FCC SAR TEST REPORT

FCC ID	:	**XHG-RG2100**
Equipment	:	**Mobile Hotspot**
Model Name	:	**RG2100**
Applicant	:	**Franklin Technology Inc. 906 JEI Platz, 186, Gasan digital 1-ro, Gumcheon-Gu, Seoul, South Korea, 08502**
Manufacturer	:	**Franklin Technology Inc. 906 JEI Platz, 186, Gasan digital 1-ro, Gumcheon-Gu, Seoul, South Korea, 08502**
Standard	:	**FCC 47 CFR Part 2 (2.1093)**

The product was received on Aug. 16, 2022 and testing was started from Sep. 01, 2022 and completed on Sep. 06, 2022. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Laboratory, the test report shall not be reproduced except in full.

Approved by: Cona Huang / Deputy Manager

Sporton International Inc. EMC & Wireless Communications Laboratory

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Table of Contents

History of this test report

Report No.	Version	Description	Issued Date
FA252021-01	01	Initial issue of report	Sep. 13, 2022

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) for Franklin Technology Inc., Mobile Hotspot, RG2100, are as follows.

Equipment Class	Frequency Band		Highest SAR Summary Hotspot (Separation 10mm) 1g SAR (W/kg)	Highest Simultaneous Transmission 1g SAR (W/kg)
Licensed	WCDMA	WCDMA II	0.88	1.59
		WCDMA IV	1.10	
		WCDMA V	1.08	
	LTE	LTE Band 2	0.75	
		LTE Band 12	0.75	
		LTE Band 25	0.70	
		LTE Band 26/5	0.76	
		LTE Band 66/4	0.75	
		LTE Band 71	0.63	
		LTE Band 41	1.02	
		LTE Band 48	0.64	
	FR1	FR1 n25	0.73	
		FR1 n66	0.97	
		FR1 n71	0.42	
		FR1 n41	0.65	
		FR1 n48	0.27	
		FR1 n77	0.86	
DTS	WLAN	2.4GHz WLAN	0.11	
NII		5GHz WLAN	0.33	
Date of Testing:			2022/9/1 ~ 2022/9/6	

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test. 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) 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.

Reviewed by: Jason Wang
Report Producer: Paula Chen

2. Equipment Under Test (EUT) Information

2.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Hotspot
Model Name	RG2100
FCC ID	XHG-RG2100
Wireless Technology and Frequency Range	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 12: 699 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n48 : 3550 MHz ~ 3700 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n71 : 663 MHz ~ 698 MHz 5G NR n77: 3700 MHz ~ 3980 MHz, 3450MHz ~ 3550MHz WLAN 2.4 GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2 GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.8 GHz Band: 5725 MHz ~ 5850 MHz
Mode	RMC 12.2Kbps HSDPA HSUPA LTE: QPSK, 16QAM 5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM WLAN: 802.11a/b/g/n/ac/ax HT20/HT40/VHT20/VHT40/VHT80/HE20/HE40/HE80
HW Version	P1
EUT Stage	Identical Prototype

2.2 General LTE SAR Test and Reporting Considerations

<table>
<tr><th colspan="2">Summarized necessary items addressed in KDB 941225 D05 v02r05</th></tr>
<tr><td>FCC ID</td><td>XHG-RG2100</td></tr>
<tr><td>Equipment Name</td><td>Mobile Hotspot</td></tr>
<tr><td>Operating Frequency Range of each LTE transmission band</td><td>LTE Band 2: 1850 MHz ~ 1910 MHz
LTE Band 4: 1710 MHz ~ 1755 MHz
LTE Band 5: 824 MHz ~ 849 MHz
LTE Band 12: 699 MHz ~ 716 MHz
LTE Band 25: 1850 MHz ~ 1915 MHz
LTE Band 26: 814 MHz ~ 849 MHz
LTE Band 41: 2496 MHz ~ 2690 MHz
LTE Band 48: 3550 MHz ~ 3700 MHz
LTE Band 66: 1710 MHz ~ 1780 MHz
LTE Band 71: 663 MHz ~ 698 MHz</td></tr>
<tr><td>Channel Bandwidth</td><td>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 12:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 25:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz
LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 48: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 71: 5MHz, 10MHz, 15MHz, 20MHz</td></tr>
<tr><td>uplink modulations used</td><td>QPSK / 16QAM</td></tr>
<tr><td>LTE Voice / Data requirements</td><td>Data only</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>
Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr>
<tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr>
</table>
</td></tr>
<tr><td>LTE A-MPR</td><td>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)</td></tr>
<tr><td>Spectrum plots for RB configuration</td><td>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.</td></tr>
<tr><td>LTE Carrier Aggregation Combinations</td><td>Intra-Band combinations and the detail power measurement please referred to section 10.</td></tr>
<tr><td>LTE Carrier Aggregation Additional Information</td><td>This device supports maximum of 2 carriers in the uplink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.</td></tr>
</table>

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)				
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				
H	20643	848.3	20635	847.5	20625	846.5	20600	844				
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)				
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				
H	23173	715.3	23165	714.5	23155	713.5	23130	711				
LTE Band 25												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905
LTE Band 26												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
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 41								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

LTE Band 48								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	55265	3552.5	55290	3555	55315	3557.5	55340	3560
LM	55810	3607	55815	3607.5	55820	3608	55830	3609
MH	56170	3643	56165	3642.5	56160	3642	56150	3641
H	56715	3697.5	56690	3695	56665	3692.5	56640	3690

LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

LTE Band 71								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	133147	665.5	133172	668	133197	670.5	133222	673
M	133297	680.5	133297	680.5	133297	680.5	133297	680.5
H	133447	695.5	133422	693	133397	690.5	133372	688

2.3 General 5G NR SAR Test and Reporting Considerations

5G NR Information	
FCC ID	XHG-RG2100
Equipment Name	Mobile Hotspot
Operating Frequency Range of each 5G NR transmission band	5G NR n25: 1850 MHz ~ 1915 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n48 : 3550 MHz ~ 3700 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n71: 663 MHz ~ 698 MHz 5G NR n77: 3700 MHz ~ 3980 MHz, 3450MHz ~ 3550MHz
Channel Bandwidth	5G NR n25: 5MHz, 10MHz, 15MHz, 20MHz, 25 MHz 30MHz, 40MHz 5G NR n41: 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 80MHz, 90MHz, 100MHz 5G NR n48: 10MHz, 20MHz, 30MHz, 40MHz 5G NR n66: 5MHz, 10MHz, 15MHz, 20MHz, 30MHz, 40MHz 5G NR n71: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n77: 10MHz, 15MHz, 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 80MHz, 90MHz, 100MHz
SCS	FDD: SCS15KHz, TDD: SCS30KHz
uplink modulations used	DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM QPSK / 16QAM / 64QAM / 256QAM
A-MPR (Additional MPR) disabled for SAR Testing?	Yes
LTE Anchor Bands for n25	LTE B66/48
LTE Anchor Bands for n41	LTE B2/66
LTE Anchor Bands for n66	LTE B2/48
LTE Anchor Bands for n71	LTE B2/66

NR Band 25

	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860	372500	1862.5	373000	1865	374000	1870
M	376500	1882.5	376500	1882.5	376500	1882.5	376500	1882.5	376500	1882.5	376500	1882.5	376500	1882.5
H	382500	1912.5	382000	1910	381500	1907.5	381000	1905	380500	1902.5	380000	1900	379000	1895

NR Band 41

	Bandwidth20MHz		Bandwidth30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	501204	2506.02	502200	2511	503202	2516.01	504204	2521.02	505200	2526	506202	2531.01	507204	2536.02	508200	2541	509202	2546.01
M	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99
H	535998	2679.99	534996	2674.98	534000	2670	532998	2664.99	531996	2659.98	531000	2655	529998	2649.99	528996	2644.98	528000	2640

NR Band 48

	Bandwidth10MHz		Bandwidth20MHz		Bandwidth30MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	637000	3555	637334	3560.01	637668	3565.02	638000	3570
M	641666	3624.99	641666	3624.99	641666	3624.99	641666	3624.99
H	646332	3694.98	646000	3690	645666	3684.99	645332	3679.98

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

NR Band 71								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	133100	665.5	133600	668	13410	670.5	134600	673
M	136100	680.5	136100	680.5	136100	680.5	136100	680.5
H	139100	695.5	138600	693	13810	690.5	137600	688

NR Band 77(3700 MHz ~ 3980 MHz)																				
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647000	3705	647168	3707.52	647334	3710.01	647668	3715.02	648000	3720	648334	3725.01	648668	3730.02	649000	3735	649334	3740.01	649668	3745.02	650000	3750
M	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840
H	665000	3975	664832	3972.48	664666	3969.99	664332	3964.98	664000	3960	663666	3954.99	663332	3949.98	663000	3945	662666	3939.99	662332	3934.98	662000	3930

NR Band 77(3450MHz ~ 3550MHz)																				
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	630334	3455.01	630500	3457.5	630668	3460.02	631000	3465	631334	3470.01	631668	3475.02	632000	3480	632334	3485.01	632668	3490.02	633000	3495	633334	3500.01
M	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98
H	636332	3544.98	636166	3542.49	636000	3540	635666	3534.99	635332	3529.98	635000	3525	634666	3519.99	634332	3514.98	634000	3510	633666	3504.99	633332	3499.98

3. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards, the below KDB standard may not including in the TAF code without accreditation.

- 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 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. RF Exposure Limits

4.1 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.

4.2 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

1. 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.

5. Specific Absorption Rate (SAR)

5.1 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.

5.2 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:

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

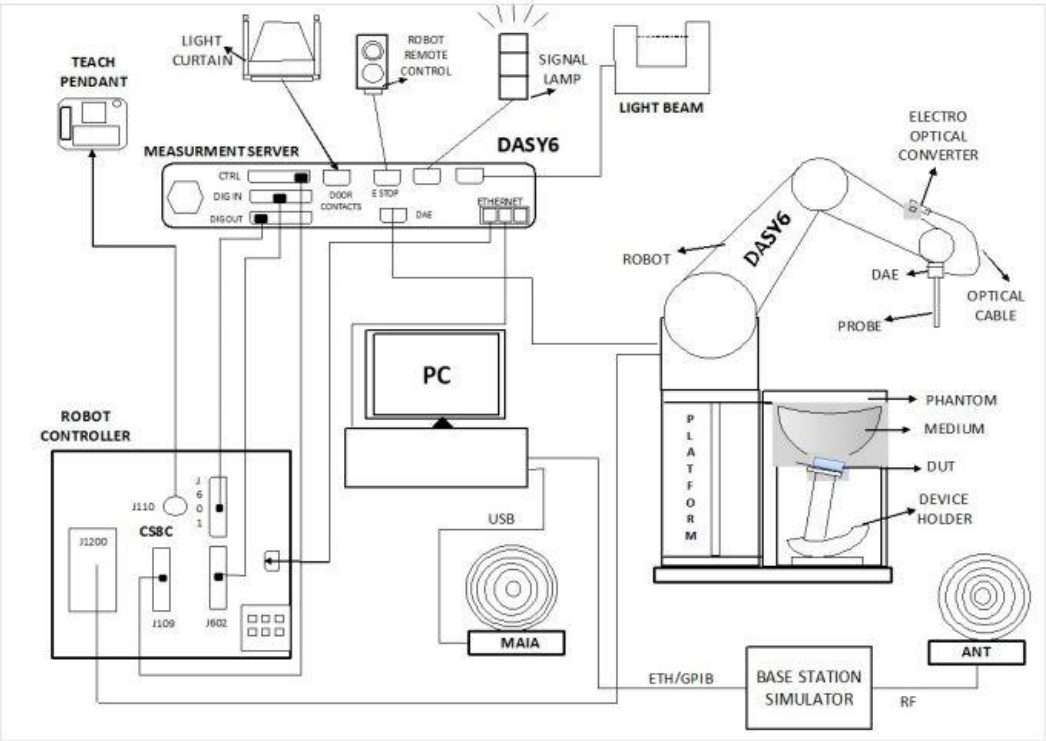
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

6. System Description and Setup

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



- The DASY system in SAR Configuration is shown above
- 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 windows software and the DASY software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

6.1 Test Site Location

The SAR measurement facilities used to collect data are within both Sporton Lab list below test site location are accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190 and 3786) and the FCC designation No. TW1190 and TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.

Test Site	EMC & Wireless Communications Laboratory		Wensan Laboratory		
Test Site Location	TW1190 No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan		TW3786 No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan		
Test Site No.	SAR01-HY	SAR03-HY	SAR08-HY	SAR09-HY	SAR15-HY
	SAR04-HY	SAR05-HY	SAR11-HY	SAR12-HY	
	SAR06-HY	SAR10-HY	SAR13-HY	SAR14-HY	

6.2 E-Field Probe

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

<ES3DV3 Probe>

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

<EX3DV4 Probe>

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

6.3 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.

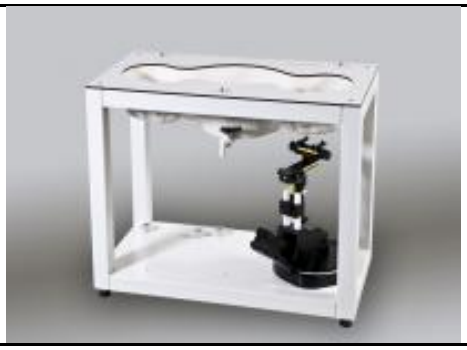
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig 5.1 Photo of DAE

6.4 Phantom

<SAM Twin Phantom>

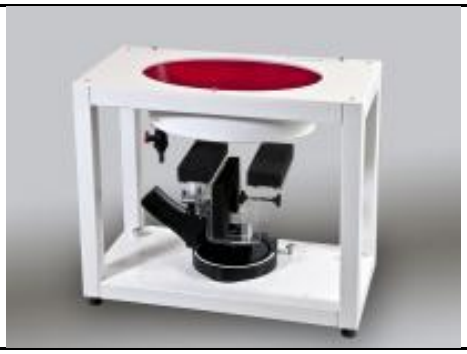
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



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

<ELI Phantom>

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



The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

6.5 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

7. Measurement Procedures

The measurement procedures are as follows:

(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

7.1 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 form 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

7.2 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.

7.3 Area Scan

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

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

<table>
<tr><td></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td>Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 ± 1 mm</td><td>½·δ·ln(2) ± 0.5 mm</td></tr>
<tr><td>Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
</table>

7.4 Zoom Scan

Zoom scans are used 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 shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

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

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* 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.

7.5 Volume Scan Procedures

The volume scan is used for 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.

7.6 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.

8. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit(2)	D750V3	1012	Aug. 18, 2021	Aug. 16, 2023
SPEAG	835MHz System Validation Kit(2)	D835V2	499	Aug. 18, 2021	Aug. 16, 2023
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 25, 2021	Nov. 24, 2022
SPEAG	1900MHz System Validation Kit(2)	D1900V2	5d041	Aug. 19, 2021	Aug. 17, 2023
SPEAG	2450MHz System Validation Kit(2)	D2450V2	736	Aug. 17, 2021	Aug. 15, 2023
SPEAG	2600MHz System Validation Kit(2)	D2600V2	1008	Aug. 17, 2021	Aug. 15, 2023
SPEAG	3500MHz System Validation Kit	D3500V2	1036	Mar. 23, 2022	Mar. 22, 2023
SPEAG	3700MHz System Validation Kit(2)	D3700V2	1022	Jul. 14, 2021	Jul. 12, 2023
SPEAG	3900MHz System Validation Kit	D3900V2	1017	Apr. 22, 2022	Apr. 21, 2023
SPEAG	5GHz System Validation Kit(2)	D5GHzV2	1171	Apr. 20, 2021	Apr. 18, 2023
SPEAG	Data Acquisition Electronics	DAE4	1694	Nov. 03, 2021	Nov. 02, 2022
SPEAG	Dosimetric E-Field Probe	EX3DV4	7692	Nov. 03, 2021	Nov. 02, 2022
RCPTWN	Thermometer	HTC-1	TM685-1	Jun. 27, 2022	Jun. 26, 2023
RCPTWN	Thermometer	HTC-1	TM560-2	Mar. 15, 2022	Mar. 14, 2023
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Oct. 21, 2021	Oct. 20, 2022
Keysight	Wireless Communication Test Set	E5515C	MY50267236	Mar. 02, 2022	Mar. 01, 2023
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Oct. 24, 2021	Oct. 23, 2022
Keysight	ENA Network Analyzer	E5071C	MY46104758	Sep. 19, 2021	Sep. 18, 2022
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 24, 2021	Sep. 23, 2022
LINE SEIKI	Digital Thermometer	DTM3000-spezial	2942	Oct. 26, 2021	Oct. 25, 2022
Anritsu	Power Meter	ML2495A	1804003	Oct. 09, 2021	Oct. 08, 2022
Anritsu	Power Meter	ML2496A	2119003	Jun. 22, 2022	Jun. 21, 2023
Anritsu	Power Sensor	MA2411B	1726150	Oct. 09, 2021	Oct. 08, 2022
Anritsu	Power Sensor	MA2411B	1911334	Jun. 22, 2022	Jun. 21, 2023
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jul. 21, 2022	Jul. 20, 2023
Anritsu	Spectrum Analyzer	N9010A	MY53470118	Jan. 12, 2022	Jan. 11, 2023
Mini-Circuits	Power Amplifier	ZVE-8G+	6418	Oct. 12, 2021	Oct. 11, 2022
Mini-Circuits	Power Amplifier	ZHL-42W+	715701915	May. 12, 2022	May. 11, 2023
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005- 3	N/A	Note 1	

General 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 source.
2. The dipole calibration interval can be extended to 3 years with justification according to KDB 865664 D01. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.

9. System Verification

9.1 Tissue Verification

The tissue dielectric parameters of tissue-equivalent media used for SAR measurements must be characterized within a temperature range of 18℃ to 25℃, measured with calibrated instruments and apparatuses, such as network analyzers and temperature probes. The temperature of the tissue-equivalent medium during SAR measurement must also be within 18℃ to 25℃ and within ± 2℃ of the temperature when the tissue parameters are characterized. The tissue dielectric measurement system must be calibrated before use. The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements.
The liquid tissue depth was at least 15cm in the phantom for all SAR testing.

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	22.5	0.886	41.800	0.89	41.90	-0.45	-0.24	±5	2022/9/1
835	22.5	0.920	41.500	0.90	41.50	2.22	0.00	±5	2022/9/1
1750	22.6	1.360	40.500	1.37	40.10	-0.73	1.00	±5	2022/9/2
1900	22.6	1.440	39.000	1.40	40.00	2.86	-2.50	±5	2022/9/2
2450	22.5	1.820	38.400	1.80	39.20	1.11	-2.04	±5	2022/9/1
2600	22.2	2.010	38.400	1.96	39.00	2.55	-1.54	±5	2022/9/3
3500	22.2	2.930	37.500	2.91	37.90	0.69	-1.06	±5	2022/9/3
3700	22.2	3.120	37.200	3.12	37.70	0.00	-1.33	±5	2022/9/3
3900	22.2	3.320	36.900	3.33	37.51	-0.30	-1.63	±5	2022/9/3
5250	22.7	4.660	35.600	4.71	35.95	-1.06	-0.97	±5	2022/9/6
5750	22.7	5.240	34.700	5.22	35.35	0.38	-1.84	±5	2022/9/6

9.2 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.

Test Site	Date	Frequency (MHz)	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 (%)
SAR10	2022/9/1	750	50	D750V3-1012	EX3DV4 - SN7692	DAE4 Sn1694	0.414	8.56	8.28	-3.27
SAR10	2022/9/1	835	50	D835V2-499	EX3DV4 - SN7692	DAE4 Sn1694	0.490	9.68	9.8	1.24
SAR10	2022/9/2	1750	50	D1750V2-1068	EX3DV4 - SN7692	DAE4 Sn1694	1.83	36.6	36.6	0.00
SAR10	2022/9/2	1900	50	D1900V2-5d041	EX3DV4 - SN7692	DAE4 Sn1694	1.93	40.6	38.6	-4.93
SAR10	2022/9/1	2450	50	D2450V2-736	EX3DV4 - SN7692	DAE4 Sn1694	2.69	54.2	53.8	-0.74
SAR10	2022/9/3	2600	50	D2600V2-1008	EX3DV4 - SN7692	DAE4 Sn1694	2.89	58.0	57.8	-0.34
SAR10	2022/9/3	3500	50	D3500V2-1036	EX3DV4 - SN7692	DAE4 Sn1694	3.62	67.4	72.4	7.42
SAR10	2022/9/3	3700	50	D3700V2-1022	EX3DV4 - SN7692	DAE4 Sn1694	3.50	68.2	70	2.64
SAR10	2022/9/3	3900	50	D3900V2-1017-3900	EX3DV4 - SN7692	DAE4 Sn1694	3.39	68.7	67.8	-1.31
SAR10	2022/9/6	5250	50	D5GHzV2-1171-5250	EX3DV4 - SN7692	DAE4 Sn1694	4.24	80.3	84.8	5.60
SAR10	2022/9/6	5750	50	D5GHzV2-1171-5750	EX3DV4 - SN7692	DAE4 Sn1694	4.41	80.4	88.2	9.70

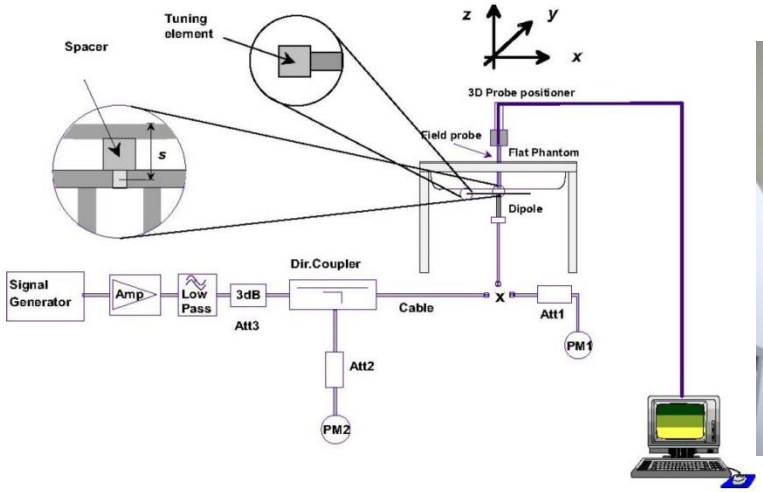


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

10. UMTS/LTE Output Power (Unit: dBm)

<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.

