

FCC Radio Test Report

FCC ID: 2AWG9-OSPREY

This report concerns: Original Grant

Project No. : 2107C014
Equipment : 4G LTE WiFi Router
Brand Name : WiFiRanger
Test Model : OSPREY
Series Model : N/A
Applicant : WiFiRanger, A LinOra Company
Address : 943 W Overland Road, , Meridian, Idaho United States 83642
Manufacturer : Shenzhen Connect Technology Co., Ltd
Address : G Zone, 3/F, Building 1, Baisha High-Tech Park, Xili Street, Shenzhen
Factory : Shenzhen Connect Technology Co., Ltd
Address : Second Standard Factory, Zhongcai Road, Yingbin Avenue, Luxi Industrial Park, Jiangxi
Date of Receipt : Jul. 08, 2021
Date of Test : Jul. 09, 2021 ~ Aug. 03, 2021
Issued Date : Aug. 25, 2021
Report Version : R01
Test Sample : Engineering Sample No.: DG2021070560 for conducted, DG2021070562 for radiated.
Standard(s) : 47 CFR FCC Part 22 Subpart H
 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.

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TESTING CERT #5123.02

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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).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

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BTL's laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

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.	Aug. 23, 2021
R01	Removed test photos.	Aug. 25, 2021

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part 22 Subpart H & Part 2			
Standard(s) Section	Test Item	Judgment	Remark
2.1046 22.913(a)(5)	Effective Radiated Power	PASS	-----
2.1049	Occupied Bandwidth	PASS	-----
2.1051 22.917(a)	Conducted Spurious Emissions	PASS	-----
2.1053 22.917(a)	Radiated Spurious Emissions	PASS	-----
22.917(a)	Band Edge Measurements	PASS	-----
-	Peak To Average Ratio	PASS	Record Only
2.1055 22.355	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 Rd. Shixia, Dalang Town, Dongguan City, Guangdong, People's Republic of China.

BTL's Test Firm Registration Number for FCC: 357015

BTL's Designation Number for FCC: CN1240

1.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ($k=2$))

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	-	3.02
		30MHz ~ 200MHz	V	4.26
		30MHz ~ 200MHz	H	3.38
		200MHz ~ 1,000MHz	V	3.98
		200MHz ~ 1,000MHz	H	3.94

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB03 (3m)	CISPR	1GHz ~ 6GHz	3.96
		6GHz ~ 18GHz	5.24

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	21.8°C	46%	AC 120V/60Hz	Tate Liu
Occupied Bandwidth	21.8°C	46%	AC 120V/60Hz	Tate Liu
Conducted Spurious Emissions	21.8°C	46%	AC 120V/60Hz	Tate Liu
Radiated Spurious Emissions	25°C	60%	AC 120V/60Hz	Kwok Guo
Band Edge	21.8°C	46%	AC 120V/60Hz	Tate Liu
Peak to Average Ratio	21.8°C	46%	AC 120V/60Hz	Tate Liu
Frequency Stability	Normal & Extreme	46%	Normal & Extreme	Tate Liu

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	4G LTE WiFi Router			
Brand Name	WiFiRanger			
Test Model	OSPREY			
Series Model	N/A			
Model Difference(s)	N/A			
Power Source	DC voltage supplied from AC adapter. (Support Units)			
Power Rating	I/P: 100-240V~ 50/60Hz 0.3A max O/P: 12.0V $\overline{=}$ 1A			
IEMI No.	Radiated	866834043420244		
	Conducted	866834044831423		
Modulation Type	WCDMA/HSDPA/HSUPA		QPSK	
	LTE		QPSK, 16QAM	
Max. ERP	WCDMA Band V		QPSK	24.89 dBm
	HSDPA Band V		QPSK	23.83 dBm
	HSUPA Band V		QPSK	23.87 dBm
	LTE	Channel Bandwidth (MHz)	QPSK (dBm)	16QAM (dBm)
	Band 5	1.4	24.77	24.01
		3	24.86	23.94
		5	24.95	23.85
		10	25.26	24.22

Note:

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

2. Channel List:

WCDMA Band V				
Test Frequency ID	UARFCN	Frequency of Uplink (MHz)	UARFCN	Frequency of Downlink (MHz)
Low Range	4132	826.4	4357	871.4
Mid Range	4182	836.4	4407	881.4
High Range	4233	846.6	4458	891.6

LTE Band 5					
Test Frequency ID	Bandwidth (MHz)	N _{UL}	Frequency of Uplink (MHz)	N _{DL}	Frequency of Downlink (MHz)
Low Range	1.4	20407	824.7	2407	869.7
	3	20415	825.5	2415	870.5
	5	20425	826.5	2425	871.5
	10	20450	829	2450	874
Mid Range	1.4/3/5/10	20525	836.5	2525	881.5
High Range	1.4	20643	848.3	2643	893.3
	3	20635	847.5	2635	892.5
	5	20625	846.5	2625	891.5
	10	20600	844	2600	889

3. Table for Filed Antenna:

Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
N/A	N/A	Dipole	N/A	3.1	WCDMA Band V
N/A	N/A	Dipole	N/A	3.1	LTE Band 5

Note: The antenna gain is provided by the manufacturer.

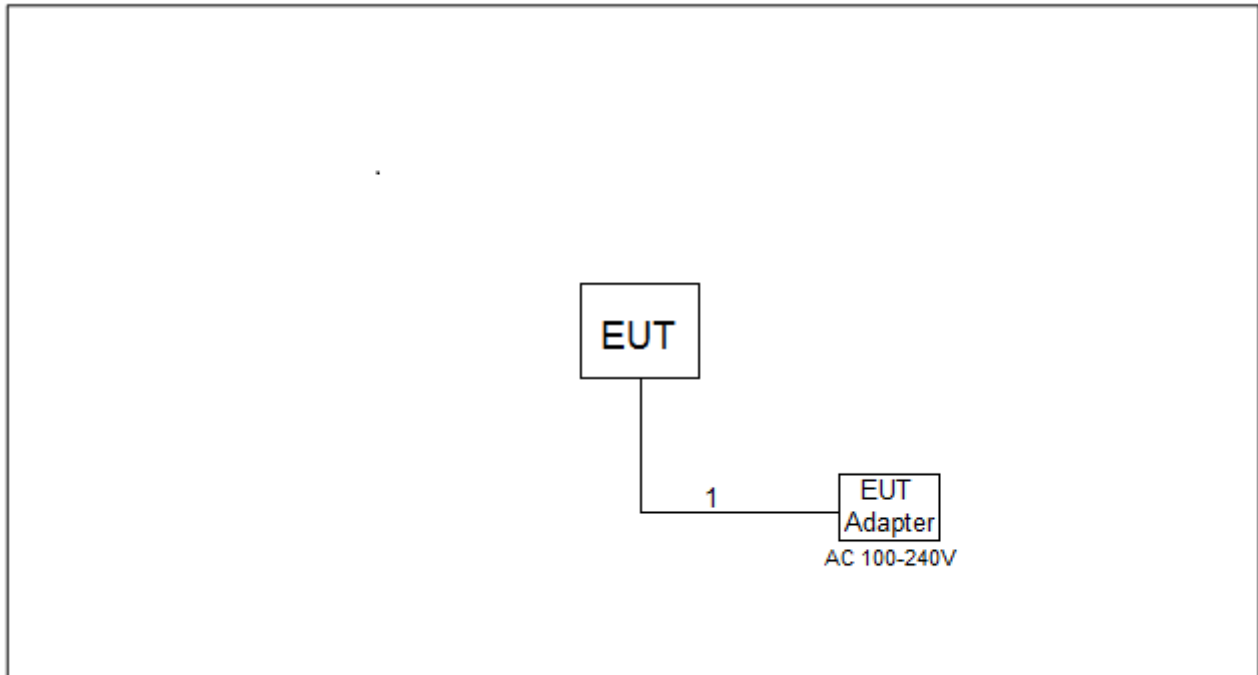
2.2 DESCRIPTION OF TEST MODES

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

WCDMA BAND V MODE			
Test Item	Available Channel	Tested Channel	Mode
Output Power & ERP	4132 to 4233	4132, 4182, 4233	WCDMA, HSDPA, HSUPA
Occupied Bandwidth	4132 to 4233	4132, 4182, 4233	WCDMA
Conducted Spurious Emissions	4132 to 4233	4182	WCDMA
Radiated Spurious Emissions	4132 to 4233	4182	WCDMA
Band Edge	4132 to 4233	4132, 4233	WCDMA
Peak to Average Ratio	4132 to 4233	4132, 4182, 4233	WCDMA
Frequency Stability	4132 to 4233	4182	WCDMA

LTE BAND 5 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Output Power & ERP	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	1RB/3RB/6RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	1RB/8RB/15RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	1RB/25RB/50RB
Occupied Bandwidth	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	6RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	15RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	25RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	50RB
Conducted Spurious Emissions	20407 to 20643	20525	1.4MHz	QPSK	1RB
	20425 to 20625	20525	5MHz	QPSK	1RB
	20450 to 20600	20525	10MHz	QPSK	1RB
Radiated Spurious Emissions	20407 to 20643	20525	1.4MHz	QPSK	1RB
	20425 to 20625	20525	5MHz	QPSK	1RB
	20450 to 20600	20525	10MHz	QPSK	1RB
Band Edge	20407 to 20643	20407, 20643	1.4MHz	QPSK	1RB/6RB
	20415 to 20635	20415, 20635	3MHz	QPSK	1RB/15RB
	20425 to 20625	20425, 20625	5MHz	QPSK	1RB/25RB
	20450 to 20600	20450, 20600	10MHz	QPSK	1RB/50RB
Peak To Average Ratio	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	1RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	1RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	1RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	1RB
Frequency Stability	20407 to 20643	20525	1.4MHz	QPSK	1RB
	20415 to 20635	20525	3MHz	QPSK	1RB
	20425 to 20625	20525	5MHz	QPSK	1RB
	20450 to 20600	20525	10MHz	QPSK	1RB

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATIONOFSYSTEMTESTED



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	Mfr/Brand	Model/Type No.	Series No.
-	-	-	-	-

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	DC Cable	NO	NO	1.5m

3. TEST RESULT

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMIT

Mobile / Portable station are limited to 7 watts e.r.p.

3.1.2 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 5.

EIRP / ERP:

EIRP = Output Power + Antenan gain

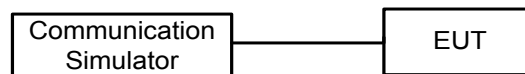
ERP = EIPR - 2.15dBi

Output Power:

The EUT was set up for the maximum power with GSM, GPRS, EDGE, 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.

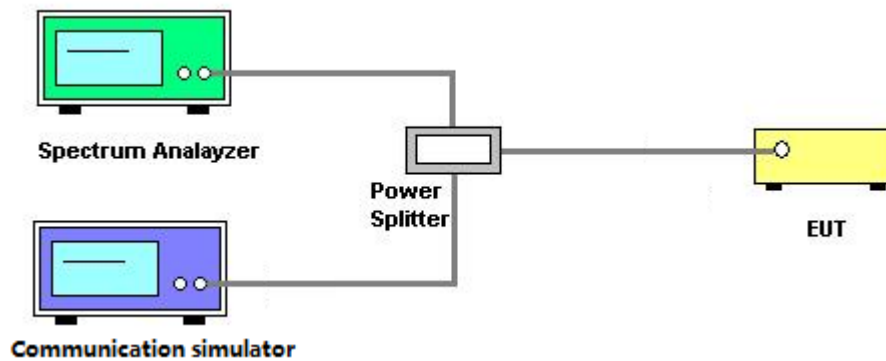
3.2 OCCUPIED BANDWIDTH MEASUREMENT

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. $RBW = (1\% \sim 5\%) * EBW$
 $VBW \geq 3 * RBW$
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

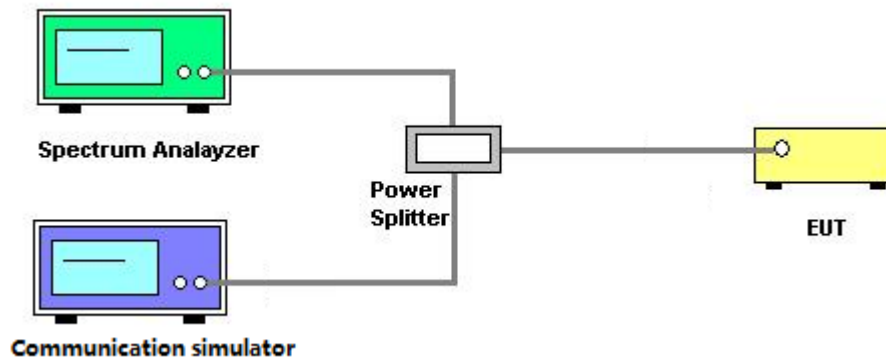
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm.

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.

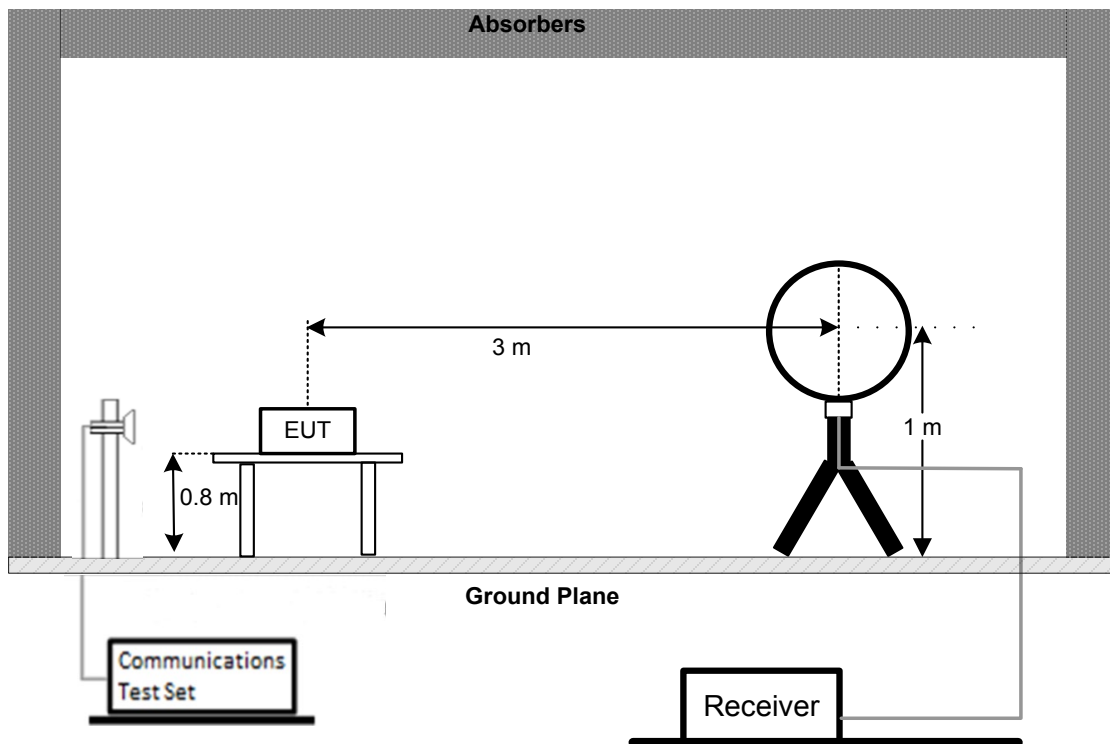
3.4.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6.2.

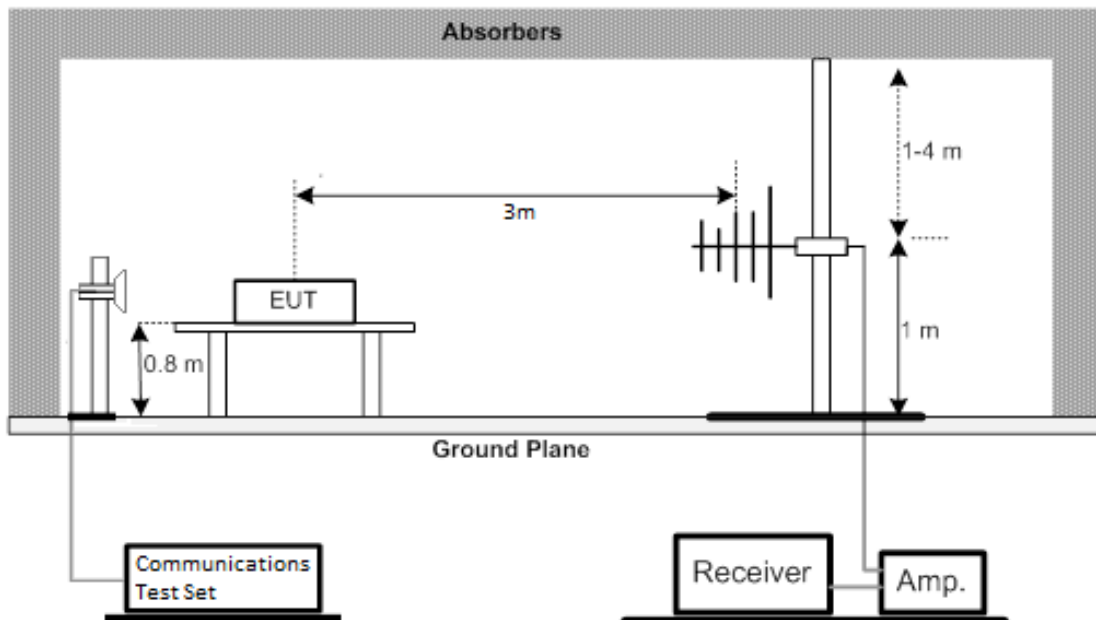
1. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
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.

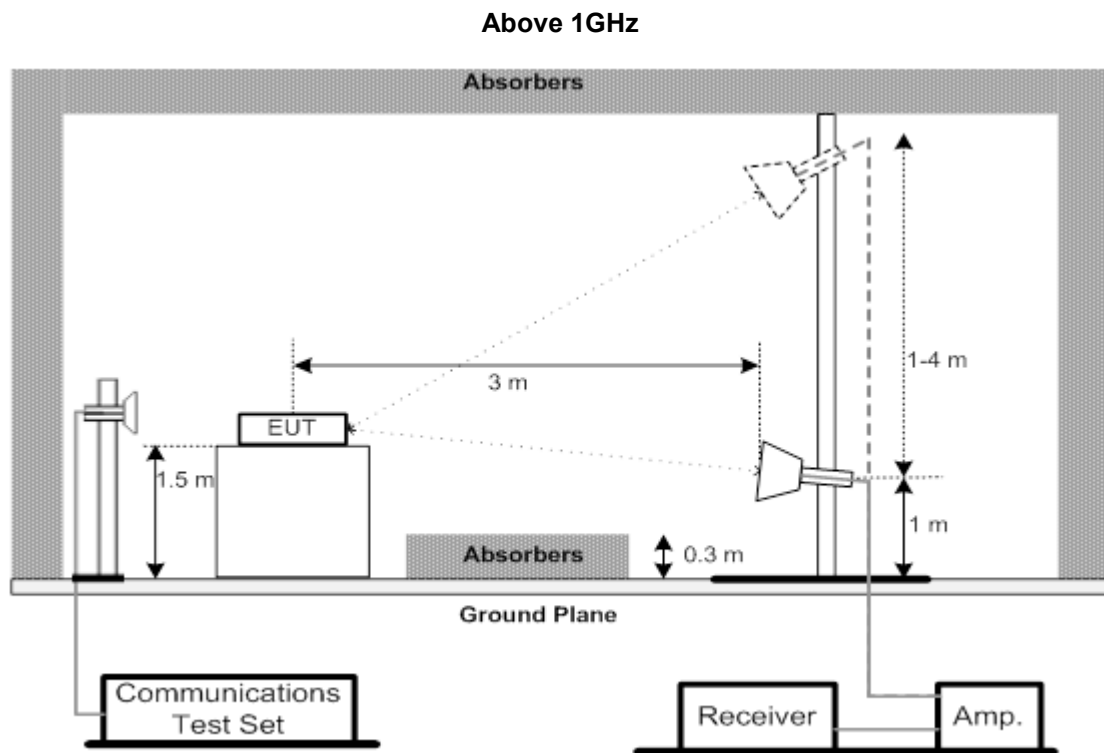
3.4.3 TEST SETUP LAYOUT

Below 30MHz



30MHz to 1000MHz





3.4.4 TEST DEVIATION

No deviation

3.4.5 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the APPENDIX D.

3.4.6 TEST RESULTS (30MHZ TO 1000MHZ)

Please refer to the APPENDIX E.

