

FCC Radio Test Report

FCC ID: ZMOSU806EAU

This report concerns: Original Grant

Project No. : 2104C157
Equipment : LTE Module
Brand Name : Fibocom
Test Model : SU806-EAU
Series Model : N/A
Applicant : Fibocom Wireless Inc.
Address : 1101,Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan,Shenzhen,China
Manufacturer : Fibocom Wireless Inc.
Address : 1101,Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan,Shenzhen,China
Factory : Huizhou HYE Technology Co., Ltd.
Address : No. 237, Sanhe group, Sanhe village, Tonghu Town, Zhongkai hi tech Zone, Huizhou
Date of Receipt : Apr. 21, 2021
Date of Test : Apr. 22, 2021 ~ Jun. 01, 2021
Issued Date : Jun. 08, 2021
Report Version : R00
Test Sample : Engineering Sample No.: DG20210425108 for conducted, DG20210425110 for radiated.
Standard(s) : 47 CFR FCC Part 27 Subpart L
47 CFR FCC Part 27 Subpart M
47 CFR FCC Part 2
ANSI/TIA/EIA-603-E-2016
FCC KDB 971168 D01 Power Meas License Digital Systems v03r01

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

Vegeta Li

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Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

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BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and is not use in determining the Pass/Fail results.

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	Jun. 08, 2021

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part 27 Subpart L, M & Part 2			
Standard(s) Section	Test Item	Judgment	Remark
2.1046 27.50(d)(4) 27.50(h)(2)	Equivalent Isotropic Radiated Power	PASS	-----
2.1049	Occupied Bandwidth	PASS	-----
2.1051 27.53(h) 27.53(m)(4)	Conducted Spurious Emissions	PASS	-----
2.1053 27.53(h) 27.53(m)(4)	Radiated Spurious Emissions	PASS	-----
2.1051 27.53(h) 27.53(m)(4)	Band Edge Measurements	PASS	-----
-	Peak To Average Ratio	PASS	Record Only
2.1055 27.54	Frequency Stability	PASS	-----

Note:

(1) "N/A" denotes test is not applicable in this test report.

1.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

BTL's Test Firm Registration Number for FCC: 357015

BTL's Designation Number for FCC: CN1240

1.2 MEASUREMENT UNCERTAINTY

The measurement uncertainty figures shall be calculated according the methods described in the ETSI TR 100 028 and shall correspond to an expansion factor (coverage factor) $k=1.96$ or $k=2$ (which provide confidence levels of respectively 90% and 95.45% in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Measurement Uncertainty for a Level of Confidence of 95 %, $U=2 \times U_c(y)$.

The BTL measurement uncertainty as below table:

A. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB03 (3m)	CISPR	9KHz ~ 30MHz	V	3.79
		9KHz ~ 30MHz	H	3.57
		30MHz ~ 200MHz	V	4.88
		30MHz ~ 200MHz	H	4.14
		200MHz ~ 1,000MHz	V	4.62
		200MHz ~ 1,000MHz	H	4.80

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB03 (3m)	CISPR	1GHz ~ 6GHz	4.58
		6GHz ~ 18GHz	5.18

B. Other Measurement:

Parameter	Uncertainty
Spectrum Bandwidth	± 3.8 %
Maximum Output Power	± 0.95 dB
Power Spectral Density	± 0.86 dB
Frequency Stability	± 0.16 dB
Temperature	± 0.08 °C
Time	± 0.58 %
Supply voltages	± 0.3 %

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By
Output Power & ERP	21.3°C	44%	DC 3.8V	Tate Liu
Occupied Bandwidth	21.3°C	44%	DC 3.8V	Tate Liu
Conducted Spurious Emissions	21.3°C	44%	DC 3.8V	Tate Liu
Radiated Spurious Emissions	26°C	52%	DC 3.8V	Laughing Zhang
Band Edge	21.3°C	44%	DC 3.8V	Tate Liu
Peak to Average Ratio	21.3°C	44%	DC 3.8V	Tate Liu
Frequency Stability	Normal & Extreme	44%	Normal & Extreme	Tate Liu

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	LTE Module			
Brand Name	Fibocom			
Test Model	SU806-EAU			
Series Model	N/A			
Model Difference(s)	N/A			
Hardware Version	V1.0			
Software Version	SU806-EAU-Q31.00.104			
Power Source	DC voltage supplied from external power supply.			
Power Rating	DC 3.5V-4.2V			
IEMI No.	Radiated	863379050003114		
	Conducted	863379050003171		
Modulation Type	UL: QPSK,16QAM DL: QPSK,16QAM			
Max. EIRP	LTE	Channel Bandwidth (MHz)	QPSK (dBm)	16QAM (dBm)
	Band 7	5	25.01	24.44
		10	25.31	24.84
		15	25.32	25.09
		20	25.04	24.58
	Band 38	5	24.03	23.47
		10	24.14	23.82
		15	24.11	23.44
		20	24.14	23.01
	Band 40 (2305-2315MHz)	5	25.32	24.60
		10	25.02	24.68
	Band 40 (2350-2360MHz)	5	25.48	24.81
		10	25.19	24.68
	Band 41	5	24.81	24.36
		10	24.92	24.62
		15	25.00	24.36
		20	25.13	23.85

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2. Channel List:

LTE Band 7					
Test Frequency ID	Bandwidth (MHz)	N _{UL}	Frequency of Uplink (MHz)	N _{DL}	Frequency of Downlink (MHz)
Low Range	5	20775	2502.5	2775	2622.5
	10	20800	2505	2800	2625
	15	20825	2507.5	2825	2627.5
	20	20850	2510	2850	2630
Mid Range	5/10/15/20	21100	2535	3100	2655
High Range	5	21425	2567.5	3425	2687.5
	10	21400	2565	3400	2685
	15	21375	2562.5	3375	2682.5
	20	21350	2560	3350	2680

LTE Band 38			
Test Frequency ID	Bandwidth (MHz)	EARFCN	Frequency (UL and DL) (MHz)
Low Range	5	37775	2572.5
	10	37800	2575
	15	37825	2577.5
	20	37850	2580
Mid Range	5/10/15/20	38000	2595
High Range	5	38225	2617.5
	10	38200	2615
	15	38175	2612.5
	20	38150	2610

LTE Band 40(2305-2315MHz)			
Test Frequency ID	Bandwidth (MHz)	EARFCN	Frequency (UL and DL) (MHz)
Low Range	5	38725	2307.5
Mid Range	5/10	38750	2310
High Range	5	38775	2312.5

LTE Band 40 (2350-2360MHz)			
Test Frequency ID	Bandwidth (MHz)	EARFCN	Frequency (UL and DL) (MHz)
Low Range	5	39175	2352.5
Mid Range	5/10	39200	2355
High Range	5	39225	2357.5

LTE Band 41			
Test Frequency ID	Bandwidth (MHz)	EARFCN	Frequency (UL and DL) (MHz)
Low Range	5	39675	2498.5
	10	39700	2501
	15	39725	2503.5
	20	39750	2506
Mid Range	5/10/15/20	40620	2593
High Range	5	41565	2687.5
	10	41540	2685
	15	41515	2682.5
	20	41490	2680

3. Table for Filed Antenna:

Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
Fibocom	V1150-006	External	SMA	2.6	LTE Band 7
Fibocom	V1150-006	External	SMA	1.8	LTE Band 38
Fibocom	V1150-006	External	SMA	2.9	LTE Band 40 (2305-2315MHz)
Fibocom	V1150-006	External	SMA	2.9	LTE Band 40 (2350-2360MHz)
Fibocom	V1150-006	External	SMA	2.6	LTE Band 41

Note: The antenna gains are provided by the manufacturer.

2.2 DESCRIPTION OF TEST MODES

Following mode(s) is (were) found to be the worst case(s) and selected for the final test.

LTE BAND 7 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Output Power & EIRP	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM	1RB/25RB/50RB
	20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM	1RB/36RB/75RB
	20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM	1RB/50RB/100RB
Occupied Bandwidth	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM	25RB
	20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM	50RB
	20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM	75RB
	20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM	100RB
Conducted Spurious Emissions	20775 to 21425	21100	5MHz	QPSK	1RB
	20850 to 21350	21100	20MHz	QPSK	1RB
Radiated Spurious Emissions	20775 to 21425	21100	5MHz	QPSK	1RB
	20850 to 21350	21100	20MHz	QPSK	1RB
Band Edge	20775 to 21425	20775, 21425	5MHz	QPSK	1RB/25RB
	20800 to 21400	20800, 21400	10MHz	QPSK	1RB/50RB
	20825 to 21375	20825, 21375	15MHz	QPSK	1RB/75RB
	20850 to 21350	20850, 21350	20MHz	QPSK	1RB/100RB
Peak To Average Ratio	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM	1RB
	20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM	1RB
	20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM	1RB
	20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM	1RB
Frequency Stability	20775 to 21425	21100	5MHz	QPSK	1RB
	20800 to 21400	21100	10MHz	QPSK	1RB
	20825 to 21375	21100	15MHz	QPSK	1RB
	20850 to 21350	21100	20MHz	QPSK	1RB

