Test Lab
Cert 2951.01

FCC TEST REPORT

(PART 27)

Product: LTE mission critical hand held

Model Name: LEX F10

FCC ID: AZ489FT7101

Applicant: Motorola Solutions, Inc.

Address: 8000 West Sunrise Blvd Ft Lauderdale, FL 33322

Manufacturer: Motorola Solutions, Inc.

Address: 8000 West Sunrise Blvd Ft Lauderdale, FL 33322

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Report No.: RF170103W004-6

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Test Date: Feb. 02, 2017 ~ Feb. 24, 2017

Issued Date: Feb. 27, 2017

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF170103W004-6	Original release	Feb. 27, 2017

1 CERTIFICATION

PRODUCT:	LTE mission critical hand held
BRAND NAME:	Motorola Solutions, Inc.
MODEL NAME:	LEX F10
APPLICANT:	Motorola Solutions, Inc.
TESTED:	Feb. 02, 2017 ~ Feb. 24, 2017
TEST SAMPLE:	Identical Prototype
STANDARDS:	**FCC Part 27, Subpart C, M**
	FCC Part 2
	ANSI/TIE/EIA-603-D

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

TESTED BY : _____ **DATE :** Feb. 27, 2017
(Harry Li/ Engineer)

APPROVED BY : _____ **DATE :** Feb. 27, 2017
(Sam Tung / Manager)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 27 & Part 2			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
2.1046 27.50(h)	Equivalent Isotropically Radiated Power	PASS	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	PASS	Meet the requirement of limit.
2.1049	Occupied Bandwidth	PASS	Meet the requirement of limit.
27.50(d)(5)	Peak to average ratio	PASS	Meet the requirement of limit.
2.1051 27.53(l)	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 27.53(l)	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 27.53(l)	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -3.65dB at 30.00MHz.

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.70dB
Radiated emissions	9KHz ~ 30MHz	2.90dB
	30MHz ~ 1GMHz	4.06dB
	1GHz ~ 18GHz	4.58dB
	18GHz ~ 40GHz	1.94dB

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

2.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101494	Apr. 05,16	Apr. 04,17
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	Nov. 04,16	Nov. 03,17
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Apr. 05,16	Apr. 04,17
Bilog Antenna 1	Teseq	CBL 6111D	30643	Jul. 14, 16	Jul. 13, 17
Bilog Antenna 2	Teseq	CBL 6111D	27089	Jul. 14, 16	Jul. 13, 17
Loop antenna	Daze	ZN30900A	0708	Nov. 28, 16	Nov. 27, 17
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	May 18,16	May 17,17
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062557	May 18,16	May 17,17
10m Semi-anechoic Chamber	CHANGLING	21.4m*12.1m*8.8m	NSEMC006	Mar. 12,16	Mar. 11,18
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. 27, 16	Jul. 26, 17
Horn Antenna (15GHz-40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170147	Mar. 12,16	Mar. 11,17
Horn Antenna (15GHz-40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170242	Mar. 12,16	Mar. 11,17
Amplifier	Burgeon	BPA-530	100220	Apr. 05,16	Apr. 04,17
Amplifier (9kHz-1GHz)	SONOMA	310D	186955	Mar. 04,16	Mar. 03, 17
Pre-Amplifier(1-18G)	HP	8449B	3008A00409	Apr. 25,16	Apr. 24,17
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,16	Nov. 03,17
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.05,16	Sep. 04,17
Signal Generator	Agilent	N5183A	MY50140980	Nov. 04,16	Nov. 03,17

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 10m 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 502831.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	LTE mission critical hand held	
MODEL NAME	LEX F10	
TYPE NUMBER	NA	
POWER SUPPLY	5Vdc (adapter or host equipment) 3.8Vdc (battery)	
MODULATION TECHNOLOGY	**LTE Band 7**	QPSK, 16QAM
FREQUENCY RANGE	**LTE Band 7 Channel Bandwidth: 5MHz**	2502.5MHz ~ 2567.5MHz
	LTE Band 7 Channel Bandwidth: 10MHz	2505MHz ~ 2565MHz
	LTE Band 7 Channel Bandwidth: 15MHz	2507.5MHz ~ 2562.5MHz
	LTE Band 7 Channel Bandwidth: 20MHz	2510MHz ~ 2560MHz
EMISSION DESIGNATOR	**LTE Band 7 Channel Bandwidth: 5MHz**	QPSK: 4M52G7D
		16QAM: 4M47W7D
	LTE Band 7 Channel Bandwidth: 10MHz	QPSK: 8M97G7D
		16QAM: 8M97W7D
	LTE Band 7 Channel Bandwidth: 15MHz	QPSK: 13M6G7D
		16QAM: 13M5W7D
	LTE Band 7 Channel Bandwidth: 20MHz	QPSK: 18M0G7D
		16QAM: 17M9W7D
MAX. EIRP POWER	**LTE Band 7 Channel Bandwidth: 5MHz**	719mW
	LTE Band 7 Channel Bandwidth: 10MHz	665mW
	LTE Band 7 Channel Bandwidth: 15MHz	652mW
	LTE Band 7 Channel Bandwidth: 20MHz	643mW
ANTENNA TYPE	Fixed Internal antenna with 1.8dBi gain	
HW VERSION	C	
SW VERSION	7A.0.0-07-5.1.1-21.00.15	
DATA CABLE	USB cable: non-shielded, detachable, 1.1m	

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:	Motorola Solutions, Inc.
MODEL:	S24A02
INPUT:	AC 100-240V, 450mA
OUTPUT:	DC 5V, 2100mA

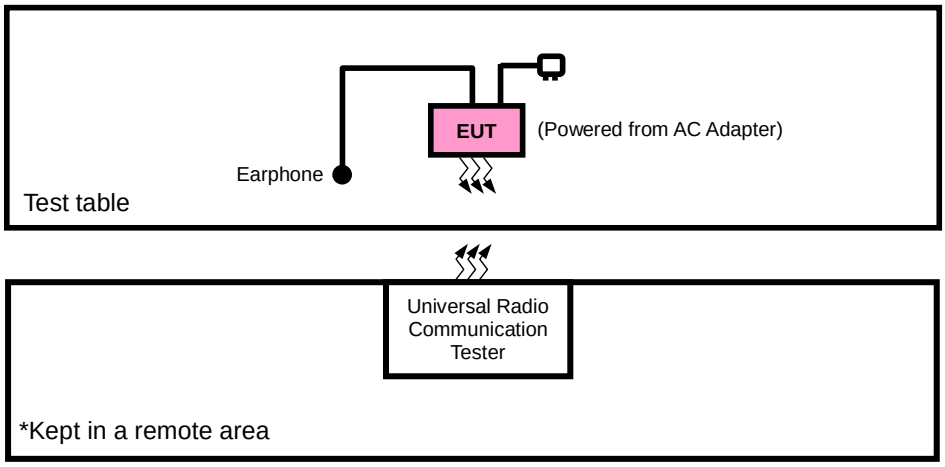
3. The EUT matched the following USB cable:

USB CABLE	
BRAND:	Sunway
MODEL:	TBD
SIGNAL LINE:	1.1 METER

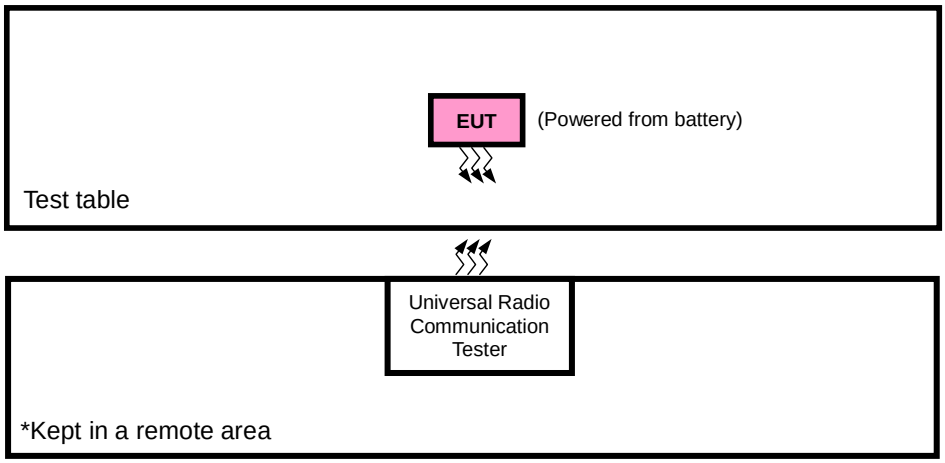
4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

3.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST



FOR CONDUCTED & E.I.R.P TEST



3.3 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	DC source	LONG WEI	PS-6403D	010934269	N/A
2	PC	HP	A6608CN	3CR83825X3	N/A
3	Earphone	Minami	ME-816B5-E	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.0m
2	AC Line: Unshielded, Detachable 1.5m
3	Earphone Cable: Shielded, Detachable, 1.2m

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

3.4 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 was found when positioned on Y-plane for EIRP and X-axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	**EUT + Adapter with LTE link**
B	EUT + Battery with **LTE link**

LTE BAND 7

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	EIRP	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM	1 RB / 0RB Offset
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	20775 to 21425	20775, 21425	5MHz	QPSK	1 RB / 0 RB Offset
		20800 to 21400	20800, 21400	10MHz	QPSK	1 RB / 0RB Offset
		20825 to 21375	20825, 21375	15MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	20850, 21350	20MHz	QPSK	1 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		20850 to 21350	20850, 21100 21350	20MHz	QPSK, 16QAM	100 RB / 0 RB Offset
B	PEAK TO AVERAGE RATIO	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM	1 RB / 0RB Offset
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM	1 RB / 0 RB Offset
B	BAND EDGE	20775 to 21425	20775	5MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			21425	5MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		20800 to 21400	20800	10MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			21400	10MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		20825 to 21375	20825	15MHz	QPSK	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			21375	15MHz	QPSK	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		20850 to 21350	20850	20MHz	QPSK	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
			21350	20MHz	QPSK	1 RB / 99 RB Offset
						100 RB / 0 RB Offset
B	CONDCUDETED EMISSION	20775 to 21425	21100	5MHz	QPSK	1 RB / 0 RB Offset
		20800 to 21400	21100	10MHz	QPSK	1 RB / 0RB Offset
		20825 to 21375	21100	15MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	21100	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	20775 to 21425	21100	5MHz	QPSK	1 RB / 0 RB Offset
		20800 to 21400	21100	10MHz	QPSK	1 RB / 0RB Offset
		20825 to 21375	21100	15MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	21100	20MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP	24deg. C, 60%RH	3.8Vdc from Battery	Wenliang Wu
FREQUENCY STABILITY	24deg. C, 61%RH	3.8Vdc from Battery	Wenliang Wu
OCCUPIED BANDWIDTH	24deg. C, 61%RH	3.8Vdc from Battery	Wenliang Wu
PEAK TO AVERAGE RATIO	24deg. C, 61%RH	3.8Vdc from Battery	Wenliang Wu
BAND EDGE	24deg. C, 61%RH	3.8Vdc from Battery	Moon Xiong
CONDCUDETED EMISSION	24deg. C, 61%RH	3.8Vdc from Battery	Moon Xiong
RADIATED EMISSION	24deg. C, 60%RH	5Vdc from adapter	Tony Zou

3.5 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 27

KDB Publication 971168 D02

ANSI/TIA/EIA-603-D

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

4 TEST TYPES AND RESULTS

4.1 OUTPUT POWER MEASUREMENT

4.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

The radiated peak output power shall be according to the specific rule Part 27.50(h)(2) that “User stations are limited to 2 watts” and 27.50(i) specific that “Peak transmit power must be measure over any interval of continuous transmission using instrumentation calibration in terms of rms-equivalent voltage.”

