

FCC TEST REPORT

(PART 27)

Product: LTE USB Modem

Model Name: FS040U

FCC ID: 2ANKMFS040U

Applicant: Shanghai Tricheer Technology Co.,Ltd.

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Report No.: RF170802W002-2

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Test Date: Aug. 03, 2017 ~ Aug. 30, 2017

Issued Date: Aug. 31, 2017

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF170802W002-2	Original release	Aug. 31, 2017



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1 CERTIFICATION

PRODUCT: LTE USB Modem
BRAND NAME: +F
MODEL NAME: FS040U
APPLICANT: Shanghai Tricheer Technology Co.,Ltd.
TESTED: Aug. 03, 2017 ~ Aug. 30, 2017
TEST SAMPLE: Identical Prototype
STANDARDS: **FCC Part 27, Subpart C, M**
FCC Part 2
ANSI /TIA/EIA-603-D
ANSI/TIA/EIA-603-E

The above equipment has been tested by **BV 7Layers Communications Technology (Shenzhen) Co. Ltd** 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.

PREPARED BY : Yuqiang Yin, **DATE:** Aug. 31, 2017
(Yuqiang Yin/ Engineer)

APPROVED BY : Bill Yao, **DATE:** Aug. 31, 2017
(Bill Yao / 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)(2)	Equivalent Isotropically Radiated Power	PASS	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	PASS	Meet the requirement of limit.
2.1049 27.53(m)(6)	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(m)(4)(6)	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 27.53(m)(4)(6)	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 27.53(m)(4)(6)	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -8.73dB at 42.61MHz.

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	2.66dB
Radiated emissions	9KHz ~ 30MHz	2.68dB
	30MHz ~ 1GMHz	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.

2.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 01,17	Feb. 28,18
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510332	Mar. 01,17	Feb. 28,18
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. 28,16	Nov. 27,17
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40 -K-SG/QMS-00 361	15433	Dec. 16,16	Dec. 15,17
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Mar. 01,17	Feb. 28,18
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	May 06,17	May 05,18
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-SM A	1505	Jul. 24,17	Jul. 23,18
Power Meter	Anritsu	ML2495A	1506002	Mar. 01,17	Feb. 28,18
Power Sensor	Anritsu	MA2411B	1339352	Mar. 01,17	Feb. 28,18
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. 01,17	Feb. 28,18

- 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.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

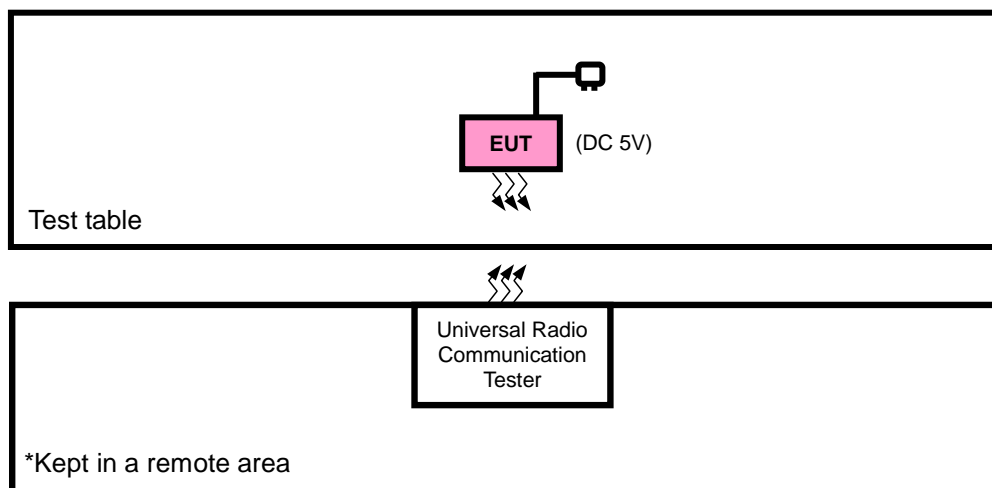
PRODUCT	LTE USB Modem	
MODEL NAME	FS040U	
POWER SUPPLY	DC 5V (host equipment)	
MODULATION TECHNOLOGY	LTE Band 41	QPSK, 16QAM
FREQUENCY RANGE	LTE Band 41 Channel Bandwidth: 5MHz	2498.5MHz ~ 2687.5MHz
	LTE Band 41 Channel Bandwidth: 10MHz	2501.0MHz ~ 2685.0MHz
	LTE Band 41 Channel Bandwidth: 15MHz	2503.5MHz ~ 2682.5MHz
	LTE Band 41 Channel Bandwidth: 20MHz	2506.0MHz ~ 2680.0MHz
EMISSION DESIGNATOR	LTE Band 41 Channel Bandwidth: 5MHz	QPSK: 4M48G7D
		16QAM: 4M47W7D
	LTE Band 41 Channel Bandwidth: 10MHz	QPSK: 8M91G7D
		16QAM: 8M93W7D
	LTE Band 41 Channel Bandwidth: 15MHz	QPSK: 13M4G7D
		16QAM: 13M4W7D
	LTE Band 41 Channel Bandwidth: 20MHz	QPSK: 17M9G7D
		16QAM: 17M8W7D
MAX. EIRP POWER	LTE Band 41 Channel Bandwidth: 5MHz	248mW
	LTE Band 41 Channel Bandwidth: 10MHz	261mW
	LTE Band 41 Channel Bandwidth: 15MHz	262mW
	LTE Band 41 Channel Bandwidth: 20MHz	230mW
ANTENNA TYPE	Fixed Internal Antenna with 2dBi	
HW VERSION	LWDM132A	
SW VERSION	LWDJC02.1.0_M132	
I/O PORTS	Refer to user's manual	
DATA CABLE	N/A	

NOTE:

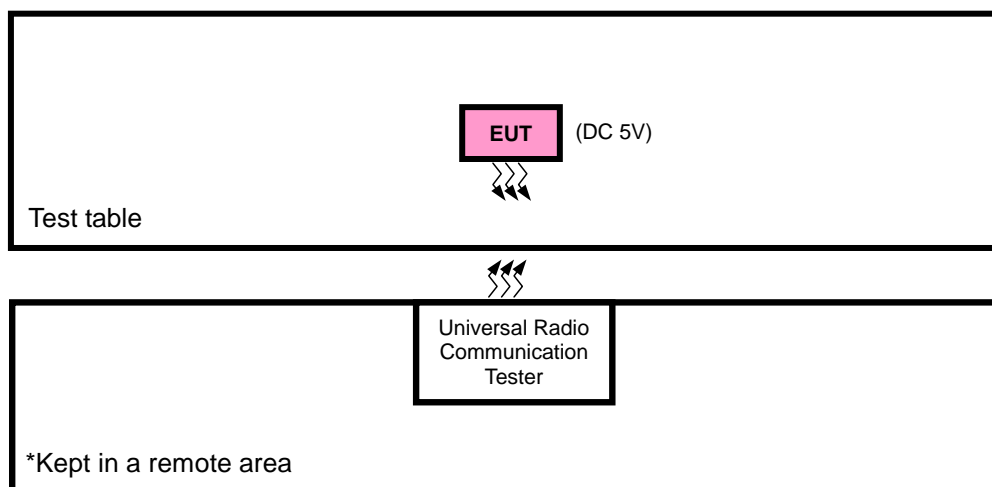
- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

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

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

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
-	EUT with LTE link

LTE BAND 41

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
-	EIRP	39675 to 41565	39675, 40620, 41565	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10MHz	QPSK, 16QAM	1 RB / 0RB Offset
		39725 to 41515	39725, 40620, 41515	15MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	FREQUENCY STABILITY	39675 to 41565	39675, 41565	5MHz	QPSK	1 RB / 0 RB Offset
		39700 to 41540	39700, 41540	10MHz	QPSK	1 RB / 0RB Offset
		39725 to 41515	39725, 41515	15MHz	QPSK	1 RB / 0 RB Offset
		39750 to 41490	39750, 41490	20MHz	QPSK	1 RB / 0 RB Offset
-	OCCUPIED BANDWIDTH	39675 to 41565	39675, 40620, 41565	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20MHz	QPSK, 16QAM	100 RB / 0 RB Offset
-	PEAK TO AVERAGE RATIO	39675 to 41565	39675, 40620, 41565	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10MHz	QPSK, 16QAM	1 RB / 0RB Offset
		39725 to 41515	39725, 40620, 41515	15MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	BAND EDGE	39675 to 41565	39675	5MHz	QPSK	1 RB / 0 RB Offset
			41565	5MHz	QPSK	25 RB / 0 RB Offset
		39700 to 41540	39700	10MHz	QPSK	1 RB / 24 RB Offset
			41540	10MHz	QPSK	25 RB / 0 RB Offset
		39725 to 41515	39725	15MHz	QPSK	1 RB / 0 RB Offset
			41515	15MHz	QPSK	1 RB / 49 RB Offset
		39750 to 41490	39750	20MHz	QPSK	50 RB / 0 RB Offset
			41490	20MHz	QPSK	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
						1 RB / 0 RB Offset
						100 RB / 0 RB Offset
						1 RB / 99 RB Offset
-	CONDCUETED EMISSION	39675 to 41565	39675, 40620, 41565	5MHz	QPSK	100 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10MHz	QPSK	1 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15MHz	QPSK	1 RB / 0RB Offset
		39750 to 41490	39750, 40620, 41490	20MHz	QPSK	1 RB / 0 RB Offset
-	RADIATED EMISSION	39675 to 41565	39675, 40620, 41565	5MHz	QPSK	1 RB / 0 RB Offset
		39700 to 41540	40620	10MHz	QPSK	1 RB / 0RB Offset
		39725 to 41515	40620	15MHz	QPSK	1 RB / 0 RB Offset
		39750 to 41490	40620	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	DC 5V	Wenliang Wu
FREQUENCY STABILITY	24deg. C, 61%RH	DC 5V	Wenliang Wu
OCCUPIED BANDWIDTH	24deg. C, 61%RH	DC 5V	Wenliang Wu
PEAK TO AVERAGE RATIO	24deg. C, 61%RH	DC 5V	Wenliang Wu
BAND EDGE	24deg. C, 61%RH	DC 5V	Wenliang Wu
CONDUCTED EMISSION	24deg. C, 61%RH	DC 5V	Wenliang Wu
RADIATED EMISSION	23deg. C, 70%RH	DC 5V	Simon Yang

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 971168 D01 Power Meas License Digital Systems v02r02

ANSI/TIA/EIA-603-D

ANSI/TIA/EIA-603-E

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:

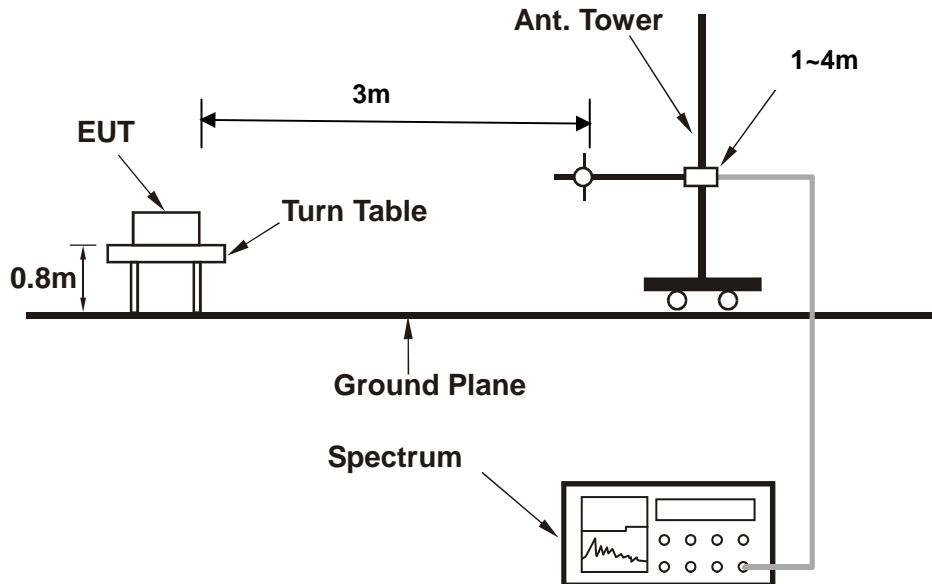
- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 10MHz for LTE mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the 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. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$

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.