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} (Note1, 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 Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_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 Δ_{NACK} = 30/15 with β_{hs} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_c.

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

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

Setup Configuration

HSUPA Setup Configuration:

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

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

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

Note 1: For sub-test 1 to 4, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c. For sub-test 5, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 5/15 with β_{hs} = 5/15 * β_c.

Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_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 β_c = 10/15 and β_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

<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 is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA , and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA.

<WCDMA_Ant 0>

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	RMC 12.2Kbps	22.92	22.88	22.98	23.50	22.96	22.96	23.08	23.50	23.81	23.77	23.79	25.00
3GPP Rel 6	HSDPA Subtest-1	22.02	22.02	21.97	22.50	21.97	21.87	21.87	22.50	22.86	22.82	22.80	24.00
3GPP Rel 6	HSDPA Subtest-2	22.06	21.94	22.02	22.50	21.94	21.92	21.90	22.50	22.86	22.79	22.87	24.00
3GPP Rel 6	HSDPA Subtest-3	21.43	21.43	21.59	22.00	21.27	21.34	21.44	22.00	22.22	22.31	22.39	23.50
3GPP Rel 6	HSDPA Subtest-4	21.49	21.57	21.47	22.00	21.37	21.41	21.38	22.00	22.34	22.37	22.29	23.50
3GPP Rel 6	HSUPA Subtest-1	21.97	22.02	21.86	22.50	21.92	21.89	21.82	22.50	22.83	22.86	22.73	24.00
3GPP Rel 6	HSUPA Subtest-2	19.96	20.05	19.89	20.50	19.88	19.95	19.81	20.50	20.77	20.86	20.74	22.00
3GPP Rel 6	HSUPA Subtest-3	21.01	20.99	20.90	21.50	20.90	20.84	20.79	21.50	21.82	21.81	21.72	23.00
3GPP Rel 6	HSUPA Subtest-4	19.94	19.97	19.87	20.50	19.84	19.84	19.85	20.50	20.74	20.76	20.76	22.00
3GPP Rel 6	HSUPA Subtest-5	21.83	21.86	21.87	22.50	21.78	21.81	21.77	22.50	22.66	22.69	22.66	24.00

<LTE Conducted Power>

General Note:

1. Anritsu MT8821C 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 output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4/B5/B12/B26/B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 2/4/5 SAR test was covered by Band 25/66/26; 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 ≤ 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

<LTE Band 2_Ant 0>							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				18700	18900	19100	
Frequency (MHz)				1860	1880	1900	
20	QPSK	1	0	21.95	21.99	21.94	23
20	QPSK	1	49	21.98	21.94	21.95	
20	QPSK	1	99	21.89	21.88	21.91	
20	QPSK	50	0	20.97	20.99	20.92	22.5
20	QPSK	50	24	20.94	20.90	20.97	
20	QPSK	50	50	20.96	20.97	20.92	
20	QPSK	100	0	21.00	20.91	20.94	
20	16QAM	1	0	20.66	20.64	20.75	22.5
20	16QAM	1	49	20.65	20.52	20.90	
20	16QAM	1	99	20.51	20.59	20.54	
20	16QAM	50	0	19.93	19.98	19.94	21.5
20	16QAM	50	24	19.96	19.96	19.95	
20	16QAM	50	50	19.98	19.97	19.98	
20	16QAM	100	0	19.93	19.92	19.94	
Channel				18675	18900	19125	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	21.86	21.90	21.92	23
15	QPSK	1	37	21.93	21.93	21.90	
15	QPSK	1	74	21.80	21.84	21.88	
15	QPSK	36	0	20.97	20.94	20.83	22.5
15	QPSK	36	20	20.94	20.82	20.97	
15	QPSK	36	39	20.91	20.94	20.92	
15	QPSK	75	0	20.96	20.84	20.87	
15	16QAM	1	0	20.58	20.60	20.69	22.5
15	16QAM	1	37	20.59	20.58	20.80	
15	16QAM	1	74	20.53	20.50	20.55	
15	16QAM	36	0	19.87	19.89	19.85	21.5
15	16QAM	36	20	19.86	19.96	19.86	
15	16QAM	36	39	19.96	19.92	19.88	
15	16QAM	75	0	19.84	19.84	19.88	
Channel				18650	18900	19150	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	QPSK	1	0	21.87	21.93	21.88	23
10	QPSK	1	25	21.93	21.92	21.87	
10	QPSK	1	49	21.84	21.87	21.88	
10	QPSK	25	0	20.97	20.90	20.82	22.5
10	QPSK	25	12	20.85	20.80	20.91	
10	QPSK	25	25	20.93	20.96	20.86	
10	QPSK	50	0	20.94	20.88	20.89	
10	16QAM	1	0	20.62	20.57	20.68	22.5
10	16QAM	1	25	20.65	20.59	20.84	
10	16QAM	1	49	20.53	20.59	20.55	
10	16QAM	25	0	19.91	19.92	19.86	21.5
10	16QAM	25	12	19.90	19.91	19.87	
10	16QAM	25	25	19.95	19.89	19.95	
10	16QAM	50	0	19.83	19.82	19.93	
Channel				18625	18900	19175	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	21.85	21.93	21.91	23
5	QPSK	1	12	21.95	21.91	21.94	

5	QPSK	1	24	21.88	21.79	21.85	
5	QPSK	12	0	20.95	20.93	20.91	22.5
5	QPSK	12	7	20.85	20.80	20.95	
5	QPSK	12	13	20.88	20.97	20.87	
5	QPSK	25	0	20.94	20.83	20.84	
5	16QAM	1	0	20.64	20.62	20.73	22.5
5	16QAM	1	12	20.59	20.50	20.86	
5	16QAM	1	24	20.57	20.59	20.54	
5	16QAM	12	0	19.85	19.92	19.84	21.5
5	16QAM	12	7	19.95	19.91	19.88	
5	16QAM	12	13	19.97	19.92	19.96	
5	16QAM	25	0	19.85	19.87	19.84	
Channel				18615	18900	19185	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1908.5	
3	QPSK	1	0	21.88	21.98	21.85	23
3	QPSK	1	8	21.89	21.84	21.88	
3	QPSK	1	14	21.82	21.85	21.91	
3	QPSK	8	0	20.97	20.98	20.84	22.5
3	QPSK	8	4	20.92	20.86	20.94	
3	QPSK	8	7	20.89	20.88	20.86	
3	QPSK	15	0	21.00	20.85	20.89	
3	16QAM	1	0	20.64	20.54	20.73	22.5
3	16QAM	1	8	20.55	20.51	20.80	
3	16QAM	1	14	20.57	20.57	20.53	
3	16QAM	8	0	19.85	19.97	19.87	21.5
3	16QAM	8	4	19.89	19.91	19.86	
3	16QAM	8	7	19.93	19.94	19.98	
3	16QAM	15	0	19.89	19.85	19.91	
Channel				18607	18900	19193	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	21.95	21.94	21.91	23
1.4	QPSK	1	3	21.96	21.92	21.90	
1.4	QPSK	1	5	21.82	21.88	21.91	
1.4	QPSK	3	0	21.86	21.91	21.93	
1.4	QPSK	3	1	21.97	21.85	21.93	
1.4	QPSK	3	3	21.87	21.83	21.89	
1.4	QPSK	6	0	20.91	20.98	20.88	22.5
1.4	16QAM	1	0	20.63	20.58	20.70	22.5
1.4	16QAM	1	3	20.60	20.58	20.90	
1.4	16QAM	1	5	20.53	20.50	20.54	
1.4	16QAM	3	0	20.64	20.54	20.66	
1.4	16QAM	3	1	20.63	20.57	20.80	
1.4	16QAM	3	3	20.54	20.55	20.53	
1.4	16QAM	6	0	19.86	19.92	19.90	21.5

<LTE Band 4_Ant 0>							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20050	20175	20300	
Frequency (MHz)				1720	1732.5	1745	
20	QPSK	1	0	21.77	21.85	21.82	22
20	QPSK	1	49	21.60	21.75	21.70	
20	QPSK	1	99	21.73	21.82	21.71	
20	QPSK	50	0	20.92	20.93	20.89	21
20	QPSK	50	24	20.85	20.89	20.85	
20	QPSK	50	50	20.79	20.88	20.78	
20	QPSK	100	0	20.79	20.82	20.68	
20	16QAM	1	0	20.72	20.89	20.66	21
20	16QAM	1	49	20.83	20.94	20.76	
20	16QAM	1	99	20.38	20.44	20.26	
20	16QAM	50	0	19.81	19.96	19.75	20
20	16QAM	50	24	19.88	19.95	19.74	
20	16QAM	50	50	19.84	19.94	19.79	
20	16QAM	100	0	19.85	19.93	19.73	
Channel				20025	20175	20325	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1732.5	1747.5	
15	QPSK	1	0	21.77	21.78	21.72	22
15	QPSK	1	37	21.57	21.68	21.63	
15	QPSK	1	74	21.73	21.79	21.68	
15	QPSK	36	0	20.92	20.91	20.81	21
15	QPSK	36	20	20.80	20.81	20.85	
15	QPSK	36	39	20.78	20.86	20.75	
15	QPSK	75	0	20.77	20.79	20.59	
15	16QAM	1	0	20.65	20.84	20.62	21
15	16QAM	1	37	20.81	20.90	20.69	
15	16QAM	1	74	20.29	20.41	20.21	
15	16QAM	36	0	19.81	19.87	19.69	20
15	16QAM	36	20	19.88	19.88	19.65	
15	16QAM	36	39	19.76	19.94	19.72	
15	16QAM	75	0	19.79	19.84	19.66	
Channel				20000	20175	20350	Tune-up limit (dBm)
Frequency (MHz)				1715	1732.5	1750	
10	QPSK	1	0	21.75	21.82	21.74	22
10	QPSK	1	25	21.58	21.71	21.69	
10	QPSK	1	49	21.67	21.74	21.69	
10	QPSK	25	0	20.90	20.92	20.83	21
10	QPSK	25	12	20.79	20.84	20.84	
10	QPSK	25	25	20.73	20.87	20.71	
10	QPSK	50	0	20.70	20.75	20.62	
10	16QAM	1	0	20.63	20.86	20.56	21
10	16QAM	1	25	20.76	20.93	20.68	
10	16QAM	1	49	20.32	20.38	20.16	
10	16QAM	25	0	19.78	19.94	19.67	20
10	16QAM	25	12	19.86	19.89	19.69	
10	16QAM	25	25	19.81	19.90	19.77	
10	16QAM	50	0	19.80	19.93	19.63	
Channel				19975	20175	20375	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1732.5	1752.5	
5	QPSK	1	0	21.75	21.82	21.81	22
5	QPSK	1	12	21.50	21.72	21.70	

5	QPSK	1	24	21.72	21.82	21.70	
5	QPSK	12	0	20.96	20.90	20.85	21
5	QPSK	12	7	20.85	20.81	20.83	
5	QPSK	12	13	20.71	20.82	20.76	
5	QPSK	25	0	20.75	20.73	20.58	
5	16QAM	1	0	20.62	20.81	20.59	21
5	16QAM	1	12	20.80	20.89	20.67	
5	16QAM	1	24	20.35	20.38	20.23	
5	16QAM	12	0	19.81	19.87	19.68	20
5	16QAM	12	7	19.82	19.88	19.70	
5	16QAM	12	13	19.75	19.84	19.73	
5	16QAM	25	0	19.85	19.85	19.73	
Channel				19965	20175	20385	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1732.5	1753.5	
3	QPSK	1	0	21.70	21.84	21.76	22
3	QPSK	1	8	21.56	21.68	21.68	
3	QPSK	1	14	21.69	21.74	21.71	
3	QPSK	8	0	20.91	20.86	20.80	21
3	QPSK	8	4	20.75	20.83	20.83	
3	QPSK	8	7	20.78	20.78	20.77	
3	QPSK	15	0	20.69	20.77	20.65	
3	16QAM	1	0	20.67	20.87	20.56	21
3	16QAM	1	8	20.74	20.86	20.70	
3	16QAM	1	14	20.38	20.41	20.26	
3	16QAM	8	0	19.81	19.94	19.65	20
3	16QAM	8	4	19.88	19.93	19.64	
3	16QAM	8	7	19.78	19.86	19.77	
3	16QAM	15	0	19.80	19.86	19.70	
Channel				19957	20175	20393	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1732.5	1754.3	
1.4	QPSK	1	0	21.77	21.77	21.75	22
1.4	QPSK	1	3	21.59	21.74	21.70	
1.4	QPSK	1	5	21.66	21.79	21.69	
1.4	QPSK	3	0	20.96	20.83	20.88	
1.4	QPSK	3	1	20.83	20.87	20.75	
1.4	QPSK	3	3	20.71	20.82	20.76	
1.4	QPSK	6	0	20.79	20.77	20.68	21
1.4	16QAM	1	0	20.66	20.85	20.64	21
1.4	16QAM	1	3	20.79	20.90	20.71	
1.4	16QAM	1	5	20.31	20.38	20.18	
1.4	16QAM	3	0	19.74	19.92	19.71	
1.4	16QAM	3	1	19.87	19.85	19.64	
1.4	16QAM	3	3	19.80	19.88	19.71	
1.4	16QAM	6	0	19.76	19.85	19.72	20

<LTE Band 5_Ant 0>							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20450	20525	20600	
Frequency (MHz)				829	836.5	844	
10	QPSK	1	0	22.79	22.82	22.80	23.5
10	QPSK	1	25	22.78	22.80	22.80	
10	QPSK	1	49	22.76	22.81	22.74	
10	QPSK	25	0	21.89	21.97	21.89	22.5
10	QPSK	25	12	21.96	21.90	21.93	
10	QPSK	25	25	21.91	21.89	21.85	
10	QPSK	50	0	21.92	21.91	21.93	
10	16QAM	1	0	22.15	22.13	22.16	22.5
10	16QAM	1	25	22.15	22.19	22.20	
10	16QAM	1	49	22.18	22.14	22.17	
10	16QAM	25	0	20.90	20.83	20.87	21.5
10	16QAM	25	12	20.95	20.92	20.94	
10	16QAM	25	25	20.91	20.90	20.88	
10	16QAM	50	0	20.94	20.89	20.90	
Channel				20425	20525	20625	Tune-up limit (dBm)
Frequency (MHz)				826.5	836.5	846.5	
5	QPSK	1	0	22.79	22.74	22.77	23.5
5	QPSK	1	12	22.72	22.70	22.70	
5	QPSK	1	24	22.68	22.77	22.68	
5	QPSK	12	0	21.86	21.79	21.88	22.5
5	QPSK	12	7	21.92	21.81	21.84	
5	QPSK	12	13	21.88	21.83	21.82	
5	QPSK	25	0	21.83	21.89	21.84	
5	16QAM	1	0	22.07	22.09	22.10	22.5
5	16QAM	1	12	22.15	22.12	22.16	
5	16QAM	1	24	22.08	22.14	22.07	
5	16QAM	12	0	20.85	20.77	20.86	21.5
5	16QAM	12	7	20.88	20.82	20.89	
5	16QAM	12	13	20.81	20.80	20.83	
5	16QAM	25	0	20.93	20.80	20.87	
Channel				20415	20525	20635	Tune-up limit (dBm)
Frequency (MHz)				825.5	836.5	847.5	
3	QPSK	1	0	22.73	22.75	22.79	23.5
3	QPSK	1	8	22.71	22.78	22.78	
3	QPSK	1	14	22.76	22.80	22.74	
3	QPSK	8	0	21.87	21.76	21.86	22.5
3	QPSK	8	4	21.95	21.82	21.84	
3	QPSK	8	7	21.81	21.81	21.81	
3	QPSK	15	0	21.91	21.87	21.91	
3	16QAM	1	0	22.05	22.09	22.06	22.5
3	16QAM	1	8	22.14	22.10	22.12	
3	16QAM	1	14	22.09	22.04	22.11	
3	16QAM	8	0	20.81	20.78	20.77	21.5
3	16QAM	8	4	20.88	20.82	20.86	
3	16QAM	8	7	20.81	20.86	20.79	
3	16QAM	15	0	20.93	20.89	20.81	
Channel				20407	20525	20643	Tune-up limit (dBm)
Frequency (MHz)				824.7	836.5	848.3	
1.4	QPSK	1	0	22.76	22.78	22.75	23.5
1.4	QPSK	1	3	22.71	22.71	22.77	

1.4	QPSK	1	5	22.76	22.75	22.74	
1.4	QPSK	3	0	22.74	22.78	22.74	
1.4	QPSK	3	1	22.68	22.77	22.75	
1.4	QPSK	3	3	22.71	22.74	22.73	
1.4	QPSK	6	0	21.86	21.74	21.86	22.5
1.4	16QAM	1	0	22.06	22.11	22.10	
1.4	16QAM	1	3	22.05	22.15	22.14	
1.4	16QAM	1	5	22.08	22.07	22.09	22.5
1.4	16QAM	3	0	22.10	22.09	22.13	
1.4	16QAM	3	1	22.09	22.11	22.12	
1.4	16QAM	3	3	22.10	22.09	22.09	
1.4	16QAM	6	0	20.86	20.81	20.85	21.5

<LTE Band 12_Ant 0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23060	23095	23130	
Frequency (MHz)				704	707.5	711	
10	QPSK	1	0	23.04	23.05	23.03	
10	QPSK	1	25	22.98	23.02	23.02	24
10	QPSK	1	49	23.00	23.01	23.00	
10	QPSK	25	0	22.04	22.14	22.13	
10	QPSK	25	12	22.00	21.98	22.11	23
10	QPSK	25	25	21.96	21.95	21.96	
10	QPSK	50	0	22.06	21.95	22.10	
10	16QAM	1	0	22.41	22.34	22.35	
10	16QAM	1	25	22.35	22.39	22.39	23
10	16QAM	1	49	22.43	22.35	22.48	
10	16QAM	25	0	20.99	20.96	20.96	
10	16QAM	25	12	21.09	21.01	21.15	22
10	16QAM	25	25	21.04	21.07	21.14	
10	16QAM	50	0	21.05	20.98	21.08	
Channel				23035	23095	23155	Tune-up limit (dBm)
Frequency (MHz)				701.5	707.5	713.5	
5	QPSK	1	0	22.94	22.99	23.00	
5	QPSK	1	12	22.98	22.92	22.94	24
5	QPSK	1	24	22.95	22.92	22.96	
5	QPSK	12	0	21.95	21.95	22.09	
5	QPSK	12	7	21.98	21.89	22.07	23
5	QPSK	12	13	21.91	21.88	21.96	
5	QPSK	25	0	22.05	21.88	22.07	
5	16QAM	1	0	22.41	22.25	22.25	
5	16QAM	1	12	22.30	22.31	22.34	23
5	16QAM	1	24	22.41	22.35	22.39	
5	16QAM	12	0	20.95	20.90	20.93	
5	16QAM	12	7	21.06	20.91	21.11	22
5	16QAM	12	13	21.02	21.05	21.05	
5	16QAM	25	0	21.01	20.92	20.99	
Channel				23025	23095	23165	Tune-up limit (dBm)
Frequency (MHz)				700.5	707.5	714.5	
3	QPSK	1	0	23.03	23.01	23.00	
3	QPSK	1	8	22.88	23.02	22.94	24
3	QPSK	1	14	22.91	22.96	22.91	
3	QPSK	8	0	22.04	22.05	22.12	
3	QPSK	8	4	21.93	21.92	22.07	23
3	QPSK	8	7	21.94	21.93	21.87	

3	QPSK	15	0	21.96	21.95	22.10	
3	16QAM	1	0	22.41	22.31	22.30	23
3	16QAM	1	8	22.29	22.37	22.31	
3	16QAM	1	14	22.33	22.26	22.45	
3	16QAM	8	0	20.95	20.96	20.90	22
3	16QAM	8	4	21.00	20.92	21.12	
3	16QAM	8	7	20.98	21.00	21.09	
3	16QAM	15	0	21.03	20.89	21.07	
Channel				23017	23095	23173	Tune-up limit (dBm)
Frequency (MHz)				699.7	707.5	715.3	
1.4	QPSK	1	0	22.99	23.00	22.94	24
1.4	QPSK	1	3	22.90	23.02	23.00	
1.4	QPSK	1	5	22.94	22.98	22.92	
1.4	QPSK	3	0	23.00	22.98	22.97	
1.4	QPSK	3	1	22.95	22.92	23.00	
1.4	QPSK	3	3	22.95	22.91	22.93	
1.4	QPSK	6	0	21.98	22.02	22.13	23
1.4	16QAM	1	0	22.33	22.24	22.27	23
1.4	16QAM	1	3	22.26	22.34	22.31	
1.4	16QAM	1	5	22.43	22.25	22.48	
1.4	16QAM	3	0	22.31	22.33	22.31	
1.4	16QAM	3	1	22.27	22.29	22.34	
1.4	16QAM	3	3	22.42	22.34	22.43	
1.4	16QAM	6	0	20.95	20.95	20.94	22

