

FCC SAR Test Report

APPLICANT : Realme Chongqing Mobile Telecommunications Corp., Ltd.
EQUIPMENT : Mobile Phone
BRAND NAME : realme
MODEL NAME : RMX5078
FCC ID : 2AUYFRMX5078
STANDARD : FCC 47 CFR Part 2 (2.1093)

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

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



Approved by: Si Zhang

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA4D2714	Rev. 01	Initial issue of report.	Mar. 06, 2025

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Realme Chongqing Mobile Telecommunications Corp., Ltd., Mobile Phone, RMX5078**, are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 10mm)	Body-worn (Separation 15mm)	Highest Simultaneous Transmission
			1g SAR (W/kg)			1g SAR (W/kg)
Licensed	GSM	GSM850	0.60	0.13	0.32	1.53
		GSM1900	1.04	0.12	0.26	
	WCDMA	WCDMA V	0.62	0.15	0.18	
		WCDMA IV	1.06	0.19	0.20	
		WCDMA II	0.74	0.38	0.27	
	LTE	LTE Band 12/17	0.56	0.13	0.17	
		LTE Band 13	0.36	0.12	0.23	
		LTE Band 26/5	0.67	0.12	0.18	
		LTE Band 66/4	1.17	0.37	0.37	
		LTE Band 2	1.17	0.27	0.26	
		LTE Band 7	1.01	0.48	0.31	
		LTE Band 41/38	1.01	0.24	0.31	
	5G NR	FR1 n26/5	0.83	0.13	0.20	
		FR1 n66	0.99	0.35	0.34	
		FR1 n2	0.94	0.32	0.30	
FR1 n7		1.04	0.58	0.29		
FR1 n41/38		1.18	0.33	0.32		
DTS	WLAN	2.4GHz WLAN	0.25	<0.10	<0.10	1.26
NII		5GHz WLAN	1.03	0.53	0.48	1.53
DSS	Bluetooth	2.4GHz Bluetooth	0.25	<0.10	<0.10	1.53
Highest 10g SAR Summary						
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)			Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	WCDMA	WCDMA II	2.23			3.89
	LTE	LTE Band 7	2.65			
	5G NR	FR1 n7	2.97			
NII	WLAN	5GHz WLAN	1.56			3.89
Date of Testing:			2025/1/17 ~ 2025/3/5			
Remark:						
1. This device supports LTE B17 /B5 /B4 /B38 and B12 /B26 /B66 /B41. Since the supported frequency span for LTE B17 /B5 /B4 /B38 falls completely within the support's frequency span for LTE B12 /B26/B41, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B12 /B26 /B66 /B41.						
2. This device supports 5GNR n5/n38 and 5GNR n26/n41. Since the supported frequency span for 5GNR n5/n38 falls completely within the support's frequency span for 5GNR n26/n41, both 5GNR bands have the same target power, and both 5GNR bands share the same transmission path; therefore, SAR was only assessed for 5GNR n26/n41.						

Declaration of Conformity:

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

Comments and Explanations:

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

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled

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

2. Administration Data

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

Testing Laboratory			
Test Firm	Sporton International Inc. (Shenzhen)		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR02-SZ	CN1256	421272

Applicant	
Company Name	Realme Chongqing Mobile Telecommunications Corp., Ltd.
Address	No.178 Yulong Avenue, Yufengshan, Yubei District, Chongqing, China

Manufacturer	
Company Name	Realme Chongqing Mobile Telecommunications Corp., Ltd.
Address	No.178 Yulong Avenue, Yufengshan, Yubei District, Chongqing, China

3. Guidance Applied

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

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- 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 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	realme
Model Name	RMX5078
FCC ID	2AUYFRMX5078
IMEI Code	IMEI 1: 865317070019999 IMEI 2: 865317070019981
Wireless Technology and Frequency Range	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850MHz ~ 1910MHz 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 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 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 WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA/HSUPA DC-HSDPA HSPA+ (16QAM uplink is supported) LTE: QPSK, 16QAM, 64QAM 5G NR: DFT-s-OFDM/CP-OFDM, QPSK/16QAM/64QAM/256QAM WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ac VHT20/VHT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC: ASK
HW Version	11
SW Version	realme UI 6.0
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Production Unit

Remark:

1. This device supports VoIP in GPRS, EGPRS, WCDMA, LTE and 5G NR (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 support GRPS/EGPRS mode up to multi-slot class 12.
5. For dual SIM card mobile has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active).
6. The device implements receiver detect mechanism trigger reduced power for the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity) and the MediaTek TA-SAR will manage to ensure the power level not exceeding the associated power table. And the device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to power table at appendix E.
7. For WLAN when transmit simultaneously with WWAN/BT, the device power will be reduced power at head, hotspot and extremity conditions. The maximum power that this device transmits in the field is limited among the 3 power tables (At-Head, Body-worn&Extremity, Hotspot). Full power is available only in the conducted setup.
8. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
9. This device has NFC function and the NFC SAR report will be separately submitted.
10. This device supports 5G NR 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
	n5	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, 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, 80, 90, 100

4.2 Operating Mode for WLAN

General Note:

1. In order to get better user experience, the device implemented the dynamic antenna swapping which based on specific user interaction for WLAN bands.
2. The device has two using scenarios state, one is Normal Mode and the other is Game Mode. Each mode will be triggered by different detection mechanism to realize the location exchanged by the antenna in different modes.
3. For normal mode, when the device is in default Settings or when the device detect audio receiver is active, the antenna is adapted on Ant 8. For Game mode, when the device detects horizontal screen, the antenna is adapted on Ant 8 and Ant 9.
4. Through the MTK system monitoring, the two antennas can be switched after meeting the switching conditions in the horizontal screen state. WIFI antenna switching is carried out in the game scenario, when the RSSI of the main antenna (ANT8) is less than -70dBm and more than 5dBm different from the secondary antenna (switch to ANT9). The switch is performed by comparing the RSSI values of the primary and secondary antennas in WIFI use.
5. Below table will summary of the relationship between mode, antenna location and detection mechanism, more detail refers to operational description.

Mode	Antenna	Detection mechanism
Normal Mode	adapted on Ant 8	Default setting or the device audio receiver is active
Game Mode	adapted on Ant 8 and Ant 9	detect horizontal screen

For SAR report, the test mode mentioned as following table.

Bands	Head SAR	Body SAR	Hotspot SAR	Extremity SAR
WLAN	Normal Mode	Normal Mode Game Mode	Normal Mode Game Mode	Normal Mode Game Mode

4.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05									
FCC ID		2AUYFRMX5078							
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 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 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 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz							
uplink modulations used		QPSK / 16QAM / 64QAM							
LTE Voice / Data requirements		Voice and Data							
LTE Release Version		R15							
CA Support		Supported, Uplink and Downlink							
LTE MPR permanently built-in by design		Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3							
		Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)
			1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
		QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
		16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
		16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
		64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
		64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
		256 QAM	≥ 1					≤ 5	
LTE A-MPR		In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)							
Spectrum plots for RB configuration		A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.							
Power reduction applied to satisfy SAR compliance		Yes, when operating in receiver 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 and inter-band with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance. 2. This device supports maximum of 2 carriers in the downlink and 2 carriers in the uplink.							

Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 5												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829				
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				
LTE Band 7												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560				
LTE Band 12												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704				
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711				
LTE Band 13												
	Bandwidth 5 MHz				Bandwidth 10 MHz							
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)					
L	23205		779.5		23230		782					
M	23230		782									
H	23255		784.5									
LTE Band 17												
	Bandwidth 5 MHz				Bandwidth 10 MHz							
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)					
L	23755		706.5		23780		709					
M	23790		710		23790		710					
H	23825		713.5		23800		711					

LTE Band 26												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5		
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5		
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5		
LTE Band 38												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580	37850	2580		
M	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595		
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610	38150	2610		
LTE Band 41												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506	39750	2506		
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5	40185	2549.5		
M	40620	2593	40620	2593	40620	2593	40620	2593	40620	2593		
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5	41055	2636.5		
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680	41490	2680		
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

<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 5	Yes	Yes	Yes	Yes		
LTE Band 26	Yes	Yes	Yes	Yes	Yes	
LTE Band 12	Yes	Yes	Yes	Yes		
LTE Band 17			Yes	Yes		
LTE Band 38			Yes	Yes	Yes	Yes
LTE Band 41			Yes	Yes	Yes	Yes

2) LTE Bands tune up:

Band	Ant	Full Tune-up Limit	ECI 2 Tune-up Limit	ECI 4 Tune-up Limit	ECI 1 Tune-up Limit	ECI 3 Tune-up Limit
LTE Band 5	Ant.0	25	25	25	25	22
LTE Band 26	Ant.0	25	25	25	25	22
LTE Band 12	Ant.0	24.5	24.5	24.5	24.5	21.5
LTE Band 17	Ant.0	24.5	24.5	24.5	24.5	21.5

Band	Ant	Full Tune-up Limit	ECI 2 Tune-up Limit	ECI 4 Tune-up Limit	ECI 1 Tune-up Limit	ECI 3 Tune-up Limit
LTE Band 5	Ant.1	24.2	24.2	21.2	24.2	21.2
LTE Band 26	Ant.1	24.2	24.2	21.2	24.2	21.2
LTE Band 12	Ant.1	23.7	23.7	20.7	23.7	20.7
LTE Band 17	Ant.1	23.7	23.7	20.7	23.7	20.7

Band	Ant	Full Tune-up Limit	ECI 2 Tune-up Limit	ECI 4 Tune-up Limit	ECI 1 Tune-up Limit	ECI 3 Tune-up Limit
LTE Band 4	Ant.1	24.8	24.8	19.8	23.8	18.8
LTE Band 66	Ant.1	24.3	22.3	18.3	22.8	17.8
LTE Band 38	Ant.1	24	20	16	24	19
LTE Band 41	Ant.1	24	18.5	15	21.5	16.5

Band	Ant	Full Tune-up Limit	ECI 2 Tune-up Limit	ECI 4 Tune-up Limit	ECI 1 Tune-up Limit	ECI 3 Tune-up Limit
LTE Band 4	Ant.3	24.8	24.8	24.8	23.8	18.8
LTE Band 66	Ant.3	24.8	24.8	24.8	23.3	18.3
LTE Band 38	Ant.3	24.5	24.5	24.5	24.5	19.5
LTE Band 41	Ant.3	24.5	24.5	24.5	22	17

Band	Ant	Full Tune-up Limit	ECI 2 Tune-up Limit	ECI 4 Tune-up Limit	ECI 1 Tune-up Limit	ECI 3 Tune-up Limit
LTE Band 4	Ant.4	24.8	22.8	18.8	23.3	18.3
LTE Band 66	Ant.4	24.8	19.3	18.8	21.8	17.8

Band	Ant	Full Tune-up Limit	ECI 2 Tune-up Limit	ECI 4 Tune-up Limit	ECI 1 Tune-up Limit	ECI 3 Tune-up Limit
LTE Band 38	Ant.5	23.5	20.5	15.5	23.5	18.5
LTE Band 41	Ant.5	22.5	18.5	13.5	20	15

Note: For some bands/antennas at some exposure conditions which cannot be covered were fully tested for RF exposure compliance.

4.4 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
Channel Bandwidth	The detail please refers to section 4.1 5GNR FR1 bands table.
SCS	FDD: SCS15KHz, TDD: SCS30KHz
uplink modulations used	DFT-s-OFDM: 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 B7/66
LTE Anchor Bands for n5	LTE B7/66
LTE Anchor Bands for n7	LTE B2/4/5/7/66
LTE Anchor Bands for n38	LTE B2/4/5/66/38
LTE Anchor Bands for n41	LTE B2/4/26/66/41
LTE Anchor Bands for n66	LTE B2/5/7/66

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 SCS30KHz																			
Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L500202	2501.01	500700	2503.5	501204	2506.02	502200	2511	503202	2516.01	504204	2521.02	505200	2526	507204	2536.02	508200	2541	509202	2546.01
M518598	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
H537000	2685	536496	2682.48	535998	2679.99	534996	2674.98	534000	2670	532998	2664.99	531996	2659.98	529998	2649.99	528996	2644.98	528000	2640

<For NR Overlap Bands Description>

1) NR Bands BW

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
FR1	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, 80, 90, 100

2) NR Bands Tune up:

Band	Ant	Full Tune-up Limit	ECI 2 Tune-up Limit	ECI 4 Tune-up Limit	ECI 1 Tune-up Limit	ECI 3 Tune-up Limit
FR1 n5	Ant.0	24.7	24.7	21.7	24.7	21.7
FR1 n26	Ant.0	24.7	24.7	21.7	24.7	21.7

Band	Ant	Full Tune-up Limit	ECI 2 Tune-up Limit	ECI 4 Tune-up Limit	ECI 1 Tune-up Limit	ECI 3 Tune-up Limit
FR1 n5	Ant.1	23.9	23.9	20.9	23.9	20.9
FR1 n26	Ant.1	24.2	24.2	21.2	24.2	21.2

Band	Ant	Full Tune-up Limit	ECI 2 Tune-up Limit	ECI 4 Tune-up Limit	ECI 1 Tune-up Limit	ECI 3 Tune-up Limit
FR1 n38	Ant.1	23.7	19.7	14.7	22.2	17.2
FR1 n41	Ant.1	23.7	18.2	14.2	21.7	16.7

Band	Ant	Full Tune-up Limit	ECI 2 Tune-up Limit	ECI 4 Tune-up Limit	ECI 1 Tune-up Limit	ECI 3 Tune-up Limit
FR1 n38	Ant.3	24.2	24.2	24.2	21.7	16.7
FR1 n41	Ant.3	24.2	24.2	24.2	22.2	17.2

5. TA-SAR feature for RF Exposure compliance

WWAN bands and mmWave are all enabled with MediaTek TA-SAR feature. This feature performs time averaging algorithm in real time to control and manage transmitting power and ensure the time-averaged RF exposure is in compliance with FCC requirements all the time.

Note that WLAN/BT operations are not enabled with TA-SAR feature.

The FCC RF exposure limit is defined based on time-averaged RF exposure. The product implements MediaTek TA-SAR feature which controls the instantaneous transmitting power for WWAN transmitter to ensure the product in compliance with FCC RF exposure limit over a defined time window, for SAR (transmit frequency $\leq 6\text{GHz}$). To control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is compliant to the regulation requirement.

The purpose of this report (Part 1 test) is to demonstrate that the EUT meets FCC SAR limits when transmitting in static transmission scenario at maximum allowable time-averaged power levels.

The P_{limit} values correspond to SAR_{design_target}. The power will be fixed at the static reduce power level at different exposure conditions for RF exposure compliance. For the GSM (TDD) P_{limit} power levels in the table correspond to the burst average power levels which don't account for TX duty cycle.

This report describes the procedures for the SAR char generation, and the parameters obtained from SAR characterization (referred to as SAR char, respectively) will be used as input for TA-SAR algorithm. SAR char will be entered via the MediaTek's NV suggestion to enable the TA-SAR Feature.

<Terminologies in this report>

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

<SAR Characterization>

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

To account for total uncertainty, SAR_{design_target} should be determined as:

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



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

TA-SAR allows the device to transmit at higher power instantaneously, as high as Pmax, when needed, but enforces power limiting to maintain time-averaged transmit power to Plimit.

<P_{limit} for supported technologies and bands>

Band	Antenna	ECI 2	ECI 4	ECI 1	ECI 3	Total Uncertainty dB (k=2)	Pmax*
GSM850	0	31.2	31.2	30.8	20.8	1.2	25.8
GSM850	1	22.3	20.8	36.7	20.8	1.2	25.3
GSM1900	1	17.3	13.8	17.6	13.6	1.2	22.3
GSM1900	3	33.8	33.8	29.4	15.8	1.2	22.8
WCDMA II	1	17.3	12.3	19.8	14.8	1.2	23.8
WCDMA II	3	35.1	35.1	22.3	17.3	1.2	23.8
WCDMA IV	1	22.3	17.3	21.8	16.8	1.2	23.8
WCDMA IV	3	33.4	33.4	22.3	17.3	1.2	23.8
WCDMA V	0	30.9	30.9	32.1	20.8	1.2	23.8
WCDMA V	1	21.8	20.3	34.2	20.3	1.2	23.3
LTE Band 2	1	17.5	12.5	19.5	14.5	1.2	22.5
LTE Band 2	3	33.2	33.2	29.9	18.0	1.2	23.0
LTE Band 2	4	20.5	15.5	20.5	15.5	1.2	22.5
LTE Band 4	1	24.4	18.6	22.6	17.6	1.2	23.6
LTE Band 4	3	33.3	33.3	22.6	17.6	1.2	23.6
LTE Band 4	4	21.6	17.6	22.1	17.1	1.2	23.6
LTE Band 5/26	0	31.9	31.9	32.0	20.8	1.2	23.8
LTE Band 5/26	1	25.5	20.0	35.7	20.0	1.2	23.0
LTE Band 7	1	15.0	13.0	20.5	15.5	1.2	22.5
LTE Band 7	3	29.1	18.0	21.5	16.5	1.2	23.0
LTE Band 7	5	17.8	12.8	20.3	15.3	1.2	22.3
LTE Band 12/17	0	34.4	34.4	31.8	20.3	1.2	23.3
LTE Band 12/17	1	25.8	19.5	32.6	19.5	1.2	22.5
LTE Band 13	0	31.7	31.7	30.4	20.3	1.2	23.3
LTE Band 13	1	27.7	19.5	35.2	19.5	1.2	22.5
LTE Band 66	1	21.1	17.1	21.6	16.6	1.2	23.1
LTE Band 66	3	33.3	33.3	22.1	17.1	1.2	23.6
LTE Band 66	4	18.1	17.6	20.6	16.6	1.2	23.6
LTE Band 38	1	16.8	12.8	26.8	15.8	1.2	20.8
LTE Band 38	3	30.3	30.3	29.1	16.3	1.2	21.3
LTE Band 38	5	17.3	12.3	25.6	15.3	1.2	20.3
LTE Band 41	1	15.3	11.8	18.3	13.3	1.2	20.8
LTE Band 41	3	30.3	30.3	18.8	13.8	1.2	21.3
LTE Band 41	5	15.3	10.3	16.8	11.8	1.2	19.3
FR1 n2	1	16.5	11.5	18.5	13.5	1.2	23.0
FR1 n2	3	31.9	31.9	22.0	17.0	1.2	23.5
FR1 n2	4	19.5	15.5	20.5	15.5	1.2	23.0
FR1 n5	0	31.7	20.5	31.3	20.5	1.2	23.5

FR1 n5	1	24.6	19.7	34.5	19.7	1.2	22.7
FR1 n26	0	31.7	20.5	31.3	20.5	1.2	23.5
FR1 n26	1	24.6	20.0	34.5	20.0	1.2	23.0
FR1 n7	1	15.5	12.5	20.5	16.5	1.2	22.5
FR1 n7	3	29.1	29.1	21.0	16.0	1.2	23.0
FR1 n66	1	20.7	15.7	20.2	15.2	1.2	22.7
FR1 n66	3	32.4	32.4	21.7	16.7	1.2	23.2
FR1 n66	4	16.7	15.7	19.7	14.7	1.2	22.7
FR1 n38	1	18.5	13.5	21.0	16.0	1.2	22.5
FR1 n38	3	30.0	30.0	20.5	15.5	1.2	23.0
FR1 n41	1	17.0	13.0	20.5	15.5	1.2	22.5
FR1 n41	3	30.1	30.1	21.0	16.0	1.2	23.0

Note: 1) *P_{max} is used for RF tune up procedure. The maximum allowed output power is equal to P_{max} + 1.2 dB device uncertainty.

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

3) The max allowed output power is the P_{limit} + 1.2 dB device uncertainty, and if P_{limit} is higher than P_{max}, the device output power will be P_{max} instead.

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:

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

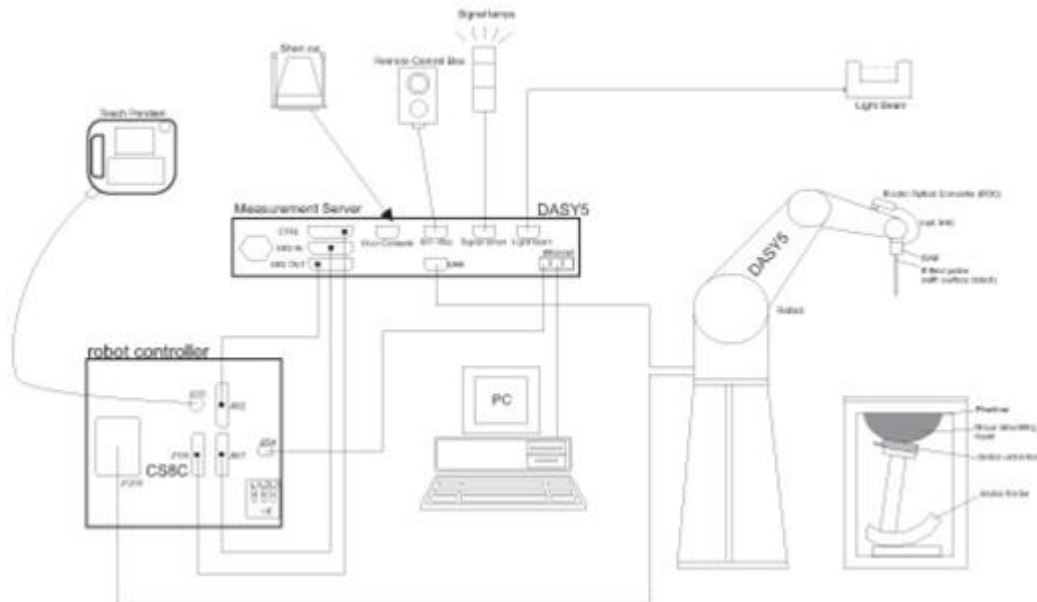
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

8. System Description and Setup

The DASY system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win7 or Win10 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

8.1 E-Field Probe

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

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	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 dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

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

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

9.4 Zoom Scan

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

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

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

9.5 Volume Scan Procedures

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

9.6 Power Drift Monitoring

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

10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	Feb. 24, 2022	Feb. 22, 2025
SPEAG	835MHz System Validation Kit	D835V2	4d162	Dec. 13, 2024	Dec. 12, 2025
SPEAG	1750MHz System Validation Kit	D1750V2	1137	Oct. 15, 2024	Oct. 14, 2025
SPEAG	1900MHz System Validation Kit	D1900V2	5d118	Mar. 30, 2022	Mar. 28, 2025
SPEAG	2450MHz System Validation Kit	D2450V2	924	Nov. 03, 2023	Nov. 02, 2026
SPEAG	2600MHz System Validation Kit	D2600V2	1008	Aug. 15, 2024	Aug. 14, 2025
SPEAG	5000MHz System Validation Kit	D5GHzV2	1113	Sep. 23, 2022	Sep. 21, 2025
SPEAG	Data Acquisition Electronics	DAE4	1386	Aug. 30, 2024	Aug. 29, 2025
SPEAG	Dosimetric E-Field Probe	EX3DV4	3819	Aug. 22, 2024	Aug. 21, 2025
SPEAG	SAM Twin Phantom	QD 000 P40 CD	1670	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201300653	Jul. 05, 2024	Jul. 04, 2025
Anritsu	Radio communication analyzer	MT8820C	6201341952	Dec. 26, 2024	Dec. 25, 2025
Anritsu	Radio communication analyzer	MT8821C	6262314715	Jul. 04, 2024	Jul. 03, 2025
Anritsu	Radio communication analyzer	MT8821C	6272278319	Jul. 03, 2024	Jul. 02, 2025
Agilent	Wireless Communication Test Set	E5515C	MY50267224	Jul. 03, 2024	Jul. 02, 2025
Keysight	Network Analyzer	E5071C	MY46523671	Oct. 15, 2024	Oct. 14, 2025
Speag	Dielectric Assessment KIT	DAK-3.5	1071	Feb. 19, 2024	Feb. 18, 2025
Speag	Dielectric Assessment KIT	DAK-3.5	1144	Aug. 20, 2024	Aug. 19, 2025
Agilent	Signal Generator	N5181A	MY50145381	Dec. 26, 2024	Dec. 25, 2025
R&S	Signal Generator	SMB100A	258306	Dec. 26, 2024	Dec. 25, 2025
Anritsu	Power Sensor	MA2411B	1306099	Oct. 15, 2024	Oct. 14, 2025
Anritsu	Power Meter	ML2495A	1349001	Oct. 15, 2024	Oct. 14, 2025
Anritsu	Power Sensor	MA2411B	1218010	Oct. 14, 2024	Oct. 13, 2025
Anritsu	Power Meter	ML2495A	1339473	Dec. 26, 2024	Dec. 25, 2025
R&S	CBT BLUETOOTH TESTER	CBT	100963	Dec. 26, 2024	Dec. 25, 2025
R&S	Spectrum Analyzer	FSP7	100818	Jul. 04, 2024	Jul. 03, 2025
TES	Hygrometer	1310	200505600	Jul. 08, 2024	Jul. 07, 2025
Anymetre	Thermo-Hygrometer	JR593	2015030903	Dec. 28, 2024	Dec. 27, 2025
SPEAG	Device Holder	N/A	N/A	N/A	N/A
AR	Amplifier	5S1G4	0333096	Note 1	
Mini-Circuits	Amplifier	ZVE-3W-83+	599201528	Note 1	
ARRA	Power Divider	A3200-2	N/A	Note 1	
ET Industries	Dual Directional Coupler	C-058-10	N/A	Note 1	
Jinkexinhua	Attenuator	10db-8G	N/A	Note 1	

Note:

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.

