

FCC SAR Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Phone
BRAND NAME : Motorola
MODEL NAME : XT2433-2, XT2433-1
FCC ID : IHDT56AS4
STANDARD : FCC 47 CFR Part 2 (2.1093)

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

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



Approved by: Si Zhang

Sporton International Inc. (Kunshan)

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



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1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Phone, XT2433-2, XT2433-1**, 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	0.33	1.44	1.44	1.59
		GSM1900	<0.10	1.43	1.43	
	WCDMA	WCDMA II	0.13	1.33	1.14	
		WCDMA IV	0.14	1.30	1.20	
		WCDMA V	0.25	1.26	1.26	
	LTE	LTE Band 5	0.43	1.41	1.41	
		LTE Band 7	0.65	1.26	1.26	
		LTE Band 12/17	0.14	0.62	0.62	
		LTE Band 13	0.12	0.69	0.69	
		LTE Band 26	0.18	0.94	0.94	
		LTE Band 66/4	0.94	1.28	1.43	
		LTE Band 25/2	0.86	1.37	1.32	
		LTE Band 38	0.30	1.43	1.43	
		LTE Band 41	0.88	1.39	1.39	
		LTE Band 42	0.92	0.78	0.86	
	5G NR	FR1 n2	0.80	1.26	1.21	
		FR1 n7	0.78	1.23	1.12	
		FR1 n26/n5	0.17	1.09	1.09	
		FR1 n66	0.96	1.39	1.34	
		FR1 n41/n38	0.95	0.76	0.85	
FR1 n78		0.90	1.33	1.33		
DTS	WLAN	2.4GHz WLAN	1.30	0.55	1.38	1.58
NII		5GHz WLAN	1.20	0.62	1.14	1.59
DSS	Bluetooth	2.4GHz Bluetooth	0.26	0.12	0.12	1.59

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	GSM	GSM850	2.40	3.97
		GSM1900	3.56	
	WCDMA	WCDMA II	3.52	
		WCDMA V	1.16	
		WCDMA IV	3.46	
	LTE	LTE Band 5	1.30	
		LTE Band 7	2.52	
		LTE Band 25/2	3.55	
		LTE Band 66/4	3.55	
		LTE Band 38	3.18	
		LTE Band 41	2.89	
		LTE Band 42	2.74	
	5G NR	FR1 n2	3.36	
		FR1 n7	3.22	
		FR1 n66	3.50	
		FR1 n41/38	2.45	



		FR1 n78	3.20	
DTS	WLAN	2.4GHz WLAN	1.13	3.78
NII		5GHz WLAN	3.00	3.97
Date of Testing:			2024/6/20 ~ 2024/7/16	

Remark:

1. This device supports LTE B2 / B4 / B17 and B25 / B66 / B12. Since the supported frequency span for LTE B2 / B4 / B17 falls completely within the supports frequency span for LTE B25 / B66 / B12, 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 / B12.
2. This device supports 5GNR n38/n5 and n41/n26. Since the supported frequency span for 5GNR n38/n5 falls completely within the supports frequency span for n41/n26, both 5GNR bands have the same target power, and both 5GNR bands share the same transmission path; therefore, SAR was only assessed for n41/n26.

Declaration of Conformity:

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

Comments and Explanations:

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

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



2. Administration Data

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

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

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

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

3. Guidance Applied

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

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



4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Phone
Brand Name	Motorola
Model Name	XT2433-2, XT2433-1
FCC ID	IHDT56AS4
IMEI Code	Sample 1: IMEI1: 356304130083088 IMEI2: 356304130122894 Sample 2: IMEI1: 356304130090646 IMEI2: 356304130130459 Sample 3: IMEI1: 356304130090646 IMEI2: 356304130130459
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 n26: 814 MHz ~ 849 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 Bluetooth: 2402 MHz ~ 2480 MHz NFC: 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA/HSUPA DC-HSDPA HSPA+(16QAM uplink is supported) LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR : CP-OFDM / DFT-s-OFDM, PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80



	Bluetooth BR/EDR/LE NFC: ASK
HW Version	DVT2
SW Version	UOA34.101
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. This device supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active).
6. There are two different types of EUT. They are single SIM card mobile and dual SIM card mobile (PSIM+ eSIM). The others are the same including circuit design, PCB board, structure and all components. After pre-scan two types of EUT, we found test result of the sample that dual SIM was the worst, so we chose dual SIM card mobile to perform all tests.
7. 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). 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.
8. 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.
9. For 5G NR test, using FTM to perform SAR with default 100% transmission.
10. For 5GNR EN-DC mode, standalone SAR performed for 5GNR NSA band with the maximum power, EN-DC SAR summed EN-DC mode 5GNR standalone SAR and LTE standalone SAR, the result of EN-DC SAR is more conservatively.
11. There are three samples, the different between them refer to the XT2433-2, XT2433-1_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 2/3 verified the worst case of sample 1.
12. The two model names are only for different market purpose, and all the others are the same.
13. This device has NFC function and the NFC SAR report will be separately submitted.
14. 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, 50
	n66	FDD	15	5, 10, 15, 20, 25, 30, 40
	n38	TDD	30	10, 15, 20, 25, 30, 40
	n41	TDD	30	10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100
	n78	TDD	30	10, 15, 20, 25, 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, 50
	n26	FDD	15	5, 10, 15, 20
	n66	FDD	15	5, 10, 15, 20, 25, 30, 40
	n38	TDD	30	10, 15, 20, 25, 30, 40
	n41	TDD	30	10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100
n78	TDD	30	10, 15, 20, 25, 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	IHDT56AS4																																																														
Equipment Name	Mobile Phone																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 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	R15																																																														
CA Support	Supported, Uplink and Downlink																																																														
LTE MPR permanently built-in by design	<p>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6" style="text-align: center;">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
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256 QAM	≥ 1						≤ 5																																																								
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																																														
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																														
Power reduction applied to satisfy SAR compliance	Yes, 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 13.																																																														
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 13.																																																														
LTE Carrier Aggregation Additional Information	1. This device supports LTE Carrier Aggregation (CA) in the uplink for intra-band with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance. 2. This device supports maximum of 3 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		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829	20450	829	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844	20600	844	20600	844
LTE Band 7												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510	20850	2510	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560	21350	2560	21350	2560
LTE Band 12												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704	23060	704	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711	23130	711	23130	711
LTE Band 13												
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 10 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23205		779.5		23230		782		23230		782	
M	23230		782		23230		782		23230		782	
H	23255		784.5		23230		782		23230		782	
LTE Band 17												
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 10 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23755		706.5		23780		709		23780		709	
M	23790		710		23790		710		23790		710	
H	23825		713.5		23800		711		23800		711	
LTE Band 25												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905
LTE Band 26												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5	26965	841.5
LTE Band 38												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 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		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



	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506				
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5				
M	40620	2593	40620	2593	40620	2593	40620	2593				
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5				
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680				
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770
LTE Band 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)	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 4	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 66	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 12	Yes	Yes	Yes	Yes		
LTE Band 17			Yes	Yes		
LTE Band 2	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 25	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 38			Yes	Yes	Yes	Yes
LTE Band 41			Yes	Yes	Yes	Yes

2) LTE Bands tune up:

Band	Antenna	Head	Body-worn	Hotspot	Extremity	Sensor Off	Default
		DSI 2 Tune-up Limit	DSI 3 Tune-up Limit	DSI 7 Tune-up Limit	DSI 6 Tune-up Limit	DSI 4 Tune-up Limit	Tune-up Limit
LTE Band 12	Ant 0	24	24	24	24	24	24
LTE Band 17		24	24	24	24	24	24
LTE Band 2	Ant 4	19	19.5	16	20.5	22	22
LTE Band 25		19	19.5	16	20.5	22	22
LTE Band 2	Ant 0	24	18.5	17	20	24	24
LTE Band 25		24	18.5	17	20	24	24
LTE Band 4	Ant 0	24	16	15.5	20	24	24
LTE Band 66		24	16	15.5	20	24	24
LTE Band 38	Ant 4	17	16	15	21	24	24
LTE Band 41		17	16	15	21	24	24
LTE Band 4	Ant 4	18.5	19.5	16	18.5	22	22
LTE Band 66		18.5	19.5	16	18.5	22	22



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 n26: 814 MHz ~ 849 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 5G NR 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
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
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	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860
M	376000	1880	376000	1880	376000	1880	376000	1880
H	381500	1907.5	381000	1905	380500	1902.5	380000	1900
NR Band 5								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	165300	826.5	165800	829	166300	831.5	166800	834
M	167300	836.5	167300	836.5	167300	836.5	167300	836.5
H	169300	846.5	168800	844	168300	841.5	167800	839

NR Band 7																
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz	
	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	500500	2502.5	501000	2505	501500	2507.5	502000	2510	502500	2512.5	503000	2515	504000	2520	505000	2525
M	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535
H	513500	2567.5	513000	2565	512500	2562.5	512000	2560	511500	2557.5	511000	2555	510000	2550	509000	2545

NR Band 26								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	163300	816.5	163800	819	164300	821.5	164800	824
M	166300	831.5	166300	831.5	166300	831.5	166300	831.5
H	169300	846.5	168800	844	168300	841.5	167800	839

NR Band 66														
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	342500	1712.5	343000	1715	343500	1717.5	344000	1720	344500	1722.5	345000	1725	346000	1730
M	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745
H	355500	1777.5	355000	1775	354500	1772.5	354000	1770	353500	1767.5	353000	1765	352000	1760

NR Band 38												
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	515004	2575.02	515502	2577.51	516000	2580	516504	2582.52	517002	2585.01	518004	2590.02
M	519000	2595	519000	2595	519000	2595	519000	2595	519000	2595	519000	2595
H	522996	2614.98	522498	2612.49	522000	2610	521496	2607.48	520998	2604.99	519996	2599.98



NR Band 41																						
Bandwidth 10MHz		Bandwidth 15MHz		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)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	500202	2501.01	500700	2503.5	501204	2506.02	502200	2511	503202	2516.01	504204	2521.02	505200	2526	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	518598	2592.99	518598	2592.99
H	537000	2685	536496	2682.48	535998	2679.99	534996	2674.98	534000	2670	532998	2664.99	531996	2659.98	531000	2655	529998	2649.99	528996	2644.98	528000	2640

NR Band 78																							
Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		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)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	630334	3455.01	630500	3457.5	630668	3460.02	630834	3462.51	631000	3465	631334	3470.01	631668	3475.02	632000	3480	632334	3485.01	632668	3490.02	633000	3495	
M	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	
H	636334	3545.01	636168	3542.52	636000	3540	635834	3537.51	635668	3535.02	635334	3530.01	635000	3525	634668	3520.02	634334	3515.01	634000	3510	633668	3505.02	

<For NR Overlap Bands Description>

1) NR Bands BW

Band	Duplex	SCS(KHz)	Bandwidths(BW)
n5	FDD	15	5, 10, 15, 20
n26	FDD	15	5, 10, 15, 20
n38	TDD	30	10,15,20,25, 30, 40
n41	TDD	30	10,15,20, 30, 40, 50, 60, 70, 80, 90, 100

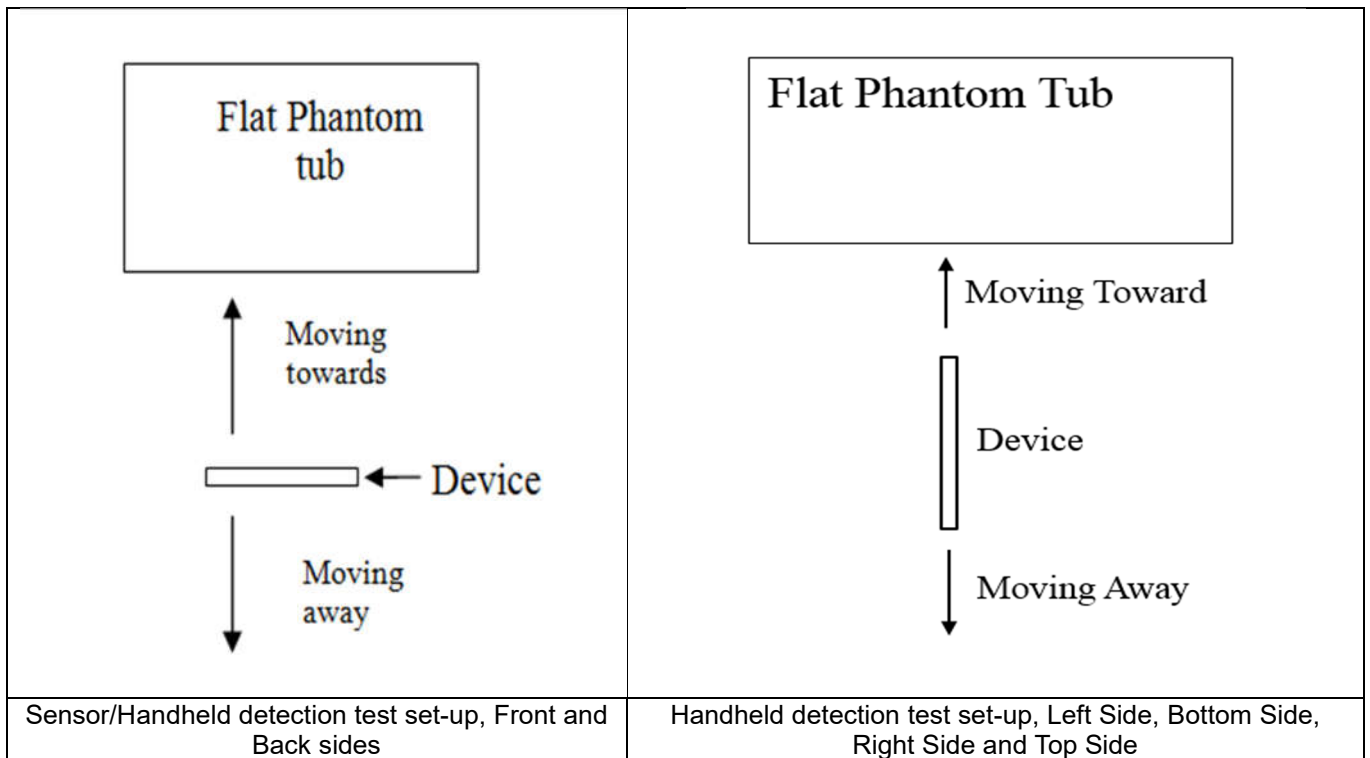
2) NR Bands Tune up:

Band	Antenna	Head DSI 2 Tune-up Limit	Body-worn DSI 3 Tune-up Limit	Hotspot DSI 7 Tune-up Limit	Extremity DSI 6 Tune-up Limit	Sensor Off DSI 4 Tune-up Limit	Default Tune-up Limit
5G NR n5	Ant 0	24	24	24	24	24	24
5G NR n26		24	24	24	24	24	24
5G NR n38	Ant 4	16	13	12	20	24	24
5G NR n41		16	13	12	20	24	24

5. 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 (835MHz) 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:



For Sample 1(1st source)

<P-Sensor>

Proximity Sensor Triggering Distance (mm)				
Position	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	16	25	22	29

<Handheld for ANT 0>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Right Side		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	6	12	12	18	2	8	12	19

<Handheld for ANT1>

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	5	13	13	20	8	14	13	19

<Handheld for ANT4>

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	6	13	10	17	3	10	13	20

<Handheld for ANT5>

Proximity Sensor Triggering Distance (mm)						
Position	Front		Back		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	3	8	10	17	13	21

<Handheld for ANT6>

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	6	14	9	16	6	13	12	19

For Sample 2(2nd source)

<P-Sensor>

Proximity Sensor Triggering Distance (mm)				
Position	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	17	23	19	25

<Handheld for ANT 0>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Right Side		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	7	12	12	18	2	7	11	17

<Handheld for ANT1>

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	9	12	18	8	13	12	19

<Handheld for ANT4>

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	5	10	9	15	3	8	11	17

<Handheld for ANT5>

Proximity Sensor Triggering Distance (mm)						
Position	Front		Back		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	4	9	10	17	10	15

<Handheld for ANT6>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Right Side		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	7	13	9	14	6	11	11	16

6. RF Exposure Limits

6.1 Uncontrolled Environment

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

6.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

7. Specific Absorption Rate (SAR)

7.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

7.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

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

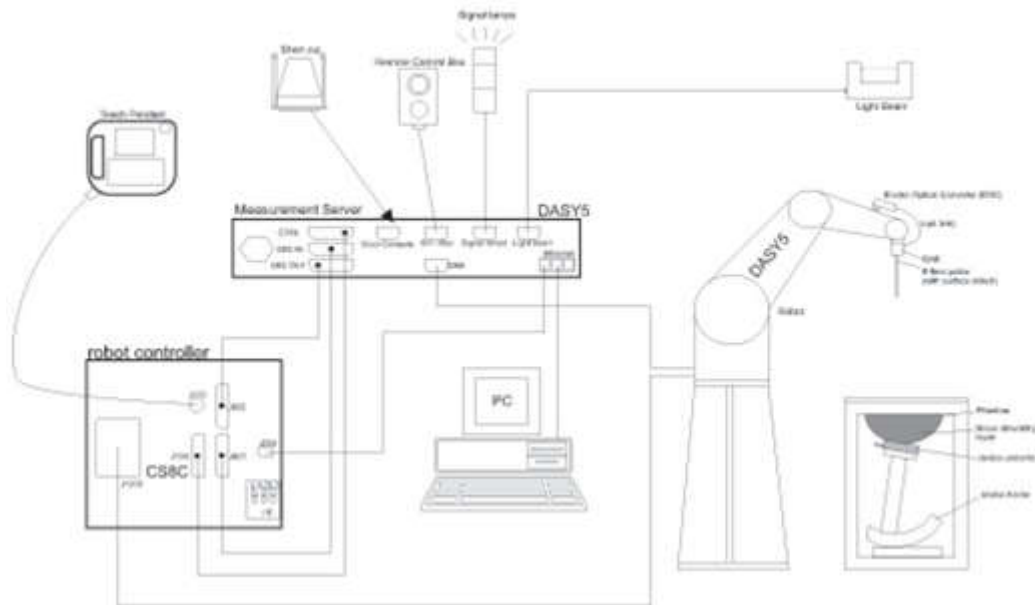
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

8. System Description and Setup

The DASY5 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 DASY software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

8.1 E-Field Probe

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

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	4 MHz – 10 GHz Linearity: ± 0.2 dB (30 MHz – 10 GHz)	
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)	
Dynamic Range	10 μ W/g – >100 mW/g Linearity: ± 0.2 dB (noise: typically <1 μ W/g)	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

8.2 Data Acquisition Electronics (DAE)

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


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



Photo of DAE


8.3 Phantom

<SAM Twin Phantom>

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

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI Phantom>

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

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

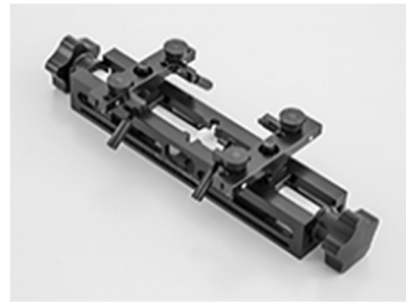
8.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

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



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

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

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.



