

FCC Test Report

(ENDC: n5 + LTE B2/B7/B12/B30/B48/B66)

Report No.: RFBFLF-WTW-P21010278-22

FCC ID: MSQI007D

Test Model: ASUS_I007D

Received Date: Jan. 04, 2021

Test Date: Feb. 26 ~ Apr. 19, 2021

Issued Date: Apr. 19, 2021

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**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
RFBFLF-WTW-P21010278-22	Original release	Apr. 19, 2021

1 Certificate of Conformity

Product: EXP21 Smartphone

Brand: ASUS

Test Model: ASUS_I007D

Sample Status: Engineering sample

Applicant: ASUSTeK COMPUTER INC.

Test Date: Feb. 26 ~ Apr. 19, 2021

Standards: FCC Part 22, Subpart H
FCC Part 24, Subpart E
FCC Part 27, Subpart C, D, H, L
FCC Part 96

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Celine Chou , **Date:** Apr. 19, 2021
Celine Chou / Senior Specialist

Approved by : Bruce Chen , **Date:** Apr. 19, 2021
Bruce Chen / Senior Project Engineer

2 Summary of Test Results

For n5

Applied Standard: FCC Part 22 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 22.913 (a)	Effective radiated power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	Pass	Meet the requirement
22.913 (d)	Peak To Average Ratio	Pass	Meet the requirement of limit.
2.1055 22.355	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Occupied Bandwidth	Pass	Meet the requirement of limit.
22.917	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 22.917	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 22.917	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -42.95dB at 1673.00MHz.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

For LTE Band 2

Applied Standard: FCC Part 24 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 24.232	Effective Isotropically Radiated Power	Pass	Meet the requirement of limit.
2.1046 24.232 (d)	Peak To Average Ratio	Pass	Refer to Note 1
2.1047	Modulation Characteristics	Pass	Refer to Note 1
2.1055 24.235	Frequency Stability	Pass	Refer to Note 1
2.1049	Occupied Bandwidth	Pass	Refer to Note 1
24.238	Band Edge Measurements	Pass	Refer to Note 1
2.1051 24.238	Conducted Spurious Emissions	Pass	Refer to Note 1
2.1053 24.238	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -31.70dB at 3818.60MHz.

Note:

1. This report is a partial report. Therefore, only test item of Transmitter Output Power and Effective Isotropically Radiated Power and Radiated Spurious Emissions tests were performed for this report. Other testing data please refer to BV CPS report no.: RFBFLF-WTW-P21010278-10.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

For LTE Band 7, LTE Band 12, LTE Band 30, LTE Band 66

Applied Standard: FCC Part 27 & Part 2						
FCC Clause				Test Item	Result	Remarks
LTE B7	LTE B12	LTE B30	LTE B66			
2.1046 27.50 (h)(2)	2.1046 27.50 (c)	2.1046 27.50 (a)(3)	2.1046 27.50 (d)(4)	Equivalent Isotropically Radiated Power / Equivalent Radiated Power	Pass	Meet the requirement of limit.
2.1047	2.1047	2.1047	2.1047	Modulation Characteristics	Pass	Refer to Note 1
----	----	----	27.50 (d)(5)	Peak To Average Ratio	Pass	Refer to Note 1
2.1055 27.54	2.1055 27.54	2.1055 27.54	2.1055 27.54	Frequency Stability Stay with the authorized bands of operation	Pass	Refer to Note 1
2.1049	2.1049	2.1049	2.1049	Occupied Bandwidth	Pass	Refer to Note 1
2.1051 27.53 (m)(4)(6)	2.1051 27.53 (g)	2.1051 27.53 (a)(4)	2.1051 27.53 (h)	Band Edge / Out of Band Emissions Measurements	Pass	Refer to Note 1
2.1051 27.53 (m)(4)(6)	2.1051 27.53 (g)	2.1051 27.53 (a)(4)	2.1051 27.53 (h)	Conducted Spurious Emissions	Pass	Refer to Note 1
2.1053 27.53 (m)(4)(6)	2.1053 27.53 (g)	2.1053 27.53 (a)(4)	2.1053 27.53 (h)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -7.50dB at 4615.00MHz.

Note:

1. This report is a partial report. Therefore, only test item of Transmitter Output Power and Equivalent Isotropically Radiated Power / Equivalent Radiated Power and Radiated Spurious Emissions tests were performed for this report. Other testing data please refer to BV CPS report no.: RFBFLF-WTW-P21010278-11.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

For LTE Band 48

47 CFR FCC Part 96			
FCC Clause	Test Item	Result	Remarks
2.1046 96.41(b)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1046 96.41(b)	Maximum Power Spectral Density	Pass	Refer to Note 1
96.41(g)	Peak to Average Ration	Pass	Refer to Note 1
2.1049	Emission Bandwidth	Pass	Refer to Note 1
2.1055	Frequency Stability	Pass	Refer to Note 1
2.1051 96.41(e)	Conducted Spurious Emissions	Pass	Refer to Note 1
2.1053 96.41(e)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -3.71dB at 7380.00MHz.

Note:

1. This report is a partial report. Therefore, only test item of Maximum Peak Output Power and Radiated Spurious Emissions tests were performed for this report. Other testing data please refer to BV CPS report no.: RFBFLF-WTW-P21010278-13.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (\pm)
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.59 dB
	200MHz ~1000MHz	3.60 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 16, 2020	Apr. 15, 2021
			Apr. 09, 2021	Apr. 08, 2022
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 12, 2020	Jun. 11, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSW43	101866	Dec. 14, 2020	Dec. 13, 2021
MXG Vector signal generator Agilent	N5182B	MY53050430	Nov. 25, 2020	Nov. 24, 2021
5G Wireless Test Platforms Keysight	E7515B	MY60102114	May 28, 2020	May 27, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Nov. 06, 2020	Nov. 05, 2021
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 22, 2020	Nov. 21, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Nov. 06, 2020	Nov. 05, 2021
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Nov. 22, 2020	Nov. 21, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 22, 2020	Nov. 21, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Jun. 08, 2020	Jun. 07, 2021
Preamplifier Agilent (Above 1GHz)	8449B	3008A02367	Feb. 17, 2021	Feb. 16, 2022
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM80 00	CABLE-CH9-02 (248780+171006)	Jan. 16, 2021	Jan. 15, 2022
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	Jan. 16, 2021	Jan. 15, 2022
RF signal cable Woken	8D-FB	Cable-CH9-01	Jun. 08, 2020	Jun. 07, 2021
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Standard Temperature And Humidity Chamber GIANT FORCE	GTH-120-40-CP-A R	MAA1306-019	Sep. 10, 2020	Sep. 09, 2021

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
True RMS Clamp Meter Fluke	325	31130711WS	Jun. 06, 2020	Jun. 05, 2021
DC power supply Keysight	U8002A	MY56330015	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 9.

3 General Information

3.1 General Description of EUT

Product	EXP21 Smartphone
Brand	ASUS
Test Model	ASUS_I007D
Sample Status	Engineering sample
Power Supply Rating	7.74 Vdc (Battery) 5 Vdc / 9 Vdc / 12 Vdc / 15Vdc / 20Vdc (Adapter)

n5

Modulation Type	$\pi/2$ BPSK, QPSK, 16QAM, 64QAM, 256QAM					
Waveform Type	CP-OFDM, DFT-s-OFDM					
Operating Frequency	n5 (Channel Bandwidth 5MHz)	826.5MHz ~ 846.5MHz				
	n5 (Channel Bandwidth 10MHz)	829.0MHz ~ 844.0MHz				
	n5 (Channel Bandwidth 15MHz)	831.5MHz ~ 841.5MHz				
	n5 (Channel Bandwidth 20MHz)	834.0MHz ~ 839.0MHz				
Max. ERP Power		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
	n5 (Channel Bandwidth 5MHz)	109.648mW (20.40dBm)	110.917mW (20.45dBm)	87.902mW (19.44dBm)	62.373mW (17.95dBm)	38.637mW (15.87dBm)
	n5 (Channel Bandwidth 10MHz)	109.901mW (20.41dBm)	110.662mW (20.44dBm)	88.308mW (19.46dBm)	62.087mW (17.93dBm)	38.815mW (15.89dBm)
	n5 (Channel Bandwidth 15MHz)	110.154mW (20.42dBm)	111.173mW (20.46dBm)	87.700mW (19.43dBm)	61.518mW (17.89dBm)	38.905mW (15.90dBm)
	n5 (Channel Bandwidth 20MHz)	110.662mW (20.44dBm)	112.202mW (20.50dBm)	88.308mW (19.46dBm)	62.373mW (17.95dBm)	39.537mW (15.97dBm)
Emission Designator		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
	n5 (Channel Bandwidth 5MHz)	4M47G7D	4M47G7D	4M47D7W	4M47D7W	4M47D7W
	n5 (Channel Bandwidth 10MHz)	9M24G7D	9M29G7D	9M29D7W	9M29D7W	9M29D7W
	n5 (Channel Bandwidth 15MHz)	14M1G7D	14M1G7D	14M1D7W	14M1D7W	14M1D7W
	n5 (Channel Bandwidth 20MHz)	18M7G7D	18M9G7D	18M9D7W	18M9D7W	18M9D7W

LTE Band

Modulation Type	QPSK, 16QAM, 64QAM, 256QAM	
Operating Frequency	LTE Band 2 (Channel Bandwidth 1.4MHz)	1850.7MHz ~ 1909.3MHz
	LTE Band 2 (Channel Bandwidth 3MHz)	1851.5MHz ~ 1908.5MHz
	LTE Band 2 (Channel Bandwidth 5MHz)	1852.5MHz ~ 1907.5MHz
	LTE Band 2 (Channel Bandwidth 10MHz)	1855.0MHz ~ 1905.0MHz
	LTE Band 2 (Channel Bandwidth 15MHz)	1857.5MHz ~ 1902.5MHz
	LTE Band 2 (Channel Bandwidth 20MHz)	1860.0MHz ~ 1900.0MHz
	LTE Band 7 (Channel Bandwidth 5MHz)	2502.5MHz ~ 2567.5MHz
	LTE Band 7 (Channel Bandwidth 10MHz)	2505.0MHz ~ 2565.0MHz
	LTE Band 7 (Channel Bandwidth 15MHz)	2507.5MHz ~ 2562.5MHz
	LTE Band 7 (Channel Bandwidth 20MHz)	2510.0MHz ~ 2560.0MHz
	LTE Band 12 (Channel Bandwidth 1.4MHz)	699.7MHz ~ 715.3MHz
	LTE Band 12 (Channel Bandwidth 3MHz)	700.5MHz ~ 714.5MHz
	LTE Band 12 (Channel Bandwidth 5MHz)	701.5MHz ~ 713.5MHz
	LTE Band 12 (Channel Bandwidth 10MHz)	704.0MHz ~ 711.0MHz
	LTE Band 30 (Channel Bandwidth 5MHz)	2307.5MHz ~ 2312.5MHz
	LTE Band 30 (Channel Bandwidth 10MHz)	2310.0MHz
	LTE Band 48 (Channel Bandwidth 5MHz)	3552.5MHz ~ 3697.5MHz
	LTE Band 48 (Channel Bandwidth 10MHz)	3555.0MHz ~ 3695.0MHz
	LTE Band 48 (Channel Bandwidth 15MHz)	3557.5MHz ~ 3692.5MHz
	LTE Band 48 (Channel Bandwidth 20MHz)	3560.0MHz ~ 3690.0MHz
	LTE Band 66 (Channel Bandwidth 1.4MHz)	1710.7MHz ~ 1779.3MHz
	LTE Band 66 (Channel Bandwidth 3MHz)	1711.5MHz ~ 1778.5MHz
	LTE Band 66 (Channel Bandwidth 5MHz)	1712.5MHz ~ 1777.5MHz
LTE Band 66 (Channel Bandwidth 10MHz)	1715.0MHz ~ 1775.0MHz	
LTE Band 66 (Channel Bandwidth 15MHz)	1717.5MHz ~ 1772.5MHz	
LTE Band 66 (Channel Bandwidth 20MHz)	1720.0MHz ~ 1770.0MHz	

Max. EIRP Power		QPSK	16QAM	64QAM	256QAM
	LTE Band 2 (Channel Bandwidth 1.4MHz)	169.044mW (22.28dBm)	136.144mW (21.34dBm)	107.895mW (20.33dBm)	50.816mW (17.06dBm)
	LTE Band 2 (Channel Bandwidth 3MHz)	167.494mW (22.24dBm)	135.831mW (21.33dBm)	109.144mW (20.38dBm)	49.774mW (16.97dBm)
	LTE Band 2 (Channel Bandwidth 5MHz)	167.494mW (22.24dBm)	137.404mW (21.38dBm)	105.439mW (20.23dBm)	50.350mW (17.02dBm)
	LTE Band 2 (Channel Bandwidth 10MHz)	169.434mW (22.29dBm)	137.404mW (21.38dBm)	107.895mW (20.33dBm)	51.286mW (17.10dBm)
	LTE Band 2 (Channel Bandwidth 15MHz)	167.880mW (22.25dBm)	138.676mW (21.42dBm)	108.643mW (20.36dBm)	51.404mW (17.11dBm)
	LTE Band 2 (Channel Bandwidth 20MHz)	172.584mW (22.37dBm)	138.676mW (21.42dBm)	110.154mW (20.42dBm)	52.240mW (17.18dBm)
	LTE Band 7 (Channel Bandwidth 5MHz)	226.464mW (23.55dBm)	194.536mW (22.89dBm)	148.252mW (21.71dBm)	67.920mW (18.32dBm)
	LTE Band 7 (Channel Bandwidth 10MHz)	225.424mW (23.53dBm)	196.336mW (22.93dBm)	154.170mW (21.88dBm)	66.988mW (18.26dBm)
	LTE Band 7 (Channel Bandwidth 15MHz)	233.346mW (23.68dBm)	199.986mW (23.01dBm)	151.356mW (21.80dBm)	68.707mW (18.37dBm)
	LTE Band 7 (Channel Bandwidth 20MHz)	241.546mW (23.83dBm)	201.372mW (23.04dBm)	151.705mW (21.81dBm)	70.795mW (18.50dBm)
	LTE Band 30 (Channel Bandwidth 5MHz)	149.968mW (21.76dBm/5MHz)	122.180mW (20.87dBm/5MHz)	97.724mW (19.90dBm/5MHz)	43.251mW (16.36dBm/5MHz)
	LTE Band 30 (Channel Bandwidth 10MHz)	153.109mW (21.85dBm/5MHz)	121.339mW (20.84dBm/5MHz)	98.628mW (19.94dBm/5MHz)	44.566mW (16.49dBm/5MHz)
	LTE Band 48 (Channel Bandwidth 5MHz)	114.815mW (20.60dBm/10MHz)	91.622mW (19.62dBm/10MHz)	75.336mW (18.77dBm/10MHz)	58.884mW (17.70dBm/10MHz)
	LTE Band 48 (Channel Bandwidth 10MHz)	113.240mW (20.54dBm/10MHz)	85.901mW (19.34dBm/10MHz)	70.307mW (18.47dBm/10MHz)	53.951mW (17.32dBm/10MHz)
	LTE Band 48 (Channel Bandwidth 15MHz)	82.794mW (19.18dBm/10MHz)	66.069mW (18.20dBm/10MHz)	59.156mW (17.72dBm/10MHz)	46.989mW (16.72dBm/10MHz)
	LTE Band 48 (Channel Bandwidth 20MHz)	89.125mW (19.50dBm/10MHz)	69.984mW (18.45dBm/10MHz)	63.096mW (18.00dBm/10MHz)	50.119mW (17.00dBm/10MHz)

Max. EIRP Power		QPSK	16QAM	64QAM	256QAM
	LTE Band 66 (Channel Bandwidth 1.4MHz)	157.761mW (21.98dBm)	123.595mW (20.92dBm)	101.158mW (20.05dBm)	42.364mW (16.27dBm)
	LTE Band 66 (Channel Bandwidth 3MHz)	153.462mW (21.86dBm)	126.474mW (21.02dBm)	99.770mW (19.99dBm)	47.534mW (16.77dBm)
	LTE Band 66 (Channel Bandwidth 5MHz)	159.221mW (22.02dBm)	125.603mW (20.99dBm)	100.000mW (20.00dBm)	46.666mW (16.69dBm)
	LTE Band 66 (Channel Bandwidth 10MHz)	157.761mW (21.98dBm)	123.310mW (20.91dBm)	100.000mW (20.00dBm)	46.989mW (16.72dBm)
	LTE Band 66 (Channel Bandwidth 15MHz)	160.325mW (22.05dBm)	128.529mW (21.09dBm)	104.954mW (20.21dBm)	48.641mW (16.87dBm)
	LTE Band 66 (Channel Bandwidth 20MHz)	161.436mW (22.08dBm)	128.825mW (21.10dBm)	102.802mW (20.12dBm)	49.091mW (16.91dBm)
Max. EIRP Power (Full power)		QPSK	16QAM	64QAM	256QAM
	LTE Band 48 (Channel Bandwidth 5MHz)	114.815mW (20.60dBm/10MHz)	91.622mW (19.62dBm/10MHz)	75.336mW (18.77dBm/10MHz)	58.884mW (17.70dBm/10MHz)
	LTE Band 48 (Channel Bandwidth 10MHz)	113.240mW (20.54dBm/10MHz)	85.901mW (19.34dBm/10MHz)	70.307mW (18.47dBm/10MHz)	53.951mW (17.32dBm/10MHz)
	LTE Band 48 (Channel Bandwidth 15MHz)	104.232mW (20.18dBm/15MHz)	80.168mW (19.04dBm/15MHz)	61.802mW (17.91dBm/15MHz)	48.865mW (16.89dBm/15MHz)
Max. ERP Power		QPSK	16QAM	64QAM	256QAM
	LTE Band 12 (Channel Bandwidth 1.4MHz)	179.473mW (22.54dBm)	147.231mW (21.68dBm)	115.080mW (20.61dBm)	53.580mW (17.29dBm)
	LTE Band 12 (Channel Bandwidth 3MHz)	180.717mW (22.57dBm)	135.207mW (21.31dBm)	114.815mW (20.60dBm)	53.951mW (17.32dBm)
	LTE Band 12 (Channel Bandwidth 5MHz)	178.238mW (22.51dBm)	138.357mW (21.41dBm)	114.551mW (20.59dBm)	54.200mW (17.34dBm)
	LTE Band 12 (Channel Bandwidth 10MHz)	183.654mW (22.64dBm)	139.637mW (21.45dBm)	117.490mW (20.70dBm)	56.364mW (17.51dBm)
Antenna Type	Refer to Note as below				
Antenna Connector	Refer to Note as below				
Accessory Device	Refer to Note as below				
Cable Supplied	Refer to Note as below				

Note:

1. The EUT contains following accessory devices.

Product	Brand	Model	Description
Battery	SCUD	C21P2002	Rating: 7.74Vdc, 15.2Wh
Adapter	AOHAI	A320Q-200325C-US	I/P: 100-240Vac, 50/60Hz, 1.5A O/P: 5Vdc, 3A; 9Vdc, 3A; 12Vdc, 3A; 15Vdc, 3A; 20Vdc, 3.25A
Type A to Type C USB Cable	Luxshare	LA9U2026-CS-R	0.5m
Type C to Type C Cable	Luxshare	LA9UC006-CS-R	1.2m
Bluetooth Earphone	Bang & Olufsen	EQ Earbud R	FCC ID: TTUBEOPLAYEQR IC: 3775B-BEOPLAYEQR
		EQ Earbud L	FCC ID: TTUBEOPLAYEQL IC: 3775B-BEOPLAYEQL
Bluetooth Earphone Charging Case	Bang & Olufsen	EQ Charging case	I/P: 5Vdc/500mA O/P: 5Vdc/ R170mA; L170mA