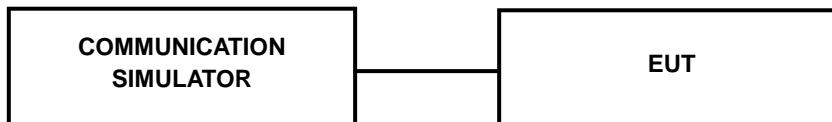
4.1.3 TEST SETUP

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 41									
BW	Modulation	RB Size	RB Offset	L-CH 39675	M-CH 40148	M-CH 40620	M-CH 41093	H-CH 41565	MPR
				2498.5 MHz	2545.8 MHz	2593.0 MHz	2640.3 MHz	2687.5 MHz	
5 MHz	QPSK	1	0	21.17	21.00	20.65	20.28	19.96	0
		1	12	21.33	21.28	20.99	20.45	20.22	0
		1	24	21.05	20.80	20.45	19.96	19.88	0
		12	0	20.27	20.22	19.93	19.39	19.16	1
		12	6	20.31	20.06	19.71	19.22	19.14	1
		12	13	20.25	20.20	19.91	19.37	19.14	1
		25	0	20.21	19.96	19.61	19.12	19.04	1
	16QAM	1	0	19.68	19.63	19.34	18.80	18.57	1
		1	12	20.05	19.80	19.45	18.96	18.88	1
		1	24	19.47	19.42	19.13	18.59	18.36	1
		12	0	19.19	18.94	18.59	18.10	18.02	2
		12	6	19.28	19.23	18.94	18.40	18.17	2
		12	13	19.35	19.10	18.75	18.26	18.18	2
		25	0	19.25	19.20	18.91	18.37	18.14	2
BW	Modulation	RB Size	RB Offset	L-CH 39700	M-CH 40160	M-CH 40620	M-CH 41080	H-CH 41540	MPR
				2501.0 MHz	2547.0 MHz	2593.0 MHz	2639.0 MHz	2685.0 MHz	
10 MHz	QPSK	1	0	21.20	21.03	20.68	20.31	19.99	0
		1	24	21.36	21.31	21.02	20.48	20.25	0
		1	49	21.08	20.83	20.48	19.99	19.91	0
		25	0	20.30	20.25	19.96	19.42	19.19	1
		25	12	20.34	20.09	19.74	19.25	19.17	1
		25	25	20.28	20.23	19.94	19.40	19.17	1
		50	0	20.24	19.99	19.64	19.15	19.07	1
	16QAM	1	0	19.71	19.66	19.37	18.83	18.60	1
		1	24	20.08	19.83	19.48	18.99	18.91	1
		1	49	19.50	19.45	19.16	18.62	18.39	1
		25	0	19.22	18.97	18.62	18.13	18.05	2
		25	12	19.31	19.26	18.97	18.43	18.20	2
		25	25	19.38	19.13	18.78	18.29	18.21	2
		50	0	19.28	19.23	18.94	18.40	18.17	2

LTE Band 41									
BW	Modulation	RB Size	RB Offset	L-CH 39725	M-CH 40173	M-CH 40620	M-CH 41068	H-CH 41515	MPR
				2503.5 MHz	2548.3 MHz	2593.0 MHz	2637.8 MHz	2682.5 MHz	
15 MHz	QPSK	1	0	21.24	21.07	20.72	20.35	20.03	0
		1	37	21.40	21.35	21.06	20.52	20.29	0
		1	74	21.12	20.87	20.52	20.03	19.95	0
		36	0	20.34	20.29	20.00	19.46	19.23	1
		36	19	20.38	20.13	19.78	19.29	19.21	1
		36	39	20.32	20.27	19.98	19.44	19.21	1
		75	0	20.28	20.03	19.68	19.19	19.11	1
	16QAM	1	0	19.75	19.70	19.41	18.87	18.64	1
		1	37	20.12	19.87	19.52	19.03	18.95	1
		1	74	19.54	19.49	19.20	18.66	18.43	1
		36	0	19.26	19.01	18.66	18.17	18.09	2
		36	19	19.35	19.30	19.01	18.47	18.24	2
		36	39	19.42	19.17	18.82	18.33	18.25	2
		75	0	19.32	19.27	18.98	18.44	18.21	2
BW	Modulation	RB Size	RB Offset	L-CH 39750	M-CH 40185	M-CH 40620	M-CH 41055	H-CH 41490	MPR
				2506.0 MHz	2549.5 MHz	2593.0 MHz	2636.5 MHz	2680.0 MHz	
20 MHz	QPSK	1	0	21.30	21.13	20.78	20.41	20.09	0
		1	50	21.46	21.41	21.12	20.58	20.35	0
		1	99	21.18	20.93	20.58	20.09	20.01	0
		50	0	20.40	20.35	20.06	19.52	19.29	1
		50	25	20.44	20.19	19.84	19.35	19.27	1
		50	50	20.38	20.33	20.04	19.50	19.27	1
		100	0	20.34	20.09	19.74	19.25	19.17	1
	16QAM	1	0	19.81	19.76	19.47	18.93	18.70	1
		1	50	20.18	19.93	19.58	19.09	19.01	1
		1	99	19.60	19.55	19.26	18.72	18.49	1
		50	0	19.32	19.07	18.72	18.23	18.15	2
		50	25	19.41	19.36	19.07	18.53	18.30	2
		50	50	19.48	19.23	18.88	18.39	18.31	2
		100	0	19.38	19.33	19.04	18.50	18.27	2

EIRP

LTE BAND 41

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39675	2498.5	-21.74	45.69	23.95	248.31	H	2
40620	2593.0	-23.48	46.07	22.59	181.55	H	2
41565	2687.5	-23.16	46.49	23.33	215.23	H	2
39675	2498.5	-25.71	46.76	21.05	127.35	V	2
40620	2593.0	-27.43	47.13	19.70	93.33	V	2
41565	2687.5	-26.52	47.60	21.08	128.23	V	2

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39675	2498.5	-22.57	45.69	23.12	205.12	H	2
40620	2593.0	-24.50	46.07	21.57	143.55	H	2
41565	2687.5	-24.26	46.49	22.23	167.07	H	2
39675	2498.5	-26.54	46.76	20.22	105.20	V	2
40620	2593.0	-28.45	47.13	18.68	73.79	V	2
41565	2687.5	-27.62	47.60	19.98	99.54	V	2

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39700	2501.0	-21.55	45.71	24.16	260.62	H	2
40620	2593.0	-23.42	46.07	22.65	184.08	H	2
41540	2685.0	-23.03	46.42	23.39	218.22	H	2
39700	2501.0	-25.52	46.78	21.26	133.66	V	2
40620	2593.0	-27.37	47.13	19.76	94.62	V	2
41540	2685.0	-26.39	47.56	21.17	130.92	V	2

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39700	2501.0	-22.70	45.71	23.01	199.99	H	2
40620	2593.0	-24.52	46.07	21.55	142.89	H	2
41540	2685.0	-24.19	46.42	22.23	167.07	H	2
39700	2501.0	-26.67	46.78	20.11	102.57	V	2
40620	2593.0	-28.47	47.13	18.66	73.45	V	2
41540	2685.0	-27.55	47.56	20.01	100.23	V	2

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39725	2503.5	-21.56	45.74	24.18	261.82	H	2
40620	2593.0	-23.49	46.07	22.58	181.13	H	2
41515	2682.5	-23.10	46.39	23.29	213.26	H	2
39725	2503.5	-25.53	46.78	21.25	133.35	V	2
40620	2593.0	-27.44	47.13	19.69	93.11	V	2
41515	2682.5	-26.46	47.41	20.95	124.45	V	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39725	2503.5	-22.42	45.74	23.32	214.78	H	2
40620	2593.0	-24.36	46.07	21.71	148.25	H	2
41515	2682.5	-23.95	46.39	22.44	175.35	H	2
39725	2503.5	-26.39	46.78	20.39	109.40	V	2
40620	2593.0	-28.31	47.13	18.82	76.21	V	2
41515	2682.5	-27.31	47.41	20.10	102.33	V	2

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39750	2506.0	-22.14	45.76	23.62	230.14	H	2
40620	2593.0	-23.94	46.07	22.13	163.31	H	2
41490	2680.0	-23.68	46.36	22.68	185.31	H	2
39750	2506.0	-26.11	46.80	20.69	117.22	V	2
40620	2593.0	-27.89	47.13	19.24	83.95	V	2
41490	2680.0	-27.04	47.39	20.35	108.39	V	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39750	2506.0	-23.07	45.76	22.69	185.78	H	2
40620	2593.0	-25.01	46.07	21.06	127.64	H	2
41490	2680.0	-24.51	46.36	21.85	153.07	H	2
39750	2506.0	-27.04	46.80	19.76	94.62	V	2
40620	2593.0	-28.96	47.13	18.17	65.61	V	2
41490	2680.0	-27.87	47.39	19.52	89.54	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

4.2 FREQUENCY STABILITY MEASUREMENT

4.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

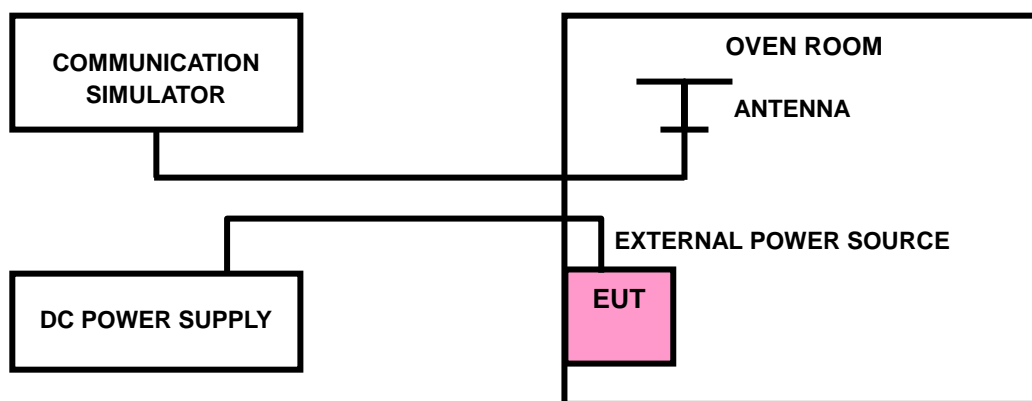
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

4.2.2 TEST PROCEDURE

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

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

4.2.3 TEST SETUP



4.2.4 TEST RESULTS

LTE BAND 41

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
5	0.0006	0.0006	2.5
4.5	-0.0007	-0.0007	2.5
5.5	0.0006	0.0006	2.5

NOTE: The applicant defined the normal working voltage of the DC source is from 4.5Vdc to 5.5Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0037	-0.0035	2.5
-20	-0.0032	-0.0030	2.5
-10	-0.0027	-0.0025	2.5
0	-0.0022	-0.0021	2.5
10	-0.0017	-0.0016	2.5
20	-0.0013	-0.0012	2.5
30	-0.0009	-0.0008	2.5
40	-0.0004	-0.0004	2.5
50	0.0000	0.0001	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
5	0.0008	0.0007	2.5
4.5	-0.0008	-0.0008	2.5
5.5	0.0007	0.0007	2.5

NOTE: The applicant defined the normal working voltage of the DC source is from 4.5Vdc to 5.5Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0037	-0.0035	2.5
-20	-0.0032	-0.0030	2.5
-10	-0.0028	-0.0026	2.5
0	-0.0023	-0.0021	2.5
10	-0.0017	-0.0016	2.5
20	-0.0012	-0.0011	2.5
30	-0.0008	-0.0007	2.5
40	-0.0003	-0.0003	2.5
50	0.0001	0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
5	0.0007	0.0007	2.5
4.5	-0.0007	-0.0007	2.5
5.5	0.0006	0.0006	2.5

NOTE: The applicant defined the normal working voltage of the DC source is from 4.5Vdc to 5.5Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0038	-0.0036	2.5
-20	-0.0033	-0.0031	2.5
-10	-0.0028	-0.0026	2.5
0	-0.0023	-0.0022	2.5
10	-0.0018	-0.0017	2.5
20	-0.0013	-0.0012	2.5
30	-0.0008	-0.0007	2.5
40	-0.0004	-0.0003	2.5
50	0.0001	0.0001	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
5	0.0006	0.0006	2.5
4.5	-0.0006	-0.0006	2.5
5.5	0.0005	0.0005	2.5

NOTE: The applicant defined the normal working voltage of the DC source is from 4.5Vdc to 5.5Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

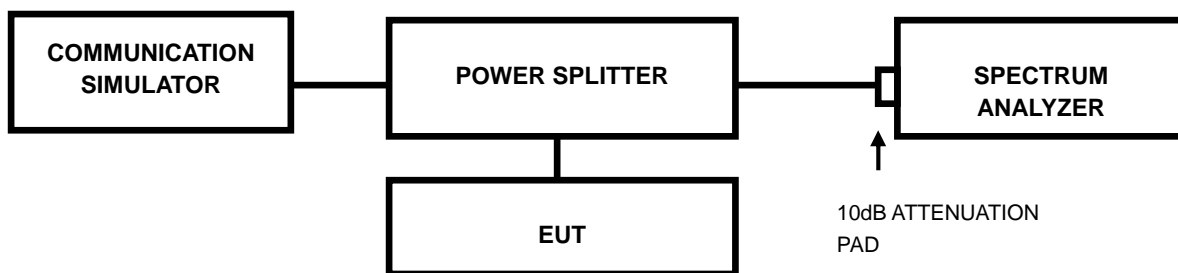
TEMP. (°C)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0038	-0.0037	2.5
-20	-0.0034	-0.0032	2.5
-10	-0.0028	-0.0027	2.5
0	-0.0024	-0.0023	2.5
10	-0.0019	-0.0017	2.5
20	-0.0014	-0.0013	2.5
30	-0.0009	-0.0008	2.5
40	-0.0005	-0.0004	2.5
50	0.0000	0.0000	2.5

