HCT CO.,LTD.
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
TEL: +82-31-645-6300 FAX: +82-31-645-6401

FCC LTE REPORT

Certification

Applicant Name:
Franklin Technology Inc.

Address:
906 JEI Platz, 186, Gasan digital 1-ro,
Geumcheon-gu, Seoul, Korea, (08502)

Date of Issue:
February 07, 2018

Location:
HCT CO., LTD.,
74, Seoicheon-ro 578beon-gil, Majang-myeon,
Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

Report No.: HCT-RF-1802-FC006

FCC ID:	**XHG-C801**
APPLICANT:	**Franklin Technology Inc.**

Model(s): C801
EUT Type: CPE
FCC Classification: PCS Licensed Transmitter (PCB)
FCC Rule Part(s): §24, §2

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band25 (1.4)	1 850.7 – 1 914.3	1M10G7D	QPSK	0.326	25.13
		1M10W7D	16QAM	0.280	24.47
LTE – Band25 (3)	1 851.5 – 1 913.5	2M71G7D	QPSK	0.340	25.32
		2M70W7D	16QAM	0.290	24.62
LTE – Band25 (5)	1 852.5 – 1 912.5	4M52G7D	QPSK	0.360	25.56
		4M50W7D	16QAM	0.306	24.86
LTE – Band25 (10)	1 855.0 – 1 910.0	9M01G7D	QPSK	0.385	25.86
		9M01W7D	16QAM	0.327	25.14
LTE – Band25 (15)	1 857.5 – 1 907.5	13M5G7D	QPSK	0.344	25.37
		13M5W7D	16QAM	0.290	24.63
LTE – Band25 (20)	1 860.0 – 1 905.0	18M0G7D	QPSK	0.344	25.37
		18M0W7D	16QAM	0.286	24.56

The measurements shown in this report were made in accordance with the procedures specified in CFR47 section §2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)

Report prepared by : Jae Ryang Do
Engineer of Telecommunication Testing Center

Report approved by : Jong Seok Lee
Manager of Telecommunication Testing Center

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-1802-FC006	February 07, 2018	- First Approval Report

Table of Contents

MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	Franklin Technology Inc.
Address:	906 JEI Platz, 186, Gasan digital 1-ro, Geumcheon-gu, Seoul, Korea, (08502)
FCC ID:	XHG-C801
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part(s):	§24, §2
EUT Type:	CPE
Model(s):	C801
Tx Frequency:	1 850.7 MHz – 1 914.3 MHz (LTE – Band25 (1.4 MHz)) 1 851.5 MHz – 1 913.5 MHz (LTE – Band25 (3 MHz)) 1 852.5 MHz – 1 912.5 MHz (LTE – Band25 (5 MHz)) 1 855.0 MHz – 1 910.0 MHz (LTE – Band25 (10 MHz)) 1 857.5 MHz – 1 907.5 MHz (LTE – Band25 (15 MHz)) 1 860.0 MHz – 1 905.0 MHz (LTE – Band25 (20 MHz))
Date(s) of Tests:	December 25, 2017 ~ February 07, 2018

2. INTRODUCTION

2.1. Description of EUT

The EUT was a CPE with only LTE.

2.2. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.3. TEST FACILITY

The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA**.**

3. DESCRIPTION OF TESTS

3.1 TEST PROCEDURE

Test Description	Test Procedure Used
Occupied Bandwidth	- KDB 971168 D01 v03 – Section 4.2 - ANSI C63.26-2015 – Section 5.4.4
Band Edge	- KDB 971168 D01 v03 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Spurious and Harmonic Emissions at Antenna Terminal	- KDB 971168 D01 v03 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Conducted Output Power	- KDB 971168 D01 v03 – Section 5.2 - ANSI C63.26-2015 – Section 5.2.4.2
Peak- to- Average Ratio	- KDB 971168 D01 v03 – Section 5.7 - ANSI C63.26-2015 – Section 5.2.3.4 - ANSI C63.26-2015 – Section 5.2.6(only GSM)
Frequency stability	- ANSI C63.26-2015 – Section 5.6
Effective Radiated Power/ Effective Isotropic Radiated Power	- KDB 971168 D01 v03 – Section 5.2 - ANSI C63.26-2015 – Section 5.2 - ANSI/TIA-603-E-2016 – Section 2.2.17
Radiated Spurious and Harmonic Emissions	- KDB 971168 D01 v03 – Section 5.8 - ANSI/TIA-603-E-2016 – Section 2.2.12

3.2 CONDUCTED OUTPUT POWER

Test Overview

When an average power meter is used to perform RF output power measurements, the fundamental condition that measurements be performed only over durations of active transmissions at maximum output power level applies.

Thus, an average power meter can always be used to perform the measurement when the EUT can be configured to transmit continuously.

3.3 RADIATED POWER

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

The equipment under test is placed on a non-conductive table 3-meters away from the receive antenna in accordance with ANSI/TIA-603-E-2016 Clause 2.2.17.

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW ≥ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points > 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

Test Note

1. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission.
2. A half wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.

   The power is calculated by the following formula;

   $$P_{d(dBm)} = Pg_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dB)}$$

   Where: P_d is the dipole equivalent power and P_g is the generator output power into the substitution antenna.
3. The maximum value is calculated by adding the forward power to the calibrated source plus its appropriate gain value.

   These steps are repeated with the receiving antenna in both vertical and horizontal polarization. the difference between the gain of the horn and an isotropic antenna are taken into consideration
4. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
5. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

3.4 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA-603-E-2016.

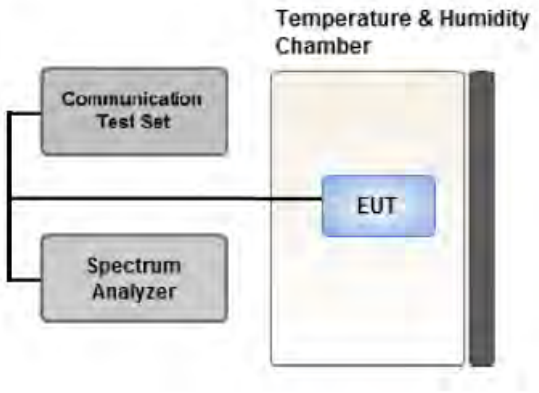
Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW ≥ 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points > 2 x span / RBW
5. Detector = Peak
6. Trace mode = Max Hold
7. The trace was allowed to stabilize
8. Test channel : Low/ Middle/ High
9. Frequency range : We are performed all frequency to 10^{th} harmonics from 9 kHz.

Test Note

1. Measurements value show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
2. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
   The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the test data

3.5 PEAK- TO- AVERAGE RATIO



Test setup

① **CCDF Procedure for PAPR**

Test Settings

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. Set the measurement interval as follows:
   .- for continuous transmissions, set to 1 ms,
   .- or burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
4. Record the maximum PAPR level associated with a probability of 0.1%.

② Alternate Procedure for PAPR

Use one of the procedures presented in 5.2(ANSI C63.26-2015) to measure the total peak power and record as P_{Pk}.

Use one of the applicable procedures presented 5.2(ANSI C63.26-2015) to measure the total average power and record as P_{Avg}. Determine the P.A.R. from:

$$P.A.R_{(dB)} = P_{Pk\ (dBm)} - P_{Avg\ (dBm)}\ (P_{Avg} = \text{Average Power} + \text{Duty cycle Factor})$$

Test Settings(Peak Power)

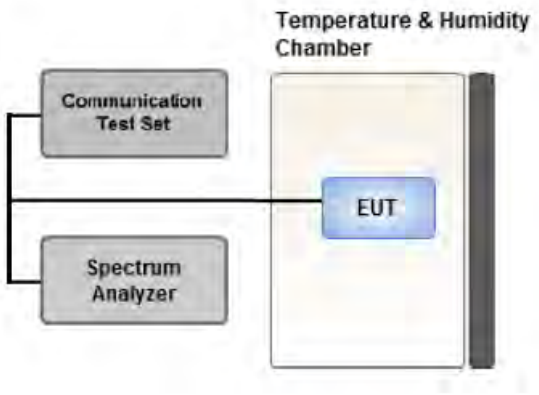
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

1. Set the RBW ≥ OBW.
2. Set VBW ≥ 3 × RBW.
3. Set span ≥ 2 × OBW.
4. Sweep time ≥ 10 × (number of points in sweep) × (transmission symbol period).
5. Detector = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the peak amplitude level.

Test Settings(Average Power)

1. Set span to 2 × to 3 × the OBW.
2. Set RBW ≥ OBW.
3. Set VBW ≥ 3 × RBW.
4. Set number of measurement points in sweep ≥ 2 × span / RBW.
5. Sweep time:
   Set ≥ [10 × (number of points in sweep) × (transmission period)] for single sweep (automation-compatible) measurement. The transmission period is the (on + off) time.
6. Detector = power averaging (rms).
7. Set sweep trigger to “free run.”
8. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. (To accurately determine the average power over the on and off period of the transmitter, it can be necessary to increase the number of traces to be averaged above 100 or, if using a manually configured sweep time, increase the sweep time.)
9. Use the peak marker function to determine the maximum amplitude level.
10. Add [10 log (1/duty cycle)] to the measured maximum power level to compute the average power during continuous transmission. For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is a constant 25%.

3.6 OCCUPIED BANDWIDTH.



Test setup

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

The EUT makes a call to the communication simulator.

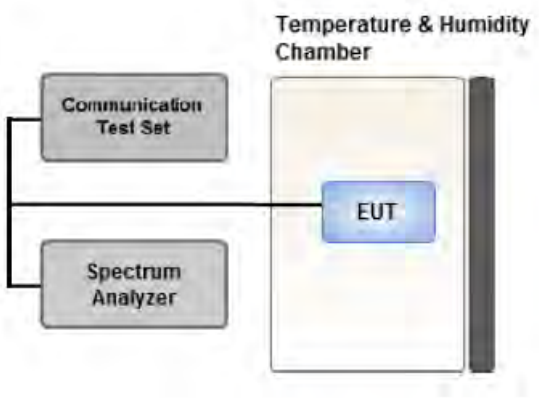
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

3.7 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

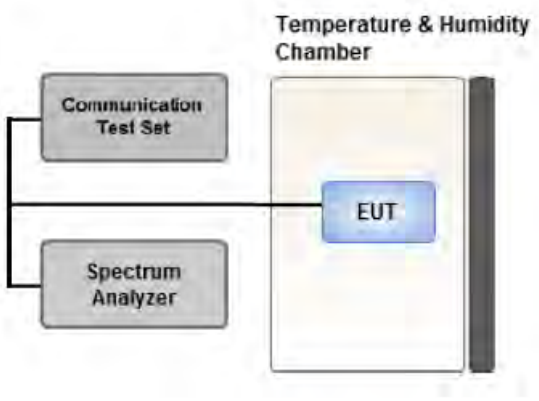
Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Settings

1. RBW = 1 MHz
2. VBW ≥ 3 MHz
3. Detector = Peak
4. Trace Mode = max hold
5. Sweep time = auto
6. Number of points in sweep ≥ 2 * Span / RBW

3.8 BAND EDGE



Test setup

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW > 1% of the emission bandwidth
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW
7. Trace mode = trace average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

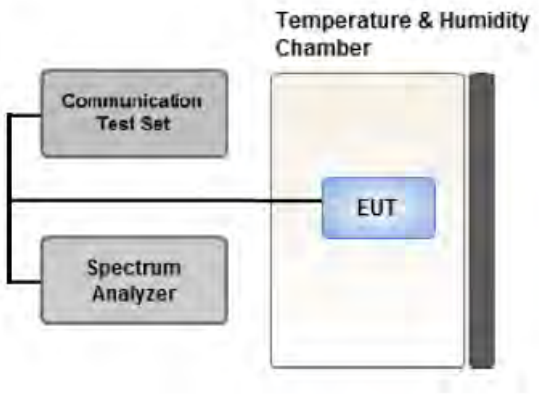
Test Notes

According to FCC 22.917, 24.238, 27.53 specified that 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.

All measurements were done at 2 channels(low and high operational frequency range.)

The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

3.9 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



Test setup

Test Overview

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015.

The frequency stability of the transmitter is measured by:

1. Temperature:

   The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

2. Primary Supply Voltage:

   .- Unless otherwise specified, vary primary supply voltage from 85% to 115% of the nominal value for other than hand carried battery equipment.