2. The following antennas were provided to the EUT.

Ant. No.	Brand	Model	Ant. Type	Connecter	Frequency Range
Ant 0	ASUS	ZS675KW	PIFA	LCP+lpex	610-960MHz, 1710-2690MHz
Ant 1	ASUS	ZS675KW	PIFA	LCP+lpex	1427-1510MHz, 1710-2690MHz
Ant 2	ASUS	ZS675KW	PIFA	LCP+lpex	610-960MHz, 1427-1510MHz, 1710-2690MHz
Ant 3	INPAQ	ZS675KW	PIFA	lpex	1575-1610MHz, 2400-2500MHz, 5150-5850MHz, 5925-7125MHz
Ant 4	INPAQ	ZS675KW	PIFA	lpex	1176±10MHz, 2400-2500MHz, 5150-5850MHz, 5925-7125MHz
Ant 5	INPAQ	ZS675KW	PIFA	LCP+lpex	3300-4000MHz, 4400-5000MHz
Ant 6	INPAQ	ZS675KW	PIFA	lpex	1427-1510MHz, 2400-2500MHz, 5150-5850MHz, 5925-7125MHz
Ant 7	INPAQ	ZS675KW	PIFA	LCP+lpex	3300-4000MHz, 4400-5000MHz
Ant 8	ASUS	ZS675KW	PIFA	LCP+lpex	1427-1510MHz, 1710-2690MHz
Ant 9	ASUS	ZS675KW	PIFA	LCP+lpex	1710-2690MHz
Ant 10	INPAQ	ZS675KW	PIFA	lpex	3300-4000MHz, 4400-5000MHz
Ant 11	INPAQ	ZS675KW	PIFA	lpex	3300-4000MHz, 4400-5000MHz

2G / 3G Band													
Band	Freq. Range (MHz)	Gain (dBi)											
		Ant. 0	Ant. 1	Ant. 2	Ant. 3	Ant. 4	Ant. 5	Ant. 6	Ant. 7	Ant. 8	Ant. 9	Ant. 10	Ant. 11
GSM-850	824 ~ 849	-1.891		-4.526									
GSM-1900	1850 ~ 1910		-1.887	-1.394						-2.89579			
WCDMA B2	1850 ~ 1910		-1.887	-1.394						-2.89579			
WCDMA B4	1710 ~ 1755		-2.884	-3.228						-3.13552			
WCDMA B5	824 ~ 849	-1.891		-4.526									
CDMA BC0	815 ~ 849	-1.891		-4.526									
CDMA BC1	1850 ~ 1910		-1.887	-1.394						-2.89579			
CDMA BC10	806 ~ 901	-1.891		-4.526									

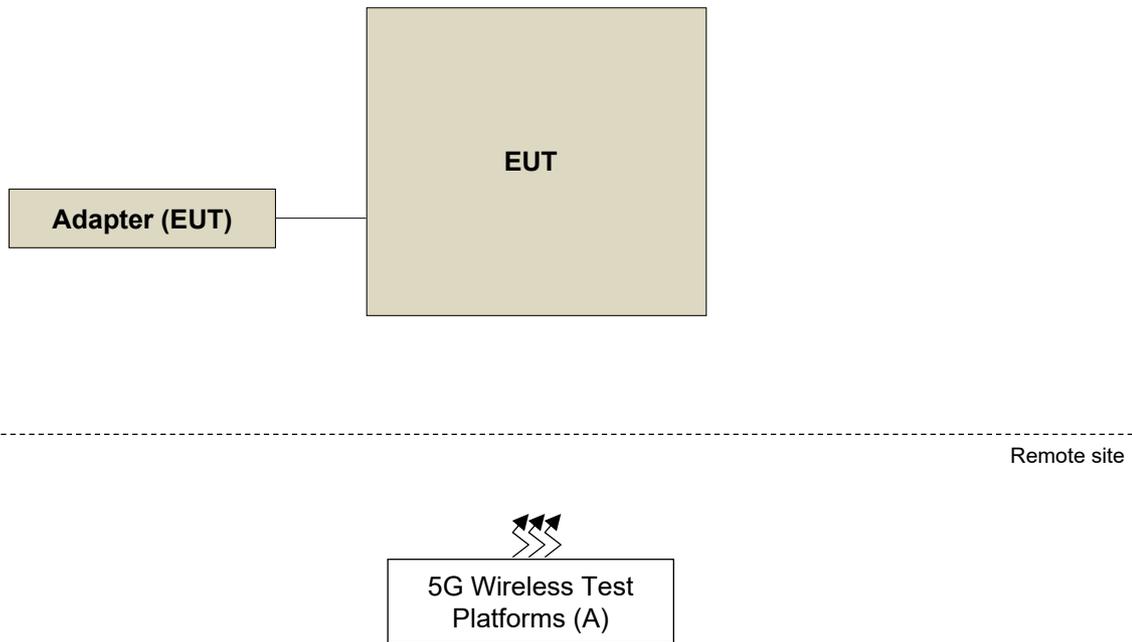
LTE Band													
Band	Freq. Range (MHz)	Gain (dBi)											
		Ant. 0	Ant. 1	Ant. 2	Ant. 3	Ant. 4	Ant. 5	Ant. 6	Ant. 7	Ant. 8	Ant. 9	Ant. 10	Ant. 11
LTE B2	1850 ~ 1910		-1.887	-1.394						-2.89579	-1.804		
LTE B4	1710 ~ 1755		-2.884	-3.228						-3.13552	-1.706		
LTE B5	824 ~ 849	-1.891		-4.526									
LTE B7	2500 ~ 2570		0.185	-0.657						-0.50837	-1.117		
LTE B12	698 ~ 716	-2.135		-4.343									
LTE B13	777 ~ 787	-4.37		-8.13									
LTE B14	788 ~ 798	-4.37		-7.931									
LTE B17	704 ~ 716	-2.135		-4.343									
LTE B25	1850 ~ 1915		-1.887	-1.394						-2.89579			
LTE B26	814 ~ 849	-1.891		-4.526									
LTE B30	2305 ~ 2315		-1.326	-2.669						-1.28433			
LTE B66	1710 ~ 1780		-2.884	-2.478						-3.0668	-1.685		
LTE B71	663 ~ 698	-5.741		-7.388									
T-LTE B38	2570 ~ 2620		0.724	-0.912						-0.59557			
T-LTE B40	2300 ~ 2400		-1.326	-2.669						-1.28433			
T-LTE B41	2496 ~ 2690		1.143	-0.657						-0.59557			
T-LTE B42	3400 ~ 3600						0.313		0.5277			-2.493	-0.35195
T-LTE B43	3600 ~ 3800						-0.434		0.5277			-0.477	-0.161
T-LTE B48	3550 ~ 3700						-0.434		0.5277			-0.477	-0.161
5G FR1 Band													
Band	Freq. Range (MHz)	Gain (dBi)											
		Ant. 0	Ant. 1	Ant. 2	Ant. 3	Ant. 4	Ant. 5	Ant. 6	Ant. 7	Ant. 8	Ant. 9	Ant. 10	Ant. 11
n2	1850 ~ 1910		-1.887	-1.394						-2.89579	-1.804		
n5	824 ~ 849	-1.891		-4.526									
n7	2500 ~ 2570		0.185	-0.657						-0.50837	-1.117		
n12	699 ~ 716	-2.135		-4.343									
n13	777 ~ 787	-4.37		-8.13									
n14	788 ~ 798	-4.37		-7.931									
n25	1850 ~ 1915		-1.887	-1.394						-2.89579	-1.627		
n26	814 ~ 849	-1.891		-4.526									
n30	2305 ~ 2315		-1.326	-2.669						-1.28433			
n38	2570 ~ 2620		0.724	-0.912						-0.59557	-1.3		
n41	2496 ~ 2690		1.143	-0.657						-0.59557	-0.076		
n66	1710 ~ 1780		-2.884	-2.478						-3.0668	-1.685		
n71	663 ~ 698	-5.741		-7.388									
n77	3300 ~ 4200						0.313		0.5277			2.017	0.19902
n78	3300 ~ 3800						0.313		0.5277			2.017	-0.161

* The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

3. The EUT supports the following ENDC configuration.

5GNR	FCC 5G FR1			ENDC
	Band	SCS	Bandwidth (MHz)	
	n2	15kHz	5/10/15/20	Band 5/12/13/14/30/66
	n5	15kHz	5/10/15/20	Band 2/7/12/30/48/66
	n7	15kHz	5/10/15/20/25/30/40	Band 2/5/12/13/66
	n12	15kHz	5/10/15	Band 2/66
	n14	15kHz	5/10	Band 2
	n25	15kHz	5/10/15/20/25/30/40	Band 12/66
	n30	15kHz	5/10	Band 2/5/66
	n38	30kHz	20/30/40	Band 2/4/5/12/66/71
	n41	30kHz	20/30/40/50/60/80/90/100	Band 2/4/12/25/26/66
	n66	15kHz	5/10/15/20/30/40	Band 2/5/7/12/13/14/30/48/71
	n71	15kHz	5/10/15/20	Band 2/7/66
	n77	30kHz	20/30/40/50/60/70/80/90/100	Band 7/41
	n78	30kHz	20/30/40/50/60/70/80/90/100	Band 2/4/5/7/12/13/38/66/71

3.2 Configuration of System under Test



3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	5G Wireless Test Platforms	Keysight	E7515B	MY58300759	NA	-

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case was found when positioned as the table below. Following channel(s) was (were) selected for the final test as listed below:

Band	Radiated Emission
n5	Y-plane
LTE Band 2	Y-plane
LTE Band 7	Y-plane
LTE Band 12	Y-plane
LTE Band 30	Y-plane
LTE Band 48	Y-plane
LTE Band 66	Y-plane

n5

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	ERP	165300 to 169300	165300 (826.5MHz), 167300 (836.5MHz), 169300 (846.5MHz)	5MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB / 1 RB Offset 1 RB / 13 RB Offset 1 RB / 23 RB Offset 12 RB / 0 RB Offset 12 RB / 7 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		165800 to 168800	165800 (829.0MHz), 167300 (836.5MHz), 168800 (844.0MHz)	10MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB / 1 RB Offset 1 RB / 26 RB Offset 1 RB / 50 RB Offset 25 RB / 0 RB Offset 25 RB / 14 RB Offset 25 RB / 27 RB Offset 50 RB / 0 RB Offset
		166300 to 168300	166300 (831.5MHz), 167300 (836.5MHz), 168300 (841.5MHz)	15MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB / 1 RB Offset 1 RB / 40 RB Offset 1 RB / 77 RB Offset 36 RB / 0 RB Offset 36 RB / 22 RB Offset 36 RB / 43 RB Offset 75 RB / 0 RB Offset
		166800 to 167800	166800 (834.0MHz), 167300 (836.5MHz), 167800 (839.0MHz)	20MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB / 1 RB Offset 1 RB / 53 RB Offset 1 RB / 104 RB Offset 50RB / 0 RB Offset 50 RB / 28 RB Offset 50 RB / 56 RB Offset 100 RB / 0 RB Offset
-	Modulation characteristics	166800 to 167800	167300 (836.5MHz)	20MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	106 RB / 0 RB Offset
-	Frequency Stability	165300 to 169300	165300 (826.5MHz), 169300 (846.5MHz)	5MHz	QPSK	25 RB / 0 RB Offset
		165800 to 168800	165800 (829.0MHz), 168800 (844.0MHz)	10MHz	QPSK	52 RB / 0 RB Offset
		166300 to 168300	166300 (831.5MHz), 168300 (841.5MHz)	15MHz	QPSK	79 RB / 0 RB Offset
		166800 to 167800	166800 (834.0MHz), 167800 (839.0MHz)	20MHz	QPSK	106 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Occupied Bandwidth	165300 to 169300	165300 (826.5MHz), 167300 (836.5MHz), 169300 (846.5MHz)	5MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	25 RB / 0 RB Offset
		165800 to 168800	165800 (829.0MHz), 167300 (836.5MHz), 168800 (844.0MHz)	10MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	52 RB / 0 RB Offset
		166300 to 168300	166300 (831.5MHz), 167300 (836.5MHz), 168300 (841.5MHz)	15MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	79 RB / 0 RB Offset
		166800 to 167800	166800 (834.0MHz), 167300 (836.5MHz), 167800 (839.0MHz)	20MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	106 RB / 0 RB Offset
-	Band Edge	165300 to 169300	165300 (826.5MHz), 169300 (846.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		165800 to 168800	165800 (829.0MHz), 168800 (844.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 51 RB Offset 52 RB / 0 RB Offset
		166300 to 168300	166300 (831.5MHz), 168300 (841.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset 1 RB / 78 RB Offset 79 RB / 0 RB Offset
		166800 to 167800	166800 (834.0MHz), 167800 (839.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset 1 RB / 105 RB Offset 106 RB / 0 RB Offset
-	Peak to Average Ratio	165300 to 169300	165300 (826.5MHz), 167300 (836.5MHz), 169300 (846.5MHz)	5MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB / 1 RB Offset
		165800 to 168800	165800 (829.0MHz), 167300 (836.5MHz), 168800 (844.0MHz)	10MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB / 1 RB Offset
		166300 to 168300	166300 (831.5MHz), 167300 (836.5MHz), 168300 (841.5MHz)	15MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB / 1 RB Offset
		166800 to 167800	166800 (834.0MHz), 167300 (836.5MHz), 167800 (839.0MHz)	20MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB / 1 RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Conducted Emission	165300 to 169300	165300 (826.5MHz), 167300 (836.5MHz), 169300 (846.5MHz)	5MHz	QPSK	1 RB / 1 RB Offset
		165800 to 168800	165800 (829.0MHz), 167300 (836.5MHz), 168800 (844.0MHz)	10MHz	QPSK	1 RB / 1 RB Offset
		166300 to 168300	166300 (831.5MHz), 167300 (836.5MHz), 168300 (841.5MHz)	15MHz	QPSK	1 RB / 1 RB Offset
		166800 to 167800	166800 (834.0MHz), 167300 (836.5MHz), 167800 (839.0MHz)	20MHz	QPSK	1 RB / 1 RB Offset
-	Radiated Emission Below 1GHz	165300 to 169300	167300 (836.5MHz)	5MHz	QPSK	1 RB / 1 RB Offset
-	Radiated Emission Above 1GHz	165300 to 169300	165300 (826.5MHz), 167300 (836.5MHz), 169300 (846.5MHz)	5MHz	QPSK	1 RB / 1 RB Offset
		166800 to 167800	166800 (834.0MHz), 167300 (836.5MHz), 167800 (839.0MHz)	20MHz	QPSK	1 RB / 1 RB Offset

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 38.521-1 Section 6.5.3.1.4, choose the lowest and highest channel bandwidth for final test.
3. Only output power, modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under $\pi/2$ BPSK, QPSK, 16QAM, 64QAM and 256QAM modes, the other test items were performed under worse mode according to the maximum output power.

LTE Band 2

EUT Configure Mode	Test item	Available channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	18607 to 19193	18607 (1850.7MHz), 18900 (1880.0MHz), 19193 (1909.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 2 RB Offset 1 RB / 5 RB Offset 3 RB / 0 RB Offset 3 RB / 1 RB Offset 3 RB / 3 RB Offset 6 RB / 0 RB Offset
		18615 to 19185	18615 (1851.5MHz), 18900 (1880.0MHz), 19185 (1908.5MHz)	3MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 7 RB Offset 1 RB / 14 RB Offset 8 RB / 0 RB Offset 8 RB / 3 RB Offset 8 RB / 7 RB Offset 15 RB / 0 RB Offset
		18625 to 19175	18625 (1852.5MHz), 18900 (1880.0MHz), 19175 (1907.5MHz)	5MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		18650 to 19150	18650 (1855.0MHz), 18900 (1880.0MHz), 19150 (1905.0MHz)	10MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
		18675 to 19125	18675 (1857.5MHz), 18900 (1880.0MHz), 19125 (1902.5MHz)	15MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 37 RB Offset 1 RB / 74 RB Offset 36 RB / 0 RB Offset 36 RB / 19 RB Offset 36 RB / 39 RB Offset 75 RB / 0 RB Offset
		18700 to 19100	18700 (1860.0MHz), 18900 (1880.0MHz), 19100 (1900.0MHz)	20MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 50 RB Offset 1 RB / 99 RB Offset 50 RB / 0 RB Offset 50 RB / 25 RB Offset 50 RB / 50 RB Offset 100 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Radiated Emission Below 1GHz	18607 to 19193	19193 (1909.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	18607 to 19193	18607 (1850.7MHz), 18900 (1880.0MHz), 19193 (1909.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18625 (1852.5MHz), 18900 (1880.0MHz), 19175 (1907.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700 (1860.0MHz), 18900 (1880.0MHz), 19100 (1900.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM, 64QAM and 256QAM, measured value of QPSK is higher than 16QAM, 64QAM and 256QAM mode. Therefore the radiated emission test items was performed under QPSK mode only.

LTE Band 7

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	EIRP	20775 to 21425	20775 (2502.5MHz), 21100 (2535.0MHz), 21425 (2567.5MHz)	5MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		20800 to 21400	20800 (2505.0MHz), 21100 (2535.0MHz), 21400 (2565.0MHz)	10MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
		20825 to 21375	20825 (2507.5MHz), 21100 (2535.0MHz), 21375 (2562.5MHz)	15MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 37 RB Offset 1 RB / 74 RB Offset 36 RB / 0 RB Offset 36 RB / 19 RB Offset 36 RB / 39 RB Offset 75 RB / 0 RB Offset
		20850 to 21350	20850 (2510.0MHz), 21100 (2535.0MHz), 21350 (2560.0MHz)	20MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 50 RB Offset 1 RB / 99 RB Offset 50 RB / 0 RB Offset 50 RB / 25 RB Offset 50 RB / 50 RB Offset 100 RB / 0 RB Offset
-	Radiated Emission Below 1GHz	20775 to 21425	21425 (2567.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	20775 to 21425	20775 (2502.5MHz), 21100 (2535.0MHz), 21425 (2567.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	20850 (2510.0MHz), 21100 (2535.0MHz), 21350 (2560.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM, 64QAM and 256QAM, measured value of QPSK is higher than 16QAM, 64QAM and 256QAM mode. Therefore the radiated emission test items was performed under QPSK mode only.

LTE Band 12

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	ERP	23017 to 23173	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 2 RB Offset 1 RB / 5 RB Offset 3 RB / 0 RB Offset 3 RB / 1 RB Offset 3 RB / 3 RB Offset 6 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23095 (707.5MHz), 23165 (714.5MHz)	3MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 7 RB Offset 1 RB / 14 RB Offset 8 RB / 0 RB Offset 8 RB / 3 RB Offset 8 RB / 7 RB Offset 15 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0 MHz)	10MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
-	Radiated Emission Below 1GHz	23017 to 23173	23017 (699.7MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	23017 to 23173	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM, 64QAM and 256QAM, measured value of QPSK is higher than 16QAM, 64QAM and 256QAM mode. Therefore the radiated emission test items was performed under QPSK mode only.

LTE Band 30

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	EIRP	27685 to 27735	27685 (2307.5MHz), 27710 (2310.0MHz), 27735 (2312.5MHz)	5MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		27710	27710 (2310.0MHz)	10MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
-	Radiated Emission Below 1GHz	27685 to 27735	27685 (2307.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	27685 to 27735	27685 (2307.5MHz), 27710 (2310.0MHz), 27735 (2312.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		27710	27710 (2310.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM, 64QAM and 256QAM, measured value of QPSK is higher than 16QAM, 64QAM and 256QAM mode. Therefore the radiated emission test items was performed under QPSK mode only.