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

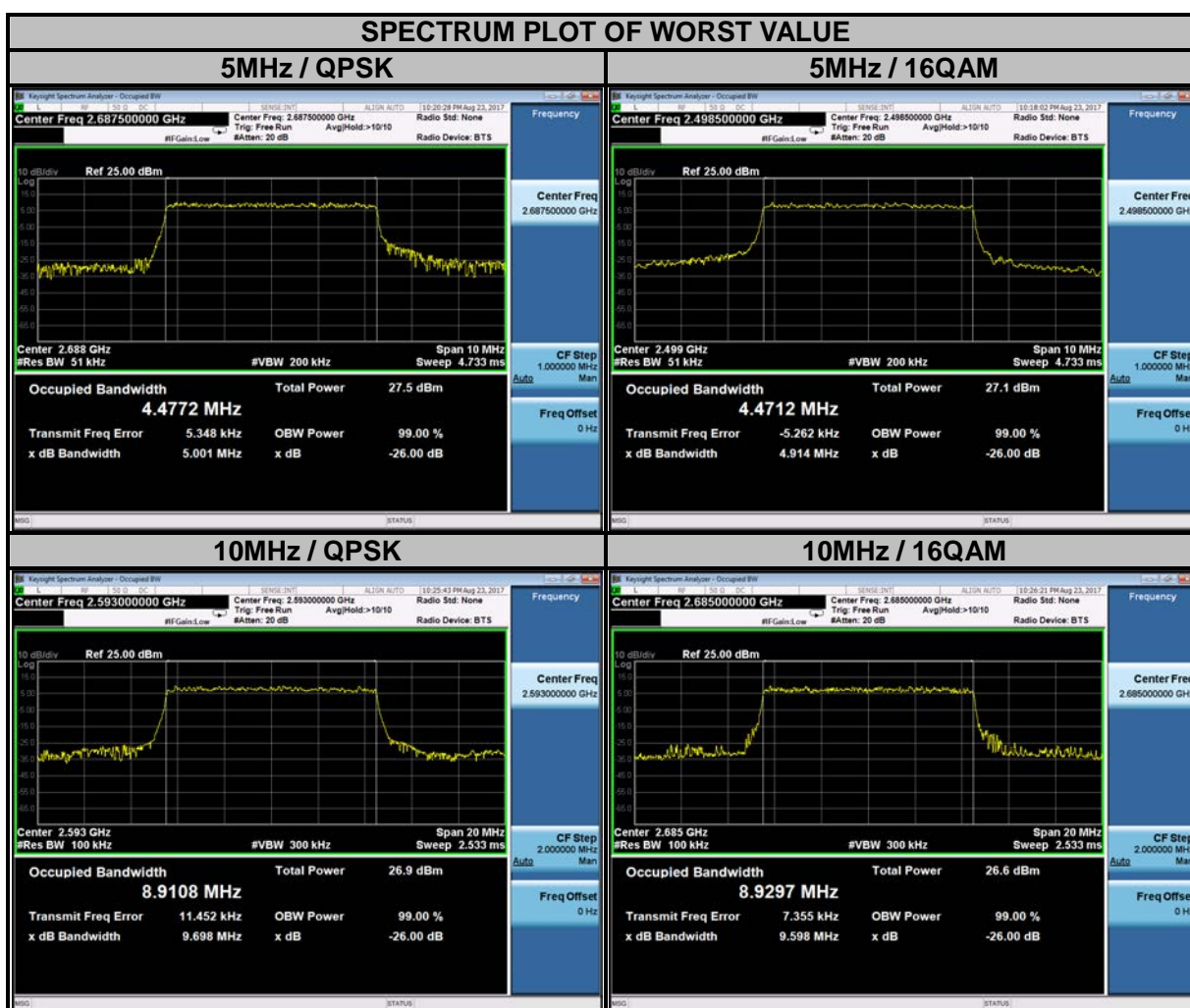


4.3.3 TEST PROCEDURES

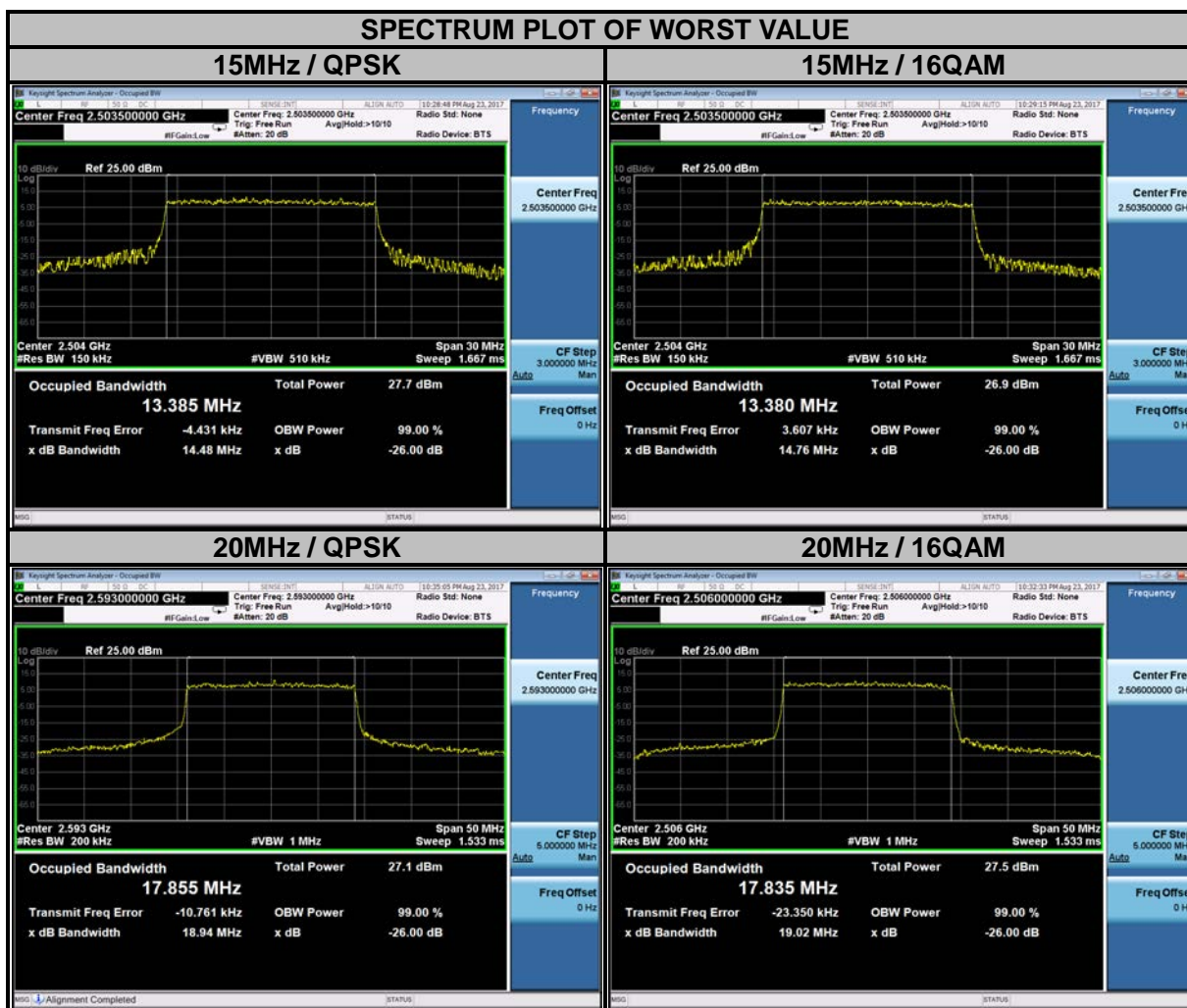
- The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

4.3.4 TEST RESULTS

LTE BAND 41							
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
39675	2498.5	4.47	4.47	39700	2501.0	8.91	8.91
40620	2593.0	4.47	4.47	40620	2593.0	8.91	8.91
41565	2687.5	4.48	4.47	41540	2685.0	8.91	8.93



LTE BAND 41							
CHANNEL BANDWIDTH: 15MHz				CHANNEL BANDWIDTH: 20MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
39725	2503.5	13.39	13.38	39750	2506.0	17.84	17.84
40620	2593.0	13.37	13.36	40620	2593.0	17.86	17.81
41515	2682.5	13.35	13.38	41490	2680.0	17.85	17.80