Mounting Device for Laptops

9. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

- (a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
- (b) Read the WWAN RF power level from the base station simulator.
- (c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
- (d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

- (a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
- (b) Place the EUT in the positions as Appendix D demonstrates.
- (c) Set scan area, grid size and other setting on the DASY software.
- (d) Measure SAR results for the highest power channel on each testing position.
- (e) Find out the largest SAR result on these testing positions of each band
- (f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- (a) Power reference measurement
- (b) Area scan
- (c) Zoom scan
- (d) Power drift measurement

9.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values from the measurement grid to the high-resolution grid
- (e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- (f) Calculation of the averaged SAR within masses of 1g and 10g

9.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

9.3 Area Scan

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

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

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

9.4 Zoom Scan

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

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

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

9.5 Volume Scan Procedures

The volume scan is used to assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

9.6 Power Drift Monitoring

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



10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	2022/2/24	2025/2/22
SPEAG	835MHz System Validation Kit	D835V2	4d091	2022/8/19	2025/8/18
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2022/2/24	2025/2/22
SPEAG	1900MHz System Validation Kit	D1900V2	5d118	2022/3/30	2025/3/28
SPEAG	2450MHz System Validation Kit	D2450V2	1095	2024/2/8	2025/2/7
SPEAG	2600MHz System Validation Kit	D2600V2	1112	2023/12/18	2024/12/17
SPEAG	3500MHz System Validation Kit	D3500V2	1037	2023/11/20	2024/11/19
SPEAG	5000MHz System Validation Kit	D5GHzV2	1113	2022/9/23	2025/9/21
SPEAG	Data Acquisition Electronics	DAE4	1650	2023/9/13	2024/9/12
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	2024/1/22	2025/1/21
SPEAG	SAM Twin Phantom	SAM Twin	TP-1754	NCR	NCR
Testo	Thermo-Hygrometer	608-H1	1241332126	2024/7/4	2025/7/3
Testo	Thermo-Hygrometer	608-H1	1241332126	2023/7/10	2024/7/9
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio Communication Analyzer	MT8821C	6262306175	2023/7/5	2024/7/4
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	2023/7/5	2024/7/4
Anritsu	Radio Communication Analyzer	MT8821C	6262306175	2024/7/4	2025/7/3
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	2024/7/4	2025/7/3
SPEAG	Dielectric Probe Kit	DAK-3.5	1144	2023/8/17	2024/8/16
Anritsu	Vector Signal Generator	MG3710A	6201682672	2024/1/2	2025/1/1
Rohde & Schwarz	Power Meter	NRVD	102081	2023/7/5	2024/7/4
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2023/7/5	2024/7/4
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2023/7/5	2024/7/4
Rohde & Schwarz	Power Meter	NRVD	102081	2024/7/4	2025/7/3
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2024/7/4	2025/7/3
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2024/7/4	2025/7/3
R&S	BLUETOOTH TESTER	CBT	100641	2024/1/2	2025/1/1
Rohde & Schwarz	Spectrum Analyzer	FSV7	101631	2023/10/11	2024/10/10
TES	DIGITAC THERMOMETER	1310	220305411	2023/7/8	2024/7/7
TES	DIGITAC THERMOMETER	1310	220305411	2024/7/4	2025/7/3
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note 1	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note 1	
Agilent	Dual Directional Coupler	778D	20500	Note 1	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note 1	
ARRA	Power Divider	A3200-2	N/A	Note 1	
MCL	Attenuation1	BW-S10W5+	N/A	Note 1	
MCL	Attenuation2	BW-S10W5+	N/A	Note 1	
MCL	Attenuation3	BW-S10W5+	N/A	Note 1	

Note:

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

11. System Verification

11.1 Tissue Simulating Liquids

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

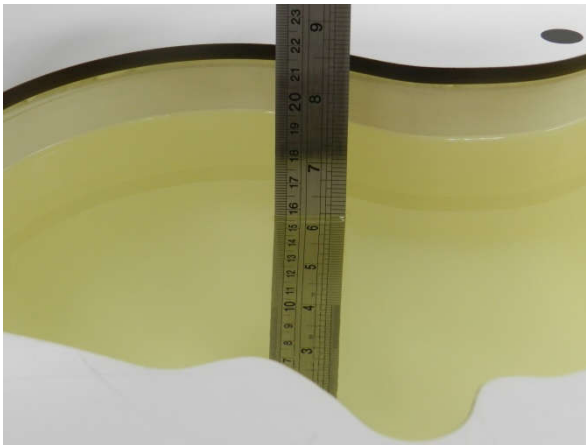


Fig 11.1 Photo of Liquid Height for Head SAR



Fig 11.2 Photo of Liquid Height for Body SAR

11.2 Tissue Verification

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

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (ϵ_r)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0

Simulating Liquid for 5GHz, Manufactured by SPEAG

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
750	Head	22.8	0.888	42.260	0.89	41.90	-0.22	0.86	±5	2024/6/20
835	Head	22.8	0.929	42.215	0.90	41.50	3.22	1.72	±5	2024/6/21
1750	Head	22.8	1.317	40.224	1.37	40.10	-3.87	0.31	±5	2024/6/22
1900	Head	22.8	1.407	40.215	1.40	40.00	0.50	0.54	±5	2024/6/23
2600	Head	22.8	1.931	39.044	1.96	39.00	-1.48	0.11	±5	2024/6/24
3500	Head	22.7	2.813	38.735	2.91	37.90	-3.33	2.20	±5	2024/6/26
750	Head	22.8	0.889	42.269	0.89	41.90	-0.11	0.88	±5	2024/6/28
835	Head	22.8	0.912	41.936	0.90	41.50	1.33	1.05	±5	2024/6/29
1750	Head	22.8	1.316	40.213	1.37	40.10	-3.94	0.28	±5	2024/6/30
1900	Head	22.8	1.406	40.201	1.40	40.00	0.43	0.50	±5	2024/7/1
2600	Head	22.8	2.031	40.349	1.96	39.00	3.62	3.46	±5	2024/7/3
3500	Head	22.7	2.811	38.710	2.91	37.90	-3.40	2.14	±5	2024/7/7
2450	Head	22.6	1.880	40.373	1.80	39.20	4.44	2.99	±5	2024/7/10
5250	Head	22.6	4.573	35.720	4.71	35.90	-2.91	-0.50	±5	2024/7/12
5600	Head	22.6	4.997	35.371	5.07	35.50	-1.44	-0.36	±5	2024/7/14
5750	Head	22.6	5.106	34.869	5.22	35.40	-2.18	-1.50	±5	2024/7/16

11.3 System Performance Check Results

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

<1g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2024/6/20	750	Head	50	1087	3857	1650	0.409	8.58	8.18	-4.66
2024/6/21	835	Head	50	4d091	3857	1650	0.453	9.45	9.06	-4.13
2024/6/22	1750	Head	50	1090	3857	1650	1.950	37.00	39	5.41
2024/6/23	1900	Head	50	5d118	3857	1650	2.020	39.30	40.4	2.80
2024/6/24	2600	Head	50	1112	3857	1650	2.670	55.10	53.4	-3.09
2024/6/26	3500	Head	50	1037	3857	1650	3.130	65.40	62.6	-4.28
2024/6/28	750	Head	50	1087	3857	1650	0.448	8.58	8.96	4.43
2024/6/29	835	Head	50	4d091	3857	1650	0.507	9.45	10.14	7.30
2024/6/30	1750	Head	50	1090	3857	1650	1.800	37.00	36	-2.70
2024/7/1	1900	Head	50	5d118	3857	1650	1.860	39.30	37.2	-5.34
2024/7/3	2600	Head	50	1112	3857	1650	2.690	55.10	53.8	-2.36
2024/7/7	3500	Head	50	1037	3857	1650	3.270	65.40	65.4	0.00
2024/7/10	2450	Head	50	1095	3857	1650	2.730	52.60	54.6	3.80
2024/7/12	5250	Head	50	1113	3857	1650	4.300	81.50	86	5.52
2024/7/14	5600	Head	50	1113	3857	1650	4.410	82.60	88.2	6.78
2024/7/16	5750	Head	50	1113	3857	1650	4.090	80.80	81.8	1.24

<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 (%)
2024/6/20	750	Head	50	1087	3857	1650	0.284	5.65	5.68	0.53
2024/6/21	835	Head	50	4d091	3857	1650	0.326	6.22	6.52	4.82
2024/6/22	1750	Head	50	1090	3857	1650	1.020	19.50	20.4	4.62
2024/6/23	1900	Head	50	5d118	3857	1650	1.070	20.40	21.4	4.90
2024/6/24	2600	Head	50	1112	3857	1650	1.220	24.80	24.4	-1.61
2024/6/26	3500	Head	50	1037	3857	1650	1.200	24.70	24	-2.83
2024/6/28	750	Head	50	1087	3857	1650	0.302	5.65	6.04	6.90
2024/6/29	835	Head	50	4d091	3857	1650	0.325	6.22	6.5	4.50
2024/6/30	1750	Head	50	1090	3857	1650	0.920	19.50	18.4	-5.64
2024/7/1	1900	Head	50	5d118	3857	1650	1.020	20.40	20.4	0.00
2024/7/3	2600	Head	50	1112	3857	1650	1.250	24.80	25	0.81
2024/7/7	3500	Head	50	1037	3857	1650	1.180	24.70	23.6	-4.45
2024/7/10	2450	Head	50	1095	3857	1650	1.310	24.70	26.2	6.07
2024/7/12	5250	Head	50	1113	3857	1650	1.230	23.30	24.6	5.58
2024/7/14	5600	Head	50	1113	3857	1650	1.200	23.70	24	1.27
2024/7/16	5750	Head	50	1113	3857	1650	1.170	23.00	23.4	1.74

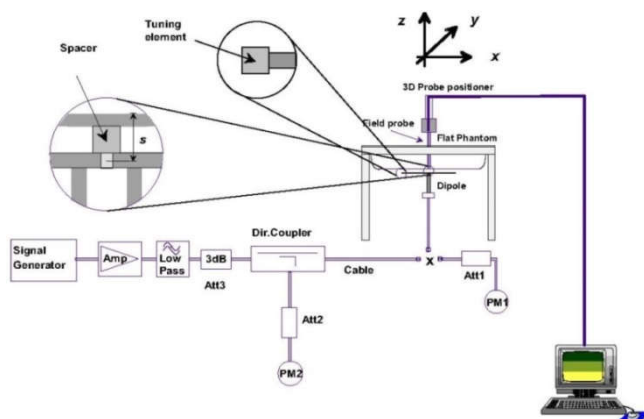


Fig 11.3.1 System Performance Check Setup



Fig 11.3.2 Setup Photo

12. RF Exposure Positions

12.1 Ear and handset reference point

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

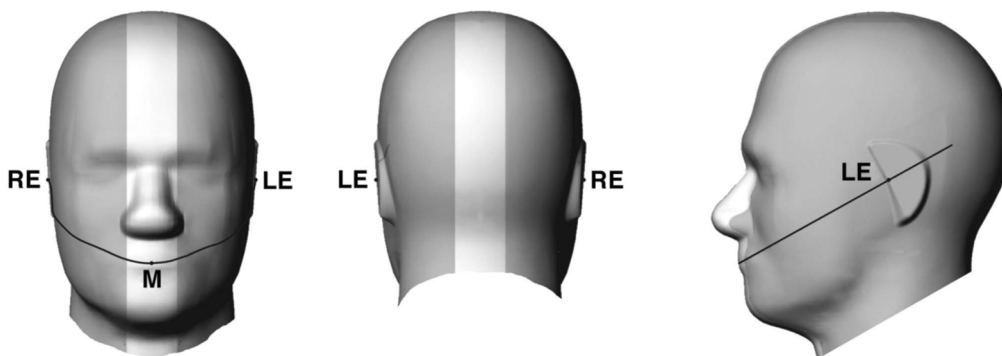


Fig 12.1.1 Front, back, and side views of SAM twin phantom

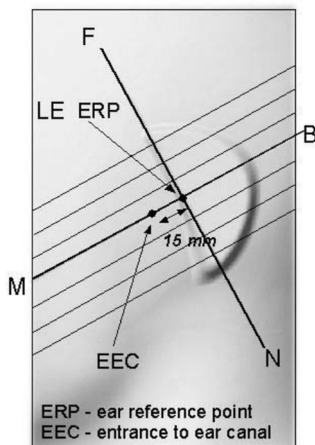


Fig 12.1.2 Close-up side view of phantom showing the ear region.

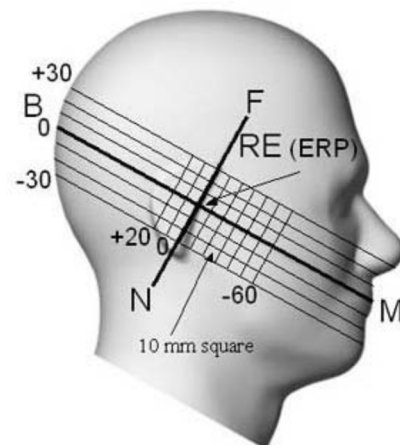


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

12.2 Definition of the cheek position

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

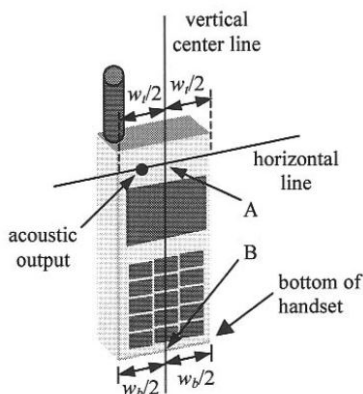


Fig 12.2.1 Handset vertical and horizontal reference lines—“fixed case”

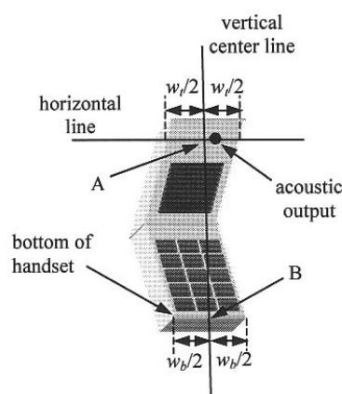


Fig 12.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

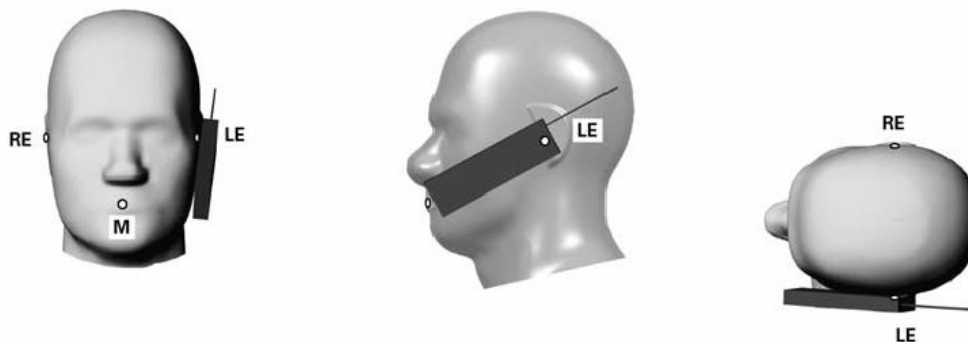


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

12.3 Definition of the tilt position

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

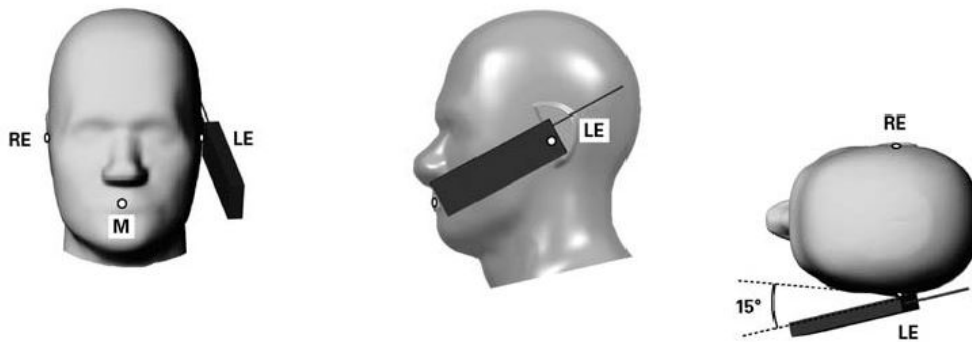


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

12.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 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 headset attached to the handset.

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

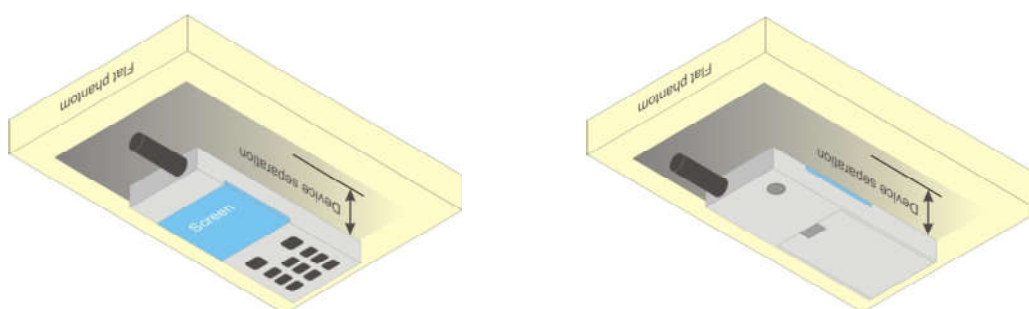


Fig 12.4 Body Worn Position

12.5 Product Specific 10g SAR Exposure

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

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

12.6 Wireless Router

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

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

13. Conducted RF Output Power (Unit: dBm)

The detailed conducted power table can refer to Appendix E.

<GSM Conducted Power>

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.
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 HSPA+ devices supporting 16 QAM in the uplink, power measurements procedure is according to the configurations in Table C.11.1.4 of 3GPP TS 34.121-1.
4. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

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

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

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

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

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

Note 4: For subtest 2 the β_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:

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

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1} : 47/15 β_{ed2} : 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

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

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

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

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

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

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

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

- a. The EUT was connected to Base Station 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.		

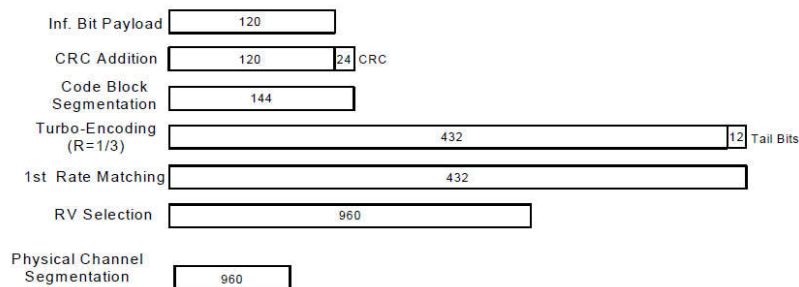


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

HSPA+ 3GPP release 7 (uplink category 7) 16QAM, Setup Configuration:

1. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
2. The RF path losses were compensated into the measurements.
3. A call was established between EUT and Base Station with following setting * :
 - i. Call Configs = 5.2E:HSPA+:UL with 16QAM
 - ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.4, quoted from the TS 34.121-1 s5.2E
 - iii. Set Channel Parmns
 - iv. Set Cell Power = -86 dBm
 - v. Set Channel Type = HSPA
 - vi. Set UE Target Power =21 dBm
 - vii. Power Ctrl Mode= All Up Bits
 - viii. Set Manual Uplink DPCH Bc/Bd = Manual
 - ix. Set Manual Uplink DPCH Bc and Bd=15,15(for 34.121-1 v8.10.0 table C11.1.4 sub-test 1)
 - x. Set HSPA Conn DL Channel Levels
 - xi. Set HS-SCCH Configs
 - xii. Set RB Test Mode Setup
 - xiii. Set Common HSUPA Parameters
 - xiv. Set Serving Grant
 - xv. Confirm that E-TFCI is equal to the target E-TFCI of 105 for sub-test 1, and other subtest's E-TFCI
4. The transmitted maximum output power was recorded.

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

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105

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

Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).

Note 3: DPDCH is not configured, therefore the β_c is set to 1 and $\beta_d = 0$ by default.

Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signaled to use the extrapolation algorithm.

Setup Configuration



<WCDMA Conducted Power>

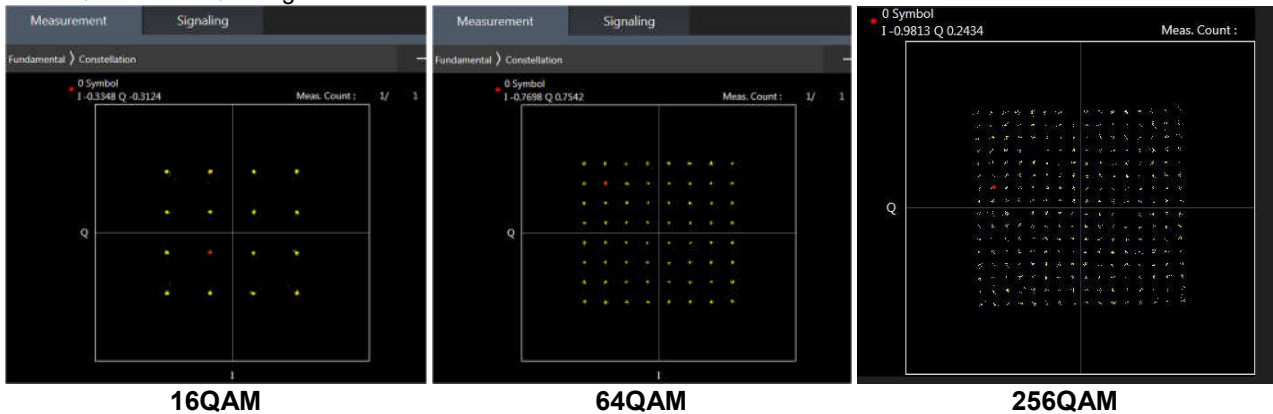
General Note:

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

<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM/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 B4 / B2 / B17 SAR test was covered by B66 / B25 / B12; 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.

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

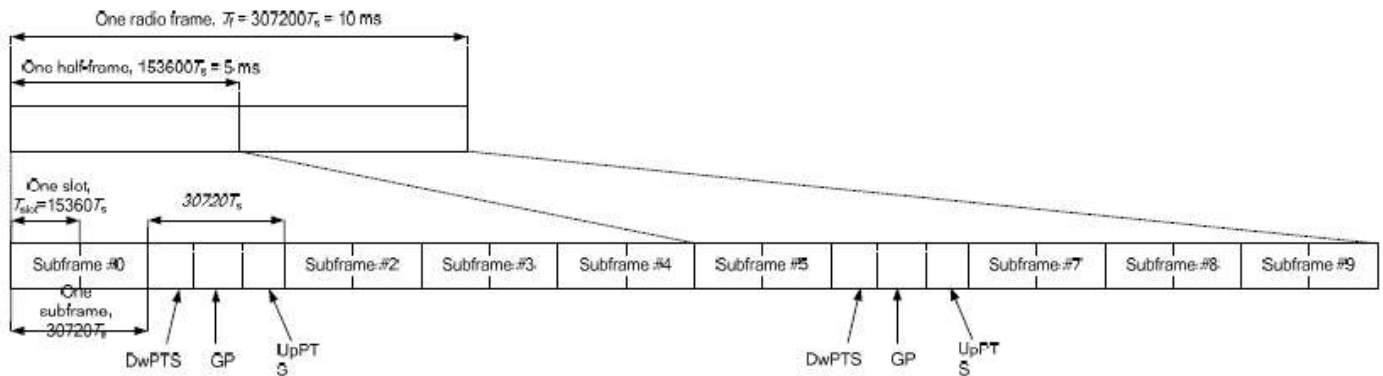


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

For LTE 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:

5. 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.
6. 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.
7. The gray color table is covered by other combinations and no need to verify power.