3.4.7 TEST RESULTS (ABOVE 1000MHZ)

Please refer to the APPENDIX F.

3.5 BAND EDGE MEASUREMENT

3.5.1 LIMIT

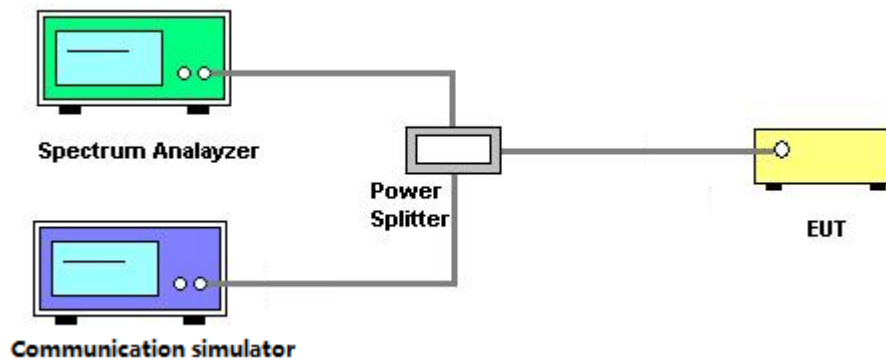
A Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the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

3.5.2 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

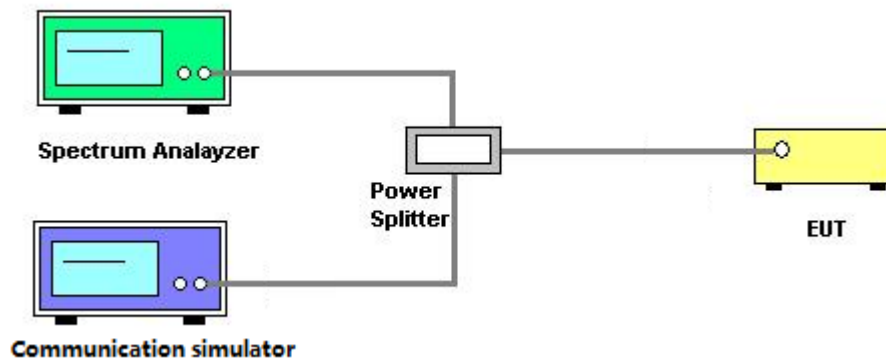
In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

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

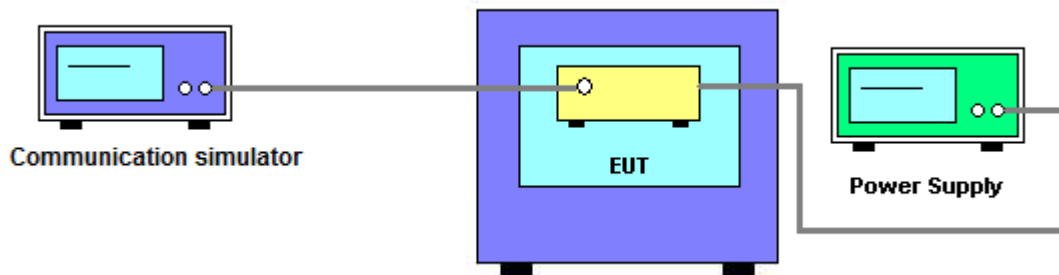
± 1.5 ppm is for base and fixed station. ± 2.5 ppm is for mobile station.

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. 27, 2022
3	High Pass Filter	Wairwright Instruments Gmbh	WHK 1.5/15G-10ST	11	Feb. 27, 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	High Pass 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	Mar. 19, 2022
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	Oct. 16, 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	Oct. 16, 2021
21	Double Ridged Guide Antenna	ETS	3115	75846	Mar. 17, 2022
22	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jun. 30, 2022

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.

APPENDIX A - OUTPUT POWER

Output Power (dBm):

Modulation	Band	WCDMA Band V		
	Tx Channel	4132CH	4182CH	4233CH
	Frequency	826.4MHz	836.4MHz	846.6MHz
QPSK	RMC 12.2K	23.81	23.82	23.77
	RMC 64K	23.82	23.83	23.81
	RMC 144K	23.83	23.83	23.94
	RMC 384K	23.8	23.81	23.93
	HSDPA Subtest-1	22.68	22.82	22.82
	HSDPA Subtest-2	22.86	22.83	22.88
	HSDPA Subtest-3	22.26	22.35	22.39
	HSDPA Subtest-4	22.28	22.33	22.38
	HSUPA Subtest-1	22.87	22.92	22.16
	HSUPA Subtest-2	21.52	21.75	21.9
	HSUPA Subtest-3	21.19	21.89	22.07
	HSUPA Subtest-4	22.5	21.92	22.06
	HSUPA Subtest-5	22.83	22.87	22.81

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20407CH	20525CH	20643CH
				824.7MHz	836.5MHz	848.3MHz
5 / 1.4M	QPSK	1	0	23.66	23.42	23.60
		1	2	23.74	23.57	23.68
		1	5	23.61	23.51	23.71
		3	0	23.79	23.67	23.76
		3	1	23.82	23.66	23.76
		3	2	23.75	23.58	23.68
		6	0	22.91	22.64	22.85
	16QAM	1	0	22.74	22.66	22.66
		1	2	22.69	22.82	22.72
		1	5	22.52	22.68	22.64
		3	0	22.66	22.98	22.99
		3	1	22.69	23.05	23.06
		3	2	22.61	22.94	22.98
		6	0	21.61	21.79	21.99

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20415CH	20525CH	20635CH
				825.5MHz	836.5MHz	847.5MHz
5 / 3M	QPSK	1	0	23.91	23.70	23.72
		1	7	23.83	23.64	23.88
		1	14	23.84	23.63	23.69
		8	0	22.93	22.78	22.83
		8	4	22.83	22.67	22.77
		8	7	22.86	22.82	22.81
		15	0	22.85	22.73	22.78
	16QAM	1	0	22.74	22.47	22.75
		1	7	22.99	22.89	22.90
		1	14	22.91	22.70	22.74
		8	0	22.34	21.78	21.94
		8	4	22.22	21.78	21.89
		8	7	22.24	21.82	21.95
		15	0	22.09	21.72	21.64

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20425CH	20525CH	20625CH
				826.5MHz	836.5MHz	846.5MHz
5 / 5M	QPSK	1	0	23.90	23.43	23.75
		1	13	23.77	23.46	24.00
		1	24	23.91	23.35	23.84
		12	0	22.85	22.79	23.04
		12	6	22.89	22.87	22.91
		12	11	22.85	22.74	22.94
		25	0	22.84	22.72	22.80
	16QAM	1	0	22.52	22.75	22.54
		1	13	22.25	22.90	22.61
		1	24	22.26	22.69	22.56
		12	0	21.80	21.79	21.95
		12	6	21.78	21.73	21.74
		12	11	21.74	21.63	21.76
		25	0	21.85	21.83	21.82

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20450CH	20525CH	20600CH
				829.0MHz	836.5MHz	844.0MHz
5 / 10M	QPSK	1	0	24.12	23.78	23.72
		1	25	24.31	23.81	23.98
		1	49	24.09	23.94	23.85
		25	0	22.94	22.95	22.85
		25	13	22.92	22.88	22.91
		25	25	22.98	22.83	22.96
		50	0	22.90	22.87	22.90
	16QAM	1	0	22.69	22.69	22.39
		1	25	22.95	22.60	22.68
		1	49	23.27	22.50	22.58
		25	0	21.82	21.88	21.57
		25	13	22.00	21.81	21.66
		25	25	21.95	21.67	21.58
		50	0	21.76	21.74	21.53

ERP (dBm):

Modulation	Band	WCDMA Band V		
	Tx Channel	4132CH	4182CH	4233CH
	Frequency	826.4MHz	836.4MHz	846.6MHz
QPSK	RMC 12.2K	24.76	24.77	24.72
	RMC 64K	24.77	24.78	24.76
	RMC 144K	24.78	24.78	24.89
	RMC 384K	24.75	24.76	24.88
	HSDPA Subtest-1	23.63	23.77	23.77
	HSDPA Subtest-2	23.81	23.78	23.83
	HSDPA Subtest-3	23.21	23.30	23.34
	HSDPA Subtest-4	23.23	23.28	23.33
	HSUPA Subtest-1	23.82	23.87	23.11
	HSUPA Subtest-2	22.47	22.70	22.85
	HSUPA Subtest-3	22.14	22.84	23.02
	HSUPA Subtest-4	23.45	22.87	23.01
	HSUPA Subtest-5	23.78	23.82	23.76

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20407CH	20525CH	20643CH
				824.7MHz	836.5MHz	848.3MHz
5 / 1.4M	QPSK	1	0	24.61	24.37	24.55
		1	2	24.69	24.52	24.63
		1	5	24.56	24.46	24.66
		3	0	24.74	24.62	24.71
		3	1	24.77	24.61	24.71
		3	2	24.70	24.53	24.63
	16QAM	6	0	23.86	23.59	23.80
		1	0	23.69	23.61	23.61
		1	2	23.64	23.77	23.67
		1	5	23.47	23.63	23.59
		3	0	23.61	23.93	23.94
		3	1	23.64	24.00	24.01
		3	2	23.56	23.89	23.93
		6	0	22.56	22.74	22.94

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20415CH	20525CH	20635CH
				825.5MHz	836.5MHz	847.5MHz
5 / 3M	QPSK	1	0	24.86	24.65	24.67
		1	7	24.78	24.59	24.83
		1	14	24.79	24.58	24.64
		8	0	23.88	23.73	23.78
		8	4	23.78	23.62	23.72
		8	7	23.81	23.77	23.76
		15	0	23.80	23.68	23.73
	16QAM	1	0	23.69	23.42	23.70
		1	7	23.94	23.84	23.85
		1	14	23.86	23.65	23.69
		8	0	23.29	22.73	22.89
		8	4	23.17	22.73	22.84
		8	7	23.19	22.77	22.90
		15	0	23.04	22.67	22.59

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20425CH	20525CH	20625CH
				826.5MHz	836.5MHz	846.5MHz
5 / 5M	QPSK	1	0	24.85	24.38	24.70
		1	13	24.72	24.41	24.95
		1	24	24.86	24.30	24.79
		12	0	23.80	23.74	23.99
		12	6	23.84	23.82	23.86
		12	11	23.80	23.69	23.89
		25	0	23.79	23.67	23.75
	16QAM	1	0	23.47	23.70	23.49
		1	13	23.20	23.85	23.56
		1	24	23.21	23.64	23.51
		12	0	22.75	22.74	22.90
		12	6	22.73	22.68	22.69
		12	11	22.69	22.58	22.71
		25	0	22.80	22.78	22.77

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20450CH	20525CH	20600CH
				829.0MHz	836.5MHz	844.0MHz
5 / 10M	QPSK	1	0	25.07	24.73	24.67
		1	25	25.26	24.76	24.93
		1	49	25.04	24.89	24.80
		25	0	23.89	23.90	23.80
		25	13	23.87	23.83	23.86
		25	25	23.93	23.78	23.91
		50	0	23.85	23.82	23.85
	16QAM	1	0	23.64	23.64	23.34
		1	25	23.90	23.55	23.63
		1	49	24.22	23.45	23.53
		25	0	22.77	22.83	22.52
		25	13	22.95	22.76	22.61
		25	25	22.90	22.62	22.53
		50	0	22.71	22.69	22.48

APPENDIX B - OCCUPIED BANDWIDTH

WCDMA Band V_WCDMA					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
4132	826.4	4.1538	4132	826.4	4.738
4182	836.4	4.1551	4182	836.4	4.732
4233	846.6	4.1712	4233	846.6	4.754



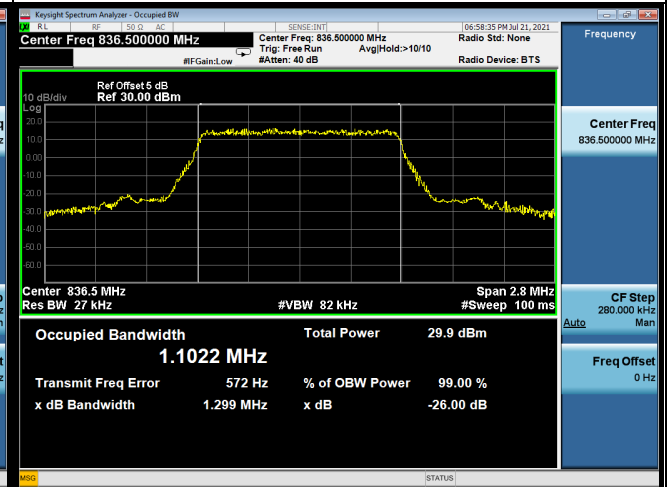
LTE Band 5_1.4M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20407	824.7	1.0956	20407	824.7	1.317
20525	836.5	1.1022	20525	836.5	1.299
20643	848.3	1.0865	20643	848.3	1.285
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20407	824.7	1.0906	20407	824.7	1.293
20525	836.5	1.0909	20525	836.5	1.288
20643	848.3	1.0935	20643	848.3	1.276

Spectrum Plot

QPSK-20407



QPSK-20525



QPSK-20643



16QAM-20407



16QAM-20525



16QAM-20643



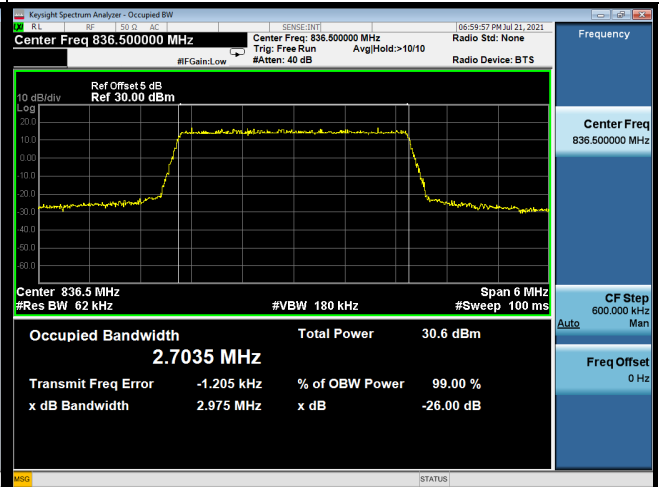
LTE Band 5_3M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20415	825.5	2.6963	20415	825.5	3.009
20525	836.5	2.7035	20525	836.5	2.975
20635	847.5	2.6956	20635	847.5	2.967
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20415	825.5	2.6966	20415	825.5	2.992
20525	836.5	2.7002	20525	836.5	2.979
20635	847.5	2.6923	20635	847.5	2.991

Spectrum Plot

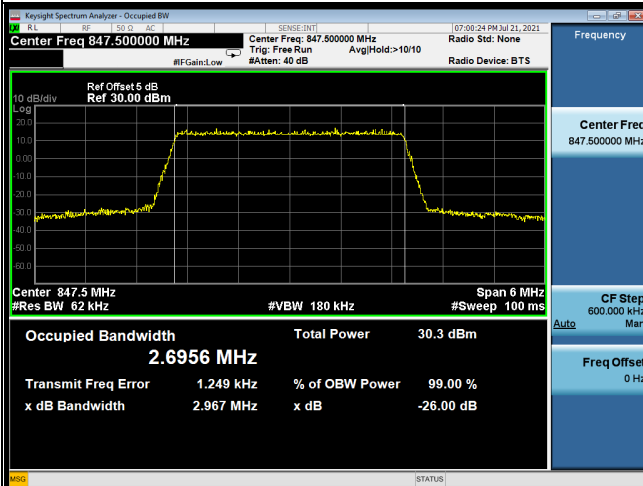
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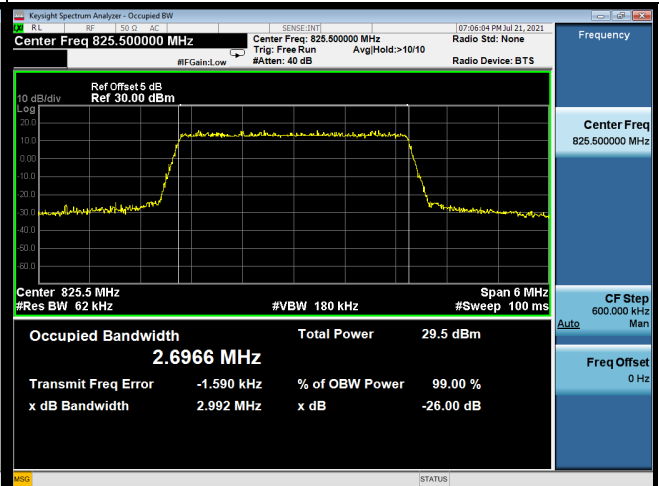
QPSK-20525



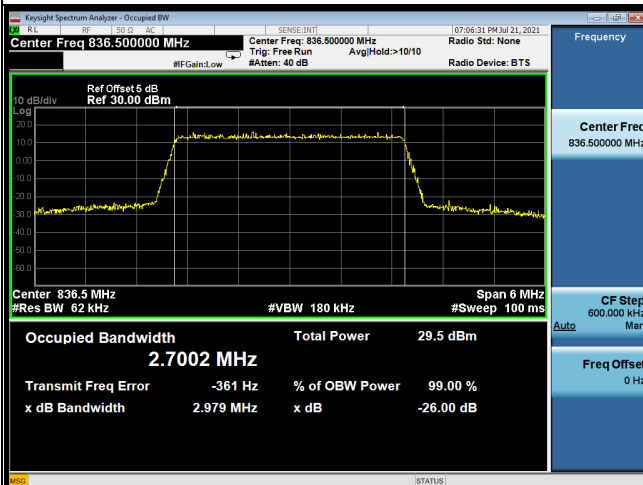
QPSK-20635



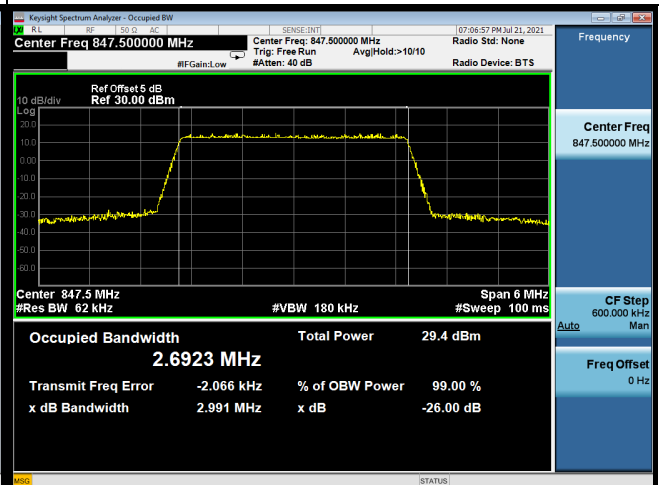
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16QAM-20525



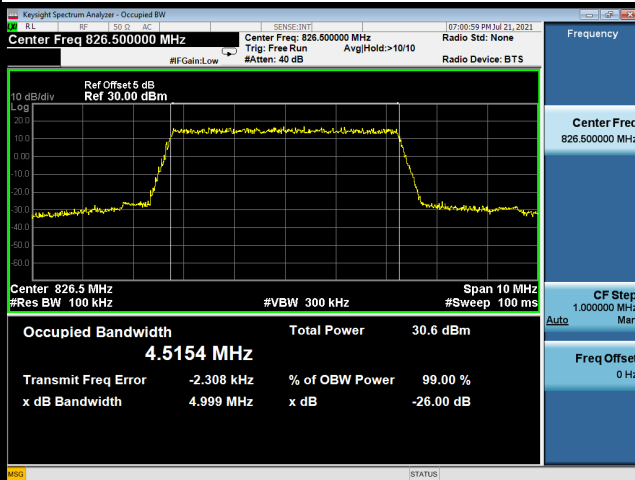
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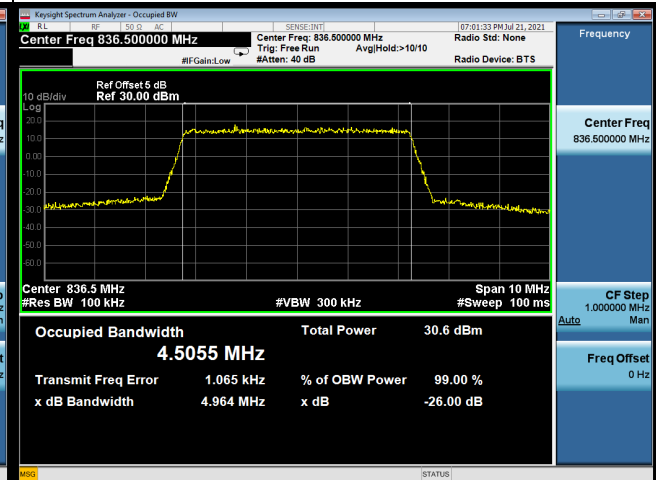
LTE Band 5_5M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20425	826.5	4.5154	20425	826.5	4.999
20525	836.5	4.5055	20525	836.5	4.964
20625	846.5	4.5071	20625	846.5	4.989
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20425	826.5	4.5049	20425	826.5	5.025
20525	836.5	4.4982	20525	836.5	4.982
20625	846.5	4.5011	20625	846.5	4.994