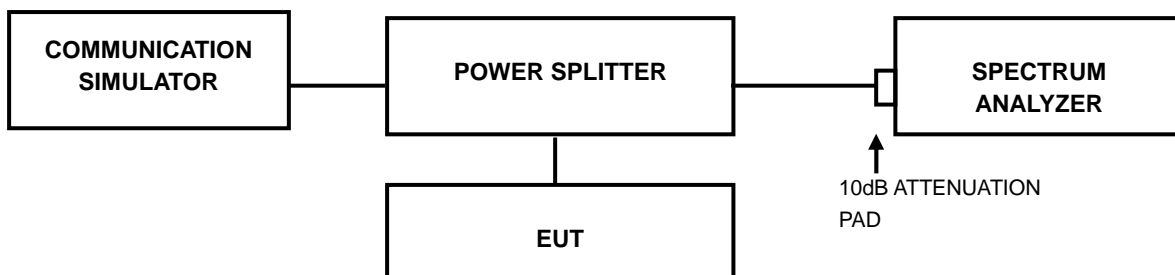


4.4 PEAK TO AVERAGE RATIO

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



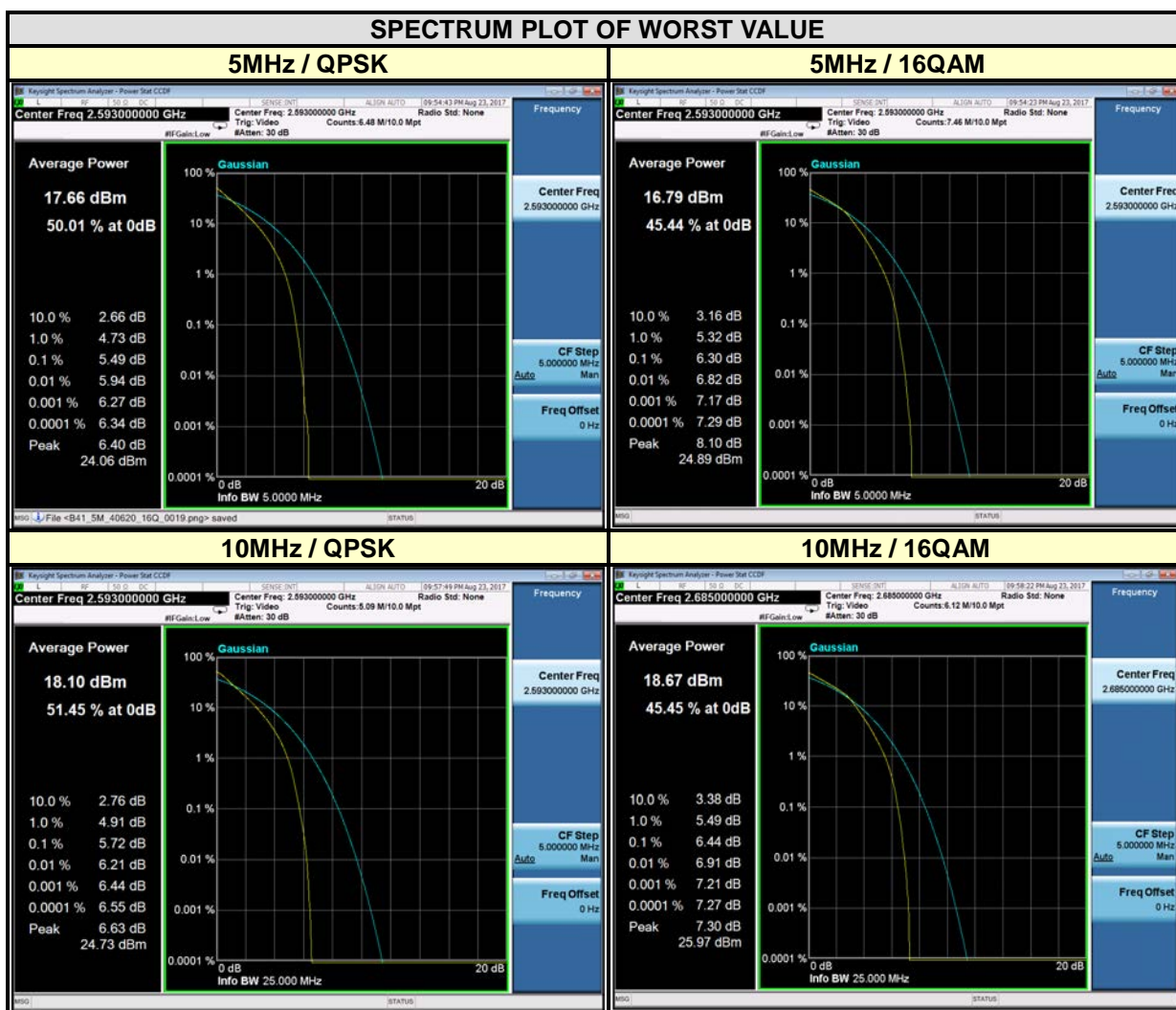
4.4.3 TEST PROCEDURES

1. Set resolution/measurement bandwidth \geq 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%.

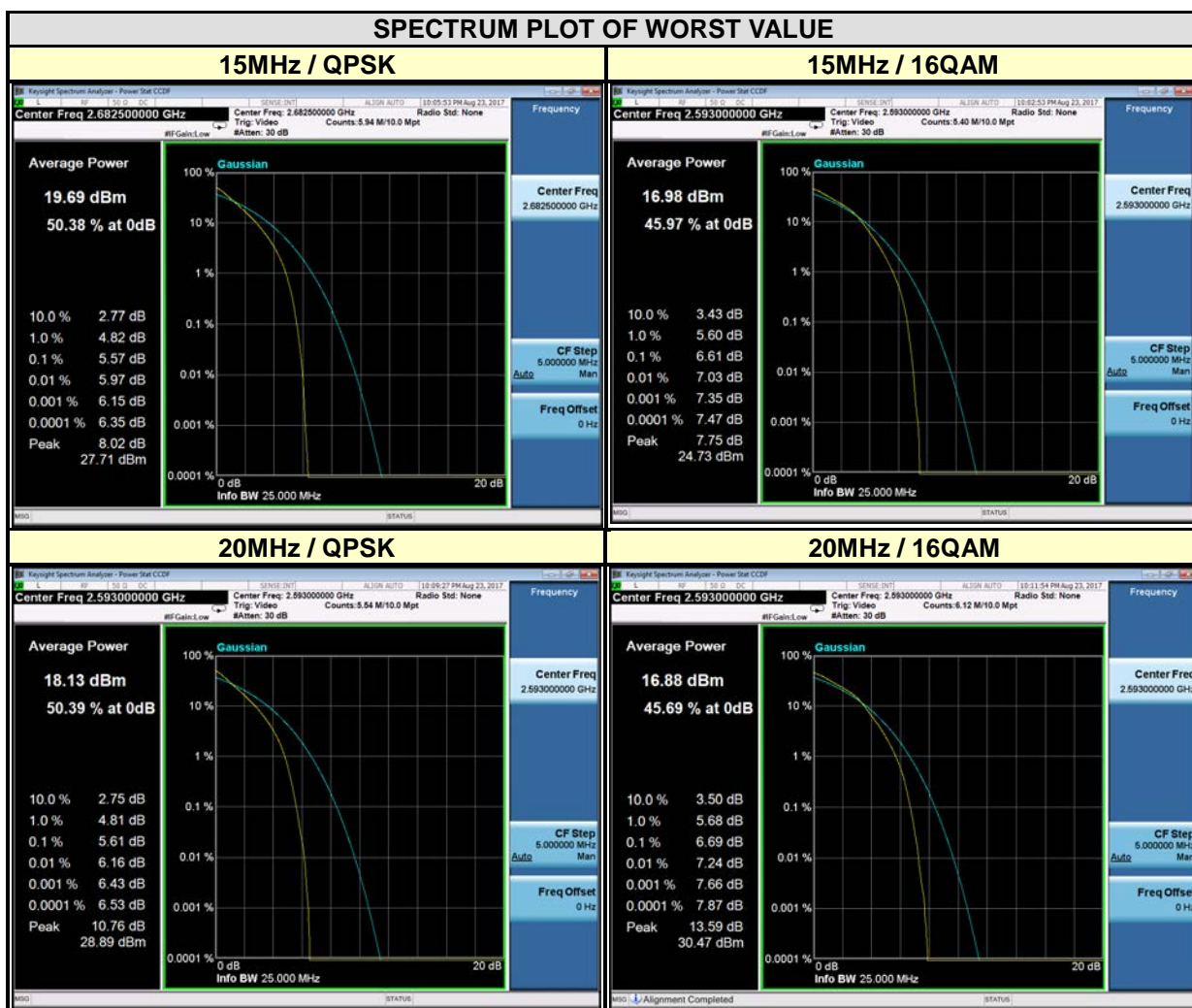
4.4.4 TEST RESULTS

LTE BAND 41

CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)		CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM			QPSK	16QAM
39675	2498.5	5.24	5.73	39700	2501.0	5.17	6.02
40620	2593.0	5.49	6.30	40620	2593.0	5.72	6.23
41565	2687.5	5.45	6.28	41540	2685.0	5.70	6.44



CHANNEL BANDWIDTH: 15MHz				CHANNEL BANDWIDTH: 20MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)		CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM			QPSK	16QAM
39725	2503.5	5.35	6.31	39750	2506.0	5.28	6.35
40620	2593.0	5.50	6.61	40620	2593.0	5.61	6.69
41515	2682.5	5.57	6.41	41490	2680.0	5.51	6.51

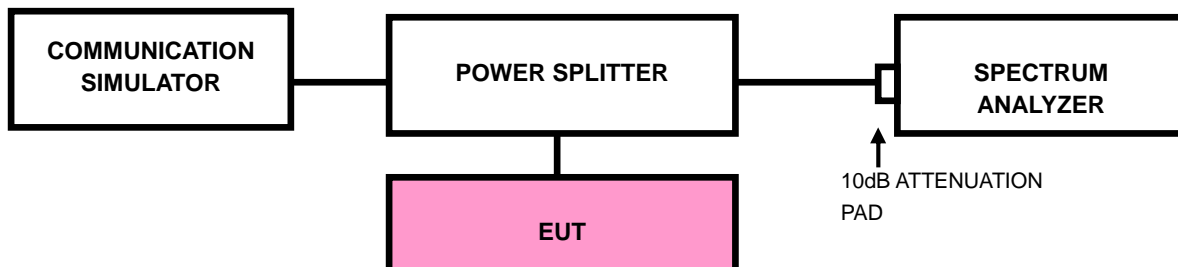


4.5 BAND EDGE MEASUREMENT

4.5.1 LIMITS OF BAND EDGE MEASUREMENT

According to FCC 27.53(m)(4) specified that For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. For mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed.