4.1.2 TEST PROCEDURES

EIRP MEASUREMENT:

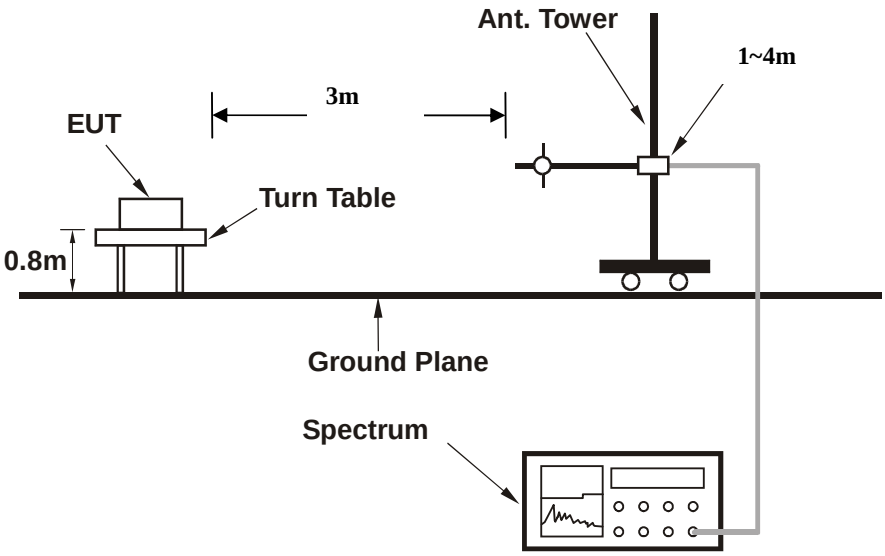
a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 10MHz for LTE mode.
b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum 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:

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

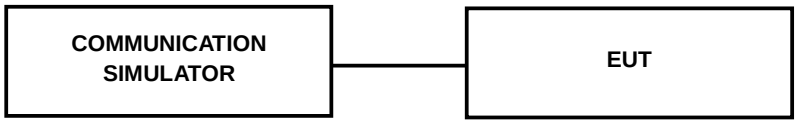
4.1.3 TEST SETUP

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).

4.1.4 TEST RESULTS

AVERAGE CONDUCTED OUTPUT POWER (dBm)

LTE Band 7							
BW	Modulation	RB Size	RB Offset	Low CH 20775	Mid CH 21100	High CH 21425	MPR
				Frequency 2502.5 MHz	Frequency 2535 MHz	Frequency 2567.5 MHz	
5 MHz	QPSK	1	0	20.79	20.78	20.55	0
		1	12	20.78	20.77	20.54	0
		1	24	20.75	20.74	20.51	0
		12	0	19.79	19.78	19.55	1
		12	6	19.78	19.77	19.54	1
		12	13	19.77	19.76	19.53	1
		25	0	19.78	19.77	19.54	1
	16QAM	1	0	19.83	19.82	19.59	1
		1	12	19.80	19.79	19.56	1
		1	24	19.81	19.80	19.57	1
		12	0	18.72	18.71	18.48	2
		12	6	18.83	18.82	18.59	2
		12	13	18.80	18.79	18.56	2
		25	0	18.80	18.79	18.56	2

LTE Band 7							
BW	Modulation	RB Size	RB Offset	Low CH 20800 Frequency 2505 MHz	Mid CH 21100 Frequency 2535 MHz	High CH 21400 Frequency 2565 MHz	MPR
10 MHz	QPSK	1	0	20.83	20.82	20.59	0
		1	24	20.82	20.81	20.58	0
		1	49	20.79	20.78	20.55	0
		25	0	19.83	19.82	19.59	1
		25	12	19.82	19.81	19.58	1
		25	25	19.81	19.80	19.57	1
		50	0	19.82	19.81	19.58	1
	16QAM	1	0	19.87	19.86	19.63	1
		1	24	19.84	19.83	19.60	1
		1	49	19.85	19.84	19.61	1
		25	0	18.76	18.75	18.52	2
		25	12	18.87	18.86	18.63	2
		25	25	18.84	18.83	18.60	2
		50	0	18.84	18.83	18.60	2
BW	Modulation	RB Size	RB Offset	Low CH 20825 Frequency 2507.5 MHz	Mid CH 21100 Frequency 2535 MHz	High CH 21375 Frequency 2562.5 MHz	MPR
15 MHz	QPSK	1	0	20.89	20.88	20.65	0
		1	37	20.88	20.87	20.64	0
		1	74	20.85	20.84	20.61	0
		36	0	19.89	19.88	19.65	1
		36	19	19.88	19.87	19.64	1
		36	39	19.87	19.86	19.63	1
		75	0	19.88	19.87	19.64	1
	16QAM	1	0	19.93	19.92	19.69	1
		1	37	19.90	19.89	19.66	1
		1	74	19.91	19.90	19.67	1
		36	0	18.82	18.81	18.58	2
		36	19	18.93	18.92	18.69	2
		36	39	18.90	18.89	18.66	2
		75	0	18.90	18.89	18.66	2

LTE Band 7							
BW	Modulation	RB Size	RB Offset	Low CH 20850	Mid CH 21100	High CH 21350	MPR
				Frequency 2510 MHz	Frequency 2535 MHz	Frequency 2560 MHz	
20 MHz	QPSK	1	0	**20.92**	20.91	20.68	0
		1	50	20.91	20.90	20.67	0
		1	99	20.88	20.87	20.64	0
		50	0	19.92	19.91	19.68	1
		50	25	19.91	19.90	19.67	1
		50	50	19.90	19.89	19.66	1
		100	0	19.91	19.90	19.67	1
	16QAM	1	0	19.96	19.95	19.72	1
		1	50	19.93	19.92	19.69	1
		1	99	19.94	19.93	19.70	1
		50	0	18.85	18.84	18.61	2
		50	25	18.96	18.95	18.72	2
		50	50	18.93	18.92	18.69	2
		100	0	18.93	18.92	18.69	2

EIRP

LTE BAND 7

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20775	2504.7	-24.54	42.48	17.94	62.23	H	2
21100	2537.2	-25.19	42.78	17.59	57.41	H	2
21425	2569.7	-26.67	43.97	17.30	53.70	H	2
20775	2504.7	-16.52	45.09	28.57	**719.45**	V	2
21100	2537.2	-16.70	44.26	27.56	570.16	V	2
21425	2569.7	-16.92	45.15	28.23	665.27	V	2

NOTE: EIRP (dBm) = LVL (dBm) + Correction Factor (dB)

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20775	2504.7	-25.65	42.48	16.83	48.19	H	2
21100	2537.2	-26.16	42.78	16.62	45.92	H	2
21425	2569.7	-27.67	43.97	16.30	42.66	H	2
20775	2504.7	-17.63	45.09	27.46	557.19	V	2
21100	2537.2	-17.67	44.26	26.59	456.04	V	2
21425	2569.7	-17.92	45.15	27.23	528.45	V	2

NOTE: EIRP (dBm) = LVL (dBm) + Correction Factor (dB)-2.15dB.

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20800	2505.0	-24.56	42.41	17.85	60.95	H	2
21100	2535.0	-25.05	42.78	17.73	59.29	H	2
21400	2565.0	-26.72	43.95	17.23	52.84	H	2
20800	2505.0	-16.54	44.77	28.23	**665.27**	V	2
21100	2535.0	-16.56	44.26	27.70	588.84	V	2
21400	2565.0	-16.97	45.06	28.09	644.17	V	2

NOTE: EIRP (dBm) = LVL (dBm) + Correction Factor (dB)

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20800	2505.0	-25.69	42.41	16.72	46.99	H	2
21100	2535.0	-26.24	42.78	16.54	45.08	H	2
21400	2565.0	-27.77	43.95	16.18	41.50	H	2
20800	2505.0	-17.67	44.77	27.10	512.86	V	2
21100	2535.0	-17.75	44.26	26.51	447.71	V	2
21400	2565.0	-18.02	45.06	27.04	505.82	V	2

NOTE: EIRP (dBm) = LVL (dBm) + Correction Factor (dB)

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20825	2507.5	-24.54	42.42	17.88	61.38	H	2
21100	2535.0	-25.17	42.78	17.61	57.68	H	2
21375	2562.5	-26.80	43.81	17.01	50.23	H	2
20825	2507.5	-16.52	44.54	28.02	633.87	V	2
21100	2535.0	-16.68	44.26	27.58	572.80	V	2
21375	2562.5	-17.05	45.19	28.14	651.63	V	2

NOTE: EIRP (dBm) = LVL (dBm) + Correction Factor (dB)

