FCC SAR TEST REPORT

FCC ID	:	YY3-1102418
Equipment	:	Wireless Module
Brand Name	:	AirPrime
Model Name	:	EM9191
Applicant	:	Handheld Group AB Handheld Group AB, Kinnegatan 17 A, SE-531 33, Lidköping, Sweden
Manufacturer	:	iBASE 11F, No. 3-1, Yuan Qu Street, Nankang, Taipei, Taiwan, R.O.C.
Standard	:	FCC 47 CFR Part 2 (2.1093)

The product was installed into Tablet (Brand Name Handheld Group, Model Name: ALGIZ 10XR) during test.

The product was received on Oct. 27, 2022 and testing was started from Nov. 22, 2022 and completed on Nov. 25, 2022. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.

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

Cona Huang

Approved by: Cona Huang / Deputy Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA261002B	01	Initial issue of report	Mar. 21, 2023

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) for Handheld Group AB, Wireless Module, EM9191, are as follows.

Equipment Class	Frequency Band		Highest SAR Summary Body (Separation 0mm) 1g SAR (W/kg)	Highest Simultaneous Transmission 1g SAR (W/kg)
Licensed	WCDMA	WCDMA II	1.13	1.45
		WCDMA IV	0.87	
		WCDMA V	1.10	
	LTE	LTE Band 7	0.99	
		LTE Band 12 / 17	1.19	
		LTE Band 13	1.05	
		LTE Band 14	1.03	
		LTE Band 2 / 25	1.17	
		LTE Band 5 / 26	1.09	
		LTE Band 38 / 41	0.79	
		LTE Band 4 / 66	0.89	
		LTE Band 71	1.08	
		FR1 n2	1.08	
		FR1 n5	1.07	
		FR1 n66	0.83	
		FR1 n71	1.06	
	NFC	13.56MHz	<0.01	
DTS	WLAN	2.4GHz WLAN	1.13	1.45
NII		5GHz WLAN	1.04	1.38
DSS	2.4GHz Band	Bluetooth	0.35	1.19
Date of Testing:			2022/11/22 ~ 2022/11/25	

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test. This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications

Reviewed by: Jason Wang
Report Producer: Daisy Peng

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 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02

3. Equipment Under Test (EUT) Information

3.1 General Information

Product Feature & Specification	
Equipment Name	Wireless Module
Brand Name	AirPrime
Model Name	EM9191
FCC ID	YY3-1102418
Wireless Technology and Frequency Range	WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 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 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 n66 : 1710 MHz ~ 1780 MHz 5G NR n71 : 663 MHz ~ 698 MHz
Mode	RMC 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM, 64QAM, 256QAM

Host Information	
Equipment Name	ALGIZ 10XR
Brand Name	Handheld Group
Model Name	ALGIZ 10XR
Integrated WLAN Module	Brand Name: Realtek Model Name: RTL8822CE
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8GHz Band: 5725 MHz ~ 5850 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz NFC : 13.56MHz
Mode	WLAN: 802.11a/b/g/n/ac/ax HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE NFC: ASK
EUT Stage	Production Unit

Remark:

1. The Realtek RTL8822CE WLAN/Bluetooth module is also integrated into this host, WLAN/BT SAR testing data, which can be referred to Sporton FCC SAR Test Report, Report No.: FA2D0131, FCC ID: TX2-RTL8822CE and these results are used simultaneous transmission analysis.
2. The NFC module is also integrated into this host, NFC SAR testing data, which can be referred to Sporton FCC SAR Test Report, Report No.: FA2D0132, FCC ID: YY3-1102420 and these results are used simultaneous transmission analysis

WWAN Antenna Information		
INPAQ Technology P/N:MDA-S6G1-02-003	Antenna Gain (dBi)	
	UMTS/LTE/5G NR B2:	3.89
	UMTS/LTE/5G NR B4:	2.39
	UMTS/LTE/5G NR B5:	1.25
	LTE B7:	1.42
	LTE B 12:	0.51
	LTE B 13:	1.38
	LTE B 14:	1.38
	LTE B 17:	0.51
	LTE B 25:	3.95
	LTE B 26:	1.25
	LTE/5GNR B66:	2.24
	LTE/5GNR B71:	0.41
	LTE B38:	-0.37
	LTE B41:	1.42

WLAN Antenna Information									
1 Wi-Fi2	Ant. Type	FPC PIFA	connector	MHF4	2 Wi-Fi1	Ant. Type	FPC PIFA	connector	MHF4
	Model No.	WA-F-LB-01-110				Model No.	WA-F-LB-02-304		
	Peak Gain (dBi)					Peak Gain (dBi)			
	2400~2483.5MHz	0.6	5470~5725MHz	2.0		2400~2483.5MHz	2.7	5470~5725MHz	3.6
	5150~5250MHz	2.6	5725~5850MHz	2.8		5150~5250MHz	3.0	5725~5850MHz	2.8
	5250~5350MHz	2.6				5250~5350MHz	3.0		

3.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05	
FCC ID	YY3-1102418
Equipment Name	Wireless 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 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 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 71: 5MHz, 10MHz, 15MHz, 20MHz
uplink modulations used	QPSK / 16QAM / 64QAM / 256QAM
LTE Voice / Data requirements	Data only
LTE MPR permanently built-in by design	**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3**

Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power measurement please referred to section 11.
LTE Carrier Aggregation Additional Information	This device supports maximum of 5 carriers in the downlink and 2 carriers in the uplink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.

Transmission (H, M, L) channel numbers and frequencies in each LTE band

LTE Band 2

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900

LTE Band 4

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745

LTE Band 5

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844

LTE Band 7

	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560

LTE Band 12

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711

LTE Band 13

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	23205	779.5	23230	782
M	23230	782		
H	23255	784.5		

LTE Band 14

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Channel #	Channel #	Freq.(MHz)
L	23305	790.5	23330	793
M	23330	793		
H	23355	795.5		

LTE Band 17

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq. (MHz)
L	23755	706.5	23780	709
M	23790	710	23790	710
H	23825	713.5	23800	711

LTE Band 25												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905

LTE Band 26										
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5

LTE Band 38								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610

LTE Band 41								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

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

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

3.3 General 5G NR SAR Test and Reporting Considerations

5G NR Information	
FCC ID	YY3-1102418
Equipment Name	Wireless 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 n66: 1710 MHz ~ 1780 MHz 5G NR n71: 663 MHz ~ 698 MHz
Channel Bandwidth	5G NR n2: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n5: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n66: 5MHz, 10MHz, 15MHz, 20MHz, 25 MHz,30MHz, 40MHz 5G NR n71: 5MHz, 10MHz, 15MHz, 20MHz
SCS	FDD: SCS15KHz, TDD: SCS30KHz
uplink modulations used	DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM QPSK / 16QAM / 64QAM / 256QAM
A-MPR (Additional MPR) disabled for SAR Testing?	Yes
LTE Anchor Bands for n2	LTE B2/5/12/13/14/66
LTE Anchor Bands for n5	LTE B2/7/66
LTE Anchor Bands for n66	LTE B2/5/7/12/13/14/71
LTE Anchor Bands for n71	LTE B2/5/7/13/66

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 66								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	342500	1712.5	343000	1715	343500	1717.5	344000	1720
M	349000	1745	349000	1745	349000	1745	349000	1745
H	355500	1777.5	355000	1775	354500	1772.5	354000	1770

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

4. Smart Transmit feature for RF Exposure compliance

The Smart Transmit algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of SAR_design_target, below the predefined time-averaged power limit (i.e., input.power.limit for 5G NR), for each characterized technology and band (refer to RF exposure part0 report)

Smart Transmit allows the device to transmit at higher power instantaneously, as high as Pmax, when needed, but enforces power limiting to maintain time-averaged transmit power to Plimit. Below table shows Plimit EFS settings and maximum tune up output power Pmax configured for this EUT for various transmit conditions (Device State Index DSI).

<Terminologies in this report>

P_{limit}	The time-averaged RF power which corresponds to SAR_design_target.
P_{max}	Maximum target power level
SAR_design_target:	The design target for SAR compliance. It should be less than regulatory power density limit to account for all device design related uncertainties.
SAR char	P_{limit} for all the technologies/bands for all applicable DSI

<SAR Characterization>

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

<SAR design target and uncertainty>

The detail SAR design target relate to each exposure conditions pls refer to operation description

Band	Device Uncertainty (dB)	duty cycle %	1g SAR design target (W/kg)
WCDMA II	1	100.00%	0.953
WCDMA IV	1	100.00%	0.953
WCDMA V	1	100.00%	0.953
LTE B2/25	1	100.00%	0.953
LTE B66/4	1	100.00%	0.953
LTE B7	1	100.00%	0.953
LTE B12/B17	1	100.00%	0.953
LTE B13	1	100.00%	0.953
LTE B14	1	100.00%	0.953
LTE B26/5	1	100.00%	0.953
LTE B41/38(PC2)**	1	63.30%	0.953
LTE B41 (PC3)**	1	43.30%	0.953
LTE B71	1	100.00%	0.953
n2	1	100.00%	0.953
n5	1	100.00%	0.953
n66	1	100.00%	0.953
n71	1	100.00%	0.953

To account for total uncertainty, SAR_design_target should be determined as:

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

<P_{limit} for supported technologies and bands (P_{limit} in EFS file)>

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

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

The max allowed output power is the P_{limit} + 1dB device uncertainty, and if P_{limit} is higher than P_{max}, the device output power will be P_{max} instead.

Band	TDD duty cycle	Plimit*	Pmax * (dBm)
		Body (DSI:1)	
WCDMA II	100.00%	18.6	23.5
WCDMA IV	100.00%	20.0	23.5
WCDMA V	100.00%	21.2	23.5
LTE B2/25	100.00%	18.1	23.0
LTE B66/4	100.00%	20.5	23.0
LTE B7	100.00%	21.8	23.8
LTE B12/B17	100.00%	21.0	23.0
LTE B13	100.00%	20.7	23.0
LTE B14	100.00%	20.7	23.0
LTE B26/5	100.00%	20.6	23.0
LTE B41/38(PC2)**	63.30%	21.2	21.8
LTE B41 (PC3)**	43.30%		21.4
LTE B71	100.00%	22.0	23.0
n2	100.00%	19.0	23.5
n5	100.00%	21.1	23.5
n66	100.00%	20.5	23.5
n71	100.00%	22.5	23.5

5. RF Exposure Limits

5.1 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.

5.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

6. Specific Absorption Rate (SAR)

6.1 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.

6.2 SAR Definition

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

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

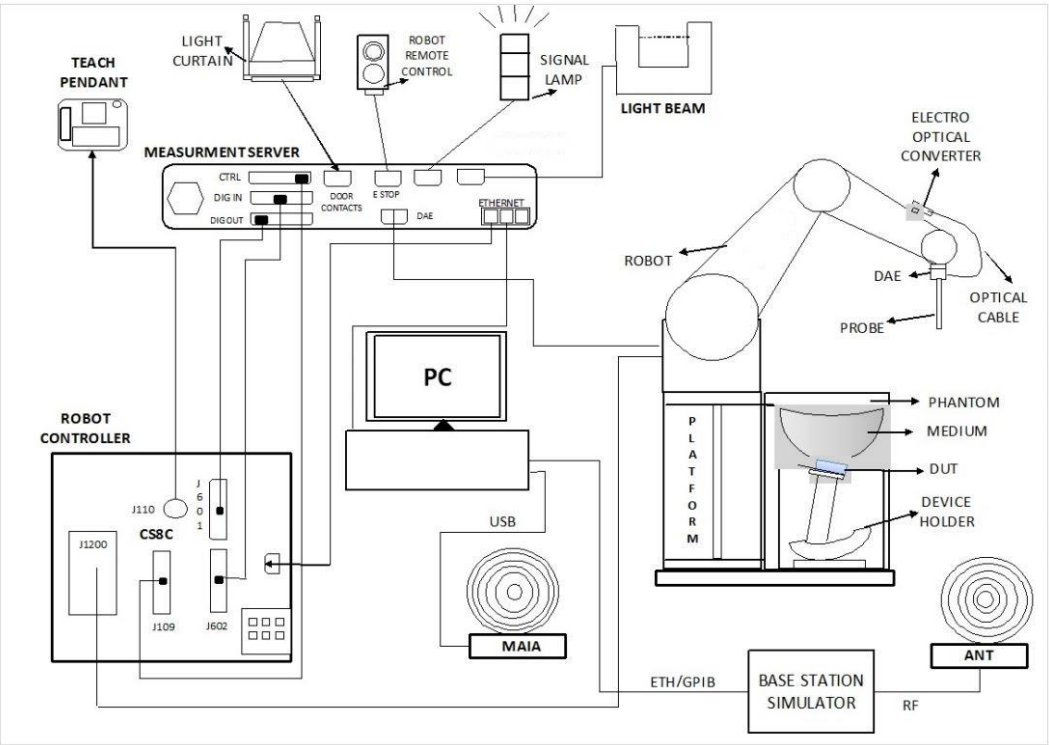
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. 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.

7.1 Test Site Location

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

Test Site	EMC & Wireless Communications Laboratory		Wensan Laboratory		
Test Site Location	TW1190 No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan		TW3786 No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan		
Test Site No.	SAR01-HY	SAR03-HY	SAR08-HY	SAR09-HY	SAR15-HY
	SAR04-HY	SAR05-HY	SAR11-HY	SAR12-HY	SAR16-HY
	SAR06-HY	SAR10-HY	SAR13-HY	SAR14-HY	SAR17-HY

7.2 E-Field Probe

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

<ES3DV3 Probe>

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

<EX3DV4 Probe>

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

7.3 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.

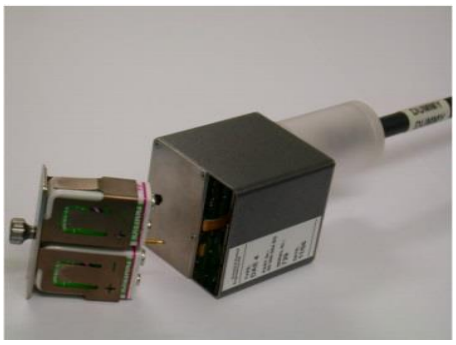
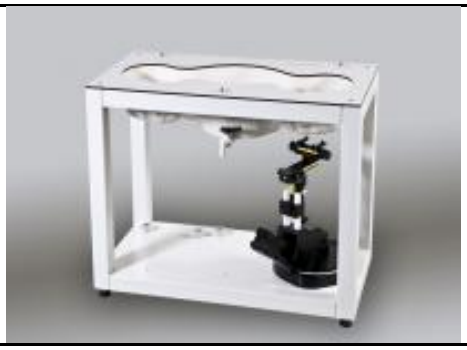


Fig 5.1 Photo of DAE

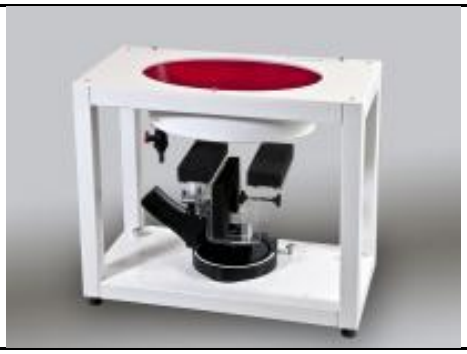
7.4 Phantom

<SAM Twin Phantom>

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

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

<ELI Phantom>

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

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

7.5 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

8. 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

8.1 Spatial Peak SAR Evaluation

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

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

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

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

8.2 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.

8.3 Area Scan

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

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

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 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: Δx_{Area}, Δy_{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.	

8.4 Zoom Scan

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

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

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

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

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

8.5 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.

8.6 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.

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1117	Mar. 24, 2022	Mar. 23, 2023
SPEAG	835MHz System Validation Kit(2)	D835V2	499	Aug. 18, 2021	Aug. 16, 2023
SPEAG	1750MHz System Validation Kit	D1750V2	1120	Mar. 25, 2022	Mar. 24, 2023
SPEAG	1900MHz System Validation Kit	D1900V2	5d185	Jun. 17, 2022	Jun. 16, 2023
SPEAG	2600MHz System Validation Kit	D2600V2	1078	Jun. 23, 2022	Jun. 22, 2023
SPEAG	Data Acquisition Electronics	DAE4	1311	Aug. 25, 2022	Aug. 24, 2023
SPEAG	Dosimetric E-Field Probe	EX3DV4	7306	Jul. 28, 2022	Jul. 27, 2023
RCPTWN	Thermometer	HTC-1	TM560-2	Mar. 15, 2022	Mar. 14, 2023
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Oct. 31, 2022	Oct. 30, 2023
Keysight	Wireless Communication Test Set	E5515C	MY50266977	May. 10, 2022	May. 09, 2023
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Oct. 12, 2022	Oct. 11, 2023
Keysight	ENA Network Analyzer	E5071C	MY46104758	Sep. 22, 2022	Sep. 21, 2023
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 28, 2022	Sep. 27, 2023
LINE SEIKI	Digital Thermometer	DTM3000-spezial	2942	Oct. 31, 2022	Oct. 30, 2023
Anritsu	Power Meter	ML2495A	1419002	Aug. 16, 2022	Aug. 15, 2023
Anritsu	Power Sensor	MA2411B	1911176	Aug. 16, 2022	Aug. 15, 2023
Anritsu	Power Meter	ML2495A	1804003	Oct. 17, 2022	Oct. 16, 2023
Anritsu	Power Sensor	MA2411B	1726150	Oct. 17, 2022	Oct. 16, 2023
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jul. 21, 2022	Jul. 20, 2023
Agilent	Spectrum Analyzer	E4408B	MY44211028	Aug. 19, 2021	Aug. 17, 2023
Mini-Circuits	Power Amplifier	ZVE-8G+	6418	Oct. 14, 2022	Oct. 13, 2023
Mini-Circuits	Power Amplifier	ZVE-8G+	479102029	Sep. 15, 2022	Sep. 14, 2023
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.

10. System Verification

10.1 Tissue Verification

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	22.2	0.885	41.700	0.89	41.90	-0.56	-0.48	±5	2022/11/22
835	22.3	0.919	41.400	0.90	41.50	2.11	-0.24	±5	2022/11/23
1750	22.5	1.360	40.500	1.37	40.10	-0.73	1.00	±5	2022/11/24
1900	22.5	1.430	38.900	1.40	40.00	2.14	-2.75	±5	2022/11/24
2600	22.6	1.990	37.800	1.96	39.00	1.53	-3.08	±5	2022/11/25

10.2 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.

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 (%)	Test Site
2022/11/22	750	50	D750V3-1117	EX3DV4 - SN7306	DAE4 Sn1311	0.406	8.520	8.12	-4.69	SAR10
2022/11/23	835	50	D835V2-499	EX3DV4 - SN7306	DAE4 Sn1311	0.488	9.680	9.76	0.83	SAR10
2022/11/24	1750	50	D1750V2-1120	EX3DV4 - SN7306	DAE4 Sn1311	1.750	36.400	35	-3.85	SAR10
2022/11/24	1900	50	D1900V2-5d185	EX3DV4 - SN7306	DAE4 Sn1311	1.910	39.000	38.2	-2.05	SAR10
2022/11/25	2600	50	D2600V2-1078	EX3DV4 - SN7306	DAE4 Sn1311	2.650	55.400	53	-4.33	SAR10

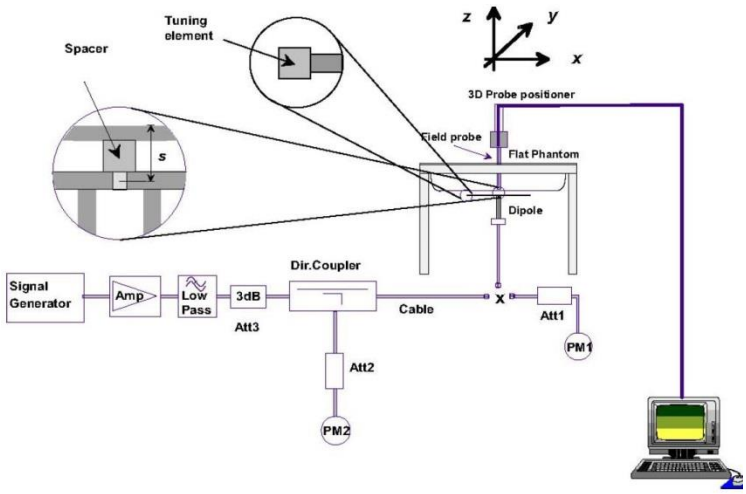


Fig 8.3.1 System Performance Check Setup

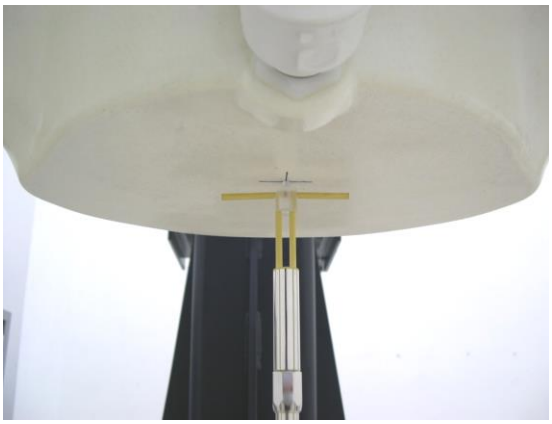


Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 SAR Testing for Tablet

This device can be used also in full sized tablet exposure conditions, due to its size. Per FCC KDB 616217, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR exclusion threshold in KDB 447498 D01v06 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

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

<WCDMA Conducted Power>

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

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

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

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.

