FCC Test Report

(Part 22, Part 27 – NSA Mode: n66A + LTE Band 5 / 12)

Report No.:	RF200514C16A-5
FCC ID:	T8GSAN9000
Test Model:	SA-N9000 OEM D1
Received Date:	May 14, 2020
Test Date:	Nov. 10 ~ Dec. 15, 2020
Issued Date:	Dec. 22, 2020
Applicant:	Harman Connected Car Division
Address:	Parking 3, 85748 Garching Germany
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
RF200514C16A-5	Original release	Dec. 22, 2020

1 Certificate of Conformity

Product:	Module
Brand:	Harman
Test Model:	SA-N9000 OEM D1
Sample Status:	Standard Sample
Applicant:	Harman Connected Car Division
Test Date:	Nov. 10 ~ Dec. 15, 2020
Standards:	FCC Part 22, Subpart H FCC Part 27, Subpart H, L

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:** Dec. 22, 2020

Celine Chou / Senior Specialist

Approved by : Bruce Chen , **Date:** Dec. 22, 2020

Bruce Chen / Senior Project Engineer

2 Summary of Test Results

For LTE Band 5

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 -26.40dB at 36.26MHz.

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

For n66, LTE Band 12

Applied Standard: FCC Part 27 & Part 2				
FCC Clause		Test Item	Result	Remarks
LTE B12	n66			
2.1046 27.50 (c)	2.1046 27.50 (d)(4)	Equivalent Isotropically Radiated Power / Equivalent Radiated Power	Pass	Meet the requirement of limit.
----	2.1047	Modulation Characteristics	Pass	Meet the requirement of limit.
----	27.50 (d)(5)	Peak To Average Ratio	Pass	Meet the requirement of limit.
2.1055 27.54	2.1055 27.54	Frequency Stability Stay with the authorized bands of operation	Pass	Meet the requirement of limit.
2.1049	2.1049	Occupied Bandwidth	Pass	Meet the requirement of limit.
2.1051 27.53(g)	2.1051 27.53(h)	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 27.53(g)	2.1051 27.53(h)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 27.53(g)	2.1053 27.53(h)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -24.10dB at 36.26MHz.

Note: 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) (±)
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.63 dB
	200MHz ~1000MHz	3.64 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 ROHDE & SCHWARZ	ESCI	100424	Dec. 31, 2019	Dec. 30, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Oct. 03, 2019	Oct. 02, 2020
			Sep. 16, 2020	Sep. 15, 2021
Signal Analyzer Keysight	N9010A	MY56070348	Sep. 09, 2019	Sep. 08, 2020
			Sep. 16, 2020	Sep. 15, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Nov. 11, 2019	Nov. 10, 2020
			Nov. 03, 2020	Nov. 02, 2021
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Nov. 24, 2019	Nov. 23, 2020
			Nov. 22, 2020	Nov. 21, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 24, 2019	Nov. 23, 2020
			Nov. 22, 2020	Nov. 21, 2021
Horn Antenna ETS	3117	00034128	Nov. 24, 2019	Nov. 23, 2020
			Nov. 22, 2020	Nov. 21, 2021
MXG Vector signal generator Agilent	N5182B	MY53050162	Jan. 14, 2020	Jan. 13, 2021
Spectrum Analyzer KEYSIGHT	N9030B	MY57140953	Jul. 02, 2020	Jul. 01, 2021
5G Wireless Test Platforms Keysight	E7515B	MY58300759	Apr. 18, 2020	Apr. 17, 2021
Loop Antenna TESEQ	HLA 6121	45745	Jul. 06, 2020	Jul. 05, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10631	Jun. 08, 2020	Jun. 07, 2021
Preamplifier KEYSIGHT (Above 1GHz)	83017A	MY53270295	Jun. 08, 2020	Jun. 07, 2021
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH4-01	Aug. 20, 2019	Aug. 19, 2020
			Aug. 16, 2020	Aug. 15, 2021
RF Coaxial Cable EMCI	EMC102-KM-KM-3000	150929	Aug. 20, 2019	Aug. 19, 2020
			Aug. 16, 2020	Aug. 15, 2021
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	Aug. 20, 2019	Aug. 19, 2020
			Aug. 16, 2020	Aug. 15, 2021
RF signal cable HUBER+SUHNER	SUCOFLEX 104	MY 13380+295012/04	Jun. 08, 2020	Jun. 07, 2021
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03 (250724)	Jun. 08, 2020	Jun. 07, 2021
Software BV ADT	ADT_Radiated_V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021703	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100	SC93021703	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Sep. 09, 2019	Sep. 08, 2020
			Sep. 04, 2020	Sep. 03, 2021
Standard Temperature And Humidity Chamber TERCHY	MHU-225AU	920842	May 27, 2020	May 26, 2021
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	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 4.

3 General Information

3.1 General Description of EUT

Product	Module
Brand	Harman
Test Model	SA-N9000 OEM D1
Sample Status	Standard Sample
Power Supply rating	4.2Vdc

n66

Modulation Type	$\pi/2$ BPSK, QPSK, 16QAM, 64QAM, 256QAM					
Waveform Type	CP-OFDM, DFT-s-OFDM					
Operating Frequency	n66 (Channel Bandwidth: 5MHz)	1712.5 ~ 1777.5MHz				
	n66 (Channel Bandwidth: 10MHz)	1715.0 ~ 1775.0MHz				
	n66 (Channel Bandwidth: 15MHz)	1717.5 ~ 1772.5MHz				
	n66 (Channel Bandwidth: 20MHz)	1720.0 ~ 1770.0MHz				
	n66 (Channel Bandwidth: 40MHz)	1730.0 ~ 1760.0MHz				
Max. EIRP Power		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
	n66 (Channel Bandwidth: 5MHz)	445.656mW (26.49dBm)	415.911mW (26.19dBm)	331.131mW (25.20dBm)	243.220mW (23.86dBm)	150.661mW (21.78dBm)
	n66 (Channel Bandwidth: 10MHz)	441.570mW (26.45dBm)	415.911mW (26.19dBm)	331.131mW (25.20dBm)	243.781mW (23.87dBm)	149.968mW (21.76dBm)
	n66 (Channel Bandwidth: 15MHz)	442.588mW (26.46dBm)	415.911mW (26.19dBm)	333.426mW (25.23dBm)	243.220mW (23.86dBm)	150.661mW (21.78dBm)
	n66 (Channel Bandwidth: 20MHz)	444.631mW (26.48dBm)	416.869mW (26.20dBm)	334.195mW (25.24dBm)	239.883mW (23.80dBm)	151.008mW (21.79dBm)
	n66 (Channel Bandwidth: 40MHz)	433.511mW (26.37dBm)	420.727mW (26.24dBm)	334.965mW (25.25dBm)	244.343mW (23.88dBm)	151.356mW (21.80dBm)
Emission Designator		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
	n66 (Channel Bandwidth: 5MHz)	4M47G7D	4M47G7D	4M47D7W	4M45D7W	4M46D7W
	n66 (Channel Bandwidth: 10MHz)	8M93G7D	8M93G7D	8M93D7W	8M92D7W	8M92D7W
	n66 (Channel Bandwidth: 15MHz)	13M4G7D	13M4G7D	13M4D7W	13M4D7W	13M4D7W
	n66 (Channel Bandwidth: 20MHz)	17M9G7D	17M9G7D	17M9D7W	17M8D7W	17M9D7W
	n66 (Channel Bandwidth: 40MHz)	38M6G7D	38M6G7D	38M6D7W	38M6D7W	38M6D7W

LTE Band

Modulation Type	QPSK, 16QAM, 64QAM, 256QAM				
Operating Frequency	LTE Band 5 (Channel Bandwidth: 1.4MHz)	824.7 ~ 848.3MHz			
	LTE Band 5 (Channel Bandwidth: 3MHz)	825.5 ~ 847.5MHz			
	LTE Band 5 (Channel Bandwidth: 5MHz)	826.5 ~ 846.5MHz			
	LTE Band 5 (Channel Bandwidth: 10MHz)	829.0 ~ 844.0MHz			
	LTE Band 12 (Channel Bandwidth: 1.4MHz)	699.7 ~ 715.3MHz			
	LTE Band 12 (Channel Bandwidth: 3MHz)	700.5 ~ 714.5MHz			
	LTE Band 12 (Channel Bandwidth: 5MHz)	701.5 ~ 713.5MHz			
	LTE Band 12 (Channel Bandwidth: 10MHz)	704.0 ~ 711.0MHz			
Max. ERP Power		QPSK	16QAM	64QAM	256QAM
	LTE Band 5 (Channel Bandwidth: 1.4MHz)	174.985mW (22.43dBm)	137.721mW (21.39dBm)	109.144mW (20.38dBm)	67.608mW (18.30dBm)
	LTE Band 5 (Channel Bandwidth: 3MHz)	173.780mW (22.40dBm)	138.038mW (21.40dBm)	110.154mW (20.42dBm)	69.823mW (18.44dBm)
	LTE Band 5 (Channel Bandwidth: 5MHz)	173.380mW (22.39dBm)	139.316mW (21.44dBm)	110.917mW (20.45dBm)	69.343mW (18.41dBm)
	LTE Band 5 (Channel Bandwidth: 10MHz)	175.792mW (22.45dBm)	138.995mW (21.43dBm)	109.648mW (20.40dBm)	69.984mW (18.45dBm)
	LTE Band 12 (Channel Bandwidth: 1.4MHz)	104.472mW (20.19dBm)	84.140mW (19.25dBm)	66.374mW (18.22dBm)	42.462mW (16.28dBm)
	LTE Band 12 (Channel Bandwidth: 3MHz)	104.232mW (20.18dBm)	84.528mW (19.27dBm)	65.917mW (18.19dBm)	42.170mW (16.25dBm)
	LTE Band 12 (Channel Bandwidth: 5MHz)	118.304mW (20.73dBm)	94.842mW (19.77dBm)	75.336mW (18.77dBm)	47.534mW (16.77dBm)
	LTE Band 12 (Channel Bandwidth: 10MHz)	119.674mW (20.78dBm)	93.325mW (19.70dBm)	75.162mW (18.76dBm)	46.559mW (16.68dBm)
Emission Designator		QPSK	16QAM	64QAM	256QAM
	LTE Band 5 (Channel Bandwidth: 1.4MHz)	1M09G7D	1M09G7D	1M09D7W	1M09D7W
	LTE Band 5 (Channel Bandwidth: 3MHz)	2M69G7D	2M68G7D	2M68D7W	2M68D7W
	LTE Band 5 (Channel Bandwidth: 5MHz)	4M50G7D	4M50G7D	4M50D7W	4M50D7W
	LTE Band 5 (Channel Bandwidth: 10MHz)	8M98G7D	8M98G7D	8M98D7W	8M98D7W
	LTE Band 12 (Channel Bandwidth: 1.4MHz)	1M09G7D	1M09G7D	1M09D7W	1M08D7W
	LTE Band 12 (Channel Bandwidth: 3MHz)	2M69G7D	2M69G7D	2M68D7W	2M69D7W
	LTE Band 12 (Channel Bandwidth: 5MHz)	4M50G7D	4M50G7D	4M50D7W	4M50D7W
	LTE Band 12 (Channel Bandwidth: 10MHz)	8M98G7D	8M98G7D	8M98D7W	8M98D7W
Antenna Type	Refer to note				
Antenna Connector	Refer to note				
Accessory Device	NA				
Cable Supplied	NA				

Note:

1. The antenna information is listed as below.

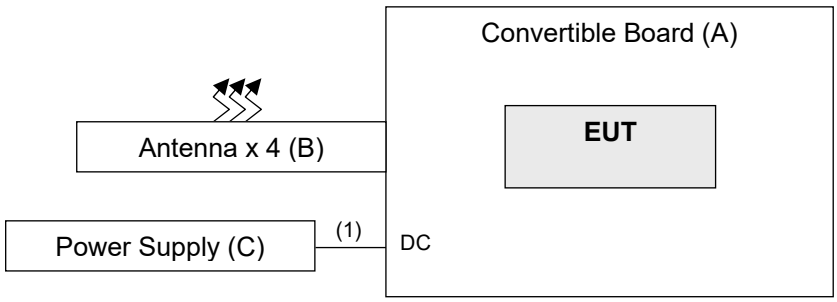
Operating frequency band	Antenna	Gain (dBi)	Connector Type
Band 2	5G/4G Terminal Mount Monopole Antenna	2.92	SMA
Band 5		1.01	
Band 7		2.20	
Band 12		-1.17	
Band 25		2.97	
Band 38		2.18	
Band 41		2.20	
Band 66		3.44	
Band 71		1.72	
Band 77		2.61	

* 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.

2. The EUT supports the following ENDC configuration.

	FCC 5G FR1			ENDC
	Band	SCS	Bandwidth (MHz)	
5GNR	n5	15kHz	5/10/15/20	Band 2/66
	n41	30kHz	10/15/20/40/50/60/80/90/100	Band 26
	n66	15kHz	5/10/15/20/40	Band 5/12
	n71	15kHz	5/10/15/20	Band 2/66

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.	Convertible Board	NA	NA	NA	NA	Provided by client
B.	Antenna x 4	TAOGLAS	TG.55.8113	NA	NA	Provided by client
C.	DC Power supply	TECPEL	GPS-3030DD	GEO855739	NA	-

Note: All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC cable	1	1	N	0	-

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 on X-plane. Following channel(s) was (were) selected for the final test as listed below.

n66

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	342500 to 355500	342500 (1712.5MHz), 349000 (1745.0MHz), 355500 (1777.5MHz)	5MHz	$\pi/2$ BPSK / 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
		343000 to 355000	343000 (1715.0MHz), 349000 (1745.0MHz), 355000 (1775.0MHz)	10MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 26 RB Offset 1 RB / 51 RB Offset 26 RB / 0 RB Offset 26 RB / 13 RB Offset 26 RB / 26 RB Offset 52 RB / 0 RB Offset
		343500 to 354500	343500 (1717.5MHz), 349000 (1745.0MHz), 354500 (1772.5MHz)	15MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 39 RB Offset 1 RB / 78 RB Offset 39 RB / 0 RB Offset 39 RB / 19 RB Offset 39 RB / 40 RB Offset 79 RB / 0 RB Offset
		344000 to 354000	344000 (1720.0MHz), 349000 (1745.0MHz), 354000 (1770.0MHz)	20MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 53 RB Offset 1 RB / 105 RB Offset 53 RB / 0 RB Offset 53 RB / 27 RB Offset 53 RB / 53 RB Offset 106 RB / 0 RB Offset
		346000 to 352000	346000 (1730.0MHz), 349000 (1745.0MHz), 352000 (1760.0MHz)	40MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 108 RB Offset 1 RB / 215 RB Offset 108 RB / 0 RB Offset 108 RB / 53 RB Offset 108 RB / 107 RB Offset 216 RB / 0 RB Offset
-	Modulation Characteristics	346000 to 352000	349000 (1745.0MHz)	40MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	216 RB / 0 RB Offset
-	Frequency Stability	342500 to 355500	342500 (1712.5MHz), 355500 (1777.5MHz)	5MHz	$\pi/2$ BPSK	25 RB / 0 RB Offset
		343000 to 355000	343000 (1715.0MHz), 355000 (1775.0MHz)	10MHz	$\pi/2$ BPSK	52 RB / 0 RB Offset
		343500 to 354500	343500 (1717.5MHz), 354500 (1772.5MHz)	15MHz	$\pi/2$ BPSK	79 RB / 0 RB Offset
		344000 to 354000	344000 (1720.0MHz), 354000 (1770.0MHz)	20MHz	$\pi/2$ BPSK	106 RB / 0 RB Offset
		346000 to 352000	346000 (1730.0MHz), 352000 (1760.0MHz)	40MHz	$\pi/2$ BPSK	216 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Emission Bandwidth	342500 to 355500	342500 (1712.5MHz), 349000 (1745.0MHz), 355500 (1777.5MHz)	5MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	25 RB / 0 RB Offset
		343000 to 355000	343000 (1715.0MHz), 349000 (1745.0MHz), 355000 (1775.0MHz)	10MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	52 RB / 0 RB Offset
		343500 to 354500	343500 (1717.5MHz), 349000 (1745.0MHz), 354500 (1772.5MHz)	15MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	79 RB / 0 RB Offset
		344000 to 354000	344000 (1720.0MHz), 349000 (1745.0MHz), 354000 (1770.0MHz)	20MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	106 RB / 0 RB Offset
		346000 to 352000	346000 (1730.0MHz), 349000 (1745.0MHz), 352000 (1760.0MHz)	40MHz	$\pi/2$ BPSK / QPSK / 16QAM / 64QAM / 256QAM	216 RB / 0 RB Offset
-	Band Edge	342500 to 355500	342500 (1712.5MHz), 355500 (1777.5MHz)	5MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		343000 to 355000	343000 (1715.0MHz), 355000 (1775.0MHz)	10MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset 1 RB / 51 RB Offset 52 RB / 0 RB Offset
		343500 to 354500	343500 (1717.5MHz), 354500 (1772.5MHz)	15MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset 1 RB / 78 RB Offset 79 RB / 0 RB Offset
		344000 to 354000	344000 (1720.0MHz), 354000 (1770.0MHz)	20MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset 1 RB / 105 RB Offset 106 RB / 0 RB Offset
		346000 to 352000	346000 (1730.0MHz), 352000 (1760.0MHz)	40MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset 1 RB / 215 RB Offset 216 RB / 0 RB Offset
-	Peak to Average Ratio	342500 to 355500	342500 (1712.5MHz), 349000 (1745.0MHz), 355500 (1777.5MHz)	5MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset
		343000 to 355000	343000 (1715.0MHz), 349000 (1745.0MHz), 355000 (1775.0MHz)	10MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset
		343500 to 354500	343500 (1717.5MHz), 349000 (1745.0MHz), 354500 (1772.5MHz)	15MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset
		344000 to 354000	344000 (1720.0MHz), 349000 (1745.0MHz), 354000 (1770.0MHz)	20MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset
		346000 to 352000	346000 (1730.0MHz), 349000 (1745.0MHz), 352000 (1760.0MHz)	40MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Conducted Emission	342500 to 355500	342500 (1712.5MHz), 349000 (1745.0MHz), 355500 (1777.5MHz)	5MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset
		343000 to 355000	343000 (1715.0MHz), 349000 (1745.0MHz), 355000 (1775.0MHz)	10MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset
		343500 to 354500	343500 (1717.5MHz), 349000 (1745.0MHz), 354500 (1772.5MHz)	15MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset
		344000 to 354000	344000 (1720.0MHz), 349000 (1745.0MHz), 354000 (1770.0MHz)	20MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset
		346000 to 352000	346000 (1730.0MHz), 349000 (1745.0MHz), 352000 (1760.0MHz)	40MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset
-	Radiated Emission Below 1GHz	343500 to 354500	349000 (1745.0MHz)	15MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	342500 to 355500	342500 (1712.5MHz), 349000 (1745.0MHz), 355500 (1777.5MHz)	5MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset
		343000 to 355000	343000 (1715.0MHz), 349000 (1745.0MHz), 355000 (1775.0MHz)	10MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset
		343500 to 354500	343500 (1717.5MHz), 349000 (1745.0MHz), 354500 (1772.5MHz)	15MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset
		344000 to 354000	344000 (1720.0MHz), 349000 (1745.0MHz), 354000 (1770.0MHz)	20MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset
		346000 to 352000	346000 (1730.0MHz), 349000 (1745.0MHz), 352000 (1760.0MHz)	40MHz	$\pi/2$ BPSK	1 RB / 0 RB Offset

Note: The conducted output power for $\pi/2$ BPSK, QPSK, 16QAM, 64QAM and 256QAM, measured value of $\pi/2$ BPSK is higher than QPSK, 16QAM, 64QAM and 256QAM mode. Therefore, only EIRP, 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 $\pi/2$ BPSK mode only.

LTE Band 5

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	ERP	20407 to 20643	20407 (824.7MHz), 20525 (836.5MHz), 20643 (848.3MHz)	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
		20415 to 20635	20415 (825.5MHz), 20525 (836.5MHz), 20635 (847.5MHz)	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
		20425 to 20625	20425 (826.5MHz), 20525 (836.5MHz), 20625 (846.5MHz)	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
		20450 to 20600	20450 (829.0MHz), 20525 (836.5MHz), 20600 (844.0MHz)	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
-	Frequency Stability	20407 to 20643	20407 (824.7MHz), 20643 (848.3MHz)	1.4MHz	QPSK	6 RB / 0 RB Offset
		20415 to 20635	20415 (825.5MHz), 20635 (847.5MHz)	3MHz	QPSK	15 RB / 0 RB Offset
		20425 to 20625	20425 (826.5MHz), 20625 (846.5MHz)	5MHz	QPSK	25 RB / 0 RB Offset
		20450 to 20600	20450 (829.0MHz), 20600 (844.0MHz)	10MHz	QPSK	50 RB / 0 RB Offset
-	Occupied Bandwidth	20407 to 20643	20407 (824.7MHz), 20525 (836.5MHz), 20643 (848.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM / 256QAM	6 RB / 0 RB Offset
		20415 to 20635	20415 (825.5MHz), 20525 (836.5MHz), 20635 (847.5MHz)	3MHz	QPSK / 16QAM / 64QAM / 256QAM	15 RB / 0 RB Offset
		20425 to 20625	20425 (826.5MHz), 20525 (836.5MHz), 20625 (846.5MHz)	5MHz	QPSK / 16QAM / 64QAM / 256QAM	25 RB / 0 RB Offset
		20450 to 20600	20450 (829.0MHz), 20525 (836.5MHz), 20600 (844.0MHz)	10MHz	QPSK / 16QAM / 64QAM / 256QAM	50 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Band Edge	20407 to 20643	20407 (824.7MHz), 20643 (848.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset 1 RB / 5 RB Offset 6 RB / 0 RB Offset
		20415 to 20635	20415 (825.5MHz), 20635 (847.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset 1 RB / 14 RB Offset 15 RB / 0 RB Offset
		20425 to 20625	20425 (826.5MHz), 20625 (846.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		20450 to 20600	20450 (829.0MHz), 20600 (844.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
-	Peak to Average Ratio	20407 to 20643	20407 (824.7MHz), 20525 (836.5MHz), 20643 (848.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset
		20415 to 20635	20415 (825.5MHz), 20525 (836.5MHz), 20635 (847.5MHz)	3MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset
		20425 to 20625	20425 (826.5MHz), 20525 (836.5MHz), 20625 (846.5MHz)	5MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset
		20450 to 20600	20450 (829.0MHz), 20525 (836.5MHz), 20600 (844.0MHz)	10MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset
-	Conducted Emission	20407 to 20643	20407 (824.7MHz), 20525 (836.5MHz), 20643 (848.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		20415 to 20635	20415 (825.5MHz), 20525 (836.5MHz), 20635 (847.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		20425 to 20625	20425 (826.5MHz), 20525 (836.5MHz), 20625 (846.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		20450 to 20600	20450 (829.0MHz), 20525 (836.5MHz), 20600 (844.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Below 1GHz	20450 to 20600	20525 (836.5MHz)	10MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	20407 to 20643	20407 (824.7MHz), 20525 (836.5MHz), 20643 (848.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		20425 to 20625	20425 (826.5MHz), 20525 (836.5MHz), 20625 (846.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		20450 to 20600	20450 (829.0MHz), 20525 (836.5MHz), 20600 (844.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset

Note: The conducted output power for QPSK, 16QAM, 64QAM and 256QAM, measured value of QPSK is higher than 16QAM, 64QAM and 256QAM mode. Therefore, only ERP, occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM, 64QAM and 256QAM modes, the other test items were 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 (707.5 MHz), 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
-	Frequency Stability	23017 to 23173	23017 (699.7MHz), 23173 (715.3MHz)	1.4MHz	QPSK	6 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23165 (714.5MHz)	3MHz	QPSK	15 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23155 (713.5MHz)	5MHz	QPSK	25 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23130 (711.0 MHz)	10MHz	QPSK	50 RB / 0 RB Offset
-	Emission Bandwidth	23017 to 23173	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM / 256QAM	6 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23095 (707.5MHz), 23165 (714.5MHz)	3MHz	QPSK / 16QAM / 64QAM / 256QAM	15 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK / 16QAM / 64QAM / 256QAM	25 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5 MHz), 23130 (711.0 MHz)	10MHz	QPSK / 16QAM / 64QAM / 256QAM	50 RB / 0 RB Offset
-	Band Edge	23017 to 23173	23017 (699.7MHz), 23173 (715.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset 1 RB / 5 RB Offset 6 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23165 (714.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset 1 RB / 14 RB Offset 15 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23155 (713.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23130 (711.0 MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Peak to Average Ratio	23017 to 23173	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM / 256QAM	1 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
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5 MHz), 23130 (711.0 MHz)	10MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset
-	Conducted Emission	23017 to 23173	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23095 (707.5MHz), 23165 (714.5MHz)	3MHz	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 (707.5 MHz), 23130 (711.0 MHz)	10MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Below 1GHz	23060 to 23130	23095 (707.5MHz)	10MHz	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: The conducted output power for QPSK, 16QAM, 64QAM and 256QAM, measured value of QPSK is higher than 16QAM, 64QAM and 256QAM mode. Therefore, only ERP, occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM, 64QAM and 256QAM modes, the other test items were performed under QPSK mode only.

Test Condition:

Test Item	Environmental Conditions	Input Power (System)	Tested By
ERP / EIRP	25deg. C, 70%RH	4.2Vdc	James Yang
Modulation characteristics	25deg. C, 70%RH	4.2Vdc	James Yang
Frequency Stability	24deg. C, 64%RH	4.2Vdc	James Yang
Occupied Bandwidth	24deg. C, 64%RH	4.2Vdc	James Yang
Band Edge	24deg. C, 64%RH	4.2Vdc	James Yang
Peak To Average Ratio	24deg. C, 64%RH	4.2Vdc	James Yang
Conducted Emission	24deg. C, 64%RH	4.2Vdc	James Yang
Radiated Emission	22deg. C, 66%RH	120Vac, 60Hz	Jones Chang

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 and References:

Test Standard:

FCC 47 CFR Part 2

FCC 47 CFR Part 22

FCC 47 CFR Part 27

ANSI/TIA/EIA-603-D-2010

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

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

References Test Guidance:

KDB 971168 D01 Power Meas License Digital Systems v03r01

KDB 971168 D02 Misc Rev Approv License Devices v02r01

All test items have been performed as a reference to the above KDB test guidance.

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

For n66:
Mobile / Portable station are limited to 1 watts e.i.r.p.

For LTE Band 5:
Mobile / Portable station are limited to 7 watts e.r.p.

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.

4.1.2 Test Procedures

Conducted Power Measurement:

1. Connect the DUT transmitter output to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
2. Set span to at least 1.5 times the OBW.
3. Set RBW = 1-5% of the OBW, not to exceed 1 MHz.
4. Set VBW ≥ 3 × RBW.
5. Set number of points in sweep ≥ 2 × span / RBW.
6. Sweep time = auto-couple.
7. Detector = RMS (power averaging).
8. If the EUT can be configured to transmit continuously (i.e., burst duty cycle ≥ 98%), then set the trigger to free run.
9. 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.
10. Trace average at least 100 traces in power averaging (i.e., RMS) mode.
11. Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function, with the band limits set equal to the OBW band edges. If the instrument does not have a band 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.

