

# FCC SAR TEST REPORT

FCC ID : XMR2024AG555QGL  
Equipment : 5G NR Module  
Brand Name : Quectel  
Model Name : AG555Q-GL  
Applicant : Quectel Wireless Solutions Company Limited  
Building 5, Shanghai Business Park Phase III, (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233 China  
Standard : FCC 47 CFR Part 2 (2.1093)

The device is integrated into a TCU with the brand name: Tesla, model name: 1763104 and tested.

The product was received on Apr. 10, 2024 and testing was started from Apr. 11, 2024 and completed on Apr. 17, 2024. 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. Wensan Laboratory**

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### History of this test report

Report No.	Version	Description	Issued Date
FA460704A	01	Initial issue of report	Aug. 12, 2024



### 1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) for Quectel Wireless Solutions Company Limited, 5G NR Module, AG555Q-GL, are as follows.

Equipment Class	Frequency Band		Highest SAR Summary
			Head (Separation 25mm)
			1g SAR (W/kg)
Licensed	GSM	GSM850	0.89
		GSM1900	0.53
	WCDMA	WCDMA II	0.74
		WCDMA IV	0.76
		WCDMA V	0.74
	LTE	LTE Band 7	0.94
		LTE Band 12 / 17	0.31
		LTE Band 13	0.50
		LTE Band 14	0.45
		LTE Band 25 / 2	0.66
		LTE Band 26 / 5	0.62
		LTE Band 66 / 4	0.70
		LTE Band 71	0.36
		LTE Band 41 / 38	0.63
		LTE Band 42	0.33
		LTE Band 48	0.42
	FR1	FR1 n7	0.90
		FR1 n12	0.29
		FR1 n25 / n2	0.60
		FR1 n26 / n5	0.66
		FR1 n66	0.68
		FR1 n71	0.34
		FR1 n41 / n38	0.50
FR1 n48	0.48		
FR1 n77 / n78	0.95		
Date of Testing:			2024/4/11 ~ 2024/4/17

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation and the FCC designation No. TW3786 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: Carlie Tsai

### 2. 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 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05



### 3. Equipment Under Test (EUT) Information

#### 3.1 General Information

Product Feature & Specification	
Equipment Name	5G NR Module
Brand Name	Quectel
Model Name	AG555Q-GL
FCC ID	XMR2024AG555QGL
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3450 MHz ~ 3550 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n12 : 699 MHz ~ 716 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n26 : 814 MHz ~ 849 MHz 5G NR n38 : 2570 MHz ~ 2620 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, 3450 MHz ~ 3550 MHz 5G NR n78: 3700 MHz ~ 3800 MHz, 3450 MHz ~ 3550 MHz
Mode	GPRS/EGPRS RMC 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+ (16QAM uplink) LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
Remark:	<ol style="list-style-type: none"> <li>The device also supports WiFi/BT transmitters and RF Exposure assessment include in FCC ID: XMR202401AF68E, Sporton SAR Report No.: FA460704B.</li> <li>When WWAN radio turn on, WiFi/BT is off, when turn on WiFi/BT operation that Cellular modem will sleep, therefore, WWAN / WLAN / BT will not transmit simultaneous at same time.</li> </ol>



**3.2 General LTE SAR Test and Reporting Considerations**

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	XMR2024AG555QGL																																																														
Equipment Name	5G NR Module																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3450 MHz ~ 3550 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz																																																														
Channel Bandwidth	LTE Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 14: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 25: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 42: 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																																																														
uplink modulations used	QPSK / 16QAM / 64QAM																																																														
LTE Voice / Data requirements	Data only																																																														
LTE MPR permanently built-in by design	<p><b>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N<sub>RB</sub>)</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 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>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 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>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (N <sub>RB</sub> )						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
Modulation	Channel bandwidth / Transmission bandwidth (N <sub>RB</sub> )						MPR (dB)																																																								
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz																																																									
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																																								
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																																								
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																																								
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64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3																																																								
256 QAM	≥ 1						≤ 5																																																								
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																																														
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																														



Transmission (H, M, L) channel numbers and frequencies in each LTE band																
LTE Band 2																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860				
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880				
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900				
LTE Band 4																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720				
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5				
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745				
LTE Band 5																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	20407	824.7	20415	825.5	20425	826.5	20450	829	20450	829	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5				
H	20643	848.3	20635	847.5	20625	846.5	20600	844	20600	844	20600	844				
LTE Band 7																
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510	20850	2510	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535				
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560	21350	2560	21350	2560				
LTE Band 12																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	23017	699.7	23025	700.5	23035	701.5	23060	704	23060	704	23060	704				
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5				
H	23173	715.3	23165	714.5	23155	713.5	23130	711	23130	711	23130	711				
LTE Band 13																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23205		779.5		23230		782		23255		784.5		23280		787	
M	23230		782		23255		784.5		23280		787		23305		789.5	
H	23255		784.5		23280		787		23305		789.5		23330		792	
LTE Band 14																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Channel #		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23305		790.5		23330		793		23355		795.5		23380		798	
M	23330		793		23355		795.5		23380		798		23405		800.5	
H	23355		795.5		23380		798		23405		800.5		23430		803	
LTE Band 17																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)		Channel #		Freq. (MHz)		Channel #		Freq. (MHz)	
L	23755		706.5		23780		709		23805		711.5		23830		714	
M	23790		710		23815		713		23840		715.5		23865		718	
H	23825		713.5		23850		716		23875		718.5		23900		721	



LTE Band 25												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905
LTE Band 26												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5	26965	841.5
LTE Band 38												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 20 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580	37850	2580	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610	38150	2610	38150	2610
LTE Band 41												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 20 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506	39750	2506	39750	2506
L	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5	40185	2549.5	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593	40620	2593	40620	2593
H	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5	41055	2636.5	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680	41490	2680	41490	2680
LTE Band 42												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 20 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	42115	3452.5	42140	3455	42165	3457.5	42190	3460	42190	3460	42190	3460
M	42590	3500	42590	3500	42590	3500	42590	3500	42590	3500	42590	3500
H	43065	3547.5	43040	3545	43015	3542.5	42990	3540	42990	3540	42990	3540
LTE Band 48												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 20 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	55265	3552.5	55290	3555	55315	3557.5	55340	3560	55340	3560	55340	3560
L	55810	3607	55815	3607.5	55820	3608	55830	3609	55830	3609	55830	3609
M	56170	3643	56165	3642.5	56160	3642	56150	3641	56150	3641	56150	3641
H	56715	3697.5	56690	3695	56665	3692.5	56640	3690	56640	3690	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		Bandwidth 20 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	133147	665.5	133172	668	133197	670.5	133222	673	133222	673	133222	673
M	133297	680.5	133297	680.5	133297	680.5	133297	680.5	133297	680.5	133297	680.5
H	133447	695.5	133422	693	133397	690.5	133372	688	133372	688	133372	688





3.3 General 5G NR SAR Test and Reporting Considerations

5G NR Information														
FCC ID		XMR2024AG555QGL												
Equipment Name		5G NR Module												
Operating Frequency Range of each 5G NR transmission band		5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n12 : 699 MHz ~ 716 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n26 : 814 MHz ~ 849 MHz 5G NR n38 : 2570 MHz ~ 2620 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, 3450 MHz ~ 3550 MHz 5G NR n78: 3700 MHz ~ 3800 MHz, 3450 MHz ~ 3550 MHz												
Channel Bandwidth		5G NR n2: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n5: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n7: 5MHz, 10MHz, 15MHz, 20MHz, 25 MHz, 30MHz, 40MHz 5G NR n12: 5MHz, 10MHz, 15MHz 5G NR n25: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n26: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n38: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n41: 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 80MHz, 90MHz, 100MHz 5G NR n48: 20MHz, 40MHz 5G NR n66: 5MHz, 10MHz, 15MHz, 20MHz, 25 MHz, 30MHz, 40MHz 5G NR n71: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n77: 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 80MHz, 90MHz, 100MHz 5G NR n78: 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 80MHz, 90MHz, 100MHz												
SCS		FDD: SCS15KHz, TDD: SCS30KHz												
uplink modulations used		DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM QPSK / 16QAM / 64QAM / 256QAM												
A-MPR (Additional MPR) disabled for SAR Testing?		Yes												
NR Band 2														
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz							
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)						
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860						
M	376000	1880	376000	1880	376000	1880	376000	1880						
H	381500	1907.5	381000	1905	380500	1902.5	380000	1900						
NR Band 5														
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz							
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)						
L	165300	826.5	165800	829	166300	831.5	166800	834						
M	167300	836.5	167300	836.5	167300	836.5	167300	836.5						
H	169300	846.5	168800	844	168300	841.5	167800	839						
NR Band 7														
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	500500	2502.5	501000	2505	501500	2507.5	502000	2510	502500	2512.5	503000	2515	504000	2520
M	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535
H	513500	2567.5	513000	2565	512500	2562.5	512000	2560	511500	2557.5	511000	2555	510000	2550
NR Band 12														
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz									
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)								
L	140300	701.5	140800	704	141300	706.5								
M	141500	707.5	141500	707.5	141500	707.5								
H	142700	713.5	142200	711	141700	708.5								



NR Band 25															
Bandwidth 5MHz		Bandwidth 10MHz				Bandwidth 15MHz				Bandwidth 20MHz					
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	370500	1852.5	371000	1855	371500	1857.5	372000	1860							
M	376500	1882.5	376500	1882.5	376500	1882.5	376500	1882.5							
H	382500	1912.5	382000	1910	381500	1907.5	381000	1905							

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

NR Band 38								
Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		
Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	514500	2572.5	515004	2575.02	515502	2577.51	516000	2580
M	519000	2595	519000	2595	519000	2595	519000	2595
H	523500	2617.5	522996	2614.98	522498	2612.49	522000	2610

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				
Bandwidth20MHz		Bandwidth 40MHz		
Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	637334	3560.01	638000	3570
M	641666	3624.99	641666	3624.99
H	646000	3690	645332	3679.98

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

NR Band 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																		
	Bandwidth 20MHz		Bandwidth30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		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	647334	3710.01	647668	3715.02	648000	3720	648334	3725.01	648668	3730.02	649000	3735	649334	3740.01	649668	3745.02	650000	3750
M	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840
H	664666	3969.99	664332	3964.98	664000	3960	663666	3954.99	663332	3949.98	663000	3945	662666	3939.99	662332	3934.98	662000	3930
NR Band 78																		
	Bandwidth 20MHz		Bandwidth30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		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	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	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750		
H	652666	3789.99	652332	3784.98	652000	3780	651666	3774.99	651332	3769.98	651000	3765	650666	3759.99	650332	3754.98		
NR Band 77/78(3450MHz ~ 3550MHz)																		
	Bandwidth20MHz		Bandwidth30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #
L	630668	3460.02	631000	3465	631334	3470.01	631668	3475.02	632000	3480	632334	3485.01	632668	3490.02	633000	3495	633332	3499.98
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		
H	636000	3540	635666	3534.99	635332	3529.98	635000	3525	634666	3519.99	634332	3514.98	634000	3510	633666	3504.99		



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)

Table with 3 columns: Whole-Body, Partial-Body, Hands, Wrists, Feet and Ankles. Values: 0.4, 8.0, 20.0

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

Table with 3 columns: Whole-Body, Partial-Body, Hands, Wrists, Feet and Ankles. Values: 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 ( $\rho$ ). The equation description is as below:

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

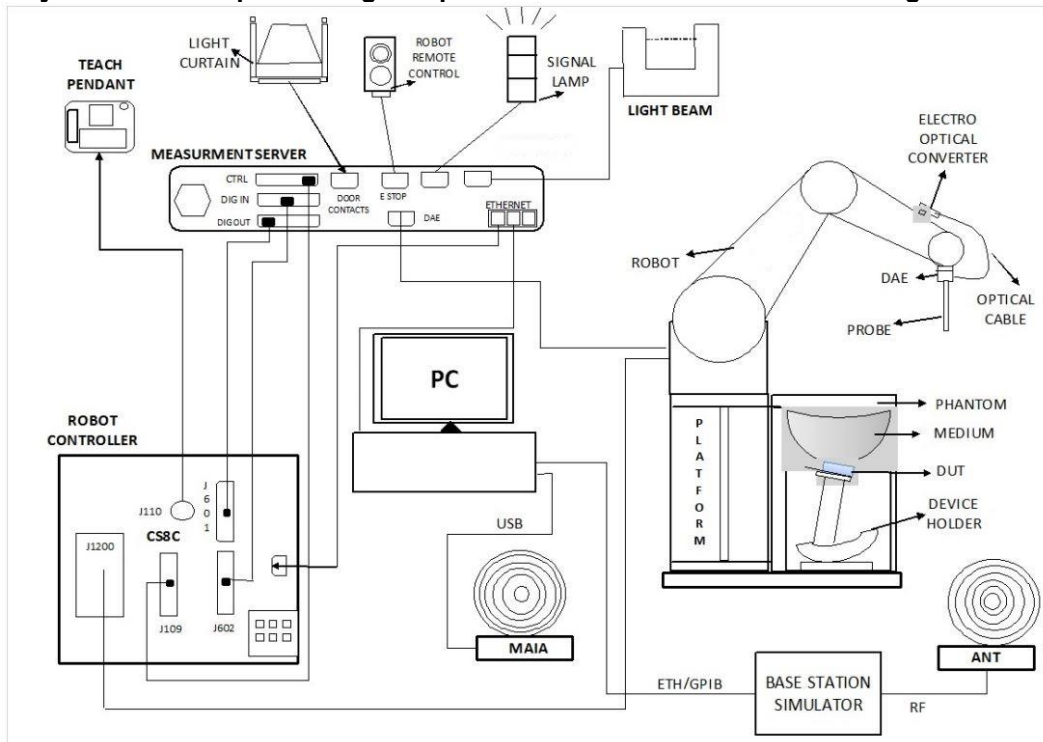
SAR is expressed in units of Watts per kilogram (W/kg)

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

Where:  $\sigma$  is the conductivity of the tissue,  $\rho$  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.

Laboratory	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	SAR18-HY	SAR21-HY
	SAR04-HY	SAR05-HY	SAR11-HY	SAR12-HY	SAR16-HY	SAR19-HY	SAR22-HY
	SAR06-HY	SAR10-HY	SAR13-HY	SAR14-HY	SAR17-HY	SAR20-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>**

<b>Construction</b>	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
<b>Frequency</b>	4 MHz – 4 GHz; Linearity: $\pm 0.2$ dB (30 MHz – 4 GHz)	
<b>Directivity</b>	$\pm 0.2$ dB in TSL (rotation around probe axis) $\pm 0.3$ dB in TSL (rotation normal to probe axis)	
<b>Dynamic Range</b>	5 $\mu$ W/g – >100 mW/g; Linearity: $\pm 0.2$ dB	
<b>Dimensions</b>	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>**

<b>Construction</b>	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
<b>Frequency</b>	4 MHz – >6 GHz Linearity: $\pm 0.2$ dB (30 MHz – 6 GHz)	
<b>Directivity</b>	$\pm 0.3$ dB in TSL (rotation around probe axis) $\pm 0.5$ dB in TSL (rotation normal to probe axis)	
<b>Dynamic Range</b>	10 $\mu$ W/g – >100 mW/g Linearity: $\pm 0.2$ dB (noise: typically <1 $\mu$ W/g)	
<b>Dimensions</b>	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**

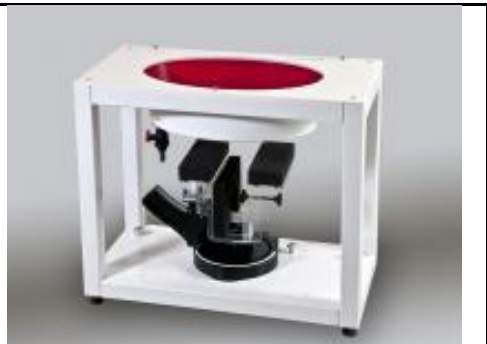
**6.4 Phantom**

**<SAM Twin Phantom>**

<b>Shell Thickness</b>	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	
<b>Filling Volume</b>	Approx. 25 liters	
<b>Dimensions</b>	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
<b>Measurement Areas</b>	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>**

<b>Shell Thickness</b>	2 ± 0.2 mm (sagging: <1%)	
<b>Filling Volume</b>	Approx. 30 liters	
<b>Dimensions</b>	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 from the measurement grid to the high-resolution grid
- (e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- (f) Calculation of the averaged SAR within masses of 1g and 10g

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

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

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

**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: $\Delta x_{Zoom}, \Delta y_{Zoom}$		$\leq 2$ GHz: $\leq 8$ mm 2 – 3 GHz: $\leq 5$ mm*	3 – 4 GHz: $\leq 5$ mm* 4 – 6 GHz: $\leq 4$ mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	$\leq 5$ mm	3 – 4 GHz: $\leq 4$ mm 4 – 5 GHz: $\leq 3$ mm 5 – 6 GHz: $\leq 2$ mm	
	graded grid	$\Delta z_{Zoom}(1)$ : between 1 <sup>st</sup> two points closest to phantom surface	$\leq 4$ mm	3 – 4 GHz: $\leq 3$ mm 4 – 5 GHz: $\leq 2.5$ mm 5 – 6 GHz: $\leq 2$ 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	$\geq 30$ mm	3 – 4 GHz: $\geq 28$ mm 4 – 5 GHz: $\geq 25$ mm 5 – 6 GHz: $\geq 22$ mm	
Note: $\delta$ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is $\leq 1.4$ W/kg, $\leq 8$ mm, $\leq 7$ mm and $\leq 5$ 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 <sup>(2)</sup>	D750V3	1107	Jun. 22, 2022	Jun. 19, 2025
SPEAG	835MHz System Validation Kit <sup>(2)</sup>	D835V2	4d060	Mar. 24, 2022	Mar. 21, 2025
SPEAG	1750MHz System Validation Kit <sup>(2)</sup>	D1750V2	1112	Jun. 22, 2022	Jun. 19, 2025
SPEAG	1900MHz System Validation Kit <sup>(2)</sup>	D1900V2	5d185	Jun. 17, 2022	Jun. 14, 2025
SPEAG	2600MHz System Validation Kit <sup>(2)</sup>	D2600V2	1078	Jun. 23, 2022	Jun. 20, 2025
SPEAG	2600MHz System Validation Kit <sup>(2)</sup>	D2600V2	1089	Mar. 24, 2022	Mar. 21, 2025
SPEAG	3500MHz System Validation Kit <sup>(2)</sup>	D3500V2	1036	Mar. 23, 2022	Mar. 20, 2025
SPEAG	3700MHz System Validation Kit <sup>(2)</sup>	D3700V2	1006	Jun. 20, 2022	Jun. 17, 2025
SPEAG	3900MHz System Validation Kit <sup>(2)</sup>	D3900V2	1017	Apr. 22, 2022	Apr. 19, 2025
SPEAG	Data Acquisition Electronics	DAE4	661	May. 16, 2024	May. 15, 2025
SPEAG	Data Acquisition Electronics	DAE4	1697	Nov. 20, 2023	Nov. 19, 2024
SPEAG	Dosimetric E-Field Probe	EX3DV4	3976	Jan. 22, 2024	Jan. 21, 2025
SPEAG	Dosimetric E-Field Probe	EX3DV4	7813	May. 30, 2024	May. 29, 2025
Testo	Hygro meter	608-H1	45196600	Nov. 02, 2023	Nov. 01, 2024
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Nov. 13, 2023	Nov. 12, 2024
Keysight	5G Wireless Test Platform	E7515B	MY59321826	Apr. 26, 2023	Apr. 25, 2024
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Sep. 27, 2023	Sep. 26, 2024
Keysight	ENA Network Analyzer	E5071C	MY46104758	Oct. 30, 2023	Oct. 29, 2024
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 19, 2023	Sep. 18, 2024
LINE SEIKI	Digital Thermometer	DTM3000-spezial	3690	Aug. 09, 2023	Aug. 08, 2024
Anritsu	Power Meter	ML2495A	1419002	Aug. 17, 2023	Aug. 16, 2024
Anritsu	Power Sensor	MA2411B	1911176	Aug. 18, 2023	Aug. 17, 2024
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jul. 10, 2023	Jul. 09, 2024
Mini-Circuits	Power Amplifier	ZVE-8G+	6418	Oct. 16, 2023	Oct. 15, 2024
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Warison	Directional Coupler	WCOU-10-50S-10	WR889BMC4B1	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°C to 25°C, 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°C to 25°C and within ± 2°C 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

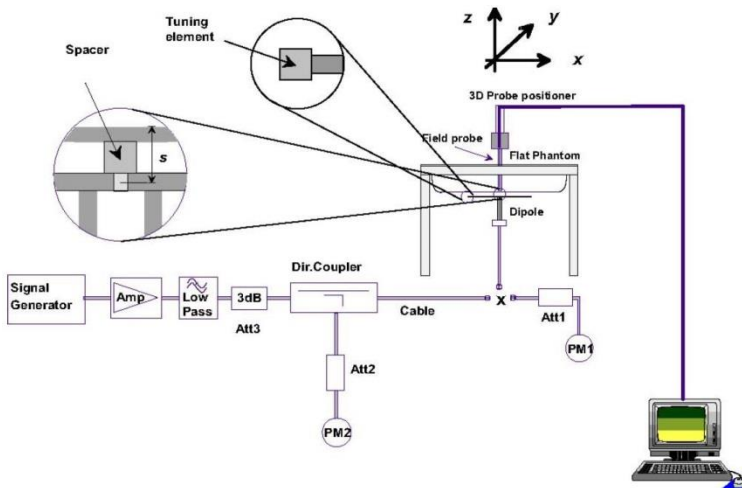
#### <Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ε <sub>r</sub> )	Conductivity Target (σ)	Permittivity Target (ε <sub>r</sub> )	Delta (σ) (%)	Delta (ε <sub>r</sub> ) (%)	Limit (%)	Date
750	22.8	0.884	42.700	0.89	41.90	-0.67	1.91	±5	2024/4/11
835	22.8	0.917	42.400	0.90	41.50	1.89	2.17	±5	2024/4/11
1750	22.8	1.380	41.100	1.37	40.10	0.73	2.49	±5	2024/4/12
1900	22.8	1.460	39.600	1.40	40.00	4.29	-1.00	±5	2024/4/12
2600	22.8	1.910	38.100	1.96	39.00	-2.55	-2.31	±5	2024/4/13
2600	22.4	1.920	39.100	1.96	39.00	-2.04	0.26	±5	2024/4/17
3500	22.4	2.950	38.400	2.91	37.90	1.37	1.32	±5	2024/4/14
3500	22.4	3.000	38.200	2.91	37.90	3.09	0.79	±5	2024/4/17
3700	22.4	3.090	38.100	3.12	37.70	-0.96	1.06	±5	2024/4/14
3700	22.4	3.160	37.900	3.12	37.70	1.28	0.53	±5	2024/4/17
3900	22.4	3.340	37.700	3.33	37.51	0.30	0.51	±5	2024/4/17

**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 (%)
SAR-13	2024/4/11	750	50	D750V3-1107	EX3DV4 - SN3976	DAE4 Sn661	0.393	8.540	7.86	-7.96
SAR-13	2024/4/11	835	50	D835V2-4d060	EX3DV4 - SN3976	DAE4 Sn661	0.458	9.730	9.16	-5.86
SAR-13	2024/4/12	1750	50	D1750V2-1112	EX3DV4 - SN3976	DAE4 Sn661	1.720	36.900	34.4	-6.78
SAR-13	2024/4/12	1900	50	D1900V2-5d185	EX3DV4 - SN3976	DAE4 Sn661	1.940	39.000	38.8	-0.51
SAR-13	2024/4/13	2600	50	D2600V2-1078	EX3DV4 - SN3976	DAE4 Sn661	2.530	55.400	50.6	-8.66
SAR-17	2024/4/17	2600	50	D2600V2-1089	EX3DV4 - SN7813	DAE4 Sn1697	2.590	55.400	51.8	-6.50
SAR-13	2024/4/14	3500	50	D3500V2-1036	EX3DV4 - SN3976	DAE4 Sn661	3.050	67.400	61	-9.50
SAR-17	2024/4/17	3500	50	D3500V2-1036	EX3DV4 - SN7813	DAE4 Sn1697	3.230	67.400	64.6	-4.15
SAR-13	2024/4/14	3700	50	D3700V2-1006	EX3DV4 - SN3976	DAE4 Sn661	3.130	65.600	62.6	-4.57
SAR-17	2024/4/17	3700	50	D3700V2-1006	EX3DV4 - SN7813	DAE4 Sn1697	3.150	65.600	63	-3.96
SAR-17	2024/4/17	3900	50	D3900V2-1017	EX3DV4 - SN7813	DAE4 Sn1697	3.140	68.700	62.8	-8.59



**Fig 8.3.1 System Performance Check Setup**



**Fig 8.3.2 Setup Photo**



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

### <GSM Conducted Power>

- Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
- Per KDB 941225 D01v03r01, for SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the GPRS 4Tx slots modes was selected when EUT operating without power back-off, the GPRS 4Tx slots modes was selected when EUT operating with power back-off, according to the highest source-based time-averaged output power.

### <GSM>

GSM1900_Ant Main	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
TX Channel	1850.2	1880	1909.8		1850.2	1880	1909.8	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GPRS 1 Tx slot	30.32	30.57	30.37	32.00	21.32	21.57	21.37	23.00
GPRS 2 Tx slots	28.09	28.53	28.38	29.50	22.09	22.53	22.38	23.50
GPRS 3 Tx slots	27.15	27.53	27.31	28.50	22.89	23.27	23.05	24.24
GPRS 4 Tx slots	25.84	26.21	25.94	27.50	22.84	23.21	22.94	24.50
EDGE 1 Tx slot	26.28	26.54	26.37	28.00	17.28	17.54	17.37	19.00
EDGE 2 Tx slots	26.11	26.52	26.14	28.00	20.11	20.52	20.14	22.00
EDGE 3 Tx slots	24.09	24.67	24.22	26.00	19.83	20.41	19.96	21.74
EDGE 4 Tx slots	23.15	23.60	23.06	25.00	20.15	20.60	20.06	22.00

GSM850_Ant DIV	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	128	189	251		128	189	251	
TX Channel	824.2	836.4	848.8		824.2	836.4	848.8	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GPRS 1 Tx slot	33.10	33.23	33.17	35.00	24.10	24.23	24.17	26.00
GPRS 2 Tx slots	31.20	31.05	30.86	32.50	25.20	25.05	24.86	26.50
GPRS 3 Tx slots	30.19	30.09	29.98	31.50	25.93	25.83	25.72	27.24
GPRS 4 Tx slots	28.90	29.15	28.77	30.50	25.90	26.15	25.77	27.50
EDGE 1 Tx slot	27.35	27.27	27.28	29.00	18.35	18.27	18.28	20.00
EDGE 2 Tx slots	27.23	27.20	27.12	29.00	21.23	21.20	21.12	23.00
EDGE 3 Tx slots	25.09	25.25	25.18	27.00	20.83	20.99	20.92	22.74
EDGE 4 Tx slots	24.04	24.42	24.01	26.00	21.04	21.42	21.01	23.00





**<WCDMA Conducted Power>**

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For HSPA+ devices supporting 16 QAM in the uplink, power measurements procedure is according to the configurations in Table C.11.1.4 of 3GPP TS 34.121-1.
4. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

**HSDPA Setup Configuration:**

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
  - i. Set Gain Factors ( $\beta_c$  and  $\beta_d$ ) 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:  $\beta$  values for transmitter characteristics tests with HS-DPCCH**

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$ (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

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

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

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

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

**Setup Configuration**

**HSUPA Setup Configuration:**

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting \* :
  - i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
  - ii. Set the Gain Factors ( $\beta_c$  and  $\beta_d$ ) 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-TFCl
  - viii. Confirm that E-TFCl is equal to the target E-TFCl of 75 for sub-test 1, and other subtest's E-TFCl
- d. The transmitted maximum output power was recorded.

**Table C.11.1.3:  $\beta$  values for transmitter characteristics tests with HS-DPCCH and E-DCH**

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

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

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

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

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

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

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

**Setup Configuration**

**DC-HSDPA 3GPP release 8 Setup Configuration:**

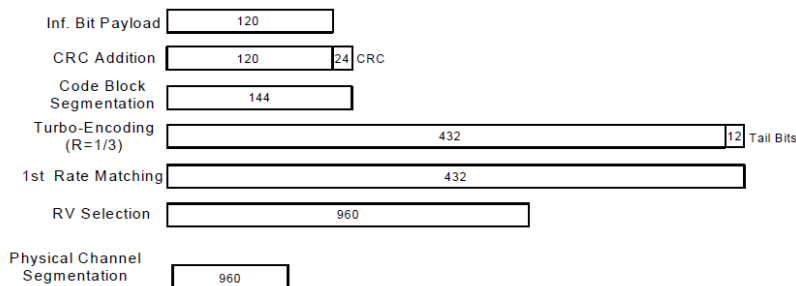
- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
  - i. Set RMC 12.2Kbps + HSDPA mode.
  - ii. Set Cell Power = -25 dBm
  - iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
  - iv. Select HSDPA Uplink Parameters
  - v. Set Gain Factors ( $\beta_c$  and  $\beta_d$ ) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
    - a). Subtest 1:  $\beta_c/\beta_d=2/15$
    - b). Subtest 2:  $\beta_c/\beta_d=12/15$
    - c). Subtest 3:  $\beta_c/\beta_d=15/8$
    - d). Subtest 4:  $\beta_c/\beta_d=15/4$
  - vi. Set Delta ACK, Delta NACK and Delta CQI = 8
  - vii. Set Ack-Nack Repetition Factor to 3
  - viii. Set CQI Feedback Cycle (k) to 4 ms
  - ix. Set CQI Repetition Factor to 2
  - x. Power Ctrl Mode = All Up bits
- d. The transmitted maximum output power was recorded.

