FCC TEST REPORT

(PART 24)

Applicant:	Sonim Technologies, Inc.
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Manufacturer or Supplier	Sonim Technologies (Shenzhen) Limited
Address	2nd Floor, No. 2 Building Phase B, Daqian Industrial park, Longchang Road, 67 District, Baoan, Shenzhen, P. R. China
Product	Mobile Phone
Brand Name	KENWOOD
Model Name	KWSA80K
FCC ID	WYPPG4032
Date of tests	Nov. 06, 2017 ~ May 30, 2018

The tests have been carried out according to the requirements of the following standard:

☒ **FCC PART 24, Subpart E** ☒ **ANSI C63.26-2015**
☒ **ANSI/TIA/EIA-603-D** ☒ **ANSI/TIA/EIA-603-E**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Roger Li Engineer / Mobile Department	Approved by Sam Tung Manager / Mobile Department
Roger Date: May 31, 2018	Date: May 31, 2018

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF171201W001-5	Original release	Dec. 25, 2017
RF180412W003-5	Based on the original report RF171201W001-5 changing model name & brand name and software.	May 31, 2018

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 24 & Part 2			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
2.1046 24.232	Equivalent Isotropic Radiated Power	N/A (note)	Meet the requirement of limit.
2.1055 24.235	Frequency Stability	N/A (note)	Meet the requirement of limit.
2.1049 24.238(b)	Occupied Bandwidth	N/A (note)	Meet the requirement of limit.
24.232(d)	Peak to average ratio	N/A (note)	Meet the requirement of limit.
24.238(b)	Band Edge Measurements	N/A (note)	Meet the requirement of limit.
2.1051 24.238	Conducted Spurious Emissions	N/A (note)	Meet the requirement of limit.
2.1053 24.238	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -20.18dB at 36.790MHz.

Note: The device (Model No. KWSA80K) was only test Transmitter Radiated Emissions for this time, other test items of the test data was copy from the original report no. IC171201W001-5, Differences in detail please refer to the declaration letter

1.1 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	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.66dB
Radiated emissions	9KHz ~ 30MHz	2.68dB
	30MHz ~ 1GHz	3.26dB
	1GHz ~ 18GHz	4.48dB
	18GHz ~ 40GHz	4.12dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 16,18	Mar. 15,19
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510332	Jun. 28,17	Jun. 27,18
Bilog Antenna 1	ETS-LINDGREN	3143B	00161964	Nov. 26,16	Nov. 25,18
Bilog Antenna 2	ETS-LINDGREN	3143B	00161965	Nov. 26,16	Nov. 25,18
Horn Antenna 1	ETS-LINDGREN	3117	00168728	Nov. 26,16	Nov. 25,18
Horn Antenna 2	ETS-LINDGREN	3117	00168692	Nov. 26,16	Nov. 25,18
Loop antenna	Daze	ZN30900A	0708	Nov. 20,17	Nov. 19,18
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Dec. 16,16	Dec. 15,18
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Mar. 02,18	Mar. 01,19
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jul. 24,17	Jul. 23,18
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jul. 24,17	Jul. 23,18
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Jul. 24,17	Jul. 23,18
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	Apr. 21,18	Apr. 20,19
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jul. 24,17	Jul. 23,18
Power Meter	Anritsu	ML2495A	1506002	Mar. 02,18	Mar. 01,19
Power Sensor	Anritsu	MA2411B	1339352	Mar. 16,18	Mar. 15,19
Humid & Temp Programmable Tester	Juyi	ITH-120-45-CP-AR	IAA1504-001	Jul. 18,17	Jul. 17,18
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Mar. 13,18	Mar. 12,19

NOTE: 1. The calibration interval of the above test instruments is 12 months or 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.

3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.

4. The FCC Site Registration No. is 525120.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Mobile Phone	
BRAND NAME	KENWOOD	
MODEL NAME	KWSA80K	
POWER SUPPLY	5/9Vdc (adapter or host equipment) 3.85Vdc (Li-ion, battery)	
MODULATION TYPE	**GSM, GPRS:** GMSK **EDGE:** GMSK, 8PSK **WCDMA :** BPSK **LTE Band 2:** QPSK, 16QAM, 64QAM	
FREQUENCY RANGE	**GSM, GPRS, EDGE**	1850.2MHz ~ 1909.8MHz
	WCDMA	1852.4MHz ~ 1907.6MHz
	LTE Band 2 Channel Bandwidth: 1.4MHz	1850.7MHz ~ 1909.3MHz
	LTE Band 2 Channel Bandwidth: 3MHz	1851.5MHz ~ 1908.5MHz
	LTE Band 2 Channel Bandwidth: 5MHz	1852.5MHz ~ 1907.5MHz
	LTE Band 2 Channel Bandwidth: 10MHz	1855.0MHz ~ 1905.0MHz
	LTE Band 2 Channel Bandwidth: 15MHz	1857.5MHz ~ 1902.5MHz
	LTE Band 2 Channel Bandwidth: 20MHz	1860.0MHz ~ 1900.0MHz
	LTE Band 25 Channel Bandwidth: 1.4MHz	1850.7MHz ~ 1914.3MHz
	LTE Band 25 Channel Bandwidth: 3MHz	1851.5MHz ~ 1913.5MHz
	LTE Band 25 Channel Bandwidth: 5MHz	1852.5MHz ~ 1912.5MHz
	LTE Band 25 Channel Bandwidth: 10MHz	1855MHz ~ 1910MHz
	LTE Band 25 Channel Bandwidth: 15MHz	1857.5MHz ~ 1907.5MHz
	LTE Band 25 Channel Bandwidth: 20MHz	1860MHz ~ 1905MHz

MAX. EIRP POWER	GSM	484mW
	EDGE	492mW
	WCDMA	238mW
	LTE Band 2 Channel Bandwidth: 1.4MHz	246mW
	LTE Band 2 Channel Bandwidth: 3MHz	250mW
	LTE Band 2 Channel Bandwidth: 5MHz	247mW
	LTE Band 2 Channel Bandwidth: 10MHz	247mW
	LTE Band 2 Channel Bandwidth: 15MHz	240mW
	LTE Band 2 Channel Bandwidth: 20MHz	212mW
	LTE Band 25 Channel Bandwidth: 1.4MHz	292mW
	LTE Band 25 Channel Bandwidth: 3MHz	293mW
	LTE Band 25 Channel Bandwidth: 5MHz	296mW
	LTE Band 25 Channel Bandwidth: 10MHz	302mW
	LTE Band 25 Channel Bandwidth: 15MHz	288mW
	LTE Band 25 Channel Bandwidth: 20MHz	248mW
EMISSION DESIGNATOR	GSM	246KGXW
	EDGE	244KG7W
	WCDMA	4M15F9W
	LTE Band 2 Channel Bandwidth: 1.4MHz	QPSK: 1M09G7D
		16QAM: 1M08W7D
		64QAM: 1M08W7D
	LTE Band 2 Channel Bandwidth: 3MHz	QPSK: 2M69G7D
		16QAM: 2M68W7D
		64QAM: 2M68W7D

EMISSION DESIGNATOR	LTE Band 2 Channel Bandwidth: 5MHz	QPSK: 4M48G7D
		16QAM: 4M47W7D
		64QAM: 4M48W7D
	LTE Band 2 Channel Bandwidth: 10MHz	QPSK: 8M95G7D
		16QAM: 8M95W7D
		64QAM: 8M95W7D
	LTE Band 2 Channel Bandwidth: 15MHz	QPSK: 13M4G7D
		16QAM: 13M4W7D
		64QAM: 13M4W7D
	LTE Band 2 Channel Bandwidth: 20MHz	QPSK: 17M9G7D
		16QAM: 17M8W7D
		64QAM: 17M9W7D
	LTE Band 25 Channel Bandwidth: 1.4MHz	QPSK: 1M09G7D
		16QAM: 1M09W7D
		64QAM: 1M09W7D
	LTE Band 25 Channel Bandwidth: 3MHz	QPSK: 2M69G7D
		16QAM: 2M69W7D
		64QAM: 2M69W7D
	LTE Band 25 Channel Bandwidth: 5MHz	QPSK: 4M49G7D
		16QAM: 4M47W7D
		64QAM: 4M49W7D
	LTE Band 25 Channel Bandwidth: 10MHz	QPSK: 8M95G7D
		16QAM: 8M95W7D
		64QAM: 8M94W7D
	LTE Band 25 Channel Bandwidth: 15MHz	QPSK: 13M4G7D
		16QAM: 13M4W7D
		64QAM: 13M4W7D
	LTE Band 25 Channel Bandwidth: 20MHz	QPSK: 17M9G7D
		16QAM: 17M9W7D
		64QAM: 17M9W7D
ANTENNA TYPE	Fixed Internal antenna with -1dBi	
HW VERSION	A	
SW VERSION	8A.0.0-00-7.1.1-30.00.07	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	USB cable 1: With shield, detachable, 1.5meter USB cable 2: non-shielded, detachable, 1.0meter	

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT was powered by the following adapter:

ADAPTER	
BRAND:	KENWOOD
MODEL:	S42A02
INPUT:	AC 100-240V, 500mA
OUTPUT:	DC 5V, 1500mA DC 9V, 1500mA DC 12V,1100mA

3. The EUT matched the following USB cables:

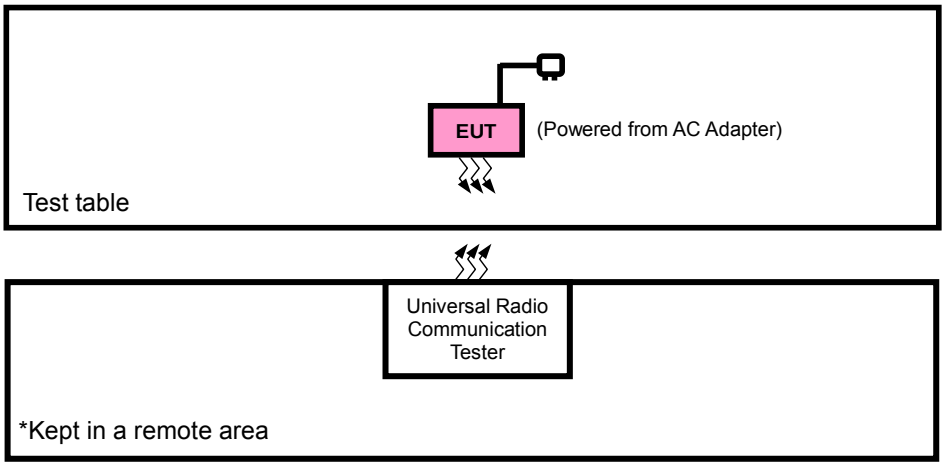
USB CABLE 1	
BRAND:	N/A
MODEL:	N/A
SIGNAL LINE:	1.5 METER

USB CABLE 2	
BRAND:	N/A
MODEL:	N/A
SIGNAL LINE:	1.0 METER

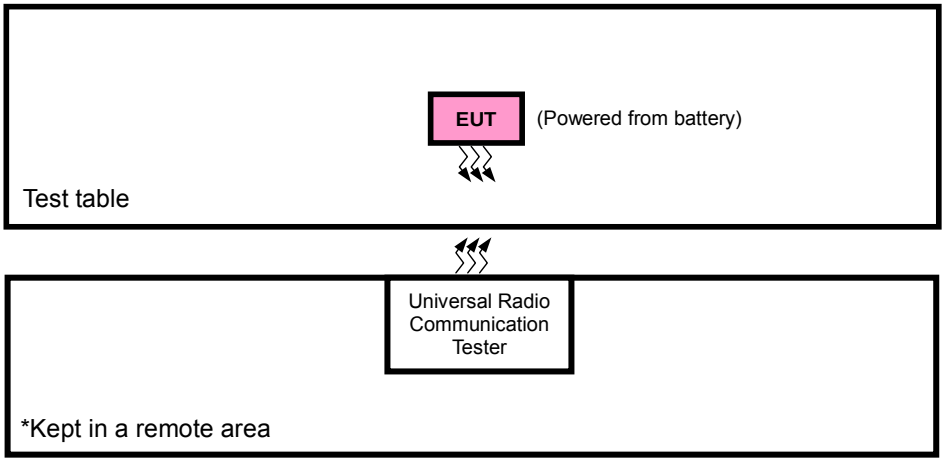
4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

2.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST



FOR CONDUCTED & E.I.R.P. TEST



2.3 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.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	PC	HP	A6608CN	3CR83825X3	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	AC Line: Unshielded, Detachable 1.5m

NOTE:

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

2.4 TEST ITEM AND TEST CONFIGURATION

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 in EIRP and radiated emission was found when positioned on X-plane for GSM/EDGE/WCDMA /LTE. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	**EUT + Adapter + USB Cable with GSM, WCDMA or LTE link**
B	EUT + Battery with **GSM, WCDMA or LTE link**

GSM MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
B	EIRP	512 to 810	512, 661, 810	GSM, EDGE
B	FREQUENCY STABILITY	512 to 810	512, 810	GSM, EDGE
B	OCCUPIED BANDWIDTH	512 to 810	512, 661, 810	GSM, EDGE
B	PEAK TO AVERAGE RATIO	512 to 810	512, 661, 810	GSM, EDGE
B	BAND EDGE	512 to 810	512, 810	GSM, EDGE
B	CONDCUDETED EMISSION	512 to 810	512, 661, 810	GSM, EDGE
A	RADIATED EMISSION	512 to 810	512, 661, 810	GSM, EDGE

WCDMA MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
B	EIRP	9262 to 9538	9262, 9400, 9538	WCDMA
B	FREQUENCY STABILITY	9262 to 9538	9262, 9538	WCDMA
B	OCCUPIED BANDWIDTH	9262 to 9538	9262, 9400, 9538	WCDMA
B	PEAK TO AVERAGE RATIO	9262 to 9538	9262, 9400, 9538	WCDMA
B	BAND EDGE	9262 to 9538	9262, 9538	WCDMA
B	CONDCUDETED EMISSION	9262 to 9538	9262, 9400, 9538	WCDMA
A	RADIATED EMISSION	9262 to 9538	9262, 9400, 9538	WCDMA

LTE BAND 2 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	EIRP	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	18607 to 19193	18607, 19193	1.4MHz	QPSK	1 RB / 0 RB Offset
		18615 to 19185	18615, 19185	3MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18625, 19175	5MHz	QPSK	1 RB / 0 RB Offset
		18650 to 19150	18650, 19150	10MHz	QPSK	1 RB / 0 RB Offset
		18675 to 19125	18675, 19125	15MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700, 19100	20MHz	QPSK	1 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM, 64QAM	6 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM, 64QAM	15 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM, 64QAM	25 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM, 64QAM	50 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM, 64QAM	75 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM, 64QAM	100 RB / 0 RB Offset
B	PEAK TO AVERAGE RATIO	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset

B	BAND EDGE	18607 to 19193	18607	1.4MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			19193	1.4MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		18615 to 19185	18615	3MHz	QPSK	1 RB / 0 RB Offset
						15 RB / 0 RB Offset
			19185	3MHz	QPSK	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		18625 to 19175	18625	5MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			19175	5MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		18650 to 19150	18650	10MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			19150	10MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		18675 to 19125	18675	15MHz	QPSK	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			19125	15MHz	QPSK	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		18700 to 19100	18700	20MHz	QPSK	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
			19100	20MHz	QPSK	1 RB / 99 RB Offset
						100 RB / 0 RB Offset
B	CONDCUDETED EMISSION	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	18607 to 19193	18900	1.4MHz	QPSK	1 RB / 0 RB Offset
		18615 to 19185	18900	3MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18900	5MHz	QPSK	1 RB / 0 RB Offset
		18650 to 19150	18900	10MHz	QPSK	1 RB / 0 RB Offset
		18675 to 19125	18900	15MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK	1 RB / 0 RB Offset

LTE BAND 25 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	EIRP	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26055 to 26675	26055, 26365, 26675	3MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26065 to 26665	26065, 26365, 26665	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26090 to 26640	26090, 26365 26640	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26115 to 26615	26115, 26365, 26615	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26140 to 26590	26140, 26365, 26590	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	26047 to 26683	26047, 26683	1.4MHz	QPSK	1 RB / 0 RB Offset
		26055 to 26675	26055, 26675	3MHz	QPSK	1 RB / 0 RB Offset
		26065 to 26665	26065, 26665	5MHz	QPSK	1 RB / 0 RB Offset
		26090 to 26640	26090, 26640	10MHz	QPSK	1 RB / 0 RB Offset
		26115 to 26615	26115, 26615	15MHz	QPSK	1 RB / 0 RB Offset
		26140 to 26590	26140, 26590	20MHz	QPSK	1 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK,16QAM, 64QAM	6 RB / 0 RB Offset
		26055 to 26675	26055, 26365, 26675	3MHz	QPSK,16QAM, 64QAM	15 RB / 0 RB Offset
		26065 to 26665	26065, 26365, 26665	5MHz	QPSK,16QAM, 64QAM	25 RB / 0 RB Offset
		26090 to 26640	26090, 26365 26640	10MHz	QPSK,16QAM, 64QAM	50 RB / 0 RB Offset
		26115 to 26615	26115, 26365, 26615	15MHz	QPSK,16QAM, 64QAM	75 RB / 0 RB Offset
		26140 to 26590	26140, 26365, 26590	20MHz	QPSK,16QAM, 64QAM	100 RB / 0 RB Offset
B	PEAK TO AVERAGE RATIO	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26055 to 26675	26055, 26365, 26675	3MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26065 to 26665	26065, 26365, 26665	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26090 to 26640	26090, 26365 26640	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26115 to 26615	26115, 26365, 26615	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26140 to 26590	26140, 26365, 26590	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset

B	BAND EDGE	26047 to 26683	26047	1.4MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			26683	1.4MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		26055 to 26675	26055	3MHz	QPSK	1 RB / 0 RB Offset
						15 RB / 0 RB Offset
			26675	3MHz	QPSK	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		26065 to 26665	26065	5MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			26665	5MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		26090 to 26640	26090	10MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			26640	10MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		26115 to 26615	26115	15MHz	QPSK	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			26615	15MHz	QPSK	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		26140 to 26590	26140	20MHz	QPSK	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
			26590	20MHz	QPSK	1 RB / 99 RB Offset
						100 RB / 0 RB Offset
B	CONDCUDETED EMISSION	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK	1 RB / 0 RB Offset
		26055 to 26675	26055, 26365, 26675	3MHz	QPSK	1 RB / 0 RB Offset
		26065 to 26665	26065, 26365, 26665	5MHz	QPSK	1 RB / 0 RB Offset
		26090 to 26640	26090, 26365 26640	10MHz	QPSK	1 RB / 0 RB Offset
		26115 to 26615	26115, 26365, 26615	15MHz	QPSK	1 RB / 0 RB Offset
		26140 to 26590	26140, 26365, 26590	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK	1 RB / 0 RB Offset
		26055 to 26675	26365	3MHz	QPSK	1 RB / 0 RB Offset
		26065 to 26665	26365	5MHz	QPSK	1 RB / 0 RB Offset
		26090 to 26640	26365	10MHz	QPSK	1 RB / 0 RB Offset
		26115 to 26615	26365	15MHz	QPSK	1 RB / 0 RB Offset
		26140 to 26590	26365	20MHz	QPSK	1 RB / 0 RB Offset

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP	25deg. C, 57%RH	3.85Vdc from Battery	Simon Yang
FREQUENCY STABILITY	23deg. C, 61%RH	DC 3.5V/3.85V/4.2V	Wenliang Wu
OCCUPIED BANDWIDTH	23deg. C, 61%RH	3.85Vdc from Battery	Wenliang Wu
PEAK TO AVERAGE RATIO	23deg. C, 61%RH	3.85Vdc from Battery	Wenliang Wu
BAND EDGE	23deg. C, 61%RH	3.85Vdc from Battery	Wenliang Wu
CONDCUDETED EMISSION	23deg. C, 61%RH	3.85Vdc from Battery	Wenliang Wu
RADIATED EMISSION	23deg. C, 70%RH	DC 5/9V from adaptor	Simon Yang

2.5 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

2.6 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC 47 CFR Part 2

FCC 47 CFR Part 24

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-D

ANSI/TIA/EIA-603-E

ANSI C63.26-2015

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

3 TEST TYPES AND RESULTS

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

Mobile and portable stations are limited to 2 watts EIRP.

3.1.2 TEST PROCEDURES

EIRP MEASUREMENT:

a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1MHz for GSM, GPRS, EDGE, 5MHz for WCDMA mode and 10MHz for LTE mode.

b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m 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.

c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value " of step b. Record the power level of S.G

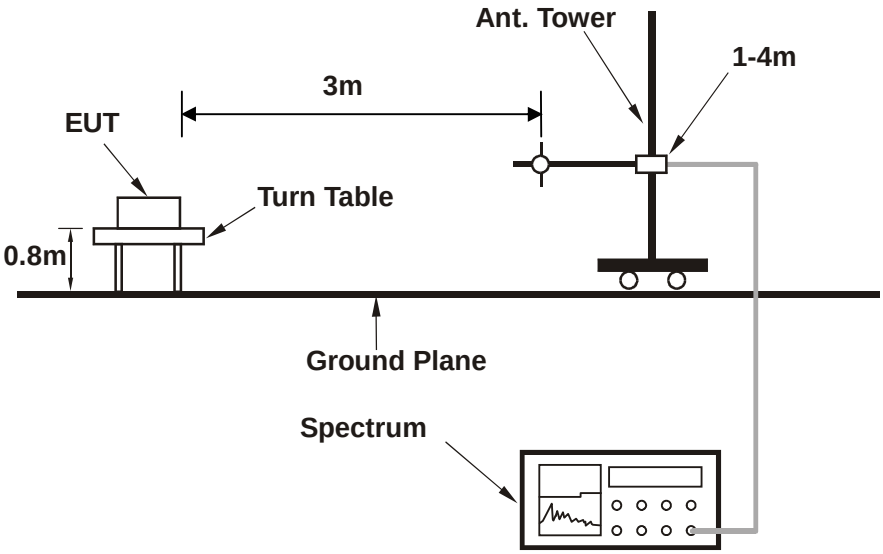
d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

CONDUCTED POWER MEASUREMENT:

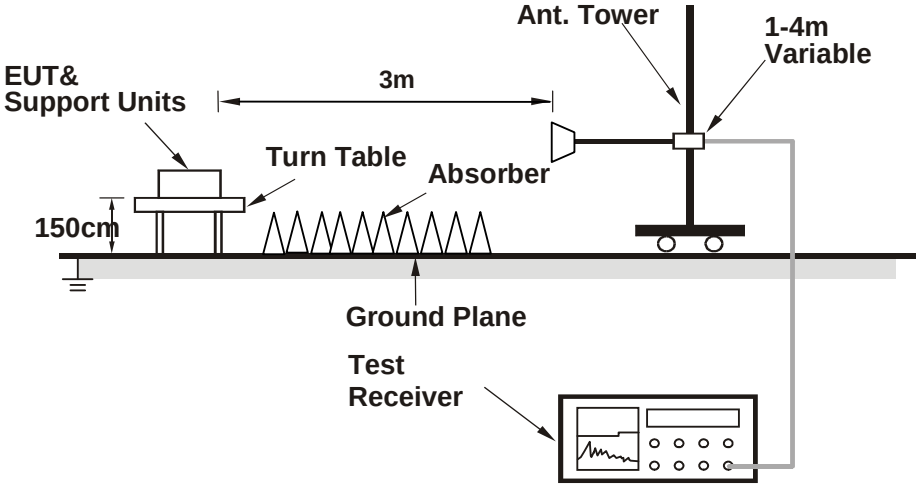
The EUT was set up for the maximum power with GSM, GPRS, EDGE & WCDMA link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

3.1.3 TEST SETUP

ERP MEASUREMENT:

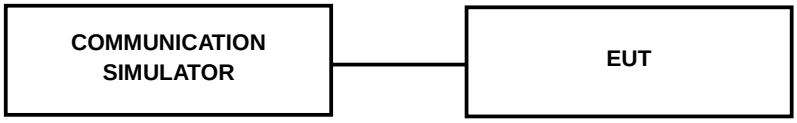


EIRP MEASUREMENT:



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

CONDUCTED POWER MEASUREMENT:



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

3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Band	GSM1900		
Channel	512	661	810
Frequency (MHz)	1850.2	1880.0	1909.8
GSM	**29.94**	29.80	29.92
GPRS 8	29.92	29.78	29.90
GPRS 10	29.10	28.96	29.08
GPRS 11	27.96	27.82	27.94
GPRS 12	26.79	26.65	26.77
EDGE 8 (MCS9)	26.31	26.17	26.29
EDGE 10 (MCS9)	26.19	26.05	26.17
EDGE 11 (MCS9)	26.01	25.87	25.99
EDGE 12 (MCS9)	25.78	25.64	25.76

Band	WCDMA II		
Channel	9262	9400	9538
Frequency (MHz)	1852.4	1880.0	1907.6
RMC 12.2K	24.31	24.29	**24.45**
HSPA			
HSDPA Subtest-1	22.82	22.80	22.96
HSDPA Subtest-2	22.81	22.79	22.95
HSDPA Subtest-3	22.15	22.13	22.29
HSDPA Subtest-4	22.13	22.11	22.27
HSUPA Subtest-1	23.25	23.23	23.39
HSUPA Subtest-2	21.07	21.05	21.21
HSUPA Subtest-3	22.11	22.09	22.25
HSUPA Subtest-4	21.06	21.04	21.20
HSUPA Subtest-5	23.21	23.19	23.35

LTE Band 2							
BW	Modulation	RB Size	RB Offset	Low CH 18607	Mid CH 18900	High CH 19193	3GPP MPR (dB)
				Frequency 1850.7 MHz	Frequency 1880 MHz	Frequency 1909.3 MHz	
1.4MHz	QPSK	1	0	23.48	23.59	23.68	0
		1	2	23.36	23.47	23.56	0
		1	5	23.25	23.36	23.45	0
		3	0	23.47	23.58	23.67	0
		3	1	23.35	23.46	23.55	0
		3	3	23.24	23.35	23.44	0
		6	0	22.50	22.61	22.70	1
	16QAM	1	0	22.62	22.73	22.82	1
		1	2	22.57	22.68	22.77	1
		1	5	22.50	22.61	22.70	1
		3	0	22.60	22.71	22.80	1
		3	1	22.55	22.66	22.75	1
		3	3	22.48	22.59	22.68	1
		6	0	21.53	21.64	21.73	2
	64QAM	1	0	21.50	21.61	21.70	2
		1	2	21.38	21.49	21.58	2
		1	5	21.30	21.41	21.50	2
		3	0	20.33	20.44	20.53	3
		3	1	20.28	20.39	20.48	3
		3	3	20.27	20.38	20.47	3
		6	0	20.30	20.41	20.50	3

LTE Band 2							
BW	Modulation	RB Size	RB Offset	Low CH 18615	Mid CH 18900	High CH 19185	3GPP MPR (dB)
				Frequency 1851.5 MHz	Frequency 1880 MHz	Frequency 1908.5 MHz	
3MHz	QPSK	1	0	23.51	23.62	23.71	0
		1	7	23.39	23.50	23.59	0
		1	14	23.28	23.39	23.48	0
		8	0	22.64	22.75	22.84	1
		8	3	22.59	22.70	22.79	1
		8	7	22.56	22.67	22.76	1
		15	0	22.53	22.64	22.73	1
	16QAM	1	0	22.65	22.76	22.85	1
		1	7	22.60	22.71	22.80	1
		1	14	22.53	22.64	22.73	1
		8	0	21.65	21.76	21.85	2
		8	3	21.63	21.74	21.83	2
		8	7	21.61	21.72	21.81	2
		15	0	21.56	21.67	21.76	2
	64QAM	1	0	21.55	21.66	21.75	2
		1	7	21.43	21.54	21.63	2
		1	14	21.35	21.46	21.55	2
		8	0	20.38	20.49	20.58	3
		8	3	20.33	20.44	20.53	3
		8	7	20.32	20.43	20.52	3
		15	0	20.35	20.46	20.55	3

LTE Band 2							
BW	Modulation	RB Size	RB Offset	Low CH 18625	Mid CH 18900	High CH 19175	3GPP MPR (dB)
				Frequency 1852.5 MHz	Frequency 1880 MHz	Frequency 1907.5 MHz	
5MHz	QPSK	1	0	23.54	23.65	23.74	0
		1	12	23.42	23.53	23.62	0
		1	24	23.31	23.42	23.51	0
		12	0	22.67	22.78	22.87	1
		12	6	22.62	22.73	22.82	1
		12	13	22.59	22.70	22.79	1
		25	0	22.56	22.67	22.76	1
	16QAM	1	0	22.68	22.79	22.88	1
		1	12	22.63	22.74	22.83	1
		1	24	22.56	22.67	22.76	1
		12	0	21.68	21.79	21.88	2
		12	6	21.66	21.77	21.86	2
		12	13	21.64	21.75	21.84	2
		25	0	21.59	21.70	21.79	2
	64QAM	1	0	21.60	21.71	21.80	2
		1	12	21.48	21.59	21.68	2
		1	24	21.40	21.51	21.60	2
		12	0	20.43	20.54	20.63	3
		12	6	20.38	20.49	20.58	3
		12	13	20.37	20.48	20.57	3
		25	0	20.40	20.51	20.60	3

LTE Band 2							
BW	Modulation	RB Size	RB Offset	Low CH 18650	Mid CH 18900	High CH 19150	3GPP MPR (dB)
				Frequency 1855 MHz	Frequency 1880 MHz	Frequency 1905 MHz	
10MHz	QPSK	1	0	23.56	23.67	23.76	0
		1	24	23.44	23.55	23.64	0
		1	49	23.33	23.44	23.53	0
		25	0	22.69	22.80	22.89	1
		25	12	22.64	22.75	22.84	1
		25	25	22.61	22.72	22.81	1
		50	0	22.58	22.69	22.78	1
	16QAM	1	0	22.70	22.81	22.90	1
		1	24	22.65	22.76	22.85	1
		1	49	22.58	22.69	22.78	1
		25	0	21.70	21.81	21.90	2
		25	12	21.68	21.79	21.88	2
		25	25	21.66	21.77	21.86	2
		50	0	21.61	21.72	21.81	2
	64QAM	1	0	21.65	21.76	21.85	2
		1	24	21.53	21.64	21.73	2
		1	49	21.45	21.56	21.65	2
		25	0	20.48	20.59	20.68	3
		25	12	20.43	20.54	20.63	3
		25	25	20.42	20.53	20.62	3
		50	0	20.45	20.56	20.65	3

LTE Band 2							
BW	Modulation	RB Size	RB Offset	Low CH 18675	Mid CH 18900	High CH 19125	3GPP MPR (dB)
				Frequency 1857.5 MHz	Frequency 1880 MHz	Frequency 1902.5 MHz	
15MHz	QPSK	1	0	23.59	23.70	23.79	0
		1	37	23.47	23.58	23.67	0
		1	74	23.36	23.47	23.56	0
		36	0	22.72	22.83	22.92	1
		36	19	22.67	22.78	22.87	1
		36	39	22.64	22.75	22.84	1
		75	0	22.61	22.72	22.81	1
	16QAM	1	0	22.73	22.84	22.93	1
		1	37	22.68	22.79	22.88	1
		1	74	22.61	22.72	22.81	1
		36	0	21.73	21.84	21.93	2
		36	19	21.71	21.82	21.91	2
		36	39	21.69	21.80	21.89	2
		75	0	21.64	21.75	21.84	2
	64QAM	1	0	21.70	21.81	21.90	2
		1	37	21.58	21.69	21.78	2
		1	74	21.50	21.61	21.70	2
		36	0	20.53	20.64	20.73	3
		36	19	20.48	20.59	20.68	3
		36	39	20.47	20.58	20.67	3
		75	0	20.50	20.61	20.70	3

LTE Band 2							
BW	Modulation	RB Size	RB Offset	Low CH 18700	Mid CH 18900	High CH 19100	3GPP MPR (dB)
				Frequency 1860 MHz	Frequency 1880 MHz	Frequency 1900 MHz	
20MHz	QPSK	1	0	23.64	23.75	**23.84**	0
		1	50	23.52	23.63	23.72	0
		1	99	23.41	23.52	23.61	0
		50	0	22.77	22.88	22.97	1
		50	25	22.72	22.83	22.92	1
		50	50	22.69	22.80	22.89	1
		100	0	22.66	22.77	22.86	1
	16QAM	1	0	22.78	22.89	22.98	1
		1	50	22.73	22.84	22.93	1
		1	99	22.66	22.77	22.86	1
		50	0	21.78	21.89	21.98	2
		50	25	21.76	21.87	21.96	2
		50	50	21.74	21.85	21.94	2
		100	0	21.69	21.80	21.89	2
	64QAM	1	0	21.75	21.86	21.95	2
		1	50	21.63	21.74	21.83	2
		1	99	21.55	21.66	21.75	2
		50	0	20.58	20.69	20.78	3
		50	25	20.53	20.64	20.73	3
		50	50	20.52	20.63	20.72	3
		100	0	20.55	20.66	20.75	3

LTE Band 25							
BW	Modulation	RB Size	RB Offset	Low CH 26047	Mid CH 26365	High CH 26683	3GPP MPR (dB)
				Frequency 1850.7 MHz	Frequency 1882.5 MHz	Frequency 1914.3 MHz	
1.4MHz	QPSK	1	0	23.60	23.52	23.63	0
		1	2	23.55	23.47	23.58	0
		1	5	23.52	23.44	23.55	0
		3	0	22.66	22.58	22.69	0
		3	1	22.62	22.54	22.65	0
		3	3	22.57	22.49	22.60	0
		6	0	22.67	22.59	22.70	1
	16QAM	1	0	22.82	22.74	22.85	1
		1	2	22.78	22.70	22.81	1
		1	5	22.74	22.66	22.77	1
		3	0	21.65	21.57	21.68	1
		3	1	21.61	21.53	21.64	1
		3	3	21.57	21.49	21.60	1
		6	0	21.62	21.54	21.65	2
	64QAM	1	0	21.45	21.37	21.48	2
		1	2	21.41	21.33	21.44	2
		1	5	21.37	21.29	21.40	2
		3	0	20.43	20.35	20.46	3
		3	1	20.38	20.30	20.41	3
		3	3	20.34	20.26	20.37	3
		6	0	20.38	20.30	20.41	3

LTE Band 25							
BW	Modulation	RB Size	RB Offset	Low CH 26055	Mid CH 26365	High CH 26675	3GPP MPR (dB)
				Frequency 1851.5 MHz	Frequency 1882.5 MHz	Frequency 1913.5 MHz	
3MHz	QPSK	1	0	23.63	23.55	23.66	0
		1	7	23.58	23.50	23.61	0
		1	14	23.55	23.47	23.58	0
		8	0	22.69	22.61	22.72	1
		8	3	22.65	22.57	22.68	1
		8	7	22.60	22.52	22.63	1
		15	0	22.70	22.62	22.73	1
	16QAM	1	0	22.85	22.77	22.88	1
		1	7	22.81	22.73	22.84	1
		1	14	22.77	22.69	22.80	1
		8	0	21.68	21.60	21.71	2
		8	3	21.64	21.56	21.67	2
		8	7	21.60	21.52	21.63	2
		15	0	21.65	21.57	21.68	2
	64QAM	1	0	21.48	21.40	21.51	2
		1	7	21.44	21.36	21.47	2
		1	14	21.40	21.32	21.43	2
		8	0	20.46	20.38	20.49	3
		8	3	20.41	20.33	20.44	3
		8	7	20.37	20.29	20.40	3
		15	0	20.41	20.33	20.44	3

LTE Band 25							
BW	Modulation	RB Size	RB Offset	Low CH 26065	Mid CH 26365	High CH 26665	3GPP MPR (dB)
				Frequency 1852.5 MHz	Frequency 1882.5 MHz	Frequency 1912.5 MHz	
5MHz	QPSK	1	0	23.66	23.58	23.69	0
		1	12	23.61	23.53	23.64	0
		1	24	23.58	23.50	23.61	0
		12	0	22.72	22.64	22.75	1
		12	6	22.68	22.60	22.71	1
		12	13	22.63	22.55	22.66	1
		25	0	22.73	22.65	22.76	1
	16QAM	1	0	22.88	22.80	22.91	1
		1	12	22.84	22.76	22.87	1
		1	24	22.80	22.72	22.83	1
		12	0	21.71	21.63	21.74	2
		12	6	21.67	21.59	21.70	2
		12	13	21.63	21.55	21.66	2
		25	0	21.68	21.60	21.71	2
	64QAM	1	0	21.51	21.43	21.54	2
		1	12	21.47	21.39	21.50	2
		1	24	21.43	21.35	21.46	2
		12	0	20.49	20.41	20.52	3
		12	6	20.44	20.36	20.47	3
		12	13	20.40	20.32	20.43	3
		25	0	20.44	20.36	20.47	3

LTE Band 25							
BW	Modulation	RB Size	RB Offset	Low CH 26090 Frequency 1855 MHz	Mid CH 26365 Frequency 1882.5 MHz	High CH 26640 Frequency 1910 MHz	3GPP MPR (dB)
10MHz	QPSK	1	0	23.68	23.60	23.71	0
		1	24	23.63	23.55	23.66	0
		1	49	23.60	23.52	23.63	0
		25	0	22.74	22.66	22.77	1
		25	12	22.70	22.62	22.73	1
		25	25	22.65	22.57	22.68	1
		50	0	22.75	22.67	22.78	1
	16QAM	1	0	22.90	22.82	22.93	1
		1	24	22.86	22.78	22.89	1
		1	49	22.82	22.74	22.85	1
		25	0	21.73	21.65	21.76	2
		25	12	21.69	21.61	21.72	2
		25	25	21.65	21.57	21.68	2
		50	0	21.70	21.62	21.73	2
	64QAM	1	0	21.56	21.48	21.59	2
		1	24	21.52	21.44	21.55	2
		1	49	21.48	21.40	21.51	2
		25	0	20.54	20.46	20.57	3
		25	12	20.49	20.41	20.52	3
		25	25	20.45	20.37	20.48	3
		50	0	20.49	20.41	20.52	3

LTE Band 25							
BW	Modulation	RB Size	RB Offset	Low CH 26115 Frequency 1857.5 MHz	Mid CH 26365 Frequency 1882.5 MHz	High CH 26615 Frequency 1907.5 MHz	3GPP MPR (dB)
15MHz	QPSK	1	0	23.70	23.62	23.73	0
		1	37	23.65	23.57	23.68	0
		1	74	23.62	23.54	23.65	0
		36	0	22.76	22.68	22.79	1
		36	19	22.72	22.64	22.75	1
		36	39	22.67	22.59	22.70	1
		75	0	22.77	22.69	22.80	1
	16QAM	1	0	22.92	22.84	22.95	1
		1	37	22.88	22.80	22.91	1
		1	74	22.84	22.76	22.87	1
		36	0	21.75	21.67	21.78	2
		36	19	21.71	21.63	21.74	2
		36	39	21.67	21.59	21.70	2
		75	0	21.72	21.64	21.75	2
	64QAM	1	0	21.61	21.53	21.64	2
		1	37	21.57	21.49	21.60	2
		1	74	21.53	21.45	21.56	2
		36	0	20.59	20.51	20.62	3
		36	19	20.54	20.46	20.57	3
		36	39	20.50	20.42	20.53	3
		75	0	20.54	20.46	20.57	3