   .- For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

4. LIST OF TEST EQUIPMENT

Manufacture	Model/ Equipment	Serial Number	Calibration Date	Calibration Interval	Calibration Due
REOHDE & SCHWARZ	SCU 18 / AMPLIFIER	10094	04/24/2017	Annual	04/24/2018
Wainwright	WHK1.2/15G-10EF/H.P.F	4	04/10/2017	Annual	04/10/2018
Wainwright	WHK3.3/18G-10EF/H.P.F	2	04/10/2017	Annual	04/10/2018
Hewlett Packard	11667B / Power Splitter(DC~26.5 GHz)	11275	05/04/2017	Annual	05/04/2018
Agilent	E3632A/DC Power Supply	KR75303243	07/18/2017	Annual	07/18/2018
Schwarzbeck	UHAP/ Dipole Antenna	557	03/31/2017	Biennial	03/31/2019
Schwarzbeck	UHAP/ Dipole Antenna	558	03/31/2017	Biennial	03/31/2019
ESPEC	SU-642 / Chamber	0093008124	03/31/2017	Annual	03/31/2018
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	147	09/09/2016	Biennial	09/09/2018
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	9120D-1298	10/14/2016	Biennial	10/14/2018
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170342	04/25/2017	Biennial	04/25/2019
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170124	04/25/2017	Biennial	04/25/2019
Agilent	N9020A/Signal Analyzer(10Hz~26.5GHz)	MY52090906	06/01/2017	Annual	06/01/2018
Hewlett Packard	8493C/ATTENUATOR(20dB)	17280	06/22/2017	Annual	06/22/2018
REOHDE & SCHWARZ	FSV40/Spectrum Analyzer(10Hz~40GHz)	100931	10/30/2017	Annual	10/30/2018
Agilent	8960 (E5515C)/ Base Station	MY48360800	09/26/2017	Annual	09/26/2018
Schwarzbeck	FMZB1513/ Loop Antenna(9kHz~30MHz)	1513-175	04/06/2017	Biennial	04/06/2019
Schwarzbeck	VULB9160/ Bilog Antenna	3150	09/30/2016	Biennial	09/30/2018
Schwarzbeck	VULB9160/ Bilog Antenna	9160-3368	10/14/2016	Biennial	10/14/2018
Anritsu Corp.	MT8820C/Wideband Radio Communication Tester	6200863156	02/15/2017	Annual	02/15/2018
Anritsu Corp.	MT8820C/Wideband Radio Communication Tester	6201026545	02/13/2017	Annual	02/13/2018
REOHDE & SCHWARZ	SMB100A/ SIGNAL GENERATOR (100kHz~40GHz)	177633	07/18/2017	Annual	07/18/2018
REOHDE & SCHWARZ	FSV40/Spectrum Analyzer	100931	10/30/2017	Annual	10/30/2018
REOHDE & SCHWARZ	ESU40 / EMI TEST RECEIVER	100524	08/16/2017	Annual	08/16/2018

5. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4:2014.

All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (±dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80
Radiated Disturbance (1 GHz ~ 18 GHz)	6.07

6. SUMMARY OF TEST RESULTS

6.1 Test Condition : Conducted Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§2.1049	N/A	PASS
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§2.1051, §24.238(a)	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions	PASS
Conducted Output Power	§2.1046	N/A	PASS
Peak- to- Average Ratio	§24.232(d)	< 13 dB	PASS
Frequency stability / variation of ambient temperature	§2.1055 §24.235	Emission must remain in band	PASS

6.2 Test Condition : Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Equivalent Isotropic Radiated Power	§24.232(c)	< 2 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§2.1053, §24.238(a)	< 43 + 10log10 (P[Watts]) for all out-of band emissions	PASS

7. SAMPLE CALCULATION

7.1 ERP Sample Calculation

Ch./ Freq.		Measured Level(dBm)	Substitute Level(dBm)	Ant. Gain (dBd)	C.L	Pol.	ERP	
channel	Freq.(MHz)						W	dBm
128	824.20	-21.37	38.40	-10.61	0.95	H	0.483	26.84

ERP = Substitute LEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.
2) During the test , the turn table is rotated until the maximum signal is found.
3) Record the field strength meter's level.
4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power.

7.2 EIRP Sample Calculation

Ch./ Freq.		Measured Level(dBm)	Substitute Level(dBm)	Ant. Gain (dBi)	C.L	Pol.	EIRP	
channel	Freq.(MHz)						W	dBm
26365	1882.5	-15.45	19.20	10.04	1.83	H	0.551	27.41

EIRP = Substitute LEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.
2) During the test , the turn table is rotated until the maximum signal is found.
3) Record the field strength meter's level.
4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
6) The signal generator output level with Ant. Gain and cable loss are the rating of equivalent isotropic radiated power.

7.3. Emission Designator

GSM Emission Designator

Emission Designator = 249KGXW

GSM BW = 249 kHz

G = Phase Modulation

X = Cases not otherwise covered

W = Combination (Audio/Data)

EDGE Emission Designator

Emission Designator = 249KG7W

GSM BW = 249 kHz

G = Phase Modulation

7 = Quantized/Digital Info

W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M17F9W

WCDMA BW = 4.17 MHz

F = Frequency Modulation

9 = Composite Digital Info

W = Combination (Audio/Data)

QPSK Modulation

Emission Designator = 4M48G7D

LTE BW = 4.48 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

16QAM Modulation

Emission Designator = 4M48W7D

LTE BW = 4.48 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

8. TEST DATA

8.1 CONDUCTED OUTPUT POWER

Band	Band Width (MHz)	Frequency (MHz)	Channel	Resource Block Size	Resource Block Offset	Average Power [dBm]	
						QPSK	16-QAM
Band 25	1.4	1850.7	26047	1	0	22.15	21.22
				1	3	22.32	21.34
				1	5	22.48	21.47
				3	0	22.22	21.40
				3	1	22.22	21.45
				3	3	22.36	21.61
				6	0	21.40	20.40
		1882.5	26365	1	0	22.77	21.93
				1	3	22.72	21.93
				1	5	22.80	22.00
				3	0	22.77	21.72
				3	1	22.79	21.73
				3	3	22.79	21.84
				6	0	21.71	20.74
		1914.3	26683	1	0	21.80	20.85
				1	3	21.64	20.70
				1	5	21.62	20.65
				3	0	21.74	20.96
				3	1	21.66	20.91
				3	3	21.62	20.64
				6	0	20.88	19.78

LTE Conducted Average Output Powers (1.4 MHz Band 25 LTE)

Band	Band Width (MHz)	Frequency (MHz)	Channel	Resource Block Size	Resource Block Offset	Average Power [dBm]	
						QPSK	16-QAM
Band 25	3	1851.5	26055	1	0	22.38	21.34
				1	7	22.81	21.73
				1	14	23.05	21.90
				8	0	21.22	20.20
				8	3	21.78	20.71
				8	7	21.96	20.91
				15	0	21.74	20.64
		1882.5	26365	1	0	22.64	21.72
				1	7	22.76	21.97
				1	14	22.89	22.03
				8	0	21.23	20.35
				8	3	21.63	20.73
				8	7	21.46	20.56
				15	0	21.64	20.70
		1913.5	26675	1	0	22.45	21.37
				1	7	22.02	20.85
				1	14	21.79	20.65
				8	0	20.85	19.76
				8	3	20.99	19.95
				8	7	20.83	19.64
				15	0	21.14	19.83

LTE Conducted Average Output Powers (3 MHz Band 25 LTE)

Band	Band Width (MHz)	Frequency (MHz)	Channel	Resource Block Size	Resource Block Offset	Average Power [dBm]	
						QPSK	16-QAM
Band 25	5	1852.5	26065	1	0	22.13	21.42
				1	12	22.81	22.00
				1	24	22.83	22.04
				12	0	21.46	20.38
				12	6	21.83	20.70
				12	11	21.68	20.56
				25	0	21.89	20.78
		1882.5	26365	1	0	22.45	21.63
				1	12	22.65	21.76
				1	24	22.81	22.05
				12	0	21.30	20.21
				12	6	21.65	20.56
				12	11	21.57	20.51
				25	0	21.68	20.61
		1912.5	26665	1	0	22.45	21.98
				1	12	22.09	21.69
				1	24	21.70	21.16
				12	0	21.24	20.24
				12	6	21.36	20.59
				12	11	21.10	20.22
				25	0	21.36	20.42

LTE Conducted Average Output Powers (5 MHz Band 25 LTE)

Band	Band Width (MHz)	Frequency (MHz)	Channel	Resource Block Size	Resource Block Offset	Average Power [dBm]	
						QPSK	16-QAM
Band 25	10	1855.0	26090	1	0	22.42	21.25
				1	24	22.39	21.33
				1	49	22.88	21.57
				25	0	21.40	20.42
				25	12	21.45	20.39
				25	24	21.66	20.61
				50	0	21.52	20.48
		1882.5	26365	1	0	21.92	21.27
				1	24	22.42	21.79
				1	49	22.54	21.93
				25	0	21.21	20.31
				25	12	21.31	20.39
				25	24	21.68	20.80
				50	0	21.37	20.46
		1910.0	26640	1	0	22.62	21.62
				1	24	22.24	21.21
				1	49	21.77	20.66
				25	0	21.37	20.48
				25	12	21.20	20.32
				25	24	21.36	20.52
				50	0	21.18	20.29

LTE Conducted Average Output Powers (10 MHz Band 25 LTE)

Band	Band Width (MHz)	Frequency (MHz)	Channel	Resource Block Size	Resource Block Offset	Average Power [dBm]	
						QPSK	16-QAM
Band 25	15	1857.5	26115	1	0	22.35	21.39
				1	36	22.58	21.37
				1	74	21.99	20.91
				36	0	21.32	20.33
				36	18	21.41	20.40
				36	39	21.17	20.14
				75	0	21.33	20.35
		1882.5	26365	1	0	21.77	21.12
				1	36	22.59	21.74
				1	74	22.79	21.88
				36	0	20.68	19.76
				36	18	21.31	20.44
				36	39	21.41	20.46
				75	0	21.20	20.26
		1907.5	26615	1	0	22.38	21.87
				1	36	22.15	21.51
				1	74	21.80	20.99
				36	0	21.31	20.21
				36	18	21.21	20.25
				36	39	21.25	20.22
				75	0	21.02	20.11

LTE Conducted Average Output Powers (15 MHz Band 25 LTE)

Band	Band Width (MHz)	Frequency (MHz)	Channel	Resource Block Size	Resource Block Offset	Average Power [dBm]	
						QPSK	16-QAM
Band 25	20	1860.0	26140	1	0	22.30	21.79
				1	49	22.25	21.80
				1	99	21.63	20.97
				50	0	21.47	20.47
				50	25	21.20	20.29
				50	49	20.89	19.87
				100	0	21.15	20.19
		1882.5	26365	1	0	21.73	21.10
				1	49	22.39	21.98
				1	99	22.78	22.11
				50	0	20.82	19.86
				50	25	21.33	20.37
				50	49	21.55	20.56
				100	0	21.30	20.38
		1905.0	26590	1	0	22.70	21.97
				1	49	22.27	21.73
				1	99	21.67	20.88
				50	0	21.42	20.51
				50	25	21.27	20.36
				50	49	21.18	20.28
				100	0	21.15	20.17

LTE Conducted Average Output Powers (20 MHz Band 25 LTE)

Note : Detecting mode is average.

9. TEST DATA

9.1 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1850.7	LTE B25/ 1.4 MHz	QPSK	-15.61	17.31	9.82	2.00	H	< 2.00	0.326	25.13
		16-QAM	-16.27	16.65	9.82	2.00	H		0.280	24.47
1882.5		QPSK	-15.80	17.22	9.92	2.02	H		0.325	25.12
		16-QAM	-16.57	16.45	9.92	2.02	H		0.272	24.35
1914.3		QPSK	-16.84	16.56	10.02	2.04	H		0.284	24.54
		16-QAM	-17.68	15.72	10.02	2.04	H		0.234	23.70

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1851.5	LTE B25/ 3 MHz	QPSK	-15.46	17.47	9.82	2.00	H	< 2.00	0.338	25.29
		16-QAM	-16.20	16.73	9.82	2.00	H		0.285	24.55
1882.5		QPSK	-15.60	17.42	9.92	2.02	H		0.340	25.32
		16-QAM	-16.30	16.72	9.92	2.02	H		0.290	24.62
1913.5		QPSK	-16.55	16.85	10.01	2.04	H		0.303	24.82
		16-QAM	-17.26	16.14	10.01	2.04	H		0.258	24.11

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1852.5	LTE B25/ 5 MHz	QPSK	-15.67	17.26	9.82	2.00	H	< 2.00	0.322	25.08
		16-QAM	-16.41	16.52	9.82	2.00	H		0.272	24.34
1882.5		QPSK	-15.36	17.66	9.92	2.02	H		0.360	25.56
		16-QAM	-16.06	16.96	9.92	2.02	H		0.306	24.86
1912.5		QPSK	-16.59	16.80	10.01	2.04	H		0.300	24.77
		16-QAM	-17.30	16.09	10.01	2.04	H		0.255	24.06

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1855.0	LTE B25/ 10 MHz	QPSK	-15.72	17.20	9.84	2.01	H	< 2.00	0.318	25.03
		16-QAM	-16.45	16.47	9.84	2.01	H		0.269	24.30
1882.5		QPSK	-15.43	17.59	9.92	2.02	H		0.354	25.49
		16-QAM	-16.13	16.89	9.92	2.02	H		0.301	24.79
1910.0		QPSK	-15.49	17.90	10.00	2.04	H		0.385	25.86
		16-QAM	-16.21	17.18	10.00	2.04	H		0.327	25.14

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1857.5	LTE B25/ 15 MHz	QPSK	-15.58	17.33	9.85	2.01	H	< 2.00	0.329	25.17
		16-QAM	-16.22	16.69	9.85	2.01	H		0.284	24.53
1882.5		QPSK	-15.55	17.47	9.92	2.02	H		0.344	25.37
		16-QAM	-16.29	16.73	9.92	2.02	H		0.290	24.63
1907.5		QPSK	-16.24	17.10	9.99	2.04	H		0.320	25.05
		16-QAM	-16.96	16.38	9.99	2.04	H		0.271	24.33

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1860.0	LTE B25/ 20 MHz	QPSK	-15.70	17.21	9.85	2.01	H	< 2.00	0.320	25.05
		16-QAM	-16.42	16.49	9.85	2.01	H		0.271	24.33
1882.5		QPSK	-15.55	17.47	9.92	2.02	H		0.344	25.37
		16-QAM	-16.36	16.66	9.92	2.02	H		0.286	24.56
1905.0		QPSK	-17.60	15.69	9.98	2.03	H		0.231	23.64
		16-QAM	-18.18	15.11	9.98	2.03	H		0.202	23.06