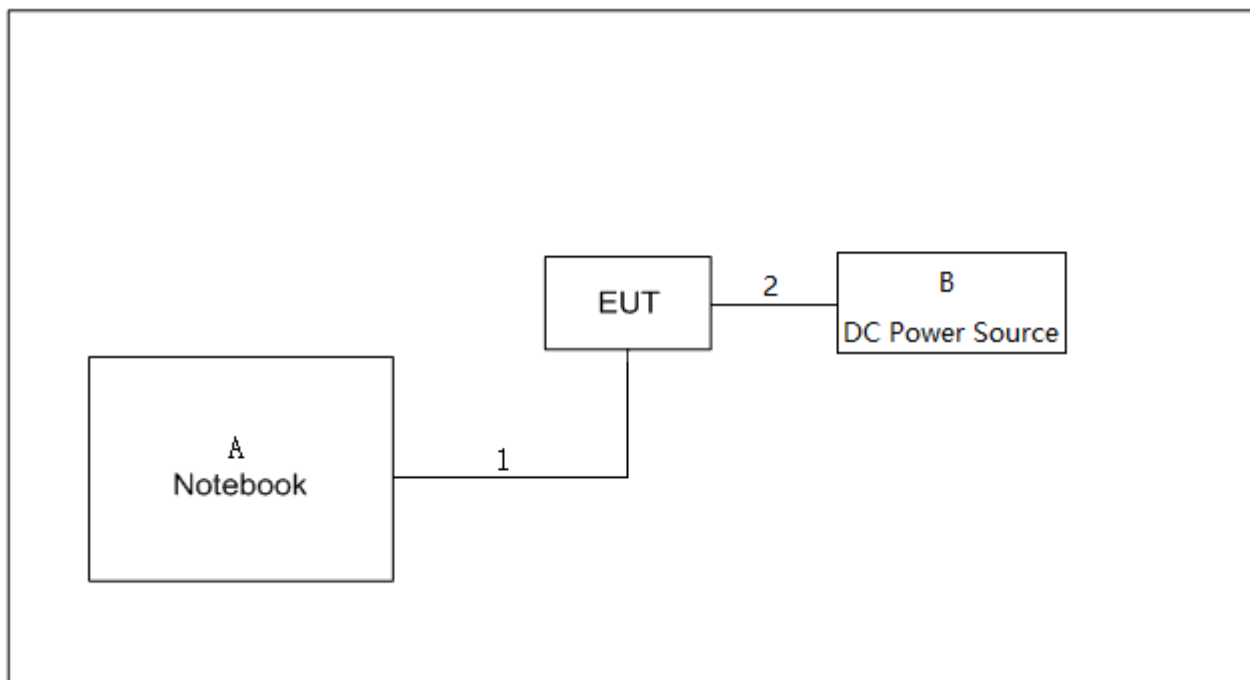
LTE BAND 38 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Output Power & EIRP	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	37800 to 38200	37800, 38000, 38200	10MHz	QPSK, 16QAM	1RB/25RB/50RB
	37825 to 38175	37825, 38000, 38175	15MHz	QPSK, 16QAM	1RB/36RB/75RB
	37850 to 38150	37850, 38000, 38150	20MHz	QPSK, 16QAM	1RB/50RB/100RB
Occupied Bandwidth	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM	25RB
	37800 to 38200	37800, 38000, 38200	10MHz	QPSK, 16QAM	50RB
	37825 to 38175	37825, 38000, 38175	15MHz	QPSK, 16QAM	75RB
	37850 to 38150	37850, 38000, 38150	20MHz	QPSK, 16QAM	100RB
Conducted Spurious Emissions	37850 to 38150	38000	5MHz	QPSK	1RB
	37850 to 38150	38000	20MHz	QPSK	1RB
Radiated Spurious Emissions	37850 to 38150	38000	5MHz	QPSK	1RB
	37850 to 38150	38000	20MHz	QPSK	1RB
Band Edge	37775 to 38225	37775, 38225	5MHz	QPSK	1RB/25RB
	37800 to 38200	37800, 38200	10MHz	QPSK	1RB/50RB
	37825 to 38175	37825, 38175	15MHz	QPSK	1RB/75RB
	37850 to 38150	37850, 38150	20MHz	QPSK	1RB/100RB
Peak to Average Ratio	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM	1RB
	37800 to 38200	37800, 38000, 38200	10MHz	QPSK, 16QAM	1RB
	37825 to 38175	37825, 38000, 38175	15MHz	QPSK, 16QAM	1RB
	37850 to 38150	37850, 38000, 38150	20MHz	QPSK, 16QAM	1RB
Frequency Stability	37775 to 38225	38000	5MHz	QPSK	1RB
	37800 to 38200	38000	10MHz	QPSK	1RB
	37825 to 38175	38000	15MHz	QPSK	1RB
	37850 to 38150	38000	20MHz	QPSK	1RB

LTE BAND 40 MODE (2305-2315MHZ)					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Output Power & EIRP	38725 to 38775	38725, 38750, 38775	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	38750	38750	10MHz	QPSK, 16QAM	1RB/25RB/50RB
Occupied Bandwidth	38725 to 38775	38725, 38750, 38775	5MHz	QPSK, 16QAM	25RB
	38750	38750	10MHz	QPSK, 16QAM	50RB
Conducted Spurious Emissions	38725 to 38775	38750	5MHz	QPSK	1RB
	38750	38750	10MHz	QPSK	1RB
Radiated Spurious Emissions	38725 to 38775	38750	5MHz	QPSK	1RB
	38750	38750	10MHz	QPSK	1RB
Band Edge	38725 to 38775	38725, 38775	5MHz	QPSK	1RB/25RB
	38750	38750	10MHz	QPSK	1RB/50RB
Peak to Average Ratio	38725 to 38775	38725, 38750, 38775	5MHz	QPSK, 16QAM	1RB
	38750	38750	10MHz	QPSK, 16QAM	1RB
Frequency Stability	38725 to 38775	38750	5MHz	QPSK	1RB
	38750	38750	10MHz	QPSK	1RB

LTE BAND 40 MODE (2350-2360MHZ)					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Output Power & EIRP	39175 to 39225	39175, 39200, 39225	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	39200	39200	10MHz	QPSK, 16QAM	1RB/25RB/50RB
Occupied Bandwidth	39175 to 39225	39175, 39200, 39225	5MHz	QPSK, 16QAM	25RB
	39200	39200	10MHz	QPSK, 16QAM	50RB
Conducted Spurious Emissions	39175 to 39225	39200	5MHz	QPSK	1RB
	39200	39200	10MHz	QPSK	1RB
Radiated Spurious Emissions	39175 to 39225	39200	5MHz	QPSK	1RB
	39200	39200	10MHz	QPSK	1RB
Band Edge	39175 to 39225	39175, 39225	5MHz	QPSK	1RB/25RB
	39200	39200	10MHz	QPSK	1RB/50RB
Peak to Average Ratio	39175 to 39225	39175, 39200, 39225	5MHz	QPSK, 16QAM	1RB
	39200	39200	10MHz	QPSK, 16QAM	1RB
Frequency Stability	39175 to 39225	39200	5MHz	QPSK	1RB
	39200	39200	10MHz	QPSK	1RB

LTE BAND 41 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Output Power & EIRP	39675 to 41565	39675, 40620, 41565	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	39700 to 41540	39700, 40620, 41540	10MHz	QPSK, 16QAM	1RB/25RB/50RB
	39725 to 41515	39725, 40620, 41545	15MHz	QPSK, 16QAM	1RB/36RB/75RB
	39750 to 41490	39750, 40620, 41490	20MHz	QPSK, 16QAM	1RB/50RB/100RB
Occupied Bandwidth	39675 to 41565	39675, 40620, 41565	5MHz	QPSK, 16QAM	25RB
	39700 to 41540	39700, 40620, 41540	10MHz	QPSK, 16QAM	50RB
	39725 to 41515	39725, 40620, 41545	15MHz	QPSK, 16QAM	75RB
	39750 to 41490	39750, 40620, 41490	20MHz	QPSK, 16QAM	100RB
Conducted Spurious Emissions	39675 to 41565	40620	5MHz	QPSK	1RB
	39750 to 41490	40620	20MHz	QPSK	1RB
Radiated Spurious Emissions	39675 to 41565	40620	5MHz	QPSK	1RB
	39750 to 41490	40620	20MHz	QPSK	1RB
Band Edge	39675 to 41565	39675, 41565	5MHz	QPSK	1RB/25RB
	40090 to 41540	40090, 41540	10MHz	QPSK	1RB/50RB
	39725 to 41515	39725, 41545	15MHz	QPSK	1RB/75RB
	39750 to 41490	39750, 41490	20MHz	QPSK	1RB/100RB
Peak to Average Ratio	39675 to 41565	39675, 40620, 41565	5MHz	QPSK, 16QAM	1RB
	40090 to 41540	40090, 40620, 41540	10MHz	QPSK, 16QAM	1RB
	39725 to 41515	39725, 40620, 41545	15MHz	QPSK, 16QAM	1RB
	39750 to 41490	39750, 40620, 41490	20MHz	QPSK, 16QAM	1RB
Frequency Stability	39675 to 41565	40620	5MHz	QPSK	1RB
	40090 to 41540	40620	10MHz	QPSK	1RB
	39725 to 41515	40620	15MHz	QPSK	1RB
	39750 to 41490	40620	20MHz	QPSK	1RB

2.3 BLOCK DIGRAM SHOWING THECONFIGURATIONOFSYSTEMTESTED



2.4 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.

Item	Equipment	Brand	Model No.	Series No.
A	Notebook	Lenovo	G50-30	PF0BRC8R
B	DC Power Source	TRUE-POWER	GPC30300N	NA

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	USB Cable	NO	NO	1m
2	DC Cable	NO	NO	1m

3. TEST RESULT

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMIT

Mobile / Portable station are limited to 1 watts e.i.r.p. (Part 27 Subpart L)

Mobile / Portable station are limited to 2 watts e.i.r.p. (Part 27 Subpart M)

3.1.2 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 5.

EIRP:

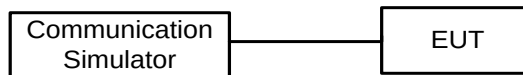
$EIRP = \text{Output Power} + \text{Antenan gain}$

Output Power:

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

3.1.3 TEST SETUP LAYOUT

Output Power Measurement



3.1.4 TEST DEVIATION

No deviation

3.1.5 TEST RESULTS

Please refer to the APPENDIX A.