Maximum EIRP / ERP

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

$EIRP = P_{Meas} + G_T$

$ERP = P_{Meas} + G_T - 2.15$

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)

4.1.3 Test Setup

Conducted Power Measurement:

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

4.1.4 Test Results

Conducted Output Power (dBm)

NR Band 66 (SCS 15kHz)						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		346000	349000	352000
		Frequency (MHz)		1730	1745	1760
40M	pi/2 BPSK	1	0	22.10	22.08	22.41
		1	108	22.62	22.60	22.93
		1	215	22.35	22.33	22.66
		108	0	22.12	22.10	22.43
		108	53	22.34	22.32	22.65
		108	107	22.76	22.74	22.80
		216	0	22.27	22.25	22.58
	QPSK	1	0	21.33	21.29	21.59
		1	108	22.28	22.24	22.54
		1	215	21.48	21.44	21.74
		108	0	21.36	21.32	21.62
		108	53	21.58	21.54	21.84
		108	107	22.54	22.50	22.80
		216	0	21.56	21.52	21.82
	16QAM	1	0	20.40	20.36	20.66
		1	108	21.46	21.42	21.72
		1	215	20.54	20.50	20.80
		108	0	20.37	20.33	20.63
		108	53	20.58	20.54	20.84
		108	107	21.55	21.51	21.81
		216	0	20.56	20.52	20.82
	64QAM	1	0	20.01	19.97	20.27
		1	108	19.98	19.94	20.24
		1	215	20.18	20.14	20.44
		108	0	19.96	19.92	20.22
		108	53	20.11	20.07	20.37
		108	107	20.10	20.06	20.36
		216	0	20.02	19.98	20.28
	256QAM	1	0	17.96	17.92	18.22
		1	108	17.95	17.91	18.21
		1	215	18.10	18.06	18.36
		108	0	17.98	17.94	18.24
		108	53	18.07	18.03	18.33
		108	107	18.05	18.01	18.31
		216	0	17.98	17.94	18.24

NR Band 66 (SCS 15kHz)						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		344000	349000	354000
		Frequency (MHz)		1720	1745	1770
20M	pi/2 BPSK	1	0	22.09	22.04	22.33
		1	53	22.58	22.57	22.87
		1	105	22.34	22.29	22.63
		53	0	22.09	22.09	22.37
		53	27	22.30	22.27	22.63
		53	53	22.70	22.72	23.04
		106	0	22.25	22.17	22.57
	QPSK	1	0	21.25	21.25	21.54
		1	53	22.25	22.18	22.52
		1	105	21.42	21.41	21.70
		53	0	21.34	21.25	21.57
		53	27	21.52	21.46	21.82
		53	53	22.48	22.47	22.76
		106	0	21.54	21.45	21.77
	16QAM	1	0	20.34	20.28	20.64
		1	53	21.45	21.40	21.64
		1	105	20.52	20.49	20.76
		53	0	20.35	20.25	20.62
		53	27	20.50	20.50	20.79
		53	53	21.53	21.43	21.80
		106	0	20.48	20.48	20.77
	64QAM	1	0	19.98	19.91	20.25
		1	53	19.96	19.87	20.19
		1	105	20.17	20.12	20.36
		53	0	19.89	19.84	20.16
		53	27	20.08	20.01	20.35
		53	53	20.08	19.99	20.31
		106	0	19.95	19.90	20.22
	256QAM	1	0	17.93	17.86	18.20
		1	53	17.93	17.84	18.16
		1	105	18.08	17.98	18.35
		53	0	17.90	17.90	18.19
		53	27	18.05	17.95	18.32
		53	53	17.97	17.97	18.26
		106	0	17.95	17.88	18.22

NR Band 66 (SCS 15kHz)						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		343500	349000	354500
		Frequency (MHz)		1717.5	1745	1772.5
15M	pi/2 BPSK	1	0	22.09	22.06	22.33
		1	39	22.57	22.52	22.87
		1	78	22.30	22.26	22.61
		39	0	22.10	22.02	22.41
		39	19	22.29	22.24	22.64
		39	40	22.71	22.67	23.02
		79	0	22.25	22.17	22.56
	QPSK	1	0	21.28	21.21	21.58
		1	39	22.24	22.19	22.49
		1	78	21.44	21.39	21.73
		39	0	21.30	21.30	21.57
		39	19	21.51	21.49	21.82
		39	40	22.46	22.48	22.75
		79	0	21.54	21.44	21.80
	16QAM	1	0	20.32	20.30	20.58
		1	39	21.40	21.40	21.66
		1	78	20.48	20.43	20.75
		39	0	20.30	20.28	20.61
		39	19	20.50	20.52	20.78
		39	40	21.47	21.50	21.79
		79	0	20.49	20.47	20.80
	64QAM	1	0	19.93	19.95	20.21
		1	39	19.90	19.93	20.22
		1	78	20.10	20.13	20.42
		39	0	19.92	19.87	20.14
		39	19	20.05	20.05	20.34
		39	40	20.04	20.04	20.30
		79	0	19.95	19.93	20.26
	256QAM	1	0	17.90	17.85	18.17
		1	39	17.88	17.86	18.19
		1	78	18.02	18.05	18.34
		39	0	17.94	17.89	18.16
		39	19	17.99	18.02	18.31
		39	40	18.00	17.96	18.27
		79	0	17.96	17.86	18.23

NR Band 66 (SCS 15kHz)						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		343000	349000	355000
		Frequency (MHz)		1715	1745	1775
10M	pi/2 BPSK	1	0	22.08	22.00	22.40
		1	26	22.54	22.56	22.88
		1	51	22.33	22.26	22.61
		26	0	22.06	22.02	22.41
		26	13	22.33	22.30	22.57
		26	26	22.71	22.66	23.01
		52	0	22.26	22.19	22.56
	QPSK	1	0	21.28	21.27	21.52
		1	26	22.26	22.16	22.53
		1	51	21.46	21.36	21.73
		26	0	21.28	21.28	21.57
		26	13	21.55	21.48	21.82
		26	26	22.52	22.43	22.75
		52	0	21.48	21.48	21.77
	16QAM	1	0	20.37	20.30	20.64
		1	26	21.44	21.35	21.67
		1	51	20.53	20.48	20.72
		26	0	20.32	20.25	20.57
		26	13	20.57	20.48	20.82
		26	26	21.50	21.44	21.76
		52	0	20.54	20.44	20.80
	64QAM	1	0	19.96	19.89	20.26
		1	26	19.94	19.89	20.19
		1	51	20.14	20.09	20.43
		26	0	19.90	19.90	20.17
		26	13	20.04	20.02	20.35
		26	26	20.02	20.04	20.31
		52	0	20.00	19.90	20.26
	256QAM	1	0	17.89	17.87	18.20
		1	26	17.87	17.89	18.16
		1	51	18.02	18.00	18.28
		26	0	17.92	17.92	18.18
		26	13	18.02	17.95	18.32
		26	26	18.01	17.96	18.26
		52	0	17.96	17.87	18.19

NR Band 66 (SCS 15kHz)						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		342500	349000	355500
		Frequency (MHz)		1712.5	1745	1777.5
5M	pi/2 BPSK	1	0	22.03	22.00	22.35
		1	12	22.59	22.54	22.91
		1	24	22.29	22.28	22.64
		12	0	22.10	22.06	22.42
		12	6	22.28	22.30	22.60
		12	13	22.74	22.70	23.05
		25	0	22.25	22.21	22.57
	QPSK	1	0	21.27	21.27	21.54
		1	12	22.26	22.20	22.52
		1	24	21.44	21.39	21.73
		12	0	21.30	21.30	21.57
		12	6	21.51	21.49	21.82
		12	13	22.46	22.48	22.75
		25	0	21.54	21.44	21.80
	16QAM	1	0	20.33	20.31	20.64
		1	12	21.38	21.40	21.67
		1	24	20.46	20.44	20.72
		12	0	20.31	20.31	20.57
		12	6	20.53	20.46	20.83
		12	13	21.51	21.46	21.76
		25	0	20.54	20.45	20.77
	64QAM	1	0	19.95	19.92	20.25
		1	12	19.97	19.92	20.16
		1	24	20.15	20.08	20.42
		12	0	19.94	19.85	20.17
		12	6	20.05	20.02	20.35
		12	13	20.08	20.02	20.35
		25	0	19.96	19.96	20.23
	256QAM	1	0	17.94	17.88	18.20
		1	12	17.93	17.87	18.20
		1	24	18.08	18.02	18.34
		12	0	17.95	17.88	18.22
		12	6	18.05	17.96	18.28
		12	13	17.99	17.96	18.29
		25	0	17.96	17.90	18.23

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20450	20525	20600
		Frequency (MHz)		829	836.5	844
10M	QPSK	1	0	23.04	23.40	23.59
		1	24	23.07	23.26	23.49
		1	49	23.14	23.22	23.57
		25	0	22.08	22.42	22.50
		25	12	22.17	22.48	22.57
		25	25	22.00	22.43	22.56
		50	0	22.05	22.43	22.45
	16QAM	1	0	22.10	22.23	22.57
		1	24	22.03	22.20	22.55
		1	49	22.20	22.28	22.40
		25	0	21.02	21.46	21.40
		25	12	21.08	21.34	21.42
		25	25	21.06	21.30	21.46
		50	0	21.01	21.36	21.60
	64QAM	1	0	21.08	21.21	21.54
		1	24	21.02	21.22	21.42
		1	49	21.17	21.32	21.51
		25	0	20.02	20.45	20.57
		25	12	20.02	20.32	20.43
		25	25	20.11	20.42	20.43
		50	0	20.16	20.30	20.53
	256QAM	1	0	18.95	19.39	19.44
		1	24	19.03	19.24	19.48
		1	49	19.06	19.39	19.59
		25	0	18.06	18.46	18.50
		25	12	18.16	18.50	18.60
		25	25	18.04	18.38	18.58
		50	0	18.12	18.31	18.46

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20425	20525	20625
		Frequency (MHz)		826.5	836.5	846.5
5M	QPSK	1	0	22.91	23.30	23.50
		1	12	23.00	23.26	23.51
		1	24	23.13	23.39	23.53
		12	0	22.07	22.31	22.40
		12	6	22.05	22.37	22.51
		12	13	22.06	22.36	22.41
		25	0	22.10	22.33	22.57
	16QAM	1	0	22.08	22.27	22.58
		1	12	22.02	22.24	22.53
		1	24	22.14	22.29	22.56
		12	0	21.14	21.47	21.52
		12	6	21.01	21.36	21.44
		12	13	21.11	21.30	21.47
		25	0	21.13	21.50	21.53
	64QAM	1	0	21.07	21.22	21.42
		1	12	21.08	21.21	21.59
		1	24	21.02	21.23	21.57
		12	0	20.19	20.38	20.59
		12	6	20.16	20.34	20.52
		12	13	20.14	20.35	20.59
		25	0	20.04	20.43	20.53
	256QAM	1	0	18.94	19.40	19.53
		1	12	18.92	19.38	19.45
		1	24	19.09	19.31	19.55
		12	0	18.12	18.34	18.54
		12	6	18.13	18.38	18.54
		12	13	18.00	18.47	18.60
		25	0	18.00	18.37	18.54

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20415	20525	20635
		Frequency (MHz)		825.5	836.5	847.5
3M	QPSK	1	0	22.90	22.95	23.48
		1	7	23.08	23.16	23.51
		1	14	23.19	23.29	23.54
		8	0	21.92	22.22	22.49
		8	3	21.91	22.34	22.46
		8	7	21.98	22.36	22.45
		15	0	21.94	22.24	22.56
	16QAM	1	0	21.93	21.96	22.45
		1	7	22.03	22.16	22.54
		1	14	22.05	22.23	22.53
		8	0	20.90	21.38	21.54
		8	3	20.94	21.39	21.59
		8	7	21.00	21.20	21.52
		15	0	20.97	21.32	21.47
	64QAM	1	0	20.87	21.10	21.44
		1	7	21.00	21.17	21.56
		1	14	21.02	21.31	21.43
		8	0	20.03	20.26	20.56
		8	3	20.04	20.29	20.53
		8	7	20.07	20.36	20.59
		15	0	20.02	20.22	20.56
	256QAM	1	0	18.96	18.93	19.52
		1	7	19.05	19.26	19.47
		1	14	19.06	19.22	19.58
		8	0	18.09	18.37	18.46
		8	3	18.09	18.23	18.45
		8	7	17.92	18.24	18.59
		15	0	18.06	18.30	18.50

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20407	20525	20643
		Frequency (MHz)		824.7	836.5	848.3
1.4M	QPSK	1	0	22.92	22.97	23.43
		1	2	23.05	23.14	23.43
		1	5	23.03	23.20	23.57
		3	0	21.92	22.23	22.60
		3	1	21.96	22.25	22.55
		3	3	22.06	22.36	22.58
		6	0	21.94	22.31	22.59
	16QAM	1	0	21.82	22.05	22.45
		1	2	21.93	22.25	22.53
		1	5	22.20	22.39	22.53
		3	0	20.98	21.35	21.60
		3	1	20.94	21.21	21.56
		3	3	20.90	21.27	21.41
		6	0	20.91	21.30	21.59
	64QAM	1	0	20.89	20.98	21.48
		1	2	21.02	21.29	21.52
		1	5	21.07	21.22	21.41
		3	0	20.04	20.21	20.47
		3	1	20.02	20.24	20.41
		3	3	20.01	20.29	20.59
		6	0	19.93	20.26	20.57
	256QAM	1	0	18.85	19.09	19.40
		1	2	19.07	19.12	19.43
		1	5	19.09	19.39	19.44
		3	0	18.00	18.25	18.48
		3	1	18.06	18.40	18.45
		3	3	17.92	18.25	18.42
		6	0	17.98	18.40	18.53

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	23.70	23.79	24.10
		1	24	23.63	23.96	24.08
		1	49	23.76	23.82	24.01
		25	0	22.65	22.85	23.04
		25	12	22.73	22.75	23.08
		25	25	22.60	22.86	22.90
		50	0	22.78	22.90	22.95
	16QAM	1	0	22.79	22.86	23.02
		1	24	22.74	22.80	22.91
		1	49	22.62	22.80	22.92
		25	0	21.63	21.81	21.93
		25	12	21.64	21.87	22.06
		25	25	21.79	21.76	22.10
		50	0	21.60	21.88	22.08
	64QAM	1	0	21.66	21.72	22.07
		1	24	21.68	21.88	22.08
		1	49	21.80	21.97	21.94
		25	0	20.69	20.81	20.93
		25	12	20.78	20.72	20.96
		25	25	20.68	20.85	20.92
		50	0	20.63	20.78	21.10
	256QAM	1	0	19.78	19.79	19.92
		1	24	19.77	19.85	20.00
		1	49	19.65	19.94	19.92
		25	0	18.79	18.88	19.07
		25	12	18.79	18.83	19.00
		25	25	18.61	18.81	18.98
		50	0	18.64	18.73	19.00

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	23.72	23.79	24.05
		1	12	23.72	23.95	23.99
		1	24	23.71	23.93	24.03
		12	0	22.80	22.76	23.04
		12	6	22.80	22.71	23.06
		12	13	22.60	22.78	23.10
		25	0	22.74	22.72	23.06
	16QAM	1	0	22.64	22.87	23.07
		1	12	22.70	22.93	22.97
		1	24	22.80	22.82	23.09
		12	0	21.72	21.81	22.06
		12	6	21.77	21.80	22.05
		12	13	21.73	21.74	22.06
		25	0	21.62	21.78	21.93
	64QAM	1	0	21.70	21.79	22.09
		1	12	21.66	21.80	21.91
		1	24	21.68	21.90	21.99
		12	0	20.60	20.89	21.05
		12	6	20.75	20.86	21.07
		12	13	20.74	20.90	20.98
		25	0	20.71	20.87	21.06
	256QAM	1	0	19.70	19.80	20.09
		1	12	19.78	19.82	19.90
		1	24	19.75	19.84	19.91
		12	0	18.61	18.74	18.95
		12	6	18.78	18.83	19.02
		12	13	18.71	18.86	19.01
		25	0	18.78	18.89	18.91

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	22.85	23.08	23.49
		1	7	23.08	23.20	23.48
		1	14	23.05	23.32	23.50
		8	0	21.98	22.37	22.42
		8	3	22.09	22.27	22.60
		8	7	22.07	22.25	22.45
		15	0	22.04	22.32	22.49
	16QAM	1	0	21.88	22.08	22.46
		1	7	22.05	22.19	22.59
		1	14	22.16	22.29	22.50
		8	0	20.97	21.30	21.56
		8	3	20.93	21.31	21.57
		8	7	21.05	21.35	21.53
		15	0	21.10	21.33	21.51
	64QAM	1	0	20.99	21.00	21.43
		1	7	20.91	21.30	21.48
		1	14	21.14	21.28	21.51
		8	0	19.99	20.35	20.60
		8	3	20.06	20.40	20.60
		8	7	20.08	20.36	20.59
		15	0	20.04	20.21	20.51
	256QAM	1	0	18.84	19.02	19.56
		1	7	19.05	19.14	19.46
		1	14	19.02	19.38	19.57
		8	0	17.90	18.34	18.53
		8	3	18.01	18.33	18.41
		8	7	18.10	18.37	18.42
		15	0	18.09	18.20	18.40

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	22.98	23.00	23.51
		1	2	22.90	23.28	23.44
		1	5	23.00	23.20	23.47
		3	0	22.08	22.21	22.43
		3	1	21.95	22.31	22.45
		3	3	22.01	22.27	22.43
		6	0	22.10	22.25	22.44
	16QAM	1	0	21.84	21.91	22.53
		1	2	21.92	22.13	22.54
		1	5	22.01	22.33	22.57
		3	0	21.04	21.30	21.55
		3	1	20.96	21.34	21.42
		3	3	21.03	21.21	21.47
		6	0	21.05	21.36	21.45
	64QAM	1	0	20.81	20.96	21.54
		1	2	20.92	21.12	21.41
		1	5	21.06	21.22	21.44
		3	0	20.06	20.31	20.41
		3	1	20.02	20.37	20.41
		3	3	19.98	20.38	20.58
		6	0	20.06	20.23	20.50
	256QAM	1	0	18.90	19.05	19.55
		1	2	18.97	19.18	19.60
		1	5	19.14	19.22	19.56
		3	0	18.10	18.34	18.49
		3	1	18.03	18.40	18.40
		3	3	17.98	18.27	18.40
		6	0	17.98	18.31	18.49

EIRP Power (dBm)

NR Band 66 (SCS 15kHz)						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		346000	349000	352000
		Frequency (MHz)		1730	1745	1760
40M	pi/2 BPSK	1	0	25.54	25.52	25.85
		1	108	26.06	26.04	26.37
		1	215	25.79	25.77	26.10
		108	0	25.56	25.54	25.87
		108	53	25.78	25.76	26.09
		108	107	26.20	26.18	26.24
		216	0	25.71	25.69	26.02
	QPSK	1	0	24.77	24.73	25.03
		1	108	25.72	25.68	25.98
		1	215	24.92	24.88	25.18
		108	0	24.80	24.76	25.06
		108	53	25.02	24.98	25.28
		108	107	25.98	25.94	26.24
		216	0	25.00	24.96	25.26
	16QAM	1	0	23.84	23.80	24.10
		1	108	24.90	24.86	25.16
		1	215	23.98	23.94	24.24
		108	0	23.81	23.77	24.07
		108	53	24.02	23.98	24.28
		108	107	24.99	24.95	25.25
		216	0	24.00	23.96	24.26
	64QAM	1	0	23.45	23.41	23.71
		1	108	23.42	23.38	23.68
		1	215	23.62	23.58	23.88
		108	0	23.40	23.36	23.66
		108	53	23.55	23.51	23.81
		108	107	23.54	23.50	23.80
		216	0	23.46	23.42	23.72
	256QAM	1	0	21.40	21.36	21.66
		1	108	21.39	21.35	21.65
		1	215	21.54	21.50	21.80
		108	0	21.42	21.38	21.68
		108	53	21.51	21.47	21.77
		108	107	21.49	21.45	21.75
		216	0	21.42	21.38	21.68

*EIRP = Conducted + antenna gain

NR Band 66 (SCS 15kHz)						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		344000	349000	354000
		Frequency (MHz)		1720	1745	1770
20M	pi/2 BPSK	1	0	25.53	25.48	25.77
		1	53	26.02	26.01	26.31
		1	105	25.78	25.73	26.07
		53	0	25.53	25.53	25.81
		53	27	25.74	25.71	26.07
		53	53	26.14	26.16	26.48
		106	0	25.69	25.61	26.01
	QPSK	1	0	24.69	24.69	24.98
		1	53	25.69	25.62	25.96
		1	105	24.86	24.85	25.14
		53	0	24.78	24.69	25.01
		53	27	24.96	24.90	25.26
		53	53	25.92	25.91	26.20
		106	0	24.98	24.89	25.21
	16QAM	1	0	23.78	23.72	24.08
		1	53	24.89	24.84	25.08
		1	105	23.96	23.93	24.20
		53	0	23.79	23.69	24.06
		53	27	23.94	23.94	24.23
		53	53	24.97	24.87	25.24
		106	0	23.92	23.92	24.21
	64QAM	1	0	23.42	23.35	23.69
		1	53	23.40	23.31	23.63
		1	105	23.61	23.56	23.80
		53	0	23.33	23.28	23.60
		53	27	23.52	23.45	23.79
		53	53	23.52	23.43	23.75
		106	0	23.39	23.34	23.66
	256QAM	1	0	21.37	21.30	21.64
		1	53	21.37	21.28	21.60
		1	105	21.52	21.42	21.79
		53	0	21.34	21.34	21.63
		53	27	21.49	21.39	21.76
		53	53	21.41	21.41	21.70
		106	0	21.39	21.32	21.66

*EIRP = Conducted + antenna gain

NR Band 66 (SCS 15kHz)						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		343500	349000	354500
		Frequency (MHz)		1717.5	1745	1772.5
15M	pi/2 BPSK	1	0	25.53	25.50	25.77
		1	39	26.01	25.96	26.31
		1	78	25.74	25.70	26.05
		39	0	25.54	25.46	25.85
		39	19	25.73	25.68	26.08
		39	40	26.15	26.11	26.46
		79	0	25.69	25.61	26.00
	QPSK	1	0	24.72	24.65	25.02
		1	39	25.68	25.63	25.93
		1	78	24.88	24.83	25.17
		39	0	24.74	24.74	25.01
		39	19	24.95	24.93	25.26
		39	40	25.90	25.92	26.19
		79	0	24.98	24.88	25.24
	16QAM	1	0	23.76	23.74	24.02
		1	39	24.84	24.84	25.10
		1	78	23.92	23.87	24.19
		39	0	23.74	23.72	24.05
		39	19	23.94	23.96	24.22
		39	40	24.91	24.94	25.23
		79	0	23.93	23.91	24.24
	64QAM	1	0	23.37	23.39	23.65
		1	39	23.34	23.37	23.66
		1	78	23.54	23.57	23.86
		39	0	23.36	23.31	23.58
		39	19	23.49	23.49	23.78
		39	40	23.48	23.48	23.74
		79	0	23.39	23.37	23.70
	256QAM	1	0	21.34	21.29	21.61
		1	39	21.32	21.30	21.63
		1	78	21.46	21.49	21.78
		39	0	21.38	21.33	21.60
		39	19	21.43	21.46	21.75
		39	40	21.44	21.40	21.71
		79	0	21.40	21.30	21.67

*EIRP = Conducted + antenna gain

NR Band 66 (SCS 15kHz)						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		343000	349000	355000
		Frequency (MHz)		1715	1745	1775
10M	pi/2 BPSK	1	0	25.52	25.44	25.84
		1	26	25.98	26.00	26.32
		1	51	25.77	25.70	26.05
		26	0	25.50	25.46	25.85
		26	13	25.77	25.74	26.01
		26	26	26.15	26.10	26.45
		52	0	25.70	25.63	26.00
	QPSK	1	0	24.72	24.71	24.96
		1	26	25.70	25.60	25.97
		1	51	24.90	24.80	25.17
		26	0	24.72	24.72	25.01
		26	13	24.99	24.92	25.26
		26	26	25.96	25.87	26.19
		52	0	24.92	24.92	25.21
	16QAM	1	0	23.81	23.74	24.08
		1	26	24.88	24.79	25.11
		1	51	23.97	23.92	24.16
		26	0	23.76	23.69	24.01
		26	13	24.01	23.92	24.26
		26	26	24.94	24.88	25.20
		52	0	23.98	23.88	24.24
	64QAM	1	0	23.40	23.33	23.70
		1	26	23.38	23.33	23.63
		1	51	23.58	23.53	23.87
		26	0	23.34	23.34	23.61
		26	13	23.48	23.46	23.79
		26	26	23.46	23.48	23.75
		52	0	23.44	23.34	23.70
	256QAM	1	0	21.33	21.31	21.64
		1	26	21.31	21.33	21.60
		1	51	21.46	21.44	21.72
		26	0	21.36	21.36	21.62
		26	13	21.46	21.39	21.76
		26	26	21.45	21.40	21.70
		52	0	21.40	21.31	21.63

*EIRP = Conducted + antenna gain

NR Band 66 (SCS 15kHz)						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		342500	349000	355500
		Frequency (MHz)		1712.5	1745	1777.5
5M	pi/2 BPSK	1	0	25.47	25.44	25.79
		1	12	26.03	25.98	26.35
		1	24	25.73	25.72	26.08
		12	0	25.54	25.50	25.86
		12	6	25.72	25.74	26.04
		12	13	26.18	26.14	26.49
		25	0	25.69	25.65	26.01
	QPSK	1	0	24.71	24.71	24.98
		1	12	25.70	25.64	25.96
		1	24	24.88	24.83	25.17
		12	0	24.74	24.74	25.01
		12	6	24.95	24.93	25.26
		12	13	25.90	25.92	26.19
		25	0	24.98	24.88	25.24
	16QAM	1	0	23.77	23.75	24.08
		1	12	24.82	24.84	25.11
		1	24	23.90	23.88	24.16
		12	0	23.75	23.75	24.01
		12	6	23.97	23.90	24.27
		12	13	24.95	24.90	25.20
		25	0	23.98	23.89	24.21
	64QAM	1	0	23.39	23.36	23.69
		1	12	23.41	23.36	23.60
		1	24	23.59	23.52	23.86
		12	0	23.38	23.29	23.61
		12	6	23.49	23.46	23.79
		12	13	23.52	23.46	23.79
		25	0	23.40	23.40	23.67
	256QAM	1	0	21.38	21.32	21.64
		1	12	21.37	21.31	21.64
		1	24	21.52	21.46	21.78
		12	0	21.39	21.32	21.66
		12	6	21.49	21.40	21.72
		12	13	21.43	21.40	21.73
		25	0	21.40	21.34	21.67

*EIRP = Conducted + antenna gain

ERP Power (dBm)

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20450	20525	20600
		Frequency (MHz)		829	836.5	844
10M	QPSK	1	0	21.90	22.26	22.45
		1	24	21.93	22.12	22.35
		1	49	22.00	22.08	22.43
		25	0	20.94	21.28	21.36
		25	12	21.03	21.34	21.43
		25	25	20.86	21.29	21.42
		50	0	20.91	21.29	21.31
	16QAM	1	0	20.96	21.09	21.43
		1	24	20.89	21.06	21.41
		1	49	21.06	21.14	21.26
		25	0	19.88	20.32	20.26
		25	12	19.94	20.20	20.28
		25	25	19.92	20.16	20.32
		50	0	19.87	20.22	20.46
	64QAM	1	0	19.94	20.07	20.40
		1	24	19.88	20.08	20.28
		1	49	20.03	20.18	20.37
		25	0	18.88	19.31	19.43
		25	12	18.88	19.18	19.29
		25	25	18.97	19.28	19.29
		50	0	19.02	19.16	19.39
	256QAM	1	0	17.81	18.25	18.30
		1	24	17.89	18.10	18.34
		1	49	17.92	18.25	18.45
		25	0	16.92	17.32	17.36
		25	12	17.02	17.36	17.46
		25	25	16.90	17.24	17.44
		50	0	16.98	17.17	17.32

*ERP = Conducted + antenna gain - 2.15

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20425	20525	20625
		Frequency (MHz)		826.5	836.5	846.5
5M	QPSK	1	0	21.77	22.16	22.36
		1	12	21.86	22.12	22.37
		1	24	21.99	22.25	22.39
		12	0	20.93	21.17	21.26
		12	6	20.91	21.23	21.37
		12	13	20.92	21.22	21.27
		25	0	20.96	21.19	21.43
	16QAM	1	0	20.94	21.13	21.44
		1	12	20.88	21.10	21.39
		1	24	21.00	21.15	21.42
		12	0	20.00	20.33	20.38
		12	6	19.87	20.22	20.30
		12	13	19.97	20.16	20.33
		25	0	19.99	20.36	20.39
	64QAM	1	0	19.93	20.08	20.28
		1	12	19.94	20.07	20.45
		1	24	19.88	20.09	20.43
		12	0	19.05	19.24	19.45
		12	6	19.02	19.20	19.38
		12	13	19.00	19.21	19.45
		25	0	18.90	19.29	19.39
	256QAM	1	0	17.80	18.26	18.39
		1	12	17.78	18.24	18.31
		1	24	17.95	18.17	18.41
		12	0	16.98	17.20	17.40
		12	6	16.99	17.24	17.40
		12	13	16.86	17.33	17.46
		25	0	16.86	17.23	17.40

*ERP = Conducted + antenna gain - 2.15

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20415	20525	20635
		Frequency (MHz)		825.5	836.5	847.5
3M	QPSK	1	0	21.76	21.81	22.34
		1	7	21.94	22.02	22.37
		1	14	22.05	22.15	22.40
		8	0	20.78	21.08	21.35
		8	3	20.77	21.20	21.32
		8	7	20.84	21.22	21.31
		15	0	20.80	21.10	21.42
	16QAM	1	0	20.79	20.82	21.31
		1	7	20.89	21.02	21.40
		1	14	20.91	21.09	21.39
		8	0	19.76	20.24	20.40
		8	3	19.80	20.25	20.45
		8	7	19.86	20.06	20.38
		15	0	19.83	20.18	20.33
	64QAM	1	0	19.73	19.96	20.30
		1	7	19.86	20.03	20.42
		1	14	19.88	20.17	20.29
		8	0	18.89	19.12	19.42
		8	3	18.90	19.15	19.39
		8	7	18.93	19.22	19.45
		15	0	18.88	19.08	19.42
	256QAM	1	0	17.82	17.79	18.38
		1	7	17.91	18.12	18.33
		1	14	17.92	18.08	18.44
		8	0	16.95	17.23	17.32
		8	3	16.95	17.09	17.31
		8	7	16.78	17.10	17.45
		15	0	16.92	17.16	17.36

*ERP = Conducted + antenna gain - 2.15

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20407	20525	20643
		Frequency (MHz)		824.7	836.5	848.3
1.4M	QPSK	1	0	21.78	21.83	22.29
		1	2	21.91	22.00	22.29
		1	5	21.89	22.06	22.43
		3	0	20.78	21.09	21.46
		3	1	20.82	21.11	21.41
		3	3	20.92	21.22	21.44
		6	0	20.80	21.17	21.45
	16QAM	1	0	20.68	20.91	21.31
		1	2	20.79	21.11	21.39
		1	5	21.06	21.25	21.39
		3	0	19.84	20.21	20.46
		3	1	19.80	20.07	20.42
		3	3	19.76	20.13	20.27
		6	0	19.77	20.16	20.45
	64QAM	1	0	19.75	19.84	20.34
		1	2	19.88	20.15	20.38
		1	5	19.93	20.08	20.27
		3	0	18.90	19.07	19.33
		3	1	18.88	19.10	19.27
		3	3	18.87	19.15	19.45
		6	0	18.79	19.12	19.43
	256QAM	1	0	17.71	17.95	18.26
		1	2	17.93	17.98	18.29
		1	5	17.95	18.25	18.30
		3	0	16.86	17.11	17.34
		3	1	16.92	17.26	17.31
		3	3	16.78	17.11	17.28
		6	0	16.84	17.26	17.39