2CC Downlink Carrier Aggregation				3CC Downlink Carrier Aggregation			
Number	Combination	4X4 MIMO	Covered by Measurement Superset	Number	Combination	4X4 MIMO	Covered by Measurement Superset
1	CA_26A-66A	66A		1	CA_2A-4A-5A	4A, 2A	
2	CA_2A-26A	2A		2	CA_2A-4A-7A	4A	
3	CA_2A-2A	2A-2A, 2A		3	CA_2A-5A-66A	66A, 2A	
4	CA_2A-4A	2A-4A, 4A, 2A	3CC-2	4	CA_2A-66A-66A	2A	
5	CA_2A-5A	2A	3CC-1	5	CA_2A-7A-66A	66A	
6	CA_2A-66A	2A-66A, 66A, 2A	3CC-3	6	CA_2A-7A-7A	2A	
7	CA_2A-7A	2A-7A, 7A, 2A	3CC-2	7	CA_2A-7C	2A	
8	CA_2C	2C, 2A	3CC-8	8	CA_2C-66A	66A	
9	CA_38C			9	CA_4A-7C	4A	
10	CA_41A-42A	42A		10	CA_5A-66A-66A		
11	CA_41C						
12	CA_42C	42C, 42A					
13	CA_4A-4A	4A-4A, 4A					
14	CA_4A-5A	4A	3CC-1				
15	CA_4A-7A	4A-7A, 7A, 4A	3CC-2				
16	CA_5A-66A	66A	3CC-3				
17	CA_5A-7A	7A					
18	CA_66A-66A	66A-66A, 66A	3CC-4				
19	CA_66B	66B, 66A					
20	CA_66C	66C, 66A					
21	CA_7A-26A	7A					
22	CA_7A-42A	7A-42A, 7A, 42A					
23	CA_7A-66A	7A-66A, 7A, 66A	3CC-5				
24	CA_7A-7A	7A-7A, 7A	3CC-6				
25	CA_7C	7C, 7A	3CC-9				

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 three 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 2/4/7/66/42 only. Uplink transmission is limited to a single output stream. Power measurements were performed with downlink 4x4 MIMO active for the configuration with highest measured maximum conducted power with 4x4 downlink MIMO inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

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

4X4 MIMO	Band
	LTE Band 2/4/7/66/42

LTE Carrier Aggregation Conducted Power (Uplink)

LTE Uplink CA	2CC Uplink Carrier Aggregation
Intra-band	
CA_7C	Ant 1

<Intra-band>

General Note:

- i. The device supports intra-band uplink carrier aggregation for LTE B7 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.

5G NR Output Power (Unit: dBm)

General Note:

1. 5G NR n2/n5/n7/n26/n66/n38/n41/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 test, 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.
9. For 5G NR EN-DC mode, standalone SAR performed for 5G NR NSA band with the maximum power, EN-DC SAR summed EN-DC mode 5G NR standalone SAR and LTE standalone SAR, the result of EN-DC SAR is more conservatively.

<3GPP 38.101 MPR for EN-DC>

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

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	$\leq 3.5^1$	$\leq 1.2^1$	$\leq 0.2^1$
		$\leq 0.5^2$	$\leq 0.5^2$	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 Antenna Tx	
	LTE TX	NR TX
DC_26A_n78A	Ant 0	Ant 5
DC_2A_n66A	Ant 0	Ant 4
DC_2A_n78A	Ant 0	Ant 5
DC_2A_n7A	Ant 0	Ant 4
DC_38A_n78A	Ant 1	Ant 5
DC_41A_n78A	Ant 1	Ant 5
DC_4A_n2A	Ant 0	Ant 4
DC_4A_n38A	Ant 0	Ant 4
DC_4A_n41A	Ant 0	Ant 4
DC_4A_n78A	Ant 0	Ant 5
DC_4A_n7A	Ant 0	Ant 4
DC_5A_n78	Ant 0	Ant 5
DC_5A_n66A	Ant 4	Ant 0
DC_5A_n7A	Ant 0	Ant 4
DC_66A_n38A	Ant 0	Ant 4
DC_66A_n41A	Ant 0	Ant 4
DC_66A_n78A	Ant 0	Ant 5
DC_66A_n7A	Ant 0	Ant 4
DC_7A_n78A	Ant 1	Ant 5
DC_2A-7A_n66A*	LTE B7: Ant 1	Ant 4
	LTE B2: Ant 0	Ant 4

Note: * For EN-DC combinations with uplink assigned to one LTE band and one NR band only.

<WLAN Conducted Power>

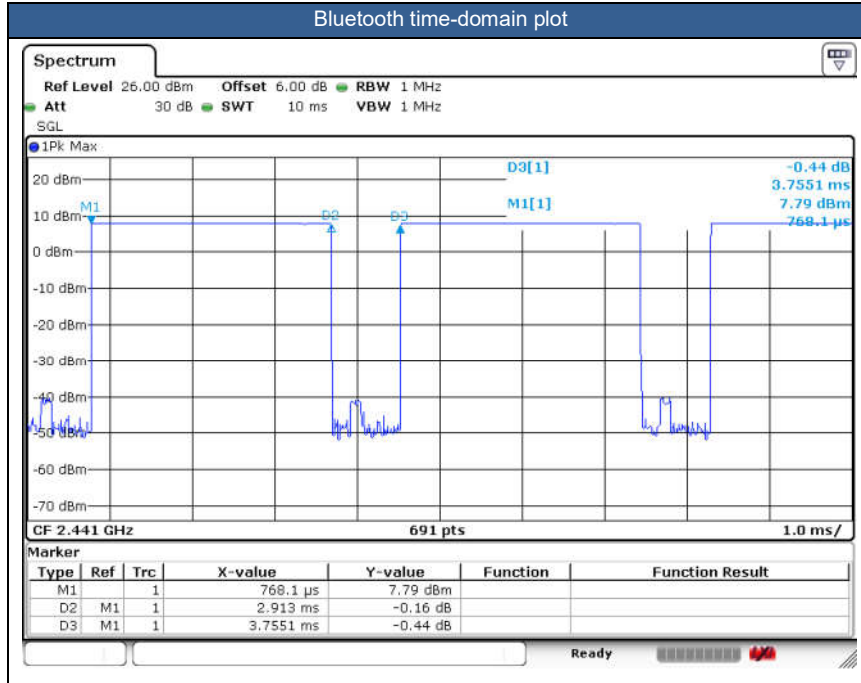
General Note:

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.

<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 77.57% as following figure, for Bluetooth SAR scaling need further consideration and the theoretical duty cycle is 83.3%, therefore the actual duty cycle will be scaled up to 83.3% for Bluetooth reported SAR calculation





14. Antenna Location

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

15. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
 - c. For SAR testing of Bluetooth signal with 83.3% theoretical duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle) *83.3%".
 - d. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - e. For BT/WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
 - f. 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). 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 GSM850/1900, WCDMA Band II/IV/V, LTE Band 2/4/5/7/25/66/38/41/42, 5GNR n2/n7/n66/n38/n41/n78, WLAN 2.4GHz /WLAN5.2/5.8GHz, 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. 5GNR n66/2 at ant4 support different PAs for some antennas, and NR bands support Other PA only under ENDC. Some 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.
10. Chose BT Front/Back at 5mm as Front at 15mm, Back at 18mm SAR to do co-located with WWAN analysis in body-worn



exposure conditions.

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

WCDMA Note:

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

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are \leq 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is $>$ 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM/64QAM/256QAM output power for each RB allocation configuration is $>$ not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is \leq 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM/256QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is $>$ not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is \leq 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B12 / B17 / B26 / B38 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 B4 / B2 / B17 SAR test was covered by B66 / B25 / B12; 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/n26/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.

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



15.1 Head SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	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																					
01	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	23095	707.5	1	22.91	24.00	1.285	-	-	0.06	0.106	0.136
	LTE Band 12	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 0	DSI2	23095	707.5	1	22.01	23.00	1.256	-	-	0.08	0.093	0.117
	LTE Band 12	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI2	23095	707.5	1	22.91	24.00	1.285	-	-	0.01	0.074	0.095
	LTE Band 12	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 0	DSI2	23095	707.5	1	22.01	23.00	1.256	-	-	0.03	0.063	0.079
	LTE Band 12	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI2	23095	707.5	1	22.91	24.00	1.285	-	-	-0.08	0.103	0.132
	LTE Band 12	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 0	DSI2	23095	707.5	1	22.01	23.00	1.256	-	-	-0.08	0.087	0.109
	LTE Band 12	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI2	23095	707.5	1	22.91	24.00	1.285	-	-	0.1	0.059	0.076
	LTE Band 12	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 0	DSI2	23095	707.5	1	22.01	23.00	1.256	-	-	-0.18	0.000	0.000
	LTE Band 13	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	23230	782	1	23.01	24.00	1.256	-	-	0.1	0.069	0.087
02	LTE Band 13	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 0	DSI2	23230	782	1	22.39	23.00	1.151	-	-	0.02	0.108	0.124
	LTE Band 13	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI2	23230	782	1	23.01	24.00	1.256	-	-	0.12	0.041	0.051
	LTE Band 13	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 0	DSI2	23230	782	1	22.39	23.00	1.151	-	-	0.08	0.063	0.073
	LTE Band 13	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI2	23230	782	1	23.01	24.00	1.256	-	-	-0.17	0.066	0.083
	LTE Band 13	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 0	DSI2	23230	782	1	22.39	23.00	1.151	-	-	-0.03	0.103	0.119
	LTE Band 13	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI2	23230	782	1	23.01	24.00	1.256	-	-	0.14	0.039	0.049
	LTE Band 13	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 0	DSI2	23230	782	1	22.39	23.00	1.151	-	-	0.11	0.063	0.073
835MHz																					
03	GSM850	-	-	-	-	GPRS (2 Tx slots)	Right Cheek	0mm	Ant 0	DSI2	189	836.4	1	30.48	31.50	1.265	-	-	-0.01	0.263	0.333
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Right Tilted	0mm	Ant 0	DSI2	189	836.4	1	30.48	31.50	1.265	-	-	-0.1	0.147	0.186
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Left Cheek	0mm	Ant 0	DSI2	189	836.4	1	30.48	31.50	1.265	-	-	-0.01	0.262	0.331
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Left Tilted	0mm	Ant 0	DSI2	189	836.4	1	30.48	31.50	1.265	-	-	-0.09	0.138	0.175
04	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	DSI2	4182	836.4	1	22.88	24.00	1.294	-	-	0.01	0.192	0.248
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 0	DSI2	4182	836.4	1	22.88	24.00	1.294	-	-	-0.11	0.112	0.145
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	DSI2	4182	836.4	1	22.88	24.00	1.294	-	-	0.14	0.182	0.236
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 0	DSI2	4182	836.4	1	22.88	24.00	1.294	-	-	0.03	0.107	0.138
	LTE Band 5	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	20525	836.5	1	22.83	24.00	1.309	-	-	0.07	0.191	0.250
	LTE Band 5	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 0	DSI2	20525	836.5	1	21.91	23.00	1.285	-	-	-0.05	0.153	0.197
	LTE Band 5	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI2	20525	836.5	1	22.83	24.00	1.309	-	-	0.18	0.106	0.139
	LTE Band 5	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 0	DSI2	20525	836.5	1	21.91	23.00	1.285	-	-	0.14	0.092	0.118
	LTE Band 5	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI2	20525	836.5	1	22.83	24.00	1.309	-	-	-0.17	0.168	0.220
	LTE Band 5	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 0	DSI2	20525	836.5	1	21.91	23.00	1.285	-	-	0.17	0.139	0.179
	LTE Band 5	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI2	20525	836.5	1	22.83	24.00	1.309	-	-	-0.05	0.096	0.126
	LTE Band 5	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 0	DSI2	20525	836.5	1	21.91	23.00	1.285	-	-	0.01	0.081	0.104
05	LTE Band 5_ENDC	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 4	DSI2	20525	836.5	1	20.63	22.00	1.371	-	-	0.07	0.310	0.425
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 4	DSI2	20525	836.5	1	19.75	21.00	1.334	-	-	0.1	0.253	0.337
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 4	DSI2	20525	836.5	1	20.63	22.00	1.371	-	-	-0.17	0.265	0.363
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 4	DSI2	20525	836.5	1	19.75	21.00	1.334	-	-	0.04	0.204	0.272
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 4	DSI2	20525	836.5	1	20.63	22.00	1.371	-	-	-0.01	0.223	0.306
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 4	DSI2	20525	836.5	1	19.75	21.00	1.334	-	-	-0.08	0.176	0.235
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 4	DSI2	20525	836.5	1	20.63	22.00	1.371	-	-	0.05	0.206	0.282
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 4	DSI2	20525	836.5	1	19.75	21.00	1.334	-	-	0.06	0.166	0.221
06	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	26865	831.5	1	22.94	24.00	1.276	-	-	0.09	0.142	0.181
	LTE Band 26	15M	QPSK	36	0	-	Right Cheek	0mm	Ant 0	DSI2	26865	831.5	1	22.02	23.00	1.253	-	-	-0.09	0.119	0.149
	LTE Band 26	15M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI2	26865	831.5	1	22.94	24.00	1.276	-	-	-0.08	0.079	0.101
	LTE Band 26	15M	QPSK	36	0	-	Right Tilted	0mm	Ant 0	DSI2	26865	831.5	1	22.02	23.00	1.253	-	-	0.13	0.068	0.085
	LTE Band 26	15M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI2	26865	831.5	1	22.94	24.00	1.276	-	-	0.12	0.128	0.163
	LTE Band 26	15M	QPSK	36	0	-	Left Cheek	0mm	Ant 0	DSI2	26865	831.5	1	22.02	23.00	1.253	-	-	0.03	0.108	0.135
	LTE Band 26	15M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI2	26865	831.5	1	22.94	24.00	1.276	-	-	0.18	0.072	0.092
	LTE Band 26	15M	QPSK	36	0	-	Left Tilted	0mm	Ant 0	DSI2	26865	831.5	1	22.02	23.00	1.253	-	-	0.16	0.066	0.083
07	FR1 n26	20M	QPSK	1	1	DFT-SCS-15KHz	Right Cheek	0mm	Ant 0	DSI2	166300	831.5	1	23.28	24.00	1.180	-	-	0.1	0.140	0.165



FCC SAR Test Report

Report No. : FA422904

FR1 n26	20M	QPSK	50	28	DFT-SCS-15KHz	Right Cheek	0mm	Ant 0	DSI2	166300	831.5	1	23.21	24.00	1.199	-	-	0.12	0.121	0.145	
FR1 n26	20M	QPSK	1	1	DFT-SCS-15KHz	Right Tilted	0mm	Ant 0	DSI2	166300	831.5	1	23.28	24.00	1.180	-	-	0.08	0.076	0.090	
FR1 n26	20M	QPSK	50	28	DFT-SCS-15KHz	Right Tilted	0mm	Ant 0	DSI2	166300	831.5	1	23.21	24.00	1.199	-	-	-0.17	0.066	0.079	
FR1 n26	20M	QPSK	1	1	DFT-SCS-15KHz	Left Cheek	0mm	Ant 0	DSI2	166300	831.5	1	23.28	24.00	1.180	-	-	-0.03	0.135	0.159	
FR1 n26	20M	QPSK	50	28	DFT-SCS-15KHz	Left Cheek	0mm	Ant 0	DSI2	166300	831.5	1	23.21	24.00	1.199	-	-	0.14	0.108	0.130	
FR1 n26	20M	QPSK	1	1	DFT-SCS-15KHz	Left Tilted	0mm	Ant 0	DSI2	166300	831.5	1	23.28	24.00	1.180	-	-	0.11	0.076	0.090	
FR1 n26	20M	QPSK	50	28	DFT-SCS-15KHz	Left Tilted	0mm	Ant 0	DSI2	166300	831.5	1	23.21	24.00	1.199	-	-	-0.05	0.060	0.072	
1750MHz																					
08	WCDMA IV	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	DSI2	1413	1732.6	1	22.53	24.00	1.403	-	-	0.04	0.096	0.135	
	WCDMA IV	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 0	DSI2	1413	1732.6	1	22.53	24.00	1.403	-	-	0.02	0.042	0.059	
	WCDMA IV	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	DSI2	1413	1732.6	1	22.53	24.00	1.403	-	-	0.01	0.059	0.083	
	WCDMA IV	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 0	DSI2	1413	1732.6	1	22.53	24.00	1.403	-	-	0.05	0.000	0.000	
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	132322	1745	1	22.99	24.00	1.262	-	-	0.03	0.109	0.138
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	DSI2	132322	1745	1	22.03	23.00	1.250	-	-	-0.1	0.084	0.105
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI2	132322	1745	1	22.99	24.00	1.262	-	-	0.07	0.055	0.069
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	DSI2	132322	1745	1	22.03	23.00	1.250	-	-	0.18	0.045	0.056
	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI2	132322	1745	1	22.99	24.00	1.262	-	-	-0.1	0.065	0.082
	LTE Band 66	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 0	DSI2	132322	1745	1	22.03	23.00	1.250	-	-	0.01	0.053	0.066
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI2	132322	1745	1	22.99	24.00	1.262	-	-	-0.15	0.048	0.061
	LTE Band 66	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 0	DSI2	132322	1745	1	22.03	23.00	1.250	-	-	0.19	0.041	0.051
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 4	DSI2	132322	1745	1	17.50	18.50	1.259	-	-	0.08	0.608	0.765
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 4	DSI2	132322	1745	1	17.45	18.50	1.274	-	-	-0.08	0.493	0.628
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 4	DSI2	132322	1745	1	17.50	18.50	1.259	-	-	0.1	0.707	0.890
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 4	DSI2	132072	1720	1	17.39	18.50	1.291	-	-	0.12	0.675	0.872
09	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 4	DSI2	132572	1770	1	17.34	18.50	1.306	-	-	-0.06	0.717	0.937
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	DSI2	132322	1745	1	17.45	18.50	1.274	-	-	-0.17	0.561	0.714
	LTE Band 66	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 4	DSI2	132322	1745	1	17.28	18.50	1.324	-	-	0.11	0.566	0.750
	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 4	DSI2	132322	1745	1	17.50	18.50	1.259	-	-	-0.05	0.390	0.491
	LTE Band 66	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 4	DSI2	132322	1745	1	17.45	18.50	1.274	-	-	-0.17	0.308	0.392
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 4	DSI2	132322	1745	1	17.50	18.50	1.259	-	-	0.1	0.483	0.608
	LTE Band 66	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 4	DSI2	132322	1745	1	17.45	18.50	1.274	-	-	-0.01	0.386	0.492
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Right Cheek	0mm	Ant 0	DSI2	349000	1745	1	22.71	24.00	1.346	-	-	-0.13	0.120	0.162
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Right Cheek	0mm	Ant 0	DSI2	349000	1745	1	22.64	24.00	1.368	-	-	0.06	0.114	0.156
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Right Tilted	0mm	Ant 0	DSI2	349000	1745	1	22.71	24.00	1.346	-	-	-0.03	0.057	0.077
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Right Tilted	0mm	Ant 0	DSI2	349000	1745	1	22.64	24.00	1.368	-	-	-0.03	0.056	0.077
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Left Cheek	0mm	Ant 0	DSI2	349000	1745	1	22.71	24.00	1.346	-	-	0.08	0.072	0.097
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Left Cheek	0mm	Ant 0	DSI2	349000	1745	1	22.64	24.00	1.368	-	-	-0.07	0.068	0.093
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Left Tilted	0mm	Ant 0	DSI2	349000	1745	1	22.71	24.00	1.346	-	-	0.05	0.048	0.065
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Left Tilted	0mm	Ant 0	DSI2	349000	1745	1	22.64	24.00	1.368	-	-	-0.11	0.051	0.070
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Right Cheek	0mm	Ant 4	DSI2	349000	1745	1	18.23	19.00	1.194	-	-	0	0.744	0.888
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Right Cheek	0mm	Ant 4	DSI2	349000	1745	1	18.15	19.00	1.216	-	-	-0.13	0.559	0.680
	FR1 n66	40M	QPSK	216	0	DFT-SCS-15KHz	Right Cheek	0mm	Ant 4	DSI2	349000	1745	1	18.16	19.00	1.213	-	-	-0.01	0.557	0.676
10	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Right Tilted	0mm	Ant 4	DSI2	349000	1745	1	18.23	19.00	1.194	-	-	-0.04	0.803	0.959
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Right Tilted	0mm	Ant 4	DSI2	349000	1745	1	18.15	19.00	1.216	-	-	0.05	0.620	0.754
	FR1 n66	40M	QPSK	216	0	DFT-SCS-15KHz	Right Tilted	0mm	Ant 4	DSI2	349000	1745	1	18.16	19.00	1.213	-	-	0.02	0.626	0.760
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Left Cheek	0mm	Ant 4	DSI2	349000	1745	1	18.23	19.00	1.194	-	-	-0.13	0.496	0.592
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Left Cheek	0mm	Ant 4	DSI2	349000	1745	1	18.15	19.00	1.216	-	-	0.17	0.362	0.440
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Left Tilted	0mm	Ant 4	DSI2	349000	1745	1	18.23	19.00	1.194	-	-	0	0.598	0.714
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Left Tilted	0mm	Ant 4	DSI2	349000	1745	1	18.15	19.00	1.216	-	-	-0.04	0.444	0.540
	FR1 n66_Other PA	40M	QPSK	1	1	DFT-SCS-15KHz	Right Tilted	0mm	Ant 4	DSI2	349000	1745	1	19.53	21.00	1.403	-	-	0.11	0.551	0.773
1900MHz																					
11	GSM1900	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 0	DSI2	661	1880	1	23.73	25.50	1.503	-	-	-0.06	0.056	0.084	
	GSM1900	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 0	DSI2	661	1880	1	23.73	25.50	1.503	-	-	0.03	0.000	0.000	
	GSM1900	-	-	-	GPRS (4 Tx slots)	Left Cheek	0mm	Ant 0	DSI2	661	1880	1	23.73	25.50	1.503	-	-	-0.17	0.051	0.077	
	GSM1900	-	-	-	GPRS (4 Tx slots)	Left Tilted	0mm	Ant 0	DSI2	661	1880	1	23.73	25.50	1.503	-	-	-0.01	0.000	0.000	
12	WCDMA II	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	DSI2	9400	1880	1	22.51	24.00	1.409	-	-	0.06	0.090	0.127	