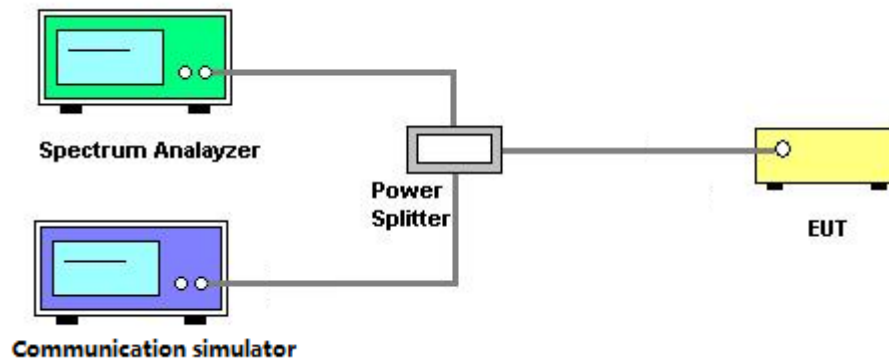
3.2 OCCUPIED BANDWIDTH MEASUREMENT

3.2.1 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 4.

1. The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth and 26dB bandwidth.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. $RBW = (1\% \sim 5\%) \cdot EBW$
 $VBW \geq 3 \cdot RBW$
4. Set spectrum analyzer with Peak detector.

3.2.2 TEST SETUP LAYOUT



3.2.3 TEST DEVIATION

No deviation

3.2.4 TEST RESULTS

Please refer to the APPENDIX B.

3.3 CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

3.3.1 LIMIT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm. (Part 27 Subpart L)

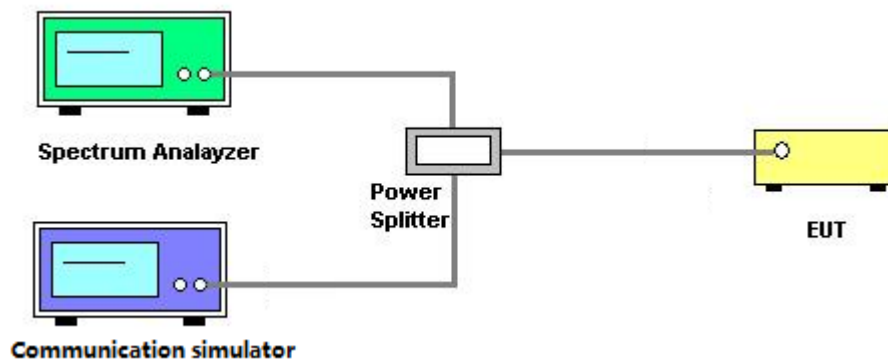
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $55 + 10 \log(P)$ dB. The emission limit equal to -25dBm. (Part 27 Subpart M)

3.3.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Set RBW $\geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
3. Set spectrum analyzer with Peak detector.
4. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.3.3 TEST SETUP LAYOUT



3.3.4 TEST DEVIATION

No deviation

3.3.5 TEST RESULTS

Please refer to the APPENDIX C.

3.4 RADIATED SPURIOUS EMISSIONS MEASUREMENT

3.4.1 LIMIT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm. (Part 27 Subpart L)

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $55 + 10 \log(P)$ dB. The emission limit equal to -25dBm. (Part 27 Subpart M)

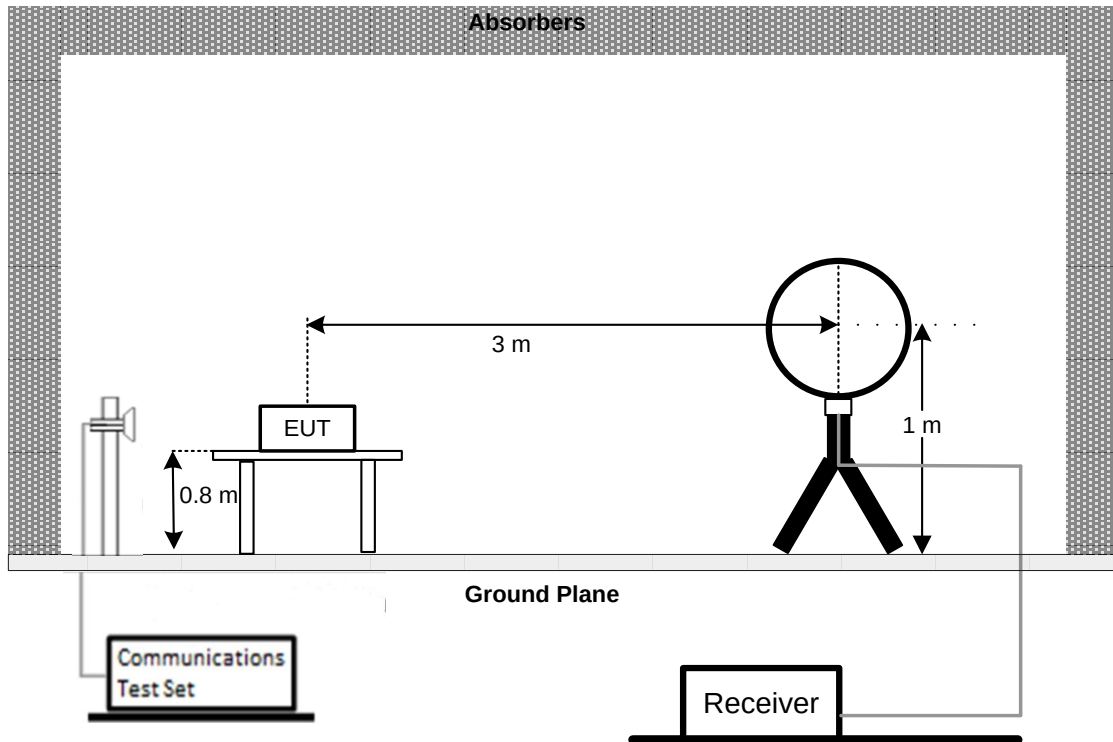
3.4.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6.2.

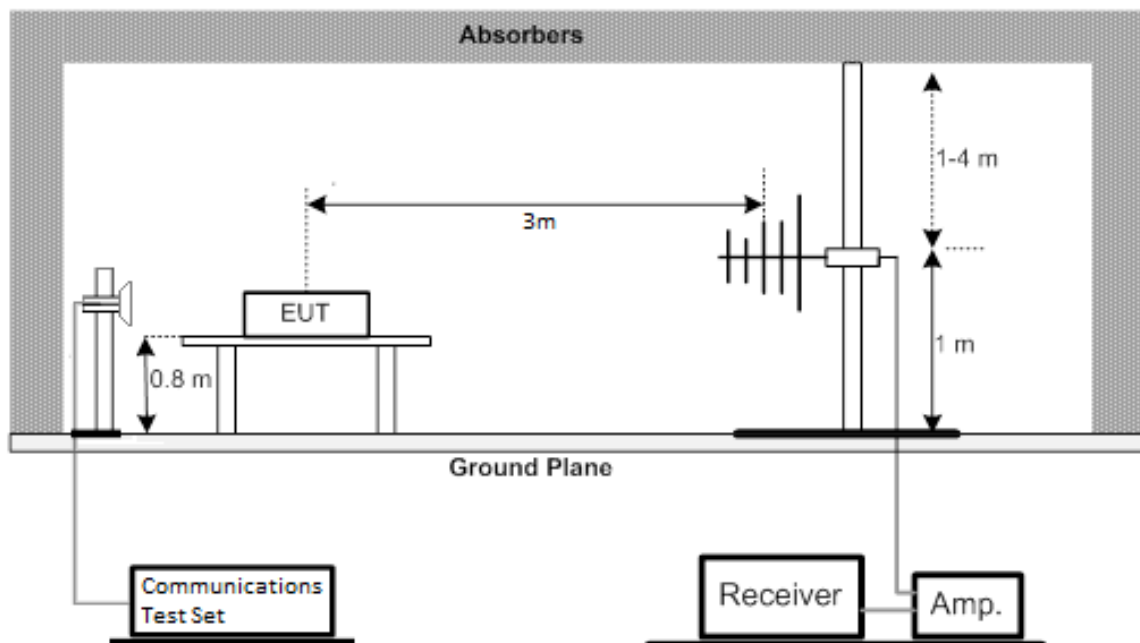
1. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
2. 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
3. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
4. ERP can be calculated form EIRP by subtracting the gain of dipole, $ERP = EIPR - 2.15\text{dBi}.$
5. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

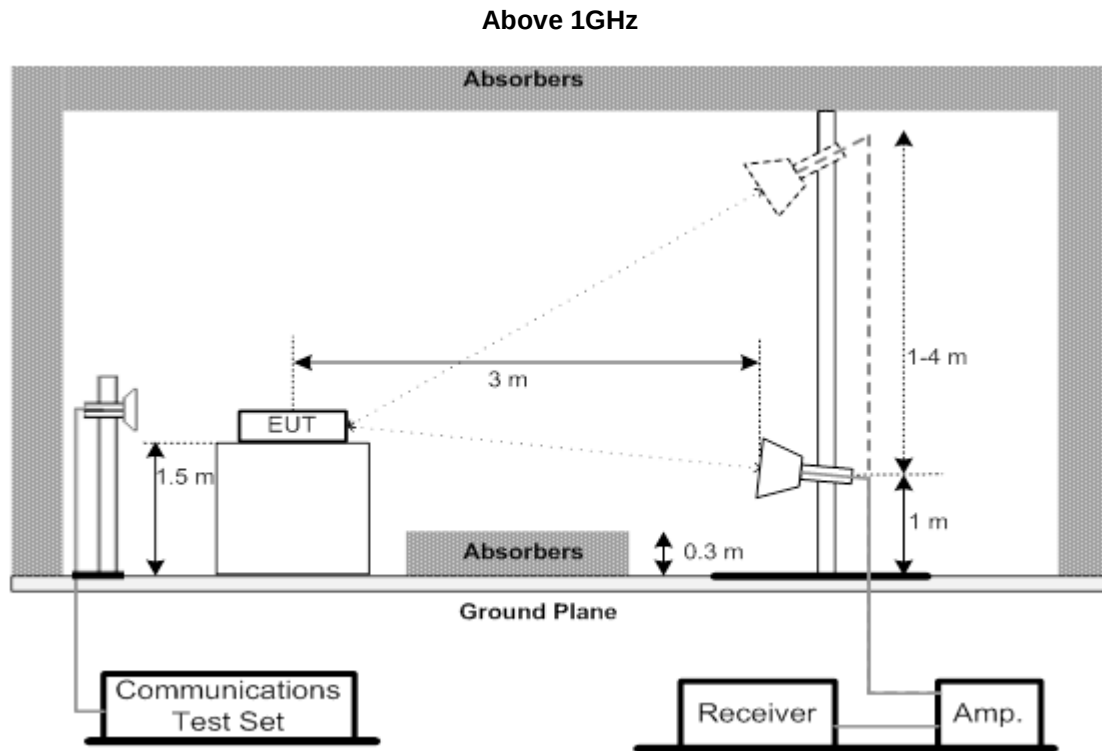
3.4.3 TEST SETUP LAYOUT

Below 30MHz



30MHz to 1GHz





3.4.4 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the APPENDIX D.