LTE Band 25							
BW	Modulation	RB Size	RB Offset	Low CH 26140 Frequency 1860 MHz	Mid CH 26365 Frequency 1882.5 MHz	High CH 26590 Frequency 1905 MHz	3GPP MPR (dB)
20MHz	QPSK	1	0	23.73	23.65	**23.76**	0
		1	50	23.68	23.60	23.71	0
		1	99	23.65	23.57	23.68	0
		50	0	22.79	22.71	22.82	1
		50	25	22.75	22.67	22.78	1
		50	50	22.70	22.62	22.73	1
		100	0	22.80	22.72	22.83	1
	16QAM	1	0	22.95	22.87	22.98	1
		1	50	22.91	22.83	22.94	1
		1	99	22.87	22.79	22.90	1
		50	0	21.78	21.70	21.81	2
		50	25	21.74	21.66	21.77	2
		50	50	21.70	21.62	21.73	2
		100	0	21.75	21.67	21.78	2
	64QAM	1	0	21.66	21.58	21.69	2
		1	50	21.62	21.54	21.65	2
		1	99	21.58	21.50	21.61	2
		50	0	20.64	20.56	20.67	3
		50	25	20.59	20.51	20.62	3
		50	50	20.55	20.47	20.58	3
		100	0	20.59	20.51	20.62	3

EIRP POWER (dBm)

GSM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
512	1850.2	-18.96	43.83	24.87	306.90	H
661	1880.0	-18.38	43.57	25.19	330.37	H
810	1909.8	-18.43	44.57	26.14	411.15	H
512	1850.2	-20.25	46.39	26.14	411.15	V
661	1880.0	-20.41	47.10	26.69	466.44	V
810	1909.8	-19.13	45.98	26.85	**483.73**	V

REMARKS: 1. EIRP Output Power (dBm) = SPA LVL (dBm) + Correction Factor (dB).
2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss

EDGE

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
512	1850.2	-20.45	43.83	23.38	217.77	H
661	1880.0	-19.40	43.57	24.17	261.22	H
810	1909.8	-19.78	44.57	24.79	301.30	H
512	1850.2	-20.51	46.39	25.88	387.26	V
661	1880.0	-20.18	47.10	26.92	**491.81**	V
810	1909.8	-20.61	45.98	25.37	344.03	V

REMARKS: 1. EIRP Output Power (dBm) = SPA LVL (dBm) + Correction Factor (dB).
2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss

WCDMA

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
9262	1852.4	-21.60	43.83	22.23	167.11	H
9400	1880.0	-21.10	43.57	22.47	176.60	H
9538	1907.6	-20.93	44.57	23.64	231.21	H
9262	1852.4	-23.91	46.39	22.48	177.01	V
9400	1880.0	-23.34	47.10	23.76	**237.57**	V
9538	1907.6	-23.14	45.98	22.84	192.13	V

REMARKS: 1. EIRP Output Power (dBm) = SPA LVL (dBm) + Correction Factor (dB).
2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss

LTE BAND 2

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18607	1850.7	-20.34	43.83	23.49	223.56	H	2
18900	1880.0	-20.40	43.57	23.17	207.49	H	2
19193	1909.3	-20.81	44.32	23.51	224.34	H	2
18607	1850.7	-22.50	46.41	23.91	**246.09**	V	2
18900	1880.0	-23.33	47.07	23.74	236.59	V	2
19193	1909.3	-22.83	45.88	23.05	202.02	V	2

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18607	1850.7	-21.21	43.83	22.62	182.98	H	2
18900	1880.0	-21.33	43.57	22.24	167.49	H	2
19193	1909.3	-21.77	44.32	22.55	179.85	H	2
18607	1850.7	-23.37	46.41	23.04	201.42	V	2
18900	1880.0	-24.26	47.07	22.81	190.99	V	2
19193	1909.3	-23.79	45.88	22.09	161.96	V	2

CHANNEL BANDWIDTH: 1.4MHZ 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18607	1850.7	-22.23	43.83	21.60	144.68	H	2
18900	1880.0	-22.30	43.57	21.27	133.97	H	2
19193	1908.3	-22.51	44.32	21.81	151.67	H	2
18607	1850.7	-23.93	46.41	22.48	177.05	V	2
18900	1880.0	-25.07	47.07	22.00	158.49	V	2
19193	1908.3	-24.79	45.88	21.09	128.65	V	2

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18615	1851.5	-20.32	43.82	23.50	223.98	H	2
18900	1880.0	-20.46	43.57	23.11	204.64	H	2
19185	1908.5	-20.76	44.38	23.62	229.93	H	2
18615	1851.5	-22.48	46.45	23.97	**249.52**	V	2
18900	1880.0	-23.39	47.07	23.68	233.35	V	2
19185	1908.5	-22.78	45.88	23.10	204.17	V	2

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18615	1851.5	-21.39	43.82	22.43	175.07	H	2
18900	1880.0	-21.35	43.57	22.22	166.72	H	2
19185	1908.5	-21.75	44.38	22.63	183.06	H	2
18615	1851.5	-23.55	46.45	22.90	195.03	V	2
18900	1880.0	-24.28	47.07	22.79	190.11	V	2
19185	1908.5	-23.77	45.88	22.11	162.55	V	2

CHANNEL BANDWIDTH: 3MHZ 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18615	1851.5	-22.21	43.82	21.61	144.94	H	2
18900	1880.0	-22.36	43.57	21.21	132.13	H	2
19185	1908.5	-22.46	44.38	21.92	155.45	H	2
18615	1851.5	-23.91	46.45	22.54	179.51	V	2
18900	1880.0	-25.13	47.07	21.94	156.31	V	2
19185	1908.5	-24.74	45.88	21.14	130.02	V	2

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18625	1852.5	-20.38	43.83	23.45	221.21	H	2
18900	1880.0	-20.41	43.57	23.16	207.01	H	2
19175	1907.5	-20.71	44.19	23.48	222.74	H	2
18625	1852.5	-22.54	46.46	23.92	**246.77**	V	2
18900	1880.0	-23.34	47.07	23.73	236.05	V	2
19175	1907.5	-22.73	45.89	23.16	207.06	V	2

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18625	1852.5	-21.21	43.83	22.62	182.73	H	2
18900	1880.0	-21.43	43.57	22.14	163.68	H	2
19175	1907.5	-21.81	44.19	22.38	172.90	H	2
18625	1852.5	-23.37	46.46	23.09	203.84	V	2
18900	1880.0	-24.36	47.07	22.71	186.64	V	2
19175	1907.5	-23.83	45.89	22.06	160.73	V	2

CHANNEL BANDWIDTH: 5MHZ 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18625	1852.5	-22.27	43.83	21.56	143.15	H	2
18900	1880.0	-22.31	43.57	21.26	133.66	H	2
19175	1907.5	-22.41	44.19	21.78	150.59	H	2
18625	1852.5	-23.97	46.46	22.49	177.54	V	2
18900	1880.0	-25.08	47.07	21.99	158.12	V	2
19175	1907.5	-24.69	45.89	21.20	131.86	V	2

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18650	1855.0	-20.19	43.86	23.67	232.86	H	2
18900	1880.0	-20.35	43.57	23.22	209.89	H	2
19150	1905.0	-20.58	43.99	23.41	219.48	H	2
18650	1855.0	-22.35	46.28	23.93	**247.06**	V	2
18900	1880.0	-23.28	47.07	23.79	239.33	V	2
19150	1905.0	-22.60	45.92	23.32	214.88	V	2

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18650	1855.0	-21.34	43.86	22.52	178.69	H	2
18900	1880.0	-21.45	43.57	22.12	162.93	H	2
19150	1905.0	-21.74	43.99	22.25	168.04	H	2
18650	1855.0	-23.50	46.28	22.78	189.58	V	2
18900	1880.0	-24.38	47.07	22.69	185.78	V	2
19150	1905.0	-23.76	45.92	22.16	164.51	V	2

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18650	1855.0	-22.08	43.86	21.78	150.70	H	2
18900	1880.0	-22.25	43.57	21.32	135.52	H	2
19150	1905.0	-22.28	43.99	21.71	148.39	H	2
18650	1855.0	-23.78	46.28	22.50	177.75	V	2
18900	1880.0	-25.02	47.07	22.05	160.32	V	2
19150	1905.0	-24.56	45.92	21.36	136.84	V	2

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18675	1857.5	-20.20	43.99	23.79	**239.44**	H	2
18900	1880.0	-20.42	43.57	23.15	206.54	H	2
19125	1902.5	-20.65	43.66	23.01	199.76	H	2
18675	1857.5	-22.36	45.93	23.57	227.35	V	2
18900	1880.0	-23.35	47.07	23.72	235.50	V	2
19125	1902.5	-22.67	46.20	23.53	225.53	V	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18675	1857.5	-21.06	43.99	22.93	196.43	H	2
18900	1880.0	-21.29	43.57	22.28	169.04	H	2
19125	1902.5	-21.50	43.66	22.16	164.25	H	2
18675	1857.5	-23.22	45.93	22.71	186.51	V	2
18900	1880.0	-24.22	47.07	22.85	192.75	V	2
19125	1902.5	-23.52	46.20	22.68	185.44	V	2

CHANNEL BANDWIDTH: 15MHZ 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18675	1857.5	-22.09	43.99	21.90	154.95	H	2
18900	1880.0	-22.32	43.57	21.25	133.35	H	2
19125	1902.5	-22.35	43.66	21.31	135.05	H	2
18675	1857.5	-23.79	45.93	22.14	163.57	V	2
18900	1880.0	-25.09	47.07	21.98	157.76	V	2
19125	1902.5	-24.63	46.20	21.57	143.62	V	2

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18700	1860.0	-20.78	43.50	22.72	187.03	H	2
18900	1880.0	-20.87	43.57	22.70	186.21	H	2
19100	1900.0	-21.23	43.62	22.39	173.22	H	2
18700	1860.0	-22.94	45.57	22.63	183.23	V	2
18900	1880.0	-23.80	47.07	23.27	**212.32**	V	2
19100	1900.0	-23.25	46.26	23.01	200.03	V	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18700	1860.0	-21.71	43.50	21.79	150.97	H	2
18900	1880.0	-21.94	43.57	21.63	145.55	H	2
19100	1900.0	-22.06	43.62	21.56	143.09	H	2
18700	1860.0	-23.87	45.57	21.70	147.91	V	2
18900	1880.0	-24.87	47.07	22.20	165.96	V	2
19100	1900.0	-24.08	46.26	22.18	165.23	V	2

CHANNEL BANDWIDTH: 20MHZ 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
18700	1860.0	-22.67	43.50	20.83	121.03	H	2
18900	1880.0	-22.77	43.57	20.80	120.23	H	2
19100	1900.0	-22.93	43.62	20.69	117.11	H	2
18700	1860.0	-24.37	45.57	21.20	131.83	V	2
18900	1880.0	-25.54	47.07	21.53	142.23	V	2
19100	1900.0	-25.21	46.26	21.05	127.38	V	2

REMARKS: 1. EIRP Output Power (dBm) = SPA LVL (dBm) + Correction Factor (dB).

2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss

LTE BAND 25

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26047	1850.7	-20.42	43.83	23.41	219.48	H	2
26340	1880.0	-19.88	43.57	23.69	233.88	H	2
26683	1914.3	-19.75	44.40	24.65	**291.74**	H	2
26047	1850.7	-23.30	46.41	23.11	204.69	V	2
26340	1880.0	-22.66	47.07	24.41	276.06	V	2
26683	1914.3	-23.08	45.99	22.91	195.43	V	2

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26047	1850.7	-21.29	43.83	22.54	179.64	H	2
26340	1880.0	-20.81	43.57	22.76	188.80	H	2
26683	1914.3	-20.71	44.40	23.69	233.88	H	2
26047	1850.7	-24.17	46.41	22.24	167.53	V	2
26340	1880.0	-23.59	47.07	23.48	222.84	V	2
26683	1914.3	-24.04	45.99	21.95	156.68	V	2

CHANNEL BANDWIDTH: 1.4MHZ 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26047	1850.7	-21.83	43.83	22.01	158.67	H	2
26340	1880.0	-21.78	43.57	21.79	151.01	H	2
26683	1914.3	-21.75	44.40	22.65	184.08	H	2
26047	1850.7	-23.90	46.41	22.51	178.28	V	2
26340	1880.0	-23.76	47.07	23.32	214.54	V	2
26683	1914.3	-24.27	45.99	21.72	148.59	V	2

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26055	1851.5	-20.40	43.82	23.42	219.89	H	2
26340	1880.0	-19.94	43.57	23.63	230.67	H	2
26675	1913.5	-19.70	44.38	24.68	**293.49**	H	2
26055	1851.5	-23.28	46.45	23.17	207.54	V	2
26340	1880.0	-22.72	47.07	24.35	272.27	V	2
26675	1913.5	-23.03	45.95	22.92	195.88	V	2

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26055	1851.5	-21.47	43.82	22.35	171.87	H	2
26340	1880.0	-20.83	43.57	22.74	187.93	H	2
26675	1913.5	-20.69	44.38	23.69	233.67	H	2
26055	1851.5	-24.35	46.45	22.10	162.22	V	2
26340	1880.0	-23.61	47.07	23.46	221.82	V	2
26675	1913.5	-24.02	45.95	21.93	155.96	V	2

CHANNEL BANDWIDTH: 3MHZ 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26055	1851.5	-21.81	43.82	22.01	158.96	H	2
26340	1880.0	-21.84	43.57	21.73	148.94	H	2
26675	1913.5	-21.70	44.38	22.68	185.18	H	2
26055	1851.5	-23.88	46.45	22.57	180.76	V	2
26340	1880.0	-23.82	47.07	23.26	211.59	V	2
26675	1913.5	-24.22	45.95	21.73	148.94	V	2

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26065	1852.5	-20.46	43.83	23.37	217.17	H	2
26340	1880.0	-19.89	43.57	23.68	233.35	H	2
26665	1912.5	-19.65	44.37	24.72	**296.48**	H	2
26065	1852.5	-23.34	46.46	23.12	205.26	V	2
26340	1880.0	-22.67	47.07	24.40	275.42	V	2
26665	1912.5	-22.98	45.90	22.92	195.88	V	2

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26065	1852.5	-21.29	43.83	22.54	179.39	H	2
26340	1880.0	-20.91	43.57	22.66	184.50	H	2
26665	1912.5	-20.75	44.37	23.62	230.14	H	2
26065	1852.5	-24.17	46.46	22.29	169.55	V	2
26340	1880.0	-23.69	47.07	23.38	217.77	V	2
26665	1912.5	-24.08	45.90	21.82	152.05	V	2

CHANNEL BANDWIDTH: 5MHZ 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26065	1852.5	-21.87	43.83	21.96	157.00	H	2
26340	1880.0	-21.79	43.57	21.78	150.66	H	2
26665	1912.5	-21.65	44.37	22.72	187.07	H	2
26065	1852.5	-23.94	46.46	22.52	178.77	V	2
26340	1880.0	-23.77	47.07	23.31	214.04	V	2
26665	1912.5	-24.17	45.90	21.73	148.94	V	2

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26090	1855.0	-20.27	43.86	23.59	228.61	H	2
26340	1880.0	-19.83	43.57	23.74	236.59	H	2
26640	1910.0	-19.52	44.32	24.80	**301.93**	H	2
26090	1855.0	-23.15	46.28	23.13	205.49	V	2
26340	1880.0	-22.61	47.07	24.46	279.25	V	2
26640	1910.0	-22.85	45.88	23.03	201.09	V	2

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26090	1855.0	-21.42	43.86	22.44	175.43	H	2
26340	1880.0	-20.93	43.57	22.64	183.65	H	2
26640	1910.0	-20.68	44.32	23.64	231.15	H	2
26090	1855.0	-24.30	46.28	21.98	157.69	V	2
26340	1880.0	-23.71	47.07	23.36	216.77	V	2
26640	1910.0	-24.01	45.88	21.87	153.96	V	2

CHANNEL BANDWIDTH: 10MHZ 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26090	1855.0	-21.68	43.86	22.18	165.27	H	2
26340	1880.0	-21.73	43.57	21.84	152.76	H	2
26640	1910.0	-21.52	44.32	22.80	190.50	H	2
26090	1855.0	-23.75	46.28	22.53	178.98	V	2
26340	1880.0	-23.71	47.07	23.37	217.02	V	2
26640	1910.0	-24.04	45.88	21.84	152.90	V	2

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26115	1857.5	-20.28	43.99	23.71	235.07	H	2
26340	1880.0	-19.90	43.57	23.67	232.81	H	2
26615	1907.5	-19.59	44.19	24.60	**288.27**	H	2
26115	1857.5	-23.16	45.93	22.77	189.10	V	2
26340	1880.0	-22.68	47.07	24.39	274.79	V	2
26615	1907.5	-22.92	45.89	22.97	198.20	V	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26115	1857.5	-21.14	43.99	22.85	192.84	H	2
26340	1880.0	-20.77	43.57	22.80	190.55	H	2
26615	1907.5	-20.44	44.19	23.75	237.03	H	2
26115	1857.5	-24.02	45.93	21.91	155.13	V	2
26340	1880.0	-23.55	47.07	23.52	224.91	V	2
26615	1907.5	-23.77	45.89	22.12	162.97	V	2

CHANNEL BANDWIDTH: 15MHZ 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26115	1857.5	-21.69	43.99	22.30	169.94	H	2
26340	1880.0	-21.80	43.57	21.77	150.31	H	2
26615	1907.5	-21.59	44.19	22.60	181.89	H	2
26115	1857.5	-23.76	45.93	22.17	164.70	V	2
26340	1880.0	-23.78	47.07	23.30	213.55	V	2
26615	1907.5	-24.11	45.89	21.78	150.70	V	2

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26140	1860.0	-20.86	43.50	22.64	183.61	H	2
26340	1880.0	-20.35	43.57	23.22	209.89	H	2
26590	1905.0	-20.17	43.99	23.82	241.21	H	2
26140	1860.0	-23.74	45.57	21.83	152.41	V	2
26340	1880.0	-23.13	47.07	23.94	**247.74**	V	2
26590	1905.0	-23.50	45.92	22.42	174.66	V	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26140	1860.0	-21.79	43.50	21.71	148.22	H	2
26340	1880.0	-21.42	43.57	22.15	164.06	H	2
26590	1905.0	-21.00	43.99	22.99	199.25	H	2
26140	1860.0	-24.67	45.57	20.90	123.03	V	2
26340	1880.0	-24.20	47.07	22.87	193.64	V	2
26590	1905.0	-24.33	45.92	21.59	144.28	V	2

CHANNEL BANDWIDTH: 20MHZ 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	LIMIT (W)
26140	1860.0	-22.27	43.50	21.23	132.74	H	2
26340	1880.0	-22.25	43.57	21.32	135.52	H	2
26590	1905.0	-22.17	43.99	21.82	152.19	H	2
26140	1860.0	-24.34	45.57	21.23	132.74	V	2
26340	1880.0	-24.23	47.07	22.85	192.53	V	2
26590	1905.0	-24.69	45.92	21.23	132.80	V	2

REMARKS: 1. EIRP Output Power (dBm) = SPA LVL (dBm) + Correction Factor (dB).
2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

3.2.2 TEST PROCEDURE

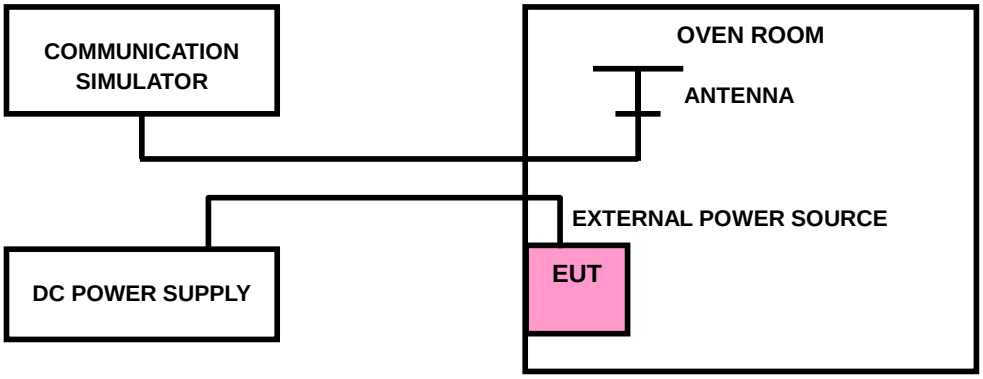
a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.

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.

3.2.3 TEST SETUP



3.2.4 TEST RESULTS

GSM1900

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
3.85	0.0009	0.0012	2.5
3.5	-0.0012	-0.0012	2.5
4.2	0.0009	0.0011	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
-30	-0.0055	-0.0053	2.5
-20	-0.0051	-0.0048	2.5
-10	-0.0046	-0.0043	2.5
0	-0.0037	-0.0035	2.5
10	-0.0030	-0.0028	2.5
20	-0.0023	-0.0021	2.5
30	-0.0017	-0.0015	2.5
40	-0.0014	-0.0012	2.5
50	-0.0005	-0.0003	2.5

EDGE 1900

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
3.85	0.0012	0.0011	2.5
3.5	-0.0013	-0.0012	2.5
4.2	0.0010	0.0009	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
-30	-0.0057	-0.0053	2.5
-20	-0.0050	-0.0047	2.5
-10	-0.0045	-0.0043	2.5
0	-0.0038	-0.0036	2.5
10	-0.0029	-0.0027	2.5
20	-0.0024	-0.0022	2.5
30	-0.0017	-0.0016	2.5
40	-0.0012	-0.0011	2.5
50	-0.0005	-0.0004	2.5

WCDMA BAND II

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
3.85	0.0009	0.0009	2.5
3.5	-0.0010	-0.0011	2.5
4.2	0.0009	0.0010	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
-30	-0.0055	-0.0052	2.5
-20	-0.0052	-0.0048	2.5
-10	-0.0044	-0.0042	2.5
0	-0.0039	-0.0036	2.5
10	-0.0029	-0.0028	2.5
20	-0.0023	-0.0022	2.5
30	-0.0017	-0.0016	2.5
40	-0.0012	-0.0012	2.5
50	-0.0005	-0.0005	2.5

LTE BAND 2

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0008	0.0009	2.5
3.5	-0.0009	-0.0010	2.5
4.2	0.0007	0.0009	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0055	-0.0055	2.5
-20	-0.0050	-0.0051	2.5
-10	-0.0044	-0.0045	2.5
0	-0.0039	-0.0039	2.5
10	-0.0030	-0.0030	2.5
20	-0.0024	-0.0023	2.5
30	-0.0018	-0.0018	2.5
40	-0.0006	-0.0006	2.5
50	-0.0003	-0.0004	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0008	0.0010	2.5
3.5	-0.0010	-0.0010	2.5
4.2	0.0010	0.0009	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0055	-0.0057	2.5
-20	-0.0050	-0.0048	2.5
-10	-0.0044	-0.0041	2.5
0	-0.0035	-0.0033	2.5
10	-0.0030	-0.0029	2.5
20	-0.0018	-0.0025	2.5
30	-0.0015	-0.0014	2.5
40	-0.0009	-0.0008	2.5
50	-0.0003	-0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0009	0.0011	2.5
3.5	-0.0011	-0.0012	2.5
4.2	0.0010	0.0010	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0053	-0.0053	2.5
-20	-0.0046	-0.0048	2.5
-10	-0.0041	-0.0039	2.5
0	-0.0036	-0.0034	2.5
10	-0.0030	-0.0028	2.5
20	-0.0023	-0.0020	2.5
30	-0.0014	-0.0013	2.5
40	-0.0008	-0.0007	2.5
50	-0.0002	0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0010	0.0008	2.5
3.5	-0.0012	-0.0009	2.5
4.2	0.0009	0.0008	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0051	-0.0052	2.5
-20	-0.0044	-0.0046	2.5
-10	-0.0039	-0.0040	2.5
0	-0.0034	-0.0034	2.5
10	-0.0028	-0.0025	2.5
20	-0.0021	-0.0019	2.5
30	-0.0015	-0.0013	2.5
40	-0.0010	-0.0008	2.5
50	0.0003	0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0012	0.0011	2.5
3.5	-0.0011	-0.0012	2.5
4.2	0.0009	0.0010	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0051	-0.0049	2.5
-20	-0.0047	-0.0043	2.5
-10	-0.0039	-0.0036	2.5
0	-0.0030	-0.0028	2.5
10	-0.0024	-0.0025	2.5
20	-0.0019	-0.0013	2.5
30	-0.0011	-0.0010	2.5
40	-0.0007	-0.0003	2.5
50	0.0002	0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0011	0.0011	2.5
3.5	-0.0012	-0.0011	2.5
4.2	0.0010	0.0012	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0048	-0.0051	2.5
-20	-0.0041	-0.0042	2.5
-10	-0.0037	-0.0036	2.5
0	-0.0028	-0.0029	2.5
10	-0.0022	-0.0023	2.5
20	-0.0018	-0.0013	2.5
30	-0.0008	-0.0009	2.5
40	-0.0005	-0.0001	2.5
50	0.0002	0.0002	2.5

LTE BAND 25

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0008	0.0009	2.5
3.5	-0.0009	-0.0010	2.5
4.2	0.0007	0.0008	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0055	-0.0057	2.5
-20	-0.0050	-0.0052	2.5
-10	-0.0044	-0.0046	2.5
0	-0.0040	-0.0042	2.5
10	-0.0028	-0.0029	2.5
20	-0.0023	-0.0023	2.5
30	-0.0018	-0.0019	2.5
40	-0.0009	-0.0009	2.5
50	-0.0004	-0.0003	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0008	0.0010	2.5
3.5	-0.0010	-0.0010	2.5
4.2	0.0010	0.0010	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0056	-0.0055	2.5
-20	-0.0052	-0.0051	2.5
-10	-0.0045	-0.0040	2.5
0	-0.0037	-0.0034	2.5
10	-0.0030	-0.0029	2.5
20	-0.0023	-0.0024	2.5
30	-0.0018	-0.0012	2.5
40	-0.0010	-0.0009	2.5
50	-0.0003	-0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0009	0.0011	2.5
3.5	-0.0012	-0.0011	2.5
4.2	0.0010	0.0010	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0053	-0.0054	2.5
-20	-0.0046	-0.0049	2.5
-10	-0.0041	-0.0039	2.5
0	-0.0034	-0.0035	2.5
10	-0.0030	-0.0027	2.5
20	-0.0023	-0.0019	2.5
30	-0.0015	-0.0012	2.5
40	-0.0007	-0.0007	2.5
50	-0.0002	0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0010	0.0007	2.5
3.5	-0.0011	-0.0010	2.5
4.2	0.0010	0.0008	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0050	-0.0051	2.5
-20	-0.0045	-0.0048	2.5
-10	-0.0039	-0.0039	2.5
0	-0.0034	-0.0033	2.5
10	-0.0029	-0.0022	2.5
20	-0.0021	-0.0019	2.5
30	-0.0015	-0.0015	2.5
40	-0.0010	-0.0008	2.5
50	0.0003	0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0012	0.0011	2.5
3.5	-0.0011	-0.0012	2.5
4.2	0.0010	0.0010	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0051	-0.0048	2.5
-20	-0.0045	-0.0041	2.5
-10	-0.0040	-0.0036	2.5
0	-0.0030	-0.0029	2.5
10	-0.0025	-0.0024	2.5
20	-0.0018	-0.0022	2.5
30	-0.0011	-0.0010	2.5
40	-0.0007	-0.0003	2.5
50	0.0002	0.0003	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0011	0.0011	2.5
3.5	-0.0012	-0.0012	2.5
4.2	0.0010	0.0011	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

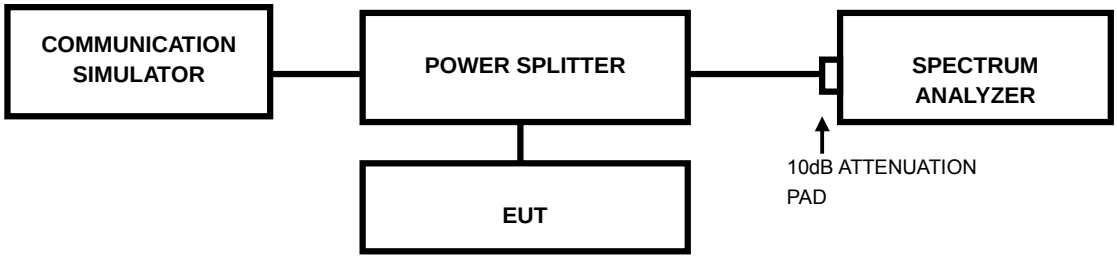
TEMP. (℃)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0048	-0.0052	2.5
-20	-0.0041	-0.0041	2.5
-10	-0.0035	-0.0036	2.5
0	-0.0028	-0.0030	2.5
10	-0.0022	-0.0022	2.5
20	-0.0019	-0.0015	2.5
30	-0.0010	-0.0010	2.5
40	-0.0005	-0.0002	2.5
50	0.0003	0.0003	2.5

3.3 OCCUPIED BANDWIDTH MEASUREMENT

3.3.1 TEST PROCEDURES

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

3.3.2 TEST SETUP

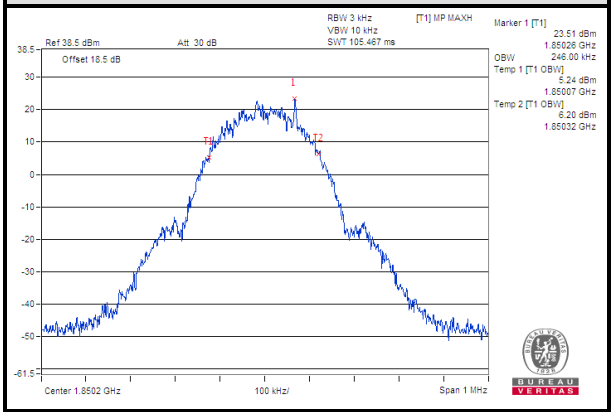


3.3.3 TEST RESULTS

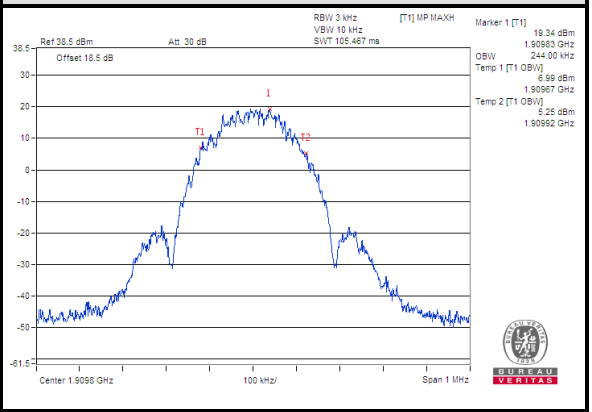
Channel	Frequency (MHz)	99% Occupied bandwidth (kHz)		Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)
		GSM	EDGE			WCDMA
512	1850.2	246.00	242.00	9262	1852.4	4.14
661	1880.0	246.00	243.00	9400	1880.0	4.14
810	1909.8	243.00	244.00	9538	1907.6	4.15

SPECTRUM PLOT OF WORST VALUE

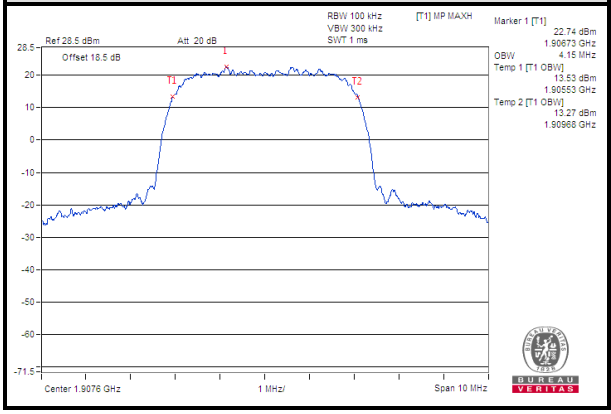
GSM



EDGE



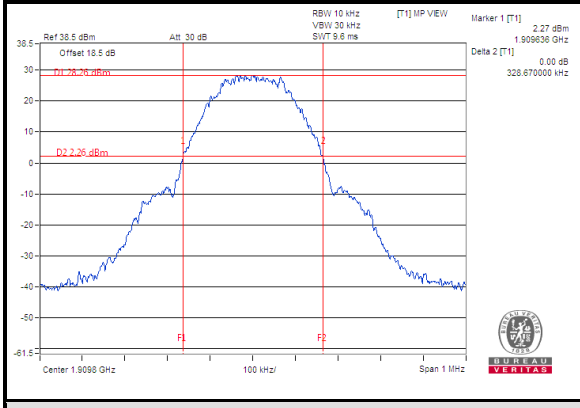
WCDMA



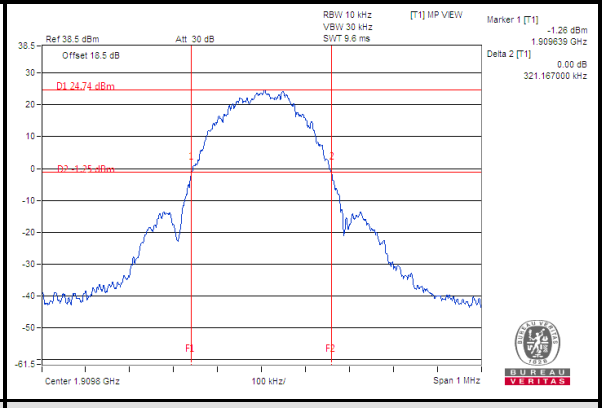
Channel	Frequency (MHz)	26dB bandwidth (kHz)		CHANNEL	FREQUENCY (MHz)	26dB bandwidth (MHz)
		GSM	EDGE			WCDMA
512	1850.2	318.14	316.45	9262	1852.4	4.73
661	1880.0	320.43	308.73	9400	1880.0	4.74
810	1909.8	328.67	321.17	9538	1907.6	4.74

SPECTRUM PLOT OF WORST VALUE

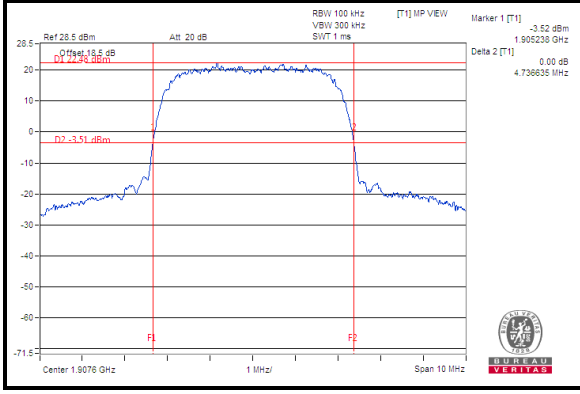
GSM



EDGE



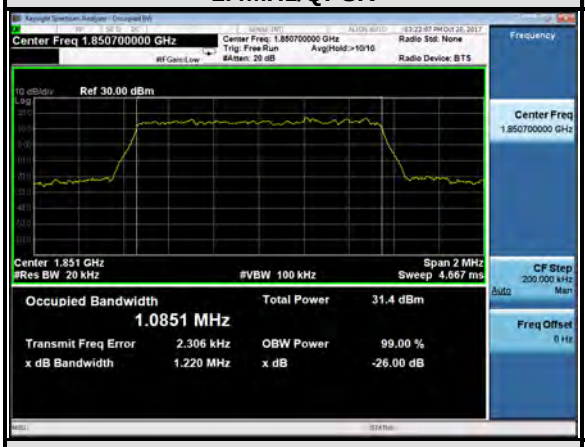
WCDMA



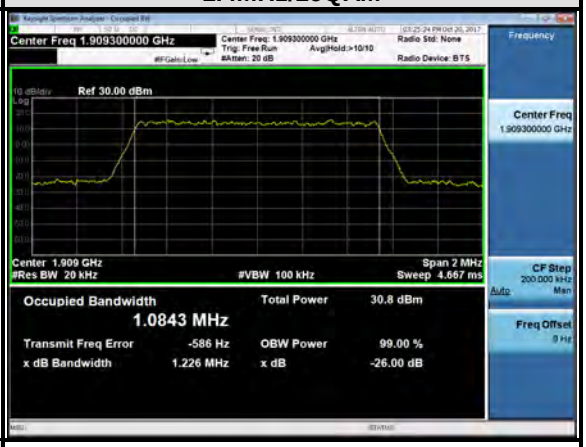
LTE band 2				
Channel Bandwidth : 1.4MHz				
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		
		QPSK	16QAM	64QAM
18607	1850.7	1.09	1.08	1.08
18900	1880	1.09	1.08	1.08
19193	1909.3	1.08	1.08	1.08

SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth

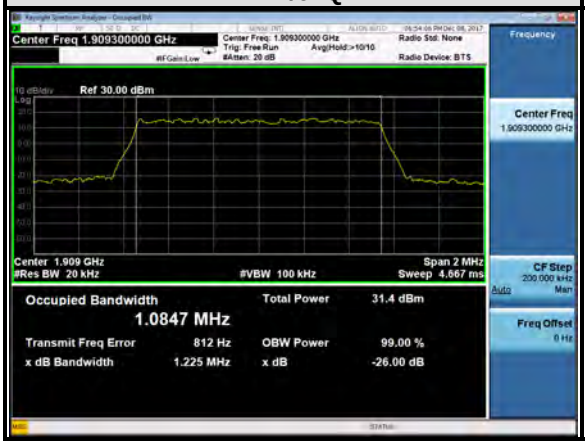
1.4MHz/QPSK



1.4MHz/16QAM



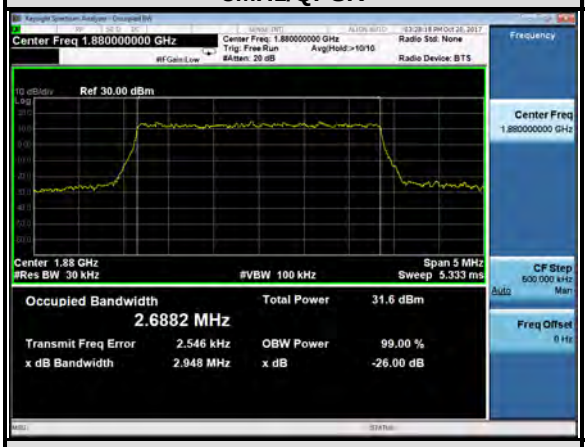
1.4MHz/64QAM



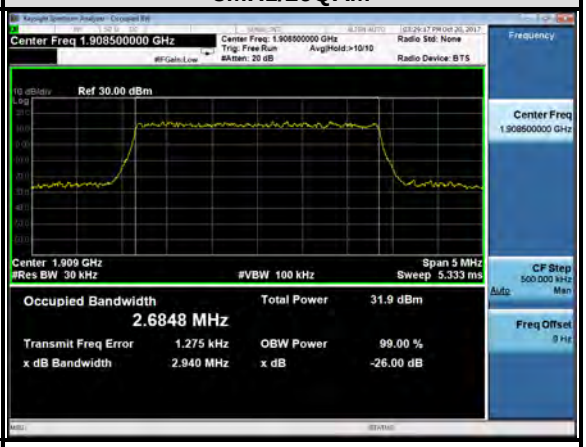
LTE band 2				
Channel Bandwidth : 3MHz				
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		
		QPSK	16QAM	64QAM
18615	1851.5	2.69	2.68	2.68
18900	1880	2.69	2.68	2.68
19185	1908.5	2.69	2.68	2.68

SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth

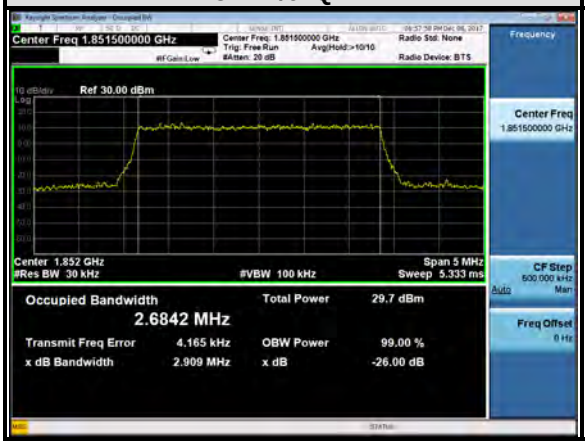
3MHz/QPSK



3MHz/16QAM



3MHz/64QAM

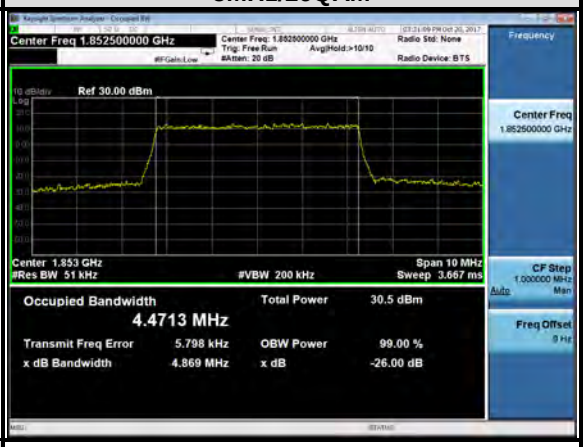


LTE band 2				
Channel Bandwidth : 5MHz				
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		
		QPSK	16QAM	64QAM
18625	1852.5	4.48	4.47	4.49
18900	1880	4.48	4.47	4.48
19175	1907.5	4.48	4.47	4.48

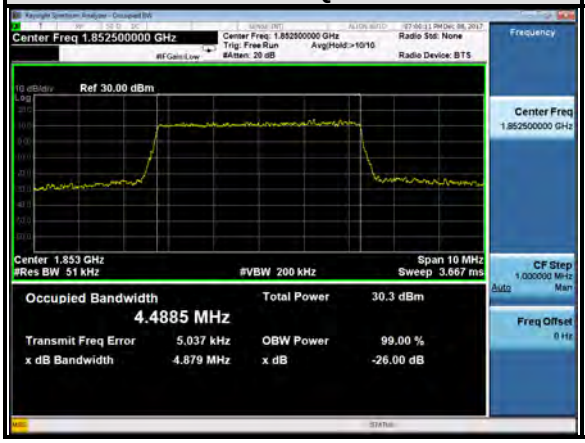
SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth

5MHz/QPSK

5MHz/16QAM



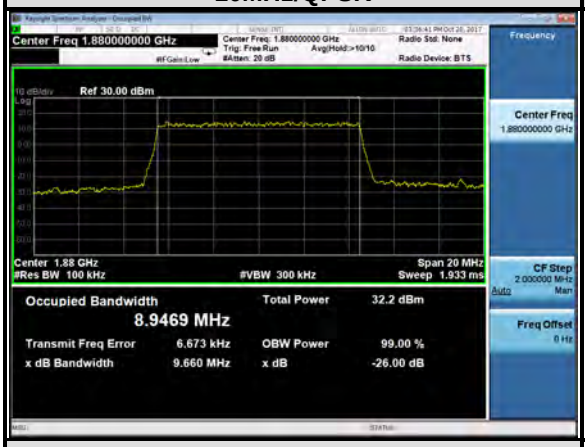
5MHz/64QAM



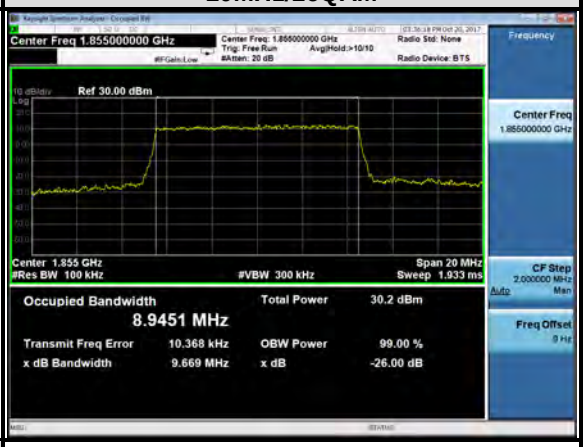
LTE band 2				
Channel Bandwidth : 10MHz				
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		
		QPSK	16QAM	64QAM
18650	1855	8.94	8.95	8.94
18900	1880	8.95	8.94	8.95
19150	1905	8.94	8.94	8.94

SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth

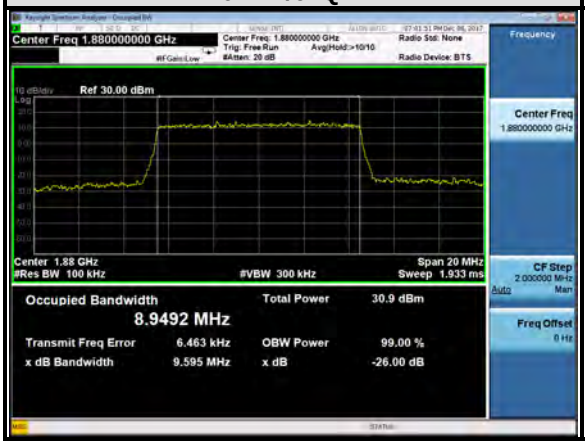
10MHz/QPSK



10MHz/16QAM



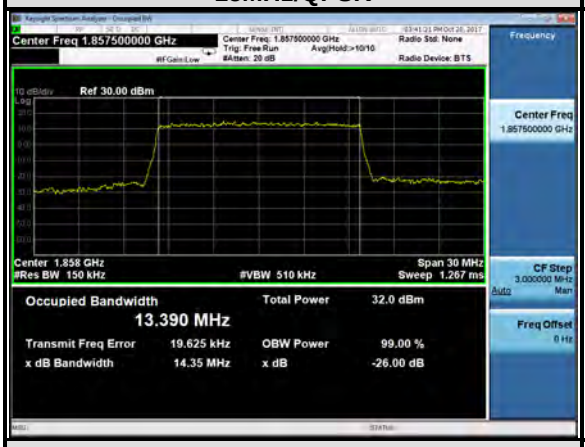
10MHz/64QAM



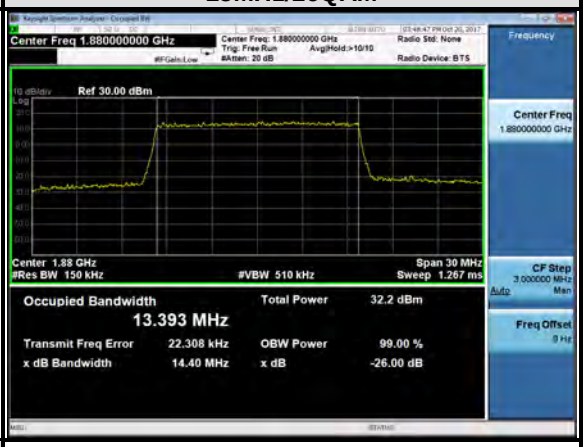
LTE band 2				
Channel Bandwidth : 15MHz				
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		
		QPSK	16QAM	64QAM
18675	1857.5	13.39	13.37	13.38
18900	1880	13.39	13.39	13.39
19125	1902.5	13.39	13.38	13.41

SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth

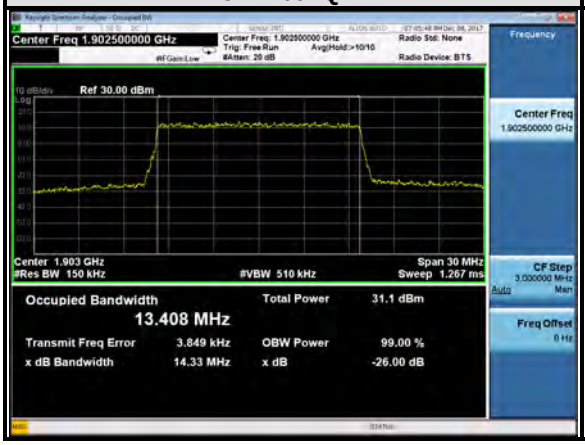
15MHz/QPSK



15MHz/16QAM



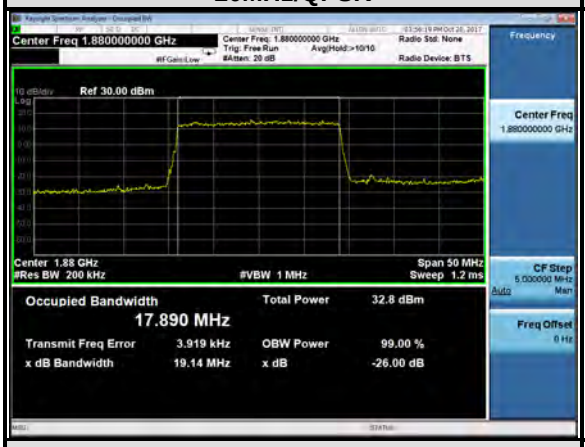
15MHz/64QAM



LTE band 2				
Channel Bandwidth : 20MHz				
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		
		QPSK	16QAM	64QAM
18700	1860	17.86	17.82	17.84
18900	1880	17.89	17.82	17.85
19100	1900	17.89	17.84	17.86

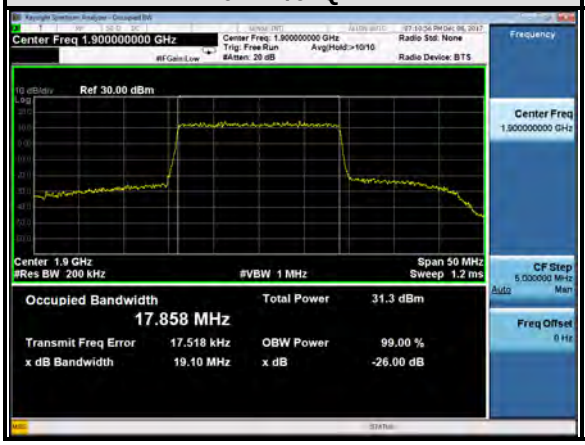
SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth

20MHz/QPSK



20MHz/16QAM

20MHz/64QAM

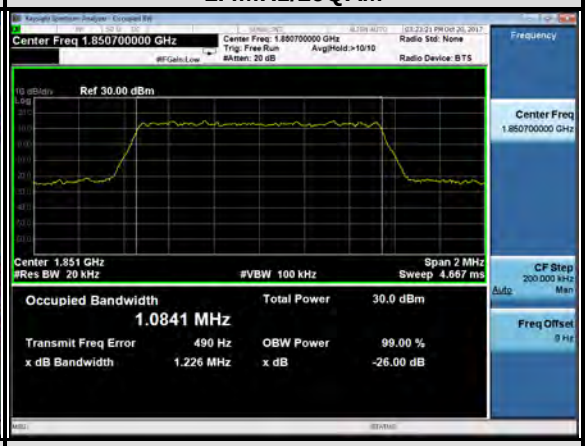


LTE band 2							
Channel Bandwidth : 1.4MHz				Channel Bandwidth : 3MHz			
Channel	Frequency (MHz)	26dB bandwidth (MHz)		Channel	Frequency (MHz)	26dB bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
18607	1850.7	1.22	1.23	18615	1851.5	2.94	2.94
18900	1880	1.22	1.22	18900	1880	2.95	2.94
19193	1909.3	1.22	1.23	19185	1908.5	2.94	2.94

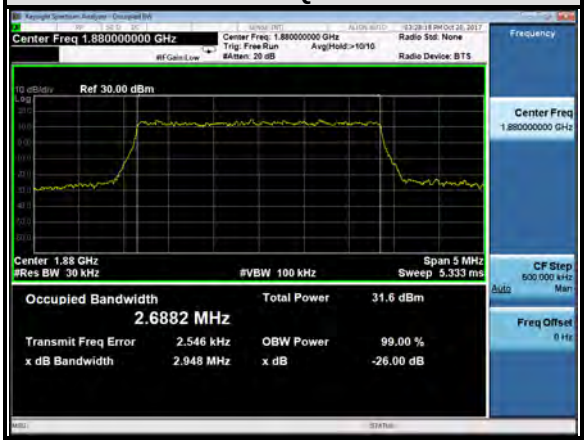
SPECTRUM PLOT OF WORST VALUE of 26dB Bandwidth

1.4MHz/QPSK

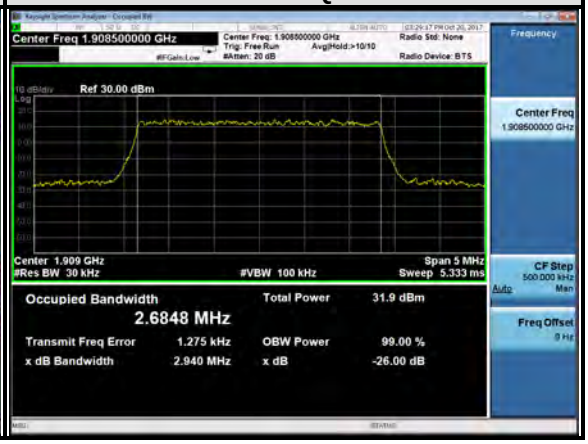
1.4MHz/16QAM



3MHz/QPSK



3MHz/16QAM

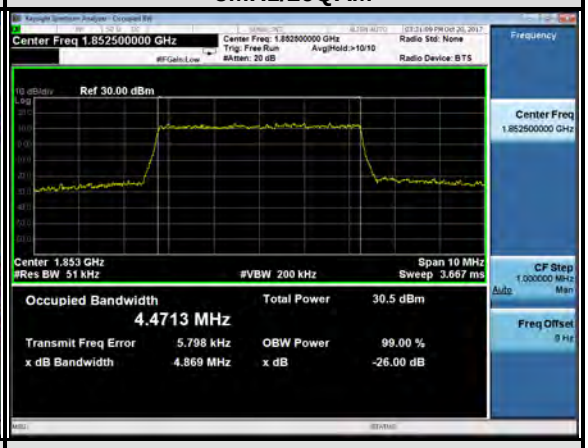


LTE band 2							
Channel Bandwidth : 5MHz				Channel Bandwidth : 10MHz			
Channel	Frequency (MHz)	26dB bandwidth (MHz)		Channel	Frequency (MHz)	26dB bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
18625	1852.5	4.87	4.87	18650	1855	9.68	9.67
18900	1880	4.89	4.86	18900	1880	9.66	9.63
19175	1907.5	4.89	4.85	19150	1905	9.69	9.70

SPECTRUM PLOT OF WORST VALUE of 26dB Bandwidth

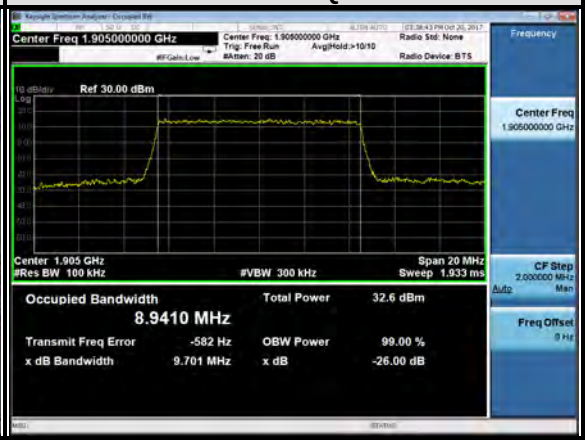
5MHz/QPSK

5MHz/16QAM



10MHz/QPSK

10MHz/16QAM

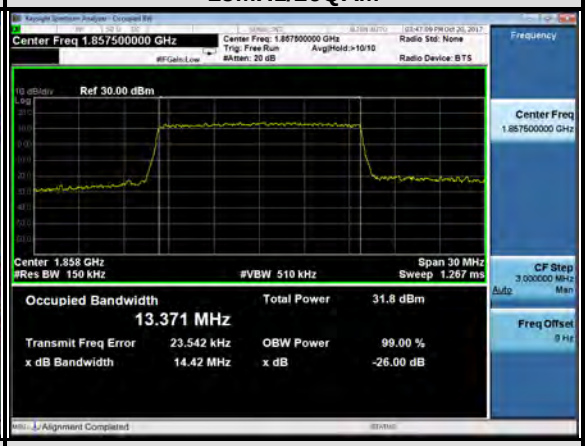


LTE band 2							
Channel Bandwidth : 15MHz				Channel Bandwidth : 20MHz			
Channel	Frequency (MHz)	26dB bandwidth (MHz)		Channel	Frequency (MHz)	26dB bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
18675	1857.5	14.35	14.42	18700	1860	19.13	18.99
18900	1880	14.39	14.40	18900	1880	19.14	19.05
19125	1902.5	14.44	14.41	19100	1900	19.19	18.98

SPECTRUM PLOT OF WORST VALUE of 26dB Bandwidth

15MHz/QPSK

15MHz/16QAM



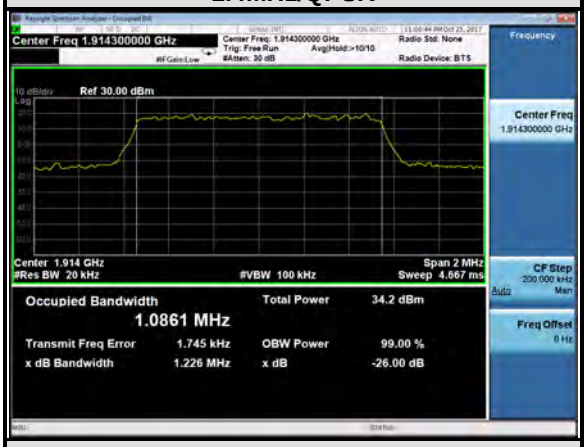
20MHz/QPSK

20MHz/16QAM

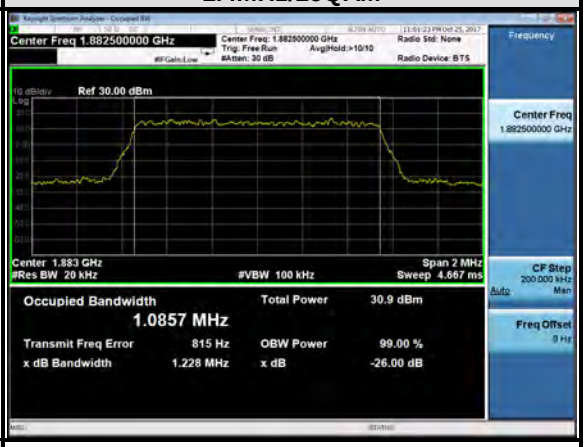
LTE band 25				
Channel Bandwidth : 1.4MHz				
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		
		QPSK	16QAM	64QAM
26047	1850.7	1.08	1.08	1.08
26365	1880	1.09	1.09	1.08
26683	1914.3	1.09	1.08	1.09

SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth

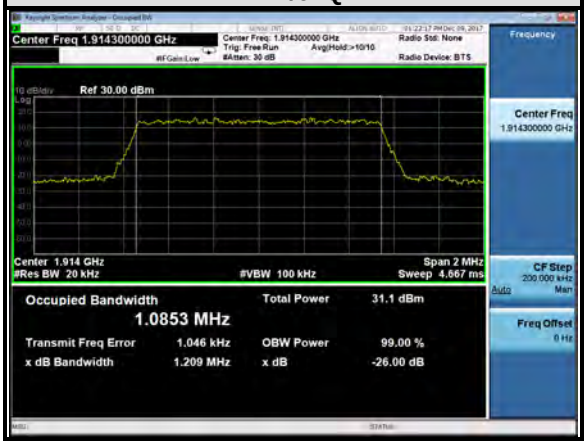
1.4MHz/QPSK



1.4MHz/16QAM



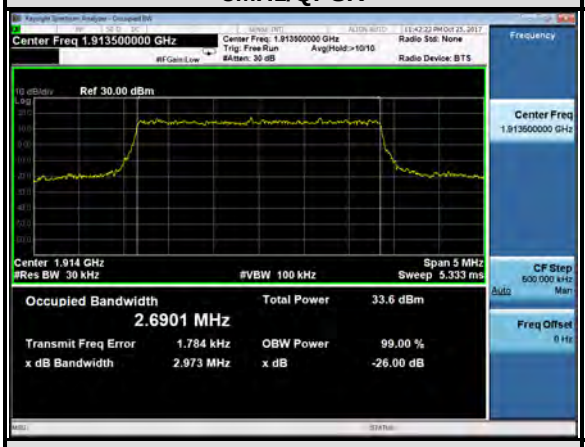
1.4MHz/64QAM



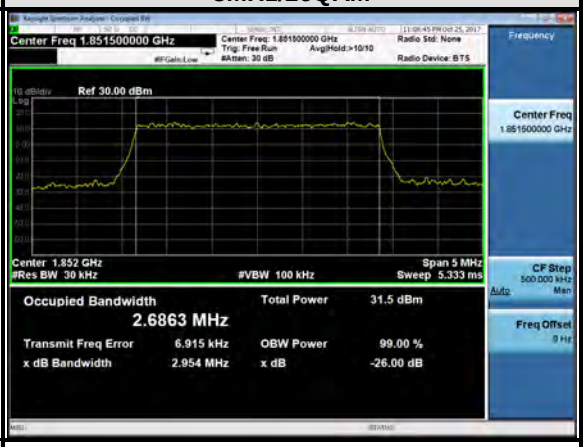
LTE band 25				
Channel Bandwidth : 3MHz				
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		
		QPSK	16QAM	64QAM
26055	1851.5	2.69	2.69	2.68
26365	1880	2.69	2.69	2.68
26675	1913.5	2.69	2.68	2.69

SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth

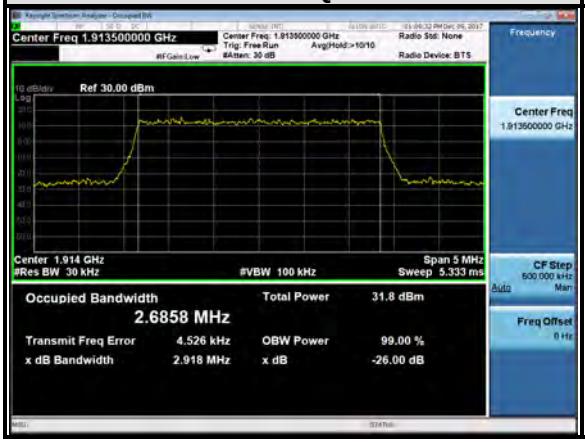
3MHz/QPSK



3MHz/16QAM



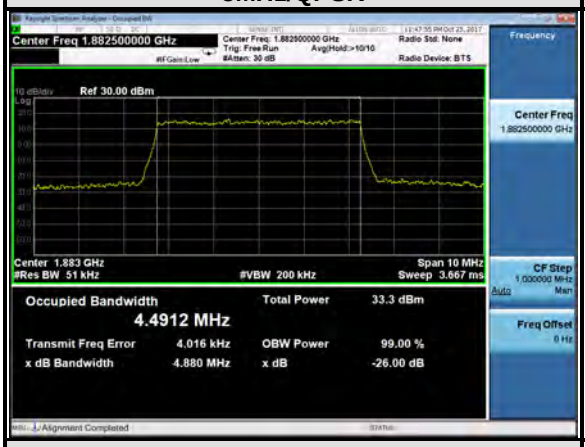
3MHz/64QAM



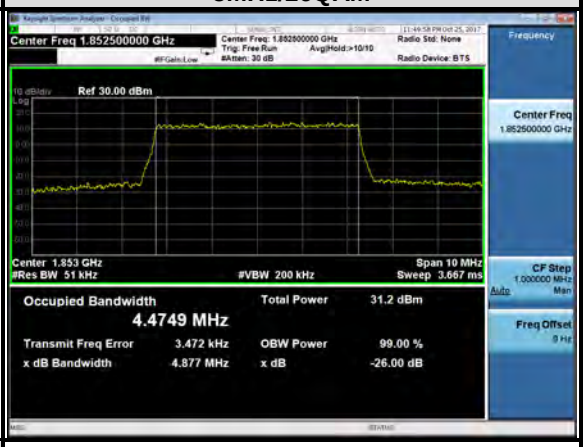
LTE band 25				
Channel Bandwidth : 5MHz				
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		
		QPSK	16QAM	64QAM
26065	1852.5	4.49	4.47	4.47
26365	1880	4.49	4.47	4.49
26665	1912.5	4.48	4.47	4.49

SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth

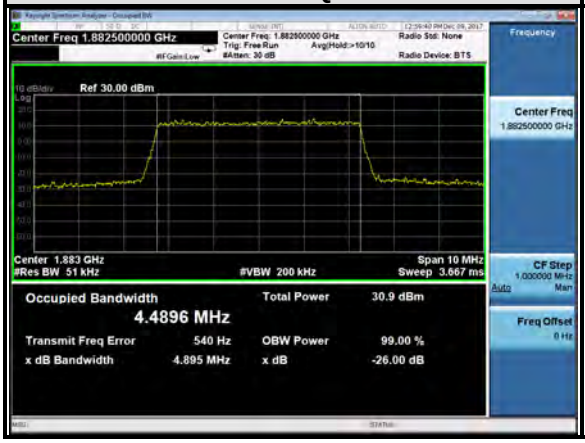
5MHz/QPSK



5MHz/16QAM



5MHz/64QAM

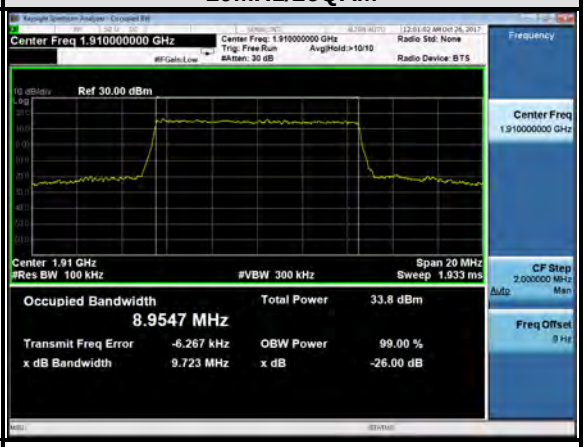


LTE band 25				
Channel Bandwidth : 10MHz				
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		
		QPSK	16QAM	64QAM
26090	1855	8.94	8.92	8.94
26365	1880	8.94	8.94	8.94
26640	1910	8.95	8.95	8.94

SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth

10MHz/QPSK

10MHz/16QAM



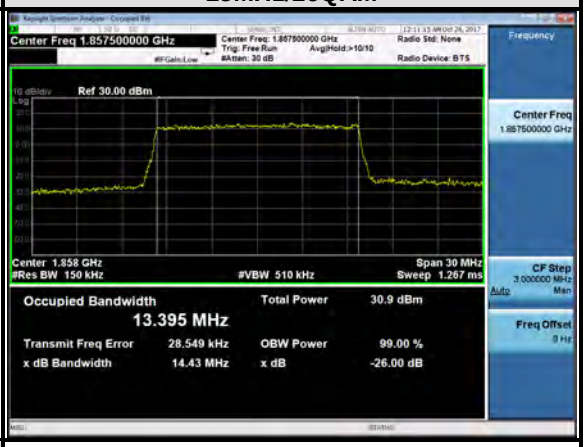
10MHz/64QAM

LTE band 25				
Channel Bandwidth : 15MHz				
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		
		QPSK	16QAM	64QAM
26115	1857.5	13.39	13.40	13.37
26365	1880	13.41	13.39	13.38
26615	1907.5	13.41	13.39	13.39

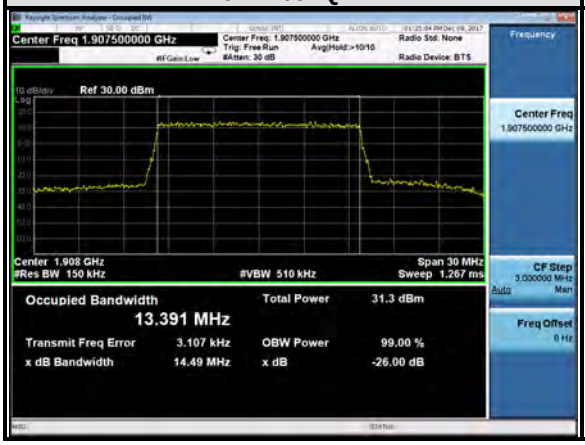
SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth

15MHz/QPSK

15MHz/16QAM



15MHz/64QAM



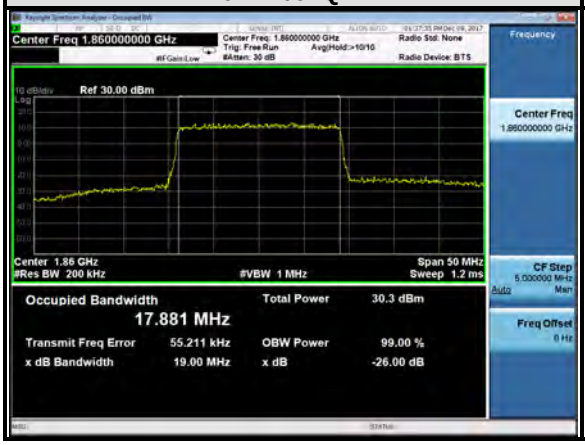
LTE band 25				
Channel Bandwidth : 20MHz				
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		
		QPSK	16QAM	64QAM
26140	1860	17.83	17.82	17.88
26365	1880	17.88	17.85	17.84
26590	1905	17.87	17.82	17.88

SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth

20MHz/QPSK

20MHz/16QAM

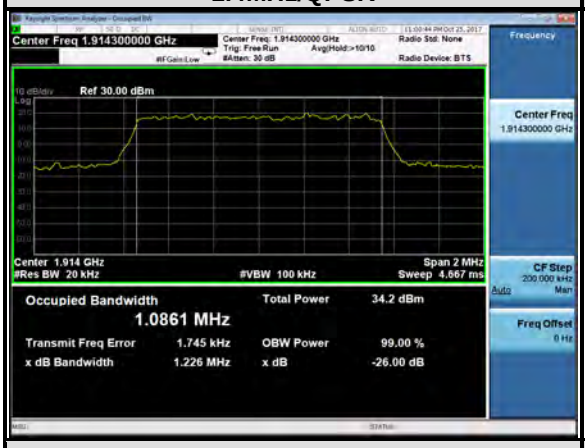
20MHz/64QAM



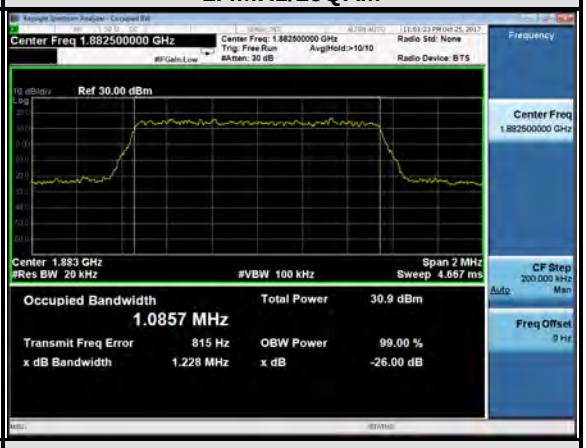
LTE band 25							
Channel Bandwidth : 1.4MHz				Channel Bandwidth : 3MHz			
Channel	Frequency (MHz)	26dB bandwidth (MHz)		Channel	Frequency (MHz)	26dB bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
26047	1850.7	1.22	1.22	26055	1851.5	2.96	2.95
26365	1880	1.22	1.23	26340	1880	2.95	2.94
26683	1914.3	1.23	1.22	26675	1913.5	2.97	2.92

SPECTRUM PLOT OF WORST VALUE of 26dB Bandwidth

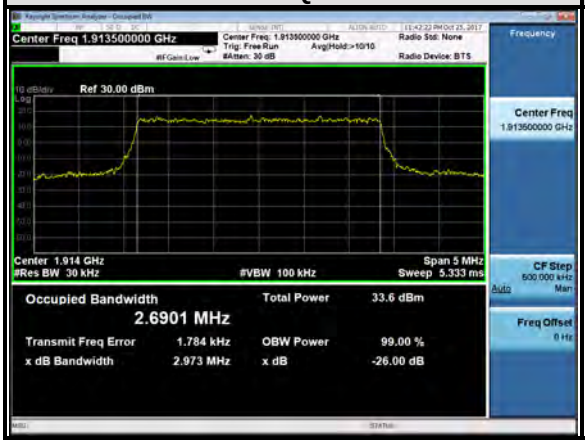
1.4MHz/QPSK



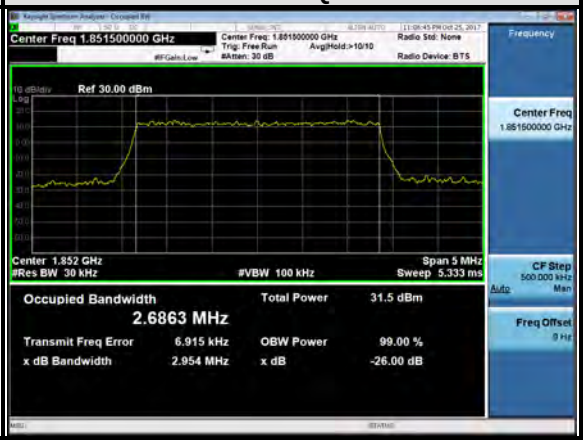
1.4MHz/16QAM



3MHz/QPSK



3MHz/16QAM

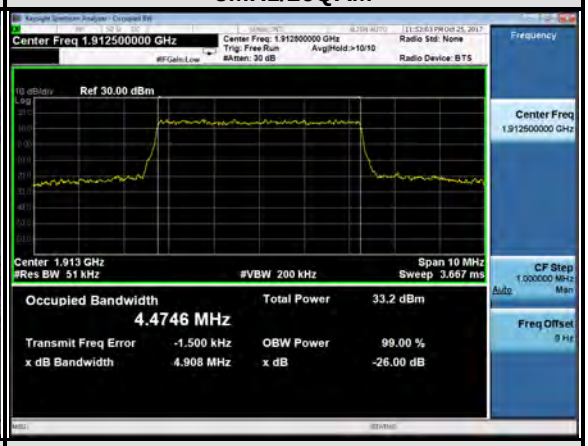


LTE band 25							
Channel Bandwidth : 5MHz				Channel Bandwidth : 10MHz			
Channel	Frequency (MHz)	26dB bandwidth (MHz)		Channel	Frequency (MHz)	26dB bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
26065	1852.5	4.89	4.88	26090	1855	9.67	9.63
26365	1880	4.88	4.86	26365	1880	9.66	9.61
26665	1912.5	4.89	4.91	26640	1910	9.65	9.72

SPECTRUM PLOT OF WORST VALUE of 26dB Bandwidth

5MHz/QPSK

5MHz/16QAM



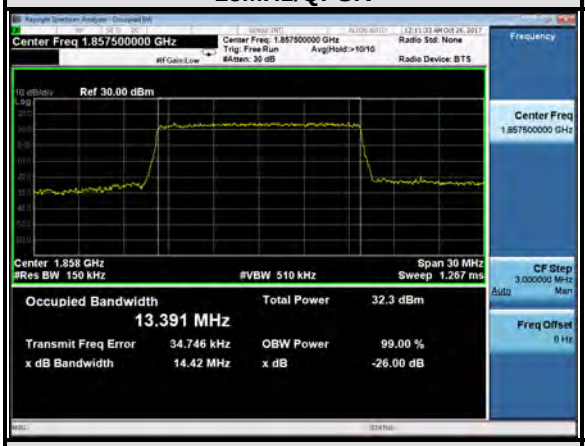
10MHz/QPSK

10MHz/16QAM

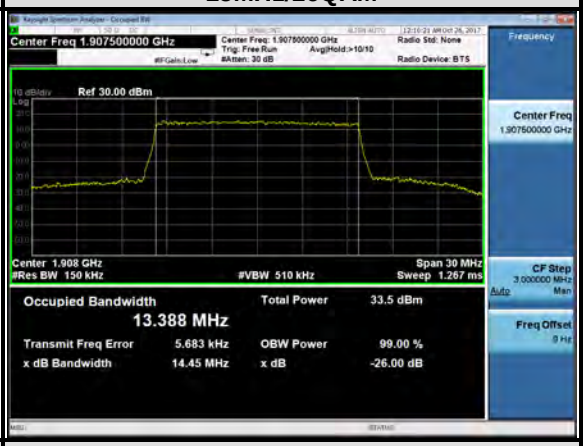
LTE band 25							
Channel Bandwidth : 15MHz				Channel Bandwidth : 20MHz			
Channel	Frequency (MHz)	26dB bandwidth (MHz)		Channel	Frequency (MHz)	26dB bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
26115	1857.5	14.42	14.43	26140	1860	19.12	18.95
26365	1880	14.32	14.36	26365	1880	19.12	19.23
26615	1907.5	14.31	14.45	26590	1905	19.02	19.05

SPECTRUM PLOT OF WORST VALUE of 26dB Bandwidth

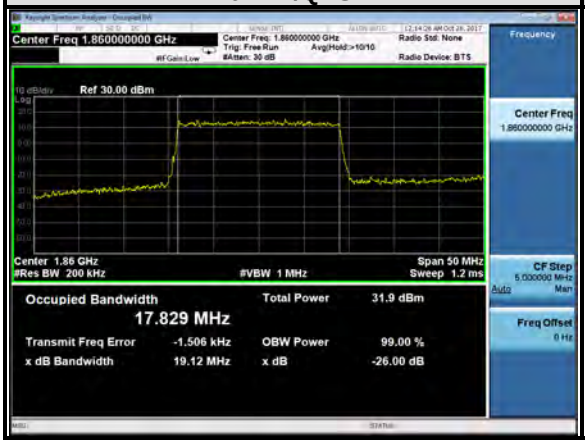
15MHz/QPSK



15MHz/16QAM



20MHz/QPSK



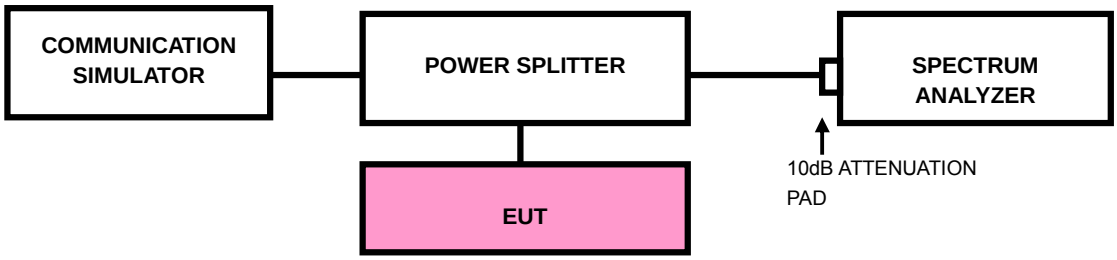
20MHz/16QAM

3.4 BAND EDGE MEASUREMENT

3.4.1 LIMITS OF BAND EDGE MEASUREMENT

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

3.4.2 TEST SETUP



3.4.3 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 1.5 MHz. RBW of the spectrum is 10kHz and VBW of the spectrum is 30kHz (GSM/GPRS/ EDGE).

c. The center frequency of spectrum is the band edge frequency and span is 10MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz (WCDMA).

d. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 20kHz and VBW of the spectrum is 100 kHz. (LTE bandwidth 1.4MHz)

e. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 30kHz and VBW of the spectrum is 100kHz. (LTE bandwidth 3MHz)

f. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 50kHz and VBW of the spectrum is 200kHz. (LTE bandwidth 5MHz)

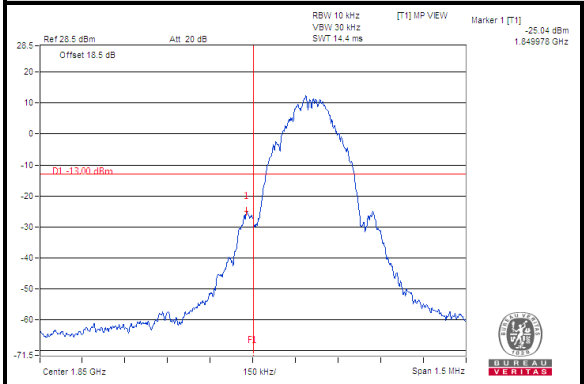
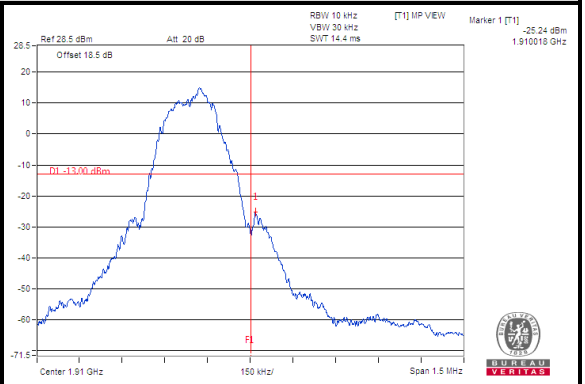
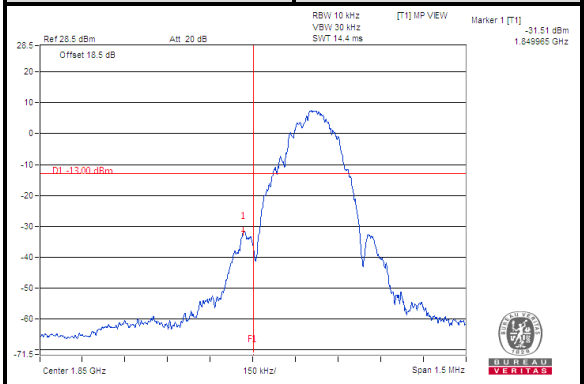
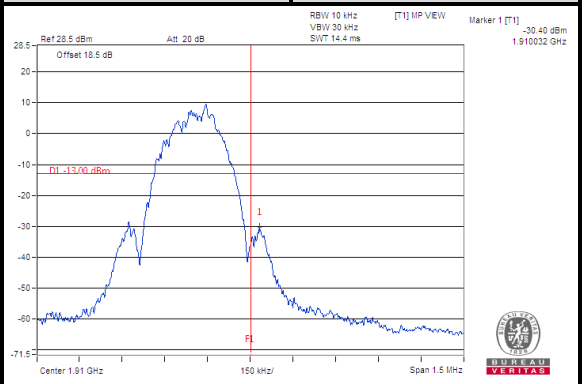
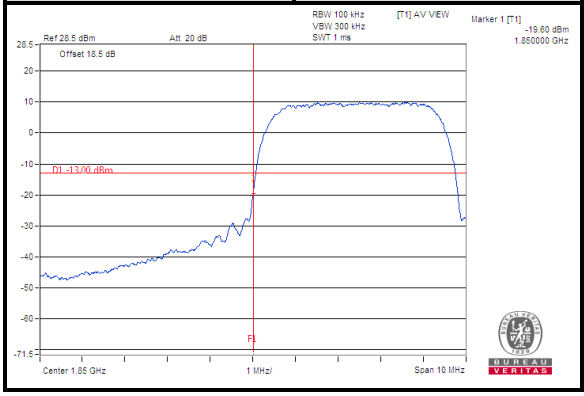
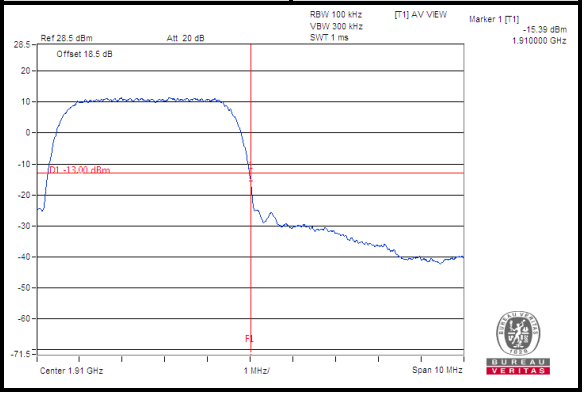
g. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz. (LTE bandwidth 10MHz)

h. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 1MHz. (LTE bandwidth 15MHz)

i. he center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 1MHz. (LTE bandwidth 20MHz)

j. Record the max trace plot into the test report.