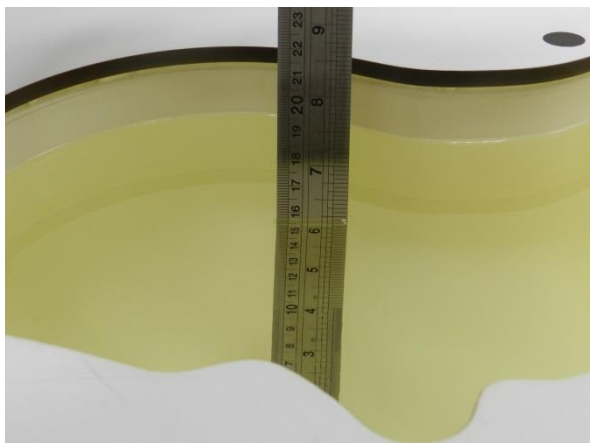


Fig 11.1 Photo of Liquid Height for Head SAR



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	22.3	0.921	41.563	0.89	41.90	3.48	-0.80	±5	2025/1/23
750	Head	22.1	0.911	42.879	0.89	41.90	2.36	2.34	±5	2025/2/4
835	Head	22.4	0.910	43.023	0.90	41.50	1.11	3.67	±5	2025/1/17
835	Head	22.5	0.941	41.182	0.90	41.50	4.56	-0.77	±5	2025/2/10
1750	Head	22.2	1.339	39.213	1.37	40.10	-2.26	-2.21	±5	2025/1/19
1750	Head	22.3	1.363	38.967	1.37	40.10	-0.51	-2.83	±5	2025/2/12
1900	Head	22.1	1.402	40.459	1.40	40.00	0.14	1.15	±5	2025/1/21
1900	Head	22.5	1.426	39.524	1.40	40.00	1.86	-1.19	±5	2025/2/8
2450	Head	22.3	1.871	38.124	1.80	39.20	3.94	-2.74	±5	2025/1/29
2450	Head	22.4	1.782	37.866	1.80	39.20	-1.00	-3.40	±5	2025/2/6
2600	Head	22.2	1.899	39.208	1.96	39.00	-3.11	0.53	±5	2025/1/25
2600	Head	22.2	1.895	37.662	1.96	39.00	-3.32	-3.43	±5	2025/2/14
5250	Head	22.3	4.626	34.202	4.71	35.95	-1.78	-4.86	±5	2025/2/2
5250	Head	22.1	4.521	34.916	4.71	35.95	-4.01	-2.88	±5	2025/2/15
5600	Head	22.4	4.968	34.688	5.07	35.50	-2.01	-2.29	±5	2025/1/27
5600	Head	22.3	4.866	34.444	5.07	35.50	-4.02	-2.97	±5	2025/2/15
5750	Head	22.2	5.119	34.477	5.22	35.35	-1.93	-2.47	±5	2025/1/31
5750	Head	22.5	5.020	34.242	5.22	35.35	-3.83	-3.13	±5	2025/2/15
1750	Head	22.1	1.377	41.359	1.37	40.10	0.51	3.14	±5	2025/3/5

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 (%)
2025/1/23	750	Head	250	1087	3819	1386	2.300	8.580	9.2	7.23
2025/2/4	750	Head	250	1087	3819	1386	2.210	8.580	8.84	3.03
2025/1/17	835	Head	250	4d162	3819	1386	2.330	9.080	9.32	2.64
2025/2/10	835	Head	250	4d162	3819	1386	2.410	9.080	9.64	6.17
2025/1/19	1750	Head	250	1137	3819	1386	8.870	36.800	35.48	-3.59
2025/2/12	1750	Head	250	1137	3819	1386	8.520	36.800	34.08	-7.39
2025/1/21	1900	Head	250	5d118	3819	1386	9.540	39.300	38.16	-2.90
2025/2/8	1900	Head	250	5d118	3819	1386	9.840	39.300	39.36	0.15
2025/1/29	2450	Head	250	924	3819	1386	13.800	52.300	55.2	5.54
2025/2/6	2450	Head	250	924	3819	1386	12.800	52.300	51.2	-2.10
2025/1/25	2600	Head	250	1008	3819	1386	12.900	55.700	51.6	-7.36
2025/2/14	2600	Head	250	1008	3819	1386	14.100	55.700	56.4	1.26
2025/2/2	5250	Head	100	1113	3819	1386	8.050	81.500	80.5	-1.23
2025/2/15	5250	Head	100	1113	3819	1386	8.150	81.500	81.5	0.00
2025/1/27	5600	Head	100	1113	3819	1386	8.600	82.600	86	4.12
2025/2/15	5600	Head	100	1113	3819	1386	8.900	82.600	89	7.75
2025/1/31	5750	Head	100	1113	3819	1386	7.990	80.800	79.9	-1.11
2025/2/15	5750	Head	100	1113	3819	1386	8.170	80.800	81.7	1.11
2025/3/5	1750	Head	250	1137	3819	1386	9.670	36.800	38.68	5.11

<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 (%)
2025/1/23	750	Head	250	1087	3819	1386	1.440	5.650	5.76	1.95
2025/2/4	750	Head	250	1087	3819	1386	1.470	5.650	5.88	4.07
2025/1/17	835	Head	250	4d162	3819	1386	1.530	5.850	6.12	4.62
2025/2/10	835	Head	250	4d162	3819	1386	1.550	5.850	6.2	5.98
2025/1/19	1750	Head	250	1137	3819	1386	4.710	19.600	18.84	-3.88
2025/2/12	1750	Head	250	1137	3819	1386	4.550	19.600	18.2	-7.14
2025/1/21	1900	Head	250	5d118	3819	1386	4.860	20.400	19.44	-4.71
2025/2/8	1900	Head	250	5d118	3819	1386	5.090	20.400	20.36	-0.20
2025/1/29	2450	Head	250	924	3819	1386	6.530	24.500	26.12	6.61
2025/2/6	2450	Head	250	924	3819	1386	5.930	24.500	23.72	-3.18
2025/1/25	2600	Head	250	1008	3819	1386	5.890	25.300	23.56	-6.88
2025/2/14	2600	Head	250	1008	3819	1386	6.520	25.300	26.08	3.08
2025/2/2	5250	Head	100	1113	3819	1386	2.210	23.300	22.1	-5.15
2025/2/15	5250	Head	100	1113	3819	1386	2.230	23.300	22.3	-4.29
2025/1/27	5600	Head	100	1113	3819	1386	2.320	23.700	23.2	-2.11
2025/2/15	5600	Head	100	1113	3819	1386	2.480	23.700	24.8	4.64
2025/1/31	5750	Head	100	1113	3819	1386	2.190	23.000	21.9	-4.78
2025/2/15	5750	Head	100	1113	3819	1386	2.250	23.000	22.5	-2.17
2025/3/5	1750	Head	250	1137	3819	1386	5.210	19.600	20.84	6.33

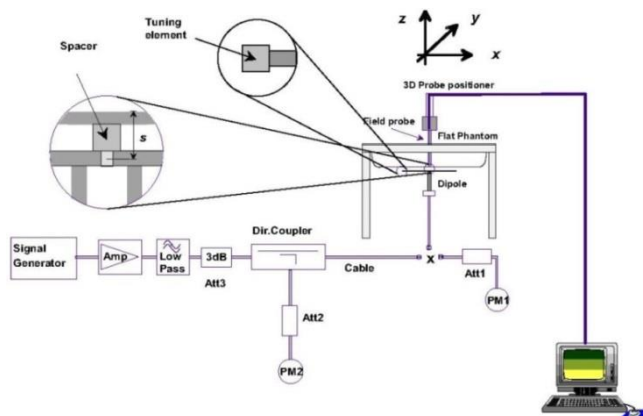


Fig 11.3.1 System Performance Check Setup



Fig 11.3.2 Setup Photo

12. RF Exposure Positions

12.1 Ear and handset reference point

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

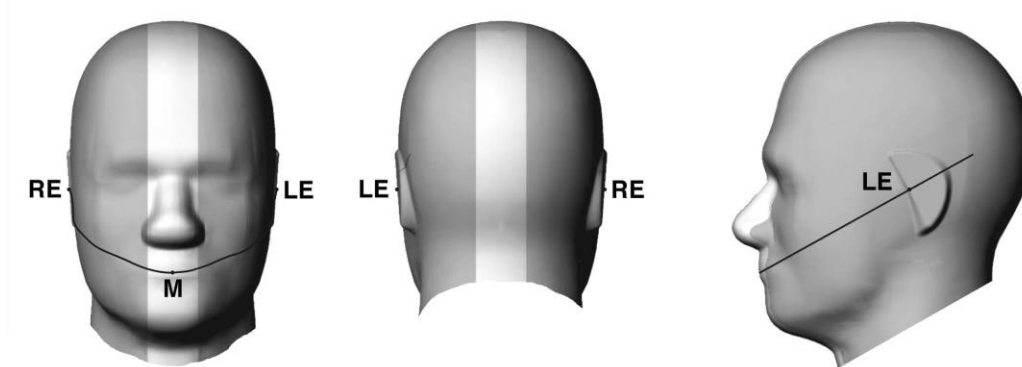


Fig 12.1.1 Front, back, and side views of SAM twin phantom

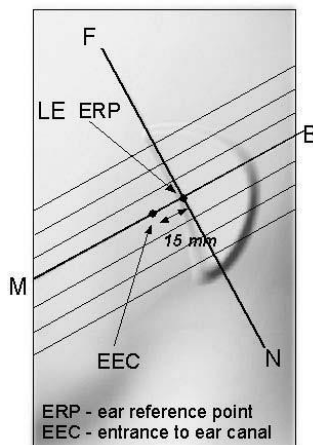


Fig 12.1.2 Close-up side view of phantom showing the ear region.

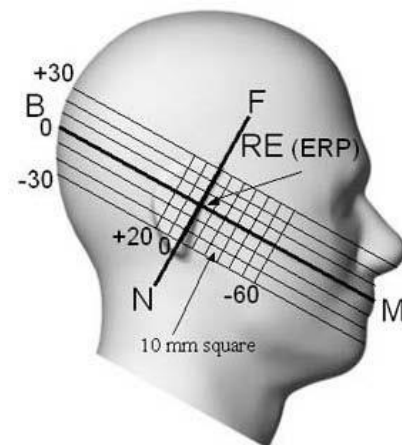


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

12.2 Definition of the cheek position

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

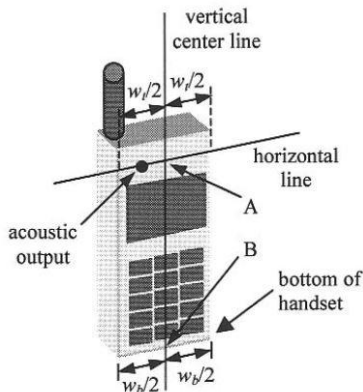


Fig 12.2.1 Handset vertical and horizontal reference lines—"fixed case"

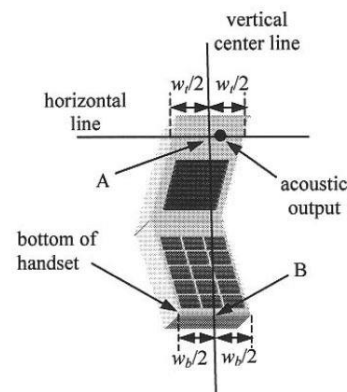


Fig 12.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

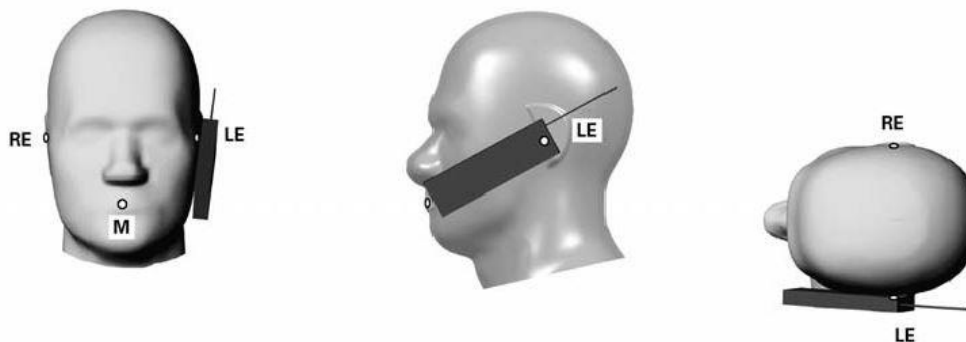


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

12.3 Definition of the tilt position

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

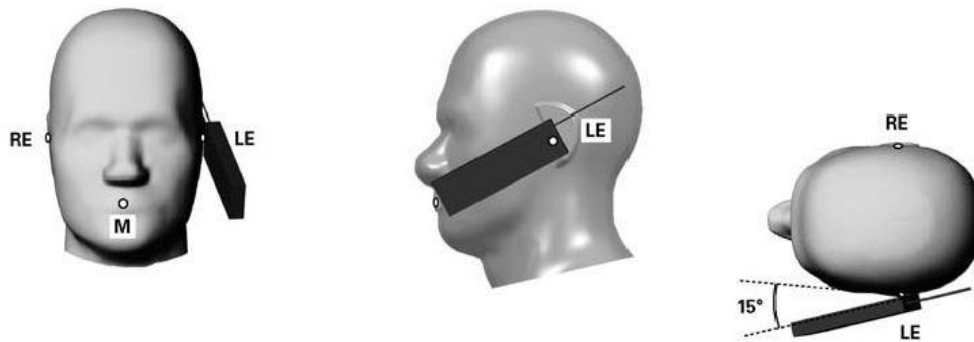


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

12.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 11.4). Per KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is $> 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

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

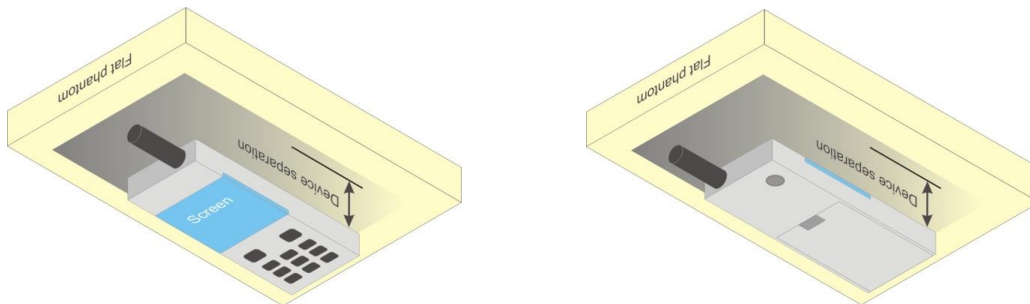


Fig 12.4 Body Worn Position

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 D01, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ 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: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$.

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

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

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

Setup Configuration

HSUPA Setup Configuration:

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

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

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

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

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

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

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

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

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

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

- a. The EUT was connected to Base Station 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.		

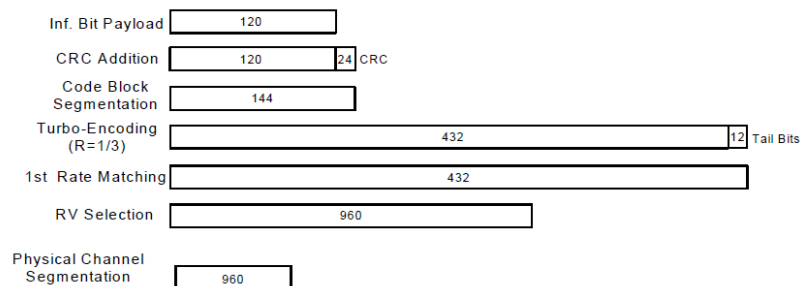


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK) Setup Configuration

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 Params
 - 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: Δ_{ACK} , Δ_{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>

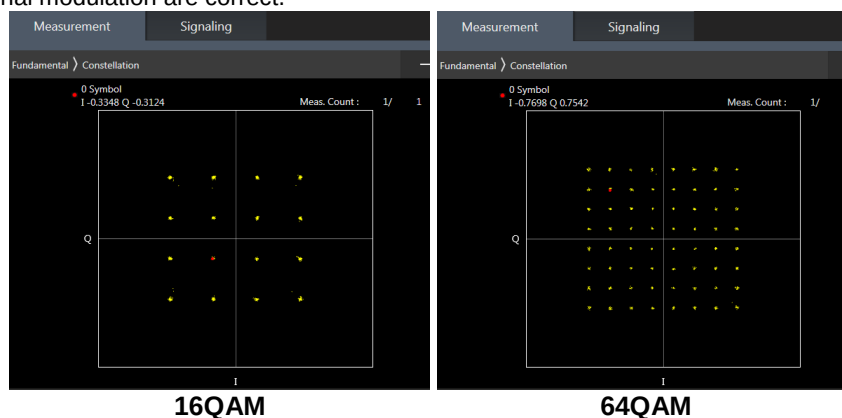
General Note:

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 output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 / B17 / B26 / B38 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 B5 / B17 SAR test was covered by B26 / 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 should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

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

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

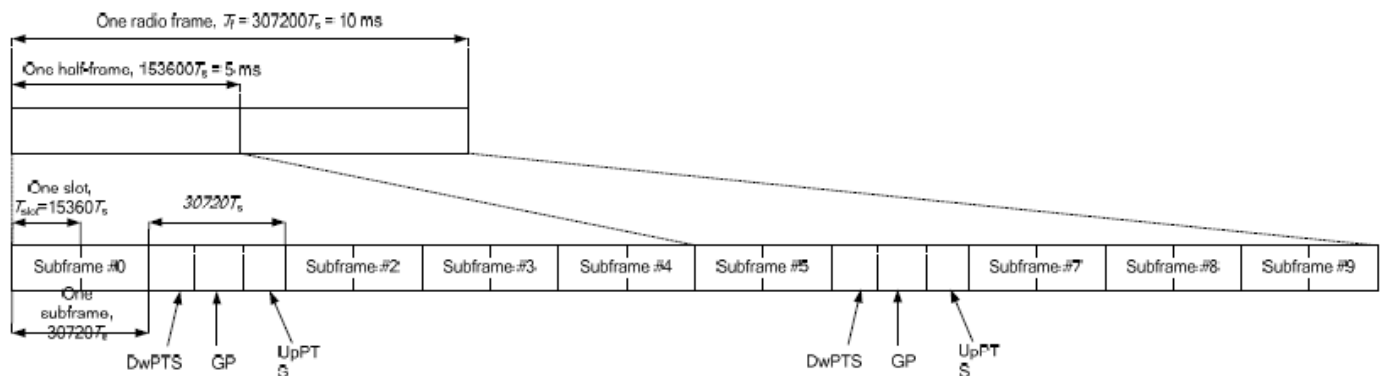


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

For LTE TDD Power class 3

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

**<LTE Carrier Aggregation>**

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

General Note:

1. This device supports Carrier Aggregation on downlink for inter and intra band. For the device supports bands and bandwidths and configurations are provided as follow table was according to 3GPP.
2. In applying the existing power measurement procedures of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of frequency bands and CCs in each row need combination, and for this device that all the configurations were choose to power measurement.
3. All permutations exist. No restrictions on Pcell & Scell combinations.
4. Per Oct. 2024 TCB workshop, Manufacturer declares that TX power measurement for multiple DL CA configurations is deemed not required as the DL CA has no impact on the TX power according to preliminary scan. TX power measured in LTE standalone operation represents the worst case.

2CC Downlink Carrier Aggregation		
Number	Combination	Restriction
1	CA_2C	
2	CA_12A-66A	
3	CA_26A-38A	
4	CA_26A-41A	
5	CA_2A-12A	
6	CA_2A-2A	
7	CA_2A-38A	
8	CA_2A-4A	
9	CA_2A-5A	
10	CA_2A-66A	
11	CA_2A-7A	
12	CA_38A-66A	
13	CA_38C	
14	CA_41A-41A	
15	CA_41C	
16	CA_4A-4A	
17	CA_4A-5A	
18	CA_4A-7A	
19	CA_5A-38A	
20	CA_5A-41A	
21	CA_5A-66A	
22	CA_5A-7A	
23	CA_66A-66A	
24	CA_66C	
25	CA_7A-26A	
26	CA_7A-66A	
27	CA_7A-7A	
28	CA_7B	
29	CA_7C	

LTE Carrier Aggregation Conducted Power (Downlink)

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

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

LTE Carrier Aggregation Conducted Power (Uplink)

Intra CA	TX Ant	
CA_7C	Ant 3	Ant 1
CA_38C	Ant 3	Ant 1
CA_41C	Ant 3	Ant 1

<Intra-band>
General Note:

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

<Inter-band>

LTE Inter CA	LTE Band	TX Ant	TX Ant	TX Ant
CA_2A-4A	B2	Ant 3	Ant 1	Ant 4
	B4	Ant 3	Ant 1	Ant 4
CA_2A-7A	B2	Ant 3	Ant 1	Ant 4
	B7	Ant 3	Ant 1	Ant 5
CA_4A-5A	B4	Ant 3	Ant 1	Ant 4
	B5	Ant 0	Ant 1	/
CA_4A-7A	B4	Ant 3	Ant 1	Ant 4
	B7	Ant 3	Ant 1	Ant 5
CA_5A-7A	B5	Ant 0	Ant 1	/
	B7	Ant 3	Ant 1	Ant 5
CA_5A-66A	B5	Ant 0	Ant 1	/
	B66	Ant 3	Ant 1	Ant 4

General Note:

1. The single carrier of inter band CA uplink power level is the same as Non-CA standalone LTE power level.
2. The product implements MediaTek TA-SAR feature which controls the instantaneous transmitting power for WWAN transmitter to ensure the product in compliance with RF exposure limit over a defined time window. To control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is compliant to the regulation requirement.
3. For LTE inter-band CA mode, MediaTek TA-SAR algorithm in WWAN adds directly the time-averaged RF exposure between two LTE bands. TA-SAR algorithm controls the total RF exposure base on LTE inter CA bands to not exceed FCC limit. In Part 1 Report, simultaneous transmission compliance was evaluated with other Radios (WLAN or BT) using standalone LTE SAR mode.

5G NR Output Power (Unit: dBm)

General Note:

1. 5G NR n2/n5/n7 /n26 /n66/n38/n41 is SA mode.
2. 5G NR n2/n5/n7 /n66/n38/n41 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 (Factory Test Mode) to perform SAR with default 100% transmission.
5. NSA and SA mode should perform SAR separately. For the maximum power of NSA mode is the same as SA total power level, so SA SAR can represent NSA mode SAR.
6. 5G NR NSA mode, the power level is the same as 5G NR SA mode, so 5G NR NSA mode and SA mode power table only show one time.
7. 5G NR supports CP-OFDM and DFT-s-OFDM modulation, for DFT-s-OFDM power is higher than CP-OFDM, so only show DFT-s-OFDM power table and chose DFT-s-OFDM to perform SAR testing.
8. For DFT-s-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for the CP-OFDM mode will not higher than DFT-s-OFDM mode, therefore, CP-OFDM measurement is unnecessary.

<3GPP 38.101 MPR for EN-DC>

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

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

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

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

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

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

<EN-DC combination>

ENDC	Band	TX Ant	TX Ant	TX Ant
DC_2A_n7A	B2	Ant4	/	/
	n7	Ant3	Ant1	/
DC_2A_n38A	B2	Ant4	/	/
	n38	Ant3	Ant1	/
DC_2A_n41A	B2	Ant4	/	/
	n41	Ant3	Ant1	/
DC_2A_n66A	B2	Ant4	/	/
	n66	Ant3	Ant1	Ant4
DC_4A_n7A	B4	Ant4	/	/
	n7	Ant3	Ant1	/
DC_4A_n38A	B4	Ant4	/	/
	n38	Ant3	Ant1	/
DC_4A_n41A	B4	Ant4	/	/
	n41	Ant3	Ant1	/
DC_5A_n7A	B5	Ant0	/	/
	n7	Ant3	Ant1	/
DC_7A_n7A	B7	Ant5	/	/
	n7	Ant3	Ant1	/
DC_5A_n38A	B5	Ant0	/	/
	n38	Ant3	Ant1	/
DC_5A_n66A	B5	Ant0	/	/
	n66	Ant3	Ant1	Ant4
DC_7A_n2A	B7	Ant3	/	/
	n2	Ant4	/	/
DC_7A_n5A	B7	Ant1	/	/
	n5	Ant0	/	/
DC_7A_n66A	B7	Ant5	/	/

	n66	Ant3	Ant1	Ant4
DC_66A_n66A	B66	Ant4	/	/
	n66	Ant3	Ant1	Ant4
DC_26A_n41A	B26	Ant0	/	/
	n41	Ant3	Ant1	/
DC_66A_n2A	B66	Ant3	/	/
	n2	Ant4	/	/
DC_66A_n5A	B66	Ant4	Ant1	/
	n5	Ant0	/	/
DC_66A_n7A	B66	Ant4	/	/
	n7	Ant3	Ant1	/
DC_66A_n38A	B66	Ant4	/	/
	n38	Ant3	Ant1	/
DC_38A_n38A	B38	Ant5	/	/
	n38	Ant3	Ant1	/
DC_66A_n41A	B66	Ant4	/	/
	n41	Ant3	Ant1	/
DC_41A_n41A	B41	Ant5	/	/
	n41	Ant3	Ant1	/

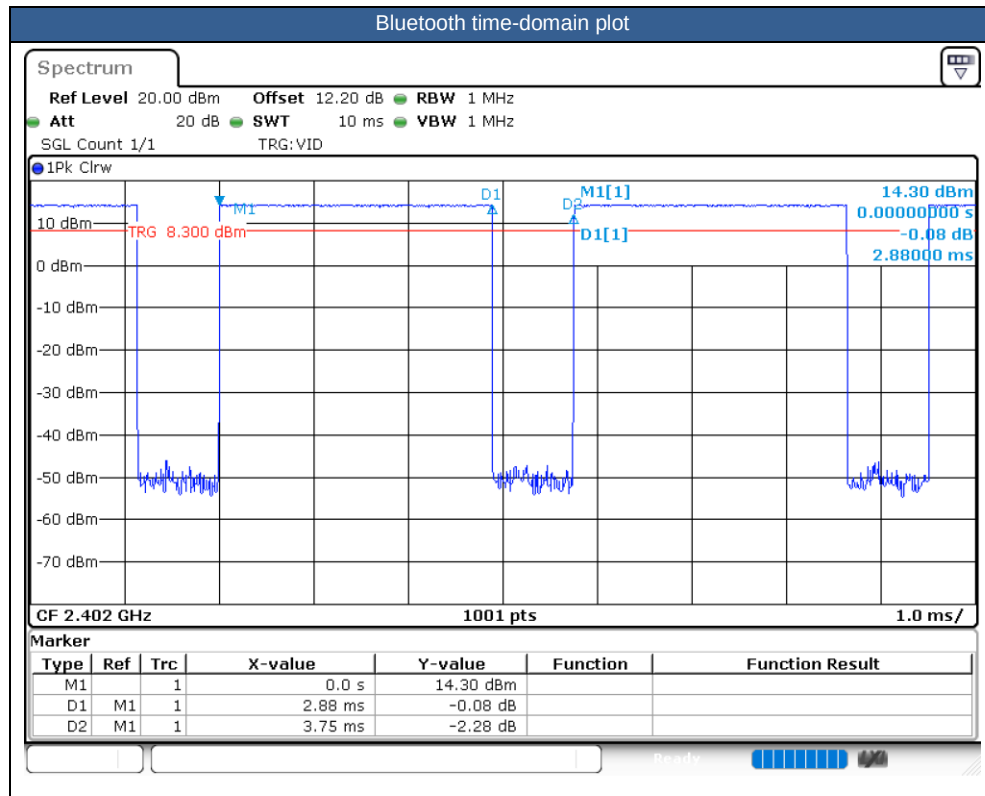
<WLAN Conducted Power>**General Note:**

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 76.8% as following figure, according to Oct. 2016 TCB workshop for Bluetooth SAR scaling need further consideration and the maximum duty cycle is 100%, therefore the actual duty cycle will be scaled up to 100% 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/Bluetooth signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
 - c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - d. For BT/WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
 - e. For TDD LTE SAR measurement of power class 3, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The reported TDD LTE SAR (W/kg) = Measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
 - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
 - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8 W/kg. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
5. The device implements receiver detect mechanism trigger reduced power for the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity) and the MediaTek TA-SAR will manage to ensure the power level not exceeding the associated power table. And the device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to power table at appendix E.
6. For WLAN when transmit simultaneously with WWAN/BT, the device power will be reduced power at head, hotspot and extremity conditions.
7. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
8. 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 transmitter scaled to maximum output power mode for product specific 10g SAR is higher than 1.2W/kg of WCDMA Band II, LTE Band 7, 5GNR n7, 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.
9. 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).
10. SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hotspot SAR.
11. For Phablet devices, when hotspot mode is not supported, Product specific 10-g SAR is required for all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions.
12. The following table "n/a" in the result means the SAR cube is too small to be detected.

GSM Note:

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

WCDMA Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA / 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 Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is $> \text{not } \frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is $> \text{not } \frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B12 / B17 / B26 / B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE B5 / B17 SAR test was covered by B26 / 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 n2/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.