*ERP = Conducted + antenna gain - 2.15

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	20.38	20.47	20.78
		1	24	20.31	20.64	20.76
		1	49	20.44	20.50	20.69
		25	0	19.33	19.53	19.72
		25	12	19.41	19.43	19.76
		25	25	19.28	19.54	19.58
		50	0	19.46	19.58	19.63
	16QAM	1	0	19.47	19.54	19.70
		1	24	19.42	19.48	19.59
		1	49	19.30	19.48	19.60
		25	0	18.31	18.49	18.61
		25	12	18.32	18.55	18.74
		25	25	18.47	18.44	18.78
		50	0	18.28	18.56	18.76
	64QAM	1	0	18.34	18.40	18.75
		1	24	18.36	18.56	18.76
		1	49	18.48	18.65	18.62
		25	0	17.37	17.49	17.61
		25	12	17.46	17.40	17.64
		25	25	17.36	17.53	17.60
		50	0	17.31	17.46	17.78
	256QAM	1	0	16.46	16.47	16.60
		1	24	16.45	16.53	16.68
		1	49	16.33	16.62	16.60
		25	0	15.47	15.56	15.75
		25	12	15.47	15.51	15.68
		25	25	15.29	15.49	15.66
		50	0	15.32	15.41	15.68

*ERP = Conducted + antenna gain - 2.15

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	20.40	20.47	20.73
		1	12	20.40	20.63	20.67
		1	24	20.39	20.61	20.71
		12	0	19.48	19.44	19.72
		12	6	19.48	19.39	19.74
		12	13	19.28	19.46	19.78
		25	0	19.42	19.40	19.74
	16QAM	1	0	19.32	19.55	19.75
		1	12	19.38	19.61	19.65
		1	24	19.48	19.50	19.77
		12	0	18.40	18.49	18.74
		12	6	18.45	18.48	18.73
		12	13	18.41	18.42	18.74
		25	0	18.30	18.46	18.61
	64QAM	1	0	18.38	18.47	18.77
		1	12	18.34	18.48	18.59
		1	24	18.36	18.58	18.67
		12	0	17.28	17.57	17.73
		12	6	17.43	17.54	17.75
		12	13	17.42	17.58	17.66
		25	0	17.39	17.55	17.74
	256QAM	1	0	16.38	16.48	16.77
		1	12	16.46	16.50	16.58
		1	24	16.43	16.52	16.59
		12	0	15.29	15.42	15.63
		12	6	15.46	15.51	15.70
		12	13	15.39	15.54	15.69
		25	0	15.46	15.57	15.59

*ERP = Conducted + antenna gain - 2.15

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	19.53	19.76	20.17
		1	7	19.76	19.88	20.16
		1	14	19.73	20.00	20.18
		8	0	18.66	19.05	19.10
		8	3	18.77	18.95	19.28
		8	7	18.75	18.93	19.13
		15	0	18.72	19.00	19.17
	16QAM	1	0	18.56	18.76	19.14
		1	7	18.73	18.87	19.27
		1	14	18.84	18.97	19.18
		8	0	17.65	17.98	18.24
		8	3	17.61	17.99	18.25
		8	7	17.73	18.03	18.21
		15	0	17.78	18.01	18.19
	64QAM	1	0	17.67	17.68	18.11
		1	7	17.59	17.98	18.16
		1	14	17.82	17.96	18.19
		8	0	16.67	17.03	17.28
		8	3	16.74	17.08	17.28
		8	7	16.76	17.04	17.27
		15	0	16.72	16.89	17.19
	256QAM	1	0	15.52	15.70	16.24
		1	7	15.73	15.82	16.14
		1	14	15.70	16.06	16.25
		8	0	14.58	15.02	15.21
		8	3	14.69	15.01	15.09
		8	7	14.78	15.05	15.10
		15	0	14.77	14.88	15.08

*ERP = Conducted + antenna gain - 2.15

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	19.66	19.68	20.19
		1	2	19.58	19.96	20.12
		1	5	19.68	19.88	20.15
		3	0	18.76	18.89	19.11
		3	1	18.63	18.99	19.13
		3	3	18.69	18.95	19.11
		6	0	18.78	18.93	19.12
	16QAM	1	0	18.52	18.59	19.21
		1	2	18.60	18.81	19.22
		1	5	18.69	19.01	19.25
		3	0	17.72	17.98	18.23
		3	1	17.64	18.02	18.10
		3	3	17.71	17.89	18.15
		6	0	17.73	18.04	18.13
	64QAM	1	0	17.49	17.64	18.22
		1	2	17.60	17.80	18.09
		1	5	17.74	17.90	18.12
		3	0	16.74	16.99	17.09
		3	1	16.70	17.05	17.09
		3	3	16.66	17.06	17.26
		6	0	16.74	16.91	17.18
	256QAM	1	0	15.58	15.73	16.23
		1	2	15.65	15.86	16.28
		1	5	15.82	15.90	16.24
		3	0	14.78	15.02	15.17
		3	1	14.71	15.08	15.08
		3	3	14.66	14.95	15.08
		6	0	14.66	14.99	15.17

*ERP = Conducted + antenna gain - 2.15

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

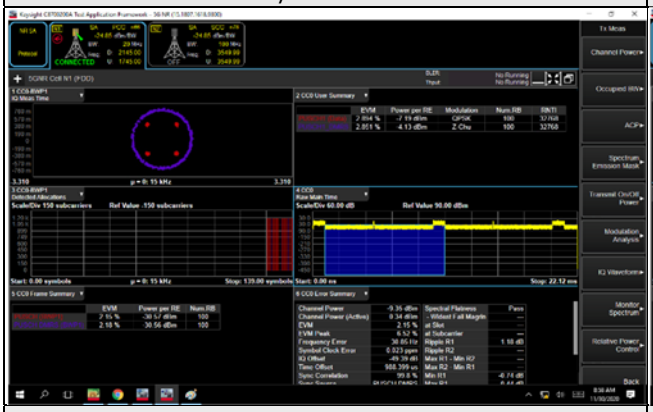
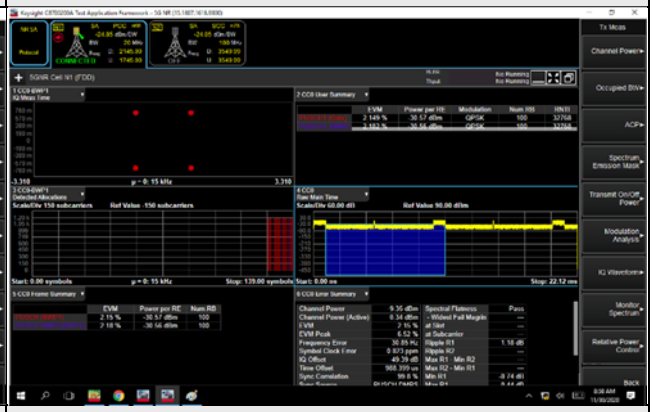
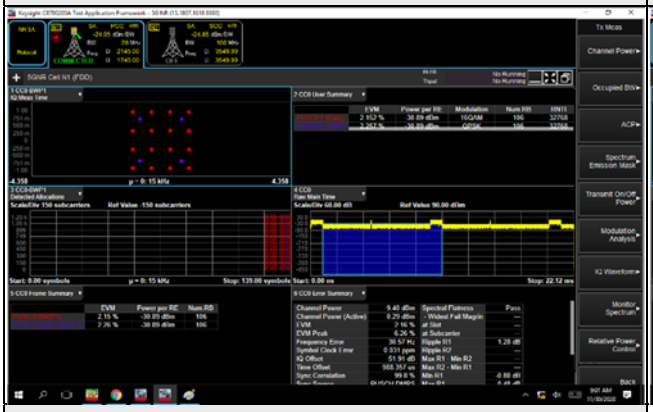
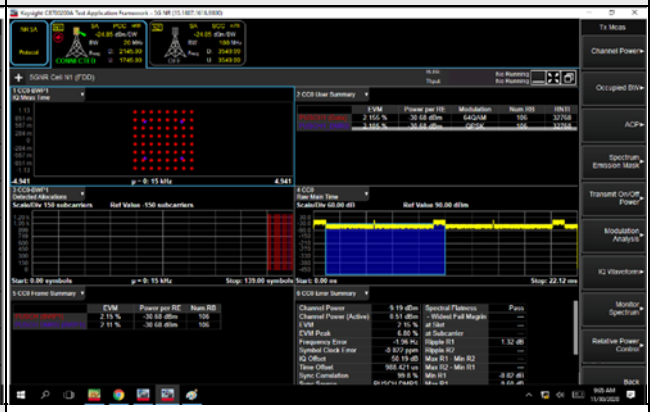
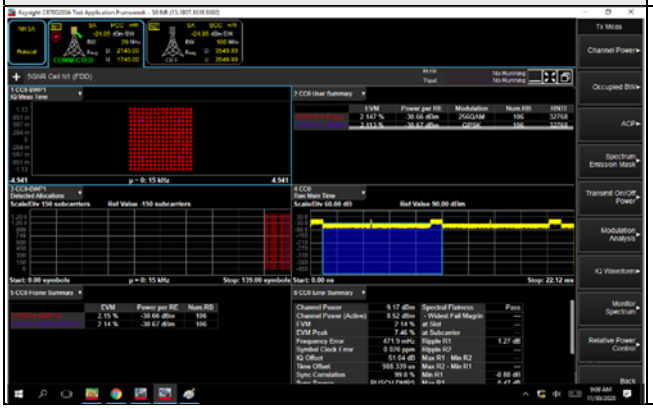
N/A

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

n66	
Spectrum Plot of Measurement Value	
Channel: 349000 / Frequency (MHz): 1745.0MHz	
$\pi/2$ BPSK	QPSK
	
16QAM	64QAM
	
256QAM	
	

4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

For n66, LTE Band 12:
According to the FCC part 2.1055 shall be tested the frequency stability. The rule is defined that" The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment and the extreme temperature rule is comply with specification of EUT -30℃ ~ 50℃.

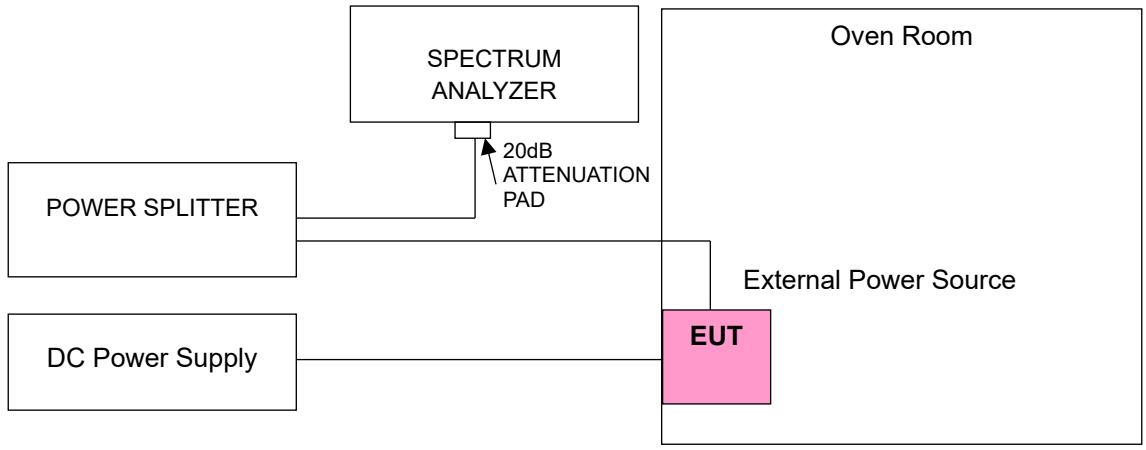
For LTE Band 5
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.3.2 Test Procedure

a. 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.
b. 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.
c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5 ℃ 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 Setup



4.3.4 Test Results

Frequency Error vs. Voltage

Voltage (Volts)	n66			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.0	1712.500002	0.001	1777.500000	-0.002
4.2	1712.500003	0.002	1777.500000	-0.002
4.4	1712.500002	0.001	1777.500000	-0.002

Note: The applicant defined the normal working voltage is from 4.2Vdc to 4.4Vdc.

Frequency Error vs. Temperature

Temp. (℃)	n66			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1712.500003	0.002	1777.500000	0.001
-20	1712.500004	0.002	1777.500000	0.001
-10	1712.500002	0.001	1777.500000	0.001
0	1712.500001	0.001	1777.500000	0.002
10	1712.499998	-0.001	1777.500000	0.001
20	1712.499998	-0.001	1777.500000	0.001
30	1712.499997	-0.002	1777.500000	0.001
40	1712.499996	-0.002	1777.500000	-0.001
50	1712.499997	-0.002	1777.500000	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	n66			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.0	1712.500004	0.002	1774.999996	-0.002
4.2	1712.500004	0.002	1774.999997	-0.002
4.4	1712.500001	0.001	1774.999999	-0.001

Note: The applicant defined the normal working voltage is from 4.2Vdc to 4.4Vdc.

Frequency Error vs. Temperature

Temp. (℃)	n66			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1712.500002	0.001	1775.000003	0.002
-20	1712.500002	0.001	1775.000003	0.002
-10	1712.500003	0.002	1775.000002	0.001
0	1712.500004	0.002	1775.000003	0.002
10	1712.499997	-0.002	1775.000003	0.002
20	1712.499998	-0.001	1775.000003	0.002
30	1712.499997	-0.002	1775.000002	0.001
40	1712.499998	-0.001	1774.999996	-0.002
50	1712.499999	-0.001	1774.999998	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	n66			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.0	1717.500003	0.002	1772.499996	-0.002
4.2	1717.500003	0.002	1772.499998	-0.001
4.4	1717.500001	0.001	1772.499996	-0.002

Note: The applicant defined the normal working voltage is from 4.2Vdc to 4.4Vdc.

Frequency Error vs. Temperature

Temp. (℃)	n66			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1717.500002	0.001	1772.500002	0.001
-20	1717.500001	0.001	1772.500004	0.002
-10	1717.500001	0.001	1772.500004	0.002
0	1717.500003	0.002	1772.500004	0.002
10	1717.499999	-0.001	1772.500002	0.001
20	1717.499996	-0.002	1772.500002	0.001
30	1717.499996	-0.002	1772.500001	0.001
40	1717.499999	-0.001	1772.499997	-0.002
50	1717.499997	-0.002	1772.499998	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	n66			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.0	1720.000003	0.002	1769.999999	-0.001
4.2	1720.000003	0.002	1769.999997	-0.002
4.4	1720.000003	0.002	1769.999996	-0.002

Note: The applicant defined the normal working voltage is from 4.2Vdc to 4.4Vdc.

Frequency Error vs. Temperature

Temp. (℃)	n66			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1720.000003	0.002	1770.000002	0.001
-20	1720.000003	0.002	1770.000001	0.001
-10	1720.000004	0.002	1770.000004	0.002
0	1720.000002	0.001	1770.000002	0.001
10	1719.999998	-0.001	1770.000002	0.001
20	1719.999997	-0.002	1770.000002	0.001
30	1719.999997	-0.002	1770.000003	0.001
40	1719.999999	-0.001	1769.999997	-0.002
50	1719.999998	-0.001	1769.999999	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	n66			
	Channel Bandwidth: 40 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.0	1730.000001	0.001	1759.999996	-0.002
4.2	1730.000002	0.001	1759.999998	-0.001
4.4	1730.000003	0.002	1759.999998	-0.001

Note: The applicant defined the normal working voltage is from 4.2Vdc to 4.4Vdc.

Frequency Error vs. Temperature

Temp. (℃)	n66			
	Channel Bandwidth: 40 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1730.000003	0.002	1760.000002	0.001
-20	1730.000003	0.002	1760.000001	0.001
-10	1730.000002	0.001	1760.000002	0.001
0	1730.000002	0.001	1760.000002	0.001
10	1729.999999	-0.001	1760.000002	0.001
20	1729.999997	-0.002	1760.000002	0.001
30	1729.999997	-0.002	1760.000001	0.001
40	1729.999999	-0.001	1759.999996	-0.002
50	1729.999998	-0.001	1759.999999	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.0	824.700004	0.005	848.300002	0.002
4.2	824.700002	0.002	848.300003	0.003
4.4	824.700004	0.005	848.300001	0.001

Note: The applicant defined the normal working voltage is from 4.2Vdc to 4.4Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 5			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	824.700004	0.005	848.300002	0.003
-20	824.700003	0.003	848.300002	0.002
-10	824.700002	0.002	848.300003	0.004
0	824.700003	0.003	848.300003	0.004
10	824.700004	0.005	848.300003	0.003
20	824.699999	-0.002	848.299998	-0.002
30	824.699999	-0.002	848.299997	-0.004
40	824.699996	-0.005	848.299998	-0.003
50	824.699997	-0.004	848.299997	-0.004

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.0	825.500004	0.004	847.500002	0.002
4.2	825.500002	0.002	847.500002	0.002
4.4	825.500002	0.003	847.500002	0.002

Note: The applicant defined the normal working voltage is from 4.2Vdc to 4.4Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 5			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	825.500003	0.004	847.500004	0.004
-20	825.500003	0.004	847.500002	0.002
-10	825.500004	0.005	847.500003	0.003
0	825.500003	0.004	847.500004	0.004
10	825.500003	0.003	847.500001	0.002
20	825.499999	-0.001	847.499996	-0.004
30	825.499997	-0.004	847.499996	-0.004
40	825.499997	-0.004	847.499998	-0.003
50	825.499997	-0.004	847.499997	-0.004

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.0	826.500004	0.005	846.500004	0.004
4.2	826.500001	0.001	846.500003	0.003
4.4	826.500004	0.004	846.500001	0.001

Note: The applicant defined the normal working voltage is from 4.2Vdc to 4.4Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 5			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	826.500002	0.002	846.500004	0.004
-20	826.500002	0.002	846.500002	0.002
-10	826.500004	0.004	846.500004	0.004
0	826.500004	0.005	846.500004	0.004
10	826.500002	0.002	846.500002	0.003
20	826.499999	-0.001	846.499997	-0.003
30	826.499998	-0.003	846.499999	-0.001
40	826.499998	-0.002	846.499997	-0.004
50	826.499996	-0.005	846.499997	-0.004

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.0	829.000003	0.004	844.000001	0.001
4.2	829.000003	0.003	844.000003	0.003
4.4	829.000003	0.004	844.000004	0.004

Note: The applicant defined the normal working voltage is from 4.2Vdc to 4.4Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 5			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	829.000003	0.004	844.000004	0.005
-20	829.000002	0.002	844.000003	0.003
-10	829.000001	0.002	844.000002	0.002
0	829.000004	0.005	844.000001	0.001
10	829.000003	0.003	844.000004	0.005
20	828.999997	-0.004	843.999998	-0.002
30	828.999998	-0.003	843.999998	-0.003
40	828.999996	-0.005	843.999997	-0.003
50	828.999997	-0.004	843.999997	-0.004

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.0	699.700002	0.003	715.300004	0.005
4.2	699.700003	0.004	715.300003	0.003
4.4	699.700002	0.002	715.300004	0.005

Note: The applicant defined the normal working voltage is from 4.2Vdc to 4.4Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 12			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	699.700001	0.002	715.300003	0.005
-20	699.700001	0.002	715.300003	0.005
-10	699.700003	0.004	715.300001	0.002
0	699.700003	0.005	715.300004	0.005
10	699.700003	0.004	715.300002	0.003
20	699.699997	-0.004	715.299998	-0.003
30	699.699998	-0.003	715.299999	-0.001
40	699.699998	-0.003	715.299998	-0.002
50	699.699997	-0.004	715.299998	-0.003

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.0	700.500003	0.004	714.500003	0.005
4.2	700.500003	0.005	714.500003	0.004
4.4	700.500003	0.005	714.500002	0.003

Note: The applicant defined the normal working voltage is from 4.2Vdc to 4.4Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 12			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	700.500001	0.002	714.500001	0.002
-20	700.500003	0.004	714.500004	0.005
-10	700.500004	0.005	714.500003	0.004
0	700.500002	0.003	714.500003	0.004
10	700.500003	0.004	714.500001	0.002
20	700.499997	-0.004	714.499998	-0.003
30	700.499996	-0.005	714.499998	-0.003
40	700.499996	-0.005	714.499998	-0.003
50	700.499997	-0.004	714.499998	-0.003

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.0	701.500002	0.003	713.500003	0.004
4.2	701.500002	0.003	713.500004	0.005
4.4	701.500001	0.001	713.500002	0.002

Note: The applicant defined the normal working voltage is from 4.2Vdc to 4.4Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 12			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	701.500004	0.006	713.500001	0.002
-20	701.500004	0.005	713.500002	0.003
-10	701.500003	0.005	713.500001	0.002
0	701.500002	0.003	713.500003	0.004
10	701.500004	0.006	713.500004	0.005
20	701.499998	-0.003	713.499999	-0.002
30	701.499997	-0.005	713.499996	-0.005
40	701.499997	-0.004	713.499996	-0.005
50	701.499997	-0.005	713.499998	-0.003

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.0	704.000002	0.002	711.000004	0.005
4.2	704.000004	0.005	711.000004	0.005
4.4	704.000001	0.001	711.000004	0.005

Note: The applicant defined the normal working voltage is from 4.2Vdc to 4.4Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 12			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	704.000002	0.002	711.000003	0.005
-20	704.000003	0.004	711.000003	0.005
-10	704.000002	0.002	711.000002	0.003
0	704.000003	0.004	711.000003	0.004
10	704.000003	0.005	711.000001	0.002
20	703.999999	-0.002	710.999998	-0.003
30	703.999998	-0.003	710.999998	-0.003
40	703.999997	-0.005	710.999997	-0.005
50	703.999999	-0.001	710.999996	-0.005

4.4 Occupied Bandwidth Measurement

4.4.1 Limits of Occupied Bandwidth Measurement

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to sampling. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

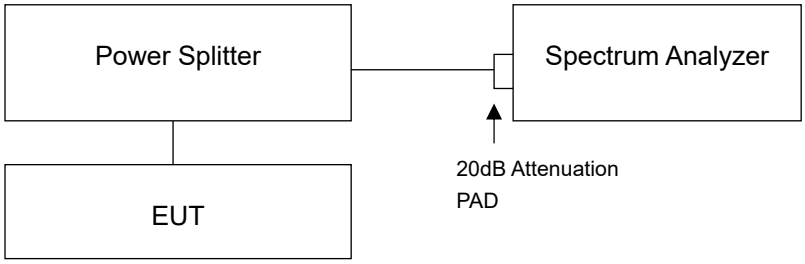
4.4.2 Test Procedure

Occupied Bandwidth

a. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer. Measurement method refers to ANSI C63.26 section 5.4.4.
b. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

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

4.4.3 Test Setup



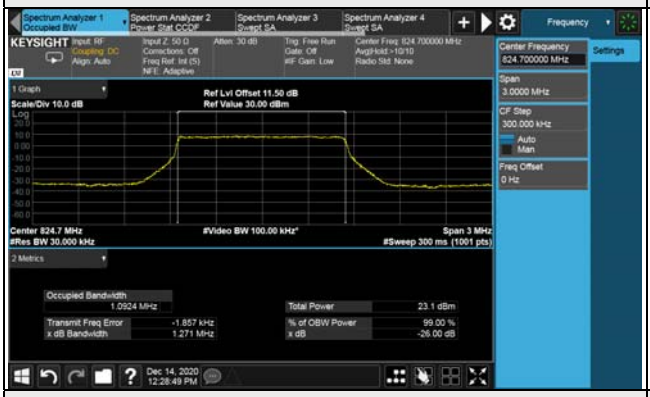
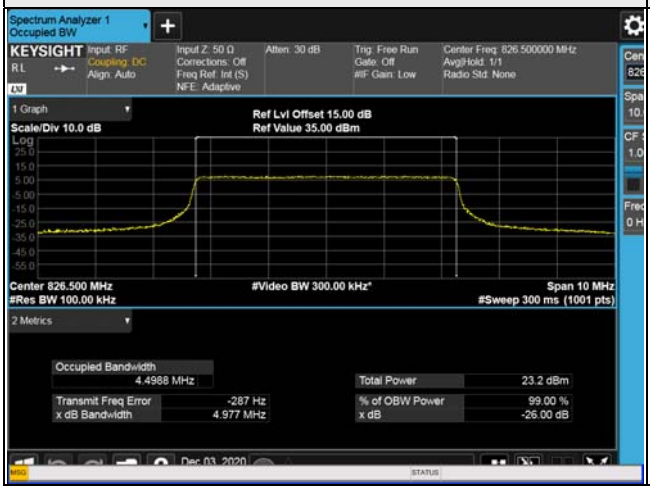
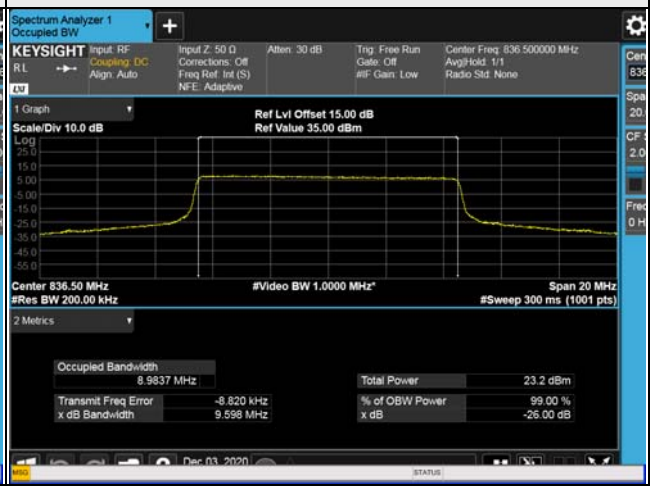
4.4.4 Test Result

Occupied Bandwidth

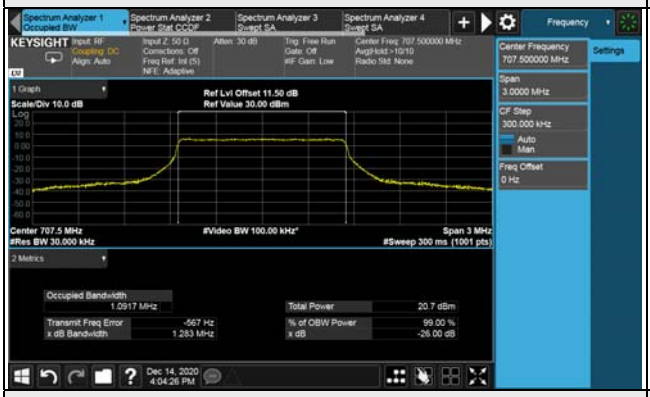
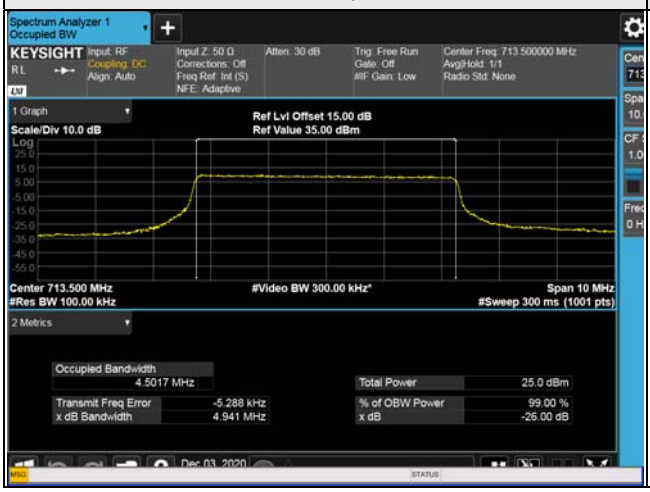
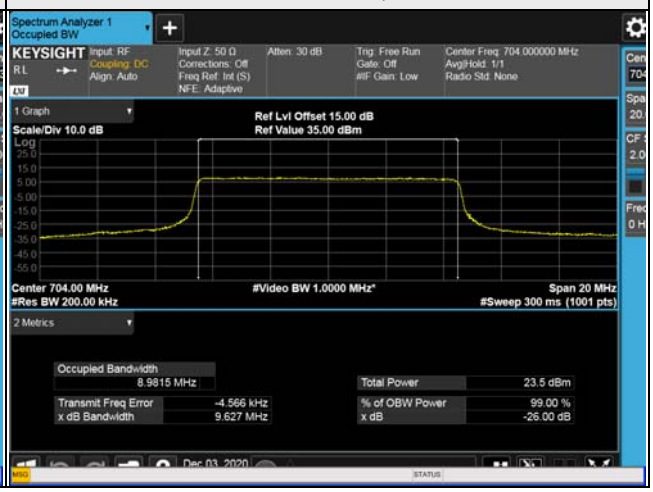
n66, Channel Bandwidth: 5MHz						
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
342500	1712.5	4.47	4.47	4.47	4.45	4.46
349000	1745.0	4.46	4.47	4.47	4.45	4.46
355500	1777.5	4.47	4.47	4.47	4.45	4.46
n66, Channel Bandwidth: 10MHz						
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
343000	1715.0	8.93	8.93	8.93	8.92	8.92
349000	1745.0	8.93	8.93	8.93	8.92	8.92
355000	1775.0	8.93	8.93	8.93	8.92	8.92
n66, Channel Bandwidth: 15MHz						
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
343500	1717.5	13.38	13.38	13.38	13.37	13.38
349000	1745.0	13.38	13.38	13.38	13.37	13.38
354500	1772.5	13.38	13.38	13.38	13.37	13.37
n66, Channel Bandwidth: 20MHz						
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
344000	1720.0	17.85	17.86	17.85	17.84	17.85
349000	1745.0	17.85	17.86	17.86	17.84	17.85
354000	1770.0	17.84	17.85	17.85	17.83	17.84
n66, Channel Bandwidth: 40MHz						
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
346000	1730.0	38.51	38.54	38.53	38.53	38.50
349000	1745.0	38.60	38.60	38.59	38.60	38.57
352000	1760.0	38.55	38.56	38.55	38.56	38.56

