FCC Radio Test Report

FCC ID: KA2WR920VA1-1

This report concerns: Original Grant

Project No.	: 1901H008A
Equipment	: CPE
Test Model	: DWR-920V
Series Model	: N/A
Applicant	: D-Link Corporation
Address	: No.289, Xinhu 3rd Rd., Neihu District, Taipei 11494, Taiwan

Date of Receipt	: Mar. 19, 2019
Date of Test	: Mar. 19, 2019~Apr. 18, 2019
Issued Date	: May. 05, 2019
Tested by	: BTL Inc.

Testing Engineer : Thomas Yu
(Thomas Yu)

Technical Manager : Krain. Wu
(Krain Wu)

Authorized Signatory : James Chiu
(James Chiu)

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Certificate # 5123.03

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 are not use in determining the Pass/Fail results.

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	May. 05, 2019

11.GENERAL SUMMARY

Equipment	:	CPE
Brand Name	:	D-Link
Test Model	:	DWR-920V
Series Model	:	N/A
Applicant	:	D-Link Corporation
Manufacturer	:	D-Link Corporation
Address	:	No.289, Xinhu 3rd Rd., Neihu District, Taipei 11494, Taiwan
Date of Test	:	Mar. 19, 2019~Apr. 18, 2019
Test Sample	:	Engineering Sample No.: B190301797
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.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-2-1901H008A) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of A2LA according to the ISO/IEC 17025 quality assessment standard and technical standard(s).

Test results included in this report are only for the LTE Band 5 and WCDMA Band V part.

2. 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
2.1046 22.913(a)	Radiated power	PASS
2.1046 22.913(a)	Maximum Output Power	PASS
2.1049(h) 22.917(a)	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
2.1055 22.355	Frequency Stability	PASS

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No. 29, Jintang Road, Tangzhen Industry Park, Pudong New Area, Shanghai 201210,China
BTL's Test Firm Registration Number for FCC: 476765
BTL's Designation Number for FCC: CN1241

2.2 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)
SH-CB01	CISPR	9KHz ~ 30MHz	V	3.79
		9KHz ~ 30MHz	H	3.57
		30MHz ~ 200MHz	V	4.12
		30MHz ~ 200MHz	H	3.20
		200MHz ~ 1,000MHz	V	3.12
		200MHz ~ 1,000MHz	H	3.18

Test Site	Method	Measurement Frequency Range	U,(dB)
SH-CB01	CISPR	1GHz ~ 6GHz	4.40
		6GHz ~ 18GHz	4.86
		18GHz ~ 26.5GHz	3.64
		26.5GHz ~ 40GHz	3.78

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	CPE				
Brand Name	D-Link				
Test Model	DWR-920V				
Series Model	N/A				
Model Difference(s)	N/A				
Hardware Version	A1				
Software Version	01.01				
Antenna Type	External Antenna				
Antenna Gain	WCDMA Band V	-4dBi			
	LTE Band 5	-0.827088 dBi			
IMEI No.	357471055275665				
Modulation Type	LTE	UL: QPSK,16QAM DL: QPSK,16QAM			
	WCDMA	UL: BPSK DL: QPSK			
	WCDMA(HSDPA/HSUPA)	16QAM			
Operation Frequency	WCDMA Band V	826.4MHz ~ 846.6MHz			
	LTE 5 (Channel Bandwidth: 1.4MHz)	824.7 MHz ~ 848.3 MHz			
	LTE 5 (Channel Bandwidth: 3MHz)	825.5 MHz ~ 847.5 MHz			
	LTE 5 (Channel Bandwidth: 5MHz)	826.5 MHz ~ 846.5 MHz			
	LTE 5 (Channel Bandwidth: 10MHz)	829.0 MHz ~ 844.0 MHz			
Max. ERP Power	WCDMA	BPSK	16.56	dBm	
	WCDMA_HSDPA	16QAM	13.99	dBm	
	WCDMA_HSUPA	16QAM	14.05	dBm	
	LTE 5 (Channel Bandwidth: 1.4MHz)	QPSK	19.58	dBm	
		16QAM	18.37	dBm	
	LTE 5 (Channel Bandwidth: 3MHz)	QPSK	19.82	dBm	
		16QAM	18.90	dBm	
	LTE 5 (Channel Bandwidth: 5MHz)	QPSK	19.67	dBm	
		16QAM	18.31	dBm	
	LTE 5 (Channel Bandwidth: 10MHz)	QPSK	19.65	dBm	
		16QAM	18.74	dBm	
Power Source	DC voltage supplied from AC/DC adapter. Model: AMS135-1201000FU				
Power Rating	I/P:100-240V~, 50/60Hz, 0.5A O/P:12V⎓ 1.0A				

Note:
1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. WCDMA (UL:BPSK; DL: QPSK) mode was found to be the worst case and recorded.

3.2 DESCRIPTION OF TEST MODES AND TEST CONDITION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports
The worst case was found when positioned on X-plane for EIRP and X-axis for radiated emission.
Following channel(s) was (were) selected for the final test as listed below:

WCDMA MODE			
Test Item	Available Channel	Tested Channel	Mode
ERP	4132 to 4233	4132, 4182, 4233	WCDMA, HSDPA, HSUPA
Maximum Output Power	4132 to 4233	4132, 4182, 4233	WCDMA, HSDPA, HSUPA
Conducted Emission	4132 to 4233	4182	WCDMA
Radiated Emission	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

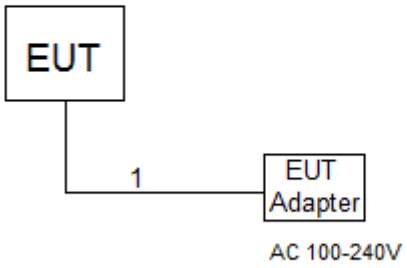
LTE BAND 5					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
ERP	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	1RB/3RB/6RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	1RB/8RB/15RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	1RB/25RB/50RB
Occupied Bandwidth	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	6 RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	15 RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	25 RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	50 RB
Conducted Emission	20407 to 20643	20525	1.4MHz	QPSK	1 RB
	20425 to 20625	20525	5MHz	QPSK	1 RB
	20450 to 20600	20525	10MHz	QPSK	1 RB
Radiated Emission	20407 to 20643	20525	1.4MHz	QPSK	1 RB
	20425 to 20625	20525	5MHz	QPSK	1 RB
	20450 to 20600	20525	10MHz	QPSK	1 RB

Band Edge	20407 to 20643	20407	1.4MHz	QPSK	1 RB
					6 RB
		20643	1.4MHz	QPSK	1 RB
					6 RB
	20415 to 20635	20415	3MHz	QPSK	1 RB
					15 RB
		20635	3MHz	QPSK	1 RB
					15 RB
	20425 to 20625	20425	5MHz	QPSK	1 RB
					25 RB
		20625	5MHz	QPSK	1 RB
					25 RB
	20450 to 20600	20450	10MHz	QPSK	1 RB
					50 RB
		20600	10MHz	QPSK	1 RB
					50 RB
Peak To Average Ratio	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	1 RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	1 RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	1 RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	1 RB
Frequency Stability	20407 to 20643	20525	1.4MHz	QPSK	1 RB
	20415 to 20635	20525	3MHz	QPSK	1 RB
	20425 to 20625	20525	5MHz	QPSK	1 RB
	20450 to 20600	20525	10MHz	QPSK	1 RB

3.3EUT TEST CONDITIONS:

Test Item	Environmental Conditions	Test Voltage
ERP	21°C, 54%RH	DC 12.0V
Maximum Output Power	21°C, 54%RH	DC 12.0V
Occupied Bandwidth	21°C, 54%RH	DC 12.0V
Conducted Emission	21°C, 54%RH	DC 12.0V
Radiated Emission	18.4°C, 53%RH	AC 120V/60Hz
Band Edge	21°C, 54%RH	DC 12.0V
Peak to Average Ratio	21°C, 54%RH	DC 12.0V
Frequency Stability	Normal and Extreme	Normal and Extreme

3.4 BLOCK DIGRAM SHOWING THE CONFIGURATIONOFSYSTEMTESTED FOR RADIATED



3.5 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.	FCC ID	Series No.
-	-	-	-	-	-

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	1.2m	DC Cable

4. TEST RESULT

4.1 OUTPUT POWER MEASUREMENT

4.1.1 LIMIT

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

4.1.2 TEST PROCEDURE

ERP:

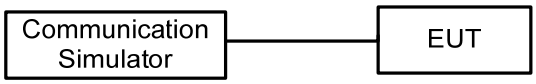
1. ERP power= EIPR power-2.15dBi.

Maximum Output Power:

The EUT was set up for the maximum power with WCDMA 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.

4.1.3 TESTSETUP LAYOUT

Output Power Measurement



4.1.4 TEST DEVIATION

No deviation

4.1.5 TEST RESULTS

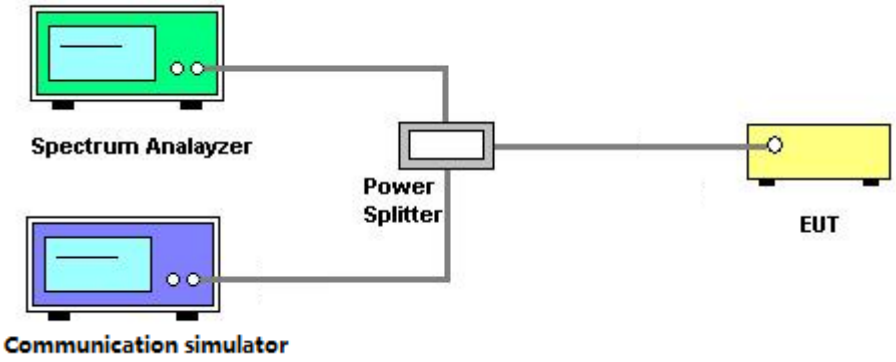
Please refer to the Appendix A.

4.2 OCCUPIED BANDWIDTH MEASUREMENT

4.2.1 TEST PROCEDURE

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.

4.2.2 TEST SETUP LAYOUT



4.2.3 TEST DEVIATION

No deviation

4.2.41.1 TEST RESULTS

Please refer to the Appendix B.

4.3 CONDUCTED EMISSIONS MEASUREMENT

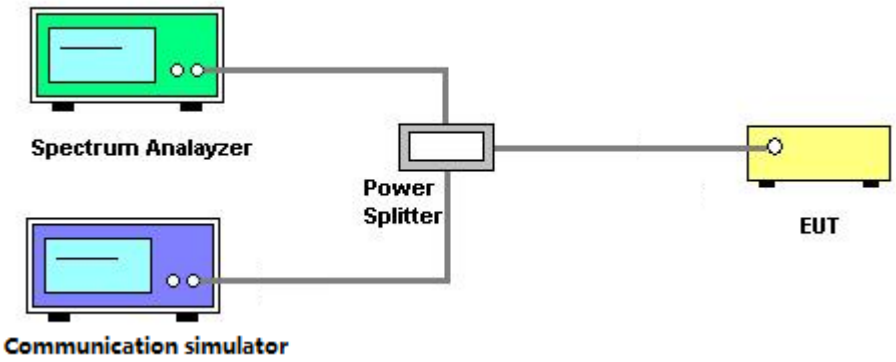
4.3.1 LIMIT

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.

4.3.2 TEST PROCEDURES

1. The testing follows FCC KDB 971168 v03r01 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured. Set RBW>=1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Set spectrum analyzer with RMS detector.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. The limit line is derived from 43+10log(P)dB below the transmitter power P(Watts)
   =P(W)-[43+10log(P)](dB)
   =[30+10log(P)](dBm)-[43+10log(P)](dB)
   =-13dBm

4.3.3 TESTSETUP LAYOUT



4.3.4 TESTDEVIATION

No deviation

4.3.51.2 TEST RESULTS

Please refer to the Appendix C.

4.4 RADIATED EMISSIONS MEASUREMENT

4.4.1 LIMIT

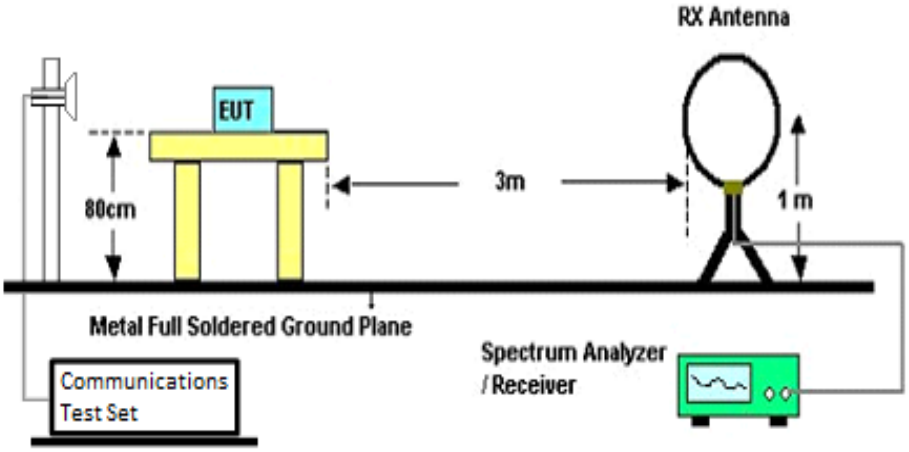
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to -13dBm.

4.4.2 TEST PROCEDURES

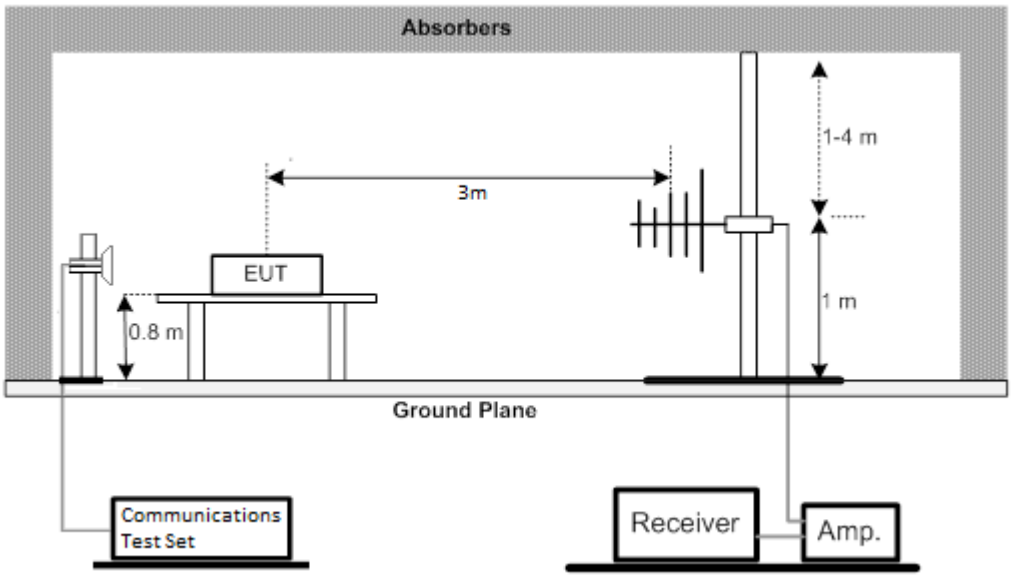
1. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 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 = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
4. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.
5. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

4.4.3 TESTSETUP LAYOUT

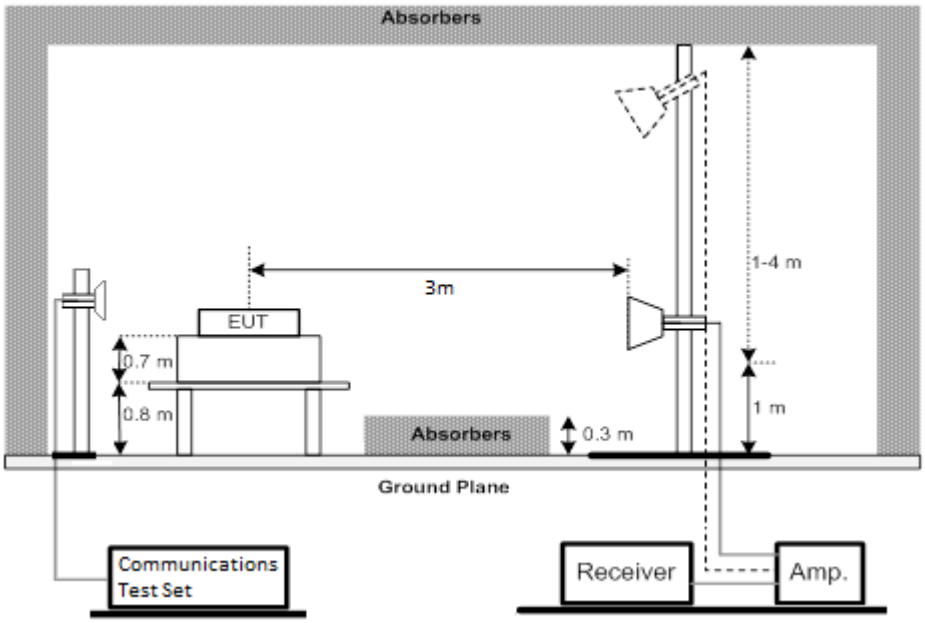
Below 30MHz



30MHz to 1GHz



Above 1GHz



4.4.4 TESTDEVIATION

No deviation

4.4.51.3 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the Appendix D.

4.4.61.4 TEST RESULTS (30MHZ TO 1000MHZ)

Please refer to the Appendix E.

4.4.71.5 TEST RESULTS (ABOVE 1000MHZ)

Please refer to the Appendix F.

4.5 BAND EDGE MEASUREMENT

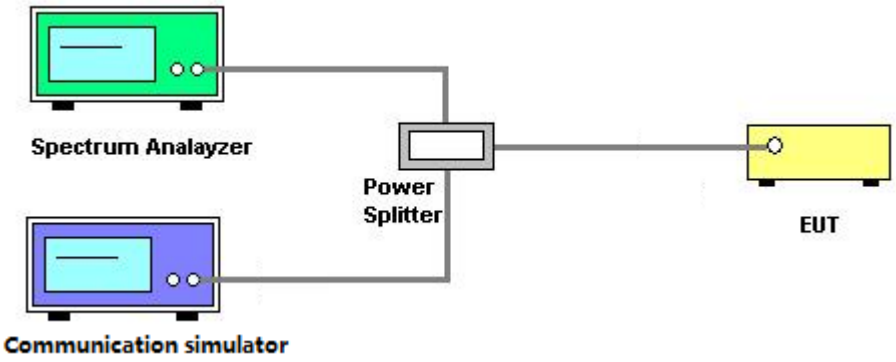
4.5.1 LIMIT

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.

4.5.2 TEST PROCEDURES

1. All measurements were done at low and high operational frequency range.
2. The center frequency of spectrum is the band edge frequency and span is 10MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (WCDMA).
3. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 15kHz and VB of the spectrum is 43kHz (LTE Bandwidth 1.4MHz).
4. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 30kHz and VB of the spectrum is 91kHz (LTE Bandwidth 3MHz).
5. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 51kHz and VB of the spectrum is 150kHz (LTE Bandwidth 5MHz).
6. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (LTE Bandwidth 10MHz).
7. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 150kHz and VB of the spectrum is 470kHz (LTE Bandwidth 15MHz).
8. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 200kHz and VB of the spectrum is 620kHz (LTE Bandwidth 20MHz).
9. Record the max trace plot into the test report.

4.5.3 TESTSETUP LAYOUT



4.5.4 TESTDEVIATION

No deviation

4.5.51.6 TEST RESULTS

Please refer to the Appendix G.

4.6 PEAK TO AVERAGE RATIO MEASUREMENT

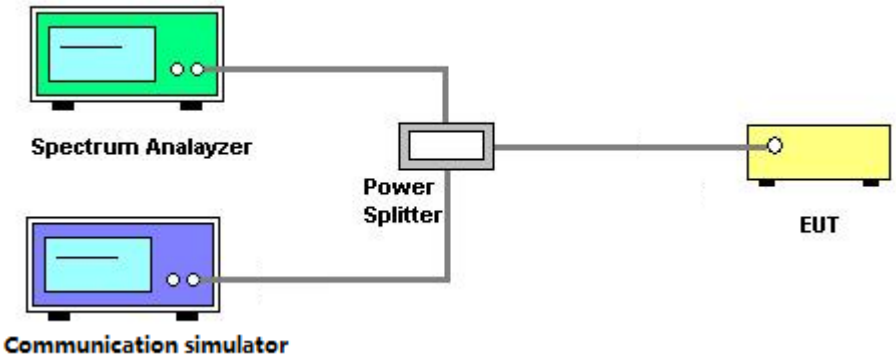
4.6.1 LIMIT

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.

4.6.2 TEST PROCEDURES

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

4.6.3 TESTSETUP LAYOUT



4.6.4 TESTDEVIATION

No deviation

4.6.51.7 TEST RESULTS

Please refer to the Appendix H.

4.7 FREQUENCY STABILITY MEASUREMENT

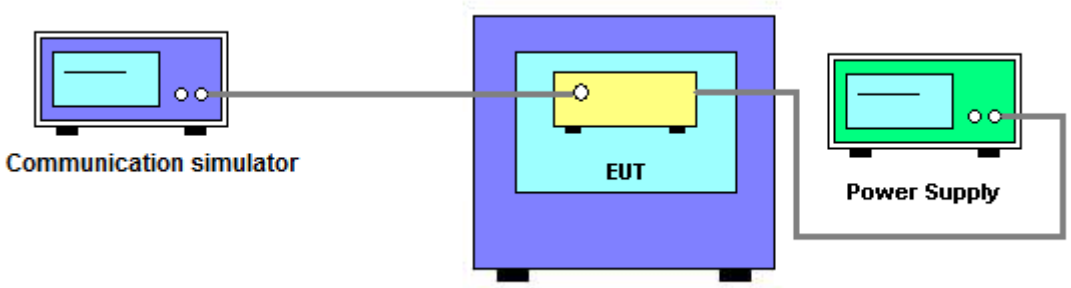
4.7.1 LIMIT

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

4.7.2 TEST PROCEDURES

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 ±0.5°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.

4.7.3 TESTSETUP LAYOUT



4.7.4 TESTDEVIATION

No deviation

4.7.51.8 TEST RESULTS

Please refer to the Appendix I.