ECI status description:

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

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

Exposure Condition	ECI	Trigger conditions
Head SAR-Standalone	ECI 2	Receiver on
Head SAR- Simultaneous	ECI 4	Receiver on + WLAN/BT
Body worn/Extremity SAR-Standalone	ECI 1	Receiver off
Hotspot Body worn/Extremity SAR- Simultaneous	ECI 3	Receiver off + WLAN/BT



15.1 Head SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power ECI	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750MHz																				
	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	ECI2	23095	707.5	23.43	24.50	1.279	-	-	-0.12	0.072	0.092
	LTE Band 12	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	ECI2	23095	707.5	23.43	24.50	1.279	-	-	-0.07	0.044	0.056
	LTE Band 12	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	ECI2	23095	707.5	23.43	24.50	1.279	-	-	-0.08	0.068	0.087
	LTE Band 12	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	ECI2	23095	707.5	23.43	24.50	1.279	-	-	-	n/a	n/a
	LTE Band 12	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 0	ECI2	23095	707.5	22.42	23.50	1.282	-	-	0.05	0.061	0.078
	LTE Band 12	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 0	ECI2	23095	707.5	22.42	23.50	1.282	-	-	-	n/a	n/a
	LTE Band 12	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 0	ECI2	23095	707.5	22.42	23.50	1.282	-	-	0.02	0.054	0.069
	LTE Band 12	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 0	ECI2	23095	707.5	22.42	23.50	1.282	-	-	-	n/a	n/a
01	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	23095	707.5	22.93	23.70	1.194	-	-	-0.09	0.466	0.556
	LTE Band 12	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	23095	707.5	22.93	23.70	1.194	-	-	0.07	0.417	0.498
	LTE Band 12	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	ECI2	23095	707.5	22.93	23.70	1.194	-	-	-0.11	0.331	0.395
	LTE Band 12	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	ECI2	23095	707.5	22.93	23.70	1.194	-	-	0.16	0.314	0.375
	LTE Band 12	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 1	ECI2	23095	707.5	21.89	22.70	1.205	-	-	-0.02	0.401	0.483
	LTE Band 12	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 1	ECI2	23095	707.5	21.89	22.70	1.205	-	-	0.11	0.344	0.415
	LTE Band 12	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 1	ECI2	23095	707.5	21.89	22.70	1.205	-	-	-0.12	0.260	0.313
	LTE Band 12	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 1	ECI2	23095	707.5	21.89	22.70	1.205	-	-	0.14	0.245	0.295
	LTE Band 13	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	ECI2	23230	782	23.40	24.50	1.288	-	-	0.05	0.134	0.173
	LTE Band 13	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	ECI2	23230	782	23.40	24.50	1.288	-	-	0.16	0.076	0.098
	LTE Band 13	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	ECI2	23230	782	23.40	24.50	1.288	-	-	0.04	0.109	0.140
	LTE Band 13	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	ECI2	23230	782	23.40	24.50	1.288	-	-	0.09	0.064	0.082
	LTE Band 13	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 0	ECI2	23230	782	23.35	23.50	1.035	-	-	0.09	0.103	0.107
	LTE Band 13	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 0	ECI2	23230	782	23.35	23.50	1.035	-	-	-0.17	0.060	0.062
	LTE Band 13	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 0	ECI2	23230	782	23.35	23.50	1.035	-	-	0.13	0.091	0.094
	LTE Band 13	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 0	ECI2	23230	782	23.35	23.50	1.035	-	-	0.1	0.046	0.048
02	LTE Band 13	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	23230	782	22.82	23.70	1.225	-	-	-0.03	0.290	0.355
	LTE Band 13	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	23230	782	22.82	23.70	1.225	-	-	-0.08	0.224	0.274
	LTE Band 13	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	ECI2	23230	782	22.82	23.70	1.225	-	-	0.17	0.207	0.253
	LTE Band 13	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	ECI2	23230	782	22.82	23.70	1.225	-	-	0.02	0.188	0.230
	LTE Band 13	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 1	ECI2	23230	782	21.68	22.70	1.265	-	-	0.1	0.218	0.276
	LTE Band 13	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 1	ECI2	23230	782	21.68	22.70	1.265	-	-	0.02	0.180	0.228
	LTE Band 13	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 1	ECI2	23230	782	21.68	22.70	1.265	-	-	-0.01	0.148	0.187
	LTE Band 13	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 1	ECI2	23230	782	21.68	22.70	1.265	-	-	0.09	0.134	0.169
835MHz																				
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 0	ECI2	128	824.2	29.54	30.00	1.112	-	-	0.1	0.262	0.291
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 0	ECI2	128	824.2	29.54	30.00	1.112	-	-	0.12	0.142	0.158
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Cheek	0mm	Ant 0	ECI2	128	824.2	29.54	30.00	1.112	-	-	-0.01	0.231	0.257
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Tilted	0mm	Ant 0	ECI2	128	824.2	29.54	30.00	1.112	-	-	-0.1	0.118	0.131
03	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 1	ECI2	189	836.4	25.27	26.50	1.327	-	-	-0.04	0.448	0.595
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 1	ECI2	189	836.4	25.27	26.50	1.327	-	-	-0.11	0.252	0.335
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Cheek	0mm	Ant 1	ECI2	189	836.4	25.27	26.50	1.327	-	-	-0.05	0.234	0.311
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Tilted	0mm	Ant 1	ECI2	189	836.4	25.27	26.50	1.327	-	-	0.14	0.189	0.251
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	ECI2	4182	836.4	24.08	25.00	1.236	-	-	-0.03	0.189	0.234
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 0	ECI2	4182	836.4	24.08	25.00	1.236	-	-	0.13	0.102	0.126
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	ECI2	4182	836.4	24.08	25.00	1.236	-	-	0.06	0.143	0.177
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 0	ECI2	4182	836.4	24.08	25.00	1.236	-	-	-0.07	0.065	0.080
04	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	ECI2	4182	836.4	22.35	23.00	1.161	-	-	0.16	0.530	0.616
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	ECI2	4182	836.4	22.35	23.00	1.161	-	-	-0.15	0.433	0.503
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	ECI2	4182	836.4	22.35	23.00	1.161	-	-	0.05	0.363	0.422
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 1	ECI2	4182	836.4	22.35	23.00	1.161	-	-	-0.02	0.321	0.373
	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	ECI2	26865	831.5	23.85	25.00	1.303	-	-	-0.08	0.142	0.185



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	LTE Band 26	15M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	ECI2	26865	831.5	23.85	25.00	1.303	-	-	-0.05	0.070	0.091
	LTE Band 26	15M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	ECI2	26865	831.5	23.85	25.00	1.303	-	-	0.05	0.112	0.146
	LTE Band 26	15M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	ECI2	26865	831.5	23.85	25.00	1.303	-	-	0.03	0.057	0.074
	LTE Band 26	15M	QPSK	36	0	-	Right Cheek	0mm	Ant 0	ECI2	26865	831.5	22.84	24.00	1.306	-	-	-0.16	0.103	0.135
	LTE Band 26	15M	QPSK	36	0	-	Right Tilted	0mm	Ant 0	ECI2	26865	831.5	22.84	24.00	1.306	-	-	0.07	0.058	0.076
	LTE Band 26	15M	QPSK	36	0	-	Left Cheek	0mm	Ant 0	ECI2	26865	831.5	22.84	24.00	1.306	-	-	0.05	0.092	0.120
	LTE Band 26	15M	QPSK	36	0	-	Left Tilted	0mm	Ant 0	ECI2	26865	831.5	22.84	24.00	1.306	-	-	-0.11	0.048	0.063
05	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	26865	831.5	23.69	24.20	1.125	-	-	0.18	0.599	0.674
	LTE Band 26	15M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	26865	831.5	23.69	24.20	1.125	-	-	0.05	0.408	0.459
	LTE Band 26	15M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	ECI2	26865	831.5	23.69	24.20	1.125	-	-	-0.08	0.369	0.415
	LTE Band 26	15M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	ECI2	26865	831.5	23.69	24.20	1.125	-	-	0.15	0.334	0.376
	LTE Band 26	15M	QPSK	36	0	-	Right Cheek	0mm	Ant 1	ECI2	26865	831.5	22.70	23.20	1.122	-	-	0.08	0.441	0.495
	LTE Band 26	15M	QPSK	36	0	-	Right Tilted	0mm	Ant 1	ECI2	26865	831.5	22.70	23.20	1.122	-	-	-0.17	0.349	0.392
	LTE Band 26	15M	QPSK	36	0	-	Left Cheek	0mm	Ant 1	ECI2	26865	831.5	22.70	23.20	1.122	-	-	0.1	0.309	0.347
	LTE Band 26	15M	QPSK	36	0	-	Left Tilted	0mm	Ant 1	ECI2	26865	831.5	22.70	23.20	1.122	-	-	0.16	0.282	0.316
	FR1 n26	20M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 0	ECI2	166300	831.5	23.06	24.70	1.459	-	-	-0.08	0.107	0.156
	FR1 n26	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 0	ECI2	166300	831.5	23.06	24.70	1.459	-	-	-0.19	0.063	0.092
	FR1 n26	20M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 0	ECI2	166300	831.5	23.06	24.70	1.459	-	-	-0.12	0.096	0.140
	FR1 n26	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 0	ECI2	166300	831.5	23.06	24.70	1.459	-	-	-0.11	0.049	0.071
	FR1 n26	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 0	ECI2	166300	831.5	22.96	24.70	1.493	-	-	0.07	0.121	0.181
	FR1 n26	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 0	ECI2	166300	831.5	22.96	24.70	1.493	-	-	0.1	0.071	0.106
	FR1 n26	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 0	ECI2	166300	831.5	22.96	24.70	1.493	-	-	-0.17	0.109	0.163
	FR1 n26	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 0	ECI2	166300	831.5	22.96	24.70	1.493	-	-	-0.19	0.055	0.082
	FR1 n26	20M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 1	ECI2	166300	831.5	22.95	24.20	1.334	-	-	0.13	0.549	0.732
	FR1 n26	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 1	ECI2	166300	831.5	22.95	24.20	1.334	-	-	-0.07	0.423	0.564
	FR1 n26	20M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 1	ECI2	166300	831.5	22.95	24.20	1.334	-	-	0.06	0.358	0.477
	FR1 n26	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 1	ECI2	166300	831.5	22.95	24.20	1.334	-	-	-0.1	0.310	0.413
06	FR1 n26	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 1	ECI2	166300	831.5	22.90	24.20	1.349	-	-	0.01	0.615	0.830
	FR1 n26	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 1	ECI2	166300	831.5	22.90	24.20	1.349	-	-	0.05	0.508	0.685
	FR1 n26	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 1	ECI2	166300	831.5	22.90	24.20	1.349	-	-	-0.04	0.430	0.580
	FR1 n26	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 1	ECI2	166300	831.5	22.90	24.20	1.349	-	-	-0.07	0.372	0.502
	FR1 n26	20M	QPSK	100	0	DFT-15	Right Cheek	0mm	Ant 1	ECI2	166300	831.5	21.87	23.20	1.358	-	-	0.13	0.581	0.789
1750MHz																				
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 3	ECI2	1513	1752.6	23.93	25.00	1.279	-	-	0.05	0.101	0.129
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 3	ECI2	1513	1752.6	23.93	25.00	1.279	-	-	0.06	0.065	0.083
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 3	ECI2	1513	1752.6	23.93	25.00	1.279	-	-	0.17	0.087	0.111
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 3	ECI2	1513	1752.6	23.93	25.00	1.279	-	-	0.13	0.058	0.074
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	ECI2	1513	1752.6	22.43	23.50	1.279	-	-	-0.09	0.620	0.793
07	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	ECI2	1513	1752.6	22.43	23.50	1.279	-	-	-0.11	0.825	1.055
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	ECI2	1513	1752.6	22.43	23.50	1.279	-	-	-0.13	0.388	0.496
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 1	ECI2	1513	1752.6	22.43	23.50	1.279	-	-	-0.06	0.452	0.578
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	ECI2	1312	1712.4	22.25	23.50	1.334	-	-	-0.01	0.540	0.720
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	ECI2	1413	1732.6	22.20	23.50	1.349	-	-	-0.12	0.670	0.904
	LTE Band 4	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	20175	1732.5	23.52	24.80	1.343	-	-	0.03	0.670	0.900
	LTE Band 4	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	20175	1732.5	23.52	24.80	1.343	-	-	-0.19	0.741	0.995
	LTE Band 4	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	ECI2	20175	1732.5	23.52	24.80	1.343	-	-	0.05	0.416	0.559
	LTE Band 4	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	ECI2	20175	1732.5	23.52	24.80	1.343	-	-	-0.14	0.467	0.627
	LTE Band 4	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	ECI2	20175	1732.5	22.50	23.80	1.349	-	-	-0.13	0.545	0.735
	LTE Band 4	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	ECI2	20175	1732.5	22.50	23.80	1.349	-	-	-0.11	0.602	0.812
	LTE Band 4	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	ECI2	20175	1732.5	22.50	23.80	1.349	-	-	0.1	0.337	0.455
	LTE Band 4	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	ECI2	20175	1732.5	22.50	23.80	1.349	-	-	0.1	0.380	0.513
	LTE Band 4	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 1	ECI2	20175	1732.5	22.48	23.80	1.355	-	-	0.01	0.625	0.847
	LTE Band 4	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 1	ECI2	20175	1732.5	22.48	23.80	1.355	-	-	0.09	0.692	0.938
08	LTE Band 4	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 4	ECI2	20175	1732.5	22.30	22.80	1.122	-	-	-0.01	1.010	1.133
	LTE Band 4	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 4	ECI2	20175	1732.5	22.30	22.80	1.122	-	-	0.05	0.222	0.249
	LTE Band 4	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 4	ECI2	20175	1732.5	22.30	22.80	1.122	-	-	-0.04	0.434	0.487



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	LTE Band 4	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 4	ECI2	20175	1732.5	22.30	22.80	1.122	-	-	0.03	0.143	0.160
	LTE Band 4	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 4	ECI4	20175	1732.5	18.00	18.80	1.202	-	-	0.05	0.395	0.475
	LTE Band 4	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 4	ECI2	20175	1732.5	21.98	22.80	1.208	-	-	-0.1	0.930	1.123
	LTE Band 4	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	ECI2	20175	1732.5	21.98	22.80	1.208	-	-	0.02	0.202	0.244
	LTE Band 4	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 4	ECI2	20175	1732.5	21.98	22.80	1.208	-	-	0.12	0.402	0.486
	LTE Band 4	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 4	ECI2	20175	1732.5	21.98	22.80	1.208	-	-	0.06	0.126	0.152
	LTE Band 4	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 4	ECI2	20175	1732.5	21.97	22.80	1.211	-	-	0.04	0.900	1.090
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 3	ECI2	132572	1770	23.82	24.80	1.253	-	-	0.15	0.101	0.127
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 3	ECI2	132572	1770	23.82	24.80	1.253	-	-	0.1	0.056	0.070
	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 3	ECI2	132572	1770	23.82	24.80	1.253	-	-	-0.12	0.086	0.108
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 3	ECI2	132572	1770	23.82	24.80	1.253	-	-	0.05	0.062	0.078
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 3	ECI2	132572	1770	22.84	23.80	1.247	-	-	0.09	0.086	0.107
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 3	ECI2	132572	1770	22.84	23.80	1.247	-	-	0.09	0.049	0.061
	LTE Band 66	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 3	ECI2	132572	1770	22.84	23.80	1.247	-	-	0.18	0.071	0.089
	LTE Band 66	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 3	ECI2	132572	1770	22.84	23.80	1.247	-	-	0.06	0.049	0.061
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	132322	1745	21.73	22.30	1.140	-	-	-0.06	0.772	0.880
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	132322	1745	21.73	22.30	1.140	-	-	0.06	0.780	0.889
	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	ECI2	132322	1745	21.73	22.30	1.140	-	-	-0.08	0.479	0.546
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	ECI2	132322	1745	21.73	22.30	1.140	-	-	0	0.544	0.620
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	132072	1720	21.71	22.30	1.146	-	-	0.11	0.624	0.715
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	132572	1770	21.70	22.30	1.148	-	-	-0.05	0.766	0.879
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	132072	1720	21.71	22.30	1.146	-	-	0.06	0.630	0.722
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	132572	1770	21.70	22.30	1.148	-	-	0.14	0.774	0.889
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	ECI2	132322	1745	21.71	22.30	1.146	-	-	0.15	0.799	0.915
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	ECI2	132322	1745	21.71	22.30	1.146	-	-	0.13	0.807	0.924
	LTE Band 66	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	ECI2	132322	1745	21.71	22.30	1.146	-	-	-0.14	0.496	0.568
	LTE Band 66	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	ECI2	132322	1745	21.71	22.30	1.146	-	-	0.15	0.563	0.645
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	ECI2	132072	1720	21.70	22.30	1.148	-	-	-0.19	0.646	0.742
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	ECI2	132572	1770	21.68	22.30	1.153	-	-	-0.04	0.793	0.915
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	ECI2	132072	1720	21.70	22.30	1.148	-	-	-0.08	0.652	0.749
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	ECI2	132572	1770	21.68	22.30	1.153	-	-	0.12	0.801	0.924
	LTE Band 66	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 1	ECI2	132322	1745	21.70	22.30	1.148	-	-	0.17	0.712	0.817
	LTE Band 66	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 1	ECI2	132322	1745	21.70	22.30	1.148	-	-	-0.13	0.719	0.826
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 4	ECI2	132572	1770	18.75	19.30	1.135	-	-	-0.1	0.711	0.807
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 4	ECI2	132572	1770	18.75	19.30	1.135	-	-	0.03	0.167	0.190
	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 4	ECI2	132572	1770	18.75	19.30	1.135	-	-	-0.18	0.313	0.355
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 4	ECI2	132572	1770	18.75	19.30	1.135	-	-	0	0.104	0.118
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 4	ECI2	132072	1720	18.12	19.30	1.312	-	-	0.05	0.711	0.933
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 4	ECI2	132322	1745	18.56	19.30	1.186	-	-	-0.15	0.723	0.857
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 4	ECI2	132572	1770	18.73	19.30	1.140	-	-	0.03	0.787	0.897
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	ECI2	132572	1770	18.73	19.30	1.140	-	-	0	0.201	0.229
	LTE Band 66	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 4	ECI2	132572	1770	18.73	19.30	1.140	-	-	-0.06	0.378	0.431
	LTE Band 66	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 4	ECI2	132572	1770	18.73	19.30	1.140	-	-	0.03	0.125	0.143
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 4	ECI2	132072	1720	18.11	19.30	1.315	-	-	-0.1	0.855	1.125
09	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 4	ECI2	132322	1745	18.55	19.30	1.189	-	-	0.01	0.983	1.168
	LTE Band 66	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 4	ECI2	132572	1770	18.71	19.30	1.146	-	-	0.19	0.877	1.005
	FR1 n66	40M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 3	ECI2	349000	1745	23.09	24.40	1.352	-	-	0.04	0.070	0.095
	FR1 n66	40M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 3	ECI2	349000	1745	23.09	24.40	1.352	-	-	-0.02	0.042	0.057
	FR1 n66	40M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 3	ECI2	349000	1745	23.09	24.40	1.352	-	-	0.04	0.100	0.135
	FR1 n66	40M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 3	ECI2	349000	1745	23.09	24.40	1.352	-	-	0.08	0.050	0.068
	FR1 n66	40M	QPSK	108	54	DFT-15	Right Cheek	0mm	Ant 3	ECI2	349000	1745	23.05	24.40	1.365	-	-	0.02	0.095	0.130
	FR1 n66	40M	QPSK	108	54	DFT-15	Right Tilted	0mm	Ant 3	ECI2	349000	1745	23.05	24.40	1.365	-	-	0.05	0.055	0.075
	FR1 n66	40M	QPSK	108	54	DFT-15	Left Cheek	0mm	Ant 3	ECI2	349000	1745	23.05	24.40	1.365	-	-	-0.12	0.103	0.141
	FR1 n66	40M	QPSK	108	54	DFT-15	Left Tilted	0mm	Ant 3	ECI2	349000	1745	23.05	24.40	1.365	-	-	0.1	0.060	0.082
	FR1 n66	40M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 1	ECI2	349000	1745	21.04	21.90	1.219	-	-	0.03	0.330	0.402
	FR1 n66	40M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 1	ECI2	349000	1745	21.04	21.90	1.219	-	-	0.12	0.342	0.417



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	FR1 n66	40M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 1	ECI2	349000	1745	21.04	21.90	1.219	-	-	0.03	0.195	0.238
	FR1 n66	40M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 1	ECI2	349000	1745	21.04	21.90	1.219	-	-	0.04	0.223	0.272
	FR1 n66	40M	QPSK	108	54	DFT-15	Right Cheek	0mm	Ant 1	ECI2	349000	1745	20.91	21.90	1.256	-	-	0.08	0.430	0.540
	FR1 n66	40M	QPSK	108	54	DFT-15	Right Tilted	0mm	Ant 1	ECI2	349000	1745	20.91	21.90	1.256	-	-	0.02	0.447	0.561
	FR1 n66	40M	QPSK	108	54	DFT-15	Left Cheek	0mm	Ant 1	ECI2	349000	1745	20.91	21.90	1.256	-	-	0.03	0.254	0.319
	FR1 n66	40M	QPSK	108	54	DFT-15	Left Tilted	0mm	Ant 1	ECI2	349000	1745	20.91	21.90	1.256	-	-	0.17	0.287	0.360
	FR1 n66	40M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 4	ECI2	352000	1760	17.02	17.90	1.225	-	-	0.04	0.790	0.967
	FR1 n66	40M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 4	ECI2	352000	1760	17.02	17.90	1.225	-	-	0.02	0.139	0.170
	FR1 n66	40M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 4	ECI2	352000	1760	17.02	17.90	1.225	-	-	0.07	0.252	0.309
	FR1 n66	40M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 4	ECI2	352000	1760	17.02	17.90	1.225	-	-	0.09	0.077	0.094
	FR1 n66	40M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 4	ECI2	346000	1730	16.79	17.90	1.291	-	-	0.05	0.690	0.891
	FR1 n66	40M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 4	ECI2	349000	1745	16.82	17.90	1.282	-	-	0.01	0.670	0.859
10	FR1 n66	40M	QPSK	108	54	DFT-15	Right Cheek	0mm	Ant 4	ECI2	352000	1760	17.00	17.90	1.230	-	-	-0.04	0.801	0.985
	FR1 n66	40M	QPSK	108	54	DFT-15	Right Tilted	0mm	Ant 4	ECI2	352000	1760	17.00	17.90	1.230	-	-	0.03	0.151	0.186
	FR1 n66	40M	QPSK	108	54	DFT-15	Left Cheek	0mm	Ant 4	ECI2	352000	1760	17.00	17.90	1.230	-	-	0.07	0.288	0.354
	FR1 n66	40M	QPSK	108	54	DFT-15	Left Tilted	0mm	Ant 4	ECI2	352000	1760	17.00	17.90	1.230	-	-	-0.02	0.090	0.111
	FR1 n66	40M	QPSK	108	54	DFT-15	Right Cheek	0mm	Ant 4	ECI2	346000	1730	16.73	17.90	1.309	-	-	0.09	0.678	0.888
	FR1 n66	40M	QPSK	108	54	DFT-15	Right Cheek	0mm	Ant 4	ECI2	349000	1745	16.67	17.90	1.327	-	-	0.04	0.670	0.889
	FR1 n66	30M	QPSK	216	0	DFT-15	Right Cheek	0mm	Ant 4	ECI2	352000	1760	16.96	17.90	1.242	-	-	0.11	0.600	0.745
1900MHz																				
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 3	ECI2	810	1909.8	26.22	27.00	1.197	-	-	-0.14	0.079	0.095
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 3	ECI2	810	1909.8	26.22	27.00	1.197	-	-	-0.18	0.057	0.068
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Cheek	0mm	Ant 3	ECI2	810	1909.8	26.22	27.00	1.197	-	-	0.1	0.077	0.092
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Tilted	0mm	Ant 3	ECI2	810	1909.8	26.22	27.00	1.197	-	-	0.15	0.060	0.072
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 1	ECI2	661	1880	20.82	21.50	1.169	-	-	-0.03	0.598	0.699
11	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 1	ECI2	661	1880	20.82	21.50	1.169	-	-	-0.06	0.886	1.036
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Cheek	0mm	Ant 1	ECI2	661	1880	20.82	21.50	1.169	-	-	-0.11	0.355	0.415
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Tilted	0mm	Ant 1	ECI2	661	1880	20.82	21.50	1.169	-	-	0.02	0.417	0.488
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 1	ECI2	512	1850.2	20.72	21.50	1.197	-	-	0.14	0.504	0.603
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 1	ECI2	810	1909.8	20.80	21.50	1.175	-	-	0.15	0.730	0.858
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 3	ECI2	9262	1852.4	24.58	25.00	1.102	-	-	-0.11	0.103	0.113
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 3	ECI2	9262	1852.4	24.58	25.00	1.102	-	-	0.17	0.074	0.082
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 3	ECI2	9262	1852.4	24.58	25.00	1.102	-	-	0.08	0.113	0.124
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 3	ECI2	9262	1852.4	24.58	25.00	1.102	-	-	-0.12	0.083	0.091
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	ECI2	9262	1852.4	18.33	18.50	1.040	-	-	0.1	0.573	0.596
12	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	ECI2	9262	1852.4	18.33	18.50	1.040	-	-	0.11	0.709	0.737
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	ECI2	9262	1852.4	18.33	18.50	1.040	-	-	0.14	0.236	0.245
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 1	ECI2	9262	1852.4	18.33	18.50	1.040	-	-	0.01	0.286	0.297
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	ECI4	9262	1852.4	13.33	13.50	1.040	-	-	0.02	0.221	0.230
	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 3	ECI2	18900	1880	23.50	24.20	1.175	-	-	0.13	0.074	0.087
	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 3	ECI2	18900	1880	23.50	24.20	1.175	-	-	-0.06	0.052	0.061
	LTE Band 2	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 3	ECI2	18900	1880	23.50	24.20	1.175	-	-	-0.16	0.096	0.113
	LTE Band 2	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 3	ECI2	18900	1880	23.50	24.20	1.175	-	-	-0.08	0.070	0.082
	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 3	ECI2	18900	1880	22.48	23.20	1.180	-	-	-0.17	0.063	0.074
	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 3	ECI2	18900	1880	22.48	23.20	1.180	-	-	-0.07	0.043	0.051
	LTE Band 2	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 3	ECI2	18900	1880	22.48	23.20	1.180	-	-	0.15	0.079	0.093
	LTE Band 2	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 3	ECI2	18900	1880	22.48	23.20	1.180	-	-	-0.03	0.051	0.060
	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	18900	1880	18.11	18.70	1.146	-	-	0.12	0.727	0.833
	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	18900	1880	18.11	18.70	1.146	-	-	-0.07	0.774	0.887
	LTE Band 2	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	ECI2	18900	1880	18.11	18.70	1.146	-	-	-0.13	0.419	0.480
	LTE Band 2	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	ECI2	18900	1880	18.11	18.70	1.146	-	-	0.19	0.485	0.556
	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	18700	1860	18.09	18.70	1.151	-	-	0.05	0.744	0.856
	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	19100	1900	18.07	18.70	1.156	-	-	0.11	0.743	0.859
	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	18700	1860	18.09	18.70	1.151	-	-	-0.18	0.792	0.911
	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	19100	1900	18.07	18.70	1.156	-	-	-0.06	0.791	0.914
	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	ECI2	18900	1880	18.10	18.70	1.148	-	-	0.17	0.759	0.871



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	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	ECI2	18900	1880	18.10	18.70	1.148	-	-	-0.12	0.803	0.922
	LTE Band 2	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	ECI2	18900	1880	18.10	18.70	1.148	-	-	0.1	0.438	0.503
	LTE Band 2	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	ECI2	18900	1880	18.10	18.70	1.148	-	-	0.01	0.506	0.581
	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	ECI2	18700	1860	18.07	18.70	1.156	-	-	0.17	0.673	0.778
	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	ECI2	19100	1900	18.06	18.70	1.159	-	-	-0.08	0.799	0.926
	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	ECI2	18700	1860	18.07	18.70	1.156	-	-	-0.14	0.712	0.823
	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	ECI2	19100	1900	18.06	18.70	1.159	-	-	0.18	0.845	0.979
	LTE Band 2	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 1	ECI2	19100	1900	18.08	18.70	1.153	-	-	-0.06	0.774	0.893
	LTE Band 2	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 1	ECI2	19100	1900	18.08	18.70	1.153	-	-	-0.17	0.819	0.945
	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 4	ECI2	18900	1880	20.50	21.70	1.318	-	-	0.02	0.756	0.997
	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 4	ECI2	18900	1880	20.50	21.70	1.318	-	-	0.14	0.256	0.337
	LTE Band 2	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 4	ECI2	18900	1880	20.50	21.70	1.318	-	-	0.06	0.342	0.451
	LTE Band 2	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 4	ECI2	18900	1880	20.50	21.70	1.318	-	-	-0.19	0.174	0.229
	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 4	ECI2	18700	1860	20.46	21.70	1.330	-	-	0.11	0.707	0.941
	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 4	ECI2	19100	1900	20.48	21.70	1.324	-	-	0.17	0.860	1.139
	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 4	ECI2	18900	1880	20.48	21.70	1.324	-	-	-0.12	0.825	1.093
	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	ECI2	18900	1880	20.48	21.70	1.324	-	-	-0.02	0.280	0.371
	LTE Band 2	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 4	ECI2	18900	1880	20.48	21.70	1.324	-	-	0.1	0.372	0.493
	LTE Band 2	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 4	ECI2	18900	1880	20.48	21.70	1.324	-	-	0.13	0.189	0.250
	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 4	ECI2	18700	1860	20.45	21.70	1.334	-	-	0.11	0.772	1.029
13	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 4	ECI2	19100	1900	20.46	21.70	1.330	-	-	0.17	0.879	1.169
	LTE Band 2	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 4	ECI2	18900	1880	20.46	21.70	1.330	-	-	-0.12	0.779	1.036
	FR1 n2	20M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 3	ECI2	380000	1900	23.47	24.70	1.327	-	-	0.08	0.088	0.117
	FR1 n2	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 3	ECI2	380000	1900	23.47	24.70	1.327	-	-	-	n/a	n/a
	FR1 n2	20M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 3	ECI2	380000	1900	23.47	24.70	1.327	-	-	0.16	0.118	0.157
	FR1 n2	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 3	ECI2	380000	1900	23.47	24.70	1.327	-	-	0.08	0.082	0.109
	FR1 n2	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 3	ECI2	380000	1900	23.41	24.70	1.346	-	-	0.18	0.094	0.127
	FR1 n2	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 3	ECI2	380000	1900	23.41	24.70	1.346	-	-	-	n/a	n/a
	FR1 n2	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 3	ECI2	380000	1900	23.41	24.70	1.346	-	-	-0.09	0.126	0.170
	FR1 n2	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 3	ECI2	380000	1900	23.41	24.70	1.346	-	-	-0.07	0.088	0.118
	FR1 n2	20M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 1	ECI2	372000	1860	16.82	17.70	1.225	-	-	0.05	0.628	0.769
	FR1 n2	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 1	ECI2	372000	1860	16.82	17.70	1.225	-	-	-0.04	0.647	0.792
	FR1 n2	20M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 1	ECI2	372000	1860	16.82	17.70	1.225	-	-	0.12	0.368	0.451
	FR1 n2	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 1	ECI2	372000	1860	16.82	17.70	1.225	-	-	0.04	0.423	0.518
	FR1 n2	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 1	ECI4	372000	1860	11.82	12.70	1.225	-	-	0.01	0.205	0.251
	FR1 n2	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 1	ECI2	372000	1860	16.75	17.70	1.245	-	-	0.05	0.622	0.774
	FR1 n2	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 1	ECI2	372000	1860	16.75	17.70	1.245	-	-	-0.1	0.630	0.784
	FR1 n2	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 1	ECI2	372000	1860	16.75	17.70	1.245	-	-	-0.14	0.364	0.453
	FR1 n2	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 1	ECI2	372000	1860	16.75	17.70	1.245	-	-	-0.01	0.418	0.520
	FR1 n2	20M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 4	ECI2	380000	1900	19.37	20.70	1.358	-	-	0.15	0.596	0.810
	FR1 n2	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 4	ECI2	380000	1900	19.37	20.70	1.358	-	-	0	0.217	0.295
	FR1 n2	20M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 4	ECI2	380000	1900	19.37	20.70	1.358	-	-	0.11	0.266	0.361
	FR1 n2	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 4	ECI2	380000	1900	19.37	20.70	1.358	-	-	0.19	0.144	0.196
14	FR1 n2	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 4	ECI2	380000	1900	19.30	20.70	1.380	-	-	-0.16	0.684	0.944
	FR1 n2	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 4	ECI2	380000	1900	19.30	20.70	1.380	-	-	-0.04	0.249	0.344
	FR1 n2	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 4	ECI2	380000	1900	19.30	20.70	1.380	-	-	-0.15	0.306	0.422
	FR1 n2	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 4	ECI2	380000	1900	19.30	20.70	1.380	-	-	0.08	0.166	0.229
	FR1 n2	20M	QPSK	100	0	DFT-15	Right Cheek	0mm	Ant 4	ECI2	380000	1900	19.17	20.70	1.422	-	-	-0.12	0.661	0.940
2600MHz																				
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 3	ECI2	21100	2535	23.10	24.20	1.288	-	-	0.1	0.146	0.188
	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 3	ECI2	21100	2535	23.10	24.20	1.288	-	-	0.03	0.142	0.183
	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 3	ECI2	21100	2535	23.10	24.20	1.288	-	-	-0.1	0.227	0.292
	LTE Band 7C	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 3	ECI2	21100/21298	2535/2554.8	23.07	24.20	1.297	-	-	-0.02	0.216	0.280
	LTE Band 7	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 3	ECI2	21100	2535	23.10	24.20	1.288	-	-	0.07	0.068	0.088
	LTE Band 7	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 3	ECI2	21100	2535	22.20	23.20	1.259	-	-	0.12	0.118	0.149
	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 3	ECI2	21100	2535	22.20	23.20	1.259	-	-	0.06	0.117	0.147