9.2 RADIATED SPURIOUS EMISSIONS

▣OPERATING FREQUENTY: 1850.70 MHz

▣ MEASURED OUTPUT POWER: 25.13 dBm = 0.326 W

▣ MODE: LTE B25

▣ MODULATION SIGNAL: 1.4 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 $\log_{10}$ (W) = 38.13 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
26047 (1850.7)	3,701.40	-45.47	12.52	-51.22	2.92	H	-41.62	66.75
	5,552.10	-42.22	13.29	-42.46	3.60	V	-32.77	57.90
	7,402.80	-52.99	11.72	-48.12	4.26	V	-40.66	65.79
	9,253.50	-54.35	11.49	-44.85	4.78	V	-38.14	63.27
	11,104.20	-53.98	10.81	-42.30	5.31	V	-36.80	61.93
	12,954.90	-53.16	13.52	-39.95	5.76	V	-32.19	57.32
	14,805.60	-51.84	12.65	-32.90	6.19	V	-26.44	51.57
26365 (1882.5)	3,765.00	-48.25	12.56	-53.84	2.91	V	-44.19	69.32
	5,647.50	-44.73	13.30	-44.63	3.64	V	-34.97	60.10
	7,530.00	-55.88	11.69	-50.98	4.08	V	-43.37	68.50
	9,412.50	-54.17	11.42	-44.58	4.80	V	-37.96	63.09
	11,295.00	-53.64	11.07	-42.47	5.34	V	-36.74	61.87
	13,177.50	-51.91	13.14	-39.64	5.82	V	-32.32	57.45
	15,060.00	-51.00	13.60	-32.89	6.21	V	-25.50	50.63
26683 (1914.3)	3,828.60	-43.80	12.61	-49.17	2.99	V	-39.55	64.68
	5,742.90	-43.46	13.32	-42.19	3.65	V	-32.52	57.65
	7,657.20	-46.87	11.60	-42.48	4.25	V	-35.13	60.26
	9,571.50	-54.00	11.33	-44.80	4.85	V	-38.32	63.45
	11,485.80	-58.12	11.34	-45.26	5.43	V	-39.35	64.48
	13,400.10	-51.19	12.75	-37.24	5.90	V	-30.39	55.52
	15,314.40	-53.21	14.98	-38.06	6.31	V	-29.39	54.52

▣OPERATING FREQUENTY: 1882.50 MHz

▣ MEASURED OUTPUT POWER: 25.32 dBm = 0.340 W

▣ MODE: LTE B25

▣ MODULATION SIGNAL: 3 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 38.32 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
26055 (1851.5)	3,703.00	-45.81	12.52	-51.52	2.92	V	-41.92	67.24
	5,554.50	-46.17	13.29	-46.36	3.60	V	-36.67	61.99
	7,406.00	-51.76	11.72	-46.77	4.26	V	-39.31	64.63
	9,257.50	-54.22	11.49	-44.79	4.79	V	-38.09	63.41
	11,109.00	-52.69	10.82	-41.00	5.33	V	-35.51	60.83
	12,960.50	-54.24	13.51	-40.80	5.75	V	-33.04	58.36
	14,812.00	-51.78	12.66	-32.73	6.19	V	-26.26	51.58
26365 (1882.5)	3,765.00	-46.18	12.56	-51.77	2.91	V	-42.12	67.44
	5,647.50	-43.42	13.30	-43.32	3.64	V	-33.66	58.98
	7,530.00	-57.06	11.69	-52.16	4.08	V	-44.55	69.87
	9,412.50	-54.15	11.42	-44.56	4.80	V	-37.94	63.26
	11,295.00	-49.38	11.07	-38.21	5.34	V	-32.48	57.80
	13,177.50	-53.94	13.14	-41.67	5.82	V	-34.35	59.67
	15,060.00	-53.29	13.60	-35.18	6.21	V	-27.79	53.11
26675 (1913.5)	3,827.00	-44.29	12.60	-49.64	2.99	V	-40.03	65.35
	5,740.50	-42.40	13.32	-41.20	3.65	V	-31.53	56.85
	7,654.00	-56.45	11.60	-52.02	4.25	V	-44.67	69.99
	9,567.50	-53.47	11.34	-44.28	4.86	V	-37.80	63.12
	11,481.00	-55.60	11.34	-42.83	5.42	V	-36.91	62.23
	13,394.50	-54.23	12.76	-40.26	5.93	V	-33.43	58.75
	15,308.00	-53.61	14.95	-38.34	6.31	V	-29.70	55.02

▣OPERATING FREQUENTY: 1882.50 MHz

▣ MEASURED OUTPUT POWER: 25.56 dBm = 0.360 W

▣ MODE: LTE B25

▣ MODULATION SIGNAL: 5 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 38.56 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
26065 (1852.5)	3,705.00	-45.52	12.52	-51.16	2.92	V	-41.56	67.12
	5,557.50	-44.56	13.29	-44.78	3.60	V	-35.09	60.65
	7,410.00	-52.71	11.72	-47.57	4.26	V	-40.11	65.67
	9,262.50	-55.53	11.49	-46.14	4.79	V	-39.44	65.00
	11,115.00	-53.48	10.82	-41.85	5.33	V	-36.36	61.92
	12,967.50	-53.64	13.49	-40.63	5.73	V	-32.87	58.43
	14,820.00	-50.92	12.69	-32.21	6.20	V	-25.72	51.28
26365 (1882.5)	3,765.00	-48.23	12.56	-53.82	2.91	V	-44.17	69.73
	5,647.50	-44.97	13.30	-44.87	3.64	V	-35.21	60.77
	7,530.00	-54.97	11.69	-50.07	4.08	V	-42.46	68.02
	9,412.50	-54.28	11.42	-44.69	4.80	V	-38.07	63.63
	11,295.00	-51.92	11.07	-40.75	5.34	V	-35.02	60.58
	13,177.50	-53.32	13.14	-41.05	5.82	V	-33.73	59.29
	15,060.00	-50.77	13.60	-32.66	6.21	V	-25.27	50.83
26665 (1912.5)	3,825.00	-41.19	12.60	-46.52	2.99	V	-36.91	62.47
	5,737.50	-42.22	13.31	-41.03	3.66	V	-31.38	56.94
	7,650.00	-55.95	11.60	-51.46	4.25	V	-44.11	69.67
	9,562.50	-53.43	11.34	-44.24	4.86	V	-37.76	63.32
	11,475.00	-54.30	11.33	-41.47	5.39	V	-35.53	61.09
	13,387.50	-50.80	12.77	-36.82	5.95	V	-30.00	55.56
	15,300.00	-53.52	14.90	-38.50	6.30	V	-29.90	55.46

▣OPERATING FREQUENTY: 1910.00 MHz

▣ MEASURED OUTPUT POWER: 25.86 dBm = 0.385 W

▣ MODE: LTE B25

▣ MODULATION SIGNAL: 10 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 38.86 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
26090 (1855.0)	3,710.00	-45.06	12.52	-50.55	2.90	V	-40.93	66.79
	5,565.00	-42.03	13.29	-42.27	3.60	V	-32.58	58.44
	7,420.00	-52.07	11.72	-46.53	4.34	V	-39.15	65.01
	9,275.00	-54.21	11.48	-44.99	4.78	V	-38.29	64.15
	11,130.00	-52.23	10.85	-40.71	5.31	V	-35.17	61.03
	12,985.00	-55.13	13.48	-41.94	5.72	V	-34.18	60.04
	14,840.00	-51.24	12.76	-32.46	6.26	V	-25.96	51.82
26365 (1882.5)	3,765.00	-49.78	12.56	-55.37	2.91	V	-45.72	71.58
	5,647.50	-43.02	13.30	-42.92	3.64	V	-33.26	59.12
	7,530.00	-56.27	11.69	-51.37	4.08	V	-43.76	69.62
	9,412.50	-55.78	11.42	-46.19	4.80	V	-39.57	65.43
	11,295.00	-53.98	11.07	-42.81	5.34	V	-37.08	62.94
	13,177.50	-51.62	13.14	-39.35	5.82	V	-32.03	57.89
	15,060.00	-53.47	13.60	-35.36	6.21	V	-27.97	53.83
26640 (1910.0)	3,820.00	-41.75	12.60	-47.05	2.98	V	-37.43	63.29
	5,730.00	-41.55	13.31	-40.46	3.66	V	-30.81	56.67
	7,640.00	-56.77	11.61	-52.25	4.27	V	-44.91	70.77
	9,550.00	-54.66	11.35	-45.94	4.87	V	-39.46	65.32
	11,460.00	-57.05	11.31	-44.49	5.36	V	-38.54	64.40
	13,370.00	-50.40	12.81	-36.45	5.95	V	-29.59	55.45
	15,280.00	-53.79	14.79	-38.81	6.37	V	-30.39	56.25

▣ OPERATING FREQUENTY: 1882.50 MHz

▣ MEASURED OUTPUT POWER: 25.37 dBm = 0.344 W

▣ MODE: LTE B25

▣ MODULATION SIGNAL: 15 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 38.37 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
26115 (1857.5)	3,715.00	-45.01	12.52	-50.67	2.90	V	-41.05	66.42
	5,572.50	-42.92	13.29	-43.11	3.61	V	-33.43	58.80
	7,430.00	-53.22	11.72	-47.87	4.30	V	-40.45	65.82
	9,287.50	-52.73	11.48	-43.22	4.77	V	-36.51	61.88
	11,145.00	-51.82	10.87	-40.02	5.45	V	-34.60	59.97
	13,002.50	-53.69	13.46	-40.97	5.73	V	-33.24	58.61
	14,860.00	-50.20	12.82	-31.56	6.27	V	-25.01	50.38
26365 (1882.5)	3,765.00	-48.21	12.56	-53.80	2.91	V	-44.15	69.52
	5,647.50	-43.87	13.30	-43.77	3.64	V	-34.11	59.48
	7,530.00	-56.31	11.69	-51.41	4.08	V	-43.80	69.17
	9,412.50	-57.16	11.42	-47.57	4.80	V	-40.95	66.32
	11,295.00	-56.66	11.07	-45.49	5.34	V	-39.76	65.13
	13,177.50	-54.23	13.14	-41.96	5.82	V	-34.64	60.01
	15,060.00	-53.64	13.60	-35.53	6.21	V	-28.14	53.51
26615 (1907.5)	3,815.00	-46.63	12.60	-52.09	2.97	V	-42.46	67.83
	5,722.50	-45.46	13.31	-44.21	3.66	V	-34.56	59.93
	7,630.00	-55.07	11.62	-50.49	4.29	V	-43.16	68.53
	9,537.50	-56.00	11.36	-47.49	4.85	V	-40.98	66.35
	11,445.00	-57.07	11.28	-44.54	5.33	V	-38.59	63.96
	13,352.50	-57.20	12.84	-42.98	5.90	V	-36.04	61.41
	15,260.00	-54.35	14.68	-38.96	6.35	V	-30.63	56.00

▣OPERATING FREQUENTY: 1882.50 MHz

▣ MEASURED OUTPUT POWER: 25.37 dBm = 0.344 W

▣ MODE: LTE B25

▣ MODULATION SIGNAL: 20 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 38.37 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
26140 (1860.0)	3,720.00	-45.93	12.53	-51.77	2.90	V	-42.14	67.51
	5,580.00	-42.68	13.29	-42.67	3.62	V	-33.00	58.37
	7,440.00	-52.52	11.72	-47.36	4.29	V	-39.93	65.30
	9,300.00	-54.13	11.47	-44.37	4.76	V	-37.66	63.03
	11,160.00	-53.14	10.89	-41.52	5.41	V	-36.04	61.41
	13,020.00	-53.55	13.42	-40.65	5.76	V	-32.99	58.36
	14,880.00	-50.26	12.89	-35.45	6.23	V	-28.79	54.16
26365 (1882.5)	3,765.00	-57.21	12.56	-62.80	2.91	V	-53.15	78.52
	5,647.50	-57.21	13.30	-57.11	3.64	V	-47.45	72.82
	7,530.00	-54.21	11.69	-49.31	4.08	V	-41.70	67.07
	9,412.50	-54.21	11.42	-44.62	4.80	V	-38.00	63.37
	11,295.00	-57.00	11.07	-45.83	5.34	V	-40.10	65.47
	13,177.50	-57.00	13.14	-44.73	5.82	V	-37.41	62.78
	15,060.00	-52.19	13.60	-34.08	6.21	V	-26.69	52.06
26590 (1905.0)	3,810.00	-54.81	12.60	-60.41	2.97	V	-50.78	76.15
	5,715.00	-55.83	13.31	-54.63	3.67	V	-44.99	70.36
	7,620.00	-55.83	11.62	-51.36	4.33	V	-44.07	69.44
	9,525.00	-57.54	11.37	-48.76	4.88	V	-42.27	67.64
	11,430.00	-57.54	11.27	-45.04	5.33	V	-39.10	64.47
	13,335.00	-57.54	12.87	-43.24	5.90	V	-36.27	61.64
	15,240.00	-54.48	14.58	-38.90	6.32	V	-30.64	56.01

9.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Band 25	1.4 MHz	1882.5	QPSK	6	0	4.93
			16-QAM	6		5.70
	3 MHz		QPSK	15		5.11
			16-QAM	15		5.87
	5 MHz		QPSK	25		5.12
			16-QAM	25		5.90
	10 MHz		QPSK	50		5.25
			16-QAM	50		5.96
	15 MHz		QPSK	75		5.58
			16-QAM	75		6.29
	20 MHz		QPSK	100		5.59
			16-QAM	100		6.35

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 52 ~ 57.

9.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Band 25	1.4 MHz	1882.5	QPSK	6	0	1.0989
			16-QAM	6	0	1.0970
	3 MHz		QPSK	15	0	2.7144
			16-QAM	15	0	2.7043
	5 MHz		QPSK	25	0	4.5158
			16-QAM	25	0	4.5041
	10 MHz		QPSK	50	0	9.0141
			16-QAM	50	0	9.0105
	15 MHz		QPSK	75	0	13.503
			16-QAM	75	0	13.506
	20 MHz		QPSK	100	0	18.029
			16-QAM	100	0	18.009

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 46 ~ 51.