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20825	2507.5	-25.64	42.42	16.78	47.64	H	2
21100	2535.0	-26.20	42.78	16.58	45.50	H	2
21375	2562.5	-27.71	43.81	16.10	40.74	H	2
20825	2507.5	-17.62	44.54	26.92	492.04	V	2
21100	2535.0	-17.71	44.26	26.55	451.86	V	2
21375	2562.5	-17.96	45.19	27.23	528.45	V	2

NOTE: EIRP (dBm) = LVL (dBm) + Correction Factor (dB)

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20850	2510.0	-24.52	42.63	18.11	64.71	H	2
21100	2535.0	-25.27	42.78	17.51	56.36	H	2
21350	2560.0	-26.79	43.65	16.86	48.53	H	2
20850	2510.0	-16.50	44.58	28.08	642.69	V	2
21100	2535.0	-16.78	44.26	27.48	559.76	V	2
21350	2560.0	-17.04	45.08	28.04	636.80	V	2

NOTE: EIRP (dBm) = LVL (dBm) + Correction Factor (dB)

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20850	2510.0	-25.71	42.63	16.92	49.20	H	2
21100	2535.0	-26.16	42.78	16.62	45.92	H	2
21350	2560.0	-27.77	43.65	15.88	38.73	H	2
20850	2510.0	-17.69	44.58	26.89	488.65	V	2
21100	2535.0	-17.67	44.26	26.59	456.04	V	2
21350	2560.0	-18.02	45.08	27.06	508.16	V	2

NOTE: EIRP (dBm) = LVL (dBm) + Correction Factor (dB)

4.2 FREQUENCY STABILITY MEASUREMENT

4.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

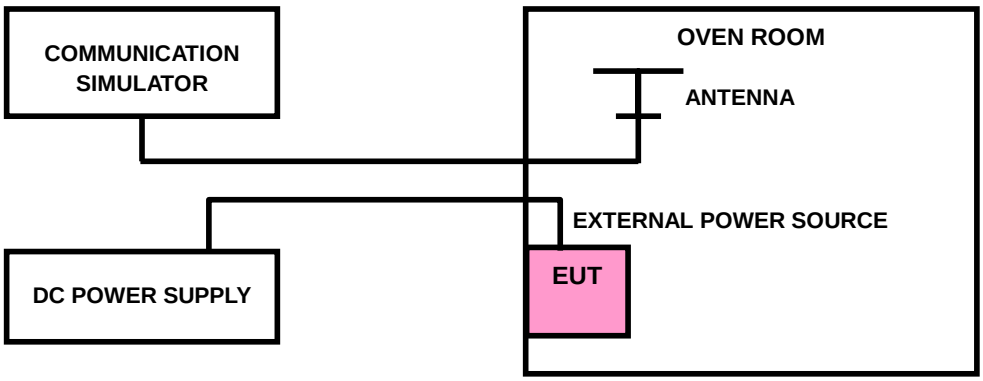
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

4.2.2 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.

4.2.3 TEST SETUP



4.2.4 TEST RESULTS

LTE BAND 7

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.8	0.0009	0.0009	2.5
3.5	-0.0010	-0.0010	2.5
4.4	0.0008	0.0008	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.35Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0045	-0.0045	2.5
-20	-0.0040	-0.0040	2.5
-10	-0.0036	-0.0036	2.5
0	-0.0031	-0.0031	2.5
10	-0.0026	-0.0026	2.5
20	-0.0021	-0.0021	2.5
30	-0.0017	-0.0017	2.5
40	-0.0012	-0.0013	2.5
50	-0.0008	-0.0008	2.5
60	-0.0002	-0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.8	0.0007	0.0007	2.5
3.5	-0.0008	-0.0009	2.5
4.4	0.0006	0.0007	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.35Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0042	-0.0043	2.5
-20	-0.0038	-0.0038	2.5
-10	-0.0033	-0.0033	2.5
0	-0.0029	-0.0029	2.5
10	-0.0023	-0.0024	2.5
20	-0.0019	-0.0019	2.5
30	-0.0013	-0.0013	2.5
40	-0.0008	-0.0008	2.5
50	-0.0003	-0.0003	2.5
60	0.0002	0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.8	0.0009	0.0009	2.5
3.5	-0.0010	-0.0010	2.5
4.4	0.0008	0.0008	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.35Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0039	-0.0040	2.5
-20	-0.0035	-0.0035	2.5
-10	-0.0030	-0.0031	2.5
0	-0.0025	-0.0026	2.5
10	-0.0021	-0.0021	2.5
20	-0.0016	-0.0017	2.5
30	-0.0012	-0.0012	2.5
40	-0.0006	-0.0006	2.5
50	-0.0001	-0.0001	2.5
60	0.0004	0.0004	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.8	0.0007	0.0008	2.5
3.5	-0.0009	-0.0009	2.5
4.4	0.0006	0.0007	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.35Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

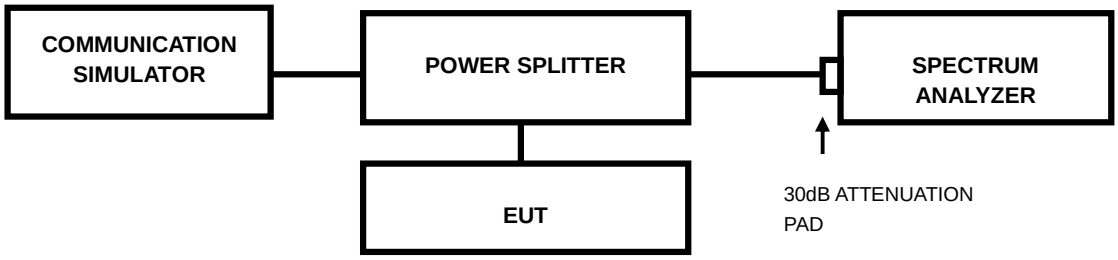
TEMP. (℃)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0041	-0.0042	2.5
-20	-0.0036	-0.0037	2.5
-10	-0.0031	-0.0031	2.5
0	-0.0027	-0.0027	2.5
10	-0.0021	-0.0021	2.5
20	-0.0017	-0.0017	2.5
30	-0.0011	-0.0012	2.5
40	-0.0007	-0.0007	2.5
50	-0.0002	-0.0002	2.5
60	0.0002	0.0002	2.5

4.3 OCCUPIED BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

4.3.2 TEST SETUP



4.3.3 TEST PROCEDURES

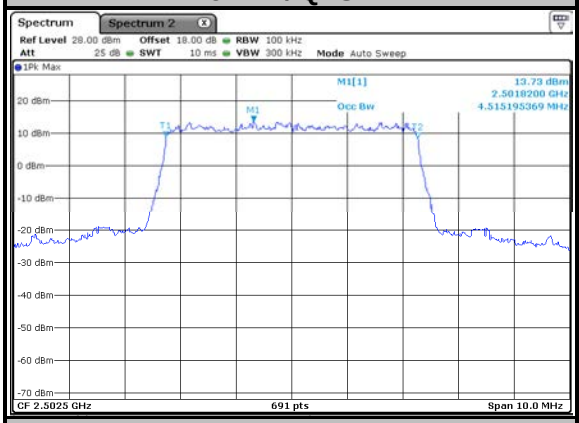
a. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
b. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

4.3.4 TEST RESULTS

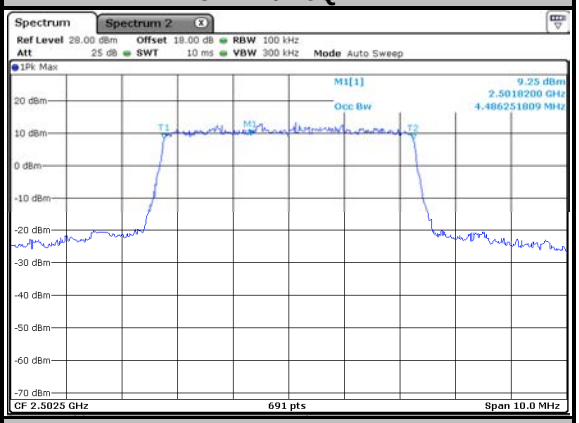
LTE BAND 7							
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
20775	2502.5	4.52	4.47	20800	2505	8.97	8.97
21100	2535	4.48	4.47	21100	2535	8.94	8.94
21425	2567.5	4.48	4.47	21400	2565	8.94	8.94

SPECTRUM PLOT OF WORST VALUE

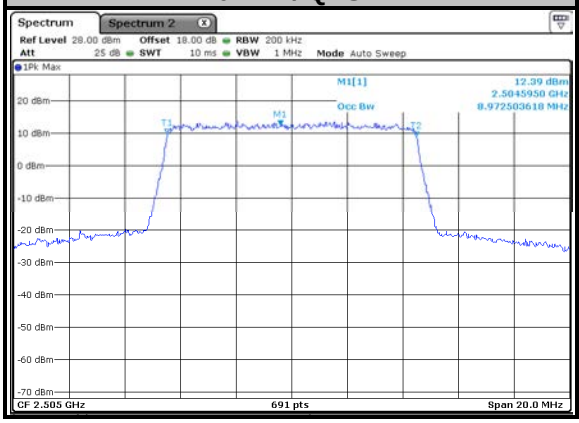
5MHz / QPSK



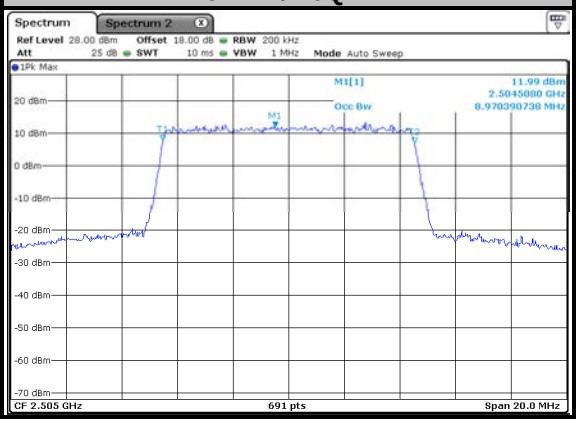
5MHz / 16QAM



10MHz / QPSK



10MHz / 16QAM



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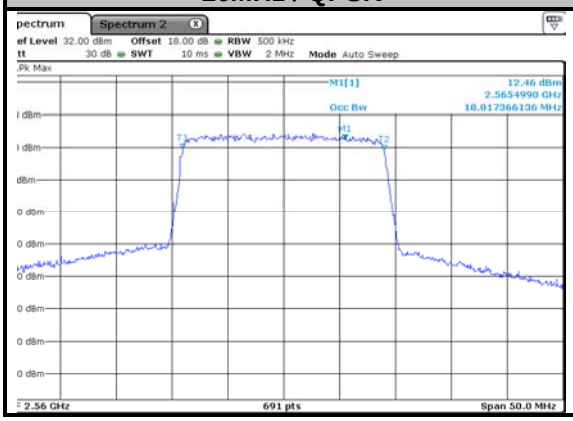
CHANNEL BANDWIDTH: 15MHz				CHANNEL BANDWIDTH: 20MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
20825	2507.5	13.60	13.53	20850	2510	17.87	17.80
21100	2535	13.45	13.45	21100	2535	17.87	17.85
21375	2562.5	13.45	13.40	21350	2560	18.02	17.94