3.4.4. TEST RESULTS

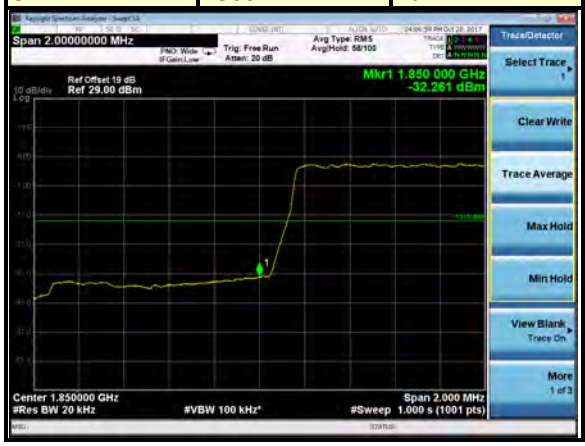
GSM			
CHANNEL	512	CHANNEL	810
GSM			
			
EDGE			
CHANNEL	512	CHANNEL	810
			
WCDMA			
CHANNEL	9262	CHANNEL	9538
			

LTE BAND 2

Channel Bandwidth: 1.4MHz

CHANNEL	18607	1 RB	CHANNEL	19193	1 RB

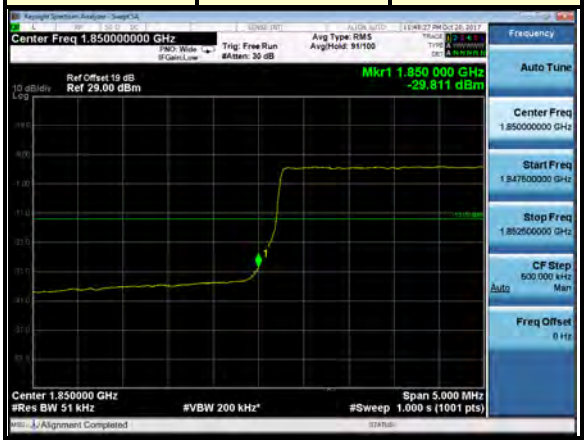
CHANNEL	18607	Full RB	CHANNEL	19193	Full RB



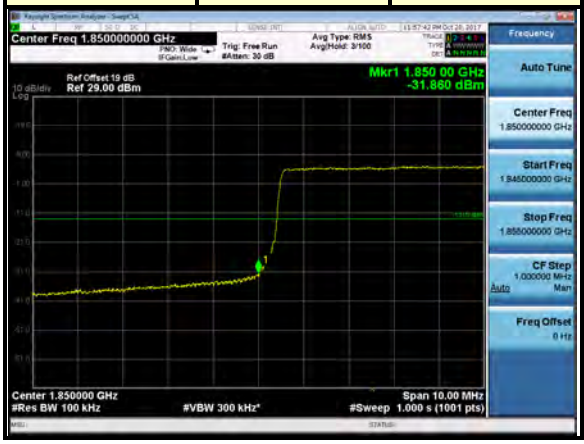
LTE BAND 2

Channel Bandwidth: 3MHz					
CHANNEL	18615	1 RB	CHANNEL	19185	1 RB
CHANNEL	18615	Full RB	CHANNEL	19185	Full RB

LTE BAND 2

Channel Bandwidth: 5MHz					
CHANNEL	18625	1 RB	CHANNEL	19175	1 RB
CHANNEL	18625	Full RB	CHANNEL	19175	Full RB
					

LTE BAND 2

Channel Bandwidth: 10MHz					
CHANNEL	18650	1 RB	CHANNEL	19150	1 RB
CHANNEL	18650	Full RB	CHANNEL	19150	Full RB
					

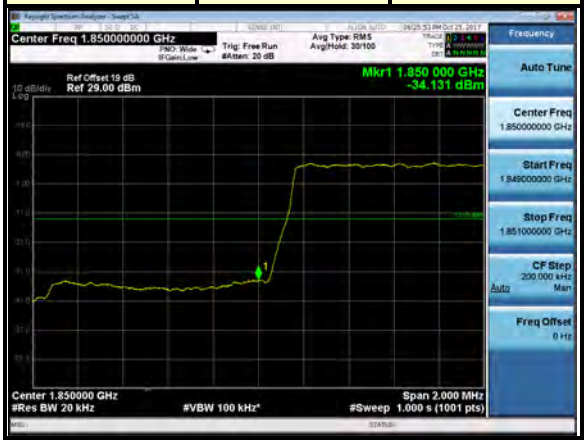
LTE BAND 2

Channel Bandwidth: 15MHz					
CHANNEL	18675	1 RB	CHANNEL	19125	1 RB
CHANNEL	18675	Full RB	CHANNEL	19125	Full RB

LTE BAND 2

Channel Bandwidth: 20MHz					
CHANNEL	18700	1 RB	CHANNEL	19100	1 RB
CHANNEL	18700	Full RB	CHANNEL	19100	Full RB

LTE BAND 25

Channel Bandwidth: 1.4MHz					
CHANNEL	26407	1 RB	CHANNEL	26683	1 RB
CHANNEL	26407	Full RB	CHANNEL	26683	Full RB
					

LTE BAND 25

Channel Bandwidth: 3MHz					
CHANNEL	26055	1 RB	CHANNEL	26675	1 RB
CHANNEL	26055	Full RB	CHANNEL	26675	Full RB

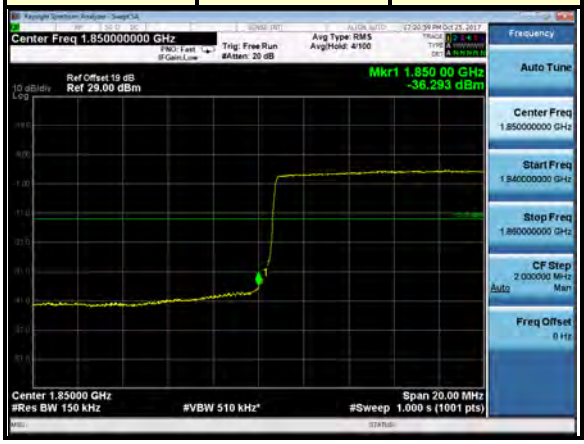
LTE BAND 25

Channel Bandwidth: 5MHz					
CHANNEL	26065	1 RB	CHANNEL	26665	1 RB
CHANNEL	26065	Full RB	CHANNEL	26665	Full RB

LTE BAND 25

Channel Bandwidth: 10MHz					
CHANNEL	26090	1 RB	CHANNEL	26640	1 RB
CHANNEL	26090	Full RB	CHANNEL	26640	Full RB

LTE BAND 25

Channel Bandwidth: 15MHz					
CHANNEL	26115	1 RB	CHANNEL	26615	1 RB
CHANNEL	26115	Full RB	CHANNEL	26615	Full RB
					

LTE BAND 25

Channel Bandwidth: 20MHz					
CHANNEL	26140	1 RB	CHANNEL	26590	1 RB
CHANNEL	26140	Full RB	CHANNEL	26590	Full RB

3.5 CONDUCTED SPURIOUS EMISSIONS

3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

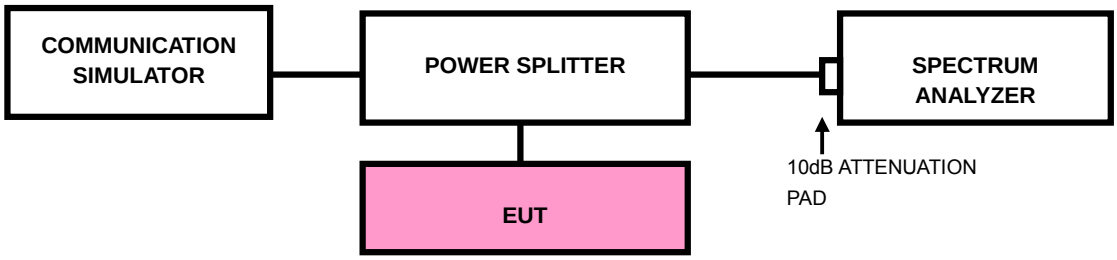
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to –13dBm.

3.5.2 TEST PROCEDURE

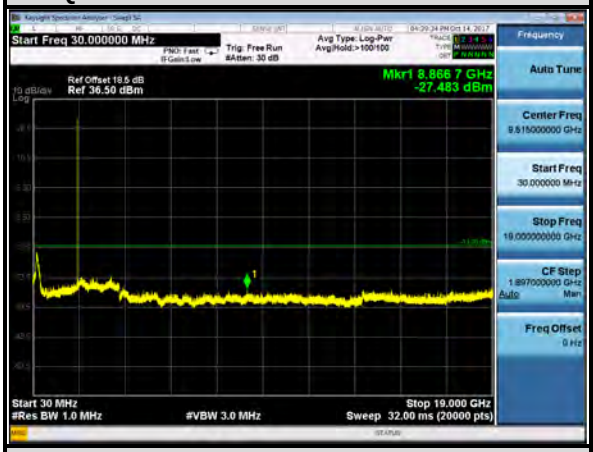
a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.

b. Measuring frequency range is from 9 kHz to 19.0GHz for GSM, 9 kHz to 19.1GHz for EDGE/WCDMA/LTE Band 2 and 9 kHz to 19.15GHz for LTE Band 25. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

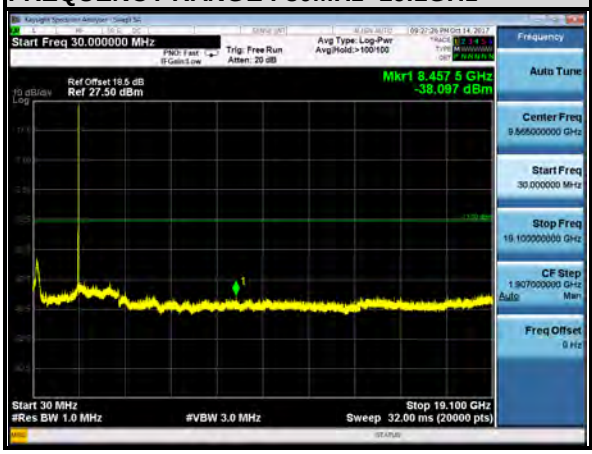
3.5.3 TEST SETUP



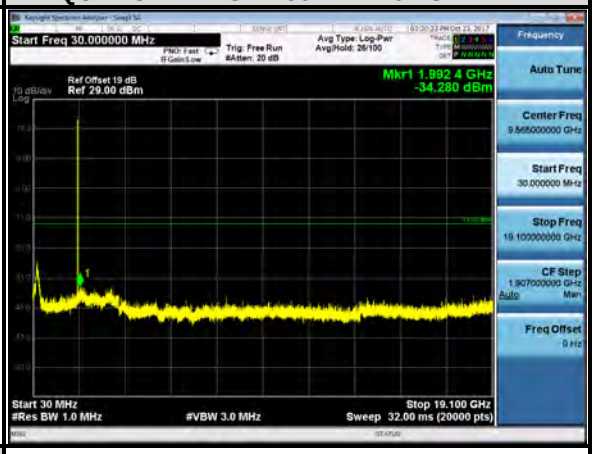
3.5.4 TEST RESULTS

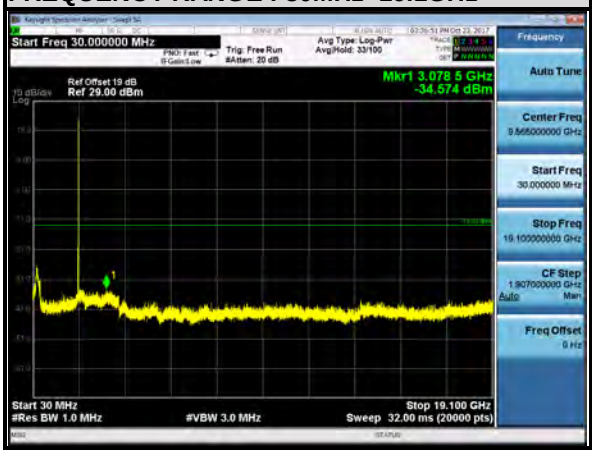
GSM	
CHANNEL 512	**CHANNEL 661**
FREQUENCY RANGE : 30MHz~19.0GHz	**FREQUENCY RANGE : 30MHz~19.0GHz**
	
CHANNEL 810	
FREQUENCY RANGE : 30MHz~19.0GHz	

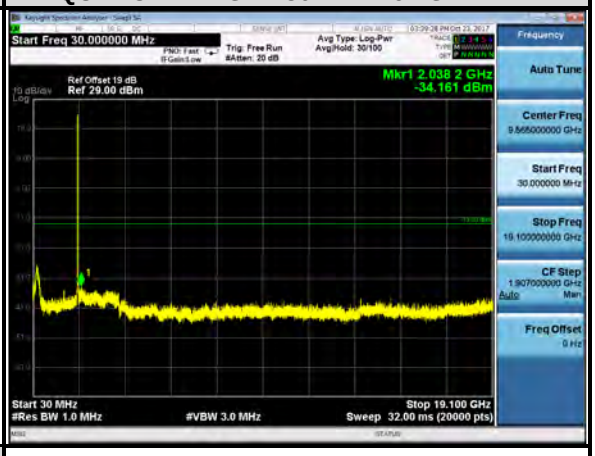
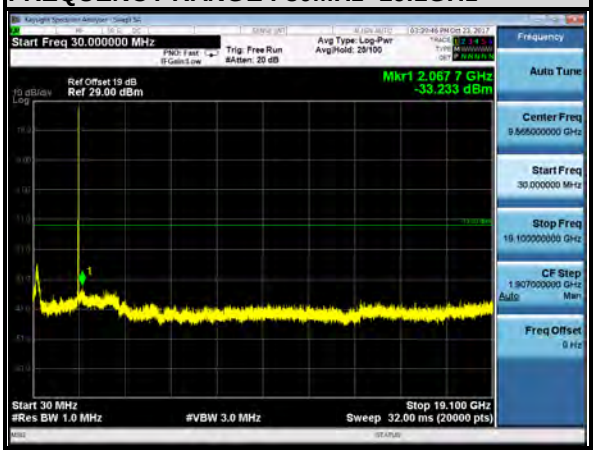
EDGE	
CHANNEL 512	CHANNEL 661
FREQUENCY RANGE : 30MHz~19.1GHz	FREQUENCY RANGE : 30MHz~19.1GHz
CHANNEL 810	
FREQUENCY RANGE : 30MHz~19.1GHz	

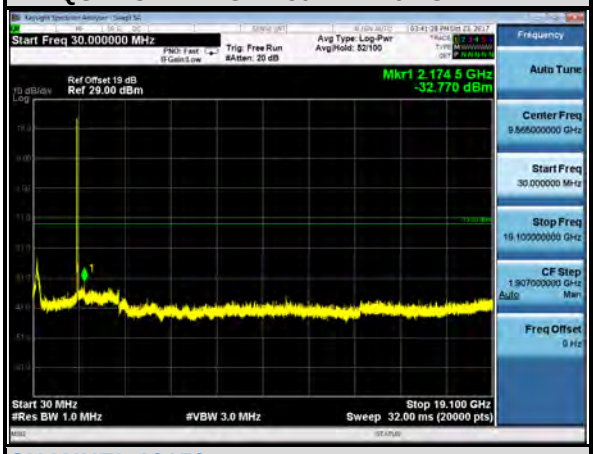
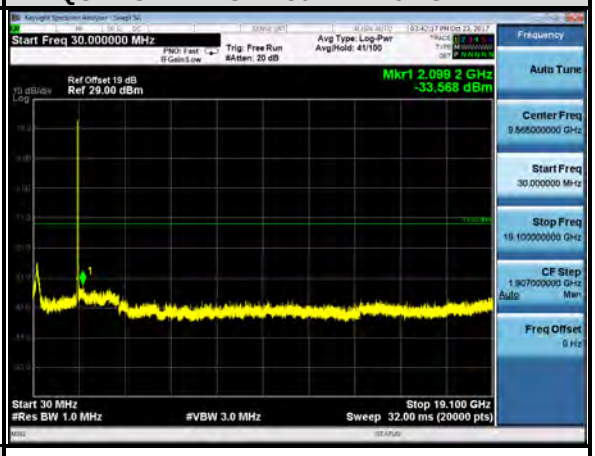
WCDMA	
CHANNEL 9262	CHANNEL 9400
FREQUENCY RANGE : 30MHz~19.1GHz	FREQUENCY RANGE : 30MHz~19.1GHz
CHANNEL 9538	
FREQUENCY RANGE : 30MHz~19.1GHz	
	

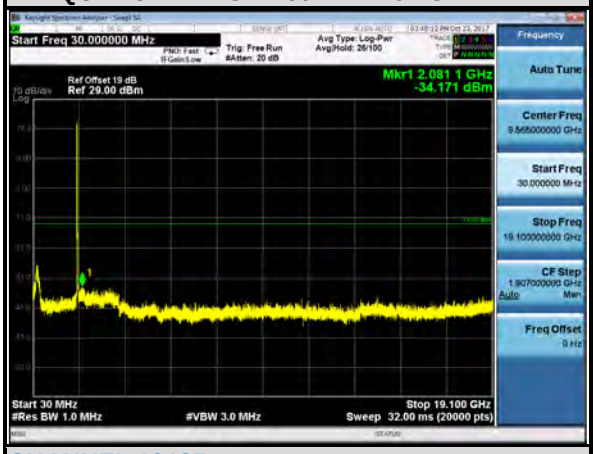
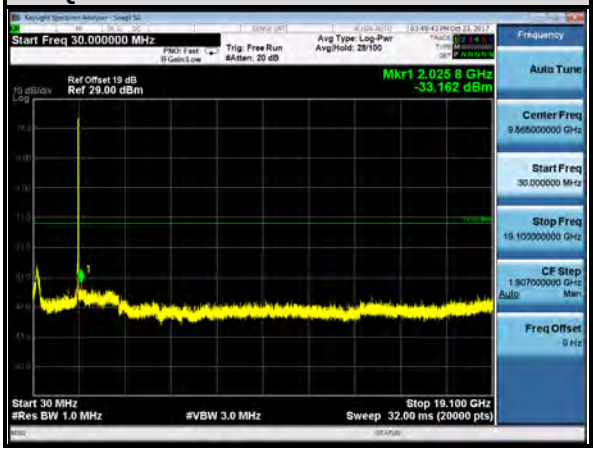
LTE BAND 2

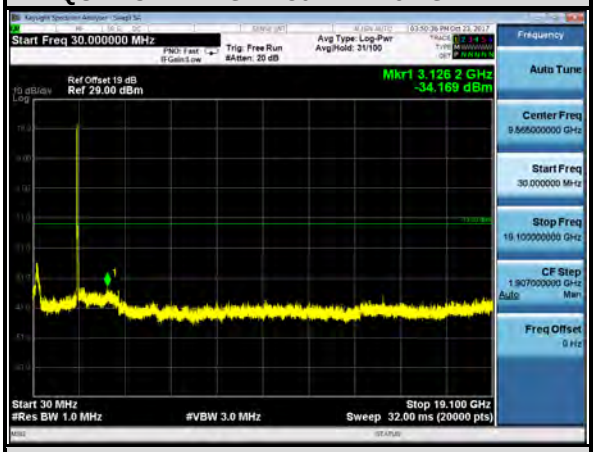
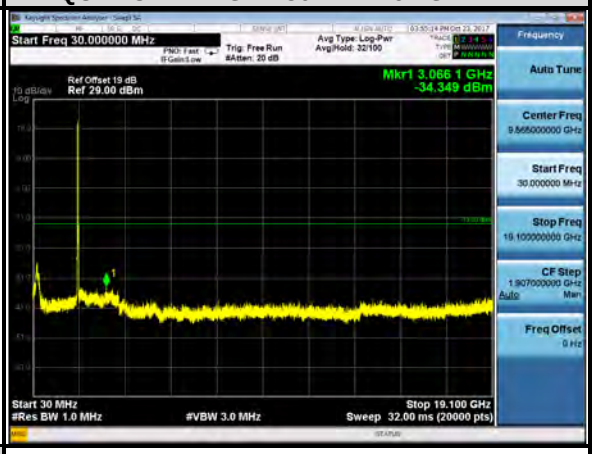
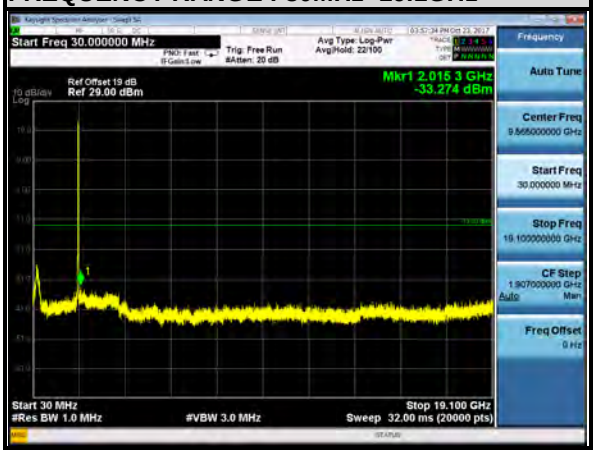
1.4MHz / QPSK	
CHANNEL 18607	CHANNEL 18900
FREQUENCY RANGE : 30MHz~19.1GHz	FREQUENCY RANGE : 30MHz~19.1GHz
	
CHANNEL 19193	
FREQUENCY RANGE : 30MHz~19.1GHz	

3MHz / QPSK	
CHANNEL 18615	CHANNEL 18900
FREQUENCY RANGE : 30MHz~19.1GHz	FREQUENCY RANGE : 30MHz~19.1GHz
CHANNEL 19185	
FREQUENCY RANGE : 30MHz~19.1GHz	
	

5MHz / QPSK	
CHANNEL 18625	CHANNEL 18900
FREQUENCY RANGE : 30MHz~19.1GHz	FREQUENCY RANGE : 30MHz~19.1GHz
	
CHANNEL 19175	
FREQUENCY RANGE : 30MHz~19.1GHz	
	

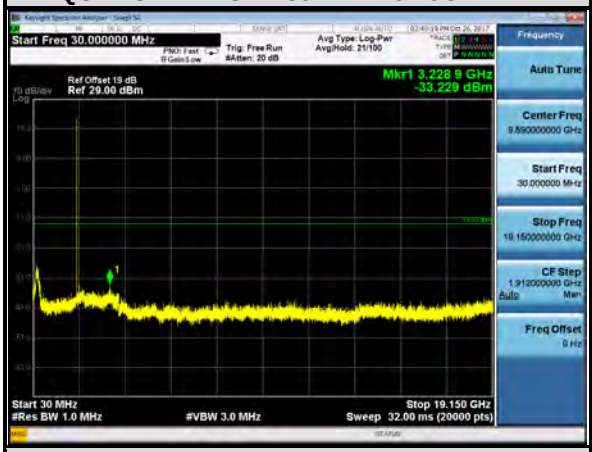
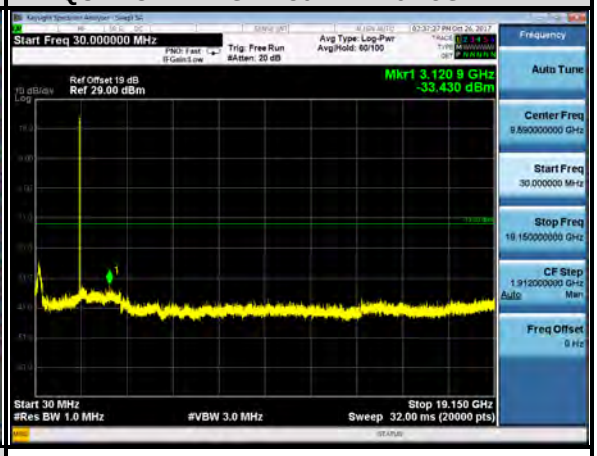
10MHz / QPSK	
CHANNEL 18650	CHANNEL 18900
FREQUENCY RANGE : 30MHz~19.1GHz	FREQUENCY RANGE : 30MHz~19.1GHz
	
CHANNEL 19150	
FREQUENCY RANGE : 30MHz~19.1GHz	

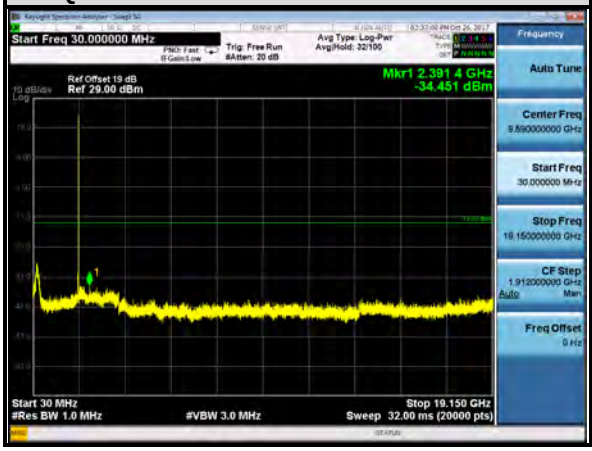
15MHz / QPSK	
CHANNEL 18675	CHANNEL 18900
FREQUENCY RANGE : 30MHz~19.1GHz	FREQUENCY RANGE : 30MHz~19.1GHz
	
CHANNEL 19125	
FREQUENCY RANGE : 30MHz~19.1GHz	
	

20MHz / QPSK	
CHANNEL 18700	CHANNEL 18900
FREQUENCY RANGE : 30MHz~19.1GHz	FREQUENCY RANGE : 30MHz~19.1GHz
	
CHANNEL 19100	
FREQUENCY RANGE : 30MHz~19.1GHz	
	

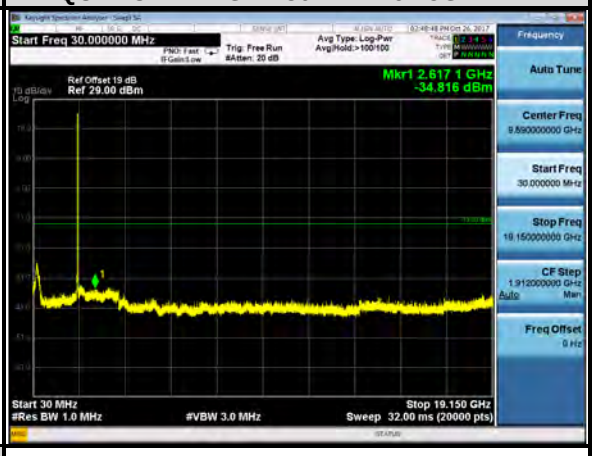
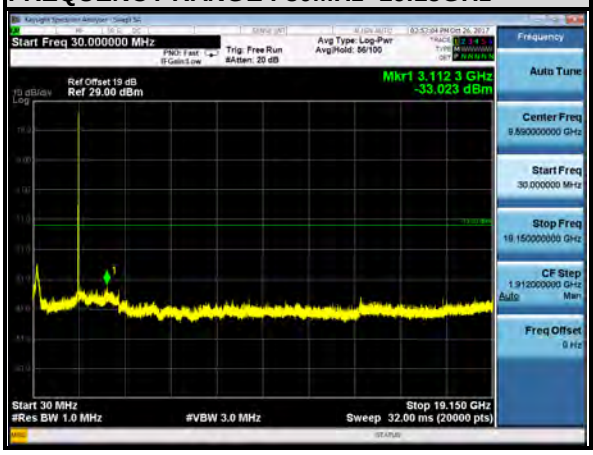
LTE BAND 25

1.4MHz / QPSK

CHANNEL 26047	CHANNEL 26365
FREQUENCY RANGE : 30MHz~19.15GHz	FREQUENCY RANGE : 30MHz~19.15GHz
	

CHANNEL 26683	
FREQUENCY RANGE : 30MHz~19.15GHz	
	

3MHz / QPSK	
CHANNEL 26055	CHANNEL 26365
FREQUENCY RANGE : 30MHz~19.15GHz	FREQUENCY RANGE : 30MHz~19.15GHz
CHANNEL 26675	
FREQUENCY RANGE : 30MHz~19.15GHz	

5MHz / QPSK	
CHANNEL 26065	CHANNEL 26365
FREQUENCY RANGE : 30MHz~19.15GHz	FREQUENCY RANGE : 30MHz~19.15GHz
	
CHANNEL 26665	
FREQUENCY RANGE : 30MHz~19.15GHz	
	

10MHz / QPSK

CHANNEL 26090

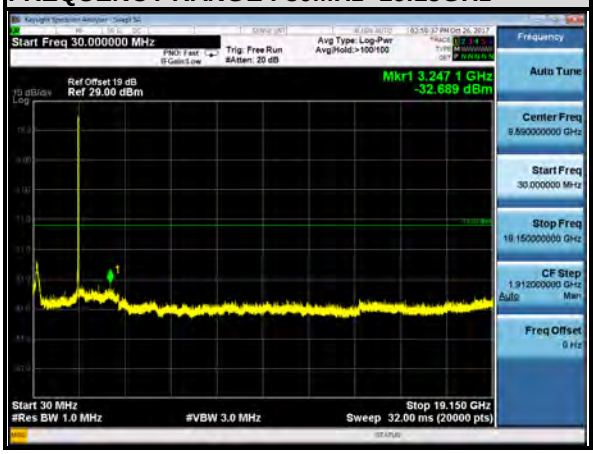
FREQUENCY RANGE : 30MHz~19.15GHz

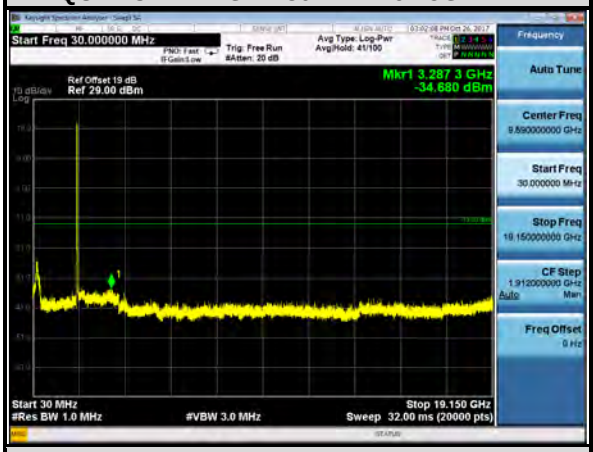
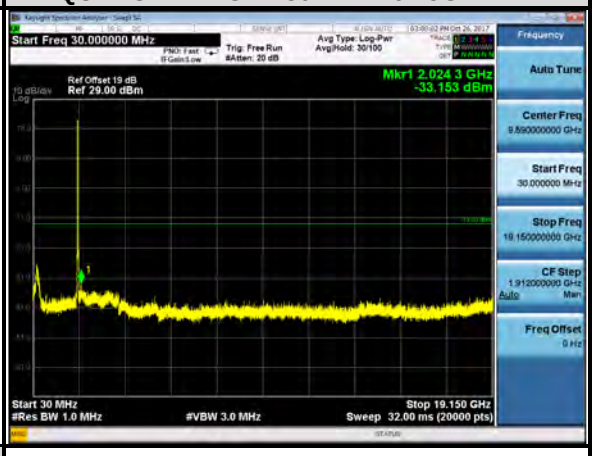
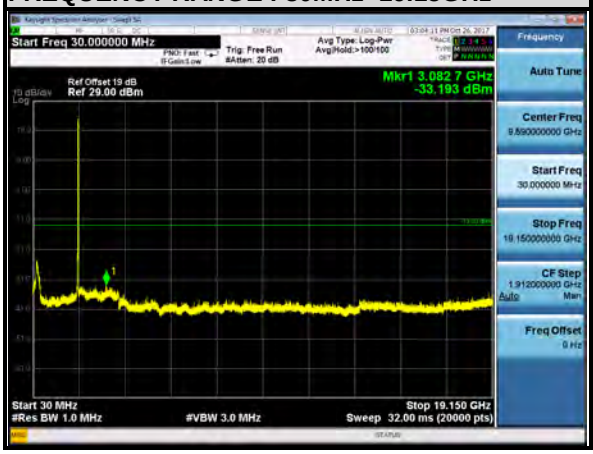
CHANNEL 26365

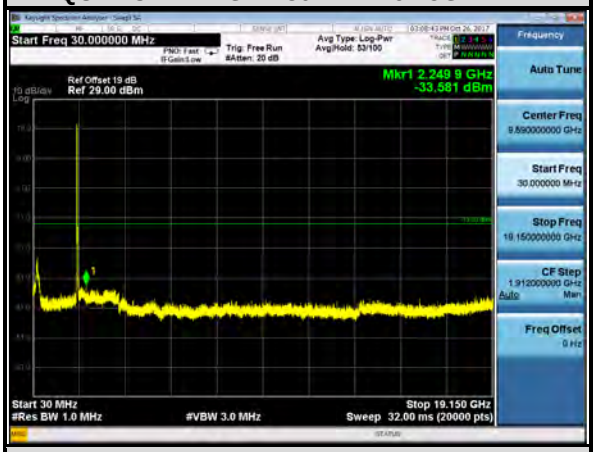
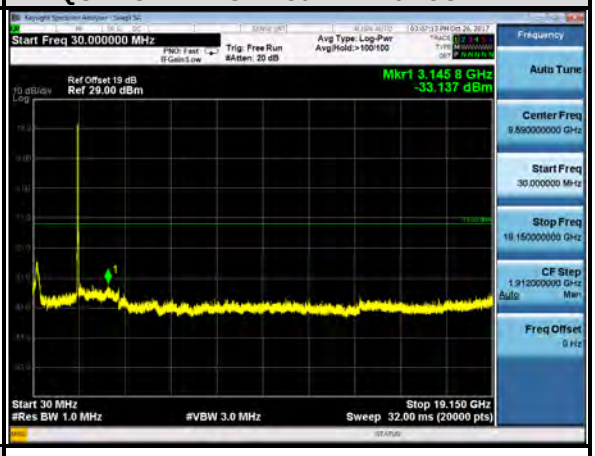
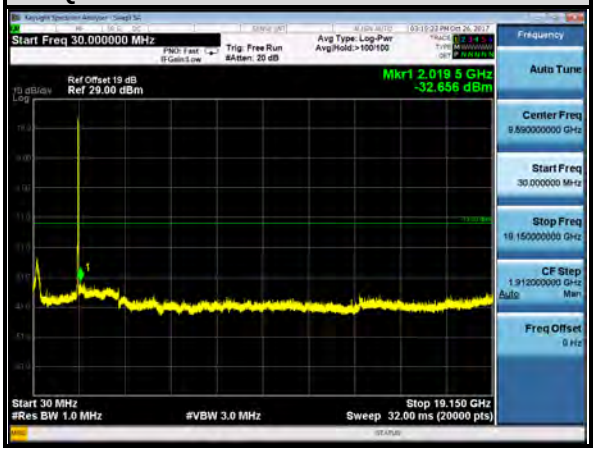
FREQUENCY RANGE : 30MHz~19.15GHz

CHANNEL 26640

FREQUENCY RANGE : 30MHz~19.15GHz



15MHz / QPSK	
CHANNEL 26115	CHANNEL 26365
FREQUENCY RANGE : 30MHz~19.15GHz	FREQUENCY RANGE : 30MHz~19.15GHz
	
CHANNEL 26615	
FREQUENCY RANGE : 30MHz~19.15GHz	
	

20MHz / QPSK	
CHANNEL 26140	CHANNEL 26365
FREQUENCY RANGE : 30MHz~19.15GHz	FREQUENCY RANGE : 30MHz~19.15GHz
	
CHANNEL 26590	
FREQUENCY RANGE : 30MHz~19.15GHz	
	

3.6 RADIATED EMISSION MEASUREMENT

3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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.