5. LIST OF MEASUREMENT EQUIPMENTS

Radiated Emission Measurement(9K-30M)					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Loop Antenna	EMCI	EMCI LPA600	275	Mar. 29, 2020
2	EMI Test Receiver	R&S	ESCI	100082	Mar. 29, 2020
3	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

For WCDMA

Radiated Emission Measurement(30M-1G)					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	719	Mar. 29, 2020
2	Pre-Amplifier	emci	EMC9135	980400	Mar. 29, 2020
3	MXE EMI Receiver	Keysight	N9038A	MY57150106	Mar. 29, 2020
4	Test Cable	emci	EMC104-SM-SM-7000	170330	Apr. 17, 2020
5	Test Cable	emci	EMC104-SM-SM-1000	170331	Apr. 17, 2020
6	Test Cable	emci	EMC104-SM-NM-3500	170621	Apr. 17, 2020
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
8	8960 SERIES 10 WIRELESS COMMUNICATIONS TEST SET	Agilent	E5515C	GB45070942	Nov. 20, 2019

Radiated Emission Measurement(1G-18G)					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Pre-Amplifier	emci	EMC184045SE	980409	Mar. 29, 2020
2	Pre-Amplifier	emci	EMC012645SE	980421	Mar. 29, 2020
3	Pre-Amplifier	emci	EMC9135	980400	Mar. 29, 2020
4	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1787	Mar. 29, 2020
5	Double-Ridged Waveguide Horn Antenna	ETS-Lindgren	3116C	00203919	Mar. 29, 2020
6	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	719	Mar. 29, 2020
7	Cable	N/A	EMC102-SM-SM-6000	170336	Jun. 10, 2019
8	8960 SERIES 10 WIRELESS COMMUNICATIONS TEST SET	Agilent	E5515C	GB45070942	Nov. 20, 2019

For LTE

Radiated Emission Measurement(30M-1G)					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	719	Mar. 29, 2020
2	Pre-Amplifier	emci	EMC9135	980400	Mar. 29, 2020
3	MXE EMI Receiver	Keysight	N9038A	MY57150106	Mar. 29, 2020
4	Test Cable	emci	EMC104-SM-SM-7000	170330	Apr. 17, 2020
5	Test Cable	emci	EMC104-SM-SM-1000	170331	Apr. 17, 2020
6	Test Cable	emci	EMC104-SM-NM-3500	170621	Apr. 17, 2020
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
8	Wideband Radio Communication Test	R&S	CMW500	131463	Nov. 20, 2019

Radiated Emission Measurement(1G-18G)					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Pre-Amplifier	emci	EMC184045SE	980409	Mar. 29, 2020
2	Pre-Amplifier	emci	EMC012645SE	980421	Mar. 29, 2020
3	Pre-Amplifier	emci	EMC9135	980400	Mar. 29, 2020
4	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1787	Mar. 29, 2020
5	Double-Ridged Waveguide Horn Antenna	ETS-Lindgren	3116C	00203919	Mar. 29, 2020
6	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	719	Mar. 29, 2020
7	Cable	N/A	EMC102-SM-SM-6000	170336	Jun. 10, 2019
8	Wideband Radio Communication Test	R&S	CMW500	131463	Nov. 20, 2019

For WCDMA

Conducted Emission & Band Edge & Occupied Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	8960 SERIES 10 WIRELESS COMMUNICATIONS TEST SET	Agilent	E5515C	GB45070942	Nov. 20, 2019
2	Spectrum Analyzer	R&S	FSP40	100626	Mar. 29, 2020
3	EXA Spectrum Analyzer	Keysight	N9010A	MY56480579	Mar. 29, 2020
4	Power Divider	JUK	PD-2SF-2060	N/A	N/A

Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	8960 SERIES 10 WIRELESS COMMUNICATIONS TEST SET	Agilent	E5515C	GB45070942	Nov. 20, 2019
2*	Spectrum Analyzer	R&S	FSP40	100626	Mar. 29, 2020
3	EXA Spectrum Analyzer	Keysight	N9010A	MY56480579	Mar. 29, 2020
4	Power Divider	JUK	PD-2SF-2060	N/A	N/A
5	Temperature And Humidity Box	Blue pand	BPHS-120B	170616454	Nov. 20, 2019

For LTE

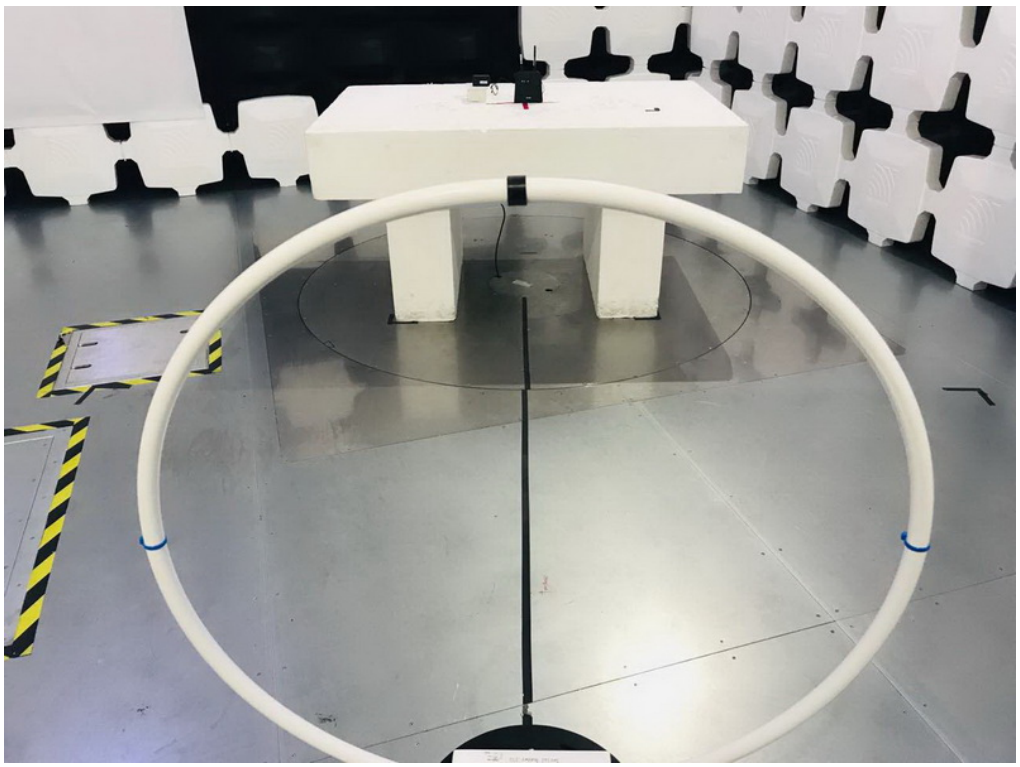
Conducted Emission & Band Edge & Occupied Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EXA Spectrum Analyzer	Keysight	N9010A	MY56480579	Mar. 29, 2020
2	Power Divider	JUK	PD-4SF-2060	N/A	N/A
3	Wideband Radio Communication Test	R&S	CMW500	131463	Nov. 20, 2019
4	Spectrum Analyzer	R&S	FSP40	100626	Mar. 29, 2020

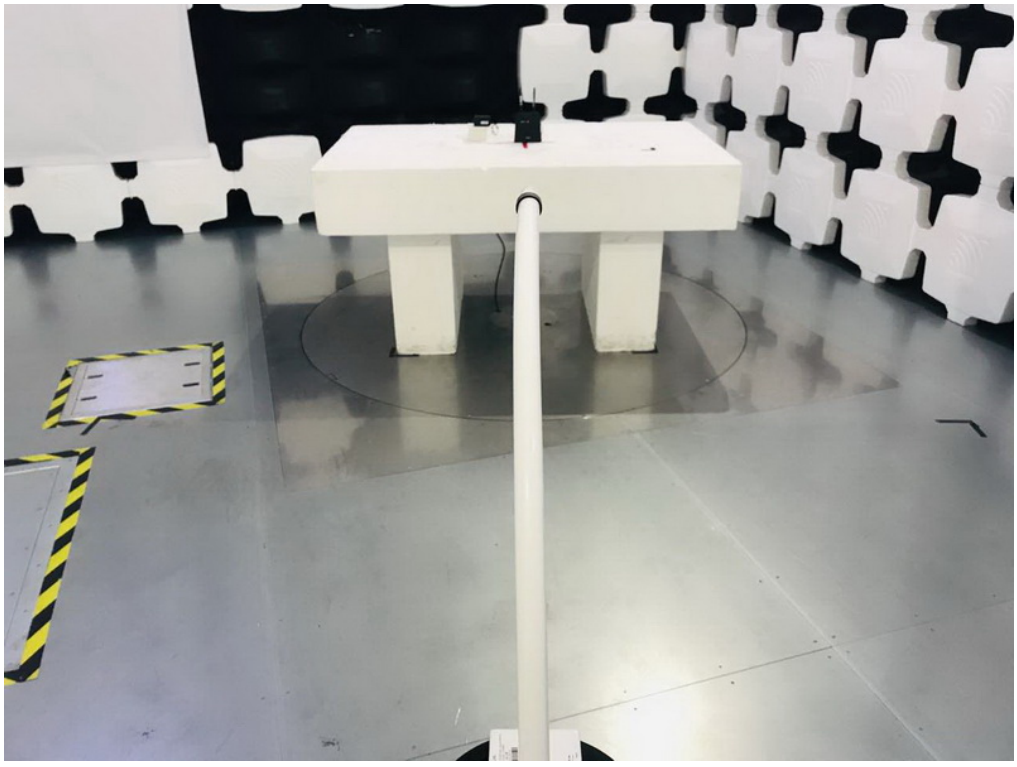
Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EXA Spectrum Analyzer	Keysight	N9010A	MY56480579	Mar. 29, 2020
2*	Power Divider	JUK	PD-4SF-2060	N/A	N/A
3	Wideband Radio Communication Test	R&S	CMW500	131463	Nov. 20, 2019
4	Spectrum Analyzer	R&S	FSP40	100626	Mar. 29, 2020
5	Temperature And Humidity Box	Blue pand	BPHS-120B	170616454	Nov. 20, 2019

Remark: ”N/A” denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.
*All calibration period of equipment list is three year.

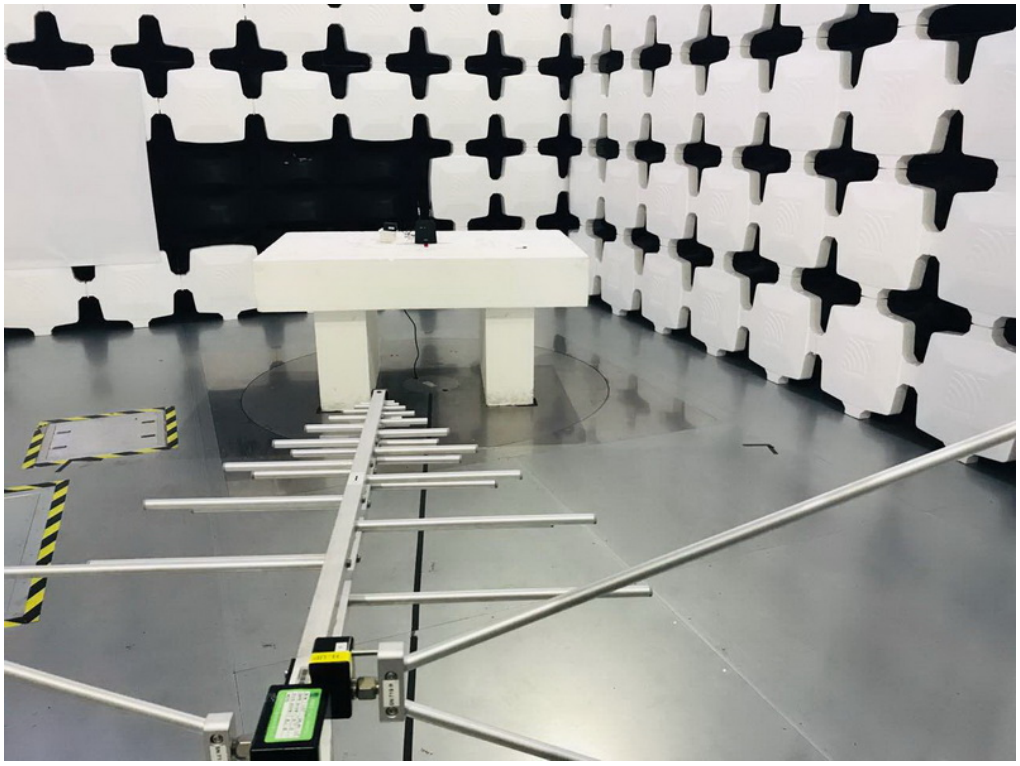
6. EUT TEST PHOTO

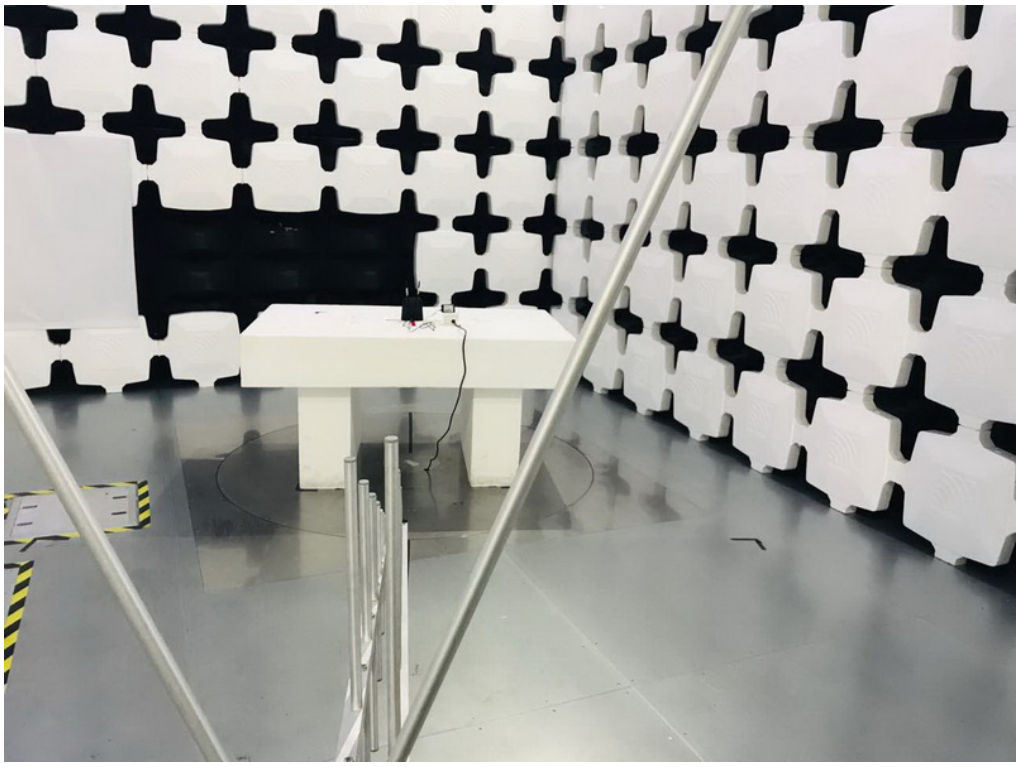
9 kHz to 30 MHz



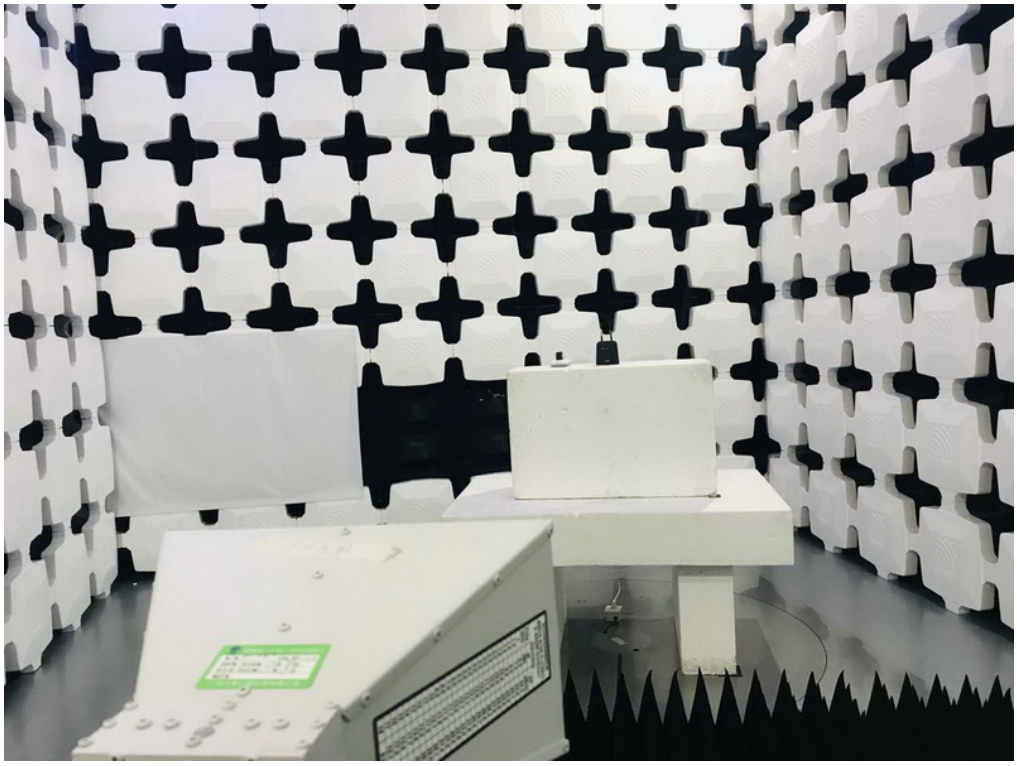


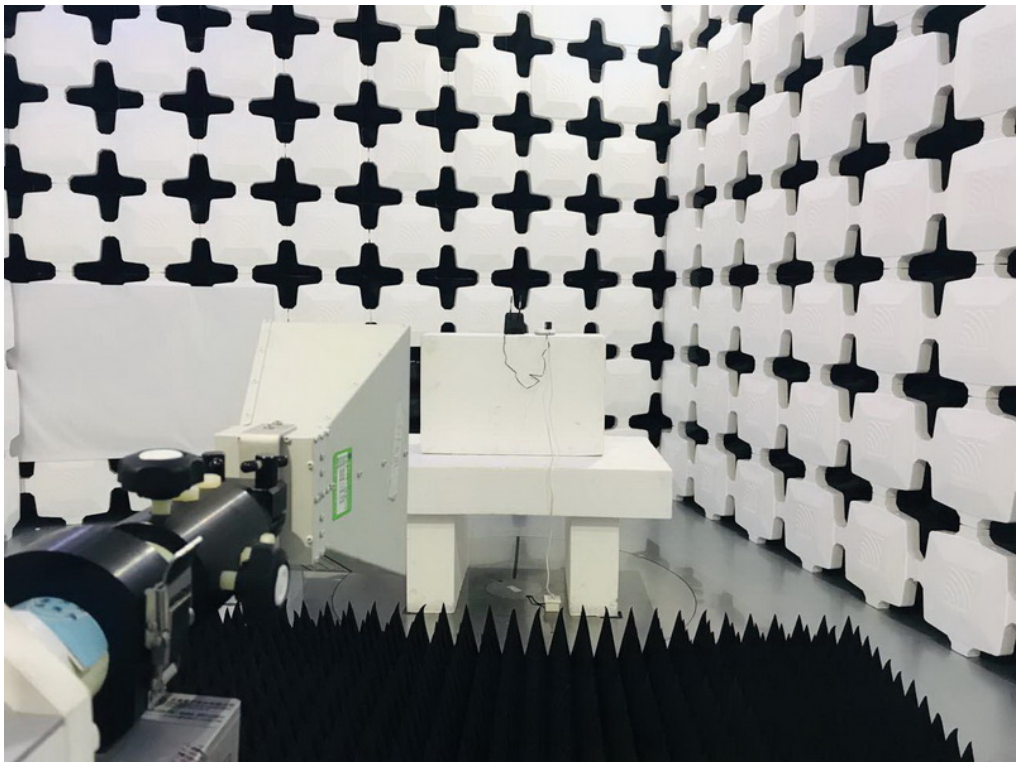
30 MHz to 1 GHz





Above 1 GHz





APPENDIX A - MAXIMUM OUTPUT POWER

Maximum Output Power (dBm):

Modulation	Band	WCDMA V		
	Tx Channel	4132CH	4182CH	4233CH
	Frequency	826.4MHz	836.4MHz	846.6MHz
BPSK	RMC 12.2K	22.71	22.33	22.45
	RMC 64K	22.39	22.20	22.33
	RMC 144K	22.30	22.14	22.32
	RMC 384K	22.36	22.24	22.42
16QAM	HSDPA Subtest-1	20.10	19.98	20.14
	HSDPA Subtest-2	20.08	19.99	19.98
	HSDPA Subtest-3	20.09	20.03	19.77
	HSDPA Subtest-4	20.10	20.08	19.93
16QAM	HSUPA Subtest-1	19.81	19.65	19.54
	HSUPA Subtest-2	20.18	20.11	20.02
	HSUPA Subtest-3	20.20	20.04	19.96
	HSUPA Subtest-4	20.16	20.01	20.02
	HSUPA Subtest-5	19.78	19.54	19.52

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	22.47	21.99	22.19
		1	2	22.41	22.09	21.94
		1	5	22.37	22.06	22.08
		3	0	22.48	22.21	22.07
		3	1	22.56	22.32	22.00
		3	2	22.45	22.27	21.98
		6	0	21.36	21.20	20.97
	16QAM	1	0	21.31	21.04	20.88
		1	2	21.34	21.01	21.15
		1	5	21.32	21.03	21.19
		3	0	21.11	20.67	20.78
		3	1	21.19	20.64	20.92
		3	2	21.15	20.59	20.83
		6	0	20.18	19.88	19.81

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	22.38	22.23	22.09
		1	7	22.80	22.31	22.30
		1	14	22.63	22.43	22.22
		8	0	21.47	21.27	20.92
		8	4	21.48	21.23	20.94
		8	7	21.36	21.33	21.09
		15	0	21.35	21.34	21.03
	16QAM	1	0	21.54	20.98	20.87
		1	7	21.88	21.57	21.06
		1	14	21.51	21.15	21.12
		8	0	20.49	20.24	19.78
		8	4	20.78	20.39	20.09
		8	7	20.48	20.48	19.98
		15	0	20.48	20.28	19.98

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	22.36	21.96	22.11
		1	13	22.64	22.06	22.20
		1	24	22.20	22.10	22.03
		12	0	21.41	21.34	21.09
		12	6	21.40	21.34	21.10
		12	11	21.31	21.42	21.11
		25	0	21.35	21.27	21.10
	16QAM	1	0	20.94	21.20	20.57
		1	13	20.86	21.17	20.38
		1	24	20.65	21.28	20.49
		12	0	20.41	20.10	20.00
		12	6	20.47	20.32	19.87
		12	11	20.31	20.31	19.79
		25	0	20.57	20.17	19.98