3.4.5 TEST RESULTS (30MHZ TO 1000MHZ)

Please refer to the APPENDIX E.

3.4.6 TEST RESULTS (ABOVE 1000MHZ)

Please refer to the APPENDIX F.

3.5 BAND EDGE MEASUREMENT

3.5.1 LIMIT

The power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed. (Part 27 Subpart L)

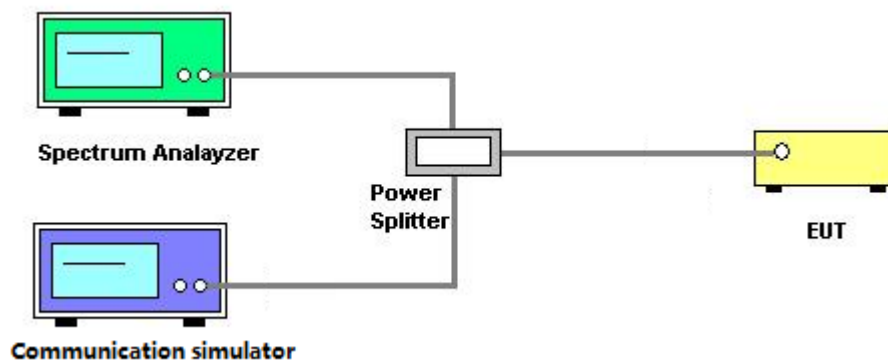
For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ 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 than $43 + 10 \log (P)$ 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. (Part 27 Subpart M)

3.5.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6.

1. All measurements were done at low and high operational frequency range.
2. Record the max trace plot into the test report.

3.5.3 TEST SETUP LAYOUT



3.5.4 TEST DEVIATION

No deviation

3.5.5 TEST RESULTS

Please refer to the APPENDIX G.

3.6 PEAK TO AVERAGE RATIO MEASUREMENT

3.6.1 LIMIT

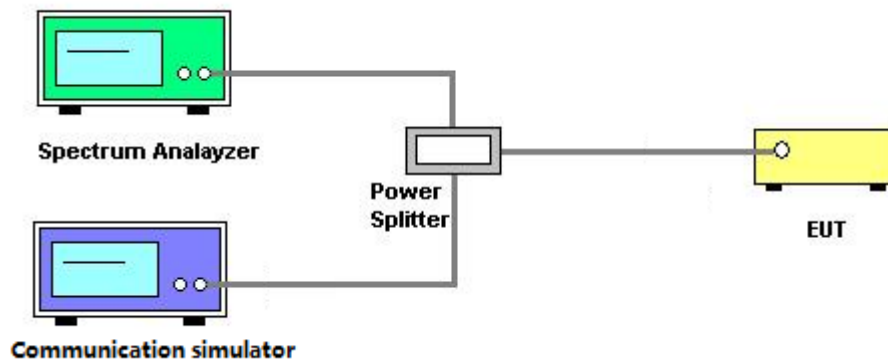
In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.6.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 5.7.

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%.

3.6.3 TEST SETUP LAYOUT



3.6.4 TEST DEVIATION

No deviation

3.6.5 TEST RESULTS

Please refer to the APPENDIX H.

3.7 FREQUENCY STABILITY MEASUREMENT

3.7.1 LIMIT

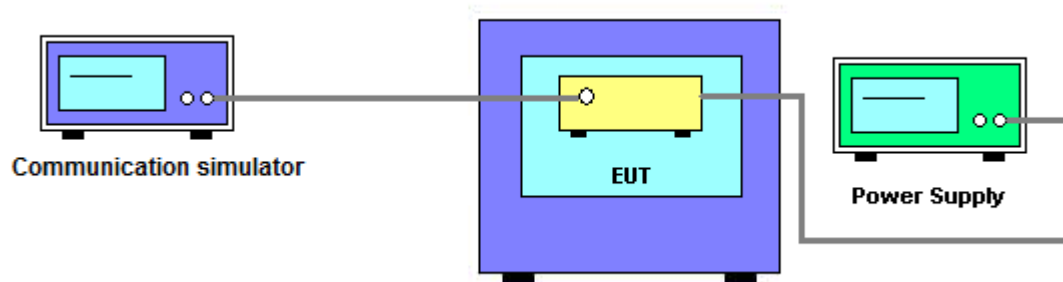
± 1.5 ppm is for base and fixed station. ± 2.5 ppm is for mobile station.

3.7.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 9.

1. 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.
2. 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.
3. 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.
4. The frequency error was recorded frequency error from the communication simulator.

3.7.3 TEST SETUP LAYOUT



3.7.4 TEST DEVIATION

No deviation

3.7.5 TEST RESULTS

Please refer to the APPENDIX I.

4. LIST OF MEASUREMENT EQUIPMENTS

Radiated Spurious Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarzbeck	VULB9160	9160-3231	Apr. 14, 2022
2	Amplifier	Agilent	8449B	3008A02334	Feb. 28, 2022
3	HighPass Filter	Wairwright Instruments Gmbh	WHK 1.5/15G-10ST	11	Feb. 28, 2022
4	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 1710/1785-1690/1805-60/ 12SS	38	Feb. 27, 2022
5	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 824/849-810/863-60/9SS	7	Feb. 27, 2022
6	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 880/915-860/935-60/9SS	14	Feb. 27, 2022
7	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 1850/1910-1830/1930-60/ 10SS	17	Feb. 27, 2022
8	HighPass Filter	Wairwright Instruments Gmbh	WHK3.1/18G-10SS	24	Feb. 27, 2022
9	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Feb. 28, 2022
10	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Feb. 28, 2022
11	Receiver	Agilent	N9038A	MY52130039	Jul. 25, 2021
12	wideband radio communication tester	R&S	CMW500	152372	Feb. 27, 2022
13	High pass filter	KANGMAIWEI	ZHPF-M3-12.75G-3869	B2015073763	Feb. 07, 2022
14	High pass filter	KANGMAIWEI	ZHPF-M1000-4000-1	B2015073762	Feb. 07, 2022
15	High pass filter	KANGMAIWEI	ZHPF-M6-186-1727	B2015073764	Feb. 07, 2022
16	Cable	emci	LMR-400(30MHz-1GHz) (8m+5m)	N/A	May 20, 2022
17	Cable	mitron	B10-01-01-12M	18072744	Jun. 28, 2021
18	Controller	ETS-Lindgren	2090	N/A	N/A
19	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
20	Loop Antenna	EM	EM-6876-1	230	Apr. 28, 2022
21	Double Ridged Guide Antenna	ETS	3115	75846	Mar. 17, 2022
22	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jul. 07, 2021

Conducted Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Feb. 28, 2022
2	EXA Spectrum Analyzer	Agilent	N9010A	MY50520044	Feb. 28, 2022
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Feb. 27, 2022
4	wideband radio communication tester	R&S	CMW500	152372	Feb. 27, 2022

Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Feb. 28, 2022
2*	Multi-output DC Power Supply	GW Instek	GPC-3030DN	EK880675	Jul. 25, 2023
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Feb. 27, 2022
4	wideband radio communication tester	R&S	CMW500	152372	Feb. 27, 2022
5	Const Temp,& Humidity Chamber	Bell	BTH-50C	20170306001	Feb. 27, 2022

Remark: "N/A" denotes no model name, serial no. or calibration specified.

"*" calibration period of equipment list is three year.

Except * item, all calibration period of equipment list is one year.

5. EUT TEST PHOTO

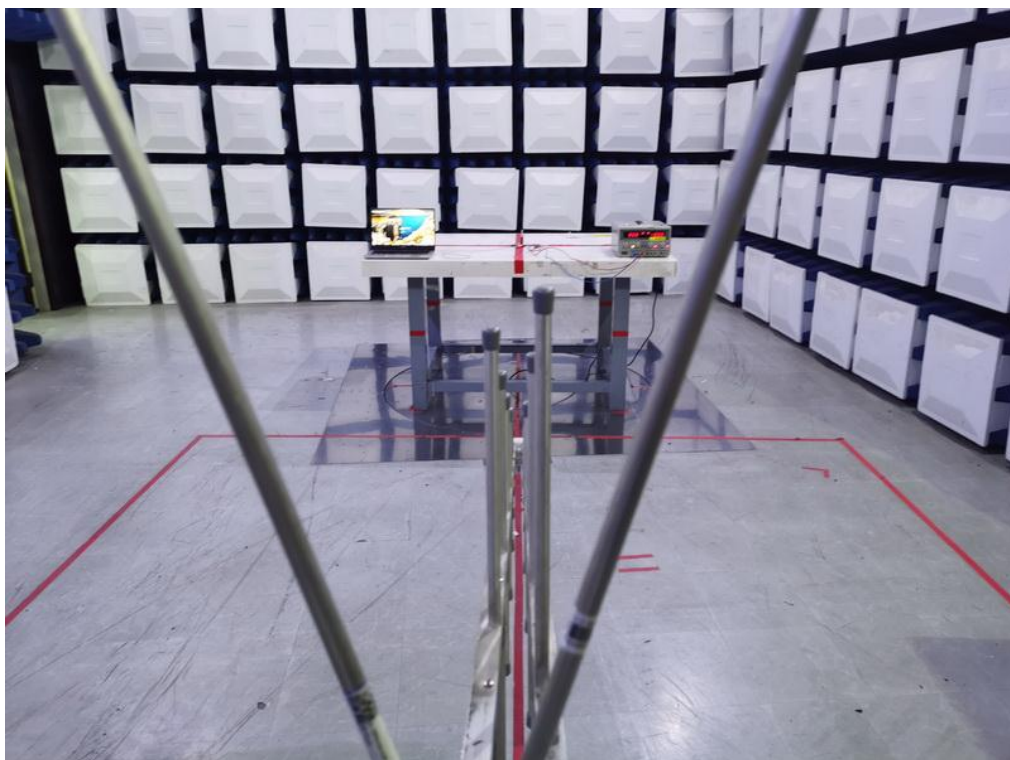
Radiated Emissions Test Photos

9 kHz to 30 MHz



Radiated Emissions Test Photos

30 MHz to 1 GHz



Radiated Emissions Test Photos

Above 1 GHz



APPENDIX A - OUTPUT POWER

Output Power (dBm):