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	LTE Band 7	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 3	ECI2	21100	2535	22.20	23.20	1.259	-	-	0.1	0.187	0.235
	LTE Band 7	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 3	ECI2	21100	2535	22.20	23.20	1.259	-	-	-0.1	0.064	0.081
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	21100	2535	15.38	16.20	1.208	-	-	-0.06	0.684	0.826
	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	21100	2535	15.38	16.20	1.208	-	-	-0.08	0.703	0.849
	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	ECI2	21100	2535	15.38	16.20	1.208	-	-	-0.11	0.243	0.293
	LTE Band 7	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	ECI2	21100	2535	15.38	16.20	1.208	-	-	-0.05	0.298	0.360
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	20850	2510	15.27	16.20	1.239	-	-	0.09	0.779	0.965
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	21350	2560	15.35	16.20	1.216	-	-	0.13	0.556	0.676
15	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	20850	2510	15.27	16.20	1.239	-	-	0.12	0.812	1.006
	LTE Band 7C	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	20850/21048	2510/2529.8	15.22	16.20	1.253	-	-	0.09	0.657	0.823
	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	21350	2560	15.35	16.20	1.216	-	-	0.11	0.575	0.699
	LTE Band 7	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	ECI2	21100	2535	15.37	16.20	1.211	-	-	0.09	0.556	0.673
	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	ECI2	21100	2535	15.37	16.20	1.211	-	-	0.14	0.584	0.707
	LTE Band 7	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	ECI2	21100	2535	15.37	16.20	1.211	-	-	0.15	0.198	0.240
	LTE Band 7	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	ECI2	21100	2535	15.37	16.20	1.211	-	-	0	0.245	0.297
	LTE Band 7	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 1	ECI2	21100	2535	15.35	16.20	1.216	-	-	0.1	0.532	0.647
	LTE Band 7	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 1	ECI2	21100	2535	15.35	16.20	1.216	-	-	-0.19	0.551	0.670
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 5	ECI2	21100	2535	18.82	19.00	1.042	-	-	0.12	0.461	0.481
	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 5	ECI2	21100	2535	18.82	19.00	1.042	-	-	0.13	0.217	0.226
	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 5	ECI2	21100	2535	18.82	19.00	1.042	-	-	0.02	0.122	0.127
	LTE Band 7	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 5	ECI2	21100	2535	18.82	19.00	1.042	-	-	-	n/a	n/a
	LTE Band 7	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 5	ECI2	21100	2535	18.80	19.00	1.047	-	-	-0.06	0.481	0.504
	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 5	ECI2	21100	2535	18.80	19.00	1.047	-	-	-0.05	0.227	0.238
	LTE Band 7	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 5	ECI2	21100	2535	18.80	19.00	1.047	-	-	0.11	0.128	0.134
	LTE Band 7	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 5	ECI2	21100	2535	18.80	19.00	1.047	-	-	-	n/a	n/a
	LTE Band 38	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	38000	2595	19.30	20.00	1.175	62.9	1.006	0.1	0.594	0.702
16	LTE Band 38	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	38000	2595	19.30	20.00	1.175	62.9	1.006	0.05	0.728	0.860
	LTE Band 38C	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	37901/38099	2585.1/2604.9	19.26	20.00	1.186	62.9	1.006	0.01	0.705	0.841
	LTE Band 38	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	ECI2	38000	2595	19.30	20.00	1.175	62.9	1.006	-0.19	0.207	0.245
	LTE Band 38	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	ECI2	38000	2595	19.30	20.00	1.175	62.9	1.006	-0.16	0.250	0.295
	LTE Band 38	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	ECI2	38000	2595	19.28	20.00	1.180	62.9	1.006	-0.07	0.585	0.695
	LTE Band 38	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	ECI2	38000	2595	19.28	20.00	1.180	62.9	1.006	0.06	0.674	0.800
	LTE Band 38	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	ECI2	38000	2595	19.28	20.00	1.180	62.9	1.006	0.06	0.204	0.242
	LTE Band 38	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	ECI2	38000	2595	19.28	20.00	1.180	62.9	1.006	-0.02	0.246	0.292
	LTE Band 38	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 1	ECI2	38000	2595	19.26	20.00	1.186	62.9	1.006	-0.17	0.649	0.774
	LTE Band 38	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 5	ECI2	38000	2595	19.23	20.50	1.340	62.9	1.006	-0.18	0.525	0.708
	LTE Band 38	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 5	ECI2	38000	2595	19.23	20.50	1.340	62.9	1.006	-0.19	0.243	0.327
	LTE Band 38	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 5	ECI2	38000	2595	19.23	20.50	1.340	62.9	1.006	0.04	0.162	0.218
	LTE Band 38	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 5	ECI2	38000	2595	19.23	20.50	1.340	62.9	1.006	-0.04	0.096	0.129
	LTE Band 38	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 5	ECI2	38000	2595	19.21	20.50	1.346	62.9	1.006	0.1	0.491	0.665
	LTE Band 38	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 5	ECI2	38000	2595	19.21	20.50	1.346	62.9	1.006	0.13	0.227	0.307
	LTE Band 38	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 5	ECI2	38000	2595	19.21	20.50	1.346	62.9	1.006	-0.14	0.152	0.206
	LTE Band 38	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 5	ECI2	38000	2595	19.21	20.50	1.346	62.9	1.006	-0.07	0.090	0.122
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 3	ECI2	39750	2506	23.82	24.50	1.169	62.9	1.006	-0.11	0.069	0.081
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 3	ECI2	39750	2506	23.82	24.50	1.169	62.9	1.006	-0.1	0.072	0.085
	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 3	ECI2	39750	2506	23.82	24.50	1.169	62.9	1.006	-0.15	0.119	0.140
	LTE Band 41C	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 3	ECI2	39750/39948	2506/2525.8	23.73	24.50	1.194	62.9	1.006	0.04	0.105	0.126
	LTE Band 41	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 3	ECI2	39750	2506	23.82	24.50	1.169	62.9	1.006	0.16	0.041	0.048
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 3	ECI2	39750	2506	22.79	23.50	1.178	62.9	1.006	-0.08	0.055	0.065
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 3	ECI2	39750	2506	22.79	23.50	1.178	62.9	1.006	-0.13	0.059	0.070
	LTE Band 41	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 3	ECI2	39750	2506	22.79	23.50	1.178	62.9	1.006	0.04	0.103	0.122
	LTE Band 41	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 3	ECI2	39750	2506	22.79	23.50	1.178	62.9	1.006	0.14	0.023	0.027
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	39750	2506	17.69	18.50	1.205	62.9	1.006	0.11	0.762	0.924
17	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	39750	2506	17.69	18.50	1.205	62.9	1.006	-0.14	0.831	1.007
	LTE Band 41C	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	39750/	2506/	17.65	18.50	1.216	62.9	1.006	0.11	0.521	0.637



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											39948	2525.8								
	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	ECI2	39750	2506	17.69	18.50	1.205	62.9	1.006	0.17	0.159	0.193
	LTE Band 41	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	ECI2	39750	2506	17.69	18.50	1.205	62.9	1.006	-0.11	0.199	0.241
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	40620	2593	17.58	18.50	1.236	62.9	1.006	-0.05	0.485	0.603
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	40185	2549.5	17.66	18.50	1.213	62.9	1.006	-0.07	0.534	0.652
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	41055	2636.5	17.60	18.50	1.230	62.9	1.006	-0.04	0.494	0.611
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI2	41490	2680	17.66	18.50	1.213	62.9	1.006	-0.04	0.615	0.751
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	40620	2593	17.58	18.50	1.236	62.9	1.006	0.01	0.516	0.642
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	40185	2549.5	17.66	18.50	1.213	62.9	1.006	-0.05	0.584	0.713
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	41055	2636.5	17.60	18.50	1.230	62.9	1.006	-0.14	0.540	0.668
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI2	41490	2680	17.66	18.50	1.213	62.9	1.006	-0.06	0.672	0.820
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI4	39750	2506	14.19	15.00	1.205	62.9	1.006	0.04	0.371	0.450
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	ECI2	39750	2506	17.67	18.50	1.211	62.9	1.006	0.08	0.461	0.561
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	ECI2	39750	2506	17.67	18.50	1.211	62.9	1.006	-0.15	0.755	0.919
	LTE Band 41	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	ECI2	39750	2506	17.67	18.50	1.211	62.9	1.006	-0.06	0.159	0.194
	LTE Band 41	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	ECI2	39750	2506	17.67	18.50	1.211	62.9	1.006	-0.13	0.196	0.239
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	ECI2	40620	2593	17.57	18.50	1.239	62.9	1.006	-0.05	0.511	0.637
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	ECI2	40185	2549.5	17.65	18.50	1.216	62.9	1.006	-0.18	0.531	0.650
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	ECI2	41055	2636.5	17.58	18.50	1.236	62.9	1.006	-0.08	0.491	0.610
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	ECI2	41490	2680	17.65	18.50	1.216	62.9	1.006	0.17	0.611	0.748
	LTE Band 41	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 1	ECI2	39750	2506	17.65	18.50	1.216	62.9	1.006	-0.09	0.518	0.634
	LTE Band 41	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 1	ECI2	39750	2506	17.65	18.50	1.216	62.9	1.006	0.03	0.513	0.628
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 5	ECI2	40620	2593	17.14	18.50	1.368	62.9	1.006	-0.18	0.419	0.577
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 5	ECI2	40620	2593	17.14	18.50	1.368	62.9	1.006	0.11	0.202	0.278
	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 5	ECI2	40620	2593	17.14	18.50	1.368	62.9	1.006	-0.02	0.128	0.176
	LTE Band 41	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 5	ECI2	40620	2593	17.14	18.50	1.368	62.9	1.006	-	n/a	n/a
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 5	ECI2	40620	2593	17.13	18.50	1.371	62.9	1.006	0.03	0.383	0.528
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 5	ECI2	40620	2593	17.13	18.50	1.371	62.9	1.006	-0.1	0.184	0.254
	LTE Band 41	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 5	ECI2	40620	2593	17.13	18.50	1.371	62.9	1.006	0.01	0.118	0.163
	LTE Band 41	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 5	ECI2	40620	2593	17.13	18.50	1.371	62.9	1.006	-	n/a	n/a
	FR1 n7	50M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 3	ECI2	507000	2535	22.80	24.20	1.380	-	-	0.15	0.122	0.168
	FR1 n7	50M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 3	ECI2	507000	2535	22.80	24.20	1.380	-	-	-0.01	0.131	0.181
	FR1 n7	50M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 3	ECI2	507000	2535	22.80	24.20	1.380	-	-	0.06	0.209	0.289
	FR1 n7	50M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 3	ECI2	507000	2535	22.80	24.20	1.380	-	-	0.08	0.066	0.091
	FR1 n7	50M	QPSK	135	68	DFT-15	Right Cheek	0mm	Ant 3	ECI2	507000	2535	22.78	24.20	1.387	-	-	0.01	0.115	0.159
	FR1 n7	50M	QPSK	135	68	DFT-15	Right Tilted	0mm	Ant 3	ECI2	507000	2535	22.78	24.20	1.387	-	-	-0.07	0.123	0.171
	FR1 n7	50M	QPSK	135	68	DFT-15	Left Cheek	0mm	Ant 3	ECI2	507000	2535	22.78	24.20	1.387	-	-	-0.13	0.197	0.273
	FR1 n7	50M	QPSK	135	68	DFT-15	Left Tilted	0mm	Ant 3	ECI2	507000	2535	22.78	24.20	1.387	-	-	-0.07	0.062	0.086
	FR1 n7	50M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 1	ECI2	507000	2535	15.50	16.70	1.318	-	-	-0.06	0.675	0.890
18	FR1 n7	50M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 1	ECI2	507000	2535	15.50	16.70	1.318	-	-	-0.17	0.791	1.043
	FR1 n7	50M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 1	ECI2	507000	2535	15.50	16.70	1.318	-	-	-0.03	0.250	0.330
	FR1 n7	50M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 1	ECI2	507000	2535	15.50	16.70	1.318	-	-	0.13	0.324	0.427
	FR1 n7	50M	QPSK	135	68	DFT-15	Right Cheek	0mm	Ant 1	ECI2	507000	2535	15.43	16.70	1.340	-	-	-0.09	0.571	0.765
	FR1 n7	50M	QPSK	135	68	DFT-15	Right Tilted	0mm	Ant 1	ECI2	507000	2535	15.43	16.70	1.340	-	-	-0.17	0.681	0.912
	FR1 n7	50M	QPSK	135	68	DFT-15	Left Cheek	0mm	Ant 1	ECI2	507000	2535	15.43	16.70	1.340	-	-	-0.01	0.213	0.285
	FR1 n7	50M	QPSK	135	68	DFT-15	Left Tilted	0mm	Ant 1	ECI2	507000	2535	15.43	16.70	1.340	-	-	-0.17	0.275	0.368
	FR1 n7	50M	QPSK	270	0	DFT-15	Right Cheek	0mm	Ant 1	ECI2	507000	2535	15.29	16.70	1.384	-	-	-0.11	0.602	0.833
	FR1 n7	50M	QPSK	270	0	DFT-15	Right Tilted	0mm	Ant 1	ECI2	507000	2535	15.29	16.70	1.384	-	-	0.14	0.713	0.986
	FR1 n38	40M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 3	ECI2	519000	2595	23.11	24.20	1.285	-	-	0.07	0.111	0.143
	FR1 n38	40M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 3	ECI2	519000	2595	23.11	24.20	1.285	-	-	0.17	0.123	0.158
	FR1 n38	40M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 3	ECI2	519000	2595	23.11	24.20	1.285	-	-	0.03	0.184	0.236
	FR1 n38	40M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 3	ECI2	519000	2595	23.11	24.20	1.285	-	-	0.18	0.066	0.085
	FR1 n38	40M	QPSK	50	28	DFT-30	Right Cheek	0mm	Ant 3	ECI2	519000	2595	22.83	24.20	1.371	-	-	-0.06	0.103	0.141
	FR1 n38	40M	QPSK	50	28	DFT-30	Right Tilted	0mm	Ant 3	ECI2	519000	2595	22.83	24.20	1.371	-	-	-0.18	0.120	0.165
	FR1 n38	40M	QPSK	50	28	DFT-30	Left Cheek	0mm	Ant 3	ECI2	519000	2595	22.83	24.20	1.371	-	-	-0.16	0.167	0.229
	FR1 n38	40M	QPSK	50	28	DFT-30	Left Tilted	0mm	Ant 3	ECI2	519000	2595	22.83	24.20	1.371	-	-	-0.04	0.064	0.088



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	FR1 n38	40M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 1	ECI2	519000	2595	19.12	19.70	1.143	-	-	-0.17	0.865	0.989
	FR1 n38	40M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 1	ECI2	519000	2595	19.12	19.70	1.143	-	-	-0.11	0.991	1.133
	FR1 n38	40M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 1	ECI2	519000	2595	19.12	19.70	1.143	-	-	0.08	0.303	0.346
	FR1 n38	40M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 1	ECI2	519000	2595	19.12	19.70	1.143	-	-	-0.02	0.382	0.437
	FR1 n38	40M	QPSK	50	28	DFT-30	Right Cheek	0mm	Ant 1	ECI2	519000	2595	19.07	19.70	1.156	-	-	0.13	0.828	0.957
	FR1 n38	40M	QPSK	50	28	DFT-30	Right Tilted	0mm	Ant 1	ECI2	519000	2595	19.07	19.70	1.156	-	-	0.17	0.966	1.117
	FR1 n38	40M	QPSK	50	28	DFT-30	Left Cheek	0mm	Ant 1	ECI2	519000	2595	19.07	19.70	1.156	-	-	0.02	0.286	0.331
	FR1 n38	40M	QPSK	50	28	DFT-30	Left Tilted	0mm	Ant 1	ECI2	519000	2595	19.07	19.70	1.156	-	-	0.16	0.365	0.422
	FR1 n38	40M	QPSK	100	0	DFT-30	Right Cheek	0mm	Ant 1	ECI2	519000	2595	18.96	19.70	1.186	-	-	-0.04	0.836	0.991
19	FR1 n38	40M	QPSK	100	0	DFT-30	Right Tilted	0mm	Ant 1	ECI2	519000	2595	18.96	19.70	1.186	-	-	0.14	0.991	1.175
	FR1 n41	100M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 3	ECI2	518598	2592.99	23.22	24.20	1.253	-	-	-0.09	0.121	0.152
	FR1 n41	100M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 3	ECI2	518598	2592.99	23.22	24.20	1.253	-	-	-0.14	0.120	0.150
	FR1 n41	100M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 3	ECI2	518598	2592.99	23.22	24.20	1.253	-	-	0.17	0.185	0.232
	FR1 n41	100M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 3	ECI2	518598	2592.99	23.22	24.20	1.253	-	-	-0.1	0.063	0.079
	FR1 n41	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 3	ECI2	518598	2592.99	22.99	24.20	1.321	-	-	-0.16	0.093	0.123
	FR1 n41	100M	QPSK	135	69	DFT-30	Right Tilted	0mm	Ant 3	ECI2	518598	2592.99	22.99	24.20	1.321	-	-	-0.09	0.092	0.122
	FR1 n41	100M	QPSK	135	69	DFT-30	Left Cheek	0mm	Ant 3	ECI2	518598	2592.99	22.99	24.20	1.321	-	-	-0.05	0.142	0.188
	FR1 n41	100M	QPSK	135	69	DFT-30	Left Tilted	0mm	Ant 3	ECI2	518598	2592.99	22.99	24.20	1.321	-	-	-0.1	0.048	0.063
	FR1 n41	100M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 1	ECI2	518598	2592.99	17.35	18.20	1.216	-	-	-0.14	0.657	0.799
20	FR1 n41	100M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 1	ECI2	518598	2592.99	17.35	18.20	1.216	-	-	0.09	0.899	1.093
	FR1 n41	100M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 1	ECI2	518598	2592.99	17.35	18.20	1.216	-	-	-0.02	0.221	0.269
	FR1 n41	100M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 1	ECI2	518598	2592.99	17.35	18.20	1.216	-	-	-0.19	0.275	0.334
	FR1 n41	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 1	ECI2	518598	2592.99	17.22	18.20	1.253	-	-	0.11	0.619	0.776
	FR1 n41	100M	QPSK	135	69	DFT-30	Right Tilted	0mm	Ant 1	ECI2	518598	2592.99	17.22	18.20	1.253	-	-	0.11	0.708	0.887
	FR1 n41	100M	QPSK	135	69	DFT-30	Left Cheek	0mm	Ant 1	ECI2	518598	2592.99	17.22	18.20	1.253	-	-	0.01	0.208	0.261
	FR1 n41	100M	QPSK	135	69	DFT-30	Left Tilted	0mm	Ant 1	ECI2	518598	2592.99	17.22	18.20	1.253	-	-	0.02	0.259	0.325
	FR1 n41	100M	QPSK	270	0	DFT-30	Right Cheek	0mm	Ant 1	ECI2	518598	2592.99	17.14	18.20	1.276	-	-	0.19	0.585	0.747
	FR1 n41	100M	QPSK	270	0	DFT-30	Right Tilted	0mm	Ant 1	ECI2	518598	2592.99	17.14	18.20	1.276	-	-	-0.1	0.670	0.855



Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power ECI	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
WLAN2.4GHz/BT																
	Bluetooth	DH5 1Mbps	Right Cheek	0mm	Ant 8	full power	0	2402	14.49	14.50	1.002	76.8	1.302	-0.07	0.062	0.081
	Bluetooth	DH5 1Mbps	Right Tilted	0mm	Ant 8	full power	0	2402	14.49	14.50	1.002	76.8	1.302	0.01	0.063	0.082
21	Bluetooth	DH5 1Mbps	Left Cheek	0mm	Ant 8	full power	0	2402	14.49	14.50	1.002	76.8	1.302	0.04	0.195	0.254
	Bluetooth	DH5 1Mbps	Left Tilted	0mm	Ant 8	full power	0	2402	14.49	14.50	1.002	76.8	1.302	0.13	0.137	0.179
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 8	Standalone	11	2462	11.70	13.50	1.514	99.64	1.004	-0.01	0.060	0.091
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 8	Standalone	11	2462	11.70	13.50	1.514	99.64	1.004	0.07	0.055	0.084
22	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 8	Standalone	11	2462	11.70	13.50	1.514	99.64	1.004	0.15	0.167	0.254
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 8	Standalone	11	2462	11.70	13.50	1.514	99.64	1.004	0.15	0.124	0.188
WLAN5GHz																
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 8	Standalone	58	5290	13.01	14.50	1.409	88.89	1.125	-0.13	0.184	0.292
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 8	Standalone	58	5290	13.01	14.50	1.409	88.89	1.125	0.01	0.228	0.361
23	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 8	Standalone	58	5290	13.01	14.50	1.409	88.89	1.125	0.04	0.391	0.620
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 8	Standalone	58	5290	13.01	14.50	1.409	88.89	1.125	0.02	0.281	0.446
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 8	Simultaneous	58	5290	10.02	11.50	1.406	88.89	1.125	0.05	0.091	0.144
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 8	Simultaneous	58	5290	10.02	11.50	1.406	88.89	1.125	-0.11	0.115	0.182
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 8	Simultaneous	58	5290	10.02	11.50	1.406	88.89	1.125	0.02	0.195	0.308
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 8	Simultaneous	58	5290	10.02	11.50	1.406	88.89	1.125	0.13	0.140	0.221
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 8	Standalone	122	5610	13.88	15.00	1.294	88.89	1.125	0.04	0.351	0.511
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 8	Standalone	122	5610	13.88	15.00	1.294	88.89	1.125	0.05	0.412	0.600
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 8	Standalone	122	5610	13.88	15.00	1.294	88.89	1.125	0.09	0.437	0.636
24	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 8	Standalone	122	5610	13.88	15.00	1.294	88.89	1.125	0.02	0.704	1.025
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 8	Standalone	106	5530	13.55	15.00	1.396	88.89	1.125	0.01	0.650	1.021
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 8	Simultaneous	122	5610	10.38	11.50	1.294	88.89	1.125	-0.1	0.157	0.229
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 8	Simultaneous	122	5610	10.38	11.50	1.294	88.89	1.125	-0.01	0.184	0.268
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 8	Simultaneous	122	5610	10.38	11.50	1.294	88.89	1.125	0.15	0.195	0.284
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 8	Simultaneous	122	5610	10.38	11.50	1.294	88.89	1.125	-0.16	0.314	0.457
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 8	Standalone	155	5775	12.64	14.50	1.535	88.89	1.125	-0.12	0.219	0.378
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 8	Standalone	155	5775	12.64	14.50	1.535	88.89	1.125	0.07	0.276	0.476
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 8	Standalone	155	5775	12.64	14.50	1.535	88.89	1.125	-0.05	0.331	0.571
25	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 8	Standalone	155	5775	12.64	14.50	1.535	88.89	1.125	0.08	0.514	0.887
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 8	Simultaneous	155	5775	9.15	11.00	1.531	88.89	1.125	0.12	0.144	0.248
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 8	Simultaneous	155	5775	9.15	11.00	1.531	88.89	1.125	-0.06	0.161	0.277
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 8	Simultaneous	155	5775	9.15	11.00	1.531	88.89	1.125	-0.12	0.199	0.343
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 8	Simultaneous	155	5775	9.15	11.00	1.531	88.89	1.125	0.13	0.285	0.491



15.2 Hotspot SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power ECI	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750MHz																				
	LTE Band 12	10M	QPSK	1	0	-	Front	10mm	Ant 0	ECI3	23095	707.5	20.45	21.50	1.274	-	-	-0.17	0.059	0.075
	LTE Band 12	10M	QPSK	1	0	-	Back	10mm	Ant 0	ECI3	23095	707.5	20.45	21.50	1.274	-	-	0.1	0.066	0.084
	LTE Band 12	10M	QPSK	1	0	-	Right Side	10mm	Ant 0	ECI3	23095	707.5	20.45	21.50	1.274	-	-	0.08	0.086	0.110
	LTE Band 12	10M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	ECI3	23095	707.5	20.45	21.50	1.274	-	-	-	n/a	n/a
	LTE Band 12	10M	QPSK	25	0	-	Front	10mm	Ant 0	ECI3	23095	707.5	20.43	21.50	1.279	-	-	-0.08	0.060	0.077
	LTE Band 12	10M	QPSK	25	0	-	Back	10mm	Ant 0	ECI3	23095	707.5	20.43	21.50	1.279	-	-	-0.02	0.070	0.090
26	LTE Band 12	10M	QPSK	25	0	-	Right Side	10mm	Ant 0	ECI3	23095	707.5	20.43	21.50	1.279	-	-	0.02	0.100	0.128
	LTE Band 12	10M	QPSK	25	0	-	Bottom Side	10mm	Ant 0	ECI3	23095	707.5	20.43	21.50	1.279	-	-	-	n/a	n/a
	LTE Band 12	10M	QPSK	1	0	-	Front	10mm	Ant 1	ECI3	23095	707.5	20.00	20.70	1.175	-	-	-	n/a	n/a
	LTE Band 12	10M	QPSK	1	0	-	Back	10mm	Ant 1	ECI3	23095	707.5	20.00	20.70	1.175	-	-	-0.01	0.050	0.059
	LTE Band 12	10M	QPSK	1	0	-	Left Side	10mm	Ant 1	ECI3	23095	707.5	20.00	20.70	1.175	-	-	-0.19	0.057	0.067
	LTE Band 12	10M	QPSK	1	0	-	Top Side	10mm	Ant 1	ECI3	23095	707.5	20.00	20.70	1.175	-	-	-0.01	0.039	0.046
	LTE Band 12	10M	QPSK	25	0	-	Front	10mm	Ant 1	ECI3	23095	707.5	19.98	20.70	1.180	-	-	-	n/a	n/a
	LTE Band 12	10M	QPSK	25	0	-	Back	10mm	Ant 1	ECI3	23095	707.5	19.98	20.70	1.180	-	-	0.07	0.048	0.057
	LTE Band 12	10M	QPSK	25	0	-	Left Side	10mm	Ant 1	ECI3	23095	707.5	19.98	20.70	1.180	-	-	-0.14	0.057	0.067
	LTE Band 12	10M	QPSK	25	0	-	Top Side	10mm	Ant 1	ECI3	23095	707.5	19.98	20.70	1.180	-	-	-	n/a	n/a
	LTE Band 13	10M	QPSK	1	0	-	Front	10mm	Ant 0	ECI3	23230	782	20.42	21.50	1.282	-	-	0.09	0.074	0.095
27	LTE Band 13	10M	QPSK	1	0	-	Back	10mm	Ant 0	ECI3	23230	782	20.42	21.50	1.282	-	-	0.02	0.090	0.116
	LTE Band 13	10M	QPSK	1	0	-	Right Side	10mm	Ant 0	ECI3	23230	782	20.42	21.50	1.282	-	-	-0.03	0.087	0.112
	LTE Band 13	10M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	ECI3	23230	782	20.42	21.50	1.282	-	-	0.17	0.061	0.078
	LTE Band 13	10M	QPSK	25	0	-	Front	10mm	Ant 0	ECI3	23230	782	20.40	21.50	1.288	-	-	-0.08	0.073	0.094
	LTE Band 13	10M	QPSK	25	0	-	Back	10mm	Ant 0	ECI3	23230	782	20.40	21.50	1.288	-	-	-0.05	0.089	0.115
	LTE Band 13	10M	QPSK	25	0	-	Right Side	10mm	Ant 0	ECI3	23230	782	20.40	21.50	1.288	-	-	-0.04	0.082	0.106
	LTE Band 13	10M	QPSK	25	0	-	Bottom Side	10mm	Ant 0	ECI3	23230	782	20.40	21.50	1.288	-	-	-0.1	0.054	0.070
	LTE Band 13	10M	QPSK	1	0	-	Front	10mm	Ant 1	ECI3	23230	782	19.87	20.70	1.211	-	-	0.1	0.024	0.028
	LTE Band 13	10M	QPSK	1	0	-	Back	10mm	Ant 1	ECI3	23230	782	19.87	20.70	1.211	-	-	-0.02	0.040	0.048
	LTE Band 13	10M	QPSK	1	0	-	Left Side	10mm	Ant 1	ECI3	23230	782	19.87	20.70	1.211	-	-	-0.01	0.030	0.036
	LTE Band 13	10M	QPSK	1	0	-	Top Side	10mm	Ant 1	ECI3	23230	782	19.87	20.70	1.211	-	-	0.02	0.031	0.037
	LTE Band 13	10M	QPSK	25	0	-	Front	10mm	Ant 1	ECI3	23230	782	19.85	20.70	1.216	-	-	0.1	0.022	0.026
	LTE Band 13	10M	QPSK	25	0	-	Back	10mm	Ant 1	ECI3	23230	782	19.85	20.70	1.216	-	-	-0.11	0.034	0.042
	LTE Band 13	10M	QPSK	25	0	-	Left Side	10mm	Ant 1	ECI3	23230	782	19.85	20.70	1.216	-	-	0.05	0.026	0.032
	LTE Band 13	10M	QPSK	25	0	-	Top Side	10mm	Ant 1	ECI3	23230	782	19.85	20.70	1.216	-	-	0.02	0.029	0.035
835MHz																				
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	10mm	Ant 0	ECI3	189	836.4	24.18	25.00	1.208	-	-	0.03	0.082	0.099
28	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	10mm	Ant 0	ECI3	189	836.4	24.18	25.00	1.208	-	-	-0.05	0.111	0.134
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Side	10mm	Ant 0	ECI3	189	836.4	24.18	25.00	1.208	-	-	0.18	0.082	0.099
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	10mm	Ant 0	ECI3	189	836.4	24.18	25.00	1.208	-	-	-0.08	0.072	0.087
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	10mm	Ant 1	ECI3	189	836.4	23.78	25.00	1.324	-	-	-0.18	0.029	0.038
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	10mm	Ant 1	ECI3	189	836.4	23.78	25.00	1.324	-	-	0.02	0.045	0.060
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Side	10mm	Ant 1	ECI3	189	836.4	23.78	25.00	1.324	-	-	-	n/a	n/a
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Top Side	10mm	Ant 1	ECI3	189	836.4	23.78	25.00	1.324	-	-	-0.02	0.045	0.060
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 0	ECI3	4182	836.4	21.11	22.00	1.227	-	-	-0.19	0.087	0.107
29	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 0	ECI3	4182	836.4	21.11	22.00	1.227	-	-	0.1	0.121	0.149
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Side	10mm	Ant 0	ECI3	4182	836.4	21.11	22.00	1.227	-	-	-0.12	0.090	0.110
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	Ant 0	ECI3	4182	836.4	21.11	22.00	1.227	-	-	0.03	0.068	0.083
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 1	ECI3	4182	836.4	20.83	21.50	1.167	-	-	0.07	0.053	0.062
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 1	ECI3	4182	836.4	20.83	21.50	1.167	-	-	0.06	0.079	0.092
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant 1	ECI3	4182	836.4	20.83	21.50	1.167	-	-	-0.11	0.024	0.028
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant 1	ECI3	4182	836.4	20.83	21.50	1.167	-	-	-0.01	0.070	0.082
	LTE Band 26	15M	QPSK	1	0	-	Front	10mm	Ant 0	ECI3	26865	831.5	21.03	22.00	1.250	-	-	0.03	0.067	0.084