LTE Band 48

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation
Maximum Output Power	55265 to 56715	55265 (3552.5MHz), 55990 (3625.0MHz), 56715 (3697.5MHz)	5MHz	QPSK / 16QAM / 64QAM / 256QAM
	55290 to 56690	55290 (3555.0MHz), 55990 (3625.0MHz), 56690 (3695.0MHz)	10MHz	QPSK / 16QAM / 64QAM / 256QAM
	55315 to 56665	55315 (3557.5MHz), 55990 (3625.0MHz), 56665 (3692.5MHz)	15MHz	QPSK / 16QAM / 64QAM / 256QAM
	55340 to 56640	55340 (3560.0MHz), 55990 (3625.0MHz), 56640 (3690.0MHz)	20MHz	QPSK / 16QAM / 64QAM / 256QAM
Radiated Emission Below 1GHz	55340 to 56640	56640 (3690.0MHz)	20MHz	QPSK
Radiated Emission Above 1GHz	55265 to 56715	55265 (3552.5MHz), 55990 (3625.0MHz), 56715 (3697.5MHz)	5MHz	QPSK
	55340 to 56640	55340 (3560.0MHz), 55990 (3625.0MHz), 56640 (3690.0MHz)	20MHz	QPSK

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM, 64QAM and 256QAM, measured value of QPSK is higher than 16QAM, 64QAM and 256QAM mode. Therefore the radiated emission test items was performed under QPSK mode only.

LTE Band 66

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	131979 to 132665	131979 (1710.7MHz), 132322 (1745.0MHz), 132665 (1779.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 2 RB Offset 1 RB / 5 RB Offset 3 RB / 0 RB Offset 3 RB / 1 RB Offset 3 RB / 3 RB Offset 6 RB / 0 RB Offset
		131987 to 132657	131987 (1711.5MHz), 132322 (1745.0MHz), 132657 (1778.5MHz)	3MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 7 RB Offset 1 RB / 14 RB Offset 8 RB / 0 RB Offset 8 RB / 3 RB Offset 8 RB / 7 RB Offset 15 RB / 0 RB Offset
		131997 to 132647	131997 (1712.5MHz), 132322 (1745.0MHz), 132647 (1777.5MHz)	5MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		132022 to 132622	132022 (1715.0MHz), 132322 (1745.0MHz), 132622 (1775.0MHz)	10MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
		132047 to 132597	132047 (1717.5MHz), 132322 (1745.0MHz), 132597 (1772.5MHz)	15MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 37 RB Offset 1 RB / 74 RB Offset 36 RB / 0 RB Offset 36 RB / 19 RB Offset 36 RB / 39 RB Offset 75 RB / 0 RB Offset
		132072 to 132572	132072 (1720.0MHz), 132322 (1745.0MHz), 132572 (1770.0MHz)	20MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 50 RB Offset 1 RB / 99 RB Offset 50 RB / 0 RB Offset 50 RB / 25 RB Offset 50 RB / 50 RB Offset 100 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Radiated Emission Below 1GHz	131997 to 132647	132647 (1777.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	131979 to 132665	131979 (1710.7MHz), 132322 (1745.0MHz), 132665 (1779.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		131997 to 132647	131997 (1712.5MHz), 132322 (1745.0MHz), 132647 (1777.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		132072 to 132572	132072 (1720.0MHz), 132322 (1745.0MHz), 132572 (1770.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM, 64QAM and 256QAM, measured value of QPSK is higher than 16QAM, 64QAM and 256QAM mode. Therefore the radiated emission test items was performed under QPSK mode only.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
EIRP / ERP	25deg. C, 60%RH 25deg. C, 70%RH	120Vac, 60Hz	James Yang Hans Wu
Modulation Characteristics	25deg. C, 60%RH	120Vac, 60Hz	James Yang
Frequency Stability	25deg. C, 60%RH	7.74Vdc	James Yang
Occupied Bandwidth	25deg. C, 60%RH	120Vac, 60Hz	James Yang
Band Edge	25deg. C, 60%RH	120Vac, 60Hz	James Yang
Peak To Average Ratio	25deg. C, 60%RH	120Vac, 60Hz	James Yang
Conducted Emission	25deg. C, 60%RH	120Vac, 60Hz	James Yang
Radiated Emission	23deg. C, 67%RH 25deg. C, 65%RH	120Vac, 60Hz	Adair Peng Tank Wu

3.4 EUT Operating Conditions

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

3.5 General Description of Applied Standards and References

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test Standard:

FCC 47 CFR Part 2

FCC 47 CFR Part 22

FCC 47 CFR Part 24

FCC 47 CFR Part 27

FCC 47 CFR Part 96

ANSI/TIA/EIA-603-D-2010

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

References Test Guidance:

KDB 971168 D01 Power Meas License Digital Systems v03r01

KDB 971168 D02 Misc Rev Approv License Devices v02r01

KDB 940660 D01 Part 96 CBRS Eqpt v03

All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

For n5:

Mobile / Portable station are limited to 7 watts e.r.p.

For LTE Band 2:

Mobile / Portable station are limited to 2 watts e.i.r.p.

For LTE Band 7:

Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

For LTE Band 12:

Control and mobile stations in the 698-746 MHz, 746-757 MHz, 787-788 MHz and 805-806 MHz band are limited to 30 watts ERP.

Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink, 746-757 MHz, 787-788 MHz and 805-806 MHz band are limited to 3 watts ERP.

For LTE Band 30:

For mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth.

For LTE Band 48:

Device		Maximum EIRP (dBm/10 MHz)
<input checked="" type="checkbox"/>	End User Device	23
<input type="checkbox"/>	Category A CBSD	30
<input type="checkbox"/>	Category B CBSD	47

For LTE Band 66:

Mobile / Portable station are limited to 1 watts e.i.r.p.

4.1.2 Test Procedures

Conducted Power Measurement:

For all test band except LTE Band 30 and LTE Band 48:

The EUT was set up for the maximum power with 5GNR and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

For LTE Band 30:

Measurement method refers to ANSI C63.26 section 5.2.7 & 5.2.4.

Maximum EIRP / ERP

For all test band except LTE Band 48:

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation as follows:

$$\text{EIRP} = P_{\text{Meas}} + G_{\text{T}}$$

$$\text{ERP} = P_{\text{Meas}} + G_{\text{T}} - 2.15$$

where

ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively
(expressed in the same units as P_{Meas} , e.g., dBm or dBW)

P_{Meas} measured transmitter output power or PSD, in dBm or dBW

G_{T} gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

For LTE Band 48

- a. Set span to at least 1.5 times the OBW.
- b. Set RBW = 1-5% of the OBW, not to exceed 1 MHz.
- c. Set VBW $\geq 3 \times$ RBW.
- d. Set number of points in sweep $\geq 2 \times$ span / RBW.
- e. Sweep time = auto-couple.
- f. Detector = RMS (power averaging).
- g. If the EUT can be configured to transmit continuously (i.e., burst duty cycle $\geq 98\%$), then set the trigger to free run.
- h. If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle $< 98\%$), then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Ensure that the sweep time is less than or equal to the transmission burst duration.
- i. Trace average at least 100 traces in power averaging (i.e., RMS) mode.
- j. Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function, with the band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
- k. For per 10MHz method, channel power integrating bandwidth 10MHz is used for bandwidth 5M, 10M, 15M and 20M. For full power method, channel power integrating bandwidth 10MHz is used for bandwidth 5M, 10M, integrating bandwidth 15MHz is used for bandwidth 15M, integrating bandwidth 20MHz is used for bandwidth 20M.
- l. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- m. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn. E.R.P power can be calculated from E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15 dB. Correction Factor (includes EIRP and ERP unit conversion factor) = Antenna gain of substitution horn. – Tx cable loss.
- n. Measurement method refers to ANSI C63.26 section 5.2.7 & 5.2.4.

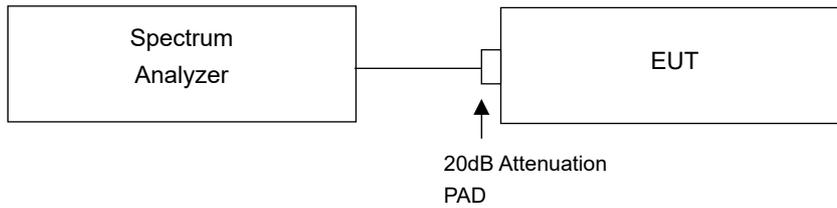
4.1.3 Test Setup

Conducted Power Measurement:

For all test band except LTE Band 30 and LTE Band 48:



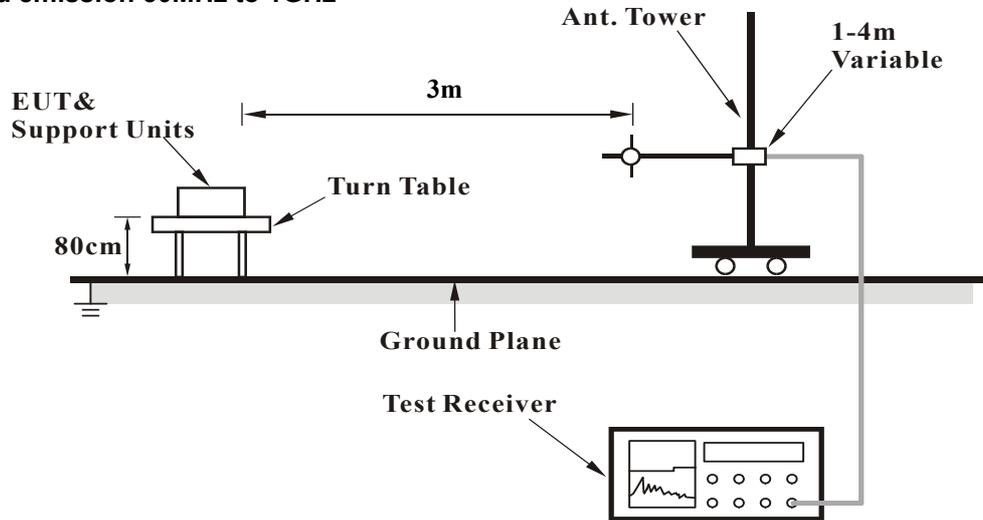
For LTE Band 30:



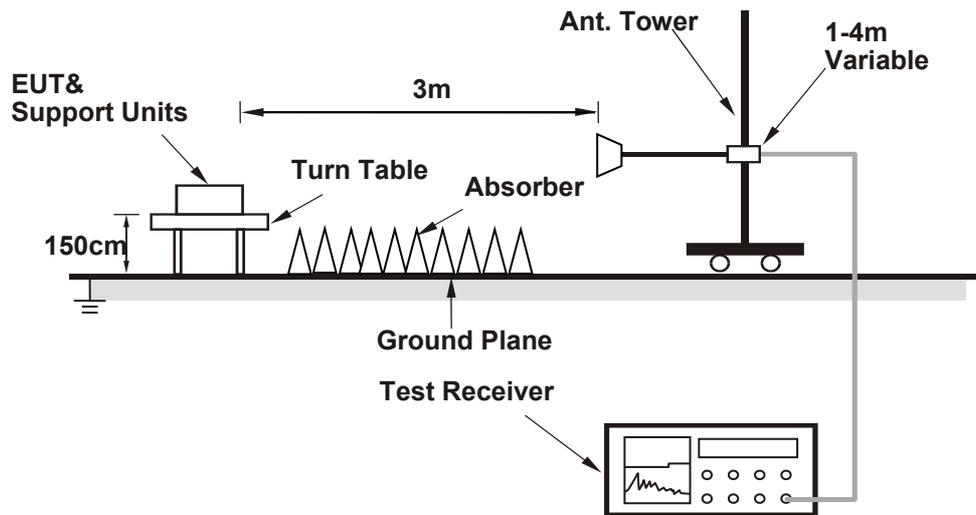
EIRP / ERP Measurement:

For LTE Band 48

For radiated emission 30MHz to 1GHz



For radiated emission above 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.4 Test Results

Conducted Output Power (dBm) (For all test band except LTE Band 30 and LTE Band 48)

NR Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		166800	167300	167800
		Frequency (MHz)		834	836.5	839
20M	$\pi/2$ BPSK	1	1	24.48	24.37	24.44
		1	53	24.44	24.36	24.40
		1	104	24.39	24.35	24.44
		50	0	24.14	24.00	24.05
		50	28	24.35	24.41	24.37
		50	56	24.00	23.90	23.92
		100	0	24.16	24.17	24.08
20M	QPSK	1	1	24.54	24.47	24.51
		1	53	24.51	24.45	24.50
		1	104	24.46	24.41	24.47
		50	0	23.65	23.54	23.57
		50	28	24.45	24.45	24.46
		50	56	23.57	23.46	23.52
		100	0	23.69	23.67	23.58
20M	16QAM	1	1	23.49	23.44	23.50
20M	64QAM	1	1	21.99	21.92	21.93
20M	256QAM	1	1	19.94	19.93	20.01
BW	MCS Index	Channel		166300	167300	168300
		Frequency (MHz)		831.5	836.5	841.5
15M	$\pi/2$ BPSK	1	1	24.46	24.33	24.40
		1	40	24.37	24.31	24.30
		1	77	24.34	24.26	24.41
		36	0	24.06	23.94	23.96
		36	22	24.32	24.36	24.32
		36	43	24.00	23.83	23.89
		75	0	24.13	24.13	24.01
15M	QPSK	1	1	24.46	24.42	24.46
		1	40	24.50	24.41	24.44
		1	77	24.44	24.33	24.42
		36	0	23.63	23.45	23.49
		36	22	24.39	24.45	24.37
		36	43	23.48	23.37	23.43
		75	0	23.68	23.66	23.53
15M	16QAM	1	1	23.40	23.36	23.47
15M	64QAM	1	1	21.93	21.91	21.90
15M	256QAM	1	1	19.89	19.93	19.94

NR Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		165800	167300	168800
		Frequency (MHz)		829	836.5	844
10M	$\pi/2$ BPSK	1	1	24.45	24.34	24.34
		1	26	24.40	24.29	24.30
		1	50	24.39	24.30	24.38
		25	0	24.10	23.92	24.04
		25	14	24.30	24.37	24.35
		25	27	23.93	23.85	23.84
		50	0	24.09	24.11	23.98
10M	QPSK	1	1	24.46	24.40	24.41
		1	26	24.48	24.41	24.47
		1	50	24.36	24.33	24.42
		25	0	23.62	23.49	23.53
		25	14	24.36	24.41	24.40
		25	27	23.50	23.42	23.49
		50	0	23.65	23.66	23.55
10M	16QAM	1	1	23.43	23.37	23.50
10M	64QAM	1	1	21.97	21.92	21.83
10M	256QAM	1	1	19.93	19.91	19.93
BW	MCS Index	Channel		165300	167300	169300
		Frequency (MHz)		826.5	836.5	846.5
5M	$\pi/2$ BPSK	1	1	24.42	24.30	24.38
		1	13	24.35	24.29	24.37
		1	23	24.38	24.31	24.44
		12	0	24.11	23.93	24.00
		12	7	24.32	24.33	24.33
		12	13	23.99	23.84	23.83
		25	0	24.14	24.14	24.06
5M	QPSK	1	1	24.45	24.44	24.47
		1	13	24.45	24.40	24.49
		1	23	24.41	24.38	24.39
		12	0	23.63	23.45	23.54
		12	7	24.35	24.39	24.40
		12	13	23.49	23.41	23.47
		25	0	23.67	23.57	23.53
5M	16QAM	1	1	23.41	23.38	23.48
5M	64QAM	1	1	21.99	21.87	21.84
5M	256QAM	1	1	19.91	19.84	19.91

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18700	18900	19100
		Frequency (MHz)		1860	1880	1900
20M	QPSK	1	0	23.75	23.59	23.76
		1	50	23.48	23.50	23.61
		1	99	23.48	23.45	23.60
		50	0	22.66	22.47	22.58
		50	25	22.60	22.47	22.65
		50	50	22.52	22.43	22.57
		100	0	22.49	22.53	22.79
20M	16QAM	1	0	22.62	22.63	22.67
		1	50	22.62	22.82	22.78
		1	99	22.73	22.61	22.54
		50	0	21.55	21.42	21.44
		50	25	21.44	21.41	21.36
		50	50	21.54	21.51	21.47
		100	0	21.47	21.53	21.52
20M	64QAM	1	0	21.81	21.75	21.51
		1	50	21.52	21.78	21.48
		1	99	21.63	21.50	21.54
		50	0	20.63	20.67	20.72
		50	25	20.56	20.59	20.44
		50	50	20.60	20.59	20.67
		100	0	20.55	20.61	20.67
20M	256QAM	1	0	18.58	18.39	18.21
		1	50	18.08	18.36	18.16
		1	99	18.20	17.87	18.25
		50	0	18.20	18.13	18.02
		50	25	18.14	18.19	18.27
		50	50	18.38	18.43	18.01
		100	0	18.03	18.19	18.25

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18675	18900	19125
		Frequency (MHz)		1857.5	1880	1902.5
15M	QPSK	1	0	23.53	23.51	23.59
		1	37	23.55	23.58	23.60
		1	74	23.63	23.61	23.64
		36	0	22.62	22.42	22.58
		36	19	22.51	22.63	22.68
		36	39	22.63	22.40	22.69
		75	0	22.75	22.47	22.41
15M	16QAM	1	0	22.74	22.82	22.70
		1	37	22.71	22.67	22.44
		1	74	22.61	22.57	22.39
		36	0	21.38	21.44	21.36
		36	19	21.47	21.27	21.50
		36	39	21.58	21.59	21.61
		75	0	21.64	21.57	21.51
15M	64QAM	1	0	21.54	21.64	21.59
		1	37	21.72	21.61	21.75
		1	74	21.45	21.39	21.62
		36	0	20.77	20.76	20.39
		36	19	20.63	20.56	20.43
		36	39	20.47	20.34	20.54
		75	0	20.66	20.54	20.73
15M	256QAM	1	0	18.30	18.02	18.51
		1	37	18.12	18.24	18.06
		1	74	17.97	18.28	18.17
		36	0	17.48	17.00	17.17
		36	19	17.23	16.99	17.17
		36	39	17.50	17.37	17.23
		75	0	17.10	16.95	17.30

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18650	18900	19150
		Frequency (MHz)		1855	1880	1905
10M	QPSK	1	0	23.38	23.42	23.69
		1	24	23.60	23.41	23.63
		1	49	23.66	23.18	23.62
		25	0	22.68	22.50	22.70
		25	12	22.52	22.28	22.50
		25	25	22.36	22.54	22.58
		50	0	22.60	22.29	22.45
10M	16QAM	1	0	22.63	22.77	22.68
		1	24	22.50	22.49	22.59
		1	49	22.70	22.43	22.48
		25	0	21.33	21.45	21.51
		25	12	21.34	21.43	21.25
		25	25	21.46	21.30	21.35
		50	0	21.34	21.21	21.30
10M	64QAM	1	0	21.72	21.31	21.59
		1	24	21.51	21.42	21.61
		1	49	21.35	21.43	21.29
		25	0	20.56	20.32	20.55
		25	12	20.55	20.41	20.41
		25	25	20.61	20.47	20.46
		50	0	20.60	20.48	20.54
10M	256QAM	1	0	18.35	18.49	18.40
		1	24	18.03	17.89	18.00
		1	49	18.16	18.02	18.09
		25	0	17.20	16.89	17.20
		25	12	17.08	17.14	16.92
		25	25	17.09	17.40	17.06
		50	0	16.94	16.85	17.08