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

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

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

Setup Configuration

HSUPA Setup Configuration:

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

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

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

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

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

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

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

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

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

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

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

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

C.8.1.12 Fixed Reference Channel Definition H-Set 12

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

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

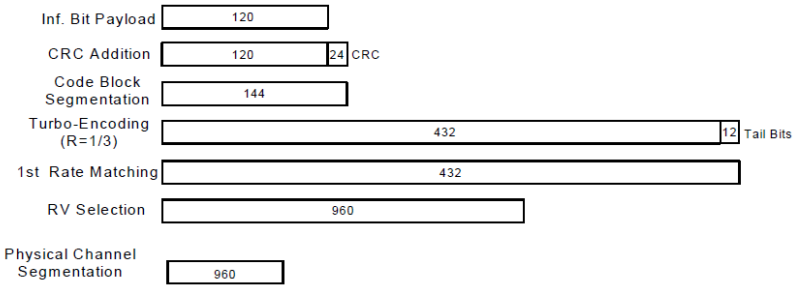


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<WCDMA Conducted Power>

General Note:

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

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	RMC 12.2Kbps	19.48	19.51	19.42	19.60	20.93	20.71	20.85	21.00	22.05	22.14	22.08	22.20
3GPP Rel 6	HSDPA Subtest-1	19.38	19.44	19.36	19.60	20.89	20.68	20.76	21.00	21.96	22.09	22.03	22.20
3GPP Rel 6	HSDPA Subtest-2	19.46	19.46	19.39	19.60	20.85	20.71	20.85	21.00	21.95	22.09	22.02	22.20
3GPP Rel 6	HSDPA Subtest-3	19.46	19.45	19.41	19.60	20.84	20.64	20.80	21.00	22.03	22.10	22.01	22.20
3GPP Rel 6	HSDPA Subtest-4	19.39	19.48	19.35	19.60	20.88	20.63	20.85	21.00	21.97	22.08	22.03	22.20
3GPP Rel 8	DC-HSDPA Subtest-1	19.48	19.42	19.35	19.60	20.83	20.70	20.80	21.00	22.05	22.08	22.06	22.20
3GPP Rel 8	DC-HSDPA Subtest-2	19.38	19.43	19.42	19.60	20.83	20.66	20.76	21.00	22.02	22.12	22.08	22.20
3GPP Rel 8	DC-HSDPA Subtest-3	19.48	19.49	19.33	19.60	20.90	20.70	20.78	21.00	21.99	22.10	21.98	22.20
3GPP Rel 8	DC-HSDPA Subtest-4	19.45	19.43	19.38	19.60	20.85	20.65	20.78	21.00	22.02	22.08	22.02	22.20
3GPP Rel 6	HSUPA Subtest-1	19.48	19.49	19.38	19.60	20.88	20.68	20.76	21.00	22.04	22.12	22.05	22.20
3GPP Rel 6	HSUPA Subtest-2	19.46	19.41	19.40	19.60	20.85	20.64	20.75	21.00	21.99	22.10	21.99	22.20
3GPP Rel 6	HSUPA Subtest-3	19.48	19.50	19.42	19.60	20.85	20.66	20.82	21.00	22.05	22.09	22.08	22.20
3GPP Rel 6	HSUPA Subtest-4	19.48	19.44	19.34	19.60	20.87	20.66	20.83	21.00	21.96	22.08	22.08	22.20
3GPP Rel 6	HSUPA Subtest-5	19.48	19.41	19.36	19.60	20.83	20.70	20.77	21.00	22.01	22.08	21.98	22.20

<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4/B5/B12/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 ≤ 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>

BW [MHz]	Modulation	ID:38	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	18.42	18.46	18.47	19.1
20	QPSK	1	49	18.40	18.38	18.37	
20	QPSK	1	99	18.38	18.42	18.41	
20	QPSK	50	0	18.37	18.43	18.37	19.1
20	QPSK	50	24	18.37	18.42	18.41	
20	QPSK	50	50	18.38	18.45	18.40	
20	QPSK	100	0	18.35	18.46	18.39	
20	16QAM	1	0	18.41	18.43	18.39	19.1
20	16QAM	1	49	18.33	18.36	18.42	
20	16QAM	1	99	18.39	18.42	18.45	
20	16QAM	50	0	18.37	18.39	18.41	19.1
20	16QAM	50	24	18.35	18.39	18.46	
20	16QAM	50	50	18.34	18.36	18.42	
20	16QAM	100	0	18.39	18.41	18.44	
20	64QAM	1	0	18.42	18.42	18.45	19.1
20	64QAM	1	49	18.38	18.44	18.37	
20	64QAM	1	99	18.38	18.46	18.41	
20	64QAM	50	0	18.38	18.37	18.39	19.1
20	64QAM	50	24	18.34	18.44	18.37	
20	64QAM	50	50	18.40	18.36	18.43	
20	64QAM	100	0	18.36	18.36	18.38	
20	256QAM	1	0	18.41	18.46	18.33	19.1
20	256QAM	1	49	18.35	18.37	18.36	
20	256QAM	1	99	18.35	18.44	18.39	
20	256QAM	50	0	18.42	18.43	18.44	19.1
20	256QAM	50	24	18.42	18.43	18.37	
20	256QAM	50	50	18.39	18.38	18.40	
20	256QAM	100	0	18.34	18.41	18.39	
Channel				18675	18900	19125	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	18.37	18.38	18.42	19.1
15	QPSK	1	37	18.33	18.33	18.35	
15	QPSK	1	74	18.36	18.40	18.36	
15	QPSK	36	0	18.28	18.38	18.32	19.1
15	QPSK	36	20	18.31	18.35	18.41	
15	QPSK	36	39	18.29	18.40	18.37	
15	QPSK	75	0	18.30	18.42	18.31	
15	16QAM	1	0	18.31	18.33	18.35	19.1
15	16QAM	1	37	18.25	18.35	18.33	
15	16QAM	1	74	18.34	18.41	18.43	
15	16QAM	36	0	18.29	18.29	18.31	19.1
15	16QAM	36	20	18.26	18.34	18.37	
15	16QAM	36	39	18.31	18.26	18.40	
15	16QAM	75	0	18.34	18.36	18.35	
15	64QAM	1	0	18.34	18.40	18.37	19.1
15	64QAM	1	37	18.37	18.42	18.33	
15	64QAM	1	74	18.35	18.38	18.37	
15	64QAM	36	0	18.28	18.29	18.38	19.1
15	64QAM	36	20	18.25	18.35	18.35	
15	64QAM	36	39	18.31	18.35	18.40	
15	64QAM	75	0	18.31	18.32	18.34	

15	256QAM	1	0	18.40	18.42	18.25	19.1
15	256QAM	1	37	18.29	18.35	18.27	
15	256QAM	1	74	18.31	18.34	18.30	
15	256QAM	36	0	18.40	18.36	18.40	19.1
15	256QAM	36	20	18.40	18.40	18.30	
15	256QAM	36	39	18.39	18.28	18.32	
15	256QAM	75	0	18.31	18.38	18.33	
Channel				18650	18900	19150	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	QPSK	1	0	18.37	18.36	18.45	19.1
10	QPSK	1	25	18.39	18.35	18.28	
10	QPSK	1	49	18.30	18.42	18.34	
10	QPSK	25	0	18.34	18.39	18.37	19.1
10	QPSK	25	12	18.33	18.42	18.39	
10	QPSK	25	25	18.29	18.41	18.33	
10	QPSK	50	0	18.28	18.42	18.31	
10	16QAM	1	0	18.40	18.41	18.33	19.1
10	16QAM	1	25	18.25	18.28	18.32	
10	16QAM	1	49	18.38	18.41	18.42	
10	16QAM	25	0	18.29	18.33	18.35	19.1
10	16QAM	25	12	18.29	18.31	18.39	
10	16QAM	25	25	18.28	18.27	18.37	
10	16QAM	50	0	18.29	18.35	18.41	
10	64QAM	1	0	18.33	18.32	18.41	19.1
10	64QAM	1	25	18.30	18.40	18.27	
10	64QAM	1	49	18.31	18.36	18.39	
10	64QAM	25	0	18.28	18.27	18.30	19.1
10	64QAM	25	12	18.32	18.38	18.37	
10	64QAM	25	25	18.31	18.27	18.39	
10	64QAM	50	0	18.31	18.29	18.35	
10	256QAM	1	0	18.33	18.38	18.31	19.1
10	256QAM	1	25	18.31	18.37	18.28	
10	256QAM	1	49	18.29	18.39	18.37	
10	256QAM	25	0	18.41	18.35	18.35	19.1
10	256QAM	25	12	18.36	18.38	18.33	
10	256QAM	25	25	18.35	18.38	18.40	
10	256QAM	50	0	18.31	18.35	18.35	
Channel				18625	18900	19175	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	18.40	18.39	18.45	19.1
5	QPSK	1	12	18.38	18.32	18.31	
5	QPSK	1	24	18.29	18.41	18.41	
5	QPSK	12	0	18.32	18.37	18.35	19.1
5	QPSK	12	7	18.34	18.40	18.37	
5	QPSK	12	13	18.38	18.45	18.32	
5	QPSK	25	0	18.28	18.40	18.38	
5	16QAM	1	0	18.38	18.34	18.35	19.1
5	16QAM	1	12	18.32	18.26	18.33	
5	16QAM	1	24	18.33	18.35	18.36	
5	16QAM	12	0	18.34	18.39	18.40	19.1
5	16QAM	12	7	18.31	18.29	18.39	
5	16QAM	12	13	18.26	18.35	18.34	
5	16QAM	25	0	18.33	18.33	18.36	
5	64QAM	1	0	18.34	18.37	18.38	19.1
5	64QAM	1	12	18.30	18.39	18.32	
5	64QAM	1	24	18.32	18.37	18.36	

5	64QAM	12	0	18.38	18.33	18.38	19.1
5	64QAM	12	7	18.34	18.41	18.31	
5	64QAM	12	13	18.39	18.28	18.37	
5	64QAM	25	0	18.30	18.36	18.37	
5	256QAM	1	0	18.33	18.40	18.25	19.1
5	256QAM	1	12	18.34	18.34	18.31	
5	256QAM	1	24	18.29	18.39	18.37	
5	256QAM	12	0	18.40	18.38	18.35	19.1
5	256QAM	12	7	18.36	18.37	18.29	
5	256QAM	12	13	18.35	18.31	18.38	
5	256QAM	25	0	18.31	18.32	18.35	
Channel				18615	18900	19185	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1908.5	
3	QPSK	1	0	18.42	18.38	18.44	19.1
3	QPSK	1	8	18.31	18.38	18.36	
3	QPSK	1	14	18.33	18.34	18.41	
3	QPSK	8	0	18.36	18.40	18.30	19.1
3	QPSK	8	4	18.36	18.41	18.35	
3	QPSK	8	7	18.37	18.37	18.37	
3	QPSK	15	0	18.34	18.46	18.37	
3	16QAM	1	0	18.31	18.43	18.38	19.1
3	16QAM	1	8	18.30	18.30	18.41	
3	16QAM	1	14	18.29	18.42	18.35	
3	16QAM	8	0	18.27	18.29	18.33	19.1
3	16QAM	8	4	18.32	18.29	18.36	
3	16QAM	8	7	18.28	18.29	18.33	
3	16QAM	15	0	18.33	18.35	18.36	
3	64QAM	1	0	18.42	18.39	18.44	19.1
3	64QAM	1	8	18.33	18.36	18.36	
3	64QAM	1	14	18.35	18.46	18.32	
3	64QAM	8	0	18.28	18.28	18.34	19.1
3	64QAM	8	4	18.28	18.38	18.36	
3	64QAM	8	7	18.35	18.31	18.42	
3	64QAM	15	0	18.30	18.34	18.33	
3	256QAM	1	0	18.31	18.44	18.23	19.1
3	256QAM	1	8	18.26	18.29	18.31	
3	256QAM	1	14	18.35	18.40	18.35	
3	256QAM	8	0	18.36	18.33	18.35	19.1
3	256QAM	8	4	18.33	18.40	18.28	
3	256QAM	8	7	18.32	18.31	18.39	
3	256QAM	15	0	18.34	18.31	18.36	
Channel				18607	18900	19193	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	18.37	18.36	18.45	19.1
1.4	QPSK	1	3	18.35	18.34	18.28	
1.4	QPSK	1	5	18.36	18.40	18.37	
1.4	QPSK	3	0	18.30	18.42	18.29	
1.4	QPSK	3	1	18.36	18.42	18.41	
1.4	QPSK	3	3	18.37	18.42	18.32	
1.4	QPSK	6	0	18.27	18.36	18.31	19.1
1.4	16QAM	1	0	18.37	18.38	18.29	19.1
1.4	16QAM	1	3	18.30	18.34	18.33	
1.4	16QAM	1	5	18.29	18.34	18.43	
1.4	16QAM	3	0	18.36	18.32	18.41	
1.4	16QAM	3	1	18.33	18.33	18.43	
1.4	16QAM	3	3	18.27	18.29	18.38	

1.4	16QAM	6	0	18.32	18.40	18.37	19.1
1.4	64QAM	1	0	18.37	18.32	18.43	19.1
1.4	64QAM	1	3	18.37	18.41	18.29	
1.4	64QAM	1	5	18.35	18.37	18.31	
1.4	64QAM	3	0	18.38	18.37	18.35	
1.4	64QAM	3	1	18.32	18.43	18.35	
1.4	64QAM	3	3	18.31	18.36	18.37	
1.4	64QAM	6	0	18.32	18.34	18.29	19.1
1.4	256QAM	1	0	18.38	18.46	18.30	19.1
1.4	256QAM	1	3	18.25	18.37	18.35	
1.4	256QAM	1	5	18.27	18.40	18.37	
1.4	256QAM	3	0	18.39	18.38	18.40	
1.4	256QAM	3	1	18.33	18.34	18.36	
1.4	256QAM	3	3	18.33	18.37	18.39	
1.4	256QAM	6	0	18.32	18.38	18.32	19.1

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
230				20050	20175	20300	
Frequency (MHz)				1720	1732.5	1745	
20	QPSK	1	0	20.86	20.92	20.97	21.5
20	QPSK	1	49	20.80	20.85	20.93	
20	QPSK	1	99	20.79	20.90	20.86	
20	QPSK	50	0	20.77	20.91	20.95	21.5
20	QPSK	50	24	20.78	20.86	20.91	
20	QPSK	50	50	20.84	20.90	20.86	
20	QPSK	100	0	20.84	20.86	20.93	
20	16QAM	1	0	20.85	20.92	20.87	21.5
20	16QAM	1	49	20.77	20.87	20.89	
20	16QAM	1	99	20.83	20.87	20.87	
20	16QAM	50	0	20.78	20.87	20.89	21.5
20	16QAM	50	24	20.81	20.83	20.92	
20	16QAM	50	50	20.82	20.87	20.93	
20	16QAM	100	0	20.84	20.88	20.94	
20	64QAM	1	0	20.80	20.83	20.91	21.5
20	64QAM	1	49	20.77	20.91	20.96	
20	64QAM	1	99	20.85	20.89	20.94	
20	64QAM	50	0	20.76	20.89	20.93	21.5
20	64QAM	50	24	20.83	20.88	20.87	
20	64QAM	50	50	20.83	20.84	20.94	
20	64QAM	100	0	20.84	20.92	20.88	
20	256QAM	1	0	19.25	19.18	19.14	19.5
20	256QAM	1	49	19.16	19.03	18.98	
20	256QAM	1	99	19.08	19.13	19.02	
20	256QAM	50	0	19.17	19.03	18.88	19.5
20	256QAM	50	24	19.12	19.01	18.94	
20	256QAM	50	50	19.05	19.00	18.95	
20	256QAM	100	0	19.02	18.98	19.02	
Channel				20025	20175	20325	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1732.5	1747.5	
15	QPSK	1	0	20.86	20.87	20.94	21.5
15	QPSK	1	37	20.70	20.85	20.86	
15	QPSK	1	74	20.70	20.87	20.93	
15	QPSK	36	0	20.71	20.91	20.85	21.5
15	QPSK	36	20	20.69	20.81	20.90	

15	QPSK	36	39	20.80	20.85	20.91	
15	QPSK	75	0	20.76	20.82	20.90	
15	16QAM	1	0	20.79	20.83	20.77	21.5
15	16QAM	1	37	20.72	20.87	20.79	
15	16QAM	1	74	20.79	20.82	20.83	
15	16QAM	36	0	20.76	20.81	20.79	21.5
15	16QAM	36	20	20.71	20.81	20.95	
15	16QAM	36	39	20.77	20.78	20.91	
15	16QAM	75	0	20.81	20.78	20.87	
15	64QAM	1	0	20.78	20.78	20.87	21.5
15	64QAM	1	37	20.72	20.82	20.90	
15	64QAM	1	74	20.80	20.89	20.85	
15	64QAM	36	0	20.70	20.89	20.84	21.5
15	64QAM	36	20	20.77	20.86	20.95	
15	64QAM	36	39	20.74	20.84	20.94	
15	64QAM	75	0	20.77	20.89	20.83	
15	256QAM	1	0	19.25	19.08	19.13	19.5
15	256QAM	1	37	19.10	18.97	18.88	
15	256QAM	1	74	19.04	19.03	19.01	
15	256QAM	36	0	19.16	18.93	18.81	19.5
15	256QAM	36	20	19.06	18.93	18.94	
15	256QAM	36	39	18.96	18.91	18.88	
15	256QAM	75	0	18.94	18.88	18.96	
Channel				20000	20175	20350	Tune-up limit (dBm)
Frequency (MHz)				1715	1732.5	1750	
10	QPSK	1	0	20.79	20.85	20.93	21.5
10	QPSK	1	25	20.71	20.78	20.91	
10	QPSK	1	49	20.78	20.90	20.96	
10	QPSK	25	0	20.74	20.91	20.89	21.5
10	QPSK	25	12	20.77	20.82	20.90	
10	QPSK	25	25	20.78	20.82	20.95	
10	QPSK	50	0	20.78	20.86	20.85	
10	16QAM	1	0	20.84	20.91	20.86	21.5
10	16QAM	1	25	20.75	20.79	20.79	
10	16QAM	1	49	20.77	20.83	20.80	
10	16QAM	25	0	20.70	20.86	20.88	21.5
10	16QAM	25	12	20.77	20.83	20.87	
10	16QAM	25	25	20.77	20.84	20.88	
10	16QAM	50	0	20.75	20.88	20.94	
10	64QAM	1	0	20.74	20.75	20.90	21.5
10	64QAM	1	25	20.71	20.85	20.87	
10	64QAM	1	49	20.81	20.88	20.93	
10	64QAM	25	0	20.73	20.82	20.89	21.5
10	64QAM	25	12	20.73	20.81	20.95	
10	64QAM	25	25	20.75	20.77	20.87	
10	64QAM	50	0	20.74	20.86	20.79	
10	256QAM	1	0	19.16	19.10	19.14	19.5
10	256QAM	1	25	19.13	18.95	18.97	
10	256QAM	1	49	19.03	19.03	18.99	
10	256QAM	25	0	19.17	18.97	18.84	19.5
10	256QAM	25	12	19.03	18.95	18.90	
10	256QAM	25	25	19.01	18.90	18.91	
10	256QAM	50	0	18.95	18.91	19.01	
Channel				19975	20175	20375	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1732.5	1752.5	
5	QPSK	1	0	20.85	20.87	20.93	21.5

5	QPSK	1	12	20.76	20.75	20.86	
5	QPSK	1	24	20.78	20.81	20.93	
5	QPSK	12	0	20.71	20.83	20.88	21.5
5	QPSK	12	7	20.73	20.80	20.87	
5	QPSK	12	13	20.79	20.89	20.88	
5	QPSK	25	0	20.81	20.83	20.89	
5	16QAM	1	0	20.80	20.87	20.81	21.5
5	16QAM	1	12	20.71	20.79	20.82	
5	16QAM	1	24	20.81	20.86	20.79	
5	16QAM	12	0	20.76	20.85	20.88	21.5
5	16QAM	12	7	20.79	20.78	20.87	
5	16QAM	12	13	20.81	20.84	20.86	
5	16QAM	25	0	20.81	20.82	20.86	
5	64QAM	1	0	20.79	20.75	20.81	21.5
5	64QAM	1	12	20.67	20.90	20.94	
5	64QAM	1	24	20.78	20.81	20.88	
5	64QAM	12	0	20.66	20.85	20.92	21.5
5	64QAM	12	7	20.77	20.82	20.90	
5	64QAM	12	13	20.77	20.75	20.94	
5	64QAM	25	0	20.79	20.92	20.79	
5	256QAM	1	0	19.24	19.10	19.11	19.5
5	256QAM	1	12	19.07	19.03	18.90	
5	256QAM	1	24	19.02	19.09	18.94	
5	256QAM	12	0	19.10	18.95	18.83	19.5
5	256QAM	12	7	19.11	18.96	18.94	
5	256QAM	12	13	19.04	18.98	18.93	
5	256QAM	25	0	19.01	18.90	18.94	
Channel				19965	20175	20385	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1732.5	1753.5	
3	QPSK	1	0	20.80	20.83	20.92	21.5
3	QPSK	1	8	20.70	20.83	20.84	
3	QPSK	1	14	20.74	20.86	20.96	
3	QPSK	8	0	20.71	20.82	20.93	21.5
3	QPSK	8	4	20.75	20.77	20.90	
3	QPSK	8	7	20.76	20.85	20.93	
3	QPSK	15	0	20.75	20.83	20.87	
3	16QAM	1	0	20.77	20.92	20.82	21.5
3	16QAM	1	8	20.74	20.84	20.79	
3	16QAM	1	14	20.79	20.87	20.85	
3	16QAM	8	0	20.76	20.84	20.88	21.5
3	16QAM	8	4	20.79	20.79	20.93	
3	16QAM	8	7	20.73	20.86	20.86	
3	16QAM	15	0	20.81	20.85	20.91	
3	64QAM	1	0	20.72	20.73	20.84	21.5
3	64QAM	1	8	20.69	20.85	20.94	
3	64QAM	1	14	20.82	20.83	20.89	
3	64QAM	8	0	20.75	20.83	20.83	21.5
3	64QAM	8	4	20.73	20.83	20.90	
3	64QAM	8	7	20.83	20.75	20.93	
3	64QAM	15	0	20.80	20.88	20.78	
3	256QAM	1	0	19.20	19.18	19.04	19.5
3	256QAM	1	8	19.13	18.93	18.95	
3	256QAM	1	14	19.06	19.05	18.98	
3	256QAM	8	0	19.17	18.93	18.78	19.5
3	256QAM	8	4	19.03	19.01	18.92	
3	256QAM	8	7	18.96	18.96	18.87	

3	256QAM	15	0	18.95	18.94	18.96	
Channel				19957	20175	20393	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1732.5	1754.3	
1.4	QPSK	1	0	20.78	20.91	20.87	21.5
1.4	QPSK	1	3	20.73	20.77	20.84	
1.4	QPSK	1	5	20.76	20.80	20.91	
1.4	QPSK	3	0	20.67	20.86	20.93	
1.4	QPSK	3	1	20.69	20.86	20.92	
1.4	QPSK	3	3	20.79	20.83	20.87	
1.4	QPSK	6	0	20.76	20.86	20.85	21.5
1.4	16QAM	1	0	20.85	20.87	20.83	21.5
1.4	16QAM	1	3	20.74	20.83	20.81	
1.4	16QAM	1	5	20.82	20.82	20.84	
1.4	16QAM	3	0	20.68	20.84	20.87	
1.4	16QAM	3	1	20.75	20.77	20.88	
1.4	16QAM	3	3	20.82	20.79	20.92	
1.4	16QAM	6	0	20.76	20.79	20.84	21.5
1.4	64QAM	1	0	20.79	20.82	20.82	21.5
1.4	64QAM	1	3	20.74	20.81	20.93	
1.4	64QAM	1	5	20.79	20.82	20.89	
1.4	64QAM	3	0	20.66	20.89	20.83	
1.4	64QAM	3	1	20.81	20.82	20.90	
1.4	64QAM	3	3	20.81	20.77	20.85	
1.4	64QAM	6	0	20.80	20.89	20.78	21.5
1.4	256QAM	1	0	19.19	19.18	19.12	19.5
1.4	256QAM	1	3	19.16	19.01	18.89	
1.4	256QAM	1	5	19.01	19.09	19.02	
1.4	256QAM	3	0	19.10	18.99	18.80	
1.4	256QAM	3	1	19.10	19.00	18.94	
1.4	256QAM	3	3	18.95	18.92	18.93	
1.4	256QAM	6	0	18.96	18.93	18.96	19.5

<LTE Band 5>

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	21.06	21.07	21.13	21.6
10	QPSK	1	25	20.96	20.99	21.09	
10	QPSK	1	49	21.03	20.98	21.12	
10	QPSK	25	0	20.98	20.97	21.10	21.6
10	QPSK	25	12	21.00	21.01	21.03	
10	QPSK	25	25	20.97	21.02	21.07	
10	QPSK	50	0	20.98	21.01	21.09	
10	16QAM	1	0	20.97	21.01	21.12	21.6
10	16QAM	1	25	21.00	21.00	21.09	
10	16QAM	1	49	21.01	21.07	21.11	
10	16QAM	25	0	20.99	21.07	21.11	21.6
10	16QAM	25	12	21.05	20.98	21.12	
10	16QAM	25	25	20.96	21.07	21.06	
10	16QAM	50	0	21.05	21.01	21.10	
10	64QAM	1	0	21.06	21.00	21.05	21.6
10	64QAM	1	25	21.01	20.97	21.07	
10	64QAM	1	49	20.98	21.02	21.04	
10	64QAM	25	0	20.03	19.99	19.68	20.5
10	64QAM	25	12	20.06	19.89	19.19	

10	64QAM	25	25	20.01	19.88	19.22	
10	64QAM	50	0	19.91	19.90	19.16	
10	256QAM	1	0	17.93	17.99	17.73	18.5
10	256QAM	1	25	18.01	17.80	17.13	
10	256QAM	1	49	17.96	17.85	17.15	
10	256QAM	25	0	17.89	17.84	17.14	18.5
10	256QAM	25	12	18.10	17.94	17.26	
10	256QAM	25	25	18.04	17.88	17.31	
10	256QAM	50	0	17.84	17.95	17.12	
Channel				20425	20525	20625	Tune-up limit (dBm)
Frequency (MHz)				826.5	836.5	846.5	
5	QPSK	1	0	21.03	21.04	21.05	21.6
5	QPSK	1	12	20.95	20.99	21.09	
5	QPSK	1	24	20.95	20.91	21.02	
5	QPSK	12	0	20.93	20.96	21.00	21.6
5	QPSK	12	7	20.94	20.91	20.97	
5	QPSK	12	13	20.88	20.99	21.07	
5	QPSK	25	0	20.98	20.96	20.99	
5	16QAM	1	0	20.92	20.93	21.11	21.6
5	16QAM	1	12	20.92	20.95	21.04	
5	16QAM	1	24	21.01	21.05	21.02	
5	16QAM	12	0	20.90	21.02	21.08	21.6
5	16QAM	12	7	20.98	20.89	21.05	
5	16QAM	12	13	20.88	21.00	21.06	
5	16QAM	25	0	20.96	20.93	21.06	
5	64QAM	1	0	21.05	20.97	21.00	21.6
5	64QAM	1	12	20.92	20.94	20.97	
5	64QAM	1	24	20.97	20.92	20.97	
5	64QAM	12	0	19.98	19.91	19.68	20.5
5	64QAM	12	7	19.98	19.87	19.12	
5	64QAM	12	13	19.94	19.84	19.22	
5	64QAM	25	0	19.83	19.86	19.16	
5	256QAM	1	0	17.91	17.89	17.72	18.5
5	256QAM	1	12	17.91	17.70	17.63	
5	256QAM	1	24	17.92	17.81	17.54	
5	256QAM	12	0	17.80	17.81	17.14	18.5
5	256QAM	12	7	18.10	17.87	17.16	
5	256QAM	12	13	17.94	17.88	17.29	
5	256QAM	25	0	17.77	17.92	17.71	
Channel				20415	20525	20635	Tune-up limit (dBm)
Frequency (MHz)				825.5	836.5	847.5	
3	QPSK	1	0	20.97	21.01	21.06	21.6
3	QPSK	1	8	20.92	20.92	21.02	
3	QPSK	1	14	20.98	20.98	21.10	
3	QPSK	8	0	20.98	20.95	21.06	21.6
3	QPSK	8	4	20.95	20.99	21.00	
3	QPSK	8	7	20.95	21.00	20.98	
3	QPSK	15	0	20.94	20.97	20.99	
3	16QAM	1	0	20.89	21.01	21.07	21.6
3	16QAM	1	8	20.91	21.00	21.05	
3	16QAM	1	14	20.95	20.98	21.02	
3	16QAM	8	0	20.99	20.99	21.02	21.6
3	16QAM	8	4	21.04	20.96	21.03	
3	16QAM	8	7	20.95	20.98	21.04	
3	16QAM	15	0	21.04	20.94	21.00	
3	64QAM	1	0	20.98	20.97	21.03	21.6