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30	LTE Band 26	15M	QPSK	1	0	-	Back	10mm	Ant 0	ECI3	26865	831.5	21.03	22.00	1.250	-	-	0.02	0.097	0.122
	LTE Band 26	15M	QPSK	1	0	-	Right Side	10mm	Ant 0	ECI3	26865	831.5	21.03	22.00	1.250	-	-	-0.01	0.072	0.090
	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	10mm	Ant 0	ECI3	26865	831.5	21.03	22.00	1.250	-	-	0.05	0.056	0.070
	LTE Band 26	15M	QPSK	36	0	-	Front	10mm	Ant 0	ECI3	26865	831.5	21.01	22.00	1.256	-	-	0.02	0.070	0.088
	LTE Band 26	15M	QPSK	36	0	-	Back	10mm	Ant 0	ECI3	26865	831.5	21.01	22.00	1.256	-	-	-0.18	0.090	0.113
	LTE Band 26	15M	QPSK	36	0	-	Right Side	10mm	Ant 0	ECI3	26865	831.5	21.01	22.00	1.256	-	-	0.19	0.078	0.098
	LTE Band 26	15M	QPSK	36	0	-	Bottom Side	10mm	Ant 0	ECI3	26865	831.5	21.01	22.00	1.256	-	-	0.16	0.060	0.075
	LTE Band 26	15M	QPSK	1	0	-	Front	10mm	Ant 1	ECI3	26865	831.5	20.72	21.20	1.117	-	-	-	n/a	n/a
	LTE Band 26	15M	QPSK	1	0	-	Back	10mm	Ant 1	ECI3	26865	831.5	20.72	21.20	1.117	-	-	0.02	0.060	0.067
	LTE Band 26	15M	QPSK	1	0	-	Left Side	10mm	Ant 1	ECI3	26865	831.5	20.72	21.20	1.117	-	-	-	n/a	n/a
	LTE Band 26	15M	QPSK	1	0	-	Top Side	10mm	Ant 1	ECI3	26865	831.5	20.72	21.20	1.117	-	-	0.01	0.055	0.061
	LTE Band 26	15M	QPSK	36	0	-	Front	10mm	Ant 1	ECI3	26865	831.5	20.70	21.20	1.122	-	-	0.15	0.044	0.049
	LTE Band 26	15M	QPSK	36	0	-	Back	10mm	Ant 1	ECI3	26865	831.5	20.70	21.20	1.122	-	-	-0.02	0.064	0.072
	LTE Band 26	15M	QPSK	36	0	-	Left Side	10mm	Ant 1	ECI3	26865	831.5	20.70	21.20	1.122	-	-	-	n/a	n/a
	LTE Band 26	15M	QPSK	36	0	-	Top Side	10mm	Ant 1	ECI3	26865	831.5	20.70	21.20	1.122	-	-	-0.11	0.052	0.058
	FR1 n26	20M	QPSK	1	1	DFT-15	Front	10mm	Ant 0	ECI3	166300	831.5	20.11	21.70	1.442	-	-	-0.11	0.059	0.085
	FR1 n26	20M	QPSK	1	1	DFT-15	Back	10mm	Ant 0	ECI3	166300	831.5	20.11	21.70	1.442	-	-	0.05	0.077	0.111
	FR1 n26	20M	QPSK	1	1	DFT-15	Right Side	10mm	Ant 0	ECI3	166300	831.5	20.11	21.70	1.442	-	-	-0.14	0.064	0.092
	FR1 n26	20M	QPSK	1	1	DFT-15	Bottom Side	10mm	Ant 0	ECI3	166300	831.5	20.11	21.70	1.442	-	-	0.08	0.051	0.074
	FR1 n26	20M	QPSK	50	28	DFT-15	Front	10mm	Ant 0	ECI3	166300	831.5	20.06	21.70	1.459	-	-	0.07	0.069	0.101
31	FR1 n26	20M	QPSK	50	28	DFT-15	Back	10mm	Ant 0	ECI3	166300	831.5	20.06	21.70	1.459	-	-	-0.06	0.090	0.131
	FR1 n26	20M	QPSK	50	28	DFT-15	Right Side	10mm	Ant 0	ECI3	166300	831.5	20.06	21.70	1.459	-	-	0.07	0.074	0.108
	FR1 n26	20M	QPSK	50	28	DFT-15	Bottom Side	10mm	Ant 0	ECI3	166300	831.5	20.06	21.70	1.459	-	-	-0.16	0.059	0.086
	FR1 n26	20M	QPSK	1	1	DFT-15	Front	10mm	Ant 1	ECI3	166300	831.5	19.92	21.20	1.343	-	-	0.07	0.028	0.038
	FR1 n26	20M	QPSK	1	1	DFT-15	Back	10mm	Ant 1	ECI3	166300	831.5	19.92	21.20	1.343	-	-	-0.05	0.049	0.066
	FR1 n26	20M	QPSK	1	1	DFT-15	Left Side	10mm	Ant 1	ECI3	166300	831.5	19.92	21.20	1.343	-	-	-	n/a	n/a
	FR1 n26	20M	QPSK	1	1	DFT-15	Top Side	10mm	Ant 1	ECI3	166300	831.5	19.92	21.20	1.343	-	-	-0.04	0.047	0.063
	FR1 n26	20M	QPSK	50	28	DFT-15	Front	10mm	Ant 1	ECI3	166300	831.5	19.86	21.20	1.361	-	-	0.02	0.044	0.060
	FR1 n26	20M	QPSK	50	28	DFT-15	Back	10mm	Ant 1	ECI3	166300	831.5	19.86	21.20	1.361	-	-	0.17	0.062	0.084
	FR1 n26	20M	QPSK	50	28	DFT-15	Left Side	10mm	Ant 1	ECI3	166300	831.5	19.86	21.20	1.361	-	-	-	n/a	n/a
	FR1 n26	20M	QPSK	50	28	DFT-15	Top Side	10mm	Ant 1	ECI3	166300	831.5	19.86	21.20	1.361	-	-	0.13	0.059	0.080
1750MHz																				
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 3	ECI3	1513	1752.6	17.45	18.50	1.274	-	-	0.14	0.099	0.126
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 3	ECI3	1513	1752.6	17.45	18.50	1.274	-	-	0.06	0.118	0.150
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant 3	ECI3	1513	1752.6	17.45	18.50	1.274	-	-	0.04	0.041	0.052
32	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	Ant 3	ECI3	1513	1752.6	17.45	18.50	1.274	-	-	0.18	0.146	0.186
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 1	ECI3	1513	1752.6	17.00	18.00	1.259	-	-	-0.06	0.042	0.053
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 1	ECI3	1513	1752.6	17.00	18.00	1.259	-	-	0.04	0.056	0.070
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant 1	ECI3	1513	1752.6	17.00	18.00	1.259	-	-	0.07	0.018	0.023
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant 1	ECI3	1513	1752.6	17.00	18.00	1.259	-	-	-0.13	0.055	0.069
	LTE Band 4	20M	QPSK	1	0	-	Front	10mm	Ant 3	ECI3	20175	1732.5	17.68	18.80	1.294	-	-	-0.13	0.088	0.114
	LTE Band 4	20M	QPSK	1	0	-	Back	10mm	Ant 3	ECI3	20175	1732.5	17.68	18.80	1.294	-	-	-0.17	0.109	0.141
	LTE Band 4	20M	QPSK	1	0	-	Left Side	10mm	Ant 3	ECI3	20175	1732.5	17.68	18.80	1.294	-	-	-	n/a	n/a
	LTE Band 4	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 3	ECI3	20175	1732.5	17.68	18.80	1.294	-	-	0.06	0.157	0.203
	LTE Band 4	20M	QPSK	50	0	-	Front	10mm	Ant 3	ECI3	20175	1732.5	17.67	18.80	1.297	-	-	-0.15	0.095	0.123
	LTE Band 4	20M	QPSK	50	0	-	Back	10mm	Ant 3	ECI3	20175	1732.5	17.67	18.80	1.297	-	-	0.17	0.112	0.145
	LTE Band 4	20M	QPSK	50	0	-	Left Side	10mm	Ant 3	ECI3	20175	1732.5	17.67	18.80	1.297	-	-	-	n/a	n/a
	LTE Band 4	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 3	ECI3	20175	1732.5	17.67	18.80	1.297	-	-	0.19	0.170	0.221
	LTE Band 4	20M	QPSK	1	0	-	Front	10mm	Ant 1	ECI3	20175	1732.5	17.55	18.80	1.334	-	-	-	n/a	n/a
	LTE Band 4	20M	QPSK	1	0	-	Back	10mm	Ant 1	ECI3	20175	1732.5	17.55	18.80	1.334	-	-	0	0.068	0.091
	LTE Band 4	20M	QPSK	1	0	-	Left Side	10mm	Ant 1	ECI3	20175	1732.5	17.55	18.80	1.334	-	-	-	n/a	n/a
	LTE Band 4	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	ECI3	20175	1732.5	17.55	18.80	1.334	-	-	0.17	0.085	0.113
	LTE Band 4	20M	QPSK	50	0	-	Front	10mm	Ant 1	ECI3	20175	1732.5	17.53	18.80	1.340	-	-	-	n/a	n/a
	LTE Band 4	20M	QPSK	50	0	-	Back	10mm	Ant 1	ECI3	20175	1732.5	17.53	18.80	1.340	-	-	-0.03	0.074	0.099
	LTE Band 4	20M	QPSK	50	0	-	Left Side	10mm	Ant 1	ECI3	20175	1732.5	17.53	18.80	1.340	-	-	-	n/a	n/a
	LTE Band 4	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	ECI3	20175	1732.5	17.53	18.80	1.340	-	-	0.14	0.087	0.117



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	LTE Band 4	20M	QPSK	1	0	-	Front	10mm	Ant 4	ECI3	20175	1732.5	17.50	18.30	1.202	-	-	0.18	0.125	0.150
	LTE Band 4	20M	QPSK	1	0	-	Back	10mm	Ant 4	ECI3	20175	1732.5	17.50	18.30	1.202	-	-	-0.13	0.195	0.234
33	LTE Band 4	20M	QPSK	1	0	-	Left Side	10mm	Ant 4	ECI3	20175	1732.5	17.50	18.30	1.202	-	-	0.19	0.305	0.367
	LTE Band 4	20M	QPSK	50	0	-	Front	10mm	Ant 4	ECI3	20175	1732.5	17.48	18.30	1.208	-	-	0.13	0.122	0.147
	LTE Band 4	20M	QPSK	50	0	-	Back	10mm	Ant 4	ECI3	20175	1732.5	17.48	18.30	1.208	-	-	-0.13	0.193	0.233
	LTE Band 4	20M	QPSK	50	0	-	Left Side	10mm	Ant 4	ECI3	20175	1732.5	17.48	18.30	1.208	-	-	0.07	0.295	0.356
	LTE Band 66	20M	QPSK	1	0	-	Front	10mm	Ant 3	ECI3	132572	1770	17.43	18.30	1.222	-	-	-0.16	0.126	0.154
	LTE Band 66	20M	QPSK	1	0	-	Back	10mm	Ant 3	ECI3	132572	1770	17.43	18.30	1.222	-	-	0.15	0.152	0.186
	LTE Band 66	20M	QPSK	1	0	-	Left Side	10mm	Ant 3	ECI3	132572	1770	17.43	18.30	1.222	-	-	0.03	0.048	0.059
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 3	ECI3	132572	1770	17.43	18.30	1.222	-	-	-0.11	0.215	0.263
	LTE Band 66	20M	QPSK	50	0	-	Front	10mm	Ant 3	ECI3	132572	1770	17.41	18.30	1.227	-	-	0.07	0.131	0.161
	LTE Band 66	20M	QPSK	50	0	-	Back	10mm	Ant 3	ECI3	132572	1770	17.41	18.30	1.227	-	-	-0.07	0.163	0.200
	LTE Band 66	20M	QPSK	50	0	-	Left Side	10mm	Ant 3	ECI3	132572	1770	17.41	18.30	1.227	-	-	0.17	0.053	0.065
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 3	ECI3	132572	1770	17.41	18.30	1.227	-	-	-0.03	0.221	0.271
	LTE Band 66	20M	QPSK	1	0	-	Front	10mm	Ant 1	ECI3	132322	1745	17.23	17.80	1.140	-	-	-	n/a	n/a
	LTE Band 66	20M	QPSK	1	0	-	Back	10mm	Ant 1	ECI3	132322	1745	17.23	17.80	1.140	-	-	-0.15	0.062	0.071
	LTE Band 66	20M	QPSK	1	0	-	Left Side	10mm	Ant 1	ECI3	132322	1745	17.23	17.80	1.140	-	-	-	n/a	n/a
	LTE Band 66	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	ECI3	132322	1745	17.23	17.80	1.140	-	-	0.06	0.067	0.076
	LTE Band 66	20M	QPSK	50	0	-	Front	10mm	Ant 1	ECI3	132322	1745	17.21	17.80	1.146	-	-	-	n/a	n/a
	LTE Band 66	20M	QPSK	50	0	-	Back	10mm	Ant 1	ECI3	132322	1745	17.21	17.80	1.146	-	-	-0.11	0.061	0.070
	LTE Band 66	20M	QPSK	50	0	-	Left Side	10mm	Ant 1	ECI3	132322	1745	17.21	17.80	1.146	-	-	-	n/a	n/a
	LTE Band 66	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	ECI3	132322	1745	17.21	17.80	1.146	-	-	0.05	0.063	0.072
	LTE Band 66	20M	QPSK	1	0	-	Front	10mm	Ant 4	ECI3	132572	1770	17.26	17.80	1.132	-	-	0.18	0.151	0.171
	LTE Band 66	20M	QPSK	1	0	-	Back	10mm	Ant 4	ECI3	132572	1770	17.26	17.80	1.132	-	-	-0.1	0.226	0.256
34	LTE Band 66	20M	QPSK	1	0	-	Left Side	10mm	Ant 4	ECI3	132572	1770	17.26	17.80	1.132	-	-	-0.16	0.289	0.327
	LTE Band 66	20M	QPSK	50	0	-	Front	10mm	Ant 4	ECI3	132572	1770	17.25	17.80	1.135	-	-	-0.18	0.133	0.151
	LTE Band 66	20M	QPSK	50	0	-	Back	10mm	Ant 4	ECI3	132572	1770	17.25	17.80	1.135	-	-	-0.02	0.210	0.238
	LTE Band 66	20M	QPSK	50	0	-	Left Side	10mm	Ant 4	ECI3	132572	1770	17.25	17.80	1.135	-	-	0.13	0.272	0.309
	FR1 n66	40M	QPSK	1	1	DFT-15	Front	10mm	Ant 3	ECI3	349000	1745	16.57	17.90	1.358	-	-	0.02	0.080	0.109
	FR1 n66	40M	QPSK	1	1	DFT-15	Back	10mm	Ant 3	ECI3	349000	1745	16.57	17.90	1.358	-	-	0.04	0.096	0.130
	FR1 n66	40M	QPSK	1	1	DFT-15	Left Side	10mm	Ant 3	ECI3	349000	1745	16.57	17.90	1.358	-	-	-	n/a	n/a
	FR1 n66	40M	QPSK	1	1	DFT-15	Bottom Side	10mm	Ant 3	ECI3	349000	1745	16.57	17.90	1.358	-	-	0.05	0.139	0.189
	FR1 n66	40M	QPSK	108	54	DFT-15	Front	10mm	Ant 3	ECI3	349000	1745	16.52	17.90	1.374	-	-	0.07	0.090	0.124
	FR1 n66	40M	QPSK	108	54	DFT-15	Back	10mm	Ant 3	ECI3	349000	1745	16.52	17.90	1.374	-	-	0.02	0.111	0.153
	FR1 n66	40M	QPSK	108	54	DFT-15	Left Side	10mm	Ant 3	ECI3	349000	1745	16.52	17.90	1.374	-	-	0.08	0.038	0.052
	FR1 n66	40M	QPSK	108	54	DFT-15	Bottom Side	10mm	Ant 3	ECI3	349000	1745	16.52	17.90	1.374	-	-	-0.04	0.161	0.221
	FR1 n66	40M	QPSK	1	1	DFT-15	Front	10mm	Ant 1	ECI3	349000	1745	15.54	16.40	1.219	-	-	-	n/a	n/a
	FR1 n66	40M	QPSK	1	1	DFT-15	Back	10mm	Ant 1	ECI3	349000	1745	15.54	16.40	1.219	-	-	-0.11	0.041	0.050
	FR1 n66	40M	QPSK	1	1	DFT-15	Left Side	10mm	Ant 1	ECI3	349000	1745	15.54	16.40	1.219	-	-	-	n/a	n/a
	FR1 n66	40M	QPSK	1	1	DFT-15	Top Side	10mm	Ant 1	ECI3	349000	1745	15.54	16.40	1.219	-	-	0.02	0.050	0.061
	FR1 n66	40M	QPSK	108	54	DFT-15	Front	10mm	Ant 1	ECI3	349000	1745	15.41	16.40	1.256	-	-	0.01	0.037	0.046
	FR1 n66	40M	QPSK	108	54	DFT-15	Back	10mm	Ant 1	ECI3	349000	1745	15.41	16.40	1.256	-	-	0.04	0.047	0.059
	FR1 n66	40M	QPSK	108	54	DFT-15	Left Side	10mm	Ant 1	ECI3	349000	1745	15.41	16.40	1.256	-	-	-	n/a	n/a
	FR1 n66	40M	QPSK	108	54	DFT-15	Top Side	10mm	Ant 1	ECI3	349000	1745	15.41	16.40	1.256	-	-	0.08	0.060	0.075
	FR1 n66	40M	QPSK	1	1	DFT-15	Front	10mm	Ant 4	ECI3	352000	1760	15.02	15.90	1.225	-	-	-0.02	0.115	0.141
	FR1 n66	40M	QPSK	1	1	DFT-15	Back	10mm	Ant 4	ECI3	352000	1760	15.02	15.90	1.225	-	-	0.07	0.168	0.206
	FR1 n66	40M	QPSK	1	1	DFT-15	Left Side	10mm	Ant 4	ECI3	352000	1760	15.02	15.90	1.225	-	-	0.08	0.270	0.331
	FR1 n66	40M	QPSK	108	54	DFT-15	Front	10mm	Ant 4	ECI3	352000	1760	15.00	15.90	1.230	-	-	-0.04	0.122	0.150
	FR1 n66	40M	QPSK	108	54	DFT-15	Back	10mm	Ant 4	ECI3	352000	1760	15.00	15.90	1.230	-	-	0.05	0.184	0.226
35	FR1 n66	40M	QPSK	108	54	DFT-15	Left Side	10mm	Ant 4	ECI3	352000	1760	15.00	15.90	1.230	-	-	0.08	0.283	0.348
1900MHz																				
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Front	10mm	Ant 3	ECI3	661	1880	19.13	20.00	1.222	-	-	0.16	0.067	0.082
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	10mm	Ant 3	ECI3	661	1880	19.13	20.00	1.222	-	-	-0.19	0.073	0.089
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Side	10mm	Ant 3	ECI3	661	1880	19.13	20.00	1.222	-	-	-0.05	0.026	0.032
36	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	10mm	Ant 3	ECI3	661	1880	19.13	20.00	1.222	-	-	-0.14	0.101	0.123
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Front	10mm	Ant 1	ECI3	661	1880	16.77	17.80	1.268	-	-	-0.09	0.053	0.067



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	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	10mm	Ant 1	ECI3	661	1880	16.77	17.80	1.268	-	-	-0.01	0.065	0.082
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Side	10mm	Ant 1	ECI3	661	1880	16.77	17.80	1.268	-	-	-0.1	0.018	0.023
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Top Side	10mm	Ant 1	ECI3	661	1880	16.77	17.80	1.268	-	-	0.19	0.082	0.104
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 3	ECI3	9262	1852.4	18.11	18.50	1.094	-	-	0.12	0.119	0.130
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 3	ECI3	9262	1852.4	18.11	18.50	1.094	-	-	0.15	0.132	0.144
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant 3	ECI3	9262	1852.4	18.11	18.50	1.094	-	-	0.19	0.042	0.046
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	Ant 3	ECI3	9262	1852.4	18.11	18.50	1.094	-	-	-0.1	0.226	0.247
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant 1	ECI3	9262	1852.4	15.77	16.00	1.054	-	-	0.09	0.152	0.160
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 1	ECI3	9262	1852.4	15.77	16.00	1.054	-	-	0.18	0.271	0.286
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant 1	ECI3	9262	1852.4	15.77	16.00	1.054	-	-	0.17	0.046	0.049
37	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant 1	ECI3	9262	1852.4	15.77	16.00	1.054	-	-	-0.08	0.360	0.380
	LTE Band 2	20M	QPSK	1	0	-	Front	10mm	Ant 3	ECI3	18900	1880	18.52	19.20	1.169	-	-	0.04	0.122	0.143
	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant 3	ECI3	18900	1880	18.52	19.20	1.169	-	-	0.13	0.143	0.167
	LTE Band 2	20M	QPSK	1	0	-	Left Side	10mm	Ant 3	ECI3	18900	1880	18.52	19.20	1.169	-	-	0.14	0.048	0.056
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 3	ECI3	18900	1880	18.52	19.20	1.169	-	-	-0.03	0.185	0.216
	LTE Band 2	20M	QPSK	50	0	-	Front	10mm	Ant 3	ECI3	18900	1880	18.50	19.20	1.175	-	-	-0.08	0.129	0.152
	LTE Band 2	20M	QPSK	50	0	-	Back	10mm	Ant 3	ECI3	18900	1880	18.50	19.20	1.175	-	-	0.09	0.153	0.180
	LTE Band 2	20M	QPSK	50	0	-	Left Side	10mm	Ant 3	ECI3	18900	1880	18.50	19.20	1.175	-	-	-0.17	0.048	0.056
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 3	ECI3	18900	1880	18.50	19.20	1.175	-	-	-0.09	0.183	0.215
	LTE Band 2	20M	QPSK	1	0	-	Front	10mm	Ant 1	ECI3	18900	1880	15.12	15.70	1.143	-	-	0.06	0.065	0.074
	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant 1	ECI3	18900	1880	15.12	15.70	1.143	-	-	-0.18	0.117	0.134
	LTE Band 2	20M	QPSK	1	0	-	Left Side	10mm	Ant 1	ECI3	18900	1880	15.12	15.70	1.143	-	-	-	n/a	n/a
	LTE Band 2	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	ECI3	18900	1880	15.12	15.70	1.143	-	-	-0.15	0.148	0.169
	LTE Band 2	20M	QPSK	50	0	-	Front	10mm	Ant 1	ECI3	18900	1880	15.10	15.70	1.148	-	-	-0.17	0.066	0.076
	LTE Band 2	20M	QPSK	50	0	-	Back	10mm	Ant 1	ECI3	18900	1880	15.10	15.70	1.148	-	-	-0.07	0.123	0.141
	LTE Band 2	20M	QPSK	50	0	-	Left Side	10mm	Ant 1	ECI3	18900	1880	15.10	15.70	1.148	-	-	-	n/a	n/a
	LTE Band 2	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	ECI3	18900	1880	15.10	15.70	1.148	-	-	-0.05	0.155	0.178
	LTE Band 2	20M	QPSK	1	0	-	Front	10mm	Ant 4	ECI3	18900	1880	15.53	16.70	1.309	-	-	0.07	0.077	0.101
	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant 4	ECI3	18900	1880	15.53	16.70	1.309	-	-	-0.02	0.115	0.151
	LTE Band 2	20M	QPSK	1	0	-	Left Side	10mm	Ant 4	ECI3	18900	1880	15.53	16.70	1.309	-	-	-0.02	0.197	0.258
	LTE Band 2	20M	QPSK	50	0	-	Front	10mm	Ant 4	ECI3	18900	1880	15.51	16.70	1.315	-	-	-0.12	0.084	0.110
	LTE Band 2	20M	QPSK	50	0	-	Back	10mm	Ant 4	ECI3	18900	1880	15.51	16.70	1.315	-	-	-0.13	0.127	0.167
38	LTE Band 2	20M	QPSK	50	0	-	Left Side	10mm	Ant 4	ECI3	18900	1880	15.51	16.70	1.315	-	-	0.14	0.208	0.274
	FR1 n2	20M	QPSK	1	1	DFT-15	Front	10mm	Ant 3	ECI3	380000	1900	16.96	18.20	1.330	-	-	-0.08	0.096	0.128
	FR1 n2	20M	QPSK	1	1	DFT-15	Back	10mm	Ant 3	ECI3	380000	1900	16.96	18.20	1.330	-	-	0.09	0.110	0.146
	FR1 n2	20M	QPSK	1	1	DFT-15	Left Side	10mm	Ant 3	ECI3	380000	1900	16.96	18.20	1.330	-	-	-	n/a	n/a
	FR1 n2	20M	QPSK	1	1	DFT-15	Bottom Side	10mm	Ant 3	ECI3	380000	1900	16.96	18.20	1.330	-	-	0.13	0.166	0.221
	FR1 n2	20M	QPSK	50	28	DFT-15	Front	10mm	Ant 3	ECI3	380000	1900	16.87	18.20	1.358	-	-	-0.11	0.100	0.136
	FR1 n2	20M	QPSK	50	28	DFT-15	Back	10mm	Ant 3	ECI3	380000	1900	16.87	18.20	1.358	-	-	0.15	0.109	0.148
	FR1 n2	20M	QPSK	50	28	DFT-15	Left Side	10mm	Ant 3	ECI3	380000	1900	16.87	18.20	1.358	-	-	-	n/a	n/a
	FR1 n2	20M	QPSK	50	28	DFT-15	Bottom Side	10mm	Ant 3	ECI3	380000	1900	16.87	18.20	1.358	-	-	0.06	0.182	0.247
	FR1 n2	20M	QPSK	1	1	DFT-15	Front	10mm	Ant 1	ECI3	372000	1860	13.82	14.70	1.225	-	-	0.19	0.051	0.062
	FR1 n2	20M	QPSK	1	1	DFT-15	Back	10mm	Ant 1	ECI3	372000	1860	13.82	14.70	1.225	-	-	-0.02	0.094	0.115
	FR1 n2	20M	QPSK	1	1	DFT-15	Left Side	10mm	Ant 1	ECI3	372000	1860	13.82	14.70	1.225	-	-	-	n/a	n/a
	FR1 n2	20M	QPSK	1	1	DFT-15	Top Side	10mm	Ant 1	ECI3	372000	1860	13.82	14.70	1.225	-	-	-0.02	0.136	0.167
	FR1 n2	20M	QPSK	50	28	DFT-15	Front	10mm	Ant 1	ECI3	372000	1860	13.75	14.70	1.245	-	-	0.08	0.051	0.063
	FR1 n2	20M	QPSK	50	28	DFT-15	Back	10mm	Ant 1	ECI3	372000	1860	13.75	14.70	1.245	-	-	-0.14	0.091	0.113
	FR1 n2	20M	QPSK	50	28	DFT-15	Left Side	10mm	Ant 1	ECI3	372000	1860	13.75	14.70	1.245	-	-	-	n/a	n/a
	FR1 n2	20M	QPSK	50	28	DFT-15	Top Side	10mm	Ant 1	ECI3	372000	1860	13.75	14.70	1.245	-	-	-0.13	0.129	0.161
	FR1 n2	20M	QPSK	1	1	DFT-15	Front	10mm	Ant 4	ECI3	380000	1900	15.37	16.70	1.358	-	-	-0.17	0.071	0.096
	FR1 n2	20M	QPSK	1	1	DFT-15	Back	10mm	Ant 4	ECI3	380000	1900	15.37	16.70	1.358	-	-	0.06	0.106	0.144
	FR1 n2	20M	QPSK	1	1	DFT-15	Left Side	10mm	Ant 4	ECI3	380000	1900	15.37	16.70	1.358	-	-	-0.07	0.172	0.234
	FR1 n2	20M	QPSK	50	28	DFT-15	Front	10mm	Ant 4	ECI3	380000	1900	15.30	16.70	1.380	-	-	-0.01	0.079	0.109
	FR1 n2	20M	QPSK	50	28	DFT-15	Back	10mm	Ant 4	ECI3	380000	1900	15.30	16.70	1.380	-	-	0.13	0.124	0.171
39	FR1 n2	20M	QPSK	50	28	DFT-15	Left Side	10mm	Ant 4	ECI3	380000	1900	15.30	16.70	1.380	-	-	-0.18	0.232	0.320