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18625	18900	19175
		Frequency (MHz)		1852.5	1880	1907.5
5M	QPSK	1	0	23.59	23.36	23.52
		1	12	23.47	23.64	23.35
		1	24	23.49	23.42	23.32
		12	0	22.54	22.40	22.67
		12	6	22.59	22.28	22.36
		12	13	22.59	22.24	22.52
		25	0	22.47	22.61	22.57
5M	16QAM	1	0	22.78	22.53	22.75
		1	12	22.71	22.49	22.40
		1	24	22.60	22.44	22.61
		12	0	21.39	21.41	21.51
		12	6	21.35	21.30	21.38
		12	13	21.30	21.43	21.29
		25	0	21.51	21.24	21.36
5M	64QAM	1	0	21.63	21.53	21.23
		1	12	21.62	21.27	21.43
		1	24	21.40	21.33	21.38
		12	0	20.61	20.44	20.49
		12	6	20.40	20.37	20.32
		12	13	20.34	20.20	20.44
		25	0	20.43	20.40	20.49
5M	256QAM	1	0	18.05	18.33	18.07
		1	12	17.85	18.22	17.85
		1	24	18.41	17.98	17.77
		12	0	17.48	17.41	17.31
		12	6	17.26	16.97	17.13
		12	13	17.19	16.81	16.83
		25	0	17.34	17.12	17.15

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18615	18900	19185
		Frequency (MHz)		1851.5	1880	1908.5
3M	QPSK	1	0	23.40	23.49	23.50
		1	7	23.33	23.46	23.58
		1	14	23.63	23.39	23.42
		8	0	22.62	22.42	22.61
		8	3	22.46	22.34	22.74
		8	7	22.46	22.43	22.63
		15	0	22.78	22.58	22.54
3M	16QAM	1	0	22.73	22.57	22.61
		1	7	22.53	22.69	22.34
		1	14	22.45	22.60	22.50
		8	0	21.31	21.54	21.44
		8	3	21.51	21.33	21.18
		8	7	21.48	21.23	21.33
		15	0	21.45	21.24	21.36
3M	64QAM	1	0	21.70	21.64	21.59
		1	7	21.44	21.77	21.49
		1	14	21.31	21.42	21.36
		8	0	20.58	20.56	20.38
		8	3	20.28	20.40	20.50
		8	7	20.34	20.36	20.45
		15	0	20.69	20.44	20.51
3M	256QAM	1	0	18.36	18.29	18.18
		1	7	18.30	17.99	17.98
		1	14	18.37	18.10	18.09
		8	0	17.22	17.02	16.79
		8	3	17.23	16.98	17.44
		8	7	17.33	17.13	17.10
		15	0	17.44	16.80	17.40

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18607	18900	19193
		Frequency (MHz)		1850.7	1880	1909.3
1.4M	QPSK	1	0	23.48	23.47	23.62
		1	2	23.41	23.59	23.54
		1	5	23.51	23.15	23.42
		3	0	23.54	23.42	23.67
		3	1	23.45	23.35	23.33
		3	3	23.54	23.28	23.52
		6	0	22.47	22.30	22.43
1.4M	16QAM	1	0	22.69	22.73	22.50
		1	2	22.58	22.32	22.49
		1	5	22.43	22.47	22.46
		3	0	22.43	22.16	22.53
		3	1	22.41	22.36	22.59
		3	3	22.38	22.55	22.26
		6	0	21.39	21.46	21.27
1.4M	64QAM	1	0	21.37	21.58	21.72
		1	2	21.27	21.54	21.46
		1	5	21.32	21.40	21.41
		3	0	21.34	21.54	21.37
		3	1	21.69	21.49	21.20
		3	3	21.34	21.24	21.19
		6	0	20.39	20.55	20.70
1.4M	256QAM	1	0	18.18	17.84	18.39
		1	2	18.09	18.34	18.37
		1	5	18.07	18.07	18.01
		3	0	18.43	18.35	18.25
		3	1	18.45	18.27	17.88
		3	3	18.44	18.10	18.01
		6	0	17.04	17.14	17.11

LTE Band 7						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20850	21100	21350
		Frequency (MHz)		2510	2535	2560
20M	QPSK	1	0	23.43	23.35	23.67
		1	50	23.34	23.36	23.34
		1	99	23.23	23.19	23.32
		50	0	22.59	22.32	22.74
		50	25	22.44	22.22	22.57
		50	50	22.36	22.43	22.45
		100	0	22.51	22.23	22.71
20M	16QAM	1	0	22.63	22.31	22.85
		1	50	21.97	21.91	22.40
		1	99	21.98	22.15	22.11
		50	0	21.47	21.33	21.75
		50	25	21.35	21.35	21.69
		50	50	21.33	21.37	21.67
		100	0	21.48	21.30	21.47
20M	64QAM	1	0	21.61	21.34	21.45
		1	50	21.61	21.24	21.63
		1	99	21.04	21.07	21.20
		50	0	20.30	20.31	20.67
		50	25	20.30	20.30	20.78
		50	50	20.37	20.07	20.26
		100	0	20.52	20.20	20.61
20M	256QAM	1	0	18.32	18.18	18.08
		1	50	17.90	17.62	17.84
		1	99	18.17	17.67	17.98
		50	0	17.29	16.85	17.35
		50	25	17.08	17.27	17.55
		50	50	17.21	16.95	16.79
		100	0	16.96	17.18	17.19

LTE Band 7						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20825	21100	21375
		Frequency (MHz)		2507.5	2535	2562.5
15M	QPSK	1	0	23.49	23.12	23.38
		1	37	23.09	23.19	23.25
		1	74	23.19	23.01	23.43
		36	0	22.28	22.51	22.67
		36	19	22.28	22.37	22.35
		36	39	22.37	22.33	22.56
		75	0	22.28	22.45	22.36
15M	16QAM	1	0	22.34	22.17	22.82
		1	37	22.05	22.15	22.02
		1	74	21.99	21.99	22.36
		36	0	21.37	21.25	21.39
		36	19	21.18	21.43	21.51
		36	39	21.20	21.16	21.45
		75	0	21.43	21.42	21.65
15M	64QAM	1	0	21.41	21.45	21.61
		1	37	21.37	21.49	21.41
		1	74	21.14	21.01	21.39
		36	0	20.32	20.33	20.64
		36	19	20.34	20.38	20.65
		36	39	20.30	19.97	20.18
		75	0	20.47	20.44	20.57
15M	256QAM	1	0	17.69	17.79	18.19
		1	37	17.67	17.77	17.97
		1	74	17.72	17.94	17.81
		36	0	17.16	16.97	17.08
		36	19	17.10	16.95	17.10
		36	39	17.10	16.87	17.31
		75	0	16.77	16.98	17.20

LTE Band 7						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20800	21100	21400
		Frequency (MHz)		2505	2535	2565
10M	QPSK	1	0	23.15	23.11	23.33
		1	24	23.02	22.85	23.34
		1	49	23.06	23.11	23.22
		25	0	22.35	22.10	22.39
		25	12	22.29	22.06	22.23
		25	25	22.19	21.96	22.23
		50	0	22.40	22.31	22.40
10M	16QAM	1	0	22.38	22.45	22.74
		1	24	22.15	21.93	22.35
		1	49	21.74	22.04	21.95
		25	0	21.35	21.19	21.62
		25	12	21.30	21.17	21.48
		25	25	21.47	21.16	21.46
		50	0	21.25	21.09	21.40
10M	64QAM	1	0	21.38	21.08	21.69
		1	24	21.28	21.19	21.63
		1	49	20.88	21.12	21.07
		25	0	20.34	20.38	20.37
		25	12	20.42	20.33	20.42
		25	25	20.28	20.19	20.28
		50	0	20.32	20.13	20.27
10M	256QAM	1	0	18.03	17.57	17.86
		1	24	18.08	17.49	17.80
		1	49	17.84	18.00	17.59
		25	0	17.00	16.81	17.26
		25	12	17.10	16.74	17.27
		25	25	17.01	17.02	16.89
		50	0	16.81	17.03	17.27

LTE Band 7						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20775	21100	21425
		Frequency (MHz)		2502.5	2535	2567.5
5M	QPSK	1	0	23.37	23.19	23.36
		1	12	23.07	23.11	23.20
		1	24	22.86	23.02	23.27
		12	0	22.26	22.15	22.43
		12	6	22.05	22.10	22.12
		12	13	22.10	22.34	22.37
		25	0	22.33	22.38	22.35
5M	16QAM	1	0	22.30	22.28	22.71
		1	12	22.16	22.08	22.20
		1	24	21.77	21.75	22.06
		12	0	21.09	21.43	21.48
		12	6	21.11	21.20	21.53
		12	13	21.20	21.02	21.51
		25	0	21.38	21.35	21.43
5M	64QAM	1	0	21.20	21.33	21.53
		1	12	21.28	21.41	21.42
		1	24	20.88	20.96	21.16
		12	0	20.49	20.13	20.58
		12	6	20.35	20.09	20.31
		12	13	20.09	20.15	20.45
		25	0	20.15	20.07	20.63
5M	256QAM	1	0	17.96	17.58	17.81
		1	12	17.50	17.51	17.81
		1	24	17.89	17.41	18.13
		12	0	16.98	16.87	16.93
		12	6	16.66	16.98	16.83
		12	13	16.90	16.79	16.87
		25	0	17.06	17.13	17.02

LTE Band 12						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23060	23095	23130
		Frequency (MHz)		704	707.5	711
10M	QPSK	1	0	24.77	24.56	24.50
		1	24	24.75	24.27	24.34
		1	49	24.61	24.41	24.45
		25	0	23.55	23.40	23.19
		25	12	23.56	23.34	23.31
		25	25	23.49	23.49	23.26
		50	0	23.55	23.56	23.34
10M	16QAM	1	0	23.56	23.31	23.42
		1	24	23.36	23.17	23.12
		1	49	23.59	23.45	23.13
		25	0	22.71	22.53	22.36
		25	12	22.77	22.35	22.18
		25	25	22.84	22.36	22.45
		50	0	22.65	22.27	22.30
10M	64QAM	1	0	22.83	22.36	22.39
		1	24	22.62	22.48	22.45
		1	49	22.31	22.04	21.88
		25	0	21.48	21.21	21.10
		25	12	21.34	21.25	21.10
		25	25	21.37	21.27	21.24
		50	0	21.52	21.15	21.01
10M	256QAM	1	0	19.64	19.22	19.01
		1	24	19.41	18.68	19.09
		1	49	19.07	18.80	18.90
		25	0	18.19	18.01	17.82
		25	12	18.43	18.16	17.84
		25	25	18.21	18.23	18.05
		50	0	18.25	18.24	18.10

LTE Band 12						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23035	23095	23155
		Frequency (MHz)		701.5	707.5	713.5
5M	QPSK	1	0	24.65	24.29	24.55
		1	12	24.64	24.26	24.40
		1	24	24.61	24.41	24.12
		12	0	23.66	23.44	23.29
		12	6	23.72	23.26	23.41
		12	13	23.74	23.16	23.42
		25	0	23.41	23.40	23.24
5M	16QAM	1	0	23.55	23.31	23.34
		1	12	23.32	23.36	23.34
		1	24	23.30	23.25	23.32
		12	0	22.88	22.55	22.45
		12	6	22.65	22.48	22.46
		12	13	22.65	22.32	22.30
		25	0	22.87	22.42	22.37
5M	64QAM	1	0	22.71	22.50	22.44
		1	12	22.72	22.49	22.26
		1	24	22.33	22.03	22.12
		12	0	21.64	21.13	21.24
		12	6	21.45	21.22	21.06
		12	13	21.36	20.96	20.95
		25	0	21.51	21.24	21.26
5M	256QAM	1	0	19.47	19.14	19.11
		1	12	18.93	19.16	18.68
		1	24	18.72	18.82	19.09
		12	0	18.42	18.01	17.79
		12	6	18.11	17.93	17.85
		12	13	18.08	18.08	17.77
		25	0	18.17	18.01	17.93

LTE Band 12						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23025	23095	23165
		Frequency (MHz)		700.5	707.5	714.5
3M	QPSK	1	0	24.60	24.23	24.47
		1	7	24.71	24.44	24.10
		1	14	24.46	24.14	24.22
		8	0	23.53	23.13	23.14
		8	3	23.68	23.18	23.26
		8	7	23.50	23.28	23.25
		15	0	23.45	23.39	23.10
3M	16QAM	1	0	23.43	23.29	23.21
		1	7	23.45	23.05	23.22
		1	14	23.36	23.20	23.12
		8	0	22.58	22.07	22.36
		8	3	22.61	22.46	22.23
		8	7	22.78	22.45	22.20
		15	0	22.72	22.06	22.18
3M	64QAM	1	0	22.74	22.33	22.19
		1	7	22.71	22.02	21.96
		1	14	22.14	21.80	21.94
		8	0	21.35	20.97	21.28
		8	3	21.32	21.18	20.87
		8	7	21.06	21.02	20.95
		15	0	21.37	21.20	21.11
3M	256QAM	1	0	19.24	19.02	19.11
		1	7	19.45	19.02	18.91
		1	14	19.06	18.87	18.64
		8	0	18.07	17.80	17.68
		8	3	18.04	17.89	17.81
		8	7	18.43	17.84	17.92
		15	0	17.95	17.97	17.76

LTE Band 12						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23017	23095	23173
		Frequency (MHz)		699.7	707.5	715.3
1.4M	QPSK	1	0	24.38	24.09	24.18
		1	2	24.42	24.44	24.38
		1	5	24.44	24.29	24.07
		3	0	24.47	24.31	24.11
		3	1	24.67	24.36	24.34
		3	3	24.53	24.12	24.21
		6	0	23.44	23.38	23.45
1.4M	16QAM	1	0	23.51	23.38	23.31
		1	2	23.43	23.10	23.02
		1	5	23.35	23.29	23.26
		3	0	23.81	23.32	23.37
		3	1	23.73	23.18	23.21
		3	3	23.81	23.36	23.23
		6	0	22.56	22.38	22.16
1.4M	64QAM	1	0	22.37	22.28	22.38
		1	2	22.75	22.34	22.29
		1	5	22.28	22.15	21.68
		3	0	22.20	21.95	22.09
		3	1	22.17	22.00	22.14
		3	3	22.35	22.19	21.82
		6	0	21.31	20.94	21.08
1.4M	256QAM	1	0	19.17	19.22	18.57
		1	2	18.98	18.89	18.94
		1	5	19.16	19.04	18.82
		3	0	19.42	18.66	18.87
		3	1	19.24	18.98	18.92
		3	3	19.15	19.13	18.84
		6	0	18.06	18.18	18.00

LTE Band 66						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		132072	132322	132572
		Frequency (MHz)		1720	1745	1770
20M	QPSK	1	0	23.09	23.75	23.76
		1	50	23.28	23.42	23.71
		1	99	22.85	23.29	23.21
		50	0	22.24	22.69	22.66
		50	25	22.54	22.50	22.59
		50	50	22.17	22.40	22.67
		100	0	22.52	22.48	22.71
20M	16QAM	1	0	22.58	22.76	22.41
		1	50	22.69	22.36	22.79
		1	99	22.34	22.48	22.63
		50	0	21.36	21.47	21.66
		50	25	21.42	21.60	21.69
		50	50	21.36	21.55	21.54
		100	0	21.22	21.66	21.64
20M	64QAM	1	0	21.47	21.61	21.67
		1	50	21.27	21.62	21.53
		1	99	21.16	21.56	21.81
		50	0	20.31	20.87	20.71
		50	25	20.57	20.62	20.61
		50	50	20.43	20.68	20.63
		100	0	20.24	20.58	20.57
20M	256QAM	1	0	17.55	18.10	18.59
		1	50	17.70	18.23	18.54
		1	99	17.40	17.79	17.88
		50	0	17.06	17.08	17.66
		50	25	17.05	17.07	17.69
		50	50	16.71	17.30	17.42
		100	0	17.17	17.34	17.07

LTE Band 66						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		132047	132322	132597
		Frequency (MHz)		1717.5	1745	1772.5
15M	QPSK	1	0	23.28	23.67	23.74
		1	37	23.15	23.59	23.72
		1	74	22.83	23.15	23.23
		36	0	22.25	22.35	22.59
		36	19	22.32	22.49	22.61
		36	39	22.28	22.53	22.58
		75	0	22.36	22.48	22.47
15M	16QAM	1	0	22.50	22.71	22.64
		1	37	22.51	22.45	22.78
		1	74	22.46	22.53	22.43
		36	0	21.27	21.66	21.49
		36	19	21.28	21.46	21.36
		36	39	21.34	21.53	21.42
		75	0	21.34	21.65	21.34
15M	64QAM	1	0	21.17	21.81	21.90
		1	37	21.10	21.68	21.64
		1	74	21.11	21.37	21.60
		36	0	20.35	20.79	20.65
		36	19	20.28	20.79	20.46
		36	39	20.46	20.83	20.82
		75	0	20.52	20.82	20.78
15M	256QAM	1	0	17.90	18.32	18.55
		1	37	17.53	18.05	18.38
		1	74	17.38	17.91	17.90
		36	0	16.90	16.94	17.40
		36	19	17.09	16.99	17.40
		36	39	16.99	16.93	17.21
		75	0	17.01	17.32	17.38

LTE Band 66						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		132022	132322	132622
		Frequency (MHz)		1715	1745	1775
10M	QPSK	1	0	23.16	23.66	23.62
		1	24	23.07	23.49	23.41
		1	49	22.59	22.95	23.33
		25	0	22.40	22.38	22.66
		25	12	22.18	22.54	22.73
		25	25	22.37	22.47	22.60
		50	0	22.28	22.32	22.77
10M	16QAM	1	0	22.48	22.41	22.44
		1	24	22.60	22.12	22.49
		1	49	22.21	22.29	22.45
		25	0	21.23	21.49	21.60
		25	12	21.25	21.53	21.57
		25	25	21.36	21.49	21.21
		50	0	21.21	21.58	21.30
10M	64QAM	1	0	21.03	21.55	21.53
		1	24	21.19	21.67	21.68
		1	49	20.92	21.25	21.52
		25	0	20.36	20.74	20.61
		25	12	20.45	20.61	20.49
		25	25	20.08	20.78	20.74
		50	0	20.42	20.42	20.69
10M	256QAM	1	0	17.61	18.09	18.41
		1	24	17.63	18.06	18.00
		1	49	17.18	17.97	17.61
		25	0	16.71	16.89	17.22
		25	12	17.07	16.89	17.34
		25	25	16.65	16.98	17.34
		50	0	16.89	16.93	17.60

LTE Band 66						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		131997	132322	132647
		Frequency (MHz)		1712.5	1745	1777.5
5M	QPSK	1	0	22.85	23.54	23.71
		1	12	22.92	23.37	23.50
		1	24	22.63	23.15	23.05
		12	0	22.33	22.60	22.88
		12	6	22.21	22.26	22.47
		12	13	22.24	22.44	22.65
		25	0	22.39	22.20	22.76
5M	16QAM	1	0	22.55	22.67	22.43
		1	12	22.55	22.21	22.27
		1	24	22.27	22.30	22.33
		12	0	21.10	21.55	21.51
		12	6	21.21	21.36	21.64
		12	13	21.05	21.53	21.33
		25	0	21.22	21.48	21.42
5M	64QAM	1	0	21.04	21.48	21.61
		1	12	21.20	21.43	21.56
		1	24	20.88	21.09	21.68
		12	0	20.35	20.75	20.49
		12	6	20.38	20.56	20.48
		12	13	20.14	20.68	20.72
		25	0	20.26	20.47	20.46
5M	256QAM	1	0	17.62	17.97	18.38
		1	12	17.87	18.07	18.03
		1	24	17.28	17.90	17.58
		12	0	16.77	16.83	17.37
		12	6	17.18	16.96	17.11
		12	13	16.65	17.07	17.26
		25	0	17.03	16.87	17.50