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification. A summary of these settings are illustrated below:

**C.8.1.12 Fixed Reference Channel Definition H-Set 12**

**Table C.8.1.12: Fixed Reference Channel H-Set 12**

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload ( $N_{INF}$ )	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table. Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		



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

**Setup Configuration**

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

- 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 = 5.2E:HSPA+:UL with 16QAM
  - ii. Set the Gain Factors ( $\beta_c$  and  $\beta_d$ ) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.4, quoted from the TS 34.121-1 s5.2E
  - iii. Set Channel Parm
  - iv. Set Cell Power = -86 dBm
  - v. Set Channel Type = HSPA
  - vi. Set UE Target Power =21 dBm
  - vii. Power Ctrl Mode= All Up Bits
  - viii. Set Manual Uplink DPCH Bc/Bd = Manual
  - ix. Set Manual Uplink DPCH Bc and Bd=15,15(for 34.121-1 v8.10.0 table C11.1.4 sub-test 1)
  - x. Set HSPA Conn DL Channel Levels
  - xi. Set HS-SCCH Configs
  - xii. Set RB Test Mode Setup
  - xiii. Set Common HSUPA Parameters
  - xiv. Set Serving Grant
  - xv. Confirm that E-TFCI is equal to the target E-TFCI of 105 for sub-test 1, and other subtest's E-TFCI
- d. The transmitted maximum output power was recorded.

**Table C.11.1.4:  $\beta$  values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM**

Sub-test	$\beta_c$ (Note 3)	$\beta_d$	$\beta_{HS}$ (Note 1)	$\beta_{ec}$	$\beta_{ed}$ (2xSF2) (Note 4)	$\beta_{ed}$ (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	$\beta_{ed1}$ : 30/15 $\beta_{ed2}$ : 30/15	$\beta_{ed3}$ : 24/15 $\beta_{ed4}$ : 24/15	3.5	2.5	14	105	105

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

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

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

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

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

**Setup Configuration**



**<WCDMA Conducted Power>**

**General Note:**

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

**<WCDMA>**

Band		WCDMA II_Ant Main			Tune-up Limit (dBm)	WCDMA IV_Ant Main			Tune-up Limit (dBm)	WCDMA V_Ant DIV			Tune-up Limit (dBm)
TX Channel		9262	9262	9262		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9662	9662	1537	1638	1738	4357	4407	4458			
Frequency (MHz)		1852.4	1852.4	1852.4	1712.4	1732.6	1752.6	826.4	836.4	846.6			
3GPP Rel 99	RMC 12.2Kbps	23.12	23.15	23.08	25.00	23.06	23.20	23.15	25.00	23.08	23.21	23.15	25.00
3GPP Rel 6	HSDPA Subtest-1	22.63	22.60	22.71	24.00	22.77	22.88	22.88	24.00	22.27	22.30	22.27	24.00
3GPP Rel 6	HSDPA Subtest-2	22.65	22.78	22.64	24.00	22.78	22.93	22.90	24.00	22.24	22.30	22.29	24.00
3GPP Rel 6	HSDPA Subtest-3	22.16	22.23	22.14	23.50	22.25	22.43	22.32	23.50	21.83	21.84	21.78	23.50
3GPP Rel 6	HSDPA Subtest-4	22.20	22.14	22.09	23.50	22.35	22.36	22.43	23.50	21.82	21.86	21.79	23.50
3GPP Rel 8	DC-HSDPA Subtest-1	22.57	22.49	22.62	24.00	22.62	22.73	22.83	24.00	22.18	22.15	22.21	24.00
3GPP Rel 8	DC-HSDPA Subtest-2	22.51	22.69	22.58	24.00	22.69	22.81	22.79	24.00	22.15	22.18	22.19	24.00
3GPP Rel 8	DC-HSDPA Subtest-3	22.03	22.15	21.99	23.50	22.16	22.31	22.21	23.50	21.76	21.74	21.67	23.50
3GPP Rel 8	DC-HSDPA Subtest-4	22.06	22.03	21.99	23.50	22.27	22.27	22.29	23.50	21.68	21.73	21.72	23.50
3GPP Rel 6	HSUPA Subtest-1	22.63	22.33	22.30	24.00	22.36	22.57	22.81	24.00	22.20	22.32	22.24	24.00
3GPP Rel 6	HSUPA Subtest-2	20.61	20.71	20.67	22.00	20.72	20.92	20.87	22.00	20.18	20.20	20.12	22.00
3GPP Rel 6	HSUPA Subtest-3	21.20	21.20	21.07	23.00	21.26	21.43	21.36	23.00	21.25	21.31	21.14	23.00
3GPP Rel 6	HSUPA Subtest-4	20.34	20.34	20.28	22.00	20.47	20.50	20.38	22.00	20.19	20.24	20.14	22.00
3GPP Rel 6	HSUPA Subtest-5	22.70	22.60	22.60	24.00	22.60	22.70	22.80	24.00	22.35	22.20	22.20	24.00
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	19.96	19.84	19.85	21.50	19.91	19.93	20.04	21.50	19.72	19.86	19.75	21.50

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

1. A 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  $\leq 0.8$  W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is  $> 1.45$  W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is  $>$  not  $\frac{1}{2}$  dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is  $\leq 1.45$  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  $\frac{1}{2}$  dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4/B5/B12/B17/B26/B38/B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 2/4/5/17/38 SAR test was covered by Band 25/66/26/12/41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
  - a. the maximum output power, including tolerance, for the smaller band is  $\leq$  the larger band to qualify for the SAR test exclusion
  - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band



<LTE Band 2\_Ant Main>

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	23.31	23.18	23.29	25
20	QPSK	1	49	23.09	23.02	23.09	
20	QPSK	1	99	23.08	23.05	23.11	
20	QPSK	50	0	22.31	22.08	22.13	24
20	QPSK	50	24	22.30	22.19	22.18	
20	QPSK	50	50	22.27	22.19	22.27	
20	QPSK	100	0	22.31	22.18	22.17	24
20	16QAM	1	0	22.63	22.45	22.47	
20	16QAM	1	49	22.48	22.37	22.46	
20	16QAM	1	99	22.44	22.42	22.45	23
20	16QAM	50	0	21.30	21.11	21.16	
20	16QAM	50	24	21.32	21.21	21.19	
20	16QAM	50	50	21.30	21.22	21.29	23
20	16QAM	100	0	21.29	21.20	21.18	
20	64QAM	1	0	21.47	21.27	21.32	
20	64QAM	1	49	21.40	21.26	21.34	23
20	64QAM	1	99	21.32	21.31	21.35	
20	64QAM	50	0	20.34	20.12	20.18	
20	64QAM	50	24	20.34	20.22	20.21	22
20	64QAM	50	50	20.31	20.24	20.32	
20	64QAM	100	0	20.30	20.21	20.19	
20	256QAM	1	0	18.43	18.26	18.37	20
20	256QAM	1	49	18.33	18.18	18.28	
20	256QAM	1	99	18.31	18.14	18.21	
20	256QAM	50	0	18.16	18.07	18.11	20
20	256QAM	50	24	18.23	18.00	18.15	
20	256QAM	50	50	18.26	18.03	18.24	
20	256QAM	100	0	18.29	18.11	18.25	
Channel				18675	18900	19125	
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	23.23	23.09	23.14	25
15	QPSK	1	37	23.18	23.06	23.14	
15	QPSK	1	74	23.17	23.09	23.16	
15	QPSK	36	0	22.32	22.08	22.15	24
15	QPSK	36	20	22.31	22.19	22.29	
15	QPSK	36	39	22.28	22.22	22.29	
15	QPSK	75	0	22.32	22.20	22.26	24
15	16QAM	1	0	22.54	22.41	22.48	
15	16QAM	1	37	22.51	22.39	22.42	
15	16QAM	1	74	22.51	22.44	22.48	23
15	16QAM	36	0	21.31	21.08	21.15	
15	16QAM	36	20	21.33	21.22	21.29	
15	16QAM	36	39	21.30	21.23	21.29	23
15	16QAM	75	0	21.31	21.22	21.27	
15	64QAM	1	0	21.47	21.27	21.31	
15	64QAM	1	37	21.43	21.36	21.38	23
15	64QAM	1	74	21.40	21.30	21.41	
15	64QAM	36	0	20.34	20.13	20.20	
15	64QAM	36	20	20.38	20.21	20.29	22
15	64QAM	36	39	20.35	20.26	20.33	
15	64QAM	75	0	20.35	20.21	20.29	
15	256QAM	1	0	18.31	18.20	18.34	20
15	256QAM	1	37	18.19	18.15	18.20	
15	256QAM	1	74	18.19	18.06	18.23	
15	256QAM	36	0	18.05	18.07	18.06	20
15	256QAM	36	20	18.18	18.00	18.15	



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15	256QAM	36	39	18.10	18.11	18.08	
15	256QAM	75	0	18.20	18.05	18.17	
Channel				18650	18900	19150	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	QPSK	1	0	23.18	23.06	23.11	25
10	QPSK	1	25	23.13	23.03	23.08	
10	QPSK	1	49	23.17	23.01	23.16	
10	QPSK	25	0	22.35	22.00	22.17	24
10	QPSK	25	12	22.35	22.12	22.20	
10	QPSK	25	25	22.35	22.14	22.33	
10	QPSK	50	0	22.35	22.14	22.25	
10	16QAM	1	0	22.59	22.42	22.50	
10	16QAM	1	25	22.56	22.40	22.49	24
10	16QAM	1	49	22.53	22.45	22.55	
10	16QAM	25	0	21.33	21.04	21.16	23
10	16QAM	25	12	21.35	21.19	21.26	
10	16QAM	25	25	21.36	21.24	21.30	
10	16QAM	50	0	21.36	21.18	21.23	
10	64QAM	1	0	21.53	21.27	21.35	
10	64QAM	1	25	21.46	21.37	21.39	
10	64QAM	1	49	21.41	21.29	21.46	23
10	64QAM	25	0	20.38	20.10	20.21	
10	64QAM	25	12	20.40	20.15	20.26	22
10	64QAM	25	25	20.37	20.21	20.35	
10	64QAM	50	0	20.35	20.22	20.27	
10	256QAM	1	0	18.37	18.17	18.31	
10	256QAM	1	25	18.32	18.11	18.24	20
10	256QAM	1	49	18.18	18.08	18.10	
10	256QAM	25	0	18.01	18.03	18.01	
10	256QAM	25	12	18.15	18.01	18.11	20
10	256QAM	25	25	18.16	18.03	18.04	
10	256QAM	25	0	18.22	18.08	18.11	
Channel				18625	18900	19175	
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	23.20	23.05	23.10	25
5	QPSK	1	12	23.28	23.07	23.27	
5	QPSK	1	24	23.27	23.14	23.25	
5	QPSK	12	0	22.34	22.17	22.24	24
5	QPSK	12	7	22.42	22.23	22.29	
5	QPSK	12	13	22.37	22.26	22.33	
5	QPSK	25	0	22.38	22.20	22.25	
5	16QAM	1	0	22.56	22.40	22.42	
5	16QAM	1	12	22.56	22.44	22.56	24
5	16QAM	1	24	22.59	22.47	22.58	
5	16QAM	12	0	21.38	21.21	21.26	
5	16QAM	12	7	21.38	21.24	21.29	23
5	16QAM	12	13	21.43	21.24	21.37	
5	16QAM	25	0	21.36	21.23	21.27	
5	64QAM	1	0	21.53	21.34	21.40	
5	64QAM	1	12	21.48	21.36	21.45	23
5	64QAM	1	24	21.51	21.39	21.52	
5	64QAM	12	0	20.39	20.25	20.28	22
5	64QAM	12	7	20.44	20.33	20.33	
5	64QAM	12	13	20.43	20.34	20.40	
5	64QAM	25	0	20.39	20.23	20.28	
5	256QAM	1	0	18.26	18.17	18.28	
5	256QAM	1	12	18.25	18.03	18.19	20
5	256QAM	1	24	18.28	18.08	18.28	
5	256QAM	12	0	18.07	18.03	18.10	20
5	256QAM	12	7	18.17	18.05	18.13	
5	256QAM	12	13	18.17	18.07	18.13	
5	256QAM	25	0	18.22	18.07	18.21	
Channel				18615	18900	19185	Tune-up limit





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Frequency (MHz)				1851.5	1880	1908.5	(dBm)
3	QPSK	1	0	23.17	23.07	23.15	25
3	QPSK	1	8	23.28	23.12	23.27	
3	QPSK	1	14	23.25	23.12	23.19	
3	QPSK	8	0	22.32	22.22	22.28	24
3	QPSK	8	4	22.38	22.26	22.36	
3	QPSK	8	7	22.38	22.17	22.33	
3	QPSK	15	0	22.32	22.20	22.29	24
3	16QAM	1	0	22.53	22.38	22.46	
3	16QAM	1	8	22.67	22.50	22.57	
3	16QAM	1	14	22.58	22.42	22.55	23
3	16QAM	8	0	21.40	21.24	21.33	
3	16QAM	8	4	21.41	21.27	21.37	
3	16QAM	8	7	21.40	21.29	21.33	23
3	16QAM	15	0	21.41	21.23	21.33	
3	64QAM	1	0	21.53	21.32	21.45	
3	64QAM	1	8	21.57	21.41	21.54	22
3	64QAM	1	14	21.51	21.36	21.45	
3	64QAM	8	0	20.39	20.25	20.36	
3	64QAM	8	4	20.44	20.28	20.40	20
3	64QAM	8	7	20.45	20.28	20.35	
3	64QAM	15	0	20.35	20.25	20.30	
3	256QAM	1	0	18.33	18.17	18.29	20
3	256QAM	1	8	18.24	18.17	18.18	
3	256QAM	1	14	18.30	18.08	18.12	
3	256QAM	8	0	18.10	18.00	18.05	20
3	256QAM	8	4	18.19	18.00	18.10	
3	256QAM	8	7	18.21	18.02	18.19	
3	256QAM	15	0	18.22	18.01	18.21	Tune-up limit (dBm)
Channel				18607	18900	19193	
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	23.18	23.06	23.06	25
1.4	QPSK	1	3	23.21	23.06	23.15	
1.4	QPSK	1	5	23.18	23.03	23.09	
1.4	QPSK	3	0	23.18	23.03	23.12	24
1.4	QPSK	3	1	23.22	23.08	23.19	
1.4	QPSK	3	3	23.19	23.03	23.13	
1.4	QPSK	6	0	22.29	22.12	22.23	24
1.4	16QAM	1	0	22.49	22.33	22.39	
1.4	16QAM	1	3	22.53	22.39	22.54	
1.4	16QAM	1	5	22.48	22.32	22.43	23
1.4	16QAM	3	0	22.29	22.13	22.20	
1.4	16QAM	3	1	22.33	22.18	22.27	
1.4	16QAM	3	3	22.25	22.10	22.23	23
1.4	16QAM	6	0	21.35	21.21	21.28	
1.4	64QAM	1	0	21.42	21.26	21.38	
1.4	64QAM	1	3	21.47	21.32	21.43	23
1.4	64QAM	1	5	21.41	21.27	21.33	
1.4	64QAM	3	0	21.37	21.25	21.31	
1.4	64QAM	3	1	21.43	21.30	21.39	22
1.4	64QAM	3	3	21.38	21.22	21.35	
1.4	64QAM	6	0	20.30	20.15	20.22	
1.4	256QAM	1	0	18.43	18.19	18.35	20
1.4	256QAM	1	3	18.33	18.12	18.23	
1.4	256QAM	1	5	18.28	18.04	18.15	
1.4	256QAM	3	0	18.11	18.01	18.07	20
1.4	256QAM	3	1	18.21	18.04	18.13	
1.4	256QAM	3	3	18.24	18.08	18.14	
1.4	256QAM	6	0	18.21	18.10	18.20	20



<LTE Band 4\_Ant Main>

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	23.25	23.30	23.33	25
20	QPSK	1	49	23.03	23.09	23.11	
20	QPSK	1	99	23.10	23.12	23.12	
20	QPSK	50	0	22.24	22.29	22.28	24
20	QPSK	50	24	22.27	22.24	22.21	
20	QPSK	50	50	22.19	22.20	22.20	
20	QPSK	100	0	22.24	22.23	22.21	
20	16QAM	1	0	22.47	22.54	22.64	24
20	16QAM	1	49	22.41	22.45	22.45	
20	16QAM	1	99	22.47	22.41	22.40	
20	16QAM	50	0	21.26	21.31	21.28	23
20	16QAM	50	24	21.30	21.25	21.22	
20	16QAM	50	50	21.24	21.24	21.22	
20	16QAM	100	0	21.27	21.21	21.21	
20	64QAM	1	0	21.35	21.45	21.49	23
20	64QAM	1	49	21.30	21.29	21.30	
20	64QAM	1	99	21.43	21.34	21.37	
20	64QAM	50	0	20.26	20.32	20.33	22
20	64QAM	50	24	20.30	20.27	20.24	
20	64QAM	50	50	20.24	20.26	20.25	
20	64QAM	100	0	20.30	20.26	20.26	
20	256QAM	1	0	18.26	18.32	18.41	20
20	256QAM	1	49	18.23	18.25	18.38	
20	256QAM	1	99	18.19	18.24	18.35	
20	256QAM	50	0	18.07	18.04	18.14	20
20	256QAM	50	24	18.04	18.00	18.11	
20	256QAM	50	50	18.01	18.06	18.12	
20	256QAM	100	0	18.03	18.06	18.14	
Channel				20025	20175	20325	
Frequency (MHz)				1717.5	1732.5	1747.5	
15	QPSK	1	0	23.22	23.26	23.27	25
15	QPSK	1	37	23.07	23.13	23.11	
15	QPSK	1	74	23.11	23.09	23.14	
15	QPSK	36	0	22.23	22.30	22.28	24
15	QPSK	36	20	22.24	22.24	22.27	
15	QPSK	36	39	22.20	22.25	22.22	
15	QPSK	75	0	22.26	22.22	22.22	
15	16QAM	1	0	22.56	22.62	22.60	24
15	16QAM	1	37	22.39	22.43	22.44	
15	16QAM	1	74	22.41	22.41	22.42	
15	16QAM	36	0	21.23	21.31	21.28	
15	16QAM	36	20	21.26	21.23	21.28	23
15	16QAM	36	39	21.22	21.24	21.23	
15	16QAM	75	0	21.28	21.26	21.23	
15	64QAM	1	0	21.39	21.47	21.41	23
15	64QAM	1	37	21.33	21.36	21.38	
15	64QAM	1	74	21.33	21.28	21.32	
15	64QAM	36	0	20.26	20.32	20.30	22
15	64QAM	36	20	20.28	20.26	20.30	
15	64QAM	36	39	20.25	20.27	20.29	
15	64QAM	75	0	20.27	20.26	20.23	
15	256QAM	1	0	18.25	18.21	18.34	20
15	256QAM	1	37	18.21	18.18	18.26	
15	256QAM	1	74	18.16	18.23	18.23	
15	256QAM	36	0	18.01	18.15	18.15	20
15	256QAM	36	20	18.02	18.04	18.11	



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**Report No. : FA460704A**

15	256QAM	36	39	18.03	18.14	18.09	
15	256QAM	75	0	18.09	18.07	18.24	
Channel				20000	20175	20350	Tune-up limit (dBm)
Frequency (MHz)				1715	1732.5	1750	
10	QPSK	1	0	23.09	23.21	23.15	25
10	QPSK	1	25	23.07	23.17	23.16	
10	QPSK	1	49	23.14	23.15	23.15	
10	QPSK	25	0	22.15	22.22	22.21	24
10	QPSK	25	12	22.27	22.28	22.30	
10	QPSK	25	25	22.26	22.34	22.30	
10	QPSK	50	0	22.27	22.24	22.32	
10	16QAM	1	0	22.49	22.54	22.55	24
10	16QAM	1	25	22.50	22.56	22.54	
10	16QAM	1	49	22.54	22.55	22.55	
10	16QAM	25	0	21.15	21.22	21.19	23
10	16QAM	25	12	21.28	21.28	21.33	
10	16QAM	25	25	21.25	21.29	21.30	
10	16QAM	50	0	21.26	21.24	21.31	
10	64QAM	1	0	21.32	21.40	21.45	23
10	64QAM	1	25	21.42	21.48	21.45	
10	64QAM	1	49	21.44	21.42	21.46	
10	64QAM	25	0	20.20	20.27	20.24	22
10	64QAM	25	12	20.32	20.30	20.35	
10	64QAM	25	25	20.29	20.36	20.35	
10	64QAM	50	0	20.29	20.26	20.33	
10	256QAM	1	0	18.15	18.38	18.29	20
10	256QAM	1	25	18.20	18.21	18.33	
10	256QAM	1	49	18.12	18.13	18.20	
10	256QAM	25	0	18.07	18.07	18.10	20
10	256QAM	25	12	18.03	18.10	18.07	
10	256QAM	25	25	18.09	18.04	18.17	
10	256QAM	50	0	18.11	18.06	18.16	
Channel				19975	20175	20375	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1732.5	1752.5	
5	QPSK	1	0	23.05	23.17	23.13	25
5	QPSK	1	12	23.18	23.26	23.24	
5	QPSK	1	24	23.21	23.25	23.24	
5	QPSK	12	0	22.17	22.26	22.23	24
5	QPSK	12	7	22.26	22.28	22.25	
5	QPSK	12	13	22.27	22.34	22.30	
5	QPSK	25	0	22.24	22.28	22.24	
5	16QAM	1	0	22.38	22.49	22.48	24
5	16QAM	1	12	22.50	22.57	22.58	
5	16QAM	1	24	22.56	22.61	22.56	
5	16QAM	12	0	21.20	21.28	21.27	23
5	16QAM	12	7	21.30	21.33	21.29	
5	16QAM	12	13	21.25	21.34	21.34	
5	16QAM	25	0	21.27	21.29	21.26	
5	64QAM	1	0	21.36	21.46	21.44	23
5	64QAM	1	12	21.41	21.52	21.46	
5	64QAM	1	24	21.45	21.50	21.50	
5	64QAM	12	0	20.26	20.32	20.28	22
5	64QAM	12	7	20.32	20.35	20.37	
5	64QAM	12	13	20.30	20.36	20.38	
5	64QAM	25	0	20.29	20.29	20.26	
5	256QAM	1	0	18.24	18.33	18.35	20
5	256QAM	1	12	18.23	18.26	18.34	
5	256QAM	1	24	18.15	18.28	18.20	
5	256QAM	12	0	18.01	18.07	18.08	20
5	256QAM	12	7	18.05	18.04	18.04	
5	256QAM	12	13	18.01	18.05	18.04	
5	256QAM	25	0	18.00	18.04	18.02	
Channel				19965	20175	20385	Tune-up limit



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Frequency (MHz)				1711.5	1732.5	1753.5	(dBm)
3	QPSK	1	0	23.08	23.14	23.21	25
3	QPSK	1	8	23.20	23.31	23.29	
3	QPSK	1	14	23.16	23.25	23.19	
3	QPSK	8	0	22.23	22.26	22.26	24
3	QPSK	8	4	22.22	22.32	22.27	
3	QPSK	8	7	22.26	22.33	22.26	
3	QPSK	15	0	22.26	22.24	22.26	24
3	16QAM	1	0	22.41	22.49	22.48	
3	16QAM	1	8	22.51	22.64	22.59	
3	16QAM	1	14	22.50	22.59	22.52	23
3	16QAM	8	0	21.29	21.32	21.34	
3	16QAM	8	4	21.34	21.43	21.39	
3	16QAM	8	7	21.31	21.35	21.34	23
3	16QAM	15	0	21.25	21.28	21.31	
3	64QAM	1	0	21.36	21.43	21.43	
3	64QAM	1	8	21.47	21.56	21.55	22
3	64QAM	1	14	21.42	21.53	21.53	
3	64QAM	8	0	20.29	20.33	20.36	
3	64QAM	8	4	20.28	20.39	20.37	20
3	64QAM	8	7	20.32	20.35	20.37	
3	64QAM	15	0	20.26	20.28	20.29	
3	256QAM	1	0	18.16	18.30	18.33	20
3	256QAM	1	8	18.21	18.19	18.34	
3	256QAM	1	14	18.14	18.24	18.34	
3	256QAM	8	0	18.00	18.00	18.04	20
3	256QAM	8	4	18.01	18.01	18.04	
3	256QAM	8	7	18.00	18.00	18.03	
3	256QAM	15	0	18.00	18.06	18.04	Tune-up limit (dBm)
Channel				19957	20175	20393	
Frequency (MHz)				1710.7	1732.5	1754.3	
1.4	QPSK	1	0	23.06	23.14	23.05	25
1.4	QPSK	1	3	23.13	23.19	23.18	
1.4	QPSK	1	5	23.04	23.11	23.15	
1.4	QPSK	3	0	23.06	23.16	23.09	24
1.4	QPSK	3	1	23.12	23.20	23.17	
1.4	QPSK	3	3	23.08	23.17	23.15	
1.4	QPSK	6	0	22.16	22.23	22.15	24
1.4	16QAM	1	0	22.28	22.48	22.35	
1.4	16QAM	1	3	22.45	22.56	22.49	
1.4	16QAM	1	5	22.42	22.47	22.47	23
1.4	16QAM	3	0	22.17	22.25	22.17	
1.4	16QAM	3	1	22.22	22.31	22.29	
1.4	16QAM	3	3	22.15	22.28	22.24	23
1.4	16QAM	6	0	21.21	21.31	21.22	
1.4	64QAM	1	0	21.25	21.40	21.31	
1.4	64QAM	1	3	21.39	21.46	21.45	23
1.4	64QAM	1	5	21.30	21.42	21.38	
1.4	64QAM	3	0	21.28	21.37	21.28	
1.4	64QAM	3	1	21.35	21.41	21.38	22
1.4	64QAM	3	3	21.26	21.37	21.36	
1.4	64QAM	6	0	20.16	20.24	20.15	
1.4	256QAM	1	0	18.21	18.23	18.37	20
1.4	256QAM	1	3	18.23	18.23	18.34	
1.4	256QAM	1	5	18.14	18.14	18.30	
1.4	256QAM	3	0	18.03	18.07	18.05	20
1.4	256QAM	3	1	18.02	18.03	18.09	
1.4	256QAM	3	3	18.06	18.09	18.11	
1.4	256QAM	6	0	18.05	18.06	18.04	20



<LTE Band 5\_Ant DIV>

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	23.24	23.15	23.12	25
10	QPSK	1	25	23.20	23.11	23.07	
10	QPSK	1	49	23.16	23.13	23.07	
10	QPSK	25	0	22.27	22.20	22.23	24
10	QPSK	25	12	22.36	22.22	22.20	
10	QPSK	25	25	22.31	22.27	22.22	
10	QPSK	50	0	22.37	22.30	22.19	24
10	16QAM	1	0	22.63	22.57	22.51	
10	16QAM	1	25	22.55	22.49	22.45	
10	16QAM	1	49	22.58	22.48	22.45	23
10	16QAM	25	0	21.25	21.19	21.20	
10	16QAM	25	12	21.37	21.22	21.21	
10	16QAM	25	25	21.31	21.31	21.23	23
10	16QAM	50	0	21.37	21.29	21.21	
10	64QAM	1	0	21.46	21.41	21.38	
10	64QAM	1	25	21.51	21.40	21.24	23
10	64QAM	1	49	21.49	21.38	21.25	
10	64QAM	25	0	20.31	20.25	20.20	
10	64QAM	25	12	20.37	20.24	20.13	22
10	64QAM	25	25	20.35	20.29	20.11	
10	64QAM	50	0	20.35	20.33	20.23	
10	256QAM	1	0	18.27	18.21	18.25	20
10	256QAM	1	25	18.32	18.20	18.24	
10	256QAM	1	49	18.30	18.19	18.27	
10	256QAM	25	0	18.14	18.08	18.08	20
10	256QAM	25	12	18.16	18.06	18.10	
10	256QAM	25	25	18.14	18.02	18.12	
10	256QAM	50	0	18.21	18.06	18.14	
Channel				20425	20525	20625	
Frequency (MHz)				826.5	836.5	846.5	Tune-up limit (dBm)
5	QPSK	1	0	23.23	23.21	23.17	25
5	QPSK	1	12	23.18	23.14	23.19	
5	QPSK	1	24	23.19	23.15	23.08	
5	QPSK	12	0	22.42	22.24	22.21	24
5	QPSK	12	7	22.36	22.25	22.23	
5	QPSK	12	13	22.32	22.22	22.21	
5	QPSK	25	0	22.36	22.19	22.18	24
5	16QAM	1	0	22.63	22.57	22.47	
5	16QAM	1	12	22.57	22.52	22.46	
5	16QAM	1	24	22.56	22.49	22.44	23
5	16QAM	12	0	21.42	21.26	21.25	
5	16QAM	12	7	21.38	21.32	21.28	
5	16QAM	12	13	21.35	21.26	21.22	23
5	16QAM	25	0	21.38	21.23	21.21	
5	64QAM	1	0	21.54	21.44	21.20	
5	64QAM	1	12	21.52	21.42	21.10	23
5	64QAM	1	24	21.38	21.43	21.11	
5	64QAM	12	0	20.44	20.30	20.05	
5	64QAM	12	7	20.42	20.33	20.09	22
5	64QAM	12	13	20.36	20.28	20.04	
5	64QAM	25	0	20.40	20.25	20.11	
5	256QAM	1	0	18.26	18.14	18.21	20
5	256QAM	1	12	18.20	18.20	18.17	
5	256QAM	1	24	18.15	18.20	18.15	
5	256QAM	12	0	18.07	18.00	18.07	20
5	256QAM	12	7	18.04	18.07	18.08	