Spectrum Plot

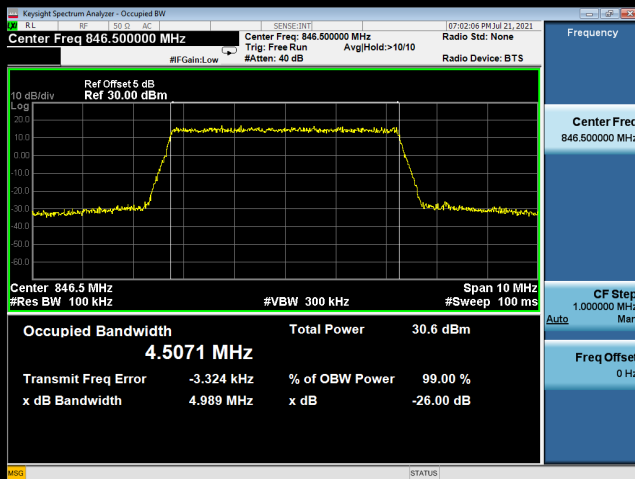
QPSK-20425



QPSK-20525



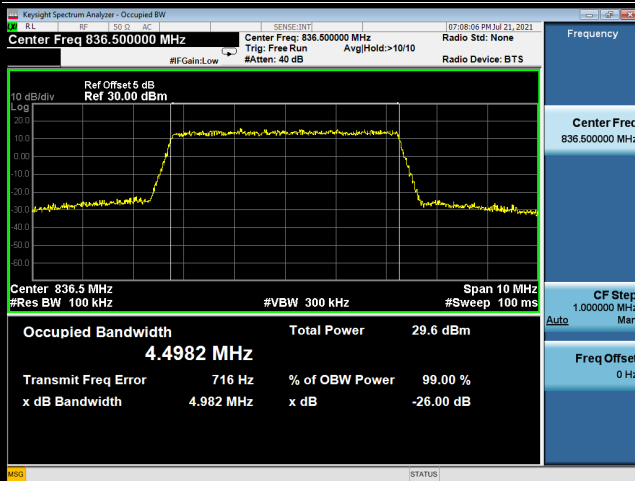
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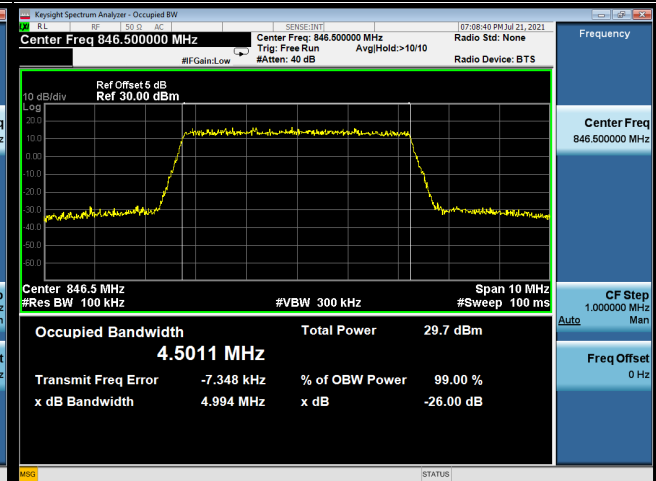
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16QAM-20525



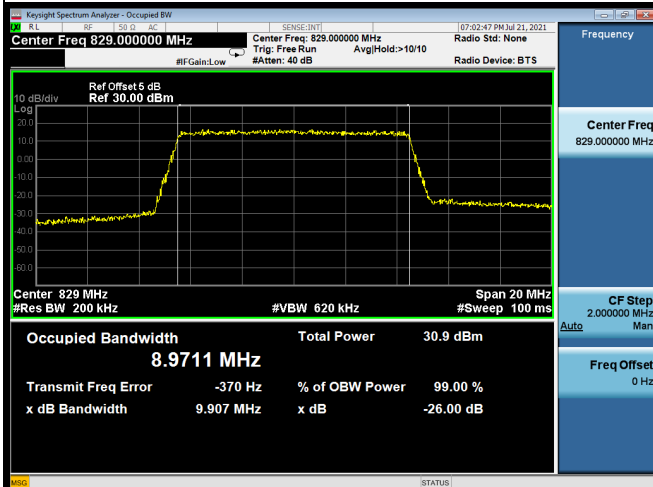
16QAM-20625



LTE Band 5_10M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20450	829.0	8.9711	20450	829.0	9.907
20525	836.5	8.9607	20525	836.5	9.861
20600	844.0	8.9691	20600	844.0	9.788
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20450	829.0	8.9688	20450	829.0	9.918
20525	836.5	8.9532	20525	836.5	9.877
20600	844.0	8.9550	20600	844.0	9.8463

Spectrum Plot

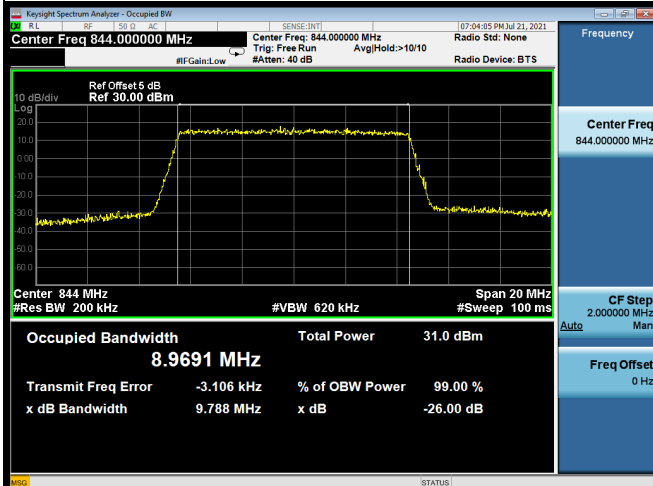
QPSK-20450



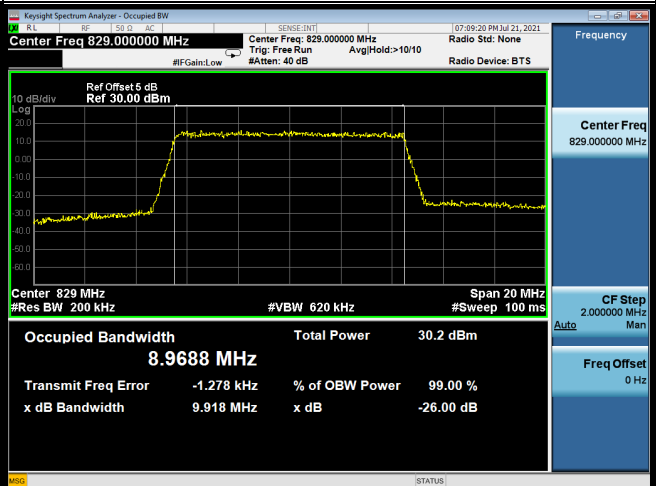
QPSK-20525



QPSK-20600



16QAM-20450



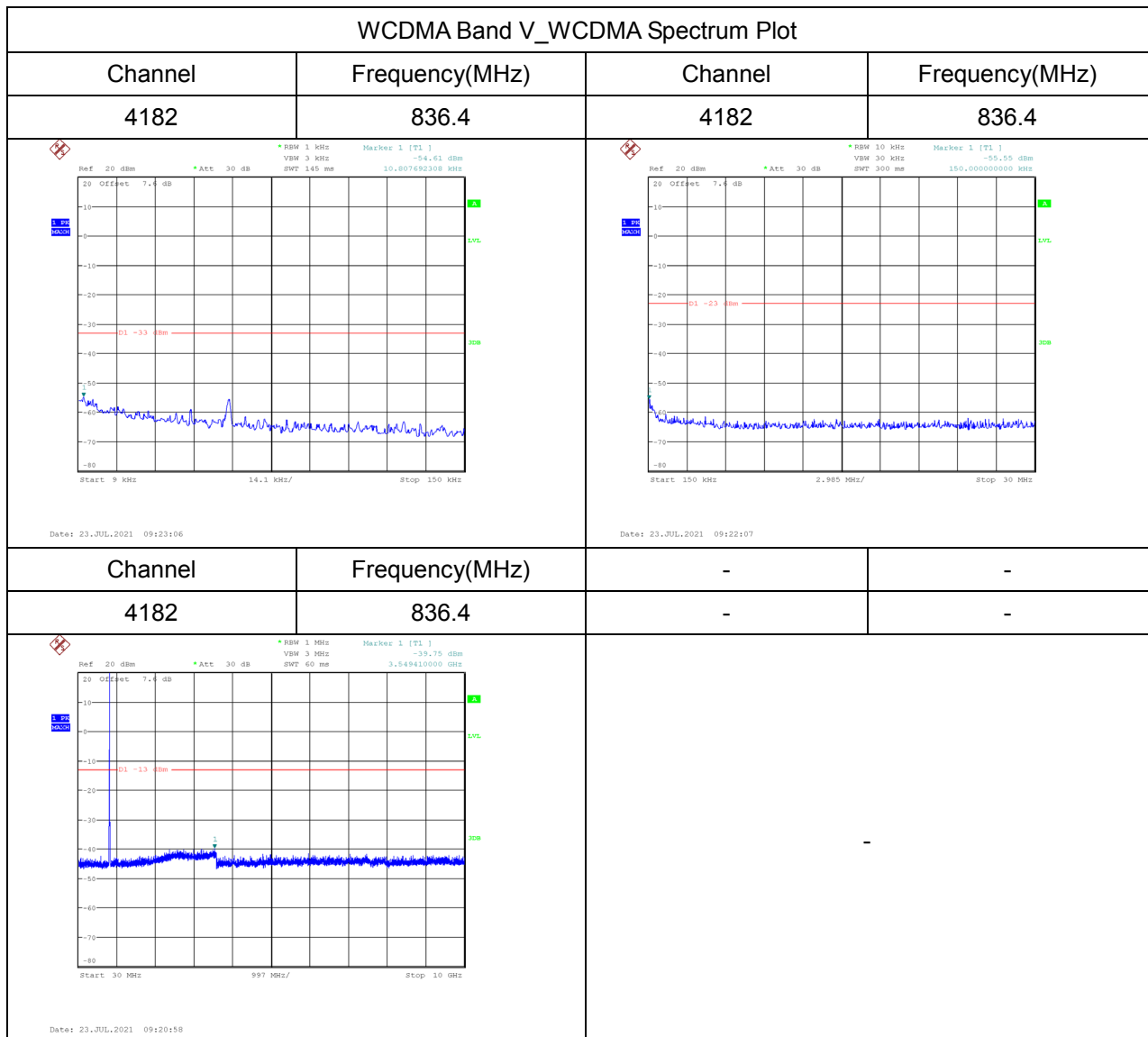
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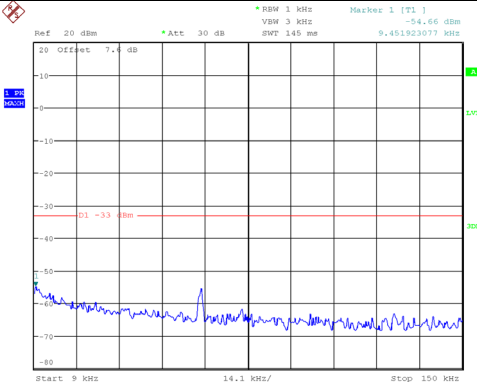
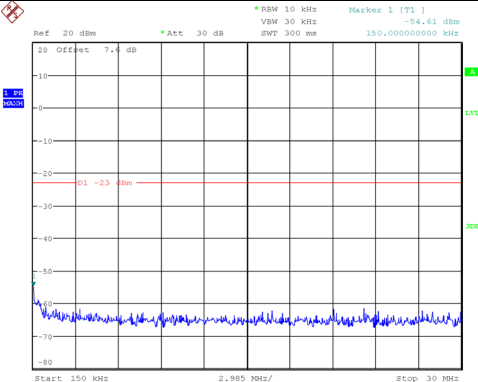
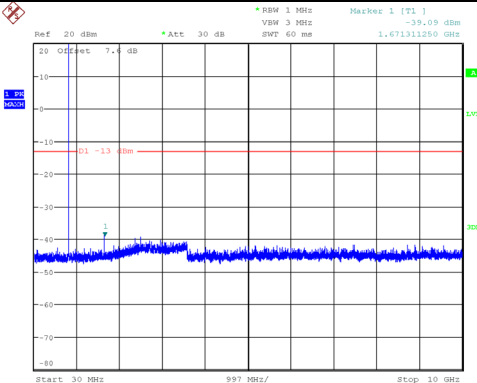
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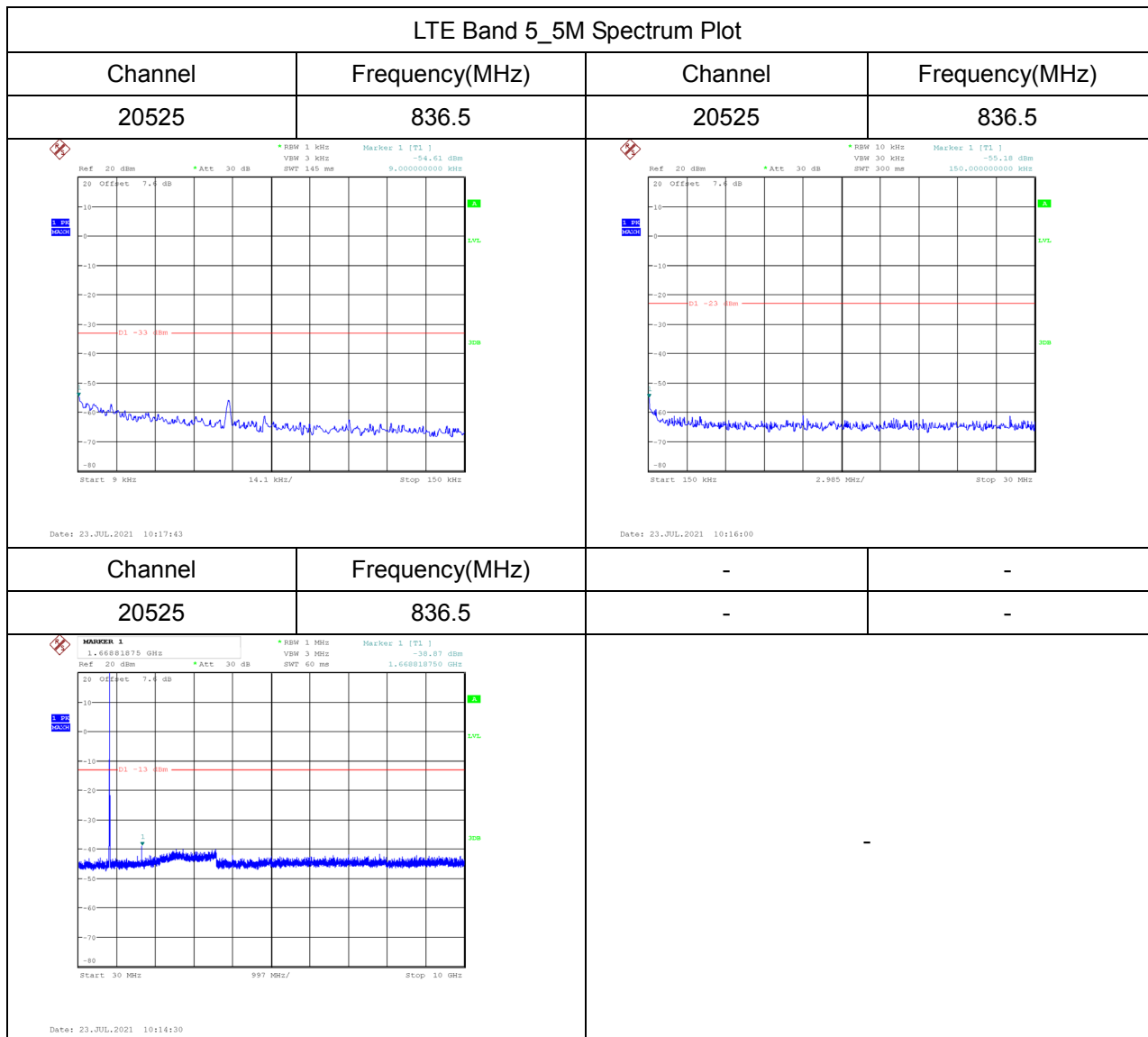


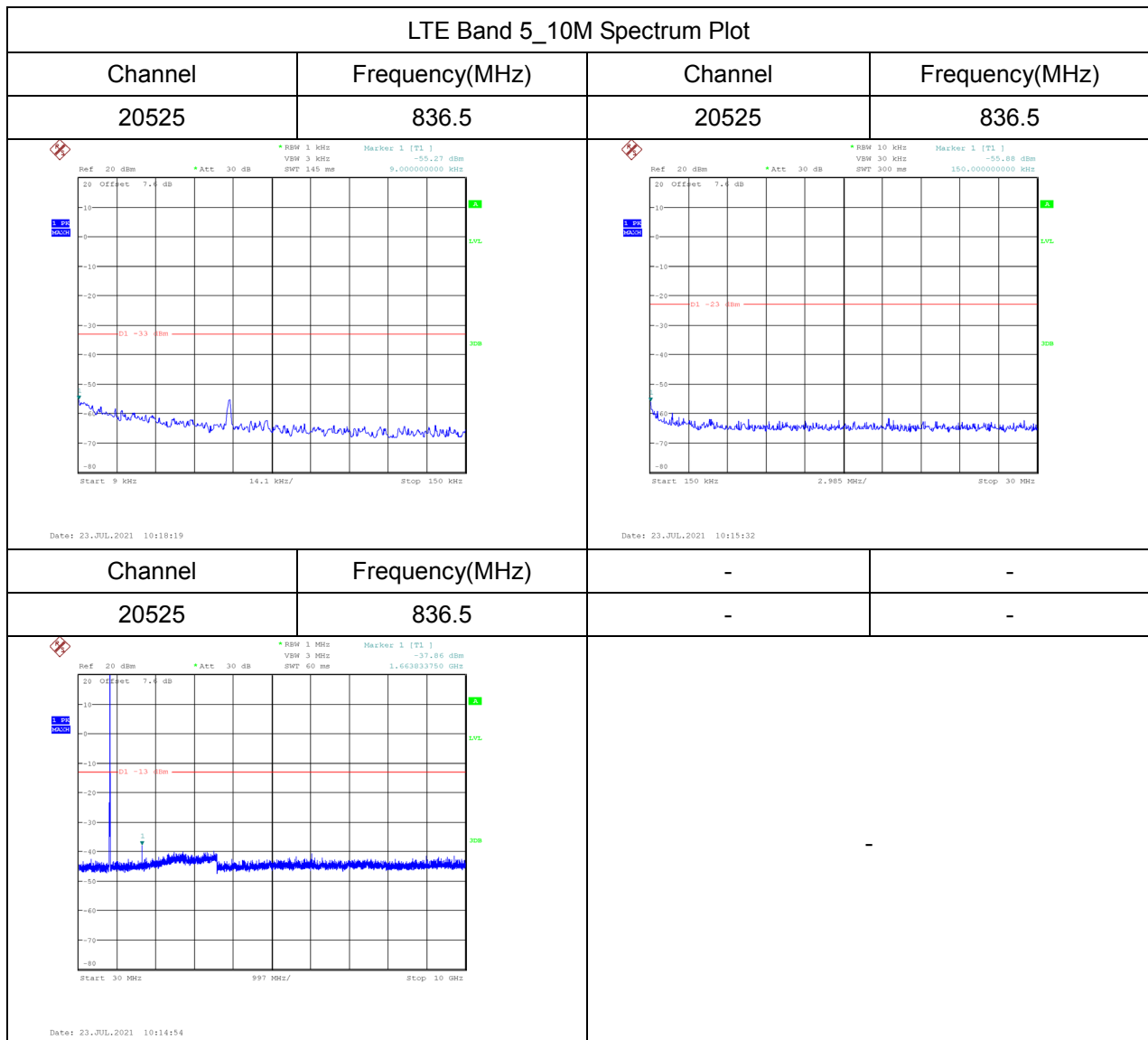
APPENDIX C - CONDUCTED SPURIOUS EMISSIONS