3.6.2 TEST PROCEDURES

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m 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. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value " of step a. Record the power level of S.G

c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

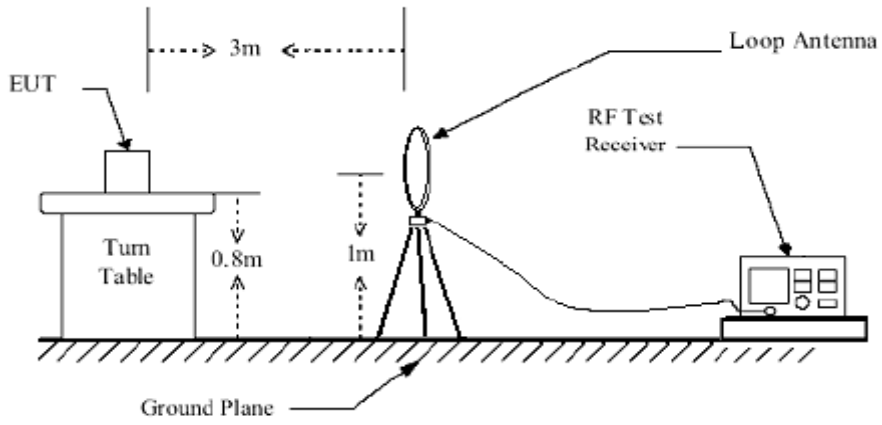
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

3.6.3 DEVIATION FROM TEST STANDARD

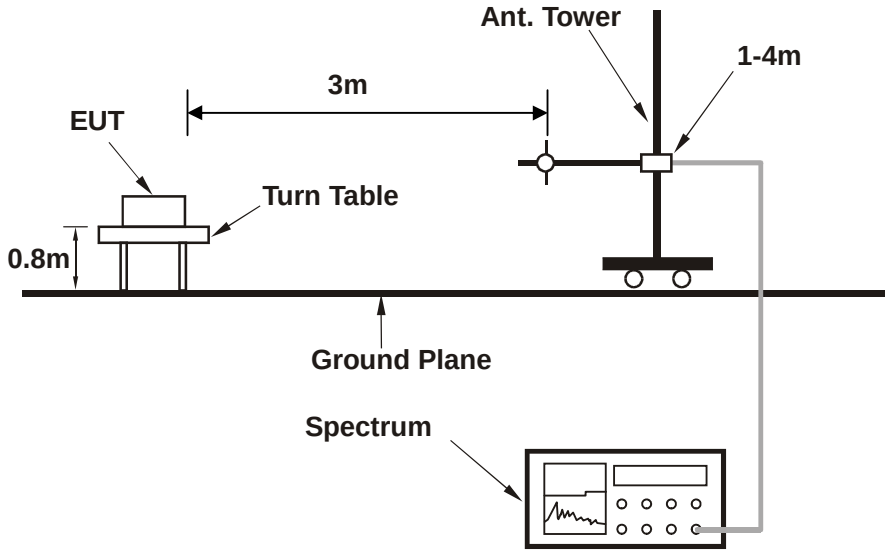
No deviation

3.6.4 TEST SETUP

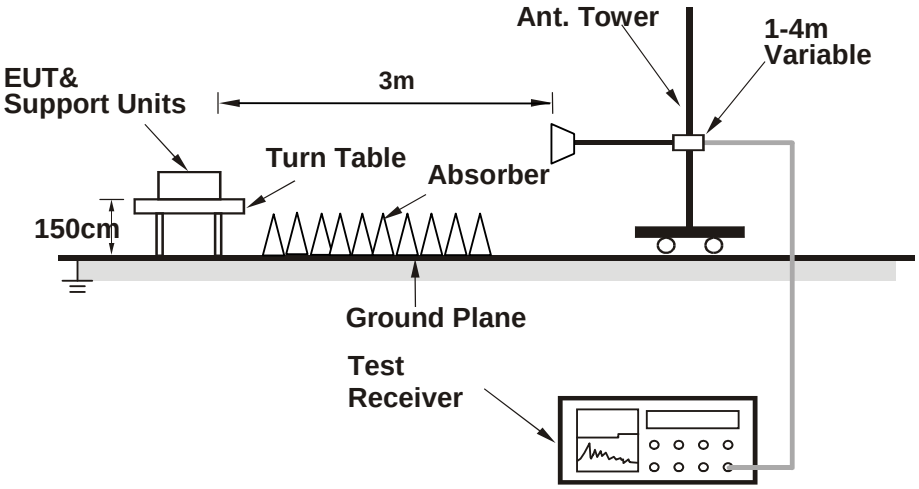
<Below 30MHz>



< Frequency Range 30MHz~1GHz >



< Frequency Range above 1GHz >



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

3.6.5 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

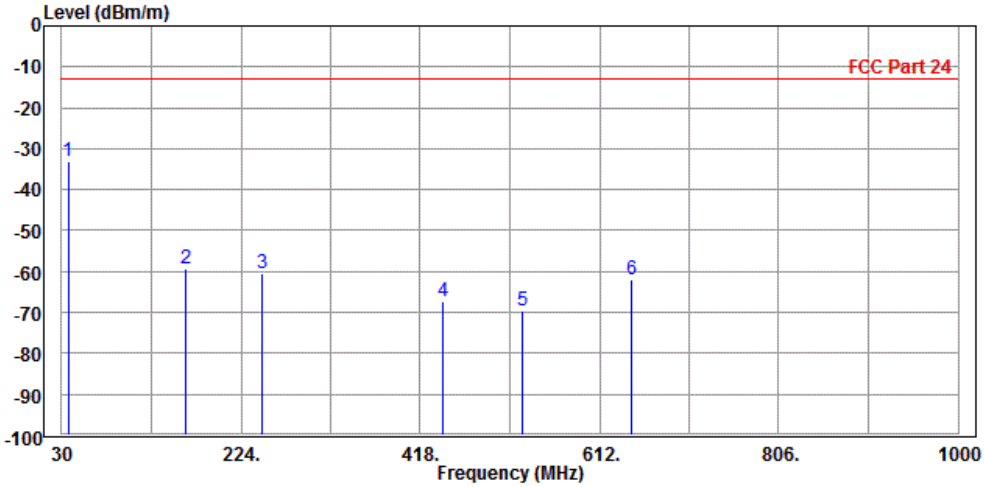
9 KHz – 30 MHz data: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

30 MHz – 1GHz data:

LTE Band 25:

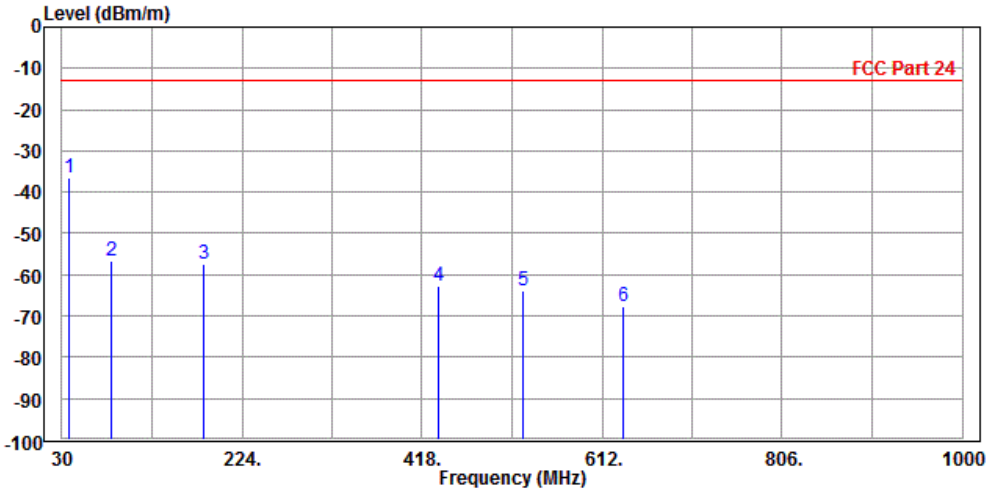
MODE	TX channel 26365	**FREQUENCY RANGE**	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	36.790	-33.18	-45.50	-13.00	-20.18	12.32	Peak	Horizontal
2	164.830	-59.27	-40.97	-13.00	-46.27	-18.30	Peak	Horizontal
3	246.310	-60.39	-44.04	-13.00	-47.39	-16.35	Peak	Horizontal
4	443.220	-67.16	-56.73	-13.00	-54.16	-10.43	Peak	Horizontal
5	528.580	-69.57	-59.67	-13.00	-56.57	-9.90	Peak	Horizontal
6	646.920	-62.14	-55.01	-13.00	-49.14	-7.13	Peak	Horizontal



MODE	TX channel 26365	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	37.760	-36.64	-35.34	-13.00	-23.64	-1.30	Peak	Vertical
2	83.350	-56.64	-46.30	-13.00	-43.64	-10.34	Peak	Vertical
3	182.290	-57.50	-44.62	-13.00	-44.50	-12.88	Peak	Vertical
4	436.430	-62.62	-53.03	-13.00	-49.62	-9.59	Peak	Vertical
5	526.640	-63.75	-56.48	-13.00	-50.75	-7.27	Peak	Vertical
6	634.310	-67.63	-60.67	-13.00	-54.63	-6.96	Peak	Vertical



ABOVE 1GHz DATA

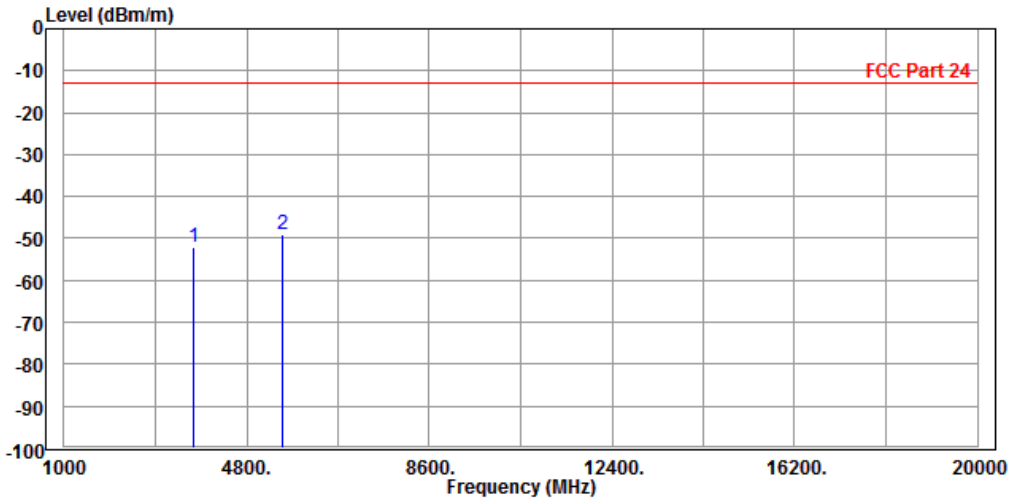
Note: For higher frequency, the emission is too low to be detected.

PCS 1900:

CH 512

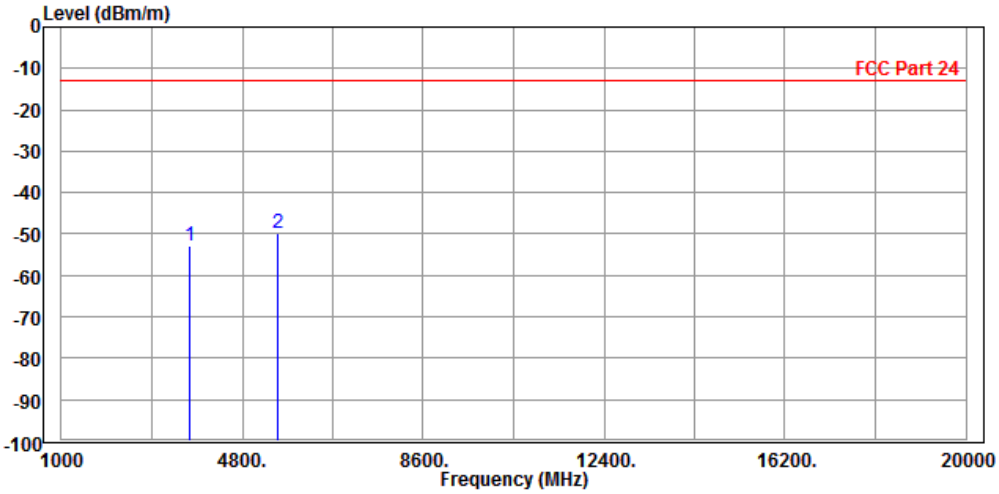
MODE	TX channel 512	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3698.000	-52.11	-55.22	-13.00	-39.11	3.11	Peak	Horizontal
2 PP	5558.000	-49.06	-58.09	-13.00	-36.06	9.03	Peak	Horizontal



MODE	TX channel 512	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

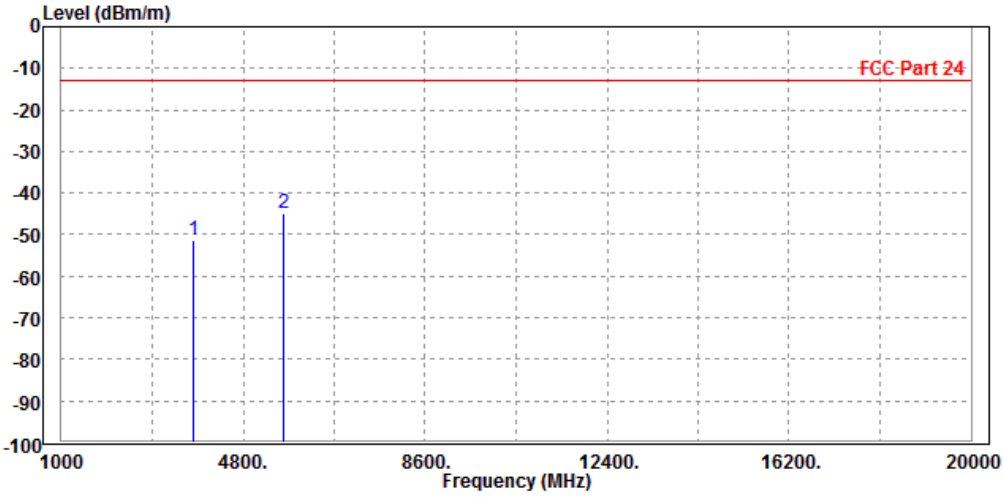
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3698.000	-52.67	-56.24	-13.00	-39.67	3.57	Peak	Vertical
2	PP	5558.000	-49.63	-57.72	-13.00	-36.63	8.09	Peak	Vertical



CH 661

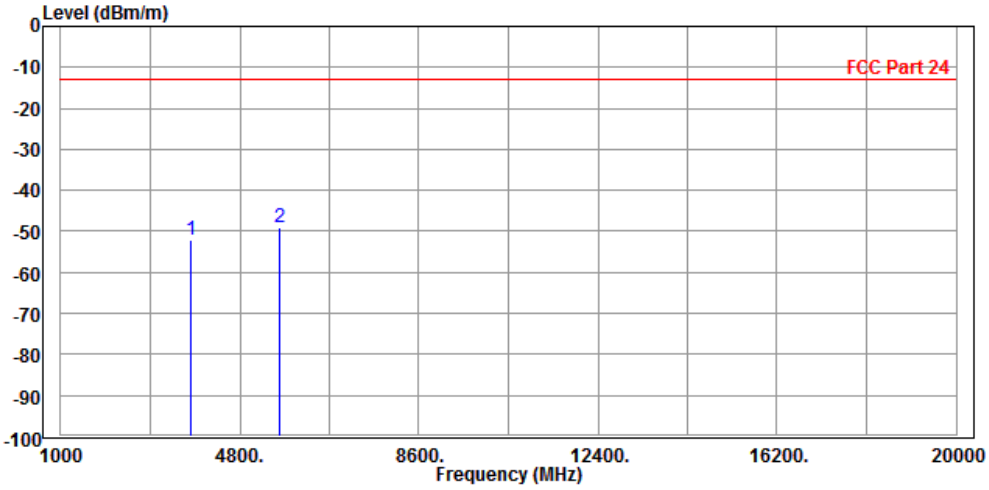
MODE	TX channel 661	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3755.000	-51.25	-54.64	-13.00	-38.25	3.39	Peak	Horizontal
2	PP	5640.000	-44.83	-53.95	-13.00	-31.83	9.12	Peak	Horizontal



MODE	TX channel 661	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

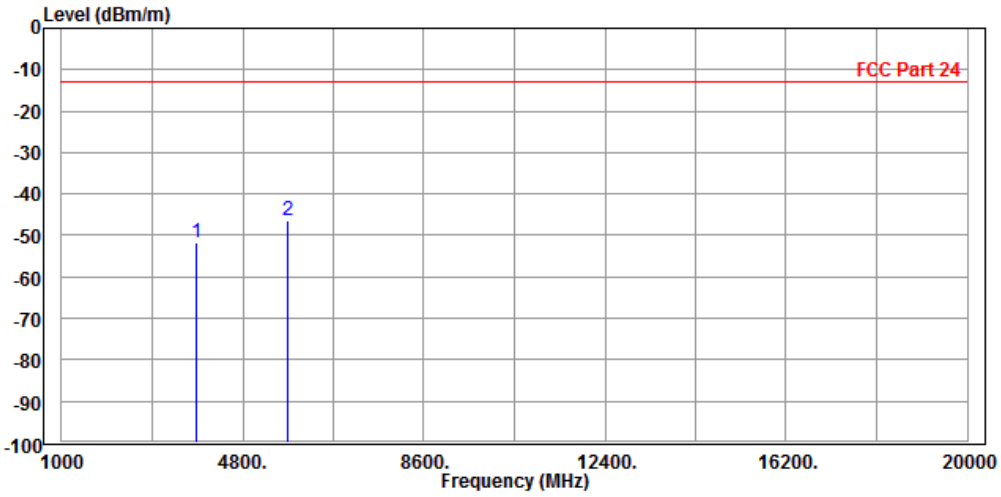
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3755.000	-51.98	-55.83	-13.00	-38.98	3.85	Peak	Vertical
2	PP	5640.000	-48.88	-57.14	-13.00	-35.88	8.26	Peak	Vertical



CH 810

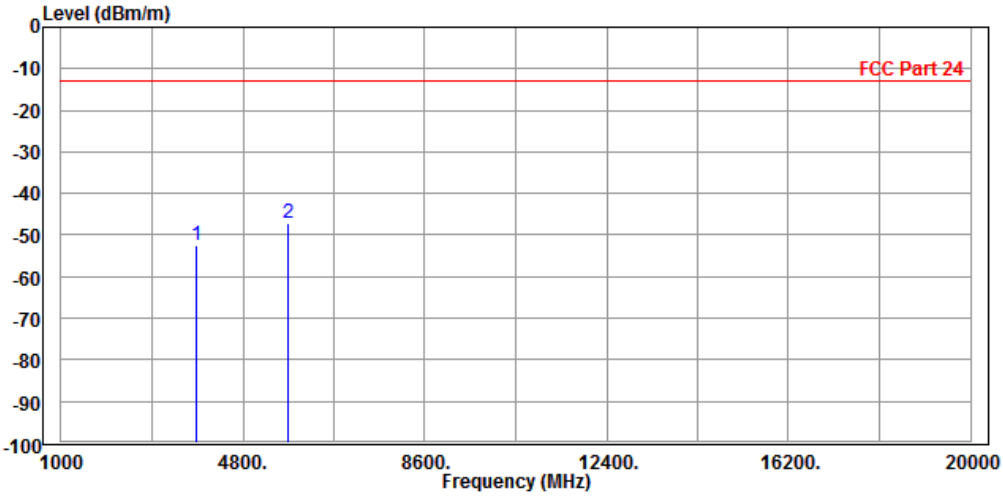
MODE	TX channel 810	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3812.000	-51.75	-55.41	-13.00	-38.75	3.66	Peak	Horizontal
2	PP	5730.000	-46.49	-55.71	-13.00	-33.49	9.22	Peak	Horizontal



MODE	TX channel 810	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3812.000	-52.64	-56.78	-13.00	-39.64	4.14	Peak	Vertical
2 PP	5730.000	-46.98	-55.42	-13.00	-33.98	8.44	Peak	Vertical

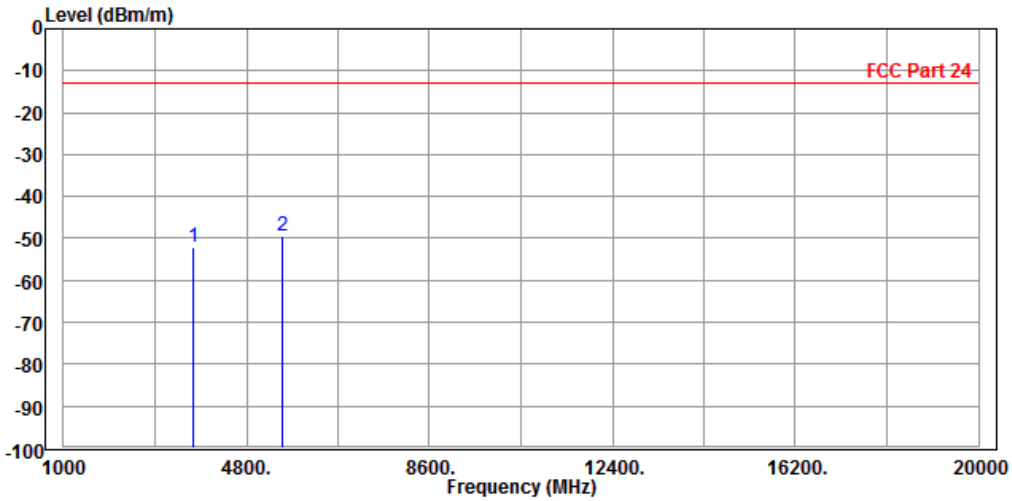


EDGE 1900:

CH 512

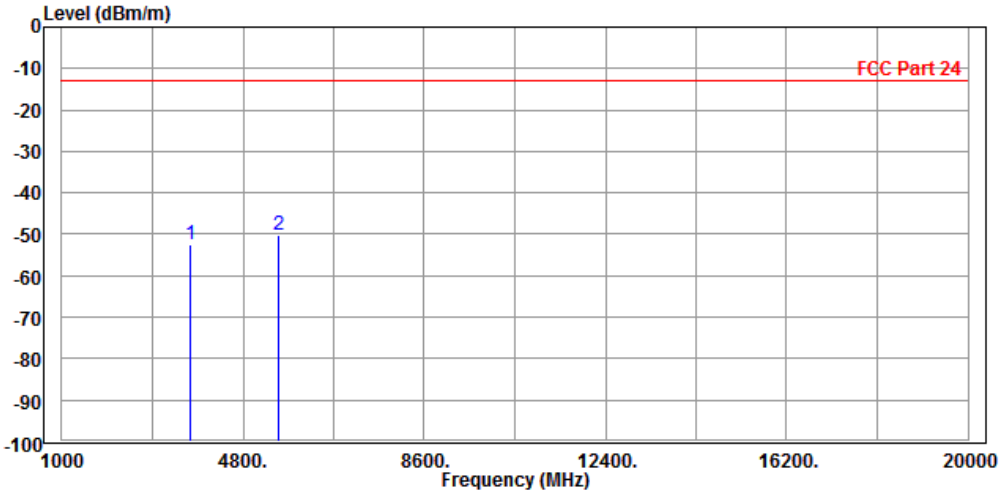
MODE	TX channel 512	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3698.000	-52.04	-55.15	-13.00	-39.04	3.11	Peak	Horizontal
2 PP	5558.000	-49.57	-58.60	-13.00	-36.57	9.03	Peak	Horizontal



MODE	TX channel 512	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

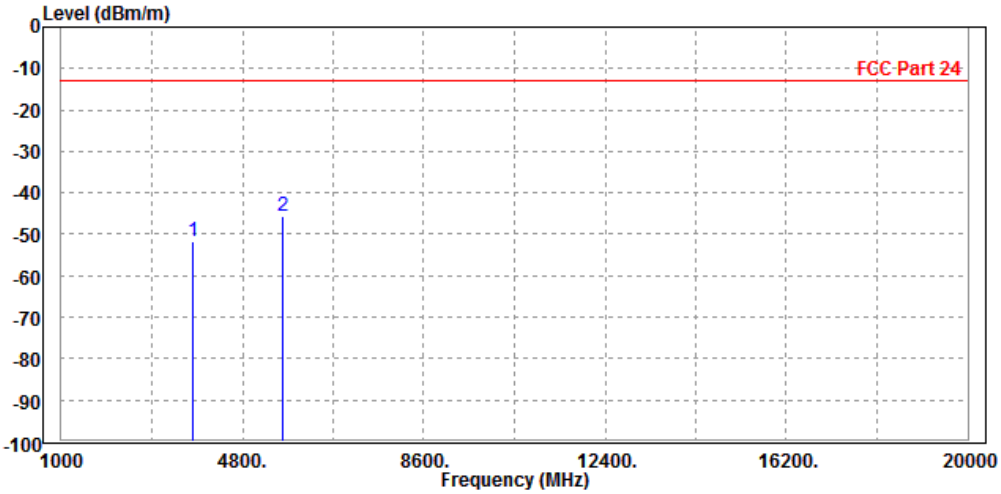
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3698.000	-52.43	-56.00	-13.00	-39.43	3.57	Peak	Vertical
2	PP	5558.000	-50.27	-58.36	-13.00	-37.27	8.09	Peak	Vertical



CH 661

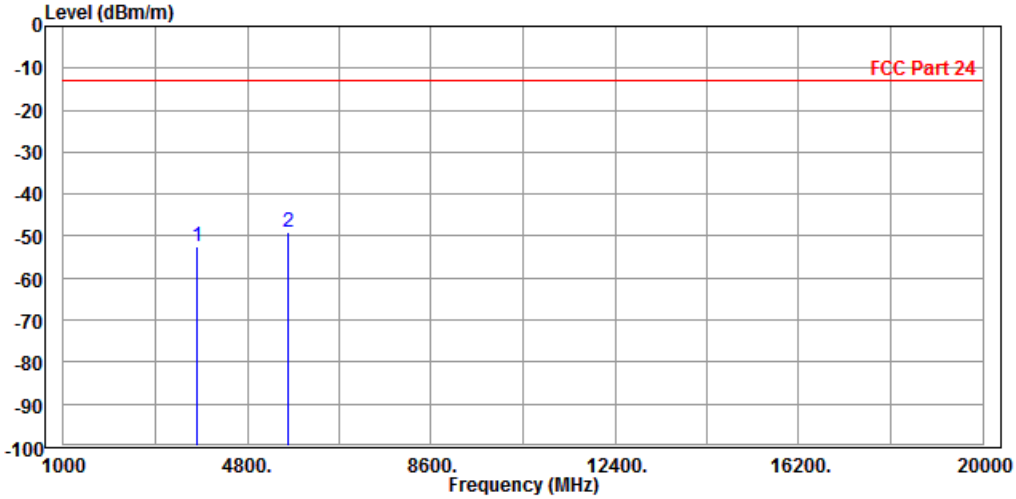
MODE	TX channel 661	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3755.000	-51.80	-55.19	-13.00	-38.80	3.39	Peak	Horizontal
2	PP	5640.000	-45.56	-54.68	-13.00	-32.56	9.12	Peak	Horizontal



MODE	TX channel 661	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

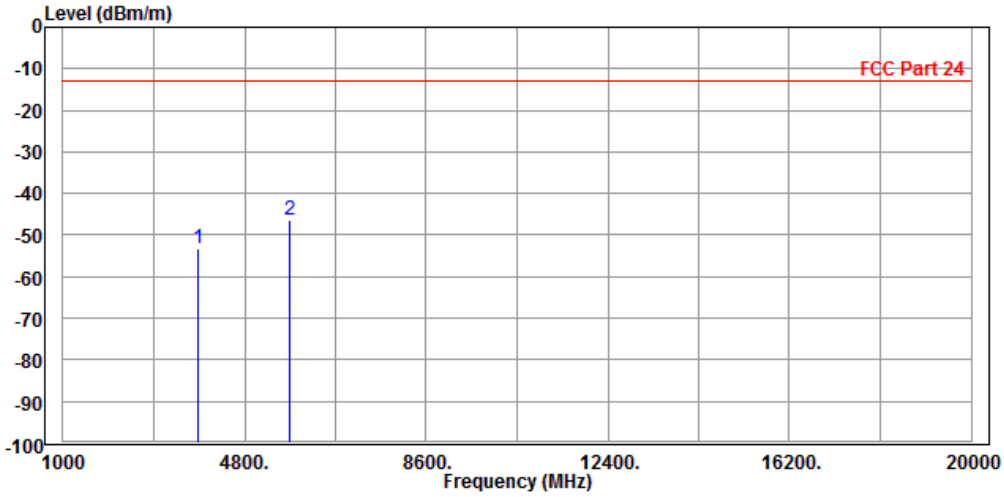
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3755.000	-52.63	-56.48	-13.00	-39.63	3.85	Peak	Vertical
2	PP	5640.000	-49.22	-57.48	-13.00	-36.22	8.26	Peak	Vertical



CH 810

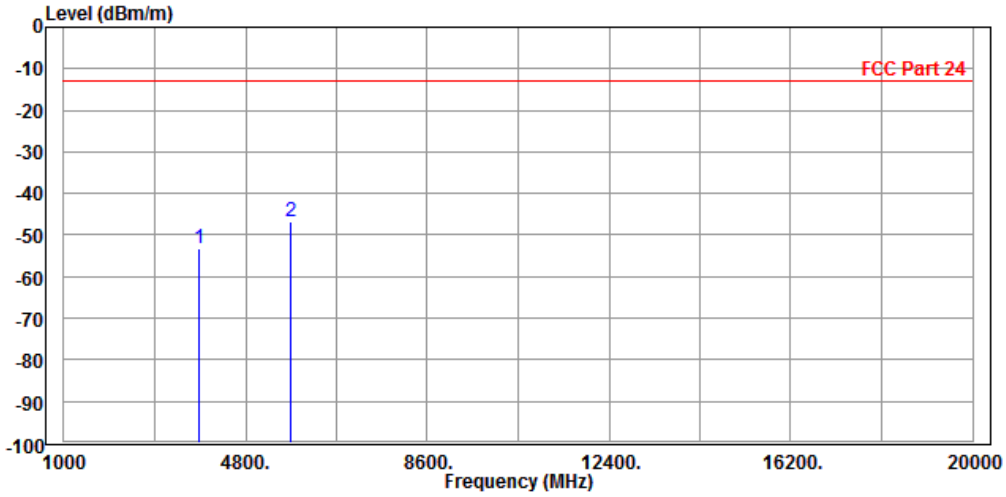
MODE	TX channel 810	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3812.000	-53.35	-57.01	-13.00	-40.35	3.66	Peak	Horizontal
2	PP	5730.000	-46.21	-55.43	-13.00	-33.21	9.22	Peak	Horizontal



MODE	TX channel 810	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3812.000	-53.04	-57.18	-13.00	-40.04	4.14	Peak	Vertical
2	PP	5730.000	-46.76	-55.20	-13.00	-33.76	8.44	Peak	Vertical

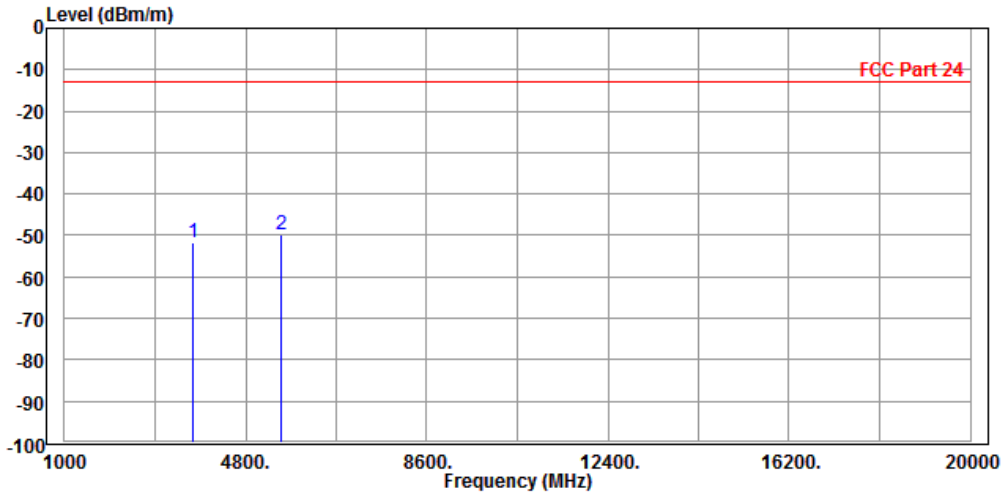


WCDMA Band II

CH 9262

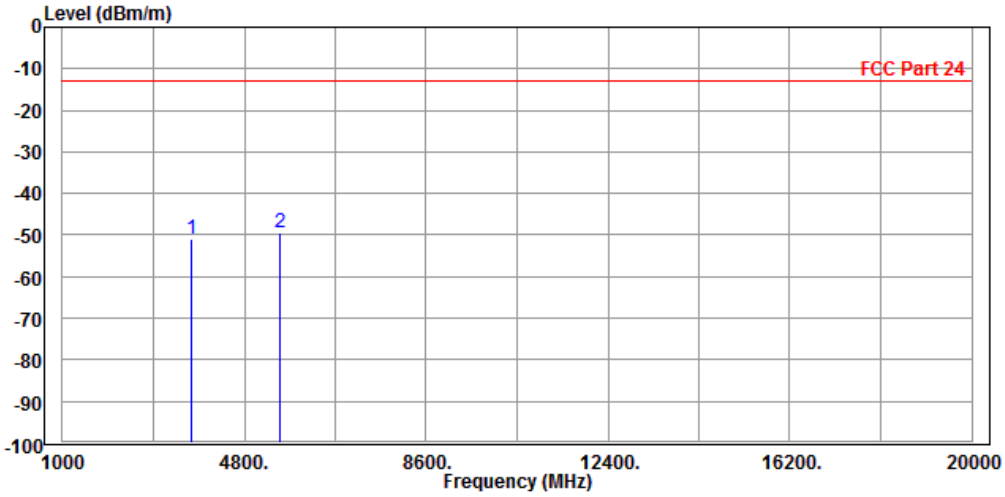
MODE	TX channel 9262	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3698.000	-51.70	-54.81	-13.00	-38.70	3.11	Peak	Horizontal
2 PP	5558.000	-49.72	-58.75	-13.00	-36.72	9.03	Peak	Horizontal



MODE	TX channel 9262	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

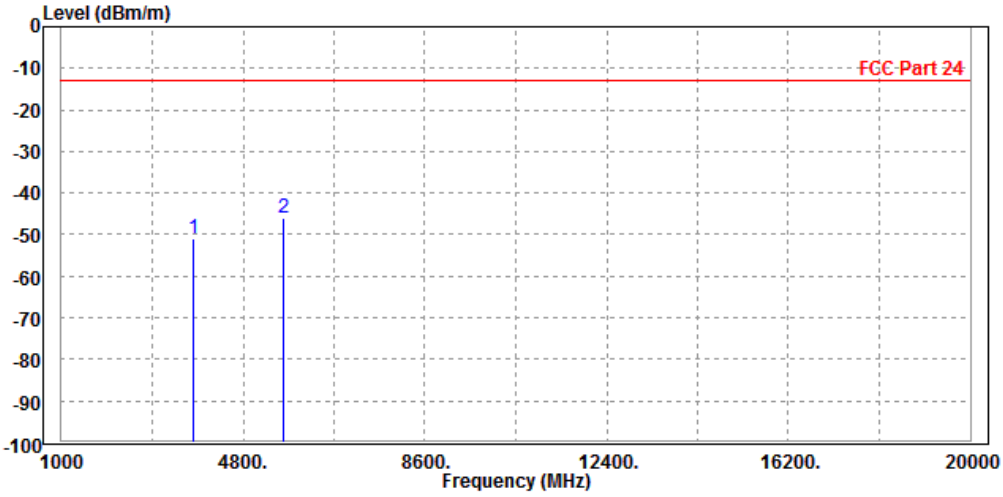
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3698.000	-50.87	-54.44	-13.00	-37.87	3.57	Peak	Vertical
2	PP	5558.000	-49.50	-57.59	-13.00	-36.50	8.09	Peak	Vertical