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20775CH	21100CH	21425CH
				2502.5MHz	2535MHz	2567.5MHz
7 / 5M	QPSK	1	0	22.18	22.32	22.32
		1	13	22.25	22.36	22.32
		1	24	22.33	22.41	22.36
		12	0	21.30	21.28	21.27
		12	6	21.20	21.25	21.28
		12	11	21.21	21.24	21.26
		25	0	21.18	21.36	21.28
	16QAM	1	0	21.79	21.10	21.21
		1	13	21.67	21.19	21.18
		1	24	21.84	21.22	21.28
		12	0	20.40	20.41	20.44
		12	6	20.29	20.44	20.41
		12	11	20.32	20.41	20.45
		25	0	20.55	20.68	20.55

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20800CH	21100CH	21400CH
				2505MHz	2535MHz	2565MHz
7 / 10M	QPSK	1	0	22.51	22.31	22.40
		1	25	22.65	22.36	22.40
		1	49	22.71	22.37	22.45
		25	0	21.21	21.26	21.28
		25	13	21.26	21.25	21.25
		25	25	21.52	21.28	21.16
		50	0	21.30	21.34	21.29
	16QAM	1	0	22.02	21.65	21.60
		1	25	22.17	21.67	21.55
		1	49	22.24	21.64	21.54
		25	0	20.38	20.53	20.54
		25	13	20.41	20.52	20.55
		25	25	20.56	20.54	20.46
		50	0	20.44	20.56	20.45

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20825CH	21100CH	21375CH
				2507.5MHz	2535MHz	2562.5MHz
7 / 15M	QPSK	1	0	22.59	22.33	22.17
		1	38	22.72	22.30	22.13
		1	74	22.68	22.36	22.14
		36	0	21.31	21.23	21.21
		36	18	21.35	21.29	21.34
		36	39	21.37	21.25	21.27
		75	0	21.41	21.35	21.21
	16QAM	1	0	22.11	21.74	22.49
		1	38	22.17	21.61	22.40
		1	74	22.15	21.52	22.33
		36	0	20.47	20.51	20.43
		36	18	20.57	20.54	20.43
		36	39	20.56	20.54	20.41
		75	0	20.65	20.55	20.43

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20850CH	21100CH	21350CH
				2510MHz	2535MHz	2560MHz
7 / 20M	QPSK	1	0	22.28	22.35	22.10
		1	50	22.44	22.30	22.08
		1	99	22.35	22.31	22.14
		50	0	21.47	21.38	21.31
		50	25	21.42	21.28	21.27
		50	50	21.31	21.29	21.22
		100	0	21.49	21.36	21.24
	16QAM	1	0	21.30	21.69	21.98
		1	50	21.42	21.61	21.86
		1	99	21.36	21.63	21.89
		50	0	20.61	20.51	20.40
		50	25	20.66	20.54	20.43
		50	50	20.62	20.54	20.46
		100	0	20.53	20.48	20.44

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				37775CH	38000CH	38225CH
				2572.5MHz	2595MHz	2617.5MHz
38 / 5M	QPSK	1	0	21.77	21.90	22.21
		1	13	21.64	21.72	22.23
		1	24	21.64	21.70	22.14
		12	0	20.86	21.11	21.10
		12	6	20.84	20.85	21.15
		12	11	20.77	20.78	21.06
		25	0	20.70	20.79	20.98
	16QAM	1	0	20.33	20.86	21.67
		1	13	20.19	20.68	21.58
		1	24	20.24	20.67	21.65
		12	0	20.03	20.10	20.19
		12	6	19.93	20.01	20.19
		12	11	19.97	19.92	20.23
		25	0	19.99	20.13	20.39

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				37800CH	38000CH	38200CH
				2575MHz	2595MHz	2615MHz
38 / 10M	QPSK	1	0	22.32	22.14	22.03
		1	25	22.30	22.05	22.10
		1	49	22.34	22.07	22.04
		25	0	20.98	21.06	21.03
		25	13	20.98	20.84	21.12
		25	25	20.97	20.98	21.07
		50	0	20.97	20.86	21.12
	16QAM	1	0	21.53	21.08	21.85
		1	25	21.61	21.00	21.90
		1	49	21.61	21.04	22.02
		25	0	20.07	20.28	20.35
		25	13	20.11	20.15	20.34
		25	25	20.09	20.13	20.28
		50	0	20.19	20.13	20.19

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				37825CH	38000CH	38175CH
				2577.5MHz	2595MHz	2612.5MHz
38 / 15M	QPSK	1	0	21.76	22.10	22.16
		1	38	21.69	22.03	22.31
		1	74	21.72	22.02	22.26
		36	0	20.80	21.02	21.08
		36	18	20.81	20.88	21.06
		36	39	20.74	20.90	21.05
		75	0	20.83	20.88	21.06
	16QAM	1	0	21.64	21.10	21.29
		1	38	21.58	20.92	21.40
		1	74	21.52	20.96	21.30
		36	0	20.00	20.11	20.30
		36	18	20.01	20.00	20.28
		36	39	20.09	20.01	20.26
		75	0	20.06	20.02	20.26

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				37850CH	38000CH	38150CH
				2580MHz	2595MHz	2610MHz
38 / 20M	QPSK	1	0	21.74	22.34	21.88
		1	50	21.78	22.26	21.99
		1	99	21.84	22.29	22.01
		50	0	20.98	20.97	20.94
		50	25	20.95	20.89	21.06
		50	50	21.01	20.96	21.12
		100	0	20.91	20.76	21.01
	16QAM	1	0	21.07	20.65	20.84
		1	50	21.02	20.49	20.75
		1	99	21.21	20.67	21.02
		50	0	20.24	20.14	20.16
		50	25	20.15	20.00	20.28
		50	50	20.26	20.04	20.30
		100	0	20.04	20.01	20.09

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				38725CH	38750CH	38775CH
				2307.5MHz	2310MHz	2312.5MHz
40(2305-2315MHz) / 5M	QPSK	1	0	22.23	22.35	22.09
		1	13	22.22	22.41	22.01
		1	24	22.26	22.42	22.12
		12	0	21.20	21.34	21.36
		12	6	21.24	21.26	21.31
		12	11	21.06	21.29	21.22
		25	0	21.19	21.29	21.17
	16QAM	1	0	20.54	21.02	21.66
		1	13	20.59	21.08	21.70
		1	24	20.53	21.10	21.61
		12	0	20.27	20.28	20.44
		12	6	20.31	20.36	20.52
		12	11	20.33	20.23	20.43
		25	0	20.37	20.45	20.55

LTE Band / BW	Modulation	RB Size	RB Offset	Mid CH
				38750CH
				2310MHz
40(2305-2315MHz) / 10M	QPSK	1	0	22.11
		1	25	22.04
		1	49	22.12
		25	0	21.23
		25	13	21.17
		25	25	21.21
		50	0	21.23
	16QAM	1	0	21.53
		1	25	21.50
		1	49	21.78
		25	0	20.40
		25	13	20.38
		25	25	20.41
		50	0	20.42

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				39175CH	39200CH	39225CH
				2352.5MHz	2355MHz	2357.5MHz
40(2350-2360MHz) / 5M	QPSK	1	0	22.21	22.32	22.48
		1	13	22.25	22.38	22.45
		1	24	22.18	22.38	22.58
		12	0	21.30	21.49	21.50
		12	6	21.39	21.41	21.43
		12	11	21.24	21.43	21.47
		25	0	21.22	21.40	21.47
	16QAM	1	0	20.69	21.16	21.80
		1	13	20.72	21.19	21.87
		1	24	20.73	21.20	21.91
		12	0	20.45	20.46	20.62
		12	6	20.49	20.47	20.60
		12	11	20.41	20.39	20.56
		25	0	20.49	20.65	20.71

LTE Band / BW	Modulation	RB Size	RB Offset	Mid CH
				39200CH
				2355MHz
40(2350-2360MHz) / 10M	QPSK	1	0	22.17
		1	25	22.17
		1	49	22.29
		25	0	21.30
		25	13	21.28
		25	25	21.26
		50	0	21.29
	16QAM	1	0	21.67
		1	25	21.72
		1	49	21.78
		25	0	20.43
		25	13	20.41
		25	25	20.55
		50	0	20.57

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				39675CH	40620CH	41565CH
				2498.5MHz	2593MHz	2687.5MHz
41 / 5M	QPSK	1	0	21.86	21.90	22.13
		1	13	21.75	21.93	22.16
		1	24	21.72	21.79	22.21
		12	0	20.92	21.10	21.24
		12	6	21.01	21.17	21.26
		12	11	21.04	21.12	21.17
		25	0	20.87	21.02	21.11
	16QAM	1	0	20.32	20.91	21.59
		1	13	20.33	20.96	21.71
		1	24	20.34	20.75	21.76
		12	0	20.14	20.13	20.41
		12	6	20.16	20.19	20.41
		12	11	20.19	20.14	20.33
		25	0	20.51	20.47	20.47