**FCC SAR TEST REPORT**

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5	256QAM	12	13	18.06	18.02	18.00	
5	256QAM	25	0	18.05	18.03	18.08	
Channel				20415	20525	20635	Tune-up limit (dBm)
Frequency (MHz)				825.5	836.5	847.5	
3	QPSK	1	0	23.21	23.12	23.13	25
3	QPSK	1	8	23.18	23.20	23.20	
3	QPSK	1	14	23.19	23.11	23.13	
3	QPSK	8	0	22.38	22.22	22.16	24
3	QPSK	8	4	22.35	22.24	22.25	
3	QPSK	8	7	22.26	22.19	22.20	
3	QPSK	15	0	22.34	22.21	22.16	
3	16QAM	1	0	22.56	22.50	22.46	24
3	16QAM	1	8	22.65	22.57	22.50	
3	16QAM	1	14	22.56	22.47	22.41	23
3	16QAM	8	0	21.46	21.24	21.25	
3	16QAM	8	4	21.41	21.34	21.31	
3	16QAM	8	7	21.34	21.30	21.26	
3	16QAM	15	0	21.37	21.23	21.18	
3	64QAM	1	0	21.52	21.39	21.19	23
3	64QAM	1	8	21.59	21.47	21.14	
3	64QAM	1	14	21.48	21.36	21.07	
3	64QAM	8	0	20.42	20.27	20.03	22
3	64QAM	8	4	20.44	20.33	20.05	
3	64QAM	8	7	20.36	20.28	20.05	
3	64QAM	15	0	20.39	20.19	20.07	
3	256QAM	1	0	18.21	18.13	18.17	20
3	256QAM	1	8	18.16	18.12	18.23	
3	256QAM	1	14	18.19	18.14	18.22	
3	256QAM	8	0	18.07	18.02	18.02	20
3	256QAM	8	4	18.07	18.00	18.01	
3	256QAM	8	7	18.01	18.04	18.02	
3	256QAM	15	0	18.13	18.04	18.05	
Channel				20407	20525	20643	Tune-up limit (dBm)
Frequency (MHz)				824.7	836.5	848.3	
1.4	QPSK	1	0	23.14	23.07	23.08	25
1.4	QPSK	1	3	23.15	23.15	23.11	
1.4	QPSK	1	5	23.13	23.07	23.00	
1.4	QPSK	3	0	23.15	23.08	23.09	
1.4	QPSK	3	1	23.16	23.08	23.11	
1.4	QPSK	3	3	23.21	23.07	23.05	24
1.4	QPSK	6	0	22.28	22.09	22.14	
1.4	16QAM	1	0	22.48	22.36	22.42	24
1.4	16QAM	1	3	22.60	22.47	22.45	
1.4	16QAM	1	5	22.51	22.38	22.33	
1.4	16QAM	3	0	22.26	22.15	22.17	
1.4	16QAM	3	1	22.38	22.18	22.20	
1.4	16QAM	3	3	22.32	22.19	22.11	
1.4	16QAM	6	0	21.33	21.15	21.21	23
1.4	64QAM	1	0	21.45	21.31	21.04	
1.4	64QAM	1	3	21.53	21.43	21.25	23
1.4	64QAM	1	5	21.41	21.33	21.17	
1.4	64QAM	3	0	21.40	21.29	21.13	
1.4	64QAM	3	1	21.49	21.28	21.13	
1.4	64QAM	3	3	21.39	21.31	21.08	
1.4	64QAM	6	0	20.29	20.12	20.04	22
1.4	256QAM	1	0	18.17	18.18	18.19	
1.4	256QAM	1	3	18.28	18.20	18.27	20
1.4	256QAM	1	5	18.27	18.11	18.21	
1.4	256QAM	3	0	18.02	18.01	18.04	
1.4	256QAM	3	1	18.04	18.01	18.08	
1.4	256QAM	3	3	18.04	18.02	18.03	
1.4	256QAM	6	0	18.07	18.05	18.13	20



<LTE Band 7\_Ant Main>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20850	21100	21350	
Frequency (MHz)				2510	2535	2560	
20	QPSK	1	0	23.26	23.31	23.27	25
20	QPSK	1	49	23.15	23.13	23.18	
20	QPSK	1	99	23.23	23.22	23.27	
20	QPSK	50	0	22.35	22.38	22.31	24
20	QPSK	50	24	22.33	22.29	22.34	
20	QPSK	50	50	22.33	22.34	22.36	
20	QPSK	100	0	22.25	22.26	22.24	24
20	16QAM	1	0	22.41	22.45	22.48	
20	16QAM	1	49	22.48	22.50	22.53	
20	16QAM	1	99	22.61	22.57	22.62	23
20	16QAM	50	0	21.18	21.20	21.24	
20	16QAM	50	24	21.33	21.24	21.38	
20	16QAM	50	50	21.36	21.34	21.35	23
20	16QAM	100	0	21.30	21.21	21.24	
20	64QAM	1	0	21.29	21.31	21.33	
20	64QAM	1	49	21.41	21.37	21.33	23
20	64QAM	1	99	21.51	21.48	21.46	
20	64QAM	50	0	20.19	20.21	20.24	
20	64QAM	50	24	20.35	20.26	20.31	22
20	64QAM	50	50	20.37	20.37	20.37	
20	64QAM	100	0	20.32	20.24	20.26	
20	256QAM	1	0	18.20	18.33	18.21	20
20	256QAM	1	49	18.12	18.26	18.13	
20	256QAM	1	99	18.24	18.36	18.30	
20	256QAM	50	0	18.12	18.19	18.12	20
20	256QAM	50	24	18.04	18.12	18.03	
20	256QAM	50	50	18.07	18.22	18.12	
20	256QAM	100	0	18.01	18.16	18.03	
Channel				20825	21100	21375	
Frequency (MHz)				2507.5	2535	2562.5	
15	QPSK	1	0	23.10	23.16	23.18	25
15	QPSK	1	37	23.15	23.18	23.20	
15	QPSK	1	74	23.21	23.26	23.20	
15	QPSK	36	0	22.18	22.20	22.27	24
15	QPSK	36	20	22.29	22.26	22.36	
15	QPSK	36	39	22.34	22.34	22.36	
15	QPSK	75	0	22.29	22.21	22.32	24
15	16QAM	1	0	22.43	22.49	22.51	
15	16QAM	1	37	22.49	22.51	22.57	
15	16QAM	1	74	22.63	22.57	22.61	23
15	16QAM	36	0	21.19	21.19	21.23	
15	16QAM	36	20	21.30	21.22	21.32	
15	16QAM	36	39	21.33	21.32	21.34	23
15	16QAM	75	0	21.30	21.23	21.34	
15	64QAM	1	0	21.28	21.33	21.36	
15	64QAM	1	37	21.36	21.43	21.31	23
15	64QAM	1	74	21.51	21.48	21.48	
15	64QAM	36	0	20.22	20.27	20.17	
15	64QAM	36	20	20.36	20.26	20.26	22
15	64QAM	36	39	20.37	20.36	20.40	
15	64QAM	75	0	20.31	20.23	20.28	
15	256QAM	1	0	18.09	18.26	18.22	20
15	256QAM	1	37	18.10	18.13	18.18	
15	256QAM	1	74	18.20	18.25	18.28	
15	256QAM	36	0	18.04	18.16	18.11	20



**FCC SAR TEST REPORT**

**Report No. : FA460704A**

15	256QAM	36	20	18.03	18.01	18.03	
15	256QAM	36	39	18.05	18.06	18.09	
15	256QAM	75	0	18.02	18.04	18.02	
Channel				20800	21100	21400	Tune-up limit (dBm)
Frequency (MHz)				2505	2535	2565	
10	QPSK	1	0	23.08	23.12	23.09	25
10	QPSK	1	25	23.07	23.10	23.14	
10	QPSK	1	49	23.18	23.19	23.22	
10	QPSK	25	0	22.18	22.21	22.26	24
10	QPSK	25	12	22.29	22.25	22.27	
10	QPSK	25	25	22.31	22.33	22.34	
10	QPSK	50	0	22.31	22.24	22.27	24
10	16QAM	1	0	22.44	22.48	22.51	
10	16QAM	1	25	22.49	22.47	22.54	
10	16QAM	1	49	22.57	22.55	22.59	23
10	16QAM	25	0	21.19	21.19	21.24	
10	16QAM	25	12	21.31	21.26	21.28	
10	16QAM	25	25	21.30	21.31	21.33	23
10	16QAM	50	0	21.31	21.23	21.28	
10	64QAM	1	0	21.30	21.30	21.34	
10	64QAM	1	25	21.42	21.43	21.46	22
10	64QAM	1	49	21.50	21.51	21.49	
10	64QAM	25	0	20.20	20.24	20.27	
10	64QAM	25	12	20.36	20.27	20.32	20
10	64QAM	25	25	20.33	20.34	20.37	
10	64QAM	50	0	20.33	20.25	20.27	
10	256QAM	1	0	18.19	18.19	18.13	20
10	256QAM	1	25	18.08	18.22	18.12	
10	256QAM	1	49	18.23	18.22	18.20	
10	256QAM	25	0	18.09	18.08	18.02	20
10	256QAM	25	12	18.00	18.08	18.03	
10	256QAM	25	25	18.05	18.09	18.07	
10	256QAM	50	0	18.05	18.04	18.02	Tune-up limit (dBm)
Channel				20775	21100	21425	
Frequency (MHz)				2502.5	2535	2567.5	
5	QPSK	1	0	23.11	23.10	23.20	25
5	QPSK	1	12	23.16	23.21	23.23	
5	QPSK	1	24	23.23	23.22	23.25	
5	QPSK	12	0	22.26	22.25	22.33	24
5	QPSK	12	7	22.29	22.26	22.37	
5	QPSK	12	13	22.30	22.33	22.34	
5	QPSK	25	0	22.28	22.23	22.35	24
5	16QAM	1	0	22.41	22.51	22.57	
5	16QAM	1	12	22.51	22.53	22.56	
5	16QAM	1	24	22.53	22.56	22.57	23
5	16QAM	12	0	21.31	21.29	21.37	
5	16QAM	12	7	21.31	21.26	21.34	
5	16QAM	12	13	21.32	21.36	21.37	23
5	16QAM	25	0	21.31	21.24	21.35	
5	64QAM	1	0	21.34	21.40	21.52	
5	64QAM	1	12	21.41	21.45	21.50	22
5	64QAM	1	24	21.49	21.51	21.53	
5	64QAM	12	0	20.36	20.31	20.41	
5	64QAM	12	7	20.34	20.33	20.38	20
5	64QAM	12	13	20.34	20.37	20.44	
5	64QAM	25	0	20.31	20.26	20.37	
5	256QAM	1	0	18.10	18.19	18.14	20
5	256QAM	1	12	18.10	18.13	18.16	
5	256QAM	1	24	18.15	18.27	18.18	
5	256QAM	12	0	18.11	18.06	18.03	20
5	256QAM	12	7	18.05	18.02	18.02	
5	256QAM	12	13	18.14	18.12	18.04	
5	256QAM	25	0	18.02	18.02	18.02	





<LTE Band 12\_Ant DIV>

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	23.19	23.23	23.22	25
10	QPSK	1	25	23.11	23.15	23.15	
10	QPSK	1	49	23.15	23.16	23.20	
10	QPSK	25	0	22.35	22.37	22.36	24
10	QPSK	25	12	22.33	22.33	22.28	
10	QPSK	25	25	22.29	22.29	22.33	
10	QPSK	50	0	22.30	22.31	22.30	24
10	16QAM	1	0	22.44	22.48	22.48	
10	16QAM	1	25	22.48	22.52	22.54	
10	16QAM	1	49	22.64	22.57	22.54	23
10	16QAM	25	0	21.24	21.28	21.30	
10	16QAM	25	12	21.33	21.34	21.29	
10	16QAM	25	25	21.28	21.34	21.34	23
10	16QAM	50	0	21.32	21.27	21.25	
10	64QAM	1	0	21.18	21.30	21.41	
10	64QAM	1	25	21.20	21.46	21.47	23
10	64QAM	1	49	21.50	21.45	21.31	
10	64QAM	25	0	20.14	20.25	20.30	
10	64QAM	25	12	20.25	20.39	20.32	22
10	64QAM	25	25	20.33	20.35	20.37	
10	64QAM	50	0	20.18	20.31	20.30	
10	256QAM	1	0	18.21	18.26	18.24	20
10	256QAM	1	25	18.18	18.23	18.17	
10	256QAM	1	49	18.09	18.21	18.15	
10	256QAM	25	0	18.05	18.20	18.12	20
10	256QAM	25	12	18.10	18.18	18.08	
10	256QAM	25	25	18.03	18.16	18.14	
10	256QAM	50	0	18.00	18.10	18.02	
Channel				23035	23095	23155	
Frequency (MHz)				701.5	707.5	713.5	
5	QPSK	1	0	23.14	23.18	23.14	25
5	QPSK	1	12	23.17	23.22	23.20	
5	QPSK	1	24	23.19	23.22	23.22	
5	QPSK	12	0	22.22	22.27	22.31	24
5	QPSK	12	7	22.30	22.36	22.30	
5	QPSK	12	13	22.27	22.29	22.29	
5	QPSK	25	0	22.24	22.30	22.32	24
5	16QAM	1	0	22.45	22.52	22.51	
5	16QAM	1	12	22.47	22.55	22.53	
5	16QAM	1	24	22.52	22.53	22.54	23
5	16QAM	12	0	21.25	21.32	21.32	
5	16QAM	12	7	21.33	21.39	21.33	
5	16QAM	12	13	21.29	21.32	21.29	23
5	16QAM	25	0	21.29	21.34	21.32	
5	64QAM	1	0	21.07	21.38	21.43	
5	64QAM	1	12	21.03	21.48	21.42	23
5	64QAM	1	24	21.37	21.53	21.21	
5	64QAM	12	0	20.07	20.37	20.32	
5	64QAM	12	7	20.11	20.43	20.38	22
5	64QAM	12	13	20.13	20.35	20.17	
5	64QAM	25	0	20.08	20.33	20.35	
5	256QAM	1	0	18.15	18.21	18.16	20
5	256QAM	1	12	18.13	18.12	18.12	
5	256QAM	1	24	18.01	18.13	18.03	
5	256QAM	12	0	18.05	18.03	18.07	20



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5	256QAM	12	7	18.04	18.08	18.05	
5	256QAM	12	13	18.03	18.07	18.13	
5	256QAM	25	0	18.03	18.00	18.03	
Channel				23025	23095	23165	Tune-up limit (dBm)
Frequency (MHz)				700.5	707.5	714.5	
3	QPSK	1	0	23.11	23.18	23.19	25
3	QPSK	1	8	23.18	23.17	23.22	
3	QPSK	1	14	23.15	23.19	23.20	
3	QPSK	8	0	22.18	22.28	22.23	24
3	QPSK	8	4	22.26	22.30	22.24	
3	QPSK	8	7	22.22	22.29	22.23	
3	QPSK	15	0	22.25	22.34	22.22	24
3	16QAM	1	0	22.47	22.54	22.50	
3	16QAM	1	8	22.48	22.61	22.55	
3	16QAM	1	14	22.47	22.50	22.48	23
3	16QAM	8	0	21.28	21.35	21.30	
3	16QAM	8	4	21.30	21.41	21.30	
3	16QAM	8	7	21.31	21.34	21.31	23
3	16QAM	15	0	21.28	21.34	21.27	
3	64QAM	1	0	21.08	21.47	21.40	
3	64QAM	1	8	21.04	21.57	21.32	22
3	64QAM	1	14	21.39	21.52	21.09	
3	64QAM	8	0	20.01	20.38	20.29	
3	64QAM	8	4	20.13	20.38	20.25	20
3	64QAM	8	7	20.21	20.35	20.10	
3	64QAM	15	0	20.06	20.34	20.20	
3	256QAM	1	0	18.18	18.18	18.17	20
3	256QAM	1	8	18.07	18.10	18.11	
3	256QAM	1	14	18.09	18.11	18.12	
3	256QAM	8	0	18.10	18.04	18.10	20
3	256QAM	8	4	18.06	18.12	18.05	
3	256QAM	8	7	18.05	18.00	18.09	
3	256QAM	15	0	18.01	18.01	18.07	20
Channel				23017	23095	23173	
Frequency (MHz)				699.7	707.5	715.3	
1.4	QPSK	1	0	23.00	23.08	23.06	25
1.4	QPSK	1	3	23.08	23.14	23.10	
1.4	QPSK	1	5	23.02	23.09	23.06	
1.4	QPSK	3	0	23.08	23.14	23.06	24
1.4	QPSK	3	1	23.11	23.18	23.13	
1.4	QPSK	3	3	23.06	23.14	23.06	
1.4	QPSK	6	0	22.14	22.22	22.16	24
1.4	16QAM	1	0	22.30	22.42	22.37	
1.4	16QAM	1	3	22.44	22.50	22.49	
1.4	16QAM	1	5	22.39	22.39	22.38	24
1.4	16QAM	3	0	22.13	22.24	22.12	
1.4	16QAM	3	1	22.18	22.27	22.22	
1.4	16QAM	3	3	22.11	22.22	22.13	23
1.4	16QAM	6	0	21.22	21.29	21.23	
1.4	64QAM	1	0	21.04	21.35	21.25	
1.4	64QAM	1	3	21.06	21.46	21.26	23
1.4	64QAM	1	5	21.06	21.40	21.14	
1.4	64QAM	3	0	21.05	21.37	21.21	
1.4	64QAM	3	1	21.09	21.40	21.23	22
1.4	64QAM	3	3	21.07	21.34	21.09	
1.4	64QAM	6	0	20.05	20.25	20.04	
1.4	256QAM	1	0	18.16	18.26	18.19	20
1.4	256QAM	1	3	18.11	18.08	18.12	
1.4	256QAM	1	5	18.04	18.07	18.10	
1.4	256QAM	3	0	18.15	18.15	18.01	20
1.4	256QAM	3	1	18.07	18.06	18.06	
1.4	256QAM	3	3	18.01	18.03	18.03	
1.4	256QAM	6	0	18.00	18.02	18.02	20



<LTE Band 13\_Ant DIV>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23230			
Frequency (MHz)				782			
10	QPSK	1	0		23.25		25
10	QPSK	1	25		23.08		
10	QPSK	1	49		23.14		
10	QPSK	25	0		22.22		24
10	QPSK	25	12		22.17		
10	QPSK	25	25		22.18		
10	QPSK	50	0		22.28		24
10	16QAM	1	0		22.55		
10	16QAM	1	25		22.45		
10	16QAM	1	49		22.53		23
10	16QAM	25	0		21.20		
10	16QAM	25	12		21.28		
10	16QAM	25	25		21.23		23
10	16QAM	50	0		21.26		
10	64QAM	1	0		21.39		
10	64QAM	1	25		21.36		23
10	64QAM	1	49		21.44		
10	64QAM	25	0		20.22		
10	64QAM	25	12		20.38		22
10	64QAM	25	25		20.29		
10	64QAM	50	0		20.32		
10	256QAM	1	0		18.48		20
10	256QAM	1	25		18.41		
10	256QAM	1	49		18.46		
10	256QAM	25	0		18.27		20
10	256QAM	25	12		18.32		
10	256QAM	25	25		18.29		
10	256QAM	50	0		18.33		
Channel				23205	23230	23255	Tune-up limit (dBm)
Frequency (MHz)				779.5	782	784.5	
5	QPSK	1	0	23.23	23.18	23.08	25
5	QPSK	1	12	23.16	23.10	23.13	
5	QPSK	1	24	23.13	23.16	23.19	
5	QPSK	12	0	22.30	22.26	22.21	24
5	QPSK	12	7	22.29	22.26	22.28	
5	QPSK	12	13	22.24	22.23	22.28	
5	QPSK	25	0	22.29	22.23	22.24	24
5	16QAM	1	0	22.49	22.50	22.40	
5	16QAM	1	12	22.46	22.47	22.52	
5	16QAM	1	24	22.46	22.47	22.51	23
5	16QAM	12	0	21.36	21.30	21.23	
5	16QAM	12	7	21.32	21.27	21.32	
5	16QAM	12	13	21.31	21.25	21.30	23
5	16QAM	25	0	21.30	21.26	21.23	
5	64QAM	1	0	21.49	21.44	21.35	
5	64QAM	1	12	21.46	21.39	21.41	23
5	64QAM	1	24	21.48	21.42	21.50	
5	64QAM	12	0	20.37	20.34	20.26	
5	64QAM	12	7	20.31	20.29	20.33	22
5	64QAM	12	13	20.33	20.27	20.33	
5	64QAM	25	0	20.33	20.28	20.25	
5	256QAM	1	0	18.41	18.30	18.29	20
5	256QAM	1	12	18.25	18.18	18.18	
5	256QAM	1	24	18.30	18.27	18.32	
5	256QAM	12	0	18.08	18.17	18.08	20



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5	256QAM	12	7	18.21	18.21	18.10
5	256QAM	12	13	18.18	18.04	18.05
5	256QAM	25	0	18.31	18.21	18.06

**<LTE Band 14\_Ant DIV>**

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23330			25
Frequency (MHz)				793			
10	QPSK	1	0		23.21		25
10	QPSK	1	25		23.01		
10	QPSK	1	49		23.10		
10	QPSK	25	0		22.31		24
10	QPSK	25	12		22.22		
10	QPSK	25	25		22.25		
10	QPSK	50	0		22.26		24
10	16QAM	1	0		22.57		
10	16QAM	1	25		22.44		
10	16QAM	1	49		22.51		23
10	16QAM	25	0		21.25		
10	16QAM	25	12		21.26		
10	16QAM	25	25		21.33		23
10	16QAM	50	0		21.26		
10	64QAM	1	0		21.46		
10	64QAM	1	25		21.40		23
10	64QAM	1	49		21.40		
10	64QAM	25	0		20.31		
10	64QAM	25	12		20.25		22
10	64QAM	25	25		20.31		
10	64QAM	50	0		20.25		
10	256QAM	1	0		18.24		20
10	256QAM	1	25		18.15		
10	256QAM	1	49		18.27		
10	256QAM	25	0		18.17		20
10	256QAM	25	12		18.16		
10	256QAM	25	25		18.21		
10	256QAM	50	0		18.12		
Channel				23305	23330	23355	25
Frequency (MHz)				790.5	793	795.5	
5	QPSK	1	0	23.19	23.15	23.02	25
5	QPSK	1	12	23.20	23.11	23.19	
5	QPSK	1	24	23.05	23.18	23.13	
5	QPSK	12	0	22.31	22.23	22.18	24
5	QPSK	12	7	22.27	22.25	22.28	
5	QPSK	12	13	22.14	22.21	22.27	
5	QPSK	25	0	22.20	22.21	22.20	24
5	16QAM	1	0	22.58	22.51	22.35	
5	16QAM	1	12	22.56	22.44	22.51	
5	16QAM	1	24	22.38	22.46	22.48	23
5	16QAM	12	0	21.36	21.26	21.20	
5	16QAM	12	7	21.30	21.25	21.30	
5	16QAM	12	13	21.22	21.22	21.24	23
5	16QAM	25	0	21.23	21.22	21.22	
5	64QAM	1	0	21.50	21.47	21.34	
5	64QAM	1	12	21.45	21.35	21.46	23
5	64QAM	1	24	21.30	21.41	21.42	
5	64QAM	12	0	20.41	20.32	20.22	
5	64QAM	12	7	20.33	20.31	20.37	22
5	64QAM	12	13	20.21	20.23	20.30	
5	64QAM	25	0	20.23	20.27	20.24	
5	256QAM	1	0	18.23	18.18	18.19	20



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5	256QAM	1	12	18.15	18.05	18.00	20
5	256QAM	1	24	18.13	18.17	18.14	
5	256QAM	12	0	18.15	18.03	18.05	
5	256QAM	12	7	18.07	18.04	18.04	
5	256QAM	12	13	18.13	18.11	18.01	
5	256QAM	25	0	18.04	18.03	18.04	

**<LTE Band 17\_Ant DIV>**

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23780	23790	23800	
Frequency (MHz)				709	710	711	
10	QPSK	1	0	23.06	23.17	23.13	25
10	QPSK	1	25	23.09	23.09	23.11	
10	QPSK	1	49	23.14	23.15	23.14	
10	QPSK	25	0	22.13	22.12	22.14	24
10	QPSK	25	12	22.22	22.21	22.19	
10	QPSK	25	25	22.32	22.31	22.30	
10	QPSK	50	0	22.19	22.16	22.17	24
10	16QAM	1	0	22.35	22.43	22.42	
10	16QAM	1	25	22.48	22.49	22.50	
10	16QAM	1	49	22.47	22.49	22.46	23
10	16QAM	25	0	21.15	21.17	21.16	
10	16QAM	25	12	21.21	21.23	21.18	
10	16QAM	25	25	21.24	21.32	21.23	23
10	16QAM	50	0	21.18	21.16	21.16	
10	64QAM	1	0	21.25	21.28	21.27	
10	64QAM	1	25	21.43	21.41	21.42	22
10	64QAM	1	49	21.13	21.17	21.09	
10	64QAM	25	0	20.16	20.15	20.18	
10	64QAM	25	12	20.23	20.25	20.24	20
10	64QAM	25	25	20.33	20.34	20.34	
10	64QAM	50	0	20.25	20.21	20.20	
10	256QAM	1	0	18.16	18.24	18.21	20
10	256QAM	1	25	18.18	18.26	18.18	
10	256QAM	1	49	18.18	18.27	18.16	
10	256QAM	25	0	18.06	18.21	18.16	20
10	256QAM	25	12	18.06	18.15	18.10	
10	256QAM	25	25	18.03	18.20	18.16	
10	256QAM	50	0	18.01	18.11	18.03	
Channel				23755	23790	23825	Tune-up limit (dBm)
Frequency (MHz)				706.5	710	713.5	
5	QPSK	1	0	23.05	23.06	23.07	25
5	QPSK	1	12	23.13	23.13	23.14	
5	QPSK	1	24	23.12	23.10	23.15	
5	QPSK	12	0	22.13	22.20	22.17	24
5	QPSK	12	7	22.24	22.25	22.26	
5	QPSK	12	13	22.26	22.27	22.25	
5	QPSK	25	0	22.19	22.18	22.17	24
5	16QAM	1	0	22.33	22.42	22.42	
5	16QAM	1	12	22.45	22.50	22.45	
5	16QAM	1	24	22.56	22.51	22.51	23
5	16QAM	12	0	21.15	21.22	21.21	
5	16QAM	12	7	21.27	21.29	21.26	
5	16QAM	12	13	21.28	21.28	21.25	23
5	16QAM	25	0	21.21	21.24	21.22	
5	64QAM	1	0	21.10	21.37	21.37	
5	64QAM	1	12	21.37	21.40	21.23	22
5	64QAM	1	24	21.48	21.47	21.01	
5	64QAM	12	0	20.07	20.22	20.22	
5	64QAM	12	7	20.30	20.30	20.24	



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5	64QAM	12	13	20.31	20.31	20.09	
5	64QAM	25	0	20.22	20.22	20.17	
5	256QAM	1	0	18.15	18.15	18.15	
5	256QAM	1	12	18.15	18.17	18.18	20
5	256QAM	1	24	18.10	18.22	18.16	
5	256QAM	12	0	18.12	18.04	18.04	
5	256QAM	12	7	18.00	18.03	18.00	20
5	256QAM	12	13	18.07	18.06	18.07	
5	256QAM	25	0	18.03	18.01	18.03	

**<LTE Band 25\_Ant Main>**

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	23.26	23.34	23.20	25
20	QPSK	1	49	23.12	23.02	23.07	
20	QPSK	1	99	23.07	23.07	23.17	
20	QPSK	50	0	22.26	22.36	22.28	24
20	QPSK	50	24	22.31	22.23	22.20	
20	QPSK	50	50	22.26	22.21	22.23	
20	QPSK	100	0	22.33	22.20	22.20	24
20	16QAM	1	0	22.58	22.44	22.45	
20	16QAM	1	49	22.46	22.39	22.44	
20	16QAM	1	99	22.42	22.41	22.48	23
20	16QAM	50	0	21.35	21.18	21.20	
20	16QAM	50	24	21.32	21.24	21.22	
20	16QAM	50	50	21.28	21.23	21.27	23
20	16QAM	100	0	21.32	21.21	21.21	
20	64QAM	1	0	21.50	21.30	21.29	
20	64QAM	1	49	21.39	21.33	21.35	23
20	64QAM	1	99	21.35	21.32	21.33	
20	64QAM	50	0	20.37	20.18	20.20	
20	64QAM	50	24	20.34	20.26	20.23	22
20	64QAM	50	50	20.31	20.24	20.29	
20	64QAM	100	0	20.32	20.23	20.22	
20	256QAM	1	0	18.18	18.29	18.14	20
20	256QAM	1	49	18.08	18.23	18.06	
20	256QAM	1	99	18.18	18.26	18.02	
20	256QAM	50	0	18.03	18.12	18.07	20
20	256QAM	50	24	18.04	18.16	18.02	
20	256QAM	50	50	18.04	18.12	18.03	
20	256QAM	100	0	18.06	18.18	18.02	
Channel				26115	26340	26615	
Frequency (MHz)				1857.5	1880	1907.5	
15	QPSK	1	0	23.27	23.11	23.11	25
15	QPSK	1	37	23.15	23.06	23.12	
15	QPSK	1	74	23.18	23.09	23.17	
15	QPSK	36	0	22.37	22.16	22.21	24
15	QPSK	36	20	22.36	22.23	22.22	
15	QPSK	36	39	22.27	22.19	22.28	
15	QPSK	75	0	22.33	22.22	22.21	24
15	16QAM	1	0	22.58	22.43	22.47	
15	16QAM	1	37	22.54	22.42	22.49	
15	16QAM	1	74	22.49	22.45	22.49	24
15	16QAM	36	0	21.40	21.18	21.22	
15	16QAM	36	20	21.33	21.24	21.22	
15	16QAM	36	39	21.29	21.19	21.28	23
15	16QAM	75	0	21.32	21.24	21.23	
15	64QAM	1	0	21.44	21.29	21.33	
15	64QAM	1	37	21.45	21.37	21.41	