3	64QAM	1	8	20.98	20.94	20.97	
3	64QAM	1	14	20.91	20.94	20.95	
3	64QAM	8	0	19.98	19.96	19.65	20.5
3	64QAM	8	4	19.97	19.85	19.11	
3	64QAM	8	7	20.00	19.79	19.18	
3	64QAM	15	0	19.82	19.84	19.12	
3	256QAM	1	0	17.89	17.99	17.67	18.5
3	256QAM	1	8	17.94	17.77	17.12	
3	256QAM	1	14	17.87	17.77	17.14	
3	256QAM	8	0	17.84	17.74	17.16	18.5
3	256QAM	8	4	18.05	17.89	17.25	
3	256QAM	8	7	17.95	17.88	17.25	
3	256QAM	15	0	17.79	17.92	17.21	
Channel				20407	20525	20643	Tune-up limit (dBm)
Frequency (MHz)				824.7	836.5	848.3	
1.4	QPSK	1	0	21.01	21.02	21.08	21.6
1.4	QPSK	1	3	20.88	20.91	21.00	
1.4	QPSK	1	5	20.99	20.93	21.06	
1.4	QPSK	3	0	20.98	20.90	21.03	
1.4	QPSK	3	1	20.99	20.96	20.97	
1.4	QPSK	3	3	20.89	20.94	21.07	
1.4	QPSK	6	0	20.94	20.95	21.05	21.6
1.4	16QAM	1	0	20.88	20.95	21.07	21.6
1.4	16QAM	1	3	20.91	20.93	21.03	
1.4	16QAM	1	5	20.91	21.02	21.02	
1.4	16QAM	3	0	20.98	21.02	21.09	
1.4	16QAM	3	1	20.99	20.90	21.07	
1.4	16QAM	3	3	20.86	21.01	21.02	
1.4	16QAM	6	0	20.95	20.94	21.09	21.6
1.4	64QAM	1	0	21.02	20.94	21.05	21.6
1.4	64QAM	1	3	20.96	20.89	20.99	
1.4	64QAM	1	5	20.98	20.92	21.03	
1.4	64QAM	3	0	20.92	20.86	20.99	
1.4	64QAM	3	1	20.92	20.84	20.95	
1.4	64QAM	3	3	20.97	20.88	21.03	
1.4	64QAM	6	0	19.81	19.88	19.14	20.5
1.4	256QAM	1	0	17.88	17.97	17.66	18.5
1.4	256QAM	1	3	17.97	17.76	17.31	
1.4	256QAM	1	5	17.87	17.85	17.13	
1.4	256QAM	3	0	17.80	17.80	17.12	
1.4	256QAM	3	1	18.02	17.94	17.24	
1.4	256QAM	3	3	18.01	17.82	17.28	
1.4	256QAM	6	0	17.83	17.94	17.93	18.5

<LTE Band 7>

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	22.35	22.28	22.26	22.8
20	QPSK	1	49	22.29	22.22	22.17	
20	QPSK	1	99	22.25	22.25	22.17	
20	QPSK	50	0	22.33	22.25	22.18	22.8
20	QPSK	50	24	22.25	22.26	22.17	
20	QPSK	50	50	22.32	22.18	22.21	
20	QPSK	100	0	22.33	22.28	22.22	

20	16QAM	1	0	22.27	22.23	22.19	22.8
20	16QAM	1	49	22.28	22.21	22.21	
20	16QAM	1	99	22.33	22.24	22.20	
20	16QAM	50	0	22.30	22.25	22.23	22.8
20	16QAM	50	24	22.26	22.21	22.22	
20	16QAM	50	50	22.31	22.21	22.23	
20	16QAM	100	0	22.32	22.25	22.24	
20	64QAM	1	0	21.28	21.23	21.26	21.5
20	64QAM	1	49	21.34	21.23	21.24	
20	64QAM	1	99	21.28	21.28	21.26	
20	64QAM	50	0	20.31	20.42	20.56	21.5
20	64QAM	50	24	20.44	20.51	20.64	
20	64QAM	50	50	20.46	20.60	20.71	
20	64QAM	100	0	20.45	20.47	20.59	
20	256QAM	1	0	18.34	18.46	18.64	19.5
20	256QAM	1	49	18.48	18.59	18.68	
20	256QAM	1	99	18.48	18.63	18.79	
20	256QAM	50	0	18.35	18.40	18.49	19.5
20	256QAM	50	24	18.50	18.42	18.74	
20	256QAM	50	50	18.42	18.50	18.66	
20	256QAM	100	0	18.45	18.44	18.59	
Channel				20825	21100	21375	Tune-up limit (dBm)
Frequency (MHz)				2507.5	2535	2562.5	
15	QPSK	1	0	22.30	22.28	22.25	22.8
15	QPSK	1	37	22.24	22.18	22.10	
15	QPSK	1	74	22.19	22.18	22.10	
15	QPSK	36	0	22.22	22.17	22.08	22.8
15	QPSK	36	20	22.20	22.21	22.10	
15	QPSK	36	39	22.29	22.11	22.19	
15	QPSK	75	0	22.24	22.18	22.19	
15	16QAM	1	0	22.25	22.20	22.10	22.8
15	16QAM	1	37	22.23	22.14	22.15	
15	16QAM	1	74	22.30	22.22	22.19	
15	16QAM	36	0	22.25	22.23	22.16	22.8
15	16QAM	36	20	22.20	22.17	22.13	
15	16QAM	36	39	22.34	22.19	22.14	
15	16QAM	75	0	22.25	22.22	22.14	
15	64QAM	1	0	21.26	21.19	21.18	21.5
15	64QAM	1	37	21.28	21.19	21.16	
15	64QAM	1	74	21.26	21.24	21.21	
15	64QAM	36	0	20.32	20.42	20.51	21.5
15	64QAM	36	20	20.41	20.46	20.59	
15	64QAM	36	39	20.42	20.58	20.64	
15	64QAM	75	0	20.36	20.39	20.53	
15	256QAM	1	0	18.31	18.44	18.58	19.5
15	256QAM	1	37	18.41	18.55	18.65	
15	256QAM	1	74	18.43	18.59	18.79	
15	256QAM	36	0	18.29	18.37	18.49	19.5
15	256QAM	36	20	18.44	18.37	18.71	
15	256QAM	36	39	18.38	18.45	18.57	
15	256QAM	75	0	18.39	18.42	18.50	
Channel				20800	21100	21400	Tune-up limit (dBm)
Frequency (MHz)				2505	2535	2565	
10	QPSK	1	0	22.25	22.21	22.22	22.8
10	QPSK	1	25	22.23	22.14	22.10	
10	QPSK	1	49	22.15	22.22	22.11	

10	QPSK	25	0	22.19	22.21	22.11	22.8
10	QPSK	25	12	22.20	22.26	22.15	
10	QPSK	25	25	22.34	22.16	22.20	
10	QPSK	50	0	22.23	22.27	22.22	
10	16QAM	1	0	22.22	22.17	22.10	22.8
10	16QAM	1	25	22.20	22.11	22.19	
10	16QAM	1	49	22.32	22.20	22.16	
10	16QAM	25	0	22.29	22.17	22.21	22.8
10	16QAM	25	12	22.21	22.13	22.18	
10	16QAM	25	25	22.33	22.17	22.23	
10	16QAM	50	0	22.26	22.21	22.15	
10	64QAM	1	0	21.18	21.22	21.17	21.5
10	64QAM	1	25	21.31	21.14	21.16	
10	64QAM	1	49	21.24	21.27	21.18	
10	64QAM	25	0	20.33	20.34	20.50	21.5
10	64QAM	25	12	20.44	20.49	20.63	
10	64QAM	25	25	20.40	20.50	20.62	
10	64QAM	50	0	20.44	20.45	20.51	
10	256QAM	1	0	18.31	18.44	18.55	19.5
10	256QAM	1	25	18.39	18.59	18.62	
10	256QAM	1	49	18.41	18.59	18.78	
10	256QAM	25	0	18.25	18.39	18.40	19.5
10	256QAM	25	12	18.41	18.41	18.74	
10	256QAM	25	25	18.33	18.45	18.63	
10	256QAM	50	0	18.45	18.38	18.56	
Channel				20775	21100	21425	Tune-up limit (dBm)
Frequency (MHz)				2502.5	2535	2567.5	
5	QPSK	1	0	22.25	22.27	22.26	22.8
5	QPSK	1	12	22.28	22.17	22.09	
5	QPSK	1	24	22.17	22.20	22.14	
5	QPSK	12	0	22.24	22.19	22.16	22.8
5	QPSK	12	7	22.16	22.19	22.14	
5	QPSK	12	13	22.25	22.09	22.17	
5	QPSK	25	0	22.23	22.24	22.18	
5	16QAM	1	0	22.19	22.14	22.18	22.8
5	16QAM	1	12	22.22	22.18	22.13	
5	16QAM	1	24	22.29	22.19	22.12	
5	16QAM	12	0	22.24	22.23	22.13	22.8
5	16QAM	12	7	22.16	22.12	22.20	
5	16QAM	12	13	22.29	22.13	22.16	
5	16QAM	25	0	22.30	22.21	22.17	
5	64QAM	1	0	21.21	21.13	21.25	21.5
5	64QAM	1	12	21.32	21.20	21.22	
5	64QAM	1	24	21.20	21.21	21.24	
5	64QAM	12	0	20.38	20.41	20.50	21.5
5	64QAM	12	7	20.38	20.43	20.60	
5	64QAM	12	13	20.39	20.58	20.69	
5	64QAM	25	0	20.41	20.40	20.57	
5	256QAM	1	0	18.34	18.39	18.60	19.5
5	256QAM	1	12	18.45	18.58	18.67	
5	256QAM	1	24	18.38	18.57	18.73	
5	256QAM	12	0	18.26	18.32	18.49	19.5
5	256QAM	12	7	18.44	18.33	18.64	
5	256QAM	12	13	18.42	18.48	18.62	
5	256QAM	25	0	18.35	18.37	18.52	

<LTE Band 12>

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	21.62	21.71	21.61	22
10	QPSK	1	25	21.45	21.45	21.38	
10	QPSK	1	49	21.37	21.50	21.40	
10	QPSK	25	0	21.45	21.47	21.38	22
10	QPSK	25	12	21.39	21.45	21.43	
10	QPSK	25	25	21.45	21.43	21.34	
10	QPSK	50	0	21.45	21.43	21.39	
10	16QAM	1	0	21.40	21.46	21.41	22
10	16QAM	1	25	21.44	21.42	21.35	
10	16QAM	1	49	21.37	21.42	21.40	
10	16QAM	25	0	20.27	20.37	20.52	21
10	16QAM	25	12	20.46	20.54	20.58	
10	16QAM	25	25	20.51	20.56	20.73	
10	16QAM	50	0	20.43	20.51	20.61	
10	64QAM	1	0	20.30	20.43	20.51	21
10	64QAM	1	25	20.53	20.60	20.62	
10	64QAM	1	49	20.59	20.61	20.26	
10	64QAM	25	0	19.32	19.38	19.35	20
10	64QAM	25	12	19.48	19.53	19.53	
10	64QAM	25	25	19.35	19.46	19.69	
10	64QAM	50	0	19.32	19.40	19.55	
10	256QAM	1	0	17.41	17.48	17.44	18
10	256QAM	1	25	17.43	17.62	17.49	
10	256QAM	1	49	17.33	17.43	17.74	
10	256QAM	25	0	17.27	17.46	17.46	18
10	256QAM	25	12	17.51	17.60	17.59	
10	256QAM	25	25	17.26	17.39	17.79	
10	256QAM	50	0	17.37	17.49	17.51	
Channel				23035	23095	23155	Tune-up limit (dBm)
Frequency (MHz)				701.5	707.5	713.5	
5	QPSK	1	0	21.37	21.44	21.40	22
5	QPSK	1	12	21.45	21.41	21.35	
5	QPSK	1	24	21.35	21.42	21.37	
5	QPSK	12	0	21.42	21.43	21.35	22
5	QPSK	12	7	21.30	21.41	21.41	
5	QPSK	12	13	21.38	21.34	21.29	
5	QPSK	25	0	21.43	21.39	21.31	
5	16QAM	1	0	21.35	21.42	21.38	22
5	16QAM	1	12	21.37	21.38	21.35	
5	16QAM	1	24	21.34	21.37	21.30	
5	16QAM	12	0	20.20	20.29	20.48	21
5	16QAM	12	7	20.43	20.53	20.54	
5	16QAM	12	13	20.49	20.49	20.68	
5	16QAM	25	0	20.41	20.41	20.55	
5	64QAM	1	0	20.25	20.33	20.51	21
5	64QAM	1	12	20.44	20.55	20.58	
5	64QAM	1	24	20.57	20.51	20.16	
5	64QAM	12	0	19.32	19.30	19.34	20
5	64QAM	12	7	19.42	19.51	19.51	
5	64QAM	12	13	19.33	19.43	19.67	

5	64QAM	25	0	19.28	19.39	19.47	
5	256QAM	1	0	17.41	17.40	17.43	18
5	256QAM	1	12	17.37	17.59	17.48	
5	256QAM	1	24	17.26	17.37	17.65	
5	256QAM	12	0	17.22	17.45	17.45	18
5	256QAM	12	7	17.51	17.56	17.54	
5	256QAM	12	13	17.17	17.33	17.79	
5	256QAM	25	0	17.35	17.42	17.48	
Channel				23025	23095	23165	Tune-up limit (dBm)
Frequency (MHz)				700.5	707.5	714.5	
3	QPSK	1	0	21.41	21.47	21.38	22
3	QPSK	1	8	21.40	21.43	21.31	
3	QPSK	1	14	21.27	21.42	21.35	
3	QPSK	8	0	21.45	21.44	21.37	22
3	QPSK	8	4	21.36	21.44	21.38	
3	QPSK	8	7	21.44	21.40	21.29	
3	QPSK	15	0	21.43	21.38	21.33	
3	16QAM	1	0	21.39	21.42	21.40	22
3	16QAM	1	8	21.37	21.38	21.34	
3	16QAM	1	14	21.29	21.42	21.34	
3	16QAM	8	0	20.20	20.30	20.52	21
3	16QAM	8	4	20.36	20.50	20.56	
3	16QAM	8	7	20.46	20.54	20.66	
3	16QAM	15	0	20.41	20.51	20.51	
3	64QAM	1	0	20.29	20.43	20.51	21
3	64QAM	1	8	20.44	20.51	20.54	
3	64QAM	1	14	20.50	20.52	20.23	
3	64QAM	8	0	19.28	19.37	19.32	20
3	64QAM	8	4	19.45	19.53	19.47	
3	64QAM	8	7	19.26	19.41	19.61	
3	64QAM	15	0	19.26	19.36	19.50	
3	256QAM	1	0	17.40	17.43	17.42	18
3	256QAM	1	8	17.33	17.59	17.47	
3	256QAM	1	14	17.26	17.39	17.65	
3	256QAM	8	0	17.20	17.39	17.36	18
3	256QAM	8	4	17.46	17.52	17.53	
3	256QAM	8	7	17.22	17.30	17.77	
3	256QAM	15	0	17.27	17.46	17.44	
Channel				23017	23095	23173	Tune-up limit (dBm)
Frequency (MHz)				699.7	707.5	715.3	
1.4	QPSK	1	0	21.43	21.51	21.33	22
1.4	QPSK	1	3	21.43	21.45	21.29	
1.4	QPSK	1	5	21.30	21.41	21.39	
1.4	QPSK	3	0	21.44	21.38	21.36	
1.4	QPSK	3	1	21.33	21.41	21.40	
1.4	QPSK	3	3	21.35	21.35	21.29	
1.4	QPSK	6	0	21.45	21.42	21.30	22
1.4	16QAM	1	0	21.30	21.40	21.41	22
1.4	16QAM	1	3	21.36	21.42	21.34	
1.4	16QAM	1	5	21.28	21.33	21.40	
1.4	16QAM	3	0	21.26	21.33	21.34	
1.4	16QAM	3	1	21.31	21.33	21.34	
1.4	16QAM	3	3	21.21	21.23	21.31	
1.4	16QAM	6	0	20.40	20.43	20.51	21
1.4	64QAM	1	0	20.30	20.39	20.50	21
1.4	64QAM	1	3	20.48	20.58	20.57	

1.4	64QAM	1	5	20.53	20.53	20.24	
1.4	64QAM	3	0	20.29	20.29	20.42	
1.4	64QAM	3	1	20.40	20.54	20.56	
1.4	64QAM	3	3	20.46	20.44	20.22	
1.4	64QAM	6	0	19.29	19.33	19.55	20
1.4	256QAM	1	0	17.40	17.38	17.34	18
1.4	256QAM	1	3	17.41	17.62	17.46	
1.4	256QAM	1	5	17.31	17.33	17.65	
1.4	256QAM	3	0	17.27	17.46	17.38	
1.4	256QAM	3	1	17.50	17.54	17.49	
1.4	256QAM	3	3	17.25	17.30	17.76	
1.4	256QAM	6	0	17.36	17.49	17.46	18

<LTE Band 13>

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		21.26		21.7
10	QPSK	1	25		21.21		
10	QPSK	1	49		21.21		
10	QPSK	25	0		21.21		21.7
10	QPSK	25	12		21.18		
10	QPSK	25	25		21.20		
10	QPSK	50	0		21.18		
10	16QAM	1	0		21.22		21.7
10	16QAM	1	25		21.18		
10	16QAM	1	49		21.24		
10	16QAM	25	0		21.17		21.7
10	16QAM	25	12		21.18		
10	16QAM	25	25		21.22		
10	16QAM	50	0		21.20		
10	64QAM	1	0		21.21		21.7
10	64QAM	1	25		21.23		
10	64QAM	1	49		21.24		
10	64QAM	25	0		19.94		20.5
10	64QAM	25	12		19.88		
10	64QAM	25	25		19.83		
10	64QAM	50	0		19.73		
10	256QAM	1	0		17.85		18.5
10	256QAM	1	25		17.95		
10	256QAM	1	49		17.84		
10	256QAM	25	0		17.79		18.5
10	256QAM	25	12		17.95		
10	256QAM	25	25		17.95		
10	256QAM	50	0		17.89		
Channel				23205	23230	23255	Tune-up limit (dBm)
Frequency (MHz)				779.5	782	784.5	
5	QPSK	1	0	21.19	21.24	21.18	21.7
5	QPSK	1	12	21.18	21.17	21.15	
5	QPSK	1	24	21.12	21.11	21.13	
5	QPSK	12	0	21.14	21.13	21.15	21.7
5	QPSK	12	7	21.09	21.13	21.15	
5	QPSK	12	13	21.15	21.10	21.11	
5	QPSK	25	0	21.08	21.14	21.17	
5	16QAM	1	0	21.12	21.20	21.20	21.7

5	16QAM	1	12	21.17	21.18	21.11	
5	16QAM	1	24	21.15	21.20	21.19	
5	16QAM	12	0	21.08	21.08	21.07	21.7
5	16QAM	12	7	21.13	21.18	21.09	
5	16QAM	12	13	21.12	21.12	21.14	
5	16QAM	25	0	21.20	21.15	21.17	
5	64QAM	1	0	21.13	21.18	21.12	21.7
5	64QAM	1	12	21.18	21.24	21.16	
5	64QAM	1	24	21.19	21.20	21.15	
5	64QAM	12	0	19.88	19.86	19.93	20.5
5	64QAM	12	7	19.88	19.81	19.87	
5	64QAM	12	13	19.82	19.81	19.77	
5	64QAM	25	0	19.68	19.65	19.69	
5	256QAM	1	0	17.81	17.77	17.80	18.5
5	256QAM	1	12	17.91	17.89	17.89	
5	256QAM	1	24	17.77	17.82	17.83	
5	256QAM	12	0	17.73	17.73	17.78	18.5
5	256QAM	12	7	17.86	17.93	17.85	
5	256QAM	12	13	17.86	17.91	17.93	
5	256QAM	25	0	17.82	17.82	17.87	

<LTE Band 14>

BW [MHz]	ID:38	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel					23330		
Frequency (MHz)					793		
10	QPSK	1	0		21.29		21.7
10	QPSK	1	25		21.22		
10	QPSK	1	49		21.24		
10	QPSK	25	0		21.22		21.7
10	QPSK	25	12		21.16		
10	QPSK	25	25		21.27		
10	QPSK	50	0		21.20		
10	16QAM	1	0		21.21		21.7
10	16QAM	1	25		21.28		
10	16QAM	1	49		21.23		
10	16QAM	25	0		21.24		21.7
10	16QAM	25	12		21.24		
10	16QAM	25	25		21.21		
10	16QAM	50	0		21.20		
10	64QAM	1	0		21.13		21.7
10	64QAM	1	25		21.26		
10	64QAM	1	49		21.11		
10	64QAM	25	0		20.15		20.5
10	64QAM	25	12		20.22		
10	64QAM	25	25		20.14		
10	64QAM	50	0		19.85		
10	256QAM	1	0		18.34		18.5
10	256QAM	1	25		18.40		
10	256QAM	1	49		18.22		
10	256QAM	25	0		18.16		18.5
10	256QAM	25	12		18.21		
10	256QAM	25	25		18.06		
10	256QAM	50	0		18.23		
Channel				23305	23330	23355	Tune-up limit (dBm)
Frequency (MHz)				790.5	793	795.5	

5	QPSK	1	0	21.23	21.19	21.21	21.7
5	QPSK	1	12	21.18	21.18	21.17	
5	QPSK	1	24	21.19	21.14	21.16	
5	QPSK	12	0	21.15	21.15	21.22	21.7
5	QPSK	12	7	21.09	21.15	21.08	
5	QPSK	12	13	21.17	21.21	21.20	
5	QPSK	25	0	21.13	21.19	21.15	
5	16QAM	1	0	21.21	21.20	21.17	21.7
5	16QAM	1	12	21.24	21.21	21.23	
5	16QAM	1	24	21.21	21.23	21.19	
5	16QAM	12	0	21.14	21.22	21.23	21.7
5	16QAM	12	7	21.22	21.22	21.24	
5	16QAM	12	13	21.13	21.16	21.14	
5	16QAM	25	0	21.18	21.18	21.10	
5	64QAM	1	0	21.09	21.10	21.08	21.7
5	64QAM	1	12	21.17	21.23	21.19	
5	64QAM	1	24	21.03	21.05	21.06	
5	64QAM	12	0	20.12	20.05	20.05	20.5
5	64QAM	12	7	20.18	20.19	20.16	
5	64QAM	12	13	20.07	20.06	20.11	
5	64QAM	25	0	19.75	19.78	19.78	
5	256QAM	1	0	18.31	18.33	18.34	18.5
5	256QAM	1	12	18.32	18.31	18.35	
5	256QAM	1	24	18.17	18.16	18.14	
5	256QAM	12	0	18.16	18.06	18.13	18.5
5	256QAM	12	7	18.13	18.16	18.21	
5	256QAM	12	13	17.99	18.03	18.05	
5	256QAM	25	0	18.16	18.17	18.14	

<LTE Band 17>

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	21.52	21.56	21.46	22
10	QPSK	1	25	21.51	21.47	21.39	
10	QPSK	1	49	21.44	21.55	21.39	
10	QPSK	25	0	21.51	21.46	21.45	22
10	QPSK	25	12	21.50	21.47	21.36	
10	QPSK	25	25	21.52	21.47	21.39	
10	QPSK	50	0	21.44	21.55	21.40	
10	16QAM	1	0	21.44	21.54	21.37	22
10	16QAM	1	25	21.52	21.51	21.39	
10	16QAM	1	49	21.43	21.52	21.36	
10	16QAM	25	0	20.35	20.56	20.49	21
10	16QAM	25	12	20.47	20.54	20.66	
10	16QAM	25	25	20.57	20.70	20.67	
10	16QAM	50	0	20.46	20.55	20.54	
10	64QAM	1	0	20.45	20.46	20.52	21
10	64QAM	1	25	20.71	20.72	20.77	
10	64QAM	1	49	20.81	20.84	20.59	
10	64QAM	25	0	19.37	19.43	19.52	20
10	64QAM	25	12	19.49	19.58	19.68	
10	64QAM	25	25	19.65	19.73	19.89	
10	64QAM	50	0	19.48	19.54	19.56	
10	256QAM	1	0	17.66	17.65	17.70	18