Spectrum Plot of Worst Value	
5MHz / QPSK	10MHz / 16QAM
	
15MHz / QPSK	20MHz / QPSK
	
40MHz / 64QAM	
	

LTE Band 5, Channel Bandwidth: 1.4MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20407	824.7	1.09	1.09	1.09	1.08
20525	836.5	1.09	1.09	1.09	1.08
20643	848.3	1.09	1.08	1.08	1.09
LTE Band 5, Channel Bandwidth: 3MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20415	825.5	2.69	2.68	2.68	2.68
20525	836.5	2.68	2.68	2.68	2.68
20635	847.5	2.68	2.68	2.68	2.68
LTE Band 5, Channel Bandwidth: 5MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20425	826.5	4.49	4.50	4.49	4.49
20525	836.5	4.50	4.50	4.50	4.50
20625	846.5	4.49	4.50	4.49	4.49
LTE Band 5, Channel Bandwidth: 10MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20450	829.0	8.97	8.98	8.97	8.97
20525	836.5	8.98	8.98	8.98	8.98
20600	844.0	8.97	8.97	8.97	8.96

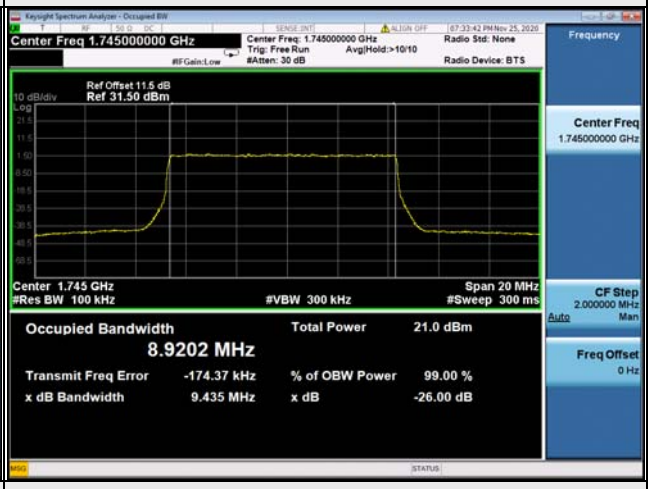
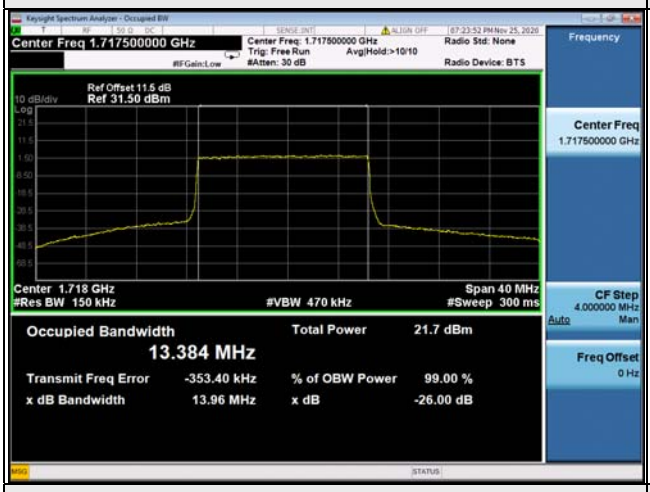
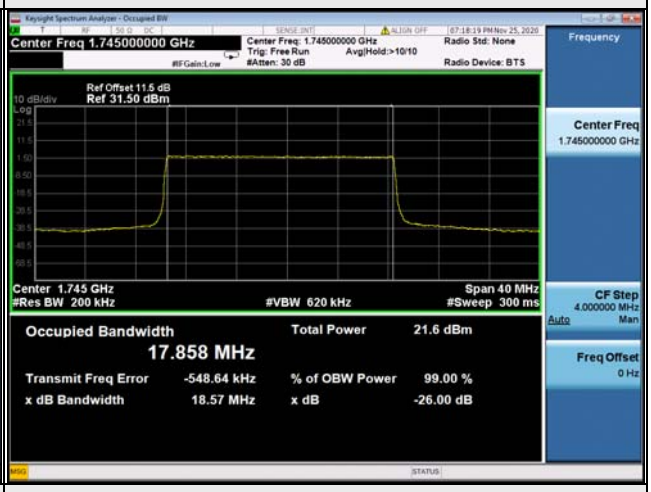
Spectrum Plot of Worst Value	
1.4MHz / QPSK	3MHz / QPSK
	
5MHz / 16QAM	10MHz / 16QAM
	

LTE Band 12, Channel Bandwidth: 1.4MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23017	699.7	1.09	1.08	1.09	1.08
23095	707.5	1.09	1.08	1.09	1.08
23173	715.3	1.09	1.09	1.09	1.08
LTE Band 12, Channel Bandwidth: 3MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23025	700.5	2.68	2.69	2.68	2.69
23095	707.5	2.69	2.69	2.68	2.68
23165	714.5	2.68	2.69	2.68	2.69
LTE Band 12, Channel Bandwidth: 5MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23035	701.5	4.50	4.50	4.50	4.49
23095	707.5	4.50	4.49	4.49	4.49
23155	713.5	4.50	4.50	4.50	4.50
LTE Band 12, Channel Bandwidth: 10MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23060	704.0	8.98	8.98	8.98	8.98
23095	707.5	8.97	8.96	8.96	8.96
23130	711.0	8.98	8.96	8.97	8.95

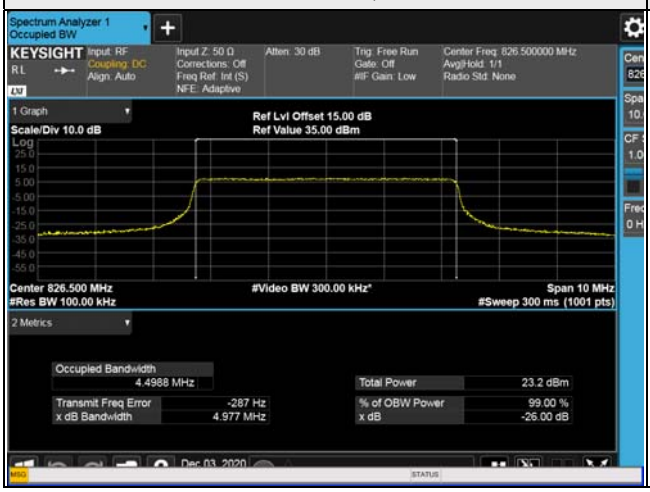
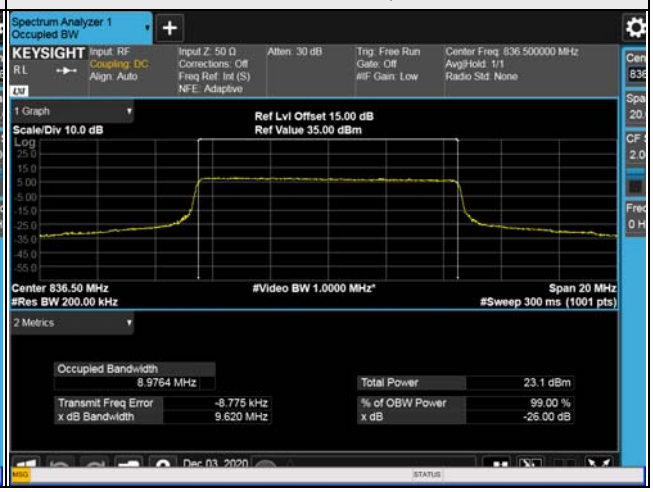
Spectrum Plot of Worst Value	
1.4MHz / 64QAM	3MHz / 256QAM
	
5MHz / QPSK	10MHz / 64QAM
	

26dB Bandwidth

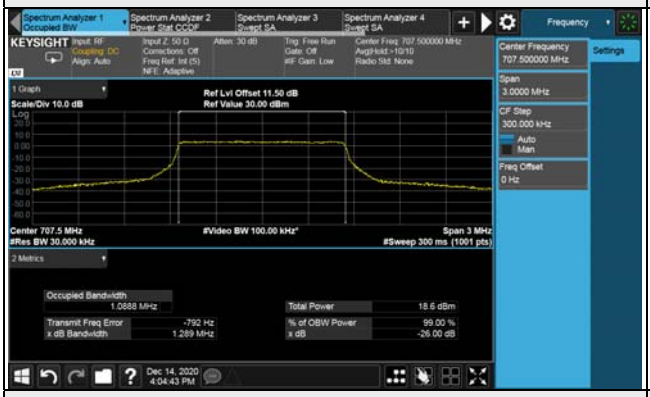
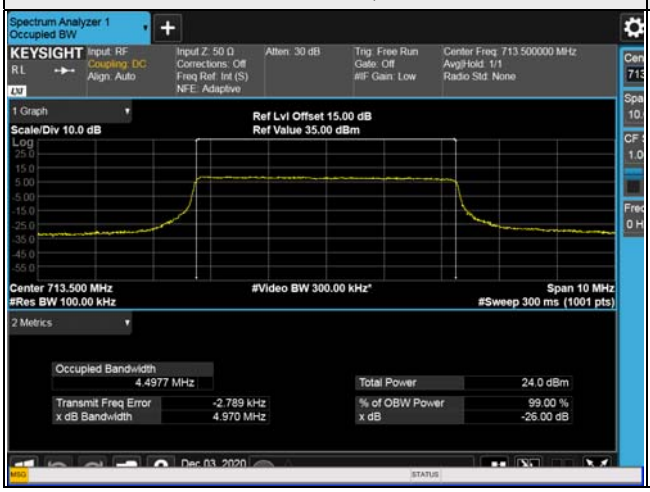
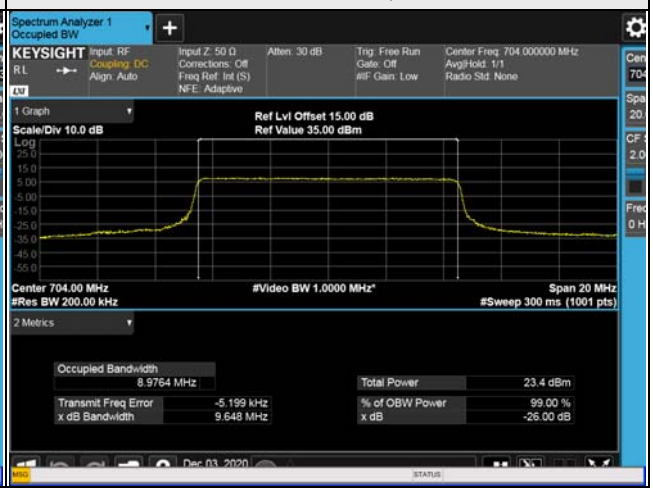
n66, Channel Bandwidth: 5MHz						
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
342500	1712.5	4.80	4.77	4.82	4.78	4.83
349000	1745.0	4.80	4.75	4.81	4.77	4.84
355500	1777.5	4.80	4.77	4.81	4.77	4.82
n66, Channel Bandwidth: 10MHz						
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
343000	1715.0	9.33	9.35	9.36	9.42	9.32
349000	1745.0	9.32	9.32	9.33	9.44	9.32
355000	1775.0	9.33	9.33	9.33	9.41	9.34
n66, Channel Bandwidth: 15MHz						
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
343500	1717.5	13.92	13.90	13.96	13.91	13.92
349000	1745.0	13.92	13.90	13.93	13.91	13.93
354500	1772.5	13.92	13.90	13.95	13.91	13.93
n66, Channel Bandwidth: 20MHz						
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
344000	1720.0	18.53	18.52	18.56	18.51	18.52
349000	1745.0	18.54	18.54	18.57	18.51	18.53
354000	1770.0	18.54	18.53	18.56	18.51	18.53
n66, Channel Bandwidth: 40MHz						
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
346000	1730.0	39.95	40.00	39.97	39.98	39.94
349000	1745.0	39.97	39.99	39.98	40.00	39.97
352000	1760.0	39.95	39.98	39.97	39.99	39.97

Spectrum Plot of Worst Value	
5MHz / 256QAM	10MHz / 64QAM
	
15MHz / 16QAM	20MHz / 16QAM
	
40MHz / QPSK	
	

LTE Band 5, Channel Bandwidth: 1.4MHz					
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20407	824.7	1.27	1.27	1.26	1.27
20525	836.5	1.26	1.28	1.27	1.27
20643	848.3	1.25	1.26	1.27	1.29
LTE Band 5, Channel Bandwidth: 3MHz					
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20415	825.5	2.94	2.94	2.95	2.96
20525	836.5	2.92	2.95	2.94	2.94
20635	847.5	2.94	2.92	2.94	2.90
LTE Band 5, Channel Bandwidth: 5MHz					
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20425	826.5	4.95	4.98	4.98	4.97
20525	836.5	4.96	4.94	4.91	4.95
20625	846.5	4.96	4.96	4.89	4.93
LTE Band 5, Channel Bandwidth: 10MHz					
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20450	829.0	9.57	9.58	9.64	9.61
20525	836.5	9.58	9.60	9.61	9.62
20600	844.0	9.55	9.60	9.57	9.58

Spectrum Plot of Worst Value	
1.4MHz / 256QAM	3MHz / 256QAM
	
5MHz / 16QAM	10MHz / 256QAM
	

LTE Band 12, Channel Bandwidth: 1.4MHz					
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23017	699.7	1.27	1.27	1.27	1.27
23095	707.5	1.25	1.27	1.28	1.28
23173	715.3	1.25	1.26	1.28	1.28
LTE Band 12, Channel Bandwidth: 3MHz					
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23025	700.5	2.92	2.95	2.94	2.93
23095	707.5	2.93	2.94	2.93	2.92
23165	714.5	2.91	2.93	2.94	2.96
LTE Band 12, Channel Bandwidth: 5MHz					
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23035	701.5	4.91	4.71	4.92	4.69
23095	707.5	4.91	4.93	4.95	4.92
23155	713.5	4.94	4.93	4.97	4.83
LTE Band 12, Channel Bandwidth: 10MHz					
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23060	704.0	9.65	9.60	9.63	9.65
23095	707.5	9.57	9.58	9.63	9.58
23130	711.0	9.63	9.61	9.58	9.33

Spectrum Plot of Worst Value	
1.4MHz / 256QAM	3MHz / 256QAM
	
5MHz / 64QAM	10MHz / 256QAM
	

4.5 Band Edge Measurement

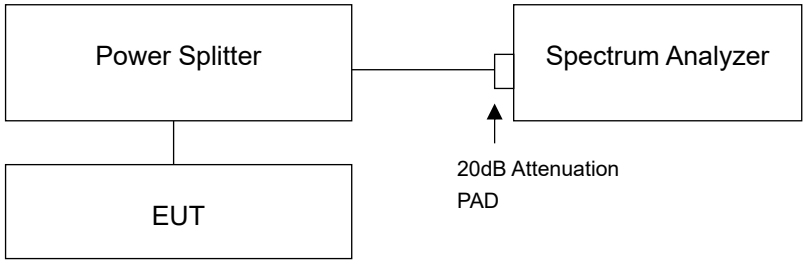
4.5.1 Limits of Band Edge Measurement

For n66:
According to FCC 27.53(h) for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log (P) dB.

For LTE Band 5:
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.

For LTE Band 12:
According to FCC 27.53(g) for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

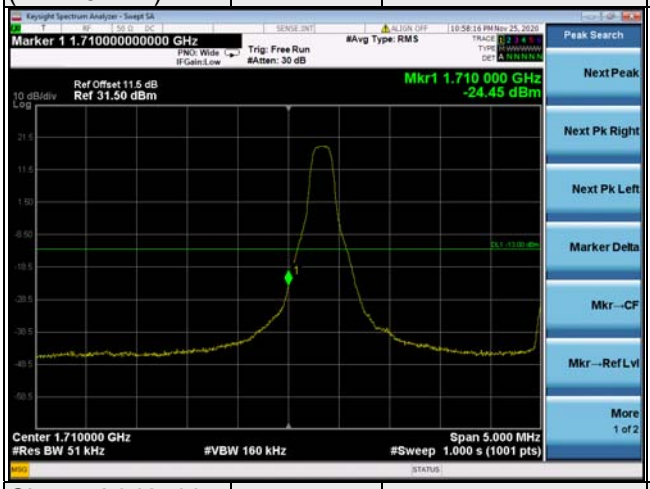
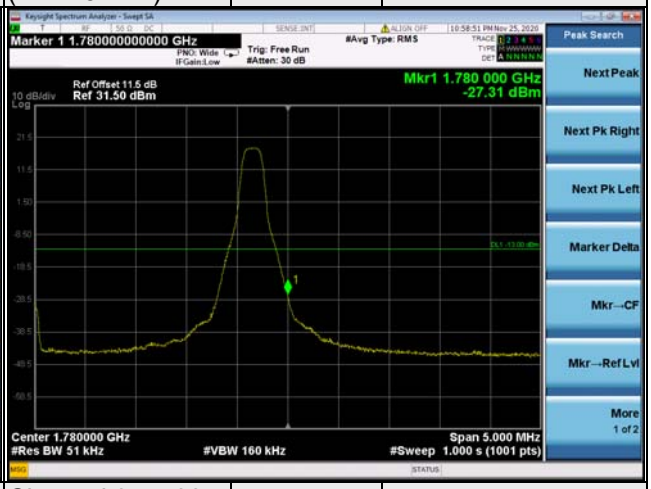
4.5.2 Test Setup

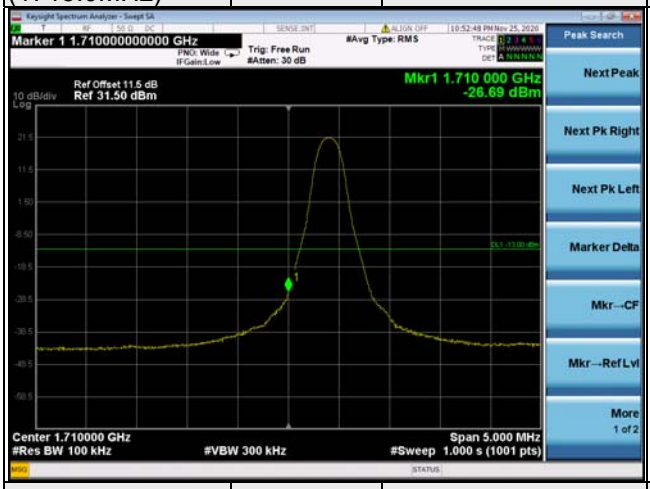
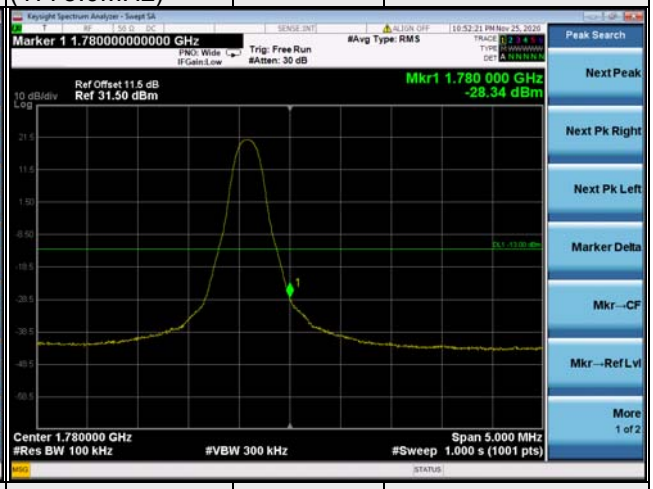


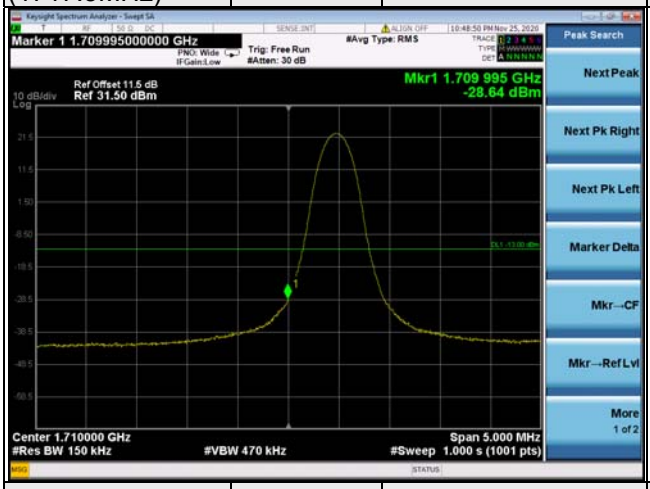
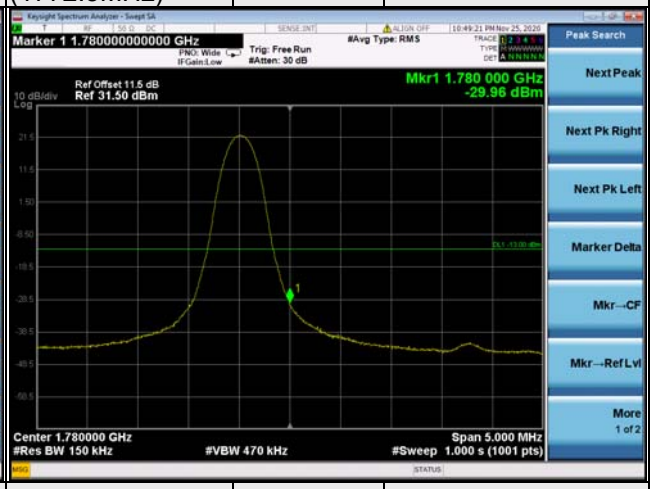
4.5.3 Test Procedures

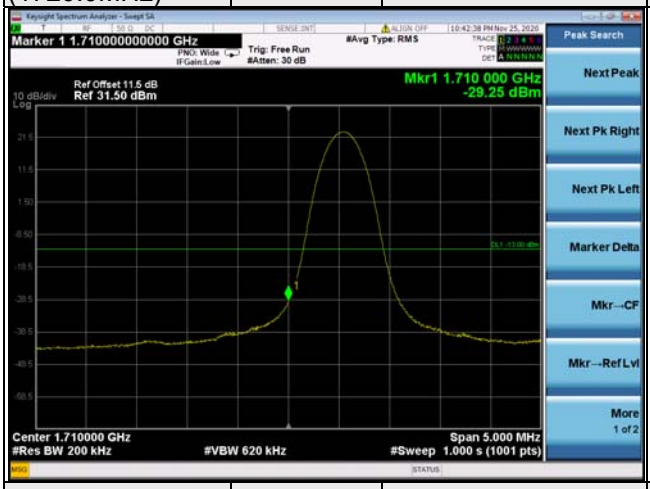
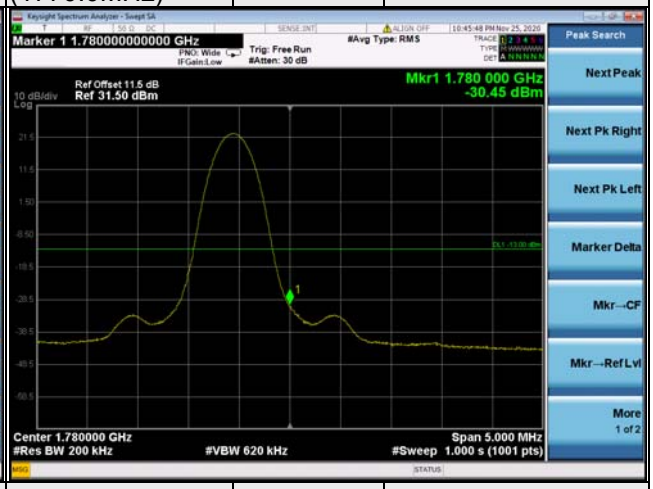
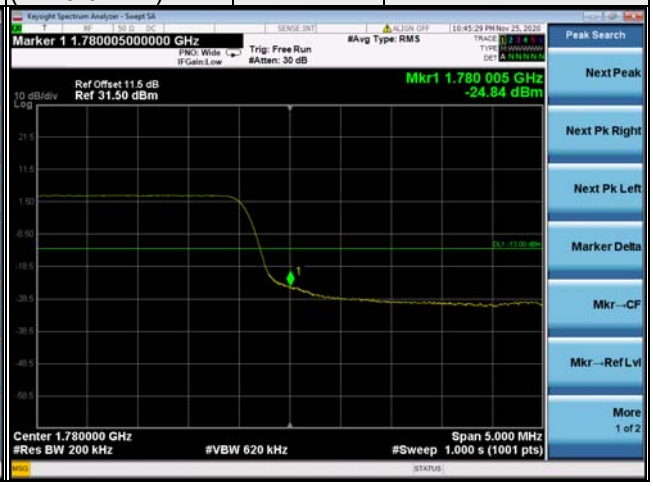
a. All measurements were done at low and high operational frequency range.
b. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 30kHz and VB of the spectrum is 100kHz (Channel Bandwidth: 1.4MHz).
c. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 30kHz and VB of the spectrum is 100kHz (Channel Bandwidth: 3MHz).
d. 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).
e. 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).
f. 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).
g. 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).
h. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 300kHz and VB of the spectrum is 1MHz (Channel Bandwidth: 40MHz).
i. Record the max trace plot into the test report.

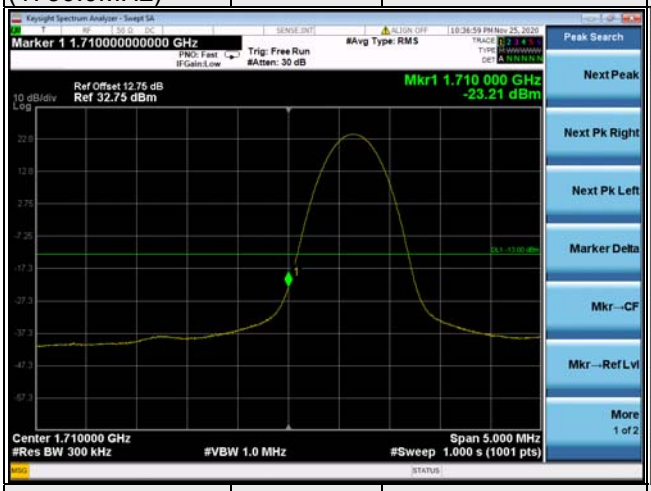
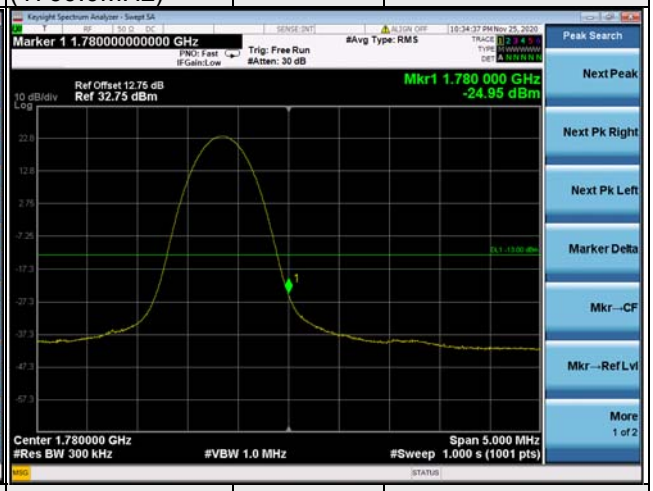
4.5.4 Test Results

n66, Channel Bandwidth: 5MHz					
Channel 342500 (1712.5MHz)	$\pi/2$ BPSK	1 RB / 0 RB Offset	Channel 355500 (1777.5MHz)	$\pi/2$ BPSK	1 RB / 24 RB Offset
					
Channel 342500 (1712.5MHz)	$\pi/2$ BPSK	25 RB / 0 RB Offset	Channel 355500 (1777.5MHz)	$\pi/2$ BPSK	25 RB / 0 RB Offset
					

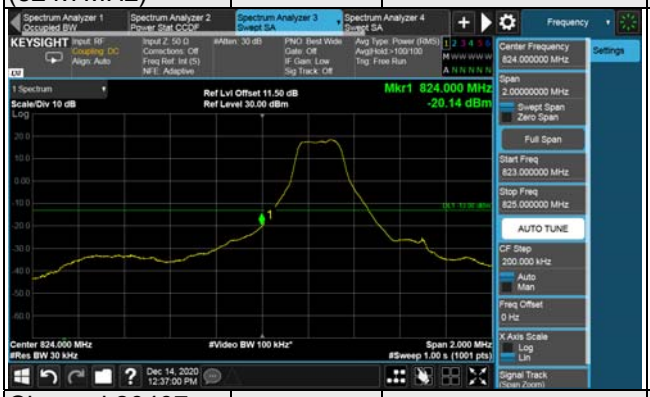
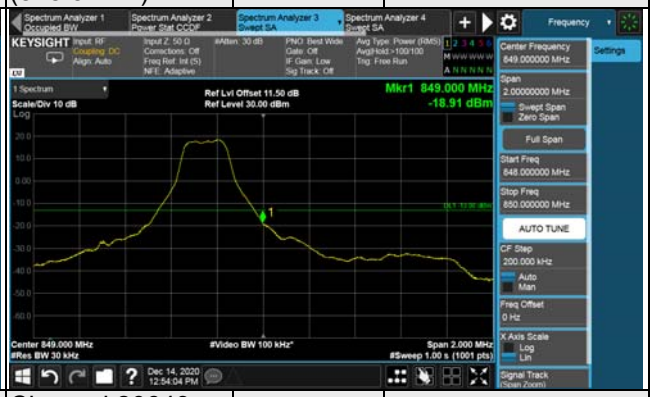
n66, Channel Bandwidth: 10MHz					
Channel 343000 (1715.0MHz)	$\pi/2$ BPSK	1 RB / 0 RB Offset	Channel 355000 (1775.0MHz)	$\pi/2$ BPSK	1 RB / 51 RB Offset
					
Channel 343000 (1715.0MHz)	$\pi/2$ BPSK	52 RB / 0 RB Offset	Channel 355000 (1775.0MHz)	$\pi/2$ BPSK	52 RB / 0 RB Offset
					