SPECTRUM PLOT OF WORST VALUE

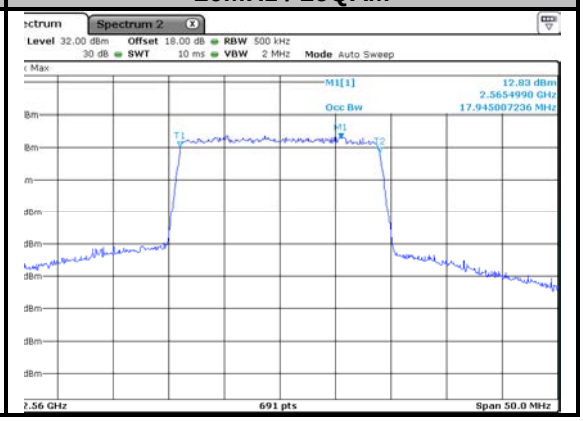
15MHz / QPSK

15MHz / 16QAM

20MHz / QPSK



20MHz / 16QAM

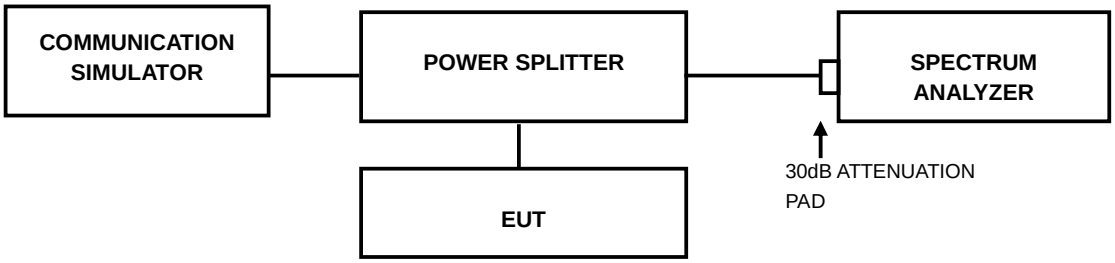


4.4 PEAK TO AVERAGE RATIO

4.4.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT

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

4.4.2 TEST SETUP



4.4.3 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%.

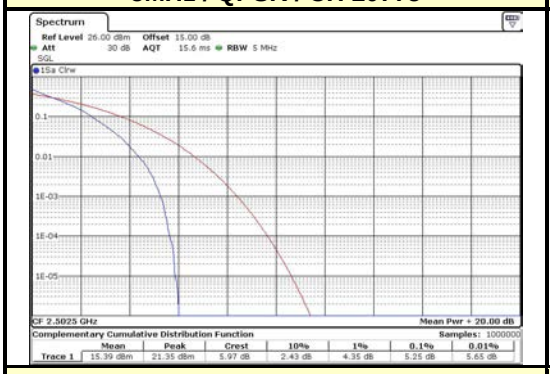
4.4.4 TEST RESULTS

LTE BAND 7

CHANNEL BANDWIDTH: 5MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
20775	2502.5	5.25	5.91
21100	2535	5.39	6.09
21425	2567.5	5.19	5.86

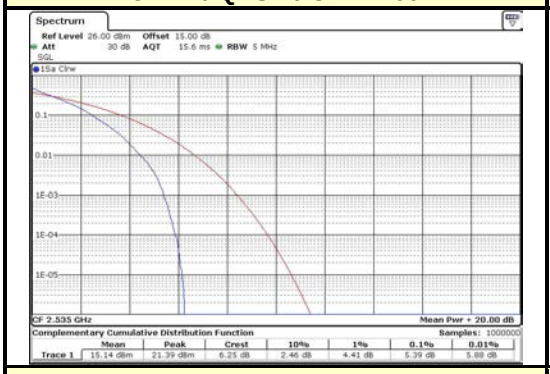
SPECTRUM PLOT OF WORST VALUE

5MHz / QPSK / CH 20775

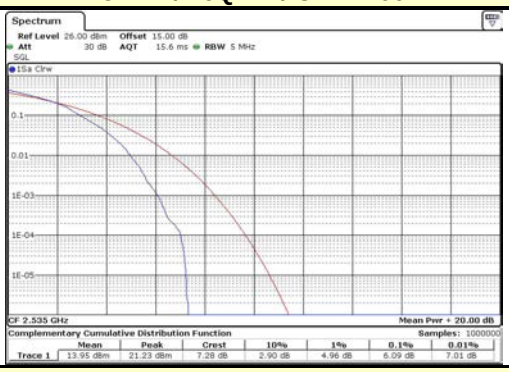


5MHz / 16QAM / CH 20775

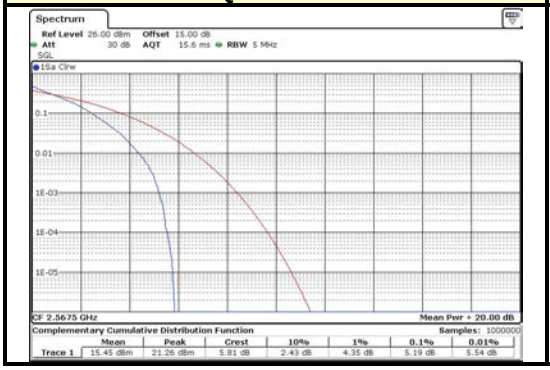
5MHz / QPSK / CH 21100



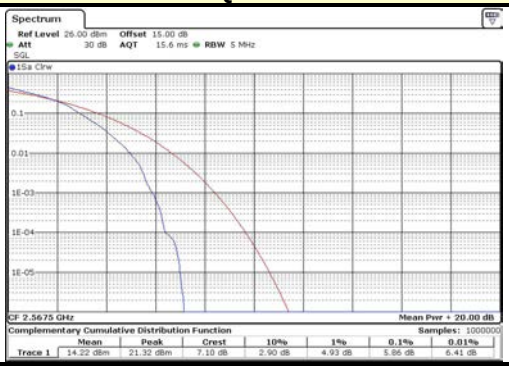
5MHz / 16QAM / CH 21100



5MHz / QPSK / CH 21425



5MHz / 16QAM / CH 21425



CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
20800	2505	5.54	5.97
21100	2535	5.51	6.14
21400	2565	5.28	5.88

SPECTRUM PLOT OF WORST VALUE

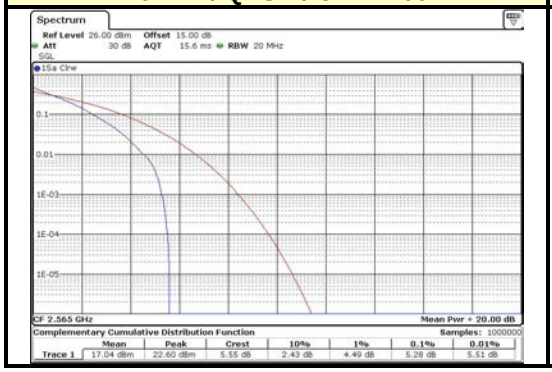
10MHz / QPSK / CH 20800

10MHz / 16QAM / CH 20800

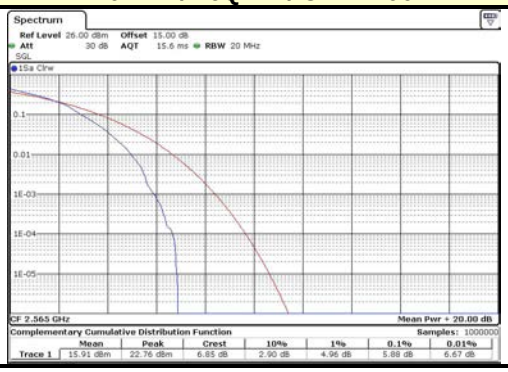
10MHz / QPSK / CH 21100

10MHz / 16QAM / CH 21100

10MHz / QPSK / CH 21400



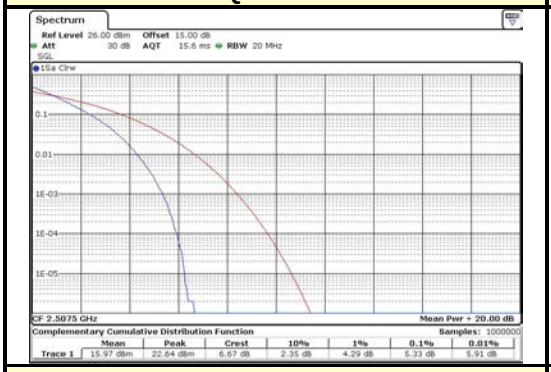
10MHz / 16QAM / CH 21400



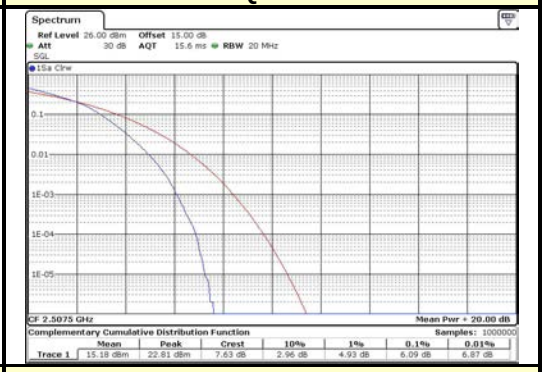
CHANNEL BANDWIDTH: 15MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
20825	2507.5	5.33	6.09
21100	2535	5.42	6.17
21375	2562.5	5.42	6.17