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	22.54	22.21	22.10
		1	25	22.59	22.63	22.16
		1	49	22.19	22.21	21.98
		25	0	21.37	21.18	21.28
		25	13	21.28	21.40	21.09
		25	25	21.19	21.37	21.03
		50	0	21.33	21.33	21.19
	16QAM	1	0	21.24	20.92	21.13
		1	25	21.71	21.02	21.03
		1	49	21.13	20.90	20.93
		25	0	20.36	20.24	20.25
		25	13	20.16	20.38	20.15
		25	25	20.27	20.28	20.04
		50	0	20.39	20.19	20.18

ERP Power (dBm):

Modulation	Band	WCDMA V		
	Tx Channel	4132CH	4182CH	4233CH
	Frequency	826.4MHz	836.4MHz	846.6MHz
BPSK	RMC 12.2K	16.56	16.18	16.30
	RMC 64K	16.24	16.05	16.18
	RMC 144K	16.15	15.99	16.17
	RMC 384K	16.21	16.09	16.27
16QAM	HSDPA Subtest-1	13.95	13.83	13.99
	HSDPA Subtest-2	13.93	13.84	13.83
	HSDPA Subtest-3	13.94	13.88	13.62
	HSDPA Subtest-4	13.95	13.93	13.78
16QAM	HSUPA Subtest-1	13.66	13.50	13.39
	HSUPA Subtest-2	14.03	13.96	13.87
	HSUPA Subtest-3	14.05	13.89	13.81
	HSUPA Subtest-4	14.01	13.86	13.87
	HSUPA Subtest-5	13.63	13.39	13.37

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	19.50	19.01	19.21
		1	2	19.43	19.11	18.96
		1	5	19.39	19.09	19.10
		3	0	19.50	19.23	19.10
		3	1	19.58	19.34	19.03
		3	2	19.48	19.30	19.00
		6	0	18.38	18.22	17.99
	16QAM	1	0	18.33	18.06	17.91
		1	2	18.37	18.04	18.17
		1	5	18.35	18.06	18.21
		3	0	18.13	17.70	17.80
		3	1	18.21	17.67	17.95
		3	2	18.17	17.61	17.85
		6	0	17.20	16.90	16.83

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	19.40	19.26	19.11
		1	7	19.82	19.33	19.33
		1	14	19.66	19.46	19.25
		8	0	18.49	18.30	17.94
		8	4	18.50	18.25	17.96
		8	7	18.38	18.35	18.11
		15	0	18.37	18.36	18.05
	16QAM	1	0	18.56	18.01	17.90
		1	7	18.90	18.60	18.08
		1	14	18.53	18.17	18.15
		8	0	17.51	17.26	16.80
		8	4	17.81	17.42	17.11
		8	7	17.50	17.50	17.00
		15	0	17.50	17.30	17.00

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	19.38	18.98	19.13
		1	13	19.67	19.08	19.22
		1	24	19.22	19.13	19.05
		12	0	18.43	18.37	18.11
		12	6	18.42	18.36	18.12
		12	11	18.33	18.44	18.14
		25	0	18.37	18.29	18.12
	16QAM	1	0	17.96	18.23	17.59
		1	13	17.88	18.19	17.40
		1	24	17.67	18.31	17.52
		12	0	17.43	17.12	17.02
		12	6	17.49	17.34	16.89
		12	11	17.34	17.33	16.81
		25	0	17.59	17.19	17.00

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	19.56	19.23	19.13
		1	25	19.62	19.65	19.18
		1	49	19.22	19.24	19.00
		25	0	18.40	18.20	18.30
		25	13	18.31	18.42	18.11
		25	25	18.21	18.39	18.06
		50	0	18.36	18.36	18.21
	16QAM	1	0	18.26	17.94	18.15
		1	25	18.74	18.04	18.05
		1	49	18.15	17.93	17.95
		25	0	17.38	17.26	17.27
		25	13	17.18	17.41	17.17
		25	25	17.29	17.31	17.07
		50	0	17.42	17.21	17.20

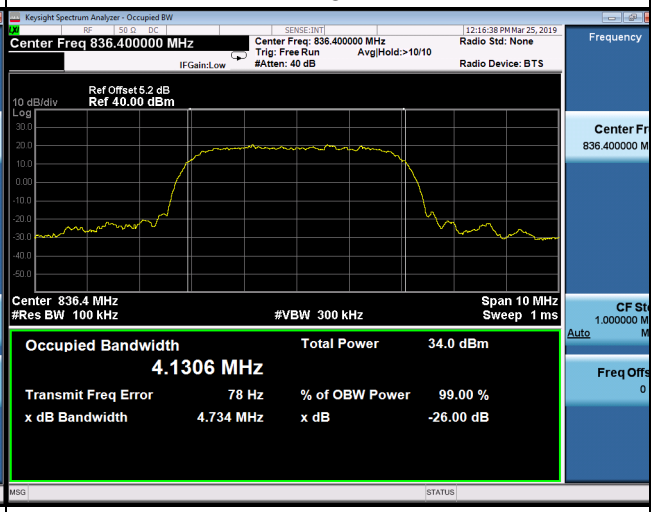
APPENDIX B - OCCUPIED BANDWIDTH

WCDMA Band V					
BPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
4132	826.4	4.1273	4132	826.4	4.715
4182	836.4	4.1306	4182	836.4	4.734
4233	846.6	4.1287	4233	846.6	4.723

Spectrum Plot

4132

4182



4233

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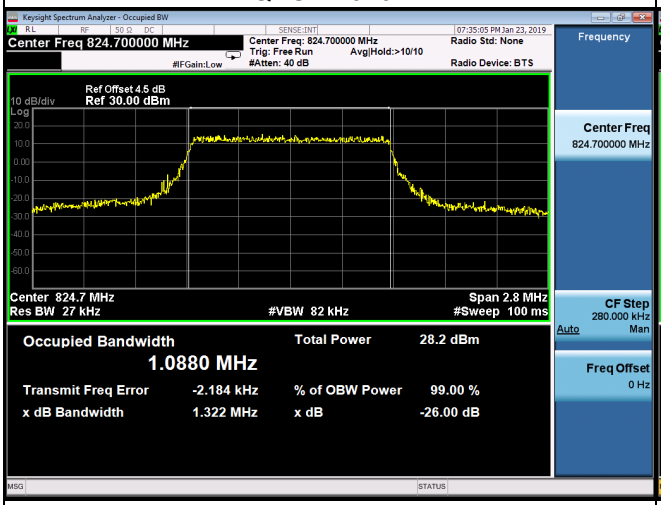
-

LTE Band 5_1.4M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
20407	824.7	1.088	20407	824.7	1.090
20525	836.5	1.092	20525	836.5	1.082
20643	848.3	1.087	20643	848.3	1.092
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20407	824.7	1.322	20407	824.7	1.273
20525	836.5	1.290	20525	836.5	1.266
20643	848.3	1.289	20643	848.3	1.283

Spectrum Plot

QPSK-20407



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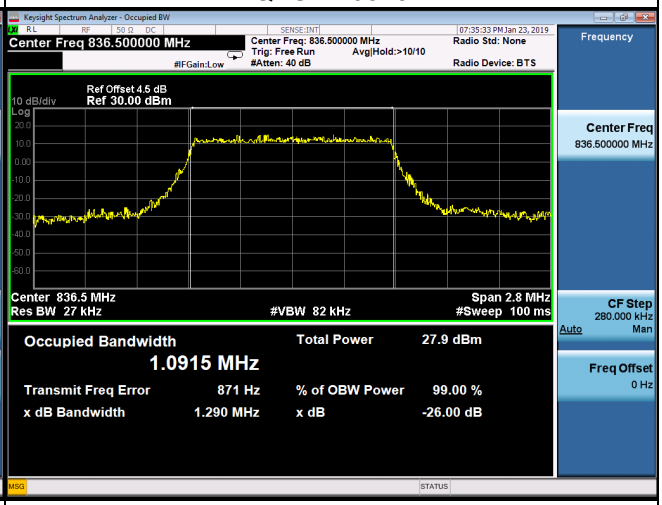

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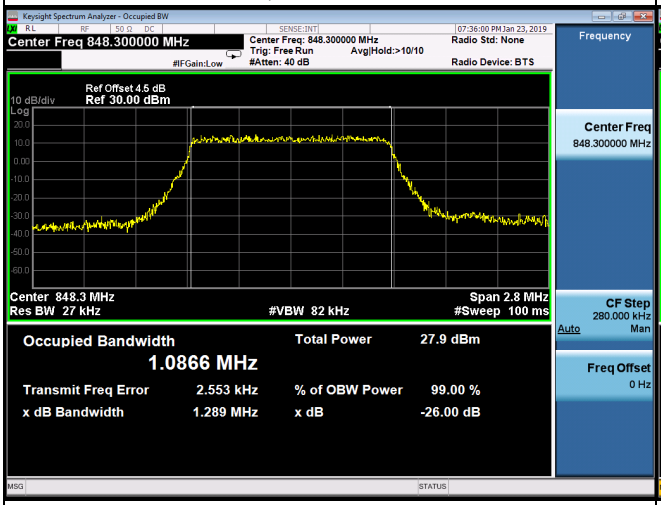

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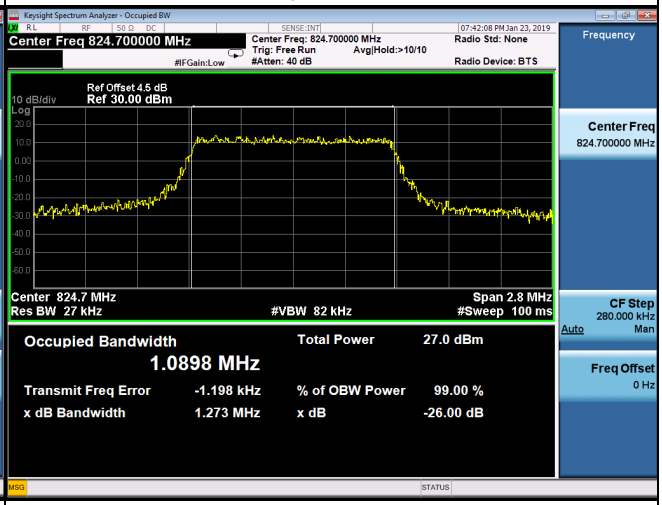

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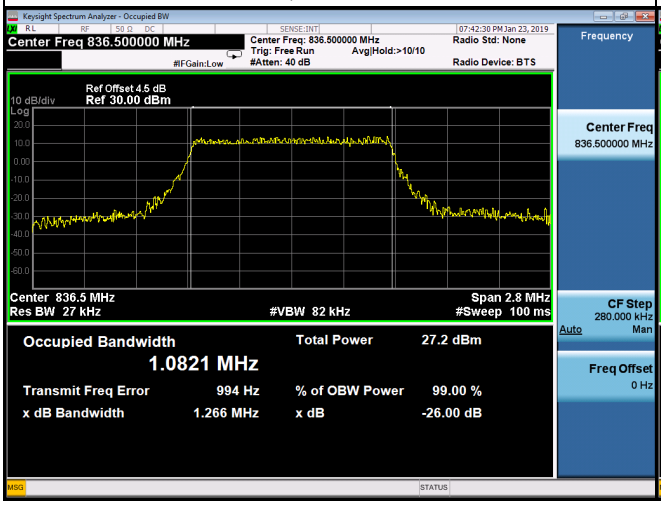

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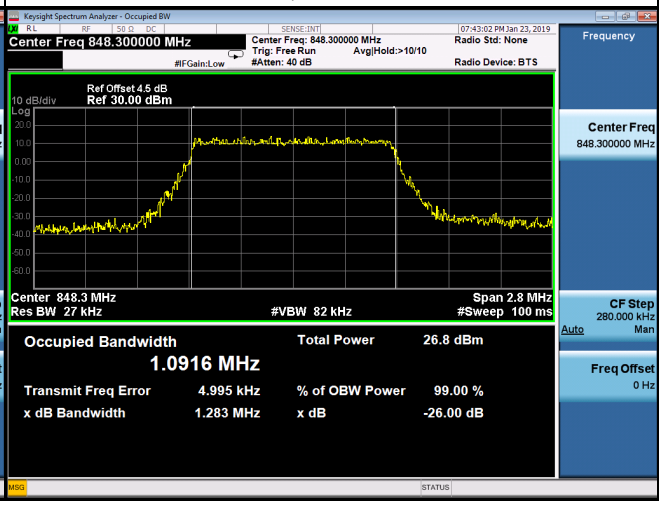
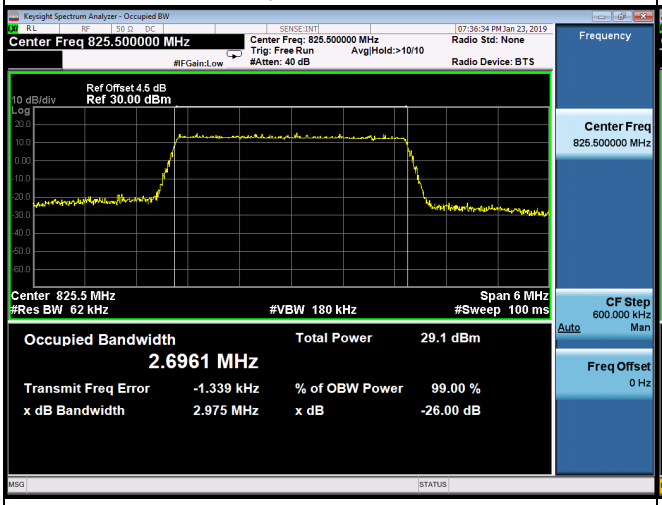


LTE Band 5_3M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
20415	825.5	2.700	20415	825.5	2.701
20525	836.5	2.699	20525	836.5	2.693
20635	847.5	2.703	20635	847.5	2.696
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20415	825.5	2.975	20415	825.5	2.968
20525	836.5	2.987	20525	836.5	2.967
20635	847.5	2.972	20635	847.5	2.981

Spectrum Plot

QPSK-20415



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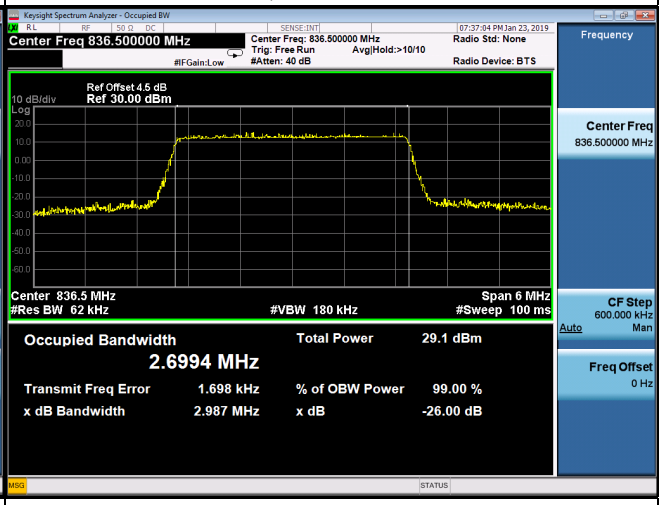

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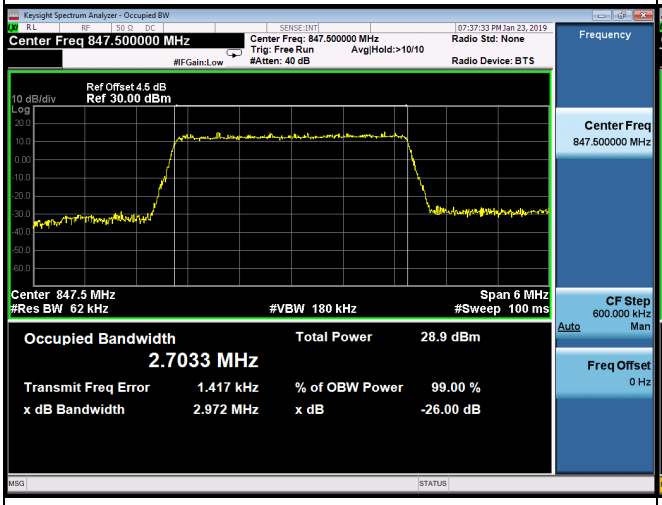

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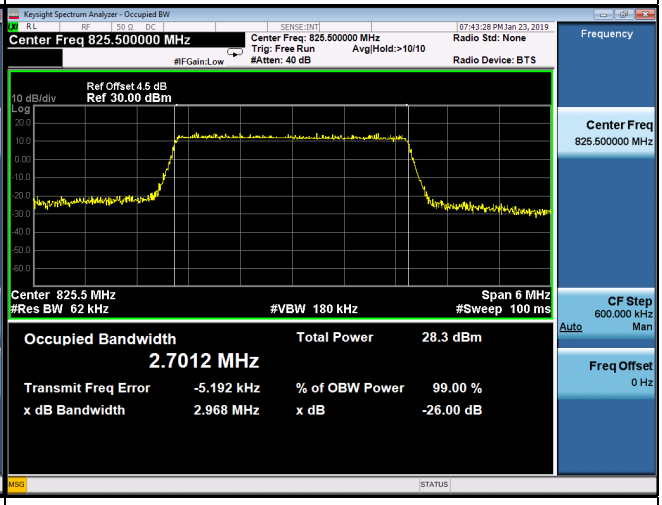

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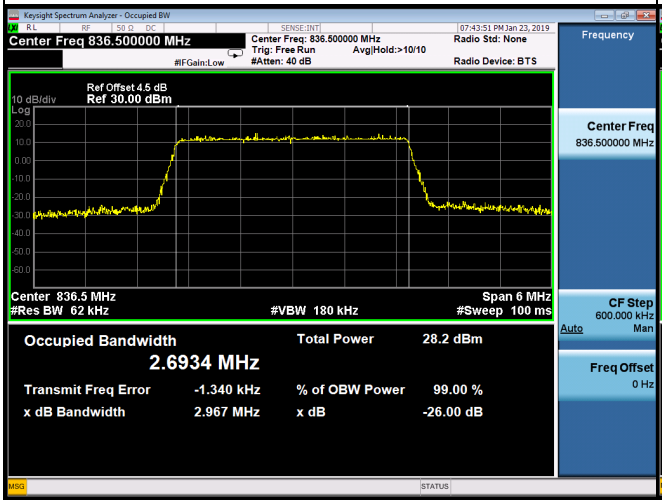
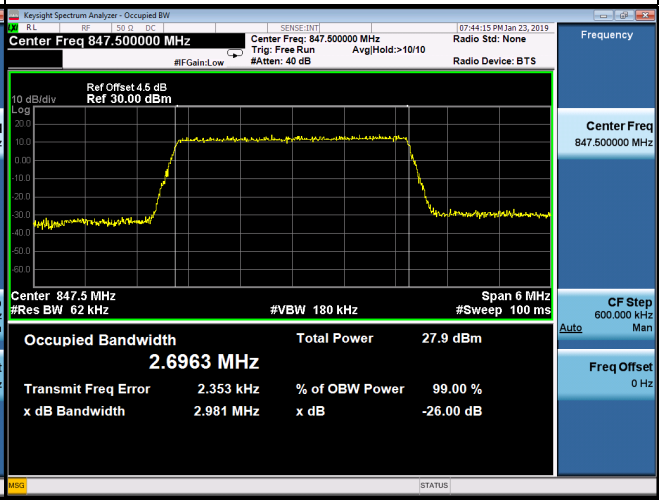


16QAM-20635

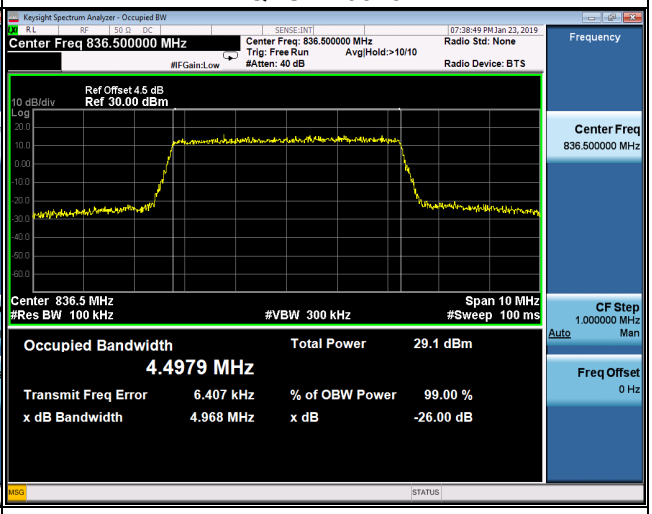


LTE Band 5_5M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
20425	826.5	4.507	20425	826.5	4.515
20525	836.5	4.498	20525	836.5	4.495
20625	846.5	4.521	20625	846.5	4.505
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20425	826.5	5.056	20425	826.5	4.988
20525	836.5	4.968	20525	836.5	4.958
20625	846.5	4.940	20625	846.5	4.966