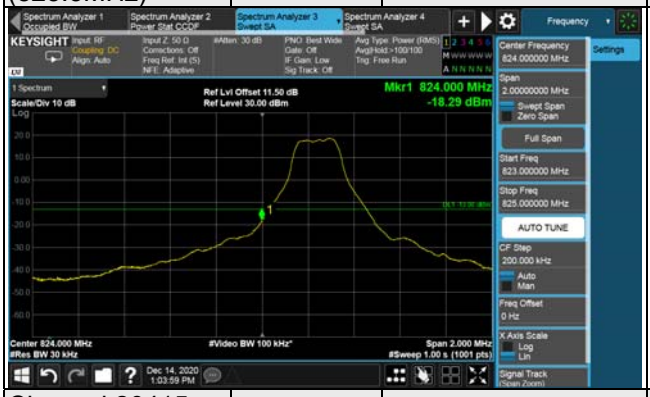
n66, Channel Bandwidth: 15MHz					
Channel 343500 (1717.5MHz)	$\pi/2$ BPSK	1 RB / 0 RB Offset	Channel 354500 (1772.5MHz)	$\pi/2$ BPSK	1 RB / 78 RB Offset
					
Channel 343500 (1717.5MHz)	$\pi/2$ BPSK	79 RB / 0 RB Offset	Channel 354500 (1772.5MHz)	$\pi/2$ BPSK	79 RB / 0 RB Offset
					

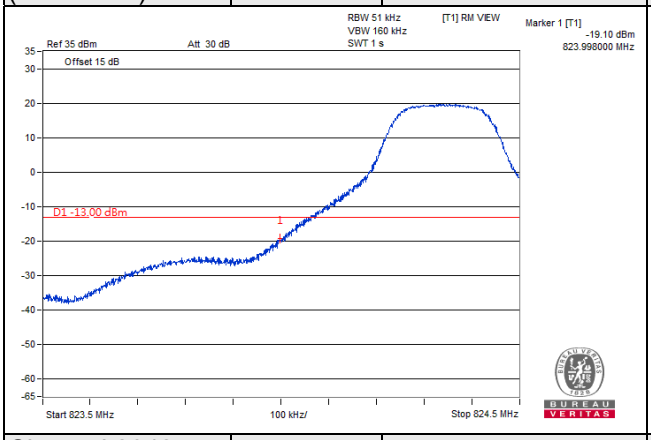
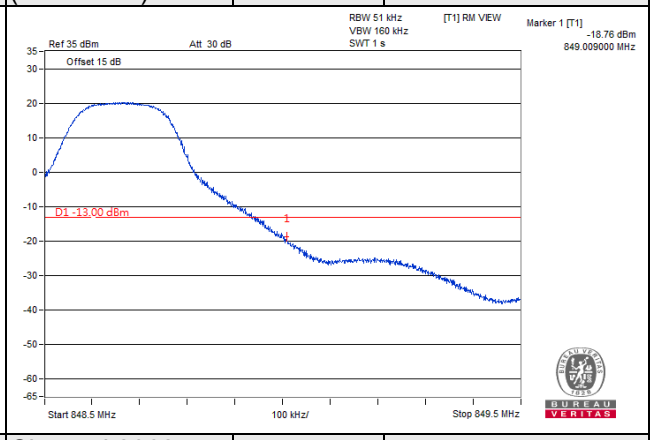
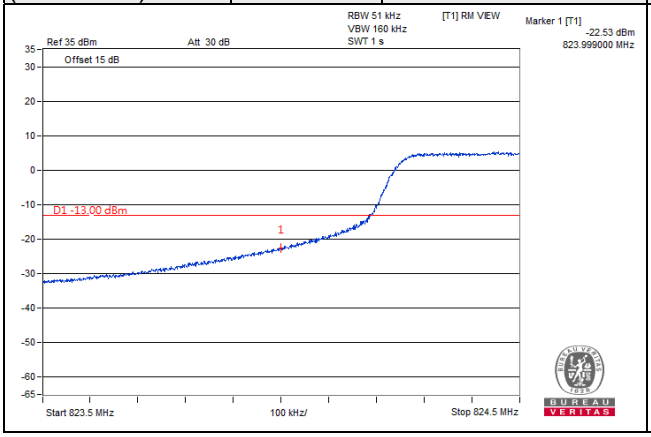
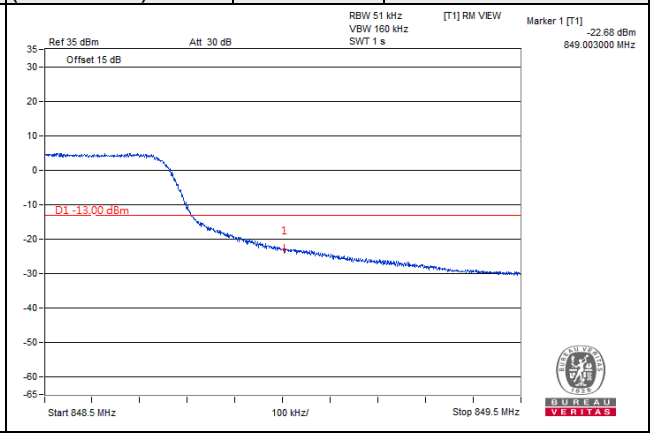
n66, Channel Bandwidth: 20MHz					
Channel 344000 (1720.0MHz)	$\pi/2$ BPSK	1 RB / 0 RB Offset	Channel 354000 (1770.0MHz)	$\pi/2$ BPSK	1 RB / 105 RB Offset
					
Channel 344000 (1720.0MHz)	$\pi/2$ BPSK	106 RB / 0 RB Offset	Channel 354000 (1770.0MHz)	$\pi/2$ BPSK	106 RB / 0 RB Offset
					

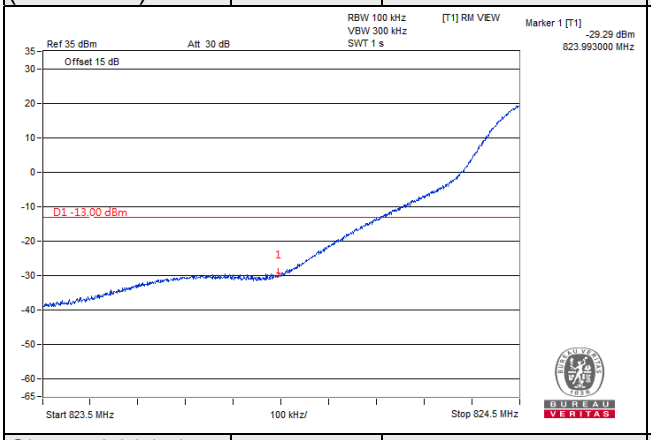
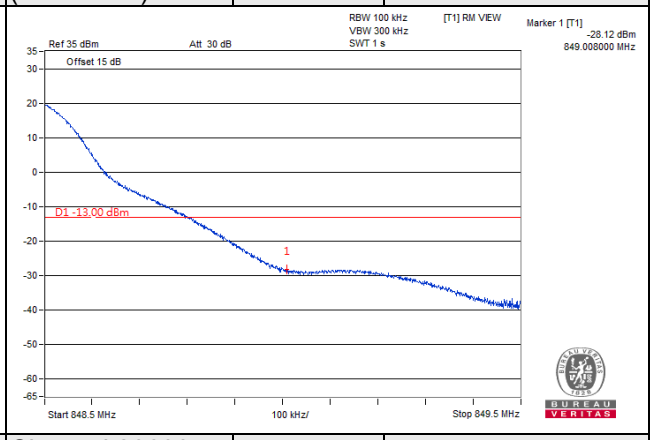
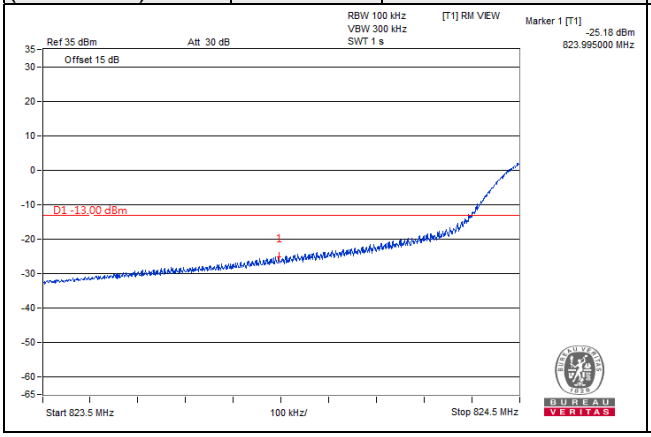
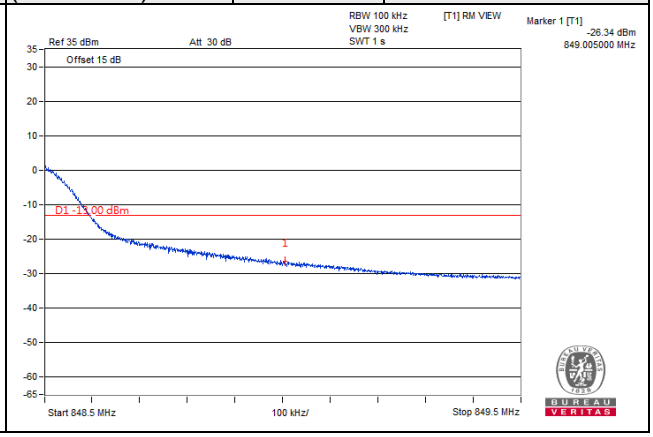
n66, Channel Bandwidth: 40MHz					
Channel 346000 (1730.0MHz)	$\pi/2$ BPSK	1 RB / 0 RB Offset	Channel 352000 (1760.0MHz)	$\pi/2$ BPSK	1 RB / 215 RB Offset
					
Channel 346000 (1730.0MHz)	$\pi/2$ BPSK	216 RB / 0 RB Offset	Channel 352000 (1760.0MHz)	$\pi/2$ BPSK	216 RB / 0 RB Offset
					

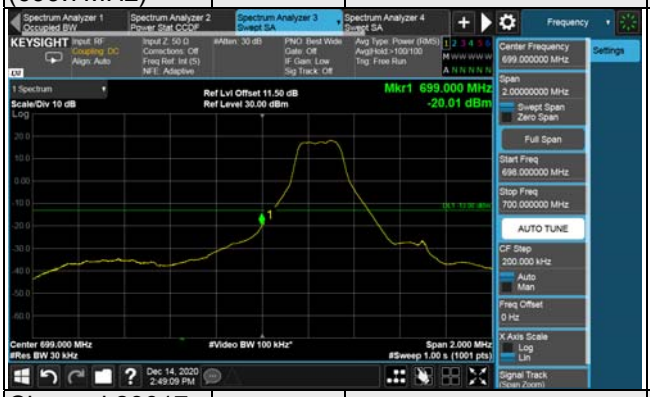
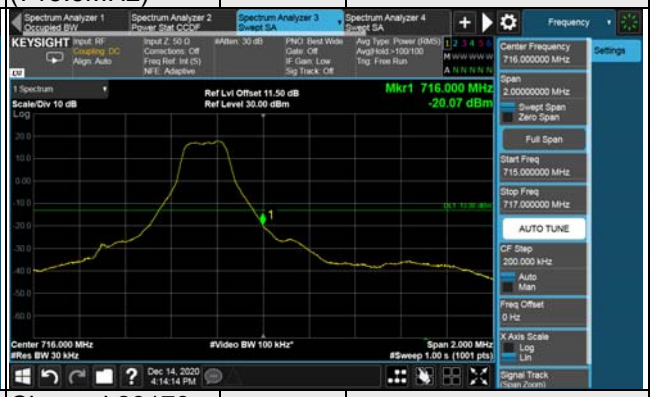
* Duty factor = 10 log [(reference bandwidth) / (resolution or measurement bandwidth)]
= 10 log [(400kHz/300kHz)]
= 1.25dB
* Offset = 31.5dB (Cable loss) + 1.25dB (Duty factor) = 32.75dB

LTE Band 5, Channel Bandwidth: 1.4MHz					
Channel 20407 (824.7MHz)	QPSK	1 RB / 0 RB Offset	Channel 20643 (848.3MHz)	QPSK	1 RB / 5 RB Offset
					
Channel 20407 (824.7MHz)	QPSK	6 RB / 0 RB Offset	Channel 20643 (848.3MHz)	QPSK	6 RB / 0 RB Offset
					

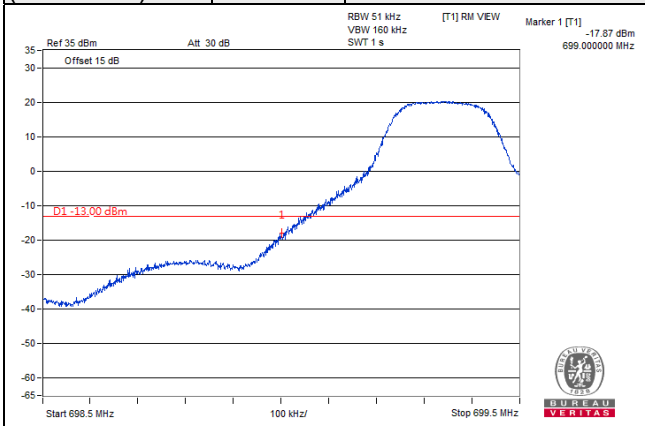
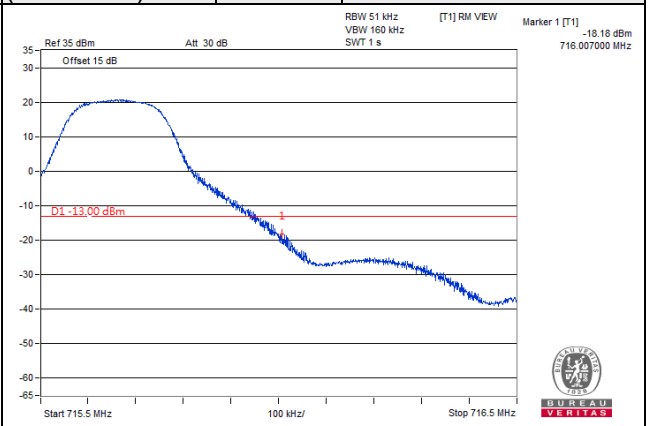
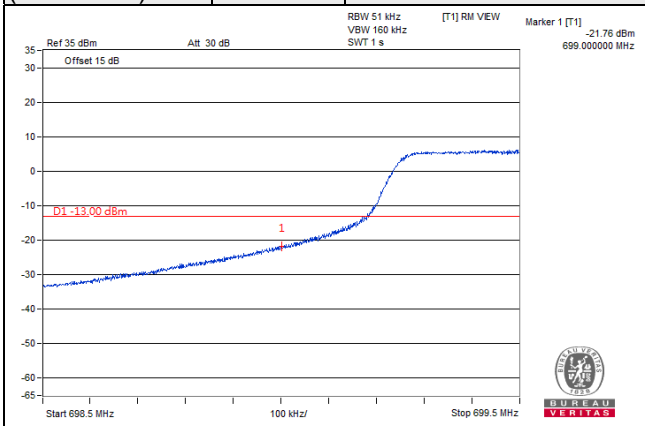
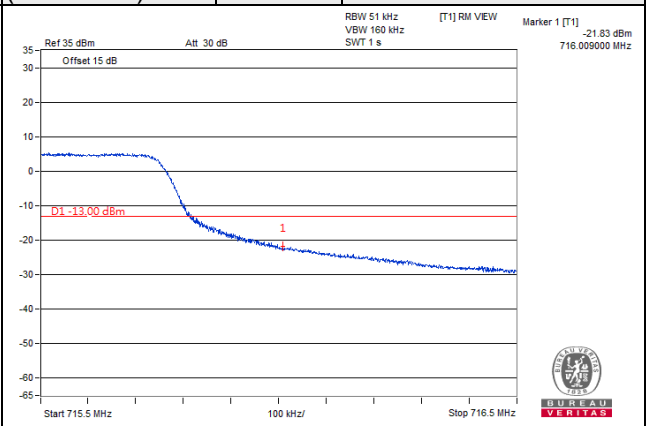
LTE Band 5, Channel Bandwidth: 3MHz					
Channel 20415 (825.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 20635 (847.5MHz)	QPSK	1 RB / 14 RB Offset
					
Channel 20415 (825.5MHz)	QPSK	15 RB / 0 RB Offset	Channel 20635 (847.5MHz)	QPSK	15 RB / 0 RB Offset
					

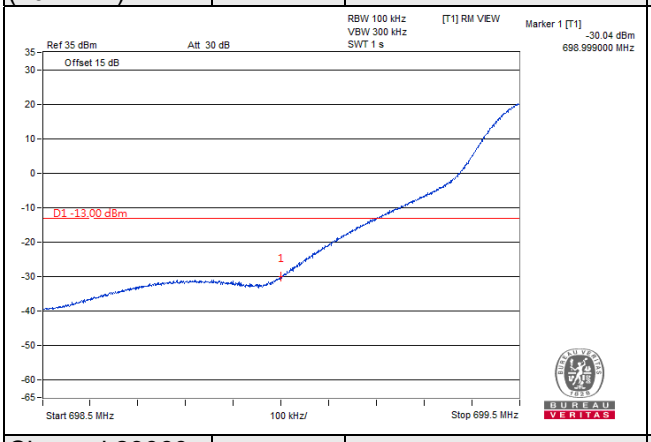
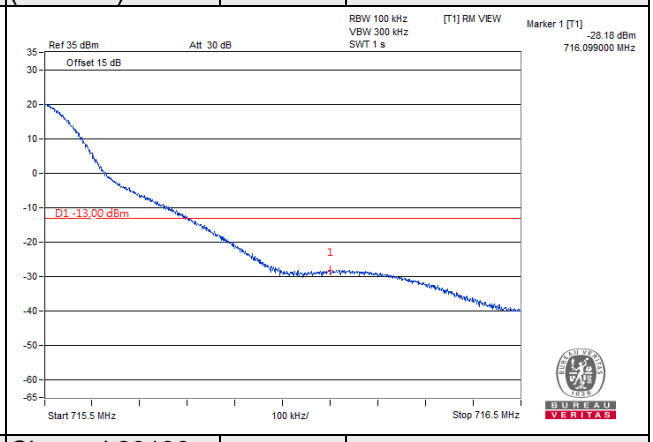
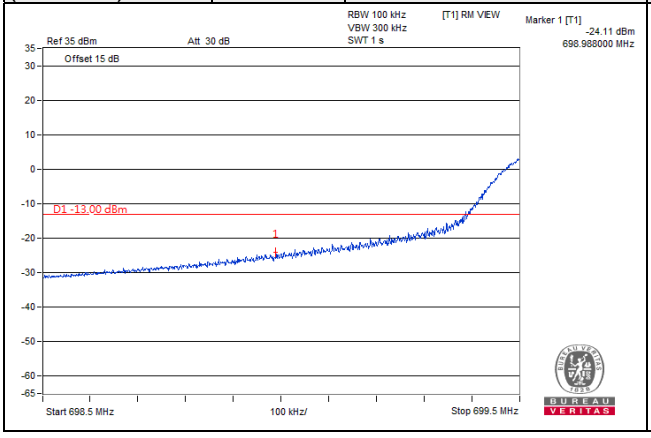
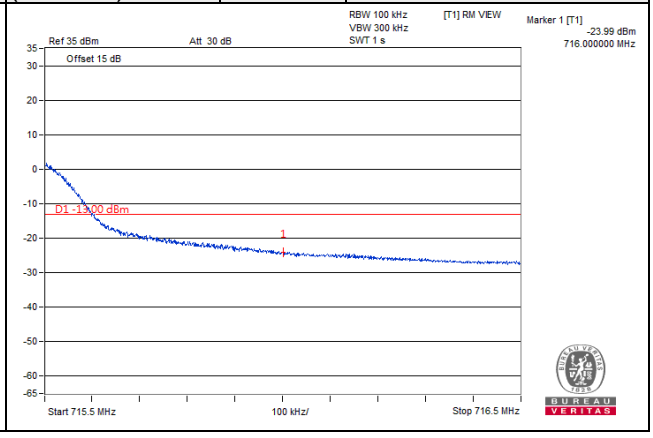
LTE Band 5, Channel Bandwidth: 5MHz					
Channel 20425 (826.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 20625 (846.5MHz)	QPSK	1 RB / 24 RB Offset
					
Channel 20425 (826.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 20625 (846.5MHz)	QPSK	25 RB / 0 RB Offset
					

LTE Band 5, Channel Bandwidth: 10MHz					
Channel 20450 (829.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 20600 (844.0MHz)	QPSK	1 RB / 49 RB Offset
					
Channel 20450 (829.0MHz)	QPSK	50 RB / 0 RB Offset	Channel 20600 (844.0MHz)	QPSK	50 RB / 0 RB Offset
					

LTE Band 12, Channel Bandwidth: 1.4MHz					
Channel 23017 (699.7MHz)	QPSK	1 RB / 0 RB Offset	Channel 23173 (715.3MHz)	QPSK	1 RB / 5 RB Offset
					
Channel 23017 (699.7MHz)	QPSK	6 RB / 0 RB Offset	Channel 23173 (715.3MHz)	QPSK	6 RB / 0 RB Offset
					

LTE Band 12, Channel Bandwidth: 3MHz					
Channel 23025 (700.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 23165 (714.5MHz)	QPSK	1 RB / 14RB Offset
					
Channel 23025 (700.5MHz)	QPSK	15 RB / 0 RB Offset	Channel 23165 (714.5MHz)	QPSK	15 RB / 0 RB Offset
					

LTE Band 12, Channel Bandwidth: 5MHz					
Channel 23035 (701.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 23155 (713.5MHz)	QPSK	1 RB / 24RB Offset
					
Channel 23035 (701.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 23155 (713.5MHz)	QPSK	25 RB / 0 RB Offset
					

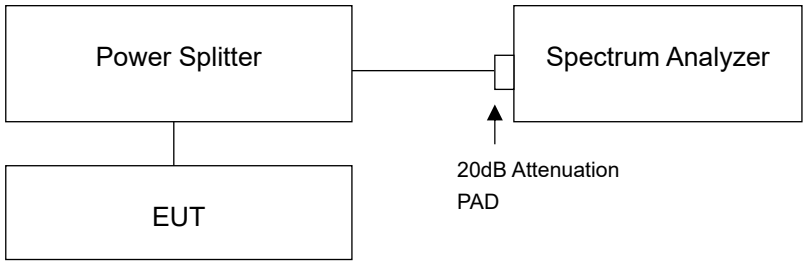
LTE Band 12, Channel Bandwidth: 10MHz					
Channel 23060 (704MHz)	QPSK	1 RB / 0 RB Offset	Channel 23130 (711MHz)	QPSK	1 RB / 24RB Offset
					
Channel 23060 (704MHz)	QPSK	50 RB / 0 RB Offset	Channel 23130 (711MHz)	QPSK	25 RB / 0 RB Offset
					

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

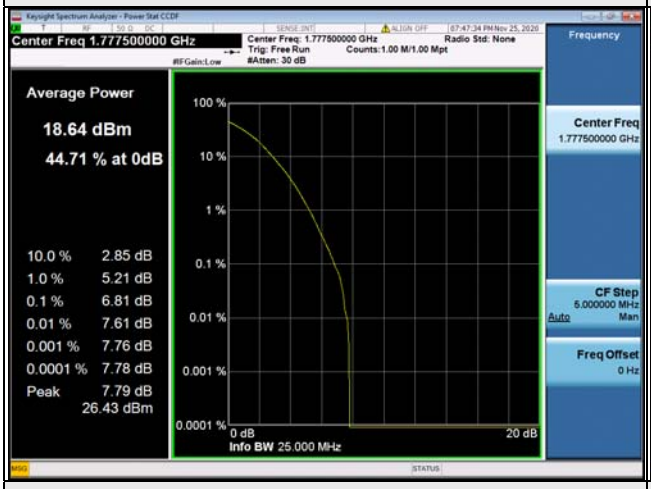
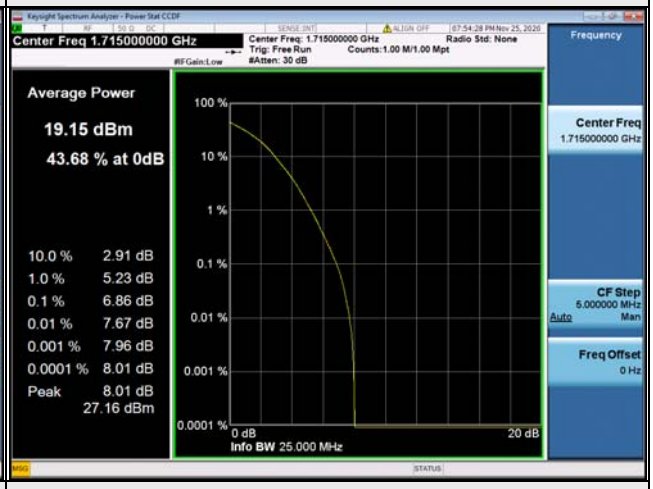
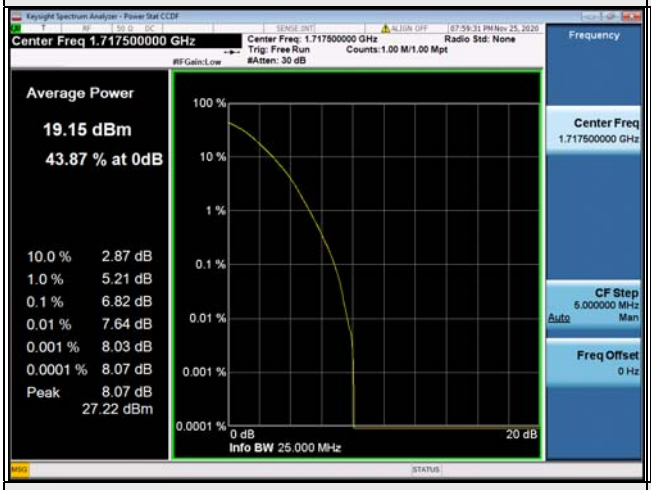
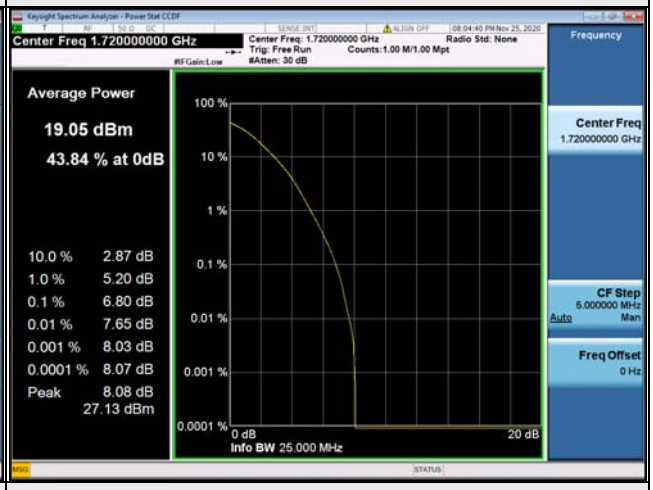
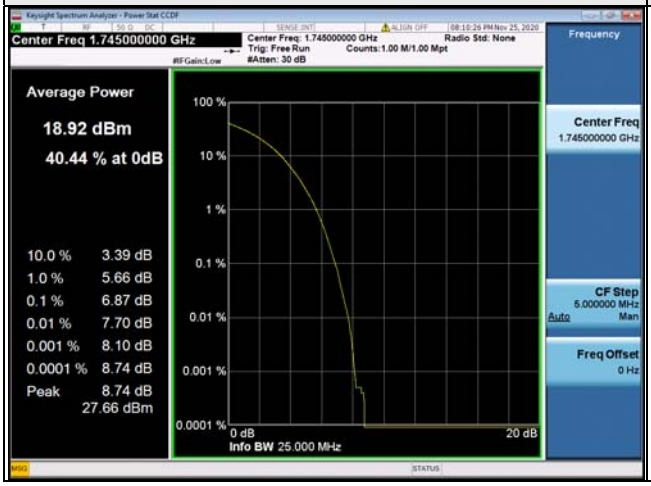


4.6.3 Test Procedures

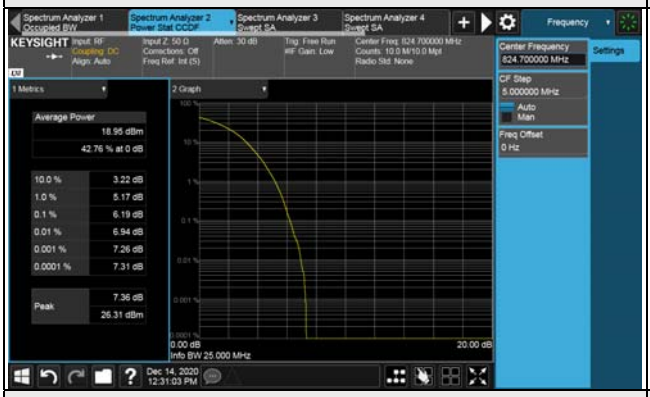
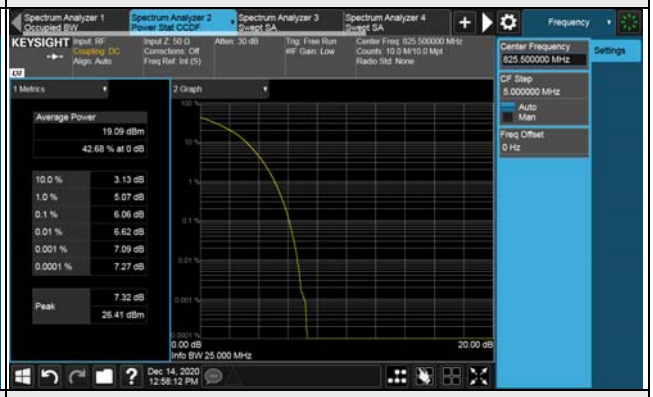
a. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
b. Set the number of counts to a value that stabilizes the measured CCDF curve;
c. Record the maximum PAPR level associated with a probability of 0.1%.