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15	64QAM	1	74	21.38	21.33	21.37	22	
15	64QAM	36	0	20.41	20.20	20.23		
15	64QAM	36	20	20.39	20.25	20.25		
15	64QAM	36	39	20.33	20.21	20.35		
15	64QAM	75	0	20.36	20.25	20.23		
15	256QAM	1	0	18.08	18.23	18.00	20	
15	256QAM	1	37	18.04	18.13	18.04		
15	256QAM	1	74	18.11	18.11	18.01		
15	256QAM	36	0	18.07	18.08	18.02	20	
15	256QAM	36	20	18.00	18.10	18.01		
15	256QAM	36	39	18.02	18.04	18.01		
15	256QAM	75	0	18.01	18.03	18.03		
Channel				26090	26340	26640		Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	23.24	23.13	23.10	25	
10	QPSK	1	25	23.18	23.04	23.17		
10	QPSK	1	49	23.19	23.12	23.21		
10	QPSK	25	0	22.33	22.19	22.18	24	
10	QPSK	25	12	22.35	22.20	22.23		
10	QPSK	25	25	22.34	22.22	22.32		
10	QPSK	50	0	22.35	22.22	22.23		
10	16QAM	1	0	22.62	22.50	22.51		
10	16QAM	1	25	22.59	22.48	22.57	24	
10	16QAM	1	49	22.60	22.50	22.58		
10	16QAM	25	0	21.33	21.20	21.19	23	
10	16QAM	25	12	21.36	21.23	21.25		
10	16QAM	25	25	21.33	21.21	21.28		
10	16QAM	50	0	21.35	21.21	21.23		
10	64QAM	1	0	21.56	21.42	21.37		
10	64QAM	1	25	21.49	21.38	21.47	23	
10	64QAM	1	49	21.48	21.41	21.50		
10	64QAM	25	0	20.37	20.23	20.21		
10	64QAM	25	12	20.39	20.25	20.28	22	
10	64QAM	25	25	20.36	20.22	20.36		
10	64QAM	50	0	20.33	20.22	20.26		
10	256QAM	1	0	18.02	18.20	18.05		
10	256QAM	1	25	18.08	18.05	18.02		
10	256QAM	1	49	18.08	18.15	18.06	20	
10	256QAM	25	0	18.08	18.03	18.00		
10	256QAM	25	12	18.02	18.00	18.02		
10	256QAM	25	25	18.07	18.07	18.03	20	
10	256QAM	50	0	18.06	18.12	18.09		
Channel				26065	26340	26665		Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	23.27	23.13	23.12		25
5	QPSK	1	12	23.29	23.20	23.28		
5	QPSK	1	24	23.29	23.17	23.23		
5	QPSK	12	0	22.31	22.16	22.16	24	
5	QPSK	12	7	22.42	22.21	22.32		
5	QPSK	12	13	22.41	22.27	22.35		
5	QPSK	25	0	22.34	22.20	22.29		
5	16QAM	1	0	22.62	22.46	22.46		
5	16QAM	1	12	22.62	22.48	22.55	24	
5	16QAM	1	24	22.59	22.50	22.58		
5	16QAM	12	0	21.36	21.19	21.22		
5	16QAM	12	7	21.43	21.26	21.33	23	
5	16QAM	12	13	21.43	21.29	21.35		
5	16QAM	25	0	21.37	21.21	21.32		
5	64QAM	1	0	21.56	21.44	21.40		
5	64QAM	1	12	21.53	21.41	21.46		
5	64QAM	1	24	21.54	21.45	21.48	23	
5	64QAM	12	0	20.38	20.26	20.27		
5	64QAM	12	7	20.44	20.32	20.37		22



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5	64QAM	12	13	20.42	20.35	20.40	
5	64QAM	25	0	20.39	20.23	20.33	
5	256QAM	1	0	18.07	18.19	18.11	
5	256QAM	1	12	18.03	18.11	18.04	20
5	256QAM	1	24	18.05	18.23	18.08	
5	256QAM	12	0	18.02	18.03	18.01	
5	256QAM	12	7	18.08	18.02	18.08	20
5	256QAM	12	13	18.07	18.00	18.03	
5	256QAM	25	0	18.02	18.08	18.07	
Channel				26055	26340	26675	Tune-up limit
Frequency (MHz)				1851.5	1880	1913.5	(dBm)
3	QPSK	1	0	23.22	23.08	23.13	
3	QPSK	1	8	23.28	23.21	23.28	25
3	QPSK	1	14	23.25	23.21	23.25	
3	QPSK	8	0	22.33	22.15	22.16	
3	QPSK	8	4	22.34	22.25	22.25	24
3	QPSK	8	7	22.33	22.27	22.30	
3	QPSK	15	0	22.37	22.19	22.22	
3	16QAM	1	0	22.54	22.43	22.40	
3	16QAM	1	8	22.70	22.54	22.61	24
3	16QAM	1	14	22.67	22.57	22.61	
3	16QAM	8	0	21.36	21.22	21.23	
3	16QAM	8	4	21.43	21.32	21.32	23
3	16QAM	8	7	21.44	21.33	21.38	
3	16QAM	15	0	21.35	21.23	21.26	
3	64QAM	1	0	21.50	21.33	21.35	
3	64QAM	1	8	21.63	21.48	21.51	23
3	64QAM	1	14	21.60	21.45	21.50	
3	64QAM	8	0	20.34	20.19	20.24	
3	64QAM	8	4	20.46	20.32	20.30	22
3	64QAM	8	7	20.46	20.29	20.37	
3	64QAM	15	0	20.37	20.24	20.29	
3	256QAM	1	0	18.09	18.27	18.12	20
3	256QAM	1	8	18.07	18.20	18.09	
3	256QAM	1	14	18.18	18.25	18.00	
3	256QAM	8	0	18.09	18.10	18.02	
3	256QAM	8	4	18.08	18.09	18.04	20
3	256QAM	8	7	18.04	18.04	18.01	
3	256QAM	15	0	18.04	18.13	18.08	
Channel				26047	26340	26683	Tune-up limit
Frequency (MHz)				1850.7	1880	1914.3	(dBm)
1.4	QPSK	1	0	23.14	23.02	23.02	
1.4	QPSK	1	3	23.25	23.13	23.16	25
1.4	QPSK	1	5	23.23	23.11	23.14	
1.4	QPSK	3	0	23.23	23.07	23.04	
1.4	QPSK	3	1	23.28	23.13	23.11	
1.4	QPSK	3	3	23.24	23.08	23.16	
1.4	QPSK	6	0	22.28	22.11	22.13	24
1.4	16QAM	1	0	22.50	22.34	22.36	
1.4	16QAM	1	3	22.59	22.43	22.51	24
1.4	16QAM	1	5	22.55	22.43	22.47	
1.4	16QAM	3	0	22.31	22.17	22.13	
1.4	16QAM	3	1	22.37	22.20	22.21	
1.4	16QAM	3	3	22.34	22.20	22.25	
1.4	16QAM	6	0	21.30	21.16	21.23	23
1.4	64QAM	1	0	21.44	21.28	21.27	
1.4	64QAM	1	3	21.53	21.40	21.44	
1.4	64QAM	1	5	21.49	21.37	21.42	23
1.4	64QAM	3	0	21.42	21.24	21.27	
1.4	64QAM	3	1	21.46	21.33	21.32	
1.4	64QAM	3	3	21.46	21.30	21.37	
1.4	64QAM	6	0	20.30	20.15	20.15	22
1.4	256QAM	1	0	18.16	18.26	18.10	20





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1.4	256QAM	1	3	18.06	18.15	18.07	
1.4	256QAM	1	5	18.16	18.21	18.05	
1.4	256QAM	3	0	18.09	18.10	18.09	
1.4	256QAM	3	1	18.03	18.09	18.07	
1.4	256QAM	3	3	18.08	18.10	18.01	
1.4	256QAM	6	0	18.00	18.14	18.01	20

**<LTE Band 26\_Ant DIV>**

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	23.23	23.30	23.37	
15	QPSK	1	37	23.16	23.27	23.20	
15	QPSK	1	74	23.19	23.24	23.21	
15	QPSK	36	0	22.28	22.40	22.42	24
15	QPSK	36	20	22.33	22.37	22.36	
15	QPSK	36	39	22.38	22.39	22.39	
15	QPSK	75	0	22.32	22.38	22.40	24
15	16QAM	1	0	22.39	22.52	22.58	
15	16QAM	1	37	22.44	22.60	22.57	
15	16QAM	1	74	22.60	22.58	22.49	23
15	16QAM	36	0	21.28	21.37	21.39	
15	16QAM	36	20	21.34	21.37	21.44	
15	16QAM	36	39	21.38	21.43	21.38	23
15	16QAM	75	0	21.36	21.37	21.36	
15	64QAM	1	0	21.26	21.41	21.46	
15	64QAM	1	37	21.40	21.56	21.16	22
15	64QAM	1	74	21.06	21.56	21.08	
15	64QAM	36	0	20.26	20.46	20.44	
15	64QAM	36	20	20.38	20.41	20.24	20
15	64QAM	36	39	20.41	20.46	19.91	
15	64QAM	75	0	20.36	20.38	20.35	
15	256QAM	1	0	18.19	18.24	18.26	20
15	256QAM	1	37	18.05	18.11	18.21	
15	256QAM	1	74	18.13	18.16	18.23	
15	256QAM	36	0	18.06	18.15	18.18	20
15	256QAM	36	20	18.09	18.07	18.19	
15	256QAM	36	39	18.01	18.01	18.08	
15	256QAM	75	0	18.11	18.11	18.20	20
Channel				26740	26865	26990	
Frequency (MHz)				819	831.5	844	
10	QPSK	1	0	23.08	23.21	23.23	25
10	QPSK	1	25	23.02	23.22	23.15	
10	QPSK	1	49	23.05	23.16	23.12	
10	QPSK	25	0	22.20	22.35	22.29	24
10	QPSK	25	12	22.18	22.23	22.26	
10	QPSK	25	25	22.30	22.34	22.34	
10	QPSK	50	0	22.26	22.29	22.35	24
10	16QAM	1	0	22.31	22.39	22.49	
10	16QAM	1	25	22.35	22.50	22.51	
10	16QAM	1	49	22.54	22.47	22.37	23
10	16QAM	25	0	21.19	21.29	21.30	
10	16QAM	25	12	21.26	21.23	21.35	
10	16QAM	25	25	21.24	21.32	21.30	23
10	16QAM	50	0	21.28	21.26	21.22	
10	64QAM	1	0	21.11	21.28	21.32	
10	64QAM	1	25	21.33	21.51	21.05	23
10	64QAM	1	49	21.05	21.42	21.00	
10	64QAM	25	0	20.18	20.36	20.29	
10	64QAM	25	12	20.29	20.36	20.19	22



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10	64QAM	25	25	20.32	20.32	19.80	
10	64QAM	50	0	20.28	20.30	20.29	
10	256QAM	1	0	18.11	18.14	18.25	
10	256QAM	1	25	18.04	18.01	18.11	20
10	256QAM	1	49	18.02	18.13	18.09	
10	256QAM	25	0	18.02	18.08	18.02	
10	256QAM	25	12	18.08	18.03	18.08	20
10	256QAM	25	25	18.02	18.05	18.00	
10	256QAM	50	0	18.04	18.09	18.08	
Channel				26715	26865	27015	Tune-up limit
Frequency (MHz)				816.5	831.5	846.5	(dBm)
5	QPSK	1	0	23.14	23.23	23.27	
5	QPSK	1	12	23.07	23.15	23.10	25
5	QPSK	1	24	23.07	23.17	23.10	
5	QPSK	12	0	22.20	22.32	22.31	
5	QPSK	12	7	22.18	22.32	22.25	24
5	QPSK	12	13	22.28	22.27	22.33	
5	QPSK	25	0	22.19	22.28	22.27	
5	16QAM	1	0	22.31	22.39	22.52	
5	16QAM	1	12	22.37	22.55	22.52	24
5	16QAM	1	24	22.53	22.50	22.34	
5	16QAM	12	0	21.18	21.31	21.29	
5	16QAM	12	7	21.23	21.32	21.35	23
5	16QAM	12	13	21.32	21.30	21.23	
5	16QAM	25	0	21.29	21.27	21.23	
5	64QAM	1	0	21.17	21.32	21.31	
5	64QAM	1	12	21.29	21.42	21.11	23
5	64QAM	1	24	21.03	21.47	21.09	
5	64QAM	12	0	20.14	20.40	20.33	
5	64QAM	12	7	20.33	20.32	20.13	22
5	64QAM	12	13	20.26	20.38	19.84	
5	64QAM	25	0	20.22	20.26	20.28	
5	256QAM	1	0	18.09	18.23	18.16	20
5	256QAM	1	12	18.12	18.13	18.05	
5	256QAM	1	24	18.04	18.07	18.15	
5	256QAM	12	0	18.05	18.06	18.02	
5	256QAM	12	7	18.03	18.06	18.07	20
5	256QAM	12	13	18.01	18.10	18.02	
5	256QAM	25	0	18.04	18.12	18.06	
Channel				26705	26865	27025	Tune-up limit
Frequency (MHz)				815.5	831.5	847.5	(dBm)
3	QPSK	1	0	23.15	23.25	23.30	
3	QPSK	1	8	23.11	23.16	23.06	25
3	QPSK	1	14	23.10	23.15	23.14	
3	QPSK	8	0	22.16	22.33	22.30	
3	QPSK	8	4	22.20	22.26	22.27	24
3	QPSK	8	7	22.33	22.33	22.26	
3	QPSK	15	0	22.17	22.28	22.33	
3	16QAM	1	0	22.28	22.38	22.53	
3	16QAM	1	8	22.29	22.50	22.43	24
3	16QAM	1	14	22.51	22.52	22.39	
3	16QAM	8	0	21.17	21.32	21.26	
3	16QAM	8	4	21.27	21.23	21.39	23
3	16QAM	8	7	21.30	21.38	21.26	
3	16QAM	15	0	21.22	21.24	21.24	
3	64QAM	1	0	21.14	21.28	21.32	
3	64QAM	1	8	21.33	21.49	21.11	23
3	64QAM	1	14	21.08	21.49	21.07	
3	64QAM	8	0	20.18	20.40	20.39	
3	64QAM	8	4	20.23	20.31	20.09	22
3	64QAM	8	7	20.27	20.34	19.82	
3	64QAM	15	0	20.27	20.23	20.30	
3	256QAM	1	0	18.11	18.24	18.18	20



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3	256QAM	1	8	18.00	18.09	18.05	20
3	256QAM	1	14	18.10	18.09	18.14	
3	256QAM	8	0	18.06	18.06	18.09	
3	256QAM	8	4	18.02	18.08	18.09	
3	256QAM	8	7	18.00	18.04	18.01	
3	256QAM	15	0	18.03	18.10	18.07	
Channel				26697	26865	27033	Tune-up limit (dBm)
Frequency (MHz)				814.7	831.5	848.3	
1.4	QPSK	1	0	23.09	23.29	23.20	25
1.4	QPSK	1	3	23.20	23.36	23.27	
1.4	QPSK	1	5	23.08	23.26	23.14	
1.4	QPSK	3	0	23.18	23.31	23.22	
1.4	QPSK	3	1	23.22	23.35	23.27	
1.4	QPSK	3	3	23.13	23.34	23.21	
1.4	QPSK	6	0	22.24	22.34	22.28	24
1.4	16QAM	1	0	22.42	22.60	22.55	24
1.4	16QAM	1	3	22.52	22.73	22.60	
1.4	16QAM	1	5	22.47	22.63	22.47	
1.4	16QAM	3	0	22.26	22.39	22.30	
1.4	16QAM	3	1	22.29	22.45	22.35	
1.4	16QAM	3	3	22.21	22.41	22.26	
1.4	16QAM	6	0	21.31	21.41	21.39	23
1.4	64QAM	1	0	21.23	21.56	21.11	23
1.4	64QAM	1	3	21.27	21.66	21.02	
1.4	64QAM	1	5	21.24	21.54	21.09	
1.4	64QAM	3	0	21.21	21.51	21.04	
1.4	64QAM	3	1	21.22	21.54	21.04	
1.4	64QAM	3	3	21.21	21.54	21.02	
1.4	64QAM	6	0	20.13	20.38	20.17	22
1.4	256QAM	1	0	18.09	18.24	18.16	20
1.4	256QAM	1	3	18.04	18.01	18.03	
1.4	256QAM	1	5	18.09	18.09	18.13	
1.4	256QAM	3	0	18.03	18.05	18.07	
1.4	256QAM	3	1	18.00	18.05	18.03	
1.4	256QAM	3	3	18.01	18.03	18.07	
1.4	256QAM	6	0	18.07	18.12	18.08	20

**<LTE Band 66\_Ant Main>**

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	Tune-up limit (dBm)
Frequency (MHz)				1720	1745	1770	
20	QPSK	1	0	23.27	23.36	23.26	25
20	QPSK	1	49	23.10	23.16	23.07	
20	QPSK	1	99	23.14	23.16	23.04	
20	QPSK	50	0	22.30	22.33	22.26	24
20	QPSK	50	24	22.25	22.26	22.24	
20	QPSK	50	50	22.26	22.29	22.18	
20	QPSK	100	0	22.26	22.27	22.25	
20	16QAM	1	0	22.58	22.63	22.57	24
20	16QAM	1	49	22.48	22.52	22.47	
20	16QAM	1	99	22.45	22.43	22.36	
20	16QAM	50	0	21.25	21.28	21.22	23
20	16QAM	50	24	21.30	21.27	21.27	
20	16QAM	50	50	21.28	21.31	21.18	
20	16QAM	100	0	21.28	21.23	21.23	
20	64QAM	1	0	21.42	21.51	21.39	23
20	64QAM	1	49	21.39	21.42	21.32	
20	64QAM	1	99	21.37	21.39	21.29	
20	64QAM	50	0	20.27	20.32	20.24	22
20	64QAM	50	24	20.33	20.30	20.28	



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20	64QAM	50	50	20.29	20.31	20.20	
20	64QAM	100	0	20.30	20.27	20.25	
20	256QAM	1	0	18.24	18.33	18.17	
20	256QAM	1	49	18.14	18.24	18.10	20
20	256QAM	1	99	18.17	18.32	18.19	
20	256QAM	50	0	18.04	18.20	18.03	
20	256QAM	50	24	18.07	18.15	18.09	20
20	256QAM	50	50	18.09	18.21	18.07	
20	256QAM	100	0	18.09	18.14	18.09	
Channel				132047	132322	132597	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	QPSK	1	0	23.15	23.26	23.20	25
15	QPSK	1	37	23.16	23.20	23.07	
15	QPSK	1	74	23.15	23.19	23.07	
15	QPSK	36	0	22.20	22.27	22.17	24
15	QPSK	36	20	22.31	22.26	22.17	
15	QPSK	36	39	22.23	22.29	22.20	
15	QPSK	75	0	22.26	22.25	22.16	24
15	16QAM	1	0	22.50	22.57	22.53	
15	16QAM	1	37	22.48	22.55	22.46	
15	16QAM	1	74	22.42	22.46	22.36	23
15	16QAM	36	0	21.21	21.27	21.18	
15	16QAM	36	20	21.29	21.27	21.17	
15	16QAM	36	39	21.26	21.30	21.17	23
15	16QAM	75	0	21.27	21.25	21.14	
15	64QAM	1	0	21.33	21.41	21.41	
15	64QAM	1	37	21.39	21.48	21.36	22
15	64QAM	1	74	21.36	21.40	21.25	
15	64QAM	36	0	20.22	20.36	20.26	
15	64QAM	36	20	20.31	20.31	20.24	20
15	64QAM	36	39	20.30	20.36	20.22	
15	64QAM	75	0	20.28	20.27	20.17	
15	256QAM	1	0	18.10	18.16	18.12	20
15	256QAM	1	37	18.02	18.18	18.05	
15	256QAM	1	74	18.14	18.16	18.15	
15	256QAM	36	0	18.06	18.13	18.08	20
15	256QAM	36	20	18.02	18.05	18.05	
15	256QAM	36	39	18.09	18.07	18.06	
15	256QAM	75	0	18.04	18.05	18.03	Tune-up limit (dBm)
Channel				132022	132322	132622	
Frequency (MHz)				1715	1745	1775	
10	QPSK	1	0	23.20	23.23	23.10	25
10	QPSK	1	25	23.16	23.22	23.07	
10	QPSK	1	49	23.10	23.17	23.00	
10	QPSK	25	0	22.19	22.26	22.14	24
10	QPSK	25	12	22.27	22.28	22.14	
10	QPSK	25	25	22.26	22.31	22.17	
10	QPSK	50	0	22.28	22.27	22.12	24
10	16QAM	1	0	22.60	22.60	22.49	
10	16QAM	1	25	22.51	22.60	22.44	
10	16QAM	1	49	22.50	22.56	22.41	23
10	16QAM	25	0	21.21	21.28	21.13	
10	16QAM	25	12	21.28	21.27	21.14	
10	16QAM	25	25	21.24	21.30	21.16	23
10	16QAM	50	0	21.28	21.28	21.14	
10	64QAM	1	0	21.40	21.47	21.35	
10	64QAM	1	25	21.44	21.53	21.35	22
10	64QAM	1	49	21.38	21.42	21.32	
10	64QAM	25	0	20.27	20.31	20.17	
10	64QAM	25	12	20.35	20.30	20.20	20
10	64QAM	25	25	20.29	20.33	20.16	
10	64QAM	50	0	20.31	20.27	20.16	
10	256QAM	1	0	18.16	18.25	18.20	20



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10	256QAM	1	25	18.09	18.20	18.04	20
10	256QAM	1	49	18.13	18.24	18.13	
10	256QAM	25	0	18.05	18.06	18.01	
10	256QAM	25	12	18.07	18.05	18.00	
10	256QAM	25	25	18.05	18.15	18.06	
10	256QAM	50	0	18.07	18.02	18.06	
Channel				131997	132322	132647	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	QPSK	1	0	23.11	23.19	23.02	25
5	QPSK	1	12	23.23	23.26	23.10	
5	QPSK	1	24	23.14	23.21	23.02	
5	QPSK	12	0	22.29	22.30	22.13	24
5	QPSK	12	7	22.31	22.30	22.12	
5	QPSK	12	13	22.21	22.29	22.15	
5	QPSK	25	0	22.25	22.27	22.08	
5	16QAM	1	0	22.42	22.53	22.36	24
5	16QAM	1	12	22.53	22.59	22.43	
5	16QAM	1	24	22.51	22.53	22.36	
5	16QAM	12	0	21.32	21.28	21.14	23
5	16QAM	12	7	21.33	21.34	21.20	
5	16QAM	12	13	21.31	21.31	21.20	
5	16QAM	25	0	21.25	21.27	21.14	
5	64QAM	1	0	21.39	21.48	21.32	23
5	64QAM	1	12	21.43	21.50	21.35	
5	64QAM	1	24	21.42	21.51	21.33	
5	64QAM	12	0	20.33	20.35	20.22	22
5	64QAM	12	7	20.36	20.34	20.19	
5	64QAM	12	13	20.33	20.39	20.24	
5	64QAM	25	0	20.28	20.32	20.12	
5	256QAM	1	0	18.23	18.22	18.16	20
5	256QAM	1	12	18.09	18.13	18.03	
5	256QAM	1	24	18.11	18.23	18.03	
5	256QAM	12	0	18.07	18.16	18.02	20
5	256QAM	12	7	18.03	18.08	18.02	
5	256QAM	12	13	18.01	18.08	18.07	
5	256QAM	25	0	18.01	18.06	18.02	
Channel				131987	132322	132657	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1745	1778.5	
3	QPSK	1	0	23.11	23.21	23.11	25
3	QPSK	1	8	23.25	23.32	23.16	
3	QPSK	1	14	23.18	23.22	23.09	
3	QPSK	8	0	22.28	22.25	22.20	24
3	QPSK	8	4	22.27	22.29	22.18	
3	QPSK	8	7	22.26	22.28	22.18	
3	QPSK	15	0	22.22	22.25	22.16	
3	16QAM	1	0	22.47	22.54	22.43	24
3	16QAM	1	8	22.58	22.64	22.47	
3	16QAM	1	14	22.50	22.55	22.37	
3	16QAM	8	0	21.30	21.33	21.25	23
3	16QAM	8	4	21.34	21.38	21.25	
3	16QAM	8	7	21.32	21.38	21.22	
3	16QAM	15	0	21.29	21.32	21.22	
3	64QAM	1	0	21.39	21.45	21.34	23
3	64QAM	1	8	21.48	21.57	21.39	
3	64QAM	1	14	21.43	21.56	21.36	
3	64QAM	8	0	20.35	20.33	20.24	22
3	64QAM	8	4	20.35	20.33	20.25	
3	64QAM	8	7	20.30	20.38	20.20	
3	64QAM	15	0	20.29	20.30	20.19	
3	256QAM	1	0	18.18	18.23	18.10	20
3	256QAM	1	8	18.04	18.14	18.02	
3	256QAM	1	14	18.14	18.24	18.13	
3	256QAM	8	0	18.00	18.18	18.01	20



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3	256QAM	8	4	18.03	18.12	18.04	
3	256QAM	8	7	18.08	18.11	18.03	
3	256QAM	15	0	18.04	18.14	18.07	
Channel				131979	132322	132665	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1745	1779.3	
1.4	QPSK	1	0	23.03	23.18	23.06	25
1.4	QPSK	1	3	23.16	23.24	23.09	
1.4	QPSK	1	5	23.06	23.18	23.03	
1.4	QPSK	3	0	23.11	23.19	23.09	
1.4	QPSK	3	1	23.15	23.23	23.09	
1.4	QPSK	3	3	23.10	23.18	23.04	24
1.4	QPSK	6	0	22.17	22.27	22.11	
1.4	16QAM	1	0	22.40	22.50	22.38	24
1.4	16QAM	1	3	22.51	22.57	22.41	
1.4	16QAM	1	5	22.38	22.47	22.36	
1.4	16QAM	3	0	22.21	22.28	22.13	
1.4	16QAM	3	1	22.26	22.34	22.18	
1.4	16QAM	3	3	22.19	22.28	22.11	23
1.4	16QAM	6	0	21.25	21.33	21.18	
1.4	64QAM	1	0	21.30	21.44	21.31	23
1.4	64QAM	1	3	21.44	21.50	21.35	
1.4	64QAM	1	5	21.35	21.44	21.25	
1.4	64QAM	3	0	21.33	21.41	21.27	
1.4	64QAM	3	1	21.35	21.45	21.30	
1.4	64QAM	3	3	21.32	21.40	21.24	22
1.4	64QAM	6	0	20.18	20.26	20.12	
1.4	256QAM	1	0	18.19	18.26	18.13	20
1.4	256QAM	1	3	18.10	18.14	18.09	
1.4	256QAM	1	5	18.10	18.31	18.09	
1.4	256QAM	3	0	18.07	18.10	18.05	
1.4	256QAM	3	1	18.05	18.13	18.06	
1.4	256QAM	3	3	18.08	18.19	18.09	20
1.4	256QAM	6	0	18.08	18.08	18.09	

**<LTE Band 71\_Ant DIV>**

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	23.19	23.20	23.10	25
20	QPSK	1	49	23.06	23.11	23.07	
20	QPSK	1	99	23.06	23.14	23.05	
20	QPSK	50	0	22.27	22.29	22.25	24
20	QPSK	50	24	22.26	22.24	22.20	
20	QPSK	50	50	22.20	22.23	22.17	
20	QPSK	100	0	22.20	22.21	22.19	24
20	16QAM	1	0	22.54	22.48	22.48	
20	16QAM	1	49	22.46	22.44	22.45	
20	16QAM	1	99	22.44	22.40	22.41	23
20	16QAM	50	0	21.22	21.21	21.21	
20	16QAM	50	24	21.22	21.25	21.21	
20	16QAM	50	50	21.26	21.29	21.20	
20	16QAM	100	0	21.27	21.21	21.18	
20	64QAM	1	0	21.36	21.34	21.32	23
20	64QAM	1	49	21.28	21.36	21.22	
20	64QAM	1	99	21.32	21.37	21.28	
20	64QAM	50	0	20.26	20.26	20.25	22
20	64QAM	50	24	20.31	20.27	20.25	
20	64QAM	50	50	20.29	20.29	20.25	
20	64QAM	100	0	20.30	20.23	20.21	
20	256QAM	1	0	18.19	18.20	18.15	20



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20	256QAM	1	49	18.17	18.25	18.15	20
20	256QAM	1	99	18.19	18.22	18.14	
20	256QAM	50	0	18.06	18.14	18.07	
20	256QAM	50	24	18.06	18.11	18.04	
20	256QAM	50	50	18.07	18.13	18.08	
20	256QAM	100	0	18.02	18.12	18.03	
Channel				133197	133297	133397	Tune-up limit (dBm)
Frequency (MHz)				670.5	680.5	690.5	
15	QPSK	1	0	23.18	23.17	23.14	25
15	QPSK	1	37	23.04	23.09	23.07	
15	QPSK	1	74	23.09	23.06	23.07	
15	QPSK	36	0	22.20	22.19	22.21	24
15	QPSK	36	20	22.18	22.20	22.26	
15	QPSK	36	39	22.18	22.18	22.21	
15	QPSK	75	0	22.15	22.19	22.23	24
15	16QAM	1	0	22.53	22.40	22.44	
15	16QAM	1	37	22.35	22.42	22.40	
15	16QAM	1	74	22.41	22.44	22.41	23
15	16QAM	36	0	21.18	21.19	21.23	
15	16QAM	36	20	21.18	21.18	21.25	
15	16QAM	36	39	21.18	21.20	21.18	23
15	16QAM	75	0	21.18	21.20	21.26	
15	64QAM	1	0	21.42	21.30	21.31	
15	64QAM	1	37	21.29	21.37	21.32	22
15	64QAM	1	74	21.30	21.26	21.29	
15	64QAM	36	0	20.22	20.27	20.25	
15	64QAM	36	20	20.20	20.24	20.30	20
15	64QAM	36	39	20.20	20.24	20.28	
15	64QAM	75	0	20.19	20.24	20.29	
15	256QAM	1	0	18.13	18.14	18.09	20
15	256QAM	1	37	18.19	18.06	18.08	
15	256QAM	1	74	18.16	18.12	18.07	
15	256QAM	36	0	18.03	18.04	18.03	20
15	256QAM	36	20	18.01	18.07	18.05	
15	256QAM	36	39	18.01	18.06	18.04	
15	256QAM	75	0	18.03	18.02	18.01	Tune-up limit (dBm)
Channel				133172	133297	133422	
Frequency (MHz)				668	680.5	693	
10	QPSK	1	0	23.12	23.13	23.08	25
10	QPSK	1	25	23.00	23.06	23.07	
10	QPSK	1	49	23.01	23.01	23.03	
10	QPSK	25	0	22.18	22.18	22.15	24
10	QPSK	25	12	22.12	22.10	22.05	
10	QPSK	25	25	22.07	22.17	22.03	
10	QPSK	50	0	22.07	22.08	22.14	24
10	16QAM	1	0	22.41	22.40	22.35	
10	16QAM	1	25	22.34	22.32	22.38	
10	16QAM	1	49	22.38	22.33	22.36	23
10	16QAM	25	0	21.16	21.13	21.06	
10	16QAM	25	12	21.14	21.14	21.09	
10	16QAM	25	25	21.14	21.17	21.09	23
10	16QAM	50	0	21.19	21.08	21.12	
10	64QAM	1	0	21.29	21.29	21.27	
10	64QAM	1	25	21.19	21.25	21.07	22
10	64QAM	1	49	21.26	21.23	21.23	
10	64QAM	25	0	20.17	20.11	20.19	
10	64QAM	25	12	20.20	20.20	20.13	20
10	64QAM	25	25	20.14	20.14	20.17	
10	64QAM	50	0	20.22	20.08	20.15	
10	256QAM	1	0	18.13	18.20	18.13	20
10	256QAM	1	25	18.14	18.16	18.16	
10	256QAM	1	49	18.12	18.13	18.01	