LTE Band 5_1.4M Spectrum Plot

Channel	Frequency(MHz)	Channel	Frequency(MHz)
20525	836.5	20525	836.5
 Date: 23.JUL.2021 10:17:11		 Date: 23.JUL.2021 10:16:17	
Channel	Frequency(MHz)	-	-
20525	836.5	-	-
 Date: 23.JUL.2021 10:13:57		-	

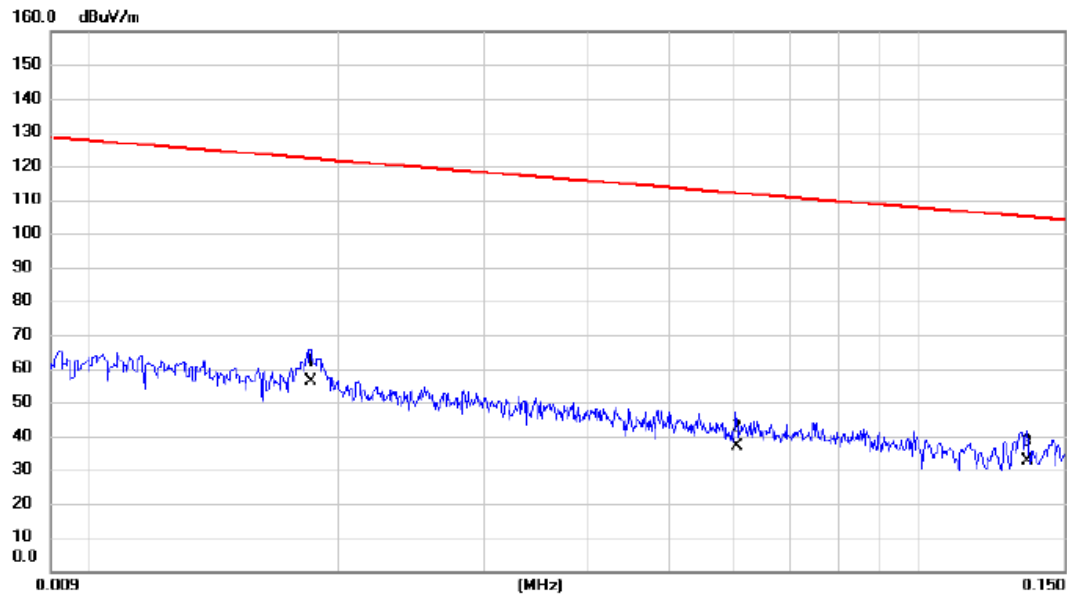




APPENDIX D - RADIATED SPURIOUS EMISSIONS (9KHZ TO 30MHZ)

Test Mode	TX Mode
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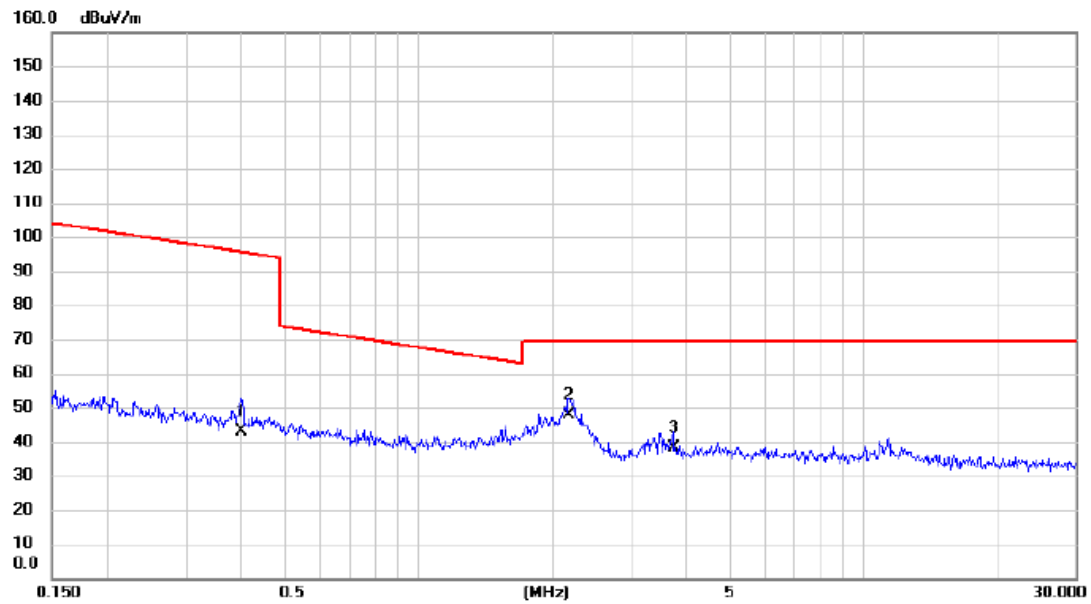
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	0.0185	42.58	13.68	56.26	122.26	-66.00	AVG		
2		0.0603	24.67	12.48	37.15	112.00	-74.85	AVG		
3		0.1352	19.95	12.73	32.68	104.99	-72.31	AVG		

Test Mode	TX Mode
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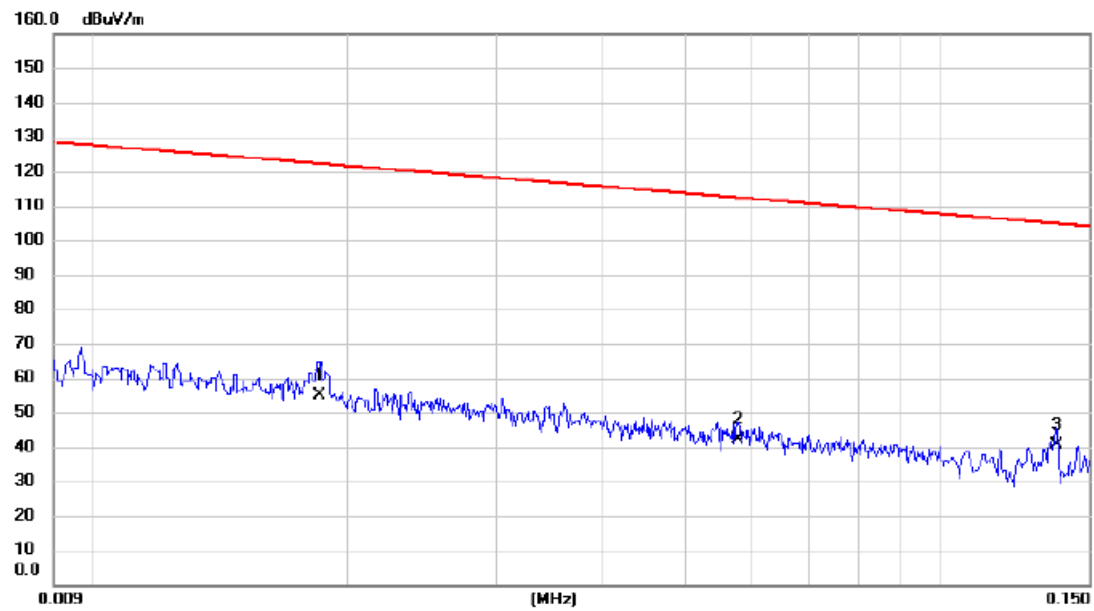
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		0.3997	30.75	12.26	43.01	95.57	-52.56	AVG		
2	*	2.1668	36.52	11.22	47.74	69.54	-21.80	QP		
3		3.7395	27.49	10.91	38.40	69.54	-31.14	QP		

Test Mode	TX Mode
-----------	---------

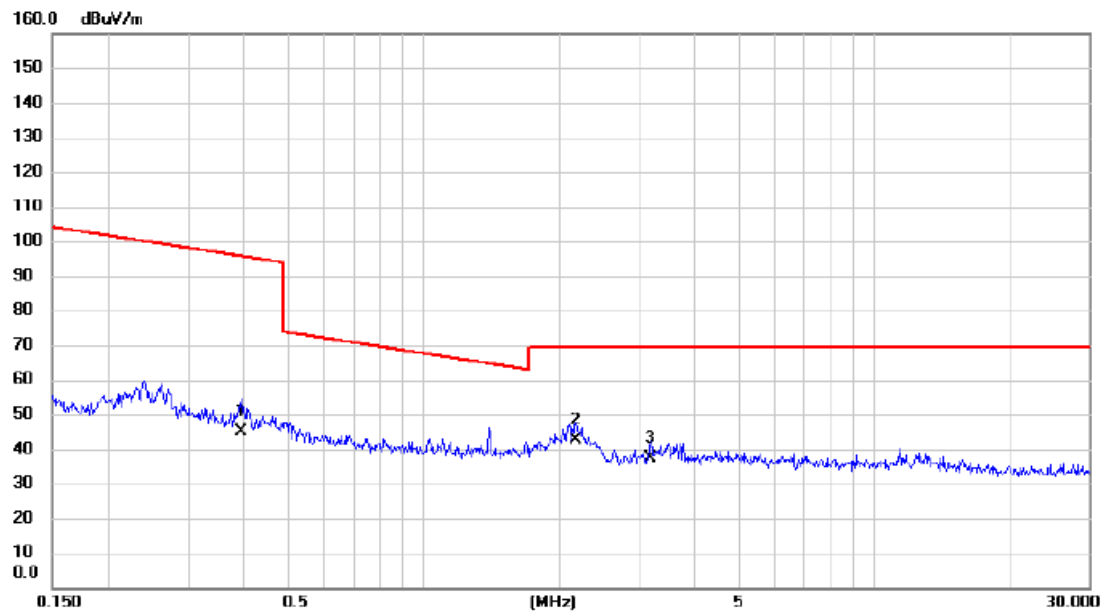
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		0.0185	41.28	13.68	54.96	122.26	-67.30	AVG		
2		0.0578	29.56	12.47	42.03	112.37	-70.34	AVG		
3	*	0.1371	27.84	12.73	40.57	104.87	-64.30	AVG		

Test Mode	TX Mode
-----------	---------

Ant 90°

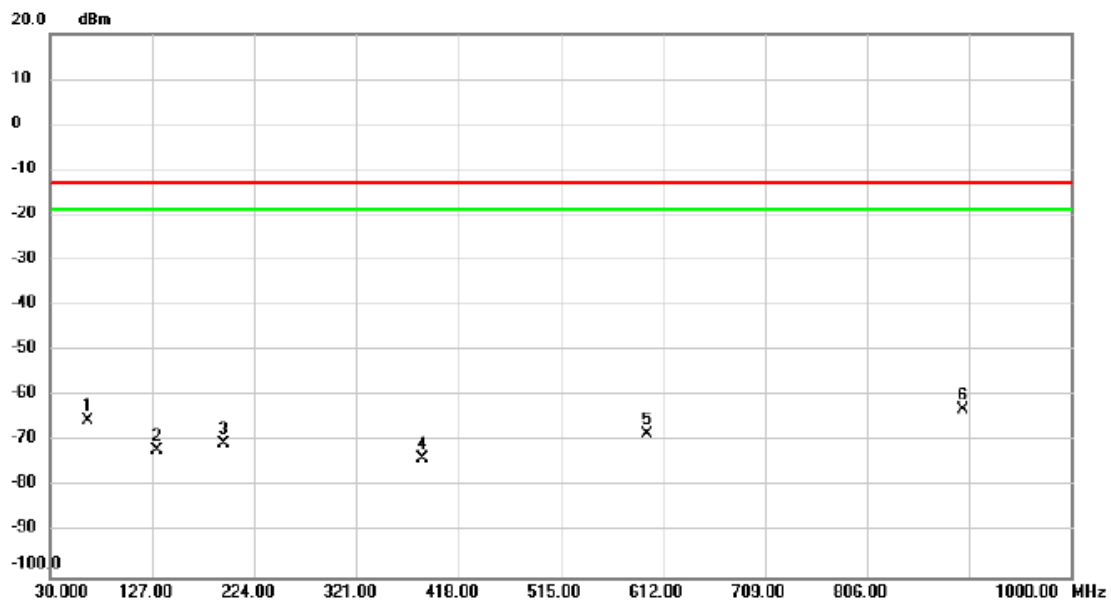


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		0.3933	32.59	12.28	44.87	95.71	-50.84	AVG		
2	*	2.1783	31.48	11.21	42.69	69.54	-26.85	QP		
3		3.1900	26.54	10.83	37.37	69.54	-32.17	QP		

APPENDIX E - RADIATED SPURIOUS EMISSIONS (30MHZ TO 1000MHZ)

Test Mode	WCDMA Band V_TX CH4182
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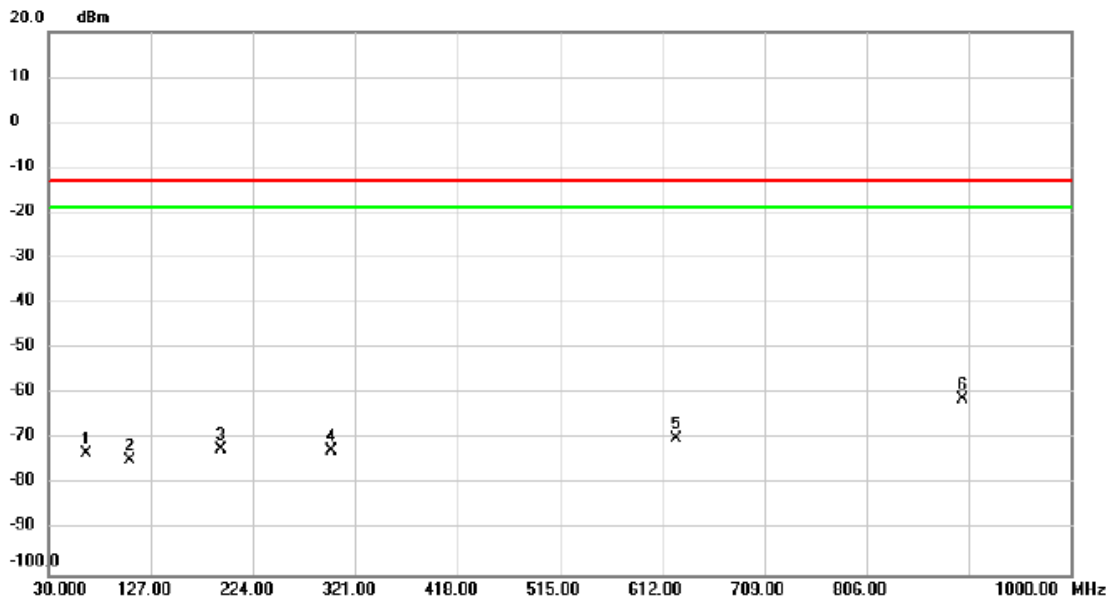
Vertical



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		64.920	-60.21	-5.26	-65.47	-13.00	-52.47	peak	
2		130.880	-68.74	-3.14	-71.88	-13.00	-58.88	peak	
3		194.900	-65.65	-4.85	-70.50	-13.00	-57.50	peak	
4		383.565	-74.09	0.20	-73.89	-13.00	-60.89	peak	
5		597.450	-72.57	4.16	-68.41	-13.00	-55.41	peak	
6	*	896.695	-71.46	8.40	-63.06	-13.00	-50.06	peak	

Test Mode	WCDMA Band V_TX CH4182
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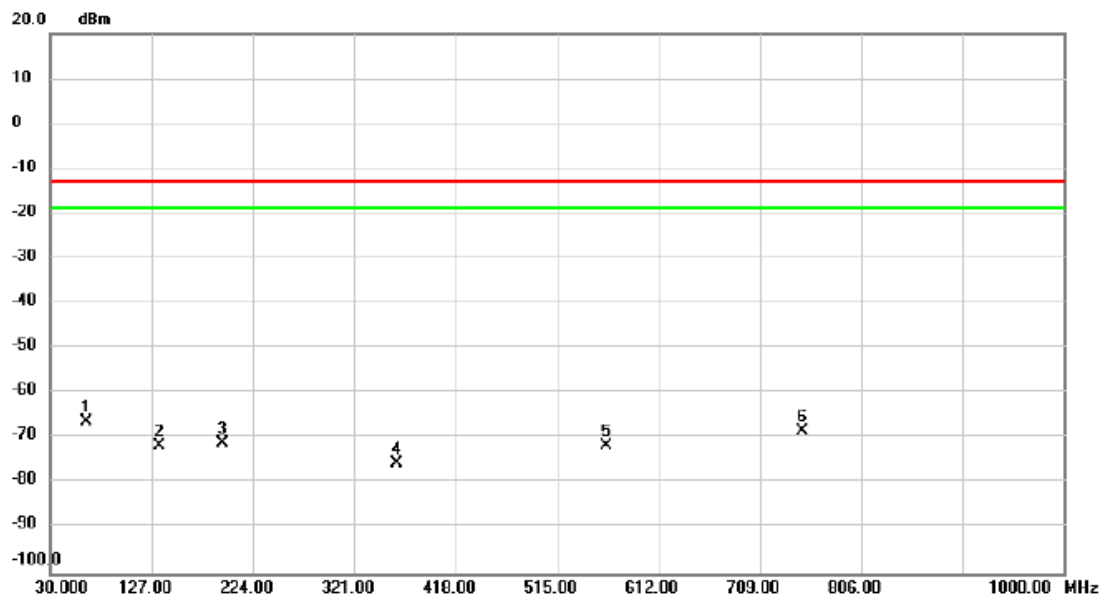
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		65.890	-67.84	-5.46	-73.30	-13.00	-60.30	peak	
2		106.630	-69.78	-4.87	-74.65	-13.00	-61.65	peak	
3		193.445	-67.44	-4.75	-72.19	-13.00	-59.19	peak	
4		298.690	-71.21	-1.47	-72.68	-13.00	-59.68	peak	
5		625.580	-74.51	4.79	-69.72	-13.00	-56.72	peak	
6	*	896.695	-69.42	8.40	-61.02	-13.00	-48.02	peak	

Test Mode	LTE Band 5_TX CH20525_1.4M
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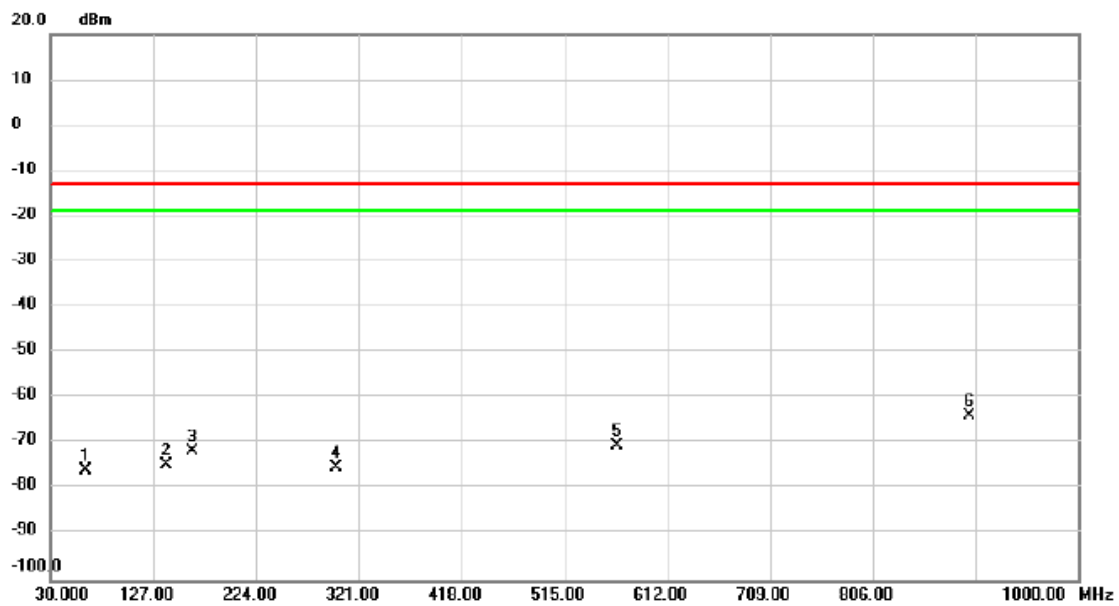
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1	*	63.950	-61.00	-5.20	-66.20	-13.00	-53.20	peak	
2		134.275	-68.49	-3.08	-71.57	-13.00	-58.57	peak	
3		195.385	-66.16	-4.89	-71.05	-13.00	-58.05	peak	
4		361.255	-75.13	-0.34	-75.47	-13.00	-62.47	peak	
5		562.530	-74.95	3.15	-71.80	-13.00	-58.80	peak	
6		749.255	-74.72	6.38	-68.34	-13.00	-55.34	peak	