4.6.4 Test Results

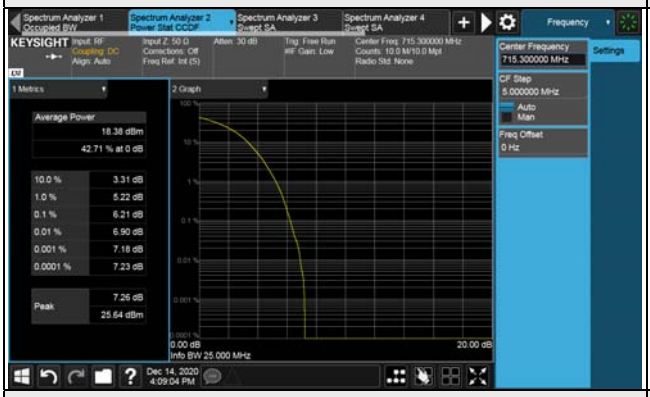
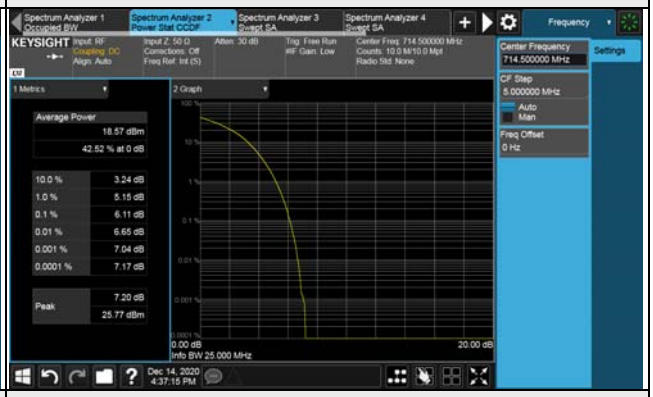
n66, Channel Bandwidth: 5MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
342500	1712.5	4.66	5.84	6.50	6.72	6.80
349000	1745.0	4.50	5.67	6.39	6.60	6.80
355500	1777.5	4.77	5.87	6.56	6.79	6.81
n66, Channel Bandwidth: 10MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
343000	1715.0	4.61	5.96	6.58	6.63	6.86
349000	1745.0	4.45	5.74	6.54	6.56	6.79
355000	1775.0	4.59	5.88	6.63	6.67	6.84
n66, Channel Bandwidth: 15MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
343500	1717.5	4.54	5.77	6.50	6.72	6.82
349000	1745.0	4.45	5.72	6.34	6.57	6.75
354500	1772.5	4.56	5.80	6.49	6.74	6.77
n66, Channel Bandwidth: 20MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
344000	1720.0	4.42	5.73	6.43	6.67	6.80
349000	1745.0	4.44	5.73	6.35	6.57	6.78
354000	1770.0	4.49	5.83	6.54	6.79	6.77
n66, Channel Bandwidth: 40MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
346000	1730.0	3.93	5.41	6.33	6.55	6.79
349000	1745.0	4.20	5.64	6.65	6.87	6.84
352000	1760.0	4.14	5.54	6.55	6.77	6.84

Spectrum Plot of Worst Value	
5MHz / 256QAM	10MHz / 256QAM
	
15MHz / 256QAM	20MHz / 256QAM
	
40MHz / 64QAM	
	

LTE Band 5, Channel Bandwidth: 1.4MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20407	824.7	5.28	5.71	5.90	6.19
20525	836.5	5.27	5.70	5.83	6.07
20643	848.3	5.14	5.54	5.80	5.98
LTE Band 5, Channel Bandwidth: 3MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20415	825.5	5.29	5.56	5.89	6.06
20525	836.5	5.50	5.62	5.89	5.91
20635	847.5	5.37	5.58	5.89	5.86
LTE Band 5, Channel Bandwidth: 5MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20425	826.5	5.45	5.74	5.86	5.86
20525	836.5	5.56	5.65	5.80	5.74
20625	846.5	5.45	5.64	5.74	5.69
LTE Band 5, Channel Bandwidth: 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20450	829.0	5.45	5.67	5.89	5.85
20525	836.5	5.27	5.61	5.72	5.75
20600	844.0	5.64	5.68	5.81	5.84

Spectrum Plot of Worst Value	
1.4MHz / 256QAM	3MHz / 256QAM
	
5MHz / 256QAM	10MHz / 64QAM
	

LTE Band 12, Channel Bandwidth: 1.4MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23017	699.7	5.22	5.76	5.78	5.86
23095	707.5	5.21	5.73	5.73	5.82
23173	715.3	5.35	5.92	5.97	6.21
LTE Band 12, Channel Bandwidth: 3MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23025	700.5	5.50	5.73	5.97	5.82
23095	707.5	5.35	5.67	5.86	5.69
23165	714.5	5.44	5.83	6.01	6.11
LTE Band 12, Channel Bandwidth: 5MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23035	701.5	5.43	5.41	5.56	5.57
23095	707.5	5.25	5.37	5.50	5.51
23155	713.5	5.54	5.41	5.52	5.67
LTE Band 12, Channel Bandwidth: 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23060	704.0	5.28	5.40	5.55	5.51
23095	707.5	5.32	5.45	5.62	5.58
23130	711.0	5.26	5.27	5.46	5.47

Spectrum Plot of Worst Value	
1.4MHz / 256QAM	3MHz / 256QAM
	
5MHz / 256QAM	10MHz / 64QAM
	

4.7 Conducted Spurious Emissions

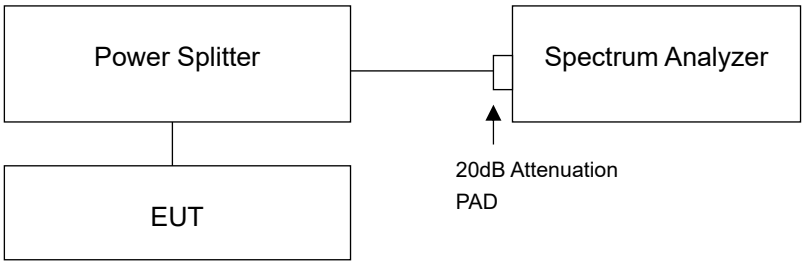
4.7.1 Limits of Conducted Spurious Emissions Measurement

For n66:
In the FCC 27.53(h), On any frequency outside a licensee's frequency block, The power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB. The emission limit equal to –13dBm.

For LTE Band 5:
The 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. The emission limit equal to –13dBm.

For LTE Band 12:
According to FCC 27.53(g) for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

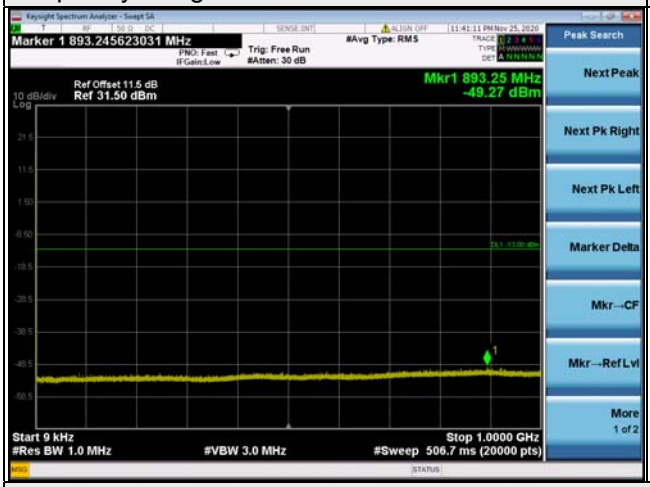
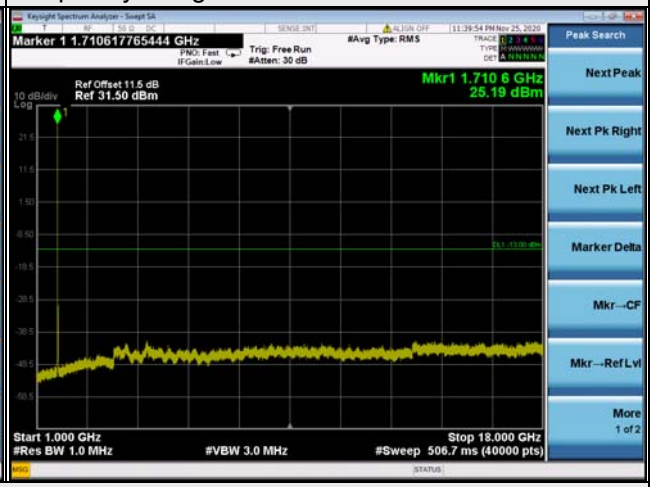
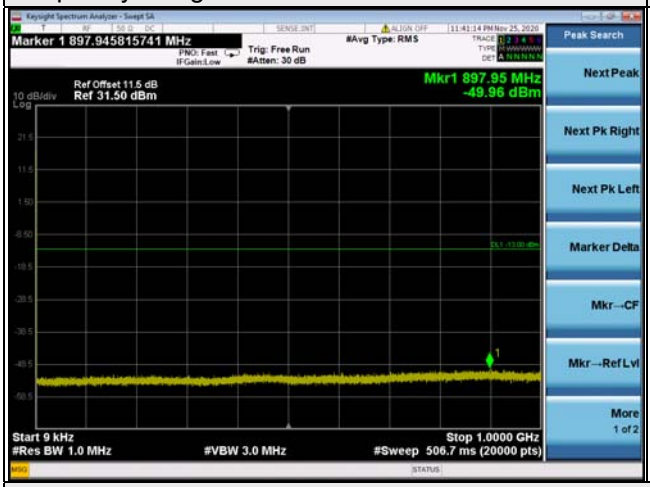
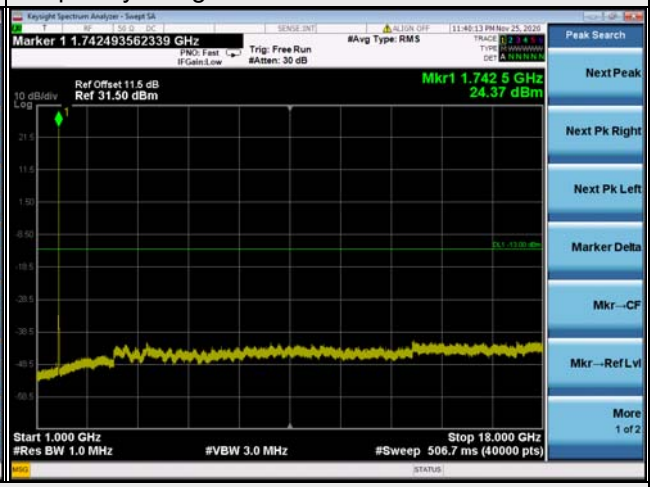
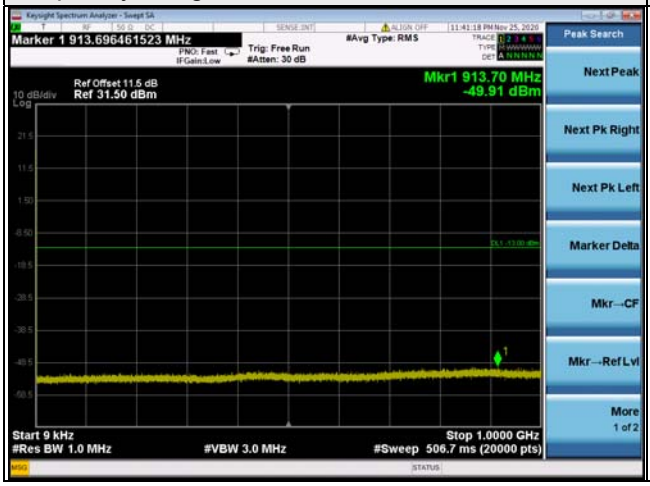
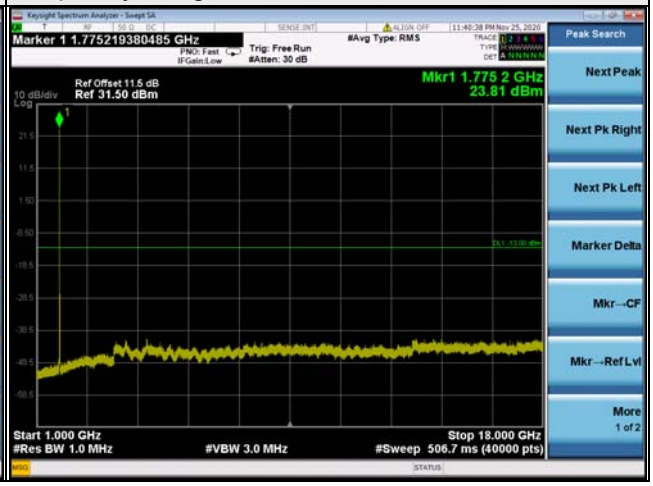
4.7.2 Test Setup



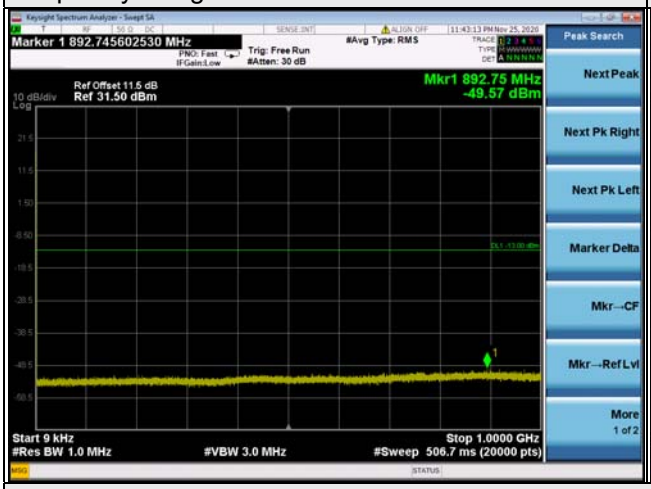
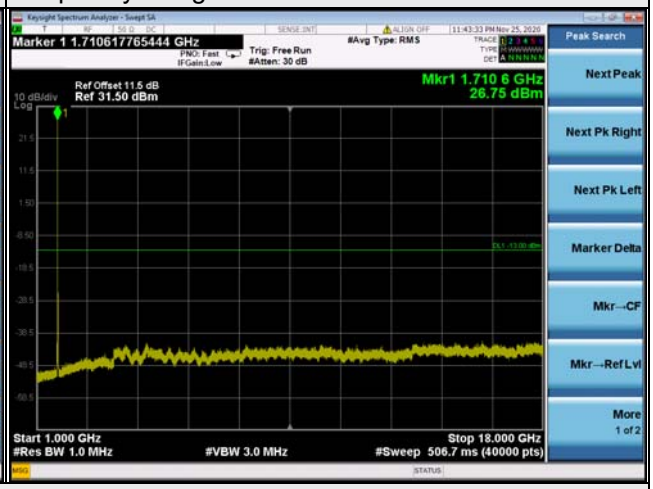
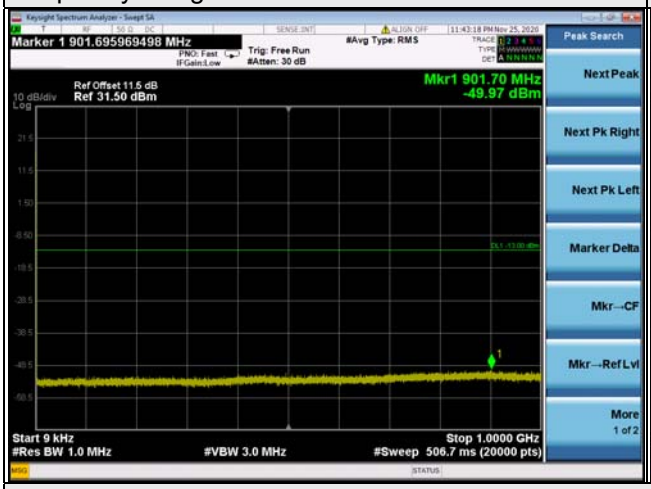
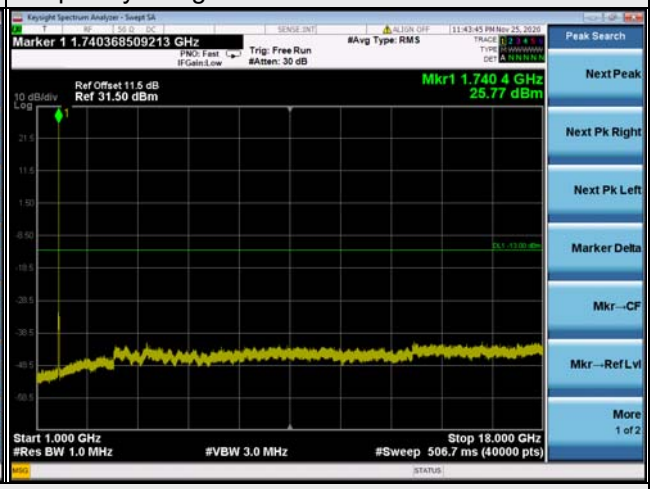
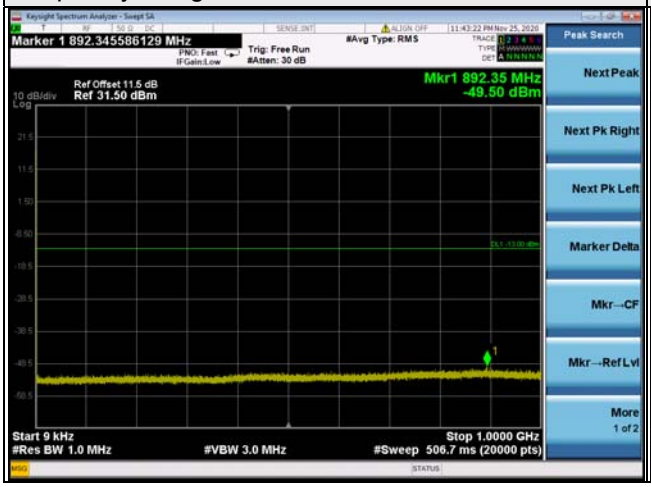
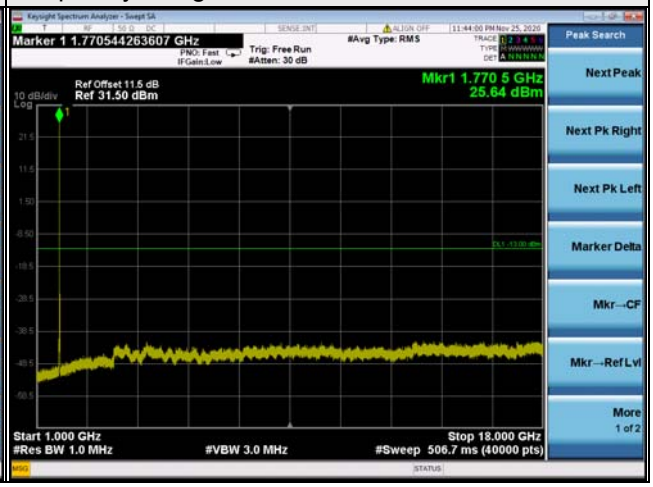
4.7.3 Test Procedure

a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
b. Measuring frequency range is from 9kHz to 8GHz / 9GHz / 10GHz / 18GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

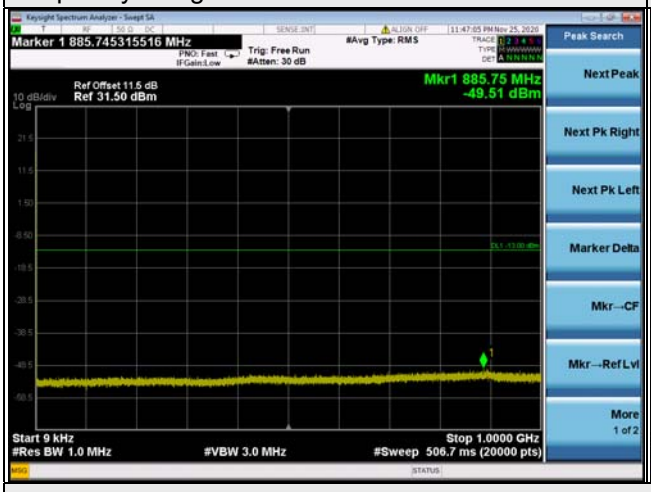
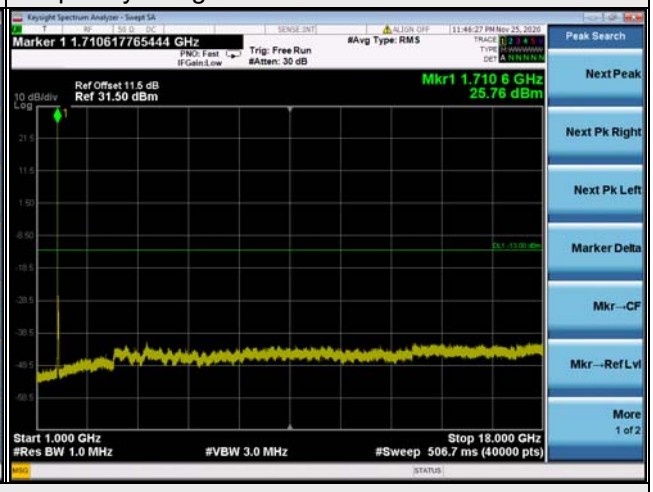
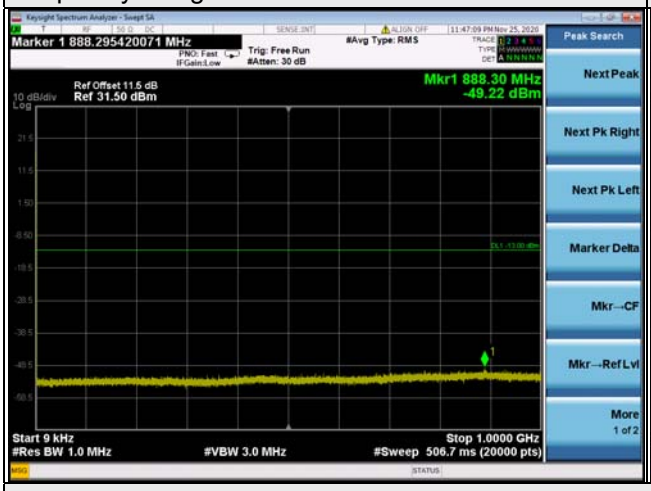
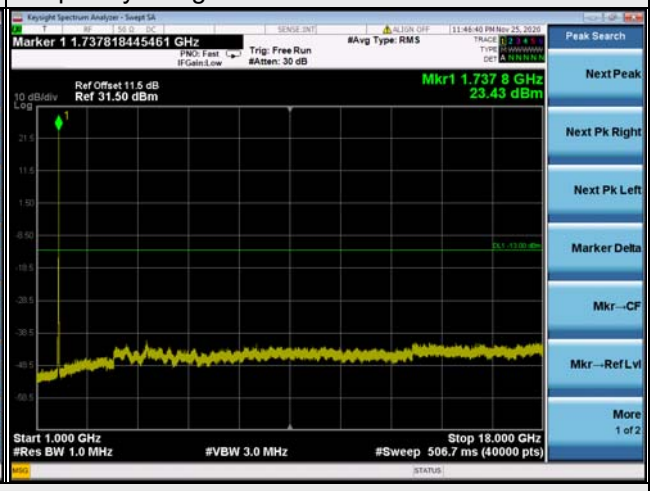
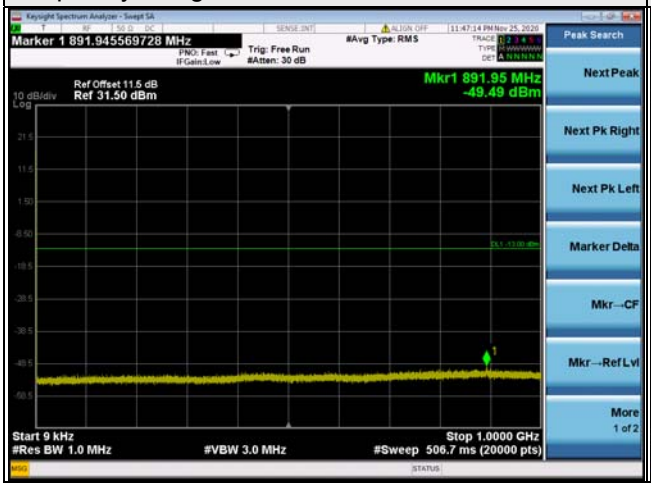
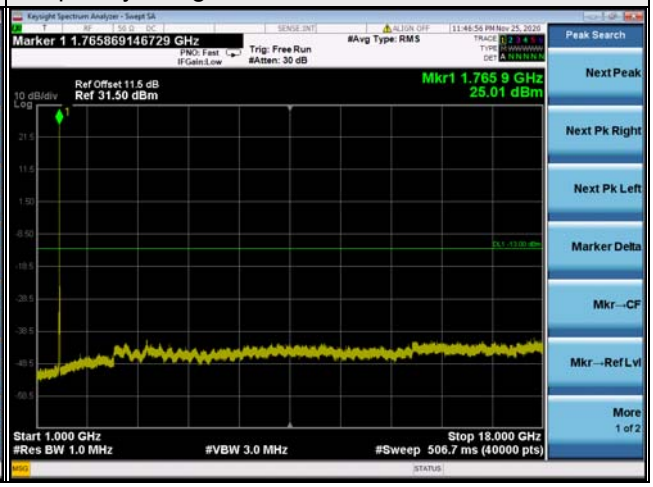
4.7.4 Test Results

n66, Channel Band width: 5MHz	
Channel 342500 (1712.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 18GHz
	
Channel 349000 (1745.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 18GHz
	
Channel 355500 (1777.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 18GHz
	

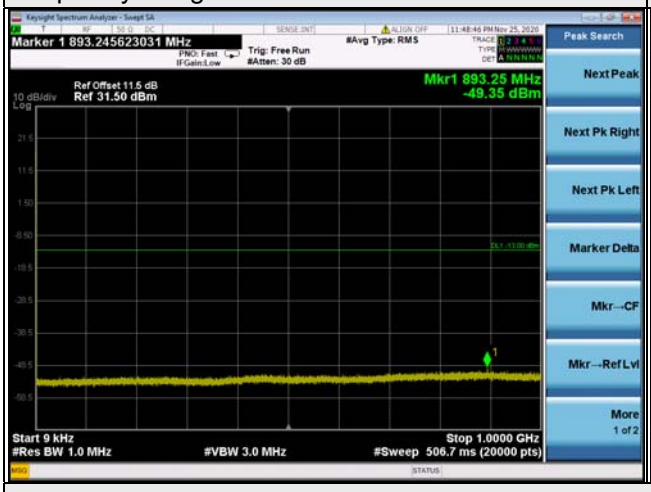
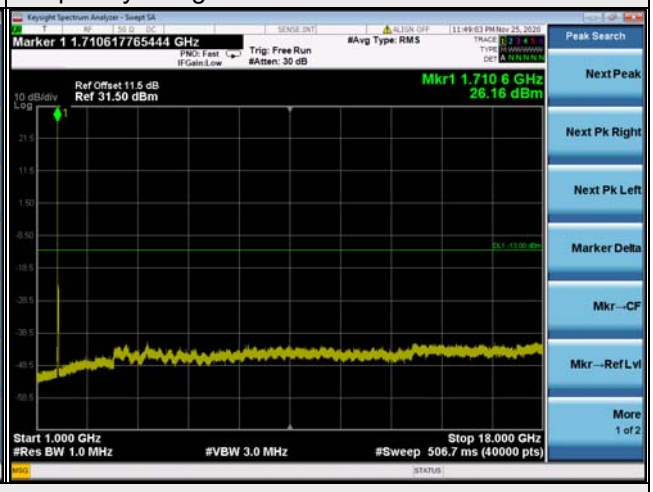
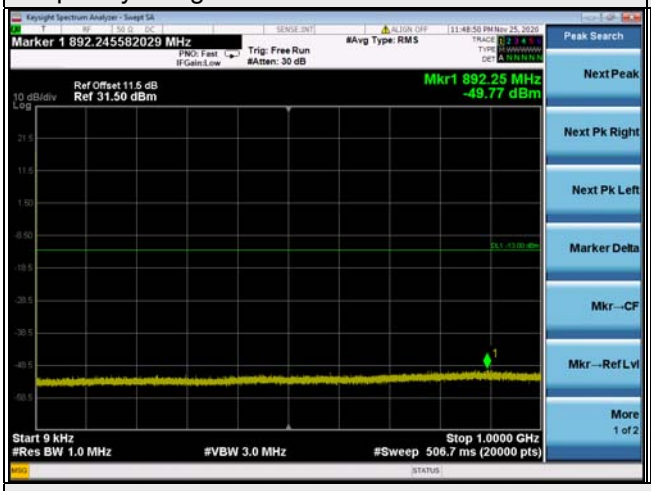
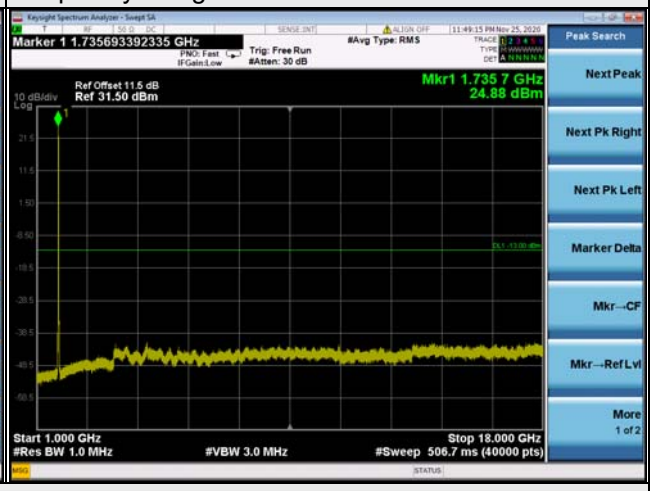
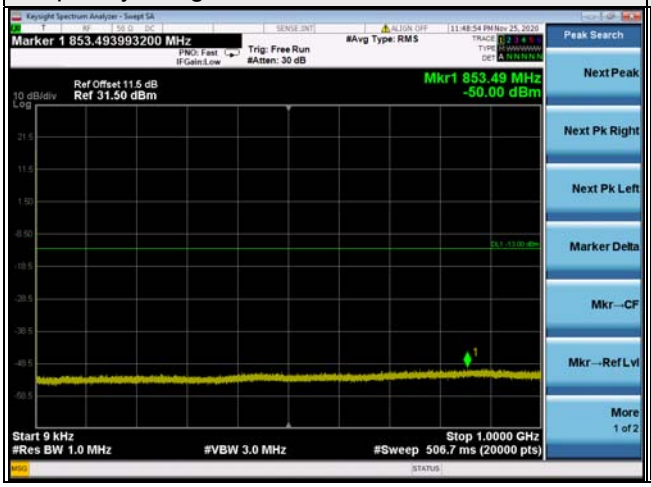
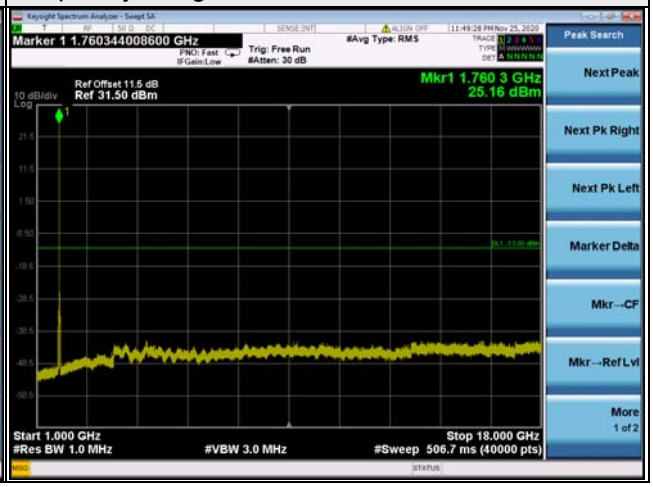
*The 9kHz signal over the limit is from Spectrum.