SPECTRUM PLOT OF WORST VALUE

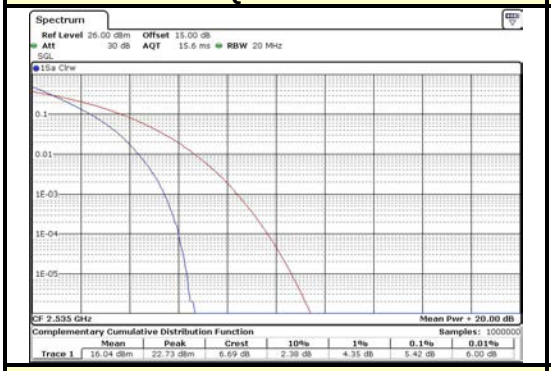
15MHz / QPSK / CH 20825



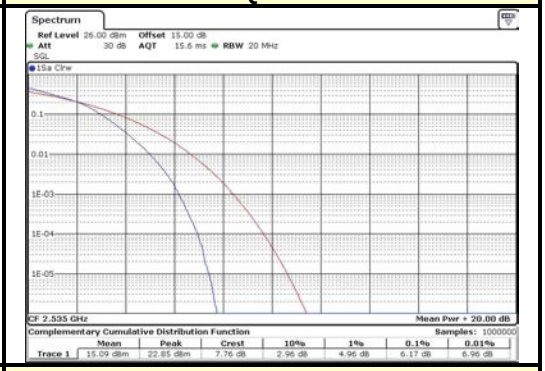
15MHz / 16QAM / CH 20825



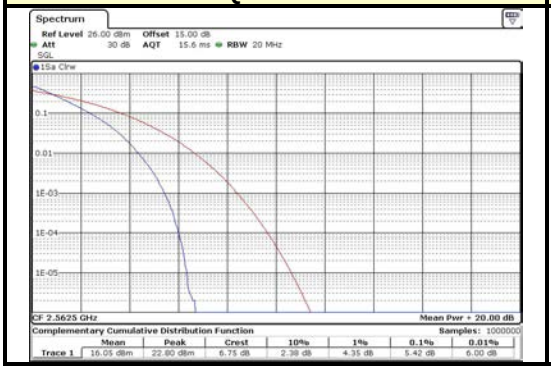
15MHz / QPSK / CH 21100



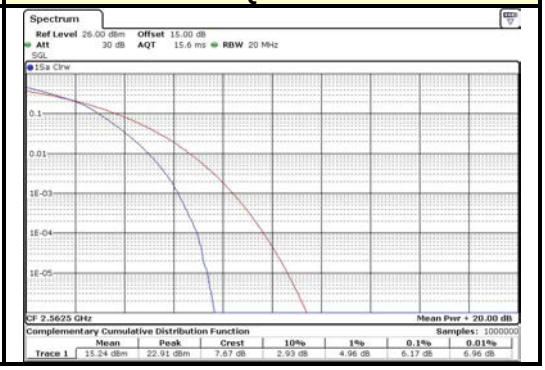
15MHz / 16QAM / CH 21100



15MHz / QPSK / CH 21375



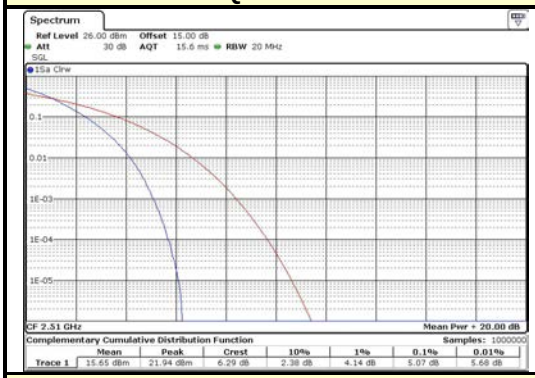
15MHz / 16QAM / CH 21375



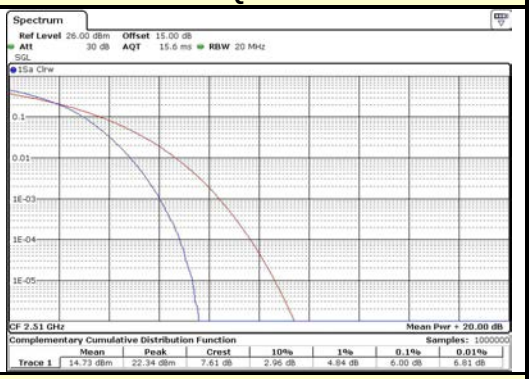
CHANNEL BANDWIDTH: 20MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
20850	2510	5.07	6.00
21100	2535	5.19	6.09
21350	2560	5.13	6.06

SPECTRUM PLOT OF WORST VALUE

20MHz / QPSK / CH 20850

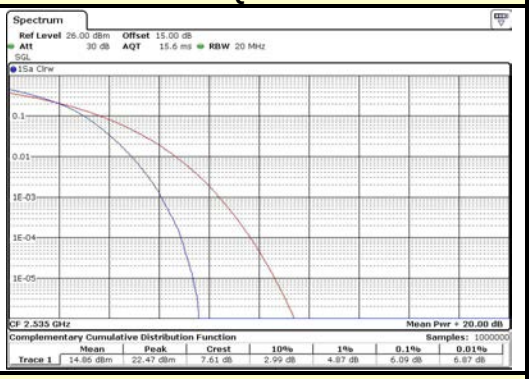


20MHz / 16QAM / CH 20850



20MHz / QPSK / CH 21100

20MHz / 16QAM / CH 21100



20MHz / QPSK / CH 21350

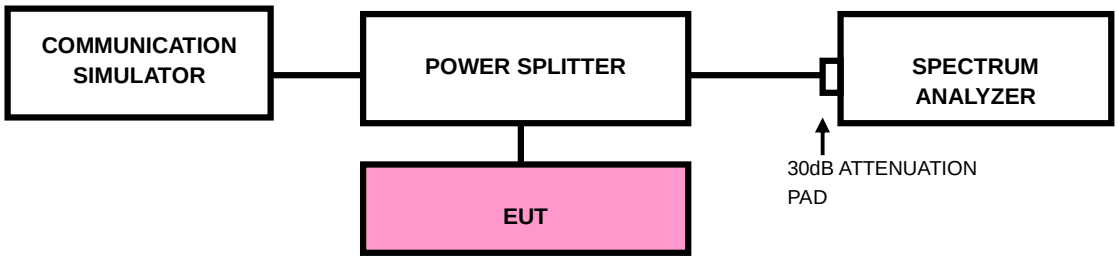
20MHz / 16QAM / CH 21350

4.5 BAND EDGE MEASUREMENT

4.5.1 LIMITS OF BAND EDGE MEASUREMENT

According to FCC 27.53(l)(4) specified that power of any emission outside of the channel edge must be attenuated below the transmitting power (P) by a factor shall be not less than 43 + 10 log (P) dB at the channel edge, the limit of emission is equal to -13dBm. And 55 + 10 log (P) dB at 5.5 MHz from the channel edges, the limit of emission is equal to -25dBm.In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

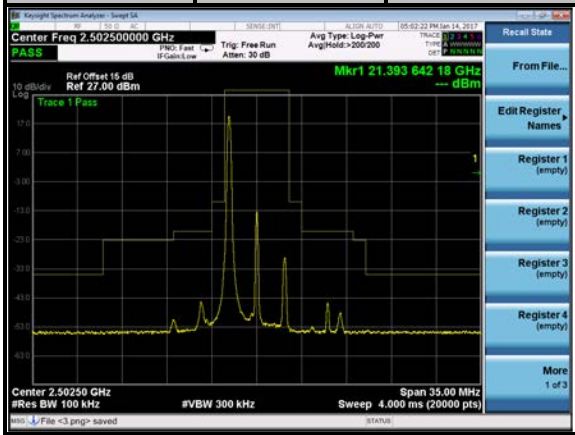
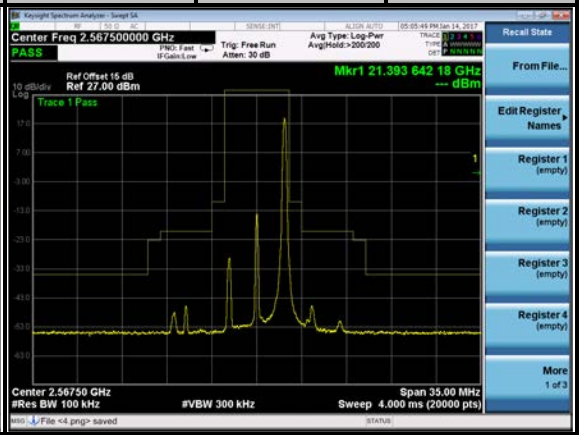
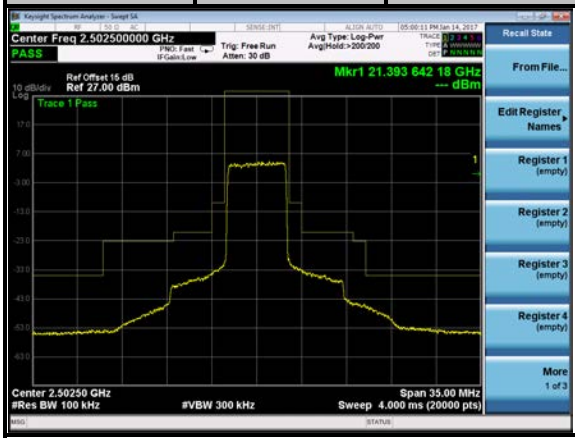
4.5.2 TEST SETUP