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				39700CH	40620CH	41540CH
				2501MHz	2593MHz	2685MHz
41 / 10M	QPSK	1	0	22.32	22.21	22.06
		1	25	22.13	22.23	22.03
		1	49	22.31	22.17	22.09
		25	0	21.03	21.06	21.08
		25	13	21.04	21.07	21.18
		25	25	21.08	20.87	21.15
		50	0	20.95	21.12	21.07
	16QAM	1	0	21.63	21.18	22.00
		1	25	21.61	21.19	21.96
		1	49	21.70	21.03	22.02
		25	0	20.23	20.31	20.47
		25	13	20.32	20.35	20.45
		25	25	20.32	20.17	20.52
		50	0	20.02	20.35	20.30

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				39725CH	40620CH	41515CH
				2503.5MHz	2593MHz	2682.5MHz
41 / 15M	QPSK	1	0	22.21	22.10	22.29
		1	38	22.12	22.25	22.40
		1	74	22.39	22.08	22.20
		36	0	21.04	21.08	21.17
		36	18	21.05	21.08	21.14
		36	39	21.24	20.98	21.15
		75	0	20.97	21.10	21.16
	16QAM	1	0	21.68	21.10	21.44
		1	38	21.63	21.19	21.42
		1	74	21.76	21.03	21.48
		36	0	19.96	20.12	20.41
		36	18	20.08	20.11	20.42
		36	39	20.09	20.01	20.40
		75	0	20.14	20.31	20.39

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				39750CH	40620CH	41490CH
				2506MHz	2593MHz	2680MHz
41 / 20M	QPSK	1	0	21.83	22.45	22.06
		1	50	21.86	22.53	22.11
		1	99	21.87	22.28	22.02
		50	0	21.05	21.10	21.23
		50	25	21.10	21.08	21.18
		50	50	21.18	20.94	21.13
		100	0	21.03	21.13	21.11
	16QAM	1	0	20.82	20.66	21.08
		1	50	20.92	20.79	21.07
		1	99	21.03	20.68	21.25
		50	0	20.26	20.18	20.36
		50	25	20.34	20.21	20.41
		50	50	20.36	20.07	20.45
		100	0	20.20	20.33	20.35

EIRP (dBm):

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20775CH	21100CH	21425CH
				2502.5MHz	2535MHz	2567.5MHz
7 / 5M	QPSK	1	0	24.78	24.92	24.92
		1	13	24.85	24.96	24.92
		1	24	24.93	25.01	24.96
		12	0	23.90	23.88	23.87
		12	6	23.80	23.85	23.88
		12	11	23.81	23.84	23.86
		25	0	23.78	23.96	23.88
	16QAM	1	0	24.39	23.70	23.81
		1	13	24.27	23.79	23.78
		1	24	24.44	23.82	23.88
		12	0	23.00	23.01	23.04
		12	6	22.89	23.04	23.01
		12	11	22.92	23.01	23.05
		25	0	23.15	23.28	23.15

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20800CH	21100CH	21400CH
				2505MHz	2535MHz	2565MHz
7 / 10M	QPSK	1	0	25.11	24.91	25.00
		1	25	25.25	24.96	25.00
		1	49	25.31	24.97	25.05
		25	0	23.81	23.86	23.88
		25	13	23.86	23.85	23.85
		25	25	24.12	23.88	23.76
		50	0	23.90	23.94	23.89
	16QAM	1	0	24.62	24.25	24.20
		1	25	24.77	24.27	24.15
		1	49	24.84	24.24	24.14
		25	0	22.98	23.13	23.14
		25	13	23.01	23.12	23.15
		25	25	23.16	23.14	23.06
		50	0	23.04	23.16	23.05

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20825CH	21100CH	21375CH
				2507.5MHz	2535MHz	2562.5MHz
7 / 15M	QPSK	1	0	25.19	24.93	24.77
		1	38	25.32	24.90	24.73
		1	74	25.28	24.96	24.74
		36	0	23.91	23.83	23.81
		36	18	23.95	23.89	23.94
		36	39	23.97	23.85	23.87
		75	0	24.01	23.95	23.81
	16QAM	1	0	24.71	24.34	25.09
		1	38	24.77	24.21	25.00
		1	74	24.75	24.12	24.93
		36	0	23.07	23.11	23.03
		36	18	23.17	23.14	23.03
		36	39	23.16	23.14	23.01
		75	0	23.25	23.15	23.03

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20850CH	21100CH	21350CH
				2510MHz	2535MHz	2560MHz
7 / 20M	QPSK	1	0	24.88	24.95	24.70
		1	50	25.04	24.90	24.68
		1	99	24.95	24.91	24.74
		50	0	24.07	23.98	23.91
		50	25	24.02	23.88	23.87
		50	50	23.91	23.89	23.82
		100	0	24.09	23.96	23.84
	16QAM	1	0	23.90	24.29	24.58
		1	50	24.02	24.21	24.46
		1	99	23.96	24.23	24.49
		50	0	23.21	23.11	23.00
		50	25	23.26	23.14	23.03
		50	50	23.22	23.14	23.06
		100	0	23.13	23.08	23.04

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				37775CH	38000CH	38225CH
				2572.5MHz	2595MHz	2617.5MHz
38 / 5M	QPSK	1	0	23.57	23.70	24.01
		1	13	23.44	23.52	24.03
		1	24	23.44	23.50	23.94
		12	0	22.66	22.91	22.90
		12	6	22.64	22.65	22.95
		12	11	22.57	22.58	22.86
		25	0	22.50	22.59	22.78
	16QAM	1	0	22.13	22.66	23.47
		1	13	21.99	22.48	23.38
		1	24	22.04	22.47	23.45
		12	0	21.83	21.90	21.99
		12	6	21.73	21.81	21.99
		12	11	21.77	21.72	22.03
		25	0	21.79	21.93	22.19

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				37800CH	38000CH	38200CH
				2575MHz	2595MHz	2615MHz
38 / 10M	QPSK	1	0	24.12	23.94	23.83
		1	25	24.10	23.85	23.90
		1	49	24.14	23.87	23.84
		25	0	22.78	22.86	22.83
		25	13	22.78	22.64	22.92
		25	25	22.77	22.78	22.87
		50	0	22.77	22.66	22.92
	16QAM	1	0	23.33	22.88	23.65
		1	25	23.41	22.80	23.70
		1	49	23.41	22.84	23.82
		25	0	21.87	22.08	22.15
		25	13	21.91	21.95	22.14
		25	25	21.89	21.93	22.08
		50	0	21.99	21.93	21.99

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				37825CH	38000CH	38175CH
				2577.5MHz	2595MHz	2612.5MHz
38 / 15M	QPSK	1	0	23.56	23.90	23.96
		1	38	23.49	23.83	24.11
		1	74	23.52	23.82	24.06
		36	0	22.60	22.82	22.88
		36	18	22.61	22.68	22.86
		36	39	22.54	22.70	22.85
		75	0	22.63	22.68	22.86
	16QAM	1	0	23.44	22.90	23.09
		1	38	23.38	22.72	23.20
		1	74	23.32	22.76	23.10
		36	0	21.80	21.91	22.10
		36	18	21.81	21.80	22.08
		36	39	21.89	21.81	22.06
		75	0	21.86	21.82	22.06

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				37850CH	38000CH	38150CH
				2580MHz	2595MHz	2610MHz
38 / 20M	QPSK	1	0	23.54	24.14	23.68
		1	50	23.58	24.06	23.79
		1	99	23.64	24.09	23.81
		50	0	22.78	22.77	22.74
		50	25	22.75	22.69	22.86
		50	50	22.81	22.76	22.92
		100	0	22.71	22.56	22.81
	16QAM	1	0	22.87	22.45	22.64
		1	50	22.82	22.29	22.55
		1	99	23.01	22.47	22.82
		50	0	22.04	21.94	21.96
		50	25	21.95	21.80	22.08
		50	50	22.06	21.84	22.10
		100	0	21.84	21.81	21.89

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				38725CH	38750CH	38775CH
				2307.5MHz	2310MHz	2312.5MHz
40(2305-2315MHz) / 5M	QPSK	1	0	25.13	25.25	24.99
		1	13	25.12	25.31	24.91
		1	24	25.16	25.32	25.02
		12	0	24.10	24.24	24.26
		12	6	24.14	24.16	24.21
		12	11	23.96	24.19	24.12
		25	0	24.09	24.19	24.07
	16QAM	1	0	23.44	23.92	24.56
		1	13	23.49	23.98	24.60
		1	24	23.43	24.00	24.51
		12	0	23.17	23.18	23.34
		12	6	23.21	23.26	23.42
		12	11	23.23	23.13	23.33
		25	0	23.27	23.35	23.45

LTE Band / BW	Modulation	RB Size	RB Offset	Mid CH
				38750CH
				2310MHz
40(2305-2315MHz) / 10M	QPSK	1	0	25.01
		1	25	24.94
		1	49	25.02
		25	0	24.13
		25	13	24.07
		25	25	24.11
		50	0	24.13
	16QAM	1	0	24.43
		1	25	24.40
		1	49	24.68
		25	0	23.30
		25	13	23.28
		25	25	23.31
		50	0	23.32

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				39175CH	39200CH	39225CH
				2352.5MHz	2355MHz	2357.5MHz
40(2350-2360MHz) / 5M	QPSK	1	0	25.11	25.22	25.38
		1	13	25.15	25.28	25.35
		1	24	25.08	25.28	25.48
		12	0	24.20	24.39	24.40
		12	6	24.29	24.31	24.33
		12	11	24.14	24.33	24.37
		25	0	24.12	24.30	24.37
	16QAM	1	0	23.59	24.06	24.70
		1	13	23.62	24.09	24.77
		1	24	23.63	24.10	24.81
		12	0	23.35	23.36	23.52
		12	6	23.39	23.37	23.50
		12	11	23.31	23.29	23.46
		25	0	23.39	23.55	23.61

LTE Band / BW	Modulation	RB Size	RB Offset	Mid CH
				39200CH
				2355MHz
40(2350-2360MHz) / 10M	QPSK	1	0	25.07
		1	25	25.07
		1	49	25.19
		25	0	24.20
		25	13	24.18
		25	25	24.16
		50	0	24.19
	16QAM	1	0	24.57
		1	25	24.62
		1	49	24.68
		25	0	23.33
		25	13	23.31
		25	25	23.45
		50	0	23.47