CH 9400

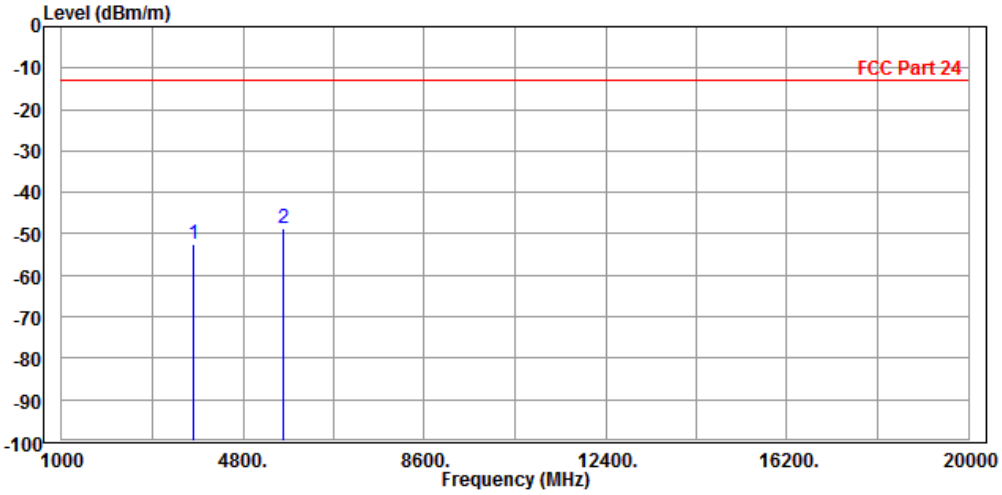
MODE	TX channel 9400	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3755.000	-51.10	-54.49	-13.00	-38.10	3.39	Peak	Horizontal
2	PP	5640.000	-46.13	-55.25	-13.00	-33.13	9.12	Peak	Horizontal



MODE	TX channel 9400	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

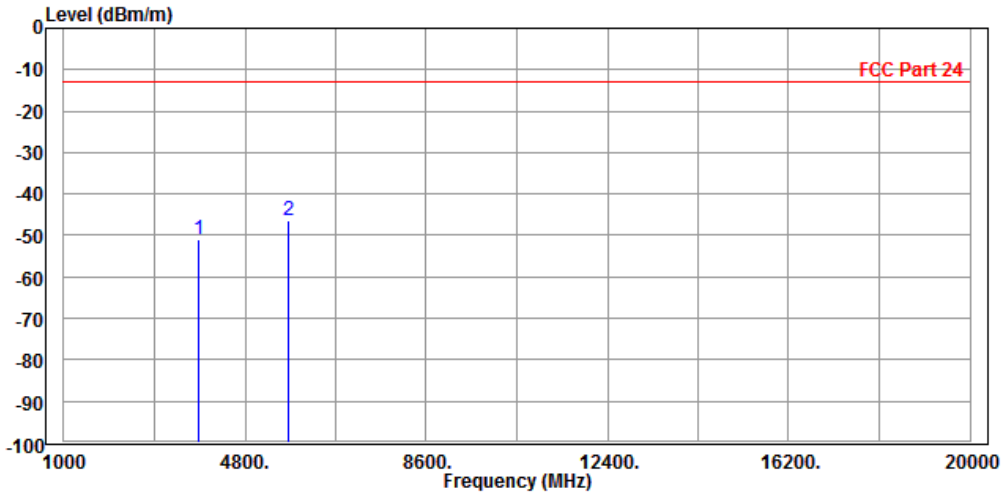
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3755.000	-52.34	-56.19	-13.00	-39.34	3.85	Peak	Vertical
2 PP	5640.000	-48.61	-56.87	-13.00	-35.61	8.26	Peak	Vertical



CH 9538

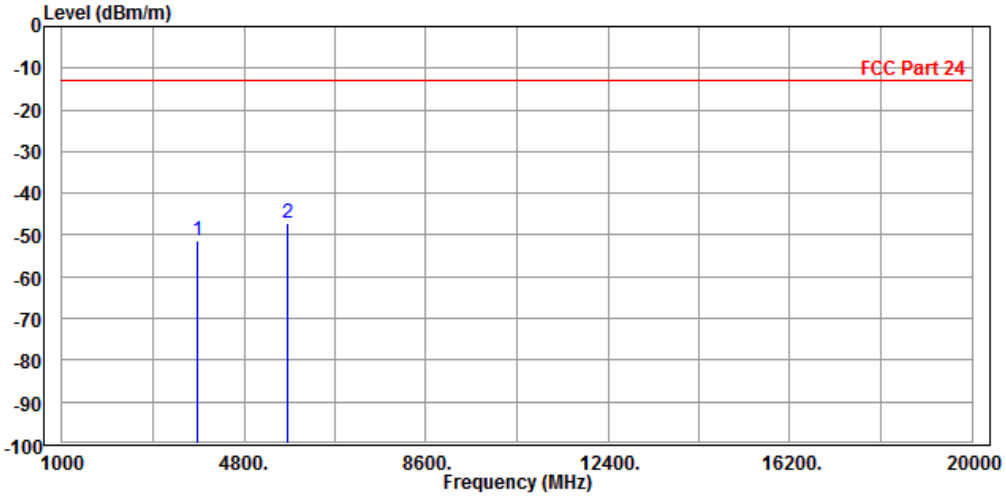
MODE	TX channel 9538	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3812.000	-51.13	-54.79	-13.00	-38.13	3.66	Peak	Horizontal
2	PP	5721.000	-46.34	-55.55	-13.00	-33.34	9.21	Peak	Horizontal



MODE	TX channel 9538	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3812.000	-51.29	-55.43	-13.00	-38.29	4.14	Peak	Vertical
2	PP	5721.000	-47.13	-55.55	-13.00	-34.13	8.42	Peak	Vertical

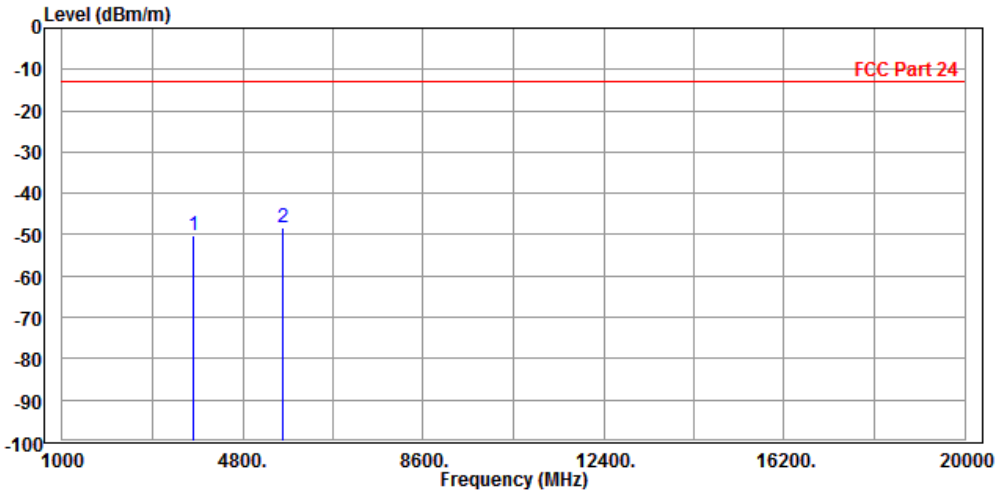


LTE Band 2

CHANNEL BANDWIDTH: 1.4MHz / QPSK

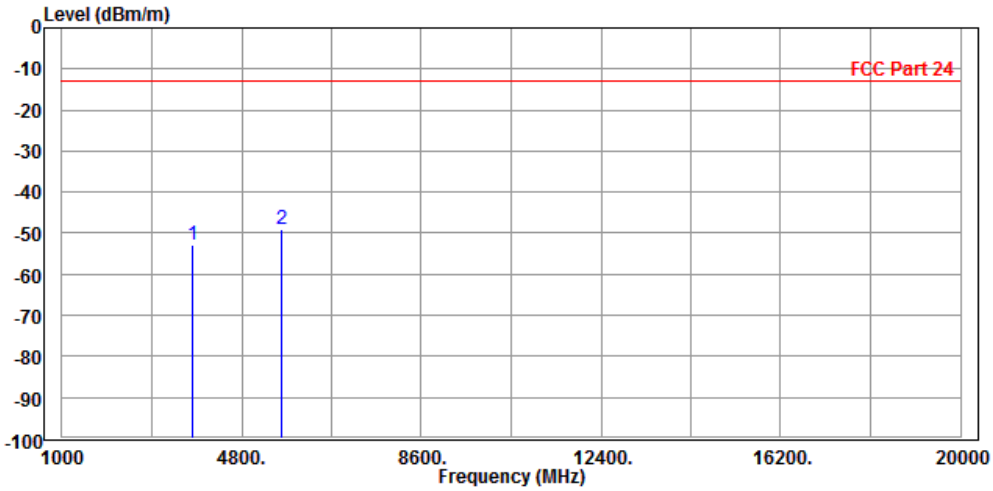
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3755.000	-50.15	-53.54	-13.00	-37.15	3.39	Peak	Horizontal
2	PP	5640.000	-48.16	-57.28	-13.00	-35.16	9.12	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

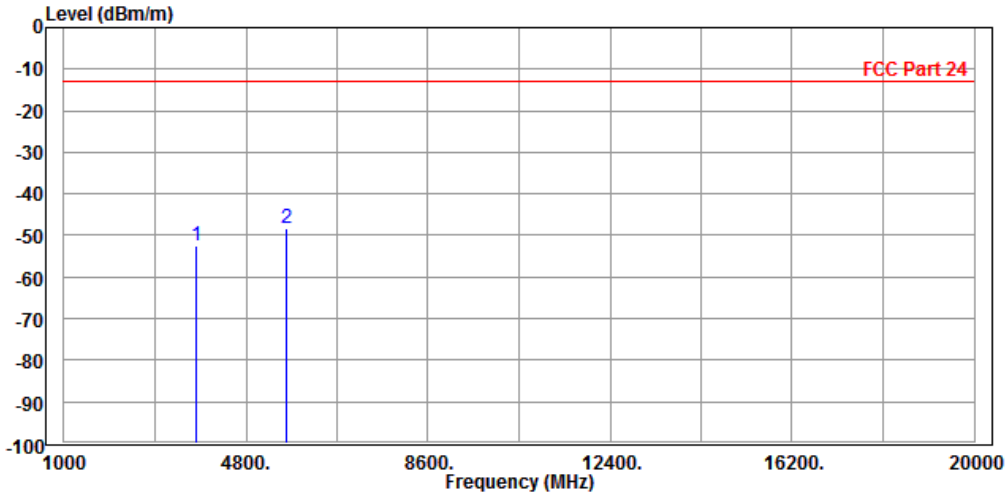
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3755.000	-52.76	-56.61	-13.00	-39.76	3.85	Peak	Vertical
2	PP	5640.000	-49.10	-57.36	-13.00	-36.10	8.26	Peak	Vertical



CHANNEL BANDWIDTH: 3MHz / QPSK

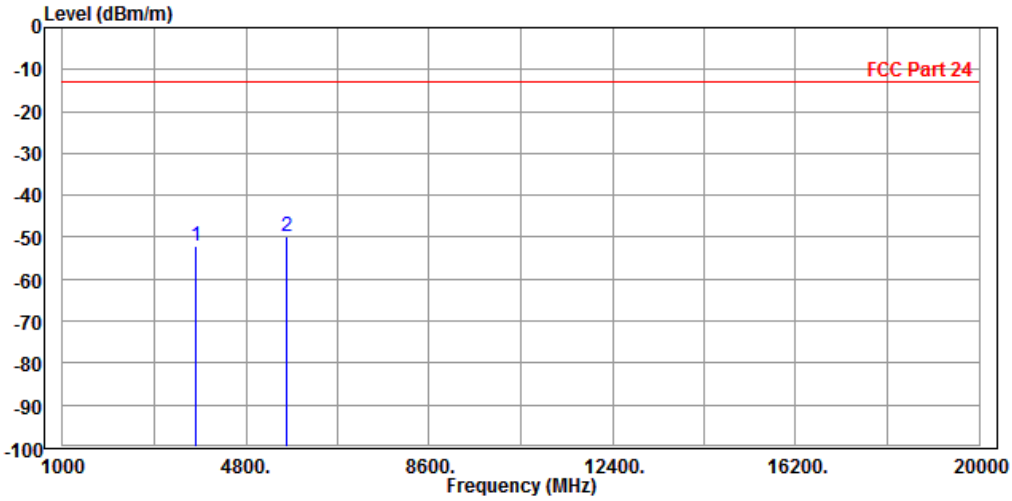
MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3755.000	-52.62	-56.01	-13.00	-39.62	3.39	Peak	Horizontal
2	PP	5640.000	-48.19	-57.31	-13.00	-35.19	9.12	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

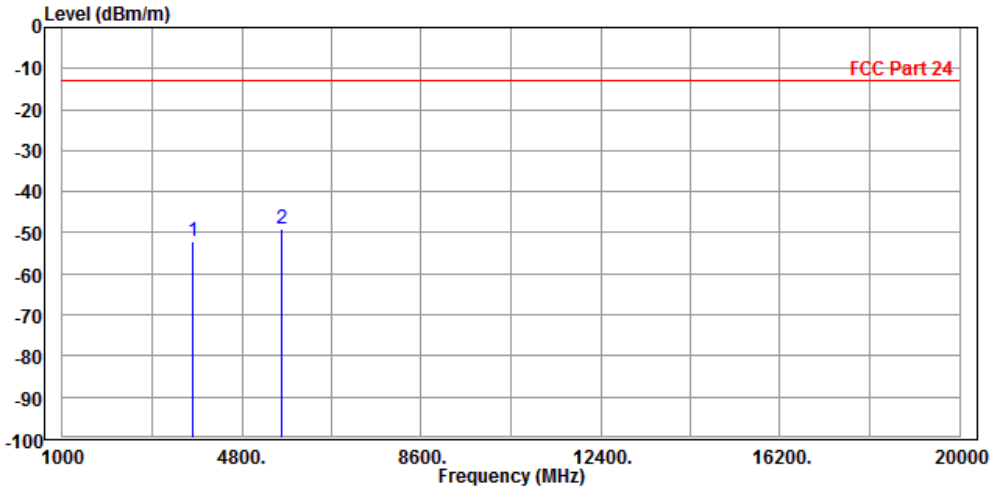
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3755.000	-51.91	-55.76	-13.00	-38.91	3.85	Peak	Vertical
2	PP	5640.000	-49.85	-58.11	-13.00	-36.85	8.26	Peak	Vertical



CHANNEL BANDWIDTH: 5MHz / QPSK

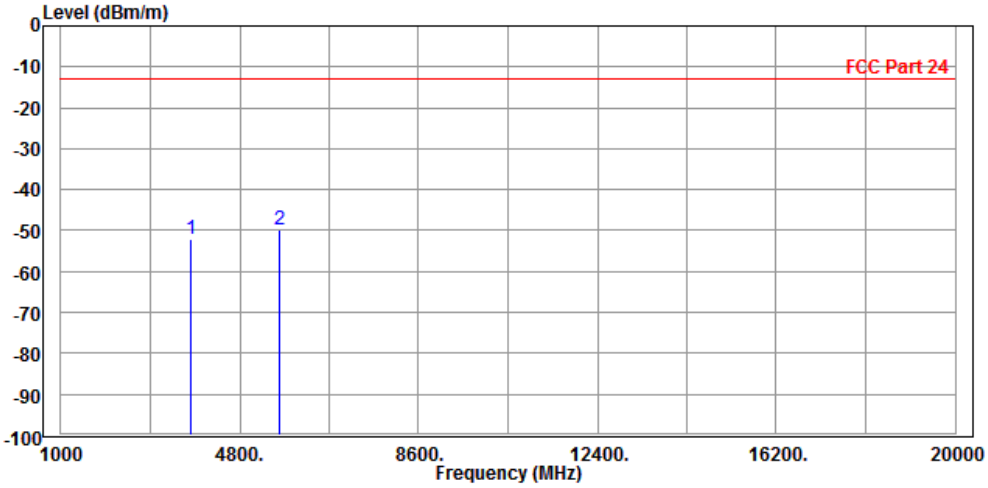
MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3755.000	-52.01	-55.40	-13.00	-39.01	3.39	Peak	Horizontal
2	PP	5640.000	-49.08	-58.20	-13.00	-36.08	9.12	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

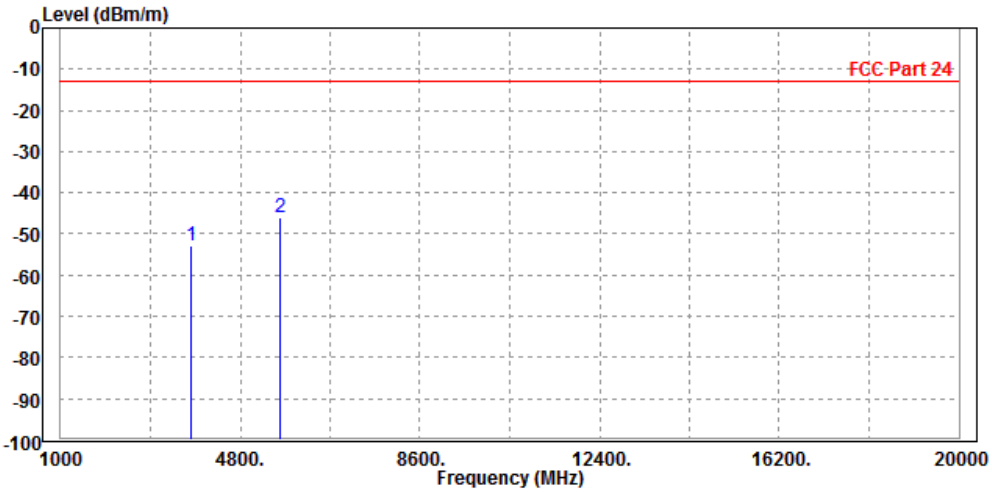
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3755.000	-52.12	-55.97	-13.00	-39.12	3.85	Peak	Vertical
2	PP	5640.000	-49.88	-58.14	-13.00	-36.88	8.26	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

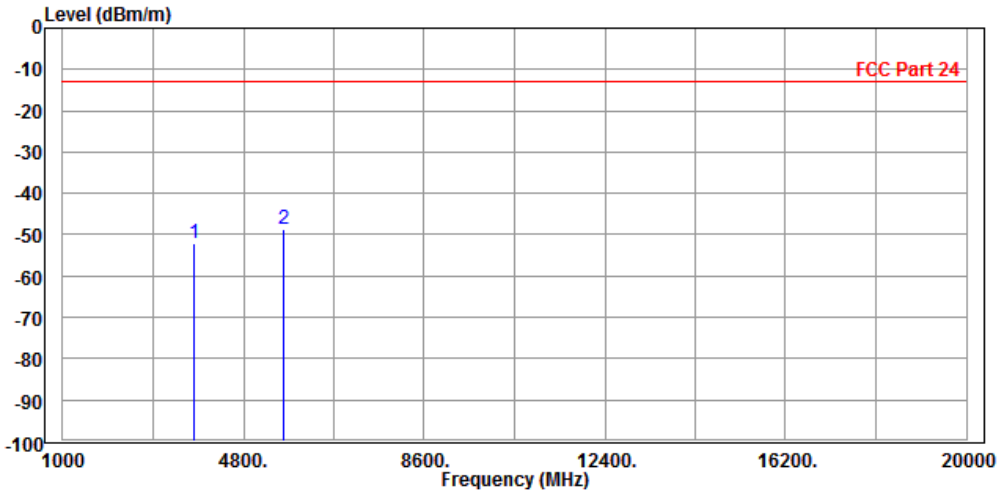
MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3755.000	-52.71	-56.10	-13.00	-39.71	3.39	Peak	Horizontal
2	PP	5640.000	-45.88	-55.00	-13.00	-32.88	9.12	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

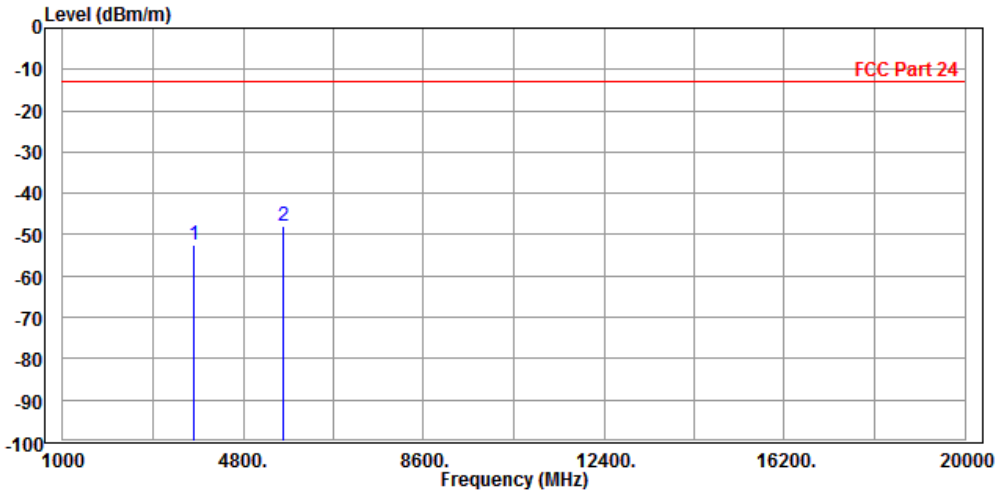
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3755.000	-52.14	-55.99	-13.00	-39.14	3.85	Peak	Vertical
2	PP	5640.000	-48.70	-56.96	-13.00	-35.70	8.26	Peak	Vertical



CHANNEL BANDWIDTH: 15MHz / QPSK

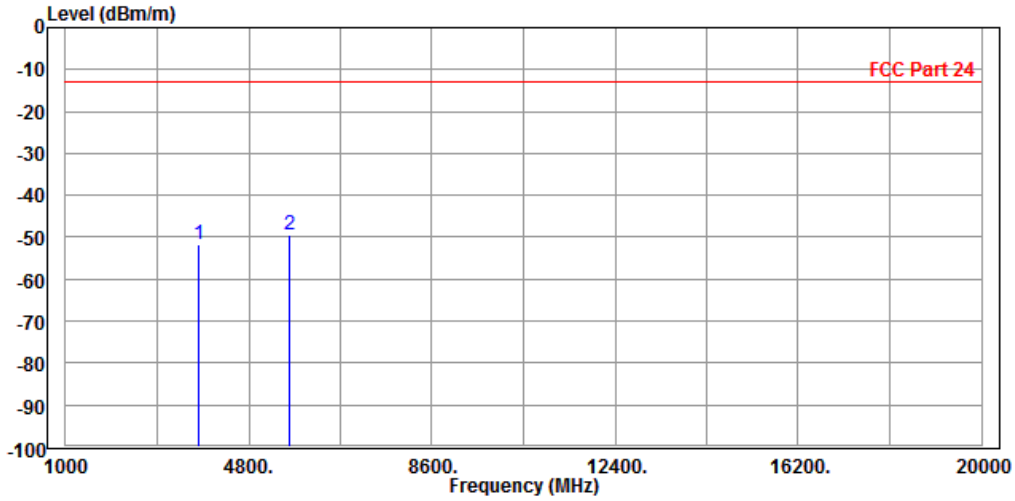
MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3755.000	-52.58	-55.97	-13.00	-39.58	3.39	Peak	Horizontal
2	PP	5640.000	-47.94	-57.06	-13.00	-34.94	9.12	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3755.000	-51.63	-55.48	-13.00	-38.63	3.85	Peak	Vertical
2	PP	5640.000	-49.24	-57.50	-13.00	-36.24	8.26	Peak	Vertical

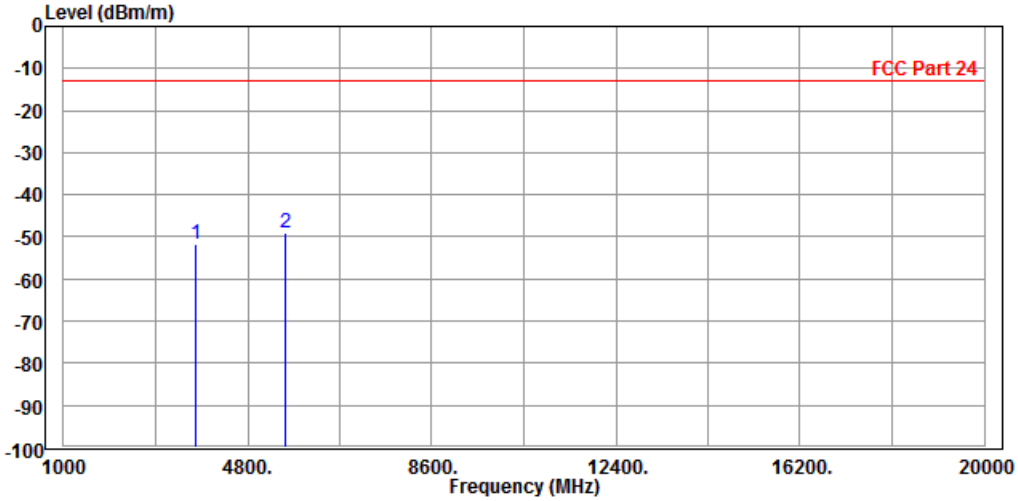


CHANNEL BANDWIDTH: 20MHz / QPSK

CH18700

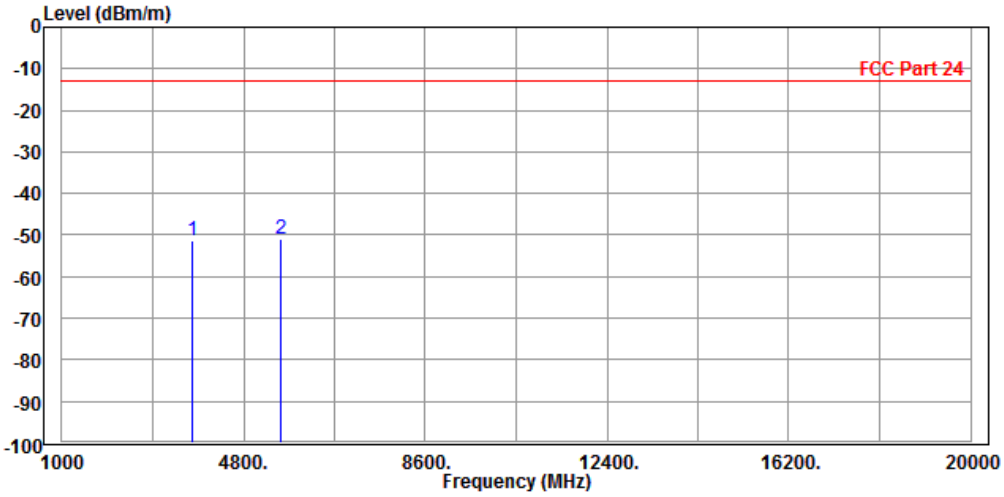
MODE	TX channel 18700	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3720.000	-51.79	-55.01	-13.00	-38.79	3.22	Peak	Horizontal
2	PP	5579.000	-49.23	-58.28	-13.00	-36.23	9.05	Peak	Horizontal



MODE	TX channel 18700	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

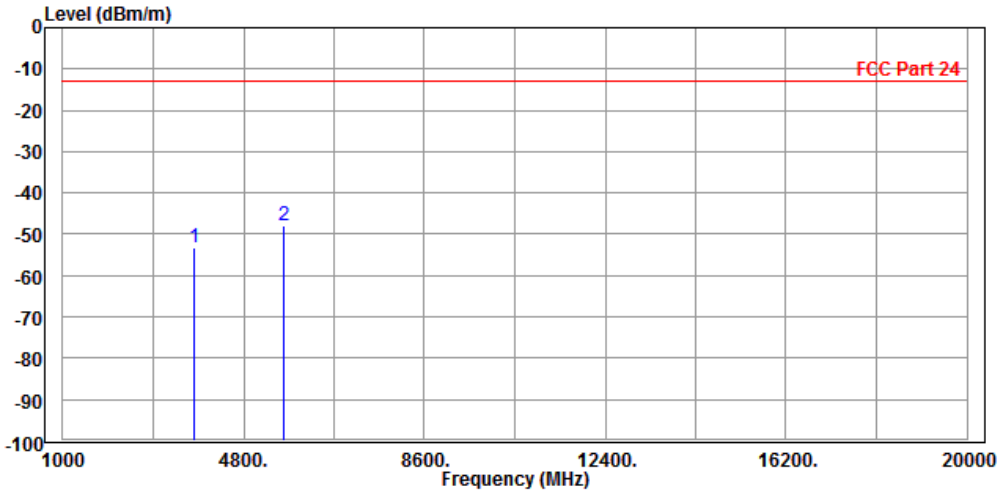
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3717.000	-51.52	-55.18	-13.00	-38.52	3.66	Peak	Vertical
2 PP	5580.000	-50.77	-58.90	-13.00	-37.77	8.13	Peak	Vertical



CH18900

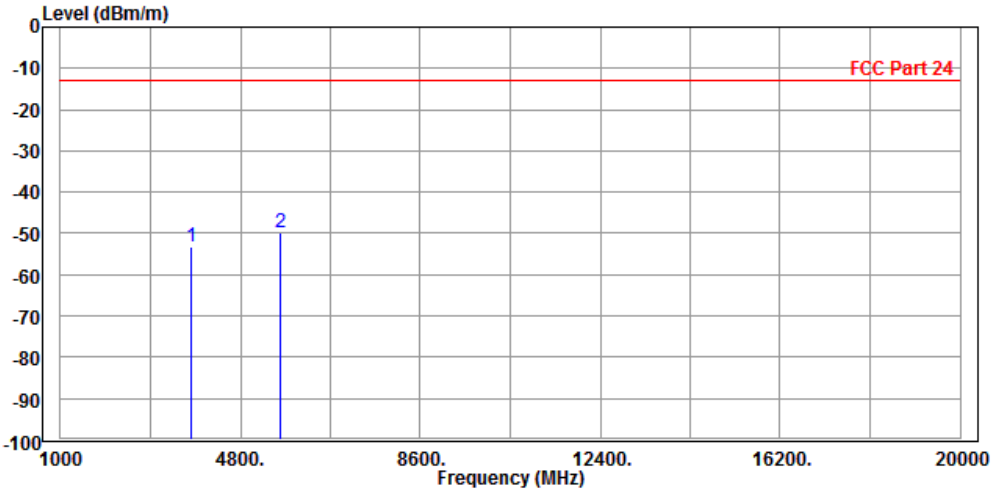
MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3755.000	-53.31	-56.70	-13.00	-40.31	3.39	Peak	Horizontal
2 PP	5640.000	-47.78	-56.90	-13.00	-34.78	9.12	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

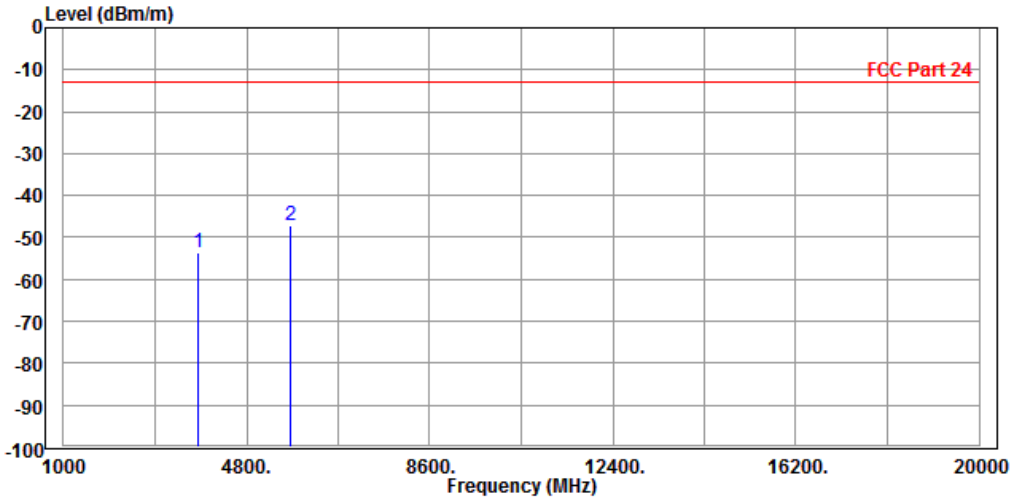
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3755.000	-53.12	-56.97	-13.00	-40.12	3.85	Peak	Vertical
2	PP	5640.000	-49.72	-57.98	-13.00	-36.72	8.26	Peak	Vertical



CH19100

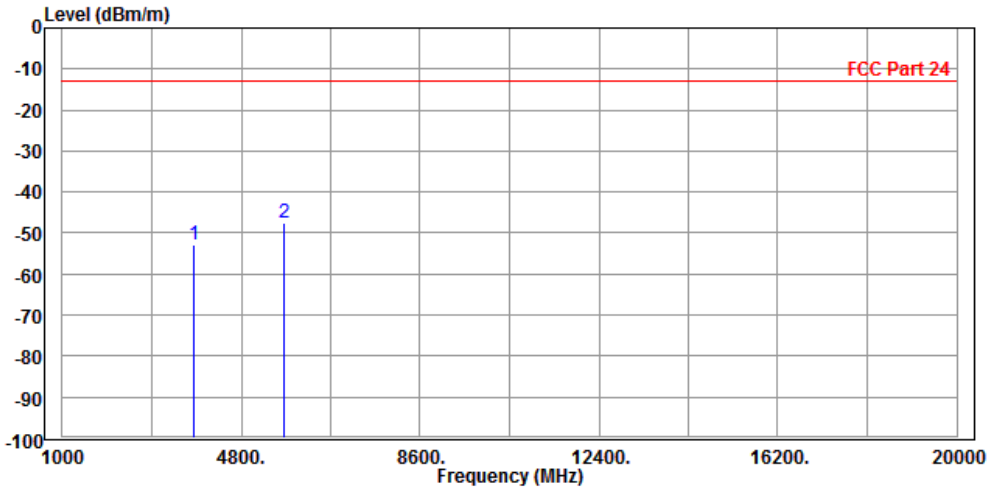
MODE	TX channel 19100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3800.000	-53.46	-57.06	-13.00	-40.46	3.60	Peak	Horizontal
2	PP	5700.000	-47.08	-56.27	-13.00	-34.08	9.19	Peak	Horizontal



MODE	TX channel 19100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3800.000	-52.67	-56.75	-13.00	-39.67	4.08	Peak	Vertical
2	PP	5700.000	-47.46	-55.84	-13.00	-34.46	8.38	Peak	Vertical



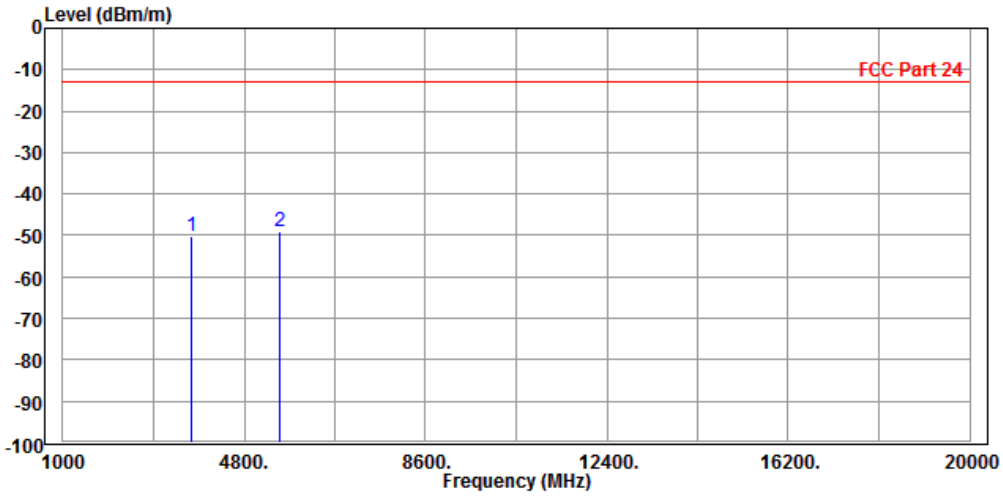
LTE Band 25

CHANNEL BANDWIDTH: 1.4MHz / QPSK

CH26047

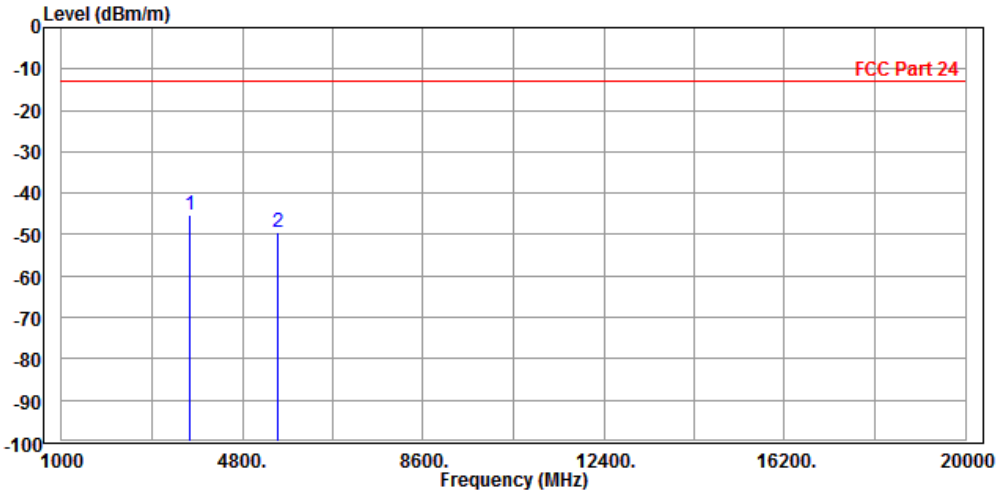
MODE	TX channel 26047	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3704.000	-50.31	-53.45	-13.00	-37.31	3.14	Peak	Horizontal
2	PP	5552.000	-49.23	-58.25	-13.00	-36.23	9.02	Peak	Horizontal



MODE	TX channel 26047	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

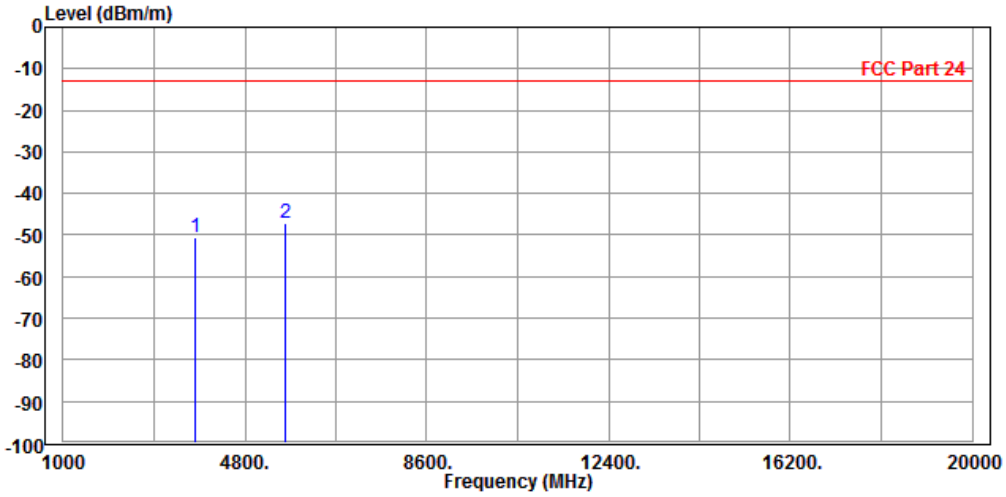
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	3704.000	-45.17	-48.77	-13.00	-32.17	3.60	Peak	Vertical
2		5552.000	-49.56	-57.64	-13.00	-36.56	8.08	Peak	Vertical