9.5 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
25	1.4	1850.7	3.7010	27.976	-68.103	-40.127	-13.00
		1882.5	3.7648	27.976	-72.566	-44.590	
		1914.3	3.8301	27.976	-66.650	-38.674	
	3	1851.5	3.7010	27.976	-67.798	-39.822	
		1882.5	3.7633	27.976	-73.573	-45.597	
		1913.5	3.8301	27.976	-65.462	-37.486	
	5	1852.5	3.7015	27.976	-68.026	-40.050	
		1882.5	3.7613	27.976	-75.127	-47.151	
		1912.5	3.8301	27.976	-66.108	-38.132	
	10	1855.0	3.7020	27.976	-68.607	-40.631	
		1882.5	3.7568	27.976	-73.537	-45.561	
		1910.0	3.8296	27.976	-68.018	-40.042	
	15	1857.5	3.7024	27.976	-67.898	-39.922	
		1882.5	3.7523	27.976	-74.717	-46.741	
		1907.5	3.8291	27.976	-72.447	-44.471	
	20	1860.0	3.7029	27.976	-68.860	-40.884	
		1882.5	3.7478	27.976	-75.392	-47.416	
		1905.0	3.8286	27.976	-70.783	-42.807	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 76 ~ 93.
2. Conducted Spurious Emissions was Tested QPSK Modulation, Resource Block Size 1 and Resource Block Offset 0
3. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)
4. Factor(dB) = Cable Loss + Attenuator + Power Splitter

Frequency Range (GHz)	Factor [dB]
0.03 – 1	25.270
1 – 5	27.976
5 – 10	28.591
10 – 15	29.116
15 – 20	29.489
Above 20	30.131

9.6 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 58 ~ 75.

9.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

▣ MODE: LTE 25

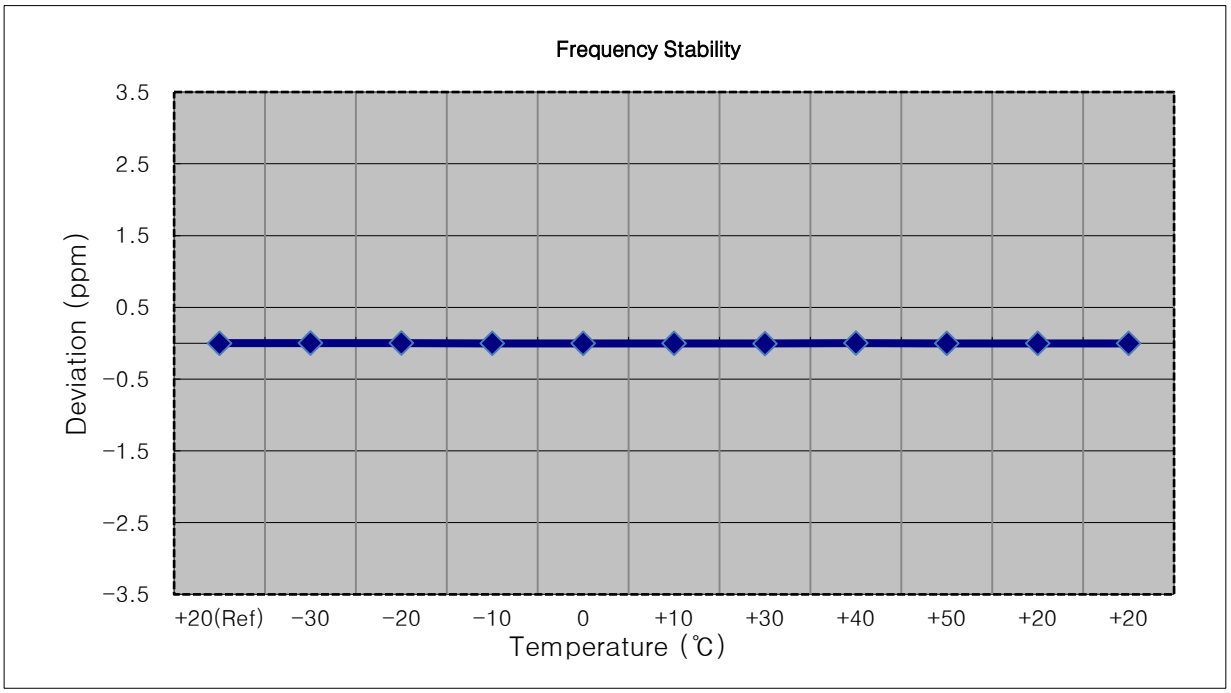
▣ OPERATING FREQUENCY: 1882,500,000 Hz

▣ CHANNEL: 26365 (1.4 MHz)

▣ REFERENCE VOLTAGE: 5.00 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	5.00	+20(Ref)	1882 499 994	0.0	0.000 000	0.000
100%		-30	1882 499 999	5.6	0.000 000	0.003
100%		-20	1882 499 997	3.7	0.000 000	0.002
100%		-10	1882 499 989	-4.3	0.000 000	-0.002
100%		0	1882 499 988	-5.4	0.000 000	-0.003
100%		+10	1882 499 989	-4.3	0.000 000	-0.002
100%		+30	1882 499 987	-6.3	0.000 000	-0.003
100%		+40	1882 499 996	2.6	0.000 000	0.001
100%		+50	1882 499 988	-5.6	0.000 000	-0.003
115%	5.75	+20	1882 499 991	-2.6	0.000 000	-0.001
85%	4.25	+20	1882 499 990	-3.7	0.000 000	-0.002



▣ MODE: LTE 25

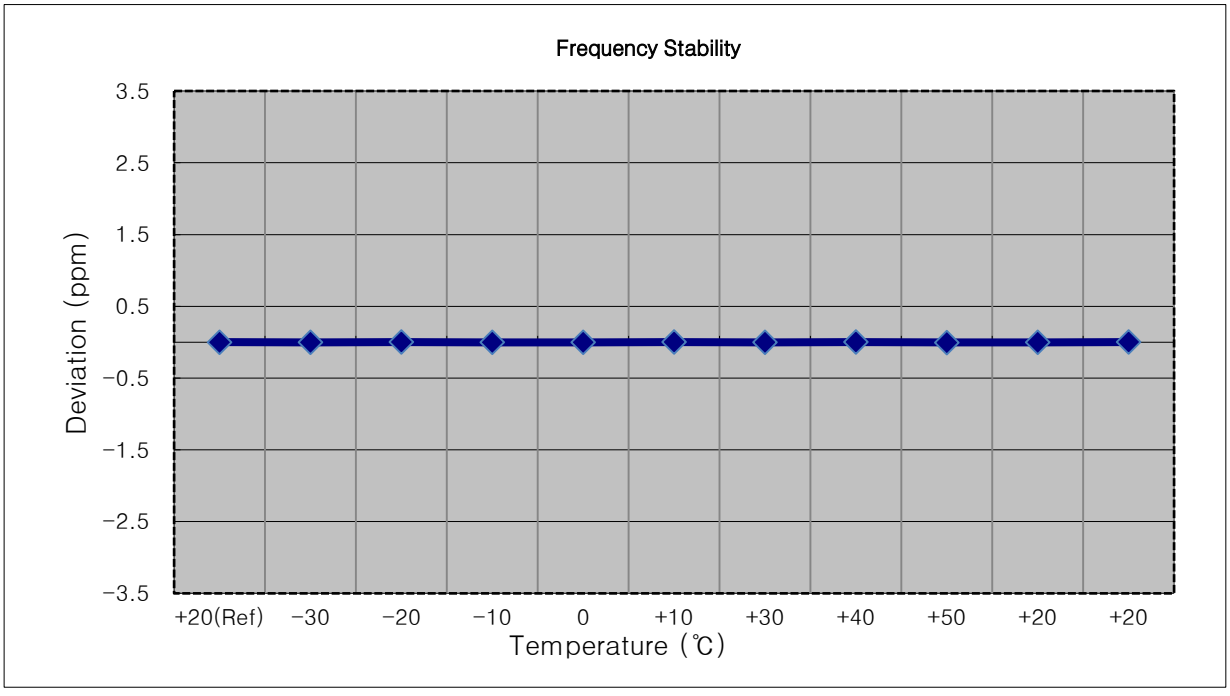
▣ OPERATING FREQUENCY: 1882,500,000 Hz

▣ CHANNEL: 26365 (3 MHz)

▣ REFERENCE VOLTAGE: 5.00 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	5.00	+20(Ref)	1882 499 994	0.0	0.000 000	0.000
100%		-30	1882 499 990	-3.9	0.000 000	-0.002
100%		-20	1882 499 998	3.6	0.000 000	0.002
100%		-10	1882 499 990	-4.1	0.000 000	-0.002
100%		0	1882 499 989	-4.7	0.000 000	-0.002
100%		+10	1882 500 000	5.6	0.000 000	0.003
100%		+30	1882 499 989	-4.6	0.000 000	-0.002
100%		+40	1882 499 999	4.6	0.000 000	0.002
100%		+50	1882 499 987	-6.7	0.000 000	-0.004
115%	5.75	+20	1882 499 989	-5.2	0.000 000	-0.003
85%	4.25	+20	1882 499 997	3.7	0.000 000	0.002



▣ MODE: LTE 25

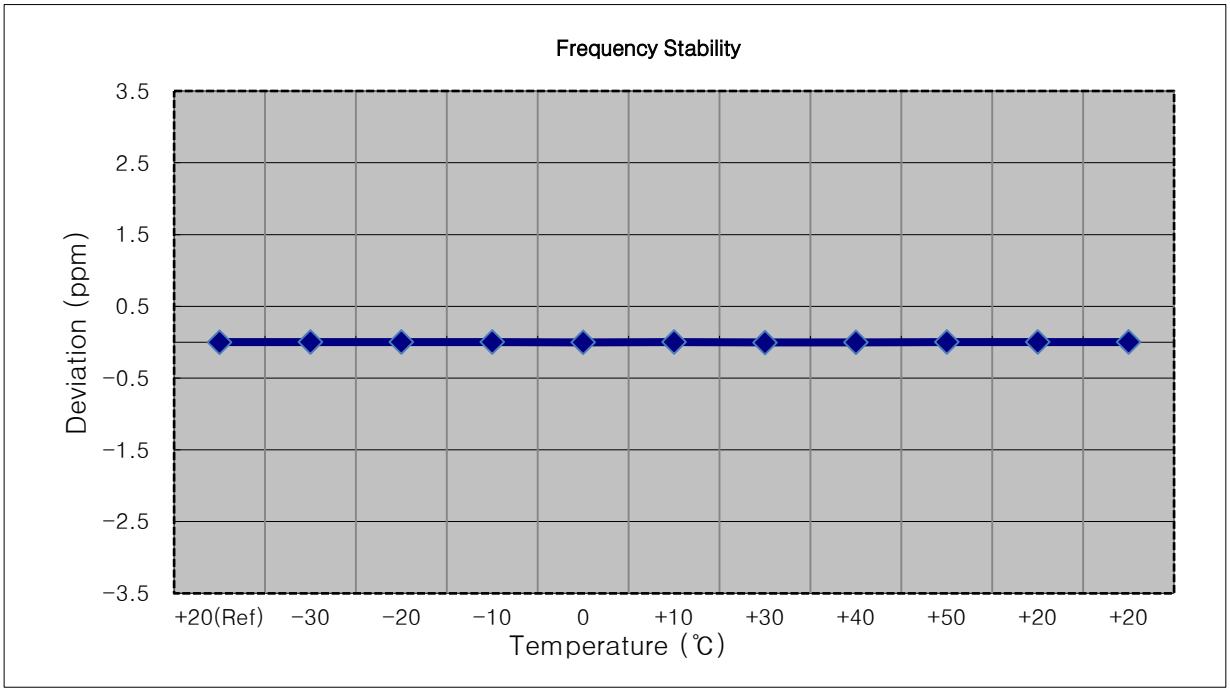
▣ OPERATING FREQUENCY: 1882,500,000 Hz

▣ CHANNEL: 26365 (5 MHz)

▣ REFERENCE VOLTAGE: 5.00 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	5.00	+20(Ref)	1882 499 996	0.0	0.000 000	0.000
100%		-30	1882 500 001	5.0	0.000 000	0.003
100%		-20	1882 500 001	4.4	0.000 000	0.002
100%		-10	1882 500 000	3.5	0.000 000	0.002
100%		0	1882 499 992	-4.5	0.000 000	-0.002
100%		+10	1882 500 000	3.7	0.000 000	0.002
100%		+30	1882 499 990	-6.2	0.000 000	-0.003
100%		+40	1882 499 993	-3.2	0.000 000	-0.002
100%		+50	1882 500 002	5.9	0.000 000	0.003
115%	5.75	+20	1882 499 998	4.2	0.000 000	0.002
85%	4.25	+20	1882 500 000	6.2	0.000 000	0.003