Test Mode LTE Band 5_TX CH20525_1.4M

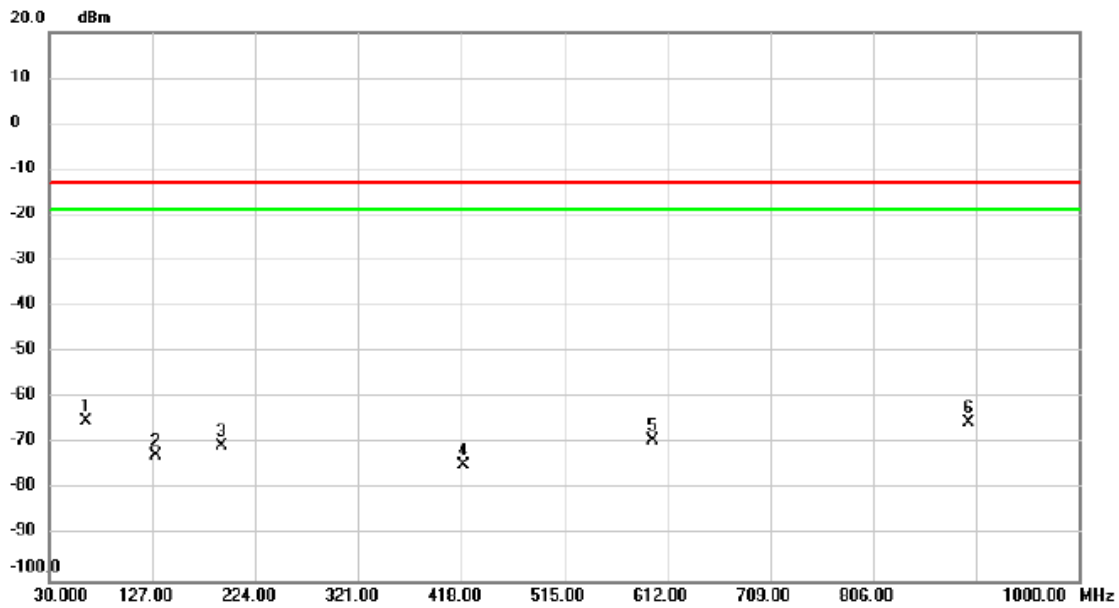
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1		62.980	-70.59	-5.13	-75.72	-13.00	-62.72	peak	
2		139.125	-71.80	-2.98	-74.78	-13.00	-61.78	peak	
3		163.860	-69.99	-1.63	-71.62	-13.00	-58.62	peak	
4		299.175	-73.91	-1.44	-75.35	-13.00	-62.35	peak	
5		564.955	-73.69	3.22	-70.47	-13.00	-57.47	peak	
6	*	896.695	-72.28	8.40	-63.88	-13.00	-50.88	peak	

Test Mode LTE Band 5_TX CH20525_5M

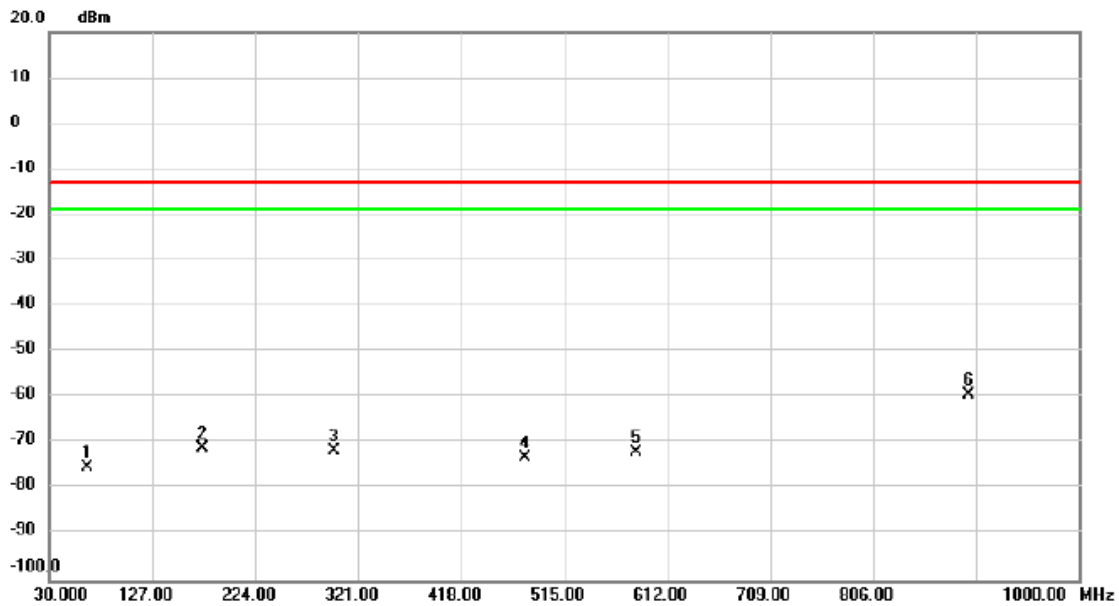
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	64.435	-59.96	-5.23	-65.19	-13.00	-52.19	peak	
2		129.910	-69.28	-3.16	-72.44	-13.00	-59.44	peak	
3		192.475	-65.72	-4.69	-70.41	-13.00	-57.41	peak	
4		419.940	-75.67	1.13	-74.54	-13.00	-61.54	peak	
5		597.935	-73.56	4.18	-69.38	-13.00	-56.38	peak	
6		896.210	-73.69	8.39	-65.30	-13.00	-52.30	peak	

Test Mode	LTE Band 5_TX CH20525_5M
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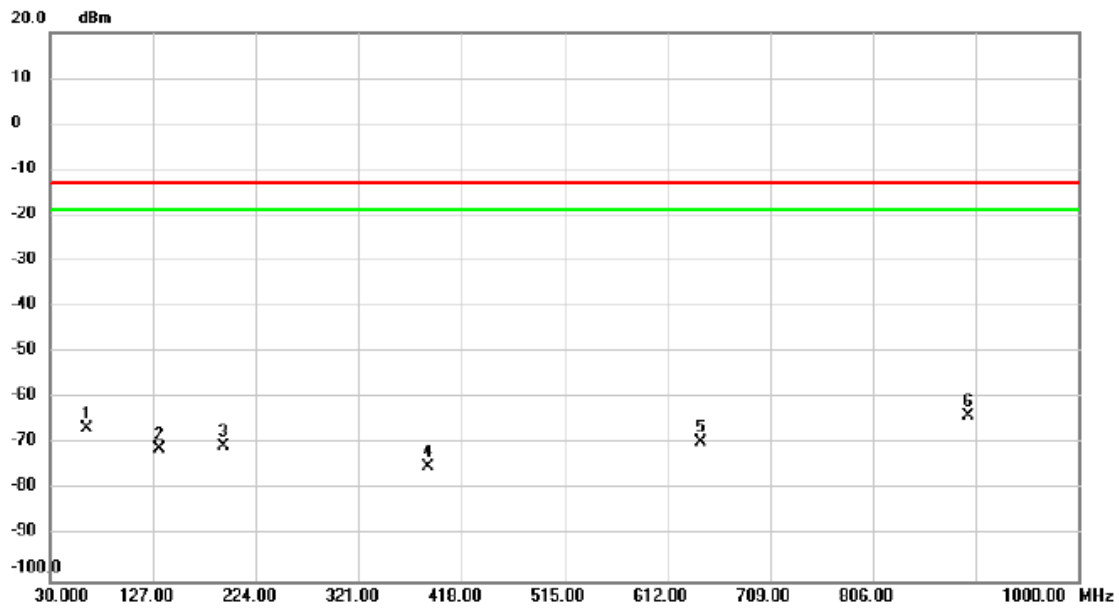
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		65.890	-69.74	-5.46	-75.20	-13.00	-62.20	peak	
2		173.560	-68.39	-2.74	-71.13	-13.00	-58.13	peak	
3		298.205	-70.24	-1.50	-71.74	-13.00	-58.74	peak	
4		478.625	-75.19	2.16	-73.03	-13.00	-60.03	peak	
5		582.900	-75.67	3.75	-71.92	-13.00	-58.92	peak	
6	*	896.210	-67.79	8.39	-59.40	-13.00	-46.40	peak	

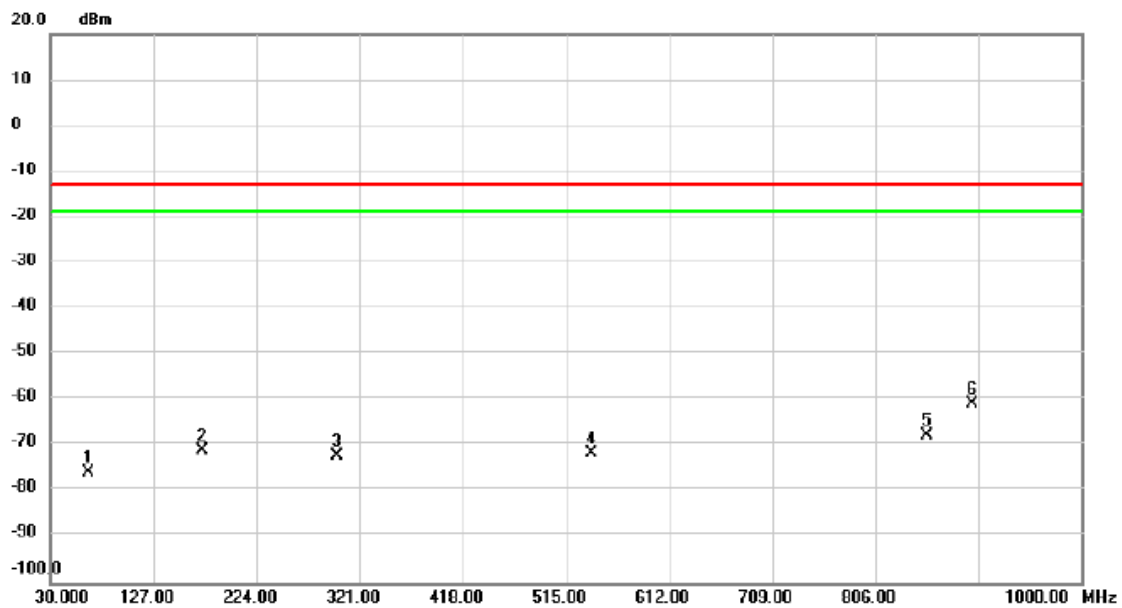
Test Mode LTE Band 5_TX CH20525_10M

Vertical



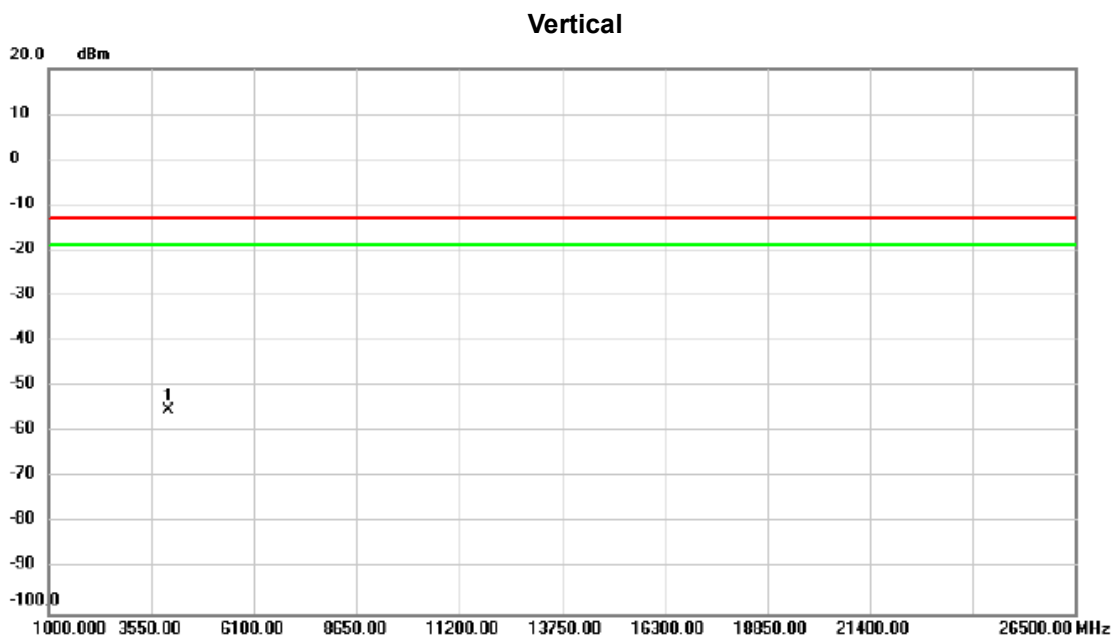
Test Mode	LTE Band 5_TX CH20525_10M
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Horizontal



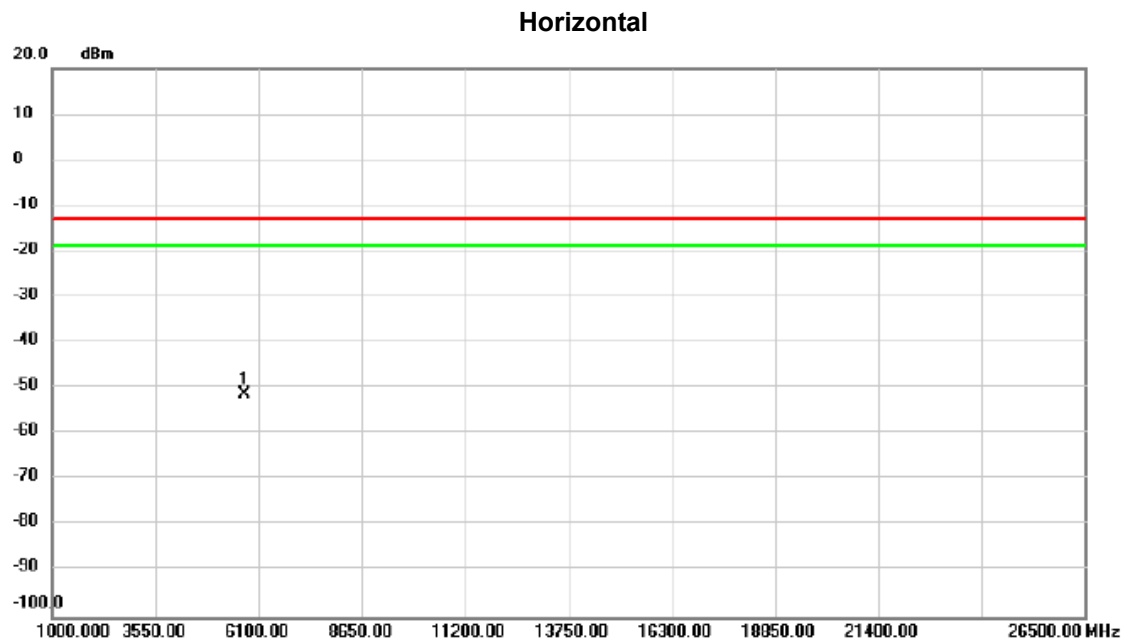
APPENDIX F - RADIATED SPURIOUS EMISSIONS (ABOVE 1000MHZ)

Test Mode	WCDMA Band V_TX CH4182
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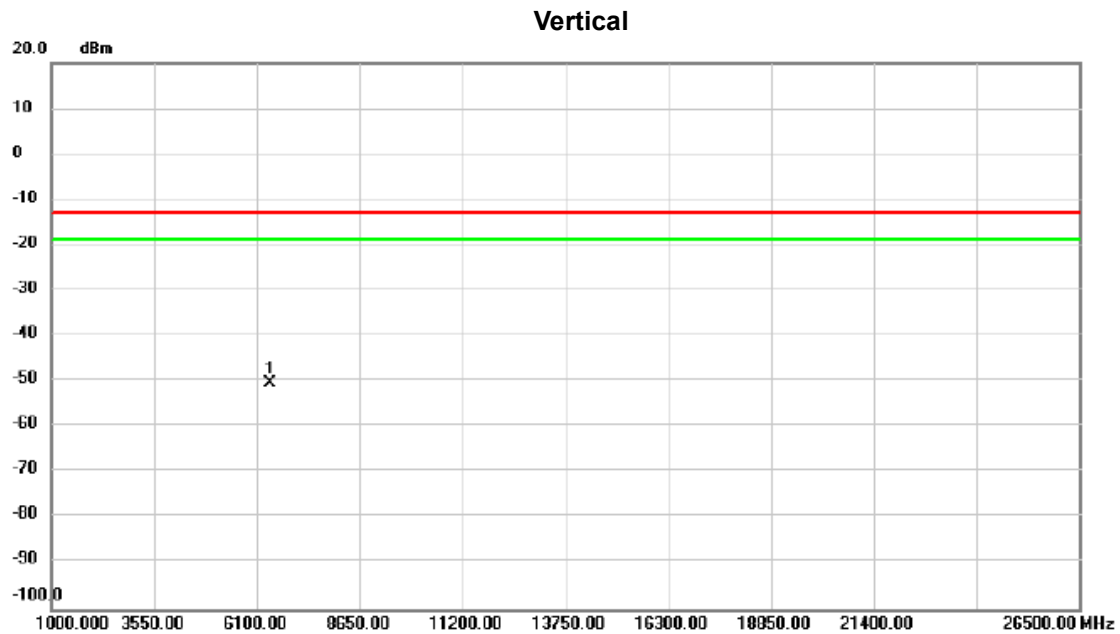
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	3970.750	-69.94	14.67	-55.27	-13.00	-42.27	peak	

Test Mode	WCDMA Band V_TX CH4182
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No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1	*	5755.750	-69.66	18.56	-51.10	-13.00	-38.10	peak	

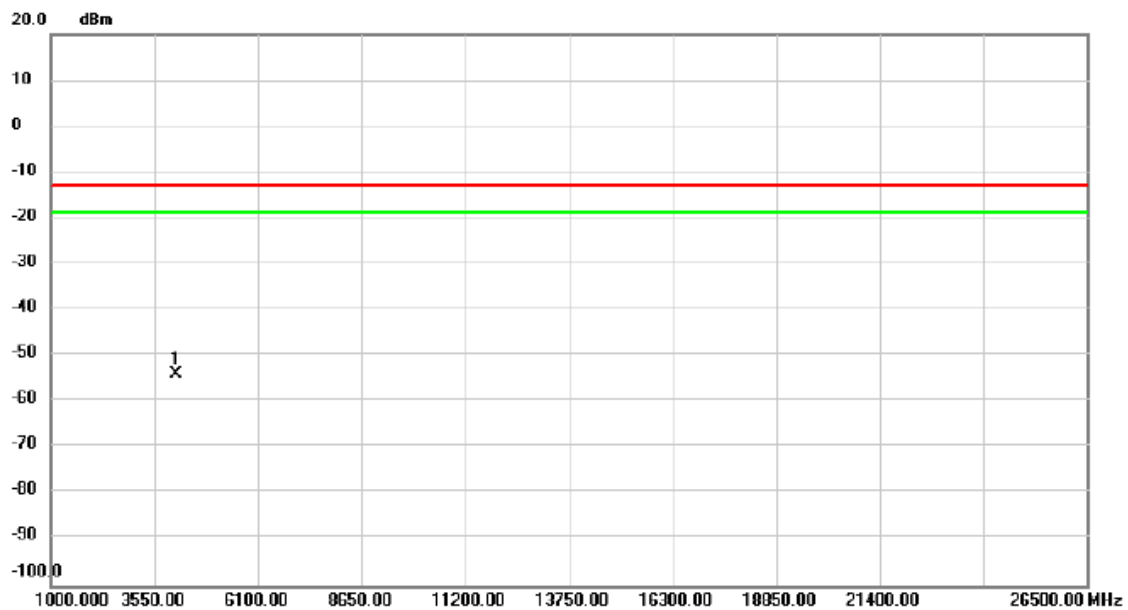
Test Mode	LTE Band 5_TX CH20525_1.4M
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	6431.500	-69.78	19.51	-50.27	-13.00	-37.27	peak	