2600MHz



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	LTE Band 7	20M	QPSK	1	0	-	Front	10mm	Ant 3	ECI3	21100	2535	16.68	17.70	1.265	-	-	-0.04	0.122	0.154
	LTE Band 7	20M	QPSK	1	0	-	Back	10mm	Ant 3	ECI3	21100	2535	16.68	17.70	1.265	-	-	0.15	0.150	0.190
	LTE Band 7	20M	QPSK	1	0	-	Left Side	10mm	Ant 3	ECI3	21100	2535	16.68	17.70	1.265	-	-	-0.03	0.064	0.081
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 3	ECI3	21100	2535	16.68	17.70	1.265	-	-	0.17	0.251	0.317
	LTE Band 7	20M	QPSK	50	0	-	Front	10mm	Ant 3	ECI3	21100	2535	16.67	17.70	1.268	-	-	-0.17	0.128	0.162
	LTE Band 7	20M	QPSK	50	0	-	Back	10mm	Ant 3	ECI3	21100	2535	16.67	17.70	1.268	-	-	0.04	0.152	0.193
	LTE Band 7	20M	QPSK	50	0	-	Left Side	10mm	Ant 3	ECI3	21100	2535	16.67	17.70	1.268	-	-	-0.18	0.058	0.074
	LTE Band 7	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 3	ECI3	21100	2535	16.67	17.70	1.268	-	-	-0.14	0.254	0.322
	LTE Band 7C	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 3	ECI3	21100/21298	2535/2554.8	16.67	17.70	1.268	-	-	0.03	0.252	0.319
	LTE Band 7	20M	QPSK	1	0	-	Front	10mm	Ant 1	ECI3	21100	2535	15.90	16.70	1.202	-	-	0.07	0.117	0.141
	LTE Band 7	20M	QPSK	1	0	-	Back	10mm	Ant 1	ECI3	21100	2535	15.90	16.70	1.202	-	-	0.12	0.171	0.206
	LTE Band 7	20M	QPSK	1	0	-	Left Side	10mm	Ant 1	ECI3	21100	2535	15.90	16.70	1.202	-	-	0.09	0.063	0.076
40	LTE Band 7	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	ECI3	21100	2535	15.90	16.70	1.202	-	-	0	0.398	0.479
	LTE Band 7C	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	ECI3	21100/21298	2535/2554.8	15.88	16.70	1.208	-	-	0.06	0.285	0.344
	LTE Band 7	20M	QPSK	50	0	-	Front	10mm	Ant 1	ECI3	21100	2535	15.88	16.70	1.208	-	-	-0.17	0.110	0.133
	LTE Band 7	20M	QPSK	50	0	-	Back	10mm	Ant 1	ECI3	21100	2535	15.88	16.70	1.208	-	-	0.04	0.160	0.193
	LTE Band 7	20M	QPSK	50	0	-	Left Side	10mm	Ant 1	ECI3	21100	2535	15.88	16.70	1.208	-	-	0.13	0.057	0.069
	LTE Band 7	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	ECI3	21100	2535	15.88	16.70	1.208	-	-	-0.15	0.276	0.333
	LTE Band 7	20M	QPSK	1	0	-	Front	10mm	Ant 5	ECI3	21100	2535	16.30	16.50	1.047	-	-	-0.06	0.052	0.054
	LTE Band 7	20M	QPSK	1	0	-	Back	10mm	Ant 5	ECI3	21100	2535	16.30	16.50	1.047	-	-	-0.18	0.080	0.084
	LTE Band 7	20M	QPSK	1	0	-	Left Side	10mm	Ant 5	ECI3	21100	2535	16.30	16.50	1.047	-	-	0.11	0.082	0.086
	LTE Band 7	20M	QPSK	1	0	-	Top Side	10mm	Ant 5	ECI3	21100	2535	16.30	16.50	1.047	-	-	0.17	0.046	0.048
	LTE Band 7	20M	QPSK	50	0	-	Front	10mm	Ant 5	ECI3	21100	2535	16.28	16.50	1.052	-	-	-0.1	0.046	0.048
	LTE Band 7	20M	QPSK	50	0	-	Back	10mm	Ant 5	ECI3	21100	2535	16.28	16.50	1.052	-	-	0.02	0.078	0.082
	LTE Band 7	20M	QPSK	50	0	-	Left Side	10mm	Ant 5	ECI3	21100	2535	16.28	16.50	1.052	-	-	0.09	0.084	0.088
	LTE Band 7	20M	QPSK	50	0	-	Top Side	10mm	Ant 5	ECI3	21100	2535	16.28	16.50	1.052	-	-	0.05	0.040	0.042
	LTE Band 38	20M	QPSK	1	0	-	Front	10mm	Ant 3	ECI3	38000	2595	18.86	19.50	1.159	62.9	1.006	0.11	0.093	0.108
	LTE Band 38	20M	QPSK	1	0	-	Back	10mm	Ant 3	ECI3	38000	2595	18.86	19.50	1.159	62.9	1.006	-0.06	0.101	0.118
	LTE Band 38	20M	QPSK	1	0	-	Left Side	10mm	Ant 3	ECI3	38000	2595	18.86	19.50	1.159	62.9	1.006	-0.08	0.026	0.030
	LTE Band 38	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 3	ECI3	38000	2595	18.86	19.50	1.159	62.9	1.006	-0.1	0.194	0.226
	LTE Band 38C	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 3	ECI3	37901/38099	2585.1/2604.9	18.81	19.50	1.172	62.9	1.006	0.02	0.191	0.225
	LTE Band 38	20M	QPSK	50	0	-	Front	10mm	Ant 3	ECI3	38000	2595	18.85	19.50	1.161	62.9	1.006	-0.12	0.088	0.103
	LTE Band 38	20M	QPSK	50	0	-	Back	10mm	Ant 3	ECI3	38000	2595	18.85	19.50	1.161	62.9	1.006	0.06	0.092	0.107
	LTE Band 38	20M	QPSK	50	0	-	Left Side	10mm	Ant 3	ECI3	38000	2595	18.85	19.50	1.161	62.9	1.006	-0.03	0.034	0.040
	LTE Band 38	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 3	ECI3	38000	2595	18.85	19.50	1.161	62.9	1.006	0.07	0.187	0.218
	LTE Band 38	20M	QPSK	1	0	-	Front	10mm	Ant 1	ECI3	38000	2595	18.29	19.00	1.178	62.9	1.006	0.04	0.090	0.107
	LTE Band 38	20M	QPSK	1	0	-	Back	10mm	Ant 1	ECI3	38000	2595	18.29	19.00	1.178	62.9	1.006	0.04	0.134	0.159
	LTE Band 38	20M	QPSK	1	0	-	Left Side	10mm	Ant 1	ECI3	38000	2595	18.29	19.00	1.178	62.9	1.006	0.12	0.061	0.072
41	LTE Band 38	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	ECI3	38000	2595	18.29	19.00	1.178	62.9	1.006	-0.15	0.201	0.238
	LTE Band 38C	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	ECI3	37901/38099	2585.1/2604.9	18.26	19.00	1.186	62.9	1.006	-0.03	0.198	0.236
	LTE Band 38	20M	QPSK	50	0	-	Front	10mm	Ant 1	ECI3	38000	2595	18.27	19.00	1.183	62.9	1.006	-0.18	0.085	0.101
	LTE Band 38	20M	QPSK	50	0	-	Back	10mm	Ant 1	ECI3	38000	2595	18.27	19.00	1.183	62.9	1.006	0.17	0.129	0.154
	LTE Band 38	20M	QPSK	50	0	-	Left Side	10mm	Ant 1	ECI3	38000	2595	18.27	19.00	1.183	62.9	1.006	0.18	0.057	0.068
	LTE Band 38	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	ECI3	38000	2595	18.27	19.00	1.183	62.9	1.006	-0.02	0.199	0.237
	LTE Band 38	20M	QPSK	1	0	-	Front	10mm	Ant 5	ECI3	38000	2595	17.25	18.50	1.334	62.9	1.006	-	n/a	n/a
	LTE Band 38	20M	QPSK	1	0	-	Back	10mm	Ant 5	ECI3	38000	2595	17.25	18.50	1.334	62.9	1.006	0.08	0.084	0.113
	LTE Band 38	20M	QPSK	1	0	-	Left Side	10mm	Ant 5	ECI3	38000	2595	17.25	18.50	1.334	62.9	1.006	-0.1	0.096	0.129
	LTE Band 38	20M	QPSK	1	0	-	Top Side	10mm	Ant 5	ECI3	38000	2595	17.25	18.50	1.334	62.9	1.006	-0.16	0.040	0.054
	LTE Band 38	20M	QPSK	50	0	-	Front	10mm	Ant 5	ECI3	38000	2595	17.23	18.50	1.340	62.9	1.006	-	n/a	n/a
	LTE Band 38	20M	QPSK	50	0	-	Back	10mm	Ant 5	ECI3	38000	2595	17.23	18.50	1.340	62.9	1.006	0.18	0.082	0.111
	LTE Band 38	20M	QPSK	50	0	-	Left Side	10mm	Ant 5	ECI3	38000	2595	17.23	18.50	1.340	62.9	1.006	-0.01	0.078	0.105
	LTE Band 38	20M	QPSK	50	0	-	Top Side	10mm	Ant 5	ECI3	38000	2595	17.23	18.50	1.340	62.9	1.006	-0.16	0.038	0.051
	LTE Band 41	20M	QPSK	1	0	-	Front	10mm	Ant 3	ECI3	39750	2506	16.33	17.00	1.167	62.9	1.006	-0.04	0.054	0.063
	LTE Band 41	20M	QPSK	1	0	-	Back	10mm	Ant 3	ECI3	39750	2506	16.33	17.00	1.167	62.9	1.006	-0.16	0.070	0.082



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	LTE Band 41	20M	QPSK	1	0	-	Left Side	10mm	Ant 3	ECI3	39750	2506	16.33	17.00	1.167	62.9	1.006	0.06	0.033	0.039
	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 3	ECI3	39750	2506	16.33	17.00	1.167	62.9	1.006	-0.05	0.114	0.134
	LTE Band 41C	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 3	ECI3	39750/39948	2506/2525.8	16.30	17.00	1.175	62.9	1.006	0.04	0.106	0.125
	LTE Band 41	20M	QPSK	50	0	-	Front	10mm	Ant 3	ECI3	39750	2506	16.31	17.00	1.172	62.9	1.006	-0.11	0.046	0.054
	LTE Band 41	20M	QPSK	50	0	-	Back	10mm	Ant 3	ECI3	39750	2506	16.31	17.00	1.172	62.9	1.006	-0.19	0.066	0.078
	LTE Band 41	20M	QPSK	50	0	-	Left Side	10mm	Ant 3	ECI3	39750	2506	16.31	17.00	1.172	62.9	1.006	0.03	0.026	0.031
	LTE Band 41	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 3	ECI3	39750	2506	16.31	17.00	1.172	62.9	1.006	-0.14	0.112	0.132
	LTE Band 41	20M	QPSK	1	0	-	Front	10mm	Ant 1	ECI3	39750	2506	15.69	16.50	1.205	62.9	1.006	-0.16	0.051	0.062
	LTE Band 41	20M	QPSK	1	0	-	Back	10mm	Ant 1	ECI3	39750	2506	15.69	16.50	1.205	62.9	1.006	0.13	0.075	0.091
	LTE Band 41	20M	QPSK	1	0	-	Left Side	10mm	Ant 1	ECI3	39750	2506	15.69	16.50	1.205	62.9	1.006	-0.13	0.024	0.029
42	LTE Band 41	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	ECI3	39750	2506	15.69	16.50	1.205	62.9	1.006	-0.14	0.116	0.141
	LTE Band 41C	20M	QPSK	1	0	-	Top Side	10mm	Ant 1	ECI3	39750/39948	2506/2525.8	15.65	16.50	1.216	62.9	1.006	0.08	0.113	0.138
	LTE Band 41	20M	QPSK	50	0	-	Front	10mm	Ant 1	ECI3	39750	2506	15.68	16.50	1.208	62.9	1.006	0.04	0.049	0.060
	LTE Band 41	20M	QPSK	50	0	-	Back	10mm	Ant 1	ECI3	39750	2506	15.68	16.50	1.208	62.9	1.006	-0.13	0.071	0.086
	LTE Band 41	20M	QPSK	50	0	-	Left Side	10mm	Ant 1	ECI3	39750	2506	15.68	16.50	1.208	62.9	1.006	-0.14	0.033	0.040
	LTE Band 41	20M	QPSK	50	0	-	Top Side	10mm	Ant 1	ECI3	39750	2506	15.68	16.50	1.208	62.9	1.006	0	0.115	0.140
	LTE Band 41	20M	QPSK	1	0	-	Front	10mm	Ant 5	ECI3	40620	2593	13.64	15.00	1.368	62.9	1.006	-	n/a	n/a
	LTE Band 41	20M	QPSK	1	0	-	Back	10mm	Ant 5	ECI3	40620	2593	13.64	15.00	1.368	62.9	1.006	-0.04	0.050	0.069
	LTE Band 41	20M	QPSK	1	0	-	Left Side	10mm	Ant 5	ECI3	40620	2593	13.64	15.00	1.368	62.9	1.006	0.18	0.074	0.102
	LTE Band 41	20M	QPSK	1	0	-	Top Side	10mm	Ant 5	ECI3	40620	2593	13.64	15.00	1.368	62.9	1.006	-	n/a	n/a
	LTE Band 41	20M	QPSK	50	0	-	Front	10mm	Ant 5	ECI3	40620	2593	13.62	15.00	1.374	62.9	1.006	-	n/a	n/a
	LTE Band 41	20M	QPSK	50	0	-	Back	10mm	Ant 5	ECI3	40620	2593	13.62	15.00	1.374	62.9	1.006	-0.01	0.048	0.066
	LTE Band 41	20M	QPSK	50	0	-	Left Side	10mm	Ant 5	ECI3	40620	2593	13.62	15.00	1.374	62.9	1.006	0.13	0.071	0.098
	LTE Band 41	20M	QPSK	50	0	-	Top Side	10mm	Ant 5	ECI3	40620	2593	13.62	15.00	1.374	62.9	1.006	-	n/a	n/a
	FR1 n7	50M	QPSK	1	1	DFT-15	Front	10mm	Ant 3	ECI3	507000	2535	15.77	17.20	1.390	-	-	-0.11	0.116	0.161
	FR1 n7	50M	QPSK	1	1	DFT-15	Back	10mm	Ant 3	ECI3	507000	2535	15.77	17.20	1.390	-	-	0	0.138	0.192
	FR1 n7	50M	QPSK	1	1	DFT-15	Left Side	10mm	Ant 3	ECI3	507000	2535	15.77	17.20	1.390	-	-	-0.03	0.049	0.068
	FR1 n7	50M	QPSK	1	1	DFT-15	Bottom Side	10mm	Ant 3	ECI3	507000	2535	15.77	17.20	1.390	-	-	-0.08	0.202	0.281
	FR1 n7	50M	QPSK	135	68	DFT-15	Front	10mm	Ant 3	ECI3	507000	2535	15.70	17.20	1.413	-	-	0.02	0.098	0.138
	FR1 n7	50M	QPSK	135	68	DFT-15	Back	10mm	Ant 3	ECI3	507000	2535	15.70	17.20	1.413	-	-	0.1	0.122	0.172
	FR1 n7	50M	QPSK	135	68	DFT-15	Left Side	10mm	Ant 3	ECI3	507000	2535	15.70	17.20	1.413	-	-	0.15	0.049	0.069
	FR1 n7	50M	QPSK	135	68	DFT-15	Bottom Side	10mm	Ant 3	ECI3	507000	2535	15.70	17.20	1.413	-	-	-0.06	0.265	0.374
	FR1 n7	50M	QPSK	1	1	DFT-15	Front	10mm	Ant 1	ECI3	507000	2535	16.50	17.70	1.318	-	-	-0.13	0.138	0.182
	FR1 n7	50M	QPSK	1	1	DFT-15	Back	10mm	Ant 1	ECI3	507000	2535	16.50	17.70	1.318	-	-	-0.09	0.201	0.265
	FR1 n7	50M	QPSK	1	1	DFT-15	Left Side	10mm	Ant 1	ECI3	507000	2535	16.50	17.70	1.318	-	-	0.18	0.064	0.084
43	FR1 n7	50M	QPSK	1	1	DFT-15	Top Side	10mm	Ant 1	ECI3	507000	2535	16.50	17.70	1.318	-	-	0.06	0.439	0.579
	FR1 n7	50M	QPSK	135	68	DFT-15	Front	10mm	Ant 1	ECI3	507000	2535	16.43	17.70	1.340	-	-	0.12	0.114	0.153
	FR1 n7	50M	QPSK	135	68	DFT-15	Back	10mm	Ant 1	ECI3	507000	2535	16.43	17.70	1.340	-	-	-0.05	0.161	0.216
	FR1 n7	50M	QPSK	135	68	DFT-15	Left Side	10mm	Ant 1	ECI3	507000	2535	16.43	17.70	1.340	-	-	0.02	0.055	0.074
	FR1 n7	50M	QPSK	135	68	DFT-15	Top Side	10mm	Ant 1	ECI3	507000	2535	16.43	17.70	1.340	-	-	-0.02	0.301	0.403
	FR1 n38	40M	QPSK	1	1	DFT-30	Front	10mm	Ant 1	ECI3	519000	2595	16.42	17.20	1.197	-	-	0.1	0.069	0.083
	FR1 n38	40M	QPSK	1	1	DFT-30	Back	10mm	Ant 1	ECI3	519000	2595	16.42	17.20	1.197	-	-	-0.09	0.119	0.142
	FR1 n38	40M	QPSK	1	1	DFT-30	Left Side	10mm	Ant 1	ECI3	519000	2595	16.42	17.20	1.197	-	-	0.18	0.039	0.047
	FR1 n38	40M	QPSK	1	1	DFT-30	Top Side	10mm	Ant 1	ECI3	519000	2595	16.42	17.20	1.197	-	-	-0.05	0.187	0.224
	FR1 n38	40M	QPSK	50	28	DFT-30	Front	10mm	Ant 1	ECI3	519000	2595	16.37	17.20	1.211	-	-	0.18	0.064	0.077
	FR1 n38	40M	QPSK	50	28	DFT-30	Back	10mm	Ant 1	ECI3	519000	2595	16.37	17.20	1.211	-	-	0.1	0.108	0.131
	FR1 n38	40M	QPSK	50	28	DFT-30	Left Side	10mm	Ant 1	ECI3	519000	2595	16.37	17.20	1.211	-	-	-0.02	0.041	0.050
44	FR1 n38	40M	QPSK	50	28	DFT-30	Top Side	10mm	Ant 1	ECI3	519000	2595	16.37	17.20	1.211	-	-	-0.03	0.192	0.232
	FR1 n41	100M	QPSK	1	1	DFT-30	Front	10mm	Ant 3	ECI3	518598	2592.99	16.17	17.20	1.268	-	-	0.13	0.095	0.120
	FR1 n41	100M	QPSK	1	1	DFT-30	Back	10mm	Ant 3	ECI3	518598	2592.99	16.17	17.20	1.268	-	-	0.19	0.121	0.153
	FR1 n41	100M	QPSK	1	1	DFT-30	Left Side	10mm	Ant 3	ECI3	518598	2592.99	16.17	17.20	1.268	-	-	0.18	0.040	0.051
45	FR1 n41	100M	QPSK	1	1	DFT-30	Bottom Side	10mm	Ant 3	ECI3	518598	2592.99	16.17	17.20	1.268	-	-	0.07	0.258	0.327
	FR1 n41	100M	QPSK	135	69	DFT-30	Front	10mm	Ant 3	ECI3	518598	2592.99	16.03	17.20	1.309	-	-	0.1	0.080	0.105
	FR1 n41	100M	QPSK	135	69	DFT-30	Back	10mm	Ant 3	ECI3	518598	2592.99	16.03	17.20	1.309	-	-	0.01	0.095	0.124
	FR1 n41	100M	QPSK	135	69	DFT-30	Left Side	10mm	Ant 3	ECI3	518598	2592.99	16.03	17.20	1.309	-	-	-	n/a	n/a



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	FR1 n41	100M	QPSK	135	69	DFT-30	Bottom Side	10mm	Ant 3	ECI3	518598	2592.99	16.03	17.20	1.309	-	-	0.13	0.197	0.258
	FR1 n41	100M	QPSK	1	1	DFT-30	Front	10mm	Ant 1	ECI3	518598	2592.99	15.85	16.70	1.216	-	-	-0.07	0.080	0.097
	FR1 n41	100M	QPSK	1	1	DFT-30	Back	10mm	Ant 1	ECI3	518598	2592.99	15.85	16.70	1.216	-	-	-0.1	0.120	0.146
	FR1 n41	100M	QPSK	1	1	DFT-30	Left Side	10mm	Ant 1	ECI3	518598	2592.99	15.85	16.70	1.216	-	-	-0.02	0.027	0.033
	FR1 n41	100M	QPSK	1	1	DFT-30	Top Side	10mm	Ant 1	ECI3	518598	2592.99	15.85	16.70	1.216	-	-	-0.06	0.210	0.255
	FR1 n41	100M	QPSK	135	69	DFT-30	Front	10mm	Ant 1	ECI3	518598	2592.99	15.72	16.70	1.253	-	-	0.08	0.077	0.096
	FR1 n41	100M	QPSK	135	69	DFT-30	Back	10mm	Ant 1	ECI3	518598	2592.99	15.72	16.70	1.253	-	-	-0.03	0.111	0.139
	FR1 n41	100M	QPSK	135	69	DFT-30	Left Side	10mm	Ant 1	ECI3	518598	2592.99	15.72	16.70	1.253	-	-	-0.07	0.045	0.056
	FR1 n41	100M	QPSK	135	69	DFT-30	Top Side	10mm	Ant 1	ECI3	518598	2592.99	15.72	16.70	1.253	-	-	-0.07	0.183	0.229

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power ECI	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
WLAN2.4GHz/BT																
	Bluetooth	DH5 1Mbps	Front	10mm	Ant 8	full power	0	2402	14.49	14.50	1.002	76.8	1.302	-	n/a	n/a
46	Bluetooth	DH5 1Mbps	Back	10mm	Ant 8	full power	0	2402	14.49	14.50	1.002	76.8	1.302	0.01	0.048	0.063
	Bluetooth	DH5 1Mbps	Right Side	10mm	Ant 8	full power	0	2402	14.49	14.50	1.002	76.8	1.302	0.07	0.047	0.061
	Bluetooth	DH5 1Mbps	Top Side	10mm	Ant 8	full power	0	2402	14.49	14.50	1.002	76.8	1.302	-	n/a	n/a
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 8	Simultaneous	11	2462	11.70	13.50	1.514	99.64	1.004	-0.17	0.043	0.065
47	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 8	Simultaneous	11	2462	11.70	13.50	1.514	99.64	1.004	-0.11	0.055	0.084
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 8	Simultaneous	11	2462	11.70	13.50	1.514	99.64	1.004	0.18	0.041	0.062
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 8	Simultaneous	11	2462	11.70	13.50	1.514	99.64	1.004	0.19	0.039	0.059
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 9	Simultaneous	11	2462	11.70	13.50	1.514	99.64	1.004	-	n/a	n/a
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 9	Simultaneous	11	2462	11.70	13.50	1.514	99.64	1.004	-0.01	0.042	0.064
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 9	Simultaneous	11	2462	11.70	13.50	1.514	99.64	1.004	0.06	0.030	0.046
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 9	Simultaneous	11	2462	11.70	13.50	1.514	99.64	1.004	-	n/a	n/a
WLAN5GHz																
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 8	Simultaneous	42	5210	12.58	13.50	1.236	88.89	1.125	-	n/a	n/a
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 8	Simultaneous	42	5210	12.58	13.50	1.236	88.89	1.125	-0.17	0.137	0.190
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Right Side	10mm	Ant 8	Simultaneous	42	5210	12.58	13.50	1.236	88.89	1.125	-	n/a	n/a
48	WLAN5.2GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 8	Simultaneous	42	5210	12.58	13.50	1.236	88.89	1.125	-0.05	0.141	0.196
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 9	Simultaneous	42	5210	12.58	13.50	1.236	88.89	1.125	-	n/a	n/a
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 9	Simultaneous	42	5210	12.58	13.50	1.236	88.89	1.125	-0.03	0.134	0.186
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Right Side	10mm	Ant 9	Simultaneous	42	5210	12.58	13.50	1.236	88.89	1.125	-	n/a	n/a
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 9	Simultaneous	42	5210	12.58	13.50	1.236	88.89	1.125	-	n/a	n/a
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 8	Simultaneous	155	5775	12.64	14.50	1.535	88.89	1.125	0.05	0.077	0.133
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 8	Simultaneous	155	5775	12.64	14.50	1.535	88.89	1.125	-0.06	0.148	0.256
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	10mm	Ant 8	Simultaneous	155	5775	12.64	14.50	1.535	88.89	1.125	-	n/a	n/a
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 8	Simultaneous	155	5775	12.64	14.50	1.535	88.89	1.125	0.03	0.180	0.311
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 9	Simultaneous	155	5775	12.64	14.50	1.535	88.89	1.125	-	n/a	n/a
49	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 9	Simultaneous	155	5775	12.64	14.50	1.535	88.89	1.125	0.06	0.309	0.533
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	10mm	Ant 9	Simultaneous	155	5775	12.64	14.50	1.535	88.89	1.125	0.15	0.078	0.135
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 9	Simultaneous	155	5775	12.64	14.50	1.535	88.89	1.125	-	n/a	n/a