▣ MODE: LTE 25

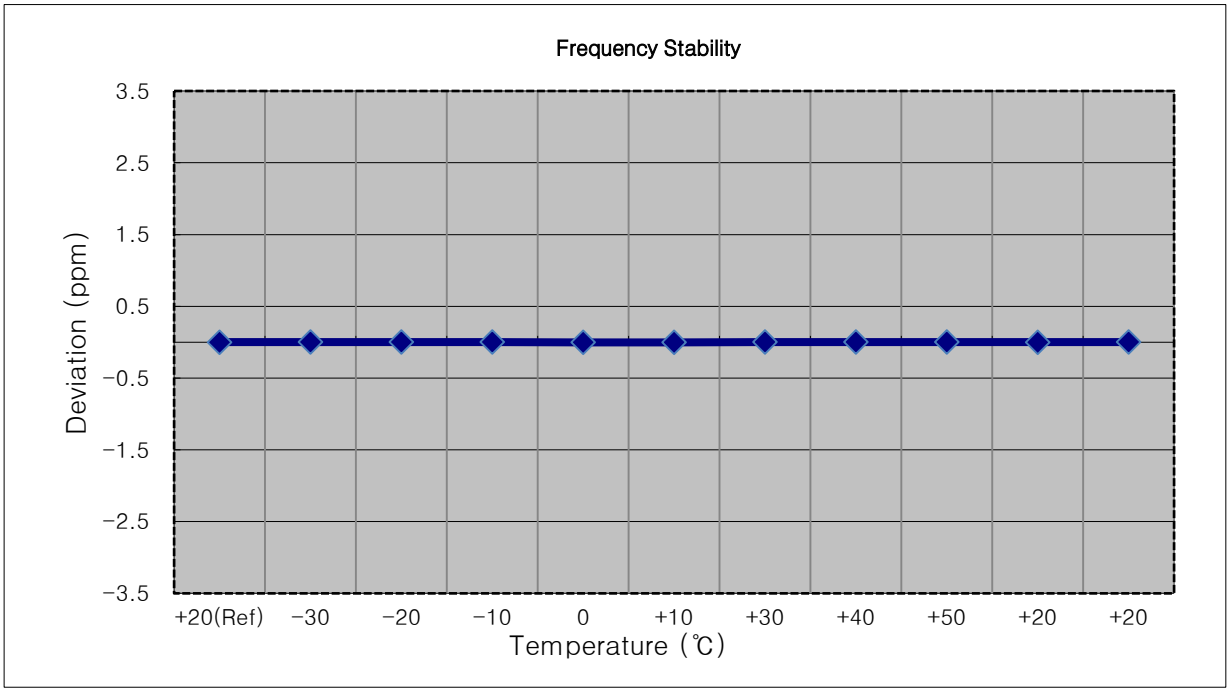
▣ OPERATING FREQUENCY: 1882,500,000 Hz

▣ CHANNEL: 26365 (10 MHz)

▣ REFERENCE VOLTAGE: 5.00 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	5.00	+20(Ref)	1882 499 994	0.0	0.000 000	0.000
100%		-30	1882 499 997	3.6	0.000 000	0.002
100%		-20	1882 499 999	5.0	0.000 000	0.003
100%		-10	1882 499 998	4.0	0.000 000	0.002
100%		0	1882 499 990	-4.2	0.000 000	-0.002
100%		+10	1882 499 990	-4.3	0.000 000	-0.002
100%		+30	1882 499 999	5.2	0.000 000	0.003
100%		+40	1882 499 998	4.1	0.000 000	0.002
100%		+50	1882 499 998	4.3	0.000 000	0.002
115%	5.75	+20	1882 499 996	2.2	0.000 000	0.001
85%	4.25	+20	1882 499 998	3.9	0.000 000	0.002



▣ MODE: LTE 25

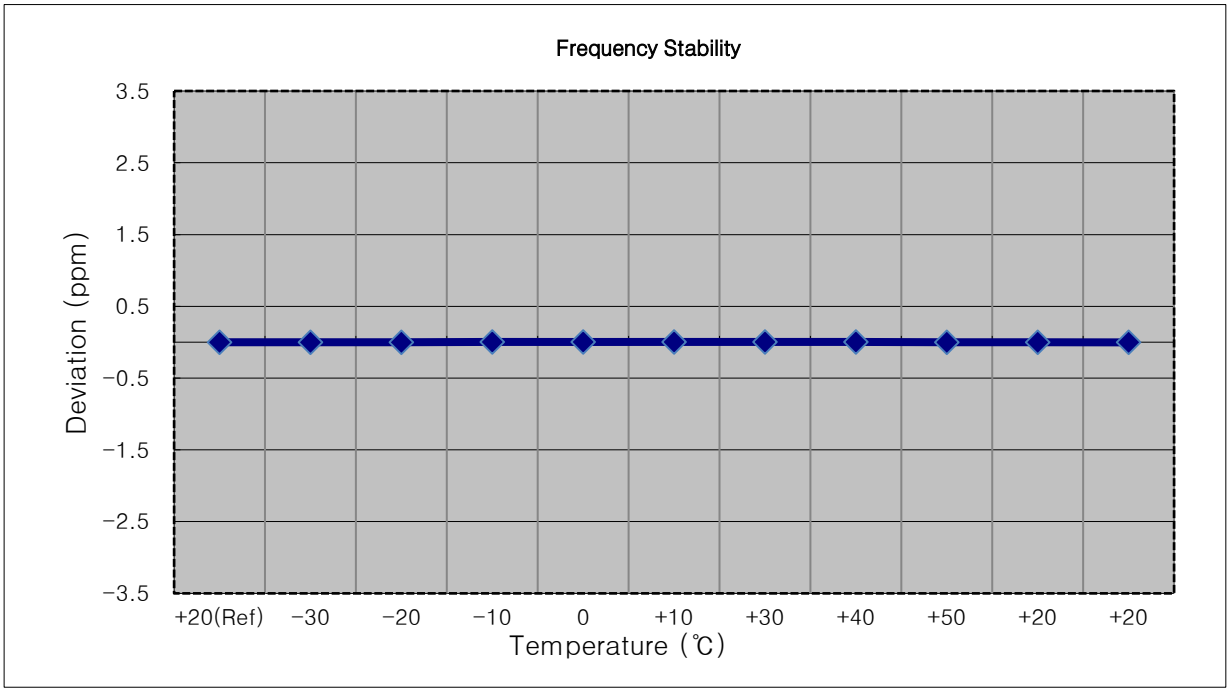
▣ OPERATING FREQUENCY: 1882,500,000 Hz

▣ CHANNEL: 26365 (15 MHz)

▣ REFERENCE VOLTAGE: 5.00 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	5.00	+20(Ref)	1882 499 996	0.0	0.000 000	0.000
100%		-30	1882 499 992	-3.9	0.000 000	-0.002
100%		-20	1882 499 992	-4.1	0.000 000	-0.002
100%		-10	1882 499 999	3.5	0.000 000	0.002
100%		0	1882 500 001	5.5	0.000 000	0.003
100%		+10	1882 500 000	4.5	0.000 000	0.002
100%		+30	1882 500 001	4.9	0.000 000	0.003
100%		+40	1882 500 001	5.0	0.000 000	0.003
100%		+50	1882 499 993	-3.0	0.000 000	-0.002
115%	5.75	+20	1882 499 989	-4.6	0.000 000	-0.002
85%	4.25	+20	1882 499 988	-5.3	0.000 000	-0.003



▣ MODE: LTE 25

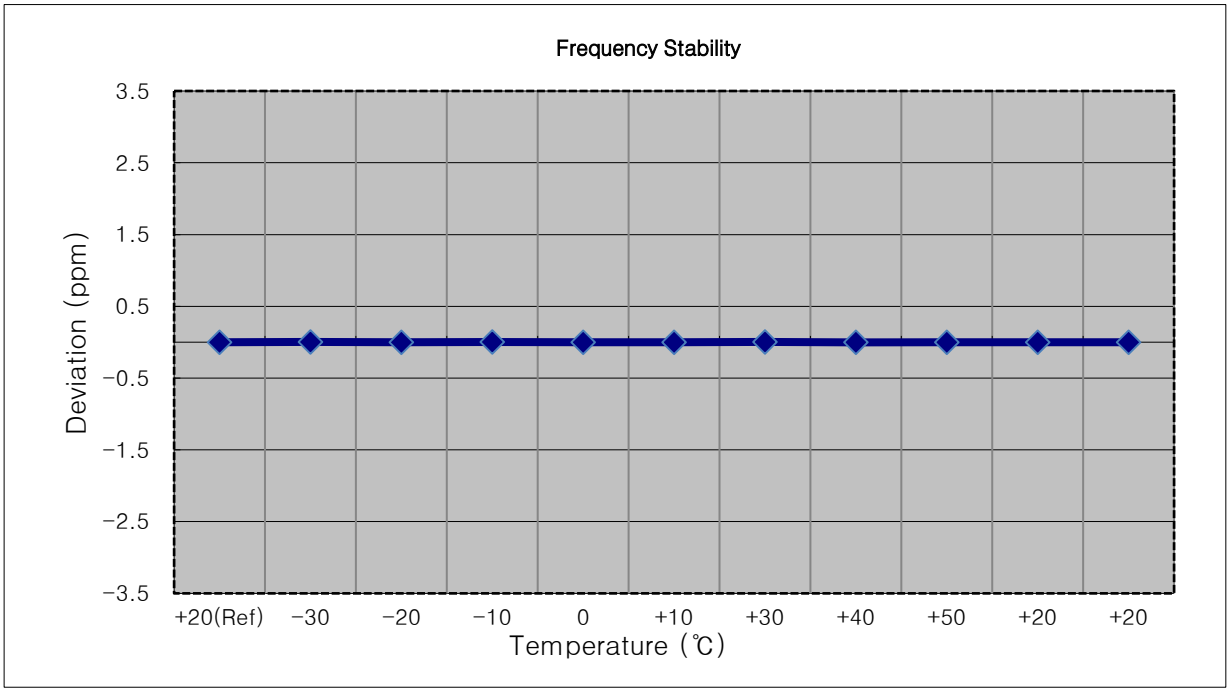
▣ OPERATING FREQUENCY: 1882,500,000 Hz

▣ CHANNEL: 26365 (20 MHz)

▣ REFERENCE VOLTAGE: 5.00 VDC

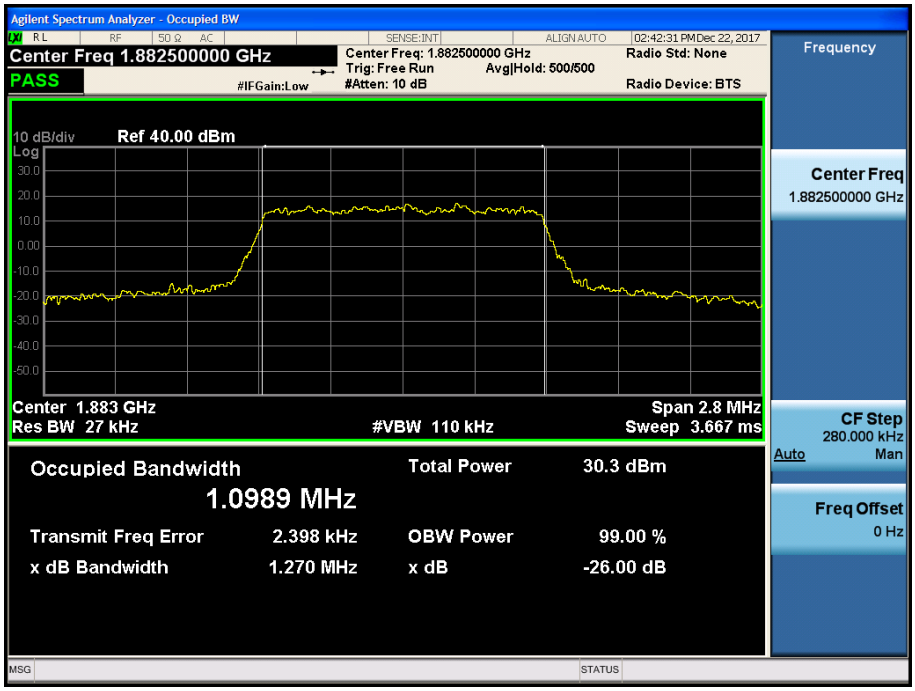
▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	5.00	+20(Ref)	1882 499 994	0.0	0.000 000	0.000
100%		-30	1882 499 997	3.2	0.000 000	0.002
100%		-20	1882 499 990	-4.2	0.000 000	-0.002
100%		-10	1882 499 999	4.5	0.000 000	0.002
100%		0	1882 499 991	-3.3	0.000 000	-0.002
100%		+10	1882 499 990	-3.8	0.000 000	-0.002
100%		+30	1882 499 997	3.0	0.000 000	0.002
100%		+40	1882 499 989	-5.3	0.000 000	-0.003
100%		+50	1882 499 996	2.2	0.000 000	0.001
115%	5.75	+20	1882 499 996	2.3	0.000 000	0.001
85%	4.25	+20	1882 499 989	-4.6	0.000 000	-0.002