Spectrum Plot

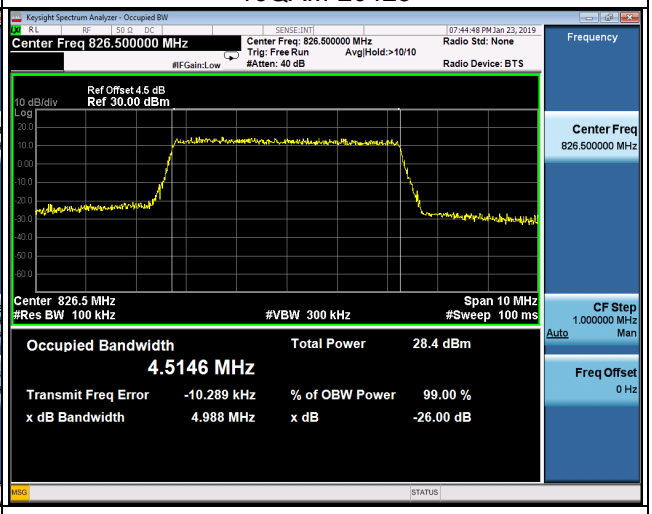
QPSK-20425

QPSK-20525



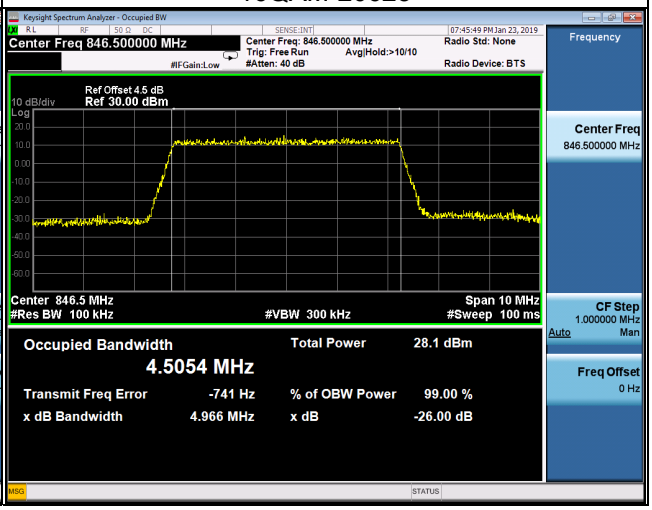
QPSK-20625

16QAM-20425



16QAM-20525

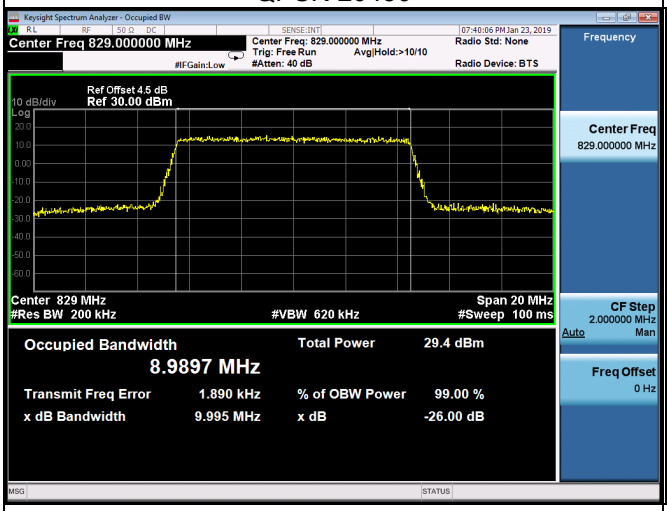
16QAM-20625



LTE Band 5_10M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
20450	829.0	8.990	20450	829.0	8.980
20525	836.5	8.917	20525	836.5	8.914
20600	844.0	8.993	20600	844.0	8.980
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20450	829.0	9.995	20450	829.0	9.930
20525	836.5	9.742	20525	836.5	9.820
20600	844.0	9.956	20600	844.0	9.852

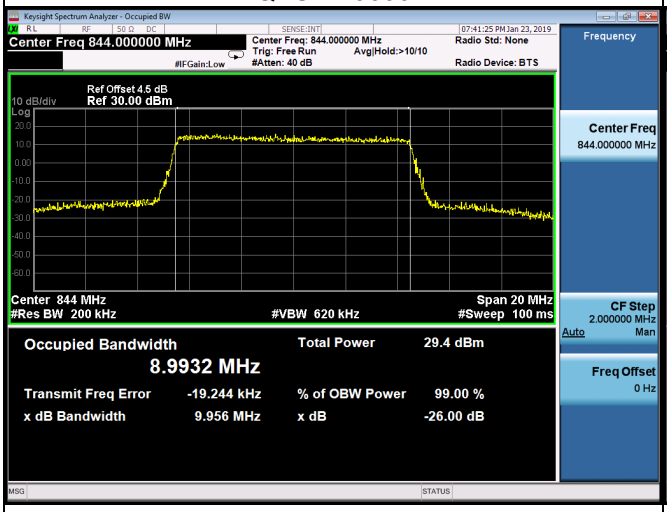
Spectrum Plot

QPSK-20450

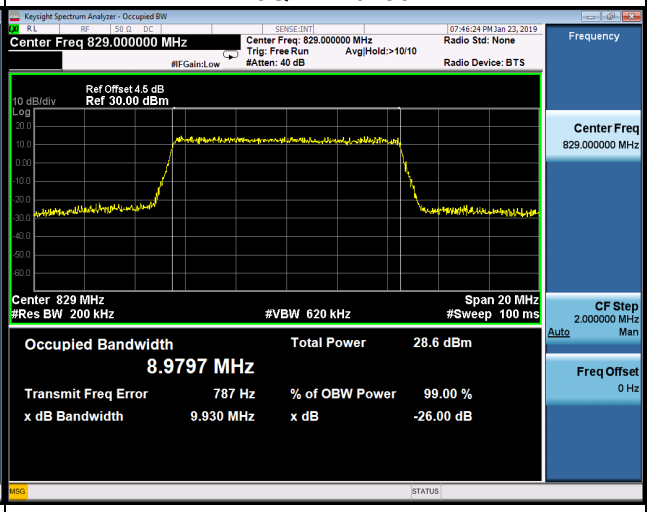


QPSK-20525

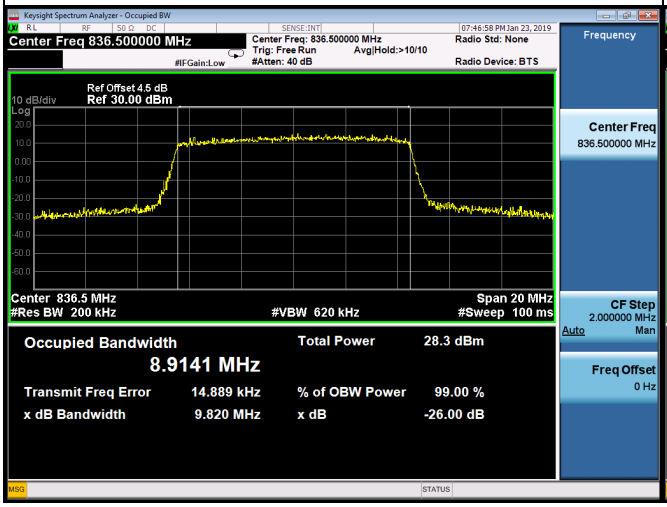
QPSK-20600



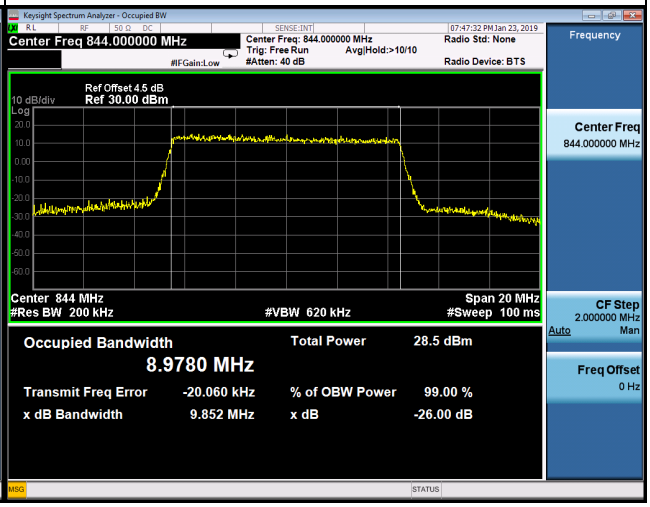
16QAM-20450



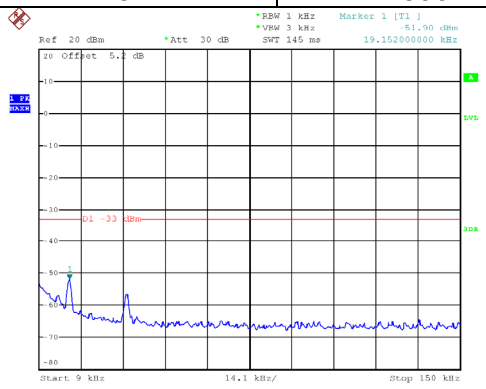
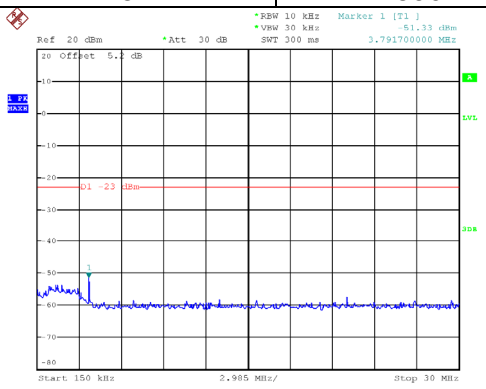
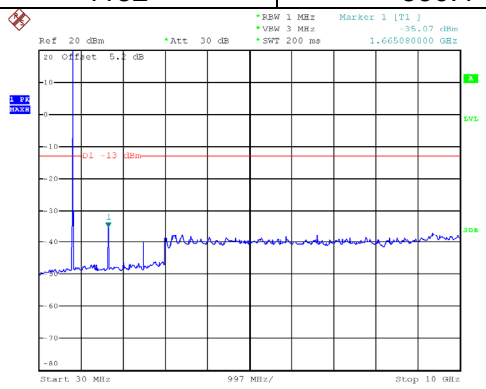
16QAM-20525

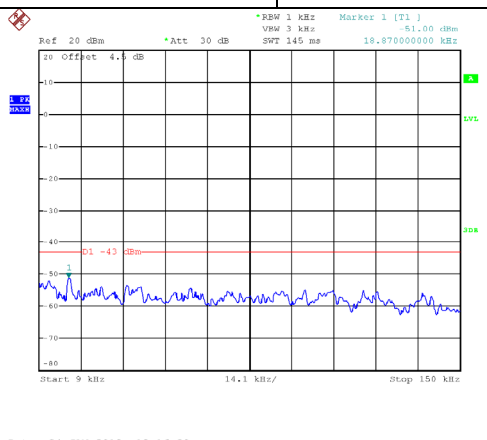
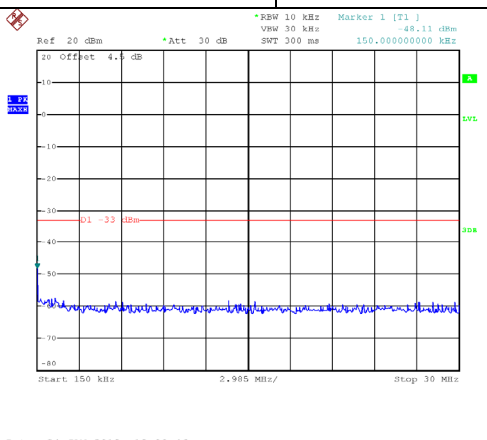
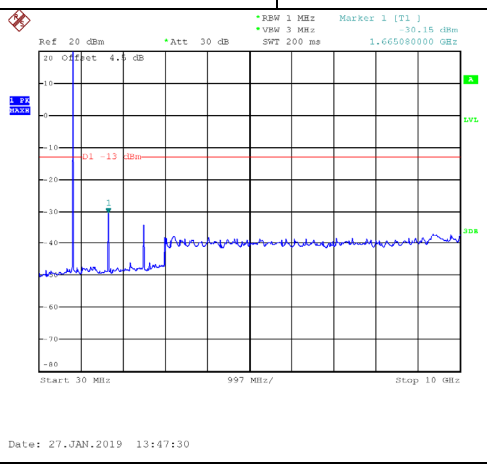


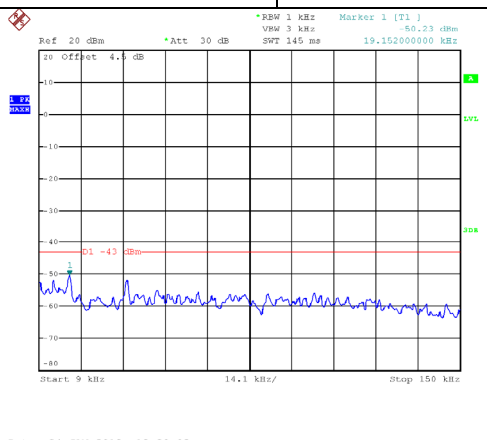
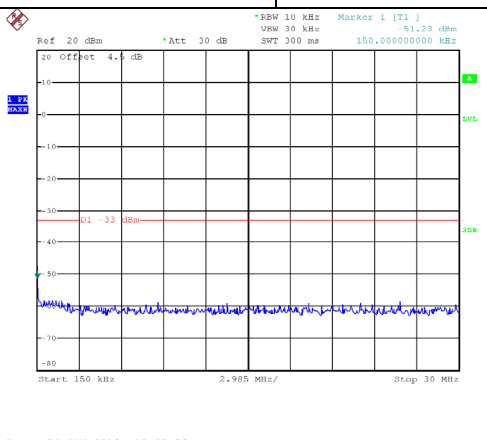
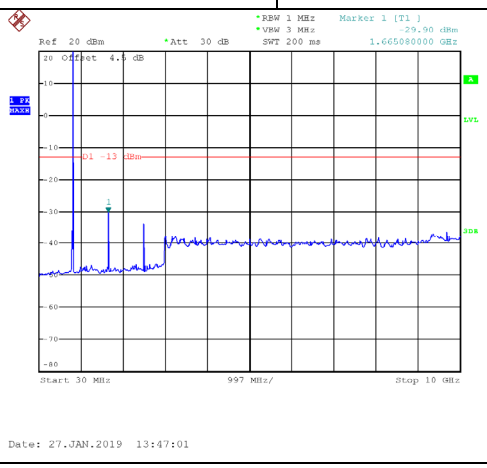
16QAM-20600

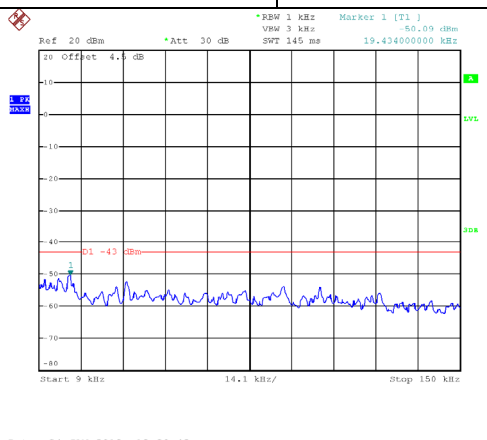
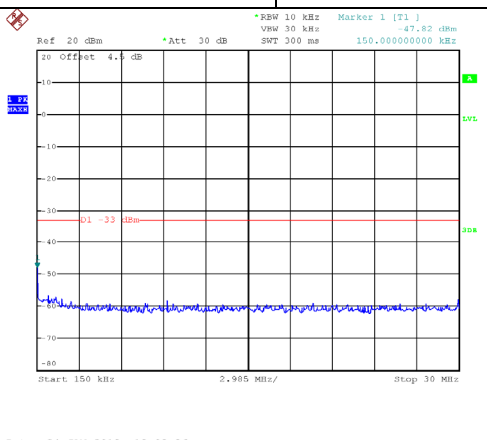
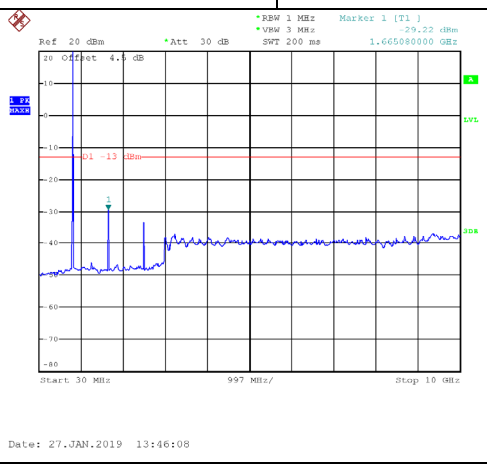


APPENDIX C - CONDUCTED EMISSIONS

WCDMA Band V			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
4182	836.4	4182	836.4
			
Channel	Frequency(MHz)	-	-
4182	836.4	-	-
		-	

LTE Band 5_1.4M			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
20525	836.5	20525	836.5
			
Channel	Frequency(MHz)	-	-
20525	836.5	-	-
		-	

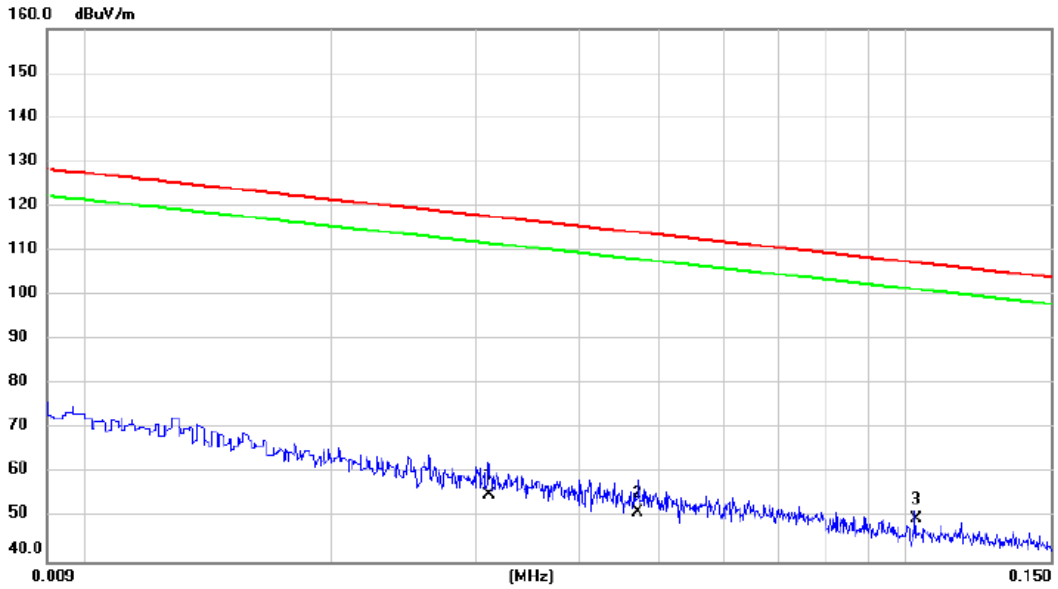
LTE Band 5_5M			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
20525	836.5	20525	836.5
			
Channel	Frequency(MHz)	-	-
20525	836.5	-	-
		-	

LTE Band 5_10M			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
20525	836.5	20525	836.5
			
Channel	Frequency(MHz)	-	-
20525	836.5	-	-
		-	

APPENDIX D - RADIATED EMISSION (9KHZ TO 30MHZ)

Test Mode:	TX CH4182

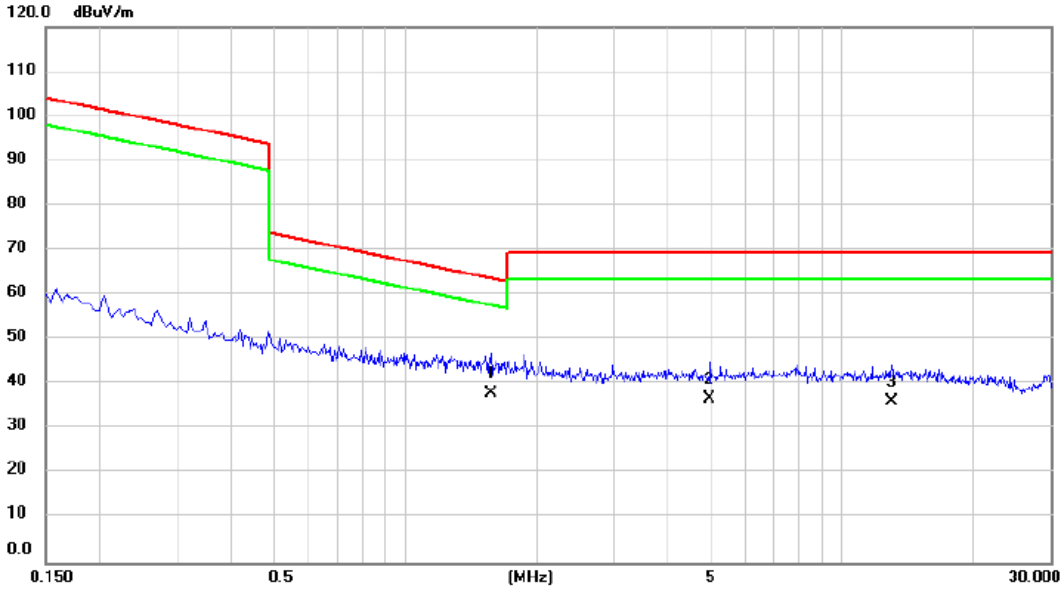
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0311	-14.10	69.37	55.27	117.75	-62.48	AVG	
2		0.0472	-13.70	64.90	51.20	114.13	-62.93	AVG	
3	*	0.1027	-8.10	57.84	49.74	107.38	-57.64	QP	

Test Mode:	TX CH4182

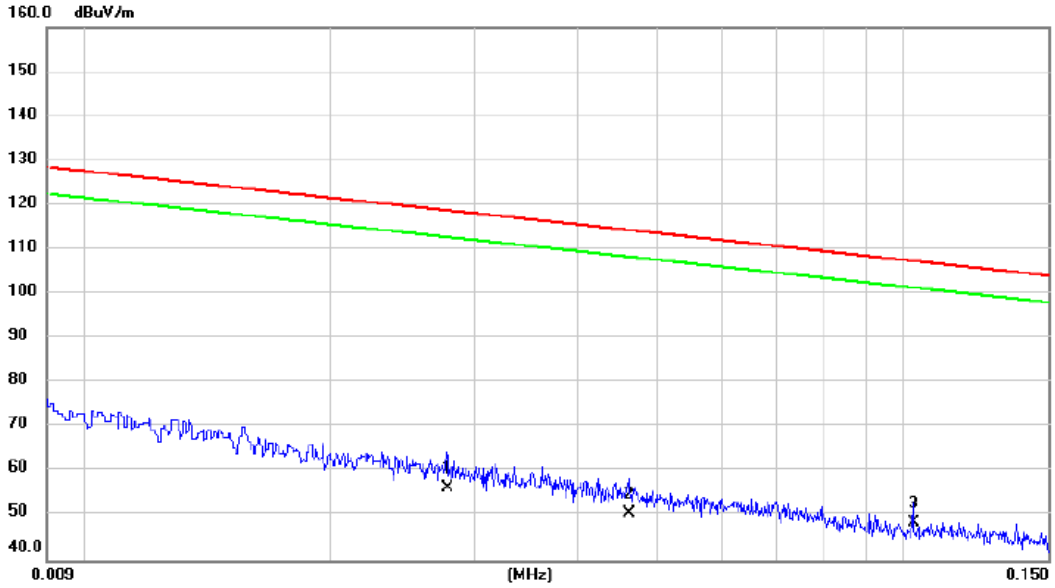
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	1.5765	-2.00	39.82	37.82	63.65	-25.83	QP	
2		4.9785	-1.10	37.70	36.60	69.54	-32.94	QP	
3		13.0065	-1.70	37.97	36.27	69.54	-33.27	QP	