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10	256QAM	25	0	18.00	18.09	18.00	20
10	256QAM	25	12	18.03	18.01	18.03	
10	256QAM	25	25	18.03	18.02	18.01	
10	256QAM	50	0	18.00	18.08	18.03	
Channel				133147	133297	133447	Tune-up limit (dBm)
Frequency (MHz)				665.5	680.5	695.5	
5	QPSK	1	0	23.12	23.13	23.10	25
5	QPSK	1	12	23.06	23.05	23.10	
5	QPSK	1	24	23.08	23.05	23.04	
5	QPSK	12	0	22.17	22.15	22.18	24
5	QPSK	12	7	22.18	22.18	22.11	
5	QPSK	12	13	22.14	22.14	22.02	
5	QPSK	25	0	22.06	22.14	22.07	
5	16QAM	1	0	22.45	22.34	22.43	24
5	16QAM	1	12	22.40	22.32	22.34	
5	16QAM	1	24	22.34	22.27	22.34	
5	16QAM	12	0	21.16	21.09	21.12	23
5	16QAM	12	7	21.08	21.14	21.09	
5	16QAM	12	13	21.19	21.18	21.10	
5	16QAM	25	0	21.13	21.08	21.09	
5	64QAM	1	0	21.29	21.23	21.18	23
5	64QAM	1	12	21.20	21.25	21.14	
5	64QAM	1	24	21.22	21.28	21.18	
5	64QAM	12	0	20.13	20.14	20.15	22
5	64QAM	12	7	20.22	20.16	20.18	
5	64QAM	12	13	20.24	20.22	20.10	
5	64QAM	25	0	20.20	20.15	20.07	
5	256QAM	1	0	18.19	18.17	18.11	20
5	256QAM	1	12	18.14	18.13	18.08	
5	256QAM	1	24	18.03	18.10	18.08	
5	256QAM	12	0	18.09	18.03	18.00	20
5	256QAM	12	7	18.03	18.09	18.00	
5	256QAM	12	13	18.04	18.04	18.05	
5	256QAM	25	0	18.04	18.03	18.02	

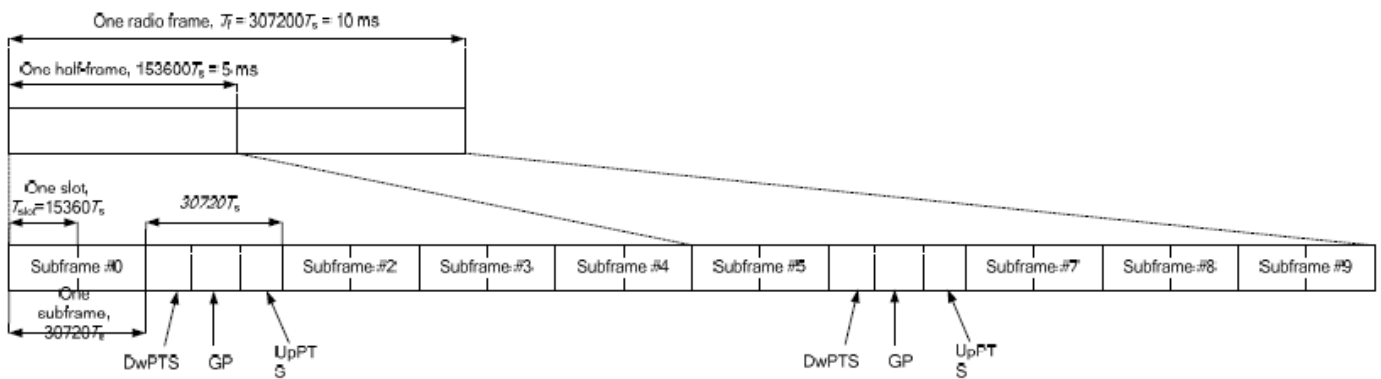


**<TDD LTE SAR Measurement>**

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 Base station simulator was used for LTE output power measurements and SAR testing.



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

**Table 4.2-2: Uplink-downlink configurations.**

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

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

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

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

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

The highest duty factor is resulted from:

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



<LTE Band 38\_Ant Main>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				37850	38000	38150	
Frequency (MHz)				2580	2595	2610	
20	QPSK	1	0	23.31	23.34	23.37	25
20	QPSK	1	49	23.25	23.22	23.24	
20	QPSK	1	99	23.25	23.22	23.24	
20	QPSK	50	0	22.37	22.34	22.37	24
20	QPSK	50	24	22.44	22.34	22.44	
20	QPSK	50	50	22.41	22.39	22.42	
20	QPSK	100	0	22.44	22.43	22.44	24
20	16QAM	1	0	22.41	22.36	22.41	
20	16QAM	1	49	22.32	22.33	22.34	
20	16QAM	1	99	22.35	22.36	22.39	23
20	16QAM	50	0	21.42	21.38	21.41	
20	16QAM	50	24	21.46	21.39	21.46	
20	16QAM	50	50	21.45	21.42	21.45	23
20	16QAM	100	0	21.46	21.43	21.46	
20	64QAM	1	0	21.11	21.08	21.07	
20	64QAM	1	49	21.06	21.04	21.06	23
20	64QAM	1	99	21.07	21.11	21.13	
20	64QAM	50	0	20.42	20.41	20.43	
20	64QAM	50	24	20.50	20.38	20.47	22
20	64QAM	50	50	20.45	20.42	20.45	
20	64QAM	100	0	20.48	20.44	20.46	
20	256QAM	1	0	18.21	18.22	18.27	20
20	256QAM	1	49	18.09	18.14	18.19	
20	256QAM	1	99	18.12	18.12	18.20	
20	256QAM	50	0	18.34	18.41	18.46	20
20	256QAM	50	24	18.37	18.46	18.51	
20	256QAM	50	50	18.34	18.35	18.47	
20	256QAM	100	0	18.34	18.38	18.48	
Channel				37825	38000	38175	Tune-up limit (dBm)
Frequency (MHz)				2577.5	2595	2612.5	
15	QPSK	1	0	23.25	23.23	23.25	25
15	QPSK	1	37	23.21	23.23	23.24	
15	QPSK	1	74	23.22	23.20	23.27	
15	QPSK	36	0	22.37	22.35	22.36	24
15	QPSK	36	20	22.43	22.31	22.42	
15	QPSK	36	39	22.39	22.37	22.42	
15	QPSK	75	0	22.42	22.35	22.43	24
15	16QAM	1	0	22.43	22.39	22.41	
15	16QAM	1	37	22.27	22.27	22.33	
15	16QAM	1	74	22.41	22.38	22.43	23
15	16QAM	36	0	21.33	21.30	21.34	
15	16QAM	36	20	21.38	21.29	21.40	
15	16QAM	36	39	21.36	21.34	21.39	23
15	16QAM	75	0	21.46	21.36	21.47	
15	64QAM	1	0	21.10	21.04	21.04	
15	64QAM	1	37	21.10	21.07	21.10	23
15	64QAM	1	74	21.05	21.09	21.14	
15	64QAM	36	0	20.40	20.36	20.39	
15	64QAM	36	20	20.44	20.36	20.46	22
15	64QAM	36	39	20.43	20.41	20.45	
15	64QAM	75	0	20.44	20.35	20.48	
15	256QAM	1	0	18.18	18.14	18.25	20
15	256QAM	1	37	18.02	18.02	18.03	
15	256QAM	1	74	18.02	18.07	18.05	
15	256QAM	36	0	18.36	18.36	18.36	20
15	256QAM	36	20	18.33	18.36	18.45	



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15	256QAM	36	39	18.30	18.29	18.41	
15	256QAM	75	0	18.39	18.38	18.34	
Channel				37800	38000	38200	Tune-up limit (dBm)
Frequency (MHz)				2575	2595	2615	
10	QPSK	1	0	23.31	23.33	23.34	25
10	QPSK	1	25	23.27	23.31	23.34	
10	QPSK	1	49	23.34	23.34	23.33	
10	QPSK	25	0	22.44	22.34	22.37	24
10	QPSK	25	12	22.46	22.35	22.47	
10	QPSK	25	25	22.45	22.43	22.45	
10	QPSK	50	0	22.44	22.38	22.47	
10	16QAM	1	0	22.49	22.47	22.48	24
10	16QAM	1	25	22.42	22.42	22.45	
10	16QAM	1	49	22.42	22.42	22.48	23
10	16QAM	25	0	21.46	21.36	21.37	
10	16QAM	25	12	21.48	21.37	21.48	
10	16QAM	25	25	21.38	21.42	21.46	
10	16QAM	50	0	21.47	21.38	21.48	
10	64QAM	1	0	21.15	21.09	21.13	23
10	64QAM	1	25	21.16	21.18	21.19	
10	64QAM	1	49	21.12	21.13	21.20	
10	64QAM	25	0	20.51	20.42	20.43	22
10	64QAM	25	12	20.53	20.42	20.55	
10	64QAM	25	25	20.51	20.50	20.51	
10	64QAM	50	0	20.49	20.37	20.47	
10	256QAM	1	0	18.17	18.13	18.25	20
10	256QAM	1	25	18.03	18.05	18.08	
10	256QAM	1	49	18.07	18.09	18.08	
10	256QAM	25	0	18.36	18.30	18.39	20
10	256QAM	25	12	18.39	18.44	18.36	
10	256QAM	25	25	18.32	18.36	18.42	
10	256QAM	50	0	18.41	18.32	18.31	
Channel				37775	38000	38225	Tune-up limit (dBm)
Frequency (MHz)				2572.5	2595	2617.5	
5	QPSK	1	0	23.27	23.21	23.26	25
5	QPSK	1	12	23.26	23.29	23.30	
5	QPSK	1	24	23.22	23.30	23.30	
5	QPSK	12	0	22.45	22.35	22.40	24
5	QPSK	12	7	22.47	22.36	22.47	
5	QPSK	12	13	22.44	22.41	22.46	
5	QPSK	25	0	22.44	22.32	22.41	
5	16QAM	1	0	22.37	22.40	22.46	24
5	16QAM	1	12	22.48	22.50	22.51	
5	16QAM	1	24	22.46	22.50	22.54	
5	16QAM	12	0	21.42	21.33	21.38	23
5	16QAM	12	7	21.44	21.36	21.44	
5	16QAM	12	13	21.41	21.39	21.40	
5	16QAM	25	0	21.44	21.36	21.50	
5	64QAM	1	0	21.14	21.11	21.17	23
5	64QAM	1	12	21.18	21.17	21.21	
5	64QAM	1	24	21.18	21.20	21.26	
5	64QAM	12	0	20.49	20.38	20.40	22
5	64QAM	12	7	20.48	20.42	20.49	
5	64QAM	12	13	20.46	20.43	20.48	
5	64QAM	25	0	20.46	20.39	20.49	
5	256QAM	1	0	18.15	18.13	18.17	20
5	256QAM	1	12	18.01	18.08	18.08	
5	256QAM	1	24	18.11	18.13	18.15	
5	256QAM	12	0	18.24	18.23	18.38	20
5	256QAM	12	7	18.38	18.38	18.46	
5	256QAM	12	13	18.28	18.27	18.41	
5	256QAM	25	0	18.40	18.25	18.33	



**<LTE Band 41\_Ant Main>**

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	23.30	23.32	23.41	23.28	23.39	25
20	QPSK	1	49	23.24	23.31	23.33	23.24	23.37	
20	QPSK	1	99	23.23	23.29	23.29	23.05	23.26	
20	QPSK	50	0	22.43	22.42	22.45	22.34	22.37	24
20	QPSK	50	24	22.38	22.39	22.43	22.35	22.38	
20	QPSK	50	50	22.41	22.37	22.41	22.22	22.36	
20	QPSK	100	0	22.44	22.39	22.46	22.29	22.33	
20	16QAM	1	0	22.39	22.42	22.46	22.13	22.14	24
20	16QAM	1	49	22.31	22.36	22.29	22.31	22.47	
20	16QAM	1	99	22.33	22.34	22.36	22.11	22.33	
20	16QAM	50	0	21.40	21.45	21.40	21.26	21.30	23
20	16QAM	50	24	21.47	21.51	21.46	21.39	21.51	
20	16QAM	50	50	21.43	21.49	21.45	21.25	21.47	
20	16QAM	100	0	21.45	21.51	21.45	21.29	21.32	
20	64QAM	1	0	21.06	21.09	21.10	21.06	21.05	23
20	64QAM	1	49	21.14	21.15	21.13	21.06	21.22	
20	64QAM	1	99	21.06	21.11	21.11	21.03	21.05	
20	64QAM	50	0	20.43	20.47	20.42	20.28	20.30	22
20	64QAM	50	24	20.46	20.54	20.44	20.38	20.52	
20	64QAM	50	50	20.44	20.50	20.44	20.25	20.49	
20	64QAM	100	0	20.48	20.52	20.45	20.30	20.35	
20	256QAM	1	0	18.30	18.32	18.37	18.29	18.35	20
20	256QAM	1	49	18.00	18.06	18.15	18.01	18.04	
20	256QAM	1	99	18.09	18.04	18.16	18.04	18.12	
20	256QAM	50	0	18.34	18.30	18.42	18.24	18.32	20
20	256QAM	50	24	18.39	18.36	18.48	18.37	18.44	
20	256QAM	50	50	18.26	18.32	18.41	18.30	18.35	
20	256QAM	100	0	18.31	18.32	18.44	18.31	18.36	
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	23.28	23.36	23.28	23.17	23.24	25.00
15	QPSK	1	37	23.20	23.24	23.21	23.26	23.29	
15	QPSK	1	74	23.20	23.29	23.31	23.05	23.34	
15	QPSK	36	0	22.44	22.40	22.35	22.26	22.31	24
15	QPSK	36	20	22.38	22.47	22.41	22.36	22.42	
15	QPSK	36	39	22.38	22.46	22.40	22.25	22.46	
15	QPSK	75	0	22.40	22.46	22.43	22.33	22.37	
15	16QAM	1	0	22.37	22.41	22.40	22.28	22.23	24
15	16QAM	1	37	22.17	22.27	22.27	22.29	22.46	
15	16QAM	1	74	22.30	22.45	22.41	22.14	22.43	
15	16QAM	36	0	21.40	21.39	21.34	21.20	21.27	23
15	16QAM	36	20	21.36	21.43	21.36	21.34	21.36	
15	16QAM	36	39	21.36	21.42	21.37	21.22	21.41	
15	16QAM	75	0	21.44	21.51	21.44	21.32	21.38	
15	64QAM	1	0	21.06	21.08	21.06	21.01	21.04	23
15	64QAM	1	37	21.02	21.08	21.06	21.08	21.21	
15	64QAM	1	74	21.05	21.18	21.11	21.06	21.13	
15	64QAM	36	0	20.46	20.44	20.37	20.28	20.35	22
15	64QAM	36	20	20.41	20.47	20.41	20.37	20.44	
15	64QAM	36	39	20.40	20.46	20.41	20.26	20.47	
15	64QAM	75	0	20.42	20.48	20.43	20.34	20.37	
15	256QAM	1	0	18.29	18.27	18.29	18.26	18.31	20
15	256QAM	1	37	18.09	18.02	18.09	18.03	18.09	
15	256QAM	1	74	18.00	18.01	18.08	18.02	18.06	
15	256QAM	36	0	18.22	18.26	18.32	18.19	18.33	20



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15	256QAM	36	20	18.26	18.30	18.37	18.27	18.39	
15	256QAM	36	39	18.23	18.32	18.26	18.24	18.31	
15	256QAM	75	0	18.19	18.36	18.31	18.32	18.33	
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)
Frequency (MHz)				2501	2547	2593	2639	2685	
10	QPSK	1	0	23.35	23.37	23.34	23.24	23.27	25.00
10	QPSK	1	25	23.29	23.37	23.34	23.30	23.32	
10	QPSK	1	49	23.27	23.37	23.34	23.06	23.14	
10	QPSK	25	0	22.44	22.41	22.37	22.28	22.41	24
10	QPSK	25	12	22.44	22.50	22.47	22.42	22.46	
10	QPSK	25	25	22.41	22.47	22.43	22.32	22.44	
10	QPSK	50	0	22.44	22.49	22.44	22.35	22.39	24
10	16QAM	1	0	22.45	22.49	22.42	22.17	22.31	
10	16QAM	1	25	22.38	22.48	22.40	22.40	22.55	
10	16QAM	1	49	22.39	22.42	22.38	22.14	22.24	23
10	16QAM	25	0	21.45	21.39	21.37	21.27	21.43	
10	16QAM	25	12	21.46	21.51	21.50	21.46	21.49	
10	16QAM	25	25	21.43	21.48	21.40	21.34	21.44	23
10	16QAM	50	0	21.46	21.50	21.46	21.37	21.40	
10	64QAM	1	0	21.18	21.12	21.08	21.04	21.01	
10	64QAM	1	25	21.14	21.22	21.20	21.13	21.25	22
10	64QAM	1	49	21.15	21.17	21.14	21.01	21.08	
10	64QAM	25	0	20.50	20.46	20.45	20.34	20.48	
10	64QAM	25	12	20.53	20.57	20.53	20.51	20.54	20
10	64QAM	25	25	20.50	20.54	20.50	20.38	20.50	
10	64QAM	50	0	20.46	20.49	20.47	20.37	20.41	
10	256QAM	1	0	18.25	18.23	18.34	18.19	18.32	20
10	256QAM	1	25	18.01	18.05	18.08	18.05	18.00	
10	256QAM	1	49	18.08	18.05	18.11	18.09	18.08	
10	256QAM	25	0	18.29	18.30	18.40	18.32	18.32	20
10	256QAM	25	12	18.34	18.35	18.45	18.29	18.38	
10	256QAM	25	25	18.27	18.27	18.35	18.29	18.27	
10	256QAM	50	0	18.24	18.20	18.41	18.23	18.26	Tune-up limit (dBm)
Channel				39675	40148	40620	41093	41565	
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	23.32	23.30	23.24	23.22	23.32	25.00
5	QPSK	1	12	23.26	23.38	23.31	23.28	23.33	
5	QPSK	1	24	23.26	23.36	23.31	23.24	23.34	
5	QPSK	12	0	22.47	22.46	22.39	22.35	22.52	24
5	QPSK	12	7	22.47	22.47	22.47	22.43	22.55	
5	QPSK	12	13	22.42	22.48	22.43	22.45	22.53	
5	QPSK	25	0	22.43	22.45	22.41	22.40	22.53	24
5	16QAM	1	0	22.45	22.41	22.37	22.42	22.57	
5	16QAM	1	12	22.48	22.55	22.50	22.50	22.63	
5	16QAM	1	24	22.50	22.61	22.56	22.51	22.53	23
5	16QAM	12	0	21.43	21.44	21.35	21.34	21.50	
5	16QAM	12	7	21.45	21.51	21.45	21.39	21.50	
5	16QAM	12	13	21.43	21.45	21.42	21.37	21.47	23
5	16QAM	25	0	21.49	21.48	21.45	21.43	21.56	
5	64QAM	1	0	21.20	21.15	21.09	21.05	21.27	
5	64QAM	1	12	21.18	21.26	21.19	21.18	21.30	22
5	64QAM	1	24	21.20	21.22	21.19	21.15	21.25	
5	64QAM	12	0	20.52	20.52	20.42	20.42	20.57	
5	64QAM	12	7	20.49	20.56	20.49	20.46	20.55	20
5	64QAM	12	13	20.48	20.50	20.46	20.46	20.52	
5	64QAM	25	0	20.47	20.49	20.46	20.46	20.60	
5	256QAM	1	0	18.20	18.30	18.29	18.25	18.34	20
5	256QAM	1	12	18.07	18.08	18.07	18.02	18.05	
5	256QAM	1	24	18.04	18.09	18.14	18.02	18.08	
5	256QAM	12	0	18.23	18.25	18.23	18.19	18.28	20
5	256QAM	12	7	18.27	18.43	18.36	18.27	18.38	
5	256QAM	12	13	18.18	18.25	18.22	18.15	18.26	
5	256QAM	25	0	18.29	18.33	18.29	18.20	18.33	



<LTE Band 42\_Ant MIMO3>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				42190	42590	42990	
Frequency (MHz)				3460	3500	3540	
20	QPSK	1	0	24.14	23.60	23.28	25
20	QPSK	1	49	23.94	23.45	23.16	
20	QPSK	1	99	23.79	23.29	23.11	
20	QPSK	50	0	23.06	22.58	22.28	24
20	QPSK	50	24	23.02	22.53	22.27	
20	QPSK	50	50	22.91	22.44	22.19	
20	QPSK	100	0	23.02	22.53	22.27	24
20	16QAM	1	0	23.23	22.68	22.33	
20	16QAM	1	49	23.01	22.44	22.15	
20	16QAM	1	99	22.80	22.27	22.10	23
20	16QAM	50	0	22.11	21.63	21.31	
20	16QAM	50	24	22.05	21.59	21.32	
20	16QAM	50	50	21.96	21.45	21.22	23
20	16QAM	100	0	22.03	21.53	21.28	
20	64QAM	1	0	21.88	21.54	21.35	
20	64QAM	1	49	21.65	21.35	21.19	23
20	64QAM	1	99	21.51	21.21	21.10	
20	64QAM	50	0	21.14	20.59	20.32	
20	64QAM	50	24	21.12	20.58	20.34	22
20	64QAM	50	50	20.96	20.47	20.19	
20	64QAM	100	0	21.11	20.58	20.30	
20	256QAM	1	0	18.79	18.54	18.47	20
20	256QAM	1	49	18.75	18.41	18.37	
20	256QAM	1	99	18.83	18.48	18.44	
20	256QAM	50	0	18.96	18.62	18.63	20
20	256QAM	50	24	19.05	18.78	18.64	
20	256QAM	50	50	19.07	18.82	18.70	
20	256QAM	100	0	19.03	18.75	18.61	
Channel				42165	42590	43015	Tune-up limit (dBm)
Frequency (MHz)				3457.5	3500	3542.5	
15	QPSK	1	0	23.97	23.49	23.16	25
15	QPSK	1	37	23.84	23.26	23.01	
15	QPSK	1	74	23.69	23.10	23.03	
15	QPSK	36	0	22.93	22.48	22.10	24
15	QPSK	36	20	22.82	22.41	22.08	
15	QPSK	36	39	22.76	22.34	22.09	
15	QPSK	75	0	22.82	22.37	22.13	24
15	16QAM	1	0	23.04	22.48	22.23	
15	16QAM	1	37	22.84	22.25	22.05	
15	16QAM	1	74	22.66	22.14	22.07	23
15	16QAM	36	0	21.91	21.46	21.14	
15	16QAM	36	20	21.95	21.39	21.14	
15	16QAM	36	39	21.77	21.29	21.06	23
15	16QAM	75	0	21.83	21.43	21.15	
15	64QAM	1	0	21.75	21.44	21.25	
15	64QAM	1	37	21.52	21.23	21.07	23
15	64QAM	1	74	21.35	21.11	21.09	
15	64QAM	36	0	20.96	20.47	20.16	
15	64QAM	36	20	20.95	20.45	20.21	22
15	64QAM	36	39	20.86	20.34	20.08	
15	64QAM	75	0	20.99	20.48	20.15	
15	256QAM	1	0	18.72	18.48	18.45	20
15	256QAM	1	37	18.58	18.41	18.40	
15	256QAM	1	74	18.70	18.48	18.35	
15	256QAM	36	0	18.79	18.64	18.53	20



**FCC SAR TEST REPORT**

**Report No. : FA460704A**

15	256QAM	36	20	19.00	18.73	18.57	
15	256QAM	36	39	19.00	18.63	18.65	
15	256QAM	75	0	18.89	18.64	18.59	
Channel				42140	42590	43040	Tune-up limit (dBm)
Frequency (MHz)				3455	3500	3545	
10	QPSK	1	0	24.00	23.41	23.17	25
10	QPSK	1	25	23.77	23.34	23.01	
10	QPSK	1	49	23.66	23.17	23.09	
10	QPSK	25	0	22.87	22.42	22.16	24
10	QPSK	25	12	22.86	22.36	22.10	
10	QPSK	25	25	22.72	22.25	22.08	
10	QPSK	50	0	22.92	22.38	22.12	24
10	16QAM	1	0	23.12	22.57	22.13	
10	16QAM	1	25	22.82	22.29	22.05	
10	16QAM	1	49	22.64	22.12	22.07	23
10	16QAM	25	0	22.00	21.45	21.20	
10	16QAM	25	12	21.95	21.40	21.17	
10	16QAM	25	25	21.77	21.27	21.05	23
10	16QAM	50	0	21.84	21.34	21.11	
10	64QAM	1	0	21.75	21.36	21.18	
10	64QAM	1	25	21.50	21.21	21.07	22
10	64QAM	1	49	21.40	21.08	21.00	
10	64QAM	25	0	20.95	20.44	20.16	
10	64QAM	25	12	20.94	20.39	20.19	20
10	64QAM	25	25	20.80	20.27	20.01	
10	64QAM	50	0	21.00	20.43	20.20	
10	256QAM	1	0	18.73	18.54	18.38	20
10	256QAM	1	25	18.71	18.40	18.39	
10	256QAM	1	49	18.71	18.56	18.47	
10	256QAM	25	0	18.81	18.55	18.55	20
10	256QAM	25	12	19.00	18.72	18.64	
10	256QAM	25	25	18.88	18.73	18.65	
10	256QAM	50	0	18.93	18.69	18.62	Tune-up limit (dBm)
Channel				42115	42590	43065	
Frequency (MHz)				3452.5	3500	3547.5	
5	QPSK	1	0	24.01	23.43	23.18	25
5	QPSK	1	12	23.81	23.30	23.03	
5	QPSK	1	24	23.62	23.16	23.02	
5	QPSK	12	0	22.88	22.45	22.10	24
5	QPSK	12	7	22.86	22.38	22.10	
5	QPSK	12	13	22.71	22.28	22.05	
5	QPSK	25	0	22.84	22.42	22.15	24
5	16QAM	1	0	23.07	22.50	22.23	
5	16QAM	1	12	22.85	22.29	22.01	
5	16QAM	1	24	22.68	22.12	22.00	23
5	16QAM	12	0	22.00	21.45	21.13	
5	16QAM	12	7	21.95	21.47	21.20	
5	16QAM	12	13	21.79	21.29	21.03	23
5	16QAM	25	0	21.84	21.37	21.17	
5	64QAM	1	0	21.74	21.44	21.24	
5	64QAM	1	12	21.52	21.17	21.09	22
5	64QAM	1	24	21.38	21.02	21.07	
5	64QAM	12	0	21.04	20.48	20.15	
5	64QAM	12	7	21.00	20.45	20.21	20
5	64QAM	12	13	20.77	20.28	20.06	
5	64QAM	25	0	20.96	20.39	20.16	
5	256QAM	1	0	18.71	18.53	18.45	20
5	256QAM	1	12	18.65	18.32	18.35	
5	256QAM	1	24	18.69	18.53	18.37	
5	256QAM	12	0	18.84	18.54	18.48	20
5	256QAM	12	7	18.97	18.74	18.60	
5	256QAM	12	13	18.97	18.70	18.55	
5	256QAM	25	0	18.93	18.58	18.62	