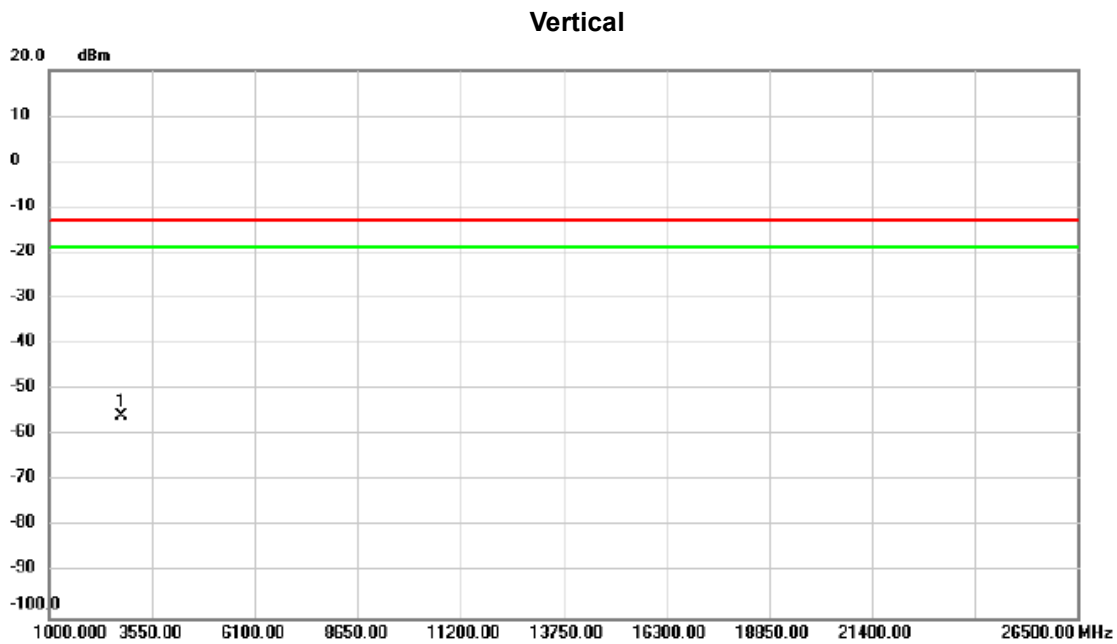
Test Mode LTE Band 5_TX CH20525_1.4M

Horizontal



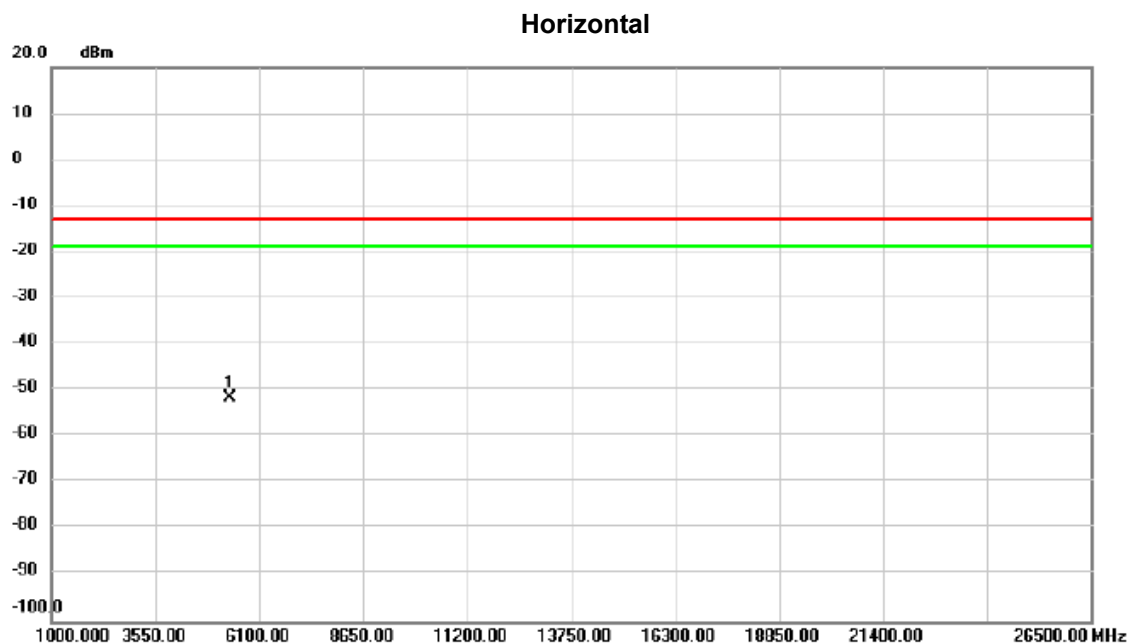
No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1 *	4072.750	-68.89	14.85	-54.04	-13.00	-41.04	peak	

Test Mode	LTE Band 5_TX CH20525_5M
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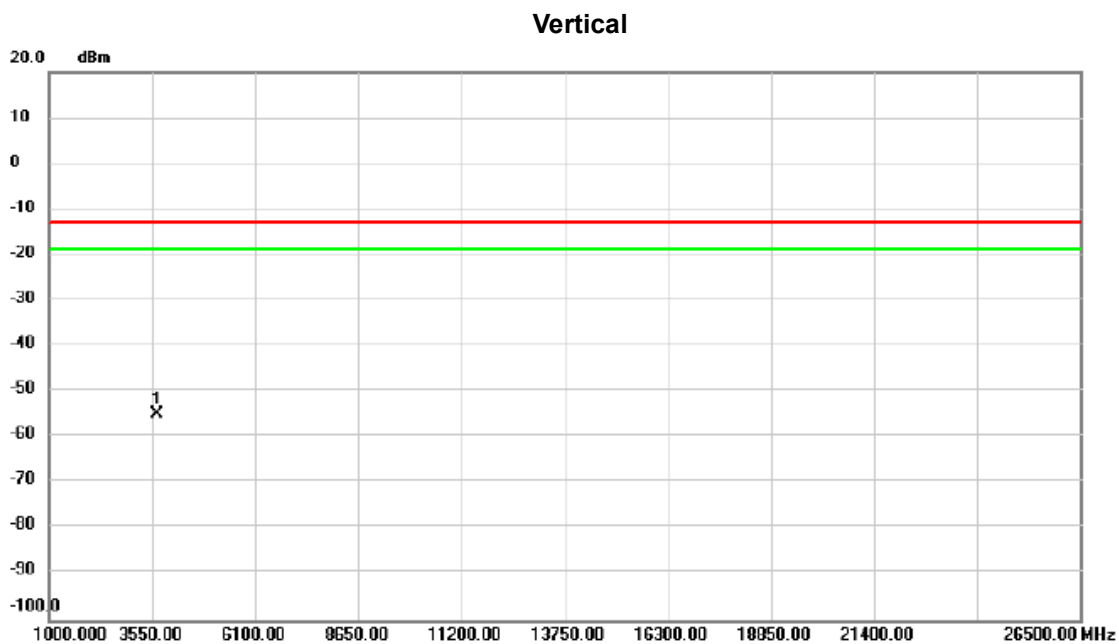
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	2797.750	-66.83	11.22	-55.61	-13.00	-42.61	peak	

Test Mode	LTE Band 5_TX CH20525_5M
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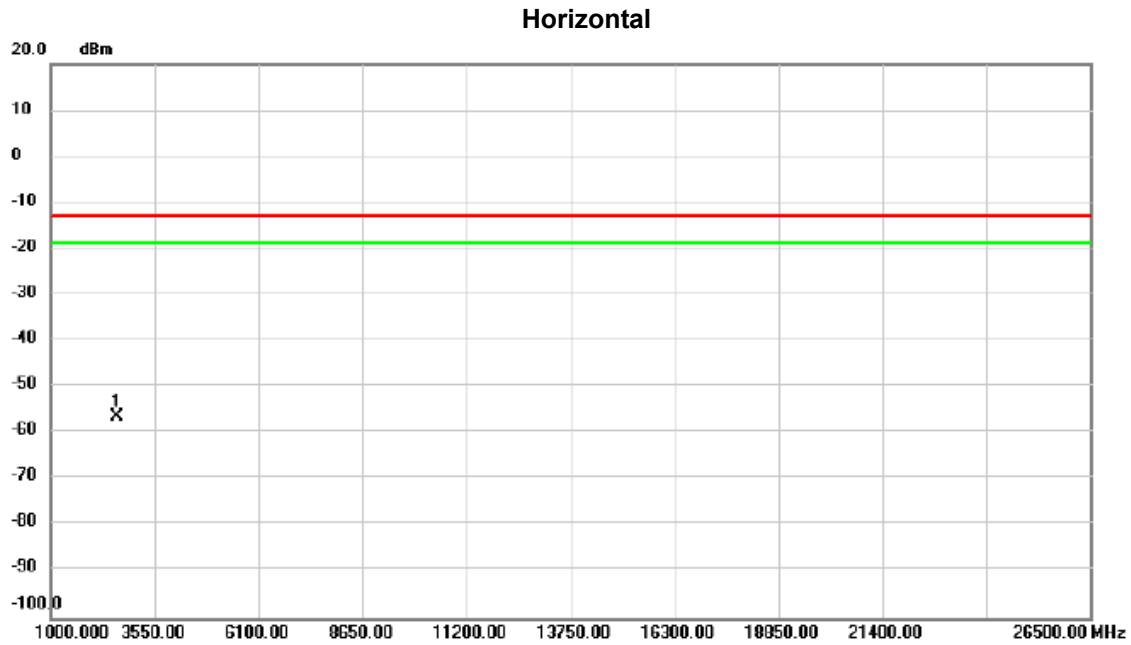
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	5373.250	-69.74	18.26	-51.48	-13.00	-38.48	peak	

Test Mode	LTE Band 5_TX CH20525_10M
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No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1	*	3652.000	-68.56	13.71	-54.85	-13.00	-41.85	peak	

Test Mode	LTE Band 5_TX CH20525_10M
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	2606.500	-66.82	10.55	-56.27	-13.00	-43.27	peak	

APPENDIX G - BAND EDGE

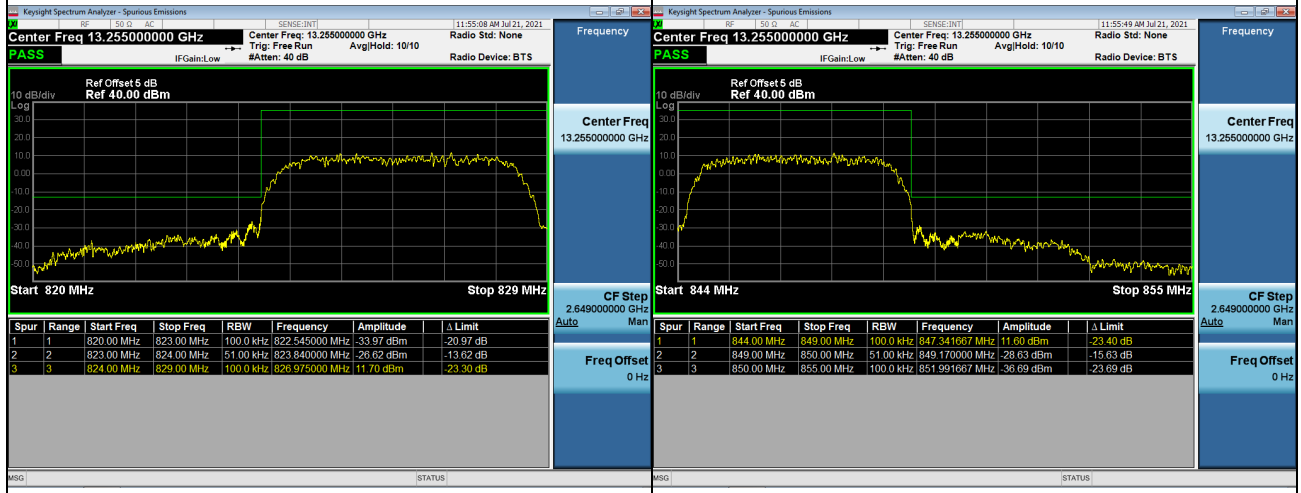
WCDMA Band V_WCDMA Spectrum Plot

Channel

4132

Channel

4233



LTE Band 5_1.4M Spectrum Plot

1RB#0

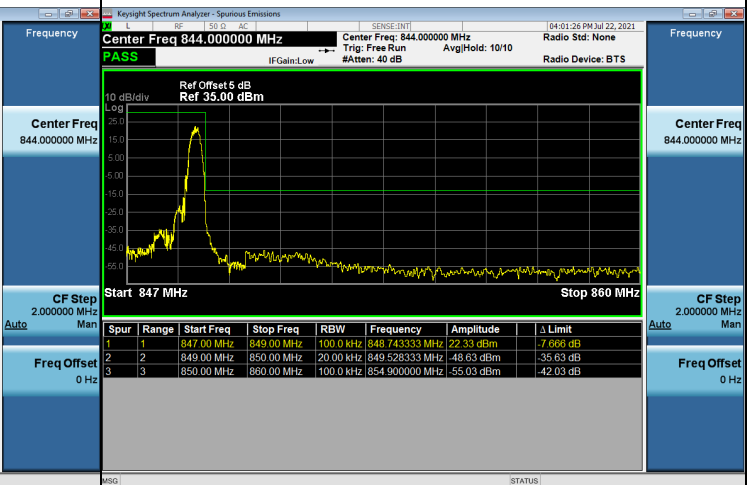
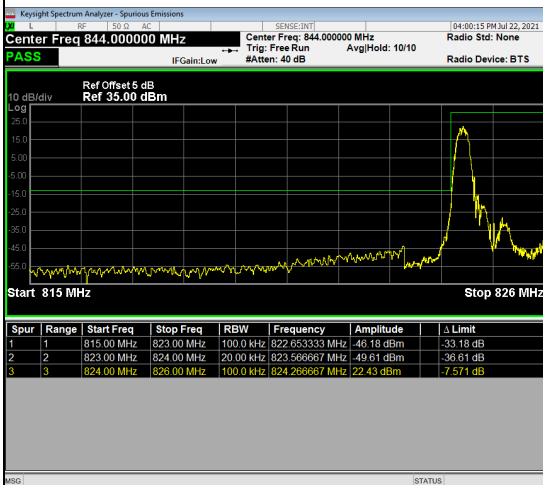
1RB#5

Channel

20407

Channel

20643



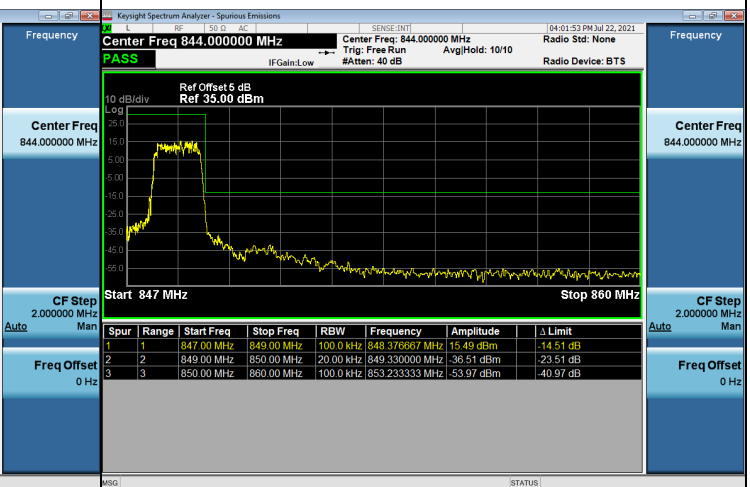
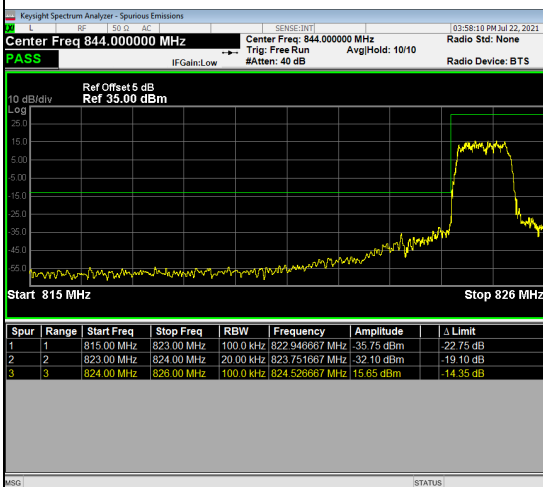
6RB#0

Channel

20407

Channel

20643



LTE Band 5_3M Spectrum Plot

1RB#0

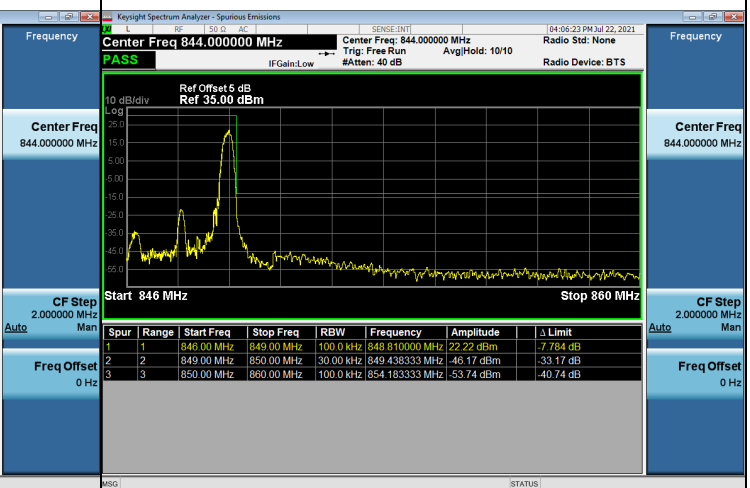
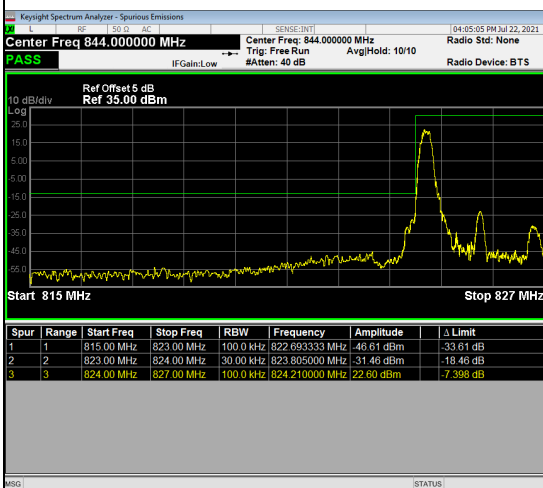
1RB#14

Channel

20415

Channel

20635



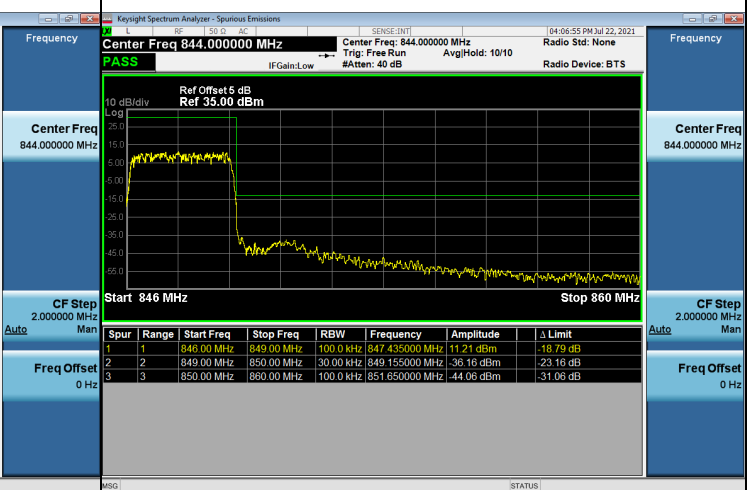
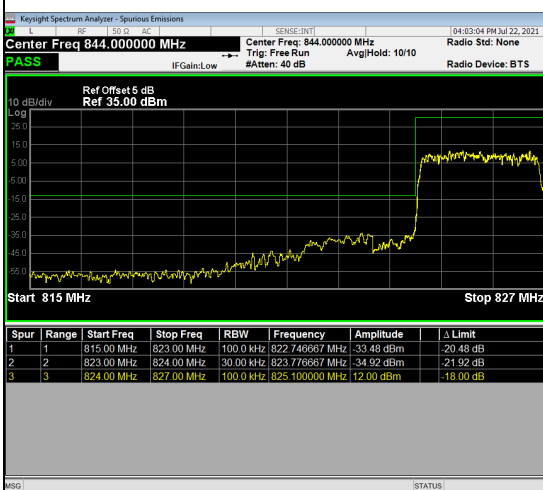
15RB#0