Test Mode:	TX CH4182

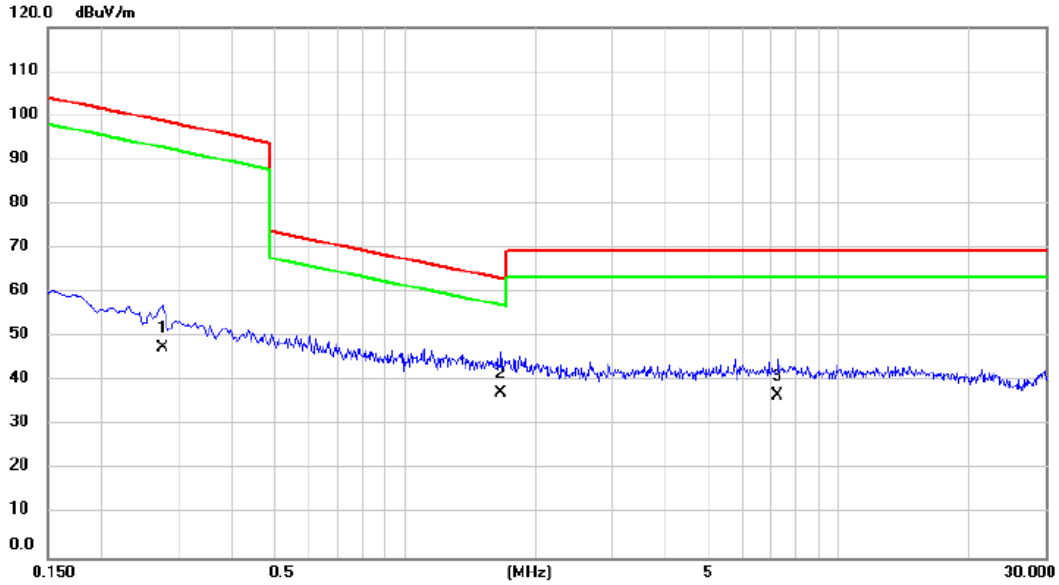
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0278	-13.90	70.27	56.37	118.72	-62.35	AVG	
2		0.0462	-14.50	65.15	50.65	114.31	-63.66	AVG	
3	*	0.1027	-9.20	57.84	48.64	107.38	-58.74	QP	

Test Mode:	TX CH4182

Ant 90°

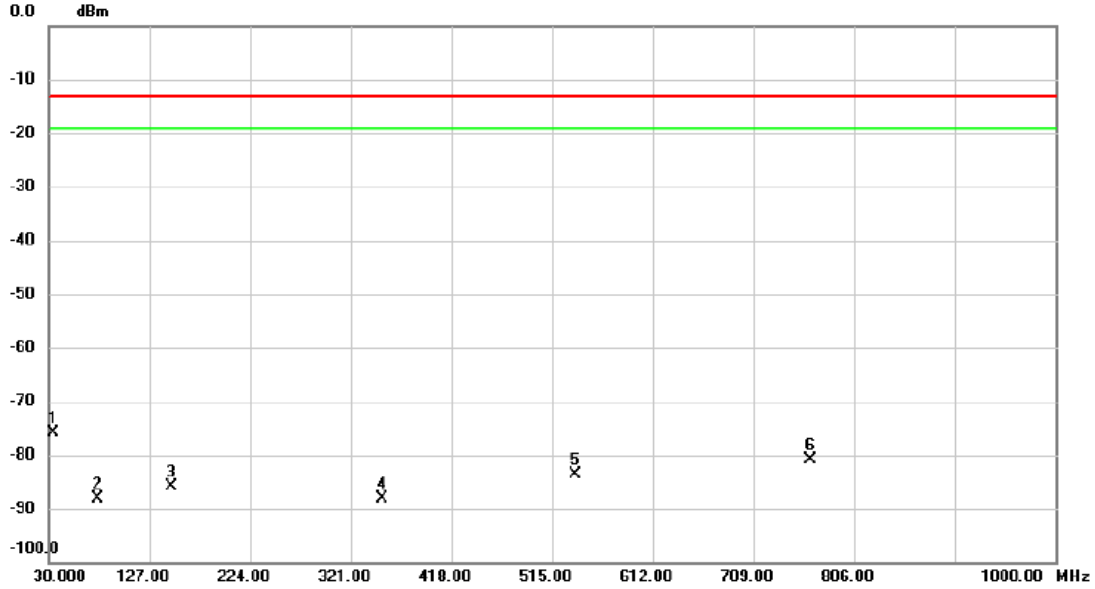


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.2760	-2.00	49.52	47.52	98.79	-51.27	AVG	
2	*	1.6665	-2.40	39.60	37.20	63.17	-25.97	QP	
3		7.2375	-0.90	37.78	36.88	69.54	-32.66	QP	

APPENDIX E - RADIATED EMISSION (30MHZ TO 1GHZ)

Test Mode:	WCDMA Band V_TX CH4182

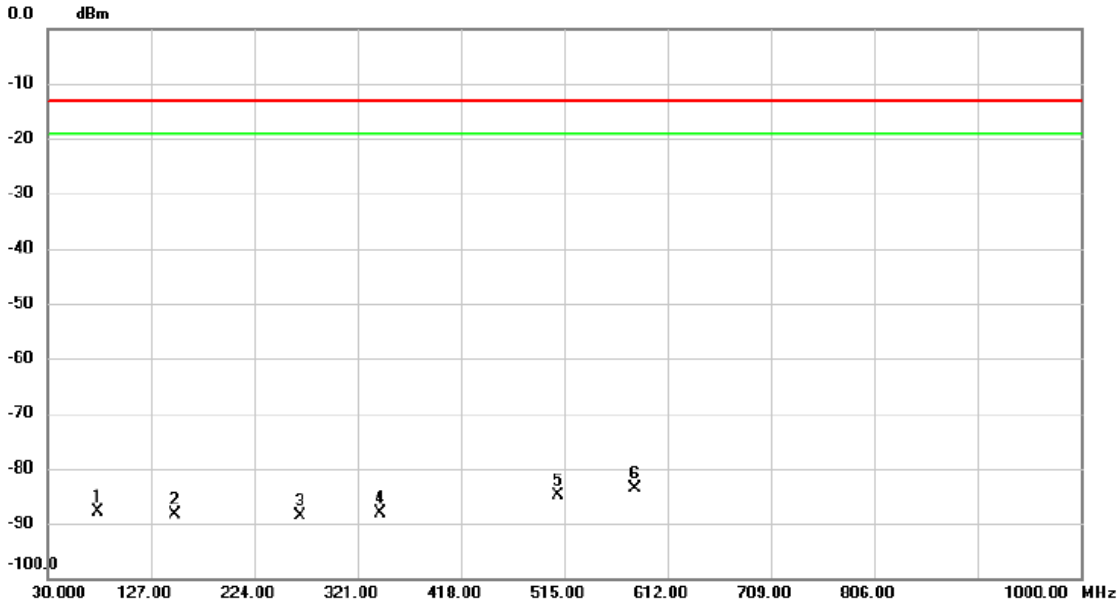
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	33.8800	-58.33	-17.43	-75.76	-13.00	-62.76	peak	
2		76.5600	-67.60	-20.61	-88.21	-13.00	-75.21	peak	
3		148.3400	-70.23	-15.68	-85.91	-13.00	-72.91	peak	
4		351.0700	-74.25	-13.85	-88.10	-13.00	-75.10	peak	
5		537.3100	-72.74	-10.77	-83.51	-13.00	-70.51	peak	
6		764.2900	-73.11	-7.87	-80.98	-13.00	-67.98	peak	

Test Mode:	WCDMA Band V_TX CH4182

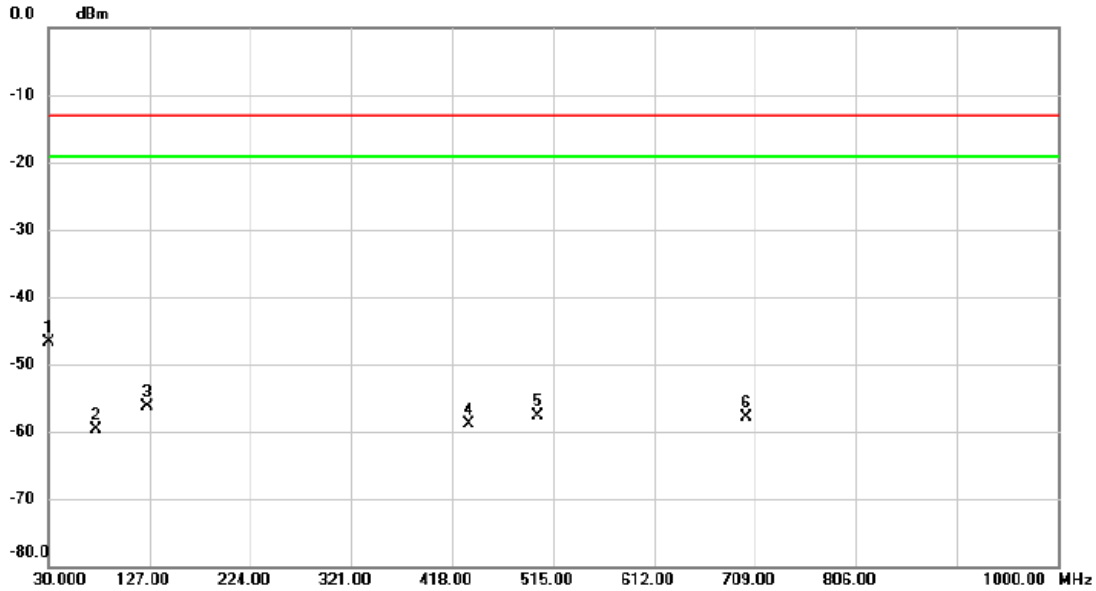
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		77.5300	-67.25	-20.74	-87.99	-13.00	-74.99	peak	
2		149.3100	-72.84	-15.61	-88.45	-13.00	-75.45	peak	
3		266.6800	-71.46	-17.20	-88.66	-13.00	-75.66	peak	
4		342.3400	-74.03	-14.13	-88.16	-13.00	-75.16	peak	
5		509.1800	-73.48	-11.49	-84.97	-13.00	-71.97	peak	
6	*	580.9600	-73.67	-10.04	-83.71	-13.00	-70.71	peak	

Test Mode:	LTE Band 5_TX CH20525_1.4M

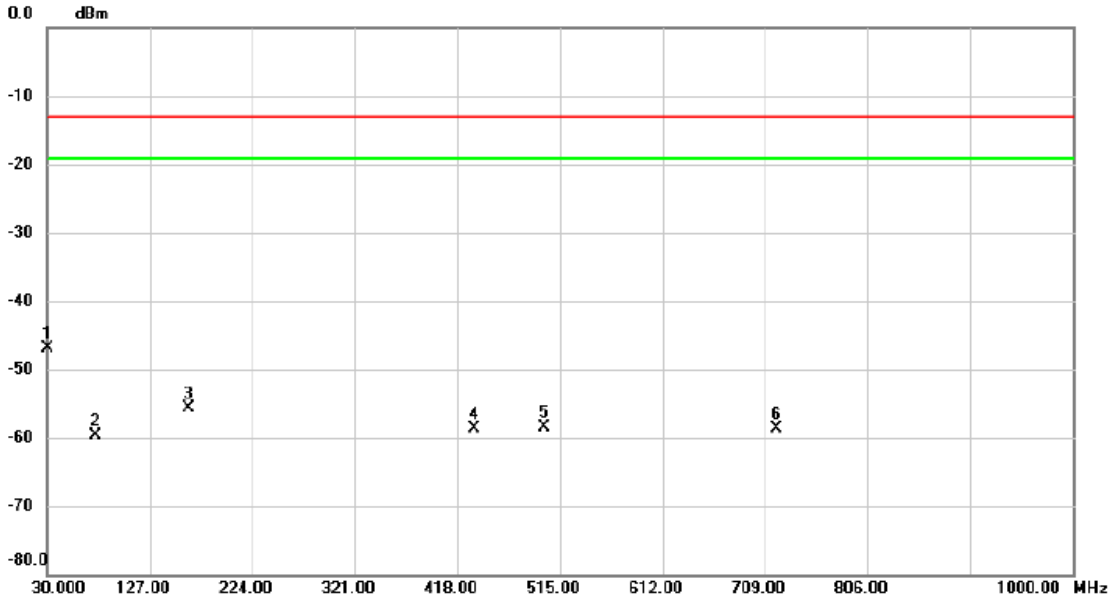
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	30.0000	-38.70	-8.08	-46.78	-13.00	-33.78	peak	
2		75.5900	-48.70	-10.91	-59.61	-13.00	-46.61	peak	
3		125.0600	-48.47	-7.84	-56.31	-13.00	-43.31	peak	
4		433.5200	-55.48	-3.33	-58.81	-13.00	-45.81	peak	
5		499.4800	-55.51	-2.14	-57.65	-13.00	-44.65	peak	
6		700.2700	-58.23	0.36	-57.87	-13.00	-44.87	peak	

Test Mode:	LTE Band 5_TX CH20525_1.4M

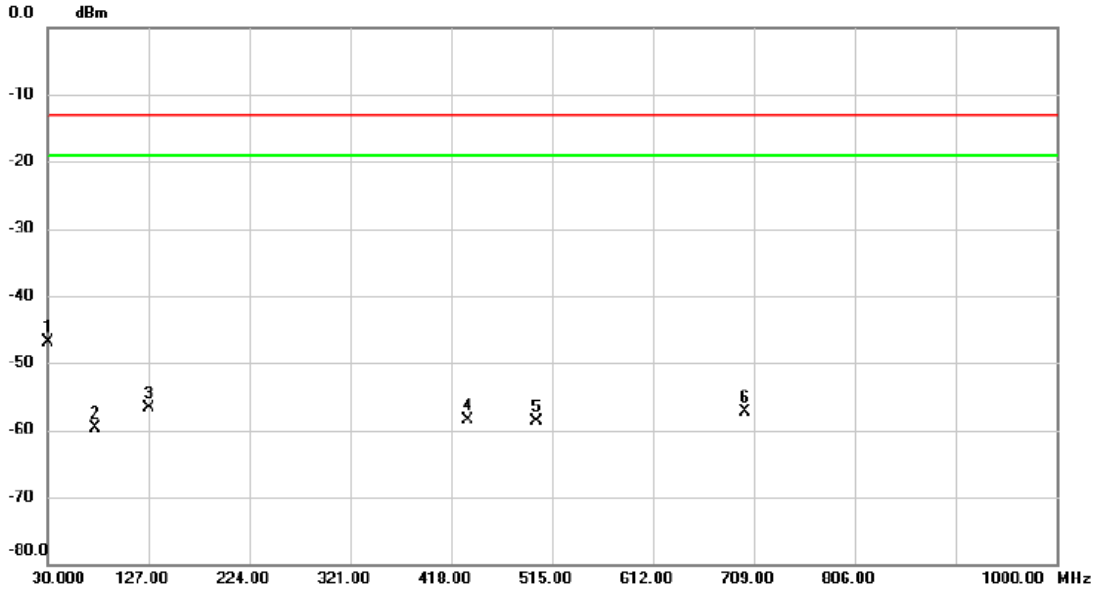
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	30.0000	-38.88	-8.08	-46.96	-13.00	-33.96	peak	
2		75.5900	-48.73	-10.91	-59.64	-13.00	-46.64	peak	
3		163.8600	-49.35	-6.44	-55.79	-13.00	-42.79	peak	
4		433.5200	-55.33	-3.33	-58.66	-13.00	-45.66	peak	
5		499.4800	-56.27	-2.14	-58.41	-13.00	-45.41	peak	
6		719.6700	-59.47	0.85	-58.62	-13.00	-45.62	peak	

Test Mode:	LTE Band 5_TX CH20525_5M

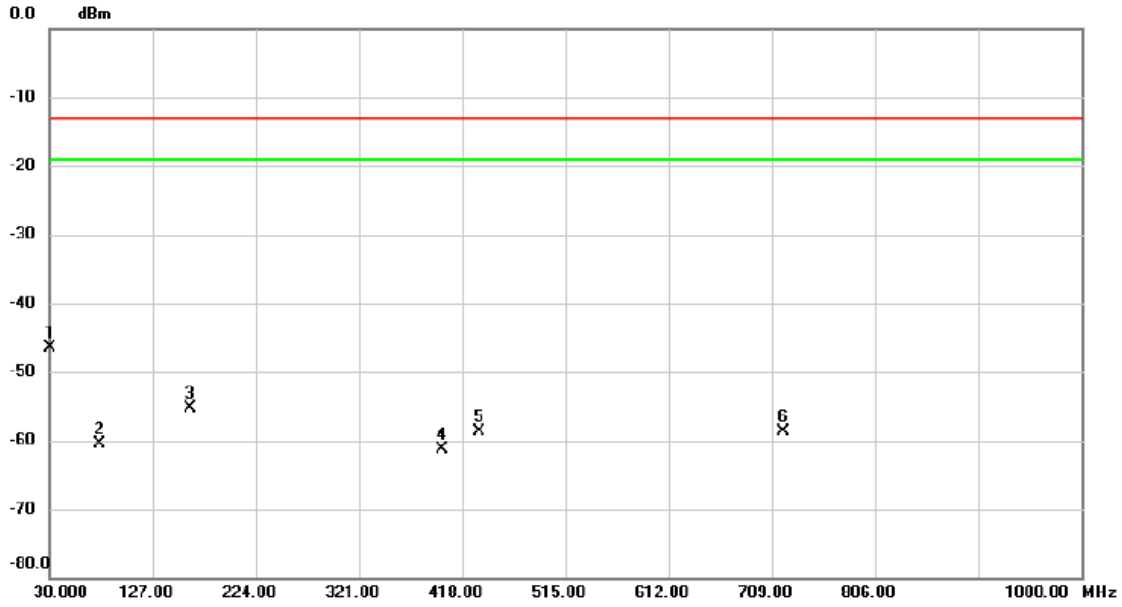
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	30.0000	-38.90	-8.08	-46.98	-13.00	-33.98	peak	
2		75.5900	-48.70	-10.91	-59.61	-13.00	-46.61	peak	
3		127.0000	-48.86	-7.76	-56.62	-13.00	-43.62	peak	
4		433.5200	-55.23	-3.33	-58.56	-13.00	-45.56	peak	
5		500.4500	-56.49	-2.12	-58.61	-13.00	-45.61	peak	
6		700.2700	-57.75	0.36	-57.39	-13.00	-44.39	peak	

Test Mode:	LTE Band 5_TX CH20525_5M

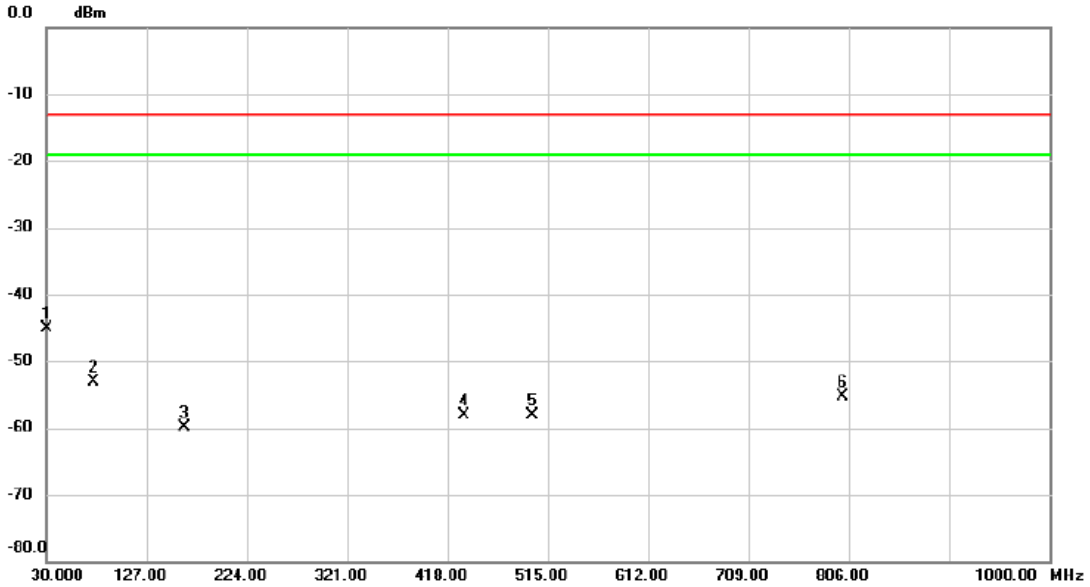
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	30.0000	-38.42	-8.08	-46.50	-13.00	-33.50	peak	
2		77.5300	-49.26	-11.15	-60.41	-13.00	-47.41	peak	
3		162.8900	-48.97	-6.39	-55.36	-13.00	-42.36	peak	
4		399.5700	-56.67	-4.57	-61.24	-13.00	-48.24	peak	
5		433.5200	-55.31	-3.33	-58.64	-13.00	-45.64	peak	
6		719.6700	-59.60	0.85	-58.75	-13.00	-45.75	peak	

Test Mode:	LTE Band 5_TX CH20525_10M

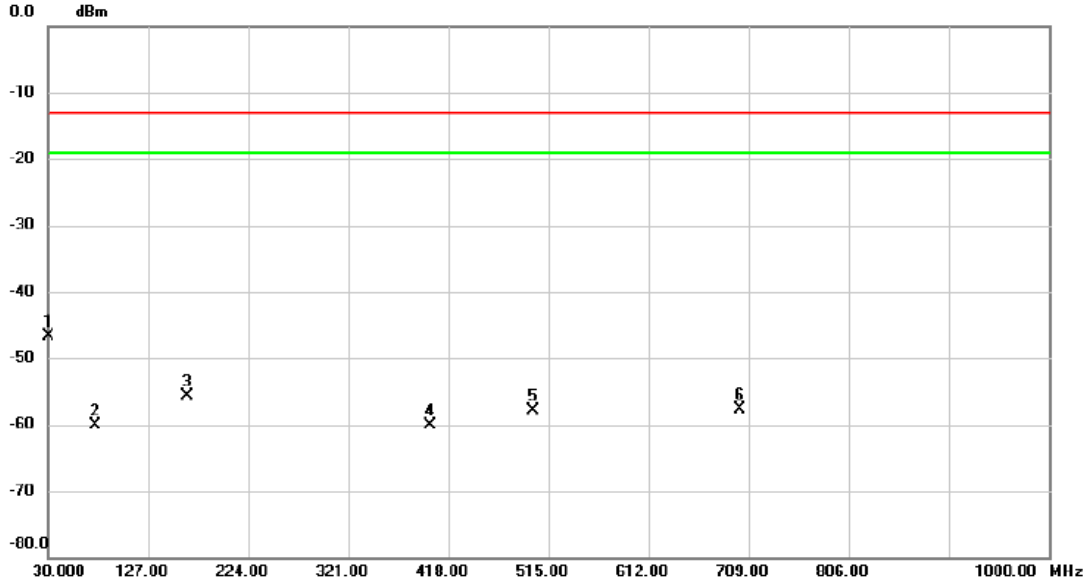
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	30.0000	-37.04	-8.08	-45.12	-13.00	-32.12	peak	
2		75.5900	-42.12	-10.91	-53.03	-13.00	-40.03	peak	
3		163.8600	-53.42	-6.44	-59.86	-13.00	-46.86	peak	
4		433.5200	-54.79	-3.33	-58.12	-13.00	-45.12	peak	
5		500.4500	-55.94	-2.12	-58.06	-13.00	-45.06	peak	
6		800.1800	-57.38	1.99	-55.39	-13.00	-42.39	peak	