LTE Band 66						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		131987	132322	132657
		Frequency (MHz)		1711.5	1745	1778.5
3M	QPSK	1	0	23.20	23.46	23.54
		1	7	22.97	23.48	23.54
		1	14	22.58	23.06	23.23
		8	0	22.27	22.28	22.75
		8	3	22.17	22.45	22.72
		8	7	22.12	22.17	22.47
		15	0	22.16	22.40	22.50
3M	16QAM	1	0	22.70	22.53	22.51
		1	7	22.60	22.25	22.60
		1	14	22.34	22.60	22.66
		8	0	21.15	21.37	21.53
		8	3	21.34	21.51	21.46
		8	7	21.14	21.25	21.48
		15	0	21.45	21.31	21.38
3M	64QAM	1	0	21.24	21.68	21.51
		1	7	21.22	21.67	21.36
		1	14	21.07	21.33	21.44
		8	0	20.43	20.78	20.40
		8	3	20.21	20.71	20.42
		8	7	20.24	20.53	20.43
		15	0	20.20	20.64	20.45
3M	256QAM	1	0	17.90	18.10	18.09
		1	7	17.68	18.15	18.45
		1	14	17.46	17.60	17.56
		8	0	16.93	17.08	17.16
		8	3	16.93	16.99	17.04
		8	7	17.04	17.17	17.18
		15	0	16.77	17.08	17.26

LTE Band 66						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		131979	132322	132665
		Frequency (MHz)		1710.7	1745	1779.3
1.4M	QPSK	1	0	22.94	23.36	23.66
		1	2	23.02	23.58	23.60
		1	5	22.76	23.21	23.47
		3	0	23.30	23.50	23.62
		3	1	23.16	23.53	23.65
		3	3	23.12	23.27	23.59
		6	0	22.22	22.53	22.56
1.4M	16QAM	1	0	22.44	22.28	22.40
		1	2	22.50	22.48	22.22
		1	5	22.24	22.35	22.54
		3	0	22.33	22.34	22.38
		3	1	22.27	22.60	22.39
		3	3	22.11	22.29	22.41
		6	0	21.31	21.40	21.42
1.4M	64QAM	1	0	21.00	21.73	21.65
		1	2	21.21	21.69	21.54
		1	5	20.76	21.39	21.48
		3	0	21.46	21.63	21.35
		3	1	21.08	21.56	21.55
		3	3	21.34	21.65	21.60
		6	0	20.41	20.63	20.54
1.4M	256QAM	1	0	17.33	17.78	17.85
		1	2	17.47	17.55	17.60
		1	5	17.38	17.32	17.50
		3	0	17.53	17.63	17.66
		3	1	17.48	17.92	17.94
		3	3	17.96	17.82	17.84
		6	0	16.88	17.19	17.03

Conducted Output Power (dBm/5MHz) (For LTE Band 30)

LTE Band 30				
BW	MCS Index	RB Size	RB Offset	Mid
		Channel		27710
		Frequency (MHz)		2310
10M	QPSK	1	0	23.14
		1	24	22.94
		1	49	22.88
		25	0	22.23
		25	12	21.90
		25	25	21.81
		50	0	21.93
10M	16QAM	1	0	22.13
		1	24	22.01
		1	49	22.03
		25	0	21.11
		25	12	20.88
		25	25	21.07
		50	0	20.91
10M	64QAM	1	0	21.23
		1	24	21.06
		1	49	21.01
		25	0	20.12
		25	12	20.05
		25	25	20.13
		50	0	19.92
10M	256QAM	1	0	17.77
		1	24	17.68
		1	49	17.26
		25	0	17.19
		25	12	17.09
		25	25	16.84
		50	0	16.90

LTE Band 30						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		27685	27710	27735
		Frequency (MHz)		2307.5	2310	2312.5
5M	QPSK	1	0	23.04	23.00	22.88
		1	12	22.81	22.80	22.82
		1	24	22.80	22.89	22.71
		12	0	21.79	21.82	21.91
		12	6	21.95	22.01	21.79
		12	13	21.89	21.95	21.69
		25	0	21.72	21.91	21.96
5M	16QAM	1	0	21.87	22.03	21.97
		1	12	22.16	21.85	22.09
		1	24	21.87	22.04	21.58
		12	0	20.80	21.15	20.97
		12	6	20.84	21.08	20.82
		12	13	21.07	20.95	21.05
		25	0	21.06	20.93	20.94
5M	64QAM	1	0	21.10	21.18	21.04
		1	12	20.78	20.86	20.66
		1	24	20.66	20.76	20.62
		12	0	19.99	20.12	19.76
		12	6	19.77	19.98	19.82
		12	13	19.90	20.02	19.83
		25	0	19.86	20.16	19.84
5M	256QAM	1	0	17.27	17.64	17.64
		1	12	17.53	17.49	17.58
		1	24	17.33	17.58	17.35
		12	0	16.93	17.10	17.10
		12	6	16.71	16.83	16.80
		12	13	16.99	17.02	16.83
		25	0	16.85	16.97	17.13

EIRP / ERP Power (dBm) (For all test band except LTE Band 30 and LTE Band 48)

NR Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		166800	167300	167800
		Frequency (MHz)		834	836.5	839
20M	$\pi/2$ BPSK	1	1	20.44	20.33	20.40
		1	53	20.40	20.32	20.36
		1	104	20.35	20.31	20.40
		50	0	20.10	19.96	20.01
		50	28	20.31	20.37	20.33
		50	56	19.96	19.86	19.88
		100	0	20.12	20.13	20.04
20M	QPSK	1	1	20.50	20.43	20.47
		1	53	20.47	20.41	20.46
		1	104	20.42	20.37	20.43
		50	0	19.61	19.50	19.53
		50	28	20.41	20.41	20.42
		50	56	19.53	19.42	19.48
		100	0	19.65	19.63	19.54
20M	16QAM	1	1	19.45	19.40	19.46
20M	64QAM	1	1	17.95	17.88	17.89
20M	256QAM	1	1	15.90	15.89	15.97
BW	MCS Index	Channel		166300	167300	168300
		Frequency (MHz)		831.5	836.5	841.5
15M	$\pi/2$ BPSK	1	1	20.42	20.29	20.36
		1	40	20.33	20.27	20.26
		1	77	20.30	20.22	20.37
		36	0	20.02	19.90	19.92
		36	22	20.28	20.32	20.28
		36	43	19.96	19.79	19.85
		75	0	20.09	20.09	19.97
15M	QPSK	1	1	20.42	20.38	20.42
		1	40	20.46	20.37	20.40
		1	77	20.40	20.29	20.38
		36	0	19.59	19.41	19.45
		36	22	20.35	20.41	20.33
		36	43	19.44	19.33	19.39
		75	0	19.64	19.62	19.49
15M	16QAM	1	1	19.36	19.32	19.43
15M	64QAM	1	1	17.89	17.87	17.86
15M	256QAM	1	1	15.85	15.89	15.90

NR Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		165800	167300	168800
		Frequency (MHz)		829	836.5	844
10M	$\pi/2$ BPSK	1	1	20.41	20.30	20.30
		1	26	20.36	20.25	20.26
		1	50	20.35	20.26	20.34
		25	0	20.06	19.88	20.00
		25	14	20.26	20.33	20.31
		25	27	19.89	19.81	19.80
		50	0	20.05	20.07	19.94
10M	QPSK	1	1	20.42	20.36	20.37
		1	26	20.44	20.37	20.43
		1	50	20.32	20.29	20.38
		25	0	19.58	19.45	19.49
		25	14	20.32	20.37	20.36
		25	27	19.46	19.38	19.45
		50	0	19.61	19.62	19.51
10M	16QAM	1	1	19.39	19.33	19.46
10M	64QAM	1	1	17.93	17.88	17.79
10M	256QAM	1	1	15.89	15.87	15.89
BW	MCS Index	Channel		165300	167300	169300
		Frequency (MHz)		826.5	836.5	846.5
5M	$\pi/2$ BPSK	1	1	20.38	20.26	20.34
		1	13	20.31	20.25	20.33
		1	23	20.34	20.27	20.40
		12	0	20.07	19.89	19.96
		12	7	20.28	20.29	20.29
		12	13	19.95	19.80	19.79
		25	0	20.10	20.10	20.02
5M	QPSK	1	1	20.41	20.40	20.43
		1	13	20.41	20.36	20.45
		1	23	20.37	20.34	20.35
		12	0	19.59	19.41	19.50
		12	7	20.31	20.35	20.36
		12	13	19.45	19.37	19.43
		25	0	19.63	19.53	19.49
5M	16QAM	1	1	19.37	19.34	19.44
5M	64QAM	1	1	17.95	17.83	17.80
5M	256QAM	1	1	15.87	15.80	15.87

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18700	18900	19100
		Frequency (MHz)		1860	1880	1900
20M	QPSK	1	0	22.35	22.19	22.37
		1	50	22.09	22.10	22.22
		1	99	22.08	22.06	22.20
		50	0	21.27	21.08	21.18
		50	25	21.21	21.08	21.26
		50	50	21.12	21.03	21.17
		100	0	21.10	21.14	21.40
20M	16QAM	1	0	21.22	21.24	21.28
		1	50	21.23	21.42	21.39
		1	99	21.33	21.22	21.14
		50	0	20.16	20.03	20.05
		50	25	20.04	20.02	19.96
		50	50	20.15	20.11	20.07
		100	0	20.07	20.13	20.13
20M	64QAM	1	0	20.42	20.35	20.11
		1	50	20.13	20.38	20.08
		1	99	20.23	20.11	20.15
		50	0	19.24	19.28	19.33
		50	25	19.17	19.20	19.04
		50	50	19.20	19.20	19.27
		100	0	19.16	19.22	19.28
20M	256QAM	1	0	17.18	17.00	16.81
		1	50	16.68	16.97	16.77
		1	99	16.81	16.47	16.85
		50	0	16.81	16.74	16.63
		50	25	16.74	16.80	16.88
		50	50	16.99	17.04	16.62
		100	0	16.64	16.80	16.85

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18675	18900	19125
		Frequency (MHz)		1857.5	1880	1902.5
15M	QPSK	1	0	22.14	22.11	22.19
		1	37	22.16	22.18	22.21
		1	74	22.23	22.22	22.25
		36	0	21.23	21.02	21.18
		36	19	21.12	21.24	21.29
		36	39	21.23	21.00	21.30
		75	0	21.36	21.07	21.02
15M	16QAM	1	0	21.34	21.42	21.30
		1	37	21.31	21.27	21.05
		1	74	21.21	21.17	20.99
		36	0	19.98	20.05	19.97
		36	19	20.08	19.88	20.11
		36	39	20.19	20.20	20.22
		75	0	20.25	20.17	20.12
15M	64QAM	1	0	20.15	20.24	20.19
		1	37	20.33	20.21	20.36
		1	74	20.06	20.00	20.22
		36	0	19.37	19.36	19.00
		36	19	19.23	19.17	19.04
		36	39	19.07	18.95	19.15
		75	0	19.27	19.14	19.34
15M	256QAM	1	0	16.90	16.63	17.11
		1	37	16.73	16.84	16.67
		1	74	16.58	16.88	16.78
		36	0	16.08	15.61	15.78
		36	19	15.83	15.60	15.78
		36	39	16.10	15.98	15.84
		75	0	15.70	15.56	15.91

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18650	18900	19150
		Frequency (MHz)		1855	1880	1905
10M	QPSK	1	0	21.99	22.03	22.29
		1	24	22.21	22.01	22.24
		1	49	22.27	21.79	22.23
		25	0	21.28	21.11	21.31
		25	12	21.13	20.88	21.10
		25	25	20.97	21.14	21.19
		50	0	21.21	20.89	21.06
10M	16QAM	1	0	21.23	21.38	21.29
		1	24	21.11	21.09	21.19
		1	49	21.30	21.04	21.08
		25	0	19.94	20.05	20.11
		25	12	19.95	20.03	19.86
		25	25	20.06	19.91	19.96
		50	0	19.94	19.82	19.91
10M	64QAM	1	0	20.33	19.91	20.19
		1	24	20.12	20.03	20.21
		1	49	19.96	20.04	19.90
		25	0	19.17	18.93	19.16
		25	12	19.15	19.01	19.01
		25	25	19.22	19.08	19.06
		50	0	19.21	19.09	19.15
10M	256QAM	1	0	16.95	17.10	17.01
		1	24	16.64	16.50	16.61
		1	49	16.77	16.62	16.69
		25	0	15.80	15.50	15.81
		25	12	15.68	15.75	15.53
		25	25	15.70	16.00	15.66
		50	0	15.54	15.46	15.69

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18625	18900	19175
		Frequency (MHz)		1852.5	1880	1907.5
5M	QPSK	1	0	22.19	21.96	22.13
		1	12	22.07	22.24	21.95
		1	24	22.10	22.03	21.93
		12	0	21.15	21.00	21.28
		12	6	21.20	20.89	20.97
		12	13	21.19	20.84	21.12
		25	0	21.08	21.21	21.17
5M	16QAM	1	0	21.38	21.13	21.36
		1	12	21.32	21.10	21.00
		1	24	21.20	21.05	21.22
		12	0	20.00	20.02	20.12
		12	6	19.95	19.90	19.99
		12	13	19.90	20.03	19.89
		25	0	20.11	19.84	19.96
5M	64QAM	1	0	20.23	20.14	19.84
		1	12	20.23	19.87	20.03
		1	24	20.00	19.94	19.99
		12	0	19.22	19.05	19.10
		12	6	19.01	18.98	18.93
		12	13	18.95	18.81	19.04
		25	0	19.04	19.00	19.09
5M	256QAM	1	0	16.66	16.94	16.68
		1	12	16.46	16.82	16.46
		1	24	17.02	16.59	16.38
		12	0	16.09	16.01	15.92
		12	6	15.87	15.58	15.73
		12	13	15.80	15.41	15.44
		25	0	15.95	15.73	15.75

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18615	18900	19185
		Frequency (MHz)		1851.5	1880	1908.5
3M	QPSK	1	0	22.00	22.10	22.11
		1	7	21.93	22.07	22.18
		1	14	22.24	22.00	22.03
		8	0	21.23	21.03	21.22
		8	3	21.06	20.95	21.35
		8	7	21.07	21.04	21.23
		15	0	21.38	21.18	21.14
3M	16QAM	1	0	21.33	21.17	21.22
		1	7	21.13	21.30	20.94
		1	14	21.05	21.21	21.11
		8	0	19.92	20.15	20.05
		8	3	20.11	19.93	19.78
		8	7	20.09	19.84	19.93
		15	0	20.05	19.85	19.97
3M	64QAM	1	0	20.31	20.25	20.19
		1	7	20.05	20.38	20.10
		1	14	19.91	20.03	19.96
		8	0	19.19	19.16	18.99
		8	3	18.88	19.01	19.11
		8	7	18.95	18.96	19.05
		15	0	19.30	19.05	19.12
3M	256QAM	1	0	16.96	16.90	16.78
		1	7	16.91	16.60	16.58
		1	14	16.97	16.70	16.69
		8	0	15.82	15.62	15.40
		8	3	15.84	15.58	16.05
		8	7	15.94	15.74	15.71
		15	0	16.04	15.40	16.01

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18607	18900	19193
		Frequency (MHz)		1850.7	1880	1909.3
1.4M	QPSK	1	0	22.08	22.08	22.22
		1	2	22.01	22.19	22.15
		1	5	22.11	21.76	22.03
		3	0	22.15	22.03	22.28
		3	1	22.05	21.95	21.94
		3	3	22.14	21.89	22.13
		6	0	21.08	20.90	21.03
1.4M	16QAM	1	0	21.29	21.34	21.11
		1	2	21.18	20.92	21.10
		1	5	21.04	21.08	21.06
		3	0	21.03	20.77	21.14
		3	1	21.02	20.96	21.19
		3	3	20.99	21.16	20.87
		6	0	20.00	20.06	19.88
1.4M	64QAM	1	0	19.98	20.19	20.33
		1	2	19.87	20.15	20.06
		1	5	19.93	20.00	20.02
		3	0	19.95	20.14	19.98
		3	1	20.29	20.10	19.80
		3	3	19.94	19.84	19.80
		6	0	18.99	19.16	19.31
1.4M	256QAM	1	0	16.79	16.45	17.00
		1	2	16.69	16.95	16.98
		1	5	16.68	16.68	16.61
		3	0	17.03	16.96	16.86
		3	1	17.06	16.87	16.48
		3	3	17.05	16.71	16.62
		6	0	15.65	15.75	15.71

LTE Band 7						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20850	21100	21350
		Frequency (MHz)		2510	2535	2560
20M	QPSK	1	0	23.61	23.53	23.86
		1	50	23.52	23.54	23.52
		1	99	23.42	23.38	23.50
		50	0	22.78	22.50	22.93
		50	25	22.63	22.40	22.75
		50	50	22.54	22.62	22.64
		100	0	22.70	22.42	22.89
20M	16QAM	1	0	22.81	22.50	23.04
		1	50	22.16	22.10	22.58
		1	99	22.16	22.34	22.30
		50	0	21.66	21.51	21.93
		50	25	21.53	21.54	21.87
		50	50	21.51	21.55	21.86
		100	0	21.67	21.49	21.66
20M	64QAM	1	0	21.80	21.52	21.64
		1	50	21.79	21.42	21.81
		1	99	21.22	21.25	21.39
		50	0	20.48	20.50	20.85
		50	25	20.49	20.48	20.97
		50	50	20.56	20.25	20.44
		100	0	20.70	20.39	20.80
20M	256QAM	1	0	18.50	18.36	18.26
		1	50	18.09	17.81	18.02
		1	99	18.36	17.85	18.17
		50	0	17.48	17.04	17.54
		50	25	17.27	17.46	17.74
		50	50	17.40	17.14	16.97
		100	0	17.14	17.37	17.38

LTE Band 7						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20825	21100	21375
		Frequency (MHz)		2507.5	2535	2562.5
15M	QPSK	1	0	23.68	23.30	23.56
		1	37	23.28	23.38	23.44
		1	74	23.38	23.19	23.61
		36	0	22.47	22.70	22.85
		36	19	22.47	22.56	22.54
		36	39	22.55	22.52	22.75
		75	0	22.47	22.64	22.54
15M	16QAM	1	0	22.53	22.35	23.01
		1	37	22.24	22.33	22.20
		1	74	22.18	22.17	22.55
		36	0	21.55	21.44	21.58
		36	19	21.37	21.62	21.70
		36	39	21.39	21.35	21.64
		75	0	21.61	21.61	21.84
15M	64QAM	1	0	21.59	21.64	21.80
		1	37	21.55	21.67	21.60
		1	74	21.33	21.19	21.57
		36	0	20.50	20.51	20.82
		36	19	20.53	20.56	20.83
		36	39	20.49	20.15	20.37
		75	0	20.65	20.62	20.75
15M	256QAM	1	0	17.88	17.98	18.37
		1	37	17.86	17.96	18.16
		1	74	17.90	18.13	17.99
		36	0	17.35	17.16	17.27
		36	19	17.28	17.14	17.29
		36	39	17.29	17.06	17.49
		75	0	16.96	17.17	17.39

LTE Band 7						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20800	21100	21400
		Frequency (MHz)		2505	2535	2565
10M	QPSK	1	0	23.34	23.29	23.51
		1	24	23.20	23.03	23.53
		1	49	23.25	23.30	23.41
		25	0	22.53	22.29	22.57
		25	12	22.47	22.25	22.41
		25	25	22.37	22.15	22.42
		50	0	22.59	22.49	22.58
10M	16QAM	1	0	22.56	22.63	22.93
		1	24	22.33	22.11	22.54
		1	49	21.93	22.22	22.14
		25	0	21.53	21.38	21.81
		25	12	21.48	21.36	21.66
		25	25	21.66	21.35	21.65
		50	0	21.44	21.28	21.59
10M	64QAM	1	0	21.57	21.26	21.88
		1	24	21.47	21.38	21.81
		1	49	21.06	21.31	21.25
		25	0	20.52	20.57	20.56
		25	12	20.61	20.51	20.61
		25	25	20.46	20.38	20.46
		50	0	20.51	20.32	20.46
10M	256QAM	1	0	18.22	17.76	18.04
		1	24	18.26	17.67	17.99
		1	49	18.02	18.19	17.78
		25	0	17.18	17.00	17.44
		25	12	17.29	16.93	17.46
		25	25	17.19	17.21	17.08
		50	0	17.00	17.21	17.46