10	256QAM	1	25	17.74	17.82	17.62	
10	256QAM	1	49	17.71	17.83	17.90	
10	256QAM	25	0	17.57	17.64	17.69	18
10	256QAM	25	12	17.69	17.72	17.82	
10	256QAM	25	25	17.83	17.86	17.79	
10	256QAM	50	0	17.61	17.74	17.73	
Channel				23755	23790	23825	Tune-up limit (dBm)
Frequency (MHz)				706.5	710	713.5	
5	QPSK	1	0	21.44	21.47	21.41	22
5	QPSK	1	12	21.51	21.45	21.33	
5	QPSK	1	24	21.35	21.53	21.29	
5	QPSK	12	0	21.45	21.39	21.43	22
5	QPSK	12	7	21.42	21.47	21.29	
5	QPSK	12	13	21.43	21.39	21.35	
5	QPSK	25	0	21.38	21.49	21.38	
5	16QAM	1	0	21.38	21.53	21.36	22
5	16QAM	1	12	21.48	21.42	21.36	
5	16QAM	1	24	21.38	21.47	21.30	
5	16QAM	12	0	20.35	20.55	20.42	21
5	16QAM	12	7	20.46	20.49	20.60	
5	16QAM	12	13	20.47	20.62	20.67	
5	16QAM	25	0	20.41	20.50	20.46	
5	64QAM	1	0	20.44	20.37	20.45	21
5	64QAM	1	12	20.65	20.70	20.77	
5	64QAM	1	24	20.76	20.76	20.57	
5	64QAM	12	0	19.31	19.33	19.47	20
5	64QAM	12	7	19.49	19.58	19.68	
5	64QAM	12	13	19.57	19.72	19.79	
5	64QAM	25	0	19.46	19.51	19.50	
5	256QAM	1	0	17.56	17.64	17.67	18
5	256QAM	1	12	17.68	17.73	17.58	
5	256QAM	1	24	17.71	17.73	17.81	
5	256QAM	12	0	17.56	17.61	17.66	18
5	256QAM	12	7	17.65	17.64	17.75	
5	256QAM	12	13	17.82	17.85	17.77	
5	256QAM	25	0	17.60	17.70	17.68	

<LTE Band 25>

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	18.61	18.54	18.49	19.1
20	QPSK	1	49	18.53	18.53	18.46	
20	QPSK	1	99	18.46	18.51	18.43	
20	QPSK	50	0	18.53	18.52	18.52	19.1
20	23.43	50	24	18.41	18.43	18.38	
20	QPSK	50	50	18.36	18.42	18.35	
20	QPSK	100	0	18.46	18.43	18.45	
20	16QAM	1	0	18.49	18.56	18.56	19.1
20	16QAM	1	49	18.45	18.53	18.48	
20	16QAM	1	99	18.53	18.54	18.51	
20	16QAM	50	0	18.46	18.51	18.49	19.1
20	16QAM	50	24	18.53	18.53	18.48	
20	16QAM	50	50	18.39	18.49	18.46	
20	16QAM	100	0	18.45	18.53	18.48	

20	64QAM	1	0	18.43	18.53	18.51	19.1
20	64QAM	1	49	18.50	18.52	18.45	
20	64QAM	1	99	18.52	18.52	18.52	
20	64QAM	50	0	18.46	18.56	18.56	19.1
20	64QAM	50	24	18.48	18.53	18.52	
20	64QAM	50	50	18.42	18.49	18.39	
20	64QAM	100	0	18.41	18.45	18.37	
20	256QAM	1	0	18.42	18.43	18.39	19.1
20	256QAM	1	49	18.38	18.46	18.42	
20	256QAM	1	99	18.39	18.42	18.35	
20	256QAM	50	0	18.42	18.51	18.44	19.1
20	256QAM	50	24	18.44	18.46	18.46	
20	256QAM	50	50	18.35	18.42	18.34	
20	256QAM	100	0	18.41	18.49	18.43	
Channel				26115	26340	26615	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1907.5	
15	QPSK	1	0	18.54	18.54	18.49	19.1
15	QPSK	1	37	18.45	18.44	18.45	
15	QPSK	1	74	18.43	18.47	18.36	
15	QPSK	36	0	18.46	18.43	18.52	19.1
15	QPSK	36	20	18.36	18.40	18.37	
15	QPSK	36	39	18.30	18.40	18.25	
15	QPSK	75	0	18.40	18.51	18.40	
15	16QAM	1	0	18.45	18.50	18.48	19.1
15	16QAM	1	37	18.36	18.49	18.46	
15	16QAM	1	74	18.46	18.47	18.47	
15	16QAM	36	0	18.36	18.44	18.45	19.1
15	16QAM	36	20	18.45	18.52	18.41	
15	16QAM	36	39	18.29	18.43	18.36	
15	16QAM	75	0	18.45	18.47	18.39	
15	64QAM	1	0	18.34	18.49	18.47	19.1
15	64QAM	1	37	18.40	18.51	18.42	
15	64QAM	1	74	18.43	18.52	18.45	
15	64QAM	36	0	18.40	18.48	18.54	19.1
15	64QAM	36	20	18.48	18.46	18.52	
15	64QAM	36	39	18.34	18.44	18.29	
15	64QAM	75	0	18.37	18.36	18.35	
15	256QAM	1	0	18.40	18.33	18.38	19.1
15	256QAM	1	37	18.34	18.44	18.35	
15	256QAM	1	74	18.32	18.33	18.33	
15	256QAM	36	0	18.37	18.41	18.38	19.1
15	256QAM	36	20	18.43	18.39	18.45	
15	256QAM	36	39	18.25	18.40	18.26	
15	256QAM	75	0	18.39	18.43	18.39	
Channel				26090	26340	26640	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1910	
10	QPSK	1	0	18.58	18.48	18.47	19.1
10	QPSK	1	25	18.44	18.49	18.44	
10	QPSK	1	49	18.36	18.45	18.36	
10	QPSK	25	0	18.50	18.47	18.52	19.1
10	QPSK	25	12	18.35	18.33	18.32	
10	QPSK	25	25	18.36	18.40	18.25	
10	QPSK	50	0	18.37	18.49	18.41	
10	16QAM	1	0	18.43	18.50	18.53	19.1
10	16QAM	1	25	18.38	18.45	18.47	
10	16QAM	1	49	18.43	18.52	18.41	

10	16QAM	25	0	18.40	18.42	18.42	19.1
10	16QAM	25	12	18.44	18.50	18.44	
10	16QAM	25	25	18.34	18.48	18.44	
10	16QAM	50	0	18.38	18.48	18.43	
10	64QAM	1	0	18.36	18.49	18.43	19.1
10	64QAM	1	25	18.45	18.48	18.43	
10	64QAM	1	49	18.46	18.44	18.52	
10	64QAM	25	0	18.36	18.54	18.50	19.1
10	64QAM	25	12	18.39	18.53	18.43	
10	64QAM	25	25	18.36	18.45	18.34	
10	64QAM	50	0	18.36	18.41	18.27	
10	256QAM	1	0	18.38	18.38	18.37	19.1
10	256QAM	1	25	18.32	18.41	18.35	
10	256QAM	1	49	18.39	18.40	18.29	
10	256QAM	25	0	18.40	18.48	18.38	19.1
10	256QAM	25	12	18.44	18.45	18.46	
10	256QAM	25	25	18.34	18.39	18.28	
10	256QAM	50	0	18.33	18.48	18.43	
Channel				26065	26340	26665	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1912.5	
5	QPSK	1	0	18.57	18.46	18.39	19.1
5	QPSK	1	12	18.48	18.48	18.41	
5	QPSK	1	24	18.39	18.44	18.40	
5	QPSK	12	0	18.45	18.49	18.44	19.1
5	QPSK	12	7	18.33	18.42	18.34	
5	QPSK	12	13	18.29	18.42	18.27	
5	QPSK	25	0	18.39	18.52	18.38	
5	16QAM	1	0	18.42	18.50	18.52	19.1
5	16QAM	1	12	18.43	18.45	18.47	
5	16QAM	1	24	18.45	18.46	18.41	
5	16QAM	12	0	18.41	18.46	18.42	19.1
5	16QAM	12	7	18.50	18.45	18.42	
5	16QAM	12	13	18.38	18.41	18.40	
5	16QAM	25	0	18.44	18.52	18.42	
5	64QAM	1	0	18.35	18.52	18.43	19.1
5	64QAM	1	12	18.45	18.47	18.42	
5	64QAM	1	24	18.44	18.43	18.49	
5	64QAM	12	0	18.44	18.52	18.53	19.1
5	64QAM	12	7	18.41	18.50	18.48	
5	64QAM	12	13	18.37	18.39	18.38	
5	64QAM	25	0	18.36	18.37	18.37	
5	256QAM	1	0	18.42	18.40	18.35	19.1
5	256QAM	1	12	18.28	18.37	18.38	
5	256QAM	1	24	18.32	18.34	18.35	
5	256QAM	12	0	18.38	18.42	18.42	19.1
5	256QAM	12	7	18.40	18.44	18.36	
5	256QAM	12	13	18.31	18.41	18.24	
5	256QAM	25	0	18.40	18.44	18.35	
Channel				26055	26340	26675	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1913.5	
3	QPSK	1	0	18.54	18.49	18.45	19.1
3	QPSK	1	8	18.51	18.53	18.40	
3	QPSK	1	14	18.44	18.50	18.34	
3	QPSK	8	0	18.47	18.52	18.46	19.1
3	QPSK	8	4	18.32	18.33	18.36	
3	QPSK	8	7	18.27	18.32	18.29	

3	QPSK	15	0	18.40	18.48	18.37	
3	16QAM	1	0	18.43	18.51	18.47	19.1
3	16QAM	1	8	18.37	18.51	18.44	
3	16QAM	1	14	18.47	18.49	18.51	
3	16QAM	8	0	18.42	18.47	18.48	19.1
3	16QAM	8	4	18.50	18.49	18.47	
3	16QAM	8	7	18.38	18.49	18.41	
3	16QAM	15	0	18.45	18.53	18.42	
3	64QAM	1	0	18.33	18.44	18.46	19.1
3	64QAM	1	8	18.44	18.47	18.38	
3	64QAM	1	14	18.51	18.44	18.48	
3	64QAM	8	0	18.39	18.51	18.54	19.1
3	64QAM	8	4	18.45	18.44	18.42	
3	64QAM	8	7	18.35	18.42	18.39	
3	64QAM	15	0	18.35	18.43	18.37	
3	256QAM	1	0	18.33	18.38	18.31	19.1
3	256QAM	1	8	18.34	18.41	18.42	
3	256QAM	1	14	18.32	18.42	18.35	
3	256QAM	8	0	18.35	18.48	18.42	19.1
3	256QAM	8	4	18.35	18.43	18.45	
3	256QAM	8	7	18.26	18.37	18.32	
3	256QAM	15	0	18.40	18.40	18.37	
Channel				26047	26340	26683	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1914.3	
1.4	QPSK	1	0	18.54	18.45	18.45	19.1
1.4	QPSK	1	3	18.45	18.44	18.46	
1.4	QPSK	1	5	18.39	18.50	18.38	
1.4	QPSK	3	0	18.44	18.47	18.42	
1.4	QPSK	3	1	18.41	18.36	18.28	
1.4	QPSK	3	3	18.30	18.35	18.25	
1.4	QPSK	6	0	18.37	18.49	18.43	19.1
1.4	16QAM	1	0	18.39	18.56	18.48	19.1
1.4	16QAM	1	3	18.38	18.52	18.48	
1.4	16QAM	1	5	18.48	18.50	18.50	
1.4	16QAM	3	0	18.40	18.42	18.49	
1.4	16QAM	3	1	18.47	18.43	18.46	
1.4	16QAM	3	3	18.38	18.46	18.41	
1.4	16QAM	6	0	18.39	18.44	18.38	19.1
1.4	64QAM	1	0	18.43	18.43	18.46	19.1
1.4	64QAM	1	3	18.44	18.51	18.43	
1.4	64QAM	1	5	18.46	18.51	18.48	
1.4	64QAM	3	0	18.46	18.55	18.48	
1.4	64QAM	3	1	18.45	18.46	18.48	
1.4	64QAM	3	3	18.42	18.39	18.31	
1.4	64QAM	6	0	18.40	18.35	18.27	19.1
1.4	256QAM	1	0	18.34	18.33	18.39	19.1
1.4	256QAM	1	3	18.28	18.43	18.33	
1.4	256QAM	1	5	18.32	18.40	18.32	
1.4	256QAM	3	0	18.34	18.42	18.42	
1.4	256QAM	3	1	18.36	18.36	18.40	
1.4	256QAM	3	3	18.33	18.41	18.32	
1.4	256QAM	6	0	18.39	18.42	18.43	19.1

<LTE Band 26>

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	21.13	21.16	21.12	21.6
15	QPSK	1	37	21.06	21.06	20.96	
15	QPSK	1	74	21.04	21.09	21.04	
15	QPSK	36	0	20.98	21.04	21.09	21.6
15	QPSK	36	20	21.06	21.01	21.08	
15	QPSK	36	39	20.99	21.12	21.06	
15	QPSK	75	0	21.02	21.12	21.07	
15	16QAM	1	0	21.11	21.07	21.01	21.6
15	16QAM	1	37	21.00	21.06	21.01	
15	16QAM	1	74	21.09	21.05	21.01	
15	16QAM	36	0	21.13	21.14	21.09	21.6
15	16QAM	36	20	21.06	21.08	21.06	
15	16QAM	36	39	21.03	21.11	21.10	
15	16QAM	75	0	20.94	21.03	21.02	
15	64QAM	1	0	21.03	21.01	20.99	21.6
15	64QAM	1	37	21.05	21.07	21.05	
15	64QAM	1	74	21.02	21.08	20.98	
15	64QAM	36	0	20.21	20.03	19.97	20.5
15	64QAM	36	20	20.22	20.00	19.86	
15	64QAM	36	39	20.12	19.89	19.71	
15	64QAM	75	0	20.24	19.92	19.82	
15	256QAM	1	0	18.35	18.39	18.20	18.5
15	256QAM	1	37	18.14	18.21	18.14	
15	256QAM	1	74	17.96	17.99	17.88	
15	256QAM	36	0	18.19	18.20	17.99	18.5
15	256QAM	36	20	17.93	18.09	17.99	
15	256QAM	36	39	17.86	17.98	17.93	
15	256QAM	75	0	17.91	18.12	18.10	
Channel				26740	26865	26990	Tune-up limit (dBm)
Frequency (MHz)				819	831.5	844	
10	QPSK	1	0	21.04	21.12	21.05	21.6
10	QPSK	1	25	21.03	21.06	20.96	
10	QPSK	1	49	20.94	21.07	21.01	
10	QPSK	25	0	20.94	20.95	21.04	21.6
10	QPSK	25	12	21.02	20.92	20.98	
10	QPSK	25	25	20.97	21.11	20.97	
10	QPSK	50	0	20.94	21.12	21.06	
10	16QAM	1	0	21.11	21.01	20.98	21.6
10	16QAM	1	25	20.98	21.00	20.98	
10	16QAM	1	49	21.08	21.02	21.01	
10	16QAM	25	0	21.13	21.09	21.01	21.6
10	16QAM	25	12	21.03	20.99	21.06	
10	16QAM	25	25	20.99	21.11	21.01	
10	16QAM	50	0	20.89	20.96	20.97	
10	64QAM	1	0	20.94	20.99	20.93	21.6
10	64QAM	1	25	21.01	21.05	20.98	
10	64QAM	1	49	20.97	21.06	20.97	
10	64QAM	25	0	20.13	19.96	19.96	20.5
10	64QAM	25	12	20.15	19.90	19.80	
10	64QAM	25	25	20.05	19.79	19.70	
10	64QAM	50	0	20.23	19.92	19.80	

10	256QAM	1	0	18.30	18.34	18.10	18.5
10	256QAM	1	25	18.06	18.18	18.12	
10	256QAM	1	49	17.86	17.99	17.82	
10	256QAM	25	0	18.13	18.15	17.95	18.5
10	256QAM	25	12	17.90	18.08	17.89	
10	256QAM	25	25	17.82	17.90	17.86	
10	256QAM	50	0	17.83	18.04	18.04	
Channel				26715	26865	27015	Tune-up limit (dBm)
Frequency (MHz)				816.5	831.5	846.5	
5	QPSK	1	0	21.05	21.11	21.02	21.6
5	QPSK	1	12	21.02	21.05	20.90	
5	QPSK	1	24	21.01	21.02	21.04	
5	QPSK	12	0	20.92	21.00	21.03	21.6
5	QPSK	12	7	20.98	20.92	21.04	
5	QPSK	12	13	20.92	21.08	21.02	
5	QPSK	25	0	20.96	21.08	21.04	
5	16QAM	1	0	21.11	20.99	21.01	21.6
5	16QAM	1	12	20.98	21.06	20.96	
5	16QAM	1	24	21.07	21.05	21.00	
5	16QAM	12	0	21.08	21.13	21.07	21.6
5	16QAM	12	7	21.00	21.08	21.01	
5	16QAM	12	13	20.94	21.06	21.01	
5	16QAM	25	0	20.86	20.99	21.01	
5	64QAM	1	0	20.94	20.92	20.97	21.6
5	64QAM	1	12	20.98	21.06	21.04	
5	64QAM	1	24	21.01	21.01	20.95	
5	64QAM	12	0	20.21	19.97	19.92	20.5
5	64QAM	12	7	20.21	19.94	19.78	
5	64QAM	12	13	20.05	19.85	19.64	
5	64QAM	25	0	20.16	19.86	19.76	
5	256QAM	1	0	18.28	18.36	18.18	18.5
5	256QAM	1	12	18.08	18.11	18.04	
5	256QAM	1	24	17.96	17.92	17.79	
5	256QAM	12	0	18.14	18.16	17.90	18.5
5	256QAM	12	7	17.85	18.02	17.97	
5	256QAM	12	13	17.81	17.90	17.91	
5	256QAM	25	0	17.82	18.04	18.00	
Channel				26705	26865	27025	Tune-up limit (dBm)
Frequency (MHz)				815.5	831.5	847.5	
3	QPSK	1	0	21.10	21.08	21.04	21.6
3	QPSK	1	8	21.02	21.00	20.94	
3	QPSK	1	14	21.03	21.05	21.01	
3	QPSK	8	0	20.89	21.00	21.06	21.6
3	QPSK	8	4	20.99	20.93	21.03	
3	QPSK	8	7	20.96	21.02	21.05	
3	QPSK	15	0	21.02	21.07	21.02	
3	16QAM	1	0	21.09	21.04	20.92	21.6
3	16QAM	1	8	20.96	21.06	20.92	
3	16QAM	1	14	21.04	20.96	21.01	
3	16QAM	8	0	21.04	21.11	20.99	21.6
3	16QAM	8	4	20.98	20.99	20.99	
3	16QAM	8	7	20.99	21.05	21.02	
3	16QAM	15	0	20.93	20.99	21.01	
3	64QAM	1	0	21.02	20.93	20.89	21.6
3	64QAM	1	8	21.02	21.04	21.00	
3	64QAM	1	14	20.93	21.04	20.93	

3	64QAM	8	0	20.17	19.94	19.88	20.5
3	64QAM	8	4	20.17	19.97	19.76	
3	64QAM	8	7	20.07	19.86	19.62	
3	64QAM	15	0	20.22	19.84	19.80	
3	256QAM	1	0	18.35	18.36	18.12	18.5
3	256QAM	1	8	18.05	18.17	18.14	
3	256QAM	1	14	17.91	17.96	17.84	
3	256QAM	8	0	18.15	18.14	17.89	18.5
3	256QAM	8	4	17.88	18.04	17.97	
3	256QAM	8	7	17.83	17.95	17.92	
3	256QAM	15	0	17.81	18.06	18.09	
Channel				26697	26865	27033	Tune-up limit (dBm)
Frequency (MHz)				814.7	831.5	848.3	
1.4	QPSK	1	0	21.09	21.14	21.05	21.6
1.4	QPSK	1	3	20.98	20.97	20.95	
1.4	QPSK	1	5	21.01	21.05	20.95	
1.4	QPSK	3	0	20.96	21.03	21.02	
1.4	QPSK	3	1	21.02	20.93	21.02	
1.4	QPSK	3	3	20.89	21.09	21.00	
1.4	QPSK	6	0	20.95	21.10	20.99	21.6
1.4	16QAM	1	0	21.09	21.02	20.91	21.6
1.4	16QAM	1	3	20.99	21.01	20.98	
1.4	16QAM	1	5	21.00	21.02	20.99	
1.4	16QAM	3	0	21.11	21.05	21.06	
1.4	16QAM	3	1	21.05	21.01	20.98	
1.4	16QAM	3	3	21.00	21.02	21.08	
1.4	16QAM	6	0	20.84	20.95	20.93	21.6
1.4	64QAM	1	0	20.94	20.94	20.89	21.6
1.4	64QAM	1	3	21.00	21.03	20.97	
1.4	64QAM	1	5	21.00	21.04	20.95	
1.4	64QAM	3	0	20.14	19.93	19.89	
1.4	64QAM	3	1	20.22	19.91	19.80	
1.4	64QAM	3	3	20.05	19.85	19.64	
1.4	64QAM	6	0	20.18	19.90	19.74	20.5
1.4	256QAM	1	0	18.33	18.36	18.18	18.5
1.4	256QAM	1	3	18.13	18.14	18.14	
1.4	256QAM	1	5	17.90	17.97	17.80	
1.4	256QAM	3	0	18.12	18.10	17.97	
1.4	256QAM	3	1	17.92	18.01	17.98	
1.4	256QAM	3	3	17.82	17.98	17.91	
1.4	256QAM	6	0	17.87	18.10	18.05	18.5

<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				132072	132322	132572	
Frequency (MHz)				1720	1745	1770	
20	QPSK	1	0	21.09	21.06	21.03	21.5
20	QPSK	1	49	20.92	20.98	20.99	
20	QPSK	1	99	20.93	20.96	20.94	
20	QPSK	50	0	21.06	21.03	20.96	21.5
20	QPSK	50	24	20.92	20.97	20.94	
20	QPSK	50	50	20.97	20.99	20.92	
20	QPSK	100	0	21.01	20.96	20.97	
20	16QAM	1	0	20.91	21.03	20.98	21.5
20	16QAM	1	49	20.95	21.02	20.97	

20	16QAM	1	99	20.99	20.98	20.94	
20	16QAM	50	0	20.98	21.00	20.99	21.5
20	16QAM	50	24	20.94	20.97	21.00	
20	16QAM	50	50	20.96	20.97	21.00	
20	16QAM	100	0	20.91	20.99	21.03	
20	64QAM	1	0	20.97	21.04	20.97	21.5
20	64QAM	1	49	20.98	21.05	20.94	
20	64QAM	1	99	20.97	21.00	21.01	
20	64QAM	50	0	20.99	20.97	20.93	21.5
20	64QAM	50	24	20.95	20.99	20.96	
20	64QAM	50	50	20.92	21.03	21.02	
20	64QAM	100	0	20.95	21.03	21.01	
20	256QAM	1	0	19.13	19.20	19.16	19.5
20	256QAM	1	49	18.88	19.08	18.97	
20	256QAM	1	99	19.01	19.12	19.07	
20	256QAM	50	0	18.96	19.00	18.96	19.5
20	256QAM	50	24	18.83	18.98	18.92	
20	256QAM	50	50	19.07	19.09	18.93	
20	256QAM	100	0	19.03	19.02	19.03	
Channel				132047	132322	132597	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	QPSK	1	0	20.95	21.05	20.93	21.5
15	QPSK	1	37	20.86	20.94	20.98	
15	QPSK	1	74	20.86	20.94	20.93	
15	QPSK	36	0	20.86	20.89	20.89	21.5
15	QPSK	36	20	20.90	20.94	20.94	
15	QPSK	36	39	20.90	20.99	21.01	
15	QPSK	75	0	20.83	21.01	20.93	
15	16QAM	1	0	20.89	20.99	20.90	21.5
15	16QAM	1	37	20.86	20.93	20.89	
15	16QAM	1	74	20.91	20.93	20.94	
15	16QAM	36	0	20.92	20.93	20.97	21.5
15	16QAM	36	20	20.91	20.95	20.91	
15	16QAM	36	39	20.86	20.92	20.97	
15	16QAM	75	0	20.88	20.92	20.98	
15	64QAM	1	0	20.91	21.00	20.92	21.5
15	64QAM	1	37	20.95	21.05	20.89	
15	64QAM	1	74	20.96	20.97	20.99	
15	64QAM	36	0	20.90	20.93	20.90	21.5
15	64QAM	36	20	20.92	20.93	20.89	
15	64QAM	36	39	20.82	21.03	21.02	
15	64QAM	75	0	20.89	20.96	20.94	
15	256QAM	1	0	19.07	19.13	19.12	19.5
15	256QAM	1	37	18.82	19.05	18.93	
15	256QAM	1	74	18.95	19.06	19.01	
15	256QAM	36	0	18.87	18.94	18.94	19.5
15	256QAM	36	20	18.83	18.92	18.90	
15	256QAM	36	39	18.99	19.04	18.86	
15	256QAM	75	0	18.93	18.97	18.95	
Channel				132022	132322	132622	Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775	
10	QPSK	1	0	20.94	21.05	21.01	21.5
10	QPSK	1	25	20.85	20.93	20.92	
10	QPSK	1	49	20.85	20.94	20.88	
10	QPSK	25	0	20.88	20.95	20.88	21.5
10	QPSK	25	12	20.84	20.95	20.88	