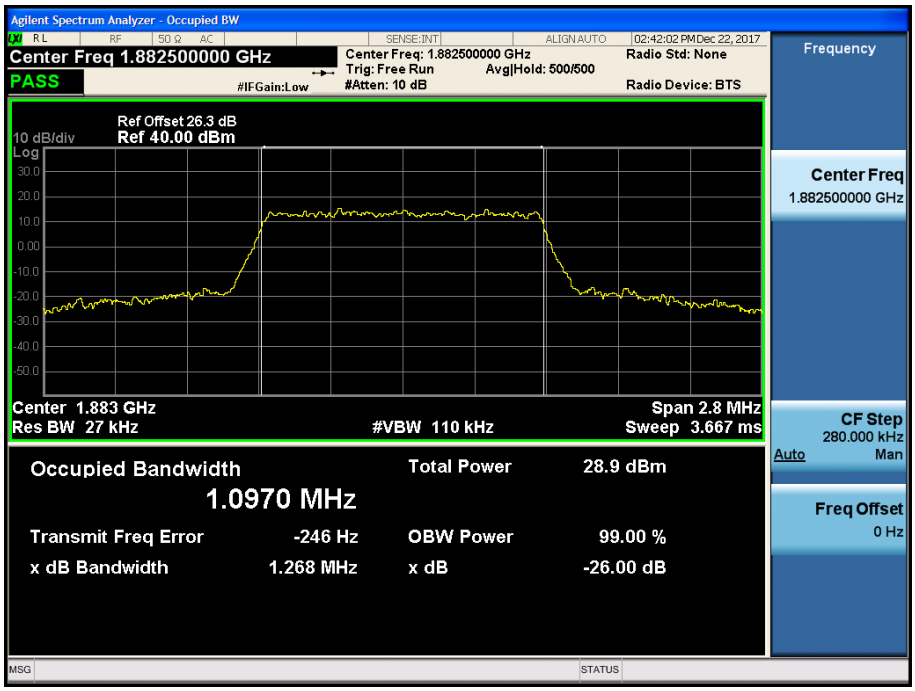


10. TEST PLOTS

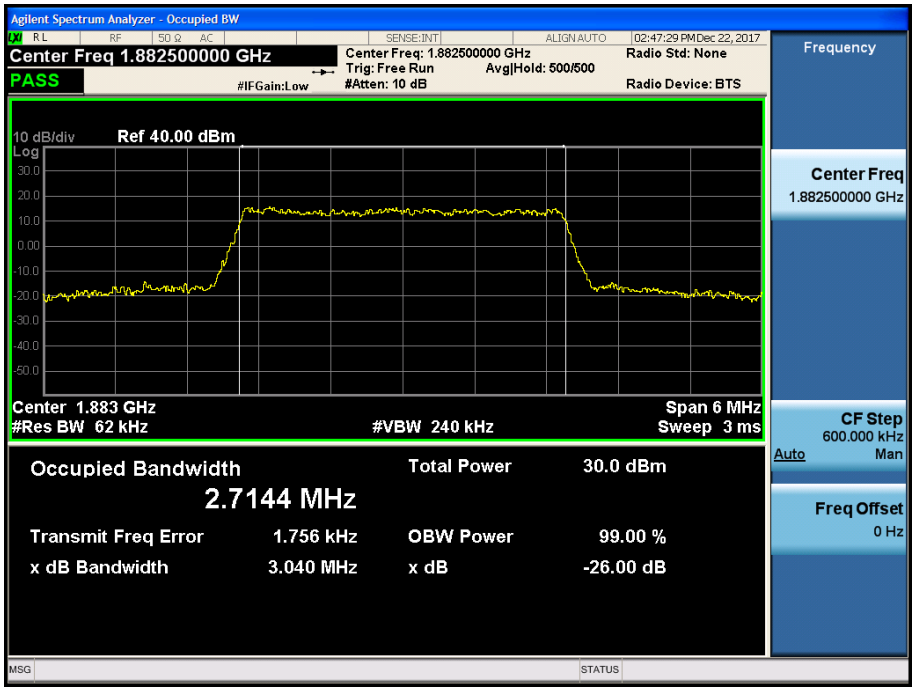
BAND 25. Occupied Bandwidth Plot (1.4M BW Ch.26365 QPSK RB 6_0)



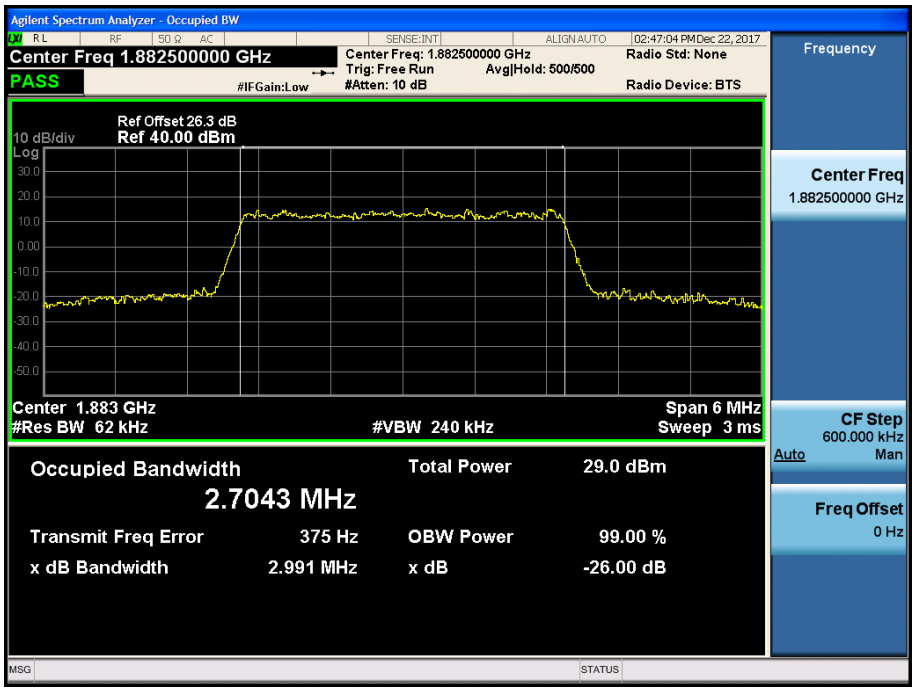
BAND 25. Occupied Bandwidth Plot (1.4M BW Ch. 26365 16QAM RB 6_0)



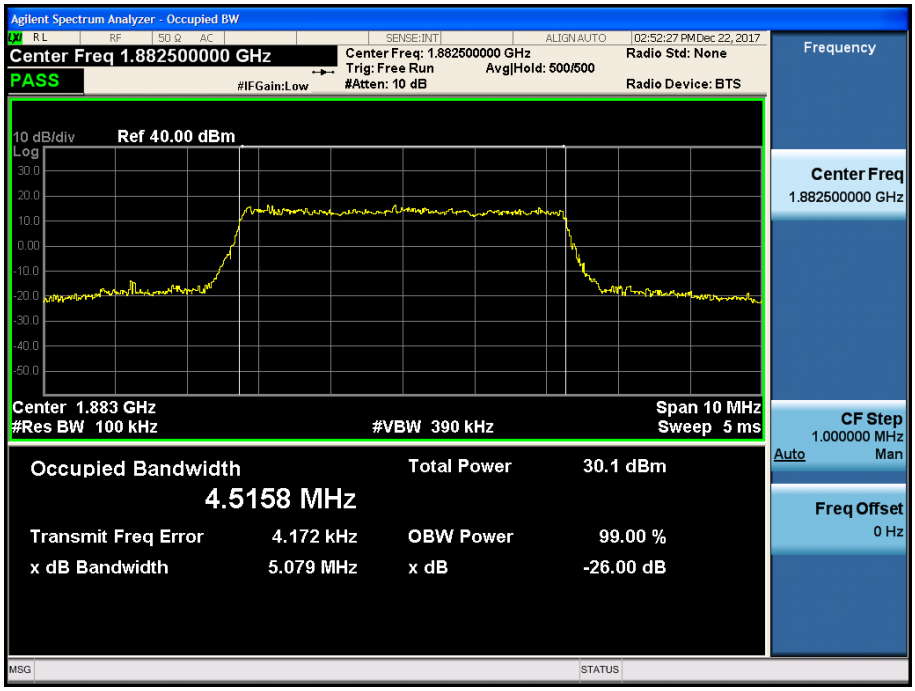
BAND 25. Occupied Bandwidth Plot (3M BW Ch. 26365 QPSK RB 15_0)



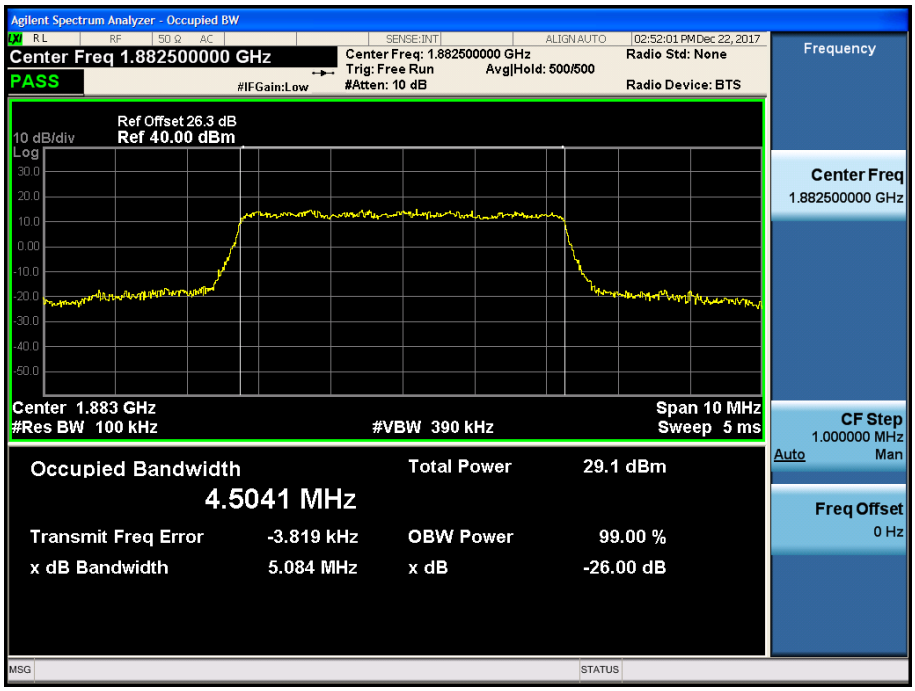
BAND 25. Occupied Bandwidth Plot (3M BW Ch. 26365 16QAM RB 15_0)



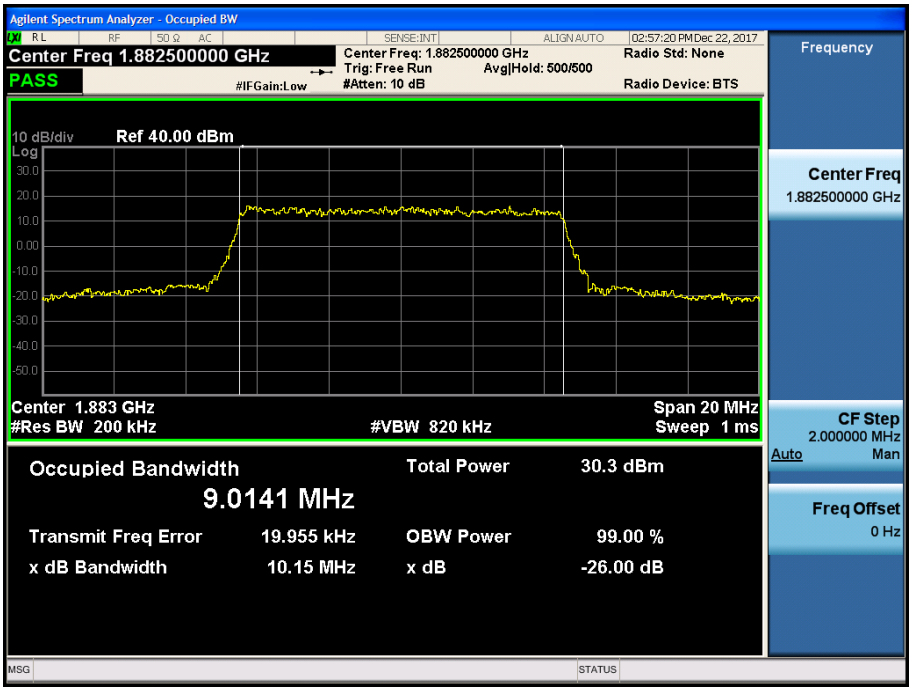
BAND 25. Occupied Bandwidth Plot (5M BW Ch. 26365 QPSK RB 25_0)



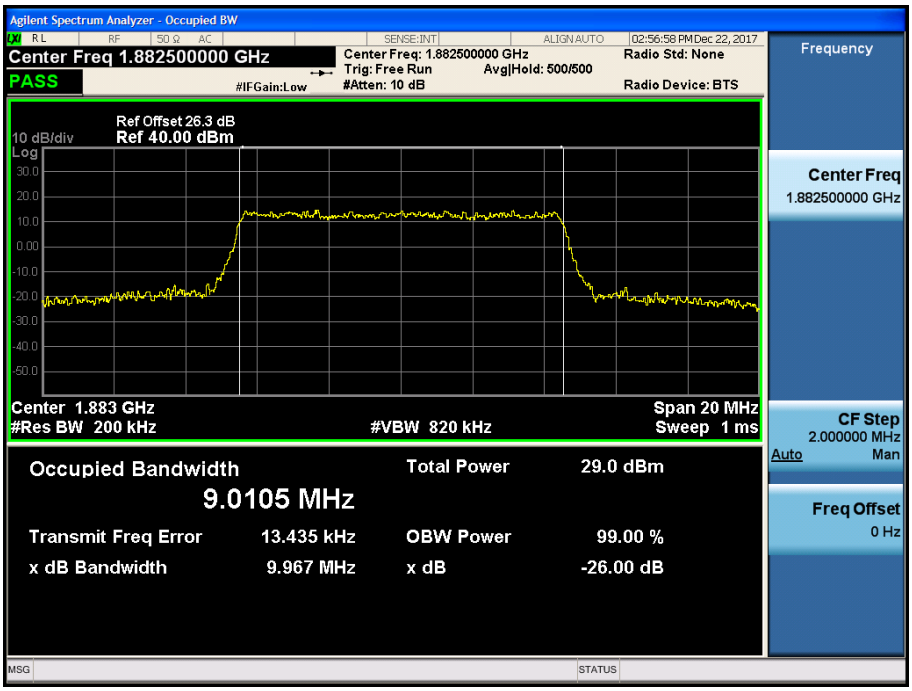
BAND 25. Occupied Bandwidth Plot (5M BW Ch. 26365 16QAM RB 25_0)