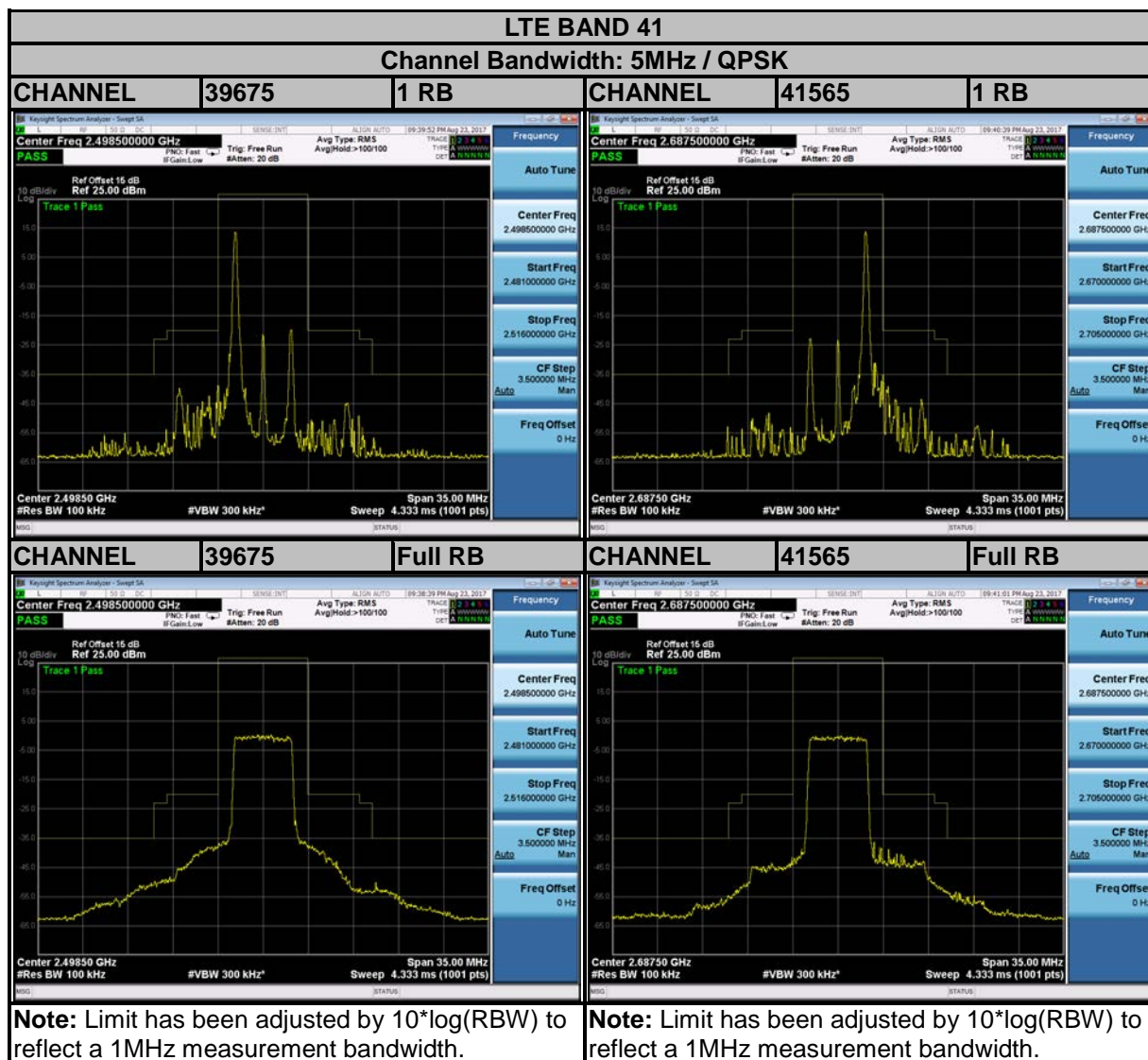
4.5.2 TEST SETUP

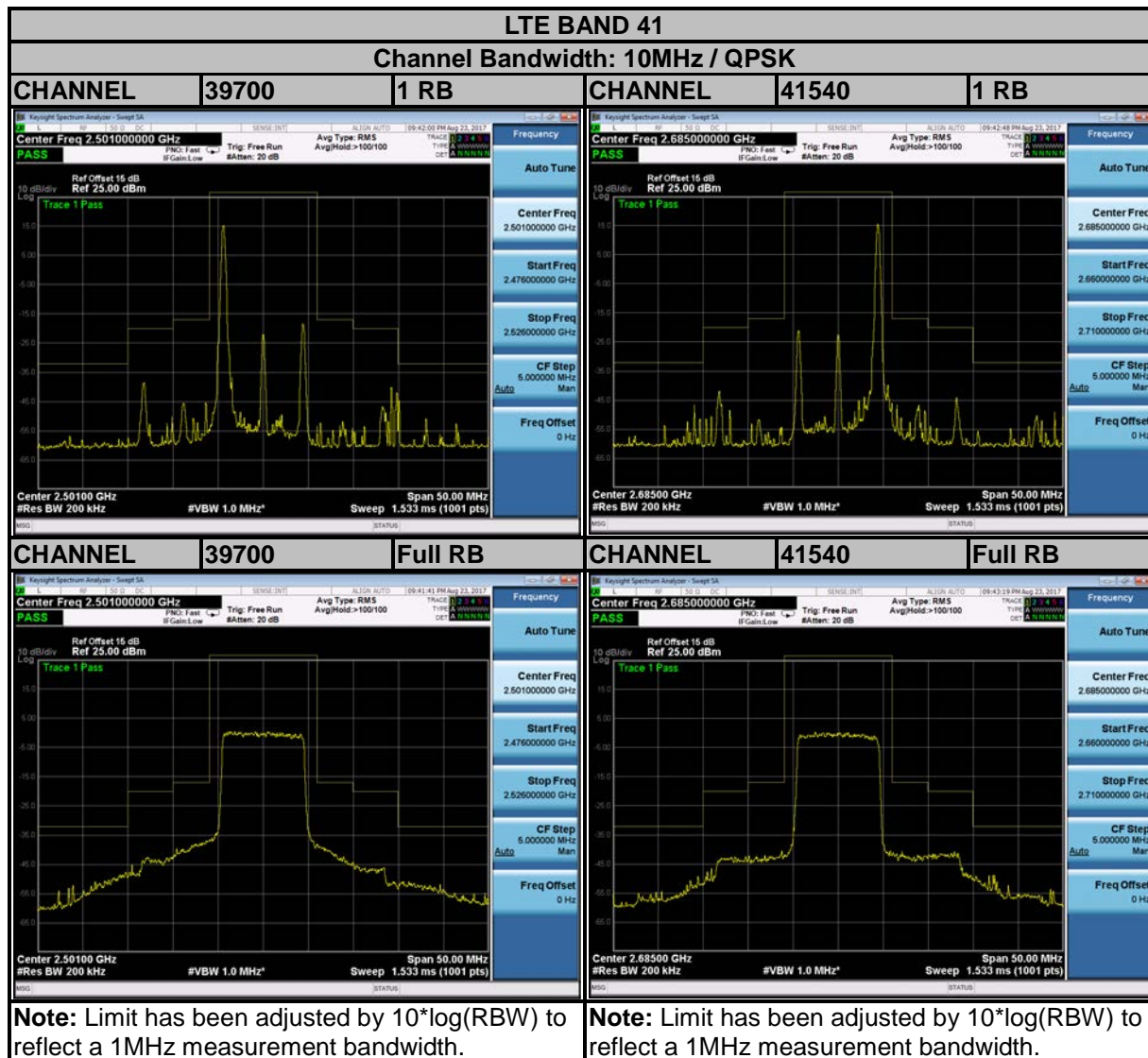


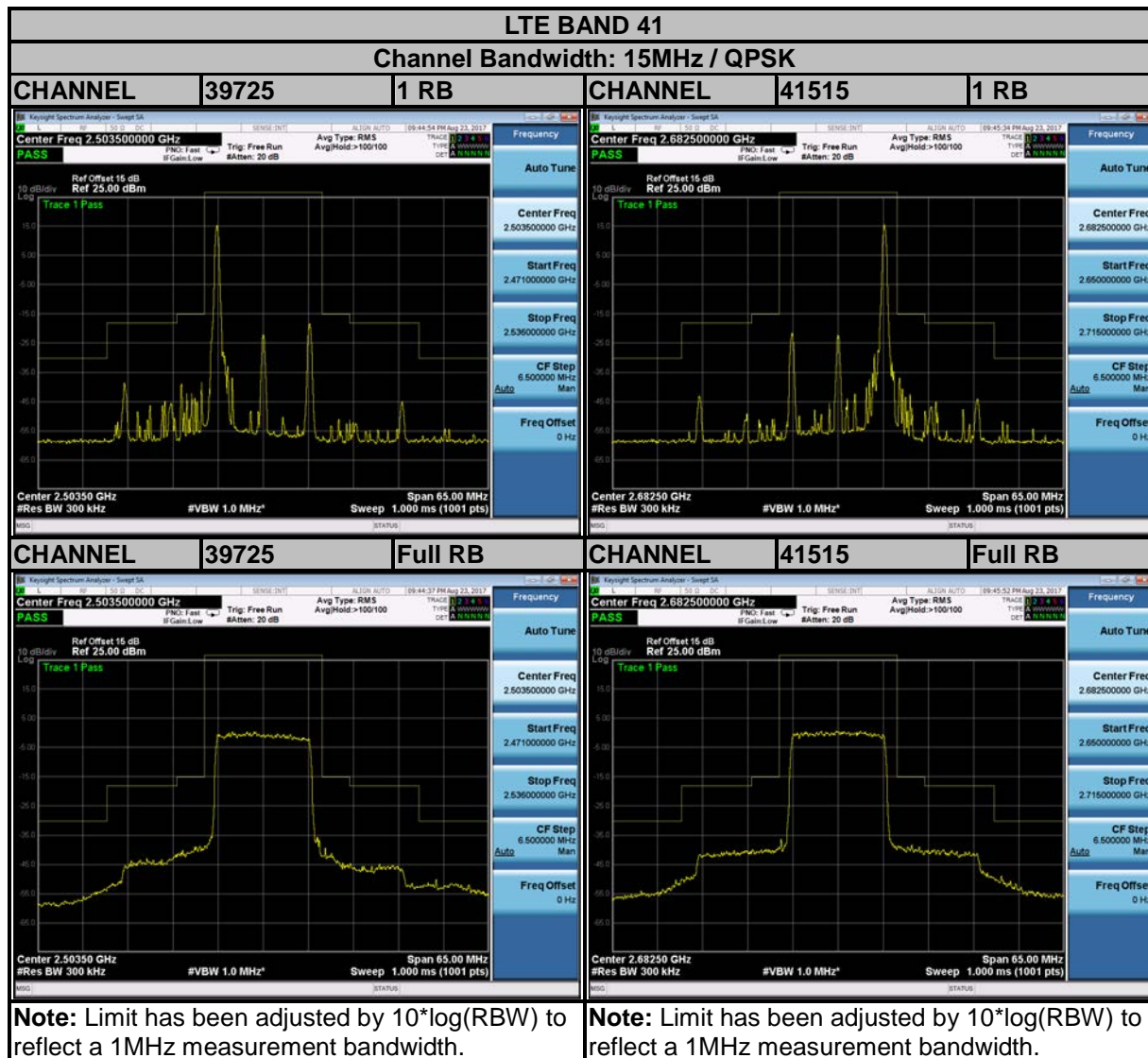
4.5.3 TEST PROCEDURES

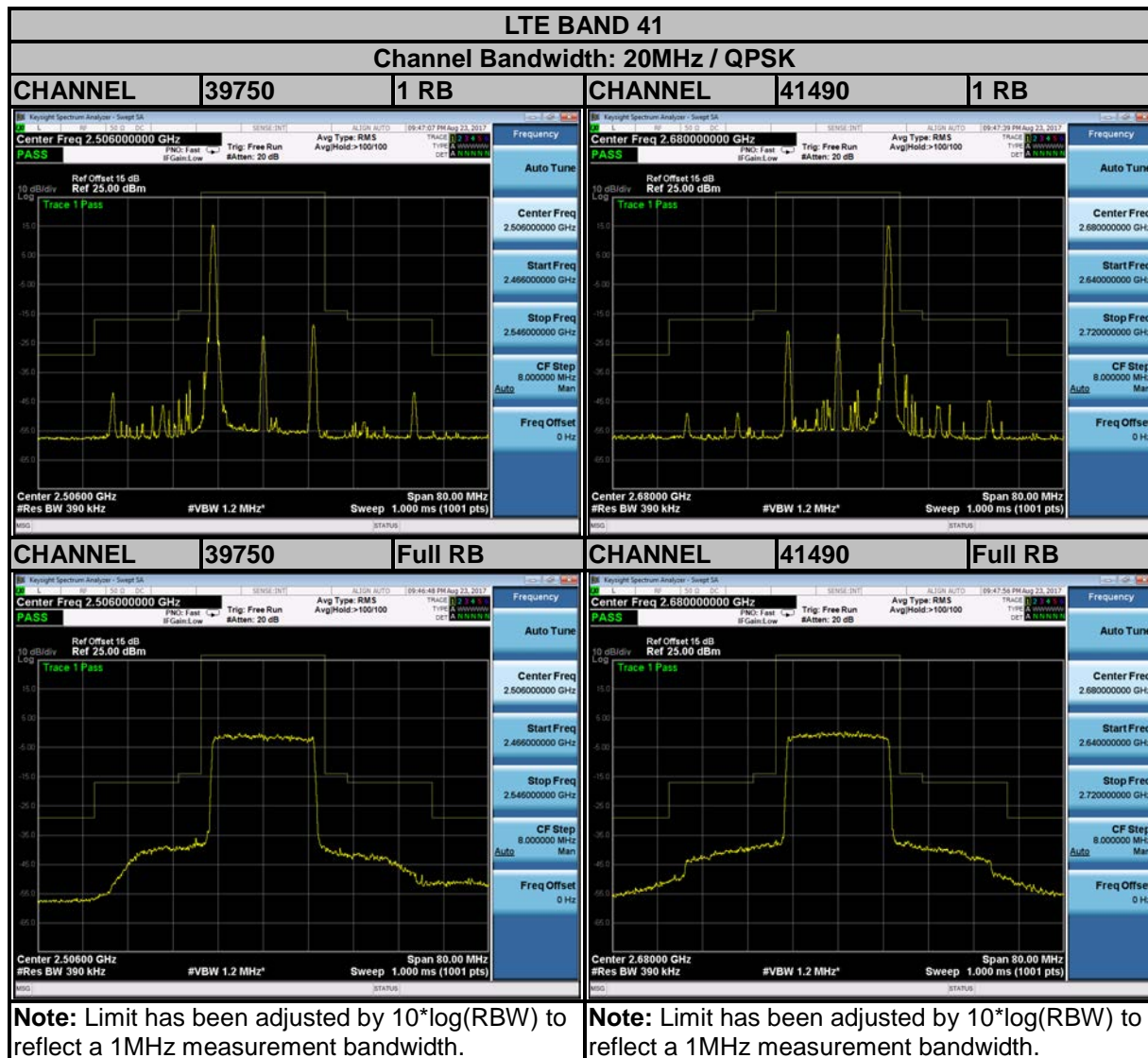
- a. The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels (low and high operational frequency range.).
- b. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- c. The center frequency of spectrum is the band edge frequency and span is 35MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz (Channel bandwidth 5MHz).
- d. 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 10MHz).
- e. The center frequency of spectrum is the band edge frequency and span is 60MHz. RBW of the spectrum is 300kHz and VBW of the spectrum is 1MHz (Channel bandwidth 15MHz).
- f. The center frequency of spectrum is the band edge frequency and span is 80MHz. RBW of the spectrum is 500kHz and VBW of the spectrum is 2MHz (Channel bandwidth 20MHz).
- g. Record the max trace plot into the test report.

4.5.4 TEST RESULTS









4.6 CONDUCTED SPURIOUS EMISSIONS

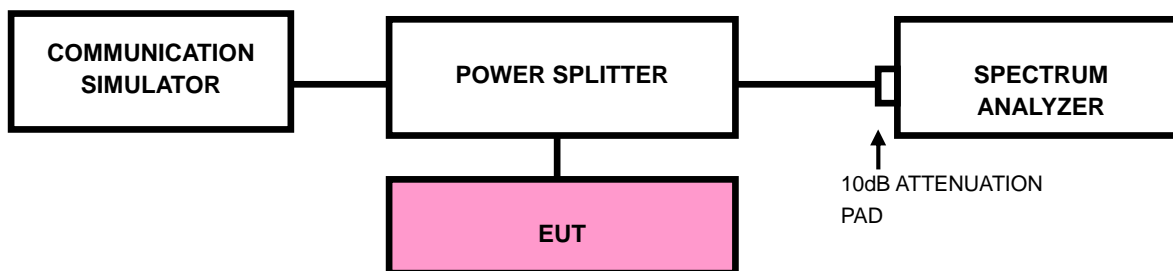
4.6.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $55 + 10 \log_{10}(P)$ 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 26.9GHz for LTE Band 41. 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

5MHz / QPSK

CHANNEL 39675

FREQUENCY RANG2E : 30MHz~26.9GHz

Keylight Spectrum Analyzer - Sweep SA

Start Freq 30.000000 MHz

Ref Offset 15 dB
Ref 25.00 dBm

Mkr1 7.490 8 GHz
-39.554 dBm

Center Freq 13.465000000 GHz

Start Freq 30.000000 MHz

Stop Freq 26.900000000 GHz

CF Step 2.687000000 GHz

Freq Offset 0 Hz

Start 30 MHz

#Res BW 1.0 MHz

#VBW 3.0 MHz

Sweep 45.33 ms (20000 pts)

CHANNEL 40620

FREQUENCY RANGE : 30MHz~26.9GHz

Keylight Spectrum Analyzer - Sweep SA

Start Freq 30.000000 MHz

Ref Offset 15 dB
Ref 25.00 dBm

Mkr1 7.775 7 GHz
-39.077 dBm

Center Freq 13.465000000 GHz

Start Freq 30.000000 MHz

Stop Freq 26.900000000 GHz

CF Step 2.687000000 GHz

Freq Offset 0 Hz

Start 30 MHz

#Res BW 1.0 MHz

#VBW 3.0 MHz

Sweep 45.33 ms (20000 pts)