10	QPSK	25	25	20.91	20.92	20.98	
10	QPSK	50	0	20.85	21.00	20.93	
10	16QAM	1	0	20.87	21.02	20.94	21.5
10	16QAM	1	25	20.93	20.96	20.87	
10	16QAM	1	49	20.89	20.96	20.93	
10	16QAM	25	0	20.98	20.92	20.89	21.5
10	16QAM	25	12	20.85	20.89	20.99	
10	16QAM	25	25	20.86	20.93	20.96	
10	16QAM	50	0	20.82	20.90	21.02	
10	64QAM	1	0	20.90	20.96	20.94	21.5
10	64QAM	1	25	20.90	21.02	20.89	
10	64QAM	1	49	20.91	20.95	20.99	
10	64QAM	25	0	20.90	20.90	20.85	21.5
10	64QAM	25	12	20.85	20.92	20.86	
10	64QAM	25	25	20.86	20.94	20.93	
10	64QAM	50	0	20.88	20.96	20.97	
10	256QAM	1	0	19.12	19.16	19.06	19.5
10	256QAM	1	25	18.85	18.98	18.92	
10	256QAM	1	49	18.93	19.05	18.97	
10	256QAM	25	0	18.87	19.00	18.96	19.5
10	256QAM	25	12	18.80	18.93	18.82	
10	256QAM	25	25	19.04	19.06	18.85	
10	256QAM	50	0	18.95	18.92	18.99	
Channel				131997	132322	132647	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	QPSK	1	0	20.96	21.04	20.99	21.5
5	QPSK	1	12	20.82	20.96	20.99	
5	QPSK	1	24	20.93	20.89	20.91	
5	QPSK	12	0	20.90	20.90	20.91	21.5
5	QPSK	12	7	20.83	20.89	20.87	
5	QPSK	12	13	20.92	20.90	20.93	
5	QPSK	25	0	20.82	20.99	20.94	
5	16QAM	1	0	20.90	21.00	20.96	21.5
5	16QAM	1	12	20.87	20.99	20.97	
5	16QAM	1	24	20.97	20.89	20.89	
5	16QAM	12	0	20.90	20.91	20.90	21.5
5	16QAM	12	7	20.89	20.97	20.95	
5	16QAM	12	13	20.89	20.95	20.97	
5	16QAM	25	0	20.89	20.90	21.00	
5	64QAM	1	0	20.93	21.01	20.97	21.5
5	64QAM	1	12	20.88	20.98	20.91	
5	64QAM	1	24	20.94	20.94	20.98	
5	64QAM	12	0	20.92	20.90	20.92	21.5
5	64QAM	12	7	20.90	20.99	20.91	
5	64QAM	12	13	20.89	20.97	20.95	
5	64QAM	25	0	20.95	20.95	21.01	
5	256QAM	1	0	19.07	19.10	19.06	19.5
5	256QAM	1	12	18.83	19.03	18.88	
5	256QAM	1	24	18.91	19.10	19.06	
5	256QAM	12	0	18.86	18.95	18.88	19.5
5	256QAM	12	7	18.80	18.92	18.88	
5	256QAM	12	13	19.05	19.03	18.89	
5	256QAM	25	0	18.98	18.97	18.95	
Channel				131987	132322	132657	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1745	1778.5	
3	QPSK	1	0	20.99	21.05	20.94	21.5

3	QPSK	1	8	20.83	20.92	20.93	
3	QPSK	1	14	20.86	20.95	20.94	
3	QPSK	8	0	20.93	20.97	20.93	21.5
3	QPSK	8	4	20.84	20.89	20.88	
3	QPSK	8	7	20.89	20.90	20.95	
3	QPSK	15	0	20.84	20.96	20.90	
3	16QAM	1	0	20.89	20.99	20.92	21.5
3	16QAM	1	8	20.93	20.95	20.88	
3	16QAM	1	14	20.94	20.96	20.87	
3	16QAM	8	0	20.96	20.95	20.90	21.5
3	16QAM	8	4	20.90	20.96	20.99	
3	16QAM	8	7	20.96	20.95	20.96	
3	16QAM	15	0	20.91	20.94	21.01	
3	64QAM	1	0	20.90	21.04	20.93	21.5
3	64QAM	1	8	20.95	21.02	20.89	
3	64QAM	1	14	20.89	20.94	20.94	
3	64QAM	8	0	20.95	20.91	20.91	21.5
3	64QAM	8	4	20.89	20.99	20.91	
3	64QAM	8	7	20.83	21.01	20.92	
3	64QAM	15	0	20.90	20.98	20.94	
3	256QAM	1	0	19.09	19.16	19.08	19.5
3	256QAM	1	8	18.83	19.05	18.90	
3	256QAM	1	14	18.92	19.08	19.05	
3	256QAM	8	0	18.94	18.94	18.87	19.5
3	256QAM	8	4	18.79	18.94	18.89	
3	256QAM	8	7	19.04	19.08	18.89	
3	256QAM	15	0	18.98	18.99	18.96	
Channel				131979	132322	132665	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1745	1779.3	
1.4	QPSK	1	0	20.93	21.02	20.93	21.5
1.4	QPSK	1	3	20.92	20.96	20.97	
1.4	QPSK	1	5	20.91	20.88	20.84	
1.4	QPSK	3	0	20.96	20.96	20.95	
1.4	QPSK	3	1	20.92	20.89	20.94	
1.4	QPSK	3	3	20.97	20.92	20.95	
1.4	QPSK	6	0	20.84	20.94	20.89	21.5
1.4	16QAM	1	0	20.89	20.96	20.89	21.5
1.4	16QAM	1	3	20.88	20.95	20.94	
1.4	16QAM	1	5	20.97	20.90	20.84	
1.4	16QAM	3	0	20.98	20.90	20.92	
1.4	16QAM	3	1	20.87	20.94	21.00	
1.4	16QAM	3	3	20.87	20.94	20.95	
1.4	16QAM	6	0	20.88	20.91	21.02	21.5
1.4	64QAM	1	0	20.96	21.03	20.95	21.5
1.4	64QAM	1	3	20.98	20.95	20.87	
1.4	64QAM	1	5	20.89	20.98	20.93	
1.4	64QAM	3	0	20.99	20.96	20.85	
1.4	64QAM	3	1	20.89	20.90	20.91	
1.4	64QAM	3	3	20.82	21.00	20.95	
1.4	64QAM	6	0	20.86	20.97	20.94	21.5
1.4	256QAM	1	0	19.08	19.14	19.14	19.5
1.4	256QAM	1	3	18.82	19.00	18.95	
1.4	256QAM	1	5	18.95	19.04	19.04	
1.4	256QAM	3	0	19.07	19.08	19.14	
1.4	256QAM	3	1	18.80	19.00	18.89	
1.4	256QAM	3	3	18.92	18.99	19.01	

1.4	256QAM	6	0	19.02	19.00	18.98	19.5

<LTE Band 71>

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	22.56	22.58	22.53	23
20	QPSK	1	49	22.53	22.57	22.49	
20	QPSK	1	99	22.53	22.54	22.53	
20	QPSK	50	0	22.54	22.48	22.48	23
20	QPSK	50	24	22.56	22.54	22.50	
20	QPSK	50	50	22.50	22.50	22.49	
20	QPSK	100	0	22.56	22.52	22.43	
20	16QAM	1	0	22.46	22.55	22.46	23
20	16QAM	1	49	22.47	22.50	22.52	
20	16QAM	1	99	22.47	22.52	22.49	
20	16QAM	50	0	21.31	21.15	21.11	21.5
20	16QAM	50	24	21.38	21.27	21.13	
20	16QAM	50	50	21.24	21.12	21.12	
20	16QAM	100	0	21.32	21.15	21.10	
20	64QAM	1	0	21.53	21.48	21.34	21.5
20	64QAM	1	49	21.52	21.22	21.27	
20	64QAM	1	99	21.22	21.29	21.20	
20	64QAM	50	0	20.21	20.22	20.19	20.5
20	64QAM	50	24	20.29	20.21	20.07	
20	64QAM	50	50	20.21	20.17	20.18	
20	64QAM	100	0	20.40	20.25	20.13	
20	256QAM	1	0	18.75	18.47	18.47	18.5
20	256QAM	1	49	18.48	18.43	18.40	
20	256QAM	1	99	18.31	18.25	18.23	
20	256QAM	50	0	18.39	18.44	18.25	18.5
20	256QAM	50	24	18.40	18.31	18.30	
20	256QAM	50	50	18.23	18.22	18.07	
20	256QAM	100	0	18.30	18.39	18.29	
Channel				133197	133297	133397	Tune-up limit (dBm)
Frequency (MHz)				670.5	680.5	690.5	
15	QPSK	1	0	22.50	22.51	22.46	23
15	QPSK	1	37	22.43	22.56	22.45	
15	QPSK	1	74	22.46	22.54	22.44	
15	QPSK	36	0	22.45	22.44	22.46	23
15	QPSK	36	20	22.55	22.48	22.43	
15	QPSK	36	39	22.44	22.40	22.48	
15	QPSK	75	0	22.51	22.43	22.43	
15	16QAM	1	0	22.43	22.56	22.38	23
15	16QAM	1	37	22.43	22.44	22.43	
15	16QAM	1	74	22.39	22.49	22.44	
15	16QAM	36	0	21.21	21.08	21.10	21.5
15	16QAM	36	20	21.28	21.25	21.08	
15	16QAM	36	39	21.21	21.05	21.04	
15	16QAM	75	0	21.31	21.07	21.10	
15	64QAM	1	0	21.45	21.45	21.34	21.5
15	64QAM	1	37	21.45	21.13	21.24	
15	64QAM	1	74	21.20	21.21	21.13	
15	64QAM	36	0	20.16	20.18	20.18	20.5
15	64QAM	36	20	20.23	20.13	19.98	

15	64QAM	36	39	20.12	20.13	20.11	
15	64QAM	75	0	20.36	20.20	20.03	
15	256QAM	1	0	18.74	18.41	18.41	18.5
15	256QAM	1	37	18.44	18.34	18.32	
15	256QAM	1	74	18.27	18.15	18.18	
15	256QAM	36	0	18.34	18.35	18.25	18.5
15	256QAM	36	20	18.40	18.25	18.24	
15	256QAM	36	39	18.21	18.17	17.98	
15	256QAM	75	0	18.22	18.35	18.29	
Channel				133172	133297	133422	Tune-up limit (dBm)
Frequency (MHz)				668	680.5	693	
10	QPSK	1	0	22.55	22.53	22.53	23
10	QPSK	1	25	22.50	22.49	22.46	
10	QPSK	1	49	22.49	22.45	22.51	
10	QPSK	25	0	22.54	22.42	22.38	23
10	QPSK	25	12	22.56	22.44	22.45	
10	QPSK	25	25	22.43	22.44	22.42	
10	QPSK	50	0	22.47	22.47	22.35	
10	16QAM	1	0	22.46	22.52	22.46	23
10	16QAM	1	25	22.43	22.45	22.44	
10	16QAM	1	49	22.38	22.45	22.45	
10	16QAM	25	0	21.29	21.12	21.07	21.5
10	16QAM	25	12	21.31	21.23	21.04	
10	16QAM	25	25	21.16	21.04	21.07	
10	16QAM	50	0	21.32	21.09	21.05	
10	64QAM	1	0	21.43	21.41	21.34	21.5
10	64QAM	1	25	21.50	21.20	21.18	
10	64QAM	1	49	21.19	21.27	21.18	
10	64QAM	25	0	20.19	20.14	20.11	20.5
10	64QAM	25	12	20.22	20.13	19.97	
10	64QAM	25	25	20.19	20.16	20.13	
10	64QAM	50	0	20.34	20.17	20.07	
10	256QAM	1	0	18.70	18.46	18.47	18.5
10	256QAM	1	25	18.43	18.37	18.34	
10	256QAM	1	49	18.21	18.24	18.21	
10	256QAM	25	0	18.38	18.41	18.19	18.5
10	256QAM	25	12	18.32	18.22	18.20	
10	256QAM	25	25	18.22	18.20	17.98	
10	256QAM	50	0	18.27	18.30	18.28	
Channel				133147	133297	133447	Tune-up limit (dBm)
Frequency (MHz)				665.5	680.5	695.5	
5	QPSK	1	0	22.50	22.52	22.52	23
5	QPSK	1	12	22.50	22.52	22.47	
5	QPSK	1	24	22.50	22.49	22.53	
5	QPSK	12	0	22.48	22.45	22.39	23
5	QPSK	12	7	22.49	22.53	22.46	
5	QPSK	12	13	22.49	22.43	22.41	
5	QPSK	25	0	22.53	22.42	22.41	
5	16QAM	1	0	22.43	22.56	22.43	23
5	16QAM	1	12	22.38	22.43	22.50	
5	16QAM	1	24	22.40	22.47	22.46	
5	16QAM	12	0	21.29	21.06	21.10	21.5
5	16QAM	12	7	21.29	21.18	21.09	
5	16QAM	12	13	21.14	21.06	21.04	
5	16QAM	25	0	21.22	21.06	21.05	
5	64QAM	1	0	21.44	21.39	21.33	21.5

5	64QAM	1	12	21.47	21.17	21.17	
5	64QAM	1	24	21.13	21.27	21.13	
5	64QAM	12	0	20.11	20.12	20.09	20.5
5	64QAM	12	7	20.20	20.11	20.02	
5	64QAM	12	13	20.13	20.12	20.15	
5	64QAM	25	0	20.40	20.24	20.10	
5	256QAM	1	0	18.69	18.37	18.40	18.5
5	256QAM	1	12	18.46	18.40	18.30	
5	256QAM	1	24	18.22	18.25	18.22	
5	256QAM	12	0	18.34	18.35	18.21	18.5
5	256QAM	12	7	18.35	18.21	18.24	
5	256QAM	12	13	18.15	18.17	17.97	
5	256QAM	25	0	18.29	18.31	18.27	

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

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

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

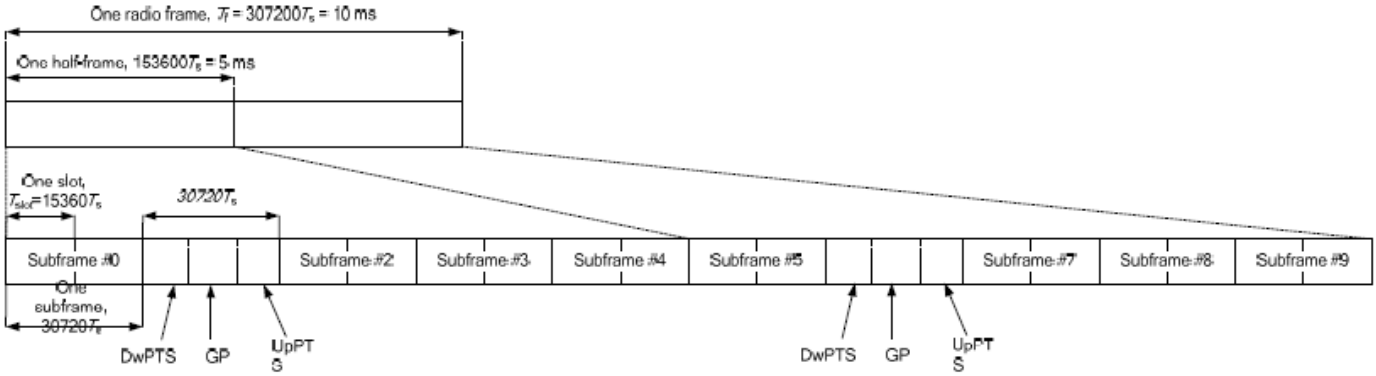


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

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

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

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

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

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

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

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

<LTE Band 38>

BW [MHz]	Modulation	ID:38	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	23.68	23.76	23.72	24.2
20	QPSK	1	49	23.68	23.73	23.62	
20	QPSK	1	99	23.63	23.72	23.63	
20	QPSK	50	0	23.59	23.72	23.66	24.2
20	QPSK	50	24	23.67	23.66	23.68	
20	QPSK	50	50	23.60	23.71	23.70	
20	QPSK	100	0	23.68	23.69	23.67	
20	16QAM	1	0	23.62	23.71	23.65	24.2
20	16QAM	1	49	23.62	23.75	23.68	
20	16QAM	1	99	23.65	23.74	23.72	
20	16QAM	50	0	21.06	21.16	21.05	22.5
20	16QAM	50	24	21.15	21.10	21.12	
20	16QAM	50	50	21.11	21.13	21.06	
20	16QAM	100	0	21.09	21.05	21.08	
20	64QAM	1	0	20.80	20.76	20.71	22.5
20	64QAM	1	49	20.85	20.78	20.77	
20	64QAM	1	99	20.81	20.76	20.80	
20	64QAM	50	0	20.07	20.09	20.07	21.5
20	64QAM	50	24	20.12	20.09	20.16	
20	64QAM	50	50	20.14	20.14	20.05	
20	64QAM	100	0	20.17	20.09	20.04	
20	256QAM	1	0	18.09	18.06	18.00	19.5
20	256QAM	1	49	18.11	18.05	18.02	
20	256QAM	1	99	18.05	18.03	18.06	
20	256QAM	50	0	18.13	18.12	18.12	19.5
20	256QAM	50	24	18.00	18.20	18.16	
20	256QAM	50	50	18.03	18.09	18.15	
20	256QAM	100	0	18.02	18.13	18.15	
Channel				37825	38000	38175	Tune-up limit (dBm)
Frequency (MHz)				2577.5	2595	2612.5	
15	QPSK	1	0	23.59	23.73	23.68	24.2
15	QPSK	1	37	23.58	23.66	23.55	
15	QPSK	1	74	23.61	23.69	23.62	
15	QPSK	36	0	23.58	23.70	23.57	24.2
15	QPSK	36	20	23.60	23.69	23.63	
15	QPSK	36	39	23.60	23.62	23.64	
15	QPSK	75	0	23.64	23.59	23.64	
15	16QAM	1	0	23.62	23.70	23.65	24.2
15	16QAM	1	37	23.53	23.72	23.61	
15	16QAM	1	74	23.62	23.64	23.63	
15	16QAM	36	0	21.04	21.15	21.05	22.5
15	16QAM	36	20	21.10	21.06	21.07	
15	16QAM	36	39	21.05	21.09	20.99	
15	16QAM	75	0	21.02	20.99	21.02	
15	64QAM	1	0	20.71	20.76	20.71	22.5
15	64QAM	1	37	20.79	20.75	20.74	
15	64QAM	1	74	20.77	20.74	20.72	
15	64QAM	36	0	20.06	20.01	20.05	21.5
15	64QAM	36	20	20.08	20.04	20.09	
15	64QAM	36	39	20.05	20.09	20.06	
15	64QAM	75	0	20.10	20.05	20.07	

15	256QAM	1	0	18.06	18.11	18.06	19.5
15	256QAM	1	37	18.02	18.06	18.09	
15	256QAM	1	74	18.03	18.01	18.11	
15	256QAM	36	0	18.04	18.06	18.05	19.5
15	256QAM	36	20	18.05	18.18	18.09	
15	256QAM	36	39	18.07	18.07	18.11	
15	256QAM	75	0	18.10	18.04	18.15	
Channel				37800	38000	38200	Tune-up limit (dBm)
Frequency (MHz)				2575	2595	2615	
10	QPSK	1	0	23.58	23.71	23.69	24.2
10	QPSK	1	25	23.64	23.73	23.55	
10	QPSK	1	49	23.55	23.69	23.56	
10	QPSK	25	0	23.52	23.70	23.63	24.2
10	QPSK	25	12	23.62	23.69	23.67	
10	QPSK	25	25	23.54	23.70	23.66	
10	QPSK	50	0	23.60	23.62	23.59	
10	16QAM	1	0	23.59	23.68	23.58	24.2
10	16QAM	1	25	23.57	23.73	23.65	
10	16QAM	1	49	23.61	23.70	23.72	
10	16QAM	25	0	21.01	21.08	21.00	22.5
10	16QAM	25	12	21.10	21.04	21.11	
10	16QAM	25	25	21.10	21.04	21.00	
10	16QAM	50	0	21.06	20.95	21.07	
10	64QAM	1	0	20.72	20.73	20.62	22.5
10	64QAM	1	25	20.79	20.73	20.69	
10	64QAM	1	49	20.75	20.66	20.74	
10	64QAM	25	0	20.01	20.06	20.06	21.5
10	64QAM	25	12	20.10	20.07	20.10	
10	64QAM	25	25	20.13	20.12	20.30	
10	64QAM	50	0	20.12	20.03	20.02	
10	256QAM	1	0	18.07	18.03	18.06	19.5
10	256QAM	1	25	18.06	18.12	18.02	
10	256QAM	1	49	18.05	18.11	18.06	
10	256QAM	25	0	18.09	18.12	18.09	19.5
10	256QAM	25	12	18.04	18.17	18.10	
10	256QAM	25	25	18.06	18.08	18.07	
10	256QAM	50	0	18.03	18.09	18.11	
Channel				37775	38000	38225	Tune-up limit (dBm)
Frequency (MHz)				2572.5	2595	2617.5	
5	QPSK	1	0	23.68	23.74	23.70	24.2
5	QPSK	1	12	23.67	23.72	23.55	
5	QPSK	1	24	23.62	23.75	23.56	
5	QPSK	12	0	23.56	23.70	23.59	24.2
5	QPSK	12	7	23.59	23.72	23.65	
5	QPSK	12	13	23.56	23.69	23.69	
5	QPSK	25	0	23.59	23.65	23.64	
5	16QAM	1	0	23.55	23.61	23.55	24.2
5	16QAM	1	12	23.56	23.74	23.62	
5	16QAM	1	24	23.57	23.65	23.65	
5	16QAM	12	0	21.03	21.07	21.00	22.5
5	16QAM	12	7	21.14	21.05	21.10	
5	16QAM	12	13	21.01	21.11	21.03	
5	16QAM	25	0	21.04	21.05	21.05	
5	64QAM	1	0	20.76	20.67	20.67	22.5
5	64QAM	1	12	20.82	20.73	20.67	
5	64QAM	1	24	20.77	20.66	20.78	

5	64QAM	12	0	20.05	20.06	20.02	21.5
5	64QAM	12	7	20.04	20.09	20.08	
5	64QAM	12	13	20.08	20.06	20.06	
5	64QAM	25	0	20.17	20.09	20.01	
5	256QAM	1	0	18.06	18.11	18.06	19.5
5	256QAM	1	12	18.03	18.09	18.03	
5	256QAM	1	24	18.02	18.02	18.07	
5	256QAM	12	0	18.03	18.06	18.06	19.5
5	256QAM	12	7	18.05	18.10	18.06	
5	256QAM	12	13	18.02	18.07	18.07	
5	256QAM	25	0	18.01	18.09	18.09	

<LTE Band 41>

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	23.76	23.72	23.76	23.81	23.86	24.2
20	QPSK	1	49	23.74	23.64	23.70	23.71	23.83	
20	QPSK	1	99	23.67	23.68	23.70	23.80	23.79	
20	QPSK	50	0	23.66	23.72	23.76	23.79	23.83	24.2
20	QPSK	50	24	23.66	23.68	23.72	23.74	23.79	
20	QPSK	50	50	23.67	23.63	23.69	23.71	23.76	
20	QPSK	100	0	23.66	23.67	23.67	23.75	23.82	
20	16QAM	1	0	23.74	23.66	23.69	23.77	23.84	24.2
20	16QAM	1	49	23.68	23.66	23.76	23.74	23.80	
20	16QAM	1	99	23.75	23.71	23.74	23.81	23.84	
20	16QAM	50	0	21.05	21.15	21.35	21.35	21.49	22.5
20	16QAM	50	24	21.13	21.27	21.40	21.44	21.53	
20	16QAM	50	50	21.19	21.33	21.43	21.48	21.52	
20	16QAM	100	0	21.12	21.27	21.47	21.43	21.46	
20	64QAM	1	0	21.00	21.16	21.06	21.07	21.24	22.5
20	64QAM	1	49	21.05	21.15	21.13	21.05	21.14	
20	64QAM	1	99	21.06	21.11	21.20	21.25	21.23	
20	64QAM	50	0	20.14	20.24	20.33	20.32	20.46	21.5
20	64QAM	50	24	20.17	20.30	20.43	20.36	20.49	
20	64QAM	50	50	20.18	20.34	20.47	20.47	20.60	
20	64QAM	100	0	20.17	20.31	20.42	20.40	20.47	
20	256QAM	1	0	18.31	18.28	18.34	18.13	18.23	19.5
20	256QAM	1	49	18.04	18.16	18.18	18.23	18.21	
20	256QAM	1	99	18.15	18.24	18.22	18.13	18.04	
20	256QAM	50	0	18.21	18.12	18.34	18.17	18.21	19.5
20	256QAM	50	24	18.18	18.28	18.28	18.30	18.23	
20	256QAM	50	50	18.18	18.36	18.41	18.33	18.16	
20	256QAM	100	0	18.25	18.17	18.33	18.17	18.16	
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	23.71	23.70	23.75	23.80	23.82	24.2
15	QPSK	1	37	23.70	23.55	23.60	23.68	23.80	
15	QPSK	1	74	23.59	23.61	23.66	23.71	23.72	
15	QPSK	36	0	23.57	23.63	23.67	23.72	23.82	24.2
15	QPSK	36	20	23.65	23.58	23.70	23.70	23.79	
15	QPSK	36	39	23.64	23.53	23.67	23.61	23.80	
15	QPSK	75	0	23.61	23.65	23.65	23.68	23.76	
15	16QAM	1	0	23.66	23.59	23.66	23.76	23.78	24.2
15	16QAM	1	37	23.68	23.62	23.66	23.69	23.79	

