	0.083
	LTE Band 12	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 0	DSI2	23095	707.5	1	22.89	24.00	1.291	-	-	0.13	0.074	0.096
	LTE Band 12	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 0	DSI2	23095	707.5	1	22.89	24.00	1.291	-	-	0	0.042	0.054
	LTE Band 12	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 0	DSI2	23095	707.5	1	22.89	24.00	1.291	-	-	-0.07	0.121	0.156
	LTE Band 12	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 0	DSI2	23095	707.5	1	22.89	24.00	1.291	-	-	-0.02	0.066	0.085
	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	23095	707.5	1	22.42	24.00	1.439	-	-	0	0.527	0.758
01	LTE Band 12	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI2	23095	707.5	1	22.42	24.00	1.439	-	-	-0.18	0.574	0.826
	LTE Band 12	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI2	23095	707.5	1	22.42	24.00	1.439	-	-	0.03	0.217	0.312
	LTE Band 12	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	DSI2	23095	707.5	1	22.42	24.00	1.439	-	-	0.11	0.249	0.358
	LTE Band 12	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 1	DSI2	23095	707.5	1	22.13	23.00	1.222	-	-	-0.11	0.458	0.560
	LTE Band 12	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 1	DSI2	23095	707.5	1	22.13	23.00	1.222	-	-	-0.11	0.515	0.629
	LTE Band 12	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 1	DSI2	23095	707.5	1	22.13	23.00	1.222	-	-	0.09	0.196	0.239
	LTE Band 12	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 1	DSI2	23095	707.5	1	22.13	23.00	1.222	-	-	0.02	0.229	0.280
	LTE Band 12	10M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI2	23095	707.5	1	22.08	23.00	1.236	-	-	0.05	0.508	0.628
	LTE Band 13	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	23230	782	1	23.32	24.00	1.169	-	-	-0.11	0.102	0.119
	LTE Band 13	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI2	23230	782	1	23.32	24.00	1.169	-	-	0.14	0.060	0.070
	LTE Band 13	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI2	23230	782	1	23.32	24.00	1.169	-	-	-0.06	0.209	0.244
	LTE Band 13	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI2	23230	782	1	23.32	24.00	1.169	-	-	0.14	0.082	0.096
	LTE Band 13	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 0	DSI2	23230	782	1	23.07	24.00	1.239	-	-	-0.1	0.085	0.105
	LTE Band 13	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 0	DSI2	23230	782	1	23.07	24.00	1.239	-	-	-0.07	0.052	0.064
	LTE Band 13	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 0	DSI2	23230	782	1	23.07	24.00	1.239	-	-	-0.18	0.170	0.211
	LTE Band 13	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 0	DSI2	23230	782	1	23.07	24.00	1.239	-	-	0.13	0.062	0.077
	LTE Band 13	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	23230	782	1	22.87	24.00	1.297	-	-	0.09	0.674	0.874
02	LTE Band 13	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI2	23230	782	1	22.87	24.00	1.297	-	-	-0.07	0.680	0.882
	LTE Band 13	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI2	23230	782	1	22.87	24.00	1.297	-	-	-0.02	0.271	0.352
	LTE Band 13	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	DSI2	23230	782	1	22.87	24.00	1.297	-	-	-0.18	0.286	0.371
	LTE Band 13	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 1	DSI2	23230	782	1	22.56	23.00	1.107	-	-	-0.12	0.642	0.710
	LTE Band 13	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 1	DSI2	23230	782	1	22.56	23.00	1.107	-	-	0.02	0.658	0.728
	LTE Band 13	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 1	DSI2	23230	782	1	22.56	23.00	1.107	-	-	0.1	0.269	0.298
	LTE Band 13	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 1	DSI2	23230	782	1	22.56	23.00	1.107	-	-	-0.17	0.276	0.305
	LTE Band 13	10M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI2	23230	782	1	22.49	23.00	1.125	-	-	-0.04	0.629	0.707
	LTE Band 13	10M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI2	23230	782	1	22.49	23.00	1.125	-	-	0.11	0.642	0.722
835Mhz																					
	GSM850	-	-	-	-	GPRS(3 Tx slots)	Right Cheek	0mm	Ant 0	DSI2	189	836.4	1	28.70	29.50	1.202	-	-	0.14	0.081	0.097
	GSM850	-	-	-	-	GPRS(3 Tx slots)	Right Tilted	0mm	Ant 0	DSI2	189	836.4	1	28.70	29.50	1.202	-	-	-0.1	0.046	0.055
03	GSM850	-	-	-	-	GPRS(3 Tx slots)	Left Cheek	0mm	Ant 0	DSI2	189	836.4	1	28.70	29.50	1.202	-	-	0.18	0.139	0.167
	GSM850	-	-	-	-	GPRS(3 Tx slots)	Left Tilted	0mm	Ant 0	DSI2	189	836.4	1	28.70	29.50	1.202	-	-	-0.07	0.066	0.079
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	DSI2	4182	836.4	1	22.97	24.00	1.268	-	-	-0.03	0.107	0.136
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 0	DSI2	4182	836.4	1	22.97	24.00	1.268	-	-	-0.02	0.060	0.076
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	DSI2	4182	836.4	1	22.97	24.00	1.268	-	-	-0.12	0.185	0.235
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 0	DSI2	4182	836.4	1	22.97	24.00	1.268	-	-	0	0.095	0.120
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI2	4182	836.4	1	23.00	24.00	1.259	-	-	0	0.518	0.652
04	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	DSI2	4182	836.4	1	23.00	24.00	1.259	-	-	-0.03	0.616	0.775
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	DSI2	4182	836.4	1	23.00	24.00	1.259	-	-	0.09	0.222	0.279
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 1	DSI2	4182	836.4	1	23.00	24.00	1.259	-	-	0.12	0.234	0.295
	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	26865	831.5	1	22.89	24.00	1.291	-	-	-0.12	0.097	0.125
	LTE Band 26	15M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI2	26865	831.5	1	22.89	24.00	1.291	-	-	0.12	0.061	0.079



FCC SAR Test Report

Report No. : FA441212

	LTE Band 26	15M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI2	26865	831.5	1	22.89	24.00	1.291	-	-	-0.08	0.164	0.212
	LTE Band 26	15M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI2	26865	831.5	1	22.89	24.00	1.291	-	-	0.17	0.079	0.102
	LTE Band 26	15M	QPSK	36	0	-	Right Cheek	0mm	Ant 0	DSI2	26865	831.5	1	22.68	24.00	1.355	-	-	0.07	0.085	0.115
	LTE Band 26	15M	QPSK	36	0	-	Right Tilted	0mm	Ant 0	DSI2	26865	831.5	1	22.68	24.00	1.355	-	-	-0.09	0.052	0.070
	LTE Band 26	15M	QPSK	36	0	-	Left Cheek	0mm	Ant 0	DSI2	26865	831.5	1	22.68	24.00	1.355	-	-	-0.12	0.135	0.183
	LTE Band 26	15M	QPSK	36	0	-	Left Tilted	0mm	Ant 0	DSI2	26865	831.5	1	22.68	24.00	1.355	-	-	0.12	0.067	0.091
	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	26865	831.5	1	22.74	24.00	1.337	-	-	-0.17	0.632	0.845
05	LTE Band 26	15M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI2	26865	831.5	1	22.74	24.00	1.337	-	-	0.05	0.663	0.886
	LTE Band 26	15M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI2	26865	831.5	2	22.74	24.00	1.337	-	-	-0.09	0.642	0.858
	LTE Band 26	15M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI2	26865	831.5	1	22.74	24.00	1.337	-	-	0	0.280	0.374
	LTE Band 26	15M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	DSI2	26865	831.5	1	22.74	24.00	1.337	-	-	0.12	0.281	0.376
	LTE Band 26	15M	QPSK	36	0	-	Right Cheek	0mm	Ant 1	DSI2	26865	831.5	1	22.24	23.00	1.191	-	-	0.03	0.609	0.725
	LTE Band 26	15M	QPSK	36	0	-	Right Tilted	0mm	Ant 1	DSI2	26865	831.5	1	22.24	23.00	1.191	-	-	-0.01	0.630	0.750
	LTE Band 26	15M	QPSK	36	0	-	Left Cheek	0mm	Ant 1	DSI2	26865	831.5	1	22.24	23.00	1.191	-	-	-0.07	0.261	0.311
	LTE Band 26	15M	QPSK	36	0	-	Left Tilted	0mm	Ant 1	DSI2	26865	831.5	1	22.24	23.00	1.191	-	-	0.1	0.274	0.326
	LTE Band 26	15M	QPSK	75	0	-	Right Cheek	0mm	Ant 1	DSI2	26865	831.5	1	22.17	23.00	1.211	-	-	0.18	0.615	0.745
	LTE Band 26	15M	QPSK	75	0	-	Right Tilted	0mm	Ant 1	DSI2	26865	831.5	1	22.17	23.00	1.211	-	-	0.12	0.644	0.780
	FR1 n5	20M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 0	DSI2	167300	836.5	1	22.84	24.00	1.306	-	-	-0.01	0.031	0.040
	FR1 n5	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 0	DSI2	167300	836.5	1	22.84	24.00	1.306	-	-	0.04	0.012	0.016
	FR1 n5	20M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 0	DSI2	167300	836.5	1	22.84	24.00	1.306	-	-	-0.18	0.045	0.059
	FR1 n5	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 0	DSI2	167300	836.5	1	22.84	24.00	1.306	-	-	0.16	0.023	0.030
	FR1 n5	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 0	DSI2	167300	836.5	1	22.79	24.00	1.321	-	-	0.04	0.028	0.037
	FR1 n5	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 0	DSI2	167300	836.5	1	22.79	24.00	1.321	-	-	0.05	0.010	0.013
	FR1 n5	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 0	DSI2	167300	836.5	1	22.79	24.00	1.321	-	-	0.06	0.038	0.050
	FR1 n5	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 0	DSI2	167300	836.5	1	22.79	24.00	1.321	-	-	-0.16	0.022	0.029
	FR1 n5	20M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 1	DSI2	167300	836.5	1	22.12	23.50	1.374	-	-	-0.13	0.502	0.690
06	FR1 n5	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 1	DSI2	167300	836.5	1	22.12	23.50	1.374	-	-	0.08	0.599	0.823
	FR1 n5	20M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 1	DSI2	167300	836.5	1	22.12	23.50	1.374	-	-	-0.09	0.226	0.311
	FR1 n5	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 1	DSI2	167300	836.5	1	22.12	23.50	1.374	-	-	-0.05	0.230	0.316
	FR1 n5	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 1	DSI2	167300	836.5	1	22.09	23.50	1.384	-	-	0.02	0.499	0.690
	FR1 n5	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 1	DSI2	167300	836.5	1	22.09	23.50	1.384	-	-	-0.14	0.542	0.750
	FR1 n5	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 1	DSI2	167300	836.5	1	22.09	23.50	1.384	-	-	0.13	0.216	0.299
	FR1 n5	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 1	DSI2	167300	836.5	1	22.09	23.50	1.384	-	-	-0.06	0.227	0.314
	FR1 n5	20M	QPSK	100	0	DFT-15	Right Tilted	0mm	Ant 1	DSI2	167300	836.5	1	22.05	23.00	1.245	-	-	-0.09	0.530	0.660
1750Mhz																					
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 2	DSI2	1413	1732.6	1	22.99	24.00	1.262	-	-	0.17	0.117	0.148
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 2	DSI2	1413	1732.6	1	22.99	24.00	1.262	-	-	-0.06	0.071	0.090
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 2	DSI2	1413	1732.6	1	22.99	24.00	1.262	-	-	0.08	0.147	0.185
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 2	DSI2	1413	1732.6	1	22.99	24.00	1.262	-	-	0.02	0.075	0.095
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI2	1413	1732.6	1	17.14	18.70	1.432	-	-	-0.18	0.447	0.640
07	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	DSI2	1413	1732.6	1	17.14	18.70	1.432	-	-	-0.08	0.521	0.746
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	DSI2	1413	1732.6	1	17.14	18.70	1.432	-	-	-0.07	0.216	0.309
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 1	DSI2	1413	1732.6	1	17.14	18.70	1.432	-	-	0.03	0.276	0.395
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	DSI2	132322	1745	1	22.58	24.00	1.387	-	-	-0.05	0.070	0.097
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 2	DSI2	132322	1745	1	22.58	24.00	1.387	-	-	0	0.053	0.073
	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 2	DSI2	132322	1745	1	22.58	24.00	1.387	-	-	0.06	0.134	0.186
	LTE Band 66 Other PA	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 2	DSI2	132322	1745	1	22.58	24.00	1.387	-	-	0.13	0.125	0.173
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 2	DSI2	132322	1745	1	22.58	24.00	1.387	-	-	0.14	0.054	0.075
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 2	DSI2	132322	1745	1	22.55	23.00	1.109	-	-	0.06	0.054	0.060
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 2	DSI2	132322	1745	1	22.55	23.00	1.109	-	-	-0.15	0.041	0.045
	LTE Band 66	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 2	DSI2	132322	1745	1	22.55	23.00	1.109	-	-	0	0.114	0.126
	LTE Band 66	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 2	DSI2	132322	1745	1	22.55	23.00	1.109	-	-	-0.08	0.048	0.053
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	132322	1745	1	15.90	17.20	1.349	-	-	-0.17	0.505	0.681
08	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI2	132322	1745	1	15.90	17.20	1.349	-	-	-0.02	0.541	0.730
	LTE Band 66 Other PA	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI2	132322	1745	1	15.89	17.20	1.352	-	-	-0.11	0.481	0.650