Test Mode:	LTE Band 5_TX CH20525_10M

Horizontal

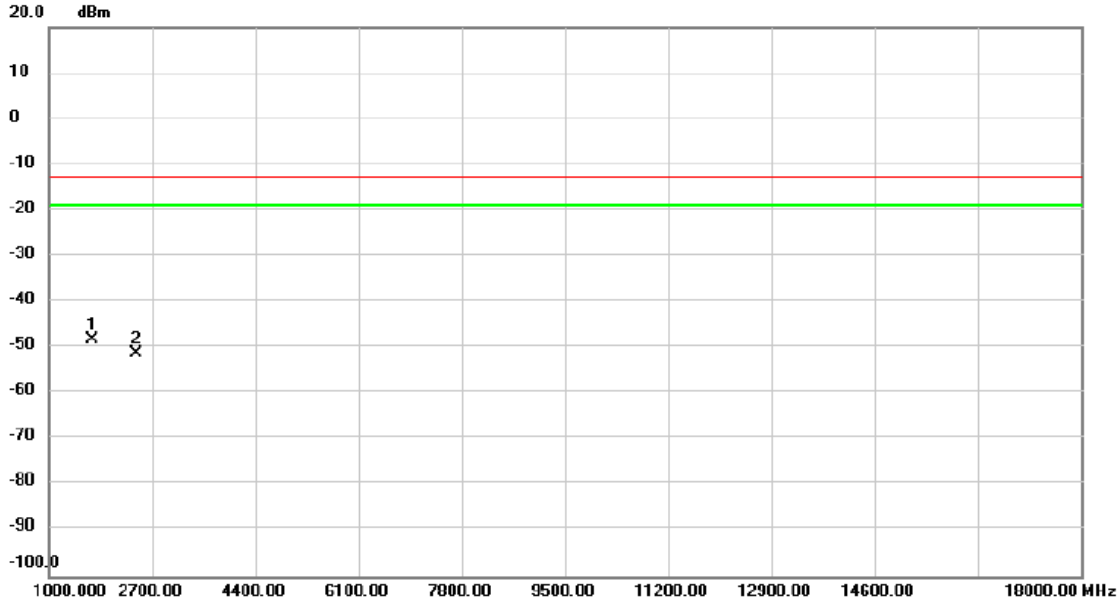


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	30.0000	-38.64	-8.08	-46.72	-13.00	-33.72	peak	
2		75.5900	-49.23	-10.91	-60.14	-13.00	-47.14	peak	
3		164.8300	-49.24	-6.49	-55.73	-13.00	-42.73	peak	
4		400.5400	-55.59	-4.55	-60.14	-13.00	-47.14	peak	
5		500.4500	-55.79	-2.12	-57.91	-13.00	-44.91	peak	
6		700.2700	-58.01	0.36	-57.65	-13.00	-44.65	peak	

APPENDIX F - RADIATED EMISSION (ABOVE 1GHZ)

Test Mode:	WCDMA Band V_TX CH4182

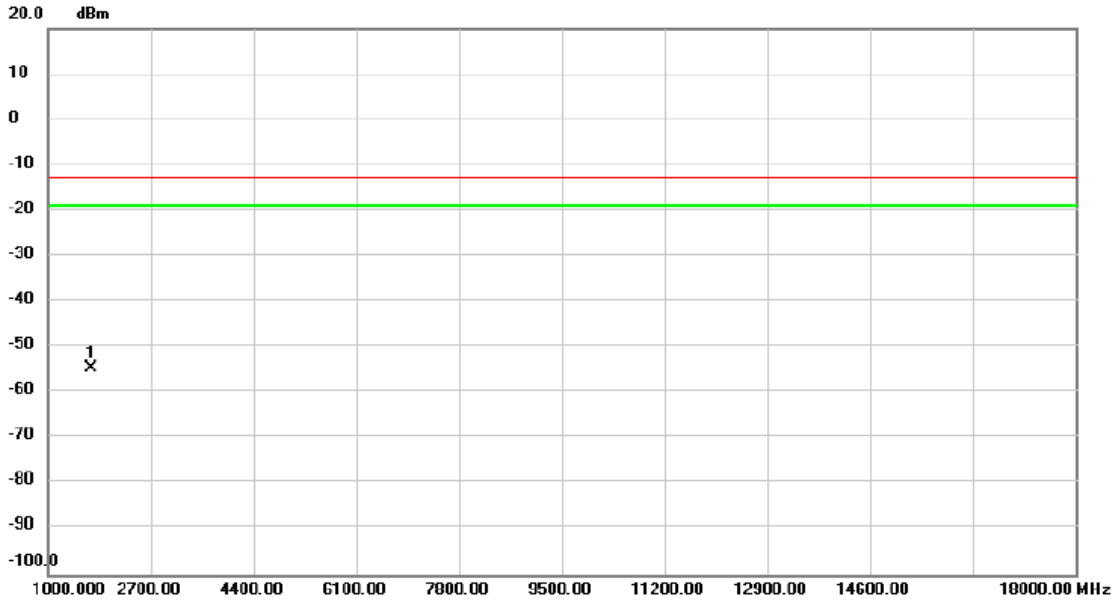
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1714.000	-44.13	-4.07	-48.20	-13.00	-35.20	peak	
2		2445.000	-48.16	-2.97	-51.13	-13.00	-38.13	peak	

Test Mode:	WCDMA Band V_TX CH4182

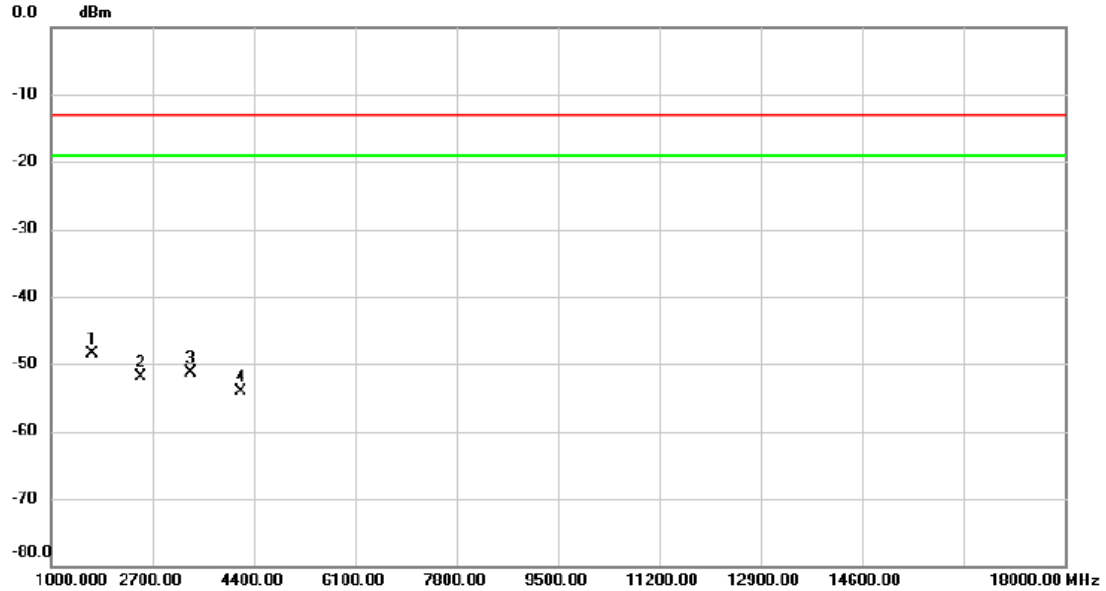
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1714.000	-50.36	-4.07	-54.43	-13.00	-41.43	peak	

Test Mode:	LTE Band 5_TX CH20525_1.4M

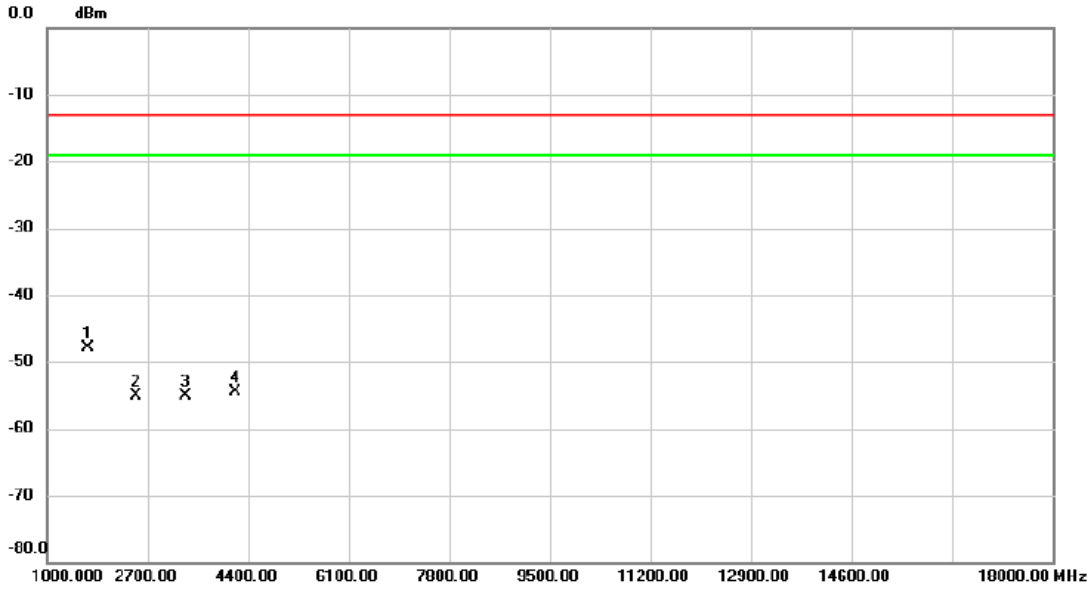
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1680.000	-40.58	-7.96	-48.54	-13.00	-35.54	peak	
2		2513.000	-46.69	-5.13	-51.82	-13.00	-38.82	peak	
3		3346.000	-48.19	-3.20	-51.39	-13.00	-38.39	peak	
4		4179.000	-53.03	-1.03	-54.06	-13.00	-41.06	peak	

Test Mode:	LTE Band 5_TX CH20525_1.4M

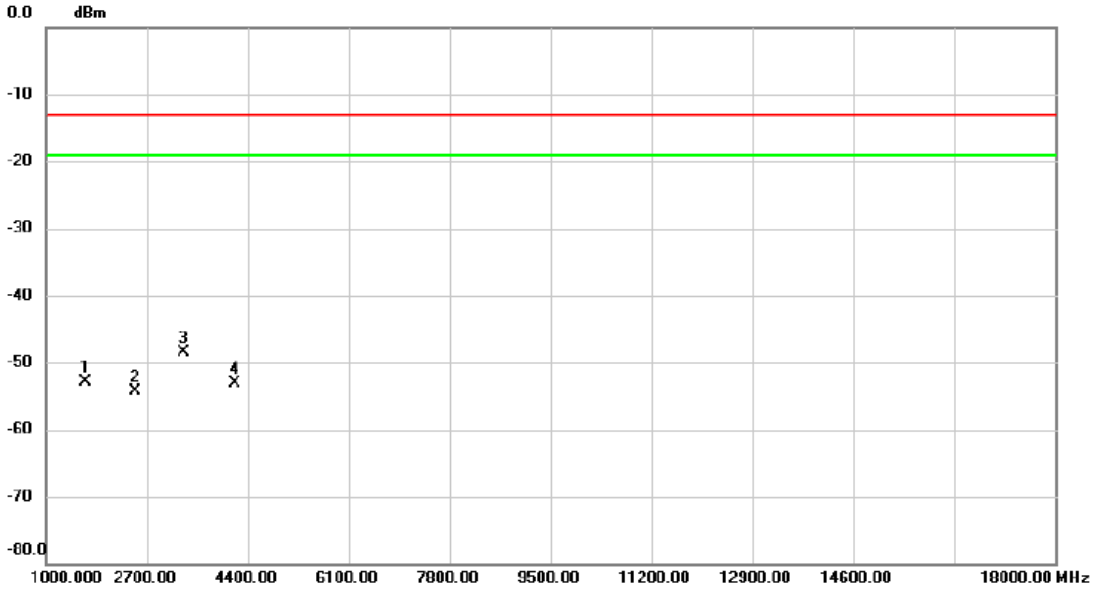
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1680.000	-40.00	-7.96	-47.96	-13.00	-34.96	peak	
2		2509.500	-50.06	-5.13	-55.19	-13.00	-42.19	peak	
3		3346.000	-51.83	-3.20	-55.03	-13.00	-42.03	peak	
4		4179.000	-53.45	-1.03	-54.48	-13.00	-41.48	peak	

Test Mode:	LTE Band 5_TX CH20525_5M

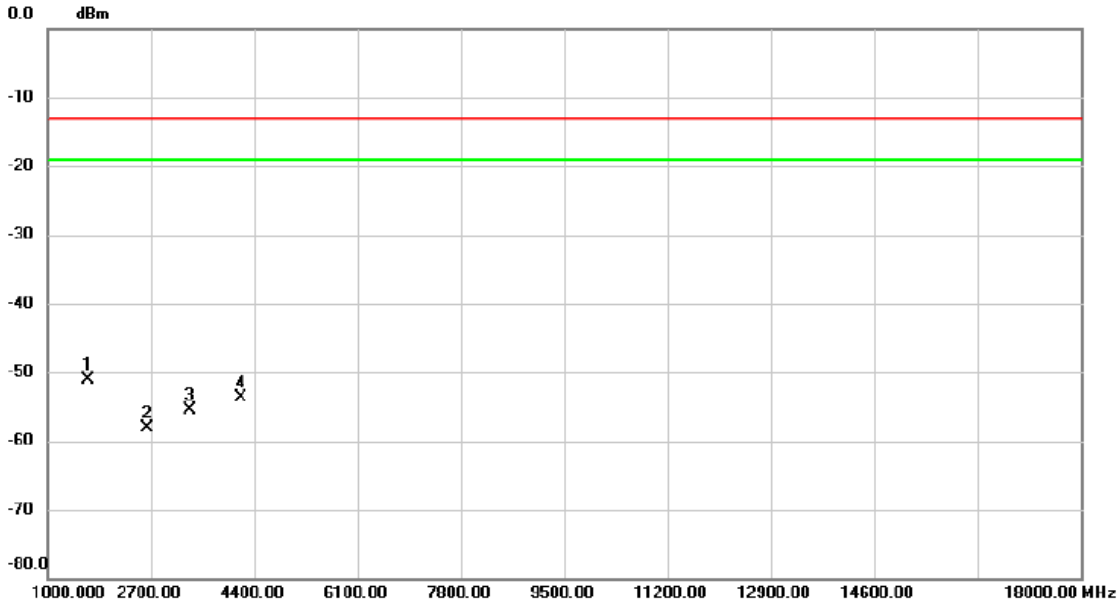
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		1663.000	-44.78	-8.03	-52.81	-13.00	-39.81	peak	
2		2496.000	-49.14	-5.17	-54.31	-13.00	-41.31	peak	
3	*	3329.000	-45.25	-3.23	-48.48	-13.00	-35.48	peak	
4		4179.000	-52.04	-1.03	-53.07	-13.00	-40.07	peak	

Test Mode:	LTE Band 5_TX CH20525_5M

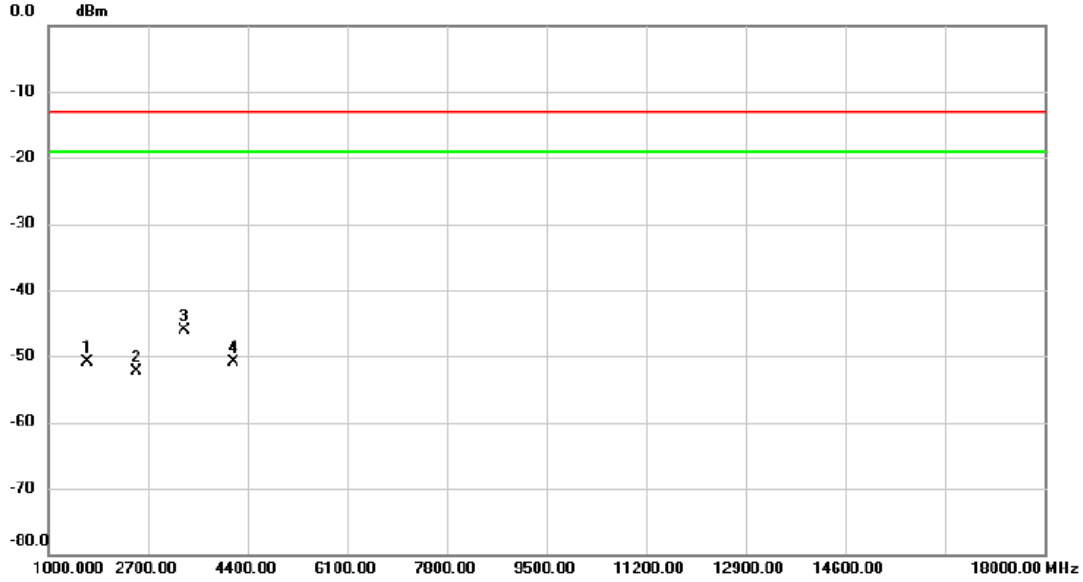
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1663.000	-43.05	-8.03	-51.08	-13.00	-38.08	peak	
2		2649.000	-53.45	-4.74	-58.19	-13.00	-45.19	peak	
3		3346.000	-52.27	-3.20	-55.47	-13.00	-42.47	peak	
4		4179.000	-52.64	-1.03	-53.67	-13.00	-40.67	peak	

Test Mode:	LTE Band 5_TX CH20525_10M

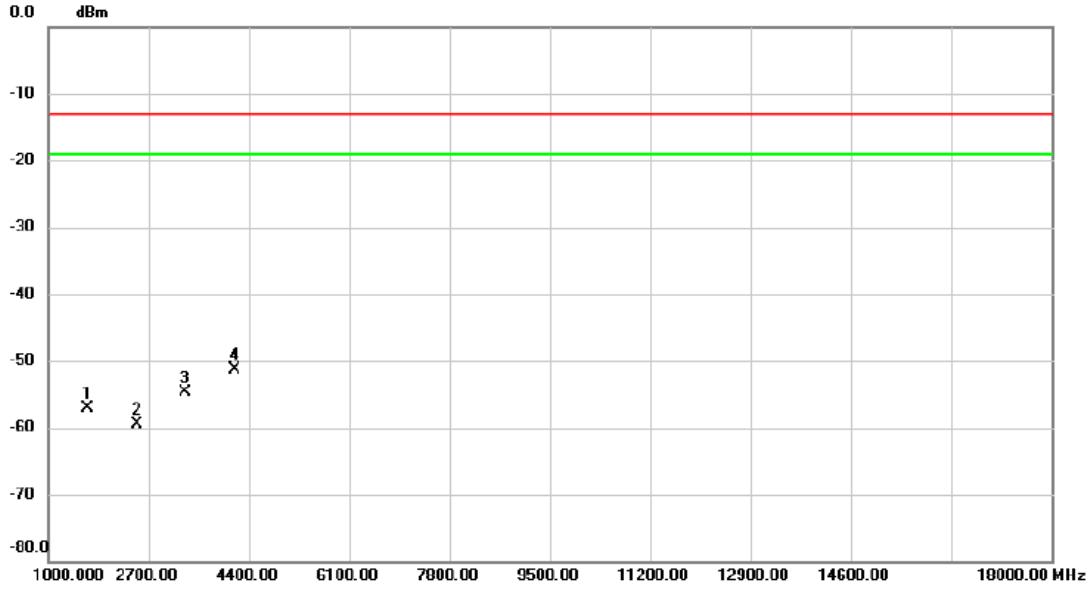
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		1663.000	-42.79	-8.03	-50.82	-13.00	-37.82	peak	
2		2496.000	-47.18	-5.17	-52.35	-13.00	-39.35	peak	
3	*	3329.000	-42.83	-3.23	-46.06	-13.00	-33.06	peak	
4		4162.000	-49.85	-1.07	-50.92	-13.00	-37.92	peak	

Test Mode:	LTE Band 5_TX CH20525_10M

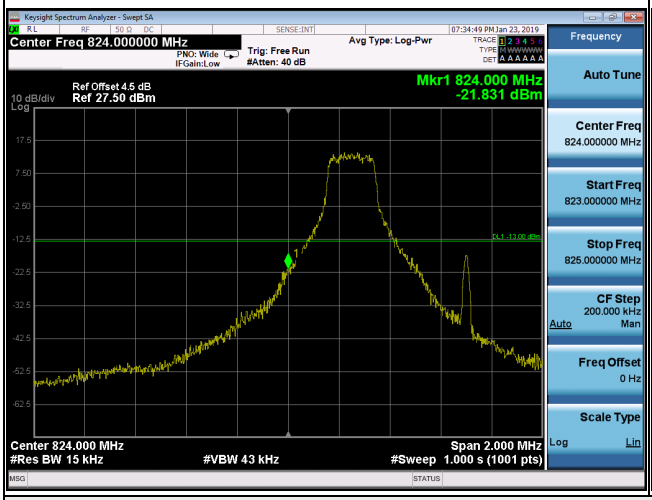
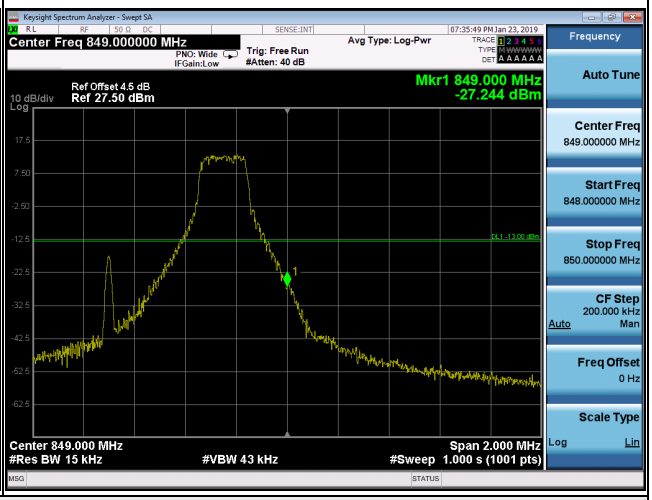
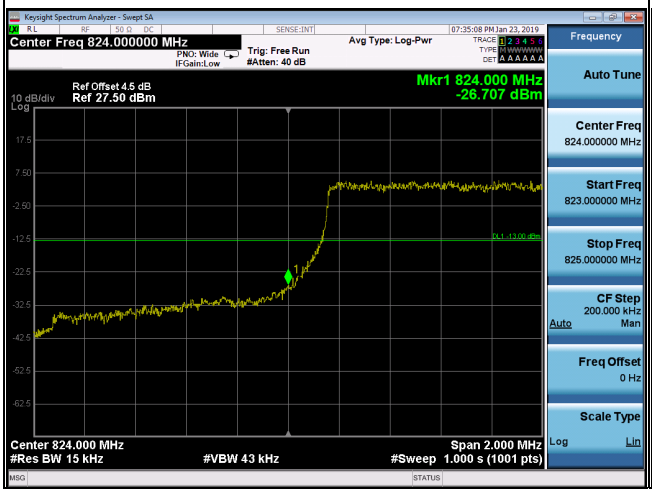
Horizontal