15.3 Body Worn Accessory SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power ECI	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750MHz																				
	LTE Band 12	10M	QPSK	1	0	-	Front	15mm	Ant 0	ECI1	23095	707.5	23.43	24.50	1.279	-	-	-0.06	0.102	0.130
50	LTE Band 12	10M	QPSK	1	0	-	Back	15mm	Ant 0	ECI1	23095	707.5	23.43	24.50	1.279	-	-	-0.15	0.131	0.168
	LTE Band 12	10M	QPSK	25	0	-	Front	15mm	Ant 0	ECI1	23095	707.5	22.42	23.50	1.282	-	-	-0.04	0.084	0.108
	LTE Band 12	10M	QPSK	25	0	-	Back	15mm	Ant 0	ECI1	23095	707.5	22.42	23.50	1.282	-	-	-0.03	0.102	0.131
	LTE Band 12	10M	QPSK	1	0	-	Front	15mm	Ant 1	ECI1	23095	707.5	22.93	23.70	1.194	-	-	-0.11	0.091	0.109
	LTE Band 12	10M	QPSK	1	0	-	Back	15mm	Ant 1	ECI1	23095	707.5	22.93	23.70	1.194	-	-	-0.07	0.096	0.115
	LTE Band 12	10M	QPSK	25	0	-	Front	15mm	Ant 1	ECI1	23095	707.5	21.89	22.70	1.205	-	-	-0.12	0.074	0.089
	LTE Band 12	10M	QPSK	25	0	-	Back	15mm	Ant 1	ECI1	23095	707.5	21.89	22.70	1.205	-	-	-0.11	0.078	0.094
	LTE Band 13	10M	QPSK	1	0	-	Front	15mm	Ant 0	ECI1	23230	782	23.40	24.50	1.288	-	-	-0.18	0.135	0.174
51	LTE Band 13	10M	QPSK	1	0	-	Back	15mm	Ant 0	ECI1	23230	782	23.40	24.50	1.288	-	-	-0.09	0.181	0.233
	LTE Band 13	10M	QPSK	25	0	-	Front	15mm	Ant 0	ECI1	23230	782	23.35	23.50	1.035	-	-	-0.15	0.101	0.105
	LTE Band 13	10M	QPSK	25	0	-	Back	15mm	Ant 0	ECI1	23230	782	23.35	23.50	1.035	-	-	-0.16	0.123	0.127
	LTE Band 13	10M	QPSK	1	0	-	Front	15mm	Ant 1	ECI1	23230	782	22.82	23.70	1.225	-	-	0.09	0.048	0.059
	LTE Band 13	10M	QPSK	1	0	-	Back	15mm	Ant 1	ECI1	23230	782	22.82	23.70	1.225	-	-	-0.03	0.052	0.064
	LTE Band 13	10M	QPSK	25	0	-	Front	15mm	Ant 1	ECI1	23230	782	21.68	22.70	1.265	-	-	0.05	0.045	0.057
	LTE Band 13	10M	QPSK	25	0	-	Back	15mm	Ant 1	ECI1	23230	782	21.68	22.70	1.265	-	-	0.02	0.048	0.061
835MHz																				
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	15mm	Ant 0	ECI1	128	824.2	29.54	30.00	1.112	-	-	0.02	0.206	0.229
52	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	15mm	Ant 0	ECI1	128	824.2	29.54	30.00	1.112	-	-	-0.06	0.283	0.315
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	15mm	Ant 1	ECI1	251	848.8	29.09	29.50	1.099	-	-	-0.12	0.063	0.069
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	15mm	Ant 1	ECI1	251	848.8	29.09	29.50	1.099	-	-	0.08	0.067	0.074
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	15mm	Ant 0	ECI1	4182	836.4	24.08	25.00	1.236	-	-	0.08	0.107	0.132
53	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 0	ECI1	4182	836.4	24.08	25.00	1.236	-	-	0.15	0.142	0.176
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	15mm	Ant 1	ECI1	4182	836.4	23.72	24.50	1.197	-	-	-0.06	0.059	0.071
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 1	ECI1	4182	836.4	23.72	24.50	1.197	-	-	0.09	0.081	0.097
	LTE Band 26	15M	QPSK	1	0	-	Front	15mm	Ant 0	ECI1	26865	831.5	23.85	25.00	1.303	-	-	0.03	0.094	0.122
54	LTE Band 26	15M	QPSK	1	0	-	Back	15mm	Ant 0	ECI1	26865	831.5	23.85	25.00	1.303	-	-	0.1	0.138	0.180
	LTE Band 26	15M	QPSK	36	0	-	Front	15mm	Ant 0	ECI1	26865	831.5	22.84	24.00	1.306	-	-	0.16	0.074	0.097
	LTE Band 26	15M	QPSK	36	0	-	Back	15mm	Ant 0	ECI1	26865	831.5	22.84	24.00	1.306	-	-	0.03	0.094	0.123
	LTE Band 26	15M	QPSK	1	0	-	Front	15mm	Ant 1	ECI1	26865	831.5	23.69	24.20	1.125	-	-	-0.03	0.044	0.049
	LTE Band 26	15M	QPSK	1	0	-	Back	15mm	Ant 1	ECI1	26865	831.5	23.69	24.20	1.125	-	-	-0.16	0.057	0.064
	LTE Band 26	15M	QPSK	36	0	-	Front	15mm	Ant 1	ECI1	26865	831.5	22.70	23.20	1.122	-	-	0.02	0.037	0.042
	LTE Band 26	15M	QPSK	36	0	-	Back	15mm	Ant 1	ECI1	26865	831.5	22.70	23.20	1.122	-	-	-0.02	0.048	0.054
	FR1 n26	20M	QPSK	1	1	DFT-15	Front	15mm	Ant 0	ECI1	166300	831.5	23.06	24.70	1.459	-	-	0.01	0.085	0.124
	FR1 n26	20M	QPSK	1	1	DFT-15	Back	15mm	Ant 0	ECI1	166300	831.5	23.06	24.70	1.459	-	-	0.17	0.105	0.153
	FR1 n26	20M	QPSK	50	28	DFT-15	Front	15mm	Ant 0	ECI1	166300	831.5	22.96	24.70	1.493	-	-	-0.01	0.097	0.145
55	FR1 n26	20M	QPSK	50	28	DFT-15	Back	15mm	Ant 0	ECI1	166300	831.5	22.96	24.70	1.493	-	-	0.17	0.132	0.197
	FR1 n26	20M	QPSK	1	1	DFT-15	Front	15mm	Ant 1	ECI1	166300	831.5	22.95	24.20	1.334	-	-	-0.03	0.038	0.051
	FR1 n26	20M	QPSK	1	1	DFT-15	Back	15mm	Ant 1	ECI1	166300	831.5	22.95	24.20	1.334	-	-	0.06	0.049	0.065
	FR1 n26	20M	QPSK	50	28	DFT-15	Front	15mm	Ant 1	ECI1	166300	831.5	22.90	24.20	1.349	-	-	-0.05	0.048	0.065
	FR1 n26	20M	QPSK	50	28	DFT-15	Back	15mm	Ant 1	ECI1	166300	831.5	22.90	24.20	1.349	-	-	-0.18	0.062	0.084
1750MHz																				
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	15mm	Ant 3	ECI1	1513	1752.6	22.45	23.50	1.274	-	-	-0.12	0.146	0.186
56	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 3	ECI1	1513	1752.6	22.45	23.50	1.274	-	-	-0.03	0.156	0.199
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	15mm	Ant 1	ECI1	1513	1752.6	21.93	23.00	1.279	-	-	-0.16	0.047	0.060
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 1	ECI1	1513	1752.6	21.93	23.00	1.279	-	-	-0.06	0.088	0.113
	LTE Band 4	20M	QPSK	1	0	-	Front	15mm	Ant 3	ECI1	20175	1732.5	22.68	23.80	1.294	-	-	0.18	0.144	0.186
	LTE Band 4	20M	QPSK	1	0	-	Back	15mm	Ant 3	ECI1	20175	1732.5	22.68	23.80	1.294	-	-	0.16	0.168	0.217
	LTE Band 4	20M	QPSK	50	0	-	Front	15mm	Ant 3	ECI1	20175	1732.5	22.54	23.80	1.337	-	-	-0.07	0.152	0.203
57	LTE Band 4	20M	QPSK	50	0	-	Back	15mm	Ant 3	ECI1	20175	1732.5	22.54	23.80	1.337	-	-	-0.12	0.174	0.233



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	LTE Band 4	20M	QPSK	1	0	-	Front	15mm	Ant 1	ECI1	20175	1732.5	22.55	23.80	1.334	-	-	-0.11	0.051	0.068
	LTE Band 4	20M	QPSK	1	0	-	Back	15mm	Ant 1	ECI1	20175	1732.5	22.55	23.80	1.334	-	-	-0.11	0.102	0.136
	LTE Band 4	20M	QPSK	50	0	-	Front	15mm	Ant 1	ECI1	20175	1732.5	22.50	23.80	1.349	-	-	-0.01	0.057	0.077
	LTE Band 4	20M	QPSK	50	0	-	Back	15mm	Ant 1	ECI1	20175	1732.5	22.50	23.80	1.349	-	-	0.06	0.110	0.148
	LTE Band 4	20M	QPSK	1	0	-	Front	15mm	Ant 4	ECI1	20175	1732.5	22.50	23.30	1.202	-	-	0.05	0.120	0.144
	LTE Band 4	20M	QPSK	1	0	-	Back	15mm	Ant 4	ECI1	20175	1732.5	22.50	23.30	1.202	-	-	0.02	0.190	0.228
	LTE Band 4	20M	QPSK	50	0	-	Front	15mm	Ant 4	ECI1	20175	1732.5	22.48	23.30	1.208	-	-	0.03	0.112	0.135
	LTE Band 4	20M	QPSK	50	0	-	Back	15mm	Ant 4	ECI1	20175	1732.5	22.48	23.30	1.208	-	-	-0.01	0.182	0.220
	LTE Band 66	20M	QPSK	1	0	-	Front	15mm	Ant 3	ECI1	132572	1770	22.42	23.30	1.225	-	-	0.06	0.164	0.201
	LTE Band 66	20M	QPSK	1	0	-	Back	15mm	Ant 3	ECI1	132572	1770	22.42	23.30	1.225	-	-	0.06	0.220	0.269
	LTE Band 66	20M	QPSK	50	0	-	Front	15mm	Ant 3	ECI1	132572	1770	22.41	23.30	1.227	-	-	0.16	0.153	0.188
	LTE Band 66	20M	QPSK	50	0	-	Back	15mm	Ant 3	ECI1	132572	1770	22.41	23.30	1.227	-	-	0.13	0.174	0.214
	LTE Band 66	20M	QPSK	1	0	-	Front	15mm	Ant 1	ECI1	132322	1745	22.23	22.80	1.140	-	-	0.17	0.050	0.057
	LTE Band 66	20M	QPSK	1	0	-	Back	15mm	Ant 1	ECI1	132322	1745	22.23	22.80	1.140	-	-	-0.15	0.091	0.104
	LTE Band 66	20M	QPSK	50	0	-	Front	15mm	Ant 1	ECI1	132322	1745	22.21	22.80	1.146	-	-	-0.09	0.048	0.055
	LTE Band 66	20M	QPSK	50	0	-	Back	15mm	Ant 1	ECI1	132322	1745	22.21	22.80	1.146	-	-	-0.01	0.090	0.103
	LTE Band 66	20M	QPSK	1	0	-	Front	15mm	Ant 4	ECI1	132572	1770	21.25	21.80	1.135	-	-	0.03	0.222	0.252
	LTE Band 66	20M	QPSK	1	0	-	Back	15mm	Ant 4	ECI1	132572	1770	21.25	21.80	1.135	-	-	0.15	0.317	0.360
	LTE Band 66	20M	QPSK	50	0	-	Front	15mm	Ant 4	ECI1	132572	1770	21.23	21.80	1.140	-	-	-0.13	0.246	0.281
58	LTE Band 66	20M	QPSK	50	0	-	Back	15mm	Ant 4	ECI1	132572	1770	21.23	21.80	1.140	-	-	0.15	0.322	0.367
	FR1 n66	40M	QPSK	1	1	DFT-15	Front	15mm	Ant 3	ECI1	349000	1745	21.57	22.90	1.358		1.000	-0.08	0.115	0.156
	FR1 n66	40M	QPSK	1	1	DFT-15	Back	15mm	Ant 3	ECI1	349000	1745	21.57	22.90	1.358		1.000	0.12	0.150	0.204
	FR1 n66	40M	QPSK	108	54	DFT-15	Front	15mm	Ant 3	ECI1	349000	1745	21.52	22.90	1.374		1.000	-0.15	0.140	0.192
	FR1 n66	40M	QPSK	108	54	DFT-15	Back	15mm	Ant 3	ECI1	349000	1745	21.52	22.90	1.374		1.000	-0.05	0.172	0.236
	FR1 n66	40M	QPSK	1	1	DFT-15	Front	15mm	Ant 1	ECI1	349000	1745	20.54	21.40	1.219		1.000	0.02	0.038	0.046
	FR1 n66	40M	QPSK	1	1	DFT-15	Back	15mm	Ant 1	ECI1	349000	1745	20.54	21.40	1.219		1.000	0.1	0.090	0.110
	FR1 n66	40M	QPSK	108	54	DFT-15	Front	15mm	Ant 1	ECI1	349000	1745	20.41	21.40	1.256		1.000	0.01	0.055	0.069
	FR1 n66	40M	QPSK	108	54	DFT-15	Back	15mm	Ant 1	ECI1	349000	1745	20.41	21.40	1.256		1.000	0.07	0.102	0.128
	FR1 n66	40M	QPSK	1	1	DFT-15	Front	15mm	Ant 4	ECI1	352000	1760	20.02	20.90	1.225		1.000	0.05	0.137	0.168
	FR1 n66	40M	QPSK	1	1	DFT-15	Back	15mm	Ant 4	ECI1	352000	1760	20.02	20.90	1.225		1.000	0.18	0.248	0.304
	FR1 n66	40M	QPSK	108	54	DFT-15	Front	15mm	Ant 4	ECI1	352000	1760	20.00	20.90	1.230		1.000	-0.02	0.145	0.178
59	FR1 n66	40M	QPSK	108	54	DFT-15	Back	15mm	Ant 4	ECI1	352000	1760	20.00	20.90	1.230		1.000	0.01	0.272	0.335
1900MHz																				
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Front	15mm	Ant 3	ECI1	810	1909.8	26.22	27.00	1.197	-	-	-0.06	0.172	0.206
60	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	15mm	Ant 3	ECI1	810	1909.8	26.22	27.00	1.197	-	-	0.04	0.220	0.263
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Front	15mm	Ant 1	ECI1	661	1880	20.82	21.80	1.253	-	-	-0.01	0.071	0.089
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	15mm	Ant 1	ECI1	661	1880	20.82	21.80	1.253	-	-	-0.01	0.118	0.148
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	15mm	Ant 3	ECI1	9262	1852.4	23.10	23.50	1.096	-	-	-0.16	0.213	0.234
61	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 3	ECI1	9262	1852.4	23.10	23.50	1.096	-	-	-0.06	0.250	0.274
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	15mm	Ant 1	ECI1	9262	1852.4	20.83	21.00	1.040	-	-	-	n/a	n/a
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 1	ECI1	9262	1852.4	20.83	21.00	1.040	-	-	0.1	0.158	0.164
	LTE Band 2	20M	QPSK	1	0	-	Front	15mm	Ant 3	ECI1	18900	1880	23.50	24.20	1.175	-	-	-0.06	0.191	0.224
	LTE Band 2	20M	QPSK	1	0	-	Back	15mm	Ant 3	ECI1	18900	1880	23.50	24.20	1.175	-	-	0.05	0.208	0.244
	LTE Band 2	20M	QPSK	50	0	-	Front	15mm	Ant 3	ECI1	18900	1880	22.48	23.20	1.180	-	-	0.1	0.187	0.221
	LTE Band 2	20M	QPSK	50	0	-	Back	15mm	Ant 3	ECI1	18900	1880	22.48	23.20	1.180	-	-	-0.01	0.206	0.243
	LTE Band 2	20M	QPSK	1	0	-	Front	15mm	Ant 1	ECI1	18900	1880	20.09	20.70	1.151	-	-	-0.13	0.106	0.122
	LTE Band 2	20M	QPSK	1	0	-	Back	15mm	Ant 1	ECI1	18900	1880	20.09	20.70	1.151	-	-	0.07	0.174	0.200
	LTE Band 2	20M	QPSK	50	0	-	Front	15mm	Ant 1	ECI1	18900	1880	20.08	20.70	1.153	-	-	0.07	0.112	0.129
	LTE Band 2	20M	QPSK	50	0	-	Back	15mm	Ant 1	ECI1	18900	1880	20.08	20.70	1.153	-	-	-0.01	0.181	0.209
	LTE Band 2	20M	QPSK	1	0	-	Front	15mm	Ant 4	ECI1	18900	1880	20.50	21.70	1.318	-	-	0.06	0.112	0.148
	LTE Band 2	20M	QPSK	1	0	-	Back	15mm	Ant 4	ECI1	18900	1880	20.50	21.70	1.318	-	-	-0.17	0.184	0.243
	LTE Band 2	20M	QPSK	50	0	-	Front	15mm	Ant 4	ECI1	18900	1880	20.48	21.70	1.324	-	-	0.1	0.128	0.170
62	LTE Band 2	20M	QPSK	50	0	-	Back	15mm	Ant 4	ECI1	18900	1880	20.48	21.70	1.324	-	-	0.07	0.195	0.258
	FR1 n2	20M	QPSK	1	1	DFT-15	Front	15mm	Ant 3	ECI1	380000	1900	21.96	23.20	1.330	-	-	0.17	0.146	0.194
	FR1 n2	20M	QPSK	1	1	DFT-15	Back	15mm	Ant 3	ECI1	380000	1900	21.96	23.20	1.330	-	-	0.15	0.172	0.229
	FR1 n2	20M	QPSK	50	28	DFT-15	Front	15mm	Ant 3	ECI1	380000	1900	21.87	23.20	1.358	-	-	-0.18	0.154	0.209



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	FR1 n2	20M	QPSK	50	28	DFT-15	Back	15mm	Ant 3	ECI1	380000	1900	21.87	23.20	1.358	-	-	0.05	0.185	0.251
	FR1 n2	20M	QPSK	1	1	DFT-15	Front	15mm	Ant 1	ECI1	372000	1860	18.82	19.70	1.225	-	-	-0.03	0.080	0.098
	FR1 n2	20M	QPSK	1	1	DFT-15	Back	15mm	Ant 1	ECI1	372000	1860	18.82	19.70	1.225	-	-	0.07	0.145	0.178
	FR1 n2	20M	QPSK	50	28	DFT-15	Front	15mm	Ant 1	ECI1	372000	1860	18.75	19.70	1.245	-	-	0.17	0.082	0.102
	FR1 n2	20M	QPSK	50	28	DFT-15	Back	15mm	Ant 1	ECI1	372000	1860	18.75	19.70	1.245	-	-	0.01	0.145	0.180
	FR1 n2	20M	QPSK	1	1	DFT-15	Front	15mm	Ant 4	ECI1	380000	1900	20.37	21.70	1.358	-	-	-0.17	0.106	0.144
	FR1 n2	20M	QPSK	1	1	DFT-15	Back	15mm	Ant 4	ECI1	380000	1900	20.37	21.70	1.358	-	-	0.02	0.171	0.232
	FR1 n2	20M	QPSK	50	28	DFT-15	Front	15mm	Ant 4	ECI1	380000	1900	20.30	21.70	1.380	-	-	-0.16	0.129	0.178
63	FR1 n2	20M	QPSK	50	28	DFT-15	Back	15mm	Ant 4	ECI1	380000	1900	20.30	21.70	1.380	-	-	-0.01	0.219	0.302
2600MHz																				
	LTE Band 7	20M	QPSK	1	0	-	Front	15mm	Ant 3	ECI1	21100	2535	21.68	22.70	1.265	-	-	-0.18	0.221	0.280
64	LTE Band 7	20M	QPSK	1	0	-	Back	15mm	Ant 3	ECI1	21100	2535	21.68	22.70	1.265	-	-	-0.03	0.243	0.307
	LTE Band 7C	20M	QPSK	1	0	-	Back	15mm	Ant 3	ECI1	21100/21298	2535/2554.8	21.65	22.70	1.274	-	-	0.01	0.237	0.302
	LTE Band 7	20M	QPSK	50	0	-	Front	15mm	Ant 3	ECI1	21100	2535	21.67	22.70	1.268	-	-	0.14	0.218	0.276
	LTE Band 7	20M	QPSK	50	0	-	Back	15mm	Ant 3	ECI1	21100	2535	21.67	22.70	1.268	-	-	-0.13	0.235	0.298
	LTE Band 7	20M	QPSK	1	0	-	Front	15mm	Ant 1	ECI1	21100	2535	20.88	21.70	1.208	-	-	-0.15	0.179	0.216
	LTE Band 7	20M	QPSK	1	0	-	Back	15mm	Ant 1	ECI1	21100	2535	20.88	21.70	1.208	-	-	0.18	0.242	0.292
	LTE Band 7C	20M	QPSK	1	0	-	Back	15mm	Ant 1	ECI1	21100/21298	2535/2554.8	20.83	21.70	1.222	-	-	-0.11	0.235	0.287
	LTE Band 7	20M	QPSK	50	0	-	Front	15mm	Ant 1	ECI1	21100	2535	20.86	21.70	1.213	-	-	0.09	0.173	0.210
	LTE Band 7	20M	QPSK	50	0	-	Back	15mm	Ant 1	ECI1	21100	2535	20.86	21.70	1.213	-	-	0.03	0.229	0.278
	LTE Band 7	20M	QPSK	1	0	-	Front	15mm	Ant 5	ECI1	21100	2535	21.30	21.50	1.047	-	-	-	n/a	n/a
	LTE Band 7	20M	QPSK	1	0	-	Back	15mm	Ant 5	ECI1	21100	2535	21.30	21.50	1.047	-	-	-0.17	0.102	0.107
	LTE Band 7	20M	QPSK	50	0	-	Front	15mm	Ant 5	ECI1	21100	2535	21.28	21.50	1.052	-	-	-	n/a	n/a
	LTE Band 7	20M	QPSK	50	0	-	Back	15mm	Ant 5	ECI1	21100	2535	21.28	21.50	1.052	-	-	0.02	0.106	0.112
	LTE Band 38	20M	QPSK	1	0	-	Front	15mm	Ant 3	ECI1	38000	2595	23.80	24.50	1.175	62.9	1.006	0.14	0.166	0.196
	LTE Band 38	20M	QPSK	1	0	-	Back	15mm	Ant 3	ECI1	38000	2595	23.80	24.50	1.175	62.9	1.006	0.15	0.170	0.201
	LTE Band 38C	20M	QPSK	1	0	-	Back	15mm	Ant 3	ECI1	37901/38099	2585.1/2604.9	23.77	24.50	1.183	62.9	1.006	0.05	0.164	0.195
	LTE Band 38	20M	QPSK	50	0	-	Front	15mm	Ant 3	ECI1	38000	2595	22.85	23.50	1.161	62.9	1.006	-0.11	0.129	0.151
	LTE Band 38	20M	QPSK	50	0	-	Back	15mm	Ant 3	ECI1	38000	2595	22.85	23.50	1.161	62.9	1.006	0.06	0.143	0.167
	LTE Band 38	20M	QPSK	1	0	-	Front	15mm	Ant 1	ECI1	38000	2595	23.14	24.00	1.219	62.9	1.006	-0.18	0.134	0.164
65	LTE Band 38	20M	QPSK	1	0	-	Back	15mm	Ant 1	ECI1	38000	2595	23.14	24.00	1.219	62.9	1.006	0.14	0.250	0.307
	LTE Band 38C	20M	QPSK	1	0	-	Back	15mm	Ant 1	ECI1	37901/38099	2585.1/2604.9	23.10	24.00	1.230	62.9	1.006	-0.05	0.195	0.241
	LTE Band 38	20M	QPSK	50	0	-	Front	15mm	Ant 1	ECI1	38000	2595	22.15	23.00	1.216	62.9	1.006	-0.14	0.108	0.132
	LTE Band 38	20M	QPSK	50	0	-	Back	15mm	Ant 1	ECI1	38000	2595	22.15	23.00	1.216	62.9	1.006	0.17	0.176	0.215
	LTE Band 38	20M	QPSK	1	0	-	Front	15mm	Ant 5	ECI1	38000	2595	22.20	23.50	1.349	62.9	1.006	0.17	0.132	0.179
	LTE Band 38	20M	QPSK	1	0	-	Back	15mm	Ant 5	ECI1	38000	2595	22.20	23.50	1.349	62.9	1.006	0.12	0.200	0.271
	LTE Band 38	20M	QPSK	50	0	-	Front	15mm	Ant 5	ECI1	38000	2595	21.13	22.50	1.371	62.9	1.006	-0.07	0.122	0.168
	LTE Band 38	20M	QPSK	50	0	-	Back	15mm	Ant 5	ECI1	38000	2595	21.13	22.50	1.371	62.9	1.006	-0.18	0.202	0.279
	LTE Band 41	20M	QPSK	1	0	-	Front	15mm	Ant 3	ECI1	39750	2506	21.30	22.00	1.175	62.9	1.006	0.04	0.089	0.105
	LTE Band 41	20M	QPSK	1	0	-	Back	15mm	Ant 3	ECI1	39750	2506	21.30	22.00	1.175	62.9	1.006	0.14	0.093	0.110
	LTE Band 41C	20M	QPSK	1	0	-	Back	15mm	Ant 3	ECI1	39750/39948	2506/2525.8	21.28	22.00	1.180	62.9	1.006	0.05	0.092	0.109
	LTE Band 41	20M	QPSK	50	0	-	Front	15mm	Ant 3	ECI1	39750	2506	21.28	22.00	1.180	62.9	1.006	0.18	0.075	0.089
	LTE Band 41	20M	QPSK	50	0	-	Back	15mm	Ant 3	ECI1	39750	2506	21.28	22.00	1.180	62.9	1.006	-0.09	0.084	0.100
	LTE Band 41	20M	QPSK	1	0	-	Front	15mm	Ant 1	ECI1	39750	2506	20.69	21.50	1.205	62.9	1.006	-0.08	0.083	0.101
66	LTE Band 41	20M	QPSK	1	0	-	Back	15mm	Ant 1	ECI1	39750	2506	20.69	21.50	1.205	62.9	1.006	0.06	0.120	0.145
	LTE Band 41C	20M	QPSK	1	0	-	Back	15mm	Ant 1	ECI1	39750/39948	2506/2525.8	20.65	21.50	1.216	62.9	1.006	0.07	0.102	0.125
	LTE Band 41	20M	QPSK	50	0	-	Front	15mm	Ant 1	ECI1	39750	2506	20.67	21.50	1.211	62.9	1.006	-0.13	0.078	0.095
	LTE Band 41	20M	QPSK	50	0	-	Back	15mm	Ant 1	ECI1	39750	2506	20.67	21.50	1.211	62.9	1.006	0.16	0.103	0.125
	LTE Band 41	20M	QPSK	1	0	-	Front	15mm	Ant 5	ECI1	40620	2593	18.64	20.00	1.368	62.9	1.006	-	n/a	n/a
	LTE Band 41	20M	QPSK	1	0	-	Back	15mm	Ant 5	ECI1	40620	2593	18.64	20.00	1.368	62.9	1.006	0.13	0.094	0.129
	LTE Band 41	20M	QPSK	50	0	-	Front	15mm	Ant 5	ECI1	40620	2593	18.62	20.00	1.374	62.9	1.006	-	n/a	n/a
	LTE Band 41	20M	QPSK	50	0	-	Back	15mm	Ant 5	ECI1	40620	2593	18.62	20.00	1.374	62.9	1.006	0.18	0.092	0.127
	FR1 n7	50M	QPSK	1	1	DFT-15	Front	15mm	Ant 3	ECI1	507000	2535	20.77	22.20	1.390	-	-	0.11	0.170	0.236



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	FR1 n7	50M	QPSK	1	1	DFT-15	Back	15mm	Ant 3	ECI1	507000	2535	20.77	22.20	1.390	-	-	0.15	0.181	0.252
	FR1 n7	50M	QPSK	135	68	DFT-15	Front	15mm	Ant 3	ECI1	507000	2535	20.70	22.20	1.413	-	-	0.16	0.153	0.216
	FR1 n7	50M	QPSK	135	68	DFT-15	Back	15mm	Ant 3	ECI1	507000	2535	20.70	22.20	1.413	-	-	0.16	0.182	0.257
	FR1 n7	50M	QPSK	1	1	DFT-15	Front	15mm	Ant 1	ECI1	507000	2535	20.50	21.70	1.318	-	-	0.03	0.132	0.174
67	FR1 n7	50M	QPSK	1	1	DFT-15	Back	15mm	Ant 1	ECI1	507000	2535	20.50	21.70	1.318	-	-	0.04	0.221	0.291
	FR1 n7	50M	QPSK	135	68	DFT-15	Front	15mm	Ant 1	ECI1	507000	2535	20.43	21.70	1.340	-	-	-0.09	0.103	0.138
	FR1 n7	50M	QPSK	135	68	DFT-15	Back	15mm	Ant 1	ECI1	507000	2535	20.43	21.70	1.340	-	-	-0.18	0.159	0.213
	FR1 n38	40M	QPSK	1	1	DFT-30	Front	15mm	Ant 1	ECI1	519000	2595	21.42	22.20	1.197	-	-	-0.13	0.119	0.142
68	FR1 n38	40M	QPSK	1	1	DFT-30	Back	15mm	Ant 1	ECI1	519000	2595	21.42	22.20	1.197	-	-	0.18	0.157	0.188
	FR1 n38	40M	QPSK	50	28	DFT-30	Front	15mm	Ant 1	ECI1	519000	2595	21.37	22.20	1.211	-	-	0.04	0.114	0.138
	FR1 n38	40M	QPSK	50	28	DFT-30	Back	15mm	Ant 1	ECI1	519000	2595	21.37	22.20	1.211	-	-	0.16	0.145	0.176
	FR1 n41	100M	QPSK	1	1	DFT-30	Front	15mm	Ant 3	ECI1	518598	2592.99	21.17	22.20	1.268	-	-	-0.02	0.183	0.232
69	FR1 n41	100M	QPSK	1	1	DFT-30	Back	15mm	Ant 3	ECI1	518598	2592.99	21.17	22.20	1.268	-	-	-0.16	0.250	0.317
	FR1 n41	100M	QPSK	135	69	DFT-30	Front	15mm	Ant 3	ECI1	518598	2592.99	21.03	22.20	1.309	-	-	-0.03	0.152	0.199
	FR1 n41	100M	QPSK	135	69	DFT-30	Back	15mm	Ant 3	ECI1	518598	2592.99	21.03	22.20	1.309	-	-	-0.02	0.179	0.234
	FR1 n41	100M	QPSK	1	1	DFT-30	Front	15mm	Ant 1	ECI1	518598	2592.99	20.85	21.70	1.216	-	-	0.17	0.120	0.146
	FR1 n41	100M	QPSK	1	1	DFT-30	Back	15mm	Ant 1	ECI1	518598	2592.99	20.85	21.70	1.216	-	-	0.14	0.187	0.227
	FR1 n41	100M	QPSK	135	69	DFT-30	Front	15mm	Ant 1	ECI1	518598	2592.99	20.72	21.70	1.253	-	-	-0.09	0.108	0.135
	FR1 n41	100M	QPSK	135	69	DFT-30	Back	15mm	Ant 1	ECI1	518598	2592.99	20.72	21.70	1.253	-	-	0.08	0.170	0.213