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	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 0	DSI2	9400	1880	1	22.51	24.00	1.409	-	-	0.1	0.063	0.089
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	DSI2	9400	1880	1	22.51	24.00	1.409	-	-	0.16	0.071	0.100
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 0	DSI2	9400	1880	1	22.51	24.00	1.409	-	-	-0.06	0.070	0.099
	LTE Band 25	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	26340	1880	1	23.13	24.00	1.222	-	-	0.01	0.109	0.133
	LTE Band 25	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	DSI2	26340	1880	1	22.15	23.00	1.216	-	-	0.07	0.084	0.102
	LTE Band 25	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	DSI2	26340	1880	1	23.13	24.00	1.222	-	-	-0.18	0.073	0.089
	LTE Band 25	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	DSI2	26340	1880	1	22.15	23.00	1.216	-	-	0.03	0.061	0.074
	LTE Band 25	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI2	26340	1880	1	23.13	24.00	1.222	-	-	-0.15	0.092	0.112
	LTE Band 25	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 0	DSI2	26340	1880	1	22.15	23.00	1.216	-	-	-0.15	0.075	0.091
	LTE Band 25	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	DSI2	26340	1880	1	23.13	24.00	1.222	-	-	0.11	0.085	0.104
	LTE Band 25	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 0	DSI2	26340	1880	1	22.15	23.00	1.216	-	-	-0.08	0.075	0.091
	LTE Band 25	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 4	DSI2	26340	1880	1	17.99	19.00	1.262	-	-	-0.09	0.527	0.665
	LTE Band 25	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 4	DSI2	26340	1880	1	17.91	19.00	1.285	-	-	0.12	0.409	0.526
	LTE Band 25	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 4	DSI2	26340	1880	1	17.99	19.00	1.262	-	-	-0.1	0.644	0.813
13	LTE Band 25	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 4	DSI2	26140	1860	1	17.78	19.00	1.324	-	-	0.04	0.651	0.862
	LTE Band 25	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 4	DSI2	26590	1905	1	17.77	19.00	1.327	-	-	0.18	0.608	0.807
	LTE Band 25	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	DSI2	26340	1880	1	17.91	19.00	1.285	-	-	-0.1	0.474	0.609
	LTE Band 25	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 4	DSI2	26340	1880	1	17.96	19.00	1.271	-	-	0.19	0.481	0.611
	LTE Band 25	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 4	DSI2	26340	1880	1	17.99	19.00	1.262	-	-	0.07	0.317	0.400
	LTE Band 25	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 4	DSI2	26340	1880	1	17.91	19.00	1.285	-	-	-0.18	0.251	0.323
	LTE Band 25	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 4	DSI2	26340	1880	1	17.99	19.00	1.262	-	-	0.03	0.401	0.506
	LTE Band 25	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 4	DSI2	26340	1880	1	17.91	19.00	1.285	-	-	0.11	0.311	0.400
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Right Cheek	0mm	Ant 0	DSI2	376000	1880	1	23.40	24.00	1.148	-	-	-0.17	0.077	0.088
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Right Cheek	0mm	Ant 0	DSI2	376000	1880	1	23.27	24.00	1.183	-	-	-0.08	0.092	0.109
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Right Tilted	0mm	Ant 0	DSI2	376000	1880	1	23.40	24.00	1.148	-	-	-0.04	0.047	0.054
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Right Tilted	0mm	Ant 0	DSI2	376000	1880	1	23.27	24.00	1.183	-	-	-0.08	0.056	0.066
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Left Cheek	0mm	Ant 0	DSI2	376000	1880	1	23.40	24.00	1.148	-	-	0.17	0.055	0.063
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Left Cheek	0mm	Ant 0	DSI2	376000	1880	1	23.27	24.00	1.183	-	-	0.18	0.076	0.090
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Left Tilted	0mm	Ant 0	DSI2	376000	1880	1	23.40	24.00	1.148	-	-	-0.04	0.059	0.068
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Left Tilted	0mm	Ant 0	DSI2	376000	1880	1	23.27	24.00	1.183	-	-	-0.08	0.068	0.080
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Right Cheek	0mm	Ant 4	DSI2	376000	1880	1	14.18	15.50	1.355	-	-	0.04	0.514	0.697
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Right Cheek	0mm	Ant 4	DSI2	376000	1880	1	14.15	15.50	1.365	-	-	0.12	0.384	0.524
14	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Right Tilted	0mm	Ant 4	DSI2	376000	1880	1	14.18	15.50	1.355	-	-	-0.17	0.593	0.804
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Right Tilted	0mm	Ant 4	DSI2	372000	1860	1	13.71	15.50	1.510	-	-	0.11	0.509	0.769
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Right Tilted	0mm	Ant 4	DSI2	380000	1900	1	13.69	15.50	1.517	-	-	0.09	0.502	0.762
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Right Tilted	0mm	Ant 4	DSI2	376000	1880	1	14.15	15.50	1.365	-	-	-0.01	0.439	0.599
	FR1 n2	20M	QPSK	100	0	DFT-SCS-15KHz	Right Tilted	0mm	Ant 4	DSI2	376000	1880	1	14.14	15.50	1.368	-	-	-0.12	0.452	0.618
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Left Cheek	0mm	Ant 4	DSI2	376000	1880	1	14.18	15.50	1.355	-	-	-0.17	0.293	0.397
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Left Cheek	0mm	Ant 4	DSI2	376000	1880	1	14.15	15.50	1.365	-	-	0.02	0.226	0.308
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Left Tilted	0mm	Ant 4	DSI2	376000	1880	1	14.18	15.50	1.355	-	-	0.1	0.378	0.512
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Left Tilted	0mm	Ant 4	DSI2	376000	1880	1	14.15	15.50	1.365	-	-	-0.09	0.292	0.398
	FR1 n2_Other PA	20M	QPSK	1	1	DFT-SCS-15KHz	Right Tilted	0mm	Ant 4	DSI2	380000	1900	1	16.25	17.50	1.334	-	-	-0.01	0.525	0.700
2600MHz																					
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	21100	2535	1	23.21	24.00	1.199	-	-	0.03	0.326	0.391
	LTE Band 7	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI2	21100	2535	1	22.29	23.00	1.178	-	-	-0.16	0.266	0.313
	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI2	21100	2535	1	23.21	24.00	1.199	-	-	-0.02	0.268	0.321
	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI2	21100	2535	1	22.29	23.00	1.178	-	-	0.15	0.224	0.264
15	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI2	21100	2535	1	23.21	24.00	1.199	-	-	0.06	0.539	0.647
	LTE Band 7C	20M	QPSK	1	99	-	Left Cheek	0mm	Ant 1	DSI2	21100+21298	2535+2554.8	1	23.17	24.00	1.211	-	-	0.01	0.501	0.607
	LTE Band 7	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	DSI2	21100	2535	1	22.29	23.00	1.178	-	-	-0.09	0.434	0.511
	LTE Band 7	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	DSI2	21100	2535	1	23.21	24.00	1.199	-	-	0.11	0.170	0.204
	LTE Band 7	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	DSI2	21100	2535	1	22.29	23.00	1.178	-	-	-0.05	0.139	0.164
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	38000	2595	1	22.36	24.00	1.459	62.9	1.006	0.07	0.130	0.191
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	DSI2	38000	2595	1	21.46	23.00	1.426	62.9	1.006	-0.09	0.103	0.148
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI2	38000	2595	1	22.36	24.00	1.459	62.9	1.006	-0.16	0.113	0.166
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI2	38000	2595	1	21.46	23.00	1.426	62.9	1.006	-0.18	0.068	0.098



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	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant 4	DSI2	518598	2592.99	1	15.20	16.00	1.202	-	-	-0.08	0.272	0.327
3500MHz																					
	LTE Band 42	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 5	DSI2	42590	3500	1	19.81	20.00	1.045	62.9	1.006	-0.14	0.511	0.537
	LTE Band 42	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 5	DSI2	42590	3500	1	19.79	20.00	1.050	62.9	1.006	-0.15	0.434	0.458
	LTE Band 42	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 5	DSI2	42590	3500	1	19.81	20.00	1.045	62.9	1.006	0.17	0.537	0.564
	LTE Band 42	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 5	DSI2	42590	3500	1	19.79	20.00	1.050	62.9	1.006	0.18	0.441	0.466
	LTE Band 42	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 5	DSI2	42590	3500	1	19.81	20.00	1.045	62.9	1.006	-0.08	0.660	0.694
20	LTE Band 42	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 5	DSI2	42190	3460	1	19.25	20.00	1.189	62.9	1.006	-0.04	0.769	0.919
	LTE Band 42	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 5	DSI2	42190	3460	2	19.25	20.00	1.189	62.9	1.006	-0.07	0.586	0.701
	LTE Band 42	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 5	DSI2	42190	3460	3	19.25	20.00	1.189	62.9	1.006	-0.05	0.565	0.676
	LTE Band 42	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 5	DSI2	42990	3540	1	19.62	20.00	1.091	62.9	1.006	-0.14	0.620	0.681
	LTE Band 42	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 5	DSI2	42590	3500	1	19.79	20.00	1.050	62.9	1.006	0.01	0.494	0.522
	LTE Band 42	20M	QPSK	100	0	-	Left Cheek	0mm	Ant 5	DSI2	42590	3500	1	19.65	20.00	1.084	62.9	1.006	0.16	0.489	0.533
	LTE Band 42	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 5	DSI2	42590	3500	1	19.81	20.00	1.045	62.9	1.006	0.06	0.664	0.698
	LTE Band 42	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 5	DSI2	42190	3460	1	19.25	20.00	1.189	62.9	1.006	-0.02	0.717	0.857
	LTE Band 42	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 5	DSI2	42990	3540	1	19.62	20.00	1.091	62.9	1.006	0.07	0.752	0.826
	LTE Band 42	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 5	DSI2	42590	3500	1	19.79	20.00	1.050	62.9	1.006	-0.17	0.542	0.572
	LTE Band 42	20M	QPSK	100	0	-	Left Tilted	0mm	Ant 5	DSI2	42590	3500	1	19.65	20.00	1.084	62.9	1.006	0	0.537	0.586
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Right Cheek	0mm	Ant 5	DSI2	633334	3500.01	1	18.93	19.50	1.140	-	-	0.08	0.527	0.601
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 5	DSI2	633334	3500.01	1	19.16	19.50	1.081	-	-	0.01	0.448	0.484
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Right Tilted	0mm	Ant 5	DSI2	633334	3500.01	1	18.93	19.50	1.140	-	-	-0.08	0.423	0.482
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Right Tilted	0mm	Ant 5	DSI2	633334	3500.01	1	19.16	19.50	1.081	-	-	-0.08	0.533	0.576
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Left Cheek	0mm	Ant 5	DSI2	633334	3500.01	1	18.93	19.50	1.140	-	-	-0.18	0.631	0.719
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant 5	DSI2	633334	3500.01	1	19.16	19.50	1.081	-	-	0.1	0.672	0.727
21	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Left Tilted	0mm	Ant 5	DSI2	633334	3500.01	1	18.93	19.50	1.140	-	-	-0.01	0.792	0.903
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant 5	DSI2	633334	3500.01	1	19.16	19.50	1.081	-	-	-0.17	0.789	0.853
	FR1 n78	100M	QPSK	270	0	DFT-SCS-30KHz	Left Tilted	0mm	Ant 5	DSI2	633334	3500.01	1	19.12	19.50	1.091	-	-	-0.03	0.704	0.768
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Right Cheek	0mm	Ant 1	DSI2	633334	3500.01	1	23.19	24.00	1.205	-	-	0.08	0.131	0.158
	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 1	DSI2	633334	3500.01	1	23.13	24.00	1.222	-	-	0.01	0.142	0.173
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Right Tilted	0mm	Ant 1	DSI2	633334	3500.01	1	23.19	24.00	1.205	-	-	0.03	0.169	0.204
	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Right Tilted	0mm	Ant 1	DSI2	633334	3500.01	1	23.13	24.00	1.222	-	-	-0.08	0.182	0.222
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Left Cheek	0mm	Ant 1	DSI2	633334	3500.01	1	23.19	24.00	1.205	-	-	-0.08	0.297	0.358
	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant 1	DSI2	633334	3500.01	1	23.13	24.00	1.222	-	-	-0.05	0.349	0.426
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Left Tilted	0mm	Ant 1	DSI2	633334	3500.01	1	23.19	24.00	1.205	-	-	0.1	0.113	0.136
	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant 1	DSI2	633334	3500.01	1	23.13	24.00	1.222	-	-	-0.18	0.109	0.133
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Right Cheek	0mm	Ant 2	DSI2	633334	3500.01	1	23.22	24.00	1.197	-	-	0.1	0.148	0.177
	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 2	DSI2	633334	3500.01	1	23.20	24.00	1.202	-	-	0.12	0.159	0.191
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Right Tilted	0mm	Ant 2	DSI2	633334	3500.01	1	23.22	24.00	1.197	-	-	0.08	0.095	0.114
	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Right Tilted	0mm	Ant 2	DSI2	633334	3500.01	1	23.20	24.00	1.202	-	-	-0.17	0.097	0.117
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Left Cheek	0mm	Ant 2	DSI2	633334	3500.01	1	23.22	24.00	1.197	-	-	-0.03	0.127	0.152
	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant 2	DSI2	633334	3500.01	1	23.20	24.00	1.202	-	-	0.14	0.168	0.202
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Left Tilted	0mm	Ant 2	DSI2	633334	3500.01	1	23.22	24.00	1.197	-	-	0.11	0.055	0.066
	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant 2	DSI2	633334	3500.01	1	23.20	24.00	1.202	-	-	-0.05	0.059	0.071
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Right Cheek	0mm	Ant 8	DSI2	633334	3500.01	1	22.89	24.00	1.291	-	-	0.18	0.066	0.085
	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 8	DSI2	633334	3500.01	1	22.86	24.00	1.300	-	-	0.14	0.071	0.092
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Right Tilted	0mm	Ant 8	DSI2	633334	3500.01	1	22.89	24.00	1.291	-	-	-0.17	0.055	0.071
	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Right Tilted	0mm	Ant 8	DSI2	633334	3500.01	1	22.86	24.00	1.300	-	-	0.17	0.062	0.081
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Left Cheek	0mm	Ant 8	DSI2	633334	3500.01	1	22.89	24.00	1.291	-	-	-0.05	0.087	0.112
	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant 8	DSI2	633334	3500.01	1	22.86	24.00	1.300	-	-	0.01	0.081	0.105
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Left Tilted	0mm	Ant 8	DSI2	633334	3500.01	1	22.89	24.00	1.291	-	-	0.1	0.113	0.146
	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant 8	DSI2	633334	3500.01	1	22.86	24.00	1.300	-	-	-0.17	0.103	0.134



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)	
2450MHz																		
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 6	standalone	11	2462	1	17.71	19.00	1.346	99.3	1.007	0.08	0.467	0.633	
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 6	standalone	11	2462	1	17.71	19.00	1.346	99.3	1.007	0.01	0.492	0.667	
22	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	standalone	11	2462	1	17.71	19.00	1.346	99.3	1.007	0.06	0.956	1.296	
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	standalone	11	2462	2	17.71	19.00	1.346	99.3	1.007	0.04	0.571	0.774	
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	standalone	11	2462	3	17.71	19.00	1.346	99.3	1.007	0.05	0.781	1.058	
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	standalone	6	2437	1	17.63	19.00	1.371	99.3	1.007	-0.08	0.870	1.201	
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	standalone	1	2412	1	17.48	19.00	1.419	99.3	1.007	0.08	0.815	1.165	
	WLAN2.4GHz	802.11g 6Mbps	Left Cheek	0mm	Ant 6	standalone	2	2417	1	17.49	19.00	1.416	98	1.020	0.01	0.756	1.092	
	WLAN2.4GHz	802.11g 6Mbps	Left Cheek	0mm	Ant 6	standalone	10	2457	1	17.25	18.50	1.334	98	1.020	0.01	0.569	0.774	
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 6	standalone	11	2462	1	17.71	19.00	1.346	99.3	1.007	0.03	0.831	1.126	
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 6	standalone	6	2437	1	17.63	19.00	1.371	99.3	1.007	0.01	0.756	1.044	
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 6	standalone	1	2412	1	17.48	19.00	1.419	99.3	1.007	0.02	0.713	1.019	
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 6	Simultaneous	11	2462	1	11.71	13.00	1.346	99.3	1.007	0.02	0.117	0.159	
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 6	Simultaneous	11	2462	1	11.71	13.00	1.346	99.3	1.007	0.05	0.124	0.168	
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	Simultaneous	11	2462	1	11.71	13.00	1.346	99.3	1.007	0.01	0.240	0.325	
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 6	Simultaneous	11	2462	1	11.71	13.00	1.346	99.3	1.007	0.1	0.190	0.258	
	Bluetooth	1Mbps	Right Cheek	0mm	Ant 6	Full Power	39	2441	1	12.05	13.50	1.396	77.57	1.074	-0.08	0.062	0.093	
	Bluetooth	1Mbps	Right Tilted	0mm	Ant 6	Full Power	39	2441	1	12.05	13.50	1.396	77.57	1.074	0.1	0.061	0.091	
23	Bluetooth	1Mbps	Left Cheek	0mm	Ant 6	Full Power	39	2441	1	12.05	13.50	1.396	77.57	1.074	-0.05	0.176	0.264	
	Bluetooth	1Mbps	Left Tilted	0mm	Ant 6	Full Power	39	2441	1	12.05	13.50	1.396	77.57	1.074	0.1	0.130	0.195	
5000MHz																		
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 6	standalone	58	5290	1	13.45	15.00	1.429	94.16	1.062	-0.13	0.353	0.536	
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 6	standalone	58	5290	1	13.45	15.00	1.429	94.16	1.062	0.06	0.430	0.653	
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 6	standalone	58	5290	1	13.45	15.00	1.429	94.16	1.062	-0.03	0.593	0.900	
24	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 6	standalone	58	5290	1	13.45	15.00	1.429	94.16	1.062	-0.02	0.788	1.196	
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 6	standalone	58	5290	2	13.45	15.00	1.429	94.16	1.062	0.01	0.639	0.970	
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 6	standalone	58	5290	3	13.45	15.00	1.429	94.16	1.062	0.08	0.608	0.923	
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 6	Simultaneous	58	5290	1	9.78	11.00	1.324	94.16	1.062	0.06	0.154	0.217	
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 6	Simultaneous	58	5290	1	9.78	11.00	1.324	94.16	1.062	0.04	0.205	0.288	
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 6	Simultaneous	58	5290	1	9.78	11.00	1.324	94.16	1.062	0.04	0.213	0.300	
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 6	Simultaneous	58	5290	1	9.78	11.00	1.324	94.16	1.062	-0.13	0.258	0.363	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 6	standalone	122	5610	1	12.51	14.00	1.409	94.16	1.062	0.05	0.271	0.406	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 6	standalone	122	5610	1	12.51	14.00	1.409	94.16	1.062	-0.11	0.283	0.424	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 6	standalone	122	5610	1	12.51	14.00	1.409	94.16	1.062	-0.12	0.488	0.730	
25	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 6	standalone	122	5610	1	12.51	14.00	1.409	94.16	1.062	-0.16	0.653	0.977	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 6	standalone	138	5690	1	12.35	14.00	1.462	94.16	1.062	-0.02	0.468	0.727	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 6	Simultaneous	122	5610	1	9.56	11.00	1.393	94.16	1.062	-0.05	0.083	0.123	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 6	Simultaneous	122	5610	1	9.56	11.00	1.393	94.16	1.062	0.09	0.116	0.172	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 6	Simultaneous	122	5610	1	9.56	11.00	1.393	94.16	1.062	-0.03	0.195	0.288	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 6	Simultaneous	122	5610	1	9.56	11.00	1.393	94.16	1.062	0.14	0.271	0.400	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 6	standalone	155	5775	1	14.55	16.00	1.396	94.16	1.062	0.16	0.523	0.776	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 6	standalone	155	5775	1	14.55	16.00	1.396	94.16	1.062	0.05	0.364	0.540	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 6	standalone	155	5775	1	14.55	16.00	1.396	94.16	1.062	0.05	0.509	0.755	
26	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 6	standalone	155	5775	1	14.55	16.00	1.396	94.16	1.062	-0.01	0.736	1.091	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 6	Simultaneous	155	5775	1	10.45	12.00	1.429	94.16	1.062	0.11	0.199	0.302	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 6	Simultaneous	155	5775	1	10.45	12.00	1.429	94.16	1.062	0.13	0.167	0.253	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 6	Simultaneous	155	5775	1	10.45	12.00	1.429	94.16	1.062	0.06	0.108	0.164	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 6	Simultaneous	155	5775	1	10.45	12.00	1.429	94.16	1.062	-0.08	0.240	0.364	