<LTE Band 25_Ant 0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				26140	26340	26590	
Frequency (MHz)				1860	1880	1905	
20	QPSK	1	0	22.02	21.91	22.16	23
20	QPSK	1	49	21.95	21.91	22.08	
20	QPSK	1	99	21.76	21.96	22.06	
20	QPSK	50	0	21.01	20.98	21.30	22
20	QPSK	50	24	21.07	21.03	21.29	
20	QPSK	50	50	20.99	21.00	21.21	
20	QPSK	100	0	21.04	21.01	21.35	
20	16QAM	1	0	21.38	21.36	21.35	22
20	16QAM	1	49	21.26	21.39	21.71	
20	16QAM	1	99	21.07	21.21	21.48	
20	16QAM	50	0	20.05	20.01	20.23	21
20	16QAM	50	24	20.10	20.08	20.31	
20	16QAM	50	50	20.01	20.03	20.36	
20	16QAM	100	0	20.06	20.05	20.36	
Channel				26115	26340	26615	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1907.5	
15	QPSK	1	0	21.99	21.88	22.14	23
15	QPSK	1	37	21.86	21.86	22.07	
15	QPSK	1	74	21.66	21.94	21.96	
15	QPSK	36	0	20.96	20.91	21.20	22
15	QPSK	36	20	21.04	21.01	21.19	
15	QPSK	36	39	20.89	20.96	21.16	
15	QPSK	75	0	21.02	20.98	21.34	
15	16QAM	1	0	21.35	21.36	21.33	22
15	16QAM	1	37	21.17	21.39	21.67	
15	16QAM	1	74	21.03	21.21	21.43	

15	16QAM	36	0	19.95	20.01	20.15	21
15	16QAM	36	20	20.01	20.07	20.28	
15	16QAM	36	39	19.91	19.96	20.27	
15	16QAM	75	0	20.01	19.98	20.27	
Channel				26090	26340	26640	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1910	
10	QPSK	1	0	21.94	21.82	22.12	23
10	QPSK	1	25	21.86	21.88	22.04	
10	QPSK	1	49	21.70	21.92	22.06	
10	QPSK	25	0	20.99	20.94	21.26	22
10	QPSK	25	12	20.97	20.98	21.29	
10	QPSK	25	25	20.96	20.90	21.20	
10	QPSK	50	0	20.94	20.97	21.27	
10	16QAM	1	0	21.37	21.36	21.28	22
10	16QAM	1	25	21.25	21.36	21.69	
10	16QAM	1	49	21.00	21.15	21.47	
10	16QAM	25	0	19.98	19.99	20.20	21
10	16QAM	25	12	20.04	20.06	20.25	
10	16QAM	25	25	19.91	20.03	20.32	
10	16QAM	50	0	20.06	20.02	20.34	
Channel				26065	26340	26665	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1912.5	
5	QPSK	1	0	21.95	21.90	22.07	23
5	QPSK	1	12	21.90	21.83	22.05	
5	QPSK	1	24	21.76	21.96	22.06	
5	QPSK	12	0	20.92	20.88	21.28	22
5	QPSK	12	7	21.07	20.97	21.22	
5	QPSK	12	13	20.94	20.94	21.16	
5	QPSK	25	0	20.95	20.95	21.29	
5	16QAM	1	0	21.28	21.29	21.32	22
5	16QAM	1	12	21.20	21.29	21.69	
5	16QAM	1	24	21.04	21.21	21.46	
5	16QAM	12	0	20.03	19.92	20.20	21
5	16QAM	12	7	20.00	20.02	20.28	
5	16QAM	12	13	20.01	19.93	20.33	
5	16QAM	25	0	20.03	20.04	20.32	
Channel				26055	26340	26675	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1913.5	
3	QPSK	1	0	21.94	21.84	22.11	23
3	QPSK	1	8	21.94	21.85	22.06	
3	QPSK	1	14	21.66	21.87	22.01	
3	QPSK	8	0	20.99	20.91	21.21	22
3	QPSK	8	4	21.04	20.98	21.26	
3	QPSK	8	7	20.91	20.90	21.12	
3	QPSK	15	0	21.01	20.98	21.30	
3	16QAM	1	0	21.37	21.26	21.33	22
3	16QAM	1	8	21.24	21.36	21.68	
3	16QAM	1	14	20.97	21.13	21.47	
3	16QAM	8	0	20.05	20.01	20.17	21
3	16QAM	8	4	20.03	20.06	20.21	
3	16QAM	8	7	20.00	20.01	20.31	
3	16QAM	15	0	20.02	20.02	20.28	
Channel				26047	26340	26683	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1914.3	
1.4	QPSK	1	0	21.95	21.83	22.06	23
1.4	QPSK	1	3	21.91	21.89	22.00	

1.4	QPSK	1	5	21.67	21.91	22.00	
1.4	QPSK	3	0	21.99	21.81	22.08	
1.4	QPSK	3	1	21.91	21.82	21.98	
1.4	QPSK	3	3	21.75	21.96	22.02	
1.4	QPSK	6	0	20.96	20.92	21.30	22
1.4	16QAM	1	0	21.34	21.30	21.25	
1.4	16QAM	1	3	21.21	21.35	21.61	
1.4	16QAM	1	5	21.04	21.13	21.42	22
1.4	16QAM	3	0	21.36	21.30	21.33	
1.4	16QAM	3	1	21.24	21.39	21.65	
1.4	16QAM	3	3	20.99	21.16	21.41	
1.4	16QAM	6	0	20.01	19.94	20.21	21

<LTE Band 26_Ant 0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				26765	26865	26965	
Frequency (MHz)				821.5	831.5	841.5	
15	QPSK	1	0	22.97	22.98	22.93	
15	QPSK	1	37	22.93	22.92	22.90	24
15	QPSK	1	74	22.84	22.93	22.87	
15	QPSK	36	0	22.09	22.11	22.04	
15	QPSK	36	20	22.08	21.95	21.96	23
15	QPSK	36	39	22.00	21.94	22.01	
15	QPSK	75	0	22.10	22.00	22.05	
15	16QAM	1	0	22.11	22.30	22.09	
15	16QAM	1	37	22.32	22.24	22.34	23
15	16QAM	1	74	22.16	22.35	22.27	
15	16QAM	36	0	21.03	20.96	20.99	
15	16QAM	36	20	21.11	20.98	21.06	22
15	16QAM	36	39	21.09	20.98	21.03	
15	16QAM	75	0	21.10	21.00	21.06	
Channel				26740	26865	26990	Tune-up limit (dBm)
Frequency (MHz)				819	831.5	844	
10	QPSK	1	0	22.94	22.94	22.83	
10	QPSK	1	25	22.85	22.87	22.87	24
10	QPSK	1	49	22.75	22.88	22.82	
10	QPSK	25	0	22.06	22.09	21.97	
10	QPSK	25	12	22.08	21.92	21.92	23
10	QPSK	25	25	21.91	21.89	21.96	
10	QPSK	50	0	22.09	21.91	21.96	
10	16QAM	1	0	22.04	22.29	22.00	
10	16QAM	1	25	22.29	22.23	22.24	23
10	16QAM	1	49	22.13	22.26	22.17	
10	16QAM	25	0	20.93	20.88	20.99	
10	16QAM	25	12	21.10	20.97	20.97	22
10	16QAM	25	25	21.08	20.97	20.93	
10	16QAM	50	0	21.06	20.99	20.98	
Channel				26715	26865	27015	Tune-up limit (dBm)
Frequency (MHz)				816.5	831.5	846.5	
5	QPSK	1	0	22.95	22.92	22.91	
5	QPSK	1	12	22.86	22.85	22.89	24
5	QPSK	1	24	22.82	22.92	22.85	
5	QPSK	12	0	22.02	22.11	22.00	
5	QPSK	12	7	22.07	21.93	21.96	23
5	QPSK	12	13	21.99	21.89	22.01	

5	QPSK	25	0	22.08	22.00	21.95	
5	16QAM	1	0	22.11	22.26	22.00	23
5	16QAM	1	12	22.29	22.22	22.34	
5	16QAM	1	24	22.10	22.28	22.23	
5	16QAM	12	0	21.01	20.93	20.89	22
5	16QAM	12	7	21.05	20.92	20.96	
5	16QAM	12	13	21.09	20.96	21.00	
5	16QAM	25	0	21.04	20.92	20.99	
Channel				26705	26865	27025	Tune-up limit (dBm)
Frequency (MHz)				815.5	831.5	847.5	
3	QPSK	1	0	22.92	22.94	22.87	24
3	QPSK	1	8	22.88	22.89	22.86	
3	QPSK	1	14	22.77	22.86	22.82	
3	QPSK	8	0	22.02	22.08	21.95	23
3	QPSK	8	4	22.04	21.86	21.90	
3	QPSK	8	7	22.00	21.92	22.01	
3	QPSK	15	0	22.04	21.96	22.03	
3	16QAM	1	0	22.01	22.24	22.01	23
3	16QAM	1	8	22.32	22.24	22.26	
3	16QAM	1	14	22.12	22.32	22.27	
3	16QAM	8	0	20.94	20.96	20.92	22
3	16QAM	8	4	21.05	20.98	21.03	
3	16QAM	8	7	21.04	20.95	20.99	
3	16QAM	15	0	21.09	20.99	20.96	
Channel				26697	26865	27033	Tune-up limit (dBm)
Frequency (MHz)				814.7	831.5	848.3	
1.4	QPSK	1	0	22.88	22.94	22.86	24
1.4	QPSK	1	3	22.86	22.86	22.89	
1.4	QPSK	1	5	22.77	22.93	22.77	
1.4	QPSK	3	0	22.97	22.88	22.93	
1.4	QPSK	3	1	22.83	22.87	22.81	
1.4	QPSK	3	3	22.84	22.83	22.85	
1.4	QPSK	6	0	22.02	22.05	21.95	23
1.4	16QAM	1	0	22.01	22.20	22.08	23
1.4	16QAM	1	3	22.30	22.23	22.28	
1.4	16QAM	1	5	22.16	22.28	22.25	
1.4	16QAM	3	0	22.05	22.26	22.03	
1.4	16QAM	3	1	22.22	22.23	22.28	
1.4	16QAM	3	3	22.06	22.31	22.20	
1.4	16QAM	6	0	21.00	20.88	20.89	22

<LTE Band 66 Ant 0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				132072	132322	132572	
Frequency (MHz)				1720	1745	1770	
20	QPSK	1	0	21.86	21.93	21.82	22
20	QPSK	1	49	21.68	21.85	21.74	
20	QPSK	1	99	21.80	21.88	21.74	
20	QPSK	50	0	20.97	20.98	20.89	21
20	QPSK	50	24	20.93	20.93	20.86	
20	QPSK	50	50	20.89	20.90	20.82	
20	QPSK	100	0	20.83	20.91	20.70	
20	16QAM	1	0	20.81	20.93	20.73	21
20	16QAM	1	49	20.84	20.94	20.77	
20	16QAM	1	99	20.39	20.47	20.33	

20	16QAM	50	0	19.91	19.98	19.79	20
20	16QAM	50	24	19.89	19.97	19.76	
20	16QAM	50	50	19.87	19.96	19.81	
20	16QAM	100	0	19.87	19.97	19.82	
Channel				132047	132322	132597	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	QPSK	1	0	21.82	21.88	21.82	22
15	QPSK	1	37	21.67	21.78	21.70	
15	QPSK	1	74	21.70	21.88	21.67	
15	QPSK	36	0	20.87	20.99	20.85	21
15	QPSK	36	20	20.91	20.93	20.85	
15	QPSK	36	39	20.83	20.98	20.74	
15	QPSK	75	0	20.76	20.91	20.66	
15	16QAM	1	0	20.75	20.91	20.64	21
15	16QAM	1	37	20.83	20.85	20.75	
15	16QAM	1	74	20.33	20.46	20.24	
15	16QAM	36	0	19.90	19.98	19.71	20
15	16QAM	36	20	19.79	19.97	19.75	
15	16QAM	36	39	19.80	19.95	19.73	
15	16QAM	75	0	19.85	19.91	19.77	
Channel				132022	132322	132622	Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775	
10	QPSK	1	0	21.86	21.88	21.81	22
10	QPSK	1	25	21.66	21.79	21.72	
10	QPSK	1	49	21.74	21.86	21.69	
10	QPSK	25	0	20.92	21.00	20.84	21
10	QPSK	25	12	20.86	20.93	20.86	
10	QPSK	25	25	20.88	20.94	20.75	
10	QPSK	50	0	20.76	20.90	20.65	
10	16QAM	1	0	20.78	20.86	20.69	21
10	16QAM	1	25	20.77	20.86	20.77	
10	16QAM	1	49	20.30	20.47	20.25	
10	16QAM	25	0	19.87	19.89	19.78	20
10	16QAM	25	12	19.81	19.90	19.72	
10	16QAM	25	25	19.80	19.89	19.78	
10	16QAM	50	0	19.78	19.97	19.73	
Channel				131997	132322	132647	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	QPSK	1	0	21.76	21.90	21.76	22
5	QPSK	1	12	21.68	21.85	21.71	
5	QPSK	1	24	21.75	21.87	21.66	
5	QPSK	12	0	20.91	20.86	20.89	21
5	QPSK	12	7	20.85	20.85	20.86	
5	QPSK	12	13	20.82	20.97	20.73	
5	QPSK	25	0	20.81	20.87	20.64	
5	16QAM	1	0	20.81	20.85	20.73	21
5	16QAM	1	12	20.74	20.86	20.73	
5	16QAM	1	24	20.29	20.39	20.25	
5	16QAM	12	0	19.89	19.94	19.69	20
5	16QAM	12	7	19.84	19.87	19.73	
5	16QAM	12	13	19.79	19.88	19.72	
5	16QAM	25	0	19.77	19.88	19.76	
Channel				131987	132322	132657	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1745	1778.5	
3	QPSK	1	0	21.81	21.92	21.79	22
3	QPSK	1	8	21.64	21.85	21.68	

3	QPSK	1	14	21.79	21.79	21.74	
3	QPSK	8	0	20.88	20.83	20.84	21
3	QPSK	8	4	20.88	20.90	20.85	
3	QPSK	8	7	20.80	20.91	20.82	
3	QPSK	15	0	20.75	20.81	20.70	
3	16QAM	1	0	20.71	20.91	20.72	21
3	16QAM	1	8	20.75	20.92	20.73	
3	16QAM	1	14	20.36	20.47	20.25	
3	16QAM	8	0	19.87	19.98	19.78	20
3	16QAM	8	4	19.87	19.97	19.75	
3	16QAM	8	7	19.81	19.92	19.76	
3	16QAM	15	0	19.84	19.90	19.82	
Channel				131979	132322	132665	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1745	1779.3	
1.4	QPSK	1	0	21.80	21.87	21.75	22
1.4	QPSK	1	3	21.63	21.83	21.66	
1.4	QPSK	1	5	21.80	21.84	21.73	
1.4	QPSK	3	0	21.85	21.89	21.79	
1.4	QPSK	3	1	21.60	21.75	21.65	
1.4	QPSK	3	3	21.72	21.83	21.74	
1.4	QPSK	6	0	20.96	20.80	20.87	21
1.4	16QAM	1	0	20.78	20.90	20.67	21
1.4	16QAM	1	3	20.83	20.92	20.70	
1.4	16QAM	1	5	20.39	20.42	20.33	
1.4	16QAM	3	0	20.77	20.83	20.73	
1.4	16QAM	3	1	20.79	20.93	20.74	
1.4	16QAM	3	3	20.33	20.40	20.23	
1.4	16QAM	6	0	19.84	19.94	19.69	20

<LTE Band 71_Ant 0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				133222	133297	133372	
Frequency (MHz)				673	680.5	688	
20	QPSK	1	0	23.06	23.08	23.07	24
20	QPSK	1	49	22.98	22.99	22.95	
20	QPSK	1	99	23.04	23.03	23.06	
20	QPSK	50	0	22.01	22.08	22.00	23
20	QPSK	50	24	22.00	22.05	21.99	
20	QPSK	50	50	21.98	22.07	21.98	
20	QPSK	100	0	22.16	22.03	22.12	
20	16QAM	1	0	22.36	22.43	22.35	23
20	16QAM	1	49	22.40	22.44	22.37	
20	16QAM	1	99	22.34	22.40	22.39	
20	16QAM	50	0	21.01	21.09	21.01	22
20	16QAM	50	24	21.16	21.04	21.01	
20	16QAM	50	50	21.16	21.09	21.11	
20	16QAM	100	0	21.18	21.06	21.13	
Channel				133197	133297	133397	Tune-up limit (dBm)
Frequency (MHz)				670.5	680.5	690.5	
15	QPSK	1	0	23.03	23.05	23.06	24
15	QPSK	1	37	22.88	22.93	22.95	
15	QPSK	1	74	22.98	22.93	22.99	
15	QPSK	36	0	22.01	22.04	21.97	23
15	QPSK	36	20	21.97	22.05	21.90	
15	QPSK	36	39	21.93	21.98	21.98	

15	QPSK	75	0	22.12	21.98	22.05	
15	16QAM	1	0	22.36	22.34	22.31	23
15	16QAM	1	37	22.30	22.39	22.32	
15	16QAM	1	74	22.25	22.35	22.39	
15	16QAM	36	0	20.92	21.07	21.00	22
15	16QAM	36	20	21.07	20.98	20.96	
15	16QAM	36	39	21.12	21.02	21.03	
15	16QAM	75	0	21.18	21.02	21.13	
Channel				133172	133297	133422	Tune-up limit (dBm)
Frequency (MHz)				668	680.5	693	
10	QPSK	1	0	22.97	22.91	23.05	24
10	QPSK	1	25	22.95	22.96	22.91	
10	QPSK	1	49	22.95	23.02	22.99	
10	QPSK	25	0	21.93	22.02	21.92	23
10	QPSK	25	12	21.96	21.97	21.99	
10	QPSK	25	25	21.95	21.97	21.95	
10	QPSK	50	0	22.10	21.97	22.10	
10	16QAM	1	0	22.35	22.41	22.27	23
10	16QAM	1	25	22.36	22.44	22.35	
10	16QAM	1	49	22.34	22.32	22.33	
10	16QAM	25	0	20.97	21.03	20.92	22
10	16QAM	25	12	21.14	20.96	20.95	
10	16QAM	25	25	21.08	20.99	21.03	
10	16QAM	50	0	21.15	20.98	21.12	
Channel				133147	133297	133447	Tune-up limit (dBm)
Frequency (MHz)				665.5	680.5	695.5	
5	QPSK	1	0	23.04	22.99	22.99	24
5	QPSK	1	12	22.89	22.97	22.89	
5	QPSK	1	24	23.03	23.01	23.03	
5	QPSK	12	0	21.92	22.03	21.94	23
5	QPSK	12	7	21.96	21.99	21.96	
5	QPSK	12	13	21.95	22.07	21.94	
5	QPSK	25	0	22.13	21.94	22.04	
5	16QAM	1	0	22.36	22.39	22.31	23
5	16QAM	1	12	22.40	22.43	22.28	
5	16QAM	1	24	22.31	22.38	22.35	
5	16QAM	12	0	20.96	21.02	20.95	22
5	16QAM	12	7	21.12	20.98	20.93	
5	16QAM	12	13	21.16	21.07	21.08	
5	16QAM	25	0	21.16	21.03	21.03	

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

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

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

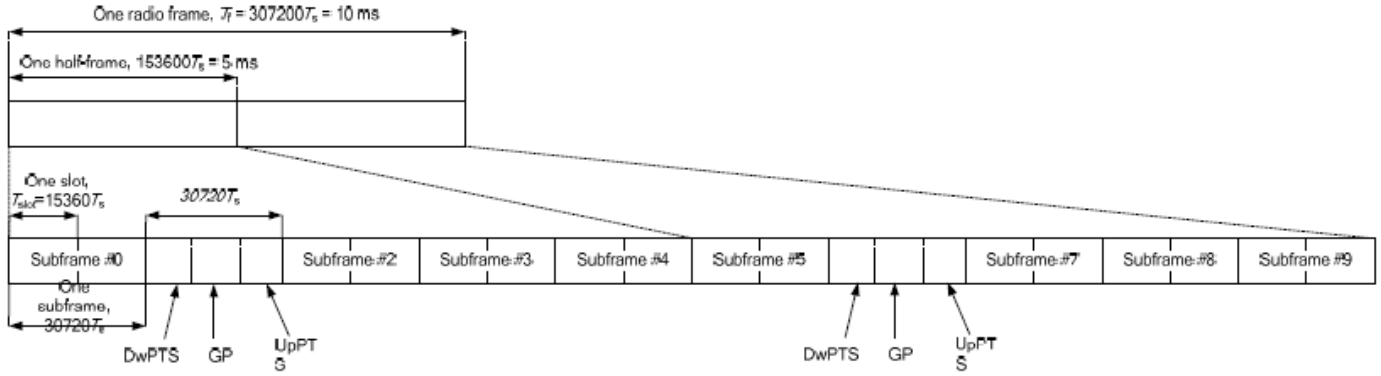


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
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	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
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:

i. Uplink-downlink configuration: 0. In a half-frame consisted of 5 subfames, uplink operation is in 3 uplink subframes and 1 special subframe.

ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink

iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.167)/5 = 63.3%

iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.143)/5 = 62.9%

v. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

vi. The device supports Power Class 3 uplink-downlink configurations 0 and 6, and Power Class 2 uplink-downlink configurations 1 to 5 operations for LTE Band 41.

vii. The highest available duty cycle for Power Class 2 operation is 43.3% using UL-DL configuration 1, for Power Class 3 operation is 63.3% using UL-DL configuration 0. Per FCC Guidance, all SAR tests were performed using Power Class 3. SAR with Power Class 2 at the available duty factor was additionally performed for the Power Class 3 configuration with the highest SAR among all exposure condition.

<LTE Band 41_Ant 0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				39750	40185	40620	41055	41490	
Frequency (MHz)				2506	2549.5	2593	2636.5	2680	
20	QPSK	1	0	23.06	23.09	23.03	22.50	22.58	24
20	QPSK	1	49	22.94	23.05	22.90	22.71	22.47	
20	QPSK	1	99	22.89	23.00	22.79	22.28	22.50	
20	QPSK	50	0	22.21	22.28	21.94	21.63	21.68	23
20	QPSK	50	24	22.13	22.11	21.91	21.63	21.63	
20	QPSK	50	50	22.16	22.09	21.91	21.57	21.62	
20	QPSK	100	0	22.20	22.22	21.94	21.64	21.51	
20	16QAM	1	0	22.09	21.99	21.94	21.40	21.27	23
20	16QAM	1	49	22.13	22.02	21.97	21.68	21.72	
20	16QAM	1	99	21.95	22.01	21.82	21.24	21.66	
20	16QAM	50	0	21.19	21.10	21.00	20.53	20.44	22
20	16QAM	50	24	21.18	21.15	20.98	20.78	20.70	
20	16QAM	50	50	21.23	21.10	20.97	20.59	20.65	
20	16QAM	100	0	21.23	21.21	21.03	20.58	20.62	
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	
15	QPSK	1	0	23.01	23.02	22.97	22.40	22.55	24.00
15	QPSK	1	37	22.91	22.96	22.89	22.65	22.44	
15	QPSK	1	74	22.80	22.97	22.74	22.27	22.46	
15	QPSK	36	0	22.13	22.21	21.92	21.56	21.65	23
15	QPSK	36	20	22.08	22.10	21.84	21.56	21.56	
15	QPSK	36	39	22.16	22.03	21.90	21.47	21.54	
15	QPSK	75	0	22.17	22.22	21.91	21.54	21.41	
15	16QAM	1	0	22.00	21.99	21.89	21.39	21.26	23
15	16QAM	1	37	22.06	21.95	21.87	21.62	21.68	
15	16QAM	1	74	21.91	21.93	21.75	21.21	21.57	
15	16QAM	36	0	21.16	21.02	20.93	20.45	20.38	22
15	16QAM	36	20	21.10	21.05	20.90	20.74	20.64	
15	16QAM	36	39	21.14	21.01	20.97	20.59	20.62	
15	16QAM	75	0	21.17	21.21	20.94	20.51	20.58	
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)
Frequency (MHz)				2501	2547	2593	2639	2685	
10	QPSK	1	0	23.02	23.03	22.96	22.45	22.54	24.00
10	QPSK	1	25	22.90	22.97	22.88	22.63	22.42	
10	QPSK	1	49	22.87	22.92	22.73	22.25	22.43	
10	QPSK	25	0	22.17	22.25	21.94	21.59	21.68	23
10	QPSK	25	12	22.05	22.02	21.85	21.57	21.59	
10	QPSK	25	25	22.11	21.99	21.84	21.47	21.60	
10	QPSK	50	0	22.11	22.20	21.91	21.60	21.48	
10	16QAM	1	0	21.99	21.97	21.85	21.39	21.23	23
10	16QAM	1	25	22.03	21.98	21.88	21.62	21.68	
10	16QAM	1	49	21.93	21.91	21.74	21.23	21.65	
10	16QAM	25	0	21.09	21.05	20.91	20.48	20.36	22
10	16QAM	25	12	21.12	21.09	20.90	20.70	20.68	
10	16QAM	25	25	21.13	21.10	20.92	20.50	20.60	
10	16QAM	50	0	21.21	21.17	20.97	20.49	20.57	
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	23.03	23.02	23.02	22.41	22.52	24.00
5	QPSK	1	12	22.87	22.96	22.85	22.63	22.42	

5	QPSK	1	24	22.83	22.98	22.75	22.20	22.48	
5	QPSK	12	0	22.15	22.27	21.90	21.56	21.62	23
5	QPSK	12	7	22.04	22.06	21.85	21.62	21.61	
5	QPSK	12	13	22.11	22.05	21.86	21.48	21.52	
5	QPSK	25	0	22.17	22.12	21.93	21.56	21.41	
5	16QAM	1	0	22.03	21.95	21.88	21.40	21.23	23
5	16QAM	1	12	22.09	21.92	21.88	21.67	21.70	
5	16QAM	1	24	21.95	21.98	21.75	21.20	21.56	
5	16QAM	12	0	21.17	21.01	20.90	20.46	20.44	22
5	16QAM	12	7	21.17	21.09	20.97	20.75	20.67	
5	16QAM	12	13	21.18	21.01	20.93	20.51	20.58	
5	16QAM	25	0	21.20	21.18	20.99	20.49	20.62	

<LTE Band 41 HPUE_Ant 0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				39750	40185	40620	41055	41490	
Frequency (MHz)				2506	2549.5	2593	2636.5	2680	
20	QPSK	1	0	24.98	25.03	24.89	24.30	24.02	26
20	QPSK	1	49	24.95	24.98	24.81	24.57	24.55	
20	QPSK	1	99	24.93	24.91	24.80	24.10	24.48	
20	QPSK	50	0	24.14	24.21	23.97	23.49	23.29	25
20	QPSK	50	24	24.12	24.10	23.95	23.61	23.58	
20	QPSK	50	50	24.13	24.07	23.95	23.47	23.60	
20	QPSK	100	0	24.18	24.09	23.96	23.53	23.49	
20	16QAM	1	0	24.29	24.29	24.20	23.58	23.39	25
20	16QAM	1	49	24.50	24.29	24.29	23.95	24.01	
20	16QAM	1	99	24.41	24.20	24.20	23.45	23.79	
20	16QAM	50	0	23.17	23.09	23.00	22.51	22.33	24
20	16QAM	50	24	23.23	23.11	22.99	22.65	22.62	
20	16QAM	50	50	23.21	23.08	22.97	22.48	22.65	
20	16QAM	100	0	23.23	23.10	22.99	22.54	22.50	
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	
15	QPSK	1	0	24.89	24.99	24.86	24.21	24.09	26.00
15	QPSK	1	37	24.90	24.95	24.80	24.47	24.52	
15	QPSK	1	74	24.83	24.90	24.72	24.07	24.42	
15	QPSK	36	0	24.08	24.13	23.95	23.42	23.24	25
15	QPSK	36	20	24.09	24.08	23.89	23.55	23.52	
15	QPSK	36	39	24.05	23.97	23.93	23.37	23.54	
15	QPSK	75	0	24.14	24.05	23.87	23.45	23.44	
15	16QAM	1	0	24.21	24.26	24.11	23.56	23.31	25
15	16QAM	1	37	24.50	24.27	24.27	23.93	23.92	
15	16QAM	1	74	24.33	24.16	24.18	23.41	23.71	
15	16QAM	36	0	23.11	23.04	22.99	22.51	22.27	24
15	16QAM	36	20	23.21	23.08	22.93	22.63	22.62	
15	16QAM	36	39	23.21	23.08	22.96	22.41	22.59	
15	16QAM	75	0	23.19	23.07	22.92	22.46	22.46	
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)
Frequency (MHz)				2501	2547	2593	2639	2685	
10	QPSK	1	0	24.94	24.98	24.86	24.23	24.03	26.00
10	QPSK	1	25	24.93	24.88	24.77	24.50	24.53	
10	QPSK	1	49	24.86	24.85	24.79	24.00	24.38	
10	QPSK	25	0	24.05	24.14	23.87	23.46	23.29	25
10	QPSK	25	12	24.08	24.05	23.87	23.58	23.52	
10	QPSK	25	25	24.05	24.00	23.91	23.44	23.59	

10	QPSK	50	0	24.09	24.04	23.88	23.52	23.45	
10	16QAM	1	0	24.26	24.20	24.10	23.57	23.38	25
10	16QAM	1	25	24.40	24.22	24.23	23.90	23.94	
10	16QAM	1	49	24.38	24.14	24.19	23.44	23.77	
10	16QAM	25	0	23.11	23.04	23.00	22.41	22.33	24
10	16QAM	25	12	23.19	23.01	22.92	22.65	22.58	
10	16QAM	25	25	23.16	22.98	22.97	22.44	22.56	
10	16QAM	50	0	23.16	23.00	22.92	22.54	22.50	
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	24.90	24.98	24.86	24.28	24.01	26.00
5	QPSK	1	12	24.95	24.97	24.79	24.50	24.49	
5	QPSK	1	24	24.88	24.90	24.80	24.05	24.41	
5	QPSK	12	0	24.08	24.16	23.89	23.49	23.25	25
5	QPSK	12	7	24.03	24.06	23.88	23.57	23.48	
5	QPSK	12	13	24.08	24.05	23.94	23.38	23.58	
5	QPSK	25	0	24.13	24.05	23.88	23.46	23.45	
5	16QAM	1	0	24.29	24.28	24.15	23.51	23.29	25
5	16QAM	1	12	24.41	24.23	24.23	23.95	24.00	
5	16QAM	1	24	24.38	24.12	24.15	23.45	23.71	
5	16QAM	12	0	23.11	23.04	22.91	22.43	22.23	24
5	16QAM	12	7	23.16	23.04	22.94	22.57	22.57	
5	16QAM	12	13	23.20	23.08	22.95	22.42	22.63	
5	16QAM	25	0	23.21	23.07	22.92	22.52	22.46	

<LTE Band 48_Ant 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				55340	55830	56150	56640	
Frequency (MHz)				3560	3609	3641	3690	
20	QPSK	1	0	21.02	21.13	21.06	21.00	23
20	QPSK	1	49	21.00	21.04	21.08	21.04	
20	QPSK	1	99	21.02	21.06	21.09	21.09	
20	QPSK	50	0	20.64	20.88	20.79	20.56	22.5
20	QPSK	50	24	20.71	20.86	20.75	20.59	
20	QPSK	50	50	20.66	20.80	20.59	20.56	
20	QPSK	100	0	20.69	20.82	20.72	20.50	
20	16QAM	1	0	20.66	20.84	20.74	20.53	22.5
20	16QAM	1	49	20.66	20.85	20.68	20.56	
20	16QAM	1	99	20.61	20.75	20.59	20.59	
20	16QAM	50	0	19.64	19.79	19.80	19.57	21.5
20	16QAM	50	24	19.71	19.84	19.73	19.51	
20	16QAM	50	50	19.65	19.82	19.59	19.52	
20	16QAM	100	0	19.68	19.83	19.71	19.58	
Channel				55315	55820	56160	56665	Tune-up limit (dBm)
Frequency (MHz)				3557.5	3608	3642	3692.5	
15	QPSK	1	0	21.04	21.03	21.08	21.06	23
15	QPSK	1	37	21.00	21.06	21.07	21.06	
15	QPSK	1	74	21.06	21.04	21.09	21.09	
15	QPSK	36	0	20.58	20.87	20.77	20.53	22.5
15	QPSK	36	20	20.70	20.80	20.72	20.57	
15	QPSK	36	39	20.59	20.73	20.50	20.52	
15	QPSK	75	0	20.59	20.75	20.64	20.51	
15	16QAM	1	0	20.57	20.74	20.66	20.50	22.5
15	16QAM	1	37	20.59	20.82	20.64	20.51	
15	16QAM	1	74	20.56	20.65	20.55	20.57	

15	16QAM	36	0	19.54	19.74	19.77	19.50	21.5
15	16QAM	36	20	19.65	19.74	19.69	19.51	
15	16QAM	36	39	19.64	19.76	19.50	19.53	
15	16QAM	75	0	19.66	19.73	19.71	19.56	
Channel				55290	55815	56165	56690	Tune-up limit (dBm)
Frequency (MHz)				3555	3607.5	3642.5	3695	
10	QPSK	1	0	21.02	21.06	21.08	21.02	23
10	QPSK	1	25	21.06	21.01	21.08	21.03	
10	QPSK	1	49	21.02	21.08	21.06	21.09	
10	QPSK	25	0	20.58	20.80	20.79	20.52	22.5
10	QPSK	25	12	20.69	20.83	20.72	20.53	
10	QPSK	25	25	20.57	20.71	20.52	20.57	
10	QPSK	50	0	20.69	20.75	20.70	20.58	
10	16QAM	1	0	20.62	20.74	20.64	20.51	22.5
10	16QAM	1	25	20.63	20.85	20.60	20.56	
10	16QAM	1	49	20.58	20.71	20.56	20.50	
10	16QAM	25	0	19.55	19.79	19.79	19.56	21.5
10	16QAM	25	12	19.71	19.81	19.70	19.53	
10	16QAM	25	25	19.61	19.79	19.54	19.54	
10	16QAM	50	0	19.62	19.73	19.63	19.57	
Channel				55265	55810	56170	56715	Tune-up limit (dBm)
Frequency (MHz)				3552.5	3607	3643	3697.5	
5	QPSK	1	0	21.05	21.10	21.04	21.01	23
5	QPSK	1	12	21.06	21.04	21.04	21.04	
5	QPSK	1	24	21.07	21.08	21.04	21.01	
5	QPSK	12	0	20.63	20.78	20.77	20.56	22.5
5	QPSK	12	7	20.66	20.85	20.73	20.57	
5	QPSK	12	13	20.59	20.77	20.53	20.54	
5	QPSK	25	0	20.61	20.75	20.62	20.50	
5	16QAM	1	0	20.59	20.78	20.67	20.59	22.5
5	16QAM	1	12	20.61	20.79	20.63	20.53	
5	16QAM	1	24	20.52	20.75	20.56	20.58	
5	16QAM	12	0	19.59	19.71	19.80	19.56	21.5
5	16QAM	12	7	19.61	19.74	19.72	19.55	
5	16QAM	12	13	19.57	19.81	19.53	19.55	
5	16QAM	25	0	19.66	19.73	19.66	19.53	

<LTE Uplink carrier aggregation>

2CC Uplink Carrier Aggregation	
Number	Combination
1	41C

<Intra-band>

General Note:

i. The device supports intra-band uplink carrier aggregation with a maximum of two 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 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 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 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 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. According 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.

v. Additional SAR measurement for LTE UL CA whit 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.

CA_41C_Ant 0										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
39750	39948	QPSK	1	0	0	0	1	0	22.78	24
40185	39987	QPSK	1	0	1	99	2	0	22.82	24
40620	40422	QPSK	1	0	1	99	2	0	22.91	24
41055	40857	QPSK	1	0	1	99	2	0	22.79	24
41490	41292	QPSK	1	0	1	99	2	0	22.96	24

11. 5G NR Output Power (Unit: dBm)

General Note:

1. Referencing the procedure in KDB 941225, the test procedures are outlined as below
   a. For DFT-OFDM output power measurement, full measurement was done for Pi/2 BPSK and QPSK and for the largest supported bandwidth, repeat test for 16QAM/64QAM/256QAM under 1RB 1Offset configuration. For smaller bandwidth, measure conducted power for Pi/2 BPSK and 1RB 1Offset configuration.
   b. According to the tune-up, CP-OFDM output power is not ½ dB higher than DFT-OFDM mode, and the reported SAR of DFT-OFDM mode reported SAR is ≤ 1.45 W/kg, SAR test and thus conducted power for CP-OFDM mode is not required.
   c. To start SAR test for the largest channel bandwidth for PI/2 BPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel. Also do SAR test for 50% RB allocation for PI/2 BPSK SAR testing using 1RB PI/2 BPSK allocation procedure
   d. For PI/2 BPSK with 100% RB allocation, SAR test 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.
   e. For higher modulation QPSK/16QAM/64QAM/256QAM, according to tune-up document the power level is not ½ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
   f. Smaller bandwidth output power for each RB allocation configuration for this device is 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
2. Due to test setup limitations, SAR testing for NR was performed using Factory Test Mode software to establish the connection and perform SAR with 100% transmission. And only for TDD power class2 was performed using Factory Test Mode software to establish the connection and perform SAR with 50% transmission

5GNR SA	Tx Ant
n25	2
n41	3
n48	4
n66	2
n71	0
n77	4

EN-DC Combination	Tx Ant	
DC_66A_n25A	ant 0	ant2
DC_48A_n25A	ant4	ant 0
DC_2A_n41A,	ant 0	ant3
DC_66A_n41A	ant 0	ant3
DC_2A_n66A	ant 0	ant2
DC_48A_n66A	ant4	ant 0
DC_66A_n71A	ant 0	ant 0
DC_2A_n71A	ant 0	ant 0

<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	≤ 3.5[1]	≤ 1.2[1]	≤ 0.2[1]
		≤ 0.5[2]	≤ 0.5[2]	0[2]
	QPSK	≤ 1		0
	16 QAM	≤ 2		≤ 1
	64 QAM	≤ 2.5		
	256 QAM	≤ 4.5		
CP-OFDM	QPSK	≤ 3		≤ 1.5
	16 QAM	≤ 3		≤ 2
	64 QAM	≤ 3.5		
	256 QAM	≤ 6.5		

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

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

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

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

<FR1 n25_Ant 0>							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				374000	376500	379000	
Frequency (MHz)				1870	1882.5	1895	
40	PI/2 BPSK	1	1	22.25	22.29	22.07	23.5
40	PI/2 BPSK	1	108	22.08	22.16	21.90	
40	PI/2 BPSK	1	214	22.18	22.24	22.22	
40	PI/2 BPSK	108	0	21.65	21.72	21.67	23.0
40	PI/2 BPSK	108	54	22.13	22.21	22.12	23.5
40	PI/2 BPSK	108	108	21.77	21.85	21.76	23.0
40	PI/2 BPSK	216	0	21.69	21.72	21.62	
40	QPSK	1	1	22.15	22.17	22.15	23.5
40	QPSK	1	108	22.08	22.14	22.11	
40	QPSK	1	214	22.18	22.21	22.20	
40	QPSK	108	0	21.13	21.15	21.10	22.5
40	QPSK	108	54	22.13	22.17	22.07	23.5
40	QPSK	108	108	21.35	21.37	21.33	22.5
40	QPSK	216	0	21.15	21.21	21.13	
40	16QAM	1	1	21.48	21.53	21.49	22.5
40	64QAM	1	1	19.93	20.00	19.99	21.0
40	256QAM	1	1	17.77	17.86	17.81	19.0
Channel				373000	376500	380000	Tune-up limit (dBm)
Frequency (MHz)				1865	1882.5	1900	
30	PI/2 BPSK	1	1	22.16	22.27	21.97	23.5
Channel				372500	376500	380500	Tune-up limit (dBm)
Frequency (MHz)				1862.5	1882.5	1902.5	
25	PI/2 BPSK	1	1	22.25	22.20	22.04	23.5
Channel				372000	376500	381000	Tune-up limit (dBm)
Frequency (MHz)				1860	1882.5	1905	
20	PI/2 BPSK	1	1	22.20	22.25	21.97	23.5
Channel				371500	376500	381500	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1882.5	1907.5	
15	PI/2 BPSK	1	1	22.16	22.24	22.06	23.5
Channel				371000	376500	382000	Tune-up limit (dBm)
Frequency (MHz)				1855	1882.5	1910	
10	PI/2 BPSK	1	1	22.19	22.24	22.04	23.5
Channel				370500	376500	382500	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1882.5	1912.5	
5	PI/2 BPSK	1	1	22.19	22.26	21.97	23.5