LTE Band 7						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20775	21100	21425
		Frequency (MHz)		2502.5	2535	2567.5
5M	QPSK	1	0	23.55	23.37	23.54
		1	12	23.25	23.30	23.38
		1	24	23.04	23.21	23.45
		12	0	22.45	22.34	22.61
		12	6	22.24	22.29	22.31
		12	13	22.29	22.53	22.56
		25	0	22.52	22.57	22.54
5M	16QAM	1	0	22.48	22.46	22.89
		1	12	22.35	22.26	22.39
		1	24	21.96	21.94	22.25
		12	0	21.28	21.61	21.67
		12	6	21.29	21.39	21.72
		12	13	21.38	21.20	21.70
		25	0	21.56	21.54	21.62
5M	64QAM	1	0	21.38	21.51	21.71
		1	12	21.46	21.60	21.60
		1	24	21.07	21.15	21.35
		12	0	20.67	20.32	20.77
		12	6	20.53	20.27	20.50
		12	13	20.27	20.34	20.64
		25	0	20.34	20.25	20.82
5M	256QAM	1	0	18.15	17.77	17.99
		1	12	17.69	17.69	18.00
		1	24	18.07	17.60	18.32
		12	0	17.17	17.05	17.12
		12	6	16.84	17.17	17.01
		12	13	17.09	16.98	17.05
		25	0	17.24	17.32	17.21

LTE Band 12						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23060	23095	23130
		Frequency (MHz)		704	707.5	711
10M	QPSK	1	0	22.64	22.42	22.37
		1	24	22.61	22.14	22.21
		1	49	22.48	22.27	22.32
		25	0	21.41	21.27	21.06
		25	12	21.43	21.21	21.18
		25	25	21.36	21.36	21.13
		50	0	21.42	21.42	21.21
10M	16QAM	1	0	21.43	21.17	21.28
		1	24	21.23	21.03	20.99
		1	49	21.45	21.32	21.00
		25	0	20.58	20.40	20.22
		25	12	20.63	20.21	20.04
		25	25	20.71	20.22	20.32
		50	0	20.52	20.13	20.16
10M	64QAM	1	0	20.70	20.23	20.25
		1	24	20.49	20.35	20.32
		1	49	20.17	19.91	19.74
		25	0	19.34	19.08	18.96
		25	12	19.20	19.12	18.97
		25	25	19.24	19.14	19.11
		50	0	19.39	19.02	18.88
10M	256QAM	1	0	17.51	17.09	16.87
		1	24	17.28	16.54	16.95
		1	49	16.93	16.66	16.77
		25	0	16.06	15.87	15.69
		25	12	16.30	16.03	15.71
		25	25	16.08	16.10	15.92
		50	0	16.11	16.11	15.96

LTE Band 12						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23035	23095	23155
		Frequency (MHz)		701.5	707.5	713.5
5M	QPSK	1	0	22.51	22.16	22.41
		1	12	22.51	22.12	22.27
		1	24	22.47	22.27	21.98
		12	0	21.53	21.30	21.16
		12	6	21.59	21.12	21.28
		12	13	21.61	21.02	21.28
		25	0	21.27	21.27	21.10
5M	16QAM	1	0	21.41	21.18	21.21
		1	12	21.19	21.22	21.20
		1	24	21.17	21.11	21.19
		12	0	20.75	20.41	20.32
		12	6	20.52	20.35	20.32
		12	13	20.52	20.18	20.17
		25	0	20.74	20.28	20.23
5M	64QAM	1	0	20.58	20.36	20.30
		1	12	20.59	20.35	20.12
		1	24	20.20	19.90	19.98
		12	0	19.51	19.00	19.11
		12	6	19.32	19.09	18.92
		12	13	19.23	18.82	18.82
		25	0	19.38	19.11	19.12
5M	256QAM	1	0	17.34	17.01	16.97
		1	12	16.79	17.02	16.54
		1	24	16.59	16.68	16.96
		12	0	16.29	15.88	15.66
		12	6	15.98	15.80	15.72
		12	13	15.95	15.94	15.64
		25	0	16.04	15.87	15.80

LTE Band 12						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23025	23095	23165
		Frequency (MHz)		700.5	707.5	714.5
3M	QPSK	1	0	22.46	22.10	22.34
		1	7	22.57	22.31	21.97
		1	14	22.33	22.01	22.08
		8	0	21.39	21.00	21.00
		8	3	21.55	21.05	21.13
		8	7	21.37	21.14	21.11
		15	0	21.32	21.26	20.97
3M	16QAM	1	0	21.30	21.16	21.08
		1	7	21.31	20.91	21.08
		1	14	21.22	21.06	20.99
		8	0	20.44	19.93	20.23
		8	3	20.47	20.32	20.10
		8	7	20.64	20.32	20.07
		15	0	20.58	19.93	20.04
3M	64QAM	1	0	20.60	20.19	20.05
		1	7	20.57	19.88	19.83
		1	14	20.00	19.67	19.81
		8	0	19.22	18.83	19.15
		8	3	19.19	19.05	18.74
		8	7	18.92	18.88	18.81
		15	0	19.24	19.07	18.98
3M	256QAM	1	0	17.11	16.89	16.98
		1	7	17.32	16.89	16.77
		1	14	16.93	16.74	16.51
		8	0	15.94	15.67	15.55
		8	3	15.91	15.76	15.68
		8	7	16.30	15.70	15.79
		15	0	15.82	15.83	15.63

LTE Band 12						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23017	23095	23173
		Frequency (MHz)		699.7	707.5	715.3
1.4M	QPSK	1	0	22.24	21.95	22.05
		1	2	22.29	22.31	22.25
		1	5	22.30	22.16	21.94
		3	0	22.34	22.17	21.98
		3	1	22.54	22.22	22.20
		3	3	22.39	21.98	22.08
		6	0	21.30	21.24	21.31
1.4M	16QAM	1	0	21.37	21.25	21.18
		1	2	21.29	20.97	20.89
		1	5	21.22	21.16	21.13
		3	0	21.68	21.18	21.23
		3	1	21.59	21.05	21.07
		3	3	21.67	21.22	21.10
		6	0	20.43	20.25	20.03
1.4M	64QAM	1	0	20.23	20.14	20.24
		1	2	20.61	20.21	20.16
		1	5	20.14	20.02	19.55
		3	0	20.07	19.82	19.95
		3	1	20.04	19.87	20.00
		3	3	20.22	20.06	19.69
		6	0	19.18	18.81	18.94
1.4M	256QAM	1	0	17.03	17.09	16.44
		1	2	16.84	16.75	16.81
		1	5	17.03	16.91	16.68
		3	0	17.29	16.53	16.73
		3	1	17.10	16.85	16.78
		3	3	17.02	16.99	16.70
		6	0	15.93	16.05	15.86

LTE Band 66						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		132072	132322	132572
		Frequency (MHz)		1720	1745	1770
20M	QPSK	1	0	21.40	22.06	22.08
		1	50	21.60	21.73	22.03
		1	99	21.17	21.60	21.53
		50	0	20.55	21.01	20.98
		50	25	20.86	20.82	20.90
		50	50	20.49	20.71	20.99
		100	0	20.83	20.80	21.03
20M	16QAM	1	0	20.89	21.07	20.73
		1	50	21.00	20.67	21.10
		1	99	20.66	20.80	20.94
		50	0	19.68	19.79	19.97
		50	25	19.73	19.92	20.00
		50	50	19.67	19.86	19.86
		100	0	19.53	19.98	19.95
20M	64QAM	1	0	19.79	19.93	19.99
		1	50	19.58	19.94	19.85
		1	99	19.48	19.88	20.12
		50	0	18.63	19.19	19.02
		50	25	18.89	18.93	18.93
		50	50	18.74	18.99	18.95
		100	0	18.55	18.90	18.89
20M	256QAM	1	0	15.87	16.41	16.91
		1	50	16.02	16.55	16.86
		1	99	15.71	16.11	16.20
		50	0	15.38	15.40	15.98
		50	25	15.37	15.39	16.01
		50	50	15.03	15.61	15.74
		100	0	15.49	15.66	15.38

LTE Band 66						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		132047	132322	132597
		Frequency (MHz)		1717.5	1745	1772.5
15M	QPSK	1	0	21.60	21.98	22.05
		1	37	21.47	21.91	22.04
		1	74	21.15	21.47	21.54
		36	0	20.57	20.66	20.90
		36	19	20.64	20.81	20.92
		36	39	20.60	20.84	20.90
		75	0	20.67	20.80	20.79
15M	16QAM	1	0	20.81	21.03	20.96
		1	37	20.83	20.77	21.09
		1	74	20.77	20.84	20.75
		36	0	19.59	19.97	19.81
		36	19	19.59	19.78	19.68
		36	39	19.65	19.85	19.74
		75	0	19.65	19.96	19.66
15M	64QAM	1	0	19.48	20.12	20.21
		1	37	19.42	20.00	19.95
		1	74	19.43	19.68	19.91
		36	0	18.66	19.11	18.97
		36	19	18.59	19.11	18.78
		36	39	18.78	19.15	19.13
		75	0	18.83	19.14	19.09
15M	256QAM	1	0	16.21	16.63	16.87
		1	37	15.84	16.37	16.70
		1	74	15.69	16.23	16.22
		36	0	15.21	15.25	15.71
		36	19	15.40	15.31	15.72
		36	39	15.31	15.25	15.52
		75	0	15.33	15.64	15.70

LTE Band 66						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		132022	132322	132622
		Frequency (MHz)		1715	1745	1775
10M	QPSK	1	0	21.48	21.98	21.94
		1	24	21.38	21.80	21.72
		1	49	20.91	21.27	21.65
		25	0	20.72	20.69	20.98
		25	12	20.49	20.85	21.05
		25	25	20.69	20.79	20.92
		50	0	20.60	20.64	21.09
10M	16QAM	1	0	20.79	20.72	20.75
		1	24	20.91	20.44	20.81
		1	49	20.52	20.60	20.76
		25	0	19.55	19.80	19.92
		25	12	19.57	19.85	19.88
		25	25	19.68	19.80	19.53
		50	0	19.53	19.90	19.62
10M	64QAM	1	0	19.35	19.87	19.84
		1	24	19.51	19.99	20.00
		1	49	19.24	19.57	19.83
		25	0	18.68	19.06	18.92
		25	12	18.76	18.93	18.81
		25	25	18.40	19.09	19.06
		50	0	18.74	18.73	19.01
10M	256QAM	1	0	15.93	16.40	16.72
		1	24	15.94	16.37	16.32
		1	49	15.49	16.28	15.92
		25	0	15.02	15.20	15.54
		25	12	15.39	15.20	15.66
		25	25	14.96	15.30	15.65
		50	0	15.21	15.25	15.92

LTE Band 66						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		131997	132322	132647
		Frequency (MHz)		1712.5	1745	1777.5
5M	QPSK	1	0	21.17	21.85	22.02
		1	12	21.23	21.69	21.81
		1	24	20.95	21.47	21.37
		12	0	20.65	20.92	21.20
		12	6	20.52	20.58	20.79
		12	13	20.55	20.75	20.97
		25	0	20.71	20.52	21.08
5M	16QAM	1	0	20.86	20.99	20.75
		1	12	20.87	20.53	20.59
		1	24	20.59	20.61	20.64
		12	0	19.42	19.87	19.83
		12	6	19.53	19.68	19.95
		12	13	19.37	19.85	19.65
		25	0	19.53	19.79	19.73
5M	64QAM	1	0	19.35	19.80	19.92
		1	12	19.52	19.75	19.87
		1	24	19.20	19.41	20.00
		12	0	18.67	19.07	18.80
		12	6	18.70	18.88	18.79
		12	13	18.46	19.00	19.03
		25	0	18.58	18.79	18.77
5M	256QAM	1	0	15.93	16.29	16.69
		1	12	16.19	16.38	16.35
		1	24	15.60	16.22	15.90
		12	0	15.09	15.15	15.68
		12	6	15.49	15.28	15.43
		12	13	14.97	15.39	15.58
		25	0	15.35	15.18	15.81

LTE Band 66						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		131987	132322	132657
		Frequency (MHz)		1711.5	1745	1778.5
3M	QPSK	1	0	21.52	21.77	21.86
		1	7	21.29	21.80	21.85
		1	14	20.90	21.37	21.54
		8	0	20.58	20.59	21.07
		8	3	20.48	20.77	21.04
		8	7	20.43	20.48	20.78
		15	0	20.48	20.72	20.82
3M	16QAM	1	0	21.02	20.84	20.83
		1	7	20.92	20.56	20.92
		1	14	20.65	20.91	20.98
		8	0	19.46	19.68	19.84
		8	3	19.65	19.83	19.78
		8	7	19.45	19.57	19.79
		15	0	19.76	19.63	19.70
3M	64QAM	1	0	19.55	19.99	19.83
		1	7	19.53	19.98	19.68
		1	14	19.39	19.65	19.76
		8	0	18.74	19.09	18.72
		8	3	18.53	19.02	18.74
		8	7	18.55	18.85	18.75
		15	0	18.51	18.95	18.76
3M	256QAM	1	0	16.21	16.41	16.41
		1	7	15.99	16.46	16.77
		1	14	15.78	15.91	15.87
		8	0	15.25	15.39	15.48
		8	3	15.24	15.30	15.36
		8	7	15.35	15.48	15.50
		15	0	15.09	15.40	15.58

LTE Band 66						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		131979	132322	132665
		Frequency (MHz)		1710.7	1745	1779.3
1.4M	QPSK	1	0	21.26	21.67	21.98
		1	2	21.33	21.89	21.92
		1	5	21.07	21.53	21.78
		3	0	21.61	21.82	21.93
		3	1	21.48	21.84	21.96
		3	3	21.43	21.59	21.90
		6	0	20.53	20.85	20.88
1.4M	16QAM	1	0	20.76	20.59	20.71
		1	2	20.82	20.79	20.54
		1	5	20.56	20.67	20.85
		3	0	20.65	20.66	20.69
		3	1	20.59	20.92	20.70
		3	3	20.42	20.61	20.73
		6	0	19.63	19.71	19.74
1.4M	64QAM	1	0	19.32	20.05	19.96
		1	2	19.53	20.01	19.86
		1	5	19.07	19.71	19.79
		3	0	19.77	19.95	19.66
		3	1	19.40	19.88	19.87
		3	3	19.66	19.97	19.91
		6	0	18.73	18.95	18.86
1.4M	256QAM	1	0	15.64	16.10	16.17
		1	2	15.78	15.86	15.92
		1	5	15.70	15.63	15.82
		3	0	15.84	15.94	15.98
		3	1	15.80	16.24	16.26
		3	3	16.27	16.14	16.16
		6	0	15.19	15.51	15.35

EIRP Power (dBm/5MHz) (For LTE Band 30)

LTE Band 30				
BW	MCS Index	RB Size	RB Offset	Mid
		Channel		27710
		Frequency (MHz)		2310
10M	QPSK	1	0	21.85
		1	24	21.65
		1	49	21.60
		25	0	20.95
		25	12	20.62
		25	25	20.53
		50	0	20.64
10M	16QAM	1	0	20.84
		1	24	20.73
		1	49	20.75
		25	0	19.83
		25	12	19.60
		25	25	19.79
		50	0	19.62
10M	64QAM	1	0	19.94
		1	24	19.78
		1	49	19.72
		25	0	18.83
		25	12	18.76
		25	25	18.85
		50	0	18.63
10M	256QAM	1	0	16.49
		1	24	16.40
		1	49	15.98
		25	0	15.90
		25	12	15.80
		25	25	15.55
		50	0	15.61

LTE Band 30						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		27685	27710	27735
		Frequency (MHz)		2307.5	2310	2312.5
5M	QPSK	1	0	21.76	21.71	21.60
		1	12	21.53	21.51	21.54
		1	24	21.52	21.60	21.42
		12	0	20.51	20.54	20.63
		12	6	20.66	20.72	20.51
		12	13	20.60	20.67	20.41
		25	0	20.44	20.63	20.67
5M	16QAM	1	0	20.59	20.74	20.68
		1	12	20.87	20.57	20.81
		1	24	20.59	20.75	20.30
		12	0	19.52	19.87	19.68
		12	6	19.56	19.80	19.54
		12	13	19.78	19.67	19.76
		25	0	19.78	19.65	19.66
5M	64QAM	1	0	19.82	19.90	19.76
		1	12	19.50	19.58	19.37
		1	24	19.38	19.48	19.33
		12	0	18.70	18.83	18.48
		12	6	18.49	18.69	18.54
		12	13	18.62	18.73	18.54
		25	0	18.58	18.87	18.56
5M	256QAM	1	0	15.99	16.36	16.36
		1	12	16.24	16.20	16.30
		1	24	16.04	16.30	16.06
		12	0	15.65	15.81	15.82
		12	6	15.42	15.54	15.52
		12	13	15.71	15.73	15.55
		25	0	15.56	15.69	15.85

EIRP Power (dBm/10MHz) (For LTE Band 48)

Modulation Type: QPSK

LTE Band 48, Channel Bandwidth 5MHz

Mode		TX channel 55265, 55990, 56715						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3552.50	19.96	23.00	-3.04	2.66 H	201	81.94	-61.98
2	3625.00	20.60	23.00	-2.40	2.72 H	199	82.41	-61.81
3	3697.50	20.11	23.00	-2.89	2.67 H	199	81.79	-61.68
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3552.50	17.98	23.00	-5.02	2.23 V	339	79.96	-61.98
2	3625.00	17.22	23.00	-5.78	2.22 V	336	79.03	-61.81
3	3697.50	17.24	23.00	-5.76	2.29 V	336	78.92	-61.68

Remarks:

1. $EIRP(dBm/10MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$.
4. The other EIRP levels were very low against the limit.

LTE Band 48, Channel Bandwidth 10MHz

Mode		TX channel 55290, 55990, 56690						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3555.00	20.02	23.00	-2.98	2.65 H	203	82.00	-61.98
2	3625.00	20.54	23.00	-2.46	2.75 H	198	82.35	-61.81
3	3695.00	20.04	23.00	-2.96	2.72 H	203	81.72	-61.68
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3555.00	17.70	23.00	-5.30	2.22 V	335	79.68	-61.98
2	3625.00	17.24	23.00	-5.76	2.22 V	339	79.05	-61.81
3	3695.00	17.79	23.00	-5.21	2.29 V	335	79.47	-61.68

Remarks:

1. $EIRP(dBm/10MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value.
4. The other EIRP levels were very low against the limit.

LTE Band 48, Channel Bandwidth 15MHz

Mode		TX channel 55315, 55990, 56665						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3557.50	18.77	23.00	-4.23	2.75 H	199	80.74	-61.97
2	3625.00	19.18	23.00	-3.82	2.73 H	197	80.99	-61.81
3	3692.50	18.66	23.00	-4.34	2.67 H	203	80.35	-61.69
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3557.50	16.21	23.00	-6.79	2.28 V	338	78.18	-61.97
2	3625.00	16.76	23.00	-6.24	2.28 V	335	78.57	-61.81
3	3692.50	16.00	23.00	-7.00	2.22 V	338	77.69	-61.69

Remarks:

1. $EIRP(dBm/10MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value.
4. The other EIRP levels were very low against the limit.