15.2 Hotspot SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	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	-	Front	5mm	Ant 0	DSI7	23095	707.5	1	22.91	24.00	1.285	-	-	0.01	0.211	0.271
	LTE Band 12	10M	QPSK	25	0	-	Front	5mm	Ant 0	DSI7	23095	707.5	1	22.01	23.00	1.256	-	-	-0.01	0.168	0.211
27	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 0	DSI7	23095	707.5	1	22.91	24.00	1.285	-	-	-0.04	0.483	0.621
	LTE Band 12	10M	QPSK	25	0	-	Back	5mm	Ant 0	DSI7	23095	707.5	1	22.01	23.00	1.256	-	-	-0.06	0.410	0.515
	LTE Band 12	10M	QPSK	1	0	-	Left Side	5mm	Ant 0	DSI7	23095	707.5	1	22.91	24.00	1.285	-	-	-0.04	0.181	0.233
	LTE Band 12	10M	QPSK	25	0	-	Left Side	5mm	Ant 0	DSI7	23095	707.5	1	22.01	23.00	1.256	-	-	-0.09	0.149	0.187
	LTE Band 12	10M	QPSK	1	0	-	Right Side	5mm	Ant 0	DSI7	23095	707.5	1	22.91	24.00	1.285	-	-	-0.17	0.337	0.433
	LTE Band 12	10M	QPSK	25	0	-	Right Side	5mm	Ant 0	DSI7	23095	707.5	1	22.01	23.00	1.256	-	-	-0.1	0.283	0.355
	LTE Band 12	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI7	23095	707.5	1	22.91	24.00	1.285	-	-	-0.04	0.422	0.542
	LTE Band 12	10M	QPSK	25	0	-	Bottom Side	5mm	Ant 0	DSI7	23095	707.5	1	22.01	23.00	1.256	-	-	-0.05	0.319	0.401
	LTE Band 13	10M	QPSK	1	0	-	Front	5mm	Ant 0	DSI7	23230	782	1	23.01	24.00	1.256	-	-	0	0.180	0.226
	LTE Band 13	10M	QPSK	25	0	-	Front	5mm	Ant 0	DSI7	23230	782	1	22.39	23.00	1.151	-	-	-0.13	0.269	0.310
	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant 0	DSI7	23230	782	1	23.01	24.00	1.256	-	-	-0.01	0.371	0.466
28	LTE Band 13	10M	QPSK	25	0	-	Back	5mm	Ant 0	DSI7	23230	782	1	22.39	23.00	1.151	-	-	-0.05	0.602	0.693
	LTE Band 13	10M	QPSK	50	0	-	Back	5mm	Ant 0	DSI7	23230	782	1	22.01	23.00	1.256	-	-	-0.09	0.514	0.646
	LTE Band 13	10M	QPSK	1	0	-	Left Side	5mm	Ant 0	DSI7	23230	782	1	23.01	24.00	1.256	-	-	0.05	0.130	0.163
	LTE Band 13	10M	QPSK	25	0	-	Left Side	5mm	Ant 0	DSI7	23230	782	1	22.39	23.00	1.151	-	-	0.02	0.186	0.214
	LTE Band 13	10M	QPSK	1	0	-	Right Side	5mm	Ant 0	DSI7	23230	782	1	23.01	24.00	1.256	-	-	-0.13	0.239	0.300
	LTE Band 13	10M	QPSK	25	0	-	Right Side	5mm	Ant 0	DSI7	23230	782	1	22.39	23.00	1.151	-	-	0.17	0.365	0.420
	LTE Band 13	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI7	23230	782	1	23.01	24.00	1.256	-	-	-0.04	0.421	0.529
	LTE Band 13	10M	QPSK	25	0	-	Bottom Side	5mm	Ant 0	DSI7	23230	782	1	22.39	23.00	1.151	-	-	-0.15	0.577	0.664
	LTE Band 13	10M	QPSK	25	0	-	Back	5mm	Ant 0	DSI7	23230	782	2	22.39	23.00	1.151	-	-	0.06	0.523	0.602
	LTE Band 13	10M	QPSK	25	0	-	Back	5mm	Ant 0	DSI7	23230	782	3	22.39	23.00	1.151	-	-	0.02	0.569	0.655
835MHz																					
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	5mm	Ant 0	DSI7	189	836.4	1	24.56	26.00	1.393	-	-	-0.13	0.488	0.680
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	DSI7	189	836.4	1	24.56	26.00	1.393	-	-	0.11	0.938	1.307
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	DSI7	128	824.2	1	24.32	26.00	1.472	-	-	-0.17	0.755	1.112
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	DSI7	251	848.8	1	24.55	26.00	1.396	-	-	0.01	0.847	1.183
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Side	5mm	Ant 0	DSI7	189	836.4	1	24.56	26.00	1.393	-	-	0.1	0.159	0.222
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Side	5mm	Ant 0	DSI7	189	836.4	1	24.56	26.00	1.393	-	-	0.11	0.356	0.496
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	5mm	Ant 0	DSI7	189	836.4	1	24.56	26.00	1.393	-	-	-0.07	0.931	1.297
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	5mm	Ant 0	DSI7	128	824.2	1	24.32	26.00	1.472	-	-	0.18	0.769	1.132
29	GSM850	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	5mm	Ant 0	DSI7	251	848.8	1	24.55	26.00	1.396	-	-	0.02	1.030	1.438
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	5mm	Ant 0	DSI7	251	848.8	2	24.55	26.00	1.396	-	-	-0.19	0.896	1.251
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	5mm	Ant 0	DSI7	251	848.8	3	24.55	26.00	1.396	-	-	0.01	0.924	1.290
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 0	DSI7	4182	836.4	1	22.88	24.00	1.294	-	-	0.08	0.329	0.426
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	DSI7	4182	836.4	1	22.88	24.00	1.294	-	-	-0.07	0.862	1.116
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	DSI7	4132	826.4	1	22.54	24.00	1.400	-	-	0.05	0.889	1.244
30	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	DSI7	4233	846.6	1	22.69	24.00	1.352	-	-	-0.11	0.930	1.257
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 0	DSI7	4182	836.4	1	22.88	24.00	1.294	-	-	0.11	0.134	0.173
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Side	5mm	Ant 0	DSI7	4182	836.4	1	22.88	24.00	1.294	-	-	0.07	0.250	0.324
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI7	4182	836.4	1	22.88	24.00	1.294	-	-	-0.04	0.535	0.692
	LTE Band 5	10M	QPSK	1	0	-	Front	5mm	Ant 0	DSI7	20525	836.5	1	22.83	24.00	1.309	-	-	0.11	0.510	0.668
	LTE Band 5	10M	QPSK	25	0	-	Front	5mm	Ant 0	DSI7	20525	836.5	1	21.91	23.00	1.285	-	-	-0.02	0.385	0.495
31	LTE Band 5	10M	QPSK	1	0	-	Back	5mm	Ant 0	DSI7	20525	836.5	1	22.83	24.00	1.309	-	-	-0.09	1.080	1.414
	LTE Band 5	10M	QPSK	25	0	-	Back	5mm	Ant 0	DSI7	20525	836.5	1	21.91	23.00	1.285	-	-	0.1	0.910	1.170
	LTE Band 5	10M	QPSK	50	0	-	Back	5mm	Ant 0	DSI7	20525	836.5	1	21.76	23.00	1.330	-	-	0.04	0.864	1.150
	LTE Band 5	10M	QPSK	1	0	-	Left Side	5mm	Ant 0	DSI7	20525	836.5	1	22.83	24.00	1.309	-	-	0.13	0.116	0.152
	LTE Band 5	10M	QPSK	25	0	-	Left Side	5mm	Ant 0	DSI7	20525	836.5	1	21.91	23.00	1.285	-	-	-0.18	0.069	0.089
	LTE Band 5	10M	QPSK	1	0	-	Right Side	5mm	Ant 0	DSI7	20525	836.5	1	22.83	24.00	1.309	-	-	-0.11	0.326	0.427



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	LTE Band 5	10M	QPSK	25	0	-	Right Side	5mm	Ant 0	DSI7	20525	836.5	1	21.91	23.00	1.285	-	-	-0.16	0.252	0.324
	LTE Band 5	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI7	20525	836.5	1	22.83	24.00	1.309	-	-	-0.14	0.930	1.218
	LTE Band 5	10M	QPSK	25	0	-	Bottom Side	5mm	Ant 0	DSI7	20525	836.5	1	21.91	23.00	1.285	-	-	-0.19	0.733	0.942
	LTE Band 5	10M	QPSK	50	0	-	Bottom Side	5mm	Ant 0	DSI7	20525	836.5	1	21.76	23.00	1.330	-	-	0.01	0.885	1.177
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Front	5mm	Ant 4	DSI7	20525	836.5	1	20.63	22.00	1.371	-	-	-0.17	0.127	0.174
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Front	5mm	Ant 4	DSI7	20525	836.5	1	19.75	21.00	1.334	-	-	0.04	0.107	0.143
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Back	5mm	Ant 4	DSI7	20525	836.5	1	20.63	22.00	1.371	-	-	-0.02	0.346	0.474
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Back	5mm	Ant 4	DSI7	20525	836.5	2	20.63	22.00	1.371	-	-	-0.16	0.235	0.322
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Back	5mm	Ant 4	DSI7	20525	836.5	3	20.63	22.00	1.371	-	-	-0.15	0.311	0.426
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Back	5mm	Ant 4	DSI7	20525	836.5	1	19.75	21.00	1.334	-	-	-0.01	0.273	0.364
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Left Side	5mm	Ant 4	DSI7	20525	836.5	1	20.63	22.00	1.371	-	-	-0.08	0.060	0.082
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Left Side	5mm	Ant 4	DSI7	20525	836.5	1	19.75	21.00	1.334	-	-	0.05	0.046	0.061
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Right Side	5mm	Ant 4	DSI7	20525	836.5	1	20.63	22.00	1.371	-	-	0.06	0.000	0.000
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Right Side	5mm	Ant 4	DSI7	20525	836.5	1	19.75	21.00	1.334	-	-	-0.09	0.000	0.000
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Top Side	5mm	Ant 4	DSI7	20525	836.5	1	20.63	22.00	1.371	-	-	-0.08	0.216	0.296
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Top Side	5mm	Ant 4	DSI7	20525	836.5	1	19.75	21.00	1.334	-	-	0.13	0.199	0.265
	LTE Band 26	15M	QPSK	1	0	-	Front	5mm	Ant 0	DSI7	26865	831.5	1	22.94	24.00	1.276	-	-	0	0.398	0.508
	LTE Band 26	15M	QPSK	36	0	-	Front	5mm	Ant 0	DSI7	26865	831.5	1	22.02	23.00	1.253	-	-	-0.11	0.341	0.427
32	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 0	DSI7	26865	831.5	1	22.94	24.00	1.276	-	-	-0.03	0.734	0.937
	LTE Band 26	15M	QPSK	36	0	-	Back	5mm	Ant 0	DSI7	26865	831.5	1	22.02	23.00	1.253	-	-	-0.06	0.659	0.826
	LTE Band 26	15M	QPSK	75	0	-	Back	5mm	Ant 0	DSI7	26865	831.5	1	21.89	23.00	1.291	-	-	-0.15	0.700	0.904
	LTE Band 26	15M	QPSK	1	0	-	Left Side	5mm	Ant 0	DSI7	26865	831.5	1	22.94	24.00	1.276	-	-	0.03	0.145	0.185
	LTE Band 26	15M	QPSK	36	0	-	Left Side	5mm	Ant 0	DSI7	26865	831.5	1	22.02	23.00	1.253	-	-	-0.13	0.122	0.153
	LTE Band 26	15M	QPSK	1	0	-	Right Side	5mm	Ant 0	DSI7	26865	831.5	1	22.94	24.00	1.276	-	-	0.16	0.301	0.384
	LTE Band 26	15M	QPSK	36	0	-	Right Side	5mm	Ant 0	DSI7	26865	831.5	1	22.02	23.00	1.253	-	-	-0.15	0.246	0.308
	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI7	26865	831.5	1	22.94	24.00	1.276	-	-	0.14	0.665	0.849
	LTE Band 26	15M	QPSK	36	0	-	Bottom Side	5mm	Ant 0	DSI7	26865	831.5	1	22.02	23.00	1.253	-	-	0.1	0.563	0.706
	LTE Band 26	15M	QPSK	75	0	-	Bottom Side	5mm	Ant 0	DSI7	26865	831.5	1	21.89	23.00	1.291	-	-	-0.09	0.612	0.790
	FR1 n26	20M	QPSK	1	1	DFT-SCS-15KHz	Front	5mm	Ant 0	DSI7	166300	831.5	1	23.28	24.00	1.180	-	-	0.12	0.444	0.524
	FR1 n26	20M	QPSK	50	28	DFT-SCS-15KHz	Front	5mm	Ant 0	DSI7	166300	831.5	1	23.21	24.00	1.199	-	-	0.03	0.433	0.519
33	FR1 n26	20M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 0	DSI7	166300	831.5	1	23.28	24.00	1.180	-	-	0.09	0.924	1.091
	FR1 n26	20M	QPSK	50	28	DFT-SCS-15KHz	Back	5mm	Ant 0	DSI7	166300	831.5	1	23.21	24.00	1.199	-	-	0.01	0.907	1.088
	FR1 n26	20M	QPSK	100	0	DFT-SCS-15KHz	Back	5mm	Ant 0	DSI7	166300	831.5	1	22.27	23.00	1.183	-	-	0.07	0.909	1.075
	FR1 n26	20M	QPSK	1	1	DFT-SCS-15KHz	Left Side	5mm	Ant 0	DSI7	166300	831.5	1	23.28	24.00	1.180	-	-	0.16	0.000	0.000
	FR1 n26	20M	QPSK	50	28	DFT-SCS-15KHz	Left Side	5mm	Ant 0	DSI7	166300	831.5	1	23.21	24.00	1.199	-	-	-0.1	0.000	0.000
	FR1 n26	20M	QPSK	1	1	DFT-SCS-15KHz	Right Side	5mm	Ant 0	DSI7	166300	831.5	1	23.28	24.00	1.180	-	-	0.07	0.192	0.227
	FR1 n26	20M	QPSK	50	28	DFT-SCS-15KHz	Right Side	5mm	Ant 0	DSI7	166300	831.5	1	23.21	24.00	1.199	-	-	0.18	0.153	0.184
	FR1 n26	20M	QPSK	1	1	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	DSI7	166300	831.5	1	23.28	24.00	1.180	-	-	-0.1	0.573	0.676
	FR1 n26	20M	QPSK	50	28	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	DSI7	166300	831.5	1	23.21	24.00	1.199	-	-	0.01	0.562	0.674
1750MHz																					
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 0	DSI7	1413	1732.6	1	15.29	16.50	1.321	-	-	-0.13	0.299	0.395
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	DSI7	1413	1732.6	1	15.29	16.50	1.321	-	-	-0.15	0.781	1.032
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	DSI7	1312	1712.4	1	15.14	16.50	1.368	-	-	-0.09	0.754	1.031
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	DSI7	1513	1752.6	1	15.19	16.50	1.352	-	-	0.05	0.612	0.827
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 0	DSI7	1413	1732.6	1	15.29	16.50	1.321	-	-	0.13	0.029	0.038
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Side	5mm	Ant 0	DSI7	1413	1732.6	1	15.29	16.50	1.321	-	-	0	0.047	0.062
34	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI7	1413	1732.6	1	15.29	16.50	1.321	-	-	0.01	0.980	1.295
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI7	1312	1712.4	1	15.14	16.50	1.368	-	-	0.15	0.918	1.256
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI7	1513	1752.6	1	15.19	16.50	1.352	-	-	-0.05	0.818	1.106
	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 0	DSI7	132322	1745	1	14.83	15.50	1.167	-	-	0.14	0.342	0.399
	LTE Band 66	20M	QPSK	50	0	-	Front	5mm	Ant 0	DSI7	132322	1745	1	14.71	15.50	1.199	-	-	0.01	0.269	0.323
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 0	DSI7	132322	1745	1	14.83	15.50	1.167	-	-	-0.09	0.947	1.105
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 0	DSI7	132072	1720	1	14.38	15.50	1.294	-	-	-0.12	0.987	1.277
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 0	DSI7	132572	1770	1	14.27	15.50	1.327	-	-	-0.06	0.885	1.175
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	Ant 0	DSI7	132322	1745	1	14.71	15.50	1.199	-	-	-0.19	0.683	0.819
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	Ant 0	DSI7	132072	1720	1	14.40	15.50	1.288	-	-	0.09	0.716	0.922



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	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	Ant 0	DSI7	132572	1770	1	14.36	15.50	1.300	-	-	0.13	0.618	0.804
	LTE Band 66	20M	QPSK	100	0	-	Back	5mm	Ant 0	DSI7	132322	1745	1	14.62	15.50	1.225	-	-	-0.08	0.662	0.811
	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 0	DSI7	132322	1745	1	14.83	15.50	1.167	-	-	0.08	0.033	0.039
	LTE Band 66	20M	QPSK	50	0	-	Left Side	5mm	Ant 0	DSI7	132322	1745	1	14.71	15.50	1.199	-	-	-0.04	0.025	0.030
	LTE Band 66	20M	QPSK	1	0	-	Right Side	5mm	Ant 0	DSI7	132322	1745	1	14.83	15.50	1.167	-	-	0.12	0.053	0.062
	LTE Band 66	20M	QPSK	50	0	-	Right Side	5mm	Ant 0	DSI7	132322	1745	1	14.71	15.50	1.199	-	-	0.09	0.045	0.054
35	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI7	132322	1745	1	14.83	15.50	1.167	-	-	0.01	1.100	1.283
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI7	132072	1720	1	14.38	15.50	1.294	-	-	-0.16	0.945	1.223
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI7	132572	1770	1	14.27	15.50	1.327	-	-	-0.03	0.956	1.269
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 0	DSI7	132322	1745	1	14.71	15.50	1.199	-	-	-0.06	0.809	0.970
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 0	DSI7	132072	1720	1	14.40	15.50	1.288	-	-	0.08	0.833	1.073
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 0	DSI7	132572	1770	1	14.36	15.50	1.300	-	-	-0.07	0.770	1.001
	LTE Band 66	20M	QPSK	100	0	-	Bottom Side	5mm	Ant 0	DSI7	132322	1745	1	14.62	15.50	1.225	-	-	0.11	0.813	0.996
	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 4	DSI7	132322	1745	1	14.97	16.00	1.268	-	-	0.03	0.200	0.254
	LTE Band 66	20M	QPSK	50	0	-	Front	5mm	Ant 4	DSI7	132322	1745	1	14.90	16.00	1.288	-	-	0.15	0.158	0.204
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 4	DSI7	132322	1745	1	14.97	16.00	1.268	-	-	-0.1	0.383	0.486
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	Ant 4	DSI7	132322	1745	1	14.90	16.00	1.288	-	-	-0.02	0.306	0.394
	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 4	DSI7	132322	1745	1	14.97	16.00	1.268	-	-	-0.04	0.037	0.047
	LTE Band 66	20M	QPSK	50	0	-	Left Side	5mm	Ant 4	DSI7	132322	1745	1	14.90	16.00	1.288	-	-	-0.12	0.029	0.037
	LTE Band 66	20M	QPSK	1	0	-	Right Side	5mm	Ant 4	DSI7	132322	1745	1	14.97	16.00	1.268	-	-	-0.07	0.018	0.023
	LTE Band 66	20M	QPSK	50	0	-	Right Side	5mm	Ant 4	DSI7	132322	1745	1	14.90	16.00	1.288	-	-	-0.03	0.014	0.018
	LTE Band 66	20M	QPSK	1	0	-	Top Side	5mm	Ant 4	DSI7	132322	1745	1	14.97	16.00	1.268	-	-	0.06	0.569	0.721
	LTE Band 66	20M	QPSK	50	0	-	Top Side	5mm	Ant 4	DSI7	132322	1745	1	14.90	16.00	1.288	-	-	-0.11	0.354	0.456
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Front	5mm	Ant 0	DSI7	349000	1745	1	14.30	15.50	1.318	-	-	-0.05	0.292	0.385
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Front	5mm	Ant 0	DSI7	349000	1745	1	14.16	15.50	1.361	-	-	-0.12	0.289	0.393
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 0	DSI7	349000	1745	1	14.30	15.50	1.318	-	-	0.14	0.779	1.027
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 0	DSI7	349000	1745	1	14.16	15.50	1.361	-	-	0.03	0.829	1.129
	FR1 n66	40M	QPSK	216	0	DFT-SCS-15KHz	Back	5mm	Ant 0	DSI7	349000	1745	1	14.21	15.50	1.346	-	-	0.09	0.701	0.943
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Left Side	5mm	Ant 0	DSI7	349000	1745	1	14.30	15.50	1.318	-	-	-0.13	0.028	0.037
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Left Side	5mm	Ant 0	DSI7	349000	1745	1	14.16	15.50	1.361	-	-	-0.09	0.029	0.039
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Right Side	5mm	Ant 0	DSI7	349000	1745	1	14.30	15.50	1.318	-	-	-0.18	0.049	0.065
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Right Side	5mm	Ant 0	DSI7	349000	1745	1	14.16	15.50	1.361	-	-	0.12	0.048	0.065
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	DSI7	349000	1745	1	14.30	15.50	1.318	-	-	0.11	0.910	1.200
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	DSI7	346000	1730	1	13.99	15.50	1.416	-	-	0.11	0.909	1.287
36	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	DSI7	352000	1760	1	13.97	15.50	1.422	-	-	0.08	0.976	1.388
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	DSI7	349000	1745	1	14.16	15.50	1.361	-	-	-0.02	0.951	1.295
	FR1 n66	40M	QPSK	216	0	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	DSI7	349000	1745	1	14.21	15.50	1.346	-	-	0.02	0.873	1.175
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Front	5mm	Ant 4	DSI7	349000	1745	1	15.24	16.00	1.191	-	-	0.02	0.296	0.353
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Front	5mm	Ant 4	DSI7	349000	1745	1	15.24	16.00	1.191	-	-	-0.11	0.185	0.220
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 4	DSI7	349000	1745	1	15.24	16.00	1.191	-	-	0.16	0.410	0.488
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 4	DSI7	349000	1745	1	15.24	16.00	1.191	-	-	0.19	0.281	0.335
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Left Side	5mm	Ant 4	DSI7	349000	1745	1	15.24	16.00	1.191	-	-	-0.03	0.054	0.064
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Left Side	5mm	Ant 4	DSI7	349000	1745	1	15.24	16.00	1.191	-	-	0.12	0.035	0.042
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Right Side	5mm	Ant 4	DSI7	349000	1745	1	15.24	16.00	1.191	-	-	0.19	0.021	0.025
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Right Side	5mm	Ant 4	DSI7	349000	1745	1	15.24	16.00	1.191	-	-	-0.09	0.018	0.021
	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Top Side	5mm	Ant 4	DSI7	349000	1745	1	15.24	16.00	1.191	-	-	0.04	0.611	0.728
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Top Side	5mm	Ant 4	DSI7	349000	1745	1	15.24	16.00	1.191	-	-	0.07	0.469	0.559
	FR1 n66_Other PA	40M	QPSK	1	1	DFT-SCS-15KHz	Top Side	5mm	Ant 4	DSI7	349000	1745	1	16.53	18.00	1.403	-	-	-0.06	0.503	0.706
1900MHz																					
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Front	5mm	Ant 0	DSI7	661	1880	1	18.39	20.00	1.449	-	-	-0.08	0.292	0.423
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	DSI7	661	1880	1	18.39	20.00	1.449	-	-	-0.05	0.566	0.820
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	DSI7	512	1850.2	1	18.21	20.00	1.510	-	-	-0.04	0.624	0.942
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	DSI7	810	1909.8	1	18.24	20.00	1.500	-	-	0.13	0.606	0.909
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Side	5mm	Ant 0	DSI7	661	1880	1	18.39	20.00	1.449	-	-	-0.03	0.039	0.057
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Side	5mm	Ant 0	DSI7	661	1880	1	18.39	20.00	1.449	-	-	0.09	0.051	0.074
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	5mm	Ant 0	DSI7	661	1880	1	18.39	20.00	1.449	-	-	0.06	0.851	1.233