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	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI2	132322	1745	1	15.90	17.20	1.349	-	-	-0.13	0.255	0.344
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	DSI2	132322	1745	1	15.90	17.20	1.349	-	-	-0.05	0.332	0.448
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI2	132322	1745	1	15.83	17.20	1.371	-	-	-0.07	0.478	0.655
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI2	132322	1745	1	15.83	17.20	1.371	-	-	0.16	0.490	0.672
	LTE Band 66	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	DSI2	132322	1745	1	15.83	17.20	1.371	-	-	-0.09	0.243	0.333
	LTE Band 66	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	DSI2	132322	1745	1	15.83	17.20	1.371	-	-	0.1	0.313	0.429
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	132322	1745	1	22.61	24.00	1.377	-	-	-0.08	0.134	0.185
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI2	132322	1745	1	22.61	24.00	1.377	-	-	-0.07	0.044	0.061
	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI2	132322	1745	1	22.61	24.00	1.377	-	-	0.16	0.099	0.136
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI2	132322	1745	1	22.61	24.00	1.377	-	-	0.16	0.057	0.079
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	DSI2	132322	1745	1	22.56	23.00	1.107	-	-	-0.07	0.112	0.124
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	DSI2	132322	1745	1	22.56	23.00	1.107	-	-	0.18	0.040	0.044
	LTE Band 66	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 0	DSI2	132322	1745	1	22.56	23.00	1.107	-	-	-0.06	0.075	0.083
	LTE Band 66	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 0	DSI2	132322	1745	1	22.56	23.00	1.107	-	-	0.14	0.048	0.053
	FR1 n66	40M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 2	DSI2	349000	1745	1	22.85	24.00	1.303	-	-	-0.11	0.060	0.078
	FR1 n66	40M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 2	DSI2	349000	1745	1	22.85	24.00	1.303	-	-	0.04	0.026	0.034
	FR1 n66	40M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 2	DSI2	349000	1745	1	22.85	24.00	1.303	-	-	0.06	0.068	0.089
	FR1 n66 Other PA	40M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 2	DSI2	349000	1745	1	22.28	24.00	1.486	-	-	-0.01	0.057	0.085
	FR1 n66	40M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 2	DSI2	349000	1745	1	22.85	24.00	1.303	-	-	-0.18	0.031	0.040
	FR1 n66	40M	QPSK	108	54	DFT-15	Right Cheek	0mm	Ant 2	DSI2	349000	1745	1	22.82	24.00	1.312	-	-	-0.02	0.048	0.063
	FR1 n66	40M	QPSK	108	54	DFT-15	Right Tilted	0mm	Ant 2	DSI2	349000	1745	1	22.82	24.00	1.312	-	-	-0.12	0.024	0.031
	FR1 n66	40M	QPSK	108	54	DFT-15	Left Cheek	0mm	Ant 2	DSI2	349000	1745	1	22.82	24.00	1.312	-	-	-0.15	0.064	0.084
	FR1 n66	40M	QPSK	108	54	DFT-15	Left Tilted	0mm	Ant 2	DSI2	349000	1745	1	22.82	24.00	1.312	-	-	-0.12	0.029	0.038
	FR1 n66	40M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 1	DSI2	349000	1745	1	16.30	17.50	1.318	-	-	-0.07	0.579	0.763
	FR1 n66	40M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 1	DSI2	349000	1745	1	16.30	17.50	1.318	-	-	0.05	0.618	0.815
	FR1 n66	40M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 1	DSI2	349000	1745	1	16.30	17.50	1.318	-	-	0.17	0.292	0.385
	FR1 n66	40M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 1	DSI2	349000	1745	1	16.30	17.50	1.318	-	-	0.08	0.385	0.508
	FR1 n66	40M	QPSK	108	54	DFT-15	Right Cheek	0mm	Ant 1	DSI2	349000	1745	1	16.25	17.50	1.334	-	-	-0.04	0.602	0.803
09	FR1 n66	40M	QPSK	108	54	DFT-15	Right Tilted	0mm	Ant 1	DSI2	349000	1745	1	16.25	17.50	1.334	-	-	0.06	0.628	0.837
	FR1 n66 Other PA	40M	QPSK	108	54	DFT-15	Right Tilted	0mm	Ant 1	DSI2	349000	1745	1	16.25	17.50	1.334	-	-	-0.04	0.549	0.732
	FR1 n66	40M	QPSK	108	54	DFT-15	Left Cheek	0mm	Ant 1	DSI2	349000	1745	1	16.25	17.50	1.334	-	-	0.08	0.295	0.393
	FR1 n66	40M	QPSK	108	54	DFT-15	Left Tilted	0mm	Ant 1	DSI2	349000	1745	1	16.25	17.50	1.334	-	-	0.02	0.407	0.543
	FR1 n66	40M	QPSK	216	0	DFT-15	Right Cheek	0mm	Ant 1	DSI2	349000	1745	1	16.23	17.50	1.340	-	-	0.07	0.565	0.757
	FR1 n66	40M	QPSK	216	0	DFT-15	Right Tilted	0mm	Ant 1	DSI2	349000	1745	1	16.23	17.50	1.340	-	-	0.12	0.588	0.788
	FR1 n66	40M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 0	DSI2	349000	1745	1	22.53	24.00	1.403	-	-	-0.17	0.117	0.164
	FR1 n66	40M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 0	DSI2	349000	1745	1	22.53	24.00	1.403	-	-	0.03	0.047	0.066
	FR1 n66	40M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 0	DSI2	349000	1745	1	22.53	24.00	1.403	-	-	0.11	0.081	0.114
	FR1 n66	40M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 0	DSI2	349000	1745	1	22.53	24.00	1.403	-	-	-0.03	0.048	0.067
	FR1 n66	40M	QPSK	108	54	DFT-15	Right Cheek	0mm	Ant 0	DSI2	349000	1745	1	22.47	24.00	1.422	-	-	0.09	0.103	0.146
	FR1 n66	40M	QPSK	108	54	DFT-15	Right Tilted	0mm	Ant 0	DSI2	349000	1745	1	22.47	24.00	1.422	-	-	-0.08	0.042	0.060
	FR1 n66	40M	QPSK	108	54	DFT-15	Left Cheek	0mm	Ant 0	DSI2	349000	1745	1	22.47	24.00	1.422	-	-	0.09	0.078	0.111
	FR1 n66	40M	QPSK	108	54	DFT-15	Left Tilted	0mm	Ant 0	DSI2	349000	1745	1	22.47	24.00	1.422	-	-	-0.11	0.045	0.064
1900Mhz																					
10	GSM1900					GPRS(3 Tx slots)	Right Cheek	0mm	Ant 2	DSI2	661	1880	1	25.76	25.80	1.009	-	-	0.01	0.047	0.047
	GSM1900					GPRS(3 Tx slots)	Right Tilted	0mm	Ant 2	DSI2	661	1880	1	25.76	25.80	1.009	-	-	-0.13	0.028	0.028
	GSM1900					GPRS(3 Tx slots)	Left Cheek	0mm	Ant 2	DSI2	661	1880	1	25.76	25.80	1.009	-	-	0.12	0.037	0.037
	GSM1900					GPRS(3 Tx slots)	Left Tilted	0mm	Ant 2	DSI2	661	1880	1	25.76	25.80	1.009	-	-	0.07	0.019	0.019
	WCDMA II					RMC 12.2Kbps	Right Cheek	0mm	Ant 2	DSI2	9400	1880	1	23.12	24.00	1.225	-	-	-0.04	0.121	0.148
	WCDMA II					RMC 12.2Kbps	Right Tilted	0mm	Ant 2	DSI2	9400	1880	1	23.12	24.00	1.225	-	-	0.03	0.072	0.088
	WCDMA II					RMC 12.2Kbps	Left Cheek	0mm	Ant 2	DSI2	9400	1880	1	23.12	24.00	1.225	-	-	0.15	0.086	0.105
	WCDMA II					RMC 12.2Kbps	Left Tilted	0mm	Ant 2	DSI2	9400	1880	1	23.12	24.00	1.225	-	-	0.04	0.068	0.083
	WCDMA II					RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI2	9400	1880	1	18.30	20.20	1.549	-	-	-0.18	0.392	0.607
	WCDMA II					RMC 12.2Kbps	Right Tilted	0mm	Ant 1	DSI2	9400	1880	1	18.30	20.20	1.549	-	-	0.09	0.546	0.846
	WCDMA II					RMC 12.2Kbps	Left Cheek	0mm	Ant 1	DSI2	9400	1880	1	18.30	20.20	1.549	-	-	-0.04	0.234	0.362
	WCDMA II					RMC 12.2Kbps	Left Tilted	0mm	Ant 1	DSI2	9400	1880	1	18.30	20.20	1.549	-	-	0.18	0.319	0.494