LTE Band 48, Channel Bandwidth 20MHz

Mode		TX channel 55340, 55990, 56640						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3560.00	18.65	23.00	-4.35	2.75 H	201	80.62	-61.97
2	3625.00	19.50	23.00	-3.50	2.69 H	203	81.31	-61.81
3	3690.00	18.52	23.00	-4.48	2.75 H	197	80.21	-61.69
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3560.00	16.38	23.00	-6.62	2.28 V	335	78.35	-61.97
2	3625.00	16.80	23.00	-6.20	2.26 V	341	78.61	-61.81
3	3690.00	15.80	23.00	-7.20	2.22 V	338	77.49	-61.69

Remarks:

1. $EIRP(dBm/10MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value.
4. The other EIRP levels were very low against the limit.

Modulation Type: 16QAM

LTE Band 48, Channel Bandwidth 5MHz

Mode		TX channel 55265, 55990, 56715						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3552.50	18.79	23.00	-4.21	2.75 H	199	80.77	-61.98
2	3625.00	19.62	23.00	-3.38	2.75 H	200	81.43	-61.81
3	3697.50	19.16	23.00	-3.84	2.69 H	201	80.84	-61.68
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3552.50	17.18	23.00	-5.82	2.27 V	340	79.16	-61.98
2	3625.00	16.39	23.00	-6.61	2.26 V	338	78.20	-61.81
3	3697.50	16.39	23.00	-6.61	2.25 V	339	78.07	-61.68

Remarks:

1. $EIRP(dBm/10MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$.
4. The other EIRP levels were very low against the limit.

LTE Band 48, Channel Bandwidth 10MHz

Mode		TX channel 55290, 55990, 56690						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3555.00	18.99	23.00	-4.01	2.72 H	202	80.97	-61.98
2	3625.00	19.34	23.00	-3.66	2.71 H	198	81.15	-61.81
3	3695.00	19.12	23.00	-3.88	2.71 H	198	80.80	-61.68
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3555.00	16.53	23.00	-6.47	2.32 V	340	78.51	-61.98
2	3625.00	16.10	23.00	-6.90	2.31 V	338	77.91	-61.81
3	3695.00	16.66	23.00	-6.34	2.23 V	334	78.34	-61.68

Remarks:

1. $EIRP(dBm/10MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$.
4. The other EIRP levels were very low against the limit.

LTE Band 48, Channel Bandwidth 15MHz

Mode		TX channel 55315, 55990, 56665						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3557.50	17.77	23.00	-5.23	2.75 H	199	79.74	-61.97
2	3625.00	18.20	23.00	-4.80	2.73 H	197	80.01	-61.81
3	3692.50	17.77	23.00	-5.23	2.67 H	203	79.46	-61.69
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3557.50	15.21	23.00	-7.79	2.28 V	338	77.18	-61.97
2	3625.00	15.76	23.00	-7.24	2.28 V	335	77.57	-61.81
3	3692.50	15.00	23.00	-8.00	2.22 V	338	76.69	-61.69

Remarks:

1. $EIRP(dBm/10MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value.
4. The other EIRP levels were very low against the limit.

LTE Band 48, Channel Bandwidth 20MHz

Mode		TX channel 55340, 55990, 56640						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3560.00	17.60	23.00	-5.40	2.75 H	201	79.57	-61.97
2	3625.00	18.45	23.00	-4.55	2.69 H	203	80.26	-61.81
3	3690.00	17.60	23.00	-5.40	2.75 H	197	79.29	-61.69
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3560.00	15.38	23.00	-7.62	2.28 V	335	77.35	-61.97
2	3625.00	15.80	23.00	-7.20	2.26 V	341	77.61	-61.81
3	3690.00	14.98	23.00	-8.02	2.22 V	338	76.67	-61.69

Remarks:

1. $EIRP(dBm/10MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value.
4. The other EIRP levels were very low against the limit.

Modulation Type: 64QAM

LTE Band 48, Channel Bandwidth 5MHz

Mode		TX channel 55265, 55990, 56715						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3552.50	17.63	23.00	-5.37	2.67 H	199	79.61	-61.98
2	3625.00	18.77	23.00	-4.23	2.68 H	200	80.58	-61.81
3	3697.50	18.03	23.00	-4.97	2.72 H	200	79.71	-61.68
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3552.50	16.30	23.00	-6.70	2.29 V	341	78.28	-61.98
2	3625.00	15.24	23.00	-7.76	2.22 V	335	77.05	-61.81
3	3697.50	15.34	23.00	-7.66	2.32 V	340	77.02	-61.68

Remarks:

1. $EIRP(dBm/10MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$.
4. The other EIRP levels were very low against the limit.

LTE Band 48, Channel Bandwidth 10MHz

Mode		TX channel 55290, 55990, 56690						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3555.00	17.98	23.00	-5.02	2.72 H	197	79.96	-61.98
2	3625.00	18.47	23.00	-4.53	2.71 H	199	80.28	-61.81
3	3695.00	18.15	23.00	-4.85	2.65 H	203	79.83	-61.68
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3555.00	15.52	23.00	-7.48	2.22 V	340	77.50	-61.98
2	3625.00	14.98	23.00	-8.02	2.23 V	339	76.79	-61.81
3	3695.00	15.68	23.00	-7.32	2.29 V	337	77.36	-61.68

Remarks:

1. $EIRP(dBm/10MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$.
4. The other EIRP levels were very low against the limit.

LTE Band 48, Channel Bandwidth 15MHz

Mode		TX channel 55315, 55990, 56665						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3557.50	17.28	23.00	-5.72	2.75 H	199	79.25	-61.97
2	3625.00	17.72	23.00	-5.28	2.73 H	197	79.53	-61.81
3	3692.50	17.17	23.00	-5.83	2.67 H	203	78.86	-61.69
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3557.50	14.42	23.00	-8.58	2.28 V	338	76.39	-61.97
2	3625.00	15.26	23.00	-7.74	2.28 V	335	77.07	-61.81
3	3692.50	14.40	23.00	-8.60	2.22 V	338	76.09	-61.69

Remarks:

1. $EIRP(dBm/10MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value.
4. The other EIRP levels were very low against the limit.

LTE Band 48, Channel Bandwidth 20MHz

Mode		TX channel 55340, 55990, 56640						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3560.00	17.10	23.00	-5.90	2.75 H	201	79.07	-61.97
2	3625.00	18.00	23.00	-5.00	2.69 H	203	79.81	-61.81
3	3690.00	17.00	23.00	-6.00	2.75 H	197	78.69	-61.69
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3560.00	14.78	23.00	-8.22	2.28 V	335	76.75	-61.97
2	3625.00	15.28	23.00	-7.72	2.26 V	341	77.09	-61.81
3	3690.00	14.50	23.00	-8.50	2.22 V	338	76.19	-61.69

Remarks:

1. $EIRP(dBm/10MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value.
4. The other EIRP levels were very low against the limit.

Modulation Type: 256QAM

LTE Band 48, Channel Bandwidth 5MHz

Mode		TX channel 55265, 55990, 56715						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3552.50	16.53	23.00	-6.47	2.70 H	200	78.51	-61.98
2	3625.00	17.70	23.00	-5.30	2.65 H	198	79.51	-61.81
3	3697.50	17.06	23.00	-5.94	2.69 H	203	78.74	-61.68
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3552.50	15.23	23.00	-7.77	2.31 V	340	77.21	-61.98
2	3625.00	14.41	23.00	-8.59	2.29 V	337	76.22	-61.81
3	3697.50	14.40	23.00	-8.60	2.26 V	336	76.08	-61.68

Remarks:

1. $EIRP(dBm/10MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$.
4. The other EIRP levels were very low against the limit.

LTE Band 48, Channel Bandwidth 10MHz

Mode		TX channel 55290, 55990, 56690						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3555.00	16.92	23.00	-6.08	2.67 H	203	78.90	-61.98
2	3625.00	17.32	23.00	-5.68	2.82 H	201	79.13	-61.81
3	3695.00	16.98	23.00	-6.02	2.69 H	203	78.66	-61.68
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3555.00	14.55	23.00	-8.45	2.31 V	336	76.53	-61.98
2	3625.00	14.16	23.00	-8.84	2.30 V	341	75.97	-61.81
3	3695.00	14.69	23.00	-8.31	2.22 V	335	76.37	-61.68

Remarks:

1. $EIRP(dBm/10MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$.
4. The other EIRP levels were very low against the limit.

LTE Band 48, Channel Bandwidth 15MHz

Mode		TX channel 55315, 55990, 56665						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3557.50	16.28	23.00	-6.72	2.75 H	199	78.25	-61.97
2	3625.00	16.72	23.00	-6.28	2.73 H	197	78.53	-61.81
3	3692.50	16.17	23.00	-6.83	2.67 H	203	77.86	-61.69
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3557.50	13.42	23.00	-9.58	2.28 V	338	75.39	-61.97
2	3625.00	14.26	23.00	-8.74	2.28 V	335	76.07	-61.81
3	3692.50	13.40	23.00	-9.60	2.22 V	338	75.09	-61.69

Remarks:

1. $EIRP(dBm/10MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value.
4. The other EIRP levels were very low against the limit.

LTE Band 48, Channel Bandwidth 20MHz

Mode		TX channel 55340, 55990, 56640						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3560.00	16.10	23.00	-6.90	2.75 H	201	78.07	-61.97
2	3625.00	17.00	23.00	-6.00	2.69 H	203	78.81	-61.81
3	3690.00	16.00	23.00	-7.00	2.75 H	197	77.69	-61.69
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/10MHz)	Limit (dBm/10MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3560.00	13.78	23.00	-9.22	2.28 V	335	75.75	-61.97
2	3625.00	14.28	23.00	-8.72	2.26 V	341	76.09	-61.81
3	3690.00	13.50	23.00	-9.50	2.22 V	338	75.19	-61.69

Remarks:

1. $EIRP(dBm/10MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value.
4. The other EIRP levels were very low against the limit.

EIRP Full Power (dBm/15MHz or dBm/20MHz) (For LTE Band 48)

Modulation Type: QPSK

LTE Band 48, Channel Bandwidth 5MHz and Channel Bandwidth 10MHz full power test data, please refer to Channel Bandwidth 5MHz and Channel Bandwidth 10MHz per 10MHz power.

LTE Band 48, Channel Bandwidth 15MHz

Mode		TX channel 55315, 55990, 56665						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/15MHz)	Limit (dBm/15MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3557.50	19.68	23.00	-3.32	2.75 H	199	81.65	-61.97
2	3625.00	20.18	23.00	-2.82	2.73 H	197	81.99	-61.81
3	3692.50	19.58	23.00	-3.42	2.67 H	203	81.27	-61.69
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/15MHz)	Limit (dBm/15MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3557.50	17.15	23.00	-5.85	2.28 V	338	79.12	-61.97
2	3625.00	17.62	23.00	-5.38	2.28 V	335	79.43	-61.81
3	3692.50	16.97	23.00	-6.03	2.22 V	338	78.66	-61.69

Remarks:

1. $EIRP(dBm/15MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$.
4. The other EIRP levels were very low against the limit.

LTE Band 48, Channel Bandwidth 20MHz

Mode		TX channel 55340, 55990, 56640						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/20MHz)	Limit (dBm/20MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3560.00	19.65	23.00	-3.35	2.75 H	201	81.62	-61.97
2	3625.00	20.50	23.00	-2.50	2.69 H	203	82.31	-61.81
3	3690.00	19.52	23.00	-3.48	2.75 H	197	81.21	-61.69
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/20MHz)	Limit (dBm/20MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3560.00	17.38	23.00	-5.62	2.28 V	335	79.35	-61.97
2	3625.00	17.80	23.00	-5.20	2.26 V	341	79.61	-61.81
3	3690.00	16.85	23.00	-6.15	2.22 V	338	78.54	-61.69

Remarks:

1. $EIRP(dBm/20MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$.
4. The other EIRP levels were very low against the limit.

Modulation Type: 16QAM

LTE Band 48, Channel Bandwidth 5MHz and Channel Bandwidth 10MHz full power test data, please refer to Channel Bandwidth 5MHz and Channel Bandwidth 10MHz per 10MHz power.

LTE Band 48, Channel Bandwidth 15MHz

Mode		TX channel 55315, 55990, 56665						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/15MHz)	Limit (dBm/15MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3557.50	18.60	23.00	-4.40	2.68 H	202	80.57	-61.97
2	3625.00	19.04	23.00	-3.96	2.70 H	199	80.85	-61.81
3	3692.50	18.47	23.00	-4.53	2.74 H	203	80.16	-61.69
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/15MHz)	Limit (dBm/15MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3557.50	15.96	23.00	-7.04	2.22 V	334	77.93	-61.97
2	3625.00	16.79	23.00	-6.21	2.29 V	339	78.60	-61.81
3	3692.50	15.96	23.00	-7.04	2.31 V	336	77.65	-61.69

Remarks:

1. $EIRP(dBm/15MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value.
4. The other EIRP levels were very low against the limit.

LTE Band 48, Channel Bandwidth 20MHz

Mode		TX channel 55340, 55990, 56640						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/20MHz)	Limit (dBm/20MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3560.00	18.78	23.00	-4.22	2.66 H	203	80.75	-61.97
2	3625.00	19.55	23.00	-3.45	2.74 H	204	81.36	-61.81
3	3690.00	18.72	23.00	-4.28	2.70 H	202	80.41	-61.69
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/20MHz)	Limit (dBm/20MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3560.00	16.25	23.00	-6.75	2.23 V	340	78.22	-61.97
2	3625.00	16.93	23.00	-6.07	2.27 V	336	78.74	-61.81
3	3690.00	16.04	23.00	-6.96	2.26 V	341	77.73	-61.69

Remarks:

1. $EIRP(dBm/20MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value.
4. The other EIRP levels were very low against the limit.

Modulation Type: 64QAM

LTE Band 48, Channel Bandwidth 5MHz and Channel Bandwidth 10MHz full power test data, please refer to Channel Bandwidth 5MHz and Channel Bandwidth 10MHz per 10MHz power.

LTE Band 48, Channel Bandwidth 15MHz

Mode		TX channel 55315, 55990, 56665						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/15MHz)	Limit (dBm/15MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3557.50	17.40	23.00	-5.60	2.75 H	201	79.37	-61.97
2	3625.00	17.91	23.00	-5.09	2.71 H	203	79.72	-61.81
3	3692.50	17.29	23.00	-5.71	2.67 H	199	78.98	-61.69
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/15MHz)	Limit (dBm/15MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3557.50	14.97	23.00	-8.03	2.31 V	341	76.94	-61.97
2	3625.00	15.61	23.00	-7.39	2.29 V	334	77.42	-61.81
3	3692.50	14.96	23.00	-8.04	2.25 V	340	76.65	-61.69

Remarks:

1. $EIRP(dBm/15MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value.
4. The other EIRP levels were very low against the limit.

LTE Band 48, Channel Bandwidth 20MHz

Mode		TX channel 55340, 55990, 56640						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/20MHz)	Limit (dBm/20MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3560.00	17.89	23.00	-5.11	2.65 H	201	79.86	-61.97
2	3625.00	18.47	23.00	-4.53	2.66 H	197	80.28	-61.81
3	3690.00	17.71	23.00	-5.29	2.71 H	197	79.40	-61.69
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/20MHz)	Limit (dBm/20MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3560.00	15.14	23.00	-7.86	2.25 V	341	77.11	-61.97
2	3625.00	15.85	23.00	-7.15	2.26 V	337	77.66	-61.81
3	3690.00	14.94	23.00	-8.06	2.22 V	338	76.63	-61.69

Remarks:

1. $EIRP(dBm/20MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value.
4. The other EIRP levels were very low against the limit.

Modulation Type: 256QAM

LTE Band 48, Channel Bandwidth 5MHz and Channel Bandwidth 10MHz full power test data, please refer to Channel Bandwidth 5MHz and Channel Bandwidth 10MHz per 10MHz power.

LTE Band 48, Channel Bandwidth 15MHz

Mode		TX channel 55315, 55990, 56665						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/15MHz)	Limit (dBm/15MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3557.50	16.52	23.00	-6.48	2.73 H	200	78.49	-61.97
2	3625.00	16.89	23.00	-6.11	2.69 H	198	78.70	-61.81
3	3692.50	16.44	23.00	-6.56	2.74 H	199	78.13	-61.69
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/15MHz)	Limit (dBm/15MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3557.50	14.08	23.00	-8.92	2.30 V	337	76.05	-61.97
2	3625.00	14.78	23.00	-8.22	2.25 V	336	76.59	-61.81
3	3692.50	14.04	23.00	-8.96	2.32 V	336	75.73	-61.69

Remarks:

1. $EIRP(dBm/15MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value.
4. The other EIRP levels were very low against the limit.

LTE Band 48, Channel Bandwidth 20MHz

Mode		TX channel 55340, 55990, 56640						
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm/20MHz)	Limit (dBm/20MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3560.00	16.90	23.00	-6.10	2.70 H	202	78.87	-61.97
2	3625.00	17.45	23.00	-5.55	2.74 H	197	79.26	-61.81
3	3690.00	16.84	23.00	-6.16	2.74 H	197	78.53	-61.69
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm/20MHz)	Limit (dBm/20MHz)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3560.00	14.23	23.00	-8.77	2.28 V	335	76.20	-61.97
2	3625.00	14.90	23.00	-8.10	2.30 V	337	76.71	-61.81
3	3690.00	14.12	23.00	-8.88	2.23 V	339	75.81	-61.69

Remarks:

1. $EIRP(dBm/20MHz) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value.
4. The other EIRP levels were very low against the limit.