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	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	5mm	Ant 0	DSI7	512	1850.2	1	18.21	20.00	1.510	-	-	-0.04	0.916	1.383
37	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	5mm	Ant 0	DSI7	810	1909.8	1	18.24	20.00	1.500	-	-	0.02	0.951	1.426
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 0	DSI7	9400	1880	1	15.74	17.00	1.337	-	-	0.06	0.273	0.365
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	DSI7	9400	1880	1	15.74	17.00	1.337	-	-	-0.05	0.550	0.735
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 0	DSI7	9400	1880	1	15.74	17.00	1.337	-	-	0.18	0.043	0.057
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Side	5mm	Ant 0	DSI7	9400	1880	1	15.74	17.00	1.337	-	-	0.1	0.040	0.053
38	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI7	9400	1880	1	15.74	17.00	1.337	-	-	0.05	0.998	1.334
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI7	9262	1852.4	1	15.60	17.00	1.380	-	-	0.04	0.899	1.241
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI7	9538	1907.6	1	15.69	17.00	1.352	-	-	-0.09	0.629	0.850
	LTE Band 25	20M	QPSK	1	0	-	Front	5mm	Ant 0	DSI7	26340	1880	1	16.31	17.00	1.172	-	-	0	0.300	0.352
	LTE Band 25	20M	QPSK	50	0	-	Front	5mm	Ant 0	DSI7	26340	1880	1	16.29	17.00	1.178	-	-	0.18	0.253	0.298
	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 0	DSI7	26340	1880	1	16.31	17.00	1.172	-	-	-0.16	0.672	0.788
	LTE Band 25	20M	QPSK	50	0	-	Back	5mm	Ant 0	DSI7	26340	1880	1	16.29	17.00	1.178	-	-	-0.18	0.515	0.606
	LTE Band 25	20M	QPSK	1	0	-	Left Side	5mm	Ant 0	DSI7	26340	1880	1	16.31	17.00	1.172	-	-	0.02	0.036	0.042
	LTE Band 25	20M	QPSK	50	0	-	Left Side	5mm	Ant 0	DSI7	26340	1880	1	16.29	17.00	1.178	-	-	0.11	0.029	0.034
	LTE Band 25	20M	QPSK	1	0	-	Right Side	5mm	Ant 0	DSI7	26340	1880	1	16.31	17.00	1.172	-	-	-0.17	0.042	0.049
	LTE Band 25	20M	QPSK	50	0	-	Right Side	5mm	Ant 0	DSI7	26340	1880	1	16.29	17.00	1.178	-	-	-0.04	0.036	0.042
	LTE Band 25	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI7	26340	1880	1	16.31	17.00	1.172	-	-	-0.17	1.070	1.254
39	LTE Band 25	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI7	26140	1860	1	16.14	17.00	1.219	-	-	0.02	1.120	1.365
	LTE Band 25	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI7	26590	1905	1	16.15	17.00	1.216	-	-	0.04	0.993	1.208
	LTE Band 25	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 0	DSI7	26340	1880	1	16.29	17.00	1.178	-	-	0.01	0.820	0.966
	LTE Band 25	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 0	DSI7	26140	1860	1	16.22	17.00	1.197	-	-	0.04	0.843	1.009
	LTE Band 25	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 0	DSI7	26590	1905	1	16.11	17.00	1.227	-	-	-0.06	0.755	0.927
	LTE Band 25	20M	QPSK	100	0	-	Bottom Side	5mm	Ant 0	DSI7	26340	1880	1	16.28	17.00	1.180	-	-	0.16	0.830	0.980
	LTE Band 25	20M	QPSK	1	0	-	Front	5mm	Ant 4	DSI7	26340	1880	1	15.01	16.00	1.256	-	-	0.06	0.162	0.203
	LTE Band 25	20M	QPSK	50	0	-	Front	5mm	Ant 4	DSI7	26340	1880	1	14.77	16.00	1.327	-	-	0.17	0.126	0.167
	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 4	DSI7	26340	1880	1	15.01	16.00	1.256	-	-	0.12	0.346	0.435
	LTE Band 25	20M	QPSK	50	0	-	Back	5mm	Ant 4	DSI7	26340	1880	1	14.77	16.00	1.327	-	-	0.02	0.266	0.353
	LTE Band 25	20M	QPSK	1	0	-	Left Side	5mm	Ant 4	DSI7	26340	1880	1	15.01	16.00	1.256	-	-	0.09	0.031	0.039
	LTE Band 25	20M	QPSK	50	0	-	Left Side	5mm	Ant 4	DSI7	26340	1880	1	14.77	16.00	1.327	-	-	-0.02	0.024	0.032
	LTE Band 25	20M	QPSK	1	0	-	Right Side	5mm	Ant 4	DSI7	26340	1880	1	15.01	16.00	1.256	-	-	-0.07	0.015	0.019
	LTE Band 25	20M	QPSK	50	0	-	Right Side	5mm	Ant 4	DSI7	26340	1880	1	14.77	16.00	1.327	-	-	-0.16	0.012	0.016
	LTE Band 25	20M	QPSK	1	0	-	Top Side	5mm	Ant 4	DSI7	26340	1880	1	15.01	16.00	1.256	-	-	-0.09	0.478	0.600
	LTE Band 25	20M	QPSK	50	0	-	Top Side	5mm	Ant 4	DSI7	26340	1880	1	14.77	16.00	1.327	-	-	0.03	0.360	0.478
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Front	5mm	Ant 0	DSI7	376000	1880	1	16.13	16.50	1.089	-	-	-0.1	0.239	0.260
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Front	5mm	Ant 0	DSI7	376000	1880	1	16.08	16.50	1.102	-	-	-0.09	0.252	0.278
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 0	DSI7	376000	1880	1	16.13	16.50	1.089	-	-	0.1	0.566	0.616
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Back	5mm	Ant 0	DSI7	376000	1880	1	16.08	16.50	1.102	-	-	0.08	0.568	0.626
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Left Side	5mm	Ant 0	DSI7	376000	1880	1	16.13	16.50	1.089	-	-	0.02	0.031	0.034
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Left Side	5mm	Ant 0	DSI7	376000	1880	1	16.08	16.50	1.102	-	-	-0.05	0.034	0.037
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Right Side	5mm	Ant 0	DSI7	376000	1880	1	16.13	16.50	1.089	-	-	-0.11	0.046	0.050
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Right Side	5mm	Ant 0	DSI7	376000	1880	1	16.08	16.50	1.102	-	-	0.03	0.043	0.047
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	DSI7	376000	1880	1	16.13	16.50	1.089	-	-	0.05	0.913	0.994
40	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	DSI7	372000	1860	1	15.46	16.50	1.271	-	-	-0.11	0.994	1.263
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	DSI7	380000	1900	1	15.85	16.50	1.161	-	-	-0.17	0.775	0.900
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	DSI7	376000	1880	1	16.08	16.50	1.102	-	-	0.05	0.913	1.006
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	DSI7	372000	1860	1	15.38	16.50	1.294	-	-	0.13	0.888	1.149
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	DSI7	380000	1900	1	15.71	16.50	1.199	-	-	0.05	0.778	0.933
	FR1 n2	20M	QPSK	100	0	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	DSI7	376000	1880	1	16.00	16.50	1.122	-	-	-0.03	0.852	0.956
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Front	5mm	Ant 4	DSI7	376000	1880	1	12.35	13.50	1.303	-	-	-0.16	0.156	0.203
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Front	5mm	Ant 4	DSI7	376000	1880	1	12.21	13.50	1.346	-	-	0.04	0.105	0.141
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 4	DSI7	376000	1880	1	12.35	13.50	1.303	-	-	0.11	0.326	0.425
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Back	5mm	Ant 4	DSI7	376000	1880	1	12.21	13.50	1.346	-	-	-0.16	0.160	0.215
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Left Side	5mm	Ant 4	DSI7	376000	1880	1	12.35	13.50	1.303	-	-	-0.18	0.042	0.055
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Left Side	5mm	Ant 4	DSI7	376000	1880	1	12.21	13.50	1.346	-	-	-0.07	0.029	0.039
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Right Side	5mm	Ant 4	DSI7	376000	1880	1	12.35	13.50	1.303	-	-	-0.14	0.018	0.023



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	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Right Side	5mm	Ant 4	DSI7	376000	1880	1	12.21	13.50	1.346	-	-	-0.07	0.015	0.020
	FR1 n2	20M	QPSK	1	1	DFT-SCS-15KHz	Top Side	5mm	Ant 4	DSI7	376000	1880	1	12.35	13.50	1.303	-	-	0.1	0.581	0.757
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Top Side	5mm	Ant 4	DSI7	376000	1880	1	12.21	13.50	1.346	-	-	0.12	0.343	0.462
	FR1 n2_Other PA	20M	QPSK	1	1	DFT-SCS-15KHz	Top Side	5mm	Ant 4	DSI7	376000	1880	1	14.39	15.50	1.291	-	-	0.15	0.455	0.588
2600MHz																					
	LTE Band 7	20M	QPSK	1	0	-	Front	5mm	Ant 1	DSI7	21100	2535	1	17.83	18.50	1.167	-	-	-0.18	0.548	0.639
	LTE Band 7	20M	QPSK	50	0	-	Front	5mm	Ant 1	DSI7	21100	2535	1	17.73	18.50	1.194	-	-	0.06	0.448	0.535
41	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	21100	2535	1	17.83	18.50	1.167	-	-	0.08	1.080	1.260
	LTE Band 7C	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	21100+21298	2535+2554.8	1	17.61	18.50	1.227	-	-	0.01	0.956	1.173
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	20850	2510	1	17.63	18.50	1.222	-	-	0.04	0.933	1.140
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	21350	2560	1	17.33	18.50	1.309	-	-	0.06	0.951	1.245
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	Ant 1	DSI7	21100	2535	1	17.73	18.50	1.194	-	-	0.07	0.751	0.897
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	Ant 1	DSI7	20850	2510	1	17.71	18.50	1.199	-	-	-0.02	0.711	0.853
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	Ant 1	DSI7	21350	2560	1	17.48	18.50	1.265	-	-	-0.03	0.779	0.985
	LTE Band 7	20M	QPSK	100	0	-	Back	5mm	Ant 1	DSI7	21100	2535	1	17.75	18.50	1.189	-	-	-0.06	0.723	0.859
	LTE Band 7	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI7	21100	2535	1	17.83	18.50	1.167	-	-	0.08	0.579	0.676
	LTE Band 7	20M	QPSK	50	0	-	Left Side	5mm	Ant 1	DSI7	21100	2535	1	17.73	18.50	1.194	-	-	0.15	0.466	0.556
	LTE Band 7	20M	QPSK	1	0	-	Right Side	5mm	Ant 1	DSI7	21100	2535	1	17.83	18.50	1.167	-	-	0.1	0.051	0.060
	LTE Band 7	20M	QPSK	50	0	-	Right Side	5mm	Ant 1	DSI7	21100	2535	1	17.73	18.50	1.194	-	-	0.12	0.044	0.053
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	DSI7	21100	2535	1	17.83	18.50	1.167	-	-	-0.11	0.416	0.485
	LTE Band 7	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 1	DSI7	21100	2535	1	17.73	18.50	1.194	-	-	0.12	0.311	0.371
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Front	5mm	Ant 1	DSI7	38000	2595	1	20.45	22.00	1.429	62.9	1.006	0.08	0.668	0.960
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Front	5mm	Ant 1	DSI7	37850	2580	1	20.29	22.00	1.483	62.9	1.006	0.01	0.603	0.899
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Front	5mm	Ant 1	DSI7	38150	2610	1	20.26	22.00	1.493	62.9	1.006	0.03	0.637	0.957
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Front	5mm	Ant 1	DSI7	38000	2595	1	20.41	22.00	1.442	62.9	1.006	-0.08	0.522	0.757
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Front	5mm	Ant 1	DSI7	37850	2580	1	20.30	22.00	1.479	62.9	1.006	-0.08	0.492	0.732
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Front	5mm	Ant 1	DSI7	38150	2610	1	20.27	22.00	1.489	62.9	1.006	0.1	0.492	0.737
	LTE Band 38_ENDC	20M	QPSK	100	0	-	Front	5mm	Ant 1	DSI7	38000	2595	1	20.35	22.00	1.462	62.9	1.006	-0.18	0.499	0.734
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	38000	2595	1	20.45	22.00	1.429	62.9	1.006	0.1	0.913	1.312
42	LTE Band 38_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	37850	2580	1	20.29	22.00	1.483	62.9	1.006	-0.07	0.956	1.426
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	38150	2610	1	20.26	22.00	1.493	62.9	1.006	0.08	0.929	1.395
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Back	5mm	Ant 1	DSI7	38000	2595	1	20.41	22.00	1.442	62.9	1.006	-0.17	0.945	1.371
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Back	5mm	Ant 1	DSI7	37850	2580	1	20.30	22.00	1.479	62.9	1.006	-0.03	0.836	1.244
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Back	5mm	Ant 1	DSI7	38150	2610	1	20.27	22.00	1.489	62.9	1.006	0.14	0.856	1.283
	LTE Band 38_ENDC	20M	QPSK	100	0	-	Back	5mm	Ant 1	DSI7	38000	2595	1	20.35	22.00	1.462	62.9	1.006	0.11	0.849	1.249
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI7	38000	2595	1	20.45	22.00	1.429	62.9	1.006	-0.05	0.675	0.970
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI7	37850	2580	1	20.29	22.00	1.483	62.9	1.006	0.18	0.657	0.980
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI7	38150	2610	1	20.26	22.00	1.493	62.9	1.006	0.14	0.682	1.024
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Left Side	5mm	Ant 1	DSI7	38000	2595	1	20.41	22.00	1.442	62.9	1.006	-0.17	0.504	0.731
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Left Side	5mm	Ant 1	DSI7	37850	2580	1	20.30	22.00	1.479	62.9	1.006	0.17	0.536	0.798
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Left Side	5mm	Ant 1	DSI7	38150	2610	1	20.27	22.00	1.489	62.9	1.006	-0.05	0.515	0.772
	LTE Band 38_ENDC	20M	QPSK	100	0	-	Left Side	5mm	Ant 1	DSI7	38000	2595	1	20.35	22.00	1.462	62.9	1.006	0.01	0.517	0.760
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Right Side	5mm	Ant 1	DSI7	38000	2595	1	20.45	22.00	1.429	62.9	1.006	0.1	0.090	0.129
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Right Side	5mm	Ant 1	DSI7	38000	2595	1	20.41	22.00	1.442	62.9	1.006	-0.17	0.055	0.080
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	DSI7	38000	2595	1	20.45	22.00	1.429	62.9	1.006	0.04	0.406	0.584
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 1	DSI7	38000	2595	1	20.41	22.00	1.442	62.9	1.006	0.05	0.400	0.580
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	37850	2580	2	20.29	22.00	1.483	62.9	1.006	0	0.895	1.335
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	37850	2580	3	20.29	22.00	1.483	62.9	1.006	-0.04	0.931	1.389
	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant 4	DSI7	40620	2593	1	14.59	15.00	1.099	62.9	1.006	-0.15	0.163	0.180
	LTE Band 41	20M	QPSK	50	0	-	Front	5mm	Ant 4	DSI7	40620	2593	1	14.56	15.00	1.107	62.9	1.006	0.13	0.118	0.131
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 4	DSI7	40620	2593	1	14.59	15.00	1.099	62.9	1.006	0.18	0.579	0.640
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 4	DSI7	39750	2506	1	14.38	15.00	1.153	62.9	1.006	0.14	0.575	0.667
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 4	DSI7	40185	2549.5	1	14.07	15.00	1.239	62.9	1.006	-0.05	0.605	0.754
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 4	DSI7	41055	2636.5	1	14.21	15.00	1.199	62.9	1.006	-0.02	0.511	0.617
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 4	DSI7	41490	2680	1	14.14	15.00	1.219	62.9	1.006	-0.13	0.381	0.467
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant 4	DSI7	40620	2593	1	14.56	15.00	1.107	62.9	1.006	0.05	0.439	0.489



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	LTE Band 41	20M	QPSK	100	0	-	Back	5mm	Ant 4	DSI7	40620	2593	1	14.51	15.00	1.119	62.9	1.006	-0.17	0.406	0.457
	LTE Band 41	20M	QPSK	1	0	-	Left Side	5mm	Ant 4	DSI7	40620	2593	1	14.59	15.00	1.099	62.9	1.006	-0.05	0.148	0.164
	LTE Band 41	20M	QPSK	50	0	-	Left Side	5mm	Ant 4	DSI7	40620	2593	1	14.56	15.00	1.107	62.9	1.006	0.04	0.114	0.127
	LTE Band 41	20M	QPSK	1	0	-	Right Side	5mm	Ant 4	DSI7	40620	2593	1	14.59	15.00	1.099	62.9	1.006	-0.05	0.005	0.006
	LTE Band 41	20M	QPSK	50	0	-	Right Side	5mm	Ant 4	DSI7	40620	2593	1	14.56	15.00	1.107	62.9	1.006	-0.07	0.004	0.004
	LTE Band 41	20M	QPSK	1	0	-	Top Side	5mm	Ant 4	DSI7	40620	2593	1	14.59	15.00	1.099	62.9	1.006	-0.06	0.547	0.605
	LTE Band 41	20M	QPSK	1	0	-	Top Side	5mm	Ant 4	DSI7	39750	2506	1	14.38	15.00	1.153	62.9	1.006	0.04	0.599	0.695
	LTE Band 41	20M	QPSK	1	0	-	Top Side	5mm	Ant 4	DSI7	40185	2549.5	1	14.07	15.00	1.239	62.9	1.006	0.08	0.582	0.725
	LTE Band 41	20M	QPSK	1	0	-	Top Side	5mm	Ant 4	DSI7	41055	2636.5	1	14.21	15.00	1.199	62.9	1.006	-0.09	0.433	0.522
	LTE Band 41	20M	QPSK	1	0	-	Top Side	5mm	Ant 4	DSI7	41490	2680	1	14.14	15.00	1.219	62.9	1.006	0.03	0.267	0.327
	LTE Band 41	20M	QPSK	50	0	-	Top Side	5mm	Ant 4	DSI7	40620	2593	1	14.56	15.00	1.107	62.9	1.006	0.03	0.427	0.475
	LTE Band 41	20M	QPSK	100	0	-	Top Side	5mm	Ant 4	DSI7	40620	2593	1	14.51	15.00	1.119	62.9	1.006	-0.04	0.418	0.471
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	Ant 1	DSI7	40620	2593	1	20.11	21.50	1.377	62.9	1.006	0.13	0.490	0.679
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	Ant 1	DSI7	39750	2506	1	19.63	21.50	1.538	62.9	1.006	0.03	0.442	0.684
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	Ant 1	DSI7	40185	2549.5	1	19.90	21.50	1.445	62.9	1.006	0.18	0.473	0.688
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	Ant 1	DSI7	41055	2636.5	1	19.93	21.50	1.435	62.9	1.006	0.16	0.534	0.771
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	Ant 1	DSI7	41490	2680	1	19.76	21.50	1.493	62.9	1.006	-0.1	0.530	0.796
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Front	5mm	Ant 1	DSI7	40620	2593	1	20.05	21.50	1.396	62.9	1.006	0.07	0.431	0.605
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Front	5mm	Ant 1	DSI7	39750	2506	1	19.64	21.50	1.535	62.9	1.006	-0.1	0.367	0.567
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Front	5mm	Ant 1	DSI7	40185	2549.5	1	19.94	21.50	1.432	62.9	1.006	0.01	0.365	0.526
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Front	5mm	Ant 1	DSI7	41055	2636.5	1	19.83	21.50	1.469	62.9	1.006	-0.15	0.407	0.601
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Front	5mm	Ant 1	DSI7	41490	2680	1	19.66	21.50	1.528	62.9	1.006	0.19	0.412	0.633
	LTE Band 41_ENDC	20M	QPSK	100	0	-	Front	5mm	Ant 1	DSI7	40620	2593	1	19.99	21.50	1.416	62.9	1.006	0.07	0.381	0.543
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	40620	2593	1	20.11	21.50	1.377	62.9	1.006	-0.18	0.808	1.119
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	39750	2506	1	19.63	21.50	1.538	62.9	1.006	-0.15	0.831	1.286
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	40185	2549.5	1	19.90	21.50	1.445	62.9	1.006	-0.15	0.854	1.242
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	41055	2636.5	1	19.93	21.50	1.435	62.9	1.006	0.11	0.894	1.291
43	LTE Band 41_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI7	41490	2680	1	19.76	21.50	1.493	62.9	1.006	0.05	0.928	1.394
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Back	5mm	Ant 1	DSI7	40620	2593	1	20.05	21.50	1.396	62.9	1.006	-0.17	0.649	0.912
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Back	5mm	Ant 1	DSI7	39750	2506	1	19.64	21.50	1.535	62.9	1.006	-0.04	0.598	0.923
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Back	5mm	Ant 1	DSI7	40185	2549.5	1	19.94	21.50	1.432	62.9	1.006	-0.08	0.689	0.993
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Back	5mm	Ant 1	DSI7	41055	2636.5	1	19.83	21.50	1.469	62.9	1.006	0.17	0.626	0.925
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Back	5mm	Ant 1	DSI7	41490	2680	1	19.66	21.50	1.528	62.9	1.006	0.18	0.672	1.033
	LTE Band 41_ENDC	20M	QPSK	100	0	-	Back	5mm	Ant 1	DSI7	40620	2593	1	19.99	21.50	1.416	62.9	1.006	-0.04	0.712	1.014
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI7	40620	2593	1	20.11	21.50	1.377	62.9	1.006	-0.08	0.492	0.682
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI7	39750	2506	1	19.63	21.50	1.538	62.9	1.006	-0.13	0.443	0.685
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI7	40185	2549.5	1	19.90	21.50	1.445	62.9	1.006	0.06	0.486	0.707
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI7	41055	2636.5	1	19.93	21.50	1.435	62.9	1.006	-0.03	0.560	0.809
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI7	41490	2680	1	19.76	21.50	1.493	62.9	1.006	-0.03	0.488	0.733
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Left Side	5mm	Ant 1	DSI7	40620	2593	1	20.05	21.50	1.396	62.9	1.006	0.08	0.402	0.565
	LTE Band 41_ENDC	20M	QPSK	100	0	-	Left Side	5mm	Ant 1	DSI7	40620	2593	1	19.99	21.50	1.416	62.9	1.006	-0.16	0.382	0.544
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Right Side	5mm	Ant 1	DSI7	40620	2593	1	20.11	21.50	1.377	62.9	1.006	-0.02	0.042	0.058
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Right Side	5mm	Ant 1	DSI7	40620	2593	1	20.05	21.50	1.396	62.9	1.006	0.15	0.041	0.058
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	DSI7	40620	2593	1	20.11	21.50	1.377	62.9	1.006	-0.09	0.325	0.450
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 1	DSI7	40620	2593	1	20.05	21.50	1.396	62.9	1.006	0.05	0.246	0.346
	FR1 n7	50M	QPSK	1	1	DFT-SCS-15KHz	Front	5mm	Ant 1	DSI7	507000	2535	1	17.95	19.00	1.274	-	-	0.03	0.517	0.658
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Front	5mm	Ant 1	DSI7	507000	2535	1	17.89	19.00	1.291	-	-	0.01	0.474	0.612
44	FR1 n7	50M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 1	DSI7	507000	2535	1	17.95	19.00	1.274	-	-	0.02	0.964	1.228
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Back	5mm	Ant 1	DSI7	507000	2535	1	17.89	19.00	1.291	-	-	-0.18	0.937	1.210
	FR1 n7	50M	QPSK	270	0	DFT-SCS-15KHz	Back	5mm	Ant 1	DSI7	507000	2535	1	17.82	19.00	1.312	-	-	0.11	0.904	1.186
	FR1 n7	50M	QPSK	1	1	DFT-SCS-15KHz	Left Side	5mm	Ant 1	DSI7	507000	2535	1	17.95	19.00	1.274	-	-	0.08	0.702	0.894
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Left Side	5mm	Ant 1	DSI7	507000	2535	1	17.89	19.00	1.291	-	-	-0.1	0.690	0.891
	FR1 n7	50M	QPSK	270	0	DFT-SCS-15KHz	Left Side	5mm	Ant 1	DSI7	507000	2535	1	17.82	19.00	1.312	-	-	0.17	0.630	0.827
	FR1 n7	50M	QPSK	1	1	DFT-SCS-15KHz	Right Side	5mm	Ant 1	DSI7	507000	2535	1	17.95	19.00	1.274	-	-	-0.01	0.067	0.085
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Right Side	5mm	Ant 1	DSI7	507000	2535	1	17.89	19.00	1.291	-	-	0.09	0.060	0.077
	FR1 n7	50M	QPSK	1	1	DFT-SCS-15KHz	Bottom Side	5mm	Ant 1	DSI7	507000	2535	1	17.95	19.00	1.274	-	-	-0.04	0.458	0.583