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	WCDMA II					RMC 12.2Kbps	Right Tilted	0mm	Ant 1	DSI2	9262	1852.4	1	18.25	20.20	1.567	-	-	0.11	0.541	0.848
11	WCDMA II					RMC 12.2Kbps	Right Tilted	0mm	Ant 1	DSI2	9538	1907.6	1	18.23	20.20	1.574	-	-	-0.04	0.563	0.886
	WCDMA II					RMC 12.2Kbps	Right Tilted	0mm	Ant 1	DSI2	9538	1907.6	2	18.23	20.20	1.574	-	-	0.08	0.542	0.853
	LTE Band 25	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	DSI2	26340	1880	1	22.90	24.00	1.288	-	-	0.02	0.105	0.135
	LTE Band 25	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 2	DSI2	26340	1880	1	22.90	24.00	1.288	-	-	-0.04	0.060	0.077
	LTE Band 25	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 2	DSI2	26340	1880	1	22.90	24.00	1.288	-	-	0.17	0.086	0.111
	LTE Band 25	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 2	DSI2	26340	1880	1	22.90	24.00	1.288	-	-	-0.06	0.055	0.071
	LTE Band 25	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 2	DSI2	26340	1880	1	22.44	23.00	1.138	-	-	0.14	0.086	0.098
	LTE Band 25	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 2	DSI2	26340	1880	1	22.44	23.00	1.138	-	-	-0.04	0.053	0.060
	LTE Band 25	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 2	DSI2	26340	1880	1	22.44	23.00	1.138	-	-	-0.04	0.073	0.083
	LTE Band 25	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 2	DSI2	26340	1880	1	22.44	23.00	1.138	-	-	0.01	0.044	0.050
	LTE Band 25	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	26340	1880	1	15.95	17.20	1.334	-	-	-0.17	0.375	0.500
12	LTE Band 25	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI2	26340	1880	1	15.95	17.20	1.334	-	-	-0.07	0.555	0.740
	LTE Band 25	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI2	26340	1880	1	15.95	17.20	1.334	-	-	0.03	0.263	0.351
	LTE Band 25	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	DSI2	26340	1880	1	15.95	17.20	1.334	-	-	0.07	0.358	0.477
	LTE Band 25	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI2	26340	1880	1	15.89	17.20	1.352	-	-	0.1	0.350	0.473
	LTE Band 25	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI2	26340	1880	1	15.89	17.20	1.352	-	-	-0.02	0.516	0.698
	LTE Band 25	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	DSI2	26340	1880	1	15.89	17.20	1.352	-	-	0.13	0.261	0.353
	LTE Band 25	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	DSI2	26340	1880	1	15.89	17.20	1.352	-	-	-0.05	0.340	0.460
	LTE Band 25	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	26340	1880	1	23.07	24.00	1.239	-	-	0.15	0.110	0.136
	LTE Band 25	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI2	26340	1880	1	23.07	24.00	1.239	-	-	0.01	0.067	0.083
	LTE Band 25	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI2	26340	1880	1	23.07	24.00	1.239	-	-	-0.07	0.133	0.165
	LTE Band 25	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI2	26340	1880	1	23.07	24.00	1.239	-	-	0.17	0.067	0.083
	LTE Band 25	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	DSI2	26340	1880	1	22.62	23.00	1.091	-	-	0	0.088	0.096
	LTE Band 25	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	DSI2	26340	1880	1	22.62	23.00	1.091	-	-	0.07	0.054	0.059
	LTE Band 25	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 0	DSI2	26340	1880	1	22.62	23.00	1.091	-	-	-0.13	0.103	0.112
	LTE Band 25	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 0	DSI2	26340	1880	1	22.62	23.00	1.091	-	-	-0.04	0.053	0.058
	FR1 n2	20M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 2	DSI2	376000	1880	1	22.81	24.00	1.315	-	-	-0.12	0.109	0.143
	FR1 n2 Other PA	20M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 2	DSI2	376000	1880	1	22.81	24.00	1.315	-	-	0.18	0.102	0.134
	FR1 n2	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 2	DSI2	376000	1880	1	22.81	24.00	1.315	-	-	-0.15	0.072	0.095
	FR1 n2	20M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 2	DSI2	376000	1880	1	22.81	24.00	1.315	-	-	0.01	0.085	0.112
	FR1 n2	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 2	DSI2	376000	1880	1	22.81	24.00	1.315	-	-	-0.16	0.066	0.087
	FR1 n2	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 2	DSI2	376000	1880	1	22.72	24.00	1.343	-	-	-0.06	0.095	0.128
	FR1 n2	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 2	DSI2	376000	1880	1	22.72	24.00	1.343	-	-	0.03	0.069	0.093
	FR1 n2	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 2	DSI2	376000	1880	1	22.72	24.00	1.343	-	-	-0.18	0.081	0.109
	FR1 n2	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 2	DSI2	376000	1880	1	22.72	24.00	1.343	-	-	0.03	0.064	0.086
	FR1 n2	20M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 1	DSI2	376000	1880	1	15.58	17.00	1.387	-	-	0.03	0.486	0.674
	FR1 n2	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 1	DSI2	376000	1880	1	15.58	17.00	1.387	-	-	0.01	0.546	0.757
	FR1 n2	20M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 1	DSI2	376000	1880	1	15.58	17.00	1.387	-	-	-0.1	0.314	0.435
	FR1 n2	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 1	DSI2	376000	1880	1	15.58	17.00	1.387	-	-	-0.06	0.420	0.582
	FR1 n2	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 1	DSI2	376000	1880	1	15.57	17.00	1.390	-	-	-0.12	0.488	0.678
	FR1 n2	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 1	DSI2	376000	1880	1	15.57	17.00	1.390	-	-	-0.03	0.579	0.805
	FR1 n2	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 1	DSI2	376000	1880	1	15.57	17.00	1.390	-	-	-0.09	0.315	0.438
	FR1 n2	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 1	DSI2	376000	1880	1	15.57	17.00	1.390	-	-	0.02	0.427	0.594
	FR1 n2	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 1	DSI2	372000	1860	1	15.50	17.00	1.413	-	-	0.16	0.560	0.791
13	FR1 n2	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 1	DSI2	380000	1900	1	15.48	17.00	1.419	-	-	0.05	0.571	0.810
	FR1 n2 Other PA	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 1	DSI2	380000	1900	1	15.48	17.00	1.419	-	-	-0.05	0.516	0.732
	FR1 n2	20M	QPSK	100	0	DFT-15	Right Tilted	0mm	Ant 1	DSI2	376000	1880	1	15.46	17.00	1.426	-	-	-0.18	0.555	0.791
	FR1 n2	20M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 0	DSI2	376000	1880	1	22.25	24.00	1.496	-	-	0.17	0.100	0.150
	FR1 n2	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 0	DSI2	376000	1880	1	22.25	24.00	1.496	-	-	-0.09	0.051	0.076
	FR1 n2	20M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 0	DSI2	376000	1880	1	22.25	24.00	1.496	-	-	0.02	0.110	0.165
	FR1 n2	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 0	DSI2	376000	1880	1	22.25	24.00	1.496	-	-	-0.07	0.057	0.085
	FR1 n2	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 0	DSI2	376000	1880	1	22.22	24.00	1.507	-	-	-0.16	0.099	0.149
	FR1 n2	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 0	DSI2	376000	1880	1	22.22	24.00	1.507	-	-	-0.12	0.049	0.074
	FR1 n2	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 0	DSI2	376000	1880	1	22.22	24.00	1.507	-	-	-0.11	0.105	0.158
	FR1 n2	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 0	DSI2	376000	1880	1	22.22	24.00	1.507	-	-	0.04	0.052	0.078



2600Mhz																					
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	DSI2	21100	2535	1	23.36	24.00	1.159	-	-	-0.08	0.150	0.174
	LTE Band 7C	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	DSI2	21100+20902	2535+2515.2	1	23.22	24.00	1.197	-	-	0.05	0.137	0.164
	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 2	DSI2	21100	2535	1	23.36	24.00	1.159	-	-	0.08	0.045	0.052
	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 2	DSI2	21100	2535	1	23.36	24.00	1.159	-	-	-0.01	0.092	0.107
	LTE Band 7	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 2	DSI2	21100	2535	1	23.36	24.00	1.159	-	-	-0.1	0.070	0.081
	LTE Band 7	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 2	DSI2	21100	2535	1	23.01	24.00	1.256	-	-	0.15	0.131	0.165
	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 2	DSI2	21100	2535	1	23.01	24.00	1.256	-	-	-0.06	0.037	0.046
	LTE Band 7	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 2	DSI2	21100	2535	1	23.01	24.00	1.256	-	-	-0.07	0.073	0.092
	LTE Band 7	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 2	DSI2	21100	2535	1	23.01	24.00	1.256	-	-	0.16	0.053	0.067
14	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	21100	2535	1	16.60	17.70	1.288	-	-	0.01	0.558	0.719
	LTE Band 7C	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	21100+20902	2535+2515.2	1	16.52	17.70	1.312	-	-	-0.14	0.534	0.701
	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI2	21100	2535	1	16.60	17.70	1.288	-	-	-0.01	0.482	0.621
	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI2	21100	2535	1	16.60	17.70	1.288	-	-	-0.15	0.208	0.268
	LTE Band 7	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	DSI2	21100	2535	1	16.60	17.70	1.288	-	-	0.07	0.197	0.254
	LTE Band 7	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI2	21100	2535	1	16.55	17.70	1.303	-	-	-0.09	0.478	0.623
	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI2	21100	2535	1	16.55	17.70	1.303	-	-	0.15	0.462	0.602
	LTE Band 7	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	DSI2	21100	2535	1	16.55	17.70	1.303	-	-	0.01	0.196	0.255
	LTE Band 7	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	DSI2	21100	2535	1	16.55	17.70	1.303	-	-	-0.18	0.191	0.249
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	21100	2535	1	22.41	24.00	1.442	-	-	-0.17	0.131	0.189
	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI2	21100	2535	1	22.41	24.00	1.442	-	-	-0.16	0.103	0.149
	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI2	21100	2535	1	22.41	24.00	1.442	-	-	0.15	0.251	0.362
	LTE Band 7C	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI2	21100+20902	2535+2515.2	1	22.35	24.00	1.462	-	-	-0.08	0.226	0.330
	LTE Band 7	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI2	21100	2535	1	22.41	24.00	1.442	-	-	-0.06	0.069	0.100
	LTE Band 7	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	DSI2	21100	2535	1	22.08	23.00	1.236	-	-	0.14	0.108	0.133
	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	DSI2	21100	2535	1	22.08	23.00	1.236	-	-	0.11	0.077	0.095
	LTE Band 7	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 0	DSI2	21100	2535	1	22.08	23.00	1.236	-	-	0.13	0.202	0.250
	LTE Band 7	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 0	DSI2	21100	2535	1	22.08	23.00	1.236	-	-	-0.12	0.053	0.066
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	DSI2	40620	2593	1	23.70	24.00	1.072	62.9	1.006	0.05	0.078	0.084
	LTE Band 41C	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	DSI2	40620+40422	2593+2573.2	1	23.30	24.00	1.175	62.9	1.006	0.06	0.067	0.079
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 2	DSI2	40620	2593	1	23.70	24.00	1.072	62.9	1.006	-0.18	0.034	0.037
	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 2	DSI2	40620	2593	1	23.70	24.00	1.072	62.9	1.006	0.03	0.052	0.056
	LTE Band 41	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 2	DSI2	40620	2593	1	23.70	24.00	1.072	62.9	1.006	-0.04	0.042	0.045
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 2	DSI2	40620	2593	1	22.71	23.00	1.069	62.9	1.006	0.1	0.067	0.072
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 2	DSI2	40620	2593	1	22.71	23.00	1.069	62.9	1.006	0.13	0.032	0.034
	LTE Band 41	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 2	DSI2	40620	2593	1	22.71	23.00	1.069	62.9	1.006	0.01	0.053	0.057
	LTE Band 41	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 2	DSI2	40620	2593	1	22.71	23.00	1.069	62.9	1.006	-0.09	0.036	0.039
15	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	40620	2593	1	18.45	19.30	1.216	62.9	1.006	0.06	0.627	0.767
	LTE Band 41C	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	40620+40422	2593+2573.2	1	18.37	19.30	1.239	62.9	1.006	-0.1	0.595	0.742
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI2	40620	2593	1	18.45	19.30	1.216	62.9	1.006	-0.15	0.554	0.678
	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI2	40620	2593	1	18.45	19.30	1.216	62.9	1.006	-0.12	0.208	0.254
	LTE Band 41	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	DSI2	40620	2593	1	18.45	19.30	1.216	62.9	1.006	-0.05	0.174	0.213
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	39750	2506	1	18.40	19.30	1.230	62.9	1.006	-0.07	0.391	0.484
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	41490	2680	1	18.33	19.30	1.250	62.9	1.006	0.02	0.605	0.761
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	39750	2506	1	18.38	19.30	1.236	62.9	1.006	0.13	0.436	0.542
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	41490	2680	1	18.35	19.30	1.245	62.9	1.006	-0.11	0.595	0.745
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI2	39750	2506	1	18.40	19.30	1.230	62.9	1.006	-0.06	0.333	0.412
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI2	41490	2680	1	18.33	19.30	1.250	62.9	1.006	-0.07	0.515	0.648
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI2	39750	2506	1	18.38	19.30	1.236	62.9	1.006	-0.08	0.371	0.461
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI2	41490	2680	1	18.35	19.30	1.245	62.9	1.006	0.09	0.506	0.634
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI2	40620	2593	1	18.40	19.30	1.230	62.9	1.006	0.08	0.610	0.755
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI2	40620	2593	1	18.40	19.30	1.230	62.9	1.006	-0.12	0.517	0.640
	LTE Band 41	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	DSI2	40620	2593	1	18.40	19.30	1.230	62.9	1.006	0.14	0.197	0.244
	LTE Band 41	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	DSI2	40620	2593	1	18.40	19.30	1.230	62.9	1.006	0.14	0.173	0.214