Channel

20415

Channel

20635



LTE Band 5_5M Spectrum Plot

1RB#0

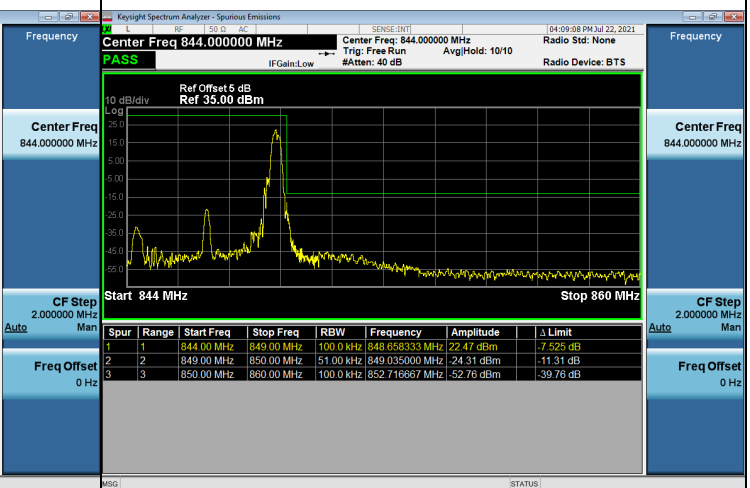
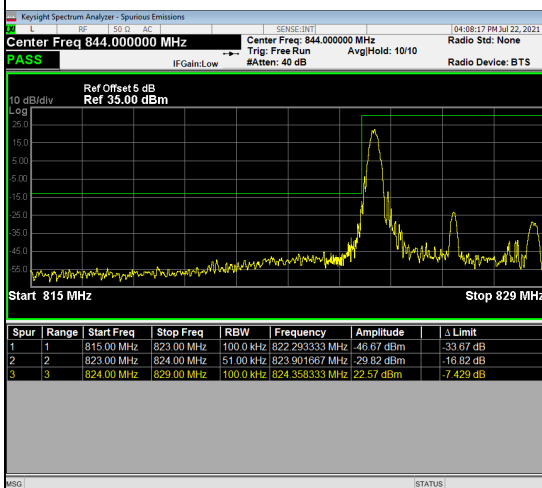
1RB#24

Channel

20425

Channel

20625



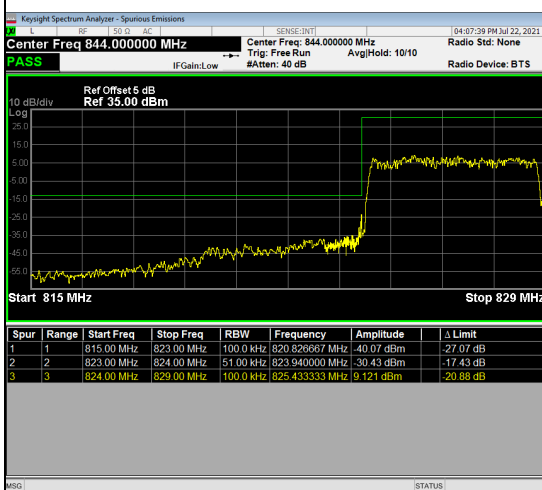
25RB#0

Channel

20425

Channel

20625



LTE Band 5_10M Spectrum Plot

1RB#0

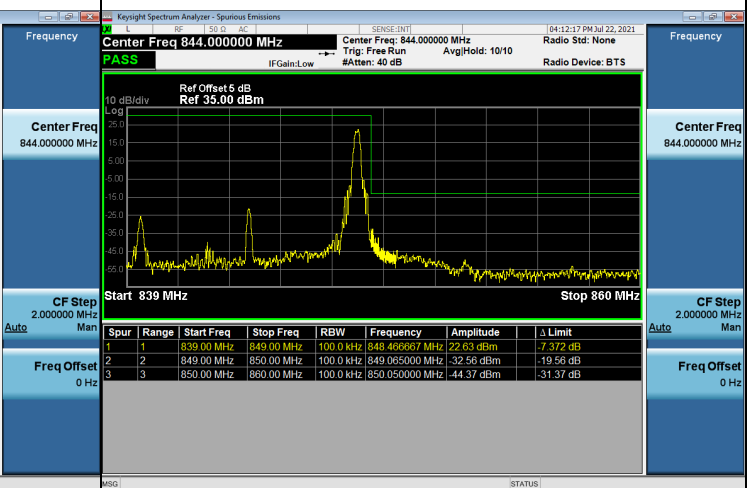
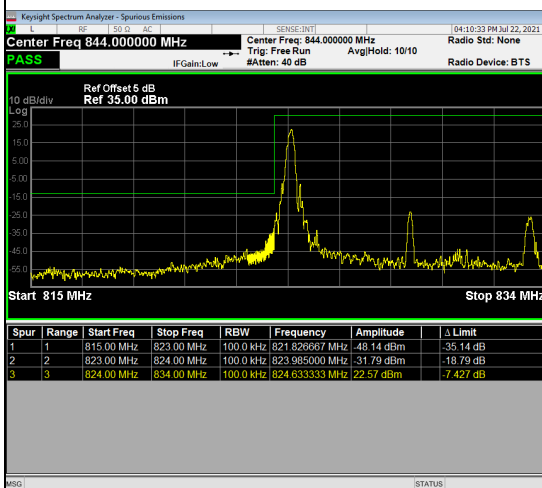
1RB#49

Channel

20450

Channel

20600



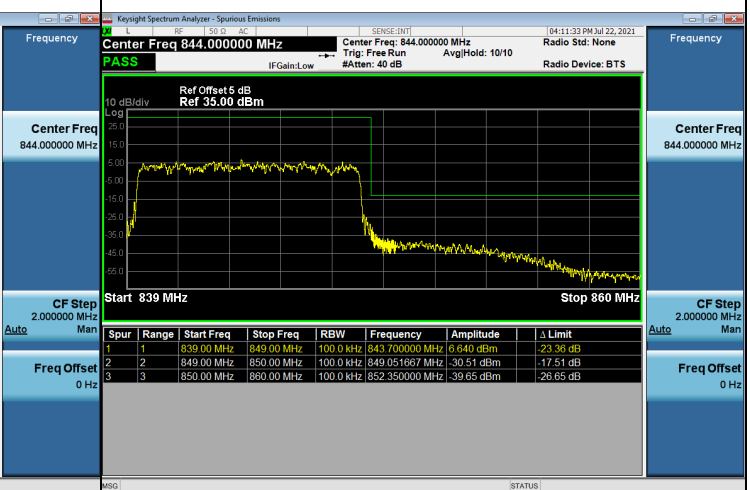
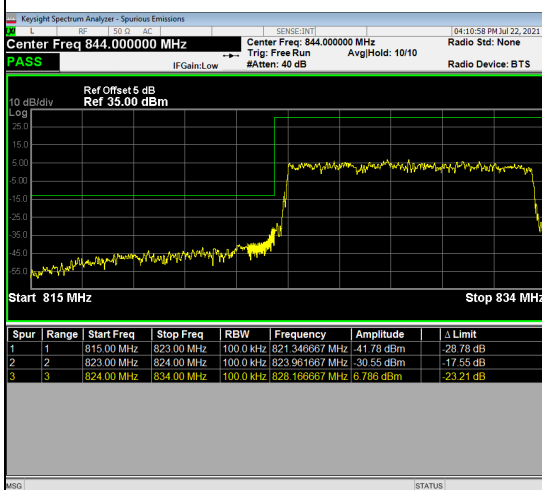
50RB#0

Channel

20450

Channel

20600

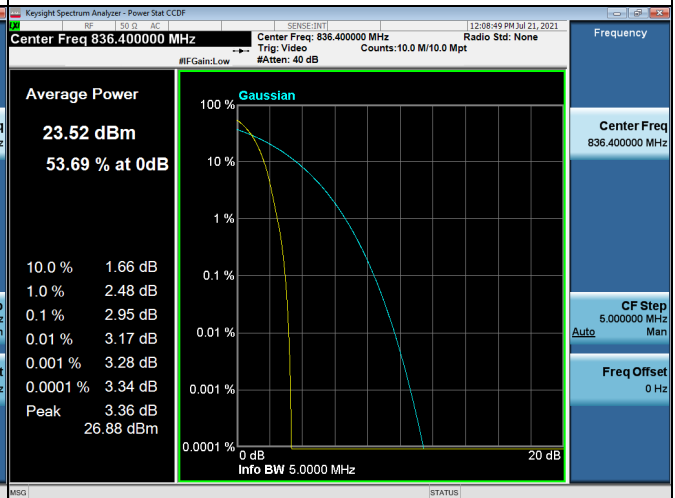
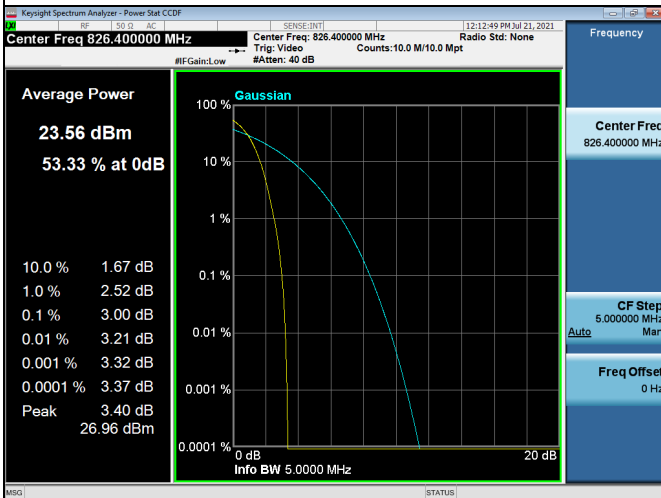


APPENDIX H - PEAK TO AVERAGE RATIO

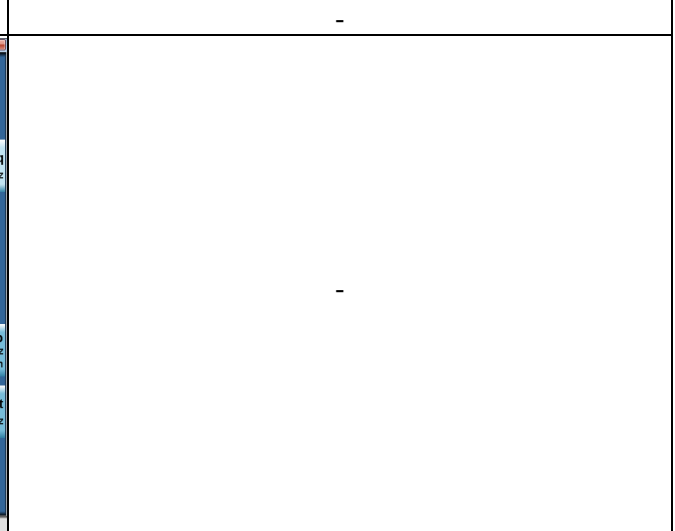
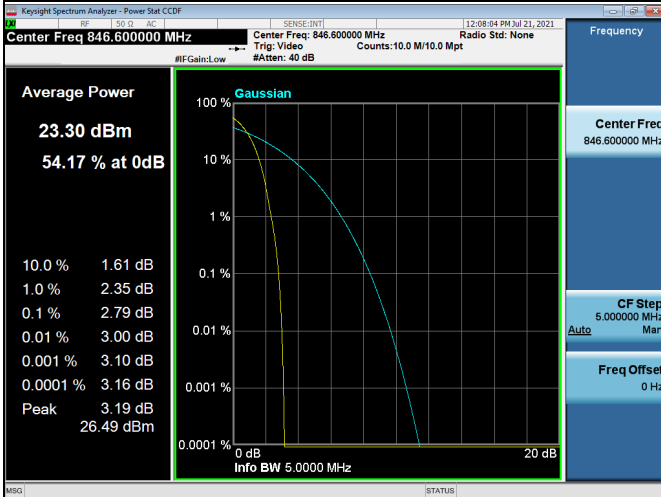
WCDMA Band V_WCDMA Spectrum Plot