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	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Bottom Side	5mm	Ant 1	DSI7	507000	2535	1	17.89	19.00	1.291	-	-	-0.1	0.395	0.510
	FR1 n7_ENDC	50M	QPSK	1	1	DFT-SCS-15KHz	Front	5mm	Ant 4	DSI7	507000	2535	1	11.35	12.00	1.161	-	-	0.15	0.155	0.180
	FR1 n7_ENDC	50M	QPSK	135	68	DFT-SCS-15KHz	Front	5mm	Ant 4	DSI7	507000	2535	1	11.18	12.00	1.208	-	-	-0.01	0.187	0.226
	FR1 n7_ENDC	50M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 4	DSI7	507000	2535	1	11.35	12.00	1.161	-	-	0.13	0.543	0.631
	FR1 n7_ENDC	50M	QPSK	135	68	DFT-SCS-15KHz	Back	5mm	Ant 4	DSI7	507000	2535	1	11.18	12.00	1.208	-	-	-0.16	0.444	0.536
	FR1 n7_ENDC	50M	QPSK	1	1	DFT-SCS-15KHz	Left Side	5mm	Ant 4	DSI7	507000	2535	1	11.35	12.00	1.161	-	-	0.18	0.113	0.131
	FR1 n7_ENDC	50M	QPSK	135	68	DFT-SCS-15KHz	Left Side	5mm	Ant 4	DSI7	507000	2535	1	11.18	12.00	1.208	-	-	0.13	0.128	0.155
	FR1 n7_ENDC	50M	QPSK	1	1	DFT-SCS-15KHz	Right Side	5mm	Ant 4	DSI7	507000	2535	1	11.35	12.00	1.161	-	-	0.19	0.003	0.003
	FR1 n7_ENDC	50M	QPSK	135	68	DFT-SCS-15KHz	Right Side	5mm	Ant 4	DSI7	507000	2535	1	11.18	12.00	1.208	-	-	-0.1	0.003	0.004
	FR1 n7_ENDC	50M	QPSK	1	1	DFT-SCS-15KHz	Top Side	5mm	Ant 4	DSI7	507000	2535	1	11.35	12.00	1.161	-	-	-0.02	0.660	0.767
	FR1 n7_ENDC	50M	QPSK	135	68	DFT-SCS-15KHz	Top Side	5mm	Ant 4	DSI7	507000	2535	1	11.18	12.00	1.208	-	-	0.05	0.621	0.750
	FR1 n41	100M	QPSK	1	137	DFT-SCS-30KHz	Front	5mm	Ant 4	DSI7	518598	2592.99	1	11.15	12.00	1.216	-	-	-0.04	0.132	0.161
	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 4	DSI7	518598	2592.99	1	11.20	12.00	1.202	-	-	0.1	0.145	0.174
45	FR1 n41	100M	QPSK	1	137	DFT-SCS-30KHz	Back	5mm	Ant 4	DSI7	518598	2592.99	1	11.15	12.00	1.216	-	-	-0.01	0.622	0.756
	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 4	DSI7	518598	2592.99	1	11.20	12.00	1.202	-	-	-0.17	0.520	0.625
	FR1 n41	100M	QPSK	1	137	DFT-SCS-30KHz	Left Side	5mm	Ant 4	DSI7	518598	2592.99	1	11.15	12.00	1.216	-	-	-0.05	0.147	0.179
	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant 4	DSI7	518598	2592.99	1	11.20	12.00	1.202	-	-	-0.03	0.164	0.197
	FR1 n41	100M	QPSK	1	137	DFT-SCS-30KHz	Right Side	5mm	Ant 4	DSI7	518598	2592.99	1	11.15	12.00	1.216	-	-	0.05	0.004	0.005
	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant 4	DSI7	518598	2592.99	1	11.20	12.00	1.202	-	-	-0.12	0.005	0.006
	FR1 n41	100M	QPSK	1	137	DFT-SCS-30KHz	Top Side	5mm	Ant 4	DSI7	518598	2592.99	1	11.15	12.00	1.216	-	-	-0.02	0.382	0.465
	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	5mm	Ant 4	DSI7	518598	2592.99	1	11.20	12.00	1.202	-	-	-0.13	0.413	0.497
3500MHz																					
	LTE Band 42	20M	QPSK	1	0	-	Front	5mm	Ant 5	DSI7	42590	3500	1	16.29	16.50	1.050	62.9	1.006	0	0.250	0.264
	LTE Band 42	20M	QPSK	50	0	-	Front	5mm	Ant 5	DSI7	42590	3500	1	16.27	16.50	1.054	62.9	1.006	-0.03	0.199	0.211
	LTE Band 42	20M	QPSK	1	0	-	Back	5mm	Ant 5	DSI7	42590	3500	1	16.29	16.50	1.050	62.9	1.006	-0.13	0.638	0.674
46	LTE Band 42	20M	QPSK	1	0	-	Back	5mm	Ant 5	DSI7	42190	3460	1	15.69	16.50	1.205	62.9	1.006	0.1	0.643	0.779
	LTE Band 42	20M	QPSK	1	0	-	Back	5mm	Ant 5	DSI7	42990	3540	1	16.14	16.50	1.086	62.9	1.006	0.06	0.619	0.677
	LTE Band 42	20M	QPSK	50	0	-	Back	5mm	Ant 5	DSI7	42590	3500	1	16.27	16.50	1.054	62.9	1.006	0.16	0.522	0.554
	LTE Band 42	20M	QPSK	100	0	-	Back	5mm	Ant 5	DSI7	42590	3500	1	16.15	16.50	1.084	62.9	1.006	0.11	0.568	0.619
	LTE Band 42	20M	QPSK	1	0	-	Left Side	5mm	Ant 5	DSI7	42590	3500	1	16.29	16.50	1.050	62.9	1.006	-0.01	0.049	0.052
	LTE Band 42	20M	QPSK	50	0	-	Left Side	5mm	Ant 5	DSI7	42590	3500	1	16.27	16.50	1.054	62.9	1.006	0.09	0.044	0.047
	LTE Band 42	20M	QPSK	1	0	-	Right Side	5mm	Ant 5	DSI7	42590	3500	1	16.29	16.50	1.050	62.9	1.006	0.02	0.154	0.163
	LTE Band 42	20M	QPSK	50	0	-	Right Side	5mm	Ant 5	DSI7	42590	3500	1	16.27	16.50	1.054	62.9	1.006	-0.01	0.128	0.136
	LTE Band 42	20M	QPSK	1	0	-	Top Side	5mm	Ant 5	DSI7	42590	3500	1	16.29	16.50	1.050	62.9	1.006	0.06	0.666	0.703
	LTE Band 42	20M	QPSK	1	0	-	Top Side	5mm	Ant 5	DSI7	42190	3460	1	15.69	16.50	1.205	62.9	1.006	0	0.556	0.674
	LTE Band 42	20M	QPSK	1	0	-	Top Side	5mm	Ant 5	DSI7	42990	3540	1	16.14	16.50	1.086	62.9	1.006	0.18	0.645	0.705
	LTE Band 42	20M	QPSK	50	0	-	Top Side	5mm	Ant 5	DSI7	42590	3500	1	16.27	16.50	1.054	62.9	1.006	-0.02	0.547	0.580
	LTE Band 42	20M	QPSK	100	0	-	Top Side	5mm	Ant 5	DSI7	42590	3500	1	16.15	16.50	1.084	62.9	1.006	-0.16	0.462	0.504
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Front	5mm	Ant 5	DSI7	633334	3500.01	1	17.78	18.00	1.052	-	-	0.04	0.205	0.216
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 5	DSI7	633334	3500.01	1	17.65	18.00	1.084	-	-	0.03	0.222	0.241
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Back	5mm	Ant 5	DSI7	633334	3500.01	1	17.78	18.00	1.052	-	-	-0.16	0.551	0.580
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 5	DSI7	633334	3500.01	1	17.65	18.00	1.084	-	-	-0.09	0.607	0.658
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Left Side	5mm	Ant 5	DSI7	633334	3500.01	1	17.78	18.00	1.052	-	-	-0.02	0.048	0.050
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant 5	DSI7	633334	3500.01	1	17.65	18.00	1.084	-	-	-0.08	0.047	0.051
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Right Side	5mm	Ant 5	DSI7	633334	3500.01	1	17.78	18.00	1.052	-	-	0.13	0.110	0.116
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant 5	DSI7	633334	3500.01	1	17.65	18.00	1.084	-	-	-0.07	0.112	0.121
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Top Side	5mm	Ant 5	DSI7	633334	3500.01	1	17.78	18.00	1.052	-	-	-0.04	0.447	0.470
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	5mm	Ant 5	DSI7	633334	3500.01	1	17.65	18.00	1.084	-	-	0.11	0.451	0.489
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Front	5mm	Ant 1	DSI7	633334	3500.01	1	20.17	21.00	1.211	-	-	0.02	0.465	0.563
	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 1	DSI7	633334	3500.01	1	20.09	21.00	1.233	-	-	-0.03	0.474	0.584
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Back	5mm	Ant 1	DSI7	633334	3500.01	1	20.17	21.00	1.211	-	-	-0.1	0.802	0.971
47	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 1	DSI7	633334	3500.01	1	20.09	21.00	1.233	-	-	0.01	1.080	1.332
	FR1 n78	100M	BPSK	270	0	DFT-SCS-30KHz	Back	5mm	Ant 1	DSI7	633334	3500.01	1	20.05	21.00	1.245	-	-	0.07	0.887	1.104
	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 1	DSI7	633334	3500.01	2	20.09	21.00	1.233	-	-	-0.13	0.966	1.191
	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 1	DSI7	633334	3500.01	3	20.09	21.00	1.233	-	-	-0.01	0.991	1.222
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Left Side	5mm	Ant 1	DSI7	633334	3500.01	1	20.17	21.00	1.211	-	-	-0.17	0.490	0.593



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FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant 1	DSI7	633334	3500.01	1	20.09	21.00	1.233	-	-	0.11	0.538	0.663
FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Right Side	5mm	Ant 1	DSI7	633334	3500.01	1	20.17	21.00	1.211	-	-	-0.14	0.036	0.044
FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant 1	DSI7	633334	3500.01	1	20.09	21.00	1.233	-	-	0.06	0.044	0.054
FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Bottom Side	5mm	Ant 1	DSI7	633334	3500.01	1	20.17	21.00	1.211	-	-	-0.09	0.447	0.541
FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Bottom Side	5mm	Ant 1	DSI7	633334	3500.01	1	20.09	21.00	1.233	-	-	0.13	0.483	0.596
FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Front	5mm	Ant 2	DSI7	633334	3500.01	1	19.23	20.00	1.194	-	-	-0.09	0.032	0.038
FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 2	DSI7	633334	3500.01	1	19.20	20.00	1.202	-	-	0.02	0.032	0.038
FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Back	5mm	Ant 2	DSI7	633334	3500.01	1	19.23	20.00	1.194	-	-	0.12	0.637	0.761
FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 2	DSI7	633334	3500.01	1	19.20	20.00	1.202	-	-	-0.01	0.536	0.644
FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Left Side	5mm	Ant 2	DSI7	633334	3500.01	1	19.23	20.00	1.194	-	-	-0.05	0.182	0.217
FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant 2	DSI7	633334	3500.01	1	19.20	20.00	1.202	-	-	-0.13	0.177	0.213
FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Top Side	5mm	Ant 2	DSI7	633334	3500.01	1	19.23	20.00	1.194	-	-	-0.11	0.025	0.030
FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Top Side	5mm	Ant 2	DSI7	633334	3500.01	1	19.20	20.00	1.202	-	-	-0.11	0.020	0.024
FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Front	5mm	Ant 8	DSI7	633334	3500.01	1	18.56	19.00	1.107	-	-	-0.02	0.016	0.018
FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 8	DSI7	633334	3500.01	1	18.39	19.00	1.151	-	-	0.12	0.012	0.014
FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Back	5mm	Ant 8	DSI7	633334	3500.01	1	18.56	19.00	1.107	-	-	0.03	0.458	0.507
FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 8	DSI7	633334	3500.01	1	18.39	19.00	1.151	-	-	-0.08	0.575	0.662
FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Right Side	5mm	Ant 8	DSI7	633334	3500.01	1	18.56	19.00	1.107	-	-	0.05	0.090	0.100
FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant 8	DSI7	633334	3500.01	1	18.39	19.00	1.151	-	-	0	0.072	0.083
FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Top Side	5mm	Ant 8	DSI7	633334	3500.01	1	18.56	19.00	1.107	-	-	0.07	0.017	0.019
FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Top Side	5mm	Ant 8	DSI7	633334	3500.01	1	18.39	19.00	1.151	-	-	-0.06	0.017	0.020

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)	
2450MHz																		
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 6	Simultaneous	11	2462	1	13.69	15.00	1.352	99.3	1.007	0.1	0.184	0.251	
48	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6	Simultaneous	11	2462	1	13.69	15.00	1.352	99.3	1.007	-0.07	0.402	0.547	
	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	Ant 6	Simultaneous	11	2462	1	13.69	15.00	1.352	99.3	1.007	0.05	0.226	0.308	
	WLAN2.4GHz	802.11b 1Mbps	Top Side	5mm	Ant 6	Simultaneous	11	2462	1	13.69	15.00	1.352	99.3	1.007	0.01	0.183	0.249	
	Bluetooth	1Mbps	Front	5mm	Ant 6	Full Power	39	2441	1	12.05	13.50	1.396	77.57	1.074	0.08	0.029	0.043	
49	Bluetooth	1Mbps	Back	5mm	Ant 6	Full Power	39	2441	1	12.05	13.50	1.396	77.57	1.074	-0.09	0.081	0.121	
	Bluetooth	1Mbps	Right Side	5mm	Ant 6	Full Power	39	2441	1	12.05	13.50	1.396	77.57	1.074	-0.03	0.034	0.050	
	Bluetooth	1Mbps	Top Side	5mm	Ant 6	Full Power	39	2441	1	12.05	13.50	1.396	77.57	1.074	0.14	0.022	0.032	
5000MHz																		
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 6	Simultaneous	42	5210	1	9.85	11.00	1.303	94.16	1.062	0.05	0.144	0.199	
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 6	Simultaneous	42	5210	1	9.85	11.00	1.303	94.16	1.062	0.01	0.358	0.495	
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 6	Simultaneous	42	5210	1	9.85	11.00	1.303	94.16	1.062	0.1	0.066	0.091	
50	WLAN5.2GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 6	Simultaneous	42	5210	1	9.85	11.00	1.303	94.16	1.062	-0.07	0.391	0.541	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 6	Simultaneous	155	5775	1	9.59	11.00	1.384	94.16	1.062	-0.08	0.175	0.257	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 6	Simultaneous	155	5775	1	9.59	11.00	1.384	94.16	1.062	0.01	0.351	0.516	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 6	Simultaneous	155	5775	1	9.59	11.00	1.384	94.16	1.062	-0.04	0.349	0.512	
51	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 6	Simultaneous	155	5775	1	9.59	11.00	1.384	94.16	1.062	0.05	0.419	0.615	



15.3 Body-Worn SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Headset	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	-	Front	5mm	Ant 0	-	DSI3	23095	707.5	1	22.91	24.00	1.285	-	-	0.01	0.211	0.271
	LTE Band 12	10M	QPSK	25	0	-	Front	5mm	Ant 0	-	DSI3	23095	707.5	1	22.01	23.00	1.256	-	-	-0.01	0.168	0.211
52	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI3	23095	707.5	1	22.91	24.00	1.285	-	-	-0.04	0.483	0.621
	LTE Band 12	10M	QPSK	25	0	-	Back	5mm	Ant 0	-	DSI3	23095	707.5	1	22.01	23.00	1.256	-	-	-0.06	0.410	0.515
	LTE Band 13	10M	QPSK	1	0	-	Front	5mm	Ant 0	-	DSI3	23230	782	1	23.01	24.00	1.256	-	-	0	0.180	0.226
	LTE Band 13	10M	QPSK	25	0	-	Front	5mm	Ant 0	-	DSI3	23230	782	1	22.39	23.00	1.151	-	-	-0.13	0.269	0.310
	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI3	23230	782	1	23.01	24.00	1.256	-	-	-0.01	0.371	0.466
53	LTE Band 13	10M	QPSK	25	0	-	Back	5mm	Ant 0	-	DSI3	23230	782	1	22.39	23.00	1.151	-	-	-0.05	0.602	0.693
	LTE Band 13	10M	QPSK	50	0	-	Back	5mm	Ant 0	-	DSI3	23230	782	1	22.01	23.00	1.256	-	-	-0.09	0.514	0.646
835MHz																						
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	5mm	Ant 0	-	DSI3	189	836.4	1	25.32	27.00	1.472	-	-	-0.08	0.462	0.680
54	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	-	DSI3	189	836.4	1	25.32	27.00	1.472	-	-	0.01	0.981	1.444
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	Headset	DSI3	189	836.4	1	25.32	27.00	1.472	-	-	0.02	0.856	1.260
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	-	DSI3	128	824.2	1	25.13	27.00	1.538	-	-	-0.03	0.769	1.183
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	-	DSI3	251	848.8	1	25.25	27.00	1.496	-	-	-0.03	0.874	1.308
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	-	DSI3	189	836.4	2	25.32	27.00	1.472	-	-	-0.18	0.869	1.279
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	-	DSI3	189	836.4	3	25.32	27.00	1.472	-	-	0.02	0.912	1.343
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Front	15mm	Ant 0	-	DSI4	189	836.4	1	30.48	31.50	1.265	-	-	-0.04	0.215	0.272
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Back	18mm	Ant 0	-	DSI4	189	836.4	1	30.48	31.50	1.265	-	-	-0.09	0.265	0.335
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 0	-	DSI3	4182	836.4	1	22.88	24.00	1.294	-	-	0.08	0.329	0.426
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI3	4182	836.4	1	22.88	24.00	1.294	-	-	-0.07	0.862	1.116
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI3	4132	826.4	1	22.54	24.00	1.400	-	-	0.05	0.889	1.244
55	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI3	4233	846.6	1	22.69	24.00	1.352	-	-	-0.11	0.930	1.257
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	Headset	DSI3	4233	846.6	1	22.69	24.00	1.352	-	-	0.01	0.901	1.218
	LTE Band 5	10M	QPSK	1	0	-	Front	5mm	Ant 0	-	DSI3	20525	836.5	1	22.83	24.00	1.309	-	-	0.11	0.510	0.668
	LTE Band 5	10M	QPSK	25	0	-	Front	5mm	Ant 0	-	DSI3	20525	836.5	1	21.91	23.00	1.285	-	-	-0.02	0.385	0.495
56	LTE Band 5	10M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI3	20525	836.5	1	22.83	24.00	1.309	-	-	-0.09	1.080	1.414
	LTE Band 5	10M	QPSK	1	0	-	Back	5mm	Ant 0	Headset	DSI3	20525	836.5	1	22.83	24.00	1.309	-	-	0.01	0.956	1.252
	LTE Band 5	10M	QPSK	25	0	-	Back	5mm	Ant 0	-	DSI3	20525	836.5	1	21.91	23.00	1.285	-	-	0.1	0.910	1.170
	LTE Band 5	10M	QPSK	50	0	-	Back	5mm	Ant 0	-	DSI3	20525	836.5	1	21.76	23.00	1.330	-	-	0.04	0.864	1.150
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Front	5mm	Ant 4	-	DSI3	20525	836.5	1	20.63	22.00	1.371	-	-	-0.17	0.127	0.174
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Front	5mm	Ant 4	-	DSI3	20525	836.5	1	19.75	21.00	1.334	-	-	0.04	0.107	0.143
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Back	5mm	Ant 4	-	DSI3	20525	836.5	1	20.63	22.00	1.371	-	-	-0.02	0.346	0.474
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Back	5mm	Ant 4	-	DSI3	20525	836.5	1	19.75	21.00	1.334	-	-	-0.01	0.273	0.364
	LTE Band 26	15M	QPSK	1	0	-	Front	5mm	Ant 0	-	DSI3	26865	831.5	1	22.94	24.00	1.276	-	-	0	0.398	0.508
	LTE Band 26	15M	QPSK	36	0	-	Front	5mm	Ant 0	-	DSI3	26865	831.5	1	22.02	23.00	1.253	-	-	-0.11	0.341	0.427
57	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI3	26865	831.5	1	22.94	24.00	1.276	-	-	-0.03	0.734	0.937
	LTE Band 26	15M	QPSK	36	0	-	Back	5mm	Ant 0	-	DSI3	26865	831.5	1	22.02	23.00	1.253	-	-	-0.06	0.659	0.826
	LTE Band 26	15M	QPSK	75	0	-	Back	5mm	Ant 0	-	DSI3	26865	831.5	1	21.89	23.00	1.291	-	-	-0.15	0.700	0.904
	FR1 n26	20M	QPSK	1	1	DFT-SCS-15KHz	Front	5mm	Ant 0	-	DSI3	166300	831.5	1	23.28	24.00	1.180	-	-	0.12	0.444	0.524
	FR1 n26	20M	QPSK	50	28	DFT-SCS-15KHz	Front	5mm	Ant 0	-	DSI3	166300	831.5	1	23.21	24.00	1.199	-	-	0.03	0.433	0.519
58	FR1 n26	20M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 0	-	DSI3	166300	831.5	1	23.28	24.00	1.180	-	-	0.09	0.924	1.091
	FR1 n26	20M	QPSK	50	28	DFT-SCS-15KHz	Back	5mm	Ant 0	-	DSI3	166300	831.5	1	23.21	24.00	1.199	-	-	0.01	0.907	1.088
	FR1 n26	20M	QPSK	100	0	DFT-SCS-15KHz	Back	5mm	Ant 0	-	DSI3	166300	831.5	1	22.27	23.00	1.183	-	-	0.07	0.909	1.075
1750MHz																						
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 0	-	DSI3	1413	1732.6	1	15.59	17.00	1.384	-	-	-0.12	0.333	0.461
59	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI3	1413	1732.6	1	15.59	17.00	1.384	-	-	-0.08	0.870	1.204
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	Headset	DSI3	1413	1732.6	1	15.59	17.00	1.384	-	-	0.01	0.811	1.122
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI3	1312	1712.4	1	15.44	17.00	1.432	-	-	0.15	0.840	1.203
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI3	1513	1752.6	1	15.49	17.00	1.416	-	-	-0.09	0.682	0.966
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	15mm	Ant 0	-	DSI4	1413	1732.6	1	22.53	24.00	1.403	-	-	-0.17	0.431	0.605