<FR1 n25_Ant 2>							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				374000	376500	379000	
Frequency (MHz)				1870	1882.5	1895	
40	PI/2 BPSK	1	1	22.53	22.55	22.36	23.5
40	PI/2 BPSK	1	108	22.40	22.45	22.16	
40	PI/2 BPSK	1	214	22.35	22.41	22.39	
40	PI/2 BPSK	108	0	21.90	21.90	21.85	23.0
40	PI/2 BPSK	108	54	22.36	22.45	22.38	23.5
40	PI/2 BPSK	108	108	21.99	22.05	21.97	23.0
40	PI/2 BPSK	216	0	21.97	22.02	22.01	
40	QPSK	1	1	22.40	22.47	22.38	23.5
40	QPSK	1	108	22.38	22.41	22.40	
40	QPSK	1	214	22.32	22.40	22.34	
40	QPSK	108	0	21.34	21.44	21.44	22.5
40	QPSK	108	54	22.40	22.42	22.32	23.5
40	QPSK	108	108	21.54	21.55	21.52	22.5
40	QPSK	216	0	21.46	21.56	21.49	
40	16QAM	1	1	21.71	21.74	21.71	22.5
40	64QAM	1	1	20.22	20.23	20.20	21.0
40	256QAM	1	1	18.11	18.12	18.07	19.0
Channel				373000	376500	380000	Tune-up limit (dBm)
Frequency (MHz)				1865	1882.5	1900	
30	PI/2 BPSK	1	1	22.47	22.46	22.29	23.5
Channel				372500	376500	380500	Tune-up limit (dBm)
Frequency (MHz)				1862.5	1882.5	1902.5	
25	PI/2 BPSK	1	1	22.49	22.54	22.30	23.5
Channel				372000	376500	381000	Tune-up limit (dBm)
Frequency (MHz)				1860	1882.5	1905	
20	PI/2 BPSK	1	1	22.53	22.54	22.27	23.5
Channel				371500	376500	381500	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1882.5	1907.5	
15	PI/2 BPSK	1	1	22.44	22.49	22.32	23.5
Channel				371000	376500	382000	Tune-up limit (dBm)
Frequency (MHz)				1855	1882.5	1910	
10	PI/2 BPSK	1	1	22.46	22.46	22.30	23.5
Channel				370500	376500	382500	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1882.5	1912.5	
5	PI/2 BPSK	1	1	22.53	22.53	22.34	23.5

<FR1 n66_Ant 0>							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				346000	349000	352000	
Frequency (MHz)				1730	1745	1760	
40	PI/2 BPSK	1	1	22.33	22.37	22.25	23.5
40	PI/2 BPSK	1	108	22.24	22.30	22.15	
40	PI/2 BPSK	1	214	22.11	22.16	22.10	
40	PI/2 BPSK	108	0	21.80	21.85	21.81	23.0
40	PI/2 BPSK	108	54	22.18	22.20	22.10	23.5
40	PI/2 BPSK	108	108	21.80	21.83	21.74	23.0
40	PI/2 BPSK	216	0	21.93	21.95	21.89	
40	QPSK	1	1	22.25	22.35	22.28	23.5
40	QPSK	1	108	22.06	22.11	22.10	
40	QPSK	1	214	22.01	22.05	22.03	
40	QPSK	108	0	21.40	21.41	21.31	22.5
40	QPSK	108	54	22.13	22.16	22.10	23.5
40	QPSK	108	108	21.21	21.31	21.23	22.5
40	QPSK	216	0	21.33	21.43	21.37	
40	16QAM	1	1	21.94	22.00	21.92	23.0
40	64QAM	1	1	20.50	20.50	20.43	21.5
40	256QAM	1	1	17.45	17.53	17.46	19.0
Channel				345000	349000	353000	Tune-up limit (dBm)
Frequency (MHz)				1725	1745	1765	
30	PI/2 BPSK	1	1	22.29	22.30	22.21	23.5
Channel				344000	349000	354000	Tune-up limit (dBm)
Frequency (MHz)				1720	1745	1770	
20	PI/2 BPSK	1	1	22.31	22.31	22.18	23.5
Channel				343500	349000	354500	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	PI/2 BPSK	1	1	22.24	22.29	22.21	23.5
Channel				343000	349000	355000	Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775	
10	PI/2 BPSK	1	1	22.23	22.34	22.25	23.5
Channel				342500	349000	355500	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	PI/2 BPSK	1	1	22.21	22.32	22.24	23.5

<FR1 n66_Ant 2>							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				346000	349000	352000	
Frequency (MHz)				1730	1745	1760	
40	PI/2 BPSK	1	1	22.44	22.48	22.38	23.5
40	PI/2 BPSK	1	108	22.27	22.37	22.26	
40	PI/2 BPSK	1	214	22.24	22.25	22.16	
40	PI/2 BPSK	108	0	22.23	22.31	22.22	23.5
40	PI/2 BPSK	108	54	22.31	22.37	22.33	23.5
40	PI/2 BPSK	108	108	22.32	22.32	22.22	23.5
40	PI/2 BPSK	216	0	22.26	22.32	22.25	
40	QPSK	1	1	22.45	22.47	22.40	23.5
40	QPSK	1	108	22.33	22.35	22.29	
40	QPSK	1	214	22.18	22.22	22.15	
40	QPSK	108	0	21.90	22.00	21.90	23.0
40	QPSK	108	54	22.35	22.36	22.33	23.5
40	QPSK	108	108	21.85	21.85	21.76	23.0
40	QPSK	216	0	21.87	21.93	21.86	
40	16QAM	1	1	22.20	22.30	22.22	23.5
40	64QAM	1	1	20.85	20.87	20.77	22.0
40	256QAM	1	1	18.44	18.51	18.48	20.0
Channel				345000	349000	353000	Tune-up limit (dBm)
Frequency (MHz)				1725	1745	1765	
30	PI/2 BPSK	1	1	22.42	22.40	22.31	23.5
Channel				344000	349000	354000	Tune-up limit (dBm)
Frequency (MHz)				1720	1745	1770	
20	PI/2 BPSK	1	1	22.34	22.38	22.29	23.5
Channel				343500	349000	354500	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	PI/2 BPSK	1	1	22.35	22.43	22.31	23.5
Channel				343000	349000	355000	Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775	
10	PI/2 BPSK	1	1	22.41	22.39	22.36	23.5
Channel				342500	349000	355500	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	PI/2 BPSK	1	1	22.41	22.44	22.30	23.5

<FR1 n71_Ant 0>							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				134600	136100	137600	
Frequency (MHz)				673	680.5	688	
20	PI/2 BPSK	1	1	22.38	22.23	22.36	22.5
20	PI/2 BPSK	1	53	22.37	22.22	22.10	
20	PI/2 BPSK	1	104	22.25	22.16	22.29	
20	PI/2 BPSK	50	0	21.91	21.99	21.91	22.0
20	PI/2 BPSK	50	28	22.31	22.16	22.10	22.5
20	PI/2 BPSK	50	56	21.97	21.89	21.92	22.0
20	PI/2 BPSK	100	0	21.94	21.88	21.93	
20	QPSK	1	1	22.13	22.28	22.35	22.5
20	QPSK	1	53	22.30	22.35	22.28	
20	QPSK	1	104	22.25	22.16	22.28	
20	QPSK	50	0	21.31	21.23	21.34	21.5
20	QPSK	50	28	22.15	22.33	22.14	22.5
20	QPSK	50	56	21.18	21.11	21.23	21.5
20	QPSK	100	0	21.24	21.10	21.20	
20	16QAM	1	1	21.19	21.09	21.18	21.5
20	64QAM	1	1	19.78	19.66	19.79	20.0
20	256QAM	1	1	17.92	17.81	17.94	18.0
Channel				134100	136100	138100	Tune-up limit (dBm)
Frequency (MHz)				670.5	680.5	690.5	
15	PI/2 BPSK	1	1	22.36	22.18	22.26	22.5
Channel				133600	136100	138600	Tune-up limit (dBm)
Frequency (MHz)				668	680.5	693	
10	PI/2 BPSK	1	1	22.35	22.18	22.29	22.5
Channel				133100	136100	139100	Tune-up limit (dBm)
Frequency (MHz)				665.5	680.5	695.5	
5	PI/2 BPSK	1	1	22.28	22.17	22.30	22.5

<FR1 n41_Ant 3>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				509202	518598	528000	
Frequency (MHz)				2546.01	2592.99	2640	
100	PI/2 BPSK	1	1	22.62	23.00	22.76	24.0
100	PI/2 BPSK	1	137	22.35	22.70	22.46	
100	PI/2 BPSK	1	271	22.42	22.76	22.47	
100	PI/2 BPSK	135	0	22.00	22.40	22.19	23.5
100	PI/2 BPSK	135	69	22.45	22.76	22.49	24.0
100	PI/2 BPSK	135	138	21.75	22.07	21.83	23.5
100	PI/2 BPSK	270	0	21.92	22.27	21.97	
100	QPSK	1	1	22.64	22.97	22.70	24.0
100	QPSK	1	137	22.37	22.72	22.51	
100	QPSK	1	271	22.46	22.78	22.54	
100	QPSK	135	0	22.41	22.40	22.35	24.0
100	QPSK	135	69	22.35	22.69	22.49	
100	QPSK	135	138	22.35	22.30	22.31	
100	QPSK	270	0	21.35	21.70	21.40	23.0
100	16QAM	1	1	21.99	22.29	22.09	23.5
100	64QAM	1	1	20.41	20.76	20.56	22.0
100	256QAM	1	1	18.20	18.52	18.24	20.0
Channel				508200	518598	528996	Tune-up limit (dBm)
Frequency (MHz)				2541	2592.99	2644.98	
90	PI/2 BPSK	1	1	22.53	22.96	22.68	24.0
Channel				507204	518598	529998	Tune-up limit (dBm)
Frequency (MHz)				2536.02	2592.99	2649.99	
80	PI/2 BPSK	1	1	22.60	22.95	22.72	24.0
Channel				506202	518598	531000	Tune-up limit (dBm)
Frequency (MHz)				2531.01	2592.99	2655	
70	PI/2 BPSK	1	1	22.58	22.92	22.67	24.0
Channel				505200	518598	531996	Tune-up limit (dBm)
Frequency (MHz)				2526	2592.99	2659.98	
60	PI/2 BPSK	1	1	22.54	22.97	22.71	24.0
Channel				504204	518598	532998	Tune-up limit (dBm)
Frequency (MHz)				2521.02	2592.99	2664.99	
50	PI/2 BPSK	1	1	22.56	22.94	22.76	24.0
Channel				503202	518598	534000	Tune-up limit (dBm)
Frequency (MHz)				2516.01	2592.99	2670	
40	PI/2 BPSK	1	1	22.52	22.91	22.71	24.0
Channel				502200	518598	534996	Tune-up limit (dBm)
Frequency (MHz)				2511	2592.99	2674.98	
30	PI/2 BPSK	1	1	22.60	22.96	22.74	24.0
Channel				501204	518598	535998	Tune-up limit (dBm)
Frequency (MHz)				2506.02	2592.99	2679.99	
20	PI/2 BPSK	1	1	22.59	22.97	22.71	24.0

<FR1 n48_Ant 4>							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				638000	641666	645332	
Frequency (MHz)				3570	3624.99	3679.98	
40	PI/2 BPSK	1	1	20.75	21.10	20.82	21.5
40	PI/2 BPSK	1	53	20.69	21.03	20.71	
40	PI/2 BPSK	1	104	20.63	20.98	20.77	
40	PI/2 BPSK	50	0	20.63	21.00	20.79	21.5
40	PI/2 BPSK	50	28	20.59	21.03	20.68	21.5
40	PI/2 BPSK	50	56	20.70	20.99	20.76	21.5
40	PI/2 BPSK	100	0	20.53	20.92	20.63	
40	QPSK	1	1	20.62	21.04	20.75	21.5
40	QPSK	1	53	20.56	20.90	20.70	
40	QPSK	1	104	20.74	21.00	20.76	
40	QPSK	50	0	20.55	20.91	20.72	21.5
40	QPSK	50	28	20.62	20.98	20.66	
40	QPSK	50	56	20.52	20.90	20.66	
40	QPSK	100	0	20.65	20.92	20.77	21.5
40	16QAM	1	1	20.59	20.90	20.70	21.5
40	64QAM	1	1	20.42	20.59	20.52	21.0
40	256QAM	1	1	18.12	18.50	18.23	19.0
Channel				637668	641666	645666	Tune-up limit (dBm)
Frequency (MHz)				3565.02	3624.99	3684.99	
30	PI/2 BPSK	1	1	20.68	21.08	20.73	21.5
Channel				637334	641666	646000	Tune-up limit (dBm)
Frequency (MHz)				3560.01	3624.99	3690	
20	PI/2 BPSK	1	1	20.74	21.07	20.81	21.5
Channel				637000	641666	646332	Tune-up limit (dBm)
Frequency (MHz)				3555	3624.99	3694.98	
10	PI/2 BPSK	1	1	20.75	21.02	20.82	21.5

<FR1 n77_Ant 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	23.82	23.74	23.67	
100	PI/2 BPSK	1	137	23.65	23.62	23.47	24.0
100	PI/2 BPSK	1	271	23.63	23.60	23.44	
100	PI/2 BPSK	135	0	23.46	23.49	23.37	23.5
100	PI/2 BPSK	135	69	23.65	23.60	23.45	24.0
100	PI/2 BPSK	135	138	23.49	23.48	23.35	23.5
100	PI/2 BPSK	270	0	23.48	23.47	23.28	
100	QPSK	1	1	23.50	23.46	23.29	
100	QPSK	1	137	23.61	23.61	23.48	24.0
100	QPSK	1	271	23.68	23.65	23.48	
100	QPSK	135	0	23.65	23.55	23.39	
100	QPSK	135	69	23.65	23.61	23.42	24.0
100	QPSK	135	138	23.67	23.64	23.45	
100	QPSK	270	0	23.48	23.50	23.43	23.5
100	16QAM	1	1	23.50	23.50	23.39	23.5
100	64QAM	1	1	23.50	23.49	23.41	23.5
100	256QAM	1	1	22.91	22.87	22.70	23.5
Channel				649668	656000	662332	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3840	3934.98	
90	PI/2 BPSK	1	1	23.81	23.70	23.62	24.0
Channel				649334	656000	662666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	23.68	22.74	23.62	24.0
Channel				649000	656000	663000	Tune-up limit (dBm)
Frequency (MHz)				3735	3840	3945	
70	PI/2 BPSK	1	1	23.64	23.79	23.67	24.0
Channel				648668	656000	663332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	23.70	23.79	23.64	24.0
Channel				648334	656000	663666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3840	3954.99	
50	PI/2 BPSK	1	1	23.66	23.75	23.60	24.0
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	23.66	23.74	23.64	24.0
Channel				647668	656000	664332	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3840.00	3964.98	
30	PI/2 BPSK	1	1	23.66	23.75	23.58	24.0
Channel				647334	656000	664666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	23.67	23.74	23.67	24.0
Channel				647168	656000	664832	Tune-up limit (dBm)
Frequency (MHz)				3707.52	3840	3972.48	
15	PI/2 BPSK	1	1	23.73	22.72	23.67	24.0
Channel				647000	656000	665000	Tune-up limit (dBm)
Frequency (MHz)				3705	3840	3975	
10	PI/2 BPSK	1	1	23.65	23.74	23.66	24.0

<FR1 n77_Ant 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel					633332		
Frequency (MHz)					3499.98		
100	PI/2 BPSK	1	1		23.47		24.0
100	PI/2 BPSK	1	137		23.20		
100	PI/2 BPSK	1	271		23.12		
100	PI/2 BPSK	135	0		23.24		23.5
100	PI/2 BPSK	135	69		23.25		24.0
100	PI/2 BPSK	135	138		23.10		23.5
100	PI/2 BPSK	270	0		23.23		
100	QPSK	1	1		23.37		24.0
100	QPSK	1	137		23.24		
100	QPSK	1	271		23.19		
100	QPSK	135	0		23.26		24.0
100	QPSK	135	69		23.21		
100	QPSK	135	138		23.11		
100	QPSK	270	0		23.22		23.5
100	16QAM	1	1		23.11		23.5
100	64QAM	1	1		23.08		23.5
100	256QAM	1	1		23.13		23.5
Channel				633000	633332	633666	Tune-up limit (dBm)
Frequency (MHz)				3495	3499.98	3504.99	
90	PI/2 BPSK	1	1	23.44	23.41	23.34	24.0
Channel				632668	633332	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3499.98	3510	
80	PI/2 BPSK	1	1	23.36	23.45	23.34	24.0
Channel				632334	633332	634332	Tune-up limit (dBm)
Frequency (MHz)				3485.01	3499.98	3514.98	
70	PI/2 BPSK	1	1	23.43	23.43	23.42	24.0
Channel				632000	633332	634666	Tune-up limit (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	23.42	23.39	23.33	24.0
Channel				631668	633332	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3499.98	3525	
50	PI/2 BPSK	1	1	23.40	23.37	23.40	24.0
Channel				631334	633332	635332	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	23.42	23.38	23.40	24.0
Channel				631000	633332	635666	Tune-up limit (dBm)
Frequency (MHz)				3465	3499.98	3534.99	
30	PI/2 BPSK	1	1	23.44	23.37	23.39	24.0
Channel				630668	633332	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	23.43	23.46	23.34	24.0
Channel				630500	633332	636166	Tune-up limit (dBm)
Frequency (MHz)				3457.5	3499.98	3542.49	
15	PI/2 BPSK	1	1	23.38	23.44	23.38	24.0
Channel				630334	633332	636332	Tune-up limit (dBm)
Frequency (MHz)				3455.01	3499.98	3544.98	
10	PI/2 BPSK	1	1	23.35	23.38	23.35	24.0

<FR1 n77 HPUE_Ant 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	24.79	24.49	24.58	
100	PI/2 BPSK	1	137	24.51	24.61	24.47	26.0
100	PI/2 BPSK	1	271	24.54	24.64	24.47	
100	PI/2 BPSK	135	0	24.24	24.42	24.31	25.5
100	PI/2 BPSK	135	69	24.53	24.43	24.35	26.0
100	PI/2 BPSK	135	138	24.32	24.43	24.23	25.5
100	PI/2 BPSK	270	0	24.27	24.39	24.18	
100	QPSK	1	1	24.32	24.47	24.30	
100	QPSK	1	137	24.57	24.69	24.49	26.0
100	QPSK	1	271	24.49	24.65	24.47	
100	QPSK	135	0	24.33	24.49	24.33	
100	QPSK	135	69	24.42	24.60	24.44	26.0
100	QPSK	135	138	24.33	24.52	24.35	
100	QPSK	270	0	24.20	24.37	24.25	25.5
100	16QAM	1	1	24.16	24.34	24.23	25.5
100	64QAM	1	1	24.00	24.19	24.02	25.5
100	256QAM	1	1	24.00	24.15	23.95	25.5
Channel				649668	656000	662332	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3840	3934.98	
90	PI/2 BPSK	1	1	24.75	24.49	24.58	26.0
Channel				649334	656000	662666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	24.76	24.59	24.59	26.0
Channel				649000	656000	663000	Tune-up limit (dBm)
Frequency (MHz)				3735	3840	3945	
70	PI/2 BPSK	1	1	24.80	24.59	24.58	26.0
Channel				648668	656000	663332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	24.84	24.49	24.56	26.0
Channel				648334	656000	663666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3840	3954.99	
50	PI/2 BPSK	1	1	24.72	24.55	24.58	26.0
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	24.55	24.45	24.57	26.0
Channel				647668	656000	664332	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3840.00	3964.98	
30	PI/2 BPSK	1	1	24.73	24.45	24.54	26.0
Channel				647334	656000	664666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	24.75	24.54	24.58	26.0
Channel				647168	656000	664832	Tune-up limit (dBm)
Frequency (MHz)				3707.52	3840	3972.48	
15	PI/2 BPSK	1	1	24.75	24.50	24.59	26.0
Channel				647000	656000	665000	Tune-up limit (dBm)
Frequency (MHz)				3705	3840	3975	
10	PI/2 BPSK	1	1	24.82	24.55	24.62	26.0

<FR1 n77 HPUE_Ant 4>							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				633334	633332	633332	
Frequency (MHz)				3500.01	3499.98	3499.98	
100	PI/2 BPSK	1	1		24.64		26.0
100	PI/2 BPSK	1	137		24.41		
100	PI/2 BPSK	1	271		24.40		
100	PI/2 BPSK	135	0		24.42		25.5
100	PI/2 BPSK	135	69		24.56		26.0
100	PI/2 BPSK	135	138		24.40		25.5
100	PI/2 BPSK	270	0		24.40		
100	QPSK	1	1		24.56		26.0
100	QPSK	1	137		24.44		
100	QPSK	1	271		24.42		
100	QPSK	135	0		24.50		26.0
100	QPSK	135	69		24.37		
100	QPSK	135	138		24.39		
100	QPSK	270	0		24.39		25.5
100	16QAM	1	1		24.41		25.5
100	64QAM	1	1		24.57		25.5
100	256QAM	1	1		24.42		25.5
Channel				633000	633332	633666	Tune-up limit (dBm)
Frequency (MHz)				3495	3499.98	3504.99	
90	PI/2 BPSK	1	1	24.42	24.49	24.41	26.0
Channel				632668	633332	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3499.98	3510	
80	PI/2 BPSK	1	1	24.44	24.55	24.43	26.0
Channel				632334	633332	634332	Tune-up limit (dBm)
Frequency (MHz)				3485.01	3499.98	3514.98	
70	PI/2 BPSK	1	1	24.44	24.53	24.49	26.0
Channel				632000	633332	634666	Tune-up limit (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	24.40	24.53	24.46	26.0
Channel				631668	633332	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3499.98	3525	
50	PI/2 BPSK	1	1	24.48	24.51	24.45	26.0
Channel				631334	633332	635332	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	24.41	24.51	24.46	26.0
Channel				631000	633332	635666	Tune-up limit (dBm)
Frequency (MHz)				3465	3499.98	3534.99	
30	PI/2 BPSK	1	1	24.49	24.49	24.45	26.0
Channel				630668	633332	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	24.47	24.50	24.41	26.0
Channel				630500	633332	636166	Tune-up limit (dBm)
Frequency (MHz)				3457.5	3499.98	3542.49	
15	PI/2 BPSK	1	1	24.47	24.50	24.46	26.0
Channel				630334	633332	636332	Tune-up limit (dBm)
Frequency (MHz)				3455.01	3499.98	3544.98	
10	PI/2 BPSK	1	1	24.48	24.55	24.45	26.0