n66, Channel Band width: 10MHz	
Channel 343000 (1715.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 18GHz
	
Channel 349000 (1745.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 18GHz
	
Channel 355000 (1775.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 18GHz
	

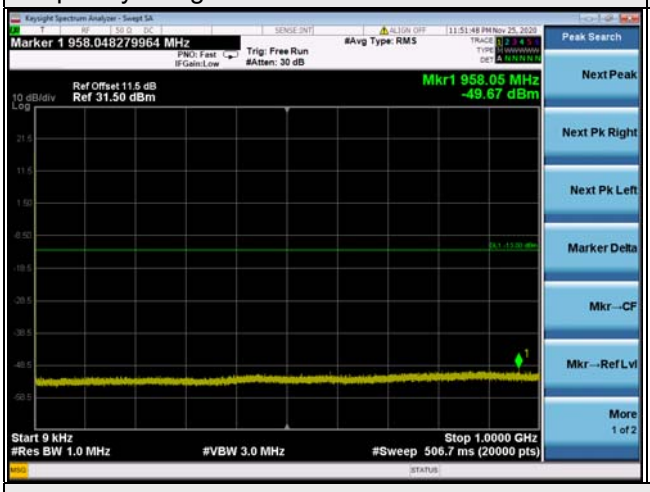
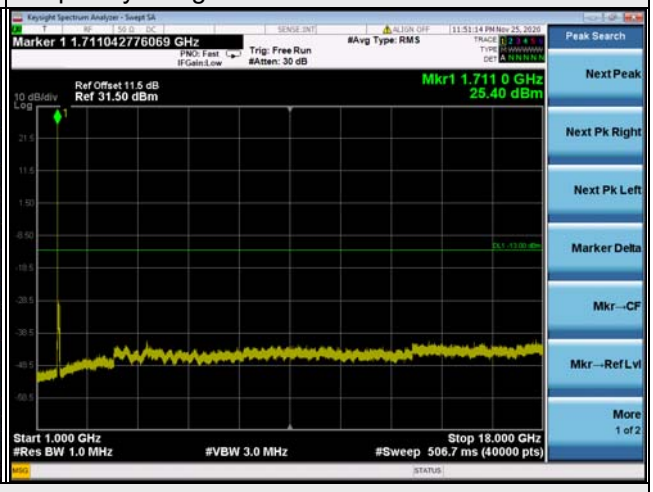
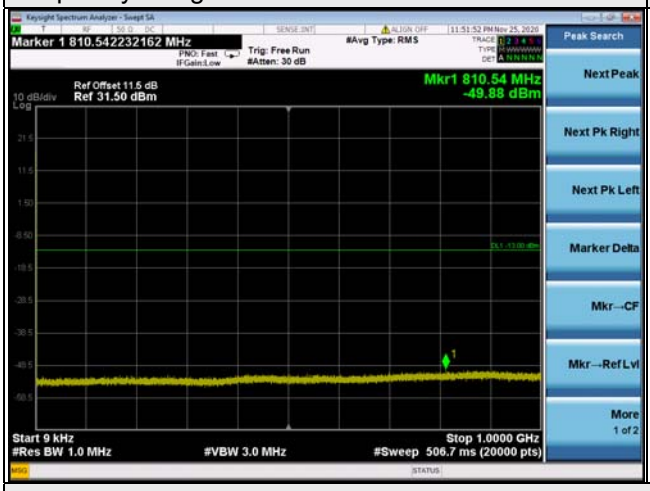
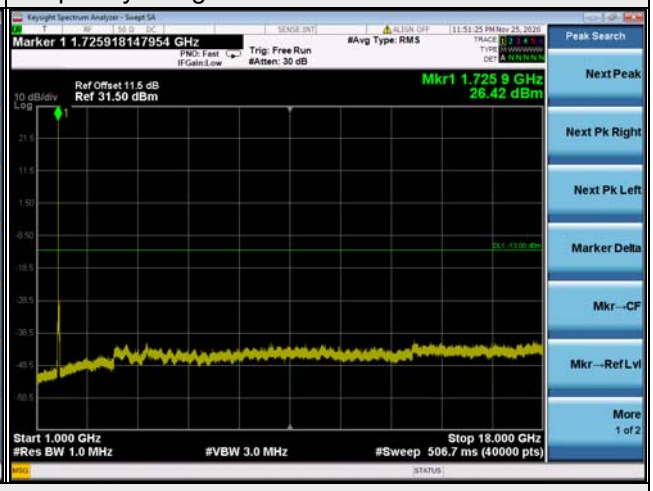
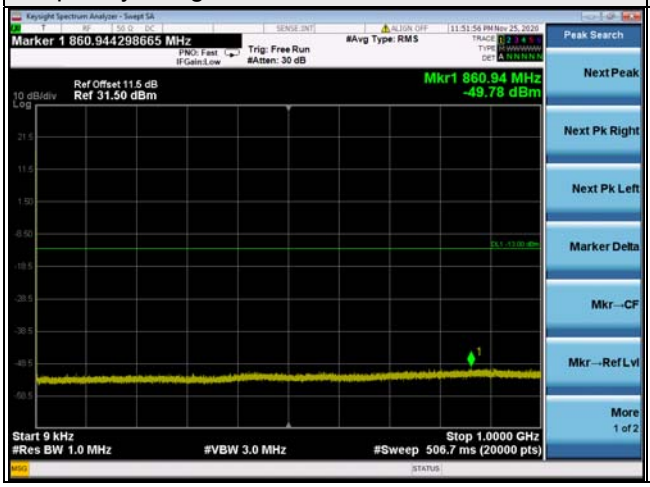
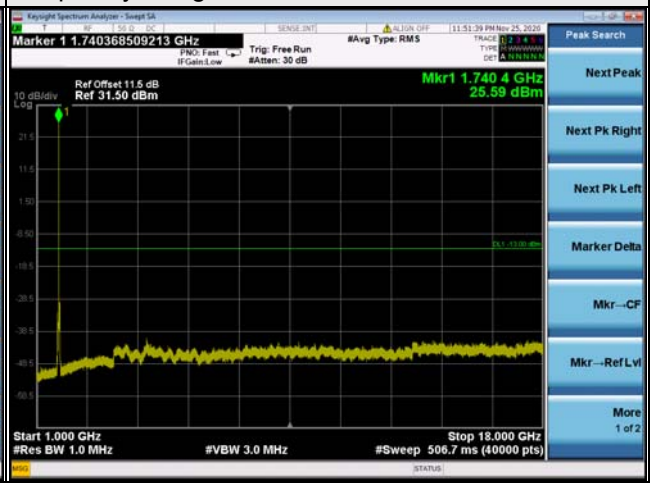
*The 9kHz signal over the limit is from Spectrum.

n66, Channel Band width: 15MHz	
Channel 343500 (1717.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 18GHz
	
Channel 349000 (1745.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 18GHz
	
Channel 354500 (1772.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 18GHz
	

*The 9kHz signal over the limit is from Spectrum.

n66, Channel Band width: 20MHz	
Channel 344000 (1720.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 18GHz
	
Channel 349000 (1745.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 18GHz
	
Channel 354000 (1770.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 18GHz
	

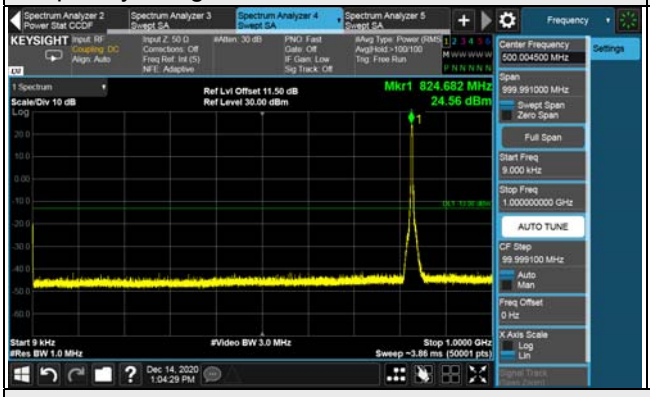
*The 9kHz signal over the limit is from Spectrum.

n66, Channel Band width: 40MHz	
Channel 346000 (1730.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 18GHz
	
Channel 349000 (1745.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 18GHz
	
Channel 352000 (1760.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 18GHz
	

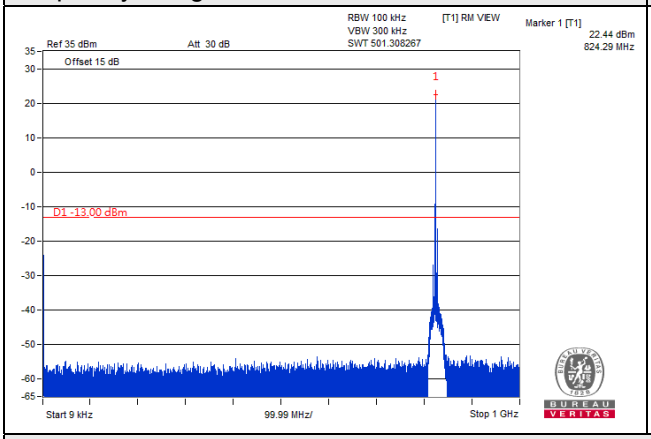
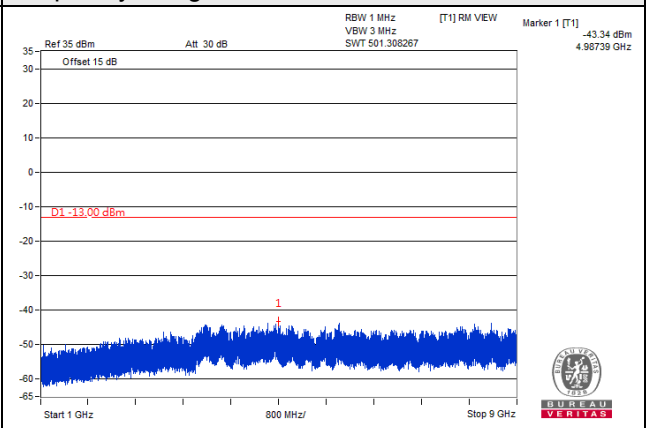
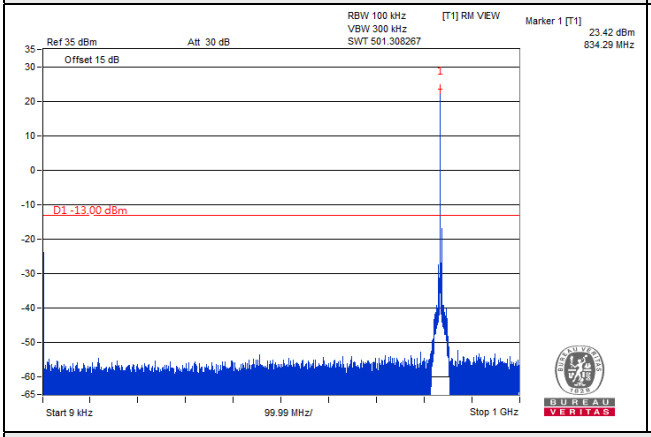
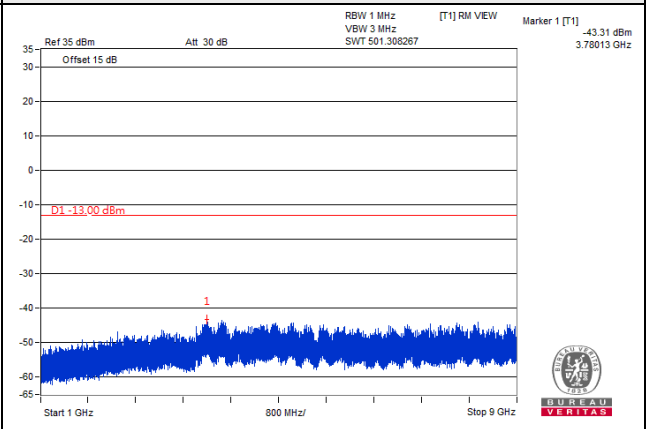
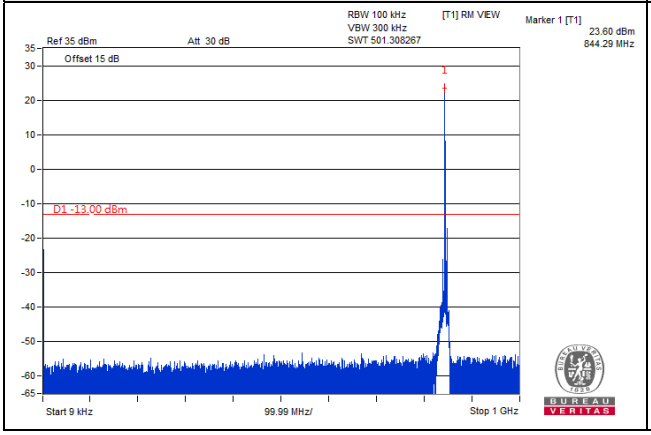
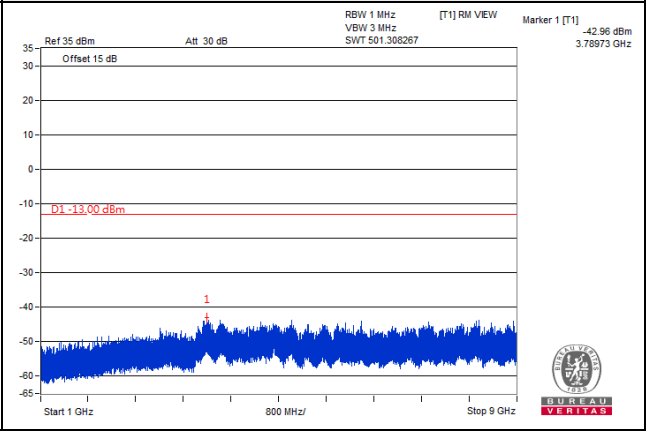
*The 9kHz signal over the limit is from Spectrum.

LTE Band 5, Channel Bandwidth: 1.4MHz	
Channel 20407 (824.7MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Channel 20525 (836.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Channel 20643 (848.3MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	

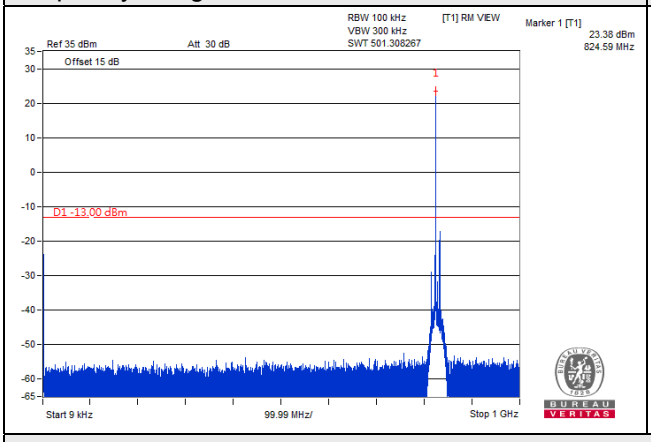
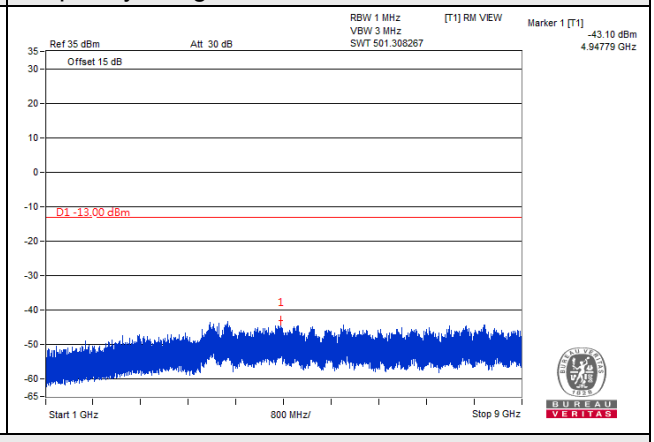
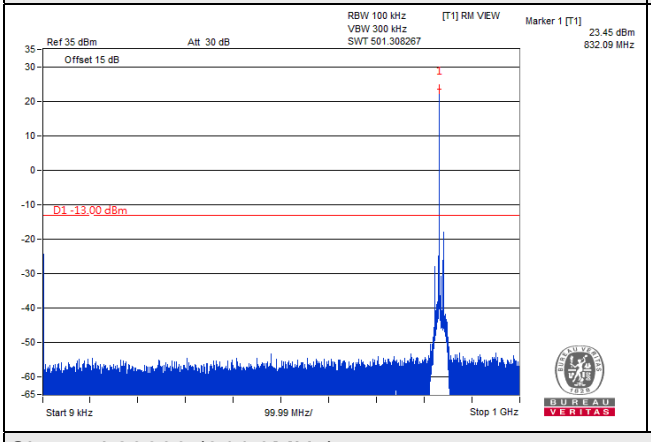
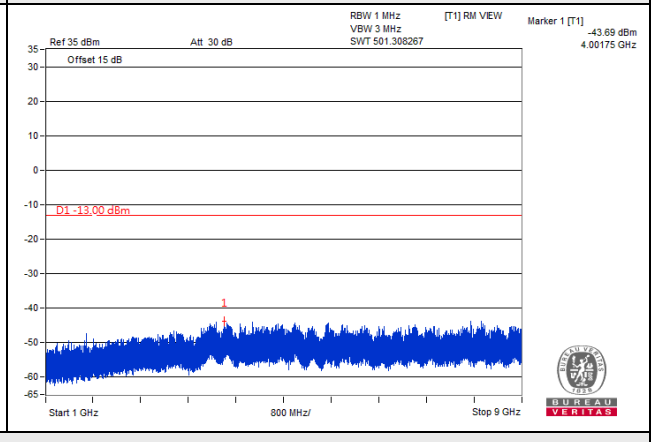
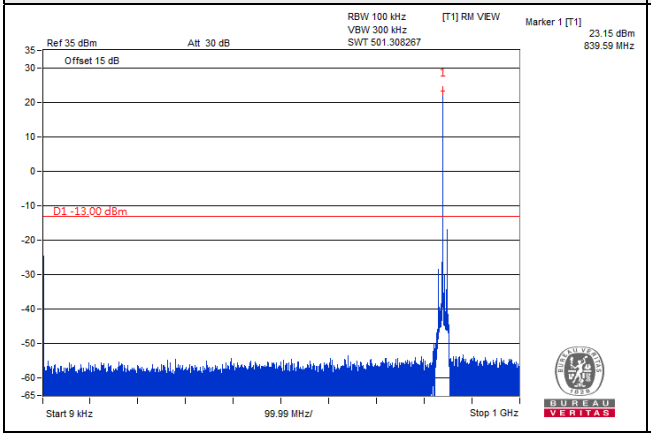
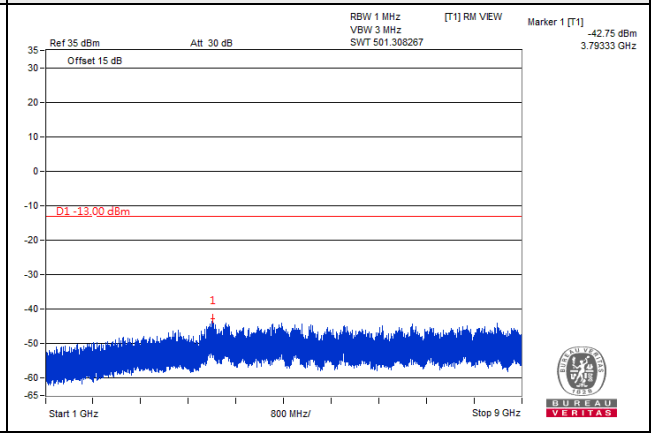
*The 9kHz signal over the limit is from Spectrum.

LTE Band 5, Channel Bandwidth: 3MHz	
Channel 20415 (825.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Channel 20525 (836.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Channel 20635 (847.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	

*The 9kHz signal over the limit is from Spectrum.

LTE Band 5, Channel Bandwidth: 5MHz	
Channel 20425 (826.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 9GHz
	
Channel 20525 (836.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 9GHz
	
Channel 20625 (846.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 9GHz
	

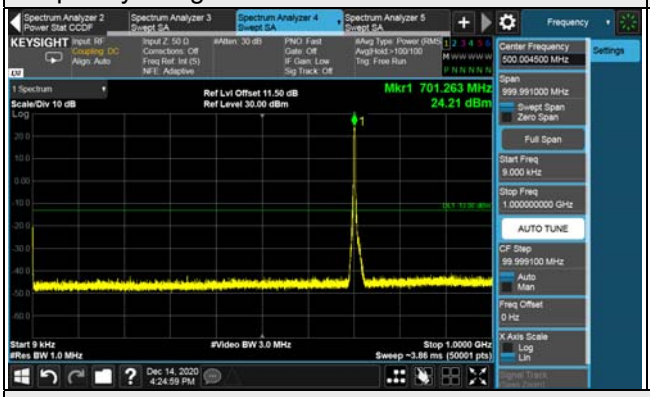
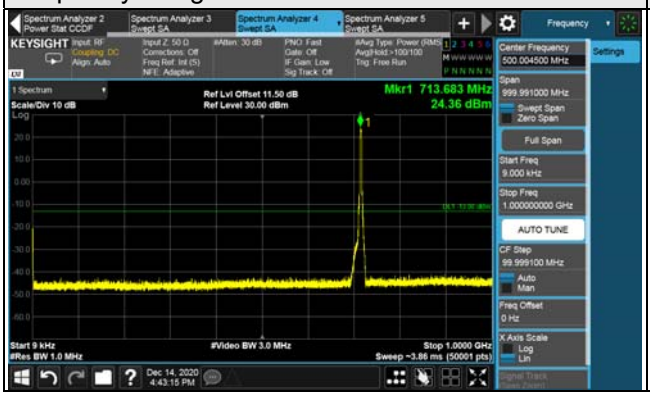
*The 9kHz signal over the limit is from Spectrum.

LTE Band 5, Channel Bandwidth: 10MHz	
Channel 20450 (829.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 9GHz
	
Channel 20525 (836.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 9GHz
	
Channel 20600 (844.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 9GHz
	

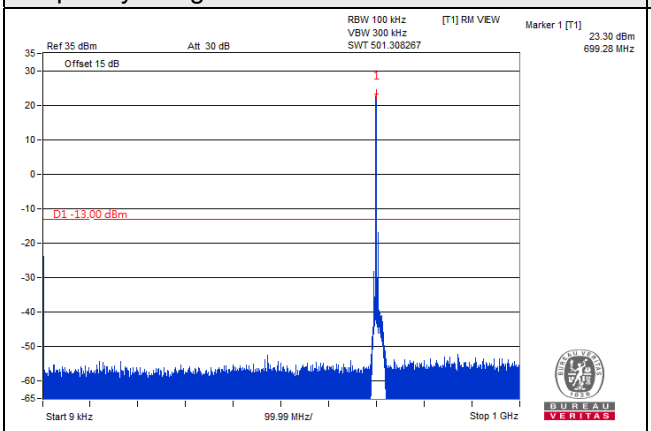
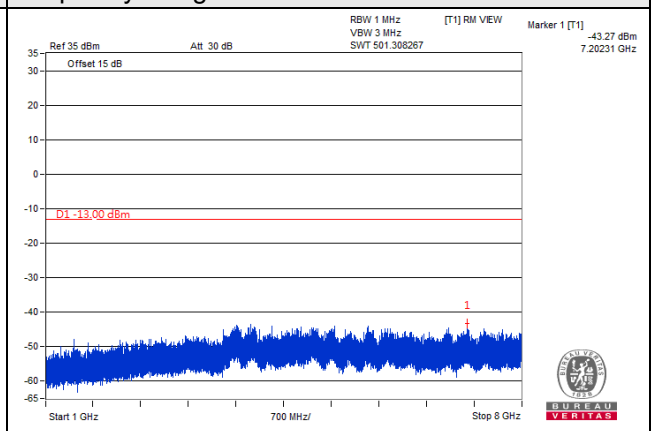
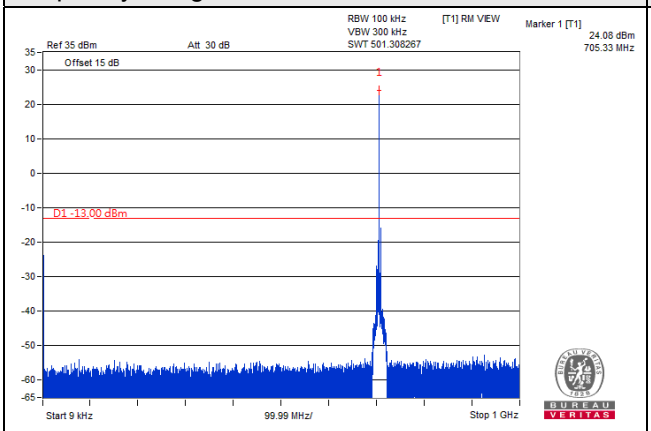
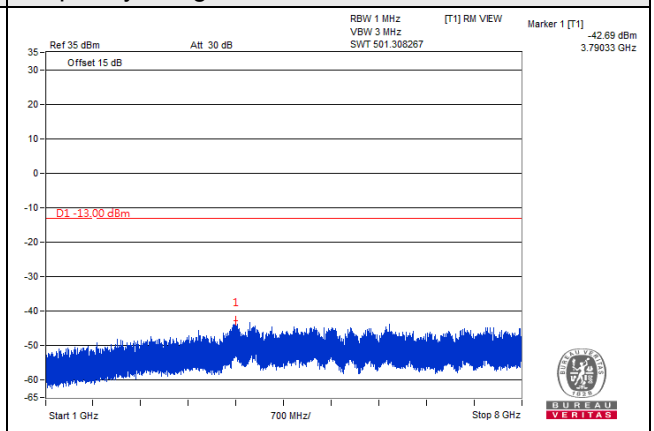
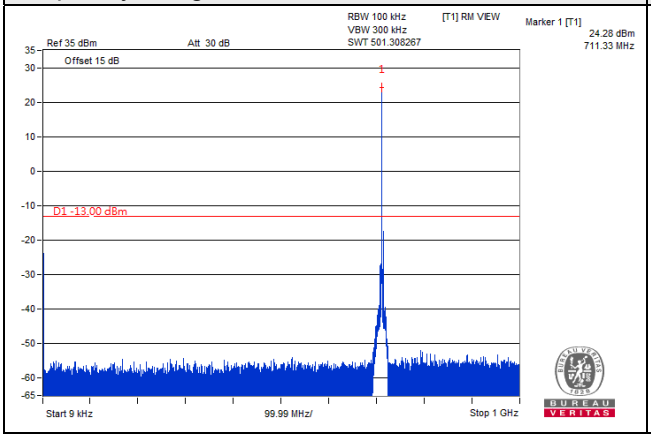
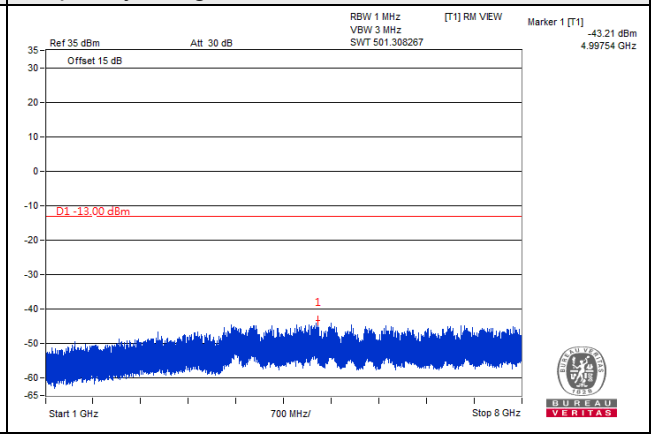
*The 9kHz signal over the limit is from Spectrum.