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Table with columns for test parameters (WCDMA IV, LTE Band 66, FR1 n66, GSM1900, WCDMA II) and SAR values. Includes a 1900MHz section. Values are listed in columns for various antenna configurations and exposure conditions.



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Report No. : FA422904

Table with columns for test parameters (Modulation, Bandwidth, Power, etc.) and SAR results. Includes rows for WCDMA II, LTE Band 25, and FR1 n2, with a 2600MHz section at the bottom.



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	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	20850	2510	1	17.63	18.50	1.222	-	-	-0.11	0.933	1.140
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	21350	2560	1	17.33	18.50	1.309	-	-	0.06	0.951	1.245
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	Ant 1	-	DSI3	21100	2535	1	17.73	18.50	1.194	-	-	0.07	0.751	0.897
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	Ant 1	-	DSI3	20850	2510	1	17.71	18.50	1.199	-	-	-0.15	0.711	0.853
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	Ant 1	-	DSI3	21350	2560	1	17.48	18.50	1.265	-	-	0.03	0.779	0.985
	LTE Band 7	20M	QPSK	100	0	-	Back	5mm	Ant 1	-	DSI3	21100	2535	1	17.75	18.50	1.189	-	-	-0.13	0.723	0.859
	LTE Band 7	20M	QPSK	1	0	-	Front	15mm	Ant 1	-	DSI4	21100	2535	1	23.21	24.00	1.199	-	-	0.13	0.378	0.453
	LTE Band 7	20M	QPSK	1	0	-	Back	18mm	Ant 1	-	DSI4	21100	2535	1	23.21	24.00	1.199	-	-	-0.18	0.371	0.445
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI3	38000	2595	1	20.45	22.00	1.429	62.9	1.006	0.08	0.668	0.960
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI3	37850	2580	1	20.29	22.00	1.483	62.9	1.006	0.01	0.603	0.899
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI3	38150	2610	1	20.26	22.00	1.493	62.9	1.006	0.03	0.637	0.957
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Front	5mm	Ant 1	-	DSI3	38000	2595	1	20.41	22.00	1.442	62.9	1.006	-0.08	0.522	0.757
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Front	5mm	Ant 1	-	DSI3	37850	2580	1	20.30	22.00	1.479	62.9	1.006	-0.08	0.492	0.732
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Front	5mm	Ant 1	-	DSI3	38150	2610	1	20.27	22.00	1.489	62.9	1.006	0.1	0.492	0.737
	LTE Band 38_ENDC	20M	QPSK	100	0	-	Front	5mm	Ant 1	-	DSI3	38000	2595	1	20.35	22.00	1.462	62.9	1.006	-0.18	0.499	0.734
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	38000	2595	1	20.45	22.00	1.429	62.9	1.006	0.1	0.913	1.312
67	LTE Band 38_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	37850	2580	1	20.29	22.00	1.483	62.9	1.006	-0.07	0.956	1.426
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	Headset	DSI3	37850	2580	1	20.29	22.00	1.483	62.9	1.006	0.08	0.915	1.365
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	37850	2580	2	20.29	22.00	1.483	62.9	1.006	-0.08	0.896	1.336
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	37850	2580	3	20.29	22.00	1.483	62.9	1.006	0.16	0.904	1.348
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	38150	2610	1	20.26	22.00	1.493	62.9	1.006	0.08	0.929	1.395
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Back	5mm	Ant 1	-	DSI3	38000	2595	1	20.41	22.00	1.442	62.9	1.006	-0.17	0.945	1.371
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Back	5mm	Ant 1	-	DSI3	37850	2580	1	20.30	22.00	1.479	62.9	1.006	-0.03	0.836	1.244
	LTE Band 38_ENDC	20M	QPSK	50	0	-	Back	5mm	Ant 1	-	DSI3	38150	2610	1	20.27	22.00	1.489	62.9	1.006	0.14	0.856	1.283
	LTE Band 38_ENDC	20M	QPSK	100	0	-	Back	5mm	Ant 1	-	DSI3	38000	2595	1	20.35	22.00	1.462	62.9	1.006	0.11	0.849	1.249
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Front	15mm	Ant 1	-	DSI4	38000	2595	1	22.36	24.00	1.459	62.9	1.006	-0.11	0.188	0.276
	LTE Band 38_ENDC	20M	QPSK	1	0	-	Back	18mm	Ant 1	-	DSI4	37850	2580	1	22.25	24.00	1.496	62.9	1.006	-0.16	0.176	0.265
	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant 4	-	DSI3	40620	2593	1	15.85	16.00	1.035	62.9	1.006	0.16	0.202	0.210
	LTE Band 41	20M	QPSK	50	0	-	Front	5mm	Ant 4	-	DSI3	40620	2593	1	15.81	16.00	1.045	62.9	1.006	-0.09	0.146	0.153
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 4	-	DSI3	40620	2593	1	15.85	16.00	1.035	62.9	1.006	-0.08	0.716	0.746
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 4	-	DSI3	39750	2506	1	15.59	16.00	1.099	62.9	1.006	-0.01	0.710	0.785
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 4	-	DSI3	40185	2549.5	1	15.39	16.00	1.151	62.9	1.006	0.04	0.748	0.866
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 4	-	DSI3	41055	2636.5	1	15.45	16.00	1.135	62.9	1.006	-0.17	0.632	0.722
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 4	-	DSI3	41490	2680	1	15.40	16.00	1.148	62.9	1.006	-0.01	0.471	0.544
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant 4	-	DSI3	40620	2593	1	15.81	16.00	1.045	62.9	1.006	-0.11	0.543	0.571
	LTE Band 41	20M	QPSK	100	0	-	Back	5mm	Ant 4	-	DSI3	40620	2593	1	15.83	16.00	1.040	62.9	1.006	0.02	0.501	0.524
	LTE Band 41	20M	QPSK	1	0	-	Front	15mm	Ant 4	-	DSI4	40620	2593	1	23.49	24.00	1.125	62.9	1.006	-0.15	0.199	0.225
	LTE Band 41	20M	QPSK	1	0	-	Back	18mm	Ant 4	-	DSI4	40185	2549.5	1	23.15	24.00	1.216	62.9	1.006	-0.06	0.365	0.447
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI3	40620	2593	1	20.11	21.50	1.377	62.9	1.006	0.13	0.490	0.679
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI3	39750	2506	1	19.63	21.50	1.538	62.9	1.006	0.03	0.442	0.684
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI3	40185	2549.5	1	19.90	21.50	1.445	62.9	1.006	0.18	0.473	0.688
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI3	41055	2636.5	1	19.93	21.50	1.435	62.9	1.006	0.16	0.534	0.771
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI3	41490	2680	1	19.76	21.50	1.493	62.9	1.006	-0.1	0.530	0.796
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Front	5mm	Ant 1	-	DSI3	40620	2593	1	20.05	21.50	1.396	62.9	1.006	0.07	0.431	0.605
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Front	5mm	Ant 1	-	DSI3	39750	2506	1	19.64	21.50	1.535	62.9	1.006	-0.1	0.367	0.567
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Front	5mm	Ant 1	-	DSI3	40185	2549.5	1	19.94	21.50	1.432	62.9	1.006	0.01	0.365	0.526
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Front	5mm	Ant 1	-	DSI3	41055	2636.5	1	19.83	21.50	1.469	62.9	1.006	-0.15	0.407	0.601
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Front	5mm	Ant 1	-	DSI3	41490	2680	1	19.66	21.50	1.528	62.9	1.006	0.19	0.412	0.633
	LTE Band 41_ENDC	20M	QPSK	100	0	-	Front	5mm	Ant 1	-	DSI3	40620	2593	1	19.99	21.50	1.416	62.9	1.006	0.07	0.381	0.543
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	40620	2593	1	20.11	21.50	1.377	62.9	1.006	-0.18	0.808	1.119
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	39750	2506	1	19.63	21.50	1.538	62.9	1.006	-0.15	0.831	1.286
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	40185	2549.5	1	19.90	21.50	1.445	62.9	1.006	-0.15	0.854	1.242
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	41055	2636.5	1	19.93	21.50	1.435	62.9	1.006	0.11	0.894	1.291
68	LTE Band 41_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	41490	2680	1	19.76	21.50	1.493	62.9	1.006	0.05	0.928	1.394
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Back	5mm	Ant 1	Headset	DSI3	41490	2680	1	19.76	21.50	1.493	62.9	1.006	0.02	0.913	1.371
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Back	5mm	Ant 1	-	DSI3	40620	2593	1	20.05	21.50	1.396	62.9	1.006	-0.17	0.649	0.912



	LTE Band 41_ENDC	20M	QPSK	50	0	-	Back	5mm	Ant 1	-	DSI3	39750	2506	1	19.64	21.50	1.535	62.9	1.006	-0.04	0.598	0.923
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Back	5mm	Ant 1	-	DSI3	40185	2549.5	1	19.94	21.50	1.432	62.9	1.006	-0.08	0.689	0.993
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Back	5mm	Ant 1	-	DSI3	41055	2636.5	1	19.83	21.50	1.469	62.9	1.006	0.17	0.626	0.925
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Back	5mm	Ant 1	-	DSI3	41490	2680	1	19.66	21.50	1.528	62.9	1.006	0.18	0.672	1.033
	LTE Band 41_ENDC	20M	QPSK	100	0	-	Back	5mm	Ant 1	-	DSI3	40620	2593	1	19.99	21.50	1.416	62.9	1.006	-0.04	0.712	1.014
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	15mm	Ant 1	-	DSI4	41490	2680	1	22.21	24.00	1.510	62.9	1.006	-0.14	0.170	0.258
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Back	18mm	Ant 1	-	DSI4	41490	2680	1	22.21	24.00	1.510	62.9	1.006	-0.19	0.167	0.254
	FR1 n7	50M	QPSK	1	1	DFT-SCS-15KHz	Front	5mm	Ant 1	-	DSI3	507000	2535	1	18.35	19.00	1.161	-	-	0.03	0.517	0.600
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Front	5mm	Ant 1	-	DSI3	507000	2535	1	18.29	19.00	1.178	-	-	0.01	0.474	0.558
69	FR1 n7	50M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 1	-	DSI3	507000	2535	1	18.35	19.00	1.161	-	-	0.02	0.964	1.120
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Back	5mm	Ant 1	-	DSI3	507000	2535	1	18.29	19.00	1.178	-	-	-0.18	0.937	1.103
	FR1 n7	50M	QPSK	270	0	DFT-SCS-15KHz	Back	5mm	Ant 1	-	DSI3	507000	2535	1	18.22	19.00	1.197	-	-	0.11	0.904	1.082
	FR1 n7	50M	QPSK	1	1	DFT-SCS-15KHz	Front	15mm	Ant 1	-	DSI4	507000	2535	1	23.25	24.00	1.189	-	-	0.01	0.346	0.411
	FR1 n7	50M	QPSK	1	1	DFT-SCS-15KHz	Back	18mm	Ant 1	-	DSI4	507000	2535	1	23.25	24.00	1.189	-	-	0.06	0.338	0.402
	FR1 n7_ENDC	50M	QPSK	1	1	DFT-SCS-15KHz	Front	5mm	Ant 4	-	DSI3	507000	2535	1	13.25	14.00	1.189	-	-	0.05	0.206	0.245
	FR1 n7_ENDC	50M	QPSK	135	68	DFT-SCS-15KHz	Front	5mm	Ant 4	-	DSI3	507000	2535	1	13.18	14.00	1.208	-	-	-0.06	0.248	0.300
	FR1 n7_ENDC	50M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 4	-	DSI3	507000	2535	1	13.25	14.00	1.189	-	-	-0.01	0.721	0.857
	FR1 n7_ENDC	50M	QPSK	135	68	DFT-SCS-15KHz	Back	5mm	Ant 4	-	DSI3	507000	2535	1	13.18	14.00	1.208	-	-	0.01	0.655	0.791
	FR1 n7_ENDC	50M	QPSK	270	0	DFT-SCS-15KHz	Back	5mm	Ant 4	-	DSI3	507000	2535	1	13.22	14.00	1.197	-	-	0.02	0.605	0.724
	FR1 n7_ENDC	50M	QPSK	135	68	DFT-SCS-15KHz	Front	15mm	Ant 4	-	DSI4	507000	2535	1	23.05	24.00	1.245	-	-	0.02	0.452	0.563
	FR1 n7_ENDC	50M	QPSK	1	1	DFT-SCS-15KHz	Front	15mm	Ant 4	-	DSI4	507000	2535	1	23.15	24.00	1.216	-	-	0.01	0.448	0.545
	FR1 n7_ENDC	50M	QPSK	1	1	DFT-SCS-15KHz	Back	18mm	Ant 4	-	DSI4	507000	2535	1	23.15	24.00	1.216	-	-	0.12	0.649	0.789
	FR1 n41	100M	QPSK	1	137	DFT-SCS-30KHz	Front	5mm	Ant 4	-	DSI3	518598	2592.99	1	12.28	13.00	1.180	-	-	0.08	0.179	0.211
	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 4	-	DSI3	518598	2592.99	1	12.17	13.00	1.211	-	-	0.01	0.197	0.238
	FR1 n41	100M	QPSK	1	137	DFT-SCS-30KHz	Back	5mm	Ant 4	-	DSI3	518598	2592.99	1	12.28	13.00	1.180	-	-	-0.08	0.676	0.798
70	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 4	-	DSI3	518598	2592.99	1	12.17	13.00	1.211	-	-	0.09	0.705	0.853
	FR1 n41	100M	QPSK	270	0	DFT-SCS-30KHz	Back	5mm	Ant 4	-	DSI3	518598	2592.99	1	12.15	13.00	1.216	-	-	0.03	0.518	0.630
	FR1 n41	100M	QPSK	1	137	DFT-SCS-30KHz	Front	15mm	Ant 4	-	DSI4	518598	2592.99	1	23.18	24.00	1.208	-	-	0.01	0.233	0.281
	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Front	15mm	Ant 4	-	DSI4	518598	2592.99	1	23.06	24.00	1.242	-	-	-0.16	0.248	0.308
	FR1 n41	100M	QPSK	1	137	DFT-SCS-30KHz	Back	18mm	Ant 4	-	DSI4	518598	2592.99	1	23.18	24.00	1.208	-	-	0.02	0.352	0.425
	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Back	18mm	Ant 4	-	DSI4	518598	2592.99	1	23.06	24.00	1.242	-	-	-0.12	0.394	0.489
3500MHz																						
	LTE Band 42	20M	QPSK	1	0	-	Front	5mm	Ant 5	-	DSI3	42590	3500	1	18.35	18.50	1.035	62.9	1.006	-0.14	0.285	0.297
	LTE Band 42	20M	QPSK	50	0	-	Front	5mm	Ant 5	-	DSI3	42590	3500	1	18.25	18.50	1.059	62.9	1.006	0.02	0.227	0.242
	LTE Band 42	20M	QPSK	1	0	-	Back	5mm	Ant 5	-	DSI3	42590	3500	1	18.35	18.50	1.035	62.9	1.006	0.13	0.726	0.756
71	LTE Band 42	20M	QPSK	1	0	-	Back	5mm	Ant 5	-	DSI3	42190	3460	1	17.83	18.50	1.167	62.9	1.006	0.01	0.731	0.858
	LTE Band 42	20M	QPSK	1	0	-	Back	5mm	Ant 5	-	DSI3	42990	3540	1	18.05	18.50	1.109	62.9	1.006	0.07	0.704	0.786
	LTE Band 42	20M	QPSK	50	0	-	Back	5mm	Ant 5	-	DSI3	42590	3500	1	18.25	18.50	1.059	62.9	1.006	0.08	0.593	0.632
	LTE Band 42	20M	QPSK	50	0	-	Back	5mm	Ant 5	-	DSI3	42190	3460	1	17.78	18.50	1.180	62.9	1.006	0.19	0.598	0.710
	LTE Band 42	20M	QPSK	50	0	-	Back	5mm	Ant 5	-	DSI3	42990	3540	1	18.19	18.50	1.074	62.9	1.006	-0.06	0.627	0.677
	LTE Band 42	20M	QPSK	100	0	-	Back	5mm	Ant 5	-	DSI3	42590	3500	1	18.20	18.50	1.072	62.9	1.006	0	0.647	0.697
	LTE Band 42	20M	QPSK	1	0	-	Front	15mm	Ant 5	-	DSI4	42590	3500	1	23.71	24.00	1.069	62.9	1.006	0.07	0.260	0.280
	LTE Band 42	20M	QPSK	1	0	-	Back	18mm	Ant 5	-	DSI4	42190	3460	1	23.27	24.00	1.183	62.9	1.006	-0.02	0.348	0.414
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Front	5mm	Ant 5	-	DSI3	633334	3500.01	1	18.73	19.00	1.064	-	-	-0.03	0.288	0.306
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 5	-	DSI3	633334	3500.01	1	18.66	19.00	1.081	-	-	0.07	0.312	0.337
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Back	5mm	Ant 5	-	DSI3	633334	3500.01	1	18.73	19.00	1.064	-	-	-0.03	0.774	0.824
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 5	-	DSI3	633334	3500.01	1	18.66	19.00	1.081	-	-	-0.09	0.853	0.922
	FR1 n78	100M	QPSK	270	0	DFT-SCS-30KHz	Back	5mm	Ant 5	-	DSI3	633334	3500.01	1	18.70	19.00	1.072	-	-	0.12	0.806	0.864
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Front	15mm	Ant 5	-	DSI4	633334	3500.01	1	23.67	24.00	1.079	-	-	0.01	0.288	0.311
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Front	15mm	Ant 5	-	DSI4	633334	3500.01	1	23.41	24.00	1.146	-	-	-0.05	0.297	0.340
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Back	18mm	Ant 5	-	DSI4	633334	3500.01	1	23.67	24.00	1.079	-	-	0.02	0.388	0.419
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	18mm	Ant 5	-	DSI4	633334	3500.01	1	23.41	24.00	1.146	-	-	-0.13	0.470	0.538
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Front	5mm	Ant 1	-	DSI3	633334	3500.01	1	20.17	21.00	1.211	-	-	0.02	0.465	0.563
	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 1	-	DSI3	633334	3500.01	1	20.09	21.00	1.233	-	-	-0.03	0.474	0.584
	FR1 n78	100M	BPSK	1	137	DFT-SCS-30KHz	Back	5mm	Ant 1	-	DSI3	633334	3500.01	1	20.17	21.00	1.211	-	-	-0.1	0.802	0.971
72	FR1 n78	100M	BPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 1	-	DSI3	633334	3500.01	1	20.09	21.00	1.233	-	-	0.01	1.080	1.332