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	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI2	39750	2506	1	18.38	19.30	1.236	62.9	1.006	-0.03	0.368	0.458
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI2	41490	2680	1	18.31	19.30	1.256	62.9	1.006	-0.15	0.580	0.733
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI2	39750	2506	1	18.35	19.30	1.245	62.9	1.006	-0.14	0.426	0.533
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI2	41490	2680	1	18.29	19.30	1.262	62.9	1.006	-0.18	0.559	0.710
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI2	39750	2506	1	18.38	19.30	1.236	62.9	1.006	-0.18	0.316	0.393
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI2	41490	2680	1	18.31	19.30	1.256	62.9	1.006	0.1	0.506	0.639
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI2	39750	2506	1	18.35	19.30	1.245	62.9	1.006	-0.09	0.357	0.447
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI2	41490	2680	1	18.29	19.30	1.262	62.9	1.006	0.08	0.486	0.617
	LTE Band 41	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 1	DSI2	40620	2593	1	18.38	19.30	1.236	62.9	1.006	-0.09	0.602	0.749
	LTE Band 41	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 1	DSI2	40620	2593	1	18.38	19.30	1.236	62.9	1.006	0.02	0.508	0.632
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	40620	2593	1	23.10	24.00	1.230	62.9	1.006	-0.14	0.112	0.139
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI2	40620	2593	1	23.10	24.00	1.230	62.9	1.006	0.05	0.102	0.126
	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI2	40620	2593	1	23.10	24.00	1.230	62.9	1.006	0.14	0.244	0.302
	LTE Band 41C	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI2	40620+ 40422	2593+ 2573.2	1	22.98	24.00	1.265	62.9	1.006	-0.18	0.222	0.282
	LTE Band 41	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI2	40620	2593	1	23.10	24.00	1.230	62.9	1.006	0.03	0.055	0.068
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	DSI2	40620	2593	1	22.21	23.00	1.199	62.9	1.006	0.05	0.089	0.107
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	DSI2	40620	2593	1	22.21	23.00	1.199	62.9	1.006	-0.07	0.080	0.097
	LTE Band 41	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 0	DSI2	40620	2593	1	22.21	23.00	1.199	62.9	1.006	0.09	0.189	0.228
	LTE Band 41	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 0	DSI2	40620	2593	1	22.21	23.00	1.199	62.9	1.006	-0.03	0.043	0.052
	FR1 n7	40M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 2	DSI2	507000	2535	1	23.38	24.00	1.153	-	-	0.1	0.087	0.100
	FR1 n7	40M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 2	DSI2	507000	2535	1	23.38	24.00	1.153	-	-	0.07	0.029	0.033
	FR1 n7	40M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 2	DSI2	507000	2535	1	23.38	24.00	1.153	-	-	0.09	0.060	0.069
	FR1 n7	40M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 2	DSI2	507000	2535	1	23.38	24.00	1.153	-	-	0.18	0.041	0.047
	FR1 n7	40M	QPSK	108	54	DFT-15	Right Cheek	0mm	Ant 2	DSI2	507000	2535	1	23.33	24.00	1.167	-	-	0.11	0.068	0.079
	FR1 n7	40M	QPSK	108	54	DFT-15	Right Tilted	0mm	Ant 2	DSI2	507000	2535	1	23.33	24.00	1.167	-	-	0.18	0.023	0.027
	FR1 n7	40M	QPSK	108	54	DFT-15	Left Cheek	0mm	Ant 2	DSI2	507000	2535	1	23.33	24.00	1.167	-	-	-0.18	0.049	0.057
	FR1 n7	40M	QPSK	108	54	DFT-15	Left Tilted	0mm	Ant 2	DSI2	507000	2535	1	23.33	24.00	1.167	-	-	0.08	0.035	0.041
	FR1 n7	40M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 1	DSI2	507000	2535	1	17.72	18.50	1.197	-	-	0.11	0.659	0.789
	FR1 n7	40M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 1	DSI2	507000	2535	1	17.72	18.50	1.197	-	-	0.1	0.588	0.704
	FR1 n7	40M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 1	DSI2	507000	2535	1	17.72	18.50	1.197	-	-	-0.15	0.291	0.348
	FR1 n7	40M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 1	DSI2	507000	2535	1	17.72	18.50	1.197	-	-	-0.05	0.268	0.321
16	FR1 n7	40M	QPSK	108	54	DFT-15	Right Cheek	0mm	Ant 1	DSI2	507000	2535	1	17.68	18.50	1.208	-	-	0.03	0.736	0.889
	FR1 n7	40M	QPSK	108	54	DFT-15	Right Tilted	0mm	Ant 1	DSI2	507000	2535	1	17.68	18.50	1.208	-	-	-0.18	0.645	0.779
	FR1 n7	40M	QPSK	108	54	DFT-15	Left Cheek	0mm	Ant 1	DSI2	507000	2535	1	17.68	18.50	1.208	-	-	0	0.319	0.385
	FR1 n7	40M	QPSK	108	54	DFT-15	Left Tilted	0mm	Ant 1	DSI2	507000	2535	1	17.68	18.50	1.208	-	-	0.08	0.273	0.330
	FR1 n7	40M	QPSK	216	0	DFT-15	Right Cheek	0mm	Ant 1	DSI2	507000	2535	1	17.65	18.50	1.216	-	-	-0.17	0.688	0.837
	FR1 n7	40M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 0	DSI2	507000	2535	1	22.55	24.00	1.396	-	-	-0.03	0.136	0.190
	FR1 n7	40M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 0	DSI2	507000	2535	1	22.55	24.00	1.396	-	-	-0.08	0.127	0.177
	FR1 n7	40M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 0	DSI2	507000	2535	1	22.55	24.00	1.396	-	-	0.06	0.238	0.332
	FR1 n7	40M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 0	DSI2	507000	2535	1	22.55	24.00	1.396	-	-	-0.04	0.080	0.112
	FR1 n7	40M	QPSK	108	54	DFT-15	Right Cheek	0mm	Ant 0	DSI2	507000	2535	1	22.43	24.00	1.435	-	-	0.05	0.131	0.188
	FR1 n7	40M	QPSK	108	54	DFT-15	Right Tilted	0mm	Ant 0	DSI2	507000	2535	1	22.43	24.00	1.435	-	-	-0.1	0.124	0.178
	FR1 n7	40M	QPSK	108	54	DFT-15	Left Cheek	0mm	Ant 0	DSI2	507000	2535	1	22.43	24.00	1.435	-	-	-0.09	0.228	0.327
	FR1 n7	40M	QPSK	108	54	DFT-15	Left Tilted	0mm	Ant 0	DSI2	507000	2535	1	22.43	24.00	1.435	-	-	0.1	0.075	0.108
	FR1 n41	100M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 2	DSI2	518598	2592.99	1	23.14	24.00	1.219	-	-	0.18	0.077	0.094
	FR1 n41	100M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 2	DSI2	518598	2592.99	1	23.14	24.00	1.219	-	-	-0.11	0.042	0.051
	FR1 n41	100M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 2	DSI2	518598	2592.99	1	23.14	24.00	1.219	-	-	-0.09	0.056	0.068
	FR1 n41	100M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 2	DSI2	518598	2592.99	1	23.14	24.00	1.219	-	-	0.1	0.046	0.056
	FR1 n41	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 2	DSI2	518598	2592.99	1	23.05	24.00	1.245	-	-	0.08	0.089	0.111
	FR1 n41	100M	QPSK	135	69	DFT-30	Right Tilted	0mm	Ant 2	DSI2	518598	2592.99	1	23.05	24.00	1.245	-	-	-0.15	0.047	0.058
	FR1 n41	100M	QPSK	135	69	DFT-30	Left Cheek	0mm	Ant 2	DSI2	518598	2592.99	1	23.05	24.00	1.245	-	-	0	0.057	0.071
	FR1 n41	100M	QPSK	135	69	DFT-30	Left Tilted	0mm	Ant 2	DSI2	518598	2592.99	1	23.05	24.00	1.245	-	-	0.17	0.051	0.063
	FR1 n41	100M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 1	DSI2	518598	2592.99	1	16.72	17.50	1.197	-	-	-0.04	0.648	0.775
	FR1 n41	100M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 1	DSI2	518598	2592.99	1	16.72	17.50	1.197	-	-	0.04	0.569	0.681
	FR1 n41	100M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 1	DSI2	518598	2592.99	1	16.72	17.50	1.197	-	-	-0.07	0.243	0.291
	FR1 n41	100M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 1	DSI2	518598	2592.99	1	16.72	17.50	1.197	-	-	0.12	0.224	0.268