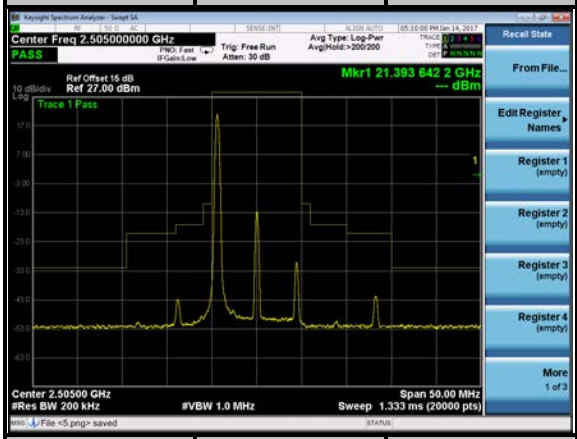
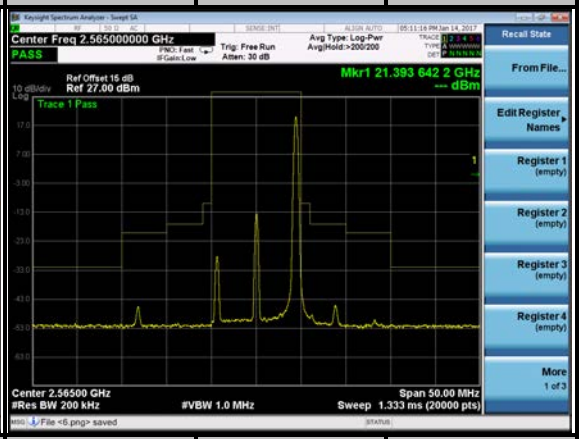


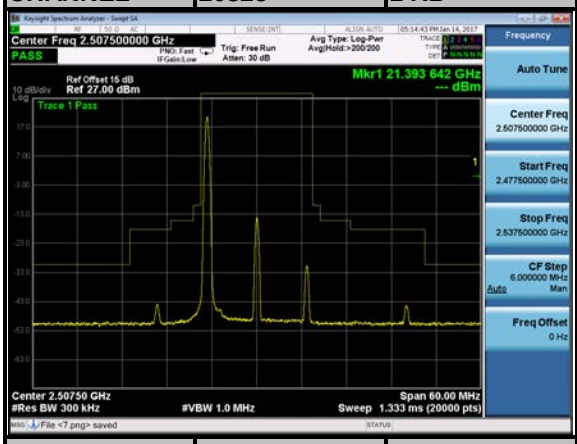
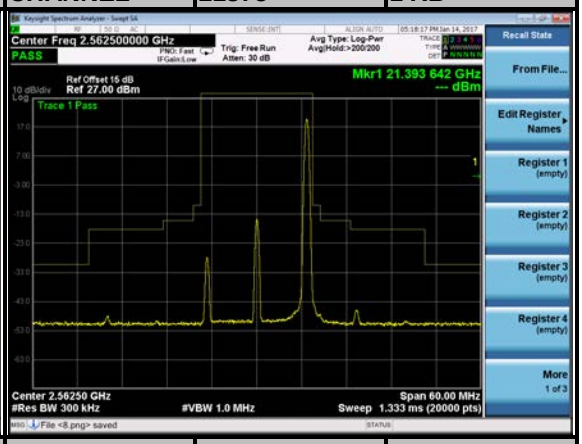
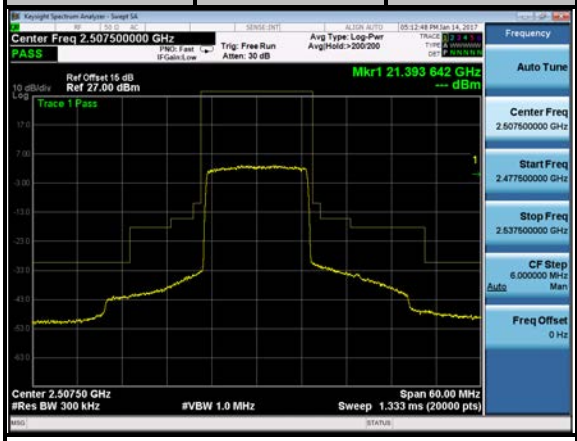
4.5.3 TEST PROCEDURES

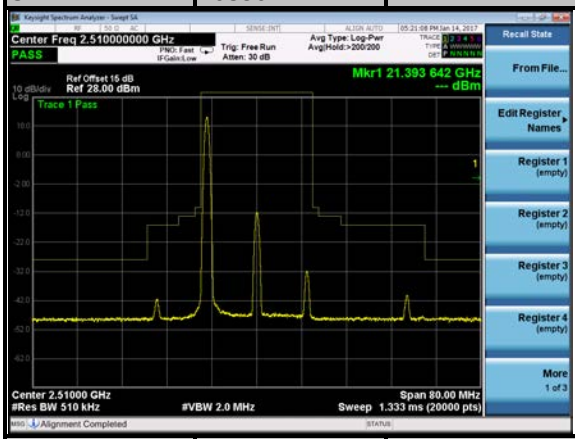
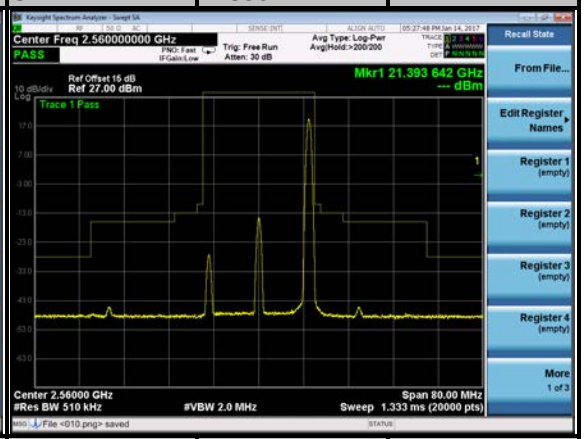
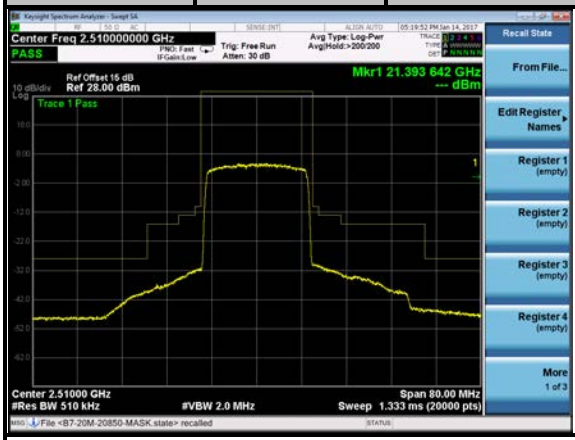
a. The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels (low and high operational frequency range.).
b. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
c. The center frequency of spectrum is the band edge frequency and span is 30MHz. RBW of the spectrum is 50kHz and VBW of the spectrum is 200kHz (Channel bandwidth 5MHz).
d. The center frequency of spectrum is the band edge frequency and span is 40MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz (Channel bandwidth 10MHz).
e. The center frequency of spectrum is the band edge frequency and span is 40MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 1MHz (Channel bandwidth 15MHz).
f. The center frequency of spectrum is the band edge frequency and span is 50MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 1MHz (Channel bandwidth 20MHz).
g. Record the max trace plot into the test report.

4.5.4 TEST RESULTS

LTE BAND 7					
Channel Bandwidth: 5MHz / QPSK					
CHANNEL	20775	1 RB	CHANNEL	21425	1 RB
					
CHANNEL	20775	Full RB	CHANNEL	21425	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

LTE BAND 7					
Channel Bandwidth: 10MHz / 16QAM					
CHANNEL	20800	1 RB	CHANNEL	21400	1 RB
					
CHANNEL	20800	Full RB	CHANNEL	21400	Full RB
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

LTE BAND 7					
Channel Bandwidth: 15MHz / QPSK					
CHANNEL	20825	1 RB	CHANNEL	21375	1 RB
					
CHANNEL	20825	Full RB	CHANNEL	21375	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

LTE BAND 7					
Channel Bandwidth: 20MHz / QPSK					
CHANNEL	20850	1 RB	CHANNEL	21350	1 RB
					
CHANNEL	20850	Full RB	CHANNEL	21350	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

4.6 CONDUCTED SPURIOUS EMISSIONS

4.6.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

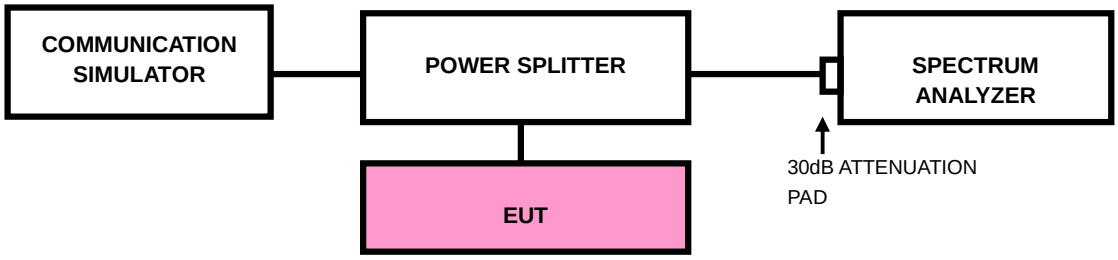
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 55 +10 log10(P) dB. The limit of emission is equal to -25dBm.

4.6.2 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.

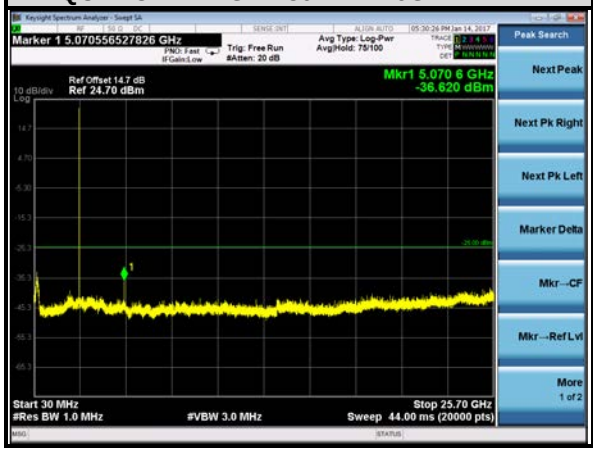
b. Measuring frequency range is from 30MHz to 26GHz for LTE Band 7. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz are used for conducted emission measurement.