15	16QAM	1	74	23.69	23.64	23.72	23.77	23.74	
15	16QAM	36	0	21.11	21.11	21.30	21.27	21.49	22.5
15	16QAM	36	20	21.07	21.26	21.33	21.40	21.47	
15	16QAM	36	39	21.16	21.27	21.35	21.46	21.48	
15	16QAM	75	0	21.03	21.25	21.44	21.34	21.36	
15	64QAM	1	0	21.11	21.07	21.02	21.09	21.19	22.5
15	64QAM	1	37	21.16	21.09	21.03	21.11	21.10	
15	64QAM	1	74	21.05	21.05	21.16	21.23	21.17	
15	64QAM	36	0	20.08	20.18	20.28	20.30	20.46	21.5
15	64QAM	36	20	20.09	20.21	20.35	20.34	20.40	
15	64QAM	36	39	20.08	20.26	20.45	20.42	20.55	
15	64QAM	75	0	20.13	20.25	20.41	20.32	20.44	
15	256QAM	1	0	18.29	18.19	18.34	18.10	18.23	19.5
15	256QAM	1	37	18.00	18.08	18.17	18.60	18.21	
15	256QAM	1	74	18.14	18.14	18.18	18.04	18.16	
15	256QAM	36	0	18.16	18.02	18.32	18.13	18.11	19.5
15	256QAM	36	20	18.12	18.24	18.19	18.24	18.15	
15	256QAM	36	39	18.16	18.26	18.40	18.32	18.10	
15	256QAM	75	0	18.22	18.12	18.23	18.09	18.14	
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)
Frequency (MHz)				2501	2547	2593	2639	2685	
10	QPSK	1	0	23.75	23.63	23.66	23.80	23.84	24.2
10	QPSK	1	25	23.72	23.55	23.66	23.63	23.85	
10	QPSK	1	49	23.58	23.62	23.60	23.79	23.76	
10	QPSK	25	0	23.58	23.64	23.67	23.72	23.82	24.2
10	QPSK	25	12	23.64	23.61	23.62	23.72	23.70	
10	QPSK	25	25	23.64	23.59	23.61	23.62	23.82	
10	QPSK	50	0	23.59	23.59	23.57	23.69	23.78	
10	16QAM	1	0	23.64	23.58	23.61	23.69	23.78	24.2
10	16QAM	1	25	23.60	23.58	23.72	23.72	23.72	
10	16QAM	1	49	23.73	23.61	23.65	23.74	23.78	
10	16QAM	25	0	21.09	21.09	21.27	21.30	21.45	22.5
10	16QAM	25	12	21.04	21.24	21.36	21.36	21.47	
10	16QAM	25	25	21.17	21.27	21.36	21.43	21.45	
10	16QAM	50	0	21.09	21.23	21.45	21.36	21.37	
10	64QAM	1	0	21.11	21.05	21.05	21.17	21.21	22.5
10	64QAM	1	25	21.13	21.06	21.03	21.11	21.11	
10	64QAM	1	49	21.16	21.11	21.20	21.18	21.16	
10	64QAM	25	0	20.04	20.18	20.32	20.32	20.46	21.5
10	64QAM	25	12	20.15	20.23	20.41	20.28	20.43	
10	64QAM	25	25	20.08	20.30	20.42	20.43	20.51	
10	64QAM	50	0	20.15	20.31	20.32	20.40	20.40	
10	256QAM	1	0	18.29	18.24	18.29	18.05	18.20	19.5
10	256QAM	1	25	18.01	18.14	18.17	18.40	18.13	
10	256QAM	1	49	18.08	18.19	18.22	18.03	18.11	
10	256QAM	25	0	18.14	18.06	18.29	18.16	18.14	19.5
10	256QAM	25	12	18.10	18.18	18.26	18.24	18.23	
10	256QAM	25	25	18.16	18.27	18.38	18.28	18.12	
10	256QAM	50	0	18.25	18.12	18.24	18.12	18.10	
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	23.70	23.65	23.74	23.79	23.83	24.2
5	QPSK	1	12	23.74	23.56	23.68	23.66	23.83	
5	QPSK	1	24	23.65	23.65	23.61	23.80	23.78	
5	QPSK	12	0	23.58	23.64	23.69	23.70	23.82	24.2
5	QPSK	12	7	23.56	23.68	23.62	23.70	23.73	

5	QPSK	12	13	23.59	23.59	23.59	23.69	23.83	
5	QPSK	25	0	23.63	23.59	23.64	23.67	23.74	
5	16QAM	1	0	23.72	23.62	23.60	23.75	23.75	24.2
5	16QAM	1	12	23.68	23.62	23.70	23.71	23.71	
5	16QAM	1	24	23.66	23.70	23.72	23.72	23.82	
5	16QAM	12	0	21.04	21.07	21.29	21.33	21.41	22.5
5	16QAM	12	7	21.04	21.17	21.37	21.34	21.45	
5	16QAM	12	13	21.15	21.32	21.43	21.44	21.50	
5	16QAM	25	0	21.07	21.18	21.45	21.41	21.44	
5	64QAM	1	0	21.06	21.13	21.04	21.00	21.16	22.5
5	64QAM	1	12	21.05	21.11	21.05	21.03	21.06	
5	64QAM	1	24	21.11	21.16	21.11	21.24	21.23	
5	64QAM	12	0	20.07	20.19	20.24	20.22	20.42	21.5
5	64QAM	12	7	20.13	20.20	20.37	20.27	20.49	
5	64QAM	12	13	20.10	20.34	20.37	20.42	20.56	
5	64QAM	25	0	20.15	20.22	20.40	20.30	20.46	
5	256QAM	1	0	18.29	18.21	18.26	18.13	18.16	19.5
5	256QAM	1	12	18.04	18.06	18.17	18.00	18.03	
5	256QAM	1	24	18.08	18.21	18.21	18.12	18.05	
5	256QAM	12	0	18.15	18.10	18.27	18.08	18.16	19.5
5	256QAM	12	7	18.17	18.24	18.25	18.20	18.19	
5	256QAM	12	13	18.11	18.36	18.35	18.27	18.11	
5	256QAM	25	0	18.15	18.13	18.28	18.13	18.10	

<LTE Band 41 HPUE>

BW [MHz]	Modulation	ID:38	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	25.31	25.33	25.36	25.43	25.48	25.8
20	QPSK	1	49	25.30	25.27	25.30	25.36	25.38	
20	QPSK	1	99	25.25	25.28	25.35	25.43	25.43	
20	QPSK	50	0	24.47	24.53	24.47	24.53	24.67	25
20	QPSK	50	24	24.48	24.53	24.55	24.54	24.65	
20	QPSK	50	50	24.49	24.50	24.55	24.57	24.66	
20	QPSK	100	0	24.42	24.48	24.48	24.60	24.63	
20	16QAM	1	0	24.50	24.49	24.46	24.62	24.58	25
20	16QAM	1	49	24.47	24.53	24.53	24.54	24.59	
20	16QAM	1	99	24.43	24.47	24.51	24.61	24.59	
20	16QAM	50	0	23.47	23.51	23.47	23.53	23.62	24
20	16QAM	50	24	23.47	23.50	23.47	23.63	23.66	
20	16QAM	50	50	23.45	23.51	23.50	23.54	23.67	
20	16QAM	100	0	23.42	23.46	23.50	23.62	23.61	
20	64QAM	1	0	23.43	23.51	23.54	23.57	23.58	24
20	64QAM	1	49	23.47	23.53	23.54	23.60	23.60	
20	64QAM	1	99	23.50	23.51	23.50	23.55	23.65	
20	64QAM	50	0	22.00	22.01	22.03	22.04	22.09	23
20	64QAM	50	24	21.97	21.99	21.98	22.04	22.16	
20	64QAM	50	50	21.95	21.94	22.02	22.07	22.14	
20	64QAM	100	0	21.93	21.95	21.96	22.06	22.13	
20	256QAM	1	0	19.76	19.74	19.86	19.85	19.68	21
20	256QAM	1	49	19.88	19.85	20.02	19.82	19.91	
20	256QAM	1	99	20.31	20.20	20.32	20.12	20.22	
20	256QAM	50	0	19.77	19.78	19.95	19.89	19.88	21
20	256QAM	50	24	19.89	19.95	19.98	19.98	19.94	
20	256QAM	50	50	20.00	19.83	20.02	20.01	19.99	

20	256QAM	100	0	19.92	19.89	20.03	19.86	19.98	
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	25.22	25.33	25.34	25.34	25.45	25.80
15	QPSK	1	37	25.24	25.20	25.25	25.32	25.34	
15	QPSK	1	74	25.22	25.26	25.28	25.39	25.34	
15	QPSK	36	0	24.44	24.49	24.47	24.43	24.55	25
15	QPSK	36	20	24.41	24.51	24.48	24.52	24.63	
15	QPSK	36	39	24.44	24.45	24.46	24.47	24.63	
15	QPSK	75	0	24.42	24.41	24.48	24.53	24.58	
15	16QAM	1	0	24.48	24.43	24.44	24.54	24.48	25
15	16QAM	1	37	24.42	24.53	24.44	24.52	24.56	
15	16QAM	1	74	24.37	24.43	24.44	24.56	24.57	
15	16QAM	36	0	23.40	23.41	23.47	23.49	23.56	24
15	16QAM	36	20	23.47	23.42	23.41	23.60	23.61	
15	16QAM	36	39	23.40	23.46	23.43	23.53	23.60	
15	16QAM	75	0	23.40	23.39	23.40	23.59	23.57	
15	64QAM	1	0	23.38	23.41	23.47	23.47	23.54	24
15	64QAM	1	37	23.44	23.46	23.53	23.54	23.59	
15	64QAM	1	74	23.43	23.42	23.46	23.45	23.59	
15	64QAM	36	0	21.95	22.00	22.01	22.03	22.05	23
15	64QAM	36	20	21.95	21.90	21.92	21.96	22.15	
15	64QAM	36	39	21.89	21.92	21.93	22.01	22.04	
15	64QAM	75	0	21.89	21.95	21.86	21.97	22.11	
15	256QAM	1	0	19.67	19.74	19.84	19.84	19.66	21
15	256QAM	1	37	19.80	19.81	19.92	19.72	19.85	
15	256QAM	1	74	20.24	20.14	20.28	20.06	20.17	
15	256QAM	36	0	19.67	19.68	19.94	19.83	19.81	21
15	256QAM	36	20	19.82	19.88	19.89	19.93	19.89	
15	256QAM	36	39	19.95	19.79	19.99	19.93	19.92	
15	256QAM	75	0	19.85	19.83	19.99	19.76	19.90	
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)
Frequency (MHz)				2501	2547	2593	2639	2685	
10	QPSK	1	0	25.31	25.23	25.35	25.34	25.46	25.80
10	QPSK	1	25	25.27	25.27	25.27	25.31	25.32	
10	QPSK	1	49	25.17	25.27	25.29	25.41	25.39	
10	QPSK	25	0	24.43	24.51	24.38	24.48	24.56	25
10	QPSK	25	12	24.40	24.49	24.46	24.53	24.59	
10	QPSK	25	25	24.43	24.40	24.53	24.56	24.62	
10	QPSK	50	0	24.37	24.42	24.43	24.59	24.61	
10	16QAM	1	0	24.46	24.45	24.36	24.58	24.50	25
10	16QAM	1	25	24.46	24.44	24.46	24.47	24.56	
10	16QAM	1	49	24.42	24.41	24.48	24.55	24.50	
10	16QAM	25	0	23.37	23.43	23.43	23.49	23.62	24
10	16QAM	25	12	23.45	23.44	23.38	23.56	23.64	
10	16QAM	25	25	23.45	23.47	23.44	23.51	23.63	
10	16QAM	50	0	23.35	23.37	23.46	23.57	23.59	
10	64QAM	1	0	23.42	23.42	23.53	23.51	23.58	24
10	64QAM	1	25	23.41	23.51	23.52	23.54	23.51	
10	64QAM	1	49	23.41	23.42	23.43	23.45	23.65	
10	64QAM	25	0	21.97	21.97	22.00	21.99	22.01	23
10	64QAM	25	12	21.89	21.99	21.97	22.03	22.15	
10	64QAM	25	25	21.86	21.90	21.92	21.97	22.11	
10	64QAM	50	0	21.84	21.85	21.89	22.06	22.15	
10	256QAM	1	0	19.72	19.65	19.76	19.77	19.62	21
10	256QAM	1	25	19.88	19.81	19.92	19.75	19.88	

10	256QAM	1	49	20.23	20.15	20.26	20.09	20.22	
10	256QAM	25	0	19.74	19.74	19.94	19.83	19.80	21
10	256QAM	25	12	19.84	19.86	19.98	19.93	19.87	
10	256QAM	25	25	19.93	19.73	19.93	20.00	19.90	
10	256QAM	50	0	19.86	19.85	19.97	19.86	19.89	
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	25.25	25.26	25.30	25.38	25.41	25.80
5	QPSK	1	12	25.22	25.19	25.21	25.30	25.38	
5	QPSK	1	24	25.21	25.25	25.33	25.43	25.37	
5	QPSK	12	0	24.37	24.53	24.41	24.51	24.58	25
5	QPSK	12	7	24.44	24.50	24.50	24.44	24.58	
5	QPSK	12	13	24.43	24.45	24.48	24.49	24.60	
5	QPSK	25	0	24.40	24.48	24.41	24.52	24.61	
5	16QAM	1	0	24.41	24.40	24.41	24.53	24.52	25
5	16QAM	1	12	24.37	24.50	24.51	24.53	24.51	
5	16QAM	1	24	24.36	24.47	24.50	24.55	24.59	
5	16QAM	12	0	23.40	23.42	23.41	23.43	23.53	24
5	16QAM	12	7	23.47	23.43	23.46	23.62	23.66	
5	16QAM	12	13	23.41	23.48	23.40	23.51	23.59	
5	16QAM	25	0	23.42	23.41	23.40	23.57	23.52	
5	64QAM	1	0	23.34	23.48	23.48	23.55	23.56	24
5	64QAM	1	12	23.41	23.47	23.52	23.50	23.57	
5	64QAM	1	24	23.48	23.48	23.43	23.47	23.55	
5	64QAM	12	0	21.95	21.91	21.94	21.94	22.01	23
5	64QAM	12	7	21.92	21.98	21.91	22.03	22.12	
5	64QAM	12	13	21.92	21.90	21.96	21.97	22.06	
5	64QAM	25	0	21.91	21.90	21.92	22.01	22.17	
5	256QAM	1	0	19.68	19.70	19.82	19.76	19.66	21
5	256QAM	1	12	19.83	19.81	19.96	19.76	19.84	
5	256QAM	1	24	20.29	20.19	20.26	20.08	20.18	
5	256QAM	12	0	19.74	19.69	19.93	19.83	19.85	21
5	256QAM	12	7	19.86	19.88	19.91	19.88	19.91	
5	256QAM	12	13	19.90	19.79	19.97	19.99	19.91	
5	256QAM	25	0	19.87	19.88	20.01	19.81	19.95	

<LTE Carrier Aggregation combinations>

General Note:

1. This device supports Carrier Aggregation on downlink only for inter and intra band, Uplink CA is not supported. For the device supports combination bands and configurations are according to 3GPP.
2. In applying the existing power measurement procedure of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of the frequency band and CCs in each row need consideration, and that configurations require power measurement should be highlighted in the below table.
3. All permutations exist. No restrictions on Pcell & Scell combinations. Only LTE Band 29A is limited to Scell.

2CC Downlink Carrier Aggregation			3CC Downlink Carrier Aggregation			4CC Downlink Carrier Aggregation			5CC Downlink Carrier Aggregation		
Number	Combination	Covered by Measurement Superset	Number	Combination	Covered by Measurement Superset	Number	Combination	Covered by Measurement Superset	Number	Combination	Covered by Measurement Superset
1	12A-12A	74	58	12A-30A-66A	156	156	12A-30A-66A-66A	268	265	25A-41E	
2	12A-25A		59	12A-66A-66A	156	157	12B-66A-66A	268	266	25A-25A-41D	266
3	12A-30A	58	60	12A-66C	59	158	13A-66A-66B	269	267	2A-12B-66A-66A	268
4	12A-66A	59	61	12B-66A	59	159	13A-66A-66C	269	268	2A-12A-30A-66A-66A	
5	12B	61	62	13A-66A-66A	158	160	13A-66D	269	269	2A-13A-66A-66B	
6	13A-66A	62	63	13A-66B	62	161	14A-30A-66A-66A	272	270	2A-13A-66A-66C	270
7	14A-30A	66	64	13A-66C	62	162	14A-66A-66A-66A	161	271	2A-13A-66D	270
8	14A-66A	66	65	14A-30A-66A	161	163	25A-25A-41C	266	272	2A-14A-30A-66A-66A	
9	25A-25A	68	66	14A-66A-66A	161	164	25A-26A-41C		273	2A-14A-66A-66A-66A	273
10	25A-26A	69	67	25A-25A-25A	68	165	25A-41D	266	274	2A-2A-12A-30A-66A	272
11	25A-41A	70	68	25A-25A-26A	164	166	2A-12A-30A-66A	268	275	2A-2A-12A-66A-66A	272
12	26A-41A	71	69	25A-25A-41A	163	167	2A-13A-66A-66A	269	276	2A-2A-12B-66A	272
13	2A-12A	74	70	25A-26A-41A	164	168	2A-13A-66B	269	277	2A-2A-13A-66A-66A	269
14	2A-13A	77	71	25A-41C	163	169	2A-13A-66C	269	278	2A-2A-13A-66B	269
15	2A-14A	78	72	26A-41C	164	170	2A-14A-30A-66A	272	279	2A-2A-14A-30A-66A	272
16	2A-17A		73	2A-12A-12A	74	171	2A-14A-66A-66A	272	280	2A-2A-14A-66A-66A	272
17	2A-2A	80	74	2A-12A-30A	166	172	2A-2A-12A-12A	166	281	2A-2A-5A-12A-66A	
18	2A-30A	83	75	2A-12A-66A	166	173	2A-2A-12A-30A	166	282	2A-2A-5A-30A-66A	
19	2A-4A	84	76	2A-12B	73	174	2A-2A-12A-66A	166	283	2A-2A-5A-66A-66A	281
20	2A-5A	85	77	2A-13A-66A	167	175	2A-2A-12B	166	284	2A-2A-5A-66B	281
21	2A-66A	86	78	2A-14A-30A	170	176	2A-12A-66A-66A	166	285	2A-2A-5A-66C	281
22	2A-71A	87	79	2A-14A-66A	170	177	2A-12A-66C	166	286	2A-2A-5B-66A	281
23	2A-7A	96	80	2A-2A-12A	183	178	2A-12B-66A	166	287	2A-2A-66A-66B	281
24	2C	111	81	2A-2A-13A	179	179	2A-2A-13A-66A	167	288	2A-2A-66A-66C	281
25	30A-66A	65	82	2A-2A-14A	180	180	2A-2A-14A-30A	170	289	2A-2A-7A-12A-66A	
26	38C	41	83	2A-2A-30A	180	181	2A-2A-14A-66A	170	290	2A-4A-5B-30A	
27	41A-41A	116	84	2A-2A-4A	184	182	2A-2A-30A-66A	170	291	2A-5A-30A-66A-66A	282
28	41C	28	85	2A-2A-5A	187	183	2A-2A-4A-12A		292	2A-5B-30A-66A	291
29	4A-12A	122	86	2A-2A-66A	189	184	2A-2A-4A-4A	183	293	2A-5B-66A-66A	291
30	4A-13A	123	87	2A-2A-71A	186	185	2A-2A-4A-5A	290	294	2A-5B-66B	291
31	4A-17A		88	2A-2A-7A	195	186	2A-2A-4A-71A		295	2A-5B-66C	291
32	4A-30A	92	89	2A-30A-66A	197	187	2A-2A-5A-12A		296	2A-7A-12B-66A	289
33	4A-4A	122	90	2A-4A-12A	198	188	2A-2A-5A-30A	291	297	2A-7A-7A-66A-66A	289
34	4A-5A	94	91	2A-4A-13A		189	2A-2A-5A-66A	291	298	2A-7C-66A-66A	289
35	4A-71A	126	92	2A-4A-30A	204	190	2A-2A-5B	291	299	41C-41D	265
36	4A-7A	127	93	2A-4A-4A	92	191	2A-2A-66A-66A	291	300	4A-4A-5B-30A	290
37	5A-12A	134	94	2A-4A-5A	185	192	2A-2A-66A-71A		301	5A-7C-66A-66A	
38	5A-13A		95	2A-4A-71A	186	193	2A-2A-66B	191	302	5B-30A-66A-66A	282
39	5A-25A		96	2A-4A-7A	206	194	2A-2A-66C	191	303	5B-66A-66B	282
40	5A-30A	136	97	2A-5A-12A	209	195	2A-2A-7A-12A	289	304	5B-66A-66C	282
41	5A-38A		98	2A-5A-30A	211	196	2A-2A-7A-66A	289			
42	5A-41A		99	2A-5A-66A	212	197	2A-30A-66A-66A	291			
43	5A-5A	137	100	2A-5A-7A	215	198	2A-4A-12A-12A	183			
44	5A-66A	134	101	2A-5B	97	199	2A-4A-12A-30A				

45	5A-7A	141	102	2A-66A-66A	219	200	2A-4A-12B	198			
46	5B	43	103	2A-66A-71A	220	201	2A-4A-4A-12A	198			
47	66A-66A	146	104	2A-66B	102	202	2A-4A-4A-5A	185			
48	66A-71A	147	105	2A-66C	102	203	2A-4A-5A-12A				
49	66B	140	106	2A-7A-12A	225	204	2A-4A-5A-30A				
50	66C	148	107	2A-7A-13A	228	205	2A-4A-5B	203			
51	7A-12A	150	108	2A-7A-66A	229	206	2A-4A-7A-12A				
52	7A-13A	153	109	2A-7A-7A	228	207	2A-4A-7A-7A	206			
53	7A-26A	154	110	2A-7C	109	208	2A-4A-7C	206			
54	7A-66A	152	111	2C-12A	73	209	2A-5A-12A-66A	281			
55	7A-7A	153	112	2C-30A	74	210	2A-5A-12B	281			
56	7B	51	113	2C-5A	85	211	2A-5A-30A-66A	291			
57	7C	51	114	2C-66A	86	212	2A-5A-66A-66A	211			
			115	30A-66A-66A	272	213	2A-5A-66B	211			
			116	41A-41A-41A	235	214	2A-5A-66C	211			
			117	41A-41C	116	215	2A-5A-7A-7A				
			118	41D	116	216	2A-5A-7C	215			
			119	4A-12A-12A	239	217	2A-5B-30A	211			
			120	4A-12A-30A	240	218	2A-5B-66A	282			
			121	4A-12B	119	219	2A-66A-66A-66A	218			
			122	4A-4A-12A	239	220	2A-66A-66A-71A	192			
			123	4A-4A-13A		221	2A-66A-66B	192			
			124	4A-4A-30A	243	222	2A-66A-66C	192			
			125	4A-4A-5A	242	223	2A-66C-71A	192			
			126	4A-4A-71A		224	2A-66D	192			
			127	4A-4A-7A	131	225	2A-7A-12A-66A	289			
			128	4A-5A-12A	242	226	2A-7A-12B	225			
			129	4A-5A-30A	243	227	2A-7A-66A-66A	225			
			130	4A-5B	242	228	2A-7A-7A-13A				
			131	4A-7A-12A		229	2A-7A-7A-66A	227			
			132	4A-7A-7A	131	230	2A-7C-13A	228			
			133	4A-7C	131	231	2A-7C-66A	227			
			134	5A-12A-66A	209	232	2C-12A-30A	166			
			135	5A-12B	134	233	2C-5A-30A	292			
			136	5A-30A-66A	211	234	2C-66A-66A	227			
			137	5A-5A-66A	211	235	41A-41A-41C	265			
			138	5A-66A-66A	211	236	41A-41D	265			
			139	5A-66B	211	237	41C-41C	265			
			140	5A-66C	211	238	41E	265			
			141	5A-7A-66A	254	239	4A-4A-12A-12A	198			
			142	5A-7A-7A	141	240	4A-4A-12A-30A	199			
			143	5A-7C	141	241	4A-4A-12B	239			
			144	5B-30A	256	242	4A-4A-5A-12A	203			
			145	5B-66A	256	243	4A-4A-5A-30A	188			
			146	66A-66A-66A	264	244	4A-4A-5B	202			
			147	66A-66A-71A	192	245	4A-5A-12B	242			
			148	66C-71A	147	246	4A-5B-30A	243			
			149	66D	146	247	5A-30A-66A-66A	211			
			150	7A-12A-66A	262	248	5A-5A-66A-66A	211			
			151	7A-12B	150	249	5A-5A-66B	211			
			152	7A-66A-66A	263	250	5A-5A-66C	211			
			153	7A-7A-13A	228	251	5A-66A-66B	211			
			154	7A-7A-26A		252	5A-66A-66C	211			
			155	7A-7A-66A	263	253	5A-66D	211			
						254	5A-7A-66A-66A	301			
						255	5A-7C-66A	301			