4132

4182

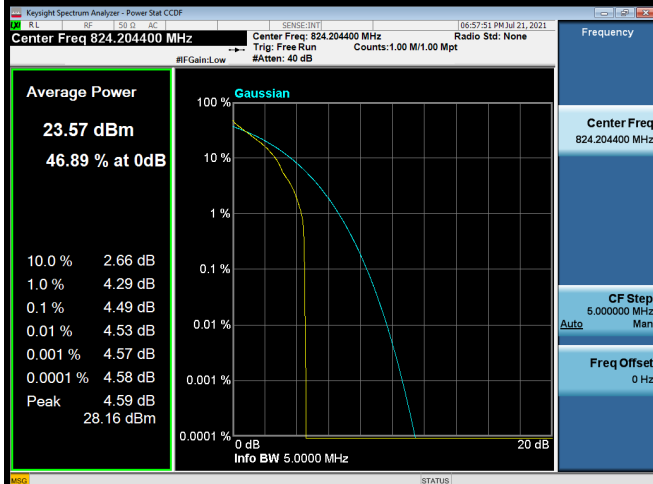


4233

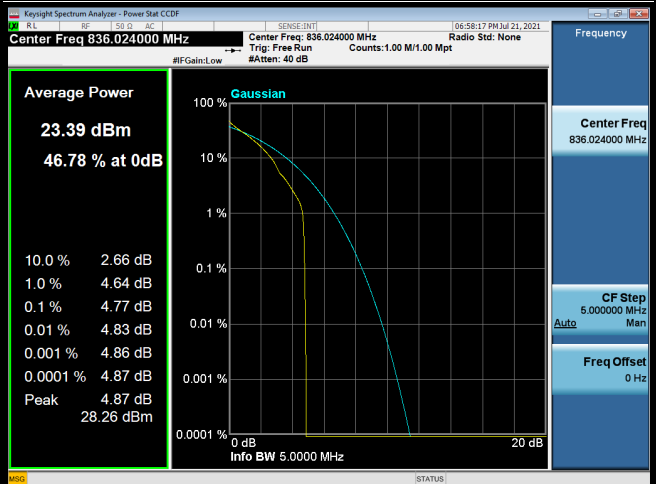


LTE Band 5_1.4M Spectrum Plot

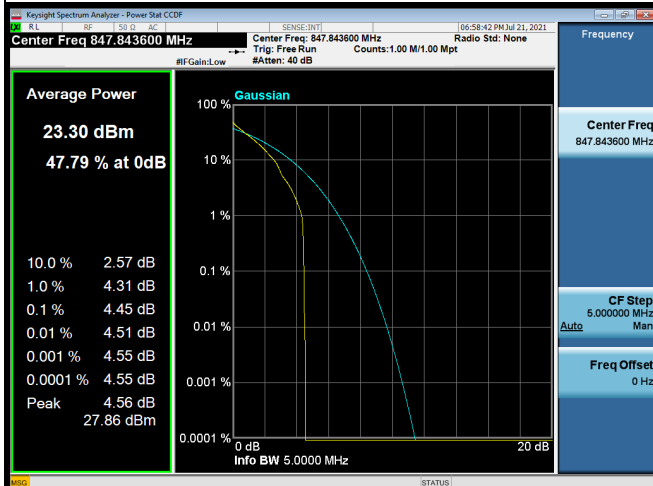
QPSK-20407



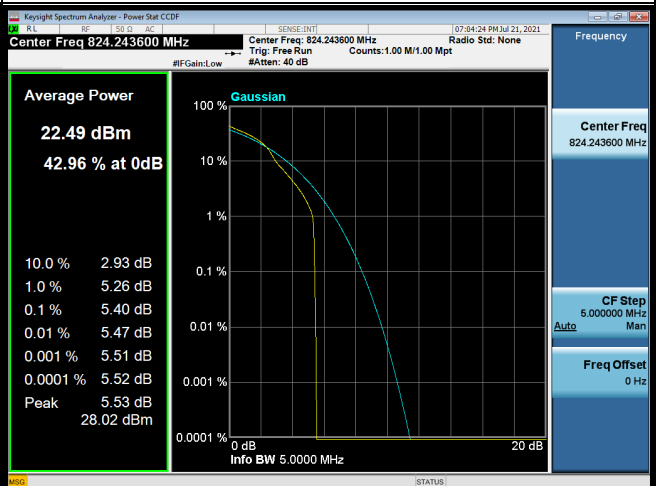
QPSK-20525



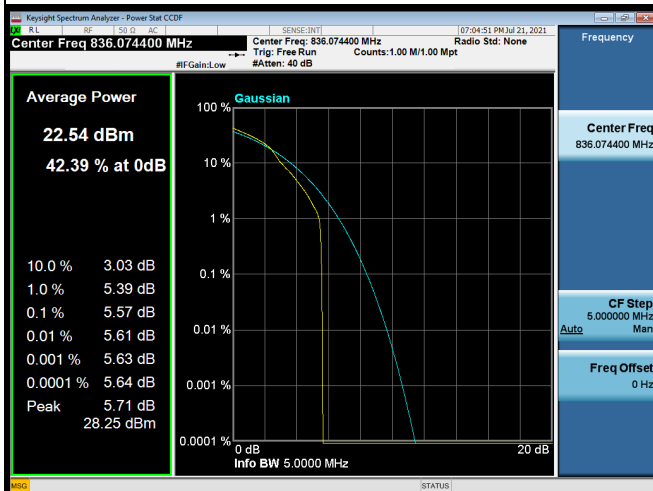
QPSK-20643



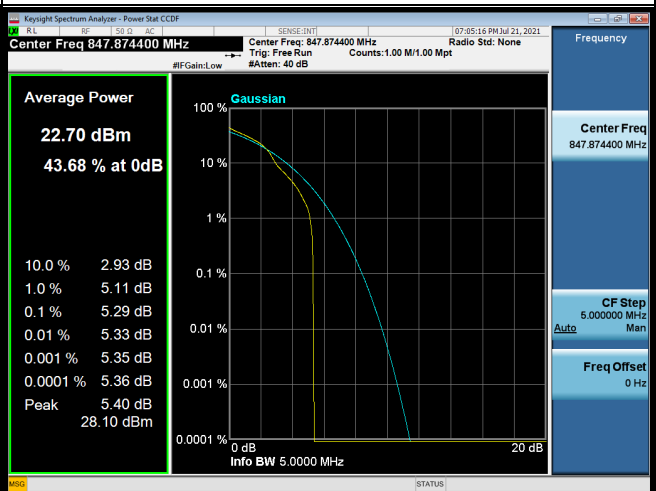
16QAM-20407



16QAM-20525

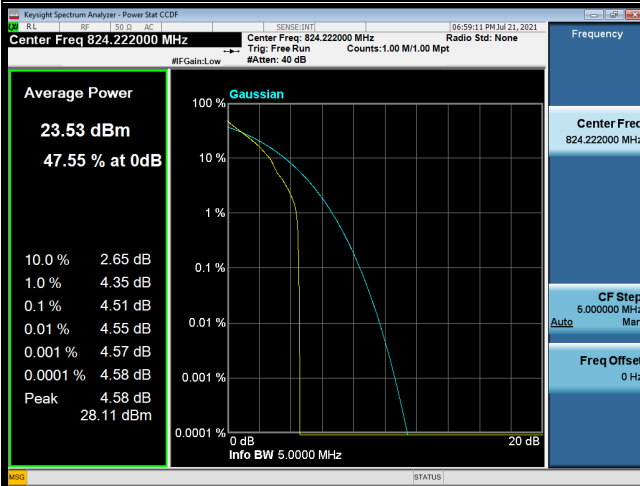


16QAM-20643

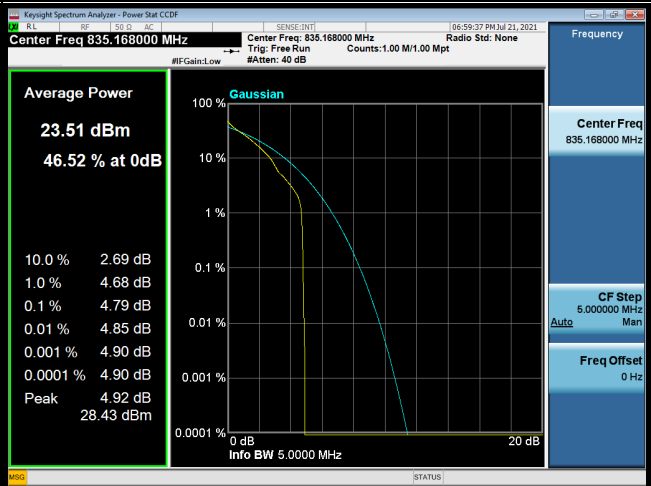


LTE Band 5_3M Spectrum Plot

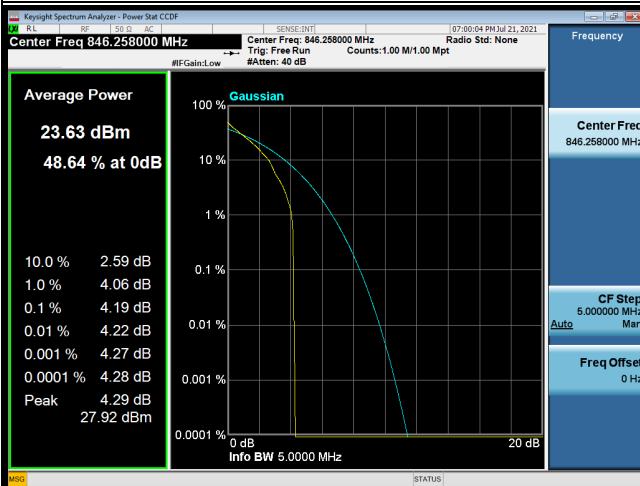
QPSK-20415



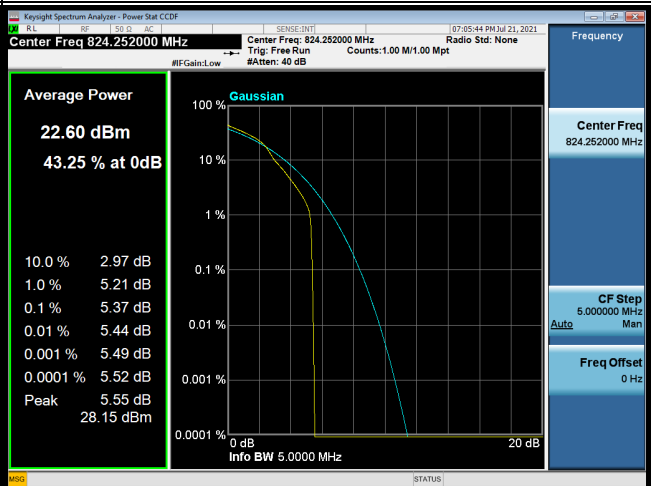
QPSK-20525



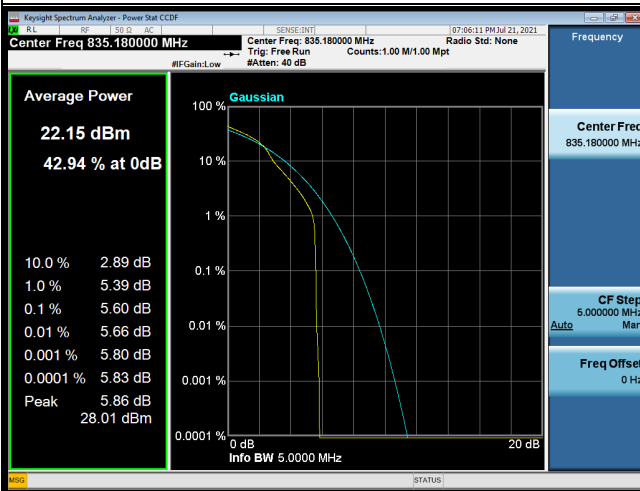
QPSK-20635



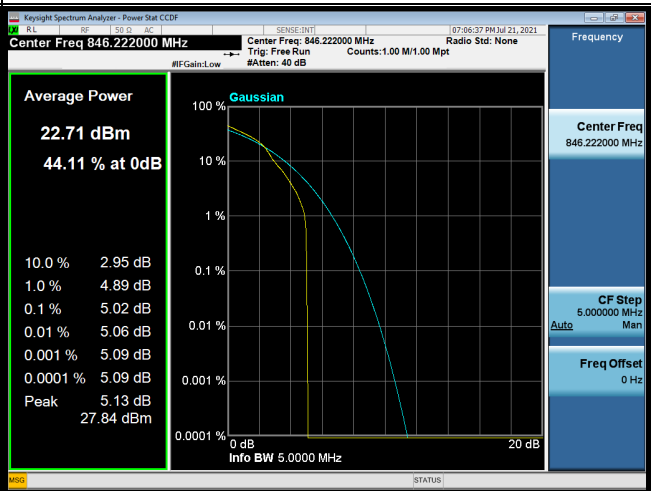
16QAM-20415



16QAM-20525

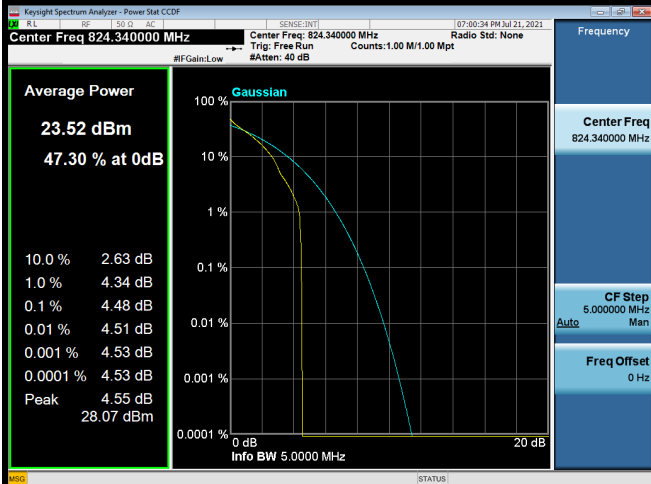


16QAM-20635

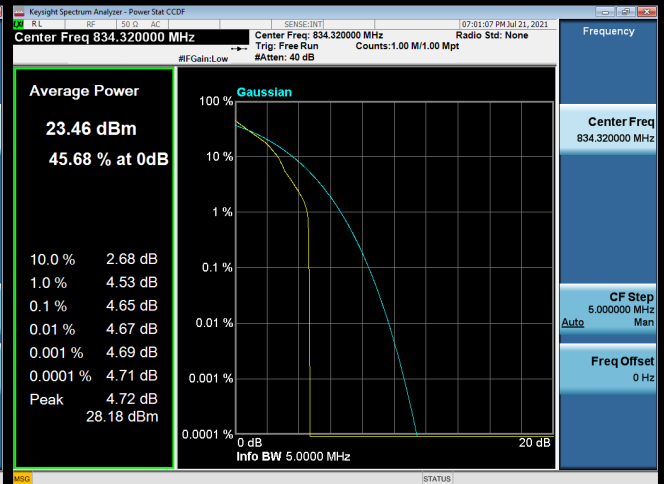


LTE Band 5_5M Spectrum Plot

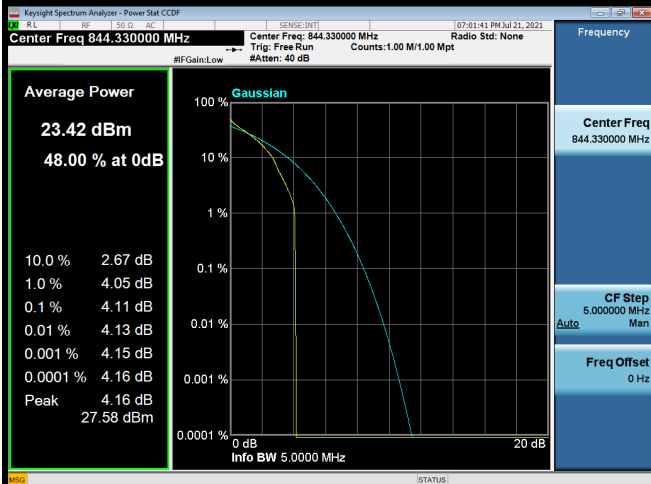
QPSK-20425



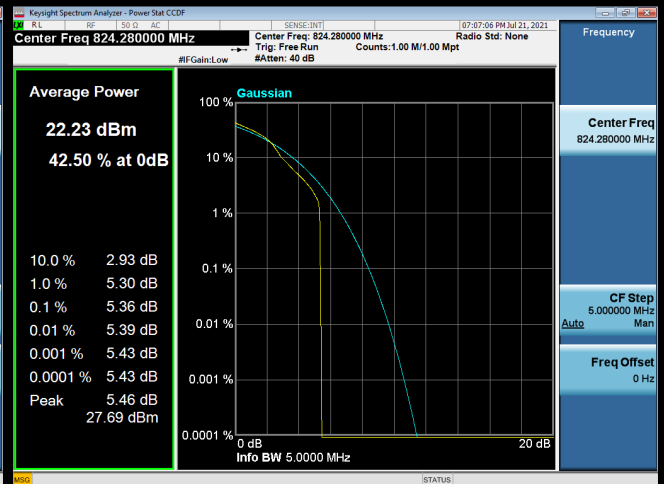
QPSK-20525



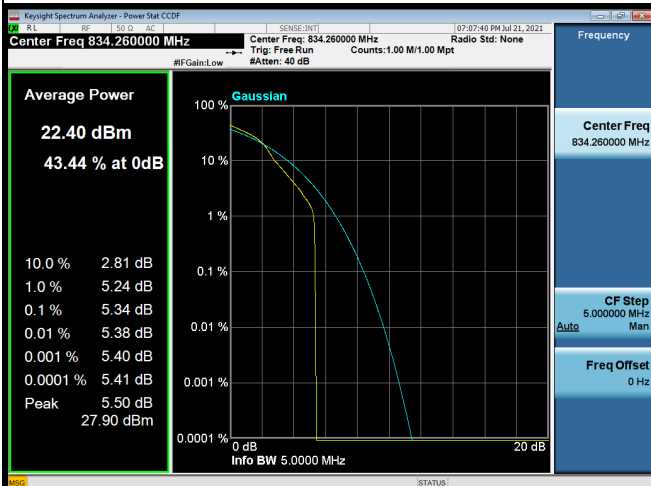
QPSK-20625



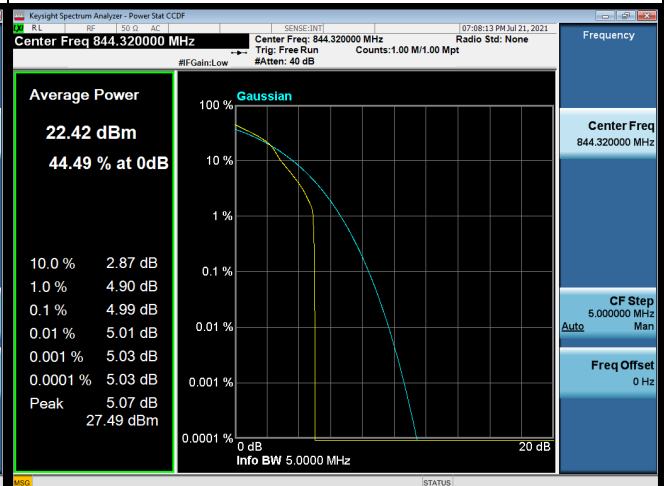
16QAM-20425



16QAM-20525

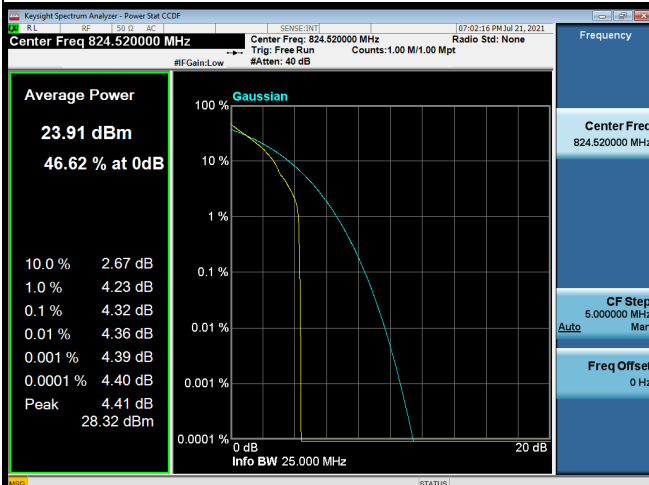


16QAM-20625

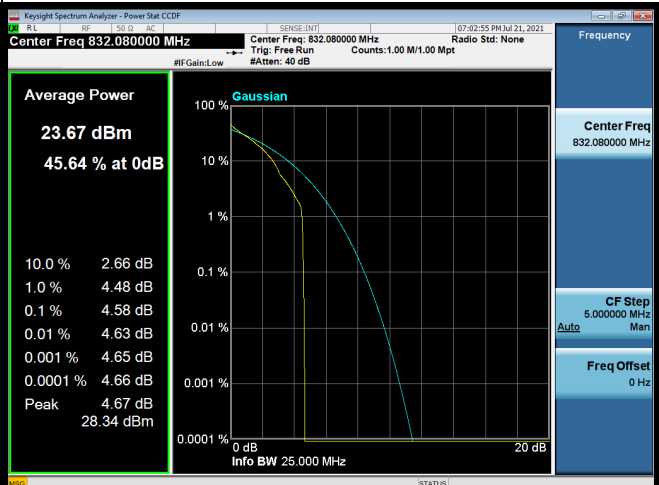


LTE Band 5_10M Spectrum Plot

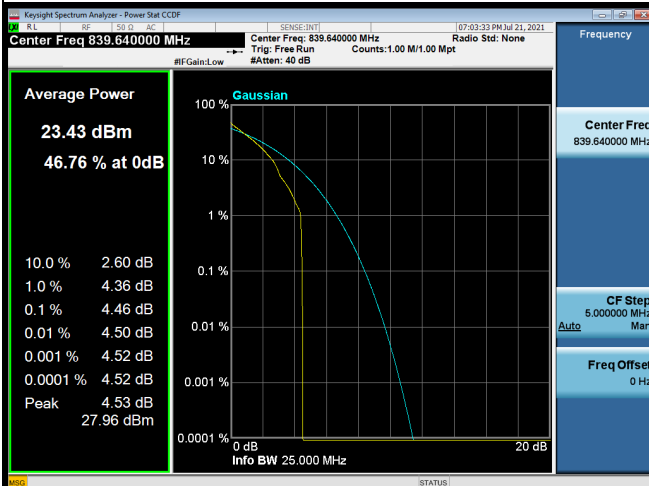
QPSK-20450



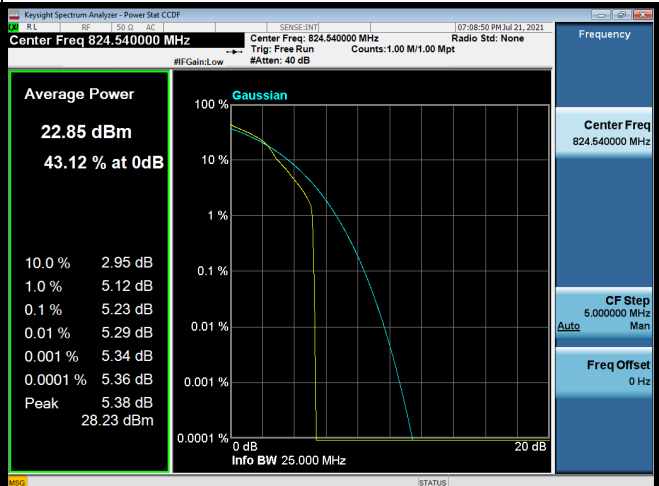
QPSK-20525



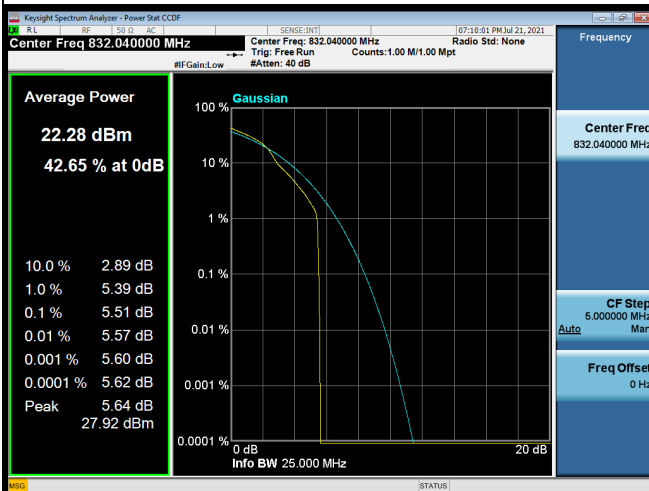
QPSK-20600



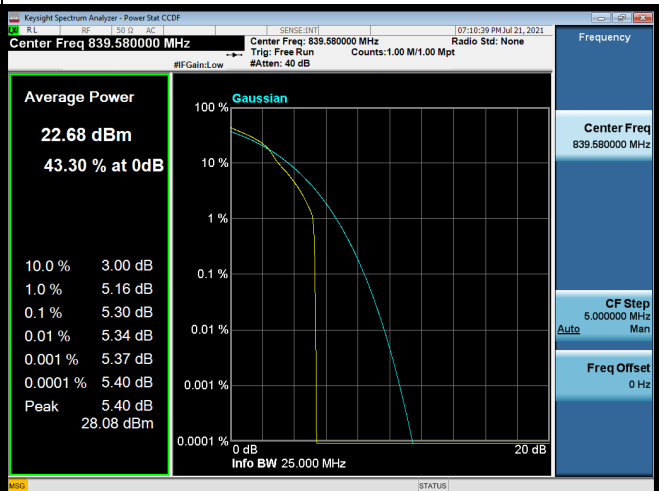
16QAM-20450



16QAM-20525



16QAM-20600



APPENDIX I - FREQUENCY STABILITY

Test Mode	WCDMA Band V_CH4182
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Temperature vs. Frequency Stability

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	7.39	0.008835485	± 2.5
-20	6.26	0.007484457	
-10	2.15	0.00257054	
0	4.05	0.004842181	
10	8.24	0.009851746	
20	0.37	0.000442372	
30	1.15	0.00137494	
40	4.44	0.005308465	
50	5.01	0.005989957	
Max. Deviation (ppm)	7.51	0.009851746	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
138	0.97	0.001159732	± 2.5
120	6.83	0.008165949	
102	2.86	0.003419417	
Max. Deviation (ppm)	6.83	0.008165949	

Test Mode	LTE Band 5_CH20525_1.4M
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Temperature vs. Frequency Stability

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	5.26	0.006288105	± 2.5
-20	-7.33	-0.008762702	
-10	-4.76	-0.005690377	
0	-3.16	-0.003777645	
10	-5.19	-0.006204423	
20	5.96	0.007124925	
30	6.73	0.008045427	
40	6.86	0.008200837	
50	-0.58	-0.000693365	
Max. Deviation (ppm)	-7.33	-0.008762702	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
138	1.70	0.002032277	± 2.5
120	-5.13	-0.006132696	
102	5.12	0.006120741	
Max. Deviation (ppm)	-5.13	-0.006132696	

Test Mode	LTE Band 5_CH20525_3M
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Temperature vs. Frequency Stability

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	8.15	0.009742977	± 2.5
-20	-4.72	-0.005642558	
-10	-6.15	-0.007352062	
0	6.12	0.007316198	
10	7.16	0.008559474	
20	5.78	0.006909743	
30	-4.80	-0.005738195	
40	6.28	0.007507472	
50	-6.05	-0.007232516	
Max. Deviation (ppm)	8.15	0.009742977	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
138	5.01	0.005989241	± 2.5
120	3.35	0.004004782	
102	3.37	0.004028691	
Max. Deviation (ppm)	5.01	0.005989241	

Test Mode	LTE Band 5_CH20525_5M
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Temperature vs. Frequency Stability

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	4.66	0.005570831	±2.5
-20	7.28	0.008702929	
-10	-1.18	-0.00141064	
0	-7.39	-0.008834429	
10	2.41	0.002881052	
20	1.46	0.001745368	
30	-2.66	-0.003179916	
40	6.49	0.007758518	
50	7.12	0.008511656	
Max. Deviation (ppm)	-7.39	-0.008834429	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
138	0.60	0.000717274	±2.5
120	-2.16	-0.002582188	
102	-5.72	-0.006838016	
Max. Deviation (ppm)	-5.72	-0.006838016	

Test Mode	LTE Band 5_CH20525_10M
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Temperature vs. Frequency Stability

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	1.57	0.001876868	±2.5
-20	2.62	0.003132098	
-10	7.63	0.009121339	
0	-2.19	-0.002618051	
10	7.75	0.009264794	
20	-3.04	-0.00363419	
30	-5.02	-0.006001195	
40	-5.06	-0.006049014	
50	-1.01	-0.001207412	
Max. Deviation (ppm)	7.75	0.009264794	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
138	-5.06	-0.006049014	±2.5
120	3.49	0.004172146	
102	1.79	0.002139868	
Max. Deviation (ppm)	-5.06	-0.006049014	

End of Test Report