12. WiFi Output Power (Unit: dBm)

General Note:

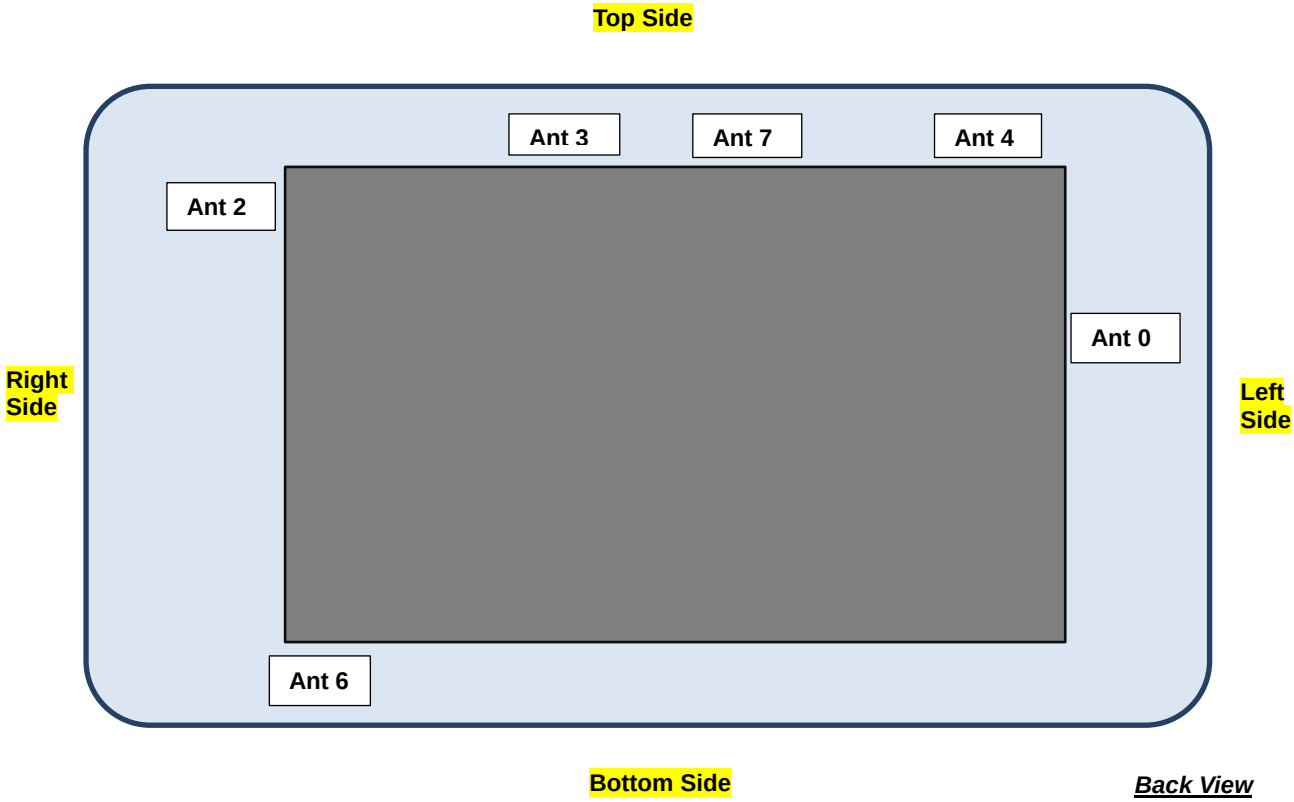
1. The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures. For “Not required”, SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, additional output power measurements were not necessary.
2. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
3. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
4. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
5. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
    a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
    b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
    c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
6. Per 201904 TCBC workshops, General principles of FCC KDB Publication 248227 D01 can be applied to determine the SAR Initial Test Configurations and test reduction for 802.11ax SAR testing. For the table below the 802.11ax maximum power is SU (non-OFDMA), and the SU maximum power also higher than RU (OFDMA)
7. In applying the test guidance, the IEEE 802.11 mode with the maximum output power (out of all modes) should be considered for testing
8. For modes with the same maximum output power, the guidance from section 5.3.2 a) of FCC KDB Publication 248227 D01 should be applied, with 802.11ax being considered as the highest 802.11 mode for the appropriate frequency bands
9. When SAR testing for 802.11ax is required
    a. If the maximum output power is highest for OFDMA scenarios, choose the tone size with the maximum number of tones and the highest maximum output power
    b. Otherwise, consider the fully allocated channel for SAR testing
    c. When SAR testing is required on RU sizes less than the fully allocated channel, use the RU number closest to the middle of the channel, choosing the higher RU number when two RUs are equidistant to the middle of the channel

WLAN 2.4GHz				Ant 6+7(6)		Ant 6+7(7)		Ant 6+7		
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	16.15	17.00	17.00	17.00	19.61	20.00	98.29
		6	2437	17.44	18.50	18.20	18.50	20.85	21.50	
		11	2462	16.96	18.50	17.39	18.50	20.19	21.50	
	802.11g 6Mbps	1	2412	12.73	13.50	13.24	13.50	16.00	16.50	99.27
		6	2437	16.22	17.00	16.35	17.00	19.30	20.00	
		11	2462	12.78	13.50	13.07	13.50	15.94	16.50	
	802.11n-HT20 MCS0	1	2412	13.51	14.50	14.32	14.50	16.94	17.50	100
		6	2437	17.19	17.50	17.38	17.50	20.30	20.50	
		11	2462	11.61	12.50	12.01	12.50	14.82	15.50	
	802.11ax-HE20 MCS0	1	2412	10.31	10.50	10.42	10.50	13.38	13.50	100
		6	2437	10.25	10.50	10.39	10.50	13.33	13.50	
		11	2462	9.83	10.50	10.44	10.50	13.16	13.50	

WLAN 5.2GHz				Ant 6+7(6)		Ant 6+7(7)		Ant 6+7		
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11n-HT20 MCS0	36	5180	13.35	13.50	13.34	13.50	16.36	16.50	100
		40	5200	13.18	13.50	13.16	13.50	16.18	16.50	
		44	5220	13.29	13.50	13.28	13.50	16.30	16.50	
		48	5240	13.16	13.50	13.11	13.50	16.15	16.50	
	802.11n-HT40 MCS0	38	5190	12.01	13.50	11.71	13.50	14.87	15.00	100
		46	5230	13.26	13.50	13.31	13.50	16.30	16.50	
	802.11ac-VHT20 MCS0	36	5180	12.87	13.00	12.42	13.00	15.66	16.00	100
		40	5200	12.91	13.00	12.75	13.00	15.84	16.00	
		44	5220	12.64	13.00	12.45	13.00	15.56	16.00	
		48	5240	12.35	13.00	12.39	13.00	15.38	16.00	
	802.11ac-VHT40 MCS0	38	5190	11.58	12.00	11.14	12.00	14.38	15.00	100
		46	5230	11.43	11.50	11.11	11.50	14.28	14.50	
	802.11ac-VHT80 MCS0	42	5210	11.85	12.00	11.57	12.00	14.72	15.00	100
	802.11ax-HE20 MCS0	36	5180	13.33	13.50	13.32	13.50	16.34	16.50	100
		40	5200	13.14	13.50	13.11	13.50	16.14	16.50	
		44	5220	13.28	13.50	13.27	13.50	16.29	16.50	
		48	5240	13.13	13.50	13.08	13.50	16.12	16.50	
	802.11ax-HE40 MCS0	38	5190	11.66	13.50	11.75	13.50	14.72	15.00	100
		46	5230	12.94	13.50	13.17	13.50	16.07	16.50	
	802.11ax-HE80 MCS0	42	5210	12.28	13.50	12.46	13.50	15.38	16.50	99.35

WLAN 5.8GHz				Ant 6+7(6)		Ant 6+7(7)		Ant 6+7		
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11n-HT20 MCS0	149	5745	13.43	13.50	13.23	13.50	16.34	16.50	100
		157	5785	13.47	13.50	13.04	13.50	16.27	16.50	
		165	5825	13.45	13.50	12.76	13.50	16.13	16.50	
	802.11n-HT40 MCS0	151	5755	13.18	13.50	12.86	13.50	16.03	16.50	100
		159	5795	13.43	13.50	13.17	13.50	16.31	16.50	
	802.11ac-VHT20 MCS0	149	5745	12.53	13.00	11.78	13.00	15.18	16.00	100
		157	5785	12.49	12.50	11.76	12.50	15.15	15.50	
		165	5825	12.67	13.00	11.35	13.00	15.07	16.00	
	802.11ac-VHT40 MCS0	151	5755	11.09	11.50	11.06	11.50	14.09	14.50	100
		159	5795	11.25	11.50	11.04	11.50	14.16	14.50	
	802.11ac-VHT80 MCS0	155	5775	11.58	12.00	11.52	12.00	14.56	15.00	100
	802.11ax-HE20 MCS0	149	5745	13.21	13.50	12.66	13.50	15.95	16.50	100
		157	5785	13.03	13.50	12.53	13.50	15.80	16.50	
		165	5825	13.14	13.50	12.19	13.50	15.70	16.50	
	802.11ax-HE40 MCS0	151	5755	12.82	13.00	12.22	13.00	15.54	16.00	100
		159	5795	12.71	13.00	12.11	13.00	15.43	16.00	
	802.11ax-HE80 MCS0	155	5775	13.11	13.50	12.77	13.50	15.95	16.50	99.35

13. Antenna Location



Back View

The separation distance for antenna to edge:

Antenna	Front (mm)	Back (mm)	Left Side (mm)	Right Side (mm)	Top Side (mm)	Bottom Side (mm)
WWAN Antenna 0	<25	<25	<25	>25	>25	>25
WWAN Antenna 2	<25	<25	>25	<25	<25	>25
WWAN Antenna 3	<25	<25	>25	>25	<25	>25
WWAN Antenna 4	<25	<25	<25	>25	<25	>25
WLAN Antenna 6	<25	<25	>25	<25	<25	<25
WLAN Antenna 7	<25	<25	>25	<25	<25	<25

General Note:

1. Referring to KDB 941225 D06 v02r01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.

14. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
   e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.

UMTS 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 is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA /to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA , and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA.

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 output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4/B5/B12/B26/B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE band 2/4/5 SAR test was covered by Band 25/66/26; according to TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. The maximum output power, including tolerance, for the smaller band is ≤ 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. Referencing the procedure in KDB 941225, the test procedures are outlined as below:
   a. To start SAR test for the largest channel bandwidth for PI/2 BPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel. Also do SAR test for 50% RB allocation for PI/2 BPSK SAR testing using 1RB PI/2 BPSK allocation procedure
   b. For PI/2 BPSK with 100% RB allocation, SAR test 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.
   c. For higher modulation QPSK/16QAM/64QAM/256QAM, according to tune-up document the power level is not ½ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
   d. Smaller bandwidth output power for each RB allocation configuration for this device is 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
   e. For 5G FR1 n41/n71/n77, the maximum channel bandwidth does not support three non-overlapping channels in the frequency band, the middle channel of the group of overlapping channels were selected for testing.
   f. Due to test setup limitations, SAR testing for NR was performed using Factory Test Mode software to establish the connection and perform SAR with 100% transmission. And only for TDD power class2 was performed using Factory Test Mode software to establish the connection and perform SAR with 50% transmission

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, WLAN5.2GHz SAR testing is not required when the WLAN5.3GHz band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for WLAN5.2GHz 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. For determination of the scaling factor for report SAR of MIMO mode, if the hot spots are separated the scaling factors are individually determined from each transmit chain. If the hot spots are not spatially separated, the scaling factor is determined from the worst number of each transmit chain
6. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

14.1 Hotspot SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II_Ant 0	RMC 12.2Kbps	Front	10mm	9538	1907.6	22.98	23.50	1.127	-0.11	0.455	0.513
	WCDMA II_Ant 0	RMC 12.2Kbps	Back	10mm	9538	1907.6	22.98	23.50	1.127	-0.02	0.717	0.808
01	WCDMA II_Ant 0	RMC 12.2Kbps	Back	10mm	9262	1852.4	22.92	23.50	1.143	0.03	0.770	0.880
	WCDMA II_Ant 0	RMC 12.2Kbps	Back	10mm	9400	1880	22.88	23.50	1.153	-0.06	0.697	0.804
	WCDMA II_Ant 0	RMC 12.2Kbps	Left Side	10mm	9538	1907.6	22.98	23.50	1.127	-0.09	0.590	0.665
	WCDMA IV_Ant 0	RMC 12.2Kbps	Front	10mm	1513	1752.6	23.08	23.50	1.102	-0.01	0.667	0.735
	WCDMA IV_Ant 0	RMC 12.2Kbps	Back	10mm	1513	1752.6	23.08	23.50	1.102	-0.07	0.839	0.924
02	WCDMA IV_Ant 0	RMC 12.2Kbps	Back	10mm	1312	1712.4	22.96	23.50	1.132	0.02	0.974	1.103
	WCDMA IV_Ant 0	RMC 12.2Kbps	Back	10mm	1413	1732.6	22.96	23.50	1.132	-0.07	0.887	1.004
	WCDMA IV_Ant 0	RMC 12.2Kbps	Left Side	10mm	1513	1752.6	23.08	23.50	1.102	-0.01	0.401	0.441
	WCDMA V_Ant 0	RMC 12.2Kbps	Front	10mm	4132	826.4	23.81	25.00	1.315	-0.02	0.819	1.078
	WCDMA V_Ant 0	RMC 12.2Kbps	Front	10mm	4182	836.4	23.77	25.00	1.327	-0.08	0.811	1.077
	WCDMA V_Ant 0	RMC 12.2Kbps	Front	10mm	4233	846.6	23.79	25.00	1.321	-0.1	0.812	1.073
03	WCDMA V_Ant 0	RMC 12.2Kbps	Back	10mm	4132	826.4	23.81	25.00	1.315	0.02	0.822	1.081
	WCDMA V_Ant 0	RMC 12.2Kbps	Back	10mm	4182	836.4	23.77	25.00	1.327	-0.1	0.795	1.055
	WCDMA V_Ant 0	RMC 12.2Kbps	Back	10mm	4233	846.6	23.79	25.00	1.321	-0.03	0.789	1.042
	WCDMA V_Ant 0	RMC 12.2Kbps	Left Side	10mm	4132	826.4	23.81	25.00	1.315	-0.09	0.133	0.175

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2_Ant 0	20M	QPSK	1	0	Front	10mm	18900	1880	21.99	23.00	1.262	-0.05	0.431	0.544
	LTE Band 2_Ant 0	20M	QPSK	50	0	Front	10mm	18900	1880	20.99	22.50	1.416	-0.01	0.321	0.454
04	LTE Band 2_Ant 0	20M	QPSK	1	0	Back	10mm	18900	1880	21.99	23.00	1.262	-0.12	0.594	0.750
	LTE Band 2_Ant 0	20M	QPSK	1	49	Back	10mm	18700	1860	21.98	23.00	1.265	-0.1	0.575	0.727
	LTE Band 2_Ant 0	20M	QPSK	1	49	Back	10mm	19100	1900	21.95	23.00	1.274	-0.13	0.583	0.742
	LTE Band 2_Ant 0	20M	QPSK	50	0	Back	10mm	18900	1880	20.99	22.50	1.416	-0.08	0.478	0.677
	LTE Band 2_Ant 0	20M	QPSK	1	0	Left Side	10mm	18900	1880	21.99	23.00	1.262	0.19	0.259	0.327
	LTE Band 2_Ant 0	20M	QPSK	50	0	Left Side	10mm	18900	1880	20.99	22.50	1.416	0.1	0.164	0.232
05	LTE Band 12_Ant 0	10M	QPSK	1	0	Front	10mm	23095	707.5	23.05	24.00	1.245	-0.03	0.600	0.747
	LTE Band 12_Ant 0	10M	QPSK	25	0	Front	10mm	23095	707.5	22.14	23.00	1.219	0.14	0.458	0.558
	LTE Band 12_Ant 0	10M	QPSK	1	0	Back	10mm	23095	707.5	23.05	24.00	1.245	0.05	0.545	0.678
	LTE Band 12_Ant 0	10M	QPSK	25	0	Back	10mm	23095	707.5	22.14	23.00	1.219	-0.15	0.431	0.525
	LTE Band 12_Ant 0	10M	QPSK	1	0	Left Side	10mm	23095	707.5	23.05	24.00	1.245	-0.11	0.067	0.083
	LTE Band 12_Ant 0	10M	QPSK	25	0	Left Side	10mm	23095	707.5	22.14	23.00	1.219	-0.19	0.045	0.055
	LTE Band 25_Ant 0	20M	QPSK	1	0	Front	10mm	26590	1905	22.16	23.00	1.213	-0.06	0.363	0.440
	LTE Band 25_Ant 0	20M	QPSK	50	0	Front	10mm	26590	1905	21.30	22.00	1.175	0.04	0.281	0.330
	LTE Band 25_Ant 0	20M	QPSK	1	0	Back	10mm	26590	1905	22.16	23.00	1.213	-0.05	0.567	0.688
06	LTE Band 25_Ant 0	20M	QPSK	1	0	Back	10mm	26140	1860	22.02	23.00	1.253	-0.07	0.555	0.695
	LTE Band 25_Ant 0	20M	QPSK	1	99	Back	10mm	26340	1880	21.96	23.00	1.271	0.19	0.522	0.663
	LTE Band 25_Ant 0	20M	QPSK	50	0	Back	10mm	26590	1905	21.30	22.00	1.175	0	0.476	0.559
	LTE Band 25_Ant 0	20M	QPSK	1	0	Left Side	10mm	26590	1905	22.16	23.00	1.213	0.11	0.357	0.433
	LTE Band 25_Ant 0	20M	QPSK	50	0	Left Side	10mm	26590	1905	21.30	22.00	1.175	0.04	0.275	0.323
	LTE Band 26_Ant 0	15M	QPSK	1	0	Front	10mm	26865	831.5	22.98	24.00	1.265	-0.03	0.558	0.706
	LTE Band 26_Ant 0	15M	QPSK	36	0	Front	10mm	26865	831.5	22.11	23.00	1.227	-0.1	0.340	0.417
07	LTE Band 26_Ant 0	15M	QPSK	1	0	Back	10mm	26865	831.5	22.98	24.00	1.265	0.02	0.600	0.759
	LTE Band 26_Ant 0	15M	QPSK	36	0	Back	10mm	26865	831.5	22.11	23.00	1.227	0.09	0.476	0.584
	LTE Band 26_Ant 0	15M	QPSK	1	0	Left Side	10mm	26865	831.5	22.98	24.00	1.265	0.07	0.175	0.221
	LTE Band 26_Ant 0	15M	QPSK	36	0	Left Side	10mm	26865	831.5	22.11	23.00	1.227	0.04	0.138	0.169
	LTE Band 66_Ant 0	20M	QPSK	1	0	Front	10mm	132322	1745	21.93	22.00	1.016	0	0.356	0.362
	LTE Band 66_Ant 0	20M	QPSK	50	0	Front	10mm	132322	1745	20.98	21.00	1.005	0.02	0.251	0.252
	LTE Band 66_Ant 0	20M	QPSK	1	0	Back	10mm	132322	1745	21.93	22.00	1.016	0.09	0.702	0.713
	LTE Band 66_Ant 0	20M	QPSK	1	0	Back	10mm	132072	1720	21.86	22.00	1.033	0.13	0.703	0.726
08	LTE Band 66_Ant 0	20M	QPSK	1	0	Back	10mm	132572	1770	21.82	22.00	1.042	0.01	0.720	0.750
	LTE Band 66_Ant 0	20M	QPSK	50	0	Back	10mm	132322	1745	20.98	21.00	1.005	0.04	0.594	0.597
	LTE Band 66_Ant 0	20M	QPSK	1	0	Left Side	10mm	132322	1745	21.93	22.00	1.016	0.08	0.308	0.313
	LTE Band 66_Ant 0	20M	QPSK	50	0	Left Side	10mm	132322	1745	20.98	21.00	1.005	0.02	0.211	0.212
	LTE Band 71_Ant 0	20M	QPSK	1	0	Front	10mm	133297	680.5	23.08	24.00	1.236	0.02	0.316	0.391
	LTE Band 71_Ant 0	20M	QPSK	50	0	Front	10mm	133297	680.5	22.08	23.00	1.236	-0.16	0.284	0.351
09	LTE Band 71_Ant 0	20M	QPSK	1	0	Back	10mm	133297	680.5	23.08	24.00	1.236	-0.02	0.506	0.625
	LTE Band 71_Ant 0	20M	QPSK	50	0	Back	10mm	133297	680.5	22.08	23.00	1.236	0.06	0.257	0.318
	LTE Band 71_Ant 0	20M	QPSK	1	0	Left Side	10mm	133297	680.5	23.08	24.00	1.236	0.19	0.044	0.054
	LTE Band 71_Ant 0	20M	QPSK	50	0	Left Side	10mm	133297	680.5	22.08	23.00	1.236	0	0.031	0.038