<LTE Band 48\_Ant MIMO3>

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	20.49	20.48	20.42	20.61	21.6
20	QPSK	1	49	20.31	20.37	20.30	20.57	
20	QPSK	1	99	20.21	20.27	20.23	20.53	
20	QPSK	50	0	19.52	19.59	19.51	19.74	20.6
20	QPSK	50	24	19.52	19.56	19.41	19.72	
20	QPSK	50	50	19.45	19.49	19.42	19.70	
20	QPSK	100	0	19.53	19.57	19.43	19.76	20.6
20	16QAM	1	0	19.50	19.57	19.56	19.75	
20	16QAM	1	49	19.33	19.45	19.37	19.62	
20	16QAM	1	99	19.28	19.34	19.30	19.59	19.6
20	16QAM	50	0	18.54	18.58	18.56	18.73	
20	16QAM	50	24	18.54	18.59	18.44	18.78	
20	16QAM	50	50	18.45	18.49	18.44	18.74	19.6
20	16QAM	100	0	18.54	18.57	18.41	18.75	
20	64QAM	1	0	18.24	18.28	18.23	18.42	
20	64QAM	1	49	18.12	18.21	18.13	18.39	19.6
20	64QAM	1	99	18.10	18.15	18.08	18.36	
20	64QAM	50	0	17.36	17.40	17.33	17.56	
20	64QAM	50	24	17.38	17.41	17.25	17.62	18.6
20	64QAM	50	50	17.27	17.30	17.26	17.52	
20	64QAM	100	0	17.34	17.41	17.25	17.58	
20	256QAM	1	0	14.82	14.81	14.75	14.83	16.6
20	256QAM	1	49	14.69	14.71	14.64	14.73	
20	256QAM	1	99	14.93	14.95	14.83	14.98	
20	256QAM	50	0	14.92	14.81	14.83	14.93	16.6
20	256QAM	50	24	15.08	15.01	15.01	15.09	
20	256QAM	50	50	15.03	15.05	15.01	15.10	
20	256QAM	100	0	14.95	14.97	14.95	15.04	
Channel				55315	55820	56160	56665	
Frequency (MHz)				3557.5	3608	3642	3692.5	Tune-up limit (dBm)
15	QPSK	1	0	20.41	20.39	20.32	20.54	21.6
15	QPSK	1	37	20.21	20.27	20.16	20.42	
15	QPSK	1	74	20.10	20.19	20.11	20.39	
15	QPSK	36	0	19.39	19.50	19.37	19.60	20.6
15	QPSK	36	20	19.46	19.53	19.26	19.62	
15	QPSK	36	39	19.37	19.36	19.30	19.56	
15	QPSK	75	0	19.45	19.47	19.32	19.68	20.6
15	16QAM	1	0	19.44	19.44	19.41	19.63	
15	16QAM	1	37	19.18	19.40	19.32	19.52	
15	16QAM	1	74	19.14	19.25	19.21	19.50	19.6
15	16QAM	36	0	18.42	18.50	18.42	18.58	
15	16QAM	36	20	18.49	18.52	18.34	18.65	
15	16QAM	36	39	18.31	18.35	18.29	18.65	19.6
15	16QAM	75	0	18.49	18.52	18.32	18.68	
15	64QAM	1	0	18.12	18.17	18.08	18.35	
15	64QAM	1	37	18.08	18.16	18.06	18.27	19.6
15	64QAM	1	74	18.07	18.01	18.01	18.21	
15	64QAM	36	0	17.30	17.25	17.25	17.45	
15	64QAM	36	20	17.26	17.36	17.19	17.48	18.6
15	64QAM	36	39	17.20	17.25	17.20	17.41	
15	64QAM	75	0	17.29	17.32	17.19	17.50	
15	256QAM	1	0	14.76	14.78	14.70	14.81	16.6
15	256QAM	1	37	14.66	14.63	14.62	14.65	
15	256QAM	1	74	14.84	14.86	14.81	14.93	
15	256QAM	36	0	14.80	14.75	14.75	14.80	16.6
15	256QAM	36	20	15.02	14.91	14.90	14.95	
15	256QAM	36	39	14.91	14.94	14.92	15.06	



**FCC SAR TEST REPORT**

**Report No. : FA460704A**

15	256QAM	75	0	14.94	14.88	14.82	14.85	
Channel				55290	55815	56165	56690	Tune-up limit (dBm)
Frequency (MHz)				3555	3607.5	3642.5	3695	
10	QPSK	1	0	20.34	20.34	20.34	20.50	21.6
10	QPSK	1	25	20.22	20.23	20.18	20.43	
10	QPSK	1	49	20.15	20.12	20.13	20.44	
10	QPSK	25	0	19.37	19.44	19.45	19.68	20.6
10	QPSK	25	12	19.38	19.51	19.35	19.58	
10	QPSK	25	25	19.35	19.40	19.31	19.65	
10	QPSK	50	0	19.39	19.48	19.35	19.67	
10	16QAM	1	0	19.39	19.51	19.49	19.67	20.6
10	16QAM	1	25	19.28	19.31	19.27	19.50	
10	16QAM	1	49	19.22	19.27	19.24	19.53	
10	16QAM	25	0	18.39	18.51	18.43	18.63	19.6
10	16QAM	25	12	18.46	18.50	18.35	18.69	
10	16QAM	25	25	18.40	18.44	18.38	18.65	
10	16QAM	50	0	18.40	18.52	18.31	18.70	
10	64QAM	1	0	18.16	18.15	18.14	18.37	19.6
10	64QAM	1	25	18.07	18.13	18.04	18.30	
10	64QAM	1	49	18.06	18.08	18.09	18.24	
10	64QAM	25	0	17.21	17.31	17.18	17.46	18.6
10	64QAM	25	12	17.31	17.32	17.11	17.56	
10	64QAM	25	25	17.14	17.16	17.20	17.46	
10	64QAM	50	0	17.26	17.34	17.14	17.47	
10	256QAM	1	0	14.74	14.80	14.73	14.73	16.6
10	256QAM	1	25	14.62	14.65	14.61	14.69	
10	256QAM	1	49	14.84	14.84	14.82	14.91	
10	256QAM	25	0	14.88	14.85	14.74	14.79	16.6
10	256QAM	25	12	14.99	14.97	14.91	14.95	
10	256QAM	25	25	14.99	15.01	14.91	14.98	
10	256QAM	50	0	14.94	14.84	14.84	14.98	
Channel				55265	55810	56170	56715	Tune-up limit (dBm)
Frequency (MHz)				3552.5	3607	3643	3697.5	
5	QPSK	1	0	20.36	20.43	20.37	20.52	21.6
5	QPSK	1	12	20.21	20.27	20.19	20.51	
5	QPSK	1	24	20.06	20.12	20.18	20.41	
5	QPSK	12	0	19.43	19.46	19.36	19.59	20.6
5	QPSK	12	7	19.37	19.48	19.28	19.64	
5	QPSK	12	13	19.35	19.44	19.31	19.63	
5	QPSK	25	0	19.39	19.43	19.30	19.66	
5	16QAM	1	0	19.45	19.51	19.51	19.66	20.6
5	16QAM	1	12	19.24	19.31	19.23	19.54	
5	16QAM	1	24	19.21	19.22	19.17	19.51	
5	16QAM	12	0	18.48	18.49	18.47	18.59	19.6
5	16QAM	12	7	18.43	18.49	18.34	18.71	
5	16QAM	12	13	18.35	18.35	18.35	18.64	
5	16QAM	25	0	18.46	18.44	18.27	18.64	
5	64QAM	1	0	18.15	18.14	18.18	18.34	19.6
5	64QAM	1	12	18.00	18.06	18.08	18.34	
5	64QAM	1	24	18.07	18.02	18.03	18.22	
5	64QAM	12	0	17.31	17.26	17.24	17.41	18.6
5	64QAM	12	7	17.31	17.35	17.10	17.55	
5	64QAM	12	13	17.16	17.17	17.12	17.37	
5	64QAM	25	0	17.27	17.30	17.13	17.44	
5	256QAM	1	0	14.73	14.73	14.73	14.74	16.6
5	256QAM	1	12	14.62	14.68	14.64	14.64	
5	256QAM	1	24	14.79	14.81	14.78	14.89	
5	256QAM	12	0	14.75	14.81	14.69	14.86	16.6
5	256QAM	12	7	14.97	14.99	14.94	15.03	
5	256QAM	12	13	14.91	15.01	14.95	15.00	
5	256QAM	25	0	14.96	14.93	14.79	14.97	

## 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.

### <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 <sup>1</sup>	≤ 1.2 <sup>1</sup>	≤ 0.2 <sup>1</sup>
		≤ 0.5 <sup>2</sup>	≤ 0.5 <sup>2</sup>	0 <sup>2</sup>
	QPSK	≤ 1		0
	16 QAM	≤ 2		≤ 1
	64 QAM		≤ 2.5	
CP-OFDM	256 QAM		≤ 4.5	
	QPSK	≤ 3		≤ 1.5
	16 QAM	≤ 3		≤ 2
	64 QAM		≤ 3.5	
	256 QAM		≤ 6.5	

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

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

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

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



<FR1 n2\_Ant Main>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				372000	376000	380000	
Frequency (MHz)				1860	1880	1900	
20	PI/2 BPSK	1	1	23.35	23.40	23.27	25.0
20	PI/2 BPSK	1	53	23.10	23.11	23.04	
20	PI/2 BPSK	1	104	23.01	23.08	23.04	
20	PI/2 BPSK	50	0	22.65	22.71	22.64	24.5
20	PI/2 BPSK	50	28	23.21	23.31	23.23	25.0
20	PI/2 BPSK	50	56	22.69	22.71	22.69	24.5
20	PI/2 BPSK	100	0	22.69	22.70	22.63	
20	QPSK	1	1	23.08	23.10	23.01	25.0
20	QPSK	1	53	23.13	23.20	23.19	
20	QPSK	1	104	23.05	23.14	23.07	
20	QPSK	50	0	22.04	22.14	22.10	24.0
20	QPSK	50	28	23.22	23.26	23.24	25.0
20	QPSK	50	56	22.15	22.24	22.21	24.0
20	QPSK	100	0	22.22	22.25	22.21	
20	16QAM	1	1	22.09	22.13	22.06	24.0
20	64QAM	1	1	20.59	20.62	20.59	22.5
20	256QAM	1	1	18.69	18.70	18.64	20.5
Channel				371500	376000	380500	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	PI/2 BPSK	1	1	23.27	23.32	23.18	25.0
Channel				371000	376000	381000	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	PI/2 BPSK	1	1	23.31	23.31	23.20	25.0
Channel				370500	376000	381500	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	PI/2 BPSK	1	1	23.32	23.32	23.26	25.0



<FR1 n5\_Ant DIV>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				166800	167300	167800	Tune-up limit (dBm)
Frequency (MHz)				834	836.5	839	
20	PI/2 BPSK	1	1	23.29	23.34	23.31	25.0
20	PI/2 BPSK	1	53	23.21	23.25	23.23	
20	PI/2 BPSK	1	104	23.02	23.03	23.00	
20	PI/2 BPSK	50	0	22.72	22.73	22.69	24.5
20	PI/2 BPSK	50	28	23.30	23.31	23.25	25.0
20	PI/2 BPSK	50	56	22.64	22.71	22.66	24.5
20	PI/2 BPSK	100	0	22.78	22.79	22.69	
20	QPSK	1	1	23.12	23.16	23.16	25.0
20	QPSK	1	53	23.14	23.23	23.23	
20	QPSK	1	104	23.04	23.06	23.03	
20	QPSK	50	0	22.20	22.29	22.20	24.0
20	QPSK	50	28	23.28	23.31	23.26	25.0
20	QPSK	50	56	22.13	22.22	22.18	24.0
20	QPSK	100	0	22.29	22.32	22.31	
20	16QAM	1	1	22.16	22.20	22.18	24.0
20	64QAM	1	1	20.66	20.71	20.69	22.5
20	256QAM	1	1	18.79	18.84	18.78	20.5
Channel				166300	167300	168300	Tune-up limit (dBm)
Frequency (MHz)				831.5	836.5	841.5	
15	PI/2 BPSK	1	1	23.24	23.32	23.21	25.0
Channel				165800	167300	168800	Tune-up limit (dBm)
Frequency (MHz)				829	836.5	844	
10	PI/2 BPSK	1	1	23.21	23.30	23.27	25.0
Channel				165300	167300	169300	Tune-up limit (dBm)
Frequency (MHz)				826.5	836.5	846.5	
5	PI/2 BPSK	1	1	23.21	23.29	23.24	25.0



<FR1 n7\_Ant Main>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				504000	507000	510000	
Frequency (MHz)				2520	2535	2550	
40	PI/2 BPSK	1	1	23.41	23.46	23.40	25.0
40	PI/2 BPSK	1	108	23.13	23.14	23.13	
40	PI/2 BPSK	1	214	23.18	23.20	23.10	
40	PI/2 BPSK	108	0	22.68	22.75	22.67	24.5
40	PI/2 BPSK	108	54	23.42	23.42	23.40	25.0
40	PI/2 BPSK	108	108	22.67	22.72	22.63	24.5
40	PI/2 BPSK	216	0	22.64	22.65	22.64	
40	QPSK	1	1	23.07	23.16	23.11	25.0
40	QPSK	1	108	23.04	23.13	23.07	
40	QPSK	1	214	23.01	23.11	23.02	
40	QPSK	108	0	22.19	22.26	22.17	24.0
40	QPSK	108	54	23.09	23.18	23.08	25.0
40	QPSK	108	108	22.18	22.27	22.21	24.0
40	QPSK	216	0	22.17	22.22	22.17	
40	16QAM	1	1	22.10	22.17	22.13	24.0
40	64QAM	1	1	20.59	20.65	20.55	22.5
40	256QAM	1	1	18.64	18.70	18.60	20.5
Channel				503000	507000	511000	Tune-up limit (dBm)
Frequency (MHz)				2515	2535	2555	
30	PI/2 BPSK	1	1	23.36	23.43	23.37	25.0
Channel				502500	507000	511500	Tune-up limit (dBm)
Frequency (MHz)				2512.5	2535	2557.5	
25	PI/2 BPSK	1	1	23.38	23.45	23.37	25.0
Channel				502000	507000	512000	Tune-up limit (dBm)
Frequency (MHz)				2510	2535	2560	
20	PI/2 BPSK	1	1	23.34	23.42	23.34	25.0
Channel				501500	507000	512500	Tune-up limit (dBm)
Frequency (MHz)				2507.5	2535	2562.5	
15	PI/2 BPSK	1	1	23.40	23.41	23.32	25.0
Channel				501000	507000	513000	Tune-up limit (dBm)
Frequency (MHz)				2505	2535	2565	
10	PI/2 BPSK	1	1	23.35	23.44	23.38	25.0
Channel				500500	507000	513500	Tune-up limit (dBm)
Frequency (MHz)				2502.5	2535	2567.5	
5	PI/2 BPSK	1	1	23.35	23.38	23.38	25.0



<FR1 n12\_Ant DIV>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				141300	141500	141700	
Frequency (MHz)				706.5	707.5	708.5	
15	PI/2 BPSK	1	1	23.40	23.51	23.36	25.0
15	PI/2 BPSK	1	40	23.08	23.22	23.08	
15	PI/2 BPSK	1	77	23.04	23.18	23.06	
15	PI/2 BPSK	36	0	22.72	22.82	22.63	24.5
15	PI/2 BPSK	36	22	23.22	23.33	23.16	25.0
15	PI/2 BPSK	36	43	22.58	22.70	22.53	24.5
15	PI/2 BPSK	75	0	22.58	22.78	22.59	
15	QPSK	1	1	23.25	23.36	23.26	25.0
15	QPSK	1	40	23.12	23.22	23.04	
15	QPSK	1	77	23.00	23.16	23.01	
15	QPSK	36	0	22.14	22.32	22.18	24.0
15	QPSK	36	22	23.12	23.29	23.18	25.0
15	QPSK	36	43	22.05	22.20	22.02	24.0
15	QPSK	75	0	22.18	22.28	22.14	
15	16QAM	1	1	22.33	22.43	22.25	24.0
15	64QAM	1	1	20.81	20.91	20.81	22.5
15	256QAM	1	1	18.83	19.00	18.88	20.5
Channel				140800	141500	142200	Tune-up limit (dBm)
Frequency (MHz)				704	707.5	711	
10	PI/2 BPSK	1	1	23.32	23.41	23.28	25.0
Channel				140300	141500	142700	Tune-up limit (dBm)
Frequency (MHz)				701.5	707.5	713.5	
5	PI/2 BPSK	1	1	23.36	23.44	23.31	25.0



<FR1 n25\_Ant Main>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				372000	376500	381000	
Frequency (MHz)				1860	1882.5	1905	
20	PI/2 BPSK	1	1	23.47	23.54	23.40	25.0
20	PI/2 BPSK	1	53	23.15	23.22	23.21	
20	PI/2 BPSK	1	104	23.04	23.11	23.05	
20	PI/2 BPSK	50	0	22.77	22.79	22.74	24.5
20	PI/2 BPSK	50	28	23.38	23.47	23.42	25.0
20	PI/2 BPSK	50	56	22.68	22.69	22.67	24.5
20	PI/2 BPSK	100	0	22.68	22.72	22.65	
20	QPSK	1	1	23.24	23.30	23.29	25.0
20	QPSK	1	53	23.16	23.25	23.20	
20	QPSK	1	104	23.10	23.14	23.11	
20	QPSK	50	0	22.26	22.31	22.23	24.0
20	QPSK	50	28	23.22	23.26	23.16	25.0
20	QPSK	50	56	22.19	22.21	22.15	24.0
20	QPSK	100	0	22.20	22.24	22.17	
20	16QAM	1	1	22.19	22.29	22.24	24.0
20	64QAM	1	1	20.67	20.77	20.76	22.5
20	256QAM	1	1	18.75	18.85	18.83	20.5
Channel				371500	376500	381500	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1882.5	1907.5	
15	PI/2 BPSK	1	1	23.37	23.52	23.35	25.0
Channel				371000	376500	382000	Tune-up limit (dBm)
Frequency (MHz)				1855	1882.5	1910	
10	PI/2 BPSK	1	1	23.45	23.51	23.36	25.0
Channel				370500	376500	382500	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1882.5	1912.5	
5	PI/2 BPSK	1	1	23.45	23.53	23.35	25.0





<FR1 n26\_Ant DIV>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				164800	166300	167800	
Frequency (MHz)				824	831.5	839	
20	PI/2 BPSK	1	1	23.35	23.42	23.38	25.0
20	PI/2 BPSK	1	53	23.21	23.22	23.22	
20	PI/2 BPSK	1	104	23.14	23.14	23.13	
20	PI/2 BPSK	50	0	22.79	22.79	22.78	24.5
20	PI/2 BPSK	50	28	23.35	23.35	23.35	25.0
20	PI/2 BPSK	50	56	22.79	22.79	22.79	24.5
20	PI/2 BPSK	100	0	22.78	22.79	22.78	
20	QPSK	1	1	23.17	23.18	23.17	25.0
20	QPSK	1	53	23.19	23.20	23.20	
20	QPSK	1	104	23.08	23.09	23.08	
20	QPSK	50	0	22.29	22.29	22.28	24.0
20	QPSK	50	28	23.31	23.31	23.31	25.0
20	QPSK	50	56	22.28	22.29	22.29	24.0
20	QPSK	100	0	22.29	22.30	22.29	
20	16QAM	1	1	22.21	22.21	22.21	24.0
20	64QAM	1	1	20.70	20.70	20.69	22.5
20	256QAM	1	1	18.78	18.79	18.77	20.5
Channel				164300	166300	168300	Tune-up limit (dBm)
Frequency (MHz)				821.5	831.5	841.5	
15	PI/2 BPSK	1	1	23.32	23.38	23.30	25.0
Channel				163800	166300	168800	Tune-up limit (dBm)
Frequency (MHz)				819	831.5	844	
10	PI/2 BPSK	1	1	23.28	23.37	23.31	25.0
Channel				163300	166300	169300	Tune-up limit (dBm)
Frequency (MHz)				816.5	831.5	846.5	
5	PI/2 BPSK	1	1	23.30	23.41	23.33	25.0



<FR1 n66\_Ant Main>

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	23.49	23.51	23.48	25.0
40	PI/2 BPSK	1	108	23.26	23.35	23.27	
40	PI/2 BPSK	1	214	23.29	23.32	23.23	
40	PI/2 BPSK	108	0	22.79	22.84	22.77	24.5
40	PI/2 BPSK	108	54	23.43	23.47	23.38	25.0
40	PI/2 BPSK	108	108	22.80	22.88	22.85	24.5
40	PI/2 BPSK	216	0	22.85	22.91	22.89	
40	QPSK	1	1	23.17	23.22	23.16	
40	QPSK	1	108	23.29	23.36	23.32	25.0
40	QPSK	1	214	23.25	23.26	23.22	
40	QPSK	108	0	22.33	22.41	22.38	
40	QPSK	108	54	23.34	23.42	23.41	25.0
40	QPSK	108	108	22.29	22.38	22.29	24.0
40	QPSK	216	0	22.40	22.42	22.35	
40	16QAM	1	1	22.17	22.25	22.24	
40	64QAM	1	1	20.71	20.75	20.70	22.5
40	256QAM	1	1	18.76	18.82	18.76	20.5
Channel				345000	349000	353000	Tune-up limit (dBm)
Frequency (MHz)				1725	1745	1765	
30	PI/2 BPSK	1	1	23.43	23.45	23.47	25.0
Channel				344500	349000	353500	Tune-up limit (dBm)
Frequency (MHz)				1722.5	1745	1767.5	
25	PI/2 BPSK	1	1	23.39	23.47	23.39	25.0
Channel				344000	349000	354000	Tune-up limit (dBm)
Frequency (MHz)				1720	1745	1770	
20	PI/2 BPSK	1	1	23.46	23.49	23.47	25.0
Channel				343500	349000	354500	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	PI/2 BPSK	1	1	23.39	23.47	23.38	25.0
Channel				343000	349000	355000	Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775	
10	PI/2 BPSK	1	1	23.40	23.47	23.39	25.0
Channel				342500	349000	355500	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	PI/2 BPSK	1	1	23.47	23.48	23.40	25.0



<FR1 n71\_Ant DIV>

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	23.23	23.40	23.35	25.0
20	PI/2 BPSK	1	53	23.28	23.37	23.35	
20	PI/2 BPSK	1	104	23.13	23.15	23.11	
20	PI/2 BPSK	50	0	22.67	22.75	22.66	24.5
20	PI/2 BPSK	50	28	23.36	23.37	23.28	25.0
20	PI/2 BPSK	50	56	22.73	22.76	22.69	24.5
20	PI/2 BPSK	100	0	22.85	22.86	22.78	
20	QPSK	1	1	23.02	23.11	23.04	
20	QPSK	1	53	23.28	23.30	23.23	25.0
20	QPSK	1	104	23.05	23.10	23.01	
20	QPSK	50	0	22.66	22.76	22.68	
20	QPSK	50	28	23.30	23.37	23.35	25.0
20	QPSK	50	56	22.69	22.73	22.69	24.0
20	QPSK	100	0	22.85	22.87	22.80	
20	16QAM	1	1	23.07	23.12	23.10	
20	64QAM	1	1	20.61	20.69	20.67	22.5
20	256QAM	1	1	18.75	18.79	18.77	20.5
Channel				134100	136100	138100	Tune-up limit (dBm)
Frequency (MHz)				670.5	680.5	690.5	
15	PI/2 BPSK	1	1	23.21	23.36	23.25	25.0
Channel				133600	136100	138600	Tune-up limit (dBm)
Frequency (MHz)				668	680.5	693	
10	PI/2 BPSK	1	1	23.20	23.38	23.25	25.0
Channel				133100	136100	139100	Tune-up limit (dBm)
Frequency (MHz)				665.5	680.5	695.5	
5	PI/2 BPSK	1	1	23.16	23.30	23.29	25.0



<FR1 n38\_Ant Main>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				516000	519000	522000	
Frequency (MHz)				2580	2595	2610	
20	PI/2 BPSK	1	1	23.36	23.37	23.25	25.0
20	PI/2 BPSK	1	26	23.03	23.13	23.06	
20	PI/2 BPSK	1	49	23.19	23.22	23.15	
20	PI/2 BPSK	25	0	22.77	22.86	22.81	24.5
20	PI/2 BPSK	25	13	23.26	23.29	23.27	25.0
20	PI/2 BPSK	25	26	22.70	22.74	22.72	24.5
20	PI/2 BPSK	50	0	22.77	22.81	22.80	
20	QPSK	1	1	23.28	23.34	23.29	25.0
20	QPSK	1	26	23.15	23.17	23.11	
20	QPSK	1	49	23.17	23.24	23.20	
20	QPSK	25	0	22.23	22.33	22.26	24.0
20	QPSK	25	13	23.24	23.31	23.21	25.0
20	QPSK	25	26	22.22	22.25	22.18	24.0
20	QPSK	50	0	22.20	22.30	22.21	
20	16QAM	1	1	22.26	22.36	22.34	24.0
20	64QAM	1	1	20.92	20.93	20.88	22.5
20	256QAM	1	1	18.79	18.86	18.80	20.5
Channel				515500	519000	522500	Tune-up limit (dBm)
Frequency (MHz)				2577.5	2595	2612.5	
15	PI/2 BPSK	1	1	23.35	23.34	23.17	25.0
Channel				515000	519000	523000	Tune-up limit (dBm)
Frequency (MHz)				2575	2595	2615	
10	PI/2 BPSK	1	1	23.34	23.36	23.24	25.0
Channel				514500	519000	523500	Tune-up limit (dBm)
Frequency (MHz)				2572.5	2595	2617.5	
5	PI/2 BPSK	1	1	23.29	23.36	23.24	25.0



<FR1 n41\_Ant Main>

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	23.47	23.49	23.38	25.0
100	PI/2 BPSK	1	137	23.25	23.27	23.17	
100	PI/2 BPSK	1	271	23.06	23.15	23.10	
100	PI/2 BPSK	135	0	22.77	22.80	22.76	24.5
100	PI/2 BPSK	135	69	23.25	23.34	23.25	25.0
100	PI/2 BPSK	135	138	22.67	22.77	22.67	24.5
100	PI/2 BPSK	270	0	22.69	22.79	22.77	
100	QPSK	1	1	23.22	23.27	23.20	
100	QPSK	1	137	23.29	23.31	23.27	25.0
100	QPSK	1	271	23.11	23.20	23.13	
100	QPSK	135	0	22.23	22.27	22.26	
100	QPSK	135	69	23.24	23.32	23.29	25.0
100	QPSK	135	138	22.26	22.31	22.26	24.0
100	QPSK	270	0	22.16	22.24	22.14	
100	16QAM	1	1	22.27	22.32	22.22	
100	64QAM	1	1	20.72	20.80	20.79	22.5
100	256QAM	1	1	18.83	18.89	18.86	20.5
Channel				508200	518598	528996	Tune-up limit (dBm)
Frequency (MHz)				2541	2592.99	2644.98	
90	PI/2 BPSK	1	1	23.46	23.41	23.30	25.0
Channel				507204	518598	529998	Tune-up limit (dBm)
Frequency (MHz)				2536.02	2592.99	2649.99	
80	PI/2 BPSK	1	1	23.41	23.46	23.35	25.0
Channel				506202	518598	531000	Tune-up limit (dBm)
Frequency (MHz)				2531.01	2592.99	2655	
70	PI/2 BPSK	1	1	23.46	23.39	23.35	25.0
Channel				505200	518598	531996	Tune-up limit (dBm)
Frequency (MHz)				2526	2592.99	2659.98	
60	PI/2 BPSK	1	1	23.46	23.45	23.29	25.0
Channel				504204	518598	532998	Tune-up limit (dBm)
Frequency (MHz)				2521.02	2592.99	2664.99	
50	PI/2 BPSK	1	1	23.43	23.43	23.31	25.0
Channel				503202	518598	534000	Tune-up limit (dBm)
Frequency (MHz)				2516.01	2592.99	2670	
40	PI/2 BPSK	1	1	23.43	23.44	23.28	25.0
Channel				502200	518598	534996	Tune-up limit (dBm)
Frequency (MHz)				2511	2592.99	2674.98	
30	PI/2 BPSK	1	1	23.38	23.42	23.33	25.0
Channel				501204	518598	535998	Tune-up limit (dBm)
Frequency (MHz)				2506.02	2592.99	2679.99	
20	PI/2 BPSK	1	1	23.46	23.47	23.28	25.0



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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	20.99	21.27	21.06	21.6
40	PI/2 BPSK	1	53	21.07	21.15	21.12	
40	PI/2 BPSK	1	104	21.08	21.16	21.13	
40	PI/2 BPSK	50	0	20.62	20.69	20.61	21.1
40	PI/2 BPSK	50	28	21.09	21.16	21.15	21.6
40	PI/2 BPSK	50	56	20.72	20.73	20.72	21.1
40	PI/2 BPSK	100	0	20.60	20.61	20.55	
40	QPSK	1	1	21.19	21.25	21.18	21.6
40	QPSK	1	53	21.08	21.14	21.11	
40	QPSK	1	104	21.15	21.16	21.07	
40	QPSK	50	0	20.19	20.22	20.12	20.6
40	QPSK	50	28	21.15	21.16	21.07	21.6
40	QPSK	50	56	20.06	20.16	20.09	20.6
40	QPSK	100	0	19.96	20.06	20.05	
40	16QAM	1	1	20.10	20.16	20.13	20.6
40	64QAM	1	1	18.69	18.75	18.67	19.1
40	256QAM	1	1	16.56	16.59	16.52	17.1
Channel				637334	641666	646000	
Frequency (MHz)				3560.01	3624.99	3690	
20	PI/2 BPSK	1	1	20.97	21.24	20.99	21.6



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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	23.15	23.31	23.30	25.0
100	PI/2 BPSK	1	137	23.00	23.05	23.02	
100	PI/2 BPSK	1	271	23.20	23.28	23.21	
100	PI/2 BPSK	135	0	22.99	23.05	23.01	24.5
100	PI/2 BPSK	135	69	23.01	23.05	23.02	25.0
100	PI/2 BPSK	135	138	23.07	23.14	23.06	24.5
100	PI/2 BPSK	270	0	23.14	23.14	23.12	
100	QPSK	1	1	23.05	23.08	23.04	
100	QPSK	1	137	23.09	23.09	23.04	25.0
100	QPSK	1	271	23.08	23.09	23.09	
100	QPSK	135	0	23.03	23.05	22.95	
100	QPSK	135	69	23.10	23.10	23.05	25.0
100	QPSK	135	138	23.06	23.14	23.06	24.0
100	QPSK	270	0	23.11	23.13	23.13	
100	16QAM	1	1	23.08	23.09	23.06	
100	64QAM	1	1	22.14	22.14	22.10	22.5
100	256QAM	1	1	20.34	20.44	20.36	20.5
Channel				649668	656000	662332	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3840	3934.98	
90	PI/2 BPSK	1	1	23.06	23.28	23.22	25.0
Channel				649334	656000	662666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	23.12	23.23	23.25	25.0
Channel				648668	656000	663332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	23.08	23.30	23.25	25.0
Channel				648334	656000	663666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3840	3954.99	
50	PI/2 BPSK	1	1	23.12	23.26	23.21	25.0
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	23.08	23.26	23.27	25.0
Channel				647668	656000	664332	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3840.00	3964.98	
30	PI/2 BPSK	1	1	23.10	23.22	23.28	25.0
Channel				647334	656000	664666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	23.13	23.27	23.24	25.0