CHANNEL 41565

FREQUENCY RANGE : 30MHz~26.9GHz

Keylight Spectrum Analyzer - Sweep SA

Start Freq 30.000000 MHz

Ref Offset 15 dB
Ref 25.00 dBm

Mkr1 8.057 8 GHz
-40.805 dBm

Center Freq 13.465000000 GHz

Start Freq 30.000000 MHz

Stop Freq 26.900000000 GHz

CF Step 2.687000000 GHz

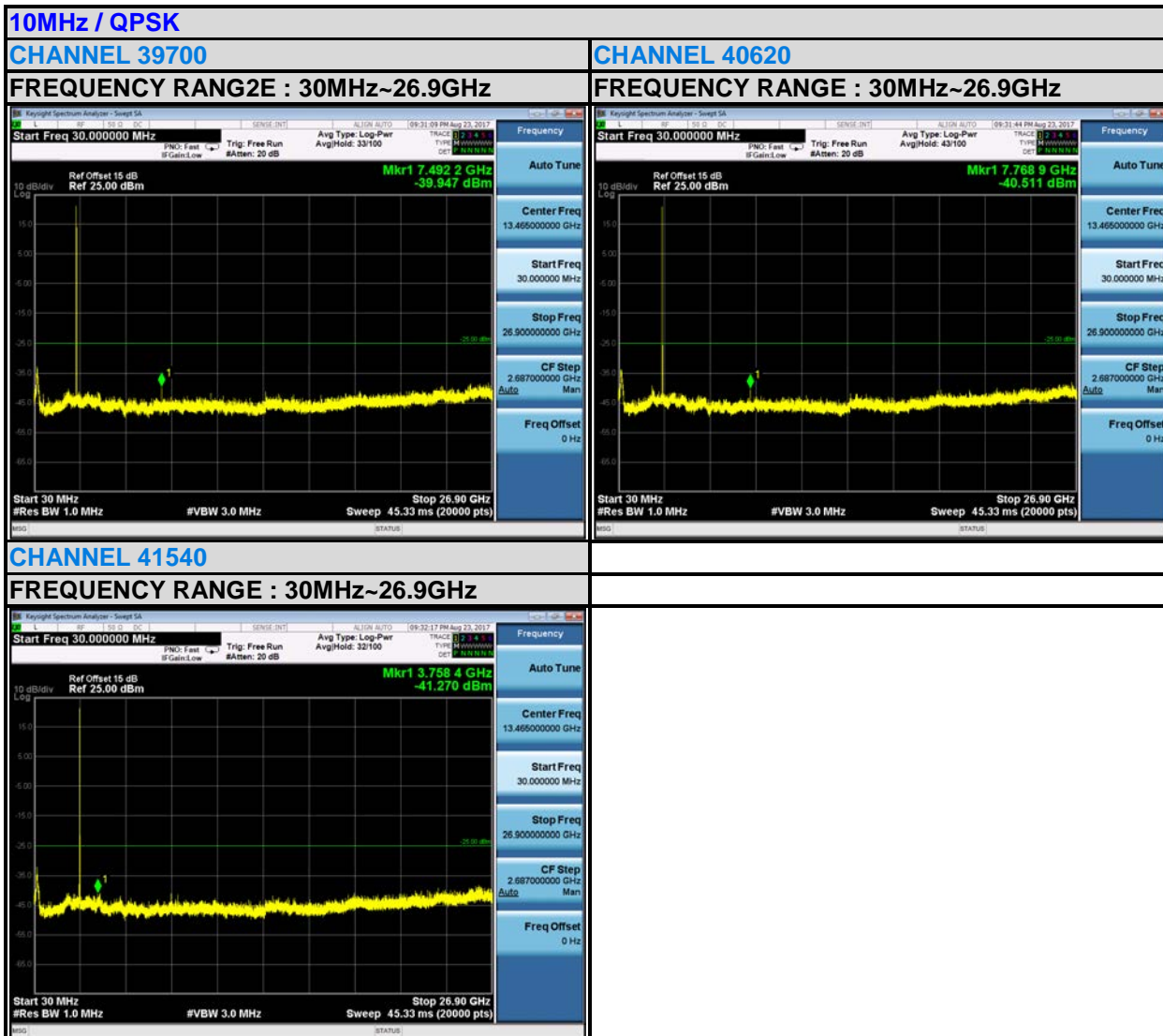
Freq Offset 0 Hz

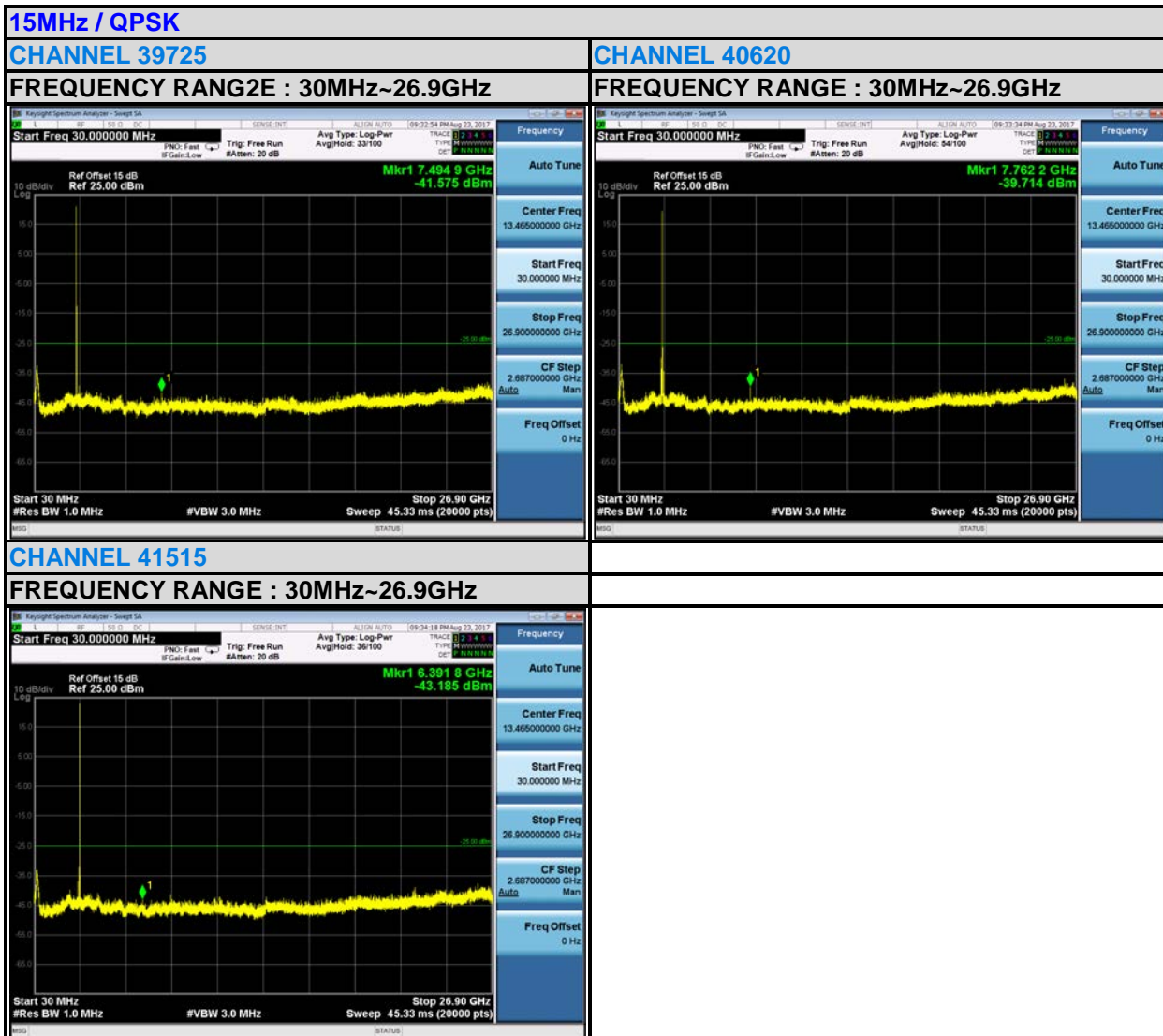
Start 30 MHz

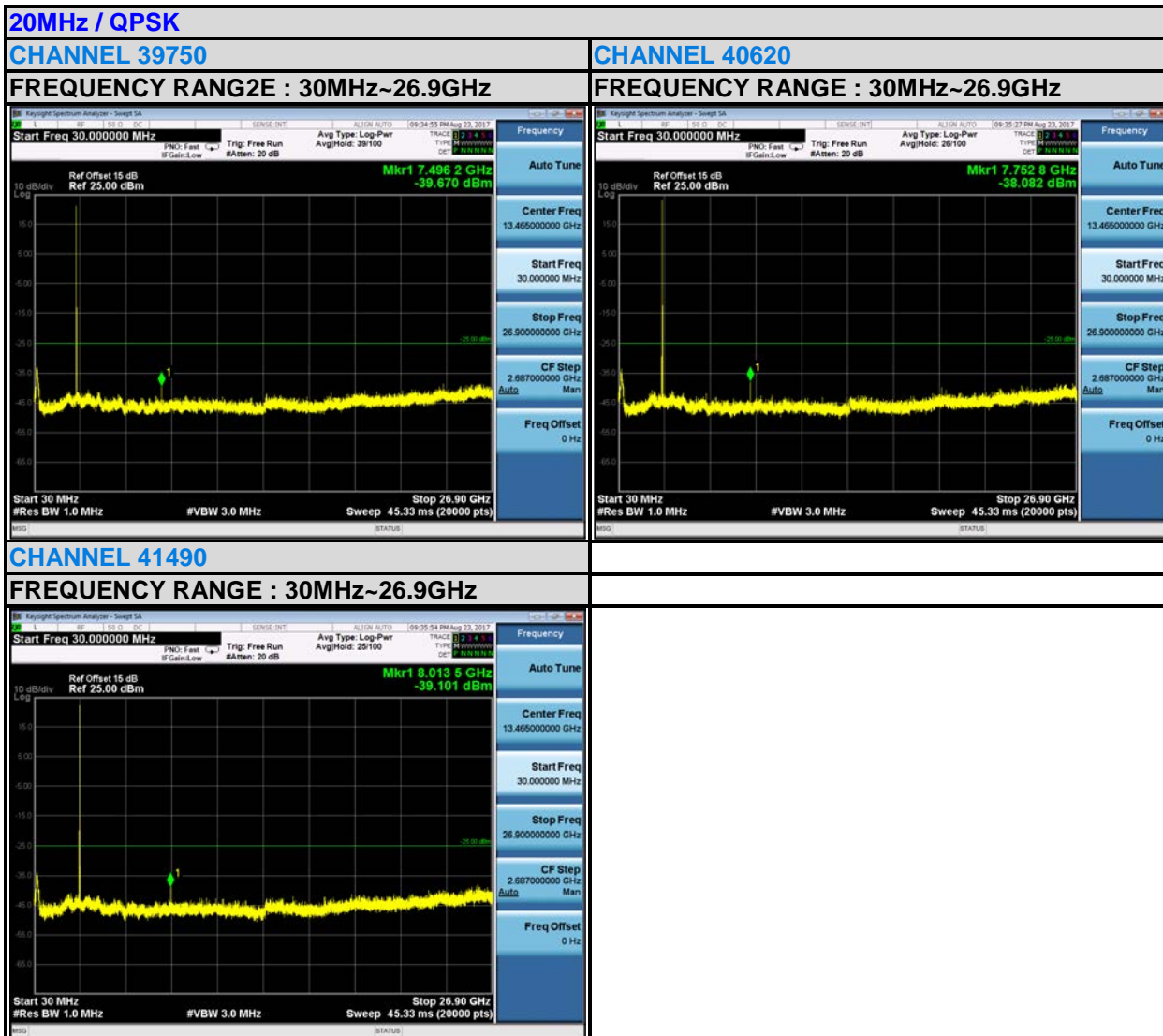
#Res BW 1.0 MHz

#VBW 3.0 MHz

Sweep 45.33 ms (20000 pts)







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 $55 + 10 \log_{10}(P)$ dB. The limit of emission is equal to -25dBm.

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. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$.
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,
 $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15\text{dBi}$.

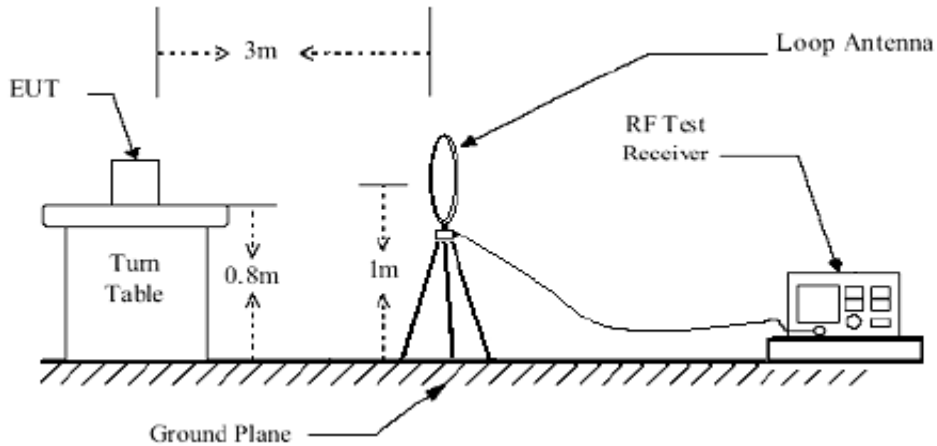
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

4.7.3 DEVIATION FROM TEST STANDARD

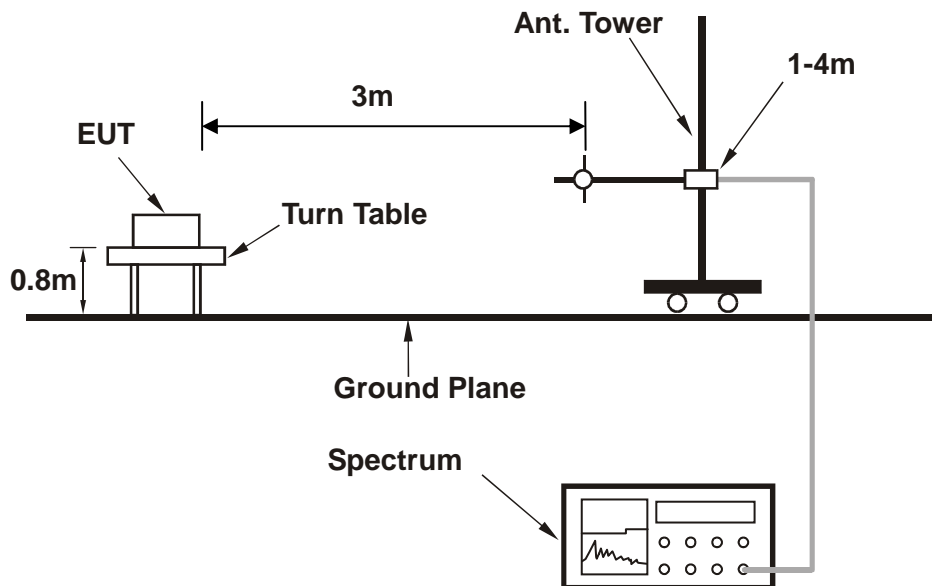
No deviation

4.7.4 TEST SETUP

<Below 30MHz>



<Above 30MHz>



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



**BUREAU
VERITAS**

Test Report No.: RF170802W002-2

4.7.5 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

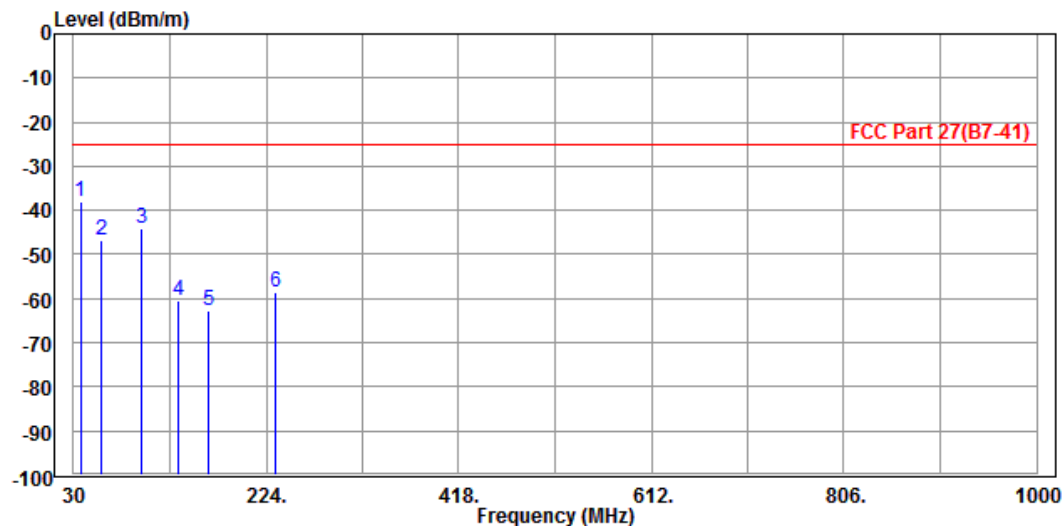
9 KHz – 30 KHz data: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

30 MHz – 1GHz data:

LTE Band 41:

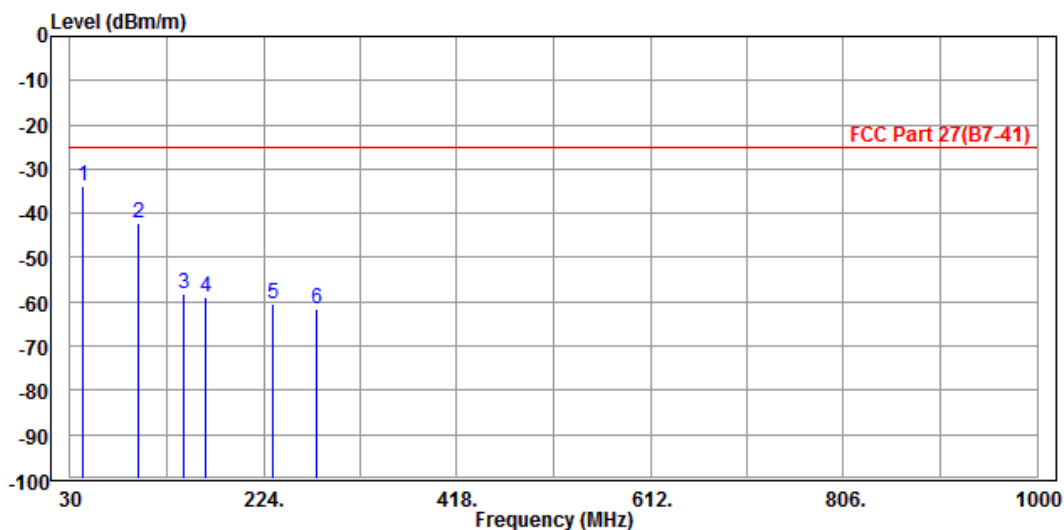
MODE	TX channel 40620	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	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	-37.97	-50.29	-25.00	-12.97	12.32	Peak	Horizontal
2	57.160	-46.65	-42.40	-25.00	-21.65	-4.25	Peak	Horizontal
3	98.870	-44.24	-33.33	-25.00	-19.24	-10.91	Peak	Horizontal
4	135.730	-60.48	-42.50	-25.00	-35.48	-17.98	Peak	Horizontal
5	165.800	-62.92	-44.66	-25.00	-37.92	-18.26	Peak	Horizontal
6	232.730	-58.50	-41.89	-25.00	-33.50	-16.61	Peak	Horizontal



MODE	TX channel 40620	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V
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	42.610	-33.73	-31.46	-25.00	-8.73	-2.27	Peak	Vertical
2	97.900	-42.11	-31.47	-25.00	-17.11	-10.64	Peak	Vertical
3	143.490	-58.08	-42.12	-25.00	-33.08	-15.96	Peak	Vertical
4	165.800	-59.02	-44.36	-25.00	-34.02	-14.66	Peak	Vertical
5	232.730	-60.54	-49.33	-25.00	-35.54	-11.21	Peak	Vertical
6	277.350	-61.50	-50.10	-25.00	-36.50	-11.40	Peak	Vertical





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ABOVE 1GHz

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

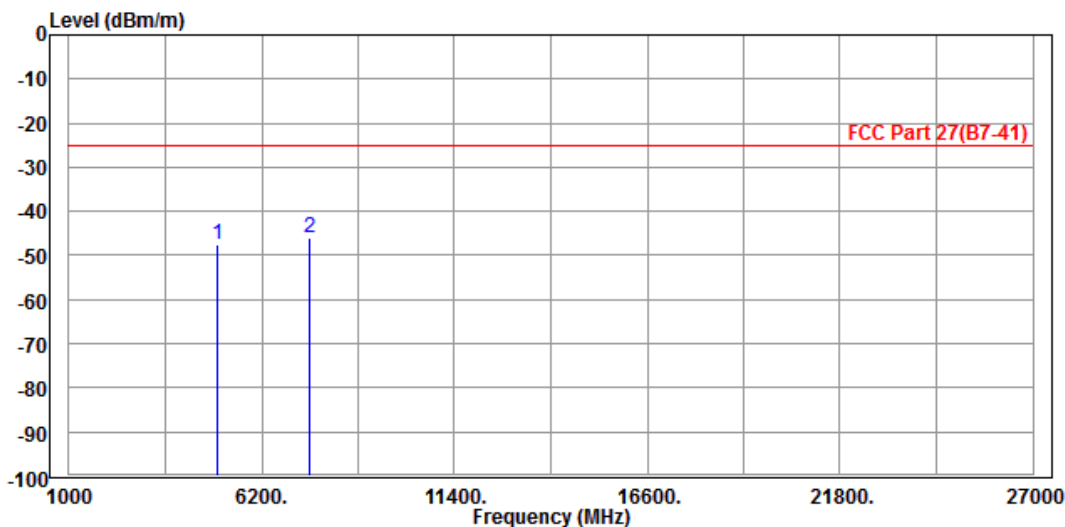
LTE Band 41

CHANNEL BANDWIDTH: 5MHz / QPSK

CH 39675

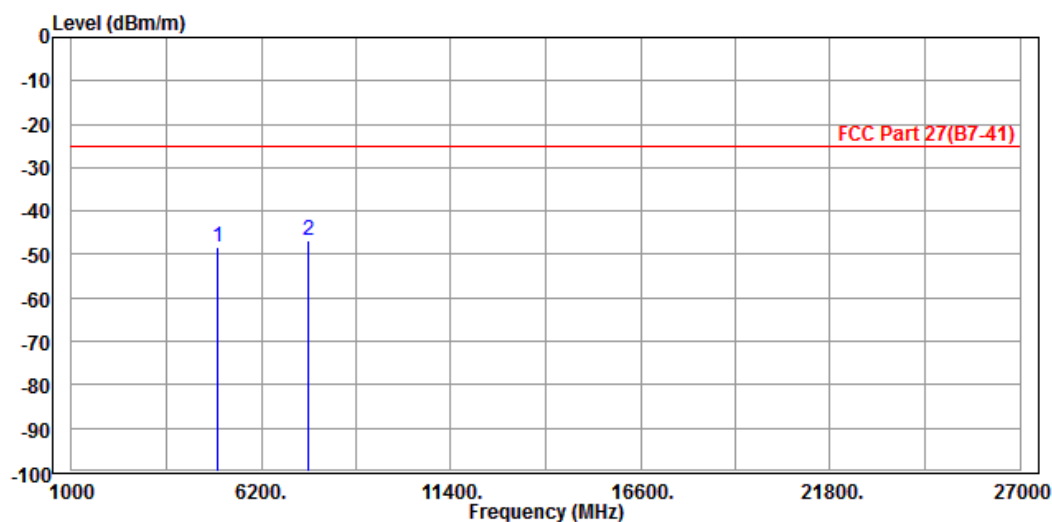
MODE	TX channel 39675	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5004.000	-47.69	-56.07	-25.00	-22.69	8.38	Peak	Horizontal
2 PP	7495.500	-46.18	-59.50	-25.00	-21.18	13.32	Peak	Horizontal



MODE	TX channel 39675	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

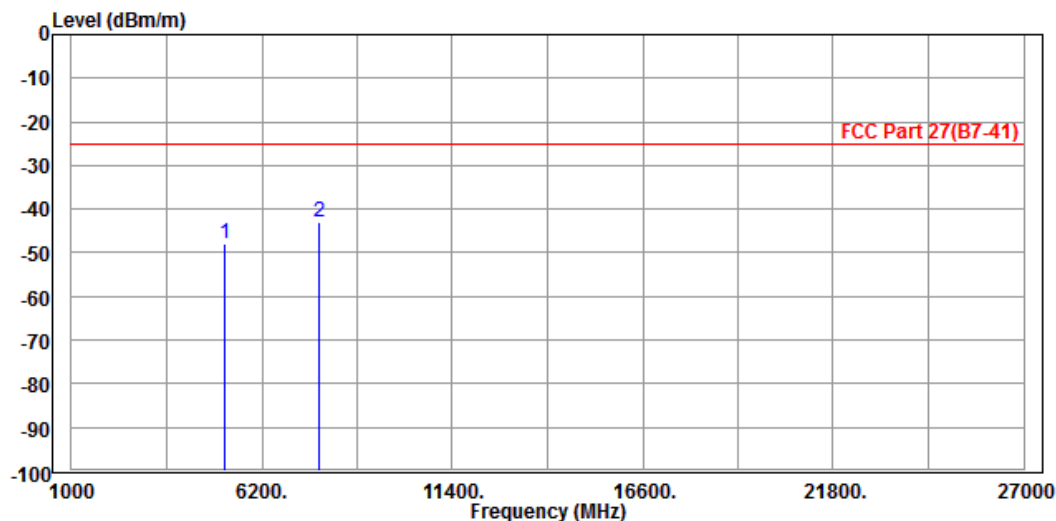
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5004.000	-48.31	-56.30	-25.00	-23.31	7.99	Peak	Vertical
2 PP	7495.500	-46.64	-59.43	-25.00	-21.64	12.79	Peak	Vertical



CH 40620

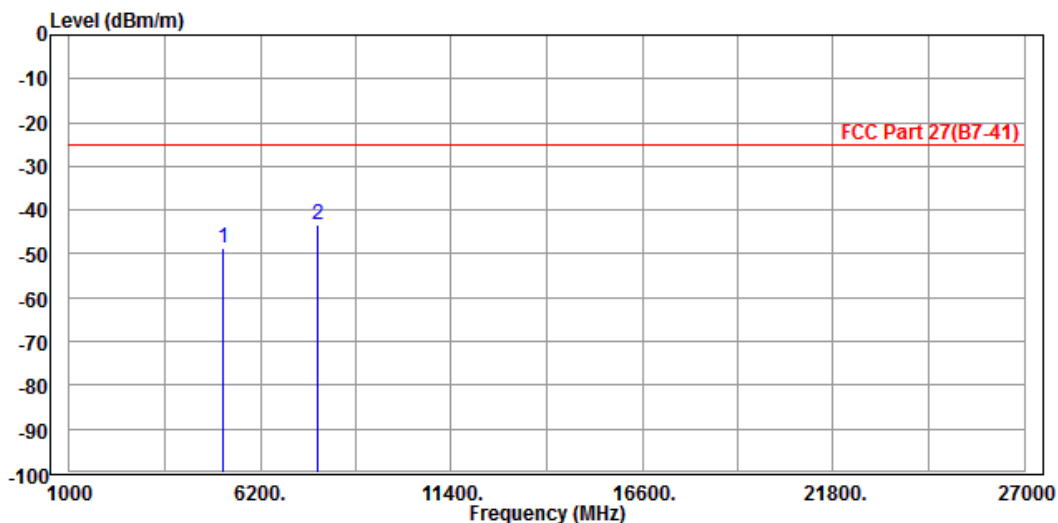
MODE	TX channel 40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5186.000	-47.90	-56.49	-25.00	-22.90	8.59	Peak	Horizontal
2 PP	7779.000	-42.80	-56.53	-25.00	-17.80	13.73	Peak	Horizontal



MODE	TX channel 40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

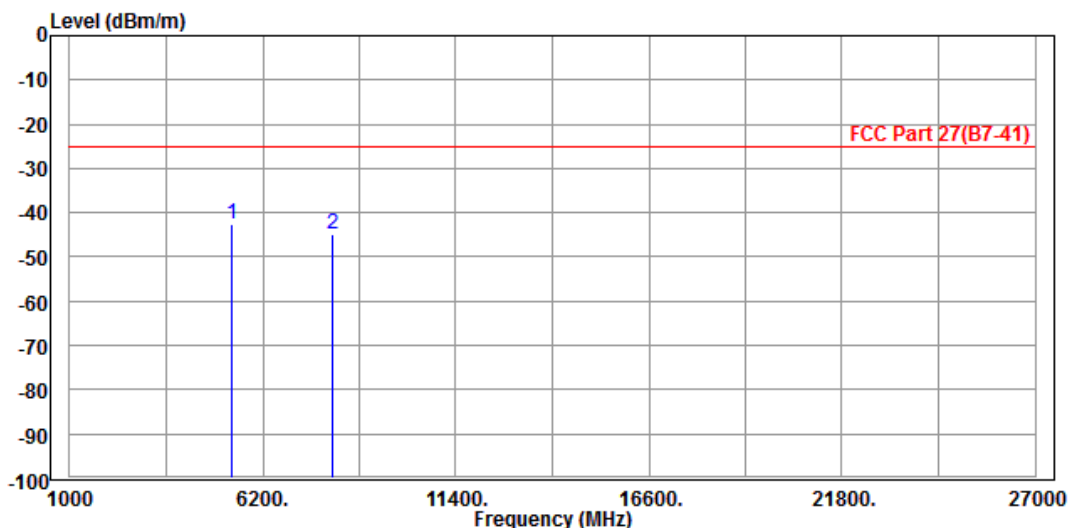
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5186.000	-48.79	-57.38	-25.00	-23.79	8.59	Peak	Horizontal
2 PP	7779.000	-43.47	-57.20	-25.00	-18.47	13.73	Peak	Horizontal