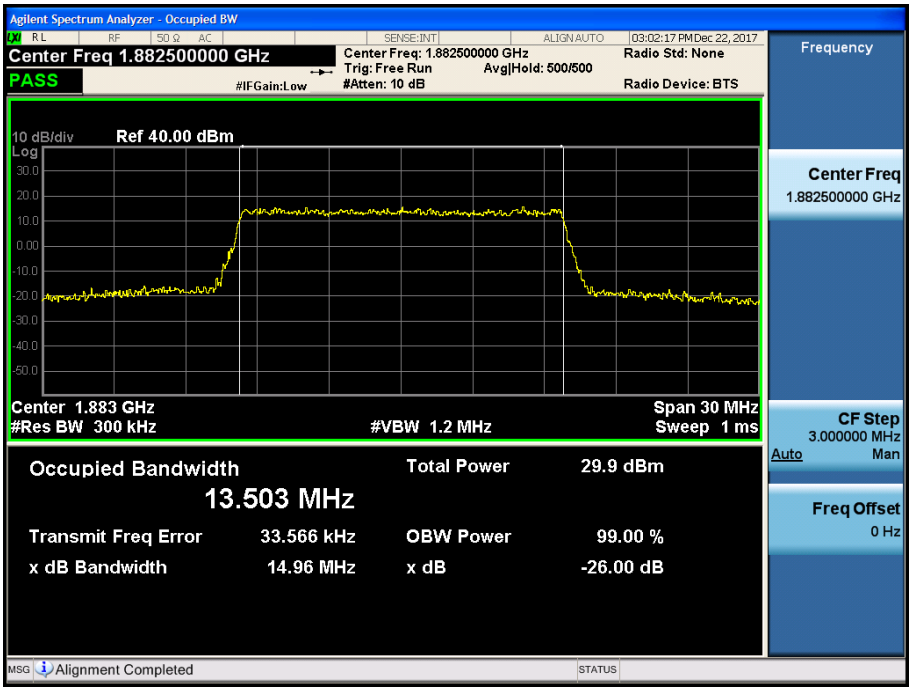
BAND 25. Occupied Bandwidth Plot (10M BW Ch. 26365 QPSK RB 50_0)



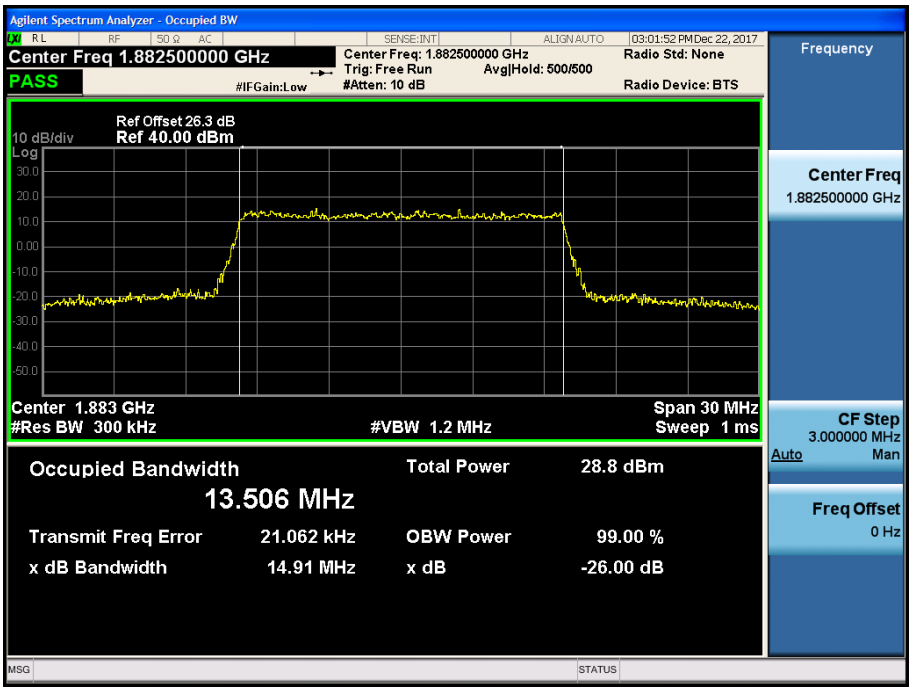
BAND 25. Occupied Bandwidth Plot (10M BW Ch. 26365 16QAM RB 50_0)



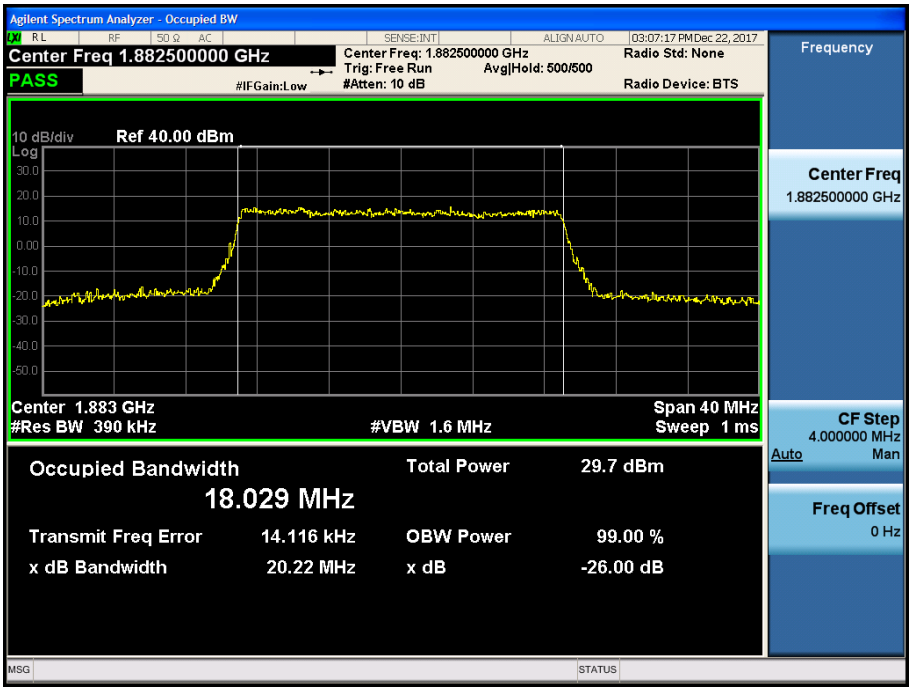
BAND 25. Occupied Bandwidth Plot (15M BW Ch. 26365 QPSK RB 75_0)



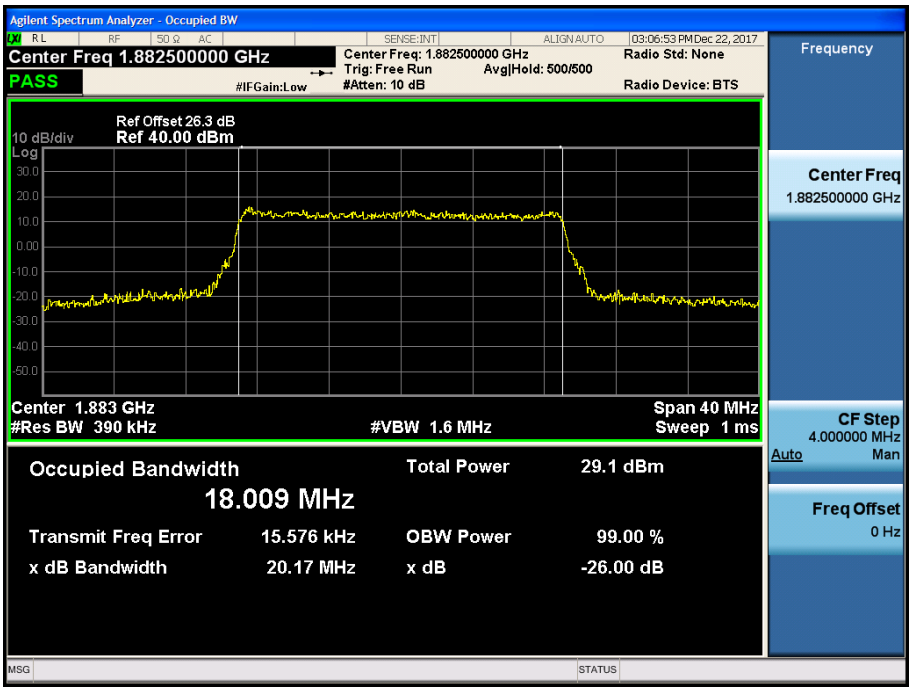
BAND 25. Occupied Bandwidth Plot (15M BW Ch. 26365 16QAM RB 75_0)



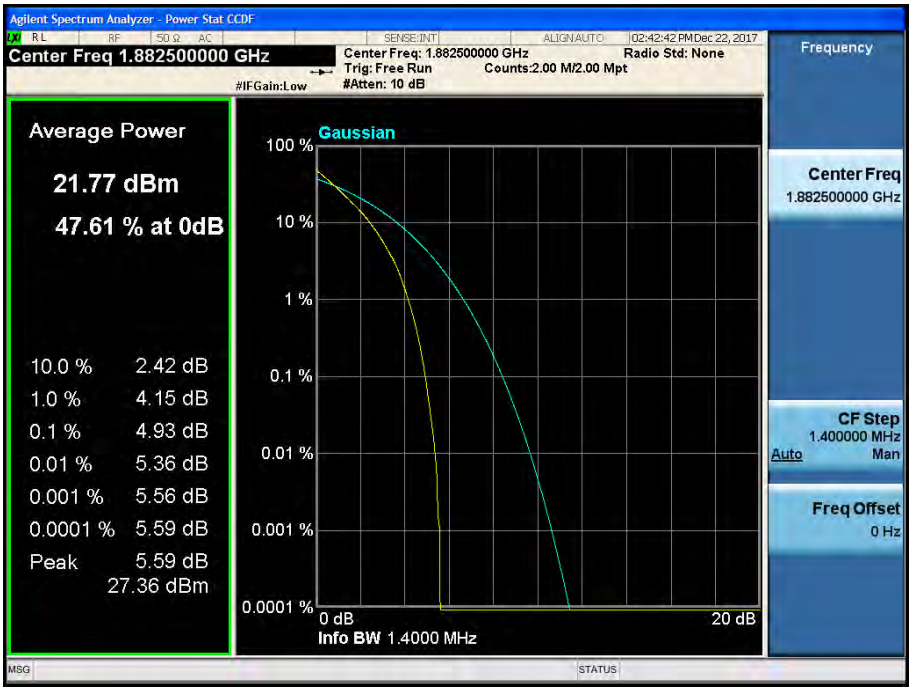
BAND 25. Occupied Bandwidth Plot (20M BW Ch. 26365 QPSK RB 100_0)



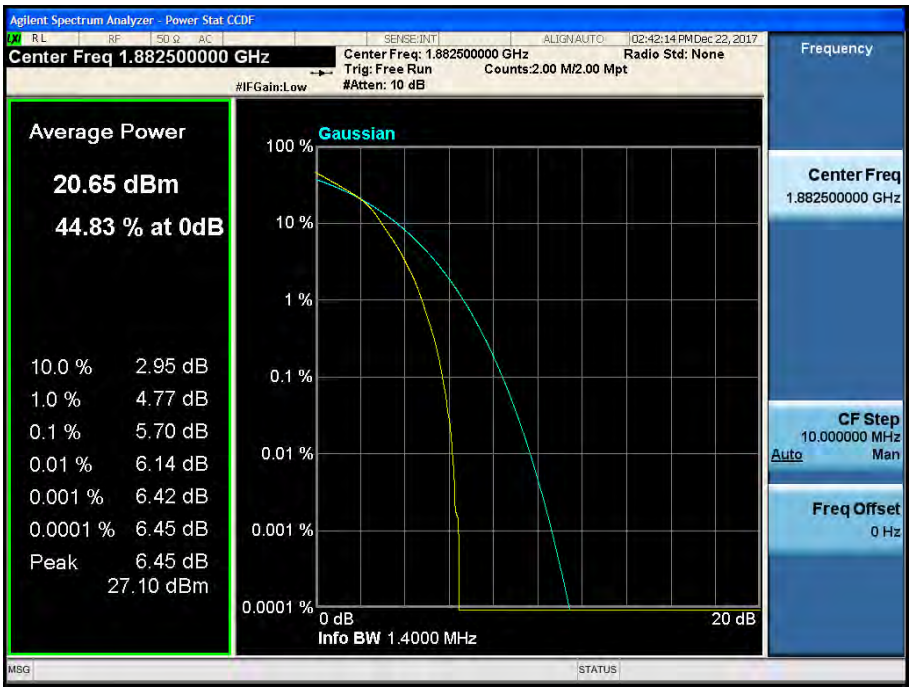
BAND 25. Occupied Bandwidth Plot (20M BW Ch. 26365 16QAM RB 100_0)



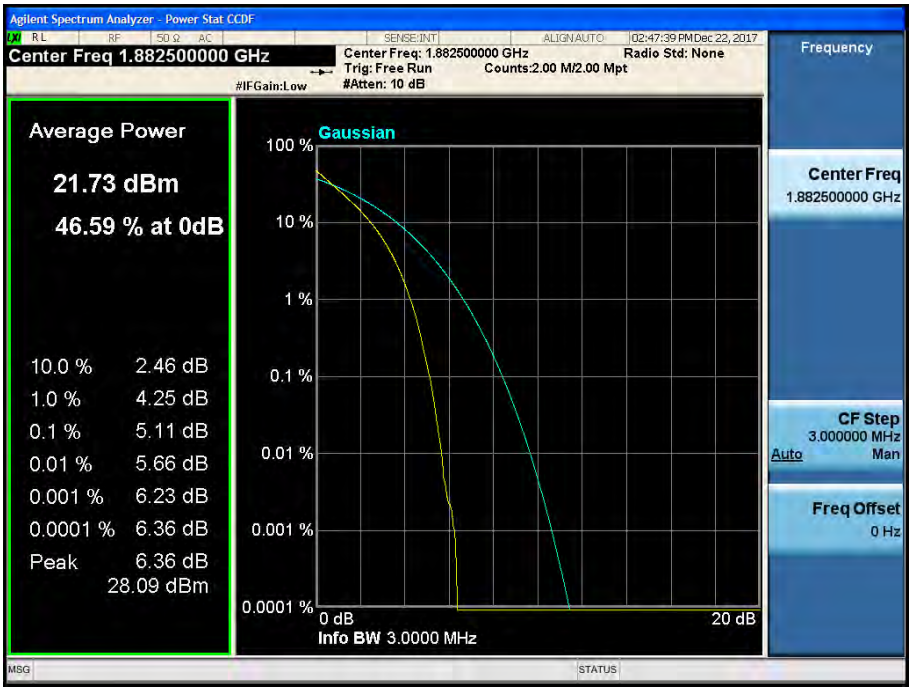
BAND 25. PAR Plot (1.4M BW Ch. 26365 QPSK RB 6_0)