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				39675CH	40620CH	41565CH
				2498.5MHz	2593MHz	2687.5MHz
41 / 5M	QPSK	1	0	24.46	24.50	24.73
		1	13	24.35	24.53	24.76
		1	24	24.32	24.39	24.81
		12	0	23.52	23.70	23.84
		12	6	23.61	23.77	23.86
		12	11	23.64	23.72	23.77
		25	0	23.47	23.62	23.71
	16QAM	1	0	22.92	23.51	24.19
		1	13	22.93	23.56	24.31
		1	24	22.94	23.35	24.36
		12	0	22.74	22.73	23.01
		12	6	22.76	22.79	23.01
		12	11	22.79	22.74	22.93
		25	0	23.11	23.07	23.07

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				39700CH	40620CH	41540CH
				2501MHz	2593MHz	2685MHz
41 / 10M	QPSK	1	0	24.92	24.81	24.66
		1	25	24.73	24.83	24.63
		1	49	24.91	24.77	24.69
		25	0	23.63	23.66	23.68
		25	13	23.64	23.67	23.78
		25	25	23.68	23.47	23.75
		50	0	23.55	23.72	23.67
	16QAM	1	0	24.23	23.78	24.60
		1	25	24.21	23.79	24.56
		1	49	24.30	23.63	24.62
		25	0	22.83	22.91	23.07
		25	13	22.92	22.95	23.05
		25	25	22.92	22.77	23.12
		50	0	22.62	22.95	22.90

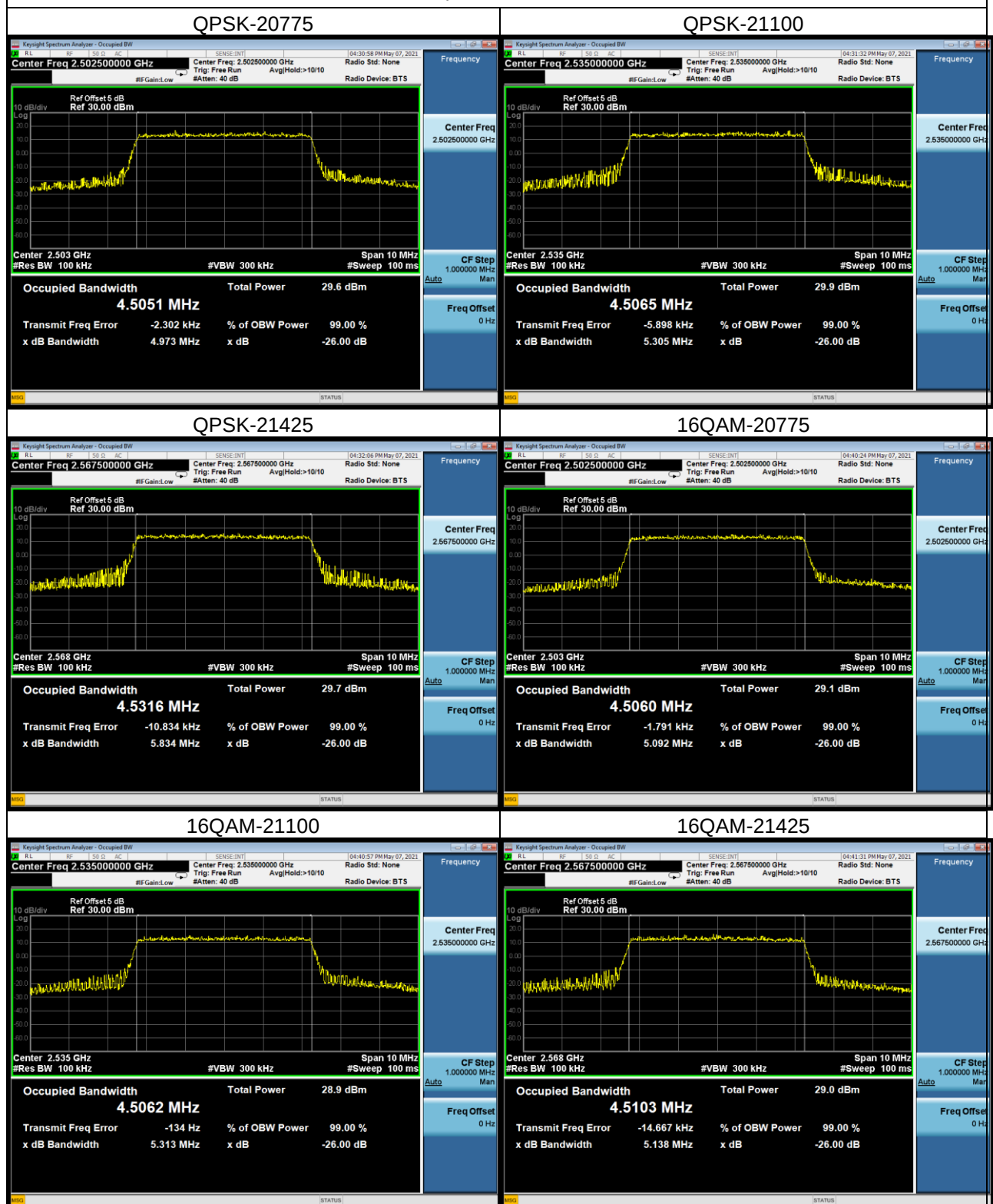
LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				39725CH	40620CH	41515CH
				2503.5MHz	2593MHz	2682.5MHz
41 / 15M	QPSK	1	0	24.81	24.70	24.89
		1	38	24.72	24.85	25.00
		1	74	24.99	24.68	24.80
		36	0	23.64	23.68	23.77
		36	18	23.65	23.68	23.74
		36	39	23.84	23.58	23.75
		75	0	23.57	23.70	23.76
	16QAM	1	0	24.28	23.70	24.04
		1	38	24.23	23.79	24.02
		1	74	24.36	23.63	24.08
		36	0	22.56	22.72	23.01
		36	18	22.68	22.71	23.02
		36	39	22.69	22.61	23.00
		75	0	22.74	22.91	22.99

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				39750CH	40620CH	41490CH
				2506MHz	2593MHz	2680MHz
41 / 20M	QPSK	1	0	24.43	25.05	24.66
		1	50	24.46	25.13	24.71
		1	99	24.47	24.88	24.62
		50	0	23.65	23.70	23.83
		50	25	23.70	23.68	23.78
		50	50	23.78	23.54	23.73
		100	0	23.63	23.73	23.71
	16QAM	1	0	23.42	23.26	23.68
		1	50	23.52	23.39	23.67
		1	99	23.63	23.28	23.85
		50	0	22.86	22.78	22.96
		50	25	22.94	22.81	23.01
		50	50	22.96	22.67	23.05
		100	0	22.80	22.93	22.95

APPENDIX B - OCCUPIED BANDWIDTH

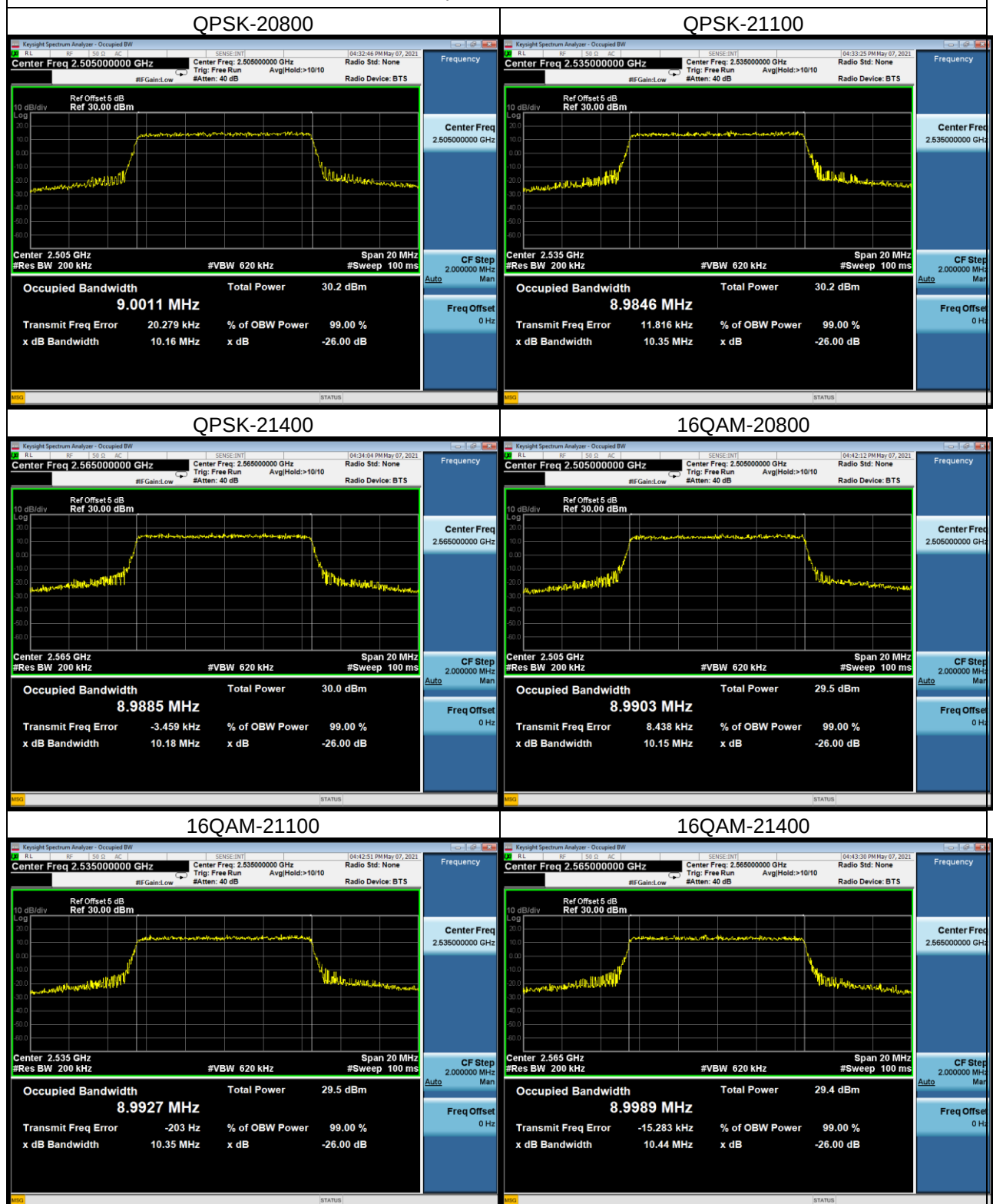
LTE Band 7_5M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20775	2502.5	4.5051	20775	2502.5	4.973
21100	2535	4.5065	21100	2535	5.305
21425	2567.5	4.5316	21425	2567.5	5.834
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20775	2502.5	4.5060	20775	2502.5	5.092
21100	2535	4.5062	21100	2535	5.313
21425	2567.5	4.5103	21425	2567.5	5.138