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

N/A

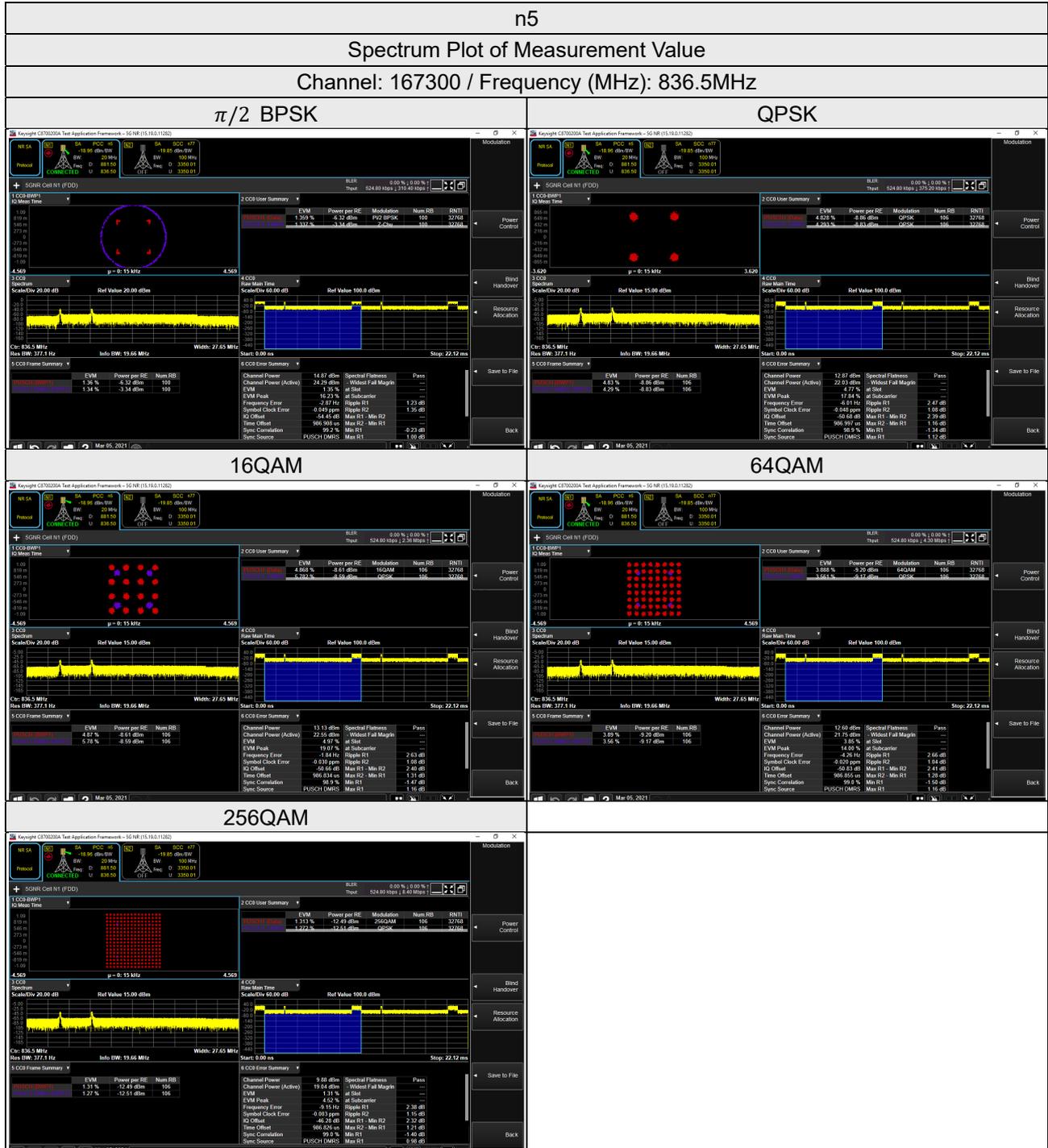
4.2.2 Test Procedure

Connect the EUT to Communication Simulator via the antenna connector, The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

4.2.3 Test Setup



4.2.4 Test Results



4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.3.2 Test Procedure

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ± 0.5 °C during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

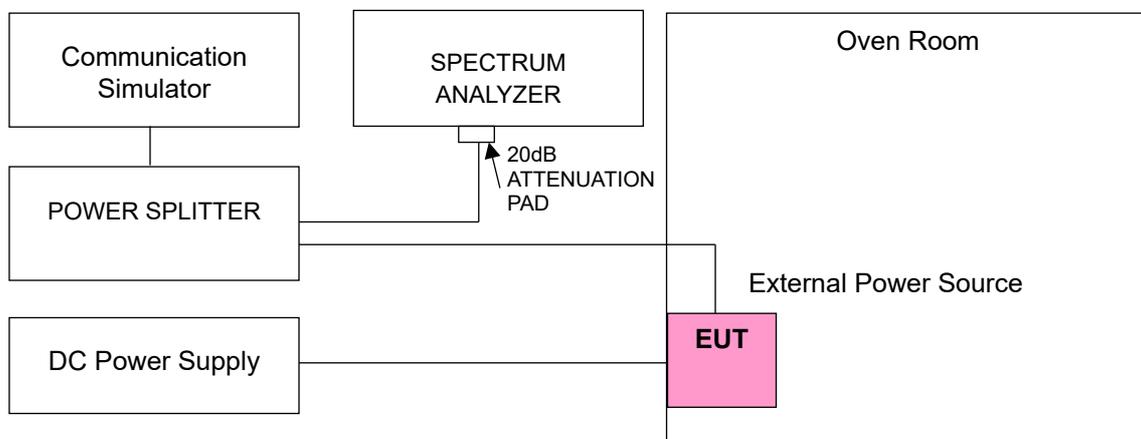
Note: The frequency error was recorded frequency error from the communication simulator.

4.3.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
5G Wireless Test Platforms Keysight	E7515B	MY60102114	May 28, 2020	May 27, 2021
Temperature & Humidity Chamber TERCHY	HRM-120RF	931022	Dec. 24, 2020	Dec. 23, 2021
Digital Multimeter Fluke	87-III	70360742	Jun. 23, 2020	Jun. 22, 2021
DC Power Supply Topward	6306A	727263	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.3.4 Test Setup



4.3.5 Test Results

Frequency Error vs. Voltage

Voltage (Vdc)	n5			
	Channel Bandwidth 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
8.90	826.500004	0.005	846.500002	0.002
7.74	826.500002	0.003	846.500004	0.005
6.58	826.500002	0.002	846.500003	0.003

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	n5			
	Channel Bandwidth 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	826.500001	0.002	846.500003	0.003
-20	826.500001	0.002	846.500004	0.004
-10	826.500001	0.002	846.500003	0.003
0	826.500002	0.003	846.500003	0.004
10	826.499998	-0.003	846.499999	-0.002
20	826.499999	-0.001	846.499998	-0.002
30	826.499999	-0.002	846.499997	-0.004
40	826.499998	-0.003	846.499999	-0.002
50	826.499997	-0.004	846.499996	-0.004

Frequency Error vs. Voltage

Voltage (Vdc)	n5			
	Channel Bandwidth 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
8.90	829.000002	0.003	844.000002	0.002
7.74	829.000002	0.002	844.000002	0.002
6.58	829.000001	0.001	844.000002	0.002

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	n5			
	Channel Bandwidth 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	829.000003	0.004	844.000003	0.003
-20	829.000002	0.002	844.000002	0.002
-10	829.000002	0.003	844.000001	0.002
0	829.000004	0.004	844.000002	0.002
10	828.999998	-0.002	843.999997	-0.003
20	828.999999	-0.001	843.999998	-0.002
30	828.999998	-0.003	843.999996	-0.004
40	828.999996	-0.004	843.999996	-0.005
50	828.999997	-0.004	843.999998	-0.003

Frequency Error vs. Voltage

Voltage (Vdc)	n5			
	Channel Bandwidth 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
8.90	831.500003	0.004	841.500003	0.004
7.74	831.500002	0.003	841.500002	0.002
6.58	831.500001	0.001	841.500001	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	n5			
	Channel Bandwidth 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	831.500001	0.002	841.500003	0.004
-20	831.500001	0.001	841.500001	0.001
-10	831.500001	0.001	841.500003	0.004
0	831.500002	0.003	841.500003	0.003
10	831.499996	-0.004	841.499996	-0.005
20	831.499999	-0.002	841.499998	-0.003
30	831.499998	-0.003	841.499999	-0.002
40	831.499997	-0.004	841.499996	-0.004
50	831.499998	-0.003	841.499997	-0.003

Frequency Error vs. Voltage

Voltage (Vdc)	n5			
	Channel Bandwidth 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
8.90	834.000002	0.003	839.000003	0.003
7.74	834.000002	0.002	839.000002	0.003
6.58	834.000001	0.002	839.000003	0.003

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	n5			
	Channel Bandwidth 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	834.000003	0.003	839.000003	0.004
-20	834.000002	0.003	839.000002	0.002
-10	834.000003	0.004	839.000003	0.003
0	834.000002	0.002	839.000003	0.004
10	833.999998	-0.003	838.999996	-0.005
20	833.999998	-0.003	838.999999	-0.002
30	833.999998	-0.003	838.999998	-0.002
40	833.999998	-0.003	838.999998	-0.003
50	833.999999	-0.002	838.999997	-0.003

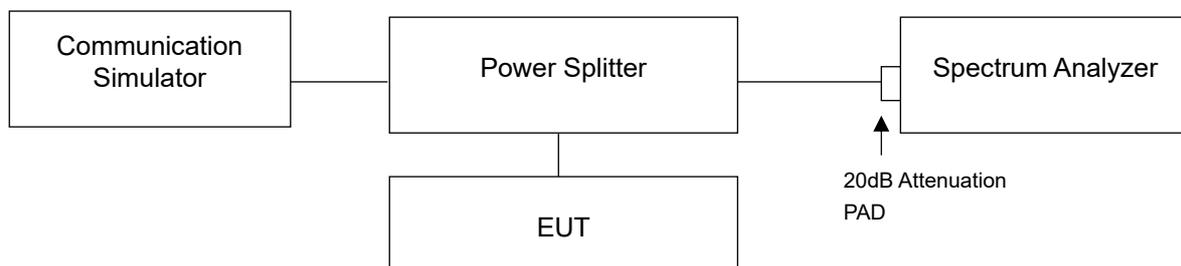
4.4 Occupied Bandwidth Measurement

4.4.1 Test Procedure

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Measurement method, please refer to section 5.4.4 of ANSI C63.26. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

For the 26dBc bandwidth measurement method, please refer to section 5.4.3 of ANSI C63.26.

4.4.2 Test Setup



4.4.3 Test Result

Occupied Bandwidth

n5, Channel Bandwidth 5MHz						
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
165300	826.5	4.47	4.47	4.47	4.46	4.47
167300	836.5	4.47	4.47	4.47	4.47	4.47
169300	846.5	4.46	4.47	4.47	4.46	4.47
n5, Channel Bandwidth 10MHz						
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
165800	829.0	9.21	9.29	9.29	9.28	9.28
167300	836.5	9.21	9.28	9.28	9.29	9.28
168800	844.0	9.24	9.29	9.28	9.29	9.29
n5, Channel Bandwidth 15MHz						
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
166300	831.5	13.95	14.11	14.11	14.11	14.12
167300	836.5	13.95	14.11	14.11	14.10	14.10
168300	841.5	14.05	14.11	14.11	14.11	14.10
n5, Channel Bandwidth 20MHz						
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
166800	834.0	18.67	18.90	18.89	18.89	18.90
167300	836.5	18.72	18.89	18.89	18.90	18.89
167800	839.0	18.73	18.89	18.89	18.88	18.89

Spectrum Plot of Worst Value

5MHz / 256QAM



10MHz / QPSK



15MHz / 256QAM



20MHz / 64QAM



26dB Bandwidth

n5, Channel Bandwidth 5MHz						
Channel	Frequency (MHz)	26dB Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
165300	826.5	4.73	4.75	4.75	4.69	4.71
167300	836.5	4.75	4.71	4.77	4.76	4.76
169300	846.5	4.74	4.74	4.76	4.72	4.72
n5, Channel Bandwidth 10MHz						
Channel	Frequency (MHz)	26dB Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
165800	829.0	9.27	9.69	9.67	9.66	9.64
167300	836.5	9.26	9.66	9.68	9.68	9.65
168800	844.0	9.32	9.63	9.66	9.62	9.63
n5, Channel Bandwidth 15MHz						
Channel	Frequency (MHz)	26dB Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
166300	831.5	13.87	14.60	14.62	14.62	14.61
167300	836.5	13.88	14.61	14.61	14.58	14.60
168300	841.5	13.88	14.60	14.59	14.60	14.59
n5, Channel Bandwidth 20MHz						
Channel	Frequency (MHz)	26dB Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
166800	834.0	18.46	19.55	19.55	19.55	19.55
167300	836.5	18.48	19.56	19.55	19.54	19.54
167800	839.0	18.47	19.56	19.55	19.54	19.54

Spectrum Plot of Worst Value

5MHz / 16QAM



10MHz / QPSK



15MHz / 16QAM



20MHz / QPSK

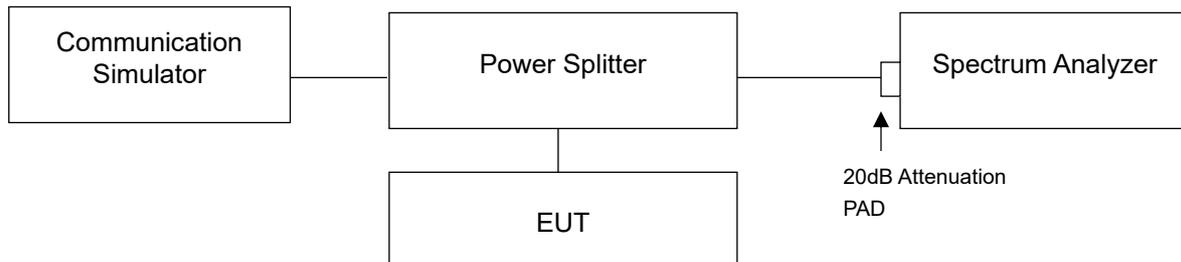


4.5 Band Edge Measurement

4.5.1 Limits of Band Edge Measurement

Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

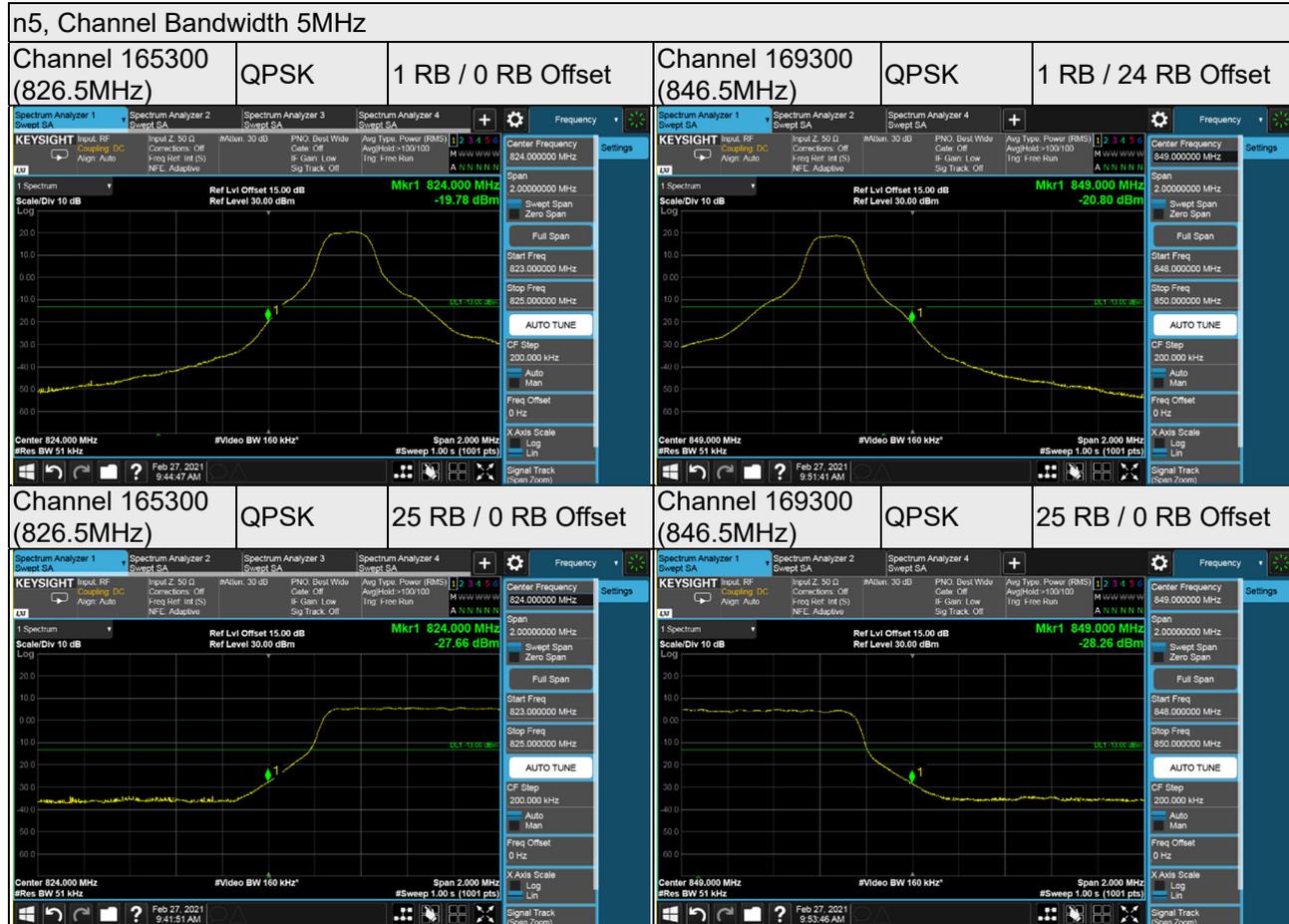
4.5.2 Test Setup



4.5.3 Test Procedures

- a. All measurements were done at low and high operational frequency range.
- a. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 51kHz and VB of the spectrum is 160kHz (Channel Bandwidth 5MHz).
- b. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (Channel Bandwidth 10MHz).
- c. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 150kHz and VB of the spectrum is 470kHz (Channel Bandwidth 15MHz).
- d. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 200kHz and VB of the spectrum is 620kHz (Channel Bandwidth 20MHz).
- e. Record the max trace plot into the test report.

4.5.4 Test Results



n5, Channel Bandwidth 10MHz

Channel 165800
(829.0MHz)

QPSK

1 RB / 0 RB Offset

Channel 168800
(849.0MHz)

QPSK

1 RB / 51 RB Offset



Channel 165800
(829.0MHz)

QPSK

52 RB / 0 RB Offset

Channel 168800
(849.0MHz)

QPSK

52 RB / 0 RB Offset



n5, Channel Bandwidth 15MHz

Channel 166300
(831.5MHz)

QPSK

1 RB / 0 RB Offset

Channel 168300
(841.5MHz)

QPSK

1 RB / 78 RB Offset



Channel 166300
(831.5MHz)

QPSK

79 RB / 0 RB Offset

Channel 168300
(841.5MHz)

QPSK

79 RB / 0 RB Offset



n5, Channel Bandwidth 20MHz

Channel 166800
(834.0MHz)

QPSK

1 RB / 0 RB Offset

Channel 167800
(839.0MHz)

QPSK

1 RB / 105 RB Offset



Channel 166800
(834.0MHz)

QPSK

106 RB / 0 RB Offset

Channel 167800
(839.0MHz)

QPSK

106 RB / 0 RB Offset

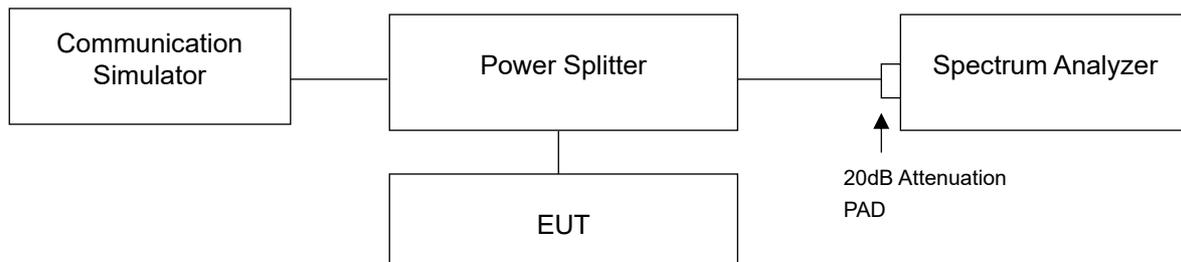


4.6 Peak to Average Ratio

4.6.1 Limits of Peak to Average Ratio Measurement

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

4.6.2 Test Setup



4.6.3 Test Procedures

- Set resolution/measurement bandwidth \geq signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Record the maximum PAPR level associated with a probability of 0.1%.

4.6.4 Test Results

n5, Channel Bandwidth 5MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
165300	826.5	4.55	6.34	6.34	6.78	8.65
167300	836.5	4.54	6.53	6.69	7.10	8.43
169300	846.5	4.35	6.48	6.54	6.90	8.55
n5, Channel Bandwidth 10MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
165800	829.0	3.94	6.63	6.64	7.04	8.54
167300	836.5	3.94	6.68	6.67	7.10	8.47
168800	844.0	3.94	6.78	6.76	7.07	8.59
n5, Channel Bandwidth 15MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
166300	831.5	3.96	6.60	6.61	7.12	8.52
167300	836.5	3.83	6.68	6.67	7.21	8.52
168300	841.5	4.09	6.90	6.88	7.37	8.46
n5, Channel Bandwidth 20MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
166800	834.0	3.69	6.65	6.68	7.04	8.52
167300	836.5	3.76	6.78	6.75	7.13	8.45
167800	839.0	3.95	6.91	6.95	7.27	8.46