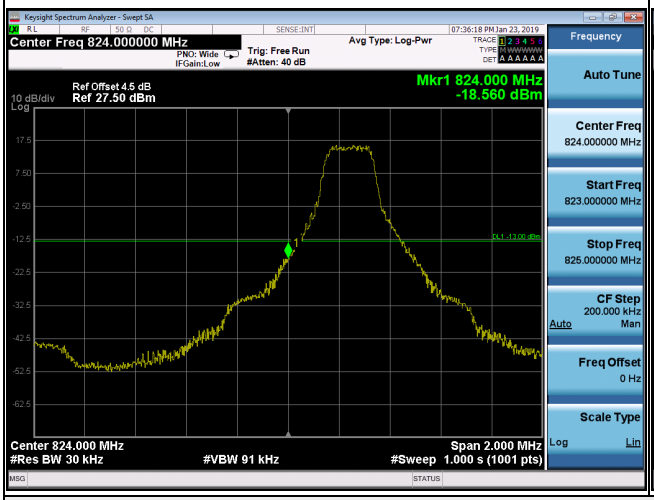
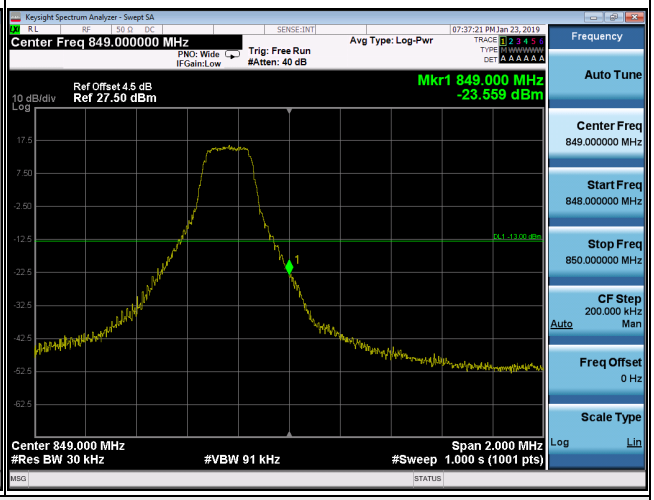
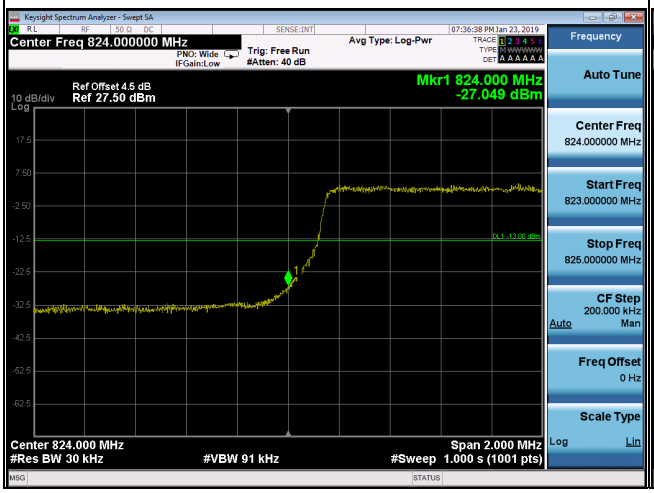
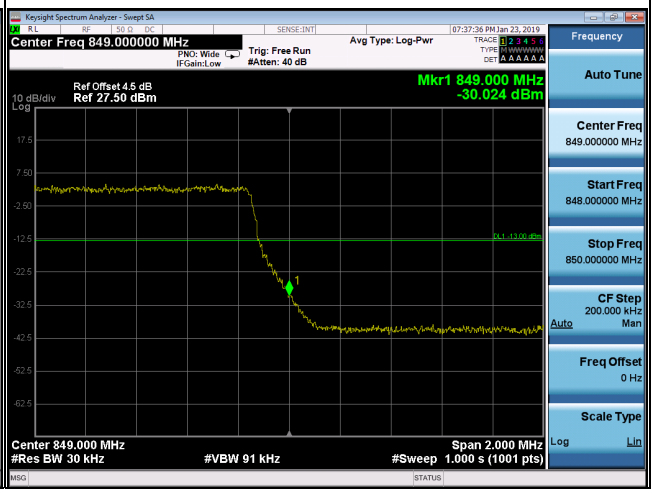


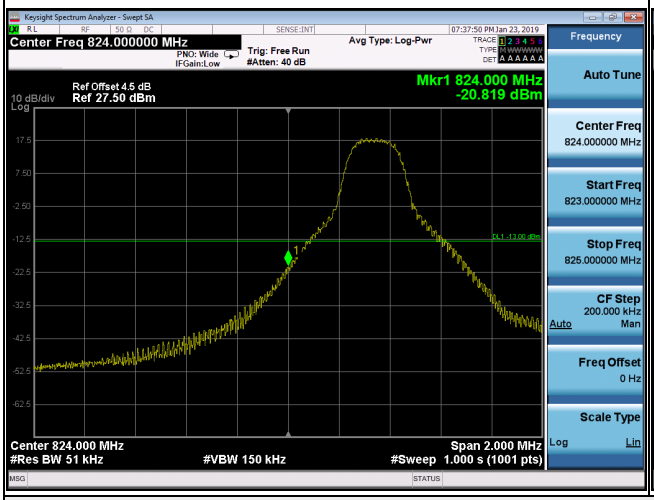
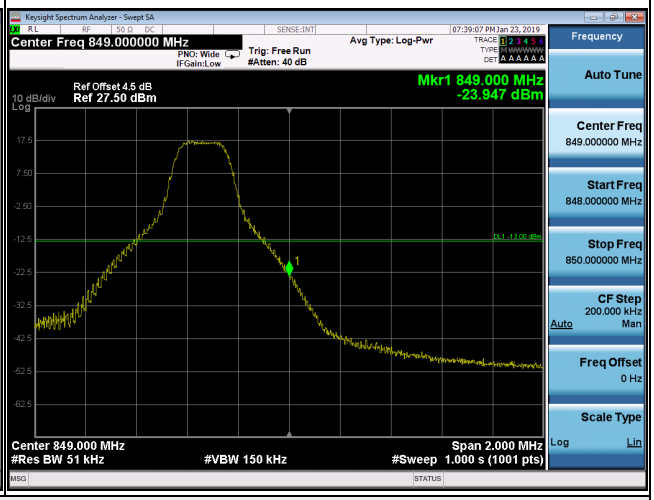
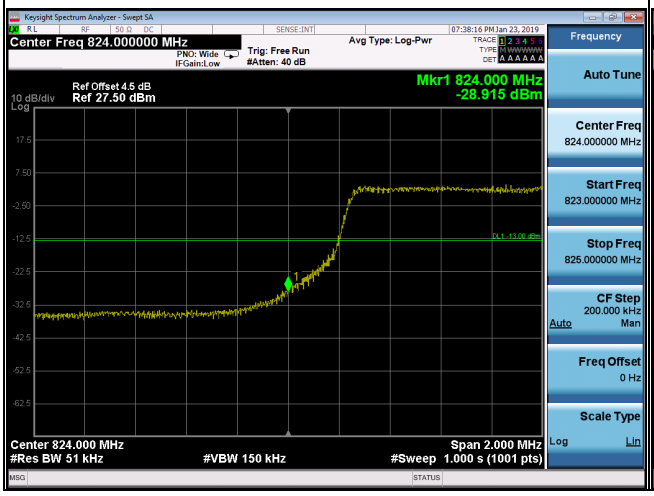
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		1663.000	-48.99	-8.03	-57.02	-13.00	-44.02	peak	
2		2496.000	-54.37	-5.17	-59.54	-13.00	-46.54	peak	
3		3329.000	-51.42	-3.23	-54.65	-13.00	-41.65	peak	
4	*	4162.000	-50.23	-1.07	-51.30	-13.00	-38.30	peak	

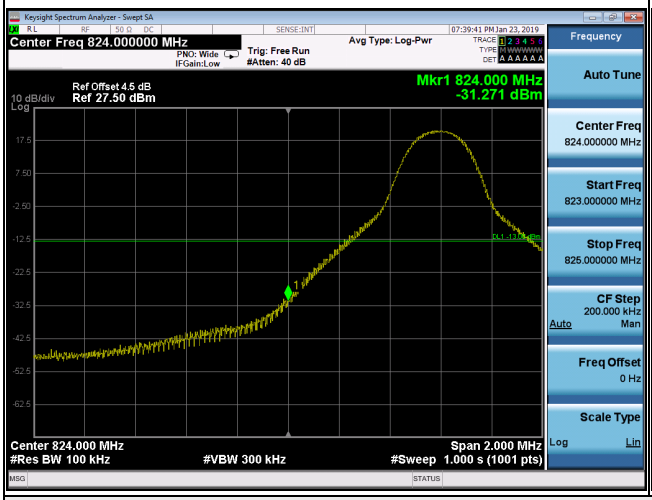
APPENDIX G - BAND EDGE

WCDMA Band V			
Channel	4132	Channel	4233
			

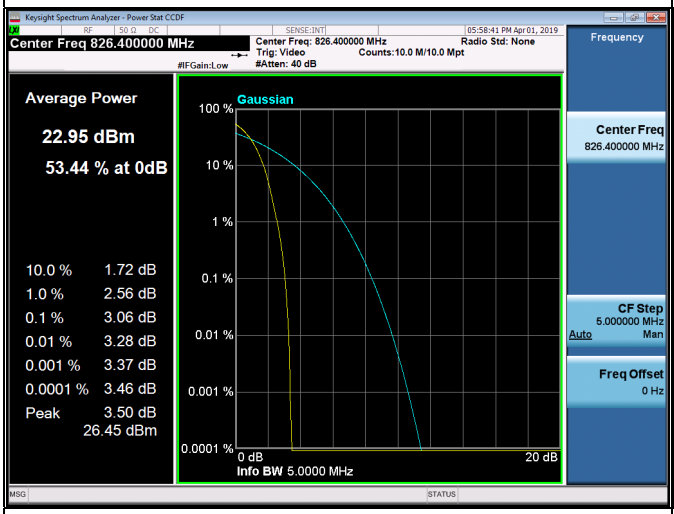
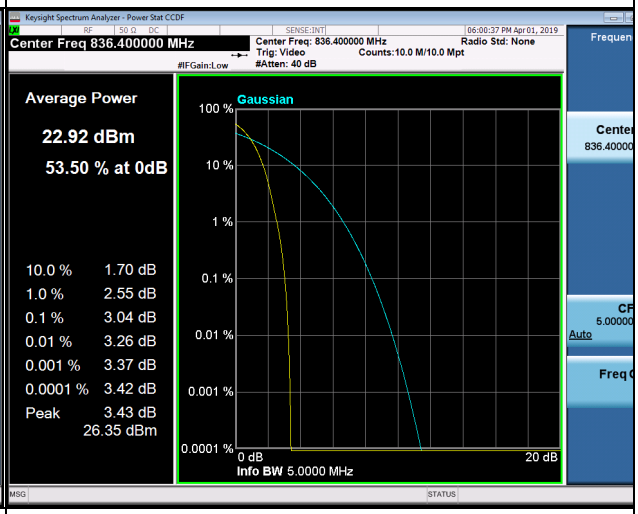
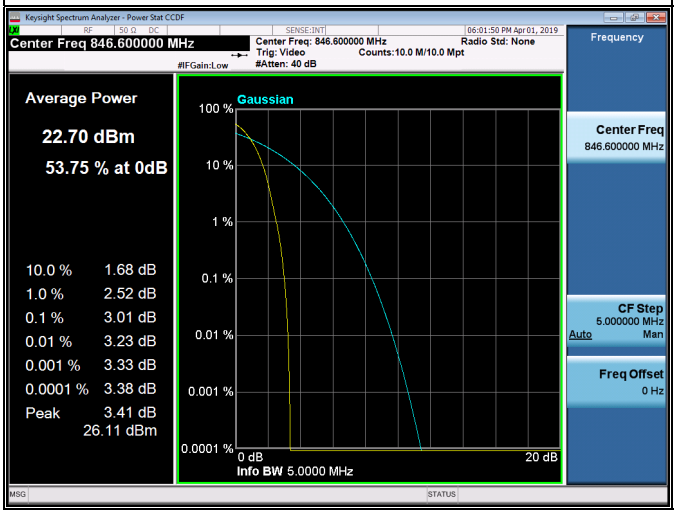
LTE Band 5_1.4M			
1RB0		1RB5	
Channel	20407	Channel	20643
			
6RB0			
Channel	20407	Channel	20643
			

LTE Band 5_3M			
1RB0		1RB14	
Channel	20415	Channel	20635
			
15RB0			
Channel	20415	Channel	20635
			

LTE Band 5_5M			
1RB0		1RB24	
Channel	20425	Channel	20625
			
25RB0			
Channel	20425	Channel	20625
			

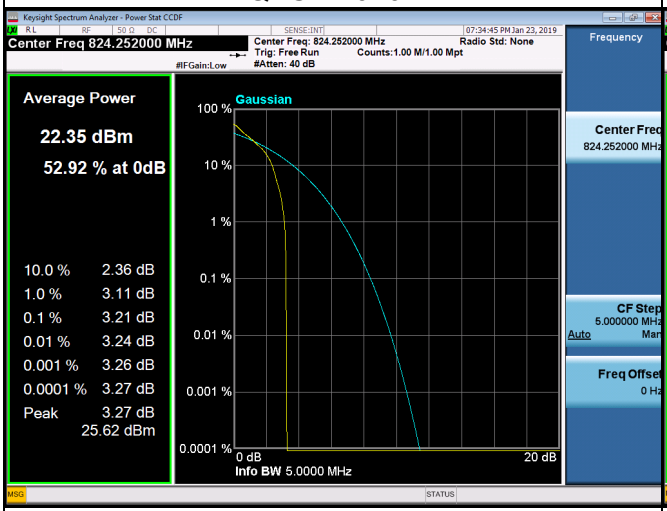
LTE Band 5_10M			
1RB0		1RB49	
Channel	20450	Channel	20600
			