FCC SAR Test Report

Report No. : FA441212

17	FR1 n41	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 1	DS12	518598	2592.99	1	16.69	17.50	1.205	-	-	0.05	0.715	0.862
	FR1 n41	100M	QPSK	135	69	DFT-30	Right Tilted	0mm	Ant 1	DS12	518598	2592.99	1	16.69	17.50	1.205	-	-	-0.03	0.573	0.690
	FR1 n41	100M	QPSK	135	69	DFT-30	Left Cheek	0mm	Ant 1	DS12	518598	2592.99	1	16.69	17.50	1.205	-	-	0.06	0.258	0.311
	FR1 n41	100M	QPSK	135	69	DFT-30	Left Tilted	0mm	Ant 1	DS12	518598	2592.99	1	16.69	17.50	1.205	-	-	0.07	0.234	0.282
	FR1 n41	100M	QPSK	270	0	DFT-30	Right Cheek	0mm	Ant 1	DS12	518598	2592.99	1	16.66	17.50	1.213	-	-	-0.13	0.655	0.795
	FR1 n41	100M	QPSK	270	0	DFT-30	Right Tilted	0mm	Ant 1	DS12	518598	2592.99	1	16.66	17.50	1.213	-	-	0.16	0.535	0.649
	FR1 n38	40M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 0	DS12	519000	2595	1	22.31	24.00	1.476	-	-	-0.11	0.117	0.173
	FR1 n38	40M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 0	DS12	519000	2595	1	22.31	24.00	1.476	-	-	0.06	0.105	0.155
89	FR1 n38	40M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 0	DS12	519000	2595	1	22.31	24.00	1.476	-	-	0.07	0.211	0.311
	FR1 n38	40M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 0	DS12	519000	2595	1	22.31	24.00	1.476	-	-	0.06	0.066	0.097
	FR1 n38	40M	QPSK	50	28	DFT-30	Right Cheek	0mm	Ant 0	DS12	519000	2595	1	22.30	24.00	1.479	-	-	0.14	0.106	0.157
	FR1 n38	40M	QPSK	50	28	DFT-30	Right Tilted	0mm	Ant 0	DS12	519000	2595	1	22.30	24.00	1.479	-	-	-0.08	0.102	0.151
	FR1 n38	40M	QPSK	50	28	DFT-30	Left Cheek	0mm	Ant 0	DS12	519000	2595	1	22.30	24.00	1.479	-	-	0.12	0.197	0.291
	FR1 n38	40M	QPSK	50	28	DFT-30	Left Tilted	0mm	Ant 0	DS12	519000	2595	1	22.30	24.00	1.479	-	-	0.15	0.062	0.092
3500Mhz																					
18	LTE Band 42	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 4	DS12	42590	3500	1	20.64	21.20	1.138	62.9	1.006	0.05	0.658	0.753
	LTE Band 42	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 4	DS12	42590	3500	1	20.64	21.20	1.138	62.9	1.006	0.08	0.375	0.429
	LTE Band 42	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 4	DS12	42590	3500	1	20.64	21.20	1.138	62.9	1.006	-0.05	0.148	0.169
	LTE Band 42	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 4	DS12	42590	3500	1	20.64	21.20	1.138	62.9	1.006	0.02	0.129	0.148
	LTE Band 42	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 4	DS12	42590	3500	1	20.58	21.20	1.153	62.9	1.006	-0.13	0.620	0.719
	LTE Band 42	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	DS12	42590	3500	1	20.58	21.20	1.153	62.9	1.006	0.09	0.371	0.430
	LTE Band 42	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 4	DS12	42590	3500	1	20.58	21.20	1.153	62.9	1.006	0.16	0.142	0.165
	LTE Band 42	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 4	DS12	42590	3500	1	20.58	21.20	1.153	62.9	1.006	-0.17	0.110	0.128
	LTE Band 42	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 3	DS12	42590	3500	1	18.40	19.60	1.318	62.9	1.006	0.16	0.203	0.269
	LTE Band 42	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 3	DS12	42590	3500	1	18.40	19.60	1.318	62.9	1.006	0.01	0.264	0.350
	LTE Band 42	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 3	DS12	42590	3500	1	18.40	19.60	1.318	62.9	1.006	0.12	0.438	0.581
	LTE Band 42	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 3	DS12	42590	3500	1	18.40	19.60	1.318	62.9	1.006	-0.06	0.478	0.634
	LTE Band 42	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 3	DS12	42590	3500	1	18.35	19.60	1.334	62.9	1.006	-0.18	0.186	0.250
	LTE Band 42	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 3	DS12	42590	3500	1	18.35	19.60	1.334	62.9	1.006	0.04	0.241	0.323
	LTE Band 42	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 3	DS12	42590	3500	1	18.35	19.60	1.334	62.9	1.006	0.14	0.427	0.573
	LTE Band 42	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 3	DS12	42590	3500	1	18.35	19.60	1.334	62.9	1.006	-0.1	0.472	0.633
	LTE Band 42	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 6	DS12	42590	3500	1	23.63	24.00	1.089	62.9	1.006	0.05	0.239	0.262
	LTE Band 42	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 6	DS12	42590	3500	1	23.63	24.00	1.089	62.9	1.006	-0.13	0.085	0.093
	LTE Band 42	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 6	DS12	42590	3500	1	23.63	24.00	1.089	62.9	1.006	0.06	0.155	0.170
	LTE Band 42	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 6	DS12	42590	3500	1	23.63	24.00	1.089	62.9	1.006	-0.07	0.146	0.160
	LTE Band 42	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 6	DS12	42590	3500	1	23.50	24.00	1.122	62.9	1.006	-0.13	0.216	0.244
	LTE Band 42	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 6	DS12	42590	3500	1	23.50	24.00	1.122	62.9	1.006	0.17	0.083	0.094
	LTE Band 42	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 6	DS12	42590	3500	1	23.50	24.00	1.122	62.9	1.006	0.09	0.133	0.150
	LTE Band 42	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 6	DS12	42590	3500	1	23.50	24.00	1.122	62.9	1.006	0.11	0.126	0.142
	LTE Band 42	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 9	DS12	42590	3500	1	19.45	20.30	1.216	62.9	1.006	0.07	0.287	0.351
	LTE Band 42	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 9	DS12	42590	3500	1	19.45	20.30	1.216	62.9	1.006	0.12	0.311	0.381
	LTE Band 42	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 9	DS12	42590	3500	1	19.45	20.30	1.216	62.9	1.006	0.08	0.438	0.536
	LTE Band 42	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 9	DS12	42590	3500	1	19.45	20.30	1.216	62.9	1.006	0.03	0.389	0.476
	LTE Band 42	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 9	DS12	42590	3500	1	19.42	20.30	1.225	62.9	1.006	0.1	0.276	0.340
	LTE Band 42	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 9	DS12	42590	3500	1	19.42	20.30	1.225	62.9	1.006	-0.04	0.305	0.376
	LTE Band 42	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 9	DS12	42590	3500	1	19.42	20.30	1.225	62.9	1.006	-0.06	0.429	0.529
	LTE Band 42	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 9	DS12	42590	3500	1	19.42	20.30	1.225	62.9	1.006	0.01	0.389	0.479
	FR1 n78	100M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 4	DS12	633332	3499.98	1	18.72	19.50	1.197	-	-	0.01	0.628	0.752
	FR1 n78	100M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 4	DS12	633332	3499.98	1	18.72	19.50	1.197	-	-	0.13	0.380	0.455
	FR1 n78	100M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 4	DS12	633332	3499.98	1	18.72	19.50	1.197	-	-	0.17	0.259	0.310
	FR1 n78	100M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 4	DS12	633332	3499.98	1	18.72	19.50	1.197	-	-	-0.11	0.187	0.224
19	FR1 n78	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 4	DS12	633332	3499.98	1	18.68	19.50	1.208	-	-	-0.01	0.681	0.823
	FR1 n78	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 4	DS12	633332	3499.98	2	18.68	19.50	1.208	-	-	-0.1	0.656	0.792
	FR1 n78	100M	QPSK	135	69	DFT-30	Right Tilted	0mm	Ant 4	DS12	633332	3499.98	1	18.68	19.50	1.208	-	-	-0.03	0.407	0.492
	FR1 n78	100M	QPSK	135	69	DFT-30	Left Cheek	0mm	Ant 4	DS12	633332	3499.98	1	18.68	19.50	1.208	-	-	-0.09	0.272	0.329
	FR1 n78	100M	QPSK	135	69	DFT-30	Left Tilted	0mm	Ant 4	DS12	633332	3499.98	1	18.68	19.50	1.208	-	-	-0.13	0.198	0.239



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Report No. : FA441212

	FR1 n78	100M	QPSK	270	0	DFT-30	Right Cheek	0mm	Ant 4	DSI2	633332	3499.98	1	18.58	19.50	1.236	-	-	-0.01	0.620	0.766
	FR1 n78	100M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 3	DSI2	633332	3499.98	1	14.95	16.00	1.274	-	-	-0.01	0.227	0.289
	FR1 n78	100M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 3	DSI2	633332	3499.98	1	14.95	16.00	1.274	-	-	-0.15	0.278	0.354
	FR1 n78	100M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 3	DSI2	633332	3499.98	1	14.95	16.00	1.274	-	-	0.12	0.488	0.621
	FR1 n78	100M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 3	DSI2	633332	3499.98	1	14.95	16.00	1.274	-	-	-0.06	0.549	0.699
	FR1 n78	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 3	DSI2	633332	3499.98	1	14.86	16.00	1.300	-	-	-0.17	0.206	0.268
	FR1 n78	100M	QPSK	135	69	DFT-30	Right Tilted	0mm	Ant 3	DSI2	633332	3499.98	1	14.86	16.00	1.300	-	-	-0.14	0.267	0.347
	FR1 n78	100M	QPSK	135	69	DFT-30	Left Cheek	0mm	Ant 3	DSI2	633332	3499.98	1	14.86	16.00	1.300	-	-	0.01	0.449	0.584
	FR1 n78	100M	QPSK	135	69	DFT-30	Left Tilted	0mm	Ant 3	DSI2	633332	3499.98	1	14.86	16.00	1.300	-	-	-0.01	0.523	0.680
	FR1 n78	100M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 6	DSI2	633332	3499.98	1	23.23	24.00	1.194	-	-	-0.16	0.131	0.156
	FR1 n78	100M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 6	DSI2	633332	3499.98	1	23.23	24.00	1.194	-	-	-0.14	0.056	0.067
	FR1 n78	100M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 6	DSI2	633332	3499.98	1	23.23	24.00	1.194	-	-	0.04	0.092	0.110
	FR1 n78	100M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 6	DSI2	633332	3499.98	1	23.23	24.00	1.194	-	-	0.09	0.088	0.105
	FR1 n78	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 6	DSI2	633332	3499.98	1	23.12	24.00	1.225	-	-	-0.14	0.125	0.153
	FR1 n78	100M	QPSK	135	69	DFT-30	Right Tilted	0mm	Ant 6	DSI2	633332	3499.98	1	23.12	24.00	1.225	-	-	-0.13	0.048	0.059
	FR1 n78	100M	QPSK	135	69	DFT-30	Left Cheek	0mm	Ant 6	DSI2	633332	3499.98	1	23.12	24.00	1.225	-	-	-0.15	0.084	0.103
	FR1 n78	100M	QPSK	135	69	DFT-30	Left Tilted	0mm	Ant 6	DSI2	633332	3499.98	1	23.12	24.00	1.225	-	-	0.11	0.075	0.092
	FR1 n78	100M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 9	DSI2	633332	3499.98	1	19.00	20.00	1.259	-	-	-0.1	0.263	0.331
	FR1 n78	100M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 9	DSI2	633332	3499.98	1	19.00	20.00	1.259	-	-	-0.13	0.394	0.496
	FR1 n78	100M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 9	DSI2	633332	3499.98	1	19.00	20.00	1.259	-	-	-0.14	0.451	0.568
	FR1 n78	100M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 9	DSI2	633332	3499.98	1	19.00	20.00	1.259	-	-	-0.11	0.424	0.534
	FR1 n78	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 9	DSI2	633332	3499.98	1	18.92	20.00	1.282	-	-	-0.1	0.277	0.355
	FR1 n78	100M	QPSK	135	69	DFT-30	Right Tilted	0mm	Ant 9	DSI2	633332	3499.98	1	18.92	20.00	1.282	-	-	-0.01	0.387	0.496
	FR1 n78	100M	QPSK	135	69	DFT-30	Left Cheek	0mm	Ant 9	DSI2	633332	3499.98	1	18.92	20.00	1.282	-	-	0.08	0.445	0.571
	FR1 n78	100M	QPSK	135	69	DFT-30	Left Tilted	0mm	Ant 9	DSI2	633332	3499.98	1	18.92	20.00	1.282	-	-	0.16	0.412	0.528



Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	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)
WLAN & BT																	
20	Bluetooth	DH5 1Mbps	Right Cheek	0mm	Ant 8	Standalone/Simultaneous	39	2441	1	12.25	14.00	1.496	77.03	1.298	0.01	0.027	0.052
	Bluetooth	DH5 1Mbps	Right Tilted	0mm	Ant 8	Standalone/Simultaneous	39	2441	1	12.25	14.00	1.496	77.03	1.298	-0.15	0.030	0.059
	Bluetooth	DH5 1Mbps	Left Cheek	0mm	Ant 8	Standalone/Simultaneous	39	2441	1	12.25	14.00	1.496	77.03	1.298	0.05	0.103	0.200
	Bluetooth	DH5 1Mbps	Left Tilted	0mm	Ant 8	Standalone/Simultaneous	39	2441	1	12.25	14.00	1.496	77.03	1.298	0.17	0.094	0.182
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 8+7(7)	Standalone	1	2412	1	17.72	19.00	1.343	100	1.000	-0.16	0.538	0.722
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 8+7(7)	Standalone	1	2412	1	17.72	19.00	1.343	100	1.000	-0.16	0.565	0.759
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 8+7(7)	Standalone	1	2412	1	17.72	19.00	1.343	100	1.000	-0.13	0.737	0.990
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 8+7(7)	Standalone	1	2412	1	17.72	19.00	1.343	100	1.000	0.12	0.806	1.082
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 8+7(7)	Standalone	6	2437	1	17.56	19.00	1.393	100	1.000	0.01	0.657	0.915
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 8+7(7)	Standalone	11	2462	1	17.68	19.00	1.355	100	1.000	-0.05	0.767	1.039
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 8+7(7)	Standalone	6	2437	1	17.56	19.00	1.393	100	1.000	-0.01	0.726	1.011
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 8+7(7)	Standalone	11	2462	1	17.68	19.00	1.355	100	1.000	0.13	0.931	1.262
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 8+7(7)	Standalone	11	2462	2	17.68	19.00	1.355	100	1.000	0.03	0.861	1.167
	WLAN2.4GHz	802.11g 6Mbps	Left Tilted	0mm	Ant 8+7(7)	Standalone	1	2412	1	17.50	19.00	1.413	100	1.000	0.03	0.834	1.178
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 8+7(7)	Simultaneous	1	2412	1	15.16	16.50	1.361	100	1.000	0.08	0.318	0.433
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 8+7(7)	Simultaneous	1	2412	1	15.16	16.50	1.361	100	1.000	0.01	0.326	0.444
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 8+7(7)	Simultaneous	1	2412	1	15.16	16.50	1.361	100	1.000	0.05	0.421	0.573
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 8+7(7)	Simultaneous	1	2412	1	15.16	16.50	1.361	100	1.000	-0.06	0.470	0.640
	WLAN5.3GHz	802.11ac-VHT160 MCS0	Right Cheek	0mm	Ant 8+7(7)	Standalone	50	5250	1	13.33	15.00	1.469	100	1.000	-0.12	0.498	0.732
	WLAN5.3GHz	802.11ac-VHT160 MCS0	Right Tilted	0mm	Ant 8+7(7)	Standalone	50	5250	1	13.33	15.00	1.469	100	1.000	-0.13	0.537	0.789
	WLAN5.3GHz	802.11ac-VHT160 MCS0	Left Cheek	0mm	Ant 8+7(7)	Standalone	50	5250	1	13.33	15.00	1.469	100	1.000	-0.11	0.784	1.152
	WLAN5.3GHz	802.11ac-VHT160 MCS0	Left Tilted	0mm	Ant 8+7(7)	Standalone	50	5250	1	13.33	15.00	1.469	100	1.000	-0.08	0.725	1.065
	WLAN5.3GHz	802.11ac-VHT160 MCS0	Right Cheek	0mm	Ant 8+7(8)	Simultaneous	50	5250	1	9.83	11.50	1.469	100	1.000	0.15	0.224	0.329
	WLAN5.3GHz	802.11ac-VHT160 MCS0	Right Tilted	0mm	Ant 8+7(8)	Simultaneous	50	5250	1	9.83	11.50	1.469	100	1.000	-0.05	0.237	0.348
	WLAN5.3GHz	802.11ac-VHT160 MCS0	Left Cheek	0mm	Ant 8+7(8)	Simultaneous	50	5250	1	9.83	11.50	1.469	100	1.000	-0.12	0.310	0.455
	WLAN5.3GHz	802.11ac-VHT160 MCS0	Left Tilted	0mm	Ant 8+7(8)	Simultaneous	50	5250	1	9.83	11.50	1.469	100	1.000	0.03	0.291	0.427
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 8+7(7)	Standalone	138	5690	1	13.01	14.50	1.409	100	1.000	-0.09	0.455	0.641
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 8+7(7)	Standalone	138	5690	1	13.01	14.50	1.409	100	1.000	0.1	0.476	0.671
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 8+7(7)	Standalone	138	5690	1	13.01	14.50	1.409	100	1.000	-0.09	0.768	1.082
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 8+7(7)	Standalone	138	5690	2	13.01	14.50	1.409	100	1.000	-0.18	0.831	1.171
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 8+7(7)	Standalone	138	5690	1	13.01	14.50	1.409	100	1.000	-0.04	0.715	1.008
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 8+7(7)	Standalone	106	5530	1	12.84	14.50	1.466	100	1.000	-0.1	0.729	1.068
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 8+7(7)	Standalone	122	5610	1	12.59	14.50	1.552	100	1.000	0.01	0.659	1.023
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 8+7(7)	Standalone	106	5530	1	12.84	14.50	1.466	100	1.000	0.07	0.671	0.983
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 8+7(7)	Standalone	122	5610	1	12.59	14.50	1.552	100	1.000	0.09	0.636	0.987
	WLAN5.5GHz	802.11ac-VHT160 MCS0	Right Cheek	0mm	Ant 8+7(7)	Simultaneous	114	5570	1	9.52	11.00	1.406	100	1.000	0.04	0.211	0.297
	WLAN5.5GHz	802.11ac-VHT160 MCS0	Right Tilted	0mm	Ant 8+7(7)	Simultaneous	114	5570	1	9.52	11.00	1.406	100	1.000	-0.07	0.221	0.311
	WLAN5.5GHz	802.11ac-VHT160 MCS0	Left Cheek	0mm	Ant 8+7(7)	Simultaneous	114	5570	1	9.52	11.00	1.406	100	1.000	0.06	0.306	0.430
	WLAN5.5GHz	802.11ac-VHT160 MCS0	Left Tilted	0mm	Ant 8+7(7)	Simultaneous	114	5570	1	9.52	11.00	1.406	100	1.000	-0.15	0.297	0.418
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 8+7(8)	Standalone	155	5775	1	13.16	14.50	1.361	100	1.000	-0.03	0.230	0.313
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 8+7(8)	Standalone	155	5775	1	13.16	14.50	1.361	100	1.000	-0.07	0.259	0.353
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 8+7(8)	Standalone	155	5775	1	13.16	14.50	1.361	100	1.000	-0.09	0.843	1.148
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 8+7(8)	Standalone	155	5775	1	13.16	14.50	1.361	100	1.000	0.05	0.689	0.938
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 8+7(8)	Simultaneous	155	5775	1	8.71	10.00	1.346	100	1.000	0.06	0.126	0.170
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 8+7(8)	Simultaneous	155	5775	1	8.71	10.00	1.346	100	1.000	0.02	0.142	0.191
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 8+7(8)	Simultaneous	155	5775	1	8.71	10.00	1.346	100	1.000	-0.05	0.326	0.439
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 8+7(8)	Simultaneous	155	5775	1	8.71	10.00	1.346	100	1.000	0.04	0.316	0.425