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power	ECI	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
WLAN2.4GHz/BT																	
	Bluetooth	DH5 1Mbps	Front	15mm	Ant 8	full power	0	2402	14.49	14.50	1.002	76.8	1.302	-	n/a	n/a	
70	Bluetooth	DH5 1Mbps	Back	15mm	Ant 8	full power	0	2402	14.49	14.50	1.002	76.8	1.302	-0.07	0.023	0.030	
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Ant 8	Standalone	11	2462	11.70	13.50	1.514	99.64	1.004	-0.02	0.021	0.032	
71	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 8	Standalone	11	2462	11.70	13.50	1.514	99.64	1.004	0	0.023	0.035	
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Ant 9	Standalone	11	2462	11.70	13.50	1.514	99.64	1.004	-	n/a	n/a	
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 9	Standalone	11	2462	11.70	13.50	1.514	99.64	1.004	0.17	0.019	0.029	
WLAN5GHz																	
	WLAN5.2GHz	802.11n-HT40 MCS0	Front	15mm	Ant 8	Standalone	46	5230	16.62	18.50	1.542	94.2	1.062	0.05	0.130	0.213	
72	WLAN5.2GHz	802.11n-HT40 MCS0	Back	15mm	Ant 8	Standalone	46	5230	16.62	18.50	1.542	94.2	1.062	0.08	0.290	0.475	
	WLAN5.2GHz	802.11n-HT40 MCS0	Front	15mm	Ant 9	Standalone	46	5230	16.62	18.50	1.542	94.2	1.062	0.02	0.112	0.183	
	WLAN5.2GHz	802.11n-HT40 MCS0	Back	15mm	Ant 9	Standalone	46	5230	16.62	18.50	1.542	94.2	1.062	0.07	0.250	0.409	
	WLAN5.3GHz	802.11n-HT20 MCS0	Front	15mm	Ant 8	Standalone	52	5260	15.24	17.00	1.500	97.76	1.023	0.05	0.116	0.178	
73	WLAN5.3GHz	802.11n-HT20 MCS0	Back	15mm	Ant 8	Standalone	52	5260	15.24	17.00	1.500	97.76	1.023	0.11	0.244	0.374	
	WLAN5.3GHz	802.11n-HT20 MCS0	Front	15mm	Ant 9	Standalone	52	5260	15.24	17.00	1.500	97.76	1.023	0.06	0.102	0.156	
	WLAN5.3GHz	802.11n-HT20 MCS0	Back	15mm	Ant 9	Standalone	52	5260	15.24	17.00	1.500	97.76	1.023	0.02	0.221	0.339	
	WLAN5.5GHz	802.11a 6Mbps	Front	15mm	Ant 8	Standalone	124	5620	15.08	17.00	1.556	97.89	1.022	0.08	0.098	0.156	
	WLAN5.5GHz	802.11a 6Mbps	Back	15mm	Ant 8	Standalone	124	5620	15.08	17.00	1.556	97.89	1.022	-0.01	0.194	0.308	
	WLAN5.5GHz	802.11a 6Mbps	Front	15mm	Ant 9	Standalone	124	5620	15.08	17.00	1.556	97.89	1.022	-	n/a	n/a	
74	WLAN5.5GHz	802.11a 6Mbps	Back	15mm	Ant 9	Standalone	124	5620	15.08	17.00	1.556	97.89	1.022	0.03	0.211	0.336	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	15mm	Ant 8	Standalone	155	5775	12.64	14.50	1.535	88.89	1.125	0.05	0.085	0.147	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	15mm	Ant 8	Standalone	155	5775	12.64	14.50	1.535	88.89	1.125	0.13	0.125	0.216	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	15mm	Ant 9	Standalone	155	5775	12.64	14.50	1.535	88.89	1.125	0.02	0.000	0.000	
75	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	15mm	Ant 9	Standalone	155	5775	12.64	14.50	1.535	88.89	1.125	0.06	0.139	0.240	



15.4 Product specific 10g SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power ECI	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
1900MHz																		
76	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	0mm	Ant 1	ECI1	9262	1852.4	20.83	21.00	1.040	0.02	1.950	2.028
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	0mm	Ant 1	ECI1	9400	1880	20.58	21.00	1.102	0.08	2.020	2.225
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	0mm	Ant 1	ECI1	9538	1907.6	20.35	21.00	1.161	-0.14	1.850	2.149
2600MHz																		
77	LTE Band 7	20M	QPSK	1	0	-	Top Side	0mm	Ant 1	ECI1	21100	2535	20.88	21.70	1.208	-0.01	1.900	2.295
	LTE Band 7	20M	QPSK	1	0	-	Top Side	0mm	Ant 1	ECI1	20850	2510	20.78	21.70	1.236	-0.07	2.140	2.645
	LTE Band 7C	20M	QPSK	1	0	-	Top Side	0mm	Ant 1	ECI1	20850/21048	2510/2529.8	20.70	21.70	1.259	0.02	1.980	2.493
	LTE Band 7	20M	QPSK	1	0	-	Top Side	0mm	Ant 1	ECI1	21350	2560	20.87	21.70	1.211	-0.07	1.720	2.082
	LTE Band 7	20M	QPSK	50	0	-	Top Side	0mm	Ant 1	ECI1	21100	2535	20.86	21.70	1.213	-0.03	1.880	2.281
	LTE Band 7	20M	QPSK	50	0	-	Top Side	0mm	Ant 1	ECI1	20850	2510	20.76	21.70	1.242	-0.17	1.990	2.471
	LTE Band 7	20M	QPSK	50	0	-	Top Side	0mm	Ant 1	ECI1	21350	2560	20.85	21.70	1.216	0.09	1.770	2.153
	LTE Band 7	20M	QPSK	100	0	-	Top Side	0mm	Ant 1	ECI1	21100	2535	20.85	21.70	1.216	-0.08	1.780	2.165
	FR1 n7	50M	QPSK	1	1	DFT-15	Top Side	0mm	Ant 1	ECI1	507000	2535	20.50	21.70	1.318	0.01	2.250	2.966
	FR1 n7	50M	QPSK	1	1	DFT-15	Top Side	0mm	Ant 1	ECI3	507000	2535	16.50	17.70	1.318	0.01	0.896	1.181
	FR1 n7	50M	QPSK	135	68	DFT-15	Top Side	0mm	Ant 1	ECI1	507000	2535	20.43	21.70	1.340	-0.02	1.990	2.666
	FR1 n7	50M	QPSK	270	0	DFT-15	Top Side	0mm	Ant 1	ECI1	507000	2535	20.29	21.70	1.384	-0.07	1.870	2.587

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power ECI	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
WLAN5GHz																
79	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	Ant 8	Standalone	52	5260	15.32	17.00	1.472	97.89	1.022	0.1	0.521	0.784
	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 8	Standalone	52	5260	15.32	17.00	1.472	97.89	1.022	-0.05	0.551	0.829
	WLAN5.3GHz	802.11a 6Mbps	Right Side	0mm	Ant 8	Standalone	52	5260	15.32	17.00	1.472	97.89	1.022	0.07	0.422	0.635
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 8	Standalone	52	5260	15.32	17.00	1.472	97.89	1.022	-0.12	0.723	1.088
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 8	Simultaneous	58	5290	13.01	14.50	1.409	88.89	1.125	0.05	0.302	0.479
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 8	Simultaneous	58	5290	13.01	14.50	1.409	88.89	1.125	0.11	0.315	0.499
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Ant 8	Simultaneous	58	5290	13.01	14.50	1.409	88.89	1.125	-0.03	0.230	0.365
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 8	Simultaneous	58	5290	13.01	14.50	1.409	88.89	1.125	0.02	0.420	0.666
	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	Ant 9	Standalone	52	5260	15.32	17.00	1.472	97.89	1.022	-	n/a	n/a
	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 9	Standalone	52	5260	15.32	17.00	1.472	97.89	1.022	-0.12	0.329	0.495
80	WLAN5.3GHz	802.11a 6Mbps	Right Side	0mm	Ant 9	Standalone	52	5260	15.32	17.00	1.472	97.89	1.022	-0.01	0.136	0.205
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 9	Standalone	52	5260	15.32	17.00	1.472	97.89	1.022	-	n/a	n/a
	WLAN5.5GHz	802.11a 6Mbps	Front	0mm	Ant 8	Standalone	124	5620	15.08	17.00	1.556	97.89	1.022	-0.08	0.578	0.919
	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 8	Standalone	124	5620	15.08	17.00	1.556	97.89	1.022	0.09	0.643	1.022
	WLAN5.5GHz	802.11a 6Mbps	Right Side	0mm	Ant 8	Standalone	124	5620	15.08	17.00	1.556	97.89	1.022	-0.19	0.356	0.566
	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 8	Standalone	124	5620	15.08	17.00	1.556	97.89	1.022	-0.05	0.978	1.555
	WLAN5.5GHz	802.11a 6Mbps	Front	0mm	Ant 8	Simultaneous	124	5620	13.59	15.50	1.552	97.89	1.022	-0.08	0.393	0.624
	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 8	Simultaneous	124	5620	13.59	15.50	1.552	97.89	1.022	-0.06	0.454	0.720
	WLAN5.5GHz	802.11a 6Mbps	Right Side	0mm	Ant 8	Simultaneous	124	5620	13.59	15.50	1.552	97.89	1.022	0.12	0.217	0.344
	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 8	Simultaneous	124	5620	13.59	15.50	1.552	97.89	1.022	-0.17	0.687	1.090
	WLAN5.5GHz	802.11a 6Mbps	Front	0mm	Ant 9	Standalone	124	5620	15.08	17.00	1.556	97.89	1.022	0.01	0.000	0.000
	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 9	Standalone	124	5620	15.08	17.00	1.556	97.89	1.022	0.05	0.511	0.813
	WLAN5.5GHz	802.11a 6Mbps	Right Side	0mm	Ant 9	Standalone	124	5620	15.08	17.00	1.556	97.89	1.022	-0.04	0.028	0.045
	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 9	Standalone	124	5620	15.08	17.00	1.556	97.89	1.022	0.11	0.053	0.084

15.5 Repeated SAR Measurement

<1g>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	LTE Band 4	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 4	ECI2	20175	1732.5	22.30	22.80	1.122	-	-	-0.01	1.010	1	1.133
2nd	LTE Band 4	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 4	ECI2	20175	1732.5	22.30	22.80	1.122	-	-	0.04	0.930	1.086	1.043
1st	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 1	ECI2	661	1880	20.82	21.50	1.169	-	-	-0.06	0.886	1	1.036
2nd	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 1	ECI2	661	1880	20.82	21.50	1.169	-	-	0.02	0.820	1.080	0.959
1st	FR1 n38	40M	QPSK	100	0	DFT-30	Right Tilted	0mm	Ant 1	ECI2	519000	2595	18.96	19.70	1.186	-	-	0.14	0.991	1	1.175
2nd	FR1 n38	40M	QPSK	100	0	DFT-30	Right Tilted	0mm	Ant 1	ECI2	519000	2595	18.96	19.70	1.186	-	-	-0.11	0.936	1.059	1.110

<10g>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	0mm	Ant 1	ECI1	9400	1880	20.58	21.00	1.102	-	-	0.08	2.020	1	2.225
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	0mm	Ant 1	ECI1	9400	1880	20.58	21.00	1.102	-	-	0.01	1.910	1.058	2.104
1st	FR1 n7	50M	QPSK	1	1	DFT-15	Top Side	0mm	Ant 1	ECI1	507000	2535	20.50	21.70	1.318	-	-	0.01	2.250	1	2.966
2nd	FR1 n7	50M	QPSK	1	1	DFT-15	Top Side	0mm	Ant 1	ECI1	507000	2535	20.50	21.70	1.318	-	-	0.13	2.120	1.061	2.795

General Note:

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

16. Simultaneous Transmission Analysis

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

General Note:

- This device supports VoIP in GPRS, EGPRS, WCDMA, LTE and 5GNR (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
- EUT will choose each GSM, WCDMA, LTE and 5GNR according to the network signal condition; therefore, they will not operate simultaneously at any moment.
- WWAN above includes 5G NR bands and EN-DC combination.
- For EN-DC mode, MediaTek TA-SAR algorithm in WWAN adds directly the time-averaged RF exposure from 4G(LTE) and time-averaged RF exposure from 5G NR. TA-SAR algorithm controls the total RF exposure from both 4G and 5G NR to not exceed FCC limit. Therefore, simultaneous transmission compliance between 4G+5G NR operation is demonstrated in the Part 2 Report during algorithm validation. In Part 1 Report, simultaneous transmission compliance was evaluated individually with other Radios (WLAN or BT) using one of 4G or 5G NR.
- This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
- This device 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WLAN Direct (GC/GO), and 5.3GHz / 5.5GHz supports WLAN Direct (GC only).
- WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
- According to the EUT characteristic, WLAN 5GHz and Bluetooth can transmit simultaneously.
- According to the EUT characteristic, WLAN 5GHz and WLAN 2.4GHz can't transmit simultaneously.
- NFC can transmit simultaneously with other Radios in extremity exposure condition.
- The maximum SAR summation is calculated based on the same configuration and test position.
- All licensed modes share the same antenna part and cannot transmit simultaneously.
- For standalone WWAN, always choose the highest SAR among all the selected WWAN bands within the selected antenna for each exposure position to perform simultaneous transmission analysis with WLAN/BT. This is the worst co-located analysis and can represent each band.
- Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
 - $SPLSR = (SAR1 + SAR2)^{1.5} / (\min. \text{ separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
 - If $SPLSR \leq 0.04$ for 1g SAR and $SPLSR \leq 0.10$ for 10g SAR, simultaneously transmission SAR measurement is not necessary.
 - Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.

16.1 5G NR + LTE + WLAN + BT Sim-Tx analysis

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

Since WLAN and BT do not employ time-averaging, 1gSAR and 10gSAR measurement for WLAN and BT need to be conducted at their corresponding rated power following current FCC test procedures to determine reported SAR values.

TA-SAR current implementation assumes hotspots from 5G NR and LTE are collocated. Therefore, for a total of 100% exposure margin, if LTE uses x, then the exposure margin left for 5G NR is capped to y. Thus, the compliance equation for LTE + 5G NR is

$$\begin{aligned} x \cdot A + y \cdot B + m &\leq 1 \\ x + y &\leq 1 \\ g + m &\leq 1 \end{aligned}$$

Where, A is normalized reported time-averaged SAR exposure ratio from LTE, and $A \leq 1.0$; B is normalized reported time-averaged exposure ratio from 5G NR (i.e., PD exposure for 5G FR2 or SAR exposure for 5G FR1), and $B \leq 1.0$.

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

$$x \cdot A + y \cdot B + m \leq 1.0 \quad (1)$$

$$x \cdot A + y \cdot B \leq x \cdot \max(A, B) + (g-x) \cdot \max(A, B) \leq \max(A, B)$$

$$x \cdot A + (g-x) \cdot B + m \leq \max(A, B) + m \leq 1.0 \quad (2)$$

If $A + m \leq 1.0$ and $B + m \leq 1.0$ can be proven, then " $x \cdot A + y \cdot B + m \leq 1.0$ ". Therefore simultaneous transmission analysis for 5G NR + LTE + WLAN + BT can be performed in two steps

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

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

Else, if $A + m > 1.0$ and/or $B + m > 1.0$, then the followings need to hold true for compliance:

- i. A and m are decoupled based on the SPLSR criteria, and
- ii. $y \cdot B + m \leq 1.0$, and
- iii. $x \cdot A + y \cdot B \leq 1.0$

Note iii. is covered in Part 2 report; i. and ii. should be addressed in Part 2 report.

Above analysis is also apply to LTE inter-band uplink, LTE1 + LTE2 + WLAN + BT simultaneous transmission, so inter-band uplink CA no need to do additional simultaneously analysis again. Only required comply with total exposure ratio (TER) of LTE + WLAN + BT < 1.

16.2 Head Exposure Conditions

Exposure Position	10	17	10+17
	WLAN5GHz Ant 8	Bluetooth Ant 8	Summed
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Right Cheek	0.511	0.081	0.59
Right Tilted	0.600	0.082	0.68
Left Cheek	0.636	0.254	0.89
Left Tilted	1.025	0.179	1.20

WWAN Band	Exposure Position	1	3	10	17	1+3	1+10+17
		WWAN	WLAN2.4GHz Ant 8	WLAN5GHz Ant 8	Bluetooth Ant 8	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
All Bands Ant 0	Right Cheek	0.291	0.091	0.248	0.081	0.38	0.62
	Right Tilted	0.158	0.084	0.277	0.082	0.24	0.52
	Left Cheek	0.257	0.254	0.343	0.254	0.51	0.85
	Left Tilted	0.131	0.188	0.491	0.179	0.32	0.80
All Bands Ant 1	Right Cheek	0.991	0.091	0.248	0.081	1.08	1.32
	Right Tilted	1.175	0.084	0.277	0.082	1.26	1.53
	Left Cheek	0.580	0.254	0.343	0.254	0.83	1.18
	Left Tilted	0.645	0.188	0.491	0.179	0.83	1.32
All Bands Ant 3	Right Cheek	0.188	0.091	0.248	0.081	0.28	0.52
	Right Tilted	0.183	0.084	0.277	0.082	0.27	0.54
	Left Cheek	0.292	0.254	0.343	0.254	0.55	0.89
	Left Tilted	0.118	0.188	0.491	0.179	0.31	0.79
All Bands Ant 4	Right Cheek	1.169	0.091	0.248	0.081	1.26	1.50
	Right Tilted	0.371	0.084	0.277	0.082	0.46	0.73
	Left Cheek	0.493	0.254	0.343	0.254	0.75	1.09
	Left Tilted	0.250	0.188	0.491	0.179	0.44	0.92
All Bands Ant 5	Right Cheek	0.708	0.091	0.248	0.081	0.80	1.04
	Right Tilted	0.327	0.084	0.277	0.082	0.41	0.69
	Left Cheek	0.218	0.254	0.343	0.254	0.47	0.82
	Left Tilted	0.129	0.188	0.491	0.179	0.32	0.80

16.3 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	3	10	17	1+3 Summed 1g SAR (W/kg)	1+10+17 Summed 1g SAR (W/kg)
		WWAN	WLAN2.4GHz Ant 8	WLAN5GHz Ant 8	Bluetooth Ant 8		
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
All Bands Ant 0	Front	0.107	0.065	0.133		0.17	0.24
	Back	0.149	0.084	0.256	0.063	0.23	0.47
	Left side					0.00	0.00
	Right side	0.128	0.062		0.061	0.19	0.19
	Top side		0.059	0.311		0.06	0.31
	Bottom side	0.087				0.09	0.09
All Bands Ant 1	Front	0.182	0.065	0.133		0.25	0.32
	Back	0.286	0.084	0.256	0.063	0.37	0.61
	Left side	0.084				0.08	0.08
	Right side		0.062		0.061	0.06	0.06
	Top side	0.579	0.059	0.311		0.64	0.89
	Bottom side					0.00	0.00
All Bands Ant 3	Front	0.162	0.065	0.133		0.23	0.30
	Back	0.200	0.084	0.256	0.063	0.28	0.52
	Left side	0.081				0.08	0.08
	Right side		0.062		0.061	0.06	0.06
	Top side		0.059	0.311		0.06	0.31
	Bottom side	0.374				0.37	0.37
All Bands Ant 4	Front	0.171	0.065	0.133		0.24	0.30
	Back	0.256	0.084	0.256	0.063	0.34	0.58
	Left side	0.367				0.37	0.37
	Right side		0.062		0.061	0.06	0.06
	Top side		0.059	0.311		0.06	0.31
	Bottom side					0.00	0.00
All Bands Ant 5	Front	0.054	0.065	0.133		0.12	0.19
	Back	0.113	0.084	0.256	0.063	0.20	0.43
	Left side	0.129				0.13	0.13
	Right side		0.062		0.061	0.06	0.06
	Top side	0.054	0.059	0.311		0.11	0.37
	Bottom side					0.00	0.00

WWAN Band	Exposure Position	1	3	10	17	1+3 Summed 1g SAR (W/kg)	1+10+17 Summed 1g SAR (W/kg)
		WWAN	WLAN2.4GHz Ant 9	WLAN5GHz Ant 9	Bluetooth Ant 8		
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
All Bands Ant 0	Front	0.107				0.11	0.11
	Back	0.149	0.064	0.533	0.063	0.21	0.75
	Left side					0.00	0.00
	Right side	0.128	0.046	0.135	0.061	0.17	0.32
	Top side					0.00	0.00
	Bottom side	0.087				0.09	0.09
All Bands Ant 1	Front	0.182				0.18	0.18
	Back	0.286	0.064	0.533	0.063	0.35	0.88
	Left side	0.084				0.08	0.08
	Right side		0.046	0.135	0.061	0.05	0.20
	Top side	0.579				0.58	0.58
	Bottom side					0.00	0.00
All Bands Ant 3	Front	0.162				0.16	0.16
	Back	0.200	0.064	0.533	0.063	0.26	0.80
	Left side	0.081				0.08	0.08



	Right side		0.046	0.135	0.061	0.05	0.20
	Top side					0.00	0.00
	Bottom side	0.374				0.37	0.37
All Bands Ant 4	Front	0.171				0.17	0.17
	Back	0.256	0.064	0.533	0.063	0.32	0.85
	Left side	0.367				0.37	0.37
	Right side		0.046	0.135	0.061	0.05	0.20
	Top side					0.00	0.00
	Bottom side					0.00	0.00
All Bands Ant 5	Front	0.054				0.05	0.05
	Back	0.113	0.064	0.533	0.063	0.18	0.71
	Left side	0.129				0.13	0.13
	Right side		0.046	0.135	0.061	0.05	0.20
	Top side	0.054				0.05	0.05
	Bottom side					0.00	0.00

16.4 Body-Worn Accessory Exposure Conditions

WWAN Band	Exposure Position	1	3	10	17	1+3	1+10+17
		WWAN	WLAN2.4GHz Ant 8	WLAN5GHz Ant 8	Bluetooth Ant 8	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
All Bands Ant 0	Front	0.229	0.032	0.213		0.26	0.44
	Back	0.315	0.035	0.475	0.030	0.35	0.82
	Front with Headset					0.00	0.00
	Back with Headset					0.00	0.00
All Bands Ant 1	Front	0.216	0.032	0.213		0.25	0.43
	Back	0.307	0.035	0.475	0.030	0.34	0.81
	Front with Headset					0.00	0.00
	Back with Headset					0.00	0.00
All Bands Ant 3	Front	0.280	0.032	0.213		0.31	0.49
	Back	0.317	0.035	0.475	0.030	0.35	0.82
	Front with Headset					0.00	0.00
	Back with Headset					0.00	0.00
All Bands Ant 4	Front	0.281	0.032	0.213		0.31	0.49
	Back	0.367	0.035	0.475	0.030	0.40	0.87
	Front with Headset					0.00	0.00
	Back with Headset					0.00	0.00
All Bands Ant 5	Front	0.179	0.032	0.213		0.21	0.39
	Back	0.279	0.035	0.475	0.030	0.31	0.78
	Front with Headset					0.00	0.00
	Back with Headset					0.00	0.00

WWAN Band	Exposure Position	1	3	10	17	1+3	1+10+17
		WWAN	WLAN2.4GHz Ant 9	WLAN5GHz Ant 9	Bluetooth Ant 8	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
All Bands Ant 0	Front	0.229		0.183		0.23	0.41
	Back	0.315	0.029	0.409	0.030	0.34	0.75
	Front with Headset					0.00	0.00
	Back with Headset					0.00	0.00
All Bands Ant 1	Front	0.216		0.183		0.22	0.40
	Back	0.307	0.029	0.409	0.030	0.34	0.75
	Front with Headset					0.00	0.00
	Back with Headset					0.00	0.00
All Bands Ant 3	Front	0.280		0.183		0.28	0.46
	Back	0.317	0.029	0.409	0.030	0.35	0.76
	Front with Headset					0.00	0.00
	Back with Headset					0.00	0.00
All Bands Ant 4	Front	0.281		0.183		0.28	0.46
	Back	0.367	0.029	0.409	0.030	0.40	0.81
	Front with Headset					0.00	0.00
	Back with Headset					0.00	0.00
All Bands Ant 5	Front	0.179		0.183		0.18	0.36
	Back	0.279	0.029	0.409	0.030	0.31	0.72
	Front with Headset					0.00	0.00
	Back with Headset					0.00	0.00

16.5 Product specific 10g SAR Exposure Conditions

Remark:

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

Exposure Position	10	18	10+18
	WLAN5GHz Ant 8	NFC	Summed
	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
Front	0.919		0.92
Back	1.022	0.036	1.06
Left side			0.00
Right side	0.635		0.64
Top side	1.555		1.56
Bottom side			0.00

WWAN Band	Exposure Position	1	10	18	1+18	1+10+18
		WWAN	WLAN5GHz Ant 8	NFC	Summed	Summed
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
All Bands Ant 0	Front		0.624		0.00	0.62
	Back		0.720	0.036	0.04	0.76
	Left side				0.00	0.00
	Right side		0.365		0.00	0.37
	Top side		1.090		0.00	1.09
	Bottom side				0.00	0.00
All Bands Ant 1	Front		0.624		0.00	0.62
	Back		0.720	0.036	0.04	0.76
	Left side				0.00	0.00
	Right side		0.365		0.00	0.37
	Top side	2.795	1.090		2.80	3.89
	Bottom side				0.00	0.00
All Bands Ant 3	Front		0.624		0.00	0.62
	Back		0.720	0.036	0.04	0.76
	Left side				0.00	0.00
	Right side		0.365		0.00	0.37
	Top side		1.090		0.00	1.09
	Bottom side				0.00	0.00
All Bands Ant 4	Front		0.624		0.00	0.62
	Back		0.720	0.036	0.04	0.76
	Left side				0.00	0.00
	Right side		0.365		0.00	0.37
	Top side		1.090		0.00	1.09
	Bottom side				0.00	0.00
All Bands Ant 5	Front		0.624		0.00	0.62
	Back		0.720	0.036	0.04	0.76
	Left side				0.00	0.00
	Right side		0.365		0.00	0.37
	Top side		1.090		0.00	1.09
	Bottom side				0.00	0.00

WWAN Band	Exposure Position	1	10	18	1+18 Summed 10g SAR (W/kg)	1+10+18 Summed 10g SAR (W/kg)
		WWAN	WLAN5GHz Ant 9	NFC		
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)		
All Bands Ant 0	Front				0.00	0.00
	Back		0.813	0.036	0.00	0.85
	Left side				0.00	0.00
	Right side		0.045		0.00	0.05
	Top side		0.084		0.00	0.08
	Bottom side				0.00	0.00
All Bands Ant 1	Front				0.00	0.00
	Back		0.813	0.036	0.00	0.85
	Left side				0.00	0.00
	Right side		0.045		0.00	0.05
	Top side	2.795	0.084		2.80	2.88
	Bottom side				0.00	0.00
All Bands Ant 3	Front				0.00	0.00
	Back		0.813	0.036	0.00	0.85
	Left side				0.00	0.00
	Right side		0.045		0.00	0.05
	Top side		0.084		0.00	0.08
	Bottom side				0.00	0.00
All Bands Ant 4	Front				0.00	0.00
	Back		0.813	0.036	0.00	0.85
	Left side				0.00	0.00
	Right side		0.045		0.00	0.05
	Top side		0.084		0.00	0.08
	Bottom side				0.00	0.00
All Bands Ant 5	Front				0.00	0.00
	Back		0.813	0.036	0.00	0.85
	Left side				0.00	0.00
	Right side		0.045		0.00	0.05
	Top side		0.084		0.00	0.08
	Bottom side				0.00	0.00

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17. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be $\leq 30\%$, for a confidence interval of $k = 2$. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.

18. References

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

Appendixes

Please refer to separated files for the following appendixes

Appendix A. Plots of System Performance Check

Appendix B. Plots of High SAR Measurement

Appendix C. DASY Calibration Certificate

Appendix D. Test Setup Photos

Appendix E. Conducted RF Output Power Table

Appendix F. Power measurement connection diagram and CA Conducted RF Output Power Table

Appendix G. Power reduction mechanism verification

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