Spectrum Plot



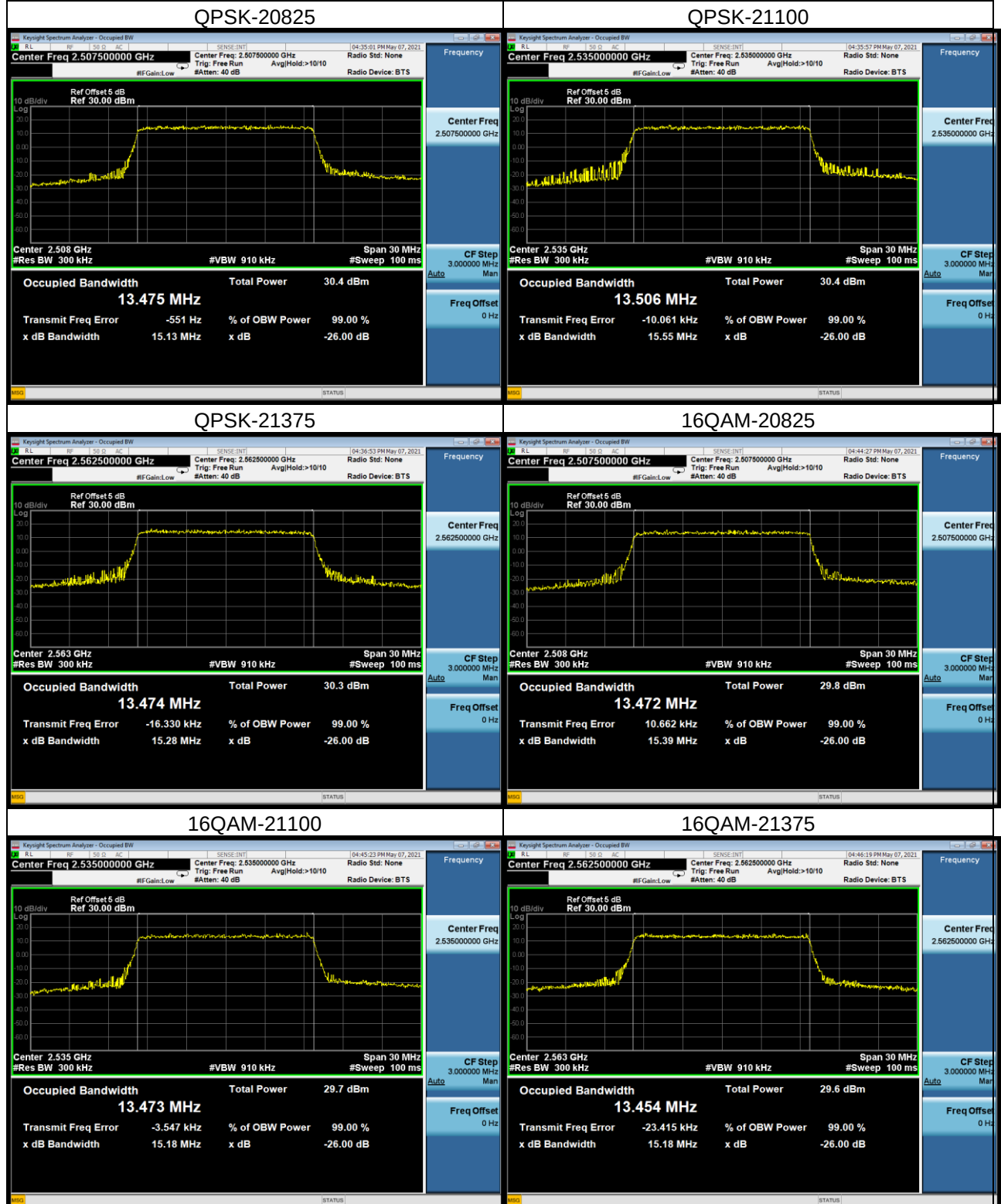
LTE Band 7_10M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20800	2505	9.0011	20800	2505	10.16
21100	2535	8.9846	21100	2535	10.35
21400	2565	8.9885	21400	2565	10.18
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20800	2505	8.9903	20800	2505	10.15
21100	2535	8.9927	21100	2535	10.35
21400	2565	8.9989	21400	2565	10.44

Spectrum Plot



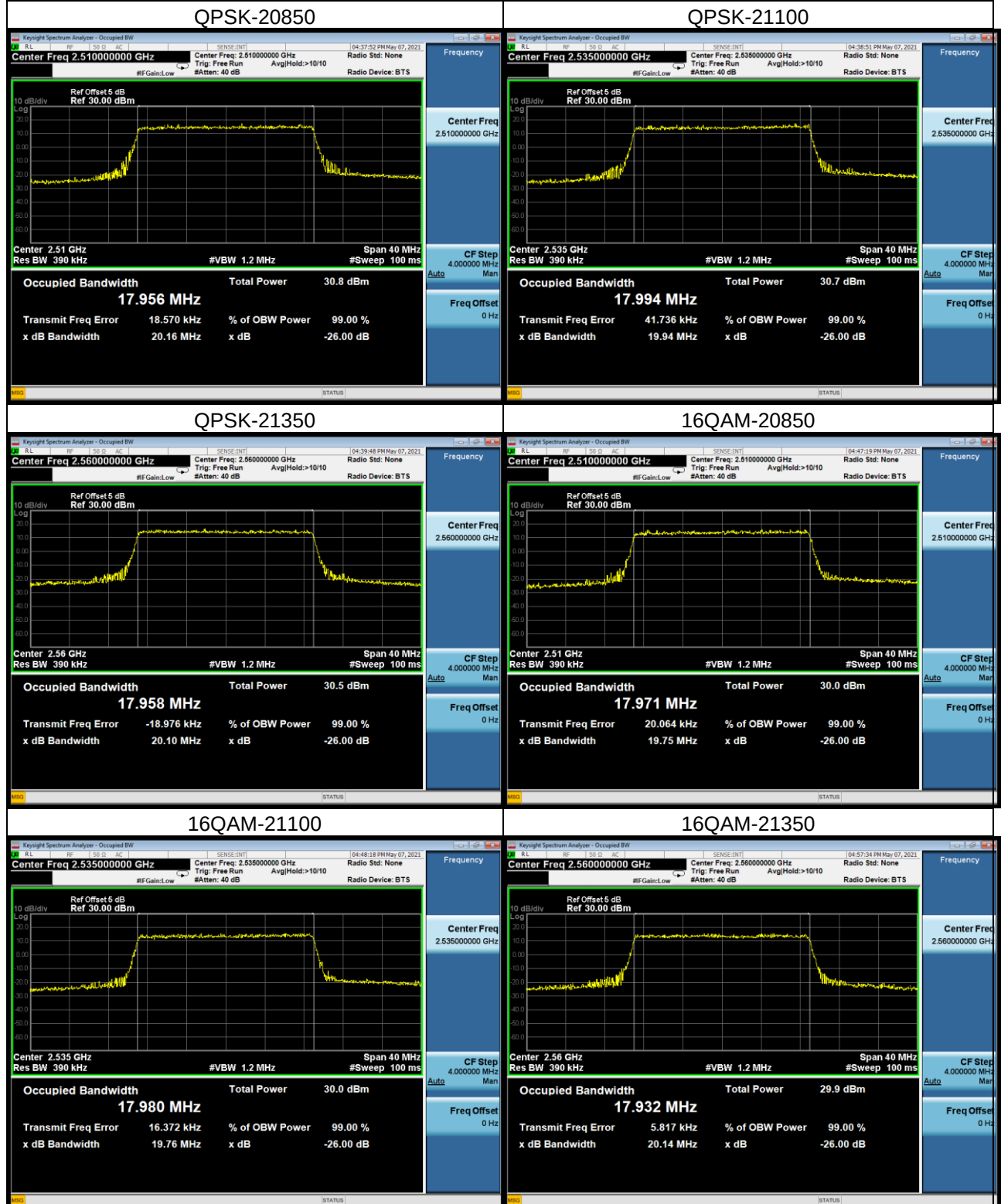
LTE Band 7_15M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20825	2507.5	13.475	20825	2507.5	15.13
21100	2535	13.506	21100	2535	15.55
21375	2562.5	13.474	21375	2562.5	15.28
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20825	2507.5	13.472	20825	2507.5	15.39
21100	2535	13.473	21100	2535	15.18
21375	2562.5	13.454	21375	2562.5	15.18

Spectrum Plot



LTE Band 7_20M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth \ (MHz)
20850	2510	17.956	20850	2510	20.16
21100	2535	17.994	21100	2535	19.94
21350	2560	17.958	21350	2560	20.10
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20850	2510	17.971	20850	2510	19.75
21100	2535	17.980	21100	2535	19.76
21350	2560	17.932	21350	2560	20.14

Spectrum Plot



LTE Band 38_5M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
37775	2572.5	4.5023	37775	2572.5	5.764
38000	2595	4.4850	38000	2595	4.959
38225	2617.5	4.5110	38225	2617.5	5.773
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
37775	2572.5	4.4827	37775	2572.5	4.961
38000	2595	4.4726	38000	2595	5.094
38225	2617.5	4.4768	38225	2617.5	4.983