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41_Ant 0	20M	QPSK	1	0	Front	10mm	40185	2549.5	23.09	24.00	1.233	62.9	1.006	-0.02	0.121	0.150
	LTE Band 41_Ant 0	20M	QPSK	50	0	Front	10mm	40185	2549.5	22.28	23.00	1.180	62.9	1.006	0.09	0.091	0.108
	LTE Band 41_Ant 0	20M	QPSK	1	0	Back	10mm	40185	2549.5	23.09	24.00	1.233	62.9	1.006	-0.01	0.375	0.465
	LTE Band 41_Ant 0	20M	QPSK	50	0	Back	10mm	40185	2549.5	22.28	23.00	1.180	62.9	1.006	0.07	0.264	0.313
	LTE Band 41_Ant 0	20M	QPSK	1	0	Left Side	10mm	40185	2549.5	23.09	24.00	1.233	62.9	1.006	-0.03	0.651	0.807
	LTE Band 41_Ant 0	20M	QPSK	1	0	Left Side	10mm	39750	2506	23.06	24.00	1.242	62.9	1.006	0.02	0.775	0.968
	LTE Band 41_Ant 0	20M	QPSK	1	0	Left Side	10mm	40620	2593	23.03	24.00	1.250	62.9	1.006	0.14	0.601	0.756
	LTE Band 41_Ant 0	20M	QPSK	1	49	Left Side	10mm	41055	2636.5	22.71	24.00	1.346	62.9	1.006	0.02	0.477	0.646
	LTE Band 41_Ant 0	20M	QPSK	1	0	Left Side	10mm	41490	2680	22.58	24.00	1.387	62.9	1.006	-0.05	0.379	0.528
	LTE Band 41_Ant 0	20M	QPSK	50	0	Left Side	10mm	40185	2549.5	22.28	23.00	1.180	62.9	1.006	0.01	0.501	0.595
	LTE Band 41_Ant 0	20M	QPSK	100	0	Left Side	10mm	40185	2549.5	22.22	23.00	1.197	62.9	1.006	0.06	0.464	0.559
10	LTE Band 41_HPUE_Ant 0	20M	QPSK	1	0	Left Side	10mm	39750	2506	24.98	26.00	1.265	42.9	1.009	-0.02	0.798	1.018
	LTE Band 41_HPUE_Ant 0	20M	QPSK	1	0	Left Side	10mm	40185	2549.5	25.03	26.00	1.250	42.9	1.009	0.13	0.738	0.931
	LTE Band 41_HPUE_Ant 0	20M	QPSK	1	0	Left Side	10mm	40620	2593	24.89	26.00	1.291	42.9	1.009	-0.09	0.729	0.950
	LTE Band 41_HPUE_Ant 0	20M	QPSK	1	49	Left Side	10mm	41055	2636.5	24.57	26.00	1.390	42.9	1.009	-0.15	0.675	0.947
	LTE Band 41_HPUE_Ant 0	20M	QPSK	1	49	Left Side	10mm	41490	2680	24.55	26.00	1.396	42.9	1.009	-0.01	0.602	0.848
	LTE Band 41C_Ant 0	20M	QPSK	1	0	Left Side	10mm	39750	2506	22.78	24.00	1.324	62.9	1.006	0.05	0.705	0.939
	LTE Band 41C_Ant 0	20M	QPSK	1	0	Left Side	10mm	40185	2549.5	22.82	24.00	1.312	62.9	1.006	0.08	0.732	0.966
	LTE Band 41C_Ant 0	20M	QPSK	1	0	Left Side	10mm	40620	2593	22.91	24.00	1.285	62.9	1.006	-0.03	0.701	0.906
	LTE Band 41C_Ant 0	20M	QPSK	1	0	Left Side	10mm	41055	2636.5	22.79	24.00	1.321	62.9	1.006	0.04	0.694	0.922
	LTE Band 41C_Ant 0	20M	QPSK	1	0	Left Side	10mm	41490	2680	22.96	24.00	1.271	62.9	1.006	-0.08	0.692	0.885
	LTE Band 48_Ant 4	20M	QPSK	1	0	Front	10mm	55830	3609	21.13	23.00	1.538	62.9	1.006	0.05	0.206	0.319
	LTE Band 48_Ant 4	20M	QPSK	50	0	Front	10mm	55830	3609	20.88	22.50	1.452	62.9	1.006	0	0.094	0.137
	LTE Band 48_Ant 4	20M	QPSK	1	0	Back	10mm	55830	3609	21.13	23.00	1.538	62.9	1.006	-0.08	0.391	0.605
11	LTE Band 48_Ant 4	20M	QPSK	1	0	Back	10mm	55340	3560	21.02	23.00	1.578	62.9	1.006	-0.09	0.405	0.643
	LTE Band 48_Ant 4	20M	QPSK	1	99	Back	10mm	56150	3641	21.09	23.00	1.552	62.9	1.006	0.08	0.296	0.462
	LTE Band 48_Ant 4	20M	QPSK	1	99	Back	10mm	56640	3690	21.09	23.00	1.552	62.9	1.006	0	0.374	0.584
	LTE Band 48_Ant 4	20M	QPSK	50	0	Back	10mm	55830	3609	20.88	22.50	1.452	62.9	1.006	-0.14	0.288	0.421
	LTE Band 48_Ant 4	20M	QPSK	1	0	Top Side	10mm	55830	3609	21.13	23.00	1.538	62.9	1.006	-0.18	0.414	0.640
	LTE Band 48_Ant 4	20M	QPSK	1	0	Top Side	10mm	55340	3560	21.02	23.00	1.578	62.9	1.006	0.05	0.394	0.625
	LTE Band 48_Ant 4	20M	QPSK	1	99	Top Side	10mm	56150	3641	21.09	23.00	1.552	62.9	1.006	0.09	0.386	0.603
	LTE Band 48_Ant 4	20M	QPSK	1	99	Top Side	10mm	56640	3690	21.09	23.00	1.552	62.9	1.006	0.01	0.389	0.608
	LTE Band 48_Ant 4	20M	QPSK	50	0	Top Side	10mm	55830	3609	20.88	22.50	1.452	62.9	1.006	0.01	0.308	0.450

<5G NR SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n25_Ant 2	40M	BPSK	1	1	Front	10mm	376500	1882.5	22.55	23.50	1.245	-0.03	0.544	0.677
	FR1 n25_Ant 2	40M	BPSK	108	54	Front	10mm	376500	1882.5	22.45	23.50	1.274	-0.14	0.524	0.667
12	FR1 n25_Ant 2	40M	BPSK	1	1	Back	10mm	376500	1882.5	22.55	23.50	1.245	0.04	0.590	0.734
	FR1 n25_Ant 2	40M	BPSK	108	54	Back	10mm	376500	1882.5	22.45	23.50	1.274	0.06	0.568	0.723
	FR1 n25_Ant 2	40M	BPSK	1	1	Right Side	10mm	376500	1882.5	22.55	23.50	1.245	-0.18	0.253	0.315
	FR1 n25_Ant 2	40M	BPSK	108	54	Right Side	10mm	376500	1882.5	22.45	23.50	1.274	0.12	0.218	0.278
	FR1 n25_Ant 2	40M	BPSK	1	1	Top Side	10mm	376500	1882.5	22.55	23.50	1.245	0.03	0.481	0.599
	FR1 n25_Ant 2	40M	BPSK	108	54	Top Side	10mm	376500	1882.5	22.45	23.50	1.274	0.05	0.450	0.573
	FR1 n25_Ant 0	40M	BPSK	1	1	Front	10mm	376500	1882.5	22.29	23.50	1.321	-0.02	0.386	0.510
	FR1 n25_Ant 0	40M	BPSK	108	54	Front	10mm	376500	1882.5	22.21	23.50	1.346	0.12	0.374	0.503
	FR1 n25_Ant 0	40M	BPSK	1	1	Back	10mm	376500	1882.5	22.29	23.50	1.321	-0.03	0.463	0.612
	FR1 n25_Ant 0	40M	BPSK	108	54	Back	10mm	376500	1882.5	22.21	23.50	1.346	-0.04	0.441	0.594
	FR1 n25_Ant 0	40M	BPSK	1	1	Left Side	10mm	376500	1882.5	22.29	23.50	1.321	0	0.230	0.304
	FR1 n25_Ant 0	40M	BPSK	108	54	Left Side	10mm	376500	1882.5	22.21	23.50	1.346	0.02	0.228	0.307
	FR1 n66_Ant 2	40M	BPSK	1	1	Front	10mm	349000	1745	22.48	23.50	1.265	0.11	0.434	0.549
	FR1 n66_Ant 2	40M	BPSK	108	54	Front	10mm	349000	1745	22.37	23.50	1.297	-0.14	0.408	0.529
	FR1 n66_Ant 2	40M	BPSK	1	1	Back	10mm	349000	1745	22.48	23.50	1.265	-0.03	0.484	0.612
	FR1 n66_Ant 2	40M	BPSK	108	54	Back	10mm	349000	1745	22.37	23.50	1.297	-0.05	0.446	0.579
	FR1 n66_Ant 2	40M	BPSK	1	1	Right Side	10mm	349000	1745	22.48	23.50	1.265	0.18	0.267	0.338
	FR1 n66_Ant 2	40M	BPSK	108	54	Right Side	10mm	349000	1745	22.37	23.50	1.297	0.07	0.258	0.335
	FR1 n66_Ant 2	40M	BPSK	1	1	Top Side	10mm	349000	1745	22.48	23.50	1.265	-0.02	0.387	0.489
	FR1 n66_Ant 2	40M	BPSK	108	54	Top Side	10mm	349000	1745	22.37	23.50	1.297	0.15	0.288	0.374
	FR1 n66_Ant 0	40M	BPSK	1	1	Front	10mm	349000	1745	22.37	23.50	1.297	0.1	0.589	0.764
	FR1 n66_Ant 0	40M	BPSK	108	54	Front	10mm	349000	1745	22.20	23.50	1.349	-0.09	0.574	0.774
13	FR1 n66_Ant 0	40M	BPSK	1	1	Back	10mm	349000	1745	22.37	23.50	1.297	-0.01	0.749	0.972
	FR1 n66_Ant 0	40M	BPSK	108	54	Back	10mm	349000	1745	22.20	23.50	1.349	0.06	0.715	0.965
	FR1 n66_Ant 0	40M	BPSK	216	0	Back	10mm	349000	1745	21.95	23.00	1.274	0.09	0.705	0.898
	FR1 n66_Ant 0	40M	BPSK	1	1	Left Side	10mm	349000	1745	22.37	23.50	1.297	-0.05	0.413	0.536
	FR1 n66_Ant 0	40M	BPSK	108	54	Left Side	10mm	349000	1745	22.20	23.50	1.349	0.1	0.408	0.550
	FR1 n71_Ant 0	20M	BPSK	1	1	Front	10mm	136100	680.5	22.23	22.50	1.064	0.16	0.348	0.371
	FR1 n71_Ant 0	20M	BPSK	50	28	Front	10mm	136100	680.5	22.16	22.50	1.081	-0.18	0.334	0.361
14	FR1 n71_Ant 0	20M	BPSK	1	1	Back	10mm	136100	680.5	22.23	22.50	1.064	-0.01	0.398	0.424
	FR1 n71_Ant 0	20M	BPSK	50	28	Back	10mm	136100	680.5	22.16	22.50	1.081	-0.18	0.386	0.417
	FR1 n71_Ant 0	20M	BPSK	1	1	Left Side	10mm	136100	680.5	22.23	22.50	1.064	-0.13	0.085	0.091
	FR1 n71_Ant 0	20M	BPSK	50	28	Left Side	10mm	136100	680.5	22.16	22.50	1.081	0.01	0.078	0.084
15	FR1 n41_Ant 3	100M	BPSK	1	1	Front	10mm	518598	2592.99	23.00	24.00	1.259	0.03	0.517	0.651
	FR1 n41_Ant 3	100M	BPSK	135	69	Front	10mm	518598	2592.99	22.76	24.00	1.330	0.08	0.484	0.644
	FR1 n41_Ant 3	100M	BPSK	1	1	Back	10mm	518598	2592.99	23.00	24.00	1.259	0	0.300	0.378
	FR1 n41_Ant 3	100M	BPSK	135	69	Back	10mm	518598	2592.99	22.76	24.00	1.330	0.09	0.296	0.394
	FR1 n41_Ant 3	100M	BPSK	1	1	Top Side	10mm	518598	2592.99	23.00	24.00	1.259	-0.16	0.480	0.605
	FR1 n41_Ant 3	100M	BPSK	135	69	Top Side	10mm	518598	2592.99	22.76	24.00	1.330	0.09	0.474	0.631

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n48_Ant 4	40M	BPSK	1	1	Front	10mm	641666	3624.99	21.10	21.50	1.096	-0.1	0.204	0.224
	FR1 n48_Ant 4	40M	BPSK	50	28	Front	10mm	641666	3624.99	21.03	21.50	1.114	0.06	0.232	0.259
	FR1 n48_Ant 4	40M	BPSK	1	1	Back	10mm	641666	3624.99	21.10	21.50	1.096	0.03	0.209	0.229
	FR1 n48_Ant 4	40M	BPSK	1	1	Back	10mm	638000	3570	20.75	21.50	1.189	0.08	0.212	0.252
16	FR1 n48_Ant 4	40M	BPSK	1	1	Back	10mm	645332	3679.98	20.82	21.50	1.169	0.02	0.233	0.272
	FR1 n48_Ant 4	40M	BPSK	50	28	Back	10mm	641666	3624.99	21.03	21.50	1.114	-0.19	0.198	0.221
	FR1 n48_Ant 4	40M	BPSK	1	1	Left Side	10mm	641666	3624.99	21.10	21.50	1.096	-0.08	0.086	0.094
	FR1 n48_Ant 4	40M	BPSK	50	28	Left Side	10mm	641666	3624.99	21.03	21.50	1.114	-0.15	0.071	0.079
	FR1 n48_Ant 4	40M	BPSK	1	1	Top Side	10mm	641666	3624.99	21.10	21.50	1.096	0	0.196	0.215
	FR1 n48_Ant 4	40M	BPSK	50	28	Top Side	10mm	641666	3624.99	21.03	21.50	1.114	0.16	0.217	0.242
	FR1 n77_Ant 4	100M	BPSK	1	1	Front	10mm	656000	3840	23.74	24.00	1.062	0.06	0.651	0.691
	FR1 n77_Ant 4	100M	BPSK	135	69	Front	10mm	656000	3840	23.60	24.00	1.096	0.03	0.643	0.705
17	FR1 n77_Ant 4	100M	BPSK	1	1	Back	10mm	656000	3840	23.74	24.00	1.062	-0.01	0.808	0.858
	FR1 n77_Ant 4	100M	BPSK	135	69	Back	10mm	656000	3840	23.60	24.00	1.096	0.02	0.744	0.816
	FR1 n77_Ant 4	100M	BPSK	270	0	Back	10mm	656000	3840	23.47	23.50	1.007	0.08	0.741	0.746
	FR1 n77_Ant 4	100M	BPSK	1	1	Left Side	10mm	656000	3840	23.74	24.00	1.062	0.11	0.081	0.087
	FR1 n77_Ant 4	100M	BPSK	135	69	Left Side	10mm	656000	3840	23.60	24.00	1.096	0.19	0.078	0.086
	FR1 n77_Ant 4	100M	BPSK	1	1	Top Side	10mm	656000	3840	23.74	24.00	1.062	-0.14	0.755	0.801
	FR1 n77_Ant 4	100M	BPSK	135	69	Top Side	10mm	656000	3840	23.60	24.00	1.096	-0.06	0.743	0.815
	FR1 n77_Ant 4	100M	BPSK	270	0	Top Side	10mm	656000	3840	23.47	23.50	1.007	0.09	0.736	0.741
	FR1 n77_HPUE_Ant 4	100M	BPSK	1	271	Back	10mm	656000	3840	24.64	26.00	1.368	-0.14	0.522	0.714
	FR1 n77_Ant 4	100M	BPSK	1	1	Front	10mm	633332	3499.98	23.47	24.00	1.130	-0.01	0.113	0.127
	FR1 n77_Ant 4	100M	BPSK	135	69	Front	10mm	633332	3499.98	23.25	24.00	1.189	-0.11	0.104	0.124
	FR1 n77_Ant 4	100M	BPSK	1	1	Back	10mm	633332	3499.98	23.47	24.00	1.130	0.13	0.135	0.153
	FR1 n77_Ant 4	100M	BPSK	135	69	Back	10mm	633332	3499.98	23.25	24.00	1.189	-0.1	0.124	0.147
	FR1 n77_Ant 4	100M	BPSK	1	1	Left Side	10mm	633332	3499.98	23.47	24.00	1.130	-0.09	0.014	0.016
	FR1 n77_Ant 4	100M	BPSK	135	69	Left Side	10mm	633332	3499.98	23.25	24.00	1.189	0.09	0.008	0.010
	FR1 n77_Ant 4	100M	BPSK	1	1	Top Side	10mm	633332	3499.98	23.47	24.00	1.130	-0.1	0.012	0.014
	FR1 n77_Ant 4	100M	BPSK	135	69	Top Side	10mm	633332	3499.98	23.25	24.00	1.189	0.02	0.006	0.007
	FR1 n77_HPUE_Ant 4	100M	BPSK	1	1	Back	10mm	633332	3499.98	24.64	26.00	1.368	0.02	0.081	0.111

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 6+7(6)	6	2437	17.44	18.50	1.275	98.29	1.017	-0.13	0.078	0.101
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 6+7(7)	6	2437	18.20	18.50	1.073	98.29	1.017	-0.13	0.028	0.031
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 6+7(6)	6	2437	17.44	18.50	1.275	98.29	1.017	-0.11	0.070	0.091
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 6+7(7)	6	2437	18.20	18.50	1.073	98.29	1.017	-0.11	0.026	0.028
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 6+7(6)	6	2437	17.44	18.50	1.275	98.29	1.017	-0.12	0.069	0.089
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 6+7(7)	6	2437	18.20	18.50	1.073	98.29	1.017	-0.12	0.018	0.020
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 6+7(6)	6	2437	17.44	18.50	1.275	98.29	1.017	0.06	0.001	0.001
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 6+7(7)	6	2437	18.20	18.50	1.073	98.29	1.017	0.06	0.001	0.001
18	WLAN2.4GHz	802.11b 1Mbps	Bottom Side	10mm	Ant 6+7(6)	6	2437	17.44	18.50	1.275	98.29	1.017	-0.04	0.086	0.112
	WLAN2.4GHz	802.11b 1Mbps	Bottom Side	10mm	Ant 6+7(7)	6	2437	18.20	18.50	1.073	98.29	1.017	-0.04	0.032	0.035
	WLAN5GHz	802.11ax-HE80 MCS0	Front	10mm	Ant 6+7(6)	42	5210	12.28	13.50	1.324	99.35	1.007	-0.11	0.141	0.188
	WLAN5GHz	802.11ax-HE80 MCS0	Front	10mm	Ant 6+7(7)	42	5210	12.46	13.50	1.271	99.35	1.007	-0.11	0.052	0.067
19	WLAN5GHz	802.11ax-HE80 MCS0	Back	10mm	Ant 6+7(6)	42	5210	12.28	13.50	1.324	99.35	1.007	0.1	0.231	0.308
	WLAN5GHz	802.11ax-HE80 MCS0	Back	10mm	Ant 6+7(7)	42	5210	12.46	13.50	1.271	99.35	1.007	0.1	0.093	0.119
	WLAN5GHz	802.11ax-HE80 MCS0	Right Side	10mm	Ant 6+7(6)	42	5210	12.28	13.50	1.324	99.35	1.007	0.15	0.121	0.161
	WLAN5GHz	802.11ax-HE80 MCS0	Right Side	10mm	Ant 6+7(7)	42	5210	12.46	13.50	1.271	99.35	1.007	0.15	0.038	0.049
	WLAN5GHz	802.11ax-HE80 MCS0	Top Side	10mm	Ant 6+7(6)	42	5210	12.28	13.50	1.324	99.35	1.007	-0.14	0.093	0.124
	WLAN5GHz	802.11ax-HE80 MCS0	Top Side	10mm	Ant 6+7(7)	42	5210	12.46	13.50	1.271	99.35	1.007	-0.14	0.041	0.052
	WLAN5GHz	802.11ax-HE80 MCS0	Bottom Side	10mm	Ant 6+7(6)	42	5210	12.28	13.50	1.324	99.35	1.007	-0.11	0.217	0.289
	WLAN5GHz	802.11ax-HE80 MCS0	Bottom Side	10mm	Ant 6+7(7)	42	5210	12.46	13.50	1.271	99.35	1.007	-0.11	0.084	0.107
	WLAN5GHz	802.11ax-HE80 MCS0	Front	10mm	Ant 6+7(6)	155	5775	13.11	13.50	1.094	99.35	1.007	0.12	0.259	0.285
	WLAN5GHz	802.11ax-HE80 MCS0	Front	10mm	Ant 6+7(7)	155	5775	12.77	13.50	1.183	99.35	1.007	0.12	0.081	0.096
20	WLAN5GHz	802.11ax-HE80 MCS0	Back	10mm	Ant 6+7(6)	155	5775	13.11	13.50	1.094	99.35	1.007	-0.09	0.296	0.326
	WLAN5GHz	802.11ax-HE80 MCS0	Back	10mm	Ant 6+7(7)	155	5775	12.77	13.50	1.183	99.35	1.007	-0.09	0.083	0.099
	WLAN5GHz	802.11ax-HE80 MCS0	Right Side	10mm	Ant 6+7(6)	155	5775	13.11	13.50	1.094	99.35	1.007	-0.15	0.062	0.068
	WLAN5GHz	802.11ax-HE80 MCS0	Right Side	10mm	Ant 6+7(7)	155	5775	12.77	13.50	1.183	99.35	1.007	-0.15	0.012	0.014
	WLAN5GHz	802.11ax-HE80 MCS0	Top Side	10mm	Ant 6+7(6)	155	5775	13.11	13.50	1.094	99.35	1.007	-0.06	0.085	0.094
	WLAN5GHz	802.11ax-HE80 MCS0	Top Side	10mm	Ant 6+7(7)	155	5775	12.77	13.50	1.183	99.35	1.007	-0.06	0.013	0.015
	WLAN5GHz	802.11ax-HE80 MCS0	Bottom Side	10mm	Ant 6+7(6)	155	5775	13.11	13.50	1.094	99.35	1.007	0.18	0.283	0.312
	WLAN5GHz	802.11ax-HE80 MCS0	Bottom Side	10mm	Ant 6+7(7)	155	5775	12.77	13.50	1.183	99.35	1.007	0.18	0.081	0.096