						256	5B-30A-66A	211			
						257	5B-66A-66A	211			
						258	5B-66B	211			
						259	5B-66C	211			
						260	66A-66B	211			
						261	66A-66C	211			
						262	7A-12B-66A	289			
						263	7A-7A-66A-66A	289			
						264	7C-66A-66A	289			

<Power verification when LTE Carrier Aggregation Active>

General Note:

i. According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.

ii. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.

iii. The device supports downlink two carrier aggregation. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.

iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.

v. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.

vi. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

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

<Two Carrier power verification>

Configure	PCC							SCC				Power	
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	LTE Band 12	10M	707.5	23095	QPSK	1	0	LTE Band 25	20M	1960	8340	22.10	22.21
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 17	10M	740	5790	17.86	17.87
	LTE Band 4	20M	1745	20300	QPSK	1	0	LTE Band 17	10M	740	5790	19.81	19.97
	LTE Band 5	10M	844	20600	QPSK	1	0	LTE Band 13	10M	751	5230	20.83	21.03
	LTE Band 5	10M	844	20600	QPSK	1	0	LTE Band 25	20M	1960	8340	20.97	21.03
	LTE Band 5	10M	844	20600	QPSK	1	0	LTE Band 38	20M	2595	38000	20.85	21.03
	LTE Band 5	10M	844	20600	QPSK	1	0	LTE Band 41	20M	2593	40620	21.01	21.03

<Three Carrier power verification>

Configure	PCC							SCC1				SCC2				Power	
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 4	20M	2132.5	2175	LTE Band 13	10M	751	5230	17.87	17.87
	LTE Band 4	20M	1745	20300	QPSK	1	0	LTE Band 4	20M	2120	2050	LTE Band 13	10M	751	5230	19.87	19.97
	LTE Band 4	20M	1745	20300	QPSK	1	0	LTE Band 4	20M	2120	2050	LTE Band 71	20M	634.5	68761	19.79	19.97
	LTE Band 4	20M	1745	20300	QPSK	1	0	LTE Band 7	20M	2655	3100	LTE Band 12	10M	737.5	5095	19.88	19.97
	LTE Band 7	20M	2510	20850	QPSK	1	0	LTE Band 7	20M	2630	2850	LTE Band 26	15M	876.5	8865	20.91	21.05

<Four Carrier power verification>

Configure	PCC							SCC1				SCC2				SCC3				Power	
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	LTE Band 25	20M	1860	26140	QPSK	1	0	LTE Band 26	15M	876.5	8865	LTE Band 41	20M	2593	40620	LTE Band 41	20M	2612.8	40818	17.85	18.01
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 2	20	1940	700	LTE Band 4	20M	2132.5	2175	LTE Band 12	10M	737.5	5095	17.70	17.87
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 2	20	1940	700	LTE Band 4	20M	2132.5	2175	LTE Band 71	20M	634.5	68761	17.75	17.87
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 2	20	1940	700	LTE Band 5	10M	881.5	2525	LTE Band 12	10M	737.5	5095	17.87	17.87
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 2	20	1940	700	LTE Band 66	20M	2155	66886	LTE Band 71	20M	634.5	68761	17.82	17.87
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 4	20M	2132.5	2175	LTE Band 12	10M	737.5	5095	LTE Band 30	10M	2355	9820	17.75	17.87
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 4	20M	2132.5	2175	LTE Band 5	10M	881.5	2525	LTE Band 12	10M	737.5	5095	17.86	17.87
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 4	20M	2132.5	2175	LTE Band 5	10M	881.5	2525	LTE Band 30	10M	2355	9820	17.78	17.87
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 4	20M	2132.5	2175	LTE Band 7	20M	2655	3100	LTE Band 12	10M	737.5	5095	17.80	17.87
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 5	10M	881.5	2525	LTE Band 7	20M	2655	3100	LTE Band 7	20M	2680	3350	17.71	17.87
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 7	20M	2655	3100	LTE Band 7	20M	2680	3350	LTE Band 13	10M	751	5230	17.83	17.87

<Five Carrier power verification>

Configure	PCC							SCC1				SCC2				SCC3				SCC4				Power	
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	LTE Band 25	20M	1860	26140	QPSK	1	0	LTE Band 41	20M	2593	40620	LTE Band 41	20M	2612.8	40818	LTE Band 41	20M	2632.6	41016	LTE Band 41	20M	2652.4	41214	17.82	18.01
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 12	10M	737.5	5095	LTE Band 30	10M	2355	9820	LTE Band 66	20M	2155	66886	LTE Band 66	20M	2190	67236	17.75	17.87
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 13	10M	751	5230	LTE Band 66	20M	2155	66886	LTE Band 66	20M	2190	67236	LTE Band 66	20M	2199.3	67329	17.79	17.87
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 14	10M	763	5330	LTE Band 30	10M	2355	9820	LTE Band 66	20M	2155	66886	LTE Band 66	20M	2190	67236	17.79	17.87
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 2	20	1940	700	LTE Band 5	10M	881.5	2525	LTE Band 12	10M	737.5	5095	LTE Band 66	20M	2155	66886	17.85	17.87
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 2	20	1940	700	LTE Band 5	10M	881.5	2525	LTE Band 30	10M	2355	9820	LTE Band 66	20M	2155	66886	17.86	17.87
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 2	20	1940	700	LTE Band 7	20M	2655	3100	LTE Band 12	10M	737.5	5095	LTE Band 66	20M	2155	66886	17.81	17.87
	LTE Band 2	20M	1900	19100	QPSK	1	0	LTE Band 4	20M	2132.5	2175	LTE Band 5	10M	881.5	2525	LTE Band 5	10M	891.4	2624	LTE Band 30	10M	2355	9820	17.82	17.87
	LTE Band 5	10M	844	20600	QPSK	1	0	LTE Band 7	20M	2655	3100	LTE Band 7	20M	2674.8	3298	LTE Band 66	20M	2155	66886	LTE Band 66	20M	2190	67236	20.86	21.03

<LTE Uplink carrier aggregation>

2CC Uplink Carrier Aggregation	
Number	Combination
1	7C
2	41C

<Intra-band>

General Note:

i. The device supports intra-band uplink carrier aggregation for LTE B66/B41/B48 with a maximum of two 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre 3GPP requirement.

ii. The device supports uplink carrier aggregation with a maximum of two 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre the 3GPP requirement.

iii. According TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.

iv. According TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.

v. Additional SAR measurement for LTE UL CA whit other DL CA combinations active were not required since the maximum output power for this configuration was not > 0.25dB higher than the maximum output power for UL CA active.

CA_7C										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
20850	21048	QPSK	1	0	0	0	1	0	22.23	22.8
21100	20902	QPSK	1	0	1	99	2	0	22.29	22.8
21350	21152	QPSK	1	0	1	99	2	0	22.19	22.8

CA_41C										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
39750	39948	QPSK	1	0	0	0	1	0	23.71	24.2
40185	39987	QPSK	1	0	1	99	2	0	23.73	24.2
40620	40422	QPSK	1	0	1	99	2	0	23.66	24.2
41055	40857	QPSK	1	0	1	99	2	0	23.59	24.2
41490	41292	QPSK	1	0	1	99	2	0	23.74	24.2

13. 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. 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[1]	≤ 1.2[1]	≤ 0.2[1]
		≤ 0.5[2]	≤ 0.5[2]	0[2]
	QPSK	≤ 1		0
	16 QAM	≤ 2		≤ 1
	64 QAM	≤ 2.5		
	256 QAM	≤ 4.5		
CP-OFDM	QPSK	≤ 3		≤ 1.5
	16 QAM	≤ 3		≤ 2
	64 QAM	≤ 3.5		
	256 QAM	≤ 6.5		

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

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

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

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

<FR1 n2>

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	19.42	19.18	19.14	20.0
20	PI/2 BPSK	1	53	19.30	19.21	19.11	
20	PI/2 BPSK	1	104	19.39	19.27	19.22	
20	PI/2 BPSK	50	0	18.77	18.81	18.71	19.5
20	PI/2 BPSK	50	28	19.29	19.04	19.10	20.0
20	PI/2 BPSK	50	56	18.90	18.71	18.86	19.5
20	PI/2 BPSK	100	0	18.91	18.68	18.68	
20	QPSK	1	1	19.24	19.11	19.10	20.0
20	QPSK	1	53	19.21	19.21	19.26	
20	QPSK	1	104	19.32	19.22	19.26	
20	QPSK	50	0	18.36	18.30	18.31	19.0
20	QPSK	50	28	19.28	19.36	19.28	20.0
20	QPSK	50	56	18.35	18.23	18.33	19.0
20	QPSK	100	0	18.46	18.24	18.23	
20	16QAM	1	1	18.56	18.41	18.31	19.0
20	64QAM	1	1	16.96	16.80	16.89	17.5
20	256QAM	1	1	14.84	14.75	14.83	15.5
Channel				371500	376000	380500	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	PI/2 BPSK	1	1	19.32	19.10	19.00	20.0
Channel				371000	376000	381000	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	PI/2 BPSK	1	1	19.32	19.18	19.23	20.0
Channel				370500	376000	381500	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	PI/2 BPSK	1	1	19.40	19.19	19.19	20.0

<FR1 n5>

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	
Frequency (MHz)				834	836.5	839	
20	PI/2 BPSK	1	1	21.08	21.04	21.06	22.1
20	PI/2 BPSK	1	53	20.87	21.08	20.86	
20	PI/2 BPSK	1	104	20.82	20.82	20.78	
20	PI/2 BPSK	50	0	20.42	20.49	20.32	21.0
20	PI/2 BPSK	50	28	20.95	20.93	20.82	22.1
20	PI/2 BPSK	50	56	20.32	20.37	20.23	21.0
20	PI/2 BPSK	100	0	20.33	20.32	20.26	
20	QPSK	1	1	20.87	20.99	20.87	22.1
20	QPSK	1	53	20.74	20.91	20.74	
20	QPSK	1	104	20.66	20.75	20.64	
20	QPSK	50	0	19.96	19.97	19.85	20.5
20	QPSK	50	28	20.77	20.90	20.93	22.1
20	QPSK	50	56	19.80	19.82	19.63	20.5
20	QPSK	100	0	19.79	19.93	19.92	
20	16QAM	1	1	19.87	20.01	19.82	20.5
20	64QAM	1	1	18.45	18.54	18.54	19.0
20	256QAM	1	1	16.76	16.91	16.76	17.0
Channel				166300	167300	168300	Tune-up limit (dBm)
Frequency (MHz)				831.5	836.5	841.5	
15	PI/2 BPSK	1	1	21.07	20.92	20.84	22.1
Channel				165800	167300	168800	Tune-up limit (dBm)
Frequency (MHz)				829	836.5	844	
10	PI/2 BPSK	1	1	20.95	20.98	20.93	22.1
Channel				165300	167300	169300	Tune-up limit (dBm)
Frequency (MHz)				826.5	836.5	846.5	
5	PI/2 BPSK	1	1	20.97	20.97	20.94	22.1

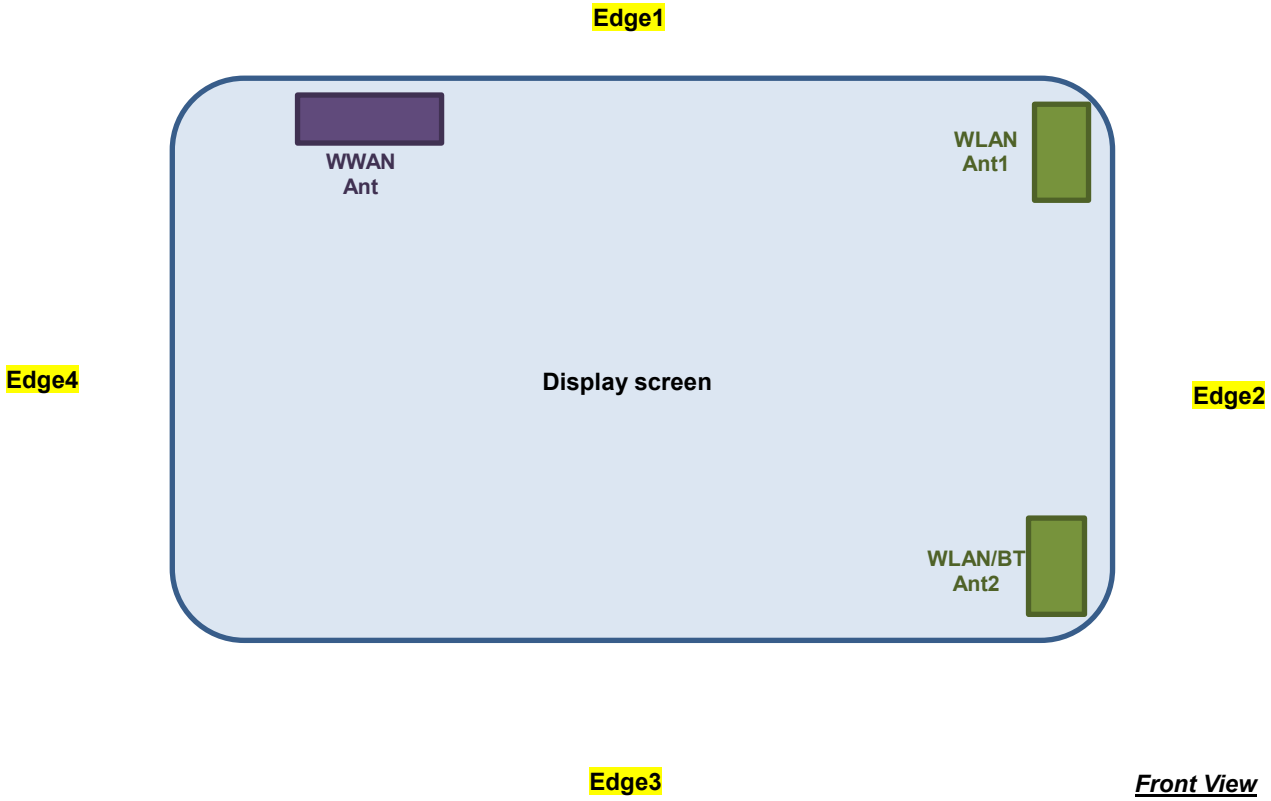
<FR1 n66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit Tune-up limit (dBm)
Channel				344000	349000	354000	
Frequency (MHz)				1720	1745	1770	
20	PI/2 BPSK	1	1	20.89	20.86	21.37	21.5
20	PI/2 BPSK	1	53	21.02	21.03	21.12	
20	PI/2 BPSK	1	104	21.05	20.98	21.20	
20	PI/2 BPSK	50	0	20.40	20.44	20.47	21.0
20	PI/2 BPSK	50	28	20.98	21.07	21.08	21.5
20	PI/2 BPSK	50	56	20.67	20.57	20.70	21.0
20	PI/2 BPSK	100	0	20.57	20.52	20.67	
20	QPSK	1	1	20.98	20.85	21.01	21.5
20	QPSK	1	53	20.97	20.88	20.97	
20	QPSK	1	104	20.95	20.89	21.07	
20	QPSK	50	0	19.84	19.99	20.04	20.5
20	QPSK	50	28	21.06	20.98	21.04	21.5
20	QPSK	50	56	20.08	20.13	20.19	20.5
20	QPSK	100	0	19.99	20.10	20.15	
20	16QAM	1	1	19.95	19.83	20.06	20.5
20	64QAM	1	1	18.58	18.48	18.65	19.0
20	256QAM	1	1	16.55	16.49	16.60	17.0
Channel				343500	349000	354500	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	PI/2 BPSK	1	1	20.86	20.78	21.25	21.5
Channel				343000	349000	355000	Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775	
10	PI/2 BPSK	1	1	20.90	20.83	21.31	21.5
Channel				342500	349000	355500	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	PI/2 BPSK	1	1	20.99	20.90	21.26	21.5

<FR1 n71>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				134600	136100	137600	
Frequency (MHz)				673	680.5	688	
20	PI/2 BPSK	1	1	22.66	22.47	22.42	23.5
20	PI/2 BPSK	1	53	22.42	22.33	22.11	
20	PI/2 BPSK	1	104	22.33	22.13	21.98	
20	PI/2 BPSK	50	0	22.00	21.90	21.78	23.0
20	PI/2 BPSK	50	28	22.26	22.25	22.16	23.5
20	PI/2 BPSK	50	56	21.73	21.63	21.48	23.0
20	PI/2 BPSK	100	0	21.80	21.76	21.68	
20	QPSK	1	1	22.45	22.29	22.19	23.5
20	QPSK	1	53	22.18	22.10	21.99	
20	QPSK	1	104	21.96	21.91	21.85	
20	QPSK	50	0	21.56	21.36	21.32	22.5
20	QPSK	50	28	22.37	22.23	22.22	23.5
20	QPSK	50	56	21.19	21.13	20.99	22.5
20	QPSK	100	0	21.35	21.25	21.02	
20	16QAM	1	1	21.52	21.42	21.30	22.5
20	64QAM	1	1	19.99	19.85	19.73	21.0
20	256QAM	1	1	18.23	17.99	17.99	19.0
Channel				134100	136100	138100	Tune-up limit (dBm)
Frequency (MHz)				670.5	680.5	690.5	
15	PI/2 BPSK	1	1	22.56	22.35	22.31	23.5
Channel				133600	136100	138600	Tune-up limit (dBm)
Frequency (MHz)				668	680.5	693	
10	PI/2 BPSK	1	1	22.66	22.40	22.26	23.5
Channel				133100	136100	139100	Tune-up limit (dBm)
Frequency (MHz)				665.5	680.5	695.5	
5	PI/2 BPSK	1	1	22.61	22.39	22.39	23.5

14. Antenna Location



Front View

The separation distance for antenna to edge :

Antenna	To Edge1 (mm)	To Edge2 (mm)	To Edge3 (mm)	To Edge4 (mm)
WWAN Antenna	5	178	147	25
WLAN Antenna 1+2	5	5	5	259
BT Antenna 2	142	5	5	259

<SAR test exclusion table>

General Note:

1. The below table, when the distance is < 50 mm exclusion threshold is "Ratio", when the distance is > 50 mm exclusion threshold is "mW"
2. Maximum power is the source-based time-average power and represents the maximum RF output power among production units
3. Per KDB 447498 D01v06, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
4. Per KDB 447498 D01v06, standalone SAR test exclusion threshold is applied; If the test separation distance is < 5mm, 5mm is used to determine SAR exclusion threshold.
5. Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison
6. Per KDB 447498 D01v06, at 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following
   a) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
   b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

	Wireless Interface	WCDMA Band V	WCDMA Band IV	WCDMA Band II	LTE Band 71	LTE Band 12	LTE Band 13	LTE Band 14	LTE Band 17	LTE Band 5	LTE Band 26	LTE Band 4	LTE Band 66	LTE Band 2	LTE Band 25	LTE Band 7	LTE Band 38	LTE Band 41	FR1 NR Band 2	FR1 NR Band 5	FR1 NR Band 66	FR1 NR Band 71
Exposure Position	Calculated Frequency (MHz)	846	1750	1907	695	715	784	795	713	848	848	1754	1779	1909	1914	2567	2617	2687	1910	849	1780	698
	Maximum power (dBm)	21.5	20.5	18.5	22.5	22.5	21.5	21.5	22.5	21.5	21.5	20.5	20.5	18.5	18.5	21.5	22.5	22.5	19.5	21.5	20.5	22.5
	Maximum rated power(mW)	141.25	112.20	70.79	177.83	177.83	141.25	141.25	177.83	141.25	141.25	112.20	112.20	70.79	70.79	141.25	177.83	177.83	89.13	141.25	112.20	177.83
Bottom Face	Separation distance(mm)	5.0																				
	exclusion threshold	26.0	29.7	19.6	29.7	30.1	25.0	25.2	23.9	26.0	26.0	29.7	29.9	19.6	19.6	45.3	57.5	58.3	24.6	26.0	29.9	29.7
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Edge 1	Separation distance(mm)	5.0																				
	exclusion threshold	26.0	29.7	19.6	29.7	30.1	25.0	25.2	23.9	26.0	26.0	29.7	29.9	19.6	19.6	45.3	57.5	58.3	24.6	26.0	29.9	29.7
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Edge 2	Separation distance(mm)	178.0																				
	exclusion threshold	885.0	1393.0	1389.0	773.0	788.0	838.0	847.0	786.0	887.0	887.0	1393.0	1392.0	1389.0	1388.0	1374.0	1373.0	1372.0	1389.0	1443.0	1392.0	1460.0
	Testing required?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Edge 3	Separation distance(mm)	147.0																				
	exclusion threshold	710.0	1083.0	1079.0	629.0	640.0	676.0	682.0	639.0	711.0	711.0	1083.0	1082.0	1079.0	1078.0	1064.0	1063.0	1062.0	1079.0	1133.0	1082.0	1150.0
	Testing required?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Edge 4	Separation distance(mm)	25.0																				
	exclusion threshold	5.2	5.9	3.9	5.9	6.0	5.0	5.0	4.8	5.2	5.2	5.9	6.0	3.9	3.9	9.1	11.5	11.7	4.9	5.2	6.0	5.9
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

15. SAR Test Results

General Note:

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

UMTS Note:

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

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4/B5/B12/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 ≤ the larger band to qualify for the SAR test exclusion.
   b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

5G NR Note:

1. Referencing the procedure in KDB 941225, the test procedures are outlined as below:
   a. To start SAR test for the largest channel bandwidth for PI/2 BPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel. Also do SAR test for 50% RB allocation for PI/2 BPSK SAR testing using 1RB PI/2 BPSK allocation procedure
   b. For PI/2 BPSK with 100% RB allocation, SAR test is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
   c. For higher modulation QPSK/16QAM/64QAM/256QAM, according to tune-up document the power level is not ½ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
   d. Smaller bandwidth output power for each RB allocation configuration for this device is not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
   e. For 5G FR1 n5/n71, 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.