50RB0			
Channel	20450	Channel	20600
			

APPENDIX H - PEAK TO AVERAGE RATIO

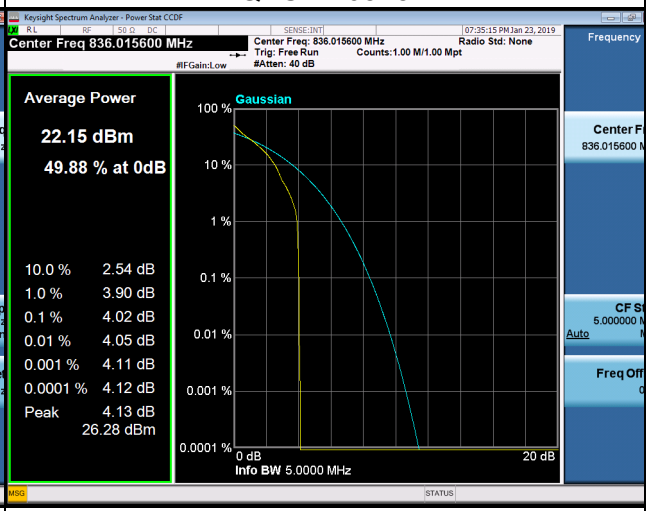
WCDMA Band V Spectrum Plot	
4132	4182
	
4233	-
	-

LTE Band 5 Spectrum Plot_1.4M

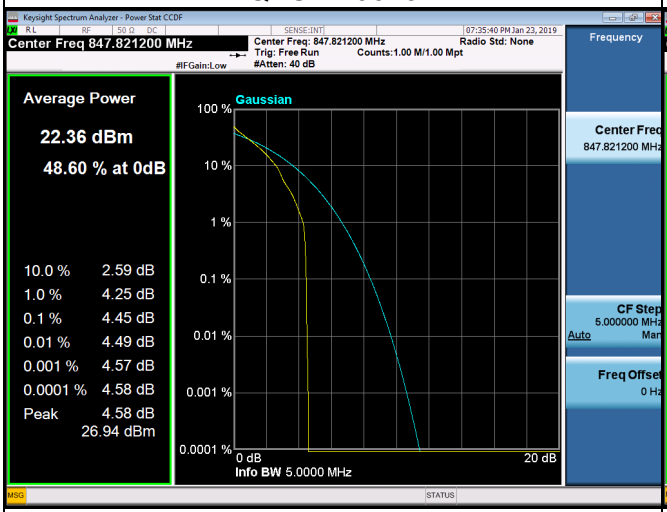
QPSK-20407



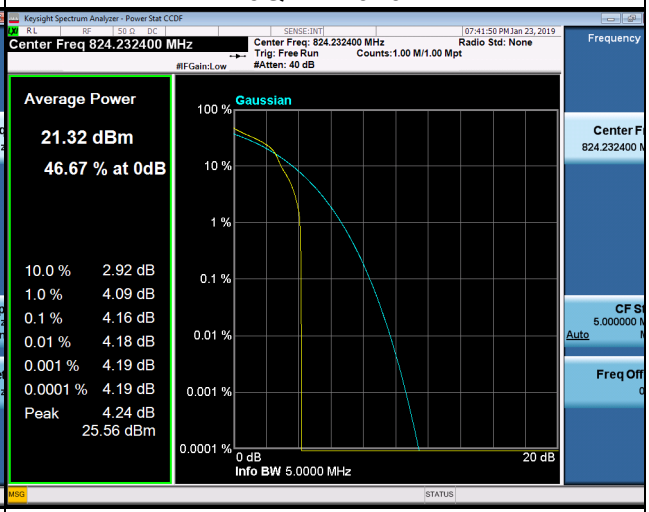
QPSK-20525



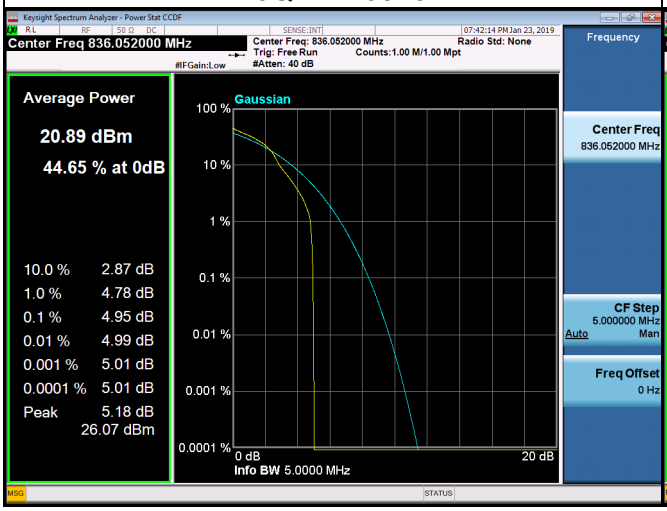
QPSK-20643



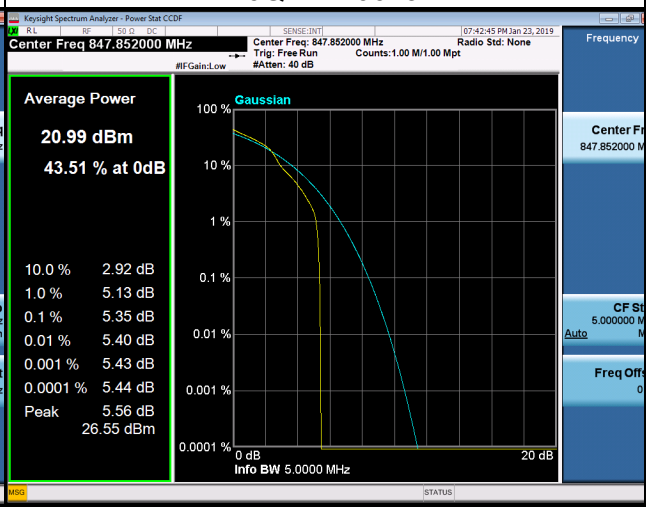
16QAM-20407



16QAM-20525

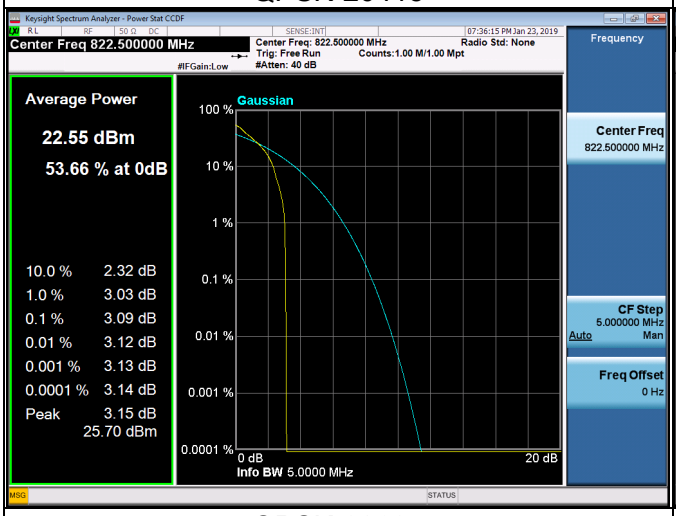


16QAM-20643

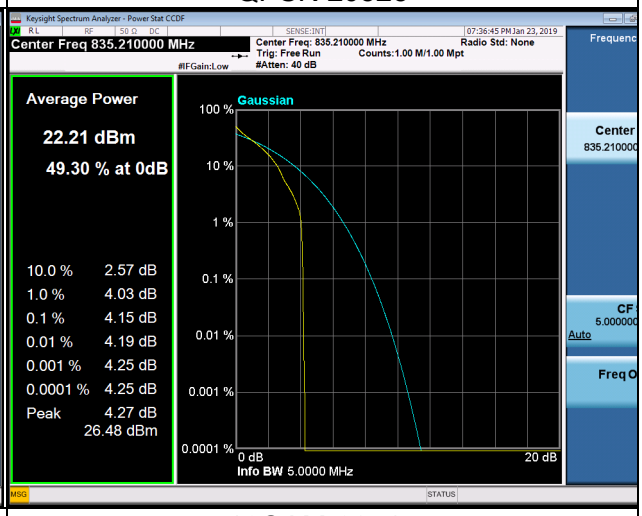


LTE Band 5 Spectrum Plot_3M

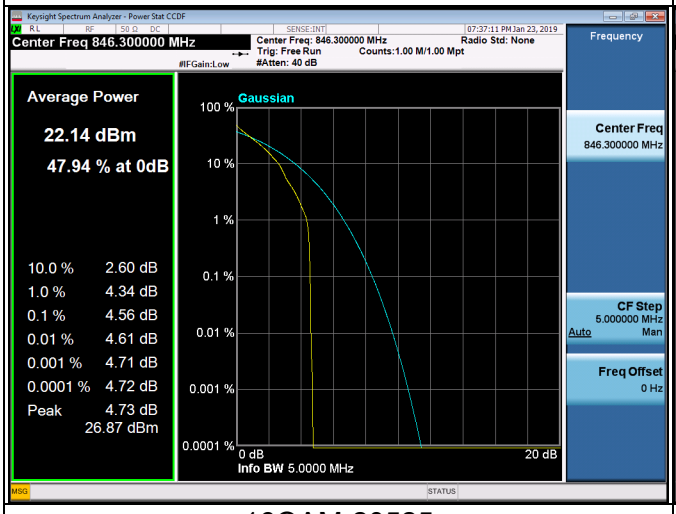
QPSK-20415



QPSK-20525



QPSK-20635



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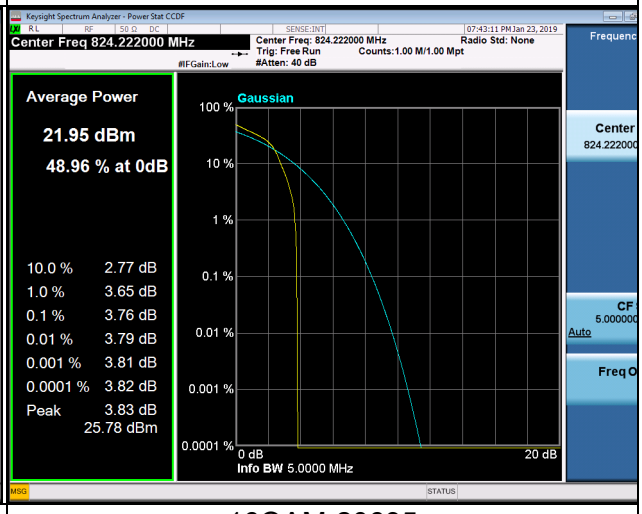
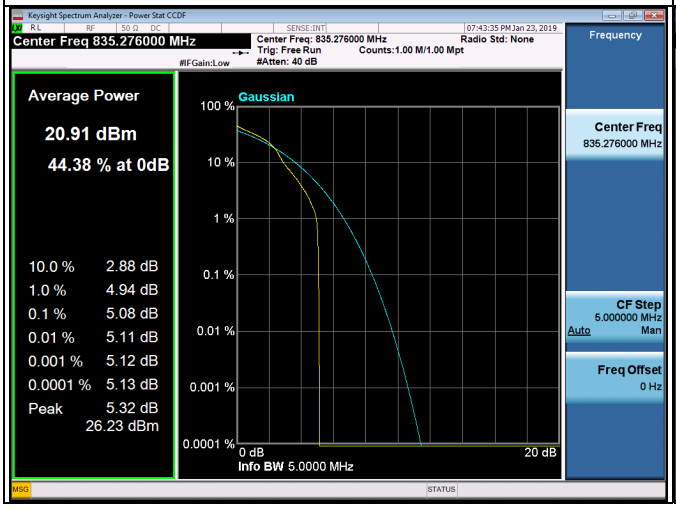
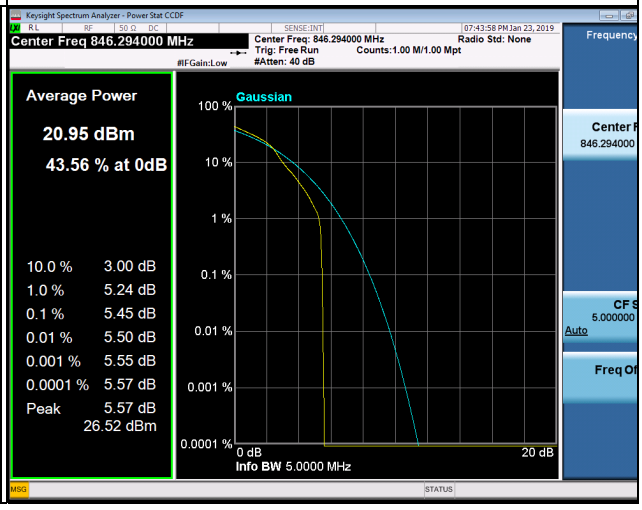


16QAM-20525

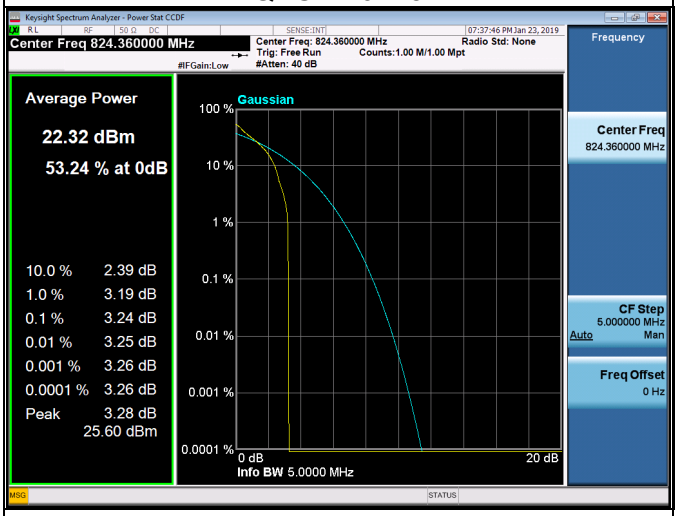


16QAM-20635

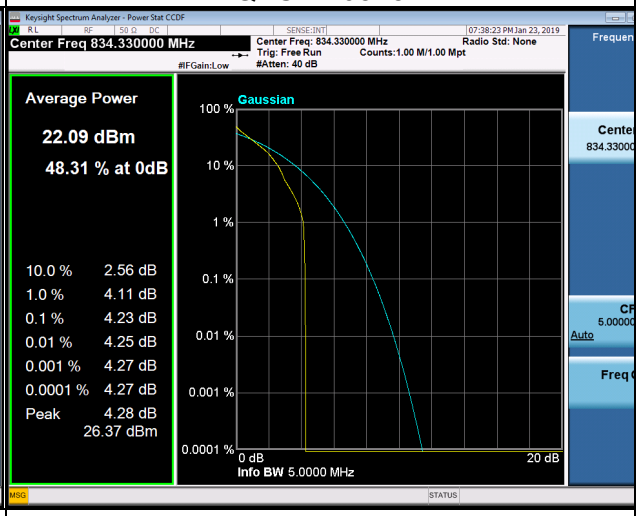


LTE Band 5 Spectrum Plot_5M

QPSK-20425



QPSK-20525



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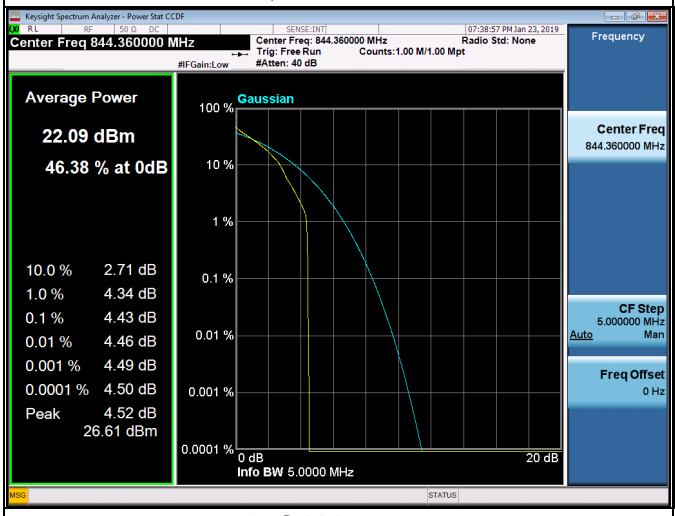

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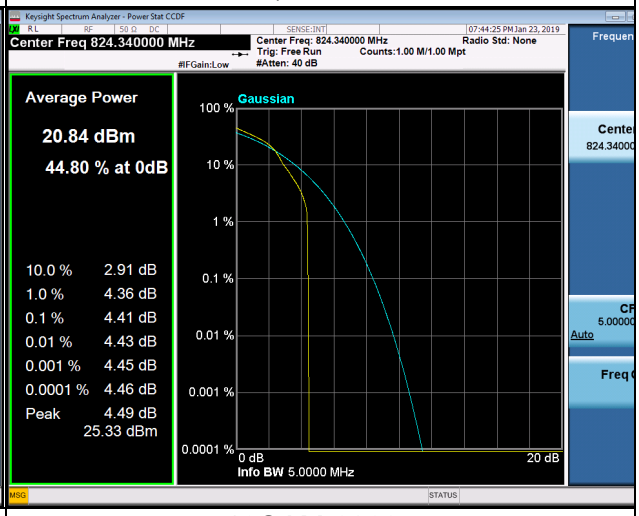
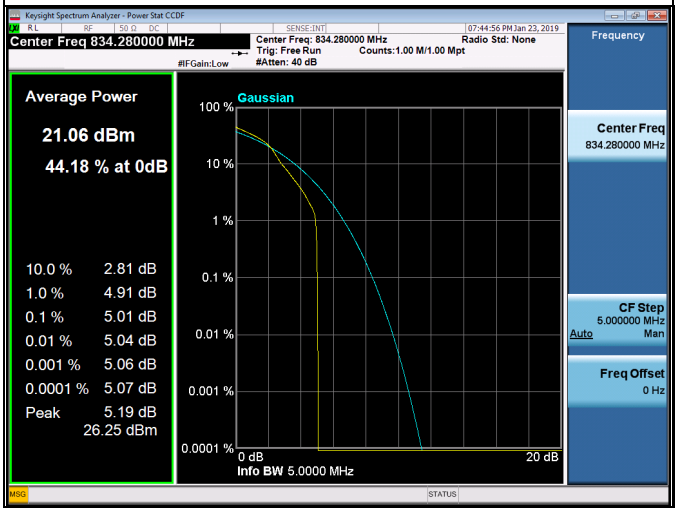
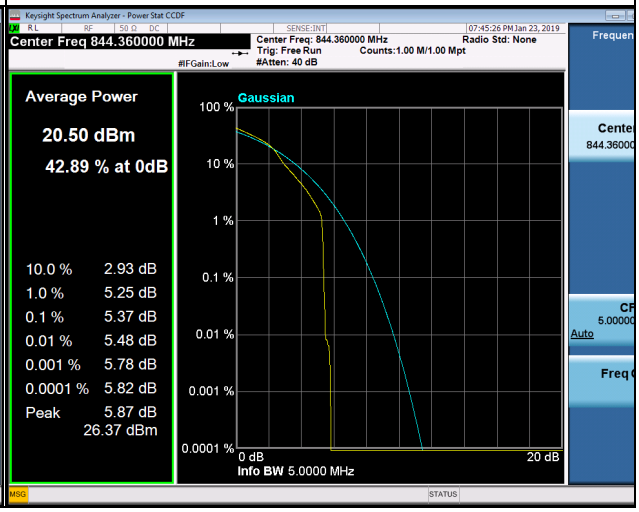


16QAM-20525

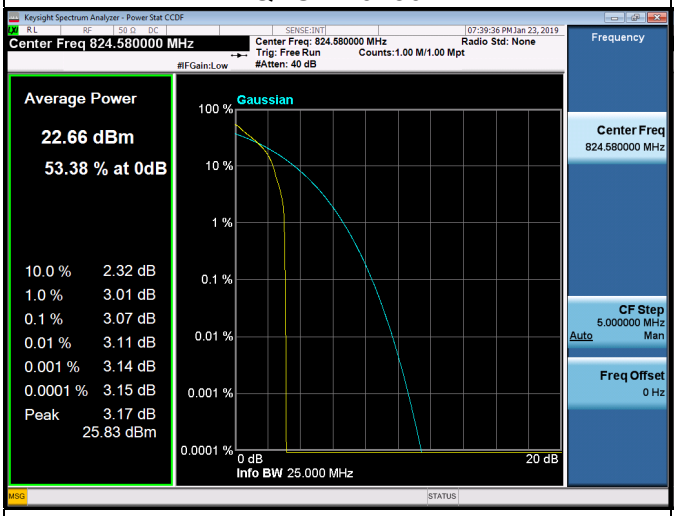


16QAM-20625

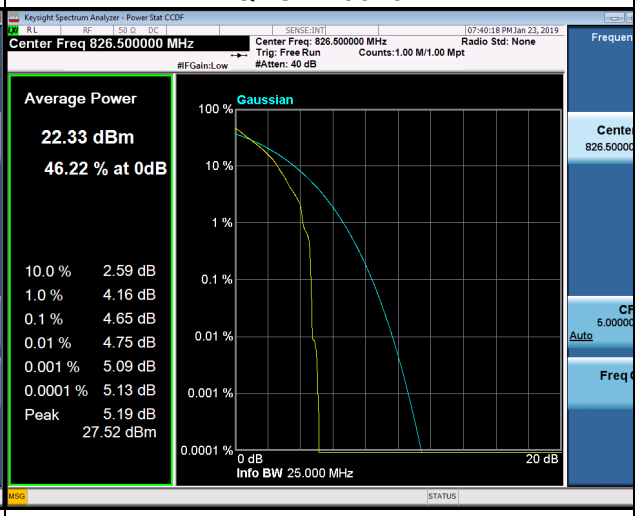


LTE Band 5 Spectrum Plot_10M

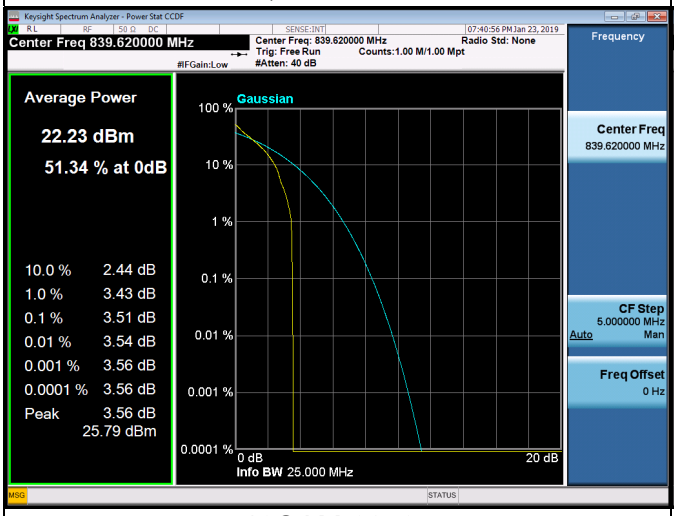
QPSK-20450



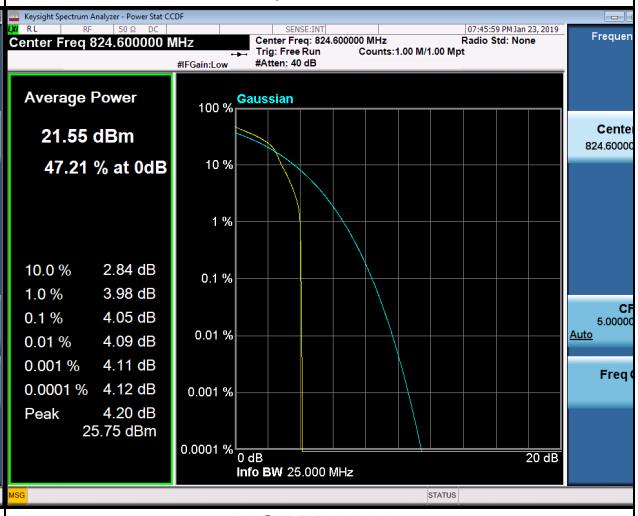
QPSK-20525



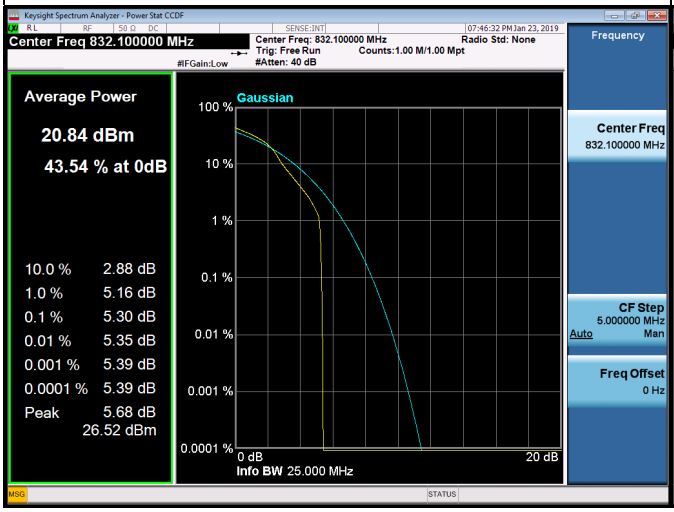
QPSK-20600



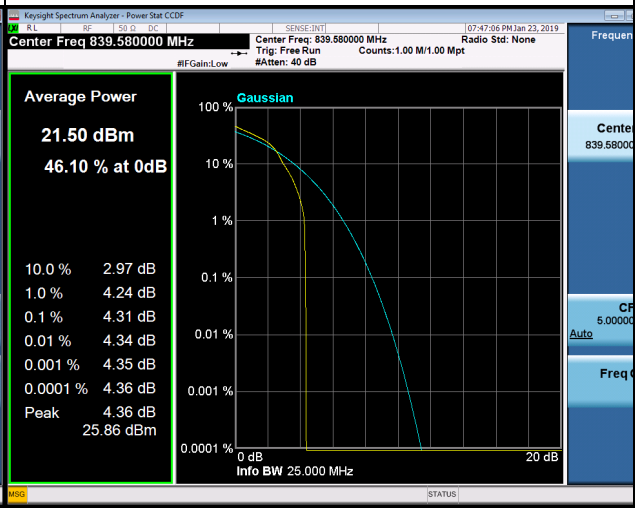
16QAM-20450



16QAM-20525



16QAM-20600



APPENDIX I - FREQUENCY STABILITY

Test Mode:	WCDMA Band V_CH4182

Temperature vs. Frequency Stabiility

Temperature(℃)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-10	6.04	0.007221425	±2.5
0	5.03	0.006013869	
10	8.97	0.010724534	
20	5.58	0.006671449	
30	10.21	0.012207078	
40	9.65	0.011537542	
50	4.15	0.004961741	
55	8.05	0.009624582	
Max. Deviation (ppm)	**10.21**	**0.012207078**	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
13.2	5.09	0.006085605	±2.5
12	3.02	0.003610713	
10.8	5.67	0.006779053	
Max. Deviation (ppm)	**5.67**	**0.006779053**	

Test Mode:	LTE Band 5_CH20525_1.4M

Temperature vs. Frequency Stabiility

Temperature(℃)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-10	-5.33	-0.006371787	±2.5
0	-3.46	-0.004136282	
10	-2.94	-0.003514644	
20	5.21	0.006228332	
30	-3.17	-0.0037896	
40	-2.35	-0.002809325	
50	3.68	0.004399283	
55	4.64	0.005546922	
Max. Deviation (ppm)	-5.33	-0.006371787	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
13.2	2.91	0.003478781	±2.5
12	2.98	0.003562463	
10.8	-3.41	-0.004076509	
Max. Deviation (ppm)	-3.41	-0.004076509	

Test Mode:	LTE Band 5_CH20525_3M

Temperature vs. Frequency Stabiility

Temperature(℃)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-10	3.46	0.004136282	±2.5
0	4.62	0.005523013	
10	5.51	0.00658697	
20	-3.13	-0.003741781	
30	4.52	0.005403467	
40	-3.67	-0.004387328	
50	2.13	0.002546324	
55	3.96	0.004734011	
Max. Deviation (ppm)	5.51	0.00658697	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
13.2	-2.94	-0.003514644	±2.5
12	2.65	0.003167962	
10.8	-3.53	-0.004219964	
Max. Deviation (ppm)	-3.53	-0.004219964	

Test Mode:	LTE Band 5_CH20525_5M

Temperature vs. Frequency Stabiility

Temperature(℃)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-10	3.75	0.004482965	±2.5
0	-1.36	-0.001625822	
10	4.53	0.005415421	
20	-2.75	-0.003287507	
30	4.10	0.004901375	
40	5.24	0.006264196	
50	3.60	0.004303646	
55	-2.64	-0.003156007	
Max. Deviation (ppm)	5.24	0.006264196	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
13.2	-3.54	-0.004231919	±2.5
12	-4.86	-0.005809922	
10.8	-2.55	-0.003048416	
Max. Deviation (ppm)	-4.86	-0.005809922	

Test Mode:	LTE Band 5_CH20525_10M

Temperature vs. Frequency Stabiility

Temperature(℃)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-10	6.81	0.008141064	±2.5
0	1.80	0.002151823	
10	-4.21	-0.005032875	
20	-2.37	-0.002833234	
30	-5.72	-0.006838016	
40	6.46	0.007722654	
50	2.35	0.002809325	
55	1.84	0.002199641	
Max. Deviation (ppm)	6.81	0.008141064	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
13.2	-3.46	-0.004136282	±2.5
12	-3.02	-0.003610281	
10.8	3.41	0.004076509	
Max. Deviation (ppm)	-3.46	-0.004136282	

End of Test Report