14.2 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA IV_Ant 0	RMC 12.2Kbps	Back	10mm	1312	1712.4	22.96	23.50	1.132	0.02	0.974	-	1.103
2nd	WCDMA IV_Ant 0	RMC 12.2Kbps	Back	10mm	1312	1712.4	22.96	23.50	1.132	-0.01	0.968	1.006	1.096
1st	WCDMA V_Ant 0	RMC 12.2Kbps	Back	10mm	4132	826.4	23.81	25.00	1.315	0.02	0.822	-	1.081
2nd	WCDMA V_Ant 0	RMC 12.2Kbps	Back	10mm	4132	826.4	23.81	25.00	1.315	-0.1	0.814	1.01	1.071
1st	FR1 n77_Ant 4	100M_BPSK_1_1	Back	10mm	656000	3840	23.74	24.00	1.062	-0.01	0.808	-	0.858
2nd	FR1 n77_Ant 4	100M_BPSK_1_1	Back	10mm	656000	3840	23.74	24.00	1.062	0	0.794	0.018	0.843

General Note:

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

14.3 LTE Band 41 Power Class 2 and Power Class 3 Linearity

This device support Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operation is 43.3% using UL-DL configuration 1. Per FCC Guidance based on the device behavior, all SAR tests were performed using Power Class 3. Power Class 2 is tested using the highest SAR test configuration in Power Class 3 for each LTE configuration and exposure condition combination, according to the highest time averaged power for all applicable uplink-downlink configurations in Power Class 2. When the reported SAR vs. output power is linearly scaled with < 10% discrepancy between power classes and all reported SAR are < 1.4 W/kg, Separate SAR testing for Power Class 2 is not required
Use PC3 power level and SAR to estimated PC2 SAR linearly, and check if the deviation from the measured PC2 SAR is <10%

	LTE Band 41_Ant 0	LTE Band 41_Ant 0
	(Power Class 3)	(Power Class 2)
Maximum Tune up Power (dBm)	24	26
Reported 1g SAR (W/kg)	0.968	1.018
Duty Cycle	62.90%	42.90%
Frame Averaged (mW)	158.00	170.79
Linearity SAR(W/kg)	1.05	
% deviation from expected linearity		-2.71%

14.4 FR1 n77 Power Class 2 and Power Class 3 Linearity

This device support Power Class 2 and Power Class 3 operations for FR1 n77. The highest available duty cycle for Power Class 2 operation is 50% using UL-DL configuration 1. Per FCC Guidance based on the device behavior, all SAR tests were performed using Power Class 3. Power Class 2 is tested using the highest SAR test configuration in Power Class 3 for each FR1 configuration and exposure condition combination, according to the highest time averaged power for all applicable uplink-downlink configurations in Power Class 2. When the reported SAR vs. output power is linearly scaled with < 10% discrepancy between power classes and all reported SAR are < 1.4 W/kg, Separate SAR testing for Power Class 2 is not required.
Use PC3 power level and SAR to estimated PC2 SAR linearly, and check if the deviation from the measured PC2 SAR is <10%

<FR1 n77 (3700 MHz ~ 3980 MHz)>

	FR1 n77_Ant 4 (Par27O)	FR1 n77_Ant 4 (Par27O)
	(Power Class 3)	(Power Class 2)
Maximum Tune up Power (dBm)	24	26
Reported 1g SAR (W/kg)	0.858	0.714
Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	251.19	199.05
Linearity SAR(W/kg)	0.68	
% deviation from expected linearity		5.01%

<FR1 n77 (3450MHz ~ 3550MHz)>

	FR1 n77_Ant 4 (Par27Q)	FR1 n77_Ant 4 (Par27Q)
	(Power Class 3)	(Power Class 2)
Maximum Tune up Power (dBm)	24	26
Reported 1g SAR (W/kg)	0.153	0.111
Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	251.19	199.05
Linearity SAR(W/kg)	0.12	
% deviation from expected linearity		-8.45%

15. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Hotspot
1	WWAN + WLAN2.4GHz Antenna 6 + WLAN 2.4GHz Antenna 7	Yes
2	WWAN+WLAN 5GHz Antenna 6 + WLAN 5GHz Antenna 7	Yes
3	LTE+FR1+ WLAN2.4GHz Antenna 6 + WLAN 2.4GHz Antenna 7	Yes
4	LTE+FR1+WLAN 5GHz Antenna 6 + WLAN 5GHz Antenna 7	Yes
5	WWAN + WLAN 2.4G MIMO + WLAN 5GHz MIMO	Yes
6	LTE+FR1 +WLAN 2.4G MIMO + WLAN 5GHz MIMO	Yes

General Note:

1. The worst case WLAN reported SAR for each configuration was used for SAR summation. Therefore, the following summations represent the absolute worst cases for simultaneous transmission with WLAN.
2. The Scaled SAR summation is calculated based on the same configuration and test position.
3. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
   v) The SPLSR calculated results please refer to section 15.2.

15.1 Hotspot Exposure Conditions

WWAN Band	FR1 Band	Exposure Position	1	2	3	4	5	6	1+2+3+5 Summed 1g SAR (W/kg)	SPLSR	Case No
			WWAN	FR1	WLAN2.4GHz Ant 6+7(6)	WLAN2.4GHz Ant 6+7(7)	WLAN5GHz Ant 6+7(6)	WLAN5GHz Ant 6+7(7)			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
WCDMA II Ant 0		Front	0.513		0.101	0.031	0.285	0.096	**0.899**		
		Back	0.880		0.091	0.028	0.326	0.119	**1.297**		
		Left side	0.665						**0.665**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side			0.001	0.001	0.124	0.052	**0.125**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
WCDMA IV Ant 0		Front	0.735		0.101	0.031	0.285	0.096	**1.121**		
		Back	1.103		0.091	0.028	0.326	0.119	**1.520**		
		Left side	0.441						**0.441**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side			0.001	0.001	0.124	0.052	**0.125**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
WCDMA V Ant 0		Front	1.078		0.101	0.031	0.285	0.096	**1.464**		
		Back	1.081		0.091	0.028	0.326	0.119	**1.498**		
		Left side	0.175						**0.175**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side			0.001	0.001	0.124	0.052	**0.125**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
LTE Band 2 Ant 0		Front	0.544		0.101	0.031	0.285	0.096	**0.930**		
		Back	0.750		0.091	0.028	0.326	0.119	**1.167**		
		Left side	0.327						**0.327**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side			0.001	0.001	0.124	0.052	**0.125**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
LTE Band 12 Ant 0		Front	0.747		0.101	0.031	0.285	0.096	**1.133**		
		Back	0.678		0.091	0.028	0.326	0.119	**1.095**		
		Left side	0.083						**0.083**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side			0.001	0.001	0.124	0.052	**0.125**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
LTE Band 25 Ant 0		Front	0.440		0.101	0.031	0.285	0.096	**0.826**		
		Back	0.695		0.091	0.028	0.326	0.119	**1.112**		
		Left side	0.433						**0.433**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side			0.001	0.001	0.124	0.052	**0.125**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
LTE Band 26 Ant 0		Front	0.706		0.101	0.031	0.285	0.096	**1.092**		
		Back	0.759		0.091	0.028	0.326	0.119	**1.176**		
		Left side	0.221						**0.221**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side			0.001	0.001	0.124	0.052	**0.125**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
LTE Band 66 Ant 0		Front	0.362		0.101	0.031	0.285	0.096	**0.748**		
		Back	0.750		0.091	0.028	0.326	0.119	**1.167**		
		Left side	0.313						**0.313**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side			0.001	0.001	0.124	0.052	**0.125**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
LTE Band 71 Ant 0		Front	0.391		0.101	0.031	0.285	0.096	**0.777**		
		Back	0.625		0.091	0.028	0.326	0.119	**1.042**		
		Left side	0.054						**0.054**		

		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side			0.001	0.001	0.124	0.052	**0.125**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
LTE Band 41 Ant 0		Front	0.150		0.101	0.031	0.285	0.096	**0.536**		
		Back	0.465		0.091	0.028	0.326	0.119	**0.882**		
		Left side	1.018						**1.018**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side			0.001	0.001	0.124	0.052	**0.125**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
LTE Band 48 Ant 4		Front	0.319		0.101	0.031	0.285	0.096	**0.705**		
		Back	0.643		0.091	0.028	0.326	0.119	**1.060**		
		Left side							**0.000**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side	0.640		0.001	0.001	0.124	0.052	**0.765**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
	FR1 n25 Ant 2	Front		0.677	0.101	0.031	0.285	0.096	**1.063**		
		Back		0.734	0.091	0.028	0.326	0.119	**1.151**		
		Left side							**0.000**		
		Right side		0.315	0.089	0.020	0.161	0.049	**0.565**		
		Top side		0.599	0.001	0.001	0.124	0.052	**0.724**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
	FR1 n66 Ant 2	Front		0.549	0.101	0.031	0.285	0.096	**0.935**		
		Back		0.612	0.091	0.028	0.326	0.119	**1.029**		
		Left side							**0.000**		
		Right side		0.338	0.089	0.020	0.161	0.049	**0.588**		
		Top side		0.489	0.001	0.001	0.124	0.052	**0.614**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
	FR1 n71 Ant 0	Front		0.371	0.101	0.031	0.285	0.096	**0.757**		
		Back		0.424	0.091	0.028	0.326	0.119	**0.841**		
		Left side		0.091					**0.091**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side			0.001	0.001	0.124	0.052	**0.125**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
	FR1 n41 Ant 3	Front		0.651	0.101	0.031	0.285	0.096	**1.037**		
		Back		0.394	0.091	0.028	0.326	0.119	**0.811**		
		Left side							**0.000**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side		0.631	0.001	0.001	0.124	0.052	**0.756**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
	FR1 n48 Ant 4	Front		0.259	0.101	0.031	0.285	0.096	**0.645**		
		Back		0.272	0.091	0.028	0.326	0.119	**0.689**		
		Left side		0.094					**0.094**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side		0.242	0.001	0.001	0.124	0.052	**0.367**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
	FR1 n77 Ant 4	Front		0.705	0.101	0.031	0.285	0.096	**1.091**		
		Back		0.858	0.091	0.028	0.326	0.119	**1.275**		
		Left side		0.087					**0.087**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side		0.815	0.001	0.001	0.124	0.052	**0.940**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
LTE Band 66 Ant 0	FR1 n71 Ant 0	Front	0.362	0.371	0.101	0.031	0.285	0.096	**1.119**		
		Back	0.750	0.424	0.091	0.028	0.326	0.119	**1.591**		
		Left side	0.313	0.091					**0.404**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side			0.001	0.001	0.124	0.052	**0.125**		

		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
LTE Band 2 Ant 0	FR1 n71 Ant 0	Front	0.544	0.371	0.101	0.031	0.285	0.096	**1.301**		
		Back	0.750	0.424	0.091	0.028	0.326	0.119	**1.591**		
		Left side	0.327	0.091					**0.418**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side			0.001	0.001	0.124	0.052	**0.125**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
LTE Band 2 Ant 0	FR1 n66 Ant 2	Front	0.544	0.549	0.101	0.031	0.285	0.096	**1.479**		
		Back	0.750	0.612	0.091	0.028	0.326	0.119	**1.779**	0.03	Case 1
		Left side	0.327						**0.327**		
		Right side		0.338	0.089	0.020	0.161	0.049	**0.588**		
		Top side		0.489	0.001	0.001	0.124	0.052	**0.614**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
LTE Band 48 Ant 4	FR1 n66 Ant 0	Front	0.319	0.774	0.101	0.031	0.285	0.096	**1.479**		
		Back	0.643	0.972	0.091	0.028	0.326	0.119	**2.032**	0.04	Case 2
		Left side		0.550					**0.550**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side	0.640		0.001	0.001	0.124	0.052	**0.765**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
LTE Band 2 Ant 0	FR1 n41 Ant 3	Front	0.544	0.651	0.101	0.031	0.285	0.096	**1.581**		
		Back	0.750	0.394	0.091	0.028	0.326	0.119	**1.561**		
		Left side	0.327						**0.327**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side		0.631	0.001	0.001	0.124	0.052	**0.756**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
LTE Band 66 Ant 0	FR1 n41 Ant 3	Front	0.362	0.651	0.101	0.031	0.285	0.096	**1.399**		
		Back	0.750	0.394	0.091	0.028	0.326	0.119	**1.561**		
		Left side	0.313						**0.313**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side		0.631	0.001	0.001	0.124	0.052	**0.756**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
LTE Band 66 Ant 0	FR1 n25 Ant 2	Front	0.362	0.677	0.101	0.031	0.285	0.096	**1.425**		
		Back	0.750	0.734	0.091	0.028	0.326	0.119	**1.901**	0.02	Case 3
		Left side	0.313						**0.313**		
		Right side		0.315	0.089	0.020	0.161	0.049	**0.565**		
		Top side		0.599	0.001	0.001	0.124	0.052	**0.724**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		
LTE Band 48 Ant 4	FR1 n25 Ant 0	Front	0.319	0.510	0.101	0.031	0.285	0.096	**1.215**		
		Back	0.643	0.612	0.091	0.028	0.326	0.119	**1.672**	0.04	Case 4
		Left side		0.307					**0.307**		
		Right side			0.089	0.020	0.161	0.049	**0.250**		
		Top side	0.640		0.001	0.001	0.124	0.052	**0.765**		
		Bottom side			0.112	0.035	0.312	0.107	**0.424**		

15.2 SPLSR Evaluation and Analysis

General Note:

1. Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneously transmitting antenna. When the sum of 1-g or 10-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration. Therefore, the adjacent transmit antennas will be summed first, and then the SPLSR calculation will be evaluated with the farther transmitted antennas.
2. SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*). If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary
3. The detail hotspot point for each transmitter in each exposure condition are showing as below figure and the minimum 3D distance for each sum combination is used for SPLSR analysis.

Back

	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 1	LTE Band 2 Ant 0	Back	0.750	0mm	-20.8	-46.8	-177	61.4	1.17	0.02	Not required
	WLAN2.4G Ant 6+WLAN5G Ant 6		0.417	0mm	-39	11.8	-177				
	LTE Band 2 Ant 0	Back	0.750	0mm	-20.8	-46.8	-177	24.3	0.90	0.03	Not required
	WLAN2.4G Ant 7+WLAN5G Ant 7		0.147	0mm	-37.6	-29.2	-177				
	FR1 n66 Ant 2	Back	0.612	0mm	27.8	24.8	-177	55.0	1.03	0.02	Not required
	WLAN2.4G Ant 6+WLAN5G Ant 6		0.417	0mm	-27.2	26	-177				
	FR1 n66 Ant 2	Back	0.612	0mm	27.8	24.8	-177	32.9	0.76	0.02	Not required
	WLAN2.4G Ant 7+WLAN5G Ant 7		0.147	0mm	40	-5.8	-177				
	LTE Band 2 Ant 0	Back	0.750	0mm	-20.8	-46.8	-177	86.5	1.36	0.02	Not required
	FR1 n66 Ant 2		0.612	0mm	27.8	24.8	-177				
	WLAN2.4G Ant 6+WLAN5G Ant 6	Back	0.417	0mm	-39	11.8	-177	41.0	0.56	0.01	Not required
	WLAN2.4G Ant 7+WLAN5G Ant 7		0.147	0mm	-37.6	-29.2	-177				

	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 2	LTE Band 48 Ant 4	Back	0.643	0mm	18	-45.2	-177	80.6	1.06	0.01	Not required
	WLAN2.4G Ant 6+WLAN5G Ant 6		0.417	0mm	-39	11.8	-177				
	LTE Band 48 Ant 4	Back	0.643	0mm	18	-45.2	-177	26.8	0.79	0.03	Not required
	WLAN2.4G Ant 7+WLAN5G Ant 7		0.147	0mm	36	-25.3	-177				
	FR1 n66 Ant 0	Back	1.003	0mm	11.2	-54.6	-177	83.2	1.42	0.02	Not required
	WLAN2.4G Ant 6+WLAN5G Ant 6		0.417	0mm	-39	11.8	-177				
	FR1 n66 Ant 0	Back	1.003	0mm	11.2	-54.6	-177	38.4	1.15	0.03	Not required
	WLAN2.4G Ant 7+WLAN5G Ant 7		0.147	0mm	36	-25.3	-177				
	LTE Band 48 Ant 4	Back	0.643	0mm	18	-45.2	-177	51.3	1.65	0.04	Not required
	FR1 n66 Ant 0		1.003	0mm	-30.8	-61.1	-177				
	WLAN2.4G Ant 6+WLAN5G Ant 6	Back	0.417	0mm	-39	11.8	-177	41.0	0.56	0.01	Not required
	WLAN2.4G Ant 7+WLAN5G Ant 7		0.147	0mm	-37.6	-29.2	-177				

	Band	Position	SAR (W/kg)	Gap	SAR peak location (cm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 3	LTE Band 66 Ant 0	Back	0.750	0mm	16.2	-59.4	-177	90.1	1.17	0.01	Not required
	WLAN2.4G Ant 6+WLAN5G Ant 6		0.417	0mm	-39	11.8	-177				
	LTE Band 66 Ant 0	Back	0.750	0mm	16.2	-59.4	-177	39.4	0.90	0.02	Not required
	WLAN2.4G Ant 7+WLAN5G Ant 7		0.147	0mm	36	-25.3	-177				
	FR1 n25 Ant 2	Back	0.734	0mm	28.4	29.8	-177	55.7	1.15	0.02	Not required
	WLAN2.4G Ant 6+WLAN5G Ant 6		0.417	0mm	-27.2	26	-177				
	FR1 n25 Ant 2	Back	0.734	0mm	28.4	29.8	-177	37.4	0.88	0.02	Not required
	WLAN2.4G Ant 7+WLAN5G Ant 7		0.147	0mm	40	-5.8	-177				
	LTE Band 66 Ant 0	Back	0.750	0mm	16.2	-59.4	-177	90.0	1.48	0.02	Not required
	FR1 n25 Ant 2		0.734	0mm	28.4	29.8	-177				
	WLAN2.4G Ant 6+WLAN5G Ant 6	Back	0.417	0mm	-39	11.8	-177	41.0	0.56	0.01	Not required
	WLAN2.4G Ant 7+WLAN5G Ant 7		0.147	0mm	-37.6	-29.2	-177				

	Band	Position	SAR (W/kg)	Gap	SAR peak location (cm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 4	LTE Band 48 Ant 4	Back	0.643	0mm	18	-45.2	-177	80.6	1.06	0.01	Not required
	WLAN2.4G Ant 6+WLAN5G Ant 6		0.417	0mm	-39	11.8	-177				
	LTE Band 48 Ant 4	Back	0.643	0mm	18	-45.2	-177	26.8	0.79	0.03	Not required
	WLAN2.4G Ant 7+WLAN5G Ant 7		0.147	0mm	36	-25.3	-177				
	FR1 n25 Ant 0	Back	0.612	0mm	-19.1	-40.6	-177	56.1	1.03	0.02	Not required
	WLAN2.4G Ant 6+WLAN5G Ant 6		0.417	0mm	-39	11.8	-177				
	FR1 n25 Ant 0	Back	0.612	0mm	-19.1	-40.6	-177	21.7	0.76	0.03	Not required
	WLAN2.4G Ant 7+WLAN5G Ant 7		0.147	0mm	-37.6	-29.2	-177				
	LTE Band 48 Ant 4	Back	0.643	0mm	18	-45.2	-177	37.4	1.26	0.04	Not required
	FR1 n25 Ant 0		0.612	0mm	-19.1	-40.6	-177				
	WLAN2.4G Ant 6+WLAN5G Ant 6	Back	0.417	0mm	-39	11.8	-177	41.0	0.56	0.01	Not required
	WLAN2.4G Ant 7+WLAN5G Ant 7		0.147	0mm	-37.6	-29.2	-177				

Test Engineer： Bob Cheng, Rain Chiu and **Jimmy Lu**

16. 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 ≤ 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. Therefore, the measurement uncertainty table is not required in this report.
Declaration of Conformity:
The test results with all measurement uncertainty excluded is 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.

17. 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 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

[6] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

[7] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015

[8] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015

[9] FCC KDB 941225 D05A v01r02, “Rel. 10 LTE SAR Test Guidance and KDB Inquiries”, Oct 2015

[10] FCC KDB 941225 D06 v02r01 , "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 201 5

[11] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[12] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.