15.1 Body SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Bottom Face	0mm	9400	1880	19.51	19.60	1.021	-0.01	0.871	0.889
	WCDMA II	RMC 12.2Kbps	Bottom Face	0mm	9262	1852.4	19.48	19.60	1.028	0.03	0.862	0.886
	WCDMA II	RMC 12.2Kbps	Bottom Face	0mm	9538	1907.6	19.42	19.60	1.042	-0.07	0.866	0.903
	WCDMA II	RMC 12.2Kbps	Edge 1	0mm	9400	1880	19.51	19.60	1.021	0	0.951	0.971
	WCDMA II	RMC 12.2Kbps	Edge 1	0mm	9262	1852.4	19.48	19.60	1.028	0.02	0.645	0.663
01	WCDMA II	RMC 12.2Kbps	Edge 1	0mm	9538	1907.6	19.42	19.60	1.042	-0.05	1.080	1.126
	WCDMA II	RMC 12.2Kbps	Edge 4	0mm	9400	1880	19.51	19.60	1.021	0	0.117	0.119
	WCDMA IV	RMC 12.2Kbps	Bottom Face	0mm	1312	1712.4	20.93	21.00	1.016	-0.09	0.543	0.552
02	WCDMA IV	RMC 12.2Kbps	Edge 1	0mm	1312	1712.4	20.93	21.00	1.016	-0.02	0.857	0.871
	WCDMA IV	RMC 12.2Kbps	Edge 1	0mm	1413	1732.6	20.71	21.00	1.069	0.05	0.794	0.849
	WCDMA IV	RMC 12.2Kbps	Edge 1	0mm	1513	1752.6	20.85	21.00	1.035	0.02	0.747	0.773
	WCDMA IV	RMC 12.2Kbps	Edge 4	0mm	1312	1712.4	20.93	21.00	1.016	0.06	0.201	0.204
	WCDMA V	RMC 12.2Kbps	Bottom Face	0mm	4182	836.4	22.14	22.20	1.014	-0.02	0.995	1.009
03	WCDMA V	RMC 12.2Kbps	Bottom Face	0mm	4132	826.4	22.05	22.20	1.035	-0.01	1.060	1.097
	WCDMA V	RMC 12.2Kbps	Bottom Face	0mm	4233	846.6	22.08	22.20	1.028	0	0.906	0.931
	WCDMA V	RMC 12.2Kbps	Edge 1	0mm	4182	836.4	22.14	22.20	1.014	0.05	0.877	0.889
	WCDMA V	RMC 12.2Kbps	Edge 1	0mm	4132	826.4	22.05	22.20	1.035	-0.07	0.876	0.907
	WCDMA V	RMC 12.2Kbps	Edge 1	0mm	4233	846.6	22.08	22.20	1.028	-0.06	0.869	0.893
	WCDMA V	RMC 12.2Kbps	Edge 4	0mm	4182	836.4	22.14	22.20	1.014	-0.03	0.114	0.116

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7	20M	QPSK	1	0	Bottom Face	0mm	20850	2510	22.35	22.80	1.109	-0.03	0.472	0.524
	LTE Band 7	20M	QPSK	50	0	Bottom Face	0mm	20850	2510	22.33	22.80	1.114	0.02	0.463	0.516
	LTE Band 7	20M	QPSK	1	0	Edge 1	0mm	20850	2510	22.35	22.80	1.109	0.1	0.768	0.852
	LTE Band 7	20M	QPSK	1	0	Edge 1	0mm	21100	2535	22.28	22.80	1.127	0	0.810	0.913
04	LTE Band 7	20M	QPSK	1	0	Edge 1	0mm	21350	2560	22.26	22.80	1.132	0	0.877	0.993
	LTE Band 7	20M	QPSK	50	0	Edge 1	0mm	20850	2510	22.33	22.80	1.114	0.06	0.673	0.750
	LTE Band 7	20M	QPSK	100	0	Edge 1	0mm	20850	2510	22.33	22.80	1.114	-0.05	0.658	0.733
	LTE Band 7	20M	QPSK	1	0	Edge 4	0mm	20850	2510	22.35	22.80	1.109	0.01	0.179	0.199
	LTE Band 7	20M	QPSK	50	0	Edge 4	0mm	20850	2510	22.33	22.80	1.114	-0.03	0.155	0.173
	LTE Band 7C	20M	QPSK	1	0	Edge 1	0mm	21100	2510	22.29	22.80	1.125	-0.01	0.673	0.757
05	LTE Band 12	10M	QPSK	1	0	Bottom Face	0mm	23095	707.5	21.71	22.00	1.069	0	1.110	1.187
	LTE Band 12	10M	QPSK	25	0	Bottom Face	0mm	23095	707.5	21.47	22.00	1.130	0.02	0.985	1.113
	LTE Band 12	10M	QPSK	50	0	Bottom Face	0mm	23095	707.5	21.43	22.00	1.140	0.06	0.953	1.087
	LTE Band 12	10M	QPSK	1	0	Edge 1	0mm	23095	707.5	21.71	22.00	1.069	-0.09	0.593	0.634
	LTE Band 12	10M	QPSK	25	0	Edge 1	0mm	23095	707.5	21.47	22.00	1.130	0.06	0.577	0.652
	LTE Band 12	10M	QPSK	1	0	Edge 4	0mm	23095	707.5	21.71	22.00	1.069	0.1	0.067	0.072
	LTE Band 12	10M	QPSK	25	0	Edge 4	0mm	23095	707.5	21.47	22.00	1.130	-0.03	0.038	0.043
06	LTE Band 13	10M	QPSK	1	0	Bottom Face	0mm	23230	782	21.26	21.70	1.107	-0.03	0.950	1.051
	LTE Band 13	10M	QPSK	25	0	Bottom Face	0mm	23230	782	21.21	21.70	1.119	0.02	0.911	1.020
	LTE Band 13	10M	QPSK	50	0	Bottom Face	0mm	23230	782	21.18	21.70	1.127	0.06	0.876	0.987
	LTE Band 13	10M	QPSK	1	0	Edge 1	0mm	23230	782	21.26	21.70	1.107	-0.08	0.597	0.661
	LTE Band 13	10M	QPSK	25	0	Edge 1	0mm	23230	782	21.21	21.70	1.119	-0.06	0.576	0.645
	LTE Band 13	10M	QPSK	1	0	Edge 4	0mm	23230	782	21.26	21.70	1.107	0.1	0.101	0.112
	LTE Band 13	10M	QPSK	25	0	Edge 4	0mm	23230	782	21.21	21.70	1.119	-0.08	0.083	0.093
07	LTE Band 14	10M	QPSK	1	0	Bottom Face	0mm	23330	793	21.29	21.70	1.099	-0.01	0.936	1.029
	LTE Band 14	10M	QPSK	25	25	Bottom Face	0mm	23330	793	21.27	21.70	1.104	0.02	0.876	0.967
	LTE Band 14	10M	QPSK	50	0	Bottom Face	0mm	23330	793	21.20	21.70	1.122	0	0.861	0.966
	LTE Band 14	10M	QPSK	1	0	Edge 1	0mm	23330	793	21.29	21.70	1.099	0.03	0.689	0.757
	LTE Band 14	10M	QPSK	25	25	Edge 1	0mm	23330	793	21.27	21.70	1.104	-0.03	0.652	0.720
	LTE Band 14	10M	QPSK	1	0	Edge 4	0mm	23330	793	21.29	21.70	1.099	0.1	0.119	0.131
	LTE Band 14	10M	QPSK	25	25	Edge 4	0mm	23330	793	21.27	21.70	1.104	-0.08	0.093	0.103
	LTE Band 25	20M	QPSK	1	0	Bottom Face	0mm	26140	1860	18.61	19.10	1.119	0.08	0.815	0.912
	LTE Band 25	20M	QPSK	1	0	Bottom Face	0mm	26340	1880	18.54	19.10	1.138	-0.04	0.888	1.010
08	LTE Band 25	20M	QPSK	1	0	Bottom Face	0mm	26590	1905	18.49	19.10	1.151	-0.02	1.020	1.174
	LTE Band 25	20M	QPSK	50	0	Bottom Face	0mm	26140	1860	18.53	19.10	1.140	-0.06	0.663	0.756
	LTE Band 25	20M	QPSK	50	0	Bottom Face	0mm	26340	1880	18.52	19.10	1.143	0.05	0.873	0.998
	LTE Band 25	20M	QPSK	50	0	Bottom Face	0mm	26590	1905	18.52	19.10	1.143	-0.01	0.982	1.122
	LTE Band 25	20M	QPSK	100	0	Bottom Face	0mm	26140	1860	18.46	19.10	1.159	0.05	0.853	0.988
	LTE Band 25	20M	QPSK	1	0	Edge 1	0mm	26140	1860	18.61	19.10	1.119	0.02	0.811	0.908
	LTE Band 25	20M	QPSK	1	0	Edge 1	0mm	26340	1880	18.54	19.10	1.138	-0.03	0.826	0.940
	LTE Band 25	20M	QPSK	1	0	Edge 1	0mm	26590	1905	18.49	19.10	1.151	-0.03	0.823	0.947
	LTE Band 25	20M	QPSK	50	0	Edge 1	0mm	26140	1860	18.53	19.10	1.140	-0.05	0.782	0.892
	LTE Band 25	20M	QPSK	50	0	Edge 1	0mm	26340	1880	18.52	19.10	1.143	0.02	0.793	0.906
	LTE Band 25	20M	QPSK	50	0	Edge 1	0mm	26590	1905	18.52	19.10	1.143	-0.03	0.783	0.895
	LTE Band 25	20M	QPSK	100	0	Edge 1	0mm	26140	1860	18.46	19.10	1.159	0.02	0.732	0.848
	LTE Band 25	20M	QPSK	1	0	Edge 4	0mm	26140	1860	18.61	19.10	1.119	0.07	0.127	0.142
	LTE Band 25	20M	QPSK	50	0	Edge 4	0mm	26140	1860	18.53	19.10	1.140	-0.06	0.102	0.116

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
09	LTE Band 26	15M	QPSK	1	0	Bottom Face	0mm	26865	831.5	21.16	21.60	1.107	0.04	0.984	1.089
	LTE Band 26	15M	QPSK	36	39	Bottom Face	0mm	26865	831.5	21.12	21.60	1.117	0.02	0.952	1.063
	LTE Band 26	15M	QPSK	75	0	Bottom Face	0mm	26865	831.5	21.12	21.60	1.117	-0.03	0.937	1.047
	LTE Band 26	15M	QPSK	1	0	Edge 1	0mm	26865	831.5	21.16	21.60	1.107	0.03	0.748	0.828
	LTE Band 26	15M	QPSK	36	39	Edge 1	0mm	26865	831.5	21.12	21.60	1.117	-0.03	0.736	0.822
	LTE Band 26	15M	QPSK	75	0	Edge 1	0mm	26865	831.5	21.12	21.60	1.117	-0.01	0.722	0.806
	LTE Band 26	15M	QPSK	1	0	Edge 4	0mm	26865	831.5	21.16	21.60	1.107	0.03	0.112	0.124
	LTE Band 26	15M	QPSK	36	39	Edge 4	0mm	26865	831.5	21.12	21.60	1.117	-0.01	0.101	0.113
	LTE Band 66	20M	QPSK	1	0	Bottom Face	0mm	132072	1720	21.09	21.50	1.099	-0.02	0.416	0.457
	LTE Band 66	20M	QPSK	50	0	Bottom Face	0mm	132072	1720	21.06	21.50	1.107	-0.08	0.395	0.437
	LTE Band 66	20M	QPSK	1	0	Edge 1	0mm	132072	1720	21.09	21.50	1.099	-0.05	0.702	0.772
	LTE Band 66	20M	QPSK	1	0	Edge 1	0mm	132322	1745	21.06	21.50	1.107	0.04	0.693	0.767
10	LTE Band 66	20M	QPSK	1	0	Edge 1	0mm	132572	1770	21.03	21.50	1.114	-0.03	0.794	0.885
	LTE Band 66	20M	QPSK	50	0	Edge 1	0mm	132072	1720	21.06	21.50	1.107	0.02	0.654	0.724
	LTE Band 66	20M	QPSK	50	0	Edge 1	0mm	132322	1745	21.03	21.50	1.114	-0.08	0.663	0.739
	LTE Band 66	20M	QPSK	50	0	Edge 1	0mm	132572	1770	20.96	21.50	1.132	-0.01	0.781	0.884
	LTE Band 66	20M	QPSK	100	0	Edge 1	0mm	132072	1720	21.01	21.50	1.119	-0.08	0.668	0.748
	LTE Band 66	20M	QPSK	1	0	Edge 4	0mm	132072	1720	21.09	21.50	1.099	0.08	0.187	0.206
	LTE Band 66	20M	QPSK	50	0	Edge 4	0mm	132072	1720	21.06	21.50	1.107	0.03	0.156	0.173
11	LTE Band 71	20M	QPSK	1	0	Bottom Face	0mm	133297	680.5	22.58	23.00	1.102	0	0.976	1.075
	LTE Band 71	20M	QPSK	50	24	Bottom Face	0mm	133297	680.5	22.54	23.00	1.112	-0.05	0.953	1.059
	LTE Band 71	20M	QPSK	100	0	Bottom Face	0mm	133297	680.5	22.52	23.00	1.117	-0.13	0.889	0.993
	LTE Band 71	20M	QPSK	1	0	Edge 1	0mm	133297	680.5	22.58	23.00	1.102	-0.06	0.495	0.545
	LTE Band 71	20M	QPSK	50	24	Edge 1	0mm	133297	680.5	22.54	23.00	1.112	0.03	0.483	0.537
	LTE Band 71	20M	QPSK	1	0	Edge 4	0mm	133297	680.5	22.58	23.00	1.102	-0.1	0.059	0.065
	LTE Band 71	20M	QPSK	50	24	Edge 4	0mm	133297	680.5	22.54	23.00	1.112	0.06	0.051	0.057

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1	0	Bottom Face	0mm	41490	2680	23.86	24.20	1.081	62.9	1.006	0.07	0.285	0.310
	LTE Band 41	20M	QPSK	50	0	Bottom Face	0mm	41490	2680	23.83	24.20	1.089	62.9	1.006	0.03	0.253	0.277
	LTE Band 41	20M	QPSK	1	0	Edge 1	0mm	41490	2680	23.86	24.20	1.081	62.9	1.006	0.06	0.444	0.483
	LTE Band 41	20M	QPSK	1	0	Edge 1	0mm	41055	2636.5	23.81	24.20	1.094	62.9	1.006	-0.03	0.610	0.671
12	LTE Band 41	20M	QPSK	1	0	Edge 1	0mm	40620	2593	23.76	24.20	1.107	62.9	1.006	-0.04	0.707	0.787
	LTE Band 41	20M	QPSK	1	0	Edge 1	0mm	40185	2549.5	23.72	24.20	1.117	62.9	1.006	-0.09	0.619	0.695
	LTE Band 41	20M	QPSK	1	0	Edge 1	0mm	39750	2506	23.76	24.20	1.107	62.9	1.006	-0.05	0.540	0.601
	LTE Band 41	20M	QPSK	50	0	Edge 1	0mm	41490	2680	23.83	24.20	1.089	62.9	1.006	0.03	0.412	0.451
	LTE Band 41	20M	QPSK	50	0	Edge 1	0mm	41055	2636.5	23.79	24.20	1.099	62.9	1.006	0.02	0.578	0.639
	LTE Band 41	20M	QPSK	50	0	Edge 1	0mm	40620	2593	23.76	24.20	1.107	62.9	1.006	0.06	0.688	0.766
	LTE Band 41	20M	QPSK	50	0	Edge 1	0mm	40185	2549.5	23.72	24.20	1.117	62.9	1.006	-0.05	0.602	0.676
	LTE Band 41	20M	QPSK	50	0	Edge 1	0mm	39750	2506	23.66	24.20	1.132	62.9	1.006	-0.09	0.527	0.600
	LTE Band 41	20M	QPSK	1	0	Edge 4	0mm	41490	2680	23.86	24.20	1.081	62.9	1.006	-0.06	0.398	0.433
	LTE Band 41	20M	QPSK	50	0	Edge 4	0mm	41490	2680	23.83	24.20	1.089	62.9	1.006	0.02	0.346	0.379
	LTE Band 41_HPUE	20M	QPSK	1	0	Edge 1	0mm	41490	2680	25.48	25.80	1.076	42.9	1.009	0.07	0.451	0.490
	LTE Band 41	20M	QPSK	1	0	Edge 1	0mm	41490	2680	23.74	24.20	1.112	62.9	1.006	0.06	0.593	0.663

<5G NR SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n2	20M	BPSK	1	1	Bottom Face	0mm	372000	1860	19.42	20.00	1.143	0.08	0.674	0.770
	FR1 n2	20M	BPSK	1	1	Bottom Face	0mm	376000	1880	19.18	20.00	1.208	0.09	0.791	0.955
13	FR1 n2	20M	BPSK	1	1	Bottom Face	0mm	380000	1900	19.14	20.00	1.219	0	0.889	1.084
	FR1 n2	20M	BPSK	50	28	Bottom Face	0mm	372000	1860	19.29	20.00	1.178	0.03	0.638	0.751
	FR1 n2	20M	BPSK	50	28	Bottom Face	0mm	376000	1880	19.04	20.00	1.247	-0.05	0.743	0.927
	FR1 n2	20M	BPSK	50	28	Bottom Face	0mm	380000	1900	19.10	20.00	1.230	-0.09	0.857	1.054
	FR1 n2	20M	BPSK	100	0	Bottom Face	0mm	372000	1860	18.91	19.50	1.146	-0.03	0.763	0.874
	FR1 n2	20M	BPSK	1	1	Edge 1	0mm	372000	1860	19.42	20.00	1.143	0.04	0.558	0.638
	FR1 n2	20M	BPSK	50	28	Edge 1	0mm	372000	1860	19.29	20.00	1.178	-0.03	0.521	0.614
	FR1 n2	20M	BPSK	1	1	Edge 4	0mm	372000	1860	19.42	20.00	1.143	-0.01	0.127	0.145
	FR1 n2	20M	BPSK	50	28	Edge 4	0mm	372000	1860	19.29	20.00	1.178	-0.03	0.102	0.120
14	FR1 n5	20M	BPSK	1	1	Bottom Face	0mm	167300	836.5	21.04	22.10	1.276	-0.01	0.839	1.071
	FR1 n5	20M	BPSK	50	28	Bottom Face	0mm	167300	836.5	20.93	22.10	1.309	0.02	0.782	1.024
	FR1 n5	20M	BPSK	100	0	Bottom Face	0mm	167300	836.5	20.32	21.00	1.169	-0.05	0.758	0.886
	FR1 n5	20M	BPSK	1	1	Edge 1	0mm	167300	836.5	21.04	22.10	1.276	-0.03	0.624	0.796
	FR1 n5	20M	BPSK	50	28	Edge 1	0mm	167300	836.5	20.93	22.10	1.309	0.05	0.587	0.768
	FR1 n5	20M	BPSK	1	1	Edge 4	0mm	167300	836.5	21.04	22.10	1.276	0.1	0.105	0.134
	FR1 n5	20M	BPSK	50	28	Edge 4	0mm	167300	836.5	20.93	22.10	1.309	0.06	0.085	0.111
	FR1 n66	20M	BPSK	1	1	Bottom Face	0mm	354000	1770	21.37	21.50	1.030	0.07	0.425	0.438
	FR1 n66	20M	BPSK	50	28	Bottom Face	0mm	354000	1770	21.08	21.50	1.102	0.06	0.385	0.424
	FR1 n66	20M	BPSK	1	1	Edge 1	0mm	354000	1770	21.37	21.50	1.030	-0.09	0.782	0.806
15	FR1 n66	20M	BPSK	1	1	Edge 1	0mm	344000	1720	20.89	21.50	1.151	-0.03	0.724	0.833
	FR1 n66	20M	BPSK	1	1	Edge 1	0mm	349000	1745	20.86	21.50	1.159	-0.02	0.712	0.825
	FR1 n66	20M	BPSK	50	28	Edge 1	0mm	354000	1770	21.08	21.50	1.102	0.03	0.702	0.773
	FR1 n66	20M	BPSK	100	0	Edge 1	0mm	354000	1770	20.67	21.00	1.079	0.02	0.683	0.737
	FR1 n66	20M	BPSK	1	1	Edge 4	0mm	354000	1770	21.37	21.50	1.030	0.04	0.202	0.208
	FR1 n66	20M	BPSK	50	28	Edge 4	0mm	354000	1770	21.08	21.50	1.102	-0.03	0.177	0.195
16	FR1 n71	20M	BPSK	1	1	Bottom Face	0mm	136100	680.5	22.47	23.50	1.268	0	0.835	1.058
	FR1 n71	20M	BPSK	50	28	Bottom Face	0mm	136100	680.5	22.25	23.50	1.334	0.03	0.783	1.044
	FR1 n71	20M	BPSK	100	0	Bottom Face	0mm	136100	680.5	21.76	23.00	1.330	0.06	0.755	1.004
	FR1 n71	20M	BPSK	1	1	Edge 1	0mm	136100	680.5	22.47	23.50	1.268	0.06	0.371	0.470
	FR1 n71	20M	BPSK	50	28	Edge 1	0mm	136100	680.5	22.25	23.50	1.334	-0.02	0.356	0.475
	FR1 n71	20M	BPSK	1	1	Edge 4	0mm	136100	680.5	22.47	23.50	1.268	-0.04	0.057	0.072
	FR1 n71	20M	BPSK	50	28	Edge 4	0mm	136100	680.5	22.25	23.50	1.334	-0.08	0.032	0.043

15.2 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA II	RMC 12.2Kbps	Edge 1	0mm	9538	1907.6	19.42	19.60	1.042	-0.05	1.080	-	1.126
2nd	WCDMA II	RMC 12.2Kbps	Edge 1	0mm	9538	1907.6	19.42	19.60	1.042	0.01	1.060	1.01	1.105
1st	WCDMA IV	RMC 12.2Kbps	Edge 1	0mm	1312	1712.4	20.93	21.00	1.016	-0.02	0.857	-	0.871
2nd	WCDMA IV	RMC 12.2Kbps	Edge 1	0mm	1312	1712.4	20.93	21.00	1.016	0.06	0.834	1.02	0.848
1st	WCDMA V	RMC 12.2Kbps	Bottom Face	0mm	4132	826.4	22.05	22.20	1.035	-0.01	1.060	-	1.097
2nd	WCDMA V	RMC 12.2Kbps	Bottom Face	0mm	4132	826.4	22.05	22.20	1.035	-0.04	1.020	1.04	1.056
1st	LTE Band 7	20M_QPSK_1_0	Edge 1	0mm	21350	2560	22.26	22.80	1.132	0	0.877	-	0.993
2nd	LTE Band 7	20M_QPSK_1_0	Edge 1	0mm	21350	2560	22.26	22.80	1.132	0.03	0.869	1.01	0.984
1st	LTE Band 12	10M_QPSK_1_0	Bottom Face	0mm	23095	707.5	21.71	22.00	1.069	0	1.110	-	1.187
2nd	LTE Band 12	10M_QPSK_1_0	Bottom Face	0mm	23095	707.5	21.71	22.00	1.069	0.05	1.020	1.09	1.090

General Note:

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

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

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

	LTE Band 41 (Power Class 3)	LTE Band 41 (Power Class 2)
Maximum Tune up Power (dBm)	24.2	24.2
Reported 1g SAR (W/kg)	0.787	0.490
Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	166.50	113.89
Linearity SAR(W/kg)	0.54	
% deviation from expected linearity		-8.98%

16. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Tablet Body
1.	WWAN + WLAN2.4GHz Ant 1+2 + NFC	Yes
2.	WWAN + WLAN5GHz Ant 1+2 + NFC	Yes
3.	WWAN + Bluetooth Ant 2 + NFC	Yes

General Note:

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

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

In 5G NR + LTE + WLAN + BT simultaneous transmission, 5G NR and LTE transmission are managed and controlled by Qualcomm® Smart Transmit, while the RF exposure from WLAN and BT radios is managed using legacy approach, i.e., through a fixed power back-off if needed.
Since WLAN and BT do not employ time-averaging, 1gSAR and 10gSAR measurement for WLAN and BT need to be conducted at their corresponding rated power following current FCC test procedures to determine reported SAR values.
Smart Transmit current implementation assumes hotspots from 5G NR and LTE are collocated. Therefore, for a total of 100% exposure margin, if LTE uses x%, then the exposure margin left for 5G NR is capped to (100-x)%. Thus, the compliance equation for LTE + 5G NR is

*x% * A + (100-x)% * B ≤ 1.0,*

Where, A is normalized reported time-averaged SAR exposure ratio from LTE, and A ≤ 1.0; B is normalized reported time-averaged exposure ratio from 5G NR (i.e., SAR exposure for sub6 NR), and B ≤1.0.
Let C = normalized reported SAR exposure ratio from WLAN+BT, then for compliance,

*x% * A + (100-x)% * B + C ≤ 1.0* (1)

x% * A + (100-x)% * B ≤ x% * max(A, B) + (100-x)% * max(A, B) ≤ max(A, B)

*x% * A + (100-x)% * B + C ≤ max(A, B) + C ≤ 1.0* (2)

if A + C ≤ 1.0 and B + C ≤ 1.0 can be proven, then “x% * A + (100-x)% * B + C ≤ 1.0”. Therefore simultaneous transmission analysis for 5G NR + LTE + WLAN + BT can be performed in two steps

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

Else, if A + C > 1.0 and/or B + C > 1.0, then the followings need to hold true for compliance:
i. A and C are decoupled based on the SPLSR criteria , and
ii. (100-x)% * B + C ≤ 1.0, and
iii. x% * A + (100-x)% * B ≤ 1.0
Note iii. is covered in Part 2 report; i. and ii. should be addressed in Part 2 report.

16.2 Body Exposure Conditions

Exposure Position	1	2	3	4	5	1+2+5 Summed 1g SAR (W/kg)	1+3+5 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)
	Maximum WWAN	WLAN2.4GHz Ant 1+2	WLAN5GHz Ant 1+2	Bluetooth Ant 2	NFC			
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
Bottom Face at 0mm	1.187	0.174	0.127	0.001	0.001	**1.362**	**1.315**	**1.189**
Edge 1 at 0mm	1.126	0.326	0.255		0.001	**1.453**	**1.382**	**1.127**
Edge 2 at 0mm		1.129	1.040	0.354	0.001	**1.130**	**1.041**	**0.355**
Edge 3 at 0mm		0.321	0.260	0.035	0.001	**0.322**	**0.261**	**0.036**
Edge 4 at 0mm	0.433				0.001	**0.434**	**0.434**	**0.434**

Test Engineer： Bob Cheng

17. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 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.

18. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013

[4] SPEAG DASY System Handbook

[5] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

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

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

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

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

[10] FCC KDB 616217 D04 v01r02, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, Oct 2015

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

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