CH26365

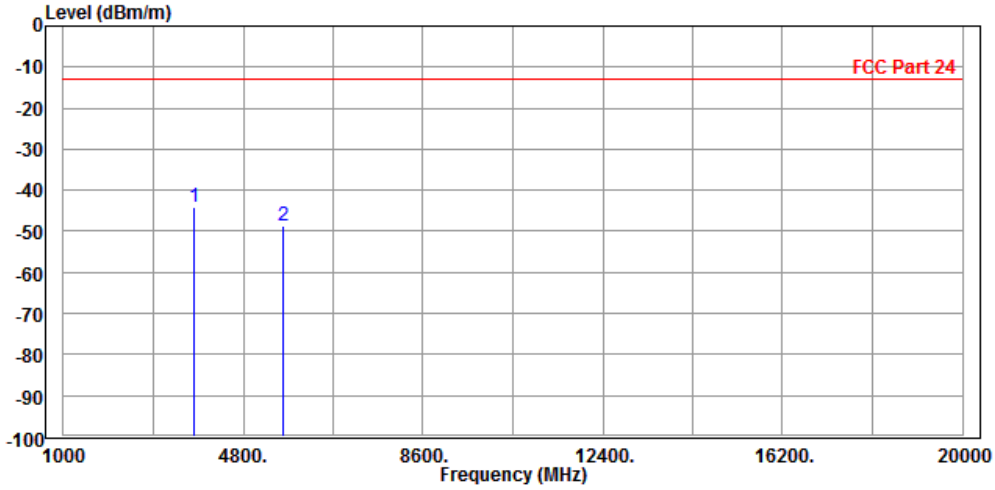
MODE	TX channel 26365	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3756.000	-50.39	-53.78	-13.00	-37.39	3.39	Peak	Horizontal
2	PP	5647.000	-47.22	-56.35	-13.00	-34.22	9.13	Peak	Horizontal



MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

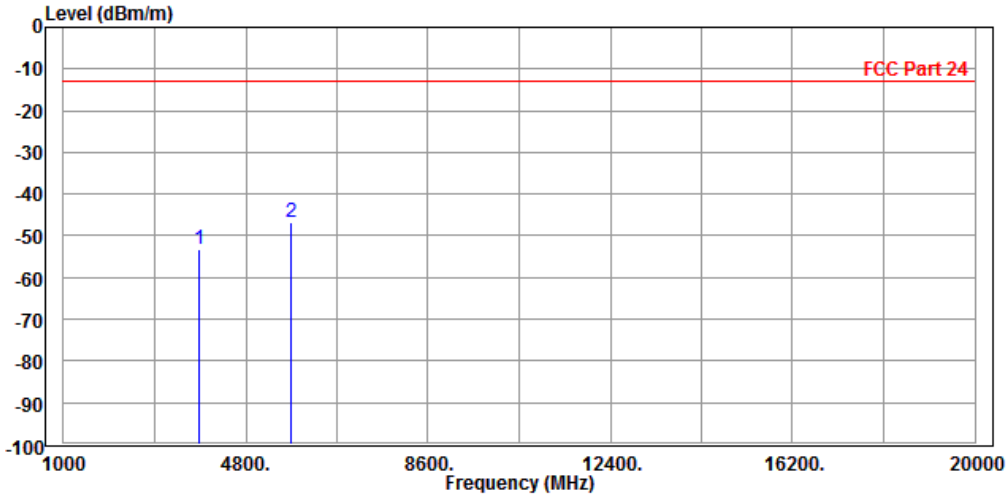
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	3756.000	-44.12	-47.98	-13.00	-31.12	3.86	Peak	Vertical
2		5647.000	-48.51	-56.78	-13.00	-35.51	8.27	Peak	Vertical



CH26683

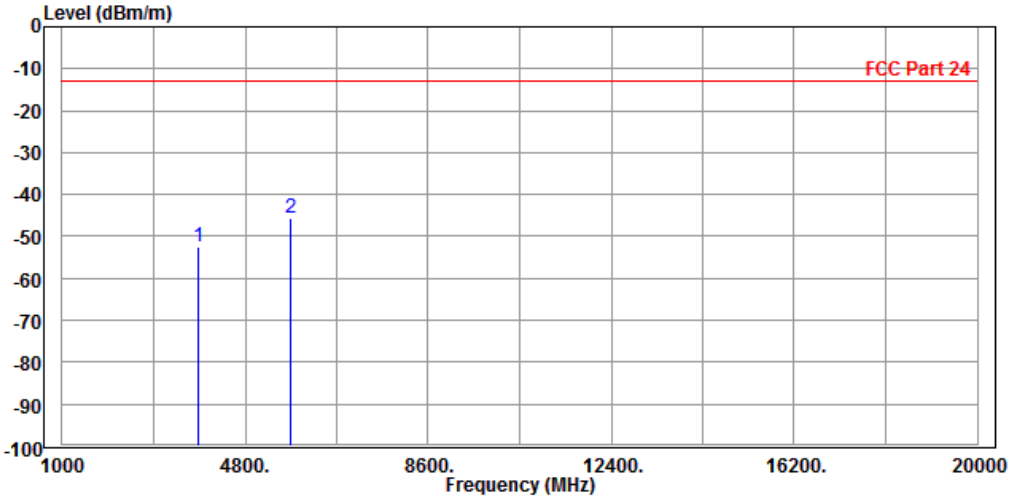
MODE	TX channel 26683	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3834.000	-53.08	-56.85	-13.00	-40.08	3.77	Peak	Horizontal
2	PP	5743.000	-46.77	-56.01	-13.00	-33.77	9.24	Peak	Horizontal



MODE	TX channel 26683	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

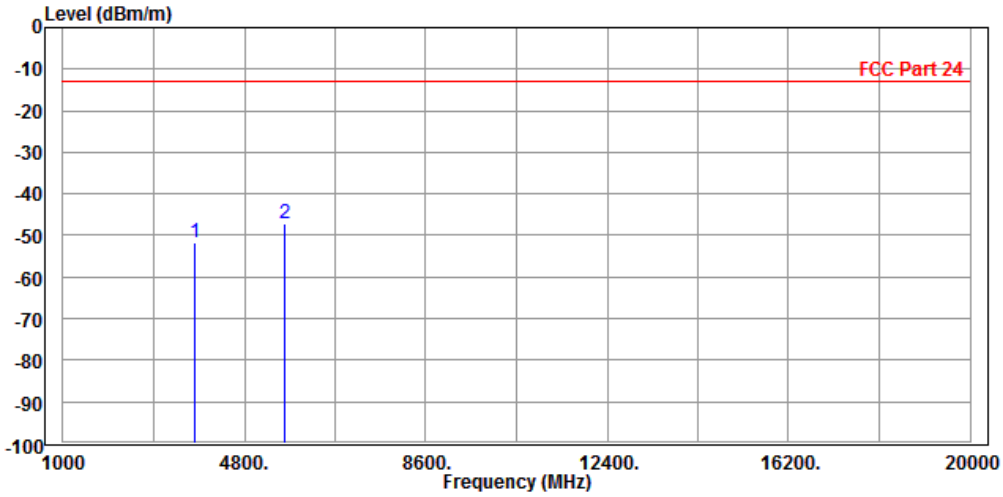
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3834.000	-52.31	-56.56	-13.00	-39.31	4.25	Peak	Vertical
2	PP	5743.000	-45.67	-54.14	-13.00	-32.67	8.47	Peak	Vertical



CHANNEL BANDWIDTH: 3MHz / QPSK

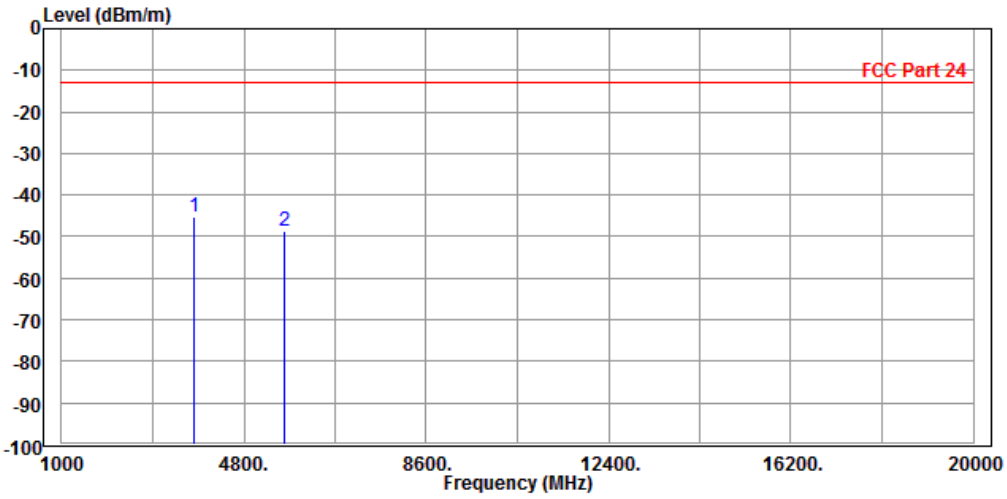
MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3756.000	-51.81	-55.20	-13.00	-38.81	3.39	Peak	Horizontal
2	PP	5647.000	-47.12	-56.25	-13.00	-34.12	9.13	Peak	Horizontal



MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

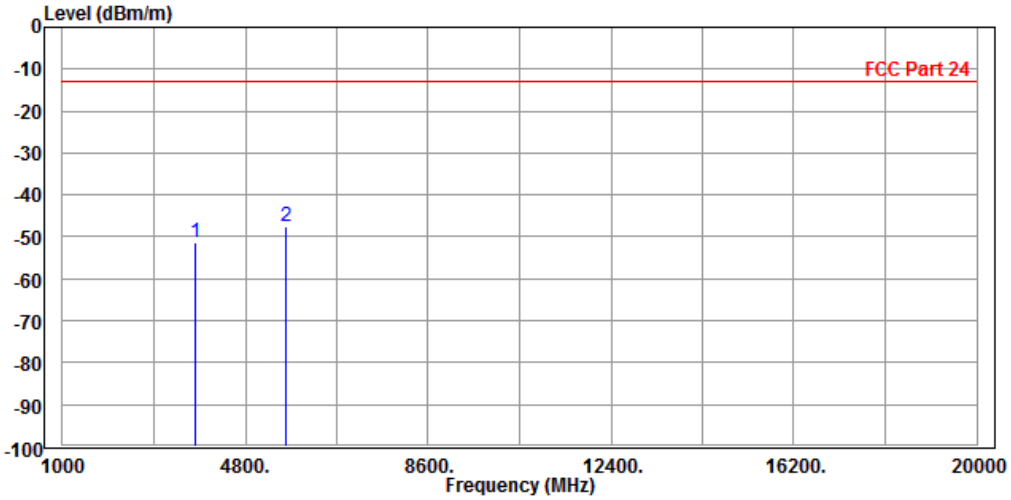
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	3756.000	-45.42	-49.28	-13.00	-32.42	3.86	Peak	Vertical
2		5647.000	-48.54	-56.81	-13.00	-35.54	8.27	Peak	Vertical



CHANNEL BANDWIDTH: 5MHz / QPSK

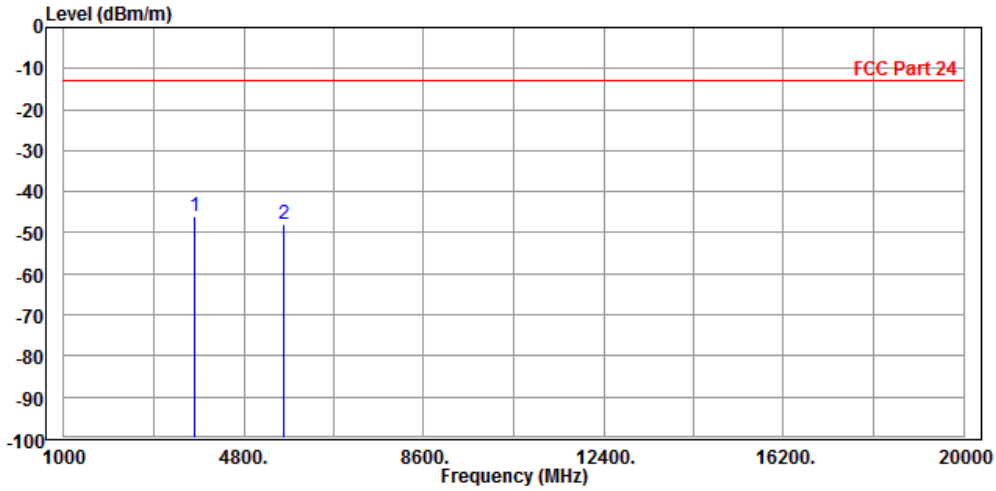
MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3756.000	-51.25	-54.64	-13.00	-38.25	3.39	Peak	Horizontal
2	PP	5647.000	-47.50	-56.63	-13.00	-34.50	9.13	Peak	Horizontal



MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

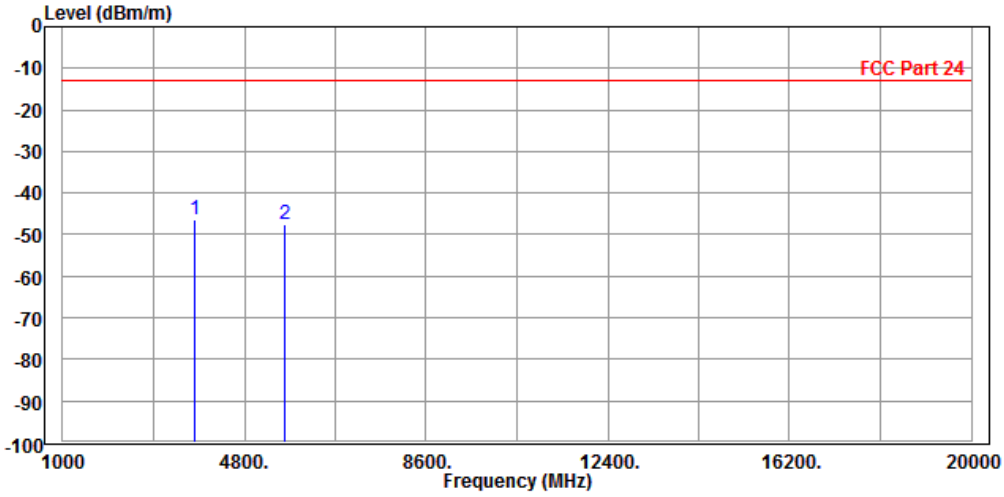
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	3756.000	-45.96	-49.82	-13.00	-32.96	3.86	Peak	Vertical
2		5647.000	-47.83	-56.10	-13.00	-34.83	8.27	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

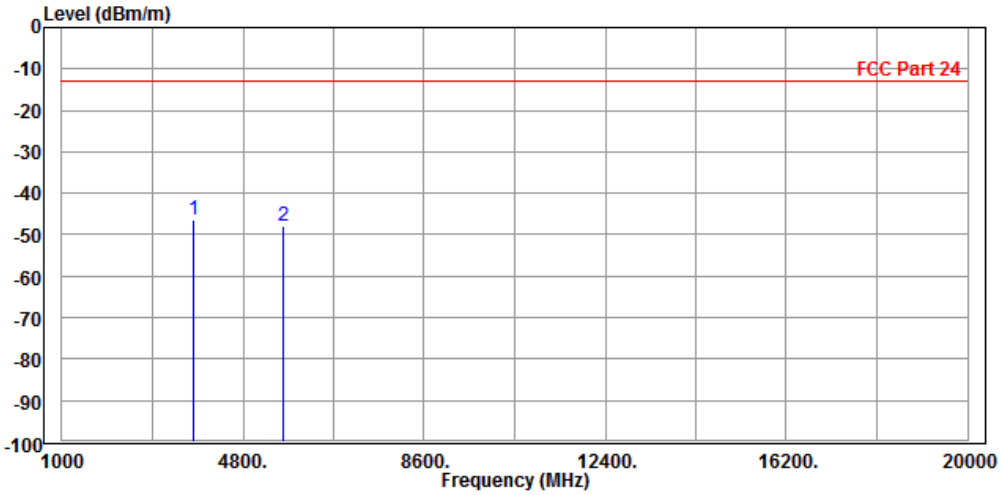
MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	3756.000	-46.49	-49.88	-13.00	-33.49	3.39	Peak	Horizontal
2		5647.000	-47.50	-56.63	-13.00	-34.50	9.13	Peak	Horizontal



MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

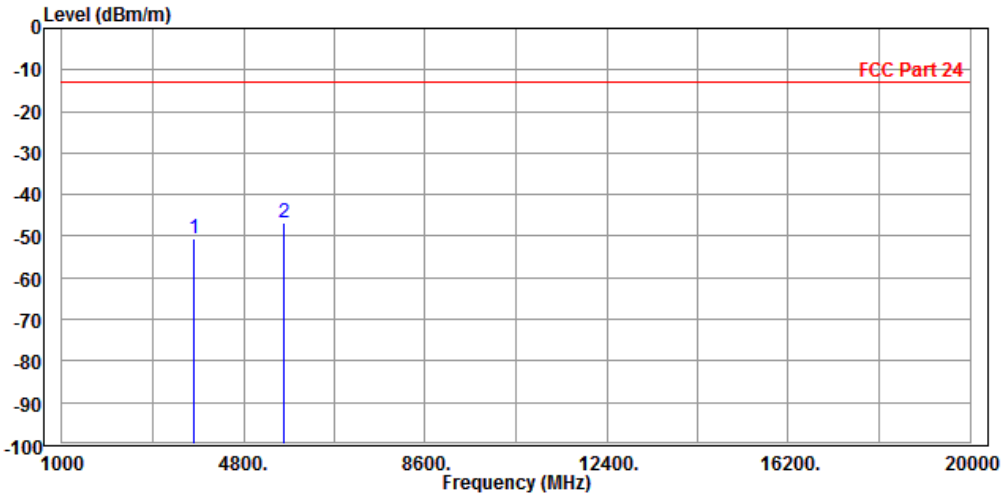
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	3756.000	-46.53	-50.39	-13.00	-33.53	3.86	Peak	Vertical
2		5647.000	-47.84	-56.11	-13.00	-34.84	8.27	Peak	Vertical



CHANNEL BANDWIDTH: 15MHz / QPSK

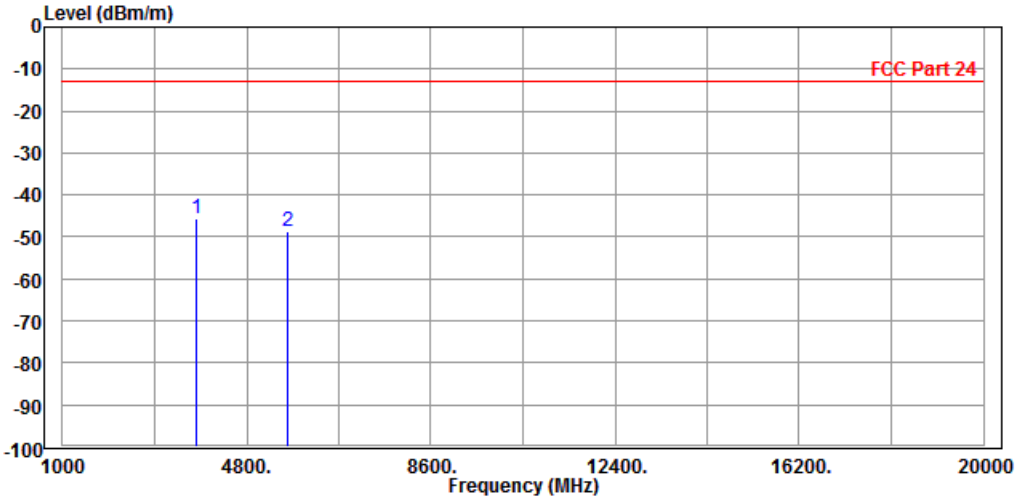
MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3756.000	-50.55	-53.94	-13.00	-37.55	3.39	Peak	Horizontal
2	PP	5647.000	-46.94	-56.07	-13.00	-33.94	9.13	Peak	Horizontal



MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

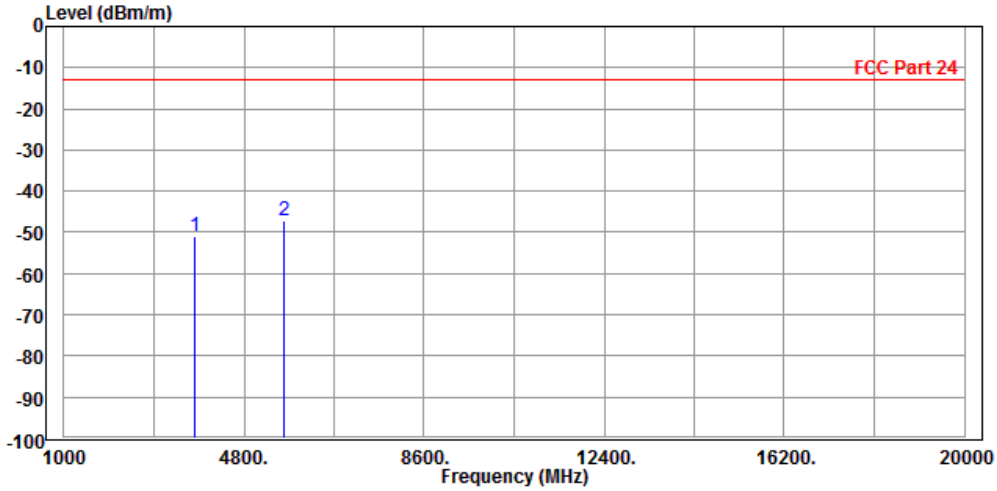
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	3756.000	-45.72	-49.58	-13.00	-32.72	3.86	Peak	Vertical
2		5647.000	-48.78	-57.05	-13.00	-35.78	8.27	Peak	Vertical



CHANNEL BANDWIDTH: 20MHz / QPSK

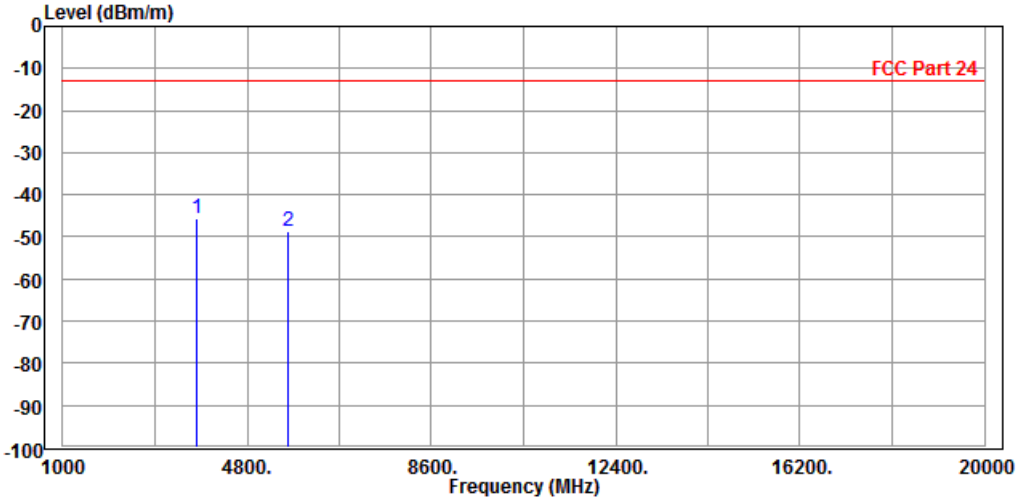
MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3756.000	-50.94	-54.33	-13.00	-37.94	3.39	Peak	Horizontal
2	PP	5647.000	-47.32	-56.45	-13.00	-34.32	9.13	Peak	Horizontal



MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	3756.000	-45.80	-49.66	-13.00	-32.80	3.86	Peak	Vertical
2		5647.000	-48.72	-56.99	-13.00	-35.72	8.27	Peak	Vertical

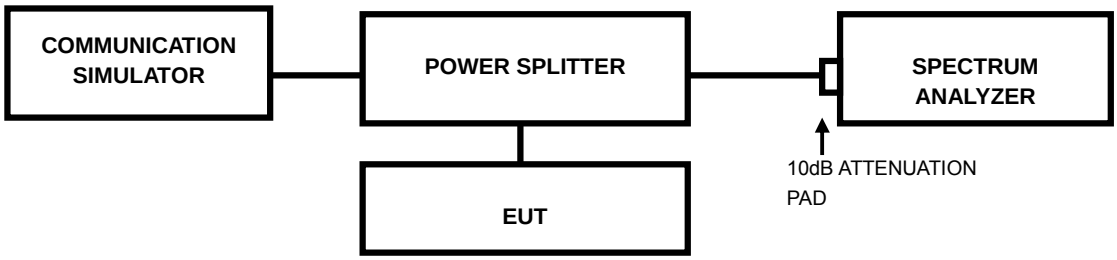


3.7 PEAK TO AVERAGE RATIO

3.7.1 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

3.7.2 TEST SETUP



3.7.3 TEST PROCEDURES

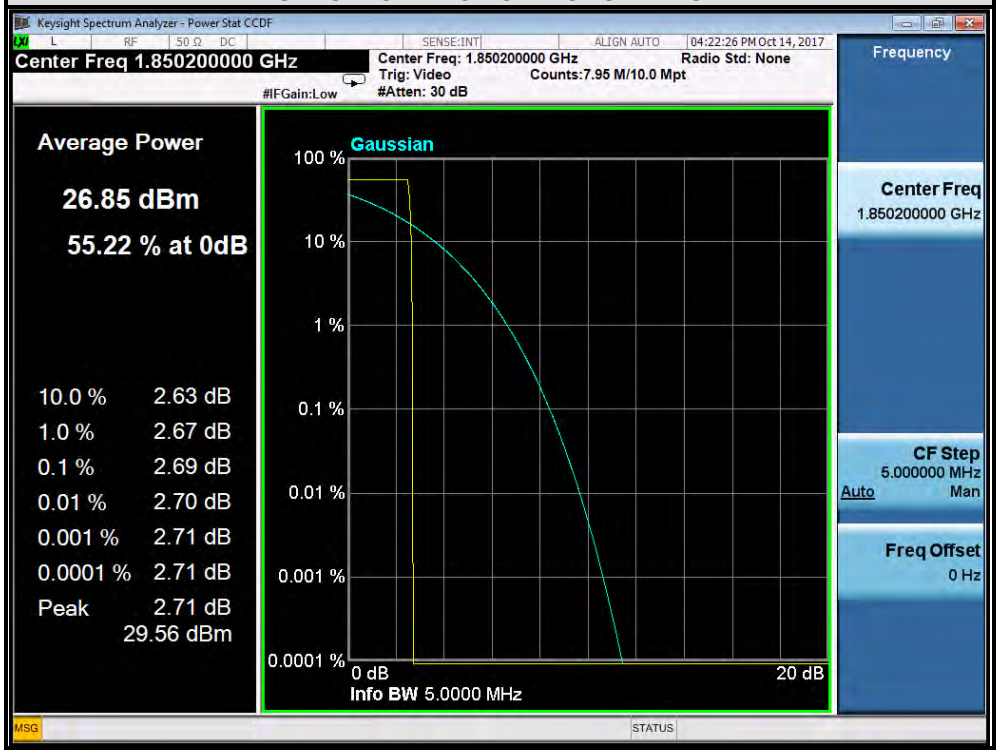
1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

3.7.4 TEST RESULTS

GSM

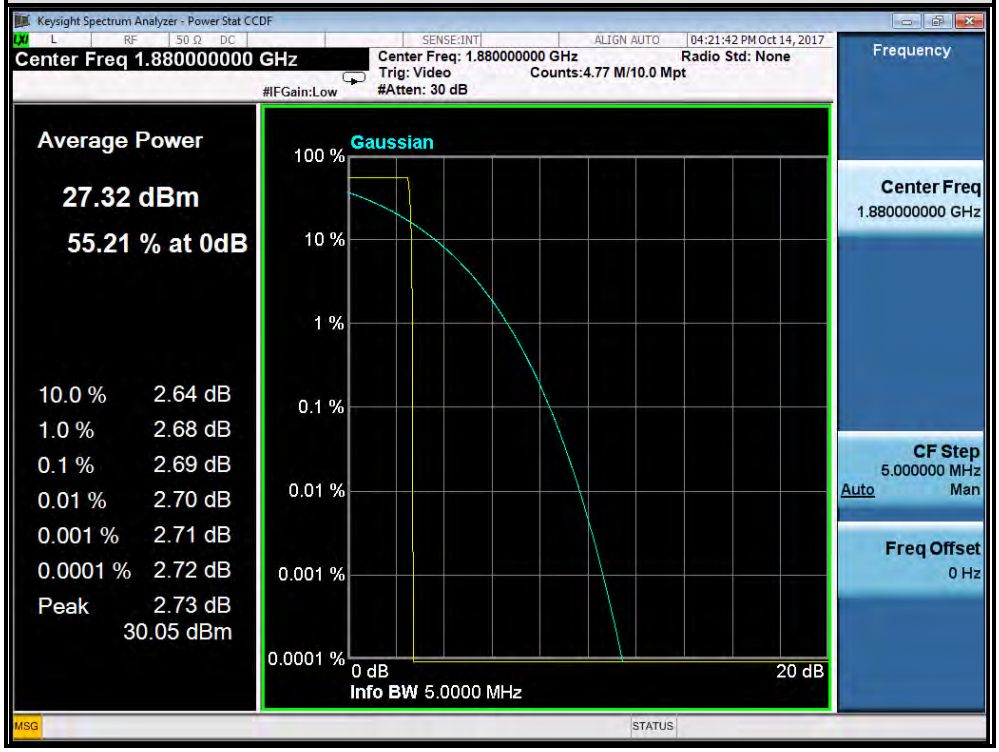
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
512	1850.2	2.69

SPECTRUM PLOT OF WORST VALUE



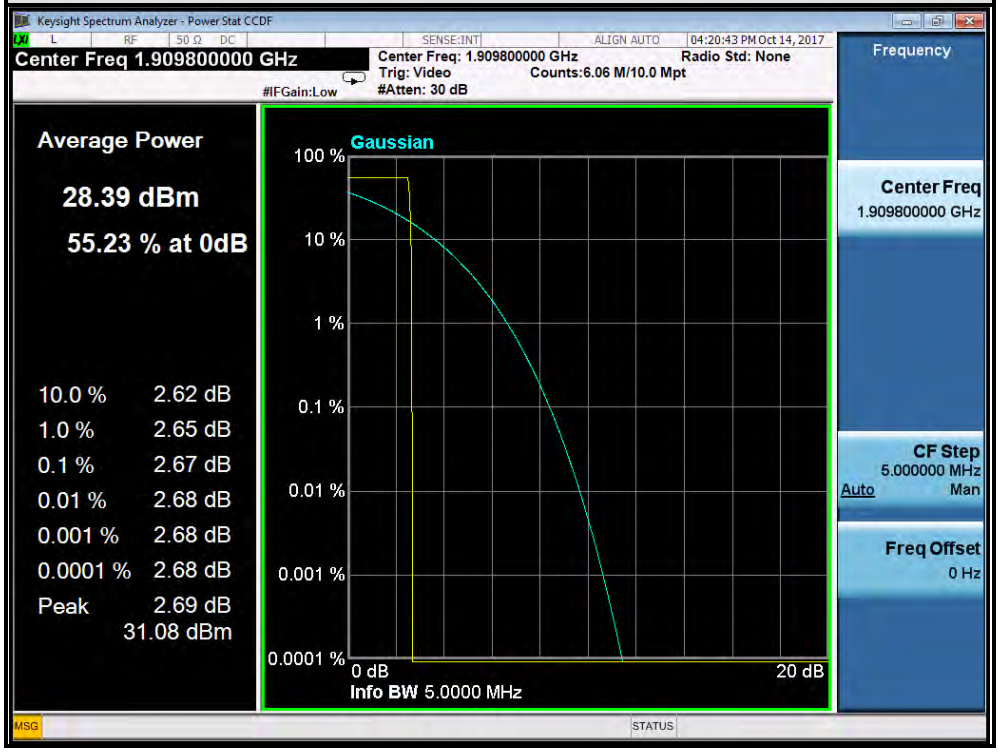
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
661	1880	2.69

SPECTRUM PLOT OF WORST VALUE



CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
810	1909.8	2.67

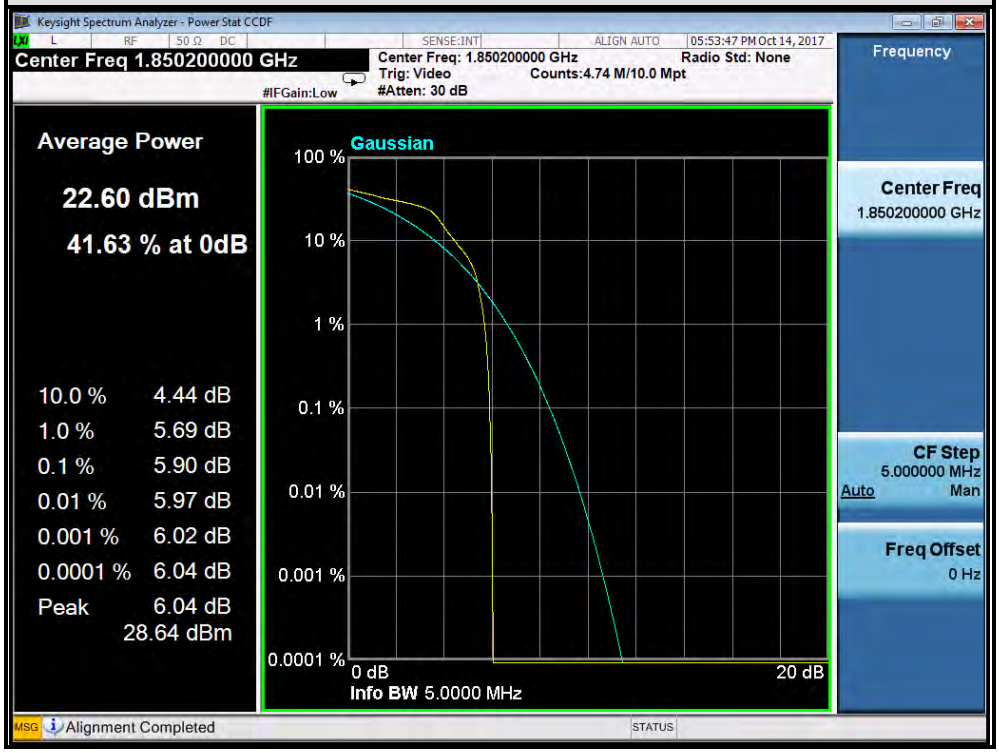
SPECTRUM PLOT OF WORST VALUE



EDGE

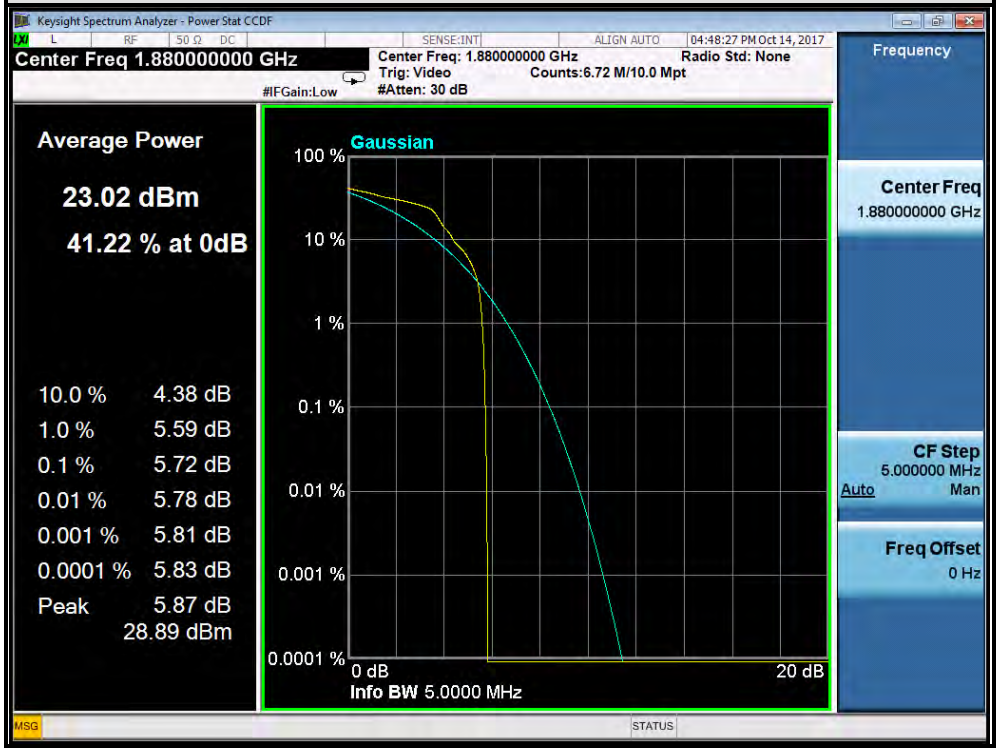
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
512	1850.2	5.90

SPECTRUM PLOT OF WORST VALUE



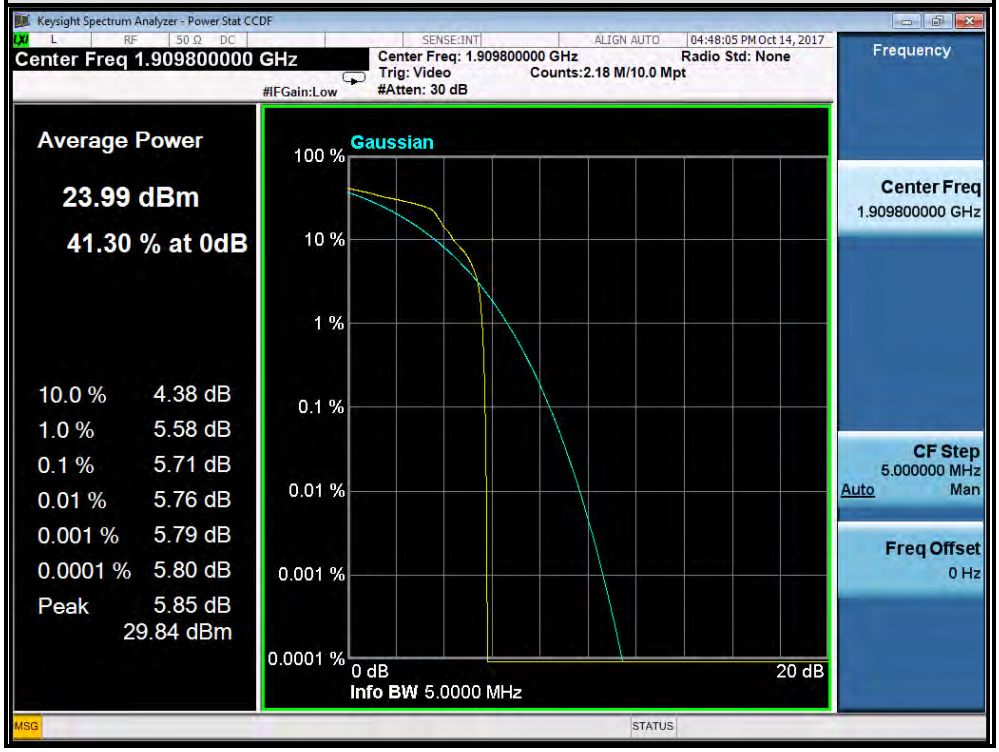
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
661	1880	5.72