LTE Band 12, Channel Band width: 1.4MHz	
Channel 23017 (699.7MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Channel 23095 (707.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Channel 23173 (715.3MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	

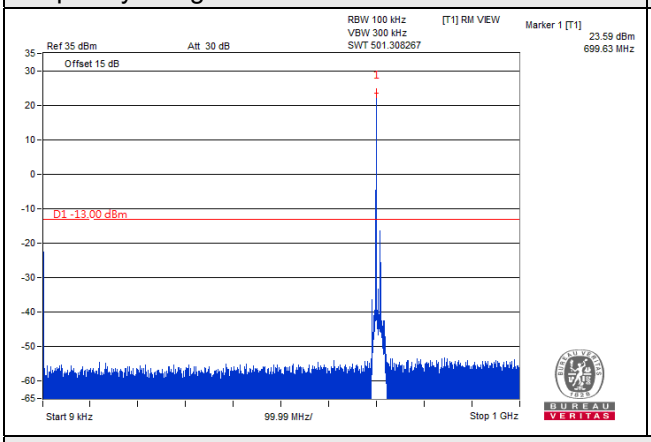
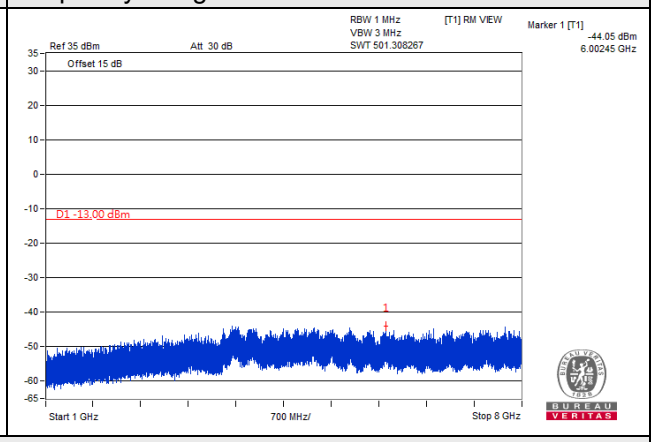
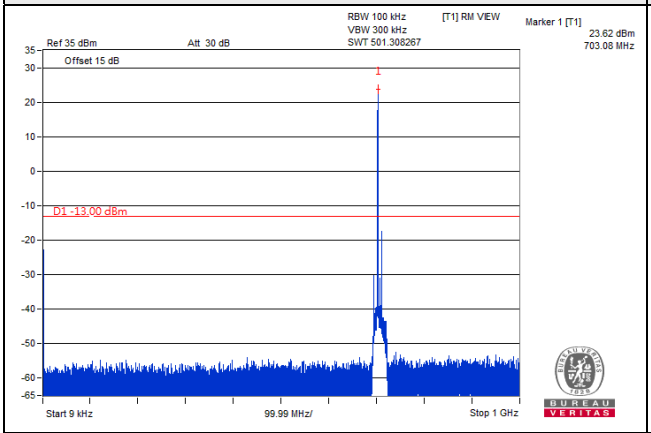
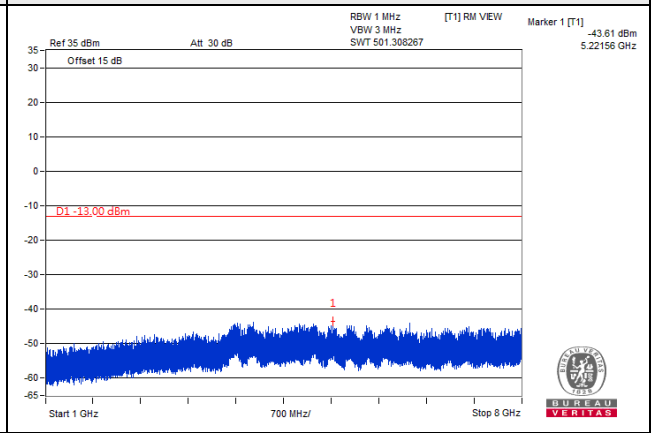
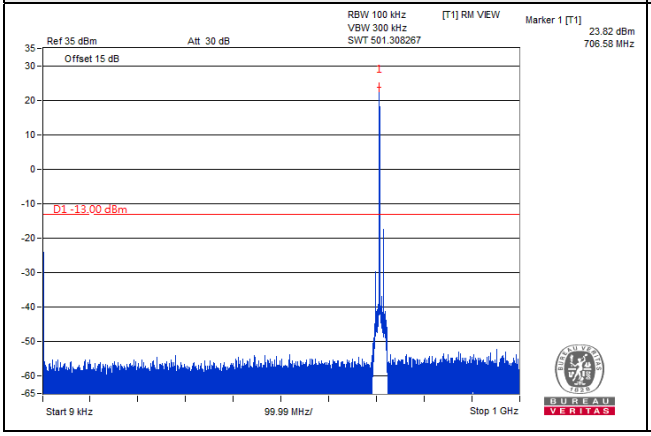
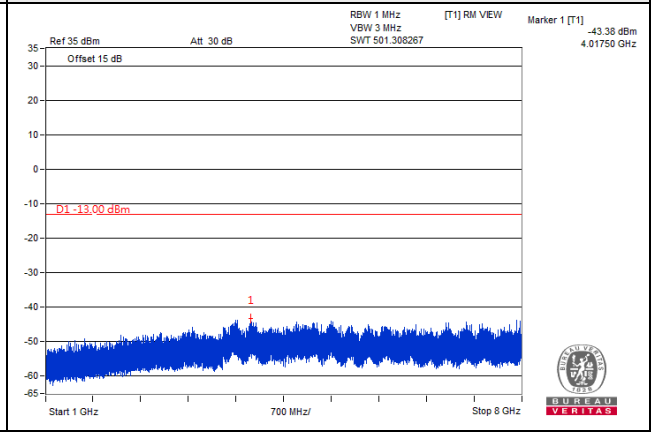
*The 9kHz signal over the limit is from Spectrum.

LTE Band 12, Channel Band width: 3MHz	
Channel 23025 (700.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Channel 23095 (707.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Channel 23165 (714.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	

*The 9kHz signal over the limit is from Spectrum.

LTE Band 12, Channel Band width: 5MHz	
Channel 23035 (701.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	
Channel 23095 (707.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	
Channel 23155 (713.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	

*The 9kHz signal over the limit is from Spectrum.

LTE Band 12, Channel Band width: 10MHz	
Channel 23060 (704MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	
Channel 23095 (707.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	
Channel 23130 (711MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	

*The 9kHz signal over the limit is from Spectrum.

4.8 Radiated Emission Measurement

4.8.1 Limits of Radiated Emission Measurement

For n66:
According to FCC 27.53(h) for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log (P) dB.

For LTE Band 5:
The 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. The emission limit equal to –13dBm.

For LTE Band 12:
According to FCC 27.53(g) for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

4.8.2 Test Procedure

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m (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 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
b. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn. Correction Factor (includes EIRP and ERP unit conversion factor) = Antenna gain of substitution horn. – Tx cable loss. Measurement method refers to ANSI C63.26 section 5.5.3.2.
c. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15dBi.

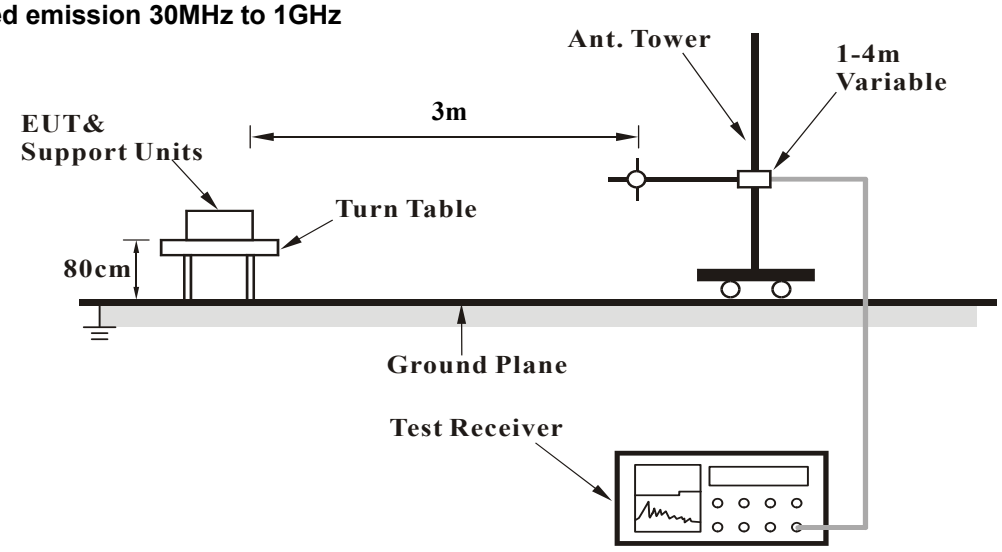
Note:
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.
2. The emission levels were against the limit of frequency range 9 kHz ~ 30 MHz: The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report

4.8.3 Deviation from Test Standard

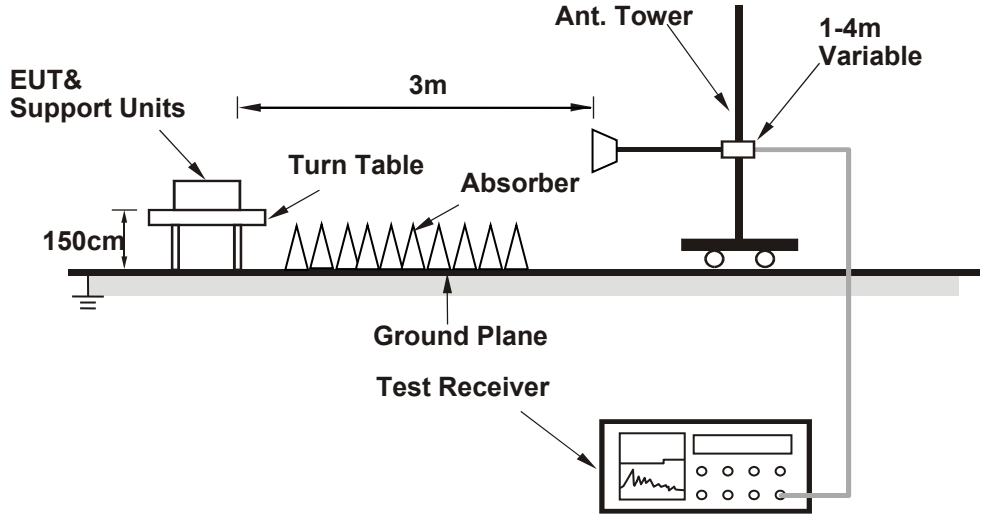
No deviation.

4.8.4 Test Setup

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).

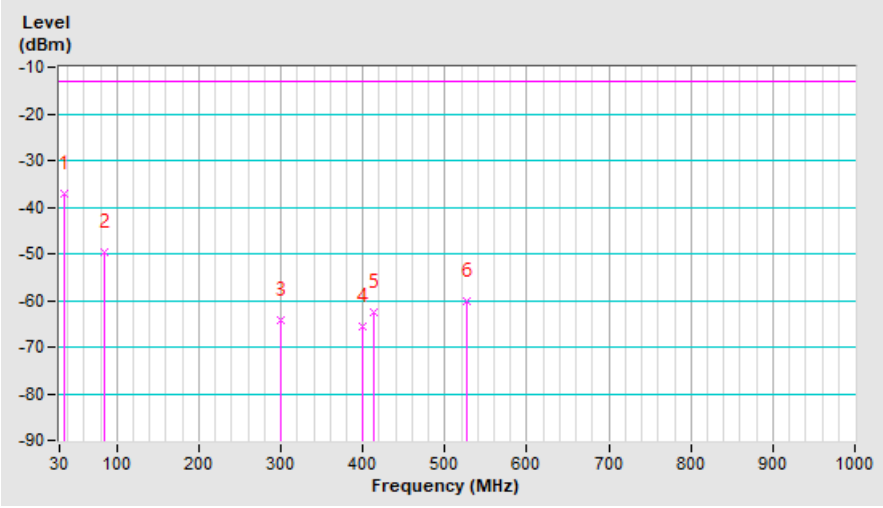
4.8.5 Test Results

Below 1GHz
n66, Channel Bandwidth: 15MHz

Mode	TX channel 349000 (1745.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	**36.26**	**-40.60**	**-21.50**	**-15.60**	**-37.10**	**-13.00**	**-24.10**
2	85.23	-43.30	-50.00	0.30	-49.70	-13.00	-36.70
3	299.64	-59.80	-66.60	2.50	-64.10	-13.00	-51.10
4	399.65	-64.80	-68.90	3.30	-65.60	-13.00	-52.60
5	412.57	-62.50	-65.90	3.30	-62.60	-13.00	-49.60
6	526.31	-60.50	-64.10	3.90	-60.20	-13.00	-47.20

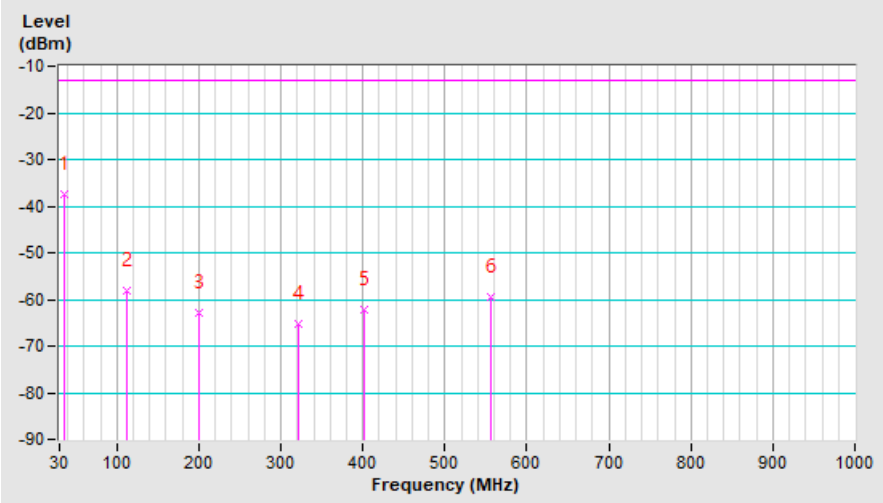
Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).



Mode	TX channel 349000 (1745.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	35.63	-27.60	-21.40	-16.00	-37.40	-13.00	-24.40
2	112.35	-50.70	-55.60	-2.50	-58.10	-13.00	-45.10
3	199.63	-61.70	-60.40	-2.40	-62.80	-13.00	-49.80
4	321.56	-65.10	-69.40	4.10	-65.30	-13.00	-52.30
5	401.25	-61.30	-65.40	3.30	-62.10	-13.00	-49.10
6	556.98	-61.20	-63.30	3.70	-59.60	-13.00	-46.60

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

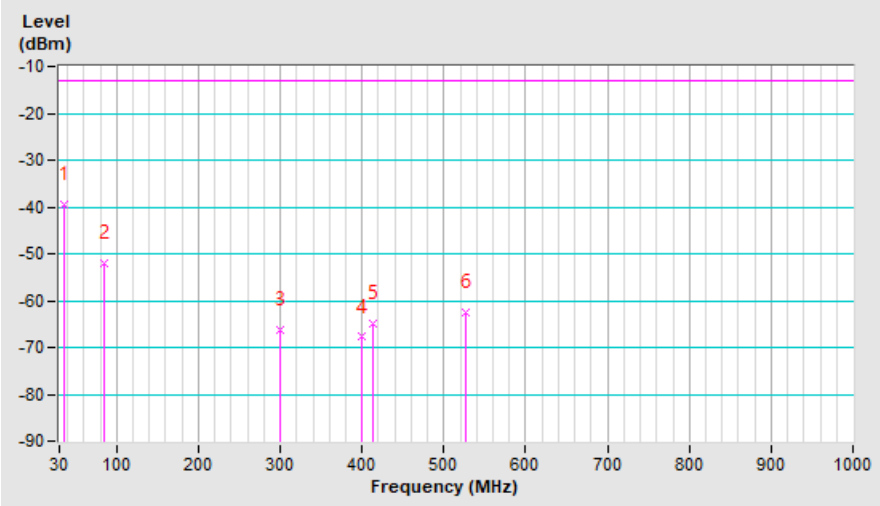


LTE Band 5, Channel Bandwidth: 10MHz

Mode	TX channel 20525 (836.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	**36.26**	**-40.80**	**-23.80**	**-15.60**	**-39.40**	**-13.00**	**-26.40**
2	85.23	-43.50	-52.30	0.30	-52.00	-13.00	-39.00
3	299.64	-59.80	-68.70	2.50	-66.20	-13.00	-53.20
4	399.65	-64.80	-71.10	3.30	-67.80	-13.00	-54.80
5	412.57	-62.50	-68.10	3.30	-64.80	-13.00	-51.80
6	526.31	-60.60	-66.40	3.90	-62.50	-13.00	-49.50

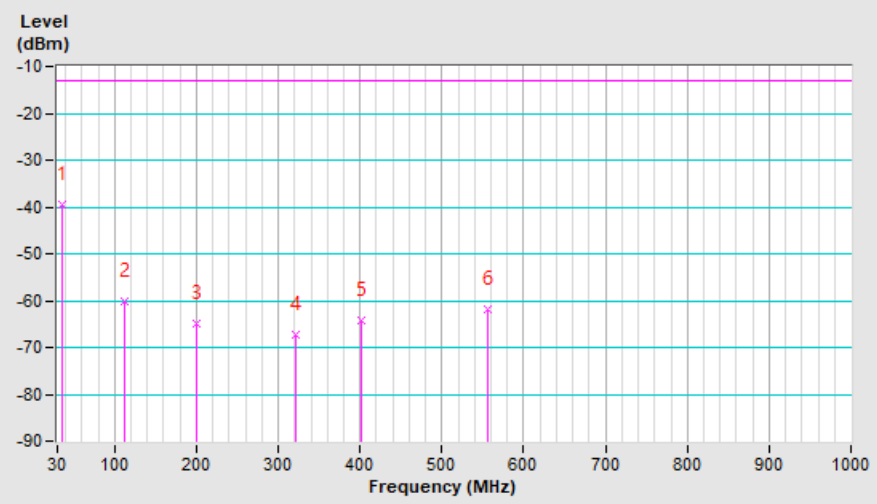
Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.



Mode	TX channel 20525 (836.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	35.63	-27.60	-23.60	-16.00	-39.60	-13.00	-26.60
2	112.35	-50.70	-57.70	-2.50	-60.20	-13.00	-47.20
3	199.63	-61.80	-62.60	-2.40	-65.00	-13.00	-52.00
4	321.56	-65.10	-71.50	4.10	-67.40	-13.00	-54.40
5	401.25	-61.20	-67.50	3.30	-64.20	-13.00	-51.20
6	556.98	-61.20	-65.50	3.70	-61.80	-13.00	-48.80

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

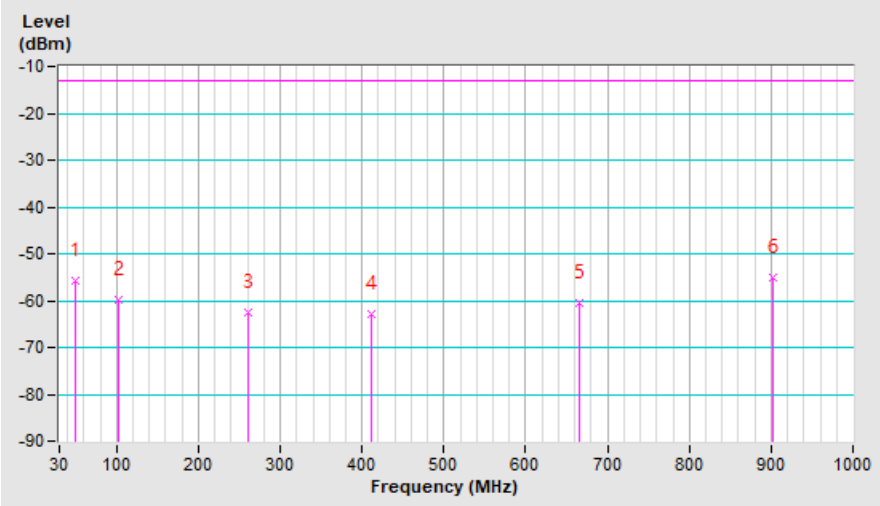


LTE Band 12, Channel Bandwidth: 10MHz

Mode	TX channel 23095 (707.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	49.40	-53.20	-47.50	-8.30	-55.80	-13.00	-42.80
2	101.78	-49.40	-58.30	-1.60	-59.90	-13.00	-46.90
3	259.89	-55.50	-61.00	-1.50	-62.50	-13.00	-49.50
4	412.18	-60.60	-66.20	3.30	-62.90	-13.00	-49.90
5	666.32	-60.80	-64.00	3.60	-60.40	-13.00	-47.40
6	902.03	-60.70	-58.70	3.50	-55.20	-13.00	-42.20

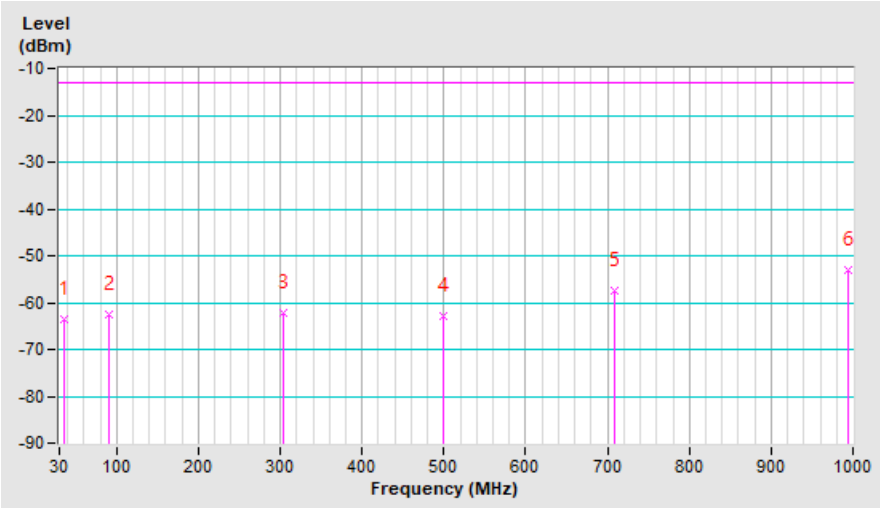
Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.



Mode	TX channel 23095 (707.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	36.79	-52.00	-48.40	-15.20	-63.60	-13.00	-50.60
2	90.14	-54.20	-62.50	-0.20	-62.70	-13.00	-49.70
3	304.51	-60.20	-66.10	3.80	-62.30	-13.00	-49.30
4	498.51	-60.80	-66.70	3.80	-62.90	-13.00	-49.90
5	709.00	-61.40	-61.00	3.50	-57.50	-13.00	-44.50
6	994.18	-61.00	-56.40	3.40	-53.00	-13.00	-40.00

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.



Above 1GHz
n66, Channel Bandwidth: 5MHz

Mode	TX channel 342500 (1712.5MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3425.00	-62.20	-53.60	1.30	-52.30	-13.00	-39.30
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3425.00	-62.40	-54.30	1.30	-53.00	-13.00	-40.00

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 349000 (1745.0MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3490.00	-63.40	-55.20	1.50	-53.70	-13.00	-40.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3490.00	-61.70	-54.10	1.50	-52.60	-13.00	-39.60

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 355500 (1777.5MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3555.00	-63.40	-55.00	1.40	-53.60	-13.00	-40.60
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3555.00	-62.00	-54.20	1.40	-52.80	-13.00	-39.80

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

n66, Channel Bandwidth: 10MHz

Mode	TX channel 343000 (1715.0MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3430.00	-62.30	-53.80	1.40	-52.40	-13.00	-39.40
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3430.00	-62.00	-54.00	1.40	-52.60	-13.00	-39.60

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 349000 (1745.0MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3490.00	-61.70	-53.50	1.50	-52.00	-13.00	-39.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3490.00	-60.90	-53.30	1.50	-51.80	-13.00	-38.80

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 355000 (1775.0MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3550.00	-62.60	-54.20	1.40	-52.80	-13.00	-39.80
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3550.00	-61.80	-54.00	1.40	-52.60	-13.00	-39.60

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

n66, Channel Bandwidth: 15MHz

Mode	TX channel 343500 (1717.5MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3435.00	-62.40	-53.80	1.30	-52.50	-13.00	-39.50
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3435.00	-60.00	-51.90	1.30	-50.60	-13.00	-37.60

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 349000 (1745.0MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3490.00	-61.60	-53.40	1.50	-51.90	-13.00	-38.90
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3490.00	-59.50	-51.90	1.50	-50.40	-13.00	-37.40

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 354500 (1772.5MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3545.00	-62.70	-54.30	1.40	-52.90	-13.00	-39.90
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3545.00	-60.60	-52.80	1.40	-51.40	-13.00	-38.40

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

n66, Channel Bandwidth: 20MHz

Mode	TX channel 344000 (1720.0MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3440.00	-62.60	-54.10	1.30	-52.80	-13.00	-39.80
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3440.00	-61.80	-53.80	1.30	-52.50	-13.00	-39.50

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 349000 (1745.0MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3490.00	-61.70	-53.50	1.50	-52.00	-13.00	-39.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3490.00	-61.30	-53.70	1.50	-52.20	-13.00	-39.20

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 354000 (1770.0MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3540.00	-62.60	-54.20	1.40	-52.80	-13.00	-39.80
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3540.00	-62.30	-54.50	1.40	-53.10	-13.00	-40.10

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

n66, Channel Bandwidth: 40MHz

Mode	TX channel 346000 (1730.0MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3460.00	-62.60	-54.20	1.40	-52.80	-13.00	-39.80
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3460.00	-61.60	-53.80	1.40	-52.40	-13.00	-39.40

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 349000 (1745.0MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3490.00	-61.70	-53.50	1.50	-52.00	-13.00	-39.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3490.00	-60.90	-53.30	1.50	-51.80	-13.00	-38.80

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 352000 (1760.0MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3520.00	-62.20	-53.90	1.40	-52.50	-13.00	-39.50
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3520.00	-61.00	-53.30	1.40	-51.90	-13.00	-38.90

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

LTE Band 5, Channel Bandwidth: 1.4MHz

Mode	TX channel 20407 (824.7MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1649.40	-56.20	-48.50	0.90	-47.60	-13.00	-34.60
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1649.40	-52.80	-45.50	0.90	-44.60	-13.00	-31.60

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

Mode	TX channel 20525 (836.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-56.20	-48.50	0.80	-47.70	-13.00	-34.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-52.90	-45.60	0.80	-44.80	-13.00	-31.80

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

Mode	TX channel 20643 (848.3MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1696.60	-56.10	-48.60	0.70	-47.90	-13.00	-34.90
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1696.60	-52.80	-45.40	0.70	-44.70	-13.00	-31.70

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

LTE Band 5, Channel Bandwidth: 5MHz

Mode	TX channel 20425 (826.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1653.00	-56.90	-49.20	0.90	-48.30	-13.00	-35.30
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1653.00	-53.10	-45.90	0.90	-45.00	-13.00	-32.00

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

Mode	TX channel 20525 (836.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-56.50	-48.80	0.80	-48.00	-13.00	-35.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-53.00	-45.70	0.80	-44.90	-13.00	-31.90

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

Mode	TX channel 20625 (846.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.00	-56.50	-48.90	0.70	-48.20	-13.00	-35.20
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.00	-53.20	-45.90	0.70	-45.20	-13.00	-32.20

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

LTE Band 5, Channel Bandwidth: 10MHz

Mode	TX channel 20450 (829.0MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1658.00	-56.30	-48.70	0.90	-47.80	-13.00	-34.80
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1658.00	-52.90	-45.70	0.90	-44.80	-13.00	-31.80

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

Mode	TX channel 20525 (836.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-56.50	-48.80	0.80	-48.00	-13.00	-35.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-52.50	-45.20	0.80	-44.40	-13.00	-31.40

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

Mode	TX channel 20600 (844.0MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1688.00	-56.60	-49.00	0.70	-48.30	-13.00	-35.30
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1688.00	-52.90	-45.60	0.70	-44.90	-13.00	-31.90

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

LTE Band 12, Channel Bandwidth: 1.4MHz

Mode	TX channel 23017 (699.7MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1399.40	-62.60	-56.40	0.90	-55.50	-13.00	-42.50
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1399.40	-64.50	-59.40	0.90	-58.50	-13.00	-45.50

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

Mode	TX channel 23095 (707.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-63.00	-56.50	0.90	-55.60	-13.00	-42.60
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-64.80	-59.50	0.90	-58.60	-13.00	-45.60

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

Mode	TX channel 23173 (715.3MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1430.60	-64.00	-57.20	1.00	-56.20	-13.00	-43.20
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1430.60	-65.50	-60.00	1.00	-59.00	-13.00	-46.00

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

LTE Band 12, Channel Bandwidth: 5MHz

Mode	TX channel 23035 (701.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1403.00	-62.60	-56.30	0.90	-55.40	-13.00	-42.40
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1403.00	-65.00	-59.80	0.90	-58.90	-13.00	-45.90

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

Mode	TX channel 23095 (707.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-63.20	-56.60	0.90	-55.70	-13.00	-42.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-65.20	-59.90	0.90	-59.00	-13.00	-46.00

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

Mode	TX channel 23155 (713.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1427.00	-63.60	-57.00	1.00	-56.00	-13.00	-43.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1427.00	-65.80	-60.20	1.00	-59.20	-13.00	-46.20

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

LTE Band 12, Channel Bandwidth: 10MHz

Mode	TX channel 23060 (704MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1408.00	-62.60	-56.10	0.90	-55.20	-13.00	-42.20
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1408.00	-64.80	-59.50	0.90	-58.60	-13.00	-45.60

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

Mode	TX channel 23095 (707.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-62.50	-56.00	0.90	-55.10	-13.00	-42.10
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-64.50	-59.20	0.90	-58.30	-13.00	-45.30

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

Mode	TX channel 23130 (711MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1422.00	-63.00	-56.50	1.00	-55.50	-13.00	-42.50
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1422.00	-65.20	-59.80	1.00	-58.80	-13.00	-45.80

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB) + 2.15dB.

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

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The address and road map of all our labs can be found in our web site also.

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