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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	25.0
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	23.37	23.58	23.51	
100	PI/2 BPSK	1	137	23.08	23.16	23.09	24.5
100	PI/2 BPSK	1	271	23.52	23.63	23.47	
100	PI/2 BPSK	135	0	23.06	23.14	23.08	24.5
100	PI/2 BPSK	135	69	23.23	23.24	23.16	25.0
100	PI/2 BPSK	135	138	23.31	23.33	23.26	24.5
100	PI/2 BPSK	270	0	23.15	23.22	23.15	
100	QPSK	1	1	23.17	23.18	23.08	25.0
100	QPSK	1	137	23.05	23.10	23.01	
100	QPSK	1	271	23.43	23.51	23.46	
100	QPSK	135	0	23.04	23.14	23.13	24.0
100	QPSK	135	69	23.14	23.23	23.18	25.0
100	QPSK	135	138	23.33	23.38	23.29	24.0
100	QPSK	270	0	23.18	23.24	23.16	
100	16QAM	1	1	23.06	23.16	23.11	24.0
100	64QAM	1	1	23.18	23.22	23.19	24.0
100	256QAM	1	1	23.08	23.18	23.15	23.5
Channel				649668	656000	662332	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3840	3934.98	
90	PI/2 BPSK	1	1	23.19	23.41	23.38	25.0
Channel				649334	656000	662666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	23.23	23.45	23.40	25.0
Channel				648668	656000	663332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	23.18	23.39	23.36	25.0
Channel				648334	656000	663666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3840	3954.99	
50	PI/2 BPSK	1	1	23.21	23.39	23.36	25.0
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	23.25	23.39	23.32	25.0
Channel				647668	656000	664332	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3840.00	3964.98	
30	PI/2 BPSK	1	1	23.23	23.38	23.31	25.0
Channel				647334	656000	664666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	23.18	23.43	23.37	25.0





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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	25.38	25.67	25.64	27.0
100	PI/2 BPSK	1	137	25.16	25.37	25.39	
100	PI/2 BPSK	1	271	25.45	25.54	25.64	
100	PI/2 BPSK	135	0	24.60	24.85	24.83	26.5
100	PI/2 BPSK	135	69	25.19	25.38	25.41	27.0
100	PI/2 BPSK	135	138	24.76	24.96	24.89	26.5
100	PI/2 BPSK	270	0	24.80	24.88	24.84	
100	QPSK	1	1	25.27	25.35	25.40	27.0
100	QPSK	1	137	25.32	25.39	25.46	
100	QPSK	1	271	25.48	25.53	25.46	
100	QPSK	135	0	24.13	24.34	24.34	26.0
100	QPSK	135	69	25.21	25.32	25.29	27.0
100	QPSK	135	138	24.19	24.43	24.46	26.0
100	QPSK	270	0	24.30	24.35	24.33	
100	16QAM	1	1	24.22	24.36	24.44	26.0
100	64QAM	1	1	22.69	22.92	22.85	24.5
100	256QAM	1	1	20.79	20.97	20.97	22.5
Channel				649668	656000	662332	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3840	3934.98	
90	PI/2 BPSK	1	1	25.25	25.52	25.53	27.0
Channel				649334	656000	662666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	25.22	25.49	25.47	27.0
Channel				648668	656000	663332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	25.27	25.55	25.54	27.0
Channel				648334	656000	663666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3840	3954.99	
50	PI/2 BPSK	1	1	25.23	25.52	25.52	27.0
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	25.24	25.49	25.54	27.0
Channel				647668	656000	664332	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3840.00	3964.98	
30	PI/2 BPSK	1	1	25.22	25.56	25.46	27.0
Channel				647334	656000	664666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	25.21	25.49	25.52	27.0



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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	26.37	26.30	26.49	27.0
100	PI/2 BPSK	1	137	26.13	26.32	26.52	
100	PI/2 BPSK	1	271	26.68	26.73	26.69	
100	PI/2 BPSK	135	0	26.28	26.27	26.16	27.0
100	PI/2 BPSK	135	69	26.47	26.41	26.45	27.0
100	PI/2 BPSK	135	138	26.39	26.40	26.40	27.0
100	PI/2 BPSK	270	0	26.24	26.38	26.48	
100	QPSK	1	1	26.42	26.24	26.07	27.0
100	QPSK	1	137	26.30	26.39	26.25	
100	QPSK	1	271	26.63	26.69	26.70	
100	QPSK	135	0	26.13	26.31	26.36	27.0
100	QPSK	135	69	26.48	26.41	26.34	27.0
100	QPSK	135	138	26.67	26.49	26.51	27.0
100	QPSK	270	0	26.21	26.40	26.49	
100	16QAM	1	1	26.25	26.25	26.08	26.5
100	64QAM	1	1	24.74	24.78	24.81	26.0
100	256QAM	1	1	22.73	22.80	22.92	24.0
Channel				649668	656000	662332	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3840	3934.98	
90	PI/2 BPSK	1	1	26.20	26.14	26.38	27.0
Channel				649334	656000	662666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	26.21	26.19	26.37	27.0
Channel				648668	656000	663332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	26.26	26.20	26.33	27.0
Channel				648334	656000	663666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3840	3954.99	
50	PI/2 BPSK	1	1	26.25	26.17	26.37	27.0
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	26.25	26.12	26.39	27.0
Channel				647668	656000	664332	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3840.00	3964.98	
30	PI/2 BPSK	1	1	26.25	26.15	26.39	27.0
Channel				647334	656000	664666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	26.25	26.19	26.37	27.0



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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		23.25		25.0
100	PI/2 BPSK	1	137		23.01		
100	PI/2 BPSK	1	271		23.22		
100	PI/2 BPSK	135	0		22.96		24.5
100	PI/2 BPSK	135	69		23.01		25.0
100	PI/2 BPSK	135	138		23.11		24.5
100	PI/2 BPSK	270	0		23.04		
100	QPSK	1	1		23.00		25.0
100	QPSK	1	137		23.04		
100	QPSK	1	271		23.09		
100	QPSK	135	0		23.02		24.0
100	QPSK	135	69		23.08		25.0
100	QPSK	135	138		23.14		24.0
100	QPSK	270	0		23.08		
100	16QAM	1	1		23.01		24.0
100	64QAM	1	1		22.11		22.5
100	256QAM	1	1		20.42		20.5
Channel				633000	633332	633666	Tune-up limit (dBm)
Frequency (MHz)				3495	3499.98	3504.99	
90	PI/2 BPSK	1	1	23.02	23.14	23.21	25.0
Channel				632668	633332	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3499.98	3510	
80	PI/2 BPSK	1	1	23.05	23.19	23.16	25.0
Channel				632000	633332	634666	Tune-up limit (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	23.03	23.17	23.24	25.0
Channel				631668	633332	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3499.98	3525	
50	PI/2 BPSK	1	1	23.05	23.13	23.23	25.0
Channel				631334	633332	635332	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	23.06	23.22	23.24	25.0
Channel				631000	633332	635666	Tune-up limit (dBm)
Frequency (MHz)				3465	3499.98	3534.99	
30	PI/2 BPSK	1	1	23.06	23.20	23.22	25.0
Channel				630668	633332	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	23.10	23.19	23.22	25.0



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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		25.0
Frequency (MHz)					3499.98		
100	PI/2 BPSK	1	1		23.85		
100	PI/2 BPSK	1	137		23.33		
100	PI/2 BPSK	1	271		23.66		
100	PI/2 BPSK	135	0		23.25		24.5
100	PI/2 BPSK	135	69		23.35		25.0
100	PI/2 BPSK	135	138		23.52		24.5
100	PI/2 BPSK	270	0		23.32		
100	QPSK	1	1		23.33		25.0
100	QPSK	1	137		23.23		
100	QPSK	1	271		23.65		
100	QPSK	135	0		23.29		24.0
100	QPSK	135	69		23.41		25.0
100	QPSK	135	138		23.52		24.0
100	QPSK	270	0		23.40		
100	16QAM	1	1		23.32		24.0
100	64QAM	1	1		23.39		24.0
100	256QAM	1	1		23.32		23.5
Channel				633000	633332	633666	Tune-up limit (dBm)
Frequency (MHz)				3495	3499.98	3504.99	
90	PI/2 BPSK	1	1	23.47	23.71	23.61	25.0
Channel				632668	633332	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.0245	3499.9845	3510.0045	
80	PI/2 BPSK	1	1	23.39	23.67	23.60	25.0
Channel				632000	633332	634666	Tune-up limit (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	23.45	23.61	23.51	25.0
Channel				631668	633332	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3499.98	3525	
50	PI/2 BPSK	1	1	23.37	23.66	23.57	25.0
Channel				631334	633332	635332	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	23.38	23.68	23.55	25.0
Channel				631000	633332	635666	Tune-up limit (dBm)
Frequency (MHz)				3465	3499.98	3534.99	
30	PI/2 BPSK	1	1	23.42	23.66	23.54	25.0
Channel				630668	633332	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	23.40	23.67	23.57	25.0



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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		26.32		27.0
100	PI/2 BPSK	1	137		26.15		
100	PI/2 BPSK	1	271		25.92		
100	PI/2 BPSK	135	0		24.76		26.5
100	PI/2 BPSK	135	69		26.21		27.0
100	PI/2 BPSK	135	138		24.57		26.5
100	PI/2 BPSK	270	0		24.69		
100	QPSK	1	1		26.29		27.0
100	QPSK	1	137		26.12		
100	QPSK	1	271		25.93		
100	QPSK	135	0		25.51		26.0
100	QPSK	135	69		26.16		27.0
100	QPSK	135	138		25.88		26.0
100	QPSK	270	0		25.43		
100	16QAM	1	1		25.22		26.0
100	64QAM	1	1		23.64		24.5
100	256QAM	1	1		21.66		22.5
Channel				633000	633332	633666	Tune-up limit (dBm)
Frequency (MHz)				3495	3499.98	3504.99	
90	PI/2 BPSK	1	1	26.09	26.22	26.25	27.0
Channel				632668	633332	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3499.98	3510	
80	PI/2 BPSK	1	1	25.94	26.07	26.20	27.0
Channel				632000	633332	634666	Tune-up limit (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	25.95	26.14	26.12	27.0
Channel				631668	633332	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3499.98	3525	
50	PI/2 BPSK	1	1	26.03	26.15	26.16	27.0
Channel				631334	633332	635332	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	26.01	26.14	26.13	27.0
Channel				631000	633332	635666	Tune-up limit (dBm)
Frequency (MHz)				3465	3499.98	3534.99	
30	PI/2 BPSK	1	1	26.01	26.08	26.13	27.0
Channel				630668	633332	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	26.03	26.08	26.14	27.0



**<FR1 n77\_HPUE\_Ant MIMO3>**

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		27.0
Frequency (MHz)					3499.98		
100	PI/2 BPSK	1	1		26.34		27.0
100	PI/2 BPSK	1	137		25.87		
100	PI/2 BPSK	1	271		25.75		
100	PI/2 BPSK	135	0		25.95		27.0
100	PI/2 BPSK	135	69		25.96		27.0
100	PI/2 BPSK	135	138		25.79		27.0
100	PI/2 BPSK	270	0		25.98		
100	QPSK	1	1		26.31		27.0
100	QPSK	1	137		25.89		
100	QPSK	1	271		25.72		
100	QPSK	135	0		25.60		27.0
100	QPSK	135	69		25.94		27.0
100	QPSK	135	138		25.28		27.0
100	QPSK	270	0		25.49		
100	16QAM	1	1		26.30		26.5
100	64QAM	1	1		25.85		26.0
100	256QAM	1	1		23.89		24.0
Channel				633000	633332	633666	Tune-up limit (dBm)
Frequency (MHz)				3495	3499.98	3504.99	
90	PI/2 BPSK	1	1	26.12	26.27	26.19	27.0
Channel				632668	633332	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3499.98	3510	
80	PI/2 BPSK	1	1	26.04	26.12	26.12	27.0
Channel				632000	633332	634666	Tune-up limit (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	25.98	26.14	26.08	27.0
Channel				631668	633332	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3499.98	3525	
50	PI/2 BPSK	1	1	26.01	26.17	26.07	27.0
Channel				631334	633332	635332	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	25.97	26.21	26.04	27.0
Channel				631000	633332	635666	Tune-up limit (dBm)
Frequency (MHz)				3465	3499.98	3534.99	
30	PI/2 BPSK	1	1	26.05	26.19	26.13	27.0
Channel				630668	633332	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	26.06	26.15	26.04	27.0



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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		
Frequency (MHz)					3750		
100	PI/2 BPSK	1	1	23.44	23.49	23.40	25.0
100	PI/2 BPSK	1	137	23.11	23.11	23.06	
100	PI/2 BPSK	1	271	23.31	23.26	23.26	
100	PI/2 BPSK	135	0	23.05	23.03	23.09	24.5
100	PI/2 BPSK	135	69	23.05	23.07	23.09	25.0
100	PI/2 BPSK	135	138	23.14	23.22	23.21	24.5
100	PI/2 BPSK	270	0	23.20	23.26	23.21	
100	QPSK	1	1	23.12	23.07	23.15	25.0
100	QPSK	1	137	23.15	23.14	23.07	
100	QPSK	1	271	23.15	23.12	23.07	
100	QPSK	135	0	23.04	23.05	23.10	24.0
100	QPSK	135	69	23.15	23.18	23.14	25.0
100	QPSK	135	138	23.14	23.16	23.12	24.0
100	QPSK	270	0	23.12	23.21	23.19	
100	16QAM	1	1	23.14	23.11	23.09	24.0
100	64QAM	1	1	22.17	22.21	22.12	22.5
100	256QAM	1	1	20.33	20.41	20.40	20.5
Channel				649668	650000	650332	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3750	3754.98	
90	PI/2 BPSK	1	1	23.29	23.37	23.30	25.0
Channel				649334	650000	650666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3750	3759.99	
80	PI/2 BPSK	1	1	23.35	23.40	23.36	25.0
Channel				649000	650000	651000	Tune-up limit (dBm)
Frequency (MHz)				3735	3750	3765	
70	PI/2 BPSK	1	1	23.24	23.35	23.25	25.0
Channel				648668	650000	651332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3750	3769.98	
60	PI/2 BPSK	1	1	23.29	23.41	23.37	25.0
Channel				648334	650000	651666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3750	3774.99	
50	PI/2 BPSK	1	1	23.33	23.36	23.33	25.0
Channel				648000	650000	652000	Tune-up limit (dBm)
Frequency (MHz)				3720	3750	3780	
40	PI/2 BPSK	1	1	23.35	23.36	23.36	25.0
Channel				647668	650000	652332	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3750.00	3784.98	
30	PI/2 BPSK	1	1	23.30	23.36	23.31	25.0
Channel				647334	650000	652666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3750	3789.99	
20	PI/2 BPSK	1	1	23.35	23.38	23.32	25.0



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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		
Frequency (MHz)					3750		
100	PI/2 BPSK	1	1		23.59		25.0
100	PI/2 BPSK	1	137		23.24		
100	PI/2 BPSK	1	271		23.45		
100	PI/2 BPSK	135	0		23.40		24.5
100	PI/2 BPSK	135	69		23.45		25.0
100	PI/2 BPSK	135	138		23.52		24.5
100	PI/2 BPSK	270	0		23.43		
100	QPSK	1	1		23.28		25.0
100	QPSK	1	137		23.52		
100	QPSK	1	271		23.43		
100	QPSK	135	0		23.39		24.0
100	QPSK	135	69		23.43		25.0
100	QPSK	135	138		23.47		24.0
100	QPSK	270	0		23.40		
100	16QAM	1	1		23.33		24.0
100	64QAM	1	1		23.29		24.0
100	256QAM	1	1		21.81		23.5
Channel				649668	650000	650332	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3750	3754.98	
90	PI/2 BPSK	1	1	23.28	23.51	23.36	25.0
Channel				649334	650000	650666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3750	3759.99	
80	PI/2 BPSK	1	1	23.32	23.49	23.37	25.0
Channel				649000	650000	651000	Tune-up limit (dBm)
Frequency (MHz)				3735	3750	3765	
70	PI/2 BPSK	1	1	23.19	23.46	23.28	25.0
Channel				648668	650000	651332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3750	3769.98	
60	PI/2 BPSK	1	1	23.32	23.50	23.34	25.0
Channel				648334	650000	651666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3750	3774.99	
50	PI/2 BPSK	1	1	23.26	23.46	23.42	25.0
Channel				648000	650000	652000	Tune-up limit (dBm)
Frequency (MHz)				3720	3750	3780	
40	PI/2 BPSK	1	1	23.32	23.48	23.41	25.0
Channel				647668	650000	652332	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3750.00	3784.98	
30	PI/2 BPSK	1	1	23.34	23.49	23.36	25.0
Channel				647334	650000	652666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3750	3789.99	
20	PI/2 BPSK	1	1	23.28	23.54	23.35	25.0





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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		
Frequency (MHz)					3750		
100	PI/2 BPSK	1	1	25.53	25.58	25.49	27.0
100	PI/2 BPSK	1	137	25.20	25.20	25.15	
100	PI/2 BPSK	1	271	25.40	25.35	25.35	
100	PI/2 BPSK	135	0	25.14	25.12	25.18	26.5
100	PI/2 BPSK	135	69	25.14	25.16	25.18	27.0
100	PI/2 BPSK	135	138	25.23	25.31	25.30	26.5
100	PI/2 BPSK	270	0	25.29	25.35	25.30	
100	QPSK	1	1	25.21	25.16	25.24	27.0
100	QPSK	1	137	25.24	25.23	25.16	
100	QPSK	1	271	25.24	25.21	25.16	
100	QPSK	135	0	25.13	25.14	25.19	26.0
100	QPSK	135	69	25.24	25.27	25.23	27.0
100	QPSK	135	138	25.23	25.25	25.21	26.0
100	QPSK	270	0	25.21	25.30	25.28	
100	16QAM	1	1	25.23	25.20	25.18	26.0
100	64QAM	1	1	24.26	24.30	24.21	24.5
100	256QAM	1	1	22.42	22.46	22.47	22.5
Channel				649668	650000	650332	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3750	3754.98	
90	PI/2 BPSK	1	1	25.38	25.46	25.39	27.0
Channel				649334	650000	650666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3750	3759.99	
80	PI/2 BPSK	1	1	25.44	25.49	25.45	27.0
Channel				649000	650000	651000	Tune-up limit (dBm)
Frequency (MHz)				3735	3750	3765	
70	PI/2 BPSK	1	1	25.33	25.44	25.34	27.0
Channel				648668	650000	651332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3750	3769.98	
60	PI/2 BPSK	1	1	25.38	25.50	25.46	27.0
Channel				648334	650000	651666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3750	3774.99	
50	PI/2 BPSK	1	1	25.42	25.45	25.42	27.0
Channel				648000	650000	652000	Tune-up limit (dBm)
Frequency (MHz)				3720	3750	3780	
40	PI/2 BPSK	1	1	25.44	25.45	25.45	27.0
Channel				647668	650000	652332	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3750.00	3784.98	
30	PI/2 BPSK	1	1	25.39	25.45	25.40	27.0
Channel				647334	650000	652666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3750	3789.99	
20	PI/2 BPSK	1	1	25.44	25.47	25.41	27.0



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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		
Frequency (MHz)					3750		
100	PI/2 BPSK	1	1		26.64		27.0
100	PI/2 BPSK	1	137		26.31		
100	PI/2 BPSK	1	271		26.34		
100	PI/2 BPSK	135	0		26.46		27.0
100	PI/2 BPSK	135	69		26.36		27.0
100	PI/2 BPSK	135	138		26.25		27.0
100	PI/2 BPSK	270	0		26.39		
100	QPSK	1	1		26.61		27.0
100	QPSK	1	137		26.28		
100	QPSK	1	271		26.36		
100	QPSK	135	0		26.39		27.0
100	QPSK	135	69		26.33		27.0
100	QPSK	135	138		26.28		27.0
100	QPSK	270	0		26.37		
100	16QAM	1	1		26.49		26.5
100	64QAM	1	1		25.13		26.0
100	256QAM	1	1		23.28		24.0
Channel				649668	650000	650332	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3750	3754.98	
90	PI/2 BPSK	1	1	26.41	26.53	26.43	27.0
Channel				649334	650000	650666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3750	3759.99	
80	PI/2 BPSK	1	1	26.34	26.42	26.34	27.0
Channel				649000	650000	651000	Tune-up limit (dBm)
Frequency (MHz)				3735	3750	3765	
70	PI/2 BPSK	1	1	26.26	26.48	26.32	27.0
Channel				648668	650000	651332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3750	3769.98	
60	PI/2 BPSK	1	1	26.32	26.38	26.35	27.0
Channel				648334	650000	651666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3750	3774.99	
50	PI/2 BPSK	1	1	26.30	26.38	26.34	27.0
Channel				648000	650000	652000	Tune-up limit (dBm)
Frequency (MHz)				3720	3750	3780	
40	PI/2 BPSK	1	1	26.34	26.39	26.29	27.0
Channel				647668	650000	652332	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3750.00	3784.98	
30	PI/2 BPSK	1	1	26.35	26.46	26.28	27.0
Channel				647334	650000	652666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3750	3789.99	
20	PI/2 BPSK	1	1	26.34	26.46	26.38	27.0



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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	23.40	23.45	23.36	25.0
100	PI/2 BPSK	1	137	23.07	23.07	23.02	
100	PI/2 BPSK	1	271	23.27	23.22	23.22	
100	PI/2 BPSK	135	0	23.01	23.09	23.05	24.5
100	PI/2 BPSK	135	69	23.01	23.03	23.05	25.0
100	PI/2 BPSK	135	138	23.10	23.18	23.17	24.5
100	PI/2 BPSK	270	0	23.16	23.22	23.17	
100	QPSK	1	1	23.08	23.03	23.11	25.0
100	QPSK	1	137	23.11	23.10	23.03	
100	QPSK	1	271	23.11	23.08	23.03	
100	QPSK	135	0	23.00	23.01	23.06	24.0
100	QPSK	135	69	23.11	23.14	23.10	25.0
100	QPSK	135	138	23.10	23.12	23.08	24.0
100	QPSK	270	0	23.08	23.17	23.15	
100	16QAM	1	1	23.10	23.07	23.05	24.0
100	64QAM	1	1	22.13	22.17	22.08	22.5
100	256QAM	1	1	20.29	20.33	20.34	20.5
Channel				633000	633332	633666	Tune-up limit (dBm)
Frequency (MHz)				3495	3499.98	3504.99	
90	PI/2 BPSK	1	1	23.25	23.33	23.26	25.0
Channel				632668	633332	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3499.98	3510	
80	PI/2 BPSK	1	1	23.31	23.36	23.32	25.0
Channel				632334	633332	634332	Tune-up limit (dBm)
Frequency (MHz)				3485.01	3499.98	3514.98	
70	PI/2 BPSK	1	1	23.20	23.31	23.21	25.0
Channel				632000	633332	634666	Tune-up limit (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	23.25	23.37	23.33	25.0
Channel				631668	633332	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3499.98	3525	
50	PI/2 BPSK	1	1	23.29	23.32	23.29	25.0
Channel				631334	633332	635332	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	23.31	23.32	23.32	25.0
Channel				631000	633332	635666	Tune-up limit (dBm)
Frequency (MHz)				3465	3499.98	3534.99	
30	PI/2 BPSK	1	1	23.26	23.32	23.27	25.0
Channel				630668	633332	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	23.31	23.34	23.28	25.0



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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		25.0
Frequency (MHz)					3499.98		
100	PI/2 BPSK	1	1		24.04		25.0
100	PI/2 BPSK	1	137		23.75		
100	PI/2 BPSK	1	271		23.98		
100	PI/2 BPSK	135	0		23.90		24.5
100	PI/2 BPSK	135	69		23.99		25.0
100	PI/2 BPSK	135	138		24.00		24.5
100	PI/2 BPSK	270	0		23.92		
100	QPSK	1	1		23.81		25.0
100	QPSK	1	137		23.98		
100	QPSK	1	271		23.93		
100	QPSK	135	0		23.87		24.0
100	QPSK	135	69		23.92		25.0
100	QPSK	135	138		23.90		24.0
100	QPSK	270	0		23.88		
100	16QAM	1	1		23.79		24.0
100	64QAM	1	1		23.80		24.0
100	256QAM	1	1		22.34		23.5
Channel				633000	633332	633666	Tune-up limit (dBm)
Frequency (MHz)				3495	3499.98	3504.99	
90	PI/2 BPSK	1	1	23.76	23.97	23.83	25.0
Channel				632668	633332	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3499.98	3510	
80	PI/2 BPSK	1	1	23.72	23.93	23.82	25.0
Channel				632334	633332	634332	Tune-up limit (dBm)
Frequency (MHz)				3485.01	3499.98	3514.98	
70	PI/2 BPSK	1	1				25.0
Channel				632000	633332	634666	Tune-up limit (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	23.75	23.96	23.81	25.0
Channel				631668	633332	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3499.98	3525	
50	PI/2 BPSK	1	1	23.68	23.88	23.79	25.0
Channel				631334	633332	635332	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	23.73	23.90	23.83	25.0
Channel				631000	633332	635666	Tune-up limit (dBm)
Frequency (MHz)				3465	3499.98	3534.99	
30	PI/2 BPSK	1	1	23.66	23.91	23.73	25.0
Channel				630668	633332	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	23.67	23.94	23.77	25.0



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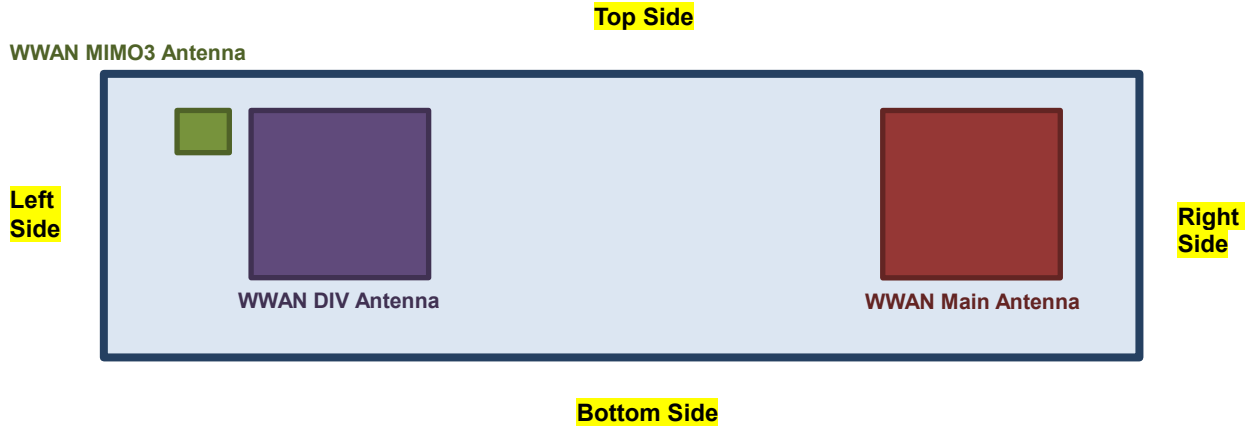
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel					633332		
Frequency (MHz)					3499.98		
100	PI/2 BPSK	1	1	25.51	25.56	25.47	27.0
100	PI/2 BPSK	1	137	25.18	25.18	25.13	
100	PI/2 BPSK	1	271	25.38	25.33	25.33	
100	PI/2 BPSK	135	0	25.12	25.20	25.16	26.5
100	PI/2 BPSK	135	69	25.12	25.14	25.16	27.0
100	PI/2 BPSK	135	138	25.21	25.29	25.28	26.5
100	PI/2 BPSK	270	0	25.27	25.33	25.28	
100	QPSK	1	1	25.19	25.14	25.22	27.0
100	QPSK	1	137	25.22	25.21	25.14	
100	QPSK	1	271	25.22	25.19	25.14	
100	QPSK	135	0	25.11	25.12	25.17	26.0
100	QPSK	135	69	25.22	25.25	25.21	27.0
100	QPSK	135	138	25.21	25.23	25.19	26.0
100	QPSK	270	0	25.19	25.28	25.26	
100	16QAM	1	1	25.21	25.18	25.16	26.0
100	64QAM	1	1	24.24	24.28	24.19	24.5
100	256QAM	1	1	22.40	22.44	22.45	22.5
Channel				633000	633332	633666	Tune-up limit (dBm)
Frequency (MHz)				3495	3499.98	3504.99	
90	PI/2 BPSK	1	1	25.36	25.44	25.37	27.0
Channel				632668	633332	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3499.98	3510	
80	PI/2 BPSK	1	1	25.42	25.47	25.43	27.0
Channel				632334	633332	634332	Tune-up limit (dBm)
Frequency (MHz)				3485.01	3499.98	3514.98	
70	PI/2 BPSK	1	1	25.31	25.42	25.32	27.0
Channel				632000	633332	634666	Tune-up limit (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	25.36	25.48	25.44	27.0
Channel				631668	633332	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3499.98	3525	
50	PI/2 BPSK	1	1	25.40	25.43	25.40	27.0
Channel				631334	633332	635332	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	25.42	25.43	25.43	27.0
Channel				631000	633332	635666	Tune-up limit (dBm)
Frequency (MHz)				3465	3499.98	3534.99	
30	PI/2 BPSK	1	1	25.37	25.43	25.38	27.0
Channel				630668	633332	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	25.42	25.45	25.39	27.0



**<FR1 n78\_HPUE\_Ant MIMO3>**

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		26.39		27.0
100	PI/2 BPSK	1	137		25.95		
100	PI/2 BPSK	1	271		25.72		
100	PI/2 BPSK	135	0		26.21		27.0
100	PI/2 BPSK	135	69		26.02		27.0
100	PI/2 BPSK	135	138		25.83		27.0
100	PI/2 BPSK	270	0		25.99		
100	QPSK	1	1		26.38		27.0
100	QPSK	1	137		25.92		
100	QPSK	1	271		25.73		
100	QPSK	135	0		25.47		27.0
100	QPSK	135	69		25.86		27.0
100	QPSK	135	138		25.15		27.0
100	QPSK	270	0		25.27		
100	16QAM	1	1		26.38		26.5
100	64QAM	1	1		25.92		26.0
100	256QAM	1	1		23.95		24.0
Channel				633000	633332	633666	Tune-up limit (dBm)
Frequency (MHz)				3495	3499.98	3504.99	
90	PI/2 BPSK	1	1	26.21	26.38	26.26	27.0
Channel				632668	633332	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3499.98	3510	
80	PI/2 BPSK	1	1	26.14	26.23	26.12	27.0
Channel				632334	633332	634332	Tune-up limit (dBm)
Frequency (MHz)				3485.01	3499.98	3514.98	
70	PI/2 BPSK	1	1	26.06	26.28	26.21	27.0
Channel				632000	633332	634666	Tune-up limit (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	26.16	26.25	26.18	27.0
Channel				631668	633332	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3499.98	3525	
50	PI/2 BPSK	1	1	26.11	26.31	26.20	27.0
Channel				631334	633332	635332	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	26.12	26.29	26.13	27.0
Channel				631000	633332	635666	Tune-up limit (dBm)
Frequency (MHz)				3465	3499.98	3534.99	
30	PI/2 BPSK	1	1	26.07	26.31	26.16	27.0
Channel				630668	633332	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	26.08	26.27	26.12	27.0

**12. Antenna Location**



Front View



## **13. 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 WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)\*Tune-up Scaling Factor
  - c. 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:
  - $\leq 0.8$  W/kg or  $2.0$  W/kg, for 1-g or 10-g respectively, when the transmission band is  $\leq 100$  MHz
  - $\leq 0.6$  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
  - $\leq 0.4$  W/kg or  $1.0$  W/kg, for 1-g or 10-g respectively, when the transmission band is  $\geq 200$  MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is  $\geq 0.8$ W/kg.