CH 41565

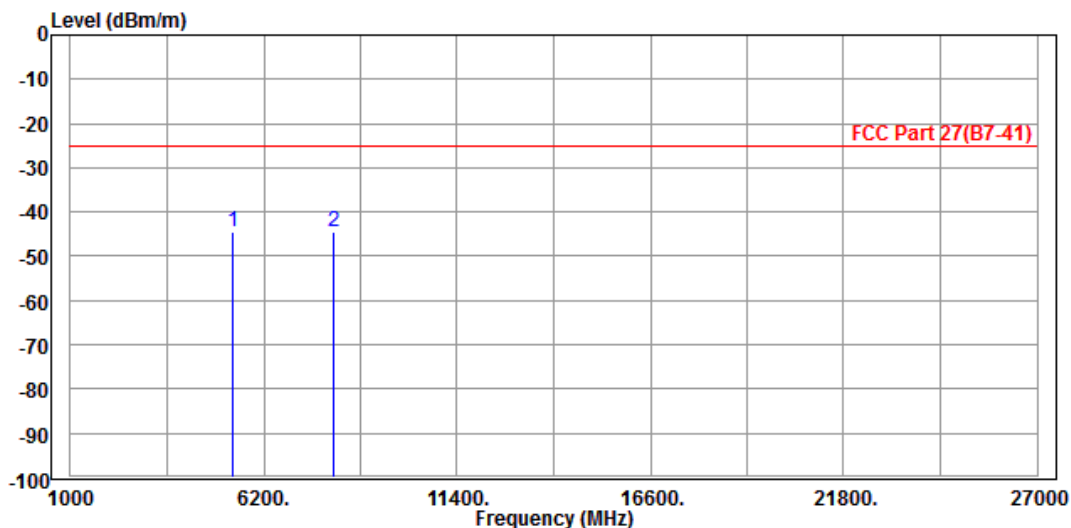
MODE	TX channel 41565	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	5368.000	-42.75	-51.56	-25.00	-17.75	8.81	Peak	Horizontal
2		8062.500	-44.73	-58.96	-25.00	-19.73	14.23	Peak	Horizontal



MODE	TX channel 41565	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

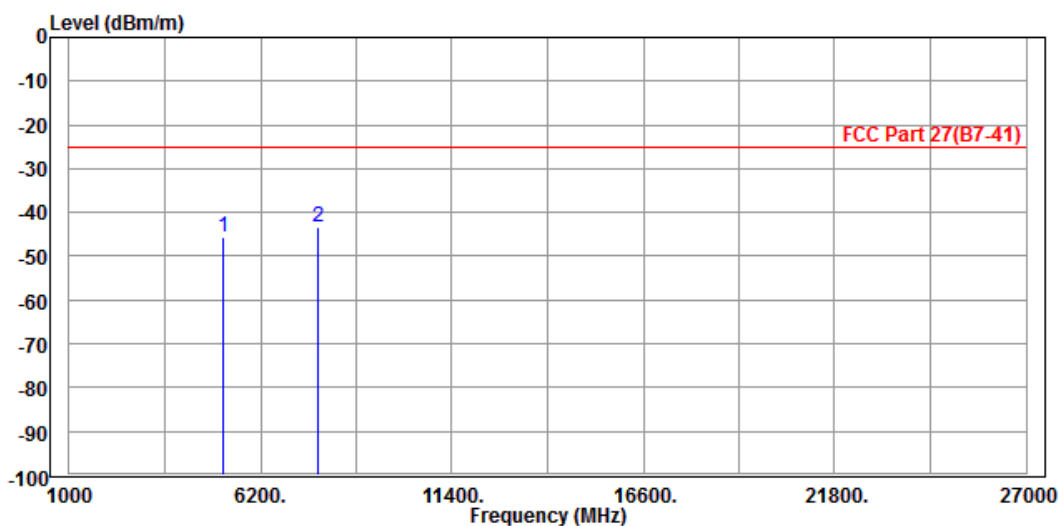
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5368.000	-44.31	-52.29	-25.00	-19.31	7.98	Peak	Vertical
2 PP	8062.500	-44.31	-58.14	-25.00	-19.31	13.83	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

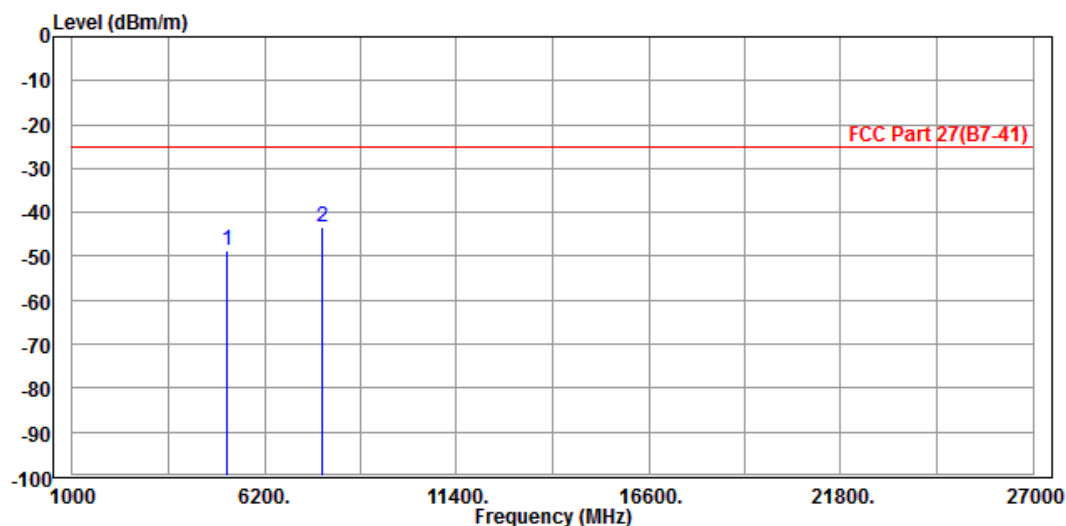
MODE	TX channel 40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5186.000	-45.67	-54.26	-25.00	-20.67	8.59	Peak	Horizontal
2 PP	7779.000	-43.42	-57.15	-25.00	-18.42	13.73	Peak	Horizontal



MODE	TX channel 40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

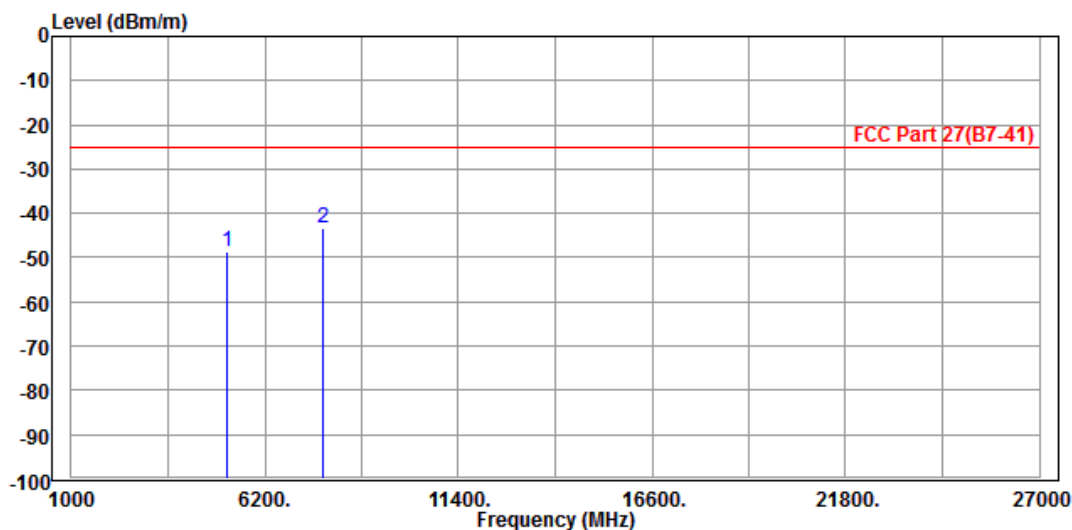
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5186.000	-48.67	-56.65	-25.00	-23.67	7.98	Peak	Vertical
2 PP	7779.000	-43.31	-56.60	-25.00	-18.31	13.29	Peak	Vertical



CHANNEL BANDWIDTH: 15MHz / QPSK

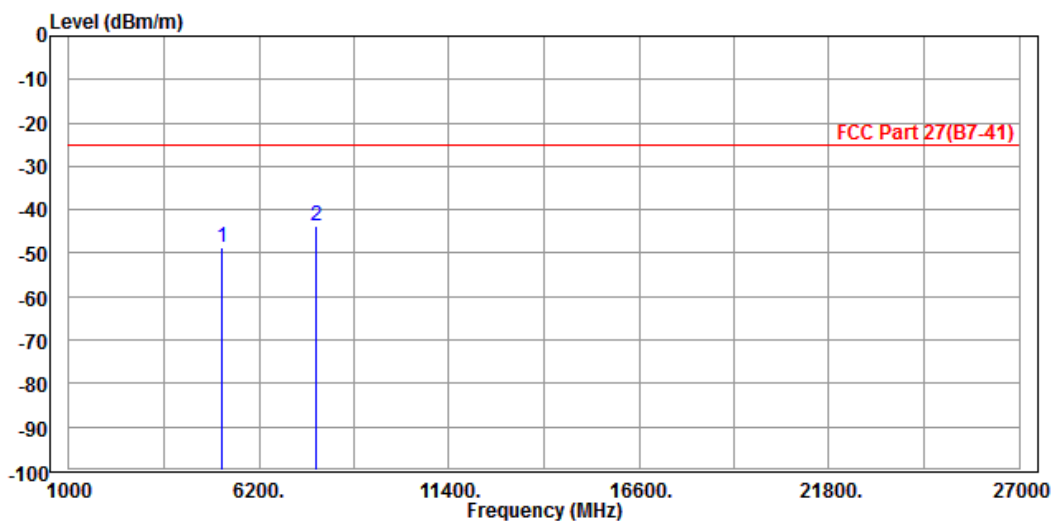
MODE	TX channel 40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5186.000	-48.79	-57.38	-25.00	-23.79	8.59	Peak	Horizontal
2 PP	7779.000	-43.47	-57.20	-25.00	-18.47	13.73	Peak	Horizontal



MODE	TX channel 40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

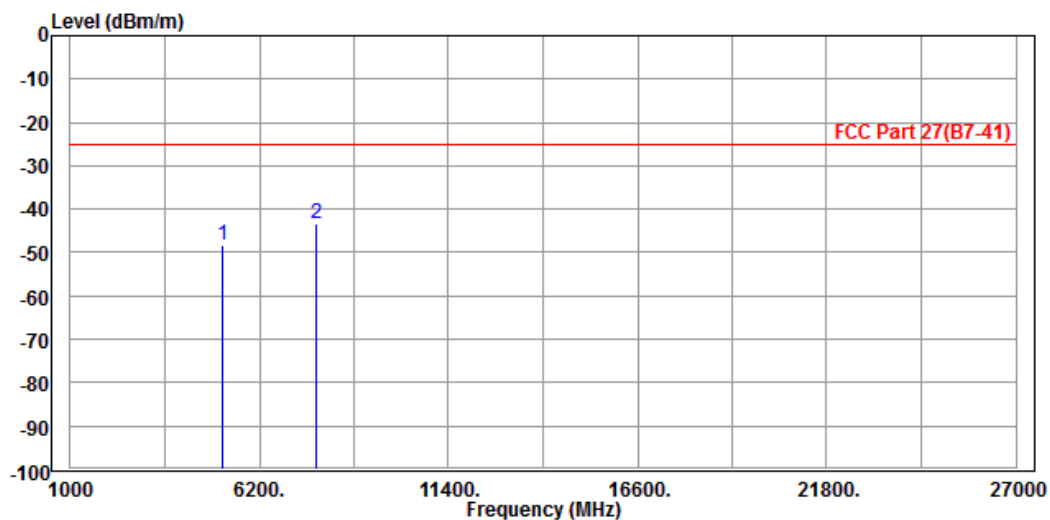
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5186.000	-48.78	-56.76	-25.00	-23.78	7.98	Peak	Vertical
2 PP	7779.000	-43.88	-57.17	-25.00	-18.88	13.29	Peak	Vertical



CHANNEL BANDWIDTH: 20MHz / QPSK

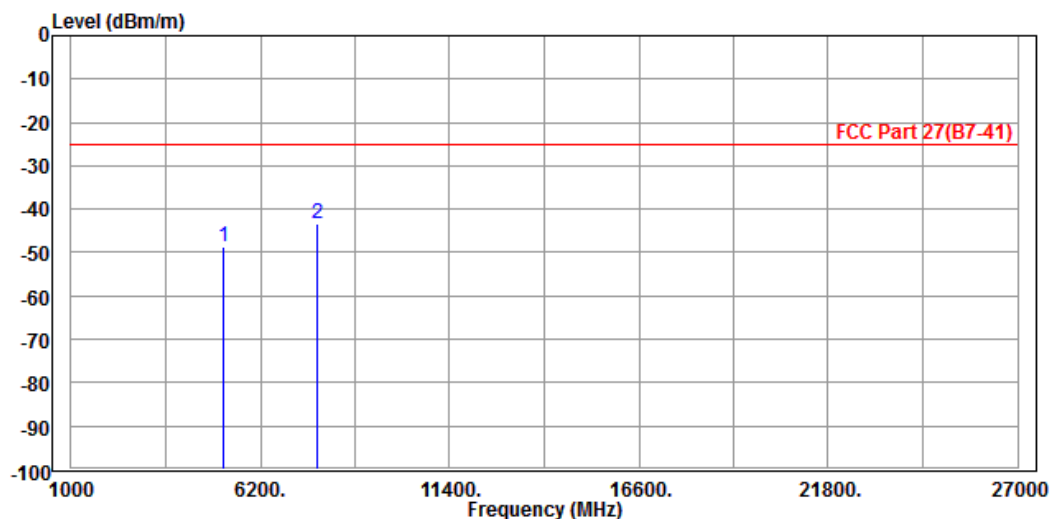
MODE	TX channel 40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5186.000	-48.34	-56.93	-25.00	-23.34	8.59	Peak	Horizontal
2	PP 7779.000	-43.37	-57.10	-25.00	-18.37	13.73	Peak	Horizontal



MODE	TX channel 40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V
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	5186.000	-48.60	-56.58	-25.00	-23.60	7.98	Peak	Vertical
2 PP	7779.000	-43.51	-56.80	-25.00	-18.51	13.29	Peak	Vertical





Test Report No.: RF170802W002-2

5 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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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.

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.

---END---