SPECTRUM PLOT OF WORST VALUE



CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
810	1909.8	5.71

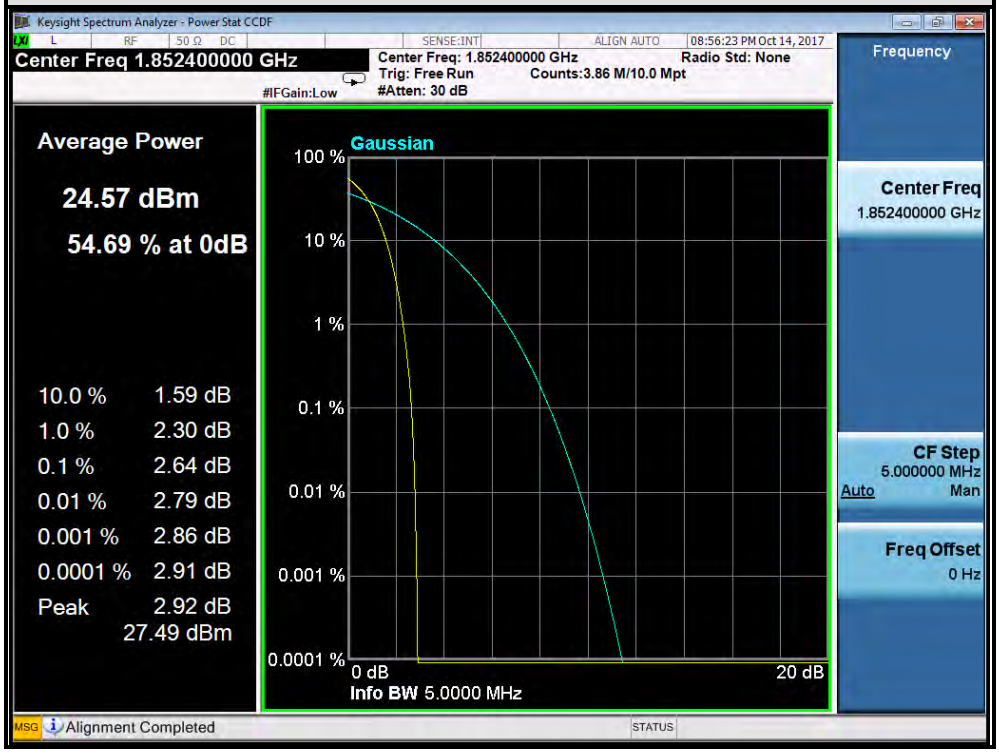
SPECTRUM PLOT OF WORST VALUE



WCDMA

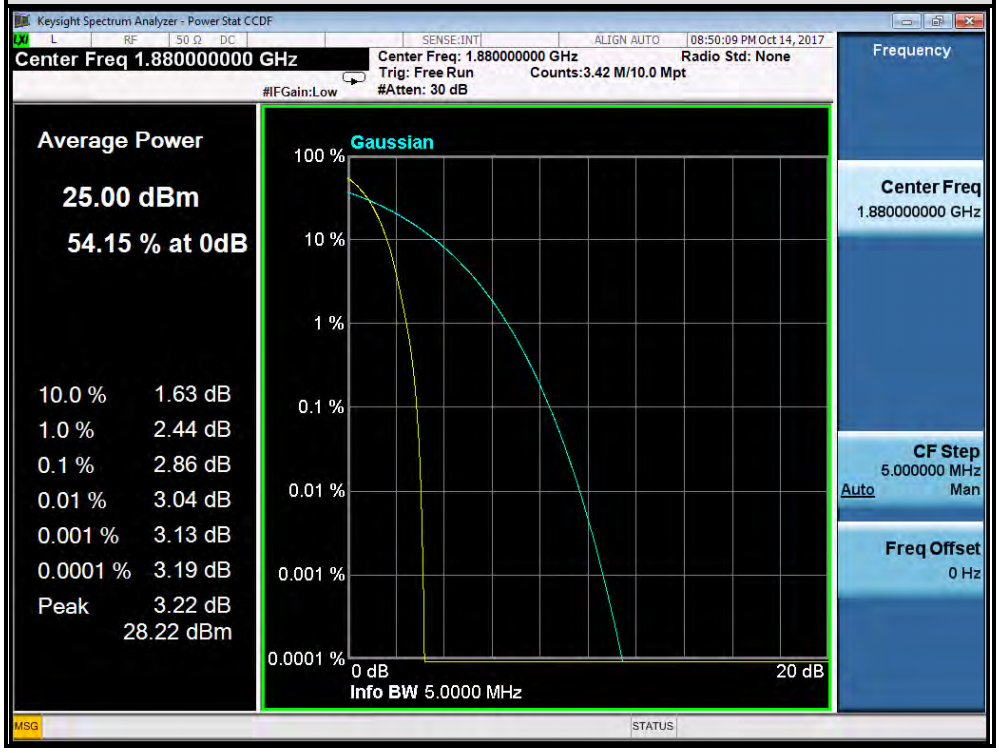
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
9262	1852.4	2.64

SPECTRUM PLOT OF WORST VALUE



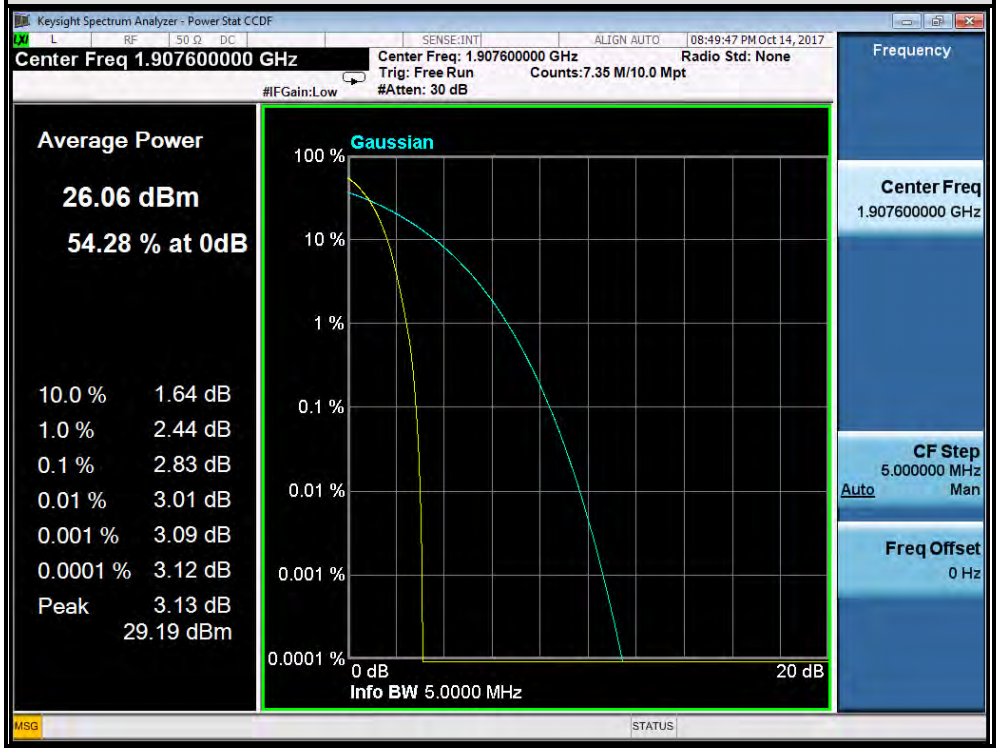
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
9400	1880.0	2.86

SPECTRUM PLOT OF WORST VALUE



CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
9538	1907.6	2.83

SPECTRUM PLOT OF WORST VALUE

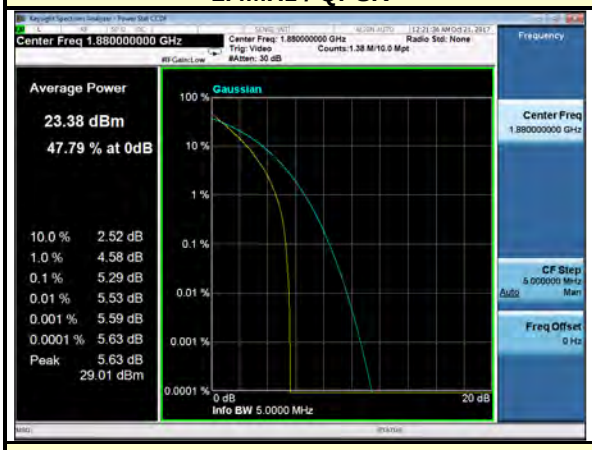


LTE BAND 2

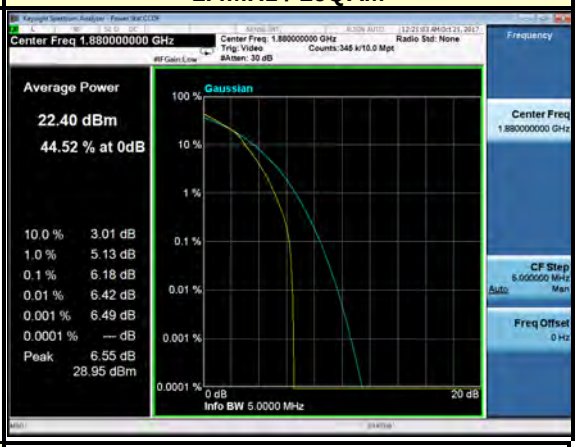
CHANNEL BANDWIDTH: 1.4MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
18607	1850.7	4.89	5.86	6.52
18900	1880	5.29	6.18	6.53
19193	1909.3	4.90	5.83	6.51

SPECTRUM PLOT OF WORST VALUE

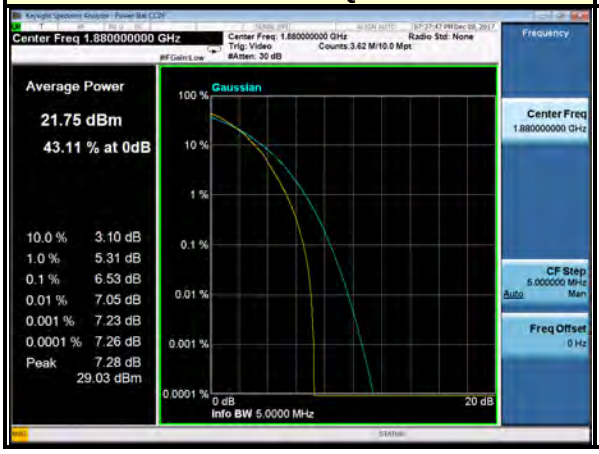
1.4MHz / QPSK



1.4MHz / 16QAM



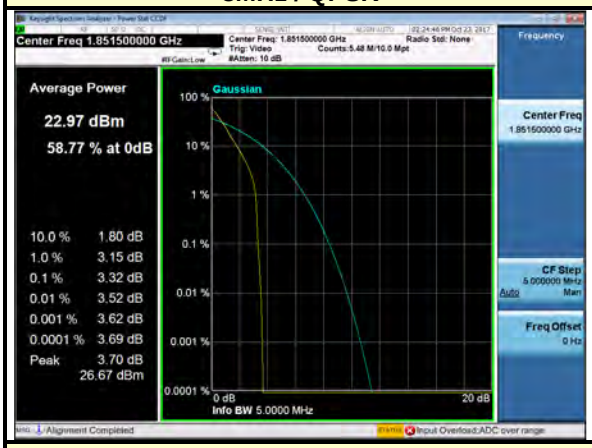
1.4MHz / 64QAM



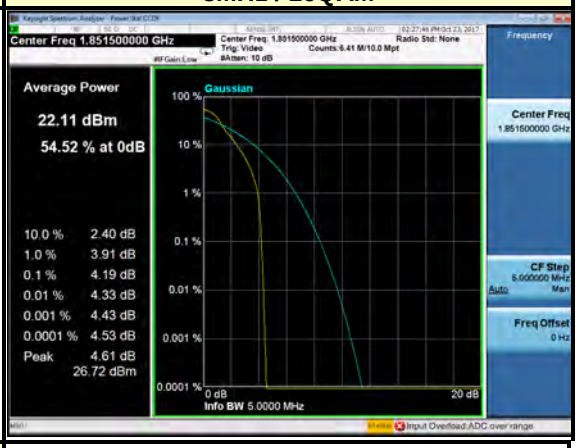
CHANNEL BANDWIDTH: 3MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
18615	1851.5	3.32	4.19	6.49
18900	1880	3.09	3.90	6.65
19185	1908.5	2.84	3.55	6.51

SPECTRUM PLOT OF WORST VALUE

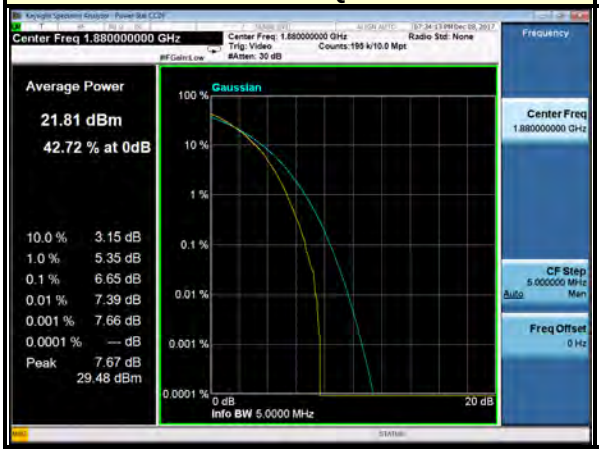
3MHz / QPSK



3MHz / 16QAM



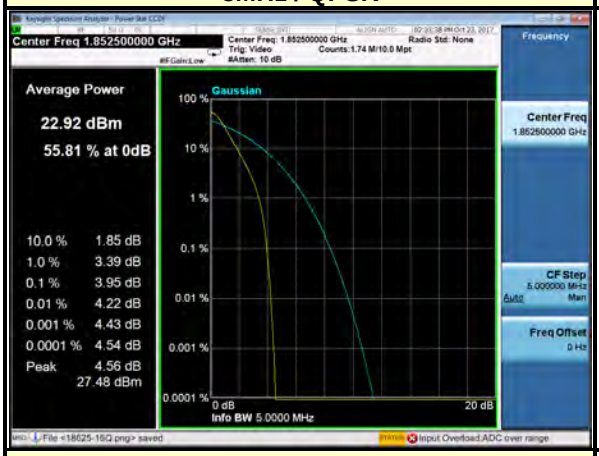
3MHz / 64QAM



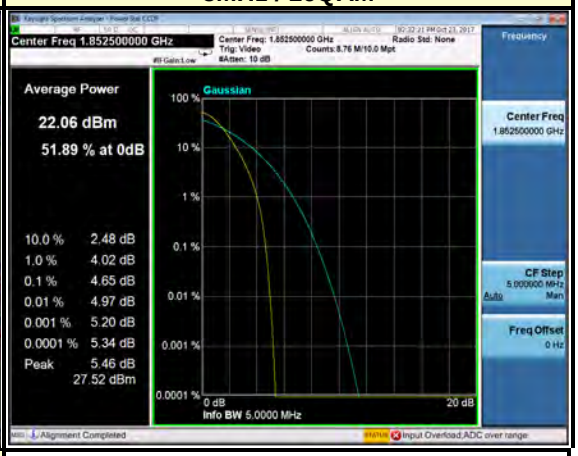
CHANNEL BANDWIDTH: 5MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
18625	1852.5	3.95	4.65	6.48
18900	1880	3.76	4.45	6.70
19175	1907.5	3.51	4.19	6.54

SPECTRUM PLOT OF WORST VALUE

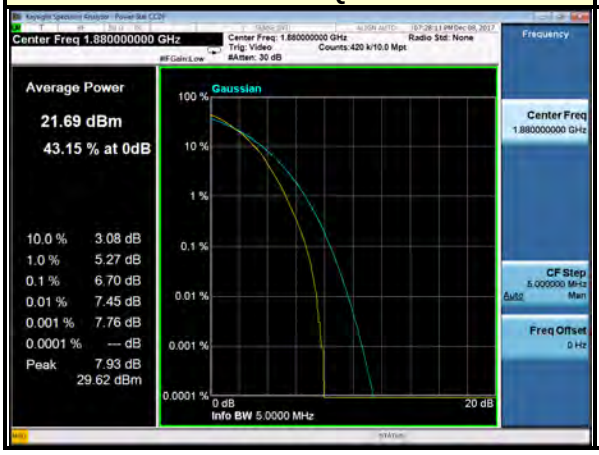
5MHz / QPSK



5MHz / 16QAM



5MHz / 64QAM

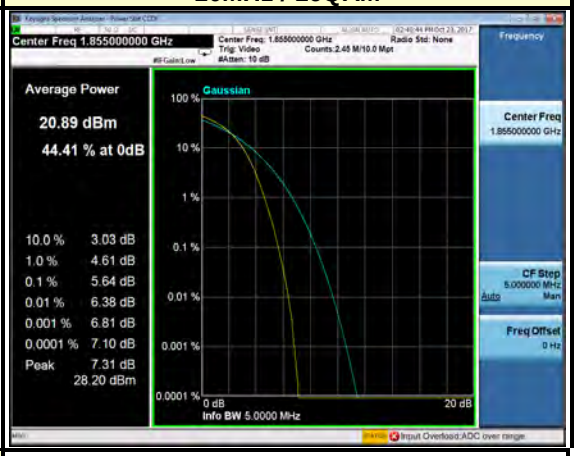


CHANNEL BANDWIDTH: 10MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
18650	1855	4.88	5.64	6.24
18900	1880	4.95	5.63	6.55
19150	1905	5.00	5.50	6.44

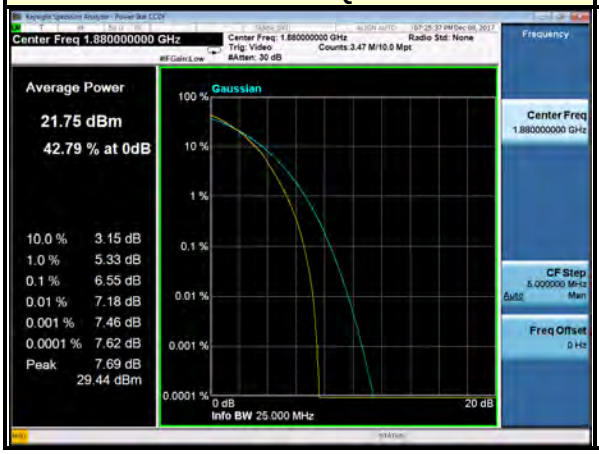
SPECTRUM PLOT OF WORST VALUE

10MHz / QPSK

10MHz / 16QAM



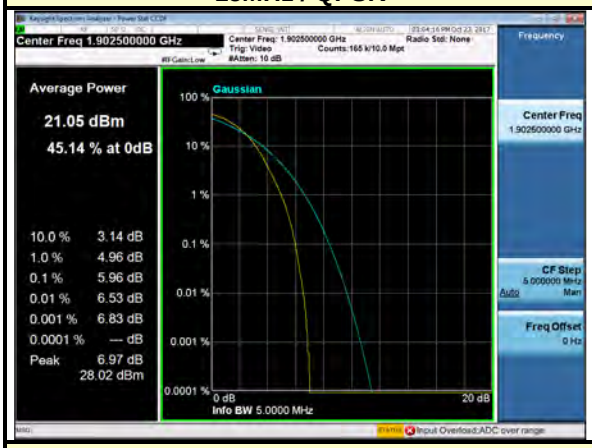
10MHz / 64QAM



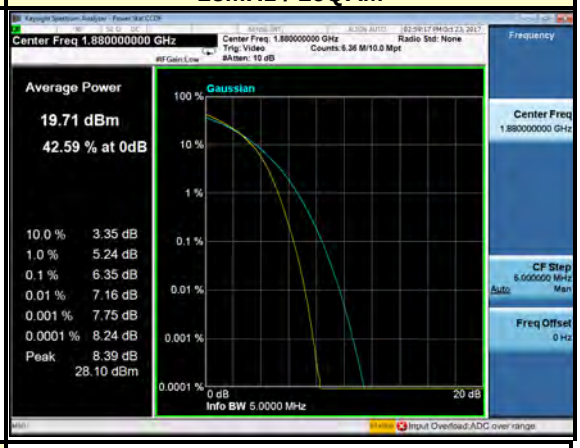
CHANNEL BANDWIDTH: 15MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
18675	1857.5	5.87	6.32	6.26
18900	1880	5.92	6.35	6.51
19125	1902.5	5.96	6.27	6.53

SPECTRUM PLOT OF WORST VALUE

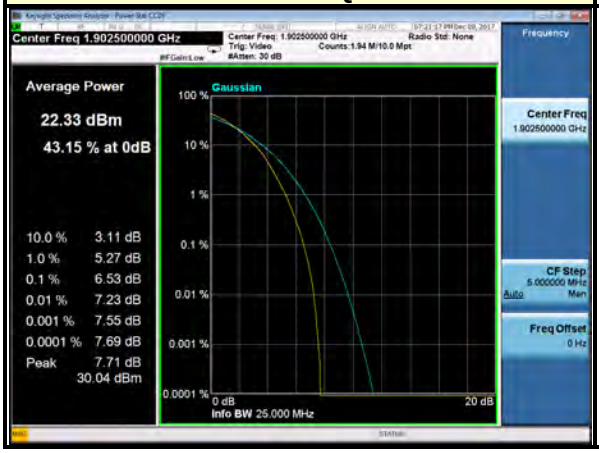
15MHz / QPSK



15MHz / 16QAM



15MHz / 64QAM

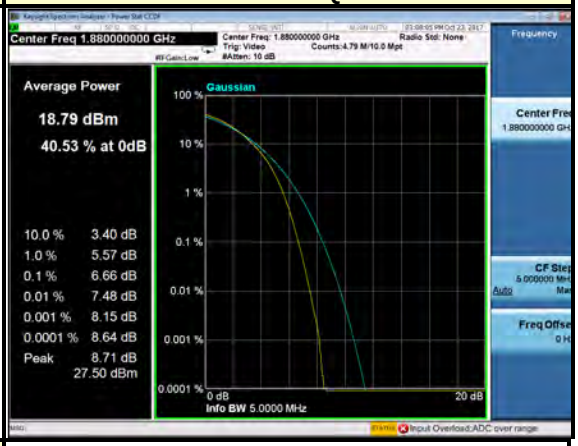


CHANNEL BANDWIDTH: 20MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
18700	1860	6.32	6.64	6.32
18900	1880	6.35	6.66	6.56
19100	1900	6.35	6.60	6.60

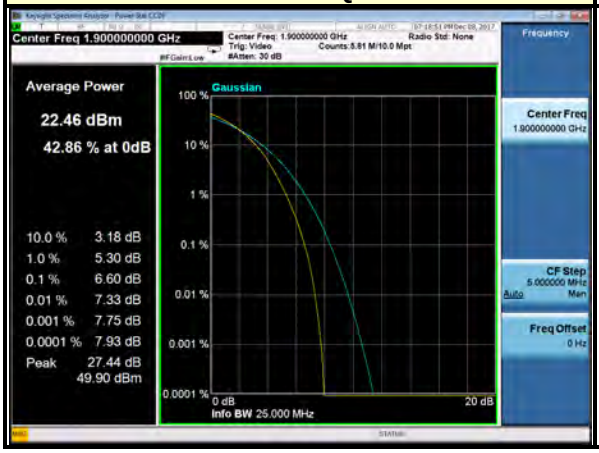
SPECTRUM PLOT OF WORST VALUE

20MHz / QPSK

20MHz / 16QAM



20MHz / 64QAM

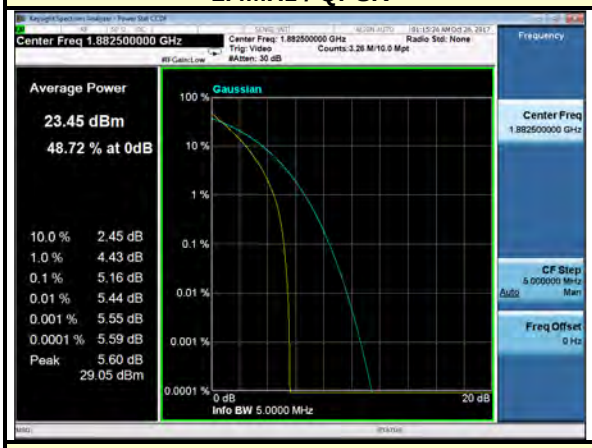


LTE BAND 25

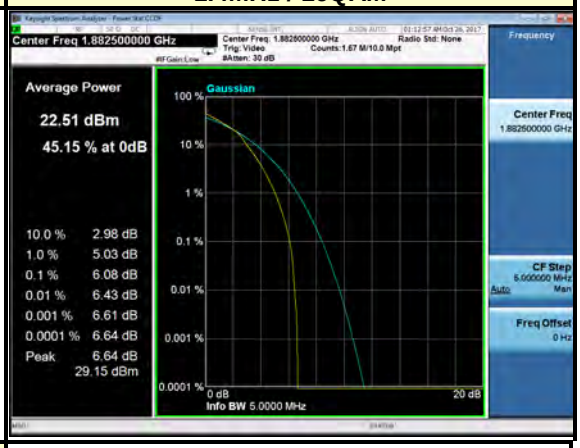
CHANNEL BANDWIDTH: 1.4MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
26047	1850.7	5.16	6.08	6.64
26365	1880	5.06	5.98	6.89
26683	1914.3	4.32	5.35	6.30

SPECTRUM PLOT OF WORST VALUE

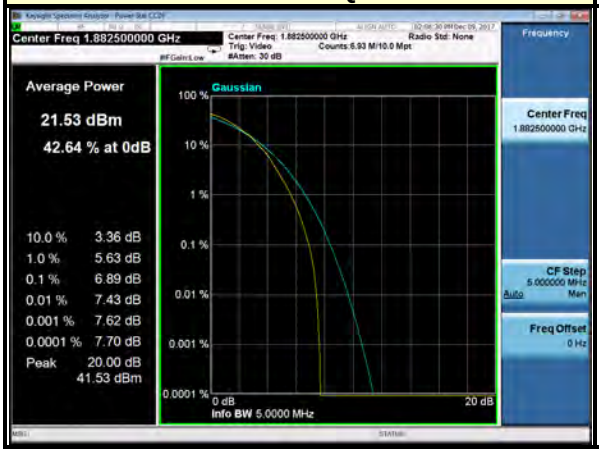
1.4MHz / QPSK



1.4MHz / 16QAM



1.4MHz / 64QAM

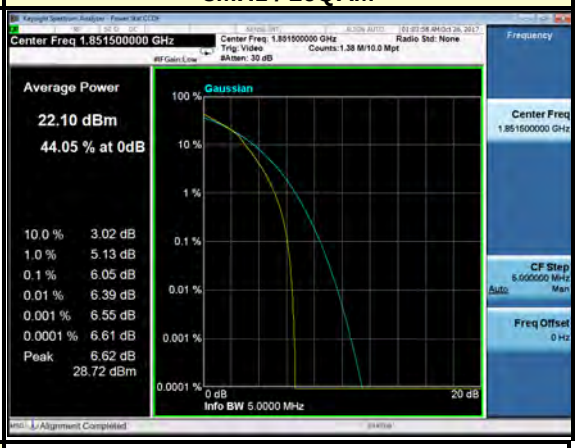


CHANNEL BANDWIDTH: 3MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
26055	1851.5	5.19	6.05	6.58
26365	1880	5.26	6.01	6.55
26675	1913.5	4.73	5.69	6.34

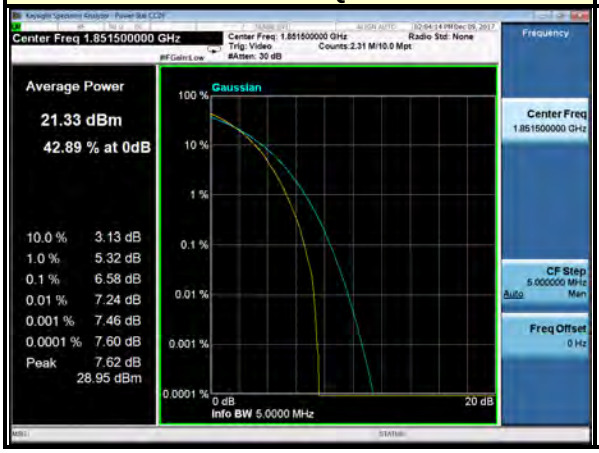
SPECTRUM PLOT OF WORST VALUE

3MHz / QPSK

3MHz / 16QAM



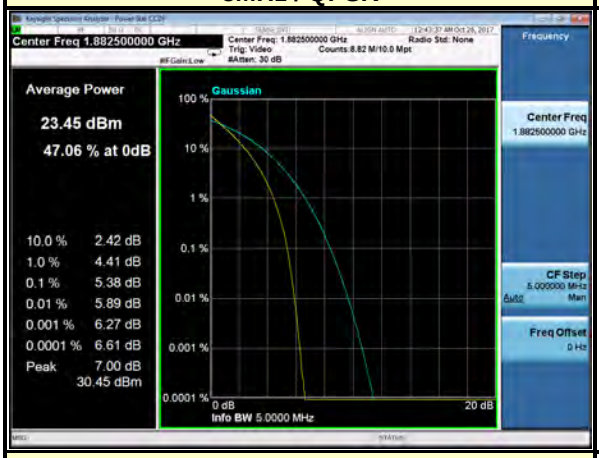
3MHz / 64QAM



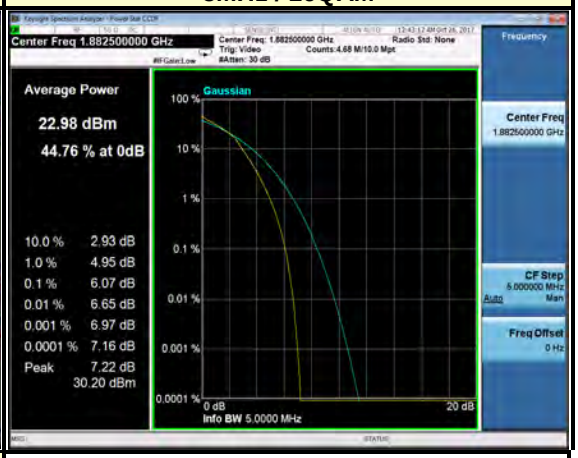
CHANNEL BANDWIDTH: 5MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
26065	1852.5	5.27	6.07	6.57
26365	1880	5.38	6.07	6.52
26665	1912.5	5.12	5.95	6.49

SPECTRUM PLOT OF WORST VALUE

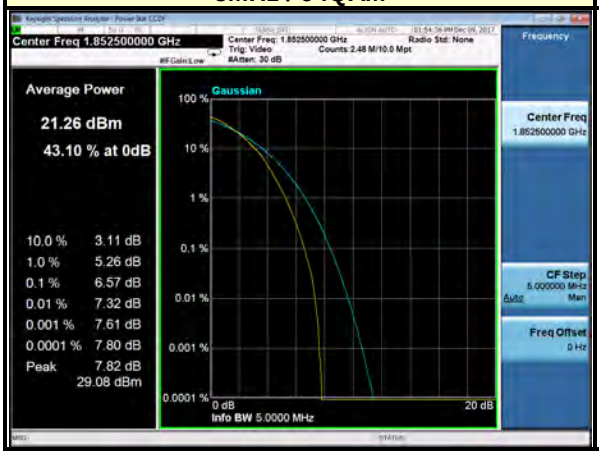
5MHz / QPSK



5MHz / 16QAM



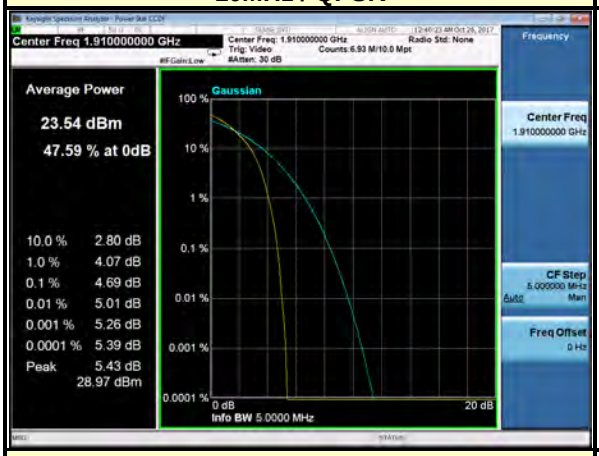
5MHz / 64QAM



CHANNEL BANDWIDTH: 10MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
26090	1855	4.67	5.88	6.20
26365	1880	4.68	6.14	6.39
26640	1910	4.69	6.08	6.39

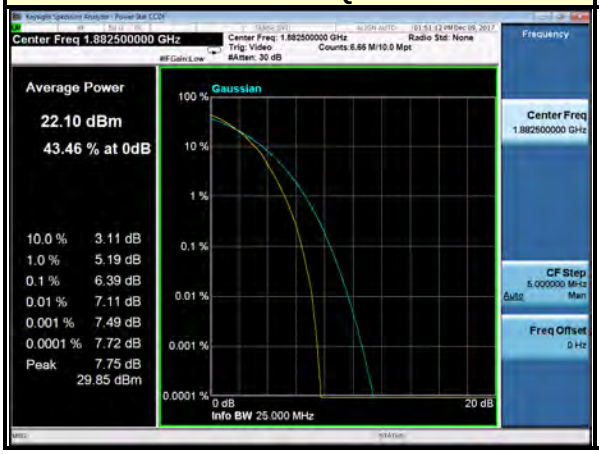
SPECTRUM PLOT OF WORST VALUE

10MHz / QPSK



10MHz / 16QAM

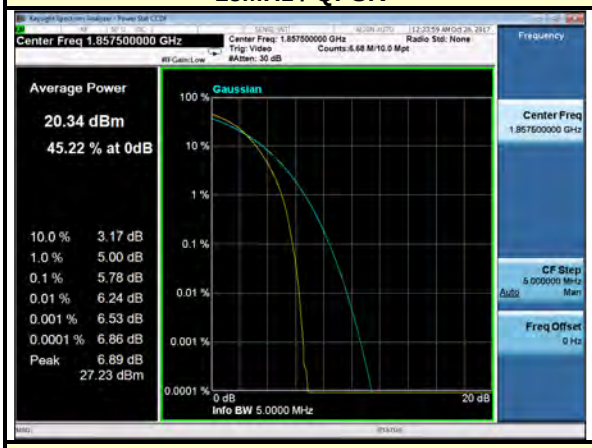
10MHz / 64QAM



CHANNEL BANDWIDTH: 15MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
26115	1857.5	5.78	6.85	6.24
26365	1880	5.78	6.80	6.43
26615	1907.5	5.78	6.84	6.46

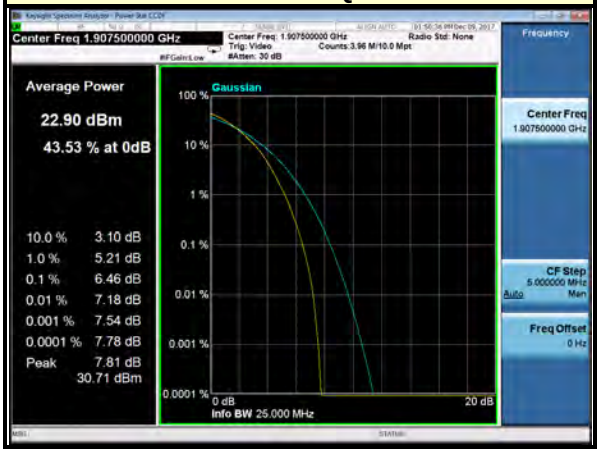
SPECTRUM PLOT OF WORST VALUE

15MHz / QPSK



15MHz / 16QAM

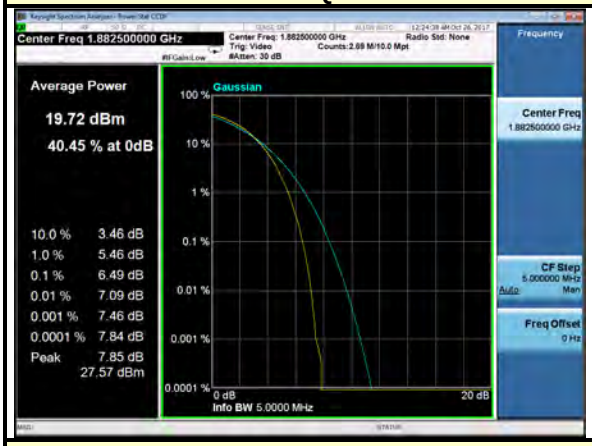
15MHz / 64QAM



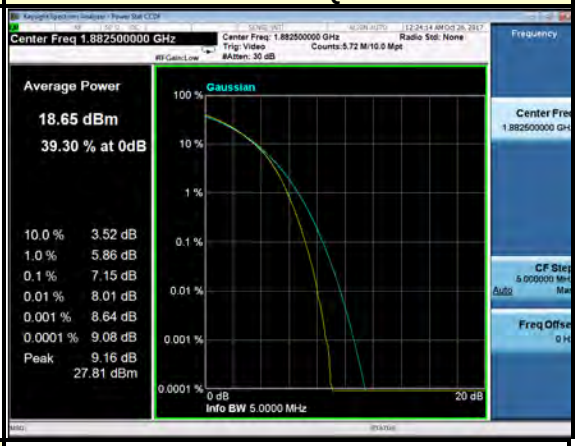
CHANNEL BANDWIDTH: 20MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
26140	1860	6.47	7.11	6.40
26365	1880	6.49	7.15	6.44
26590	1905	6.49	7.10	6.52

SPECTRUM PLOT OF WORST VALUE

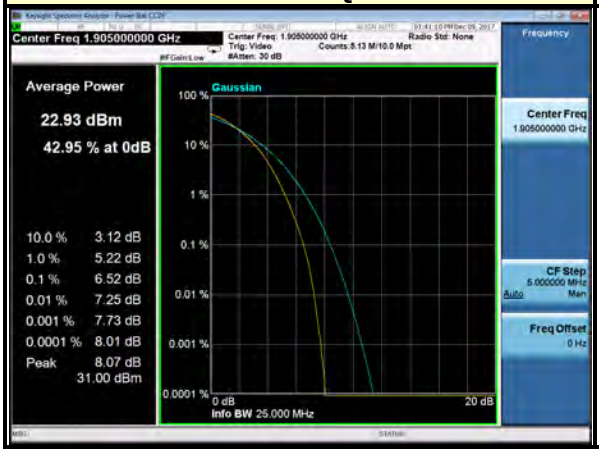
20MHz / QPSK



20MHz / 16QAM



20MHz / 64QAM



4 INFORMATION ON THE TESTING LABORATORIES

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD., were founded in 2015 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Fax: +86-755-88696577

Email: customerservice.dg@cn.bureauveritas.com
Web Site: www.adt.com.tw

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

5 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---