### **GSM Note:**

1. Per KDB 941225 D01v03r01, for SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the GPRS 4Tx slots modes was selected when EUT operating without power back-off, the GPRS 4Tx slots modes was selected when EUT operating with power back-off, according to the highest source-based time-averaged output power.

### **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 / DC-HSDPA is  $\leq 1/4$  dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is  $\leq 1.2$  W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than  $1/4$  dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.



**LTE Note:**

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are  $\leq 0.8$  W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is  $> 1.45$  W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is  $>$  not  $\frac{1}{2}$  dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is  $\leq 1.45$  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  $\frac{1}{2}$  dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4/B5/B12/B17/B26/B38/B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE band 2/4/5/17/38 SAR test was covered by Band 25/66/26/12/41; 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  $\leq$  the larger band to qualify for the SAR test exclusion.
  - b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

**5G NR Note:**

1. 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  $\leq 0.8$  W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is  $> 1.45$  W/kg, the remaining required test channels must also be tested.
  - c. For higher modulation QPSK/16QAM/64QAM/256QAM, according to tune-up document the power level is not  $\frac{1}{2}$  dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
  - d. Smaller bandwidth output power for each RB allocation configuration for this device is not  $\frac{1}{2}$  dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq 1.45$  W/kg, smaller bandwidth SAR testing is not required for this device
  - e. For 5G FR1 n5/n12/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.



13.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (4 Tx slots)	Back	25mm	DIV	189	836.4	29.15	30.50	1.365	0.08	0.122	0.166
	GSM850	GPRS (4 Tx slots)	Top Side	25mm	DIV	189	836.4	29.15	30.50	1.365	0.01	0.131	0.179
01	GSM850	GPRS (4 Tx slots)	Bottom Side	25mm	DIV	189	836.4	29.15	30.50	1.365	-0.03	0.653	0.891
	GSM850	GPRS (4 Tx slots)	Bottom Side	25mm	DIV	128	824.2	28.90	30.50	1.445	0.04	0.500	0.723
	GSM850	GPRS (4 Tx slots)	Bottom Side	25mm	DIV	251	848.8	28.77	30.50	1.489	0.03	0.562	0.837
	GSM1900	GPRS (4 Tx slots)	Back	25mm	Main	661	1880	26.21	27.50	1.346	-0.08	0.171	0.230
	GSM1900	GPRS (4 Tx slots)	Top Side	25mm	Main	661	1880	26.21	27.50	1.346	0.1	0.194	0.261
02	GSM1900	GPRS (4 Tx slots)	Bottom Side	25mm	Main	661	1880	26.21	27.50	1.346	-0.02	0.397	0.534

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	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	RMC 12.2Kbps	Back	25mm	Main	9400	1880	23.15	25.00	1.531	0.1	0.194	0.297
	WCDMA II	RMC 12.2Kbps	Top Side	25mm	Main	9400	1880	23.15	25.00	1.531	0.12	0.339	0.519
03	WCDMA II	RMC 12.2Kbps	Bottom Side	25mm	Main	9400	1880	23.15	25.00	1.531	0	0.484	0.741
	WCDMA IV	RMC 12.2Kbps	Back	25mm	Main	1413	1732.6	23.20	25.00	1.514	-0.17	0.270	0.409
	WCDMA IV	RMC 12.2Kbps	Top Side	25mm	Main	1413	1732.6	23.20	25.00	1.514	-0.03	0.342	0.518
04	WCDMA IV	RMC 12.2Kbps	Bottom Side	25mm	Main	1413	1732.6	23.20	25.00	1.514	0.03	0.504	0.763
	WCDMA V	RMC 12.2Kbps	Back	25mm	DIV	4182	836.4	23.21	25.00	1.510	0.11	0.082	0.124
	WCDMA V	RMC 12.2Kbps	Top Side	25mm	DIV	4182	836.4	23.21	25.00	1.510	-0.05	0.089	0.134
05	WCDMA V	RMC 12.2Kbps	Bottom Side	25mm	DIV	4182	836.4	23.21	25.00	1.510	0	0.491	0.741



<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	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 7	20M	QPSK	1	0	Back	25mm	Main	21100	2535	23.31	25.00	1.476	0.14	0.166	0.245
	LTE Band 7	20M	QPSK	50	0	Back	25mm	Main	21100	2535	22.38	24.00	1.452	-0.17	0.126	0.183
06	LTE Band 7	20M	QPSK	1	0	Top Side	25mm	Main	21100	2535	23.31	25.00	1.476	0.01	0.637	0.940
	LTE Band 7	20M	QPSK	1	0	Top Side	25mm	Main	20850	2510	23.26	25.00	1.493	0.17	0.494	0.737
	LTE Band 7	20M	QPSK	1	0	Top Side	25mm	Main	21350	2560	23.27	25.00	1.489	-0.05	0.618	0.920
	LTE Band 7	20M	QPSK	50	0	Top Side	25mm	Main	21100	2535	22.38	24.00	1.452	0.01	0.502	0.729
	LTE Band 7	20M	QPSK	100	0	Top Side	25mm	Main	21100	2535	22.26	24.00	1.493	0.1	0.497	0.742
	LTE Band 7	20M	QPSK	1	0	Bottom Side	25mm	Main	21100	2535	23.31	25.00	1.476	-0.17	0.234	0.345
	LTE Band 7	20M	QPSK	50	0	Bottom Side	25mm	Main	21100	2535	22.38	24.00	1.452	0.04	0.195	0.283
	LTE Band 12	10M	QPSK	1	0	Back	25mm	DIV	23095	707.5	23.23	25.00	1.503	-0.08	0.113	0.170
	LTE Band 12	10M	QPSK	25	0	Back	25mm	DIV	23095	707.5	22.37	24.00	1.455	0.05	0.093	0.135
	LTE Band 12	10M	QPSK	1	0	Top Side	25mm	DIV	23095	707.5	23.23	25.00	1.503	0.06	0.154	0.231
	LTE Band 12	10M	QPSK	25	0	Top Side	25mm	DIV	23095	707.5	22.37	24.00	1.455	-0.09	0.118	0.172
07	LTE Band 12	10M	QPSK	1	0	Bottom Side	25mm	DIV	23095	707.5	23.23	25.00	1.503	0.03	0.205	0.308
	LTE Band 12	10M	QPSK	25	0	Bottom Side	25mm	DIV	23095	707.5	22.37	24.00	1.455	-0.08	0.182	0.265
	LTE Band 13	10M	QPSK	1	0	Back	25mm	DIV	23230	782	23.25	25.00	1.496	0.12	0.175	0.262
	LTE Band 13	10M	QPSK	25	0	Back	25mm	DIV	23230	782	22.22	24.00	1.507	0.03	0.141	0.212
	LTE Band 13	10M	QPSK	1	0	Top Side	25mm	DIV	23230	782	23.25	25.00	1.496	0.18	0.177	0.265
	LTE Band 13	10M	QPSK	25	0	Top Side	25mm	DIV	23230	782	22.22	24.00	1.507	0.16	0.135	0.203
08	LTE Band 13	10M	QPSK	1	0	Bottom Side	25mm	DIV	23230	782	23.25	25.00	1.496	0.02	0.331	0.495
	LTE Band 13	10M	QPSK	25	0	Bottom Side	25mm	DIV	23230	782	22.22	24.00	1.507	-0.1	0.257	0.387
	LTE Band 14	10M	QPSK	1	0	Back	25mm	DIV	23330	793	23.21	25.00	1.510	0.18	0.157	0.237
	LTE Band 14	10M	QPSK	25	0	Back	25mm	DIV	23330	793	22.31	24.00	1.476	-0.1	0.125	0.184
	LTE Band 14	10M	QPSK	1	0	Top Side	25mm	DIV	23330	793	23.21	25.00	1.510	0.01	0.124	0.187
	LTE Band 14	10M	QPSK	25	0	Top Side	25mm	DIV	23330	793	22.31	24.00	1.476	-0.15	0.085	0.125
09	LTE Band 14	10M	QPSK	1	0	Bottom Side	25mm	DIV	23330	793	23.21	25.00	1.510	0.04	0.298	0.450
	LTE Band 14	10M	QPSK	25	0	Bottom Side	25mm	DIV	23330	793	22.31	24.00	1.476	0.19	0.235	0.347
	LTE Band 25	20M	QPSK	1	0	Back	25mm	Main	26340	1880	23.34	25.00	1.466	-0.18	0.188	0.276
	LTE Band 25	20M	QPSK	50	0	Back	25mm	Main	26340	1880	22.36	24.00	1.459	0.03	0.150	0.219
	LTE Band 25	20M	QPSK	1	0	Top Side	25mm	Main	26340	1880	23.34	25.00	1.466	-0.15	0.404	0.592
	LTE Band 25	20M	QPSK	50	0	Top Side	25mm	Main	26340	1880	22.36	24.00	1.459	-0.15	0.321	0.468
10	LTE Band 25	20M	QPSK	1	0	Bottom Side	25mm	Main	26340	1880	23.34	25.00	1.466	0	0.451	0.661
	LTE Band 25	20M	QPSK	50	0	Bottom Side	25mm	Main	26340	1880	22.36	24.00	1.459	0.11	0.366	0.534
	LTE Band 26	15M	QPSK	1	0	Back	25mm	DIV	26865	831.5	23.30	25.00	1.479	-0.17	0.102	0.151
	LTE Band 26	15M	QPSK	36	0	Back	25mm	DIV	26865	831.5	22.40	24.00	1.445	-0.08	0.077	0.111
	LTE Band 26	15M	QPSK	1	0	Top Side	25mm	DIV	26865	831.5	23.30	25.00	1.479	-0.04	0.106	0.157
	LTE Band 26	15M	QPSK	36	0	Top Side	25mm	DIV	26865	831.5	22.40	24.00	1.445	-0.08	0.089	0.129
11	LTE Band 26	15M	QPSK	1	0	Bottom Side	25mm	DIV	26865	831.5	23.30	25.00	1.479	0	0.420	0.621
	LTE Band 26	15M	QPSK	36	0	Bottom Side	25mm	DIV	26865	831.5	22.40	24.00	1.445	0.17	0.363	0.525
	LTE Band 66	20M	QPSK	1	0	Back	25mm	Main	132322	1745	23.36	25.00	1.459	0.13	0.377	0.550
	LTE Band 66	20M	QPSK	50	0	Back	25mm	Main	132322	1745	22.33	24.00	1.469	-0.18	0.294	0.432
	LTE Band 66	20M	QPSK	1	0	Top Side	25mm	Main	132322	1745	23.36	25.00	1.459	0.02	0.468	0.683
	LTE Band 66	20M	QPSK	50	0	Top Side	25mm	Main	132322	1745	22.33	24.00	1.469	0.16	0.369	0.542
12	LTE Band 66	20M	QPSK	1	0	Bottom Side	25mm	Main	132322	1745	23.36	25.00	1.459	0.01	0.479	0.699
	LTE Band 66	20M	QPSK	50	0	Bottom Side	25mm	Main	132322	1745	22.33	24.00	1.469	-0.03	0.384	0.564
	LTE Band 71	20M	QPSK	1	0	Back	25mm	DIV	133297	680.5	23.20	25.00	1.514	0	0.113	0.171
	LTE Band 71	20M	QPSK	50	0	Back	25mm	DIV	133297	680.5	22.29	24.00	1.483	0.01	0.091	0.135
	LTE Band 71	20M	QPSK	1	0	Top Side	25mm	DIV	133297	680.5	23.20	25.00	1.514	-0.01	0.178	0.269
	LTE Band 71	20M	QPSK	50	0	Top Side	25mm	DIV	133297	680.5	22.29	24.00	1.483	-0.06	0.135	0.200
13	LTE Band 71	20M	QPSK	1	0	Bottom Side	25mm	DIV	133297	680.5	23.20	25.00	1.514	0.03	0.236	0.357
	LTE Band 71	20M	QPSK	50	0	Bottom Side	25mm	DIV	133297	680.5	22.29	24.00	1.483	-0.04	0.184	0.273



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	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)
	LTE Band 41	20M	QPSK	1	0	Back	25mm	Main	40620	2593	23.41	25.00	1.442	62.9	1.006	-0.03	0.141	0.205
	LTE Band 41	20M	QPSK	50	0	Back	25mm	Main	40620	2593	22.45	24.00	1.429	62.9	1.006	0.08	0.112	0.161
	LTE Band 41	20M	QPSK	1	0	Top Side	25mm	Main	40620	2593	23.41	25.00	1.442	62.9	1.006	0	0.432	0.627
	LTE Band 41	20M	QPSK	1	0	Top Side	25mm	Main	39750	2506	23.30	25.00	1.479	62.9	1.006	-0.07	0.286	0.426
14	LTE Band 41	20M	QPSK	1	0	Top Side	25mm	Main	40185	2549.5	23.32	25.00	1.472	62.9	1.006	0	0.424	0.628
	LTE Band 41	20M	QPSK	1	0	Top Side	25mm	Main	41055	2636.5	23.28	25.00	1.486	62.9	1.006	-0.11	0.317	0.474
	LTE Band 41	20M	QPSK	1	0	Top Side	25mm	Main	41490	2680	23.39	25.00	1.449	62.9	1.006	-0.12	0.226	0.329
	LTE Band 41	20M	QPSK	50	0	Top Side	25mm	Main	40620	2593	22.45	24.00	1.429	62.9	1.006	0.03	0.326	0.469
	LTE Band 41	20M	QPSK	1	0	Bottom Side	25mm	Main	40620	2593	23.41	25.00	1.442	62.9	1.006	-0.16	0.294	0.427
	LTE Band 41	20M	QPSK	50	0	Bottom Side	25mm	Main	40620	2593	22.45	24.00	1.429	62.9	1.006	-0.02	0.242	0.348
	LTE Band 42	20M	QPSK	1	0	Back	25mm	MIMO3	42190	3460	24.14	25.00	1.219	62.9	1.006	-0.09	0.264	0.324
	LTE Band 42	20M	QPSK	50	0	Back	25mm	MIMO3	42190	3460	23.06	24.00	1.242	62.9	1.006	0.11	0.215	0.269
15	LTE Band 42	20M	QPSK	1	0	Top Side	25mm	MIMO3	42190	3460	24.14	25.00	1.219	62.9	1.006	-0.02	0.267	0.327
	LTE Band 42	20M	QPSK	50	0	Top Side	25mm	MIMO3	42190	3460	23.06	24.00	1.242	62.9	1.006	-0.05	0.206	0.257
	LTE Band 42	20M	QPSK	1	0	Bottom Side	25mm	MIMO3	42190	3460	24.14	25.00	1.219	62.9	1.006	-0.08	0.035	0.043
	LTE Band 42	20M	QPSK	50	0	Bottom Side	25mm	MIMO3	42190	3460	23.06	24.00	1.242	62.9	1.006	0.16	0.028	0.035
	LTE Band 48	20M	QPSK	1	0	Back	25mm	MIMO3	56640	3690	20.61	21.60	1.256	62.9	1.006	0.05	0.302	0.382
	LTE Band 48	20M	QPSK	50	0	Back	25mm	MIMO3	56640	3690	19.74	20.60	1.219	62.9	1.006	-0.03	0.245	0.300
16	LTE Band 48	20M	QPSK	1	0	Top Side	25mm	MIMO3	56640	3690	20.61	21.60	1.256	62.9	1.006	0.1	0.329	0.416
	LTE Band 48	20M	QPSK	50	0	Top Side	25mm	MIMO3	56640	3690	19.74	20.60	1.219	62.9	1.006	-0.15	0.254	0.311
	LTE Band 48	20M	QPSK	1	0	Bottom Side	25mm	MIMO3	56640	3690	20.61	21.60	1.256	62.9	1.006	0.02	0.075	0.095
	LTE Band 48	20M	QPSK	50	0	Bottom Side	25mm	MIMO3	56640	3690	19.74	20.60	1.219	62.9	1.006	0.07	0.060	0.074



<5G NR SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	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 n7	40M	BPSK	1	1	Back	25mm	Main	507000	2535	23.46	25.00	1.426	-0.17	0.124	0.177
	FR1 n7	40M	BPSK	108	54	Back	25mm	Main	507000	2535	23.42	25.00	1.439	-0.1	0.155	0.223
	FR1 n7	40M	BPSK	1	1	Top Side	25mm	Main	507000	2535	23.46	25.00	1.426	0.18	0.565	0.805
17	FR1 n7	40M	BPSK	108	54	Top Side	25mm	Main	507000	2535	23.42	25.00	1.439	-0.01	0.623	0.896
	FR1 n7	40M	BPSK	216	0	Top Side	25mm	Main	507000	2535	22.65	24.50	1.531	-0.17	0.534	0.818
	FR1 n7	40M	BPSK	1	1	Bottom Side	25mm	Main	507000	2535	23.46	25.00	1.426	-0.04	0.271	0.386
	FR1 n7	40M	BPSK	108	54	Bottom Side	25mm	Main	507000	2535	23.42	25.00	1.439	-0.05	0.257	0.370
	FR1 n12	15M	BPSK	1	1	Back	25mm	DIV	141500	707.5	23.51	25.00	1.409	-0.13	0.102	0.144
	FR1 n12	15M	BPSK	36	22	Back	25mm	DIV	141500	707.5	23.33	25.00	1.469	-0.01	0.100	0.147
	FR1 n12	15M	BPSK	1	1	Top Side	25mm	DIV	141500	707.5	23.51	25.00	1.409	-0.09	0.133	0.187
	FR1 n12	15M	BPSK	36	22	Top Side	25mm	DIV	141500	707.5	23.33	25.00	1.469	0.05	0.137	0.201
18	FR1 n12	15M	BPSK	1	1	Bottom Side	25mm	DIV	141500	707.5	23.51	25.00	1.409	-0.02	0.206	0.290
	FR1 n12	15M	BPSK	36	22	Bottom Side	25mm	DIV	141500	707.5	23.33	25.00	1.469	0.02	0.196	0.288
	FR1 n25	20M	BPSK	1	1	Back	25mm	Main	376500	1882.5	23.54	25.00	1.400	0.17	0.148	0.207
	FR1 n25	20M	BPSK	50	28	Back	25mm	Main	376500	1882.5	23.47	25.00	1.422	0.06	0.097	0.138
	FR1 n25	20M	BPSK	1	1	Top Side	25mm	Main	376500	1882.5	23.54	25.00	1.400	0	0.126	0.176
	FR1 n25	20M	BPSK	50	28	Top Side	25mm	Main	376500	1882.5	23.47	25.00	1.422	-0.04	0.110	0.156
	FR1 n25	20M	BPSK	1	1	Bottom Side	25mm	Main	376500	1882.5	23.54	25.00	1.400	-0.15	0.423	0.592
19	FR1 n25	20M	BPSK	50	28	Bottom Side	25mm	Main	376500	1882.5	23.47	25.00	1.422	0	0.424	0.603
	FR1 n26	20M	BPSK	1	1	Back	25mm	DIV	166300	831.5	23.42	25.00	1.439	-0.02	0.093	0.134
	FR1 n26	20M	BPSK	50	28	Back	25mm	DIV	166300	831.5	23.35	25.00	1.462	0.1	0.085	0.124
	FR1 n26	20M	BPSK	1	1	Top Side	25mm	DIV	166300	831.5	23.42	25.00	1.439	0.04	0.098	0.141
	FR1 n26	20M	BPSK	50	28	Top Side	25mm	DIV	166300	831.5	23.35	25.00	1.462	0.13	0.123	0.180
	FR1 n26	20M	BPSK	1	1	Bottom Side	25mm	DIV	166300	831.5	23.42	25.00	1.439	-0.18	0.418	0.601
20	FR1 n26	20M	BPSK	50	28	Bottom Side	25mm	DIV	166300	831.5	23.35	25.00	1.462	0.03	0.450	0.658
	FR1 n66	40M	BPSK	1	1	Back	25mm	Main	349000	1745	23.51	25.00	1.409	0.06	0.227	0.320
	FR1 n66	40M	BPSK	108	54	Back	25mm	Main	349000	1745	23.47	25.00	1.422	0.02	0.219	0.311
	FR1 n66	40M	BPSK	1	1	Top Side	25mm	Main	349000	1745	23.51	25.00	1.409	0.12	0.113	0.159
	FR1 n66	40M	BPSK	108	54	Top Side	25mm	Main	349000	1745	23.47	25.00	1.422	-0.16	0.113	0.161
	FR1 n66	40M	BPSK	1	1	Bottom Side	25mm	Main	349000	1745	23.51	25.00	1.409	-0.12	0.442	0.623
21	FR1 n66	40M	BPSK	108	54	Bottom Side	25mm	Main	349000	1745	23.47	25.00	1.422	-0.02	0.478	0.680
	FR1 n71	20M	BPSK	1	1	Back	25mm	DIV	136100	680.5	23.40	25.00	1.445	-0.02	0.096	0.139
	FR1 n71	20M	BPSK	50	28	Back	25mm	DIV	136100	680.5	23.37	25.00	1.455	-0.05	0.102	0.148
	FR1 n71	20M	BPSK	1	1	Top Side	25mm	DIV	136100	680.5	23.40	25.00	1.445	-0.13	0.156	0.225
	FR1 n71	20M	BPSK	50	28	Top Side	25mm	DIV	136100	680.5	23.37	25.00	1.455	0.08	0.145	0.211
22	FR1 n71	20M	BPSK	1	1	Bottom Side	25mm	DIV	136100	680.5	23.40	25.00	1.445	0.04	0.238	0.344
	FR1 n71	20M	BPSK	50	28	Bottom Side	25mm	DIV	136100	680.5	23.37	25.00	1.455	0.16	0.214	0.311



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	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 n41	100M	BPSK	1	1	Back	25mm	Main	518598	2592.99	23.49	25.00	1.416	-0.16	0.109	0.154
	FR1 n41	100M	BPSK	135	69	Back	25mm	Main	518598	2592.99	23.34	25.00	1.466	0.1	0.101	0.148
23	FR1 n41	100M	BPSK	1	1	Top Side	25mm	Main	518598	2592.99	23.49	25.00	1.416	0	0.355	0.503
	FR1 n41	100M	BPSK	135	69	Top Side	25mm	Main	518598	2592.99	23.34	25.00	1.466	-0.04	0.335	0.491
	FR1 n41	100M	BPSK	1	1	Bottom Side	25mm	Main	518598	2592.99	23.49	25.00	1.416	-0.01	0.161	0.228
	FR1 n41	100M	BPSK	135	69	Bottom Side	25mm	Main	518598	2592.99	23.34	25.00	1.466	0	0.183	0.268
	FR1 n48	40M	BPSK	1	1	Back	25mm	MIMO3	641666	3624.99	21.27	21.60	1.079	-0.06	0.308	0.332
	FR1 n48	40M	BPSK	50	28	Back	25mm	MIMO3	641666	3624.99	21.16	21.60	1.107	-0.15	0.290	0.321
24	FR1 n48	40M	BPSK	1	1	Top Side	25mm	MIMO3	641666	3624.99	21.27	21.60	1.079	-0.04	0.442	0.477
	FR1 n48	40M	BPSK	50	28	Top Side	25mm	MIMO3	641666	3624.99	21.16	21.60	1.107	0.03	0.416	0.460
	FR1 n48	40M	BPSK	1	1	Bottom Side	25mm	MIMO3	641666	3624.99	21.27	21.60	1.079	-0.13	0.052	0.056
	FR1 n48	40M	BPSK	50	28	Bottom Side	25mm	MIMO3	641666	3624.99	21.16	21.60	1.107	0.16	0.037	0.041
	FR1 n77_HPUE	100M	BPSK	1	1	Back	25mm	Main	656000	3840	25.67	27.00	1.358	-0.02	0.194	0.264
	FR1 n77_HPUE	100M	BPSK	135	69	Back	25mm	Main	656000	3840	25.38	27.00	1.452	-0.09	0.234	0.340
	FR1 n77_HPUE	100M	BPSK	1	1	Top Side	25mm	Main	656000	3840	25.67	27.00	1.358	0.14	0.169	0.230
	FR1 n77_HPUE	100M	BPSK	135	69	Top Side	25mm	Main	656000	3840	25.38	27.00	1.452	0.1	0.180	0.261
	FR1 n77_HPUE	100M	BPSK	1	1	Bottom Side	25mm	Main	656000	3840	25.67	27.00	1.358	-0.09	0.605	0.822
25	FR1 n77_HPUE	100M	BPSK	135	69	Bottom Side	25mm	Main	656000	3840	25.38	27.00	1.452	-0.01	0.652	0.947
	FR1 n77_HPUE	100M	BPSK	270	0	Bottom Side	25mm	Main	656000	3840	24.88	26.50	1.452	0.08	0.575	0.835
	FR1 n77_HPUE	100M	BPSK	1	271	Back	25mm	MIMO3	656000	3840	26.73	27.00	1.064	0.11	0.186	0.198
	FR1 n77_HPUE	100M	BPSK	135	69	Back	25mm	MIMO3	656000	3840	26.41	27.00	1.146	-0.08	0.208	0.238
	FR1 n77_HPUE	100M	BPSK	1	271	Top Side	25mm	MIMO3	656000	3840	26.73	27.00	1.064	-0.1	0.230	0.245
	FR1 n77_HPUE	100M	BPSK	135	69	Top Side	25mm	MIMO3	656000	3840	26.41	27.00	1.146	-0.02	0.233	0.267
	FR1 n77_HPUE	100M	BPSK	1	271	Bottom Side	25mm	MIMO3	656000	3840	26.73	27.00	1.064	-0.01	0.063	0.067
	FR1 n77_HPUE	100M	BPSK	135	69	Bottom Side	25mm	MIMO3	656000	3840	26.41	27.00	1.146	-0.09	0.064	0.073
	FR1 n77_HPUE	100M	BPSK	1	1	Back	25mm	Main	633332	3499.98	26.32	27.00	1.169	-0.17	0.084	0.098
	FR1 n77_HPUE	100M	BPSK	135	69	Back	25mm	Main	633332	3499.98	26.21	27.00	1.199	-0.01	0.089	0.107
	FR1 n77_HPUE	100M	BPSK	1	1	Top Side	25mm	Main	633332	3499.98	26.32	27.00	1.169	-0.11	0.138	0.161
	FR1 n77_HPUE	100M	BPSK	135	69	Top Side	25mm	Main	633332	3499.98	26.21	27.00	1.199	0.14	0.135	0.162
	FR1 n77_HPUE	100M	BPSK	1	1	Bottom Side	25mm	Main	633332	3499.98	26.32	27.00	1.169	0.03	0.357	0.418
	FR1 n77_HPUE	100M	BPSK	135	69	Bottom Side	25mm	Main	633332	3499.98	26.21	27.00	1.199	0	0.364	0.437
	FR1 n77_HPUE	100M	BPSK	1	1	Back	25mm	MIMO3	633332	3499.98	26.34	27.00	1.164	0.16	0.292	0.340
	FR1 n77_HPUE	100M	BPSK	135	69	Back	25mm	MIMO3	633332	3499.98	25.96	27.00	1.271	-0.06	0.329	0.418
	FR1 n77_HPUE	100M	BPSK	1	1	Top Side	25mm	MIMO3	633332	3499.98	26.34	27.00	1.164	0.02	0.305	0.355
	FR1 n77_HPUE	100M	BPSK	135	69	Top Side	25mm	MIMO3	633332	3499.98	25.96	27.00	1.271	0.03	0.333	0.423
	FR1 n77_HPUE	100M	BPSK	1	1	Bottom Side	25mm	MIMO3	633332	3499.98	26.34	27.00	1.164	-0.16	0.048	0.056
	FR1 n77_HPUE	100M	BPSK	135	69	Bottom Side	25mm	MIMO3	633332	3499.98	25.96	27.00	1.271	0.05	0.049	0.062

Test Engineer : Randy Lin, Teddy Chang and Andy Chiang



## **14. Uncertainty Assessment**

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

## **15. 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 447498 D01 v06, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", Oct 2015
- [6] FCC KDB 941225 D01 v03r01, "3G SAR MEAUREMENT PROCEDURES", Oct 2015
- [7] FCC KDB 941225 D05 v02r05, "SAR Evaluation Considerations for LTE Devices", Dec 2015
- [8] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.
- [9] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.