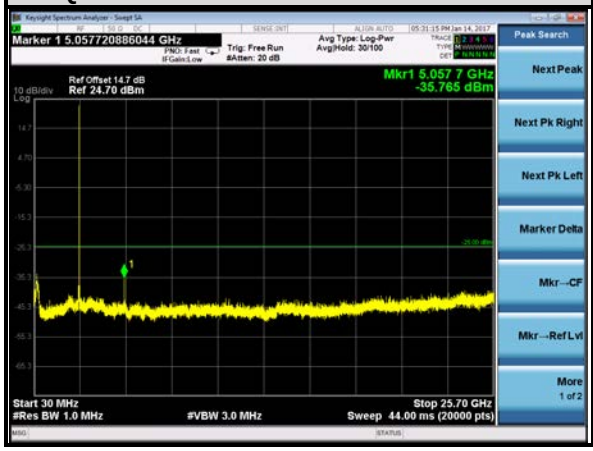
4.6.3 TEST SETUP



4.6.4 TEST RESULTS

LTE BAND 7

CHANNEL 21100	CHANNEL 21100
5MHz / QPSK	10MHz / QPSK
FREQUENCY RANGE : 30MHz~26GHz	FREQUENCY RANGE : 30MHz~26GHz
	

CHANNEL 21100	CHANNEL 21100
15MHz / QPSK	20MHz / QPSK
FREQUENCY RANGE : 30MHz~26GHz	FREQUENCY RANGE : 30MHz~26GHz
	

4.7 RADIATED EMISSION MEASUREMENT

4.7.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 +10 log10(P) dB. The limit of emission is equal to -13dBm.

4.7.2 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.
d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.

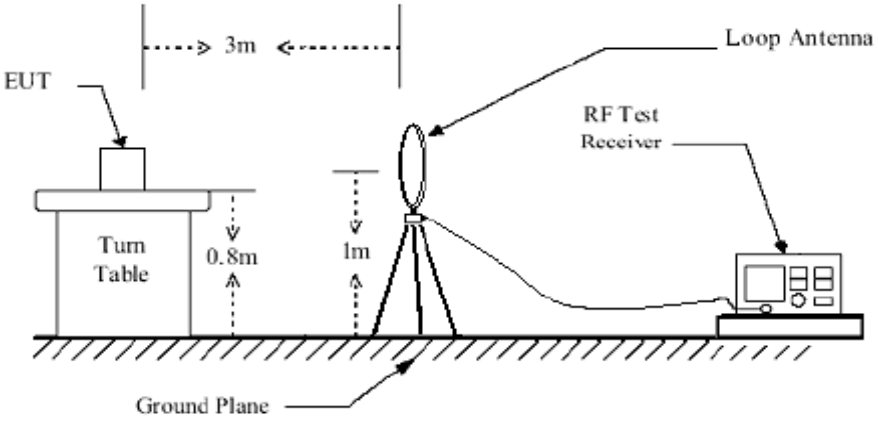
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

4.7.3 DEVIATION FROM TEST STANDARD

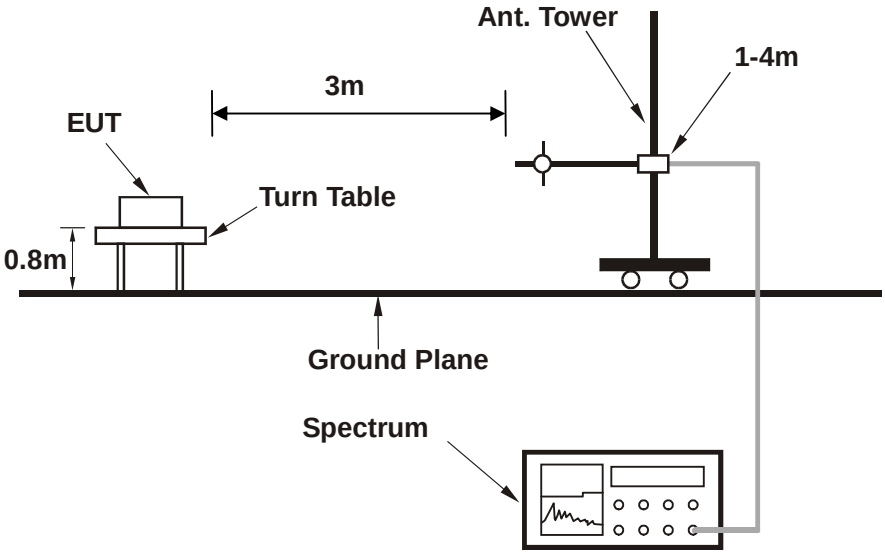
No deviation

4.7.4 TEST SETUP

<Below 30MHz>



<Above 30MHz>



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

4.7.5 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

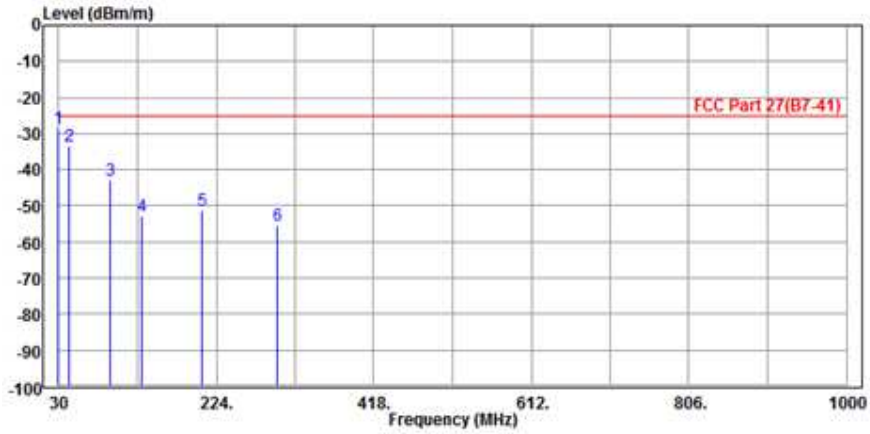
9 KHz – 30 KHz data: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

30 MHz – 1GHz data:

LTE BAND 7:

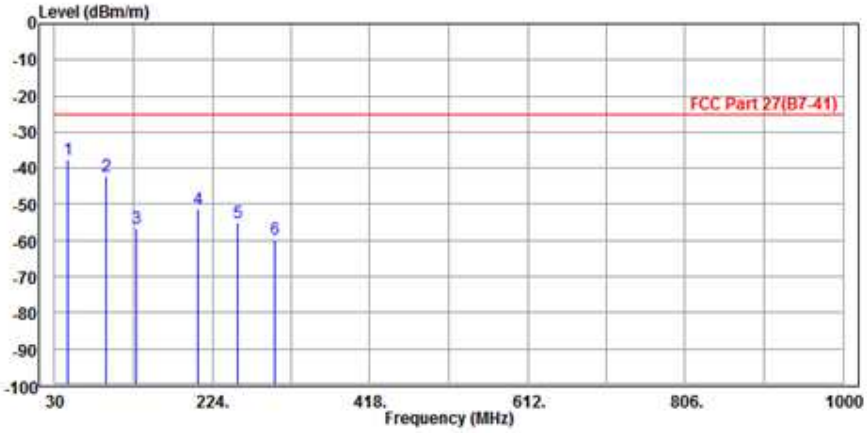
MODE	TX channel 21100	**FREQUENCY RANGE**	Below 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	**INPUT POWER**	DC 5V from adapter
TESTED BY	Tony		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	30.000	-28.65	-47.99	-25.00	-3.65	19.34	Peak	Horizontal
2		42.610	-33.63	-43.41	-25.00	-8.63	9.78	Peak	Horizontal
3		93.050	-43.07	-33.38	-25.00	-18.07	-9.69	Peak	Horizontal
4		131.850	-52.95	-36.12	-25.00	-27.95	-16.83	Peak	Horizontal
5		206.540	-51.16	-34.05	-25.00	-26.16	-17.11	Peak	Horizontal
6		299.660	-55.44	-41.62	-25.00	-30.44	-13.82	Peak	Horizontal



MODE	TX channel 21100	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony		
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	46.490	-37.59	-33.95	-25.00	-12.59	-3.64	Peak	Vertical
2		93.050	-42.36	-31.78	-25.00	-17.36	-10.58	Peak	Vertical
3		130.880	-56.77	-45.21	-25.00	-31.77	-11.56	Peak	Vertical
4		206.540	-51.44	-40.69	-25.00	-26.44	-10.75	Peak	Vertical
5		255.040	-55.30	-43.80	-25.00	-30.30	-11.50	Peak	Vertical
6		300.630	-59.61	-48.32	-25.00	-34.61	-11.29	Peak	Vertical



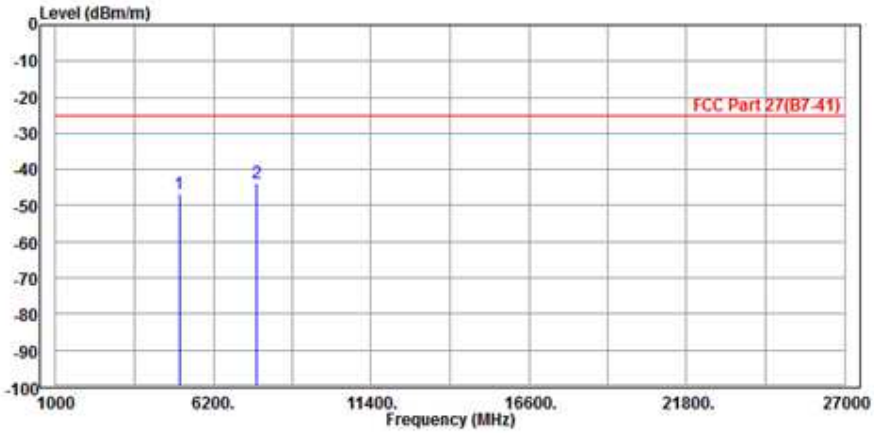
ABOVE 1GHz

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

CHANNEL BANDWIDTH: 5MHz / QPSK

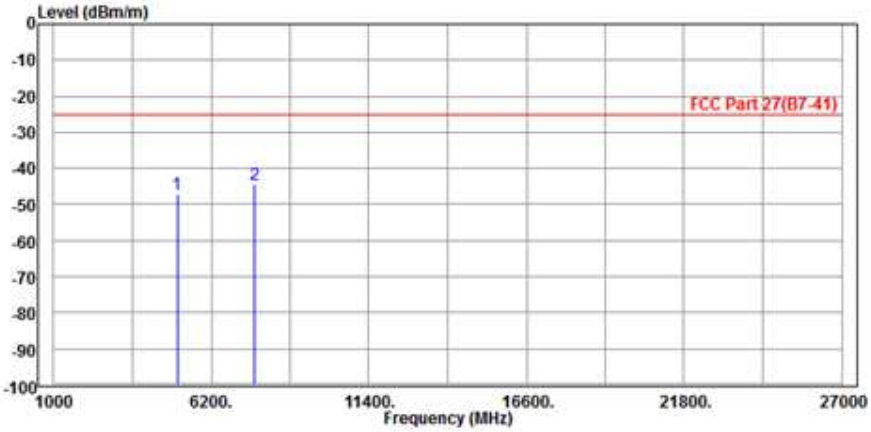
MODE	TX channel 21100	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	**INPUT POWER**	DC 5V from adapter
TESTED BY	Tony		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5070.000	-46.89	-55.35	-25.00	-21.89	8.46	Peak	Horizontal
2 PP	7605.000	-43.89	-57.37	-25.00	-18.89	13.48	Peak	Horizontal



MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

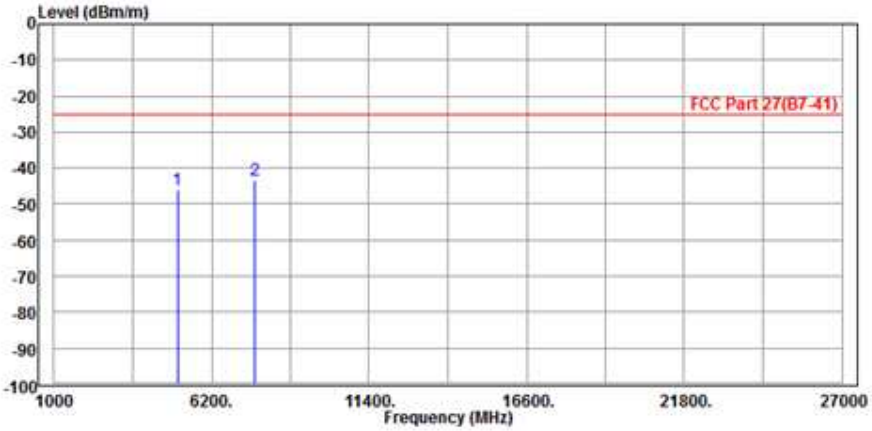
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5070.000	-47.01	-55.00	-25.00	-22.01	7.99	Peak	Vertical
2 PP	7605.000	-44.63	-57.62	-25.00	-19.63	12.99	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

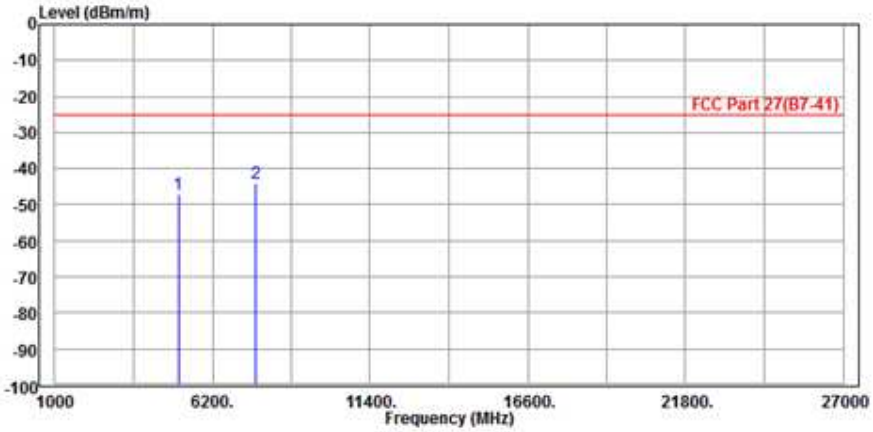
MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5070.000	-46.17	-54.63	-25.00	-21.17	8.46	Peak	Horizontal
2	PP	7605.000	-43.20	-56.68	-25.00	-18.20	13.48	Peak	Horizontal



MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

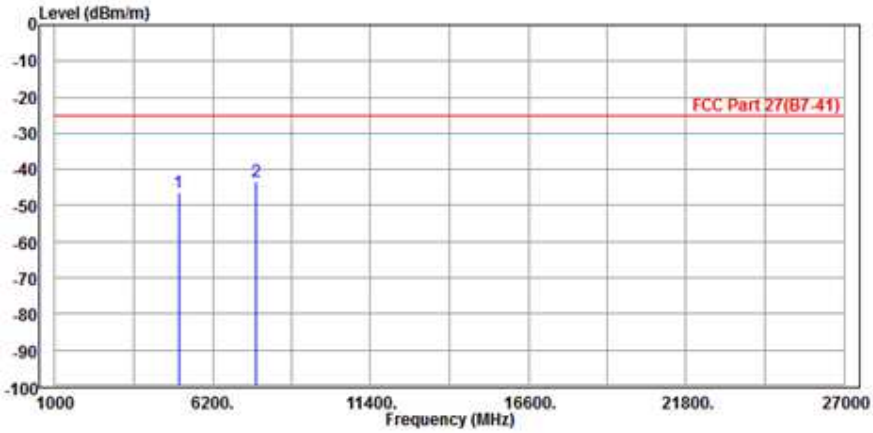
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5070.000	-46.96	-54.95	-25.00	-21.96	7.99	Peak	Vertical
2	PP	7605.000	-44.09	-57.08	-25.00	-19.09	12.99	Peak	Vertical



CHANNEL BANDWIDTH: 15MHz / QPSK

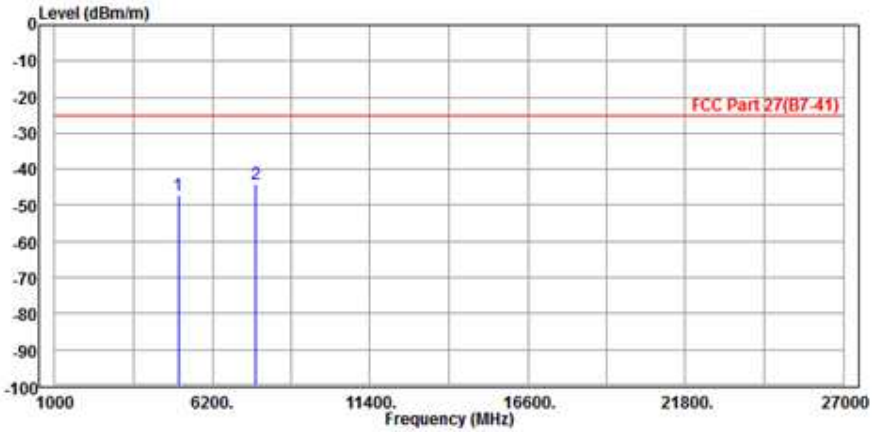
MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5070.000	-46.32	-54.78	-25.00	-21.32	8.46	Peak	Horizontal
2	PP	7605.000	-43.26	-56.74	-25.00	-18.26	13.48	Peak	Horizontal



MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

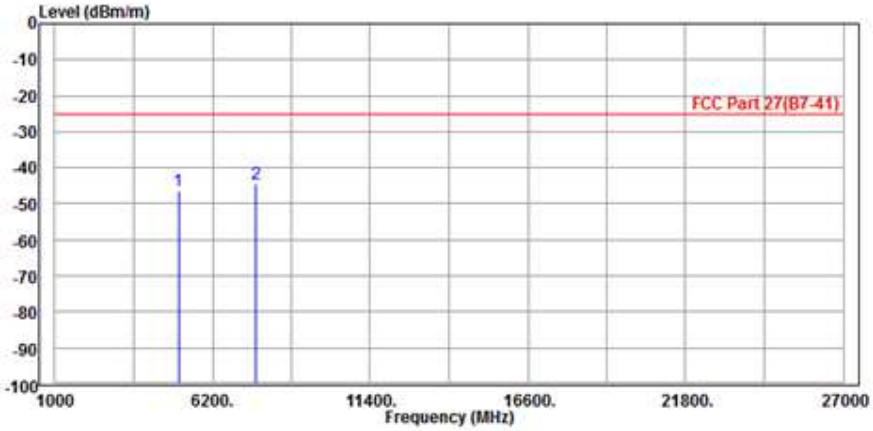
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5070.000	-47.01	-55.00	-25.00	-22.01	7.99	Peak	Vertical
2	PP	7605.000	-43.99	-56.98	-25.00	-18.99	12.99	Peak	Vertical



CHANNEL BANDWIDTH: 20MHz / QPSK

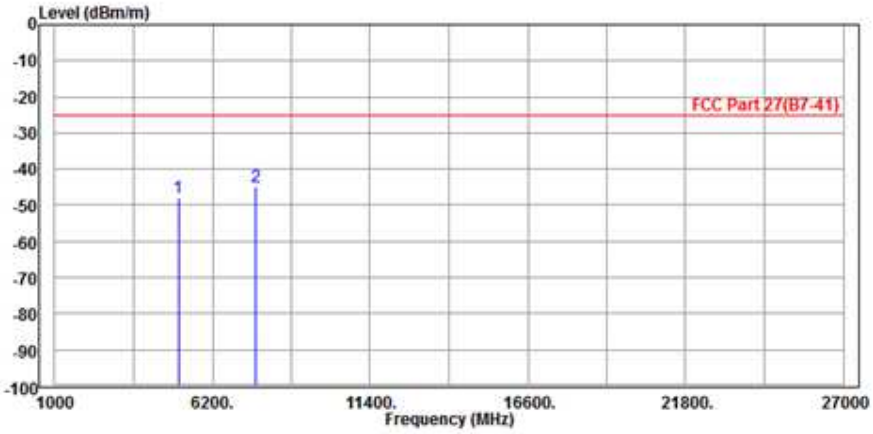
MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5070.000	-46.36	-54.82	-25.00	-21.36	8.46	Peak	Horizontal
2 PP	7605.000	-44.63	-58.11	-25.00	-19.63	13.48	Peak	Horizontal



MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony		
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		5070.000	-47.83	-55.82	-25.00	-22.83	7.99	Peak	Vertical
2	PP	7605.000	-44.68	-57.67	-25.00	-19.68	12.99	Peak	Vertical



5 INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Shenzhen Co., Ltd. Dongguan Branch, were founded in 2002 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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Web Site: www.adt.com.tw

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

6 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.

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