16.2 Hotspot SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750Mhz																					
25	LTE Band 12	10M	QPSK	1	0	-	Front	5mm	Ant 0	DSI7	23095	707.5	1	23.07	24.00	1.239	-	-	0.05	0.454	0.562
	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 0	DSI7	23095	707.5	1	23.07	24.00	1.239	-	-	-0.1	0.617	0.764
	LTE Band 12	10M	QPSK	1	0	-	Left Side	5mm	Ant 0	DSI7	23095	707.5	1	23.07	24.00	1.239	-	-	-0.1	0.609	0.754
	LTE Band 12	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI7	23095	707.5	1	23.07	24.00	1.239	-	-	-0.11	0.544	0.674
	LTE Band 12	10M	QPSK	25	0	-	Front	5mm	Ant 0	DSI7	23095	707.5	1	22.89	24.00	1.291	-	-	-0.04	0.433	0.559
	LTE Band 12	10M	QPSK	25	0	-	Back	5mm	Ant 0	DSI7	23095	707.5	1	22.89	24.00	1.291	-	-	0.14	0.584	0.754
	LTE Band 12	10M	QPSK	25	0	-	Left Side	5mm	Ant 0	DSI7	23095	707.5	1	22.89	24.00	1.291	-	-	-0.09	0.556	0.718
	LTE Band 12	10M	QPSK	25	0	-	Bottom Side	5mm	Ant 0	DSI7	23095	707.5	1	22.89	24.00	1.291	-	-	0.16	0.511	0.660
	LTE Band 12	10M	QPSK	1	0	-	Front	5mm	Ant 1	DSI7	23095	707.5	1	21.80	23.50	1.479	-	-	-0.09	0.155	0.229
	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	23095	707.5	1	21.80	23.50	1.479	-	-	0.14	0.381	0.564
	LTE Band 12	10M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI7	23095	707.5	1	21.80	23.50	1.479	-	-	-0.02	0.295	0.436
	LTE Band 12	10M	QPSK	1	0	-	Top Side	5mm	Ant 1	DSI7	23095	707.5	1	21.80	23.50	1.479	-	-	0.06	0.374	0.553
	LTE Band 12	10M	QPSK	25	0	-	Front	5mm	Ant 1	DSI7	23095	707.5	1	21.75	23.00	1.334	-	-	0.04	0.149	0.199
	LTE Band 12	10M	QPSK	25	0	-	Back	5mm	Ant 1	DSI7	23095	707.5	1	21.75	23.00	1.334	-	-	0.05	0.368	0.491
26	LTE Band 12	10M	QPSK	25	0	-	Left Side	5mm	Ant 1	DSI7	23095	707.5	1	21.75	23.00	1.334	-	-	-0.15	0.292	0.389
	LTE Band 12	10M	QPSK	25	0	-	Top Side	5mm	Ant 1	DSI7	23095	707.5	1	21.75	23.00	1.334	-	-	0.12	0.350	0.467
	LTE Band 13	10M	QPSK	1	0	-	Front	5mm	Ant 0	DSI7	23230	782	1	23.32	24.00	1.169	-	-	0.03	0.498	0.582
	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant 0	DSI7	23230	782	1	23.32	24.00	1.169	-	-	-0.06	0.781	0.913
	LTE Band 13	10M	QPSK	1	0	-	Left Side	5mm	Ant 0	DSI7	23230	782	1	23.32	24.00	1.169	-	-	-0.08	0.739	0.864
	LTE Band 13	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI7	23230	782	1	23.32	24.00	1.169	-	-	-0.13	0.672	0.786
	LTE Band 13	10M	QPSK	25	0	-	Front	5mm	Ant 0	DSI7	23230	782	1	23.07	24.00	1.239	-	-	0.14	0.399	0.494
	LTE Band 13	10M	QPSK	25	0	-	Back	5mm	Ant 0	DSI7	23230	782	1	23.07	24.00	1.239	-	-	0.04	0.706	0.875
	LTE Band 13	10M	QPSK	25	0	-	Left Side	5mm	Ant 0	DSI7	23230	782	1	23.07	24.00	1.239	-	-	0.03	0.670	0.830
	LTE Band 13	10M	QPSK	25	0	-	Bottom Side	5mm	Ant 0	DSI7	23230	782	1	23.07	24.00	1.239	-	-	-0.04	0.535	0.663
	LTE Band 13	10M	QPSK	50	0	-	Back	5mm	Ant 0	DSI7	23230	782	1	22.95	24.00	1.274	-	-	-0.1	0.672	0.856
	LTE Band 13	10M	QPSK	50	0	-	Left Side	5mm	Ant 0	DSI7	23230	782	1	22.95	24.00	1.274	-	-	-0.13	0.665	0.847
	LTE Band 13	10M	QPSK	1	0	-	Front	5mm	Ant 1	DSI7	23230	782	1	21.33	22.80	1.403	-	-	-0.04	0.199	0.279
	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	23230	782	1	21.33	22.80	1.403	-	-	0.14	0.412	0.578
835Mhz																					
27	GSM850					GPRS(3 Tx slots)	Front	5mm	Ant 0	DSI7	189	836.4	1	28.70	29.50	1.202	-	-	0.06	0.379	0.456
	GSM850					GPRS(3 Tx slots)	Back	5mm	Ant 0	DSI7	189	836.4	1	28.70	29.50	1.202	-	-	-0.11	0.719	0.864
	GSM850					GPRS(3 Tx slots)	Left Side	5mm	Ant 0	DSI7	189	836.4	1	28.70	29.50	1.202	-	-	-0.16	0.567	0.682
	GSM850					GPRS(3 Tx slots)	Bottom Side	5mm	Ant 0	DSI7	189	836.4	1	28.70	29.50	1.202	-	-	-0.08	0.245	0.295
	GSM850					GPRS(3 Tx slots)	Back	5mm	Ant 0	DSI7	128	824.2	1	28.68	29.50	1.208	-	-	-0.09	0.637	0.769
	GSM850					GPRS(3 Tx slots)	Back	5mm	Ant 0	DSI7	251	848.8	1	28.53	29.50	1.250	-	-	-0.16	0.656	0.820
28	WCDMA V					RMC 12.2Kbps	Front	5mm	Ant 0	DSI7	4182	836.4	1	22.97	24.00	1.268	-	-	-0.14	0.501	0.635
	WCDMA V					RMC 12.2Kbps	Back	5mm	Ant 0	DSI7	4182	836.4	1	22.97	24.00	1.268	-	-	0.02	0.888	1.126
	WCDMA V					RMC 12.2Kbps	Back	5mm	Ant 0	DSI7	4182	836.4	2	22.97	24.00	1.268	-	-	0.03	0.846	1.072
	WCDMA V					RMC 12.2Kbps	Left Side	5mm	Ant 0	DSI7	4182	836.4	1	22.97	24.00	1.268	-	-	-0.14	0.786	0.996
	WCDMA V					RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI7	4182	836.4	1	22.97	24.00	1.268	-	-	-0.03	0.379	0.480
	WCDMA V					RMC 12.2Kbps	Back	5mm	Ant 0	DSI7	4132	826.4	1	22.96	24.00	1.271	-	-	0.16	0.865	1.099
	WCDMA V					RMC 12.2Kbps	Back	5mm	Ant 0	DSI7	4233	846.6	1	22.89	24.00	1.291	-	-	0.13	0.850	1.098
	WCDMA V					RMC 12.2Kbps	Left Side	5mm	Ant 0	DSI7	4132	826.4	1	22.96	24.00	1.271	-	-	0.09	0.731	0.929
	WCDMA V					RMC 12.2Kbps	Left Side	5mm	Ant 0	DSI7	4233	846.6	1	22.89	24.00	1.291	-	-	0.01	0.723	0.934
	WCDMA V					RMC 12.2Kbps	Left Side	5mm	Ant 0	DSI7	4233	846.6	1	22.89	24.00	1.291	-	-	0.01	0.723	0.934



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	WCDMA V					RMC 12.2Kbps	Front	5mm	Ant 1	DSI7	4182	836.4	1	21.88	22.90	1.265	-	-	0.06	0.210	0.266
	WCDMA V					RMC 12.2Kbps	Back	5mm	Ant 1	DSI7	4182	836.4	1	21.88	22.90	1.265	-	-	0.08	0.436	0.551
	WCDMA V					RMC 12.2Kbps	Left Side	5mm	Ant 1	DSI7	4182	836.4	1	21.88	22.90	1.265	-	-	-0.09	0.201	0.254
	WCDMA V					RMC 12.2Kbps	Top Side	5mm	Ant 1	DSI7	4182	836.4	1	21.88	22.90	1.265	-	-	0.01	0.283	0.358
	LTE Band 26	15M	QPSK	1	0	-	Front	5mm	Ant 0	DSI7	26865	831.5	1	22.89	24.00	1.291	-	-	-0.09	0.528	0.682
29	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 0	DSI7	26865	831.5	1	22.89	24.00	1.291	-	-	-0.14	0.720	0.930
	LTE Band 26	15M	QPSK	1	0	-	Left Side	5mm	Ant 0	DSI7	26865	831.5	1	22.89	24.00	1.291	-	-	0.06	0.677	0.874
	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI7	26865	831.5	1	22.89	24.00	1.291	-	-	0.13	0.456	0.589
	LTE Band 26	15M	QPSK	36	0	-	Front	5mm	Ant 0	DSI7	26865	831.5	1	22.68	24.00	1.355	-	-	0.05	0.466	0.632
	LTE Band 26	15M	QPSK	36	0	-	Back	5mm	Ant 0	DSI7	26865	831.5	1	22.68	24.00	1.355	-	-	0.14	0.672	0.911
	LTE Band 26	15M	QPSK	36	0	-	Left Side	5mm	Ant 0	DSI7	26865	831.5	1	22.68	24.00	1.355	-	-	-0.15	0.640	0.867
	LTE Band 26	15M	QPSK	36	0	-	Bottom Side	5mm	Ant 0	DSI7	26865	831.5	1	22.68	24.00	1.355	-	-	0.03	0.437	0.592
	LTE Band 26	15M	QPSK	75	0	-	Back	5mm	Ant 0	DSI7	26865	831.5	1	22.57	24.00	1.390	-	-	0.1	0.665	0.924
	LTE Band 26	15M	QPSK	75	0	-	Left Side	5mm	Ant 0	DSI7	26865	831.5	1	22.57	24.00	1.390	-	-	0.05	0.625	0.869
	LTE Band 26	15M	QPSK	1	0	-	Front	5mm	Ant 1	DSI7	26865	831.5	1	22.10	23.40	1.349	-	-	0.15	0.248	0.335
	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	26865	831.5	1	22.10	23.40	1.349	-	-	0.12	0.468	0.631
	LTE Band 26	15M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI7	26865	831.5	1	22.10	23.40	1.349	-	-	0.04	0.172	0.232
	LTE Band 26	15M	QPSK	1	0	-	Top Side	5mm	Ant 1	DSI7	26865	831.5	1	22.10	23.40	1.349	-	-	-0.04	0.356	0.480
	LTE Band 26	15M	QPSK	36	0	-	Front	5mm	Ant 1	DSI7	26865	831.5	1	22.09	23.00	1.233	-	-	0.09	0.218	0.269
	LTE Band 26	15M	QPSK	36	0	-	Back	5mm	Ant 1	DSI7	26865	831.5	1	22.09	23.00	1.233	-	-	-0.16	0.394	0.486
	LTE Band 26	15M	QPSK	36	0	-	Left Side	5mm	Ant 1	DSI7	26865	831.5	1	22.09	23.00	1.233	-	-	-0.01	0.169	0.208
	LTE Band 26	15M	QPSK	36	0	-	Top Side	5mm	Ant 1	DSI7	26865	831.5	1	22.09	23.00	1.233	-	-	0.1	0.337	0.416
	FR1 n5	20M	QPSK	1	1	DFT-15	Front	5mm	Ant 0	DSI7	167300	836.5	1	22.84	24.00	1.306	-	-	-0.15	0.264	0.345
	FR1 n5	20M	QPSK	1	1	DFT-15	Back	5mm	Ant 0	DSI7	167300	836.5	1	22.84	24.00	1.306	-	-	-0.08	0.511	0.667
	FR1 n5	20M	QPSK	1	1	DFT-15	Left Side	5mm	Ant 0	DSI7	167300	836.5	1	22.84	24.00	1.306	-	-	-0.12	0.456	0.596
	FR1 n5	20M	QPSK	1	1	DFT-15	Bottom Side	5mm	Ant 0	DSI7	167300	836.5	1	22.84	24.00	1.306	-	-	-0.1	0.182	0.238
	FR1 n5	20M	QPSK	50	28	DFT-15	Front	5mm	Ant 0	DSI7	167300	836.5	1	22.79	24.00	1.321	-	-	0.08	0.300	0.396
30	FR1 n5	20M	QPSK	50	28	DFT-15	Back	5mm	Ant 0	DSI7	167300	836.5	1	22.79	24.00	1.321	-	-	0.15	0.559	0.739
	FR1 n5	20M	QPSK	50	28	DFT-15	Left Side	5mm	Ant 0	DSI7	167300	836.5	1	22.79	24.00	1.321	-	-	-0.16	0.479	0.633
	FR1 n5	20M	QPSK	50	28	DFT-15	Bottom Side	5mm	Ant 0	DSI7	167300	836.5	1	22.79	24.00	1.321	-	-	-0.09	0.191	0.252
	FR1 n5	20M	QPSK	1	1	DFT-15	Front	5mm	Ant 1	DSI7	167300	836.5	1	21.60	23.00	1.380	-	-	-0.12	0.235	0.324
	FR1 n5	20M	QPSK	1	1	DFT-15	Back	5mm	Ant 1	DSI7	167300	836.5	1	21.60	23.00	1.380	-	-	-0.11	0.405	0.559
	FR1 n5	20M	QPSK	1	1	DFT-15	Left Side	5mm	Ant 1	DSI7	167300	836.5	1	21.60	23.00	1.380	-	-	-0.1	0.206	0.284
	FR1 n5	20M	QPSK	1	1	DFT-15	Top Side	5mm	Ant 1	DSI7	167300	836.5	1	21.60	23.00	1.380	-	-	0.05	0.331	0.457
	FR1 n5	20M	QPSK	50	28	DFT-15	Front	5mm	Ant 1	DSI7	167300	836.5	1	21.56	23.00	1.393	-	-	-0.01	0.229	0.319
	FR1 n5	20M	QPSK	50	28	DFT-15	Back	5mm	Ant 1	DSI7	167300	836.5	1	21.56	23.00	1.393	-	-	0.11	0.388	0.541
	FR1 n5	20M	QPSK	50	28	DFT-15	Left Side	5mm	Ant 1	DSI7	167300	836.5	1	21.56	23.00	1.393	-	-	-0.01	0.194	0.270
	FR1 n5	20M	QPSK	50	28	DFT-15	Top Side	5mm	Ant 1	DSI7	167300	836.5	1	21.56	23.00	1.393	-	-	-0.05	0.324	0.451
1750Mhz																					
	WCDMA IV					RMC 12.2Kbps	Front	5mm	Ant 2	DSI7	1413	1732.6	1	20.15	21.20	1.274	-	-	0.14	0.719	0.916
	WCDMA IV					RMC 12.2Kbps	Back	5mm	Ant 2	DSI7	1413	1732.6	1	20.15	21.20	1.274	-	-	0.15	0.667	0.849
	WCDMA IV					RMC 12.2Kbps	Right Side	5mm	Ant 2	DSI7	1413	1732.6	1	20.15	21.20	1.274	-	-	-0.12	0.385	0.490
	WCDMA IV					RMC 12.2Kbps	Bottom Side	5mm	Ant 2	DSI7	1413	1732.6	1	20.15	21.20	1.274	-	-	0.06	0.885	1.127
	WCDMA IV					RMC 12.2Kbps	Bottom Side	5mm	Ant 2	DSI7	1312	1712.4	1	20.10	21.20	1.288	-	-	-0.16	0.890	1.147
31	WCDMA IV					RMC 12.2Kbps	Bottom Side	5mm	Ant 2	DSI7	1513	1752.6	1	20.00	21.20	1.318	-	-	0.02	0.902	1.189
	WCDMA IV					RMC 12.2Kbps	Front	5mm	Ant 2	DSI7	1312	1712.4	1	20.10	21.20	1.288	-	-	-0.12	0.723	0.931
	WCDMA IV					RMC 12.2Kbps	Front	5mm	Ant 2	DSI7	1513	1752.6	1	20.00	21.20	1.318	-	-	-0.06	0.733	0.966
	WCDMA IV					RMC 12.2Kbps	Back	5mm	Ant 2	DSI7	1312	1712.4	1	20.10	21.20	1.288	-	-	-0.11	0.691	0.890
	WCDMA IV					RMC 12.2Kbps	Back	5mm	Ant 2	DSI7	1513	1752.6	1	20.00	21.20	1.318	-	-	0.14	0.700	0.923
	WCDMA IV					RMC 12.2Kbps	Front	5mm	Ant 1	DSI7	1413	1732.6	1	13.48	15.20	1.486	-	-	0.14	0.110	0.163
	WCDMA IV					RMC 12.2Kbps	Back	5mm	Ant 1	DSI7	1413	1732.6	1	13.48	15.20	1.486	-	-	0.11	0.348	0.517
	WCDMA IV					RMC 12.2Kbps	Left Side	5mm	Ant 1	DSI7	1413	1732.6	1	13.48	15.20	1.486	-	-	0.08	0.169	0.251
	WCDMA IV					RMC 12.2Kbps	Top Side	5mm	Ant 1	DSI7	1413	1732.6	1	13.48	15.20	1.486	-	-	-0.11	0.271	0.403
	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 2	DSI7	132322	1745	1	21.30	22.70	1.380	-	-	-0.15	0.721	0.995
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 2	DSI7	132322	1745	1	21.30	22.70	1.380	-	-	-0.09	0.684	0.944
	LTE Band 66	20M	QPSK	1	0	-	Right Side	5mm	Ant 2	DSI7	132322	1745	1	21.30	22.70	1.380	-	-	0.03	0.333	0.460



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	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI7	132322	1745	1	21.30	22.70	1.380	-	-	0.07	0.633	0.874
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI7	132072	1720	1	21.25	22.70	1.396	-	-	0.14	0.608	0.849
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI7	132572	1770	1	21.22	22.70	1.406	-	-	0.07	0.541	0.761
	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 2	DSI7	132072	1720	1	21.25	22.70	1.396	-	-	-0.05	0.731	1.021
	LTE Band 66 Other PA	20M	QPSK	1	0	-	Front	5mm	Ant 2	DSI7	132072	1720	1	21.25	22.70	1.396	-	-	0.06	0.721	1.007
	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 2	DSI7	132572	1770	1	21.22	22.70	1.406	-	-	-0.01	0.634	0.891
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 2	DSI7	132072	1720	1	21.25	22.70	1.396	-	-	0.12	0.652	0.910
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 2	DSI7	132572	1770	1	21.22	22.70	1.406	-	-	0.01	0.602	0.846
	LTE Band 66	20M	QPSK	50	0	-	Front	5mm	Ant 2	DSI7	132322	1745	1	21.25	22.70	1.396	-	-	-0.15	0.691	0.965
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	Ant 2	DSI7	132322	1745	1	21.25	22.70	1.396	-	-	0	0.652	0.910
	LTE Band 66	20M	QPSK	50	0	-	Right Side	5mm	Ant 2	DSI7	132322	1745	1	21.25	22.70	1.396	-	-	0.04	0.320	0.447
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 2	DSI7	132322	1745	1	21.25	22.70	1.396	-	-	-0.09	0.619	0.864
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 2	DSI7	132072	1720	1	21.21	22.70	1.409	-	-	0.06	0.601	0.847
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 2	DSI7	132572	1770	1	21.20	22.70	1.413	-	-	0.09	0.536	0.757
	LTE Band 66	20M	QPSK	50	0	-	Front	5mm	Ant 2	DSI7	132072	1720	1	21.21	22.70	1.409	-	-	0.1	0.711	1.002
	LTE Band 66	20M	QPSK	50	0	-	Front	5mm	Ant 2	DSI7	132572	1770	1	21.20	22.70	1.413	-	-	-0.06	0.623	0.880
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	Ant 2	DSI7	132072	1720	1	21.21	22.70	1.409	-	-	0.11	0.642	0.905
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	Ant 2	DSI7	132572	1770	1	21.20	22.70	1.413	-	-	-0.09	0.589	0.832
	LTE Band 66	20M	QPSK	100	0	-	Front	5mm	Ant 2	DSI7	132322	1745	1	21.17	22.70	1.422	-	-	0.12	0.702	0.998
	LTE Band 66	20M	QPSK	100	0	-	Back	5mm	Ant 2	DSI7	132322	1745	1	21.17	22.70	1.422	-	-	-0.14	0.662	0.942
	LTE Band 66	20M	QPSK	100	0	-	Bottom Side	5mm	Ant 2	DSI7	132322	1745	1	21.17	22.70	1.422	-	-	-0.11	0.615	0.875
	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 1	DSI7	132322	1745	1	13.68	14.70	1.265	-	-	-0.16	0.183	0.231
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	132322	1745	1	13.68	14.70	1.265	-	-	-0.14	0.397	0.502
	LTE Band 66 Other PA	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	132322	1745	1	13.68	14.70	1.265	-	-	0.04	0.358	0.453
	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI7	132322	1745	1	13.68	14.70	1.265	-	-	-0.09	0.237	0.300
	LTE Band 66	20M	QPSK	1	0	-	Top Side	5mm	Ant 1	DSI7	132322	1745	1	13.68	14.70	1.265	-	-	0.15	0.248	0.314
	LTE Band 66	20M	QPSK	50	0	-	Front	5mm	Ant 1	DSI7	132322	1745	1	13.63	14.70	1.279	-	-	-0.06	0.171	0.219
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	Ant 1	DSI7	132322	1745	1	13.63	14.70	1.279	-	-	0.15	0.363	0.464
	LTE Band 66	20M	QPSK	50	0	-	Left Side	5mm	Ant 1	DSI7	132322	1745	1	13.63	14.70	1.279	-	-	0.08	0.228	0.292
	LTE Band 66	20M	QPSK	50	0	-	Top Side	5mm	Ant 1	DSI7	132322	1745	1	13.63	14.70	1.279	-	-	-0.15	0.242	0.310
	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 0	DSI7	132322	1745	1	20.98	22.60	1.452	-	-	-0.08	0.655	0.951
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 0	DSI7	132322	1745	1	20.98	22.60	1.452	-	-	-0.05	0.786	1.141
	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 0	DSI7	132322	1745	1	20.98	22.60	1.452	-	-	-0.07	0.735	1.067
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI7	132322	1745	1	20.98	22.60	1.452	-	-	-0.02	0.509	0.739
	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 0	DSI7	132072	1720	1	20.94	22.60	1.466	-	-	0.1	0.641	0.939
	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 0	DSI7	132572	1770	1	20.90	22.60	1.479	-	-	0.11	0.626	0.926
32	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 0	DSI7	132072	1720	1	20.94	22.60	1.466	-	-	0.06	0.797	1.168
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 0	DSI7	132572	1770	1	20.90	22.60	1.479	-	-	-0.07	0.774	1.145
	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 0	DSI7	132072	1720	1	20.94	22.60	1.466	-	-	-0.1	0.721	1.057
	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 0	DSI7	132572	1770	1	20.90	22.60	1.479	-	-	0.12	0.709	1.049
	LTE Band 66	20M	QPSK	50	0	-	Front	5mm	Ant 0	DSI7	132322	1745	1	20.96	22.60	1.459	-	-	0.02	0.631	0.921
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	Ant 0	DSI7	132322	1745	1	20.96	22.60	1.459	-	-	-0.13	0.775	1.131
	LTE Band 66	20M	QPSK	50	0	-	Left Side	5mm	Ant 0	DSI7	132322	1745	1	20.96	22.60	1.459	-	-	0.05	0.720	1.050
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 0	DSI7	132322	1745	1	20.96	22.60	1.459	-	-	-0.08	0.482	0.703
	LTE Band 66	20M	QPSK	50	0	-	Front	5mm	Ant 0	DSI7	132072	1720	1	20.89	22.60	1.483	-	-	-0.05	0.623	0.924
	LTE Band 66	20M	QPSK	50	0	-	Front	5mm	Ant 0	DSI7	132572	1770	1	20.85	22.60	1.496	-	-	0.13	0.606	0.907
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	Ant 0	DSI7	132072	1720	1	20.89	22.60	1.483	-	-	0.09	0.747	1.107
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	Ant 0	DSI7	132572	1770	1	20.85	22.60	1.496	-	-	0.07	0.748	1.119
	LTE Band 66	20M	QPSK	50	0	-	Left Side	5mm	Ant 0	DSI7	132072	1720	1	20.89	22.60	1.483	-	-	0.06	0.698	1.035
	LTE Band 66	20M	QPSK	50	0	-	Left Side	5mm	Ant 0	DSI7	132572	1770	1	20.85	22.60	1.496	-	-	-0.11	0.676	1.011
	LTE Band 66	20M	QPSK	100	0	-	Front	5mm	Ant 0	DSI7	132322	1745	1	20.92	22.60	1.472	-	-	0.03	0.630	0.928
	LTE Band 66	20M	QPSK	100	0	-	Back	5mm	Ant 0	DSI7	132322	1745	1	20.92	22.60	1.472	-	-	0.09	0.773	1.138
	LTE Band 66	20M	QPSK	100	0	-	Left Side	5mm	Ant 0	DSI7	132322	1745	1	20.92	22.60	1.472	-	-	-0.02	0.711	1.047
33	FR1 n66	40M	QPSK	1	1	DFT-15	Front	5mm	Ant 2	DSI7	349000	1745	1	22.85	24.00	1.303	-	-	-0.14	0.969	1.263
	FR1 n66	40M	QPSK	1	1	DFT-15	Front	5mm	Ant 2	DSI7	349000	1745	2	22.85	24.00	1.303	-	-	0.06	0.833	1.086