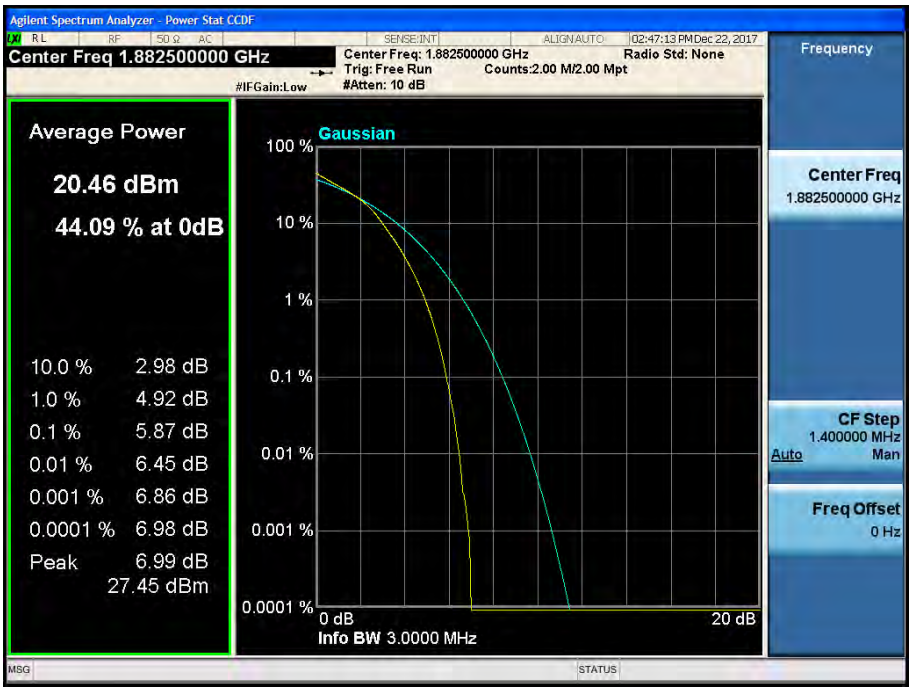
BAND 25. PAR Plot (1.4M BW Ch. 26365 16QAM RB 6_0)



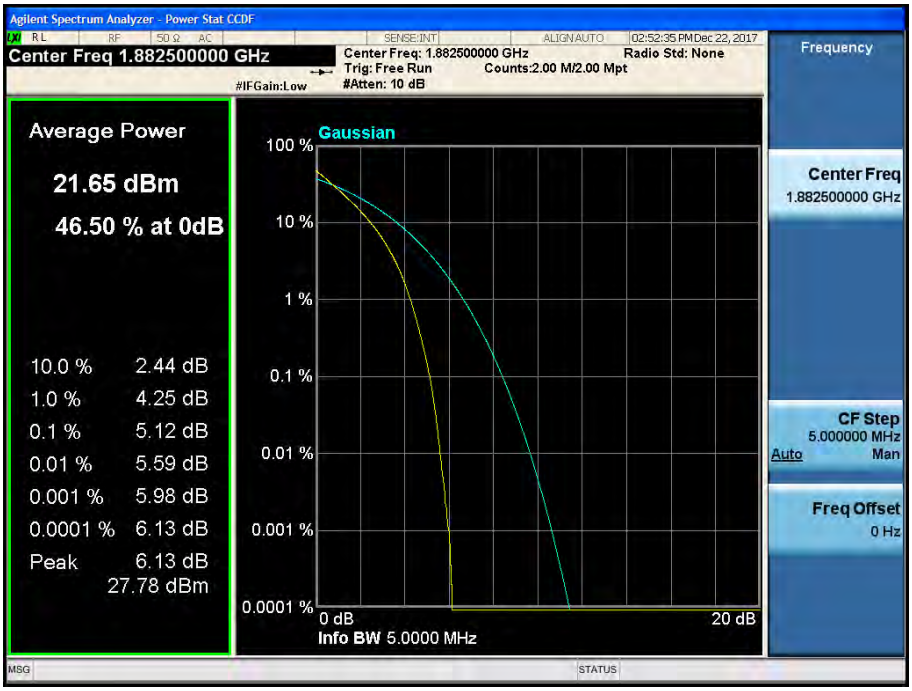
BAND 25. PAR Plot (3M BW Ch. 26365 QPSK RB 15_0)



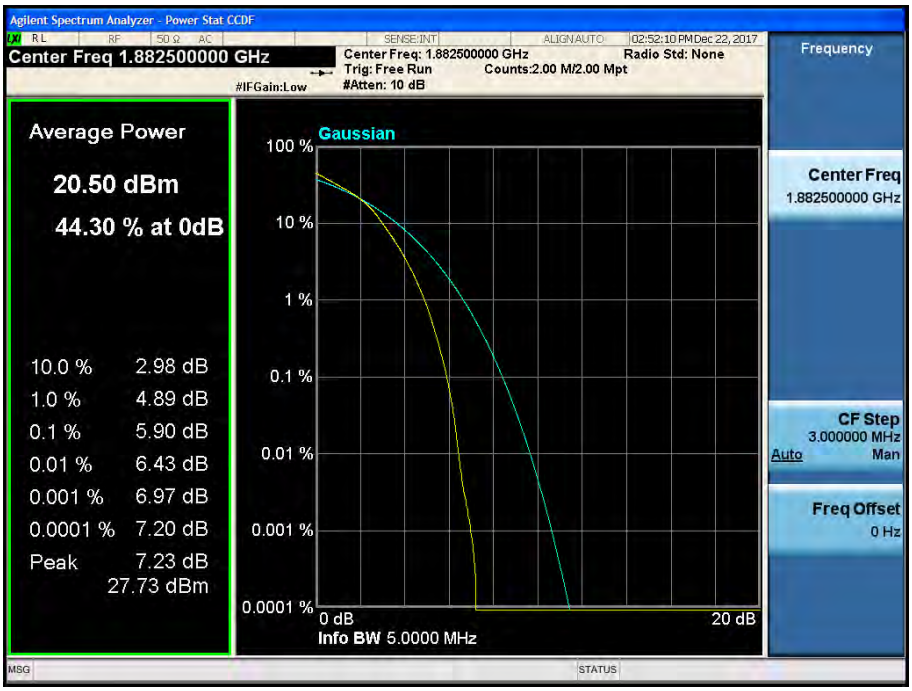
BAND 25. PAR Plot (3M BW Ch. 26365 16QAM RB 15_0)



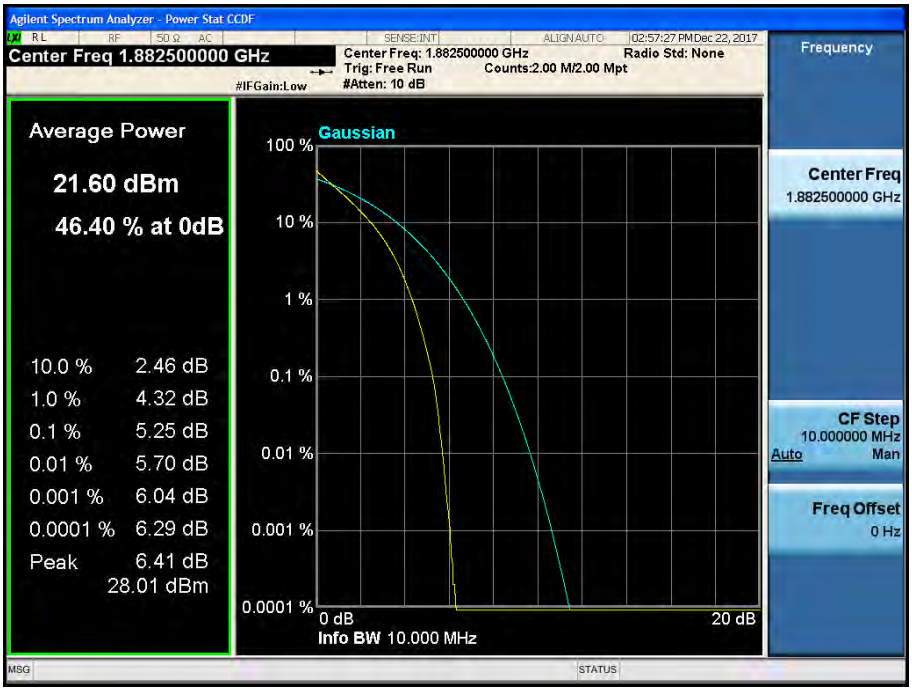
BAND 25. PAR Plot (5M BW Ch. 26365 QPSK RB 25_0)



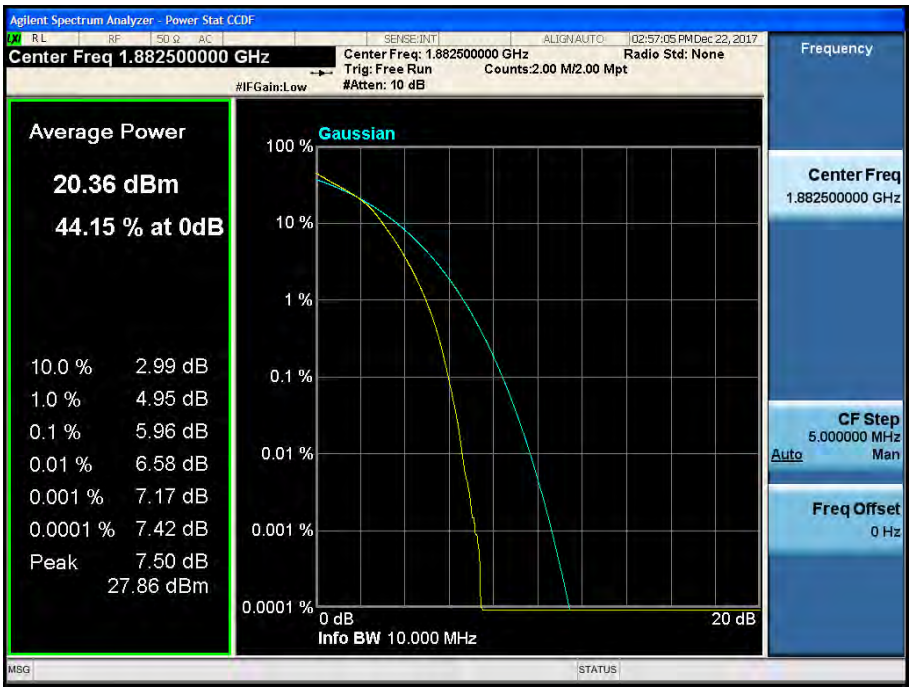
BAND 25. PAR Plot (5M BW Ch. 26365 16QAM RB 25_0)



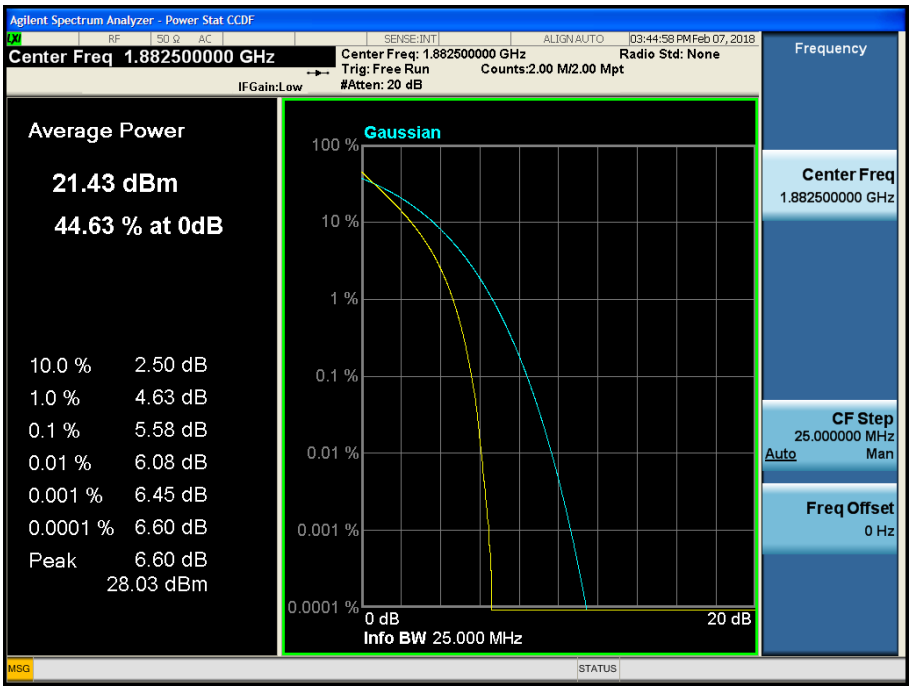
BAND 25. PAR Plot (10M BW Ch. 26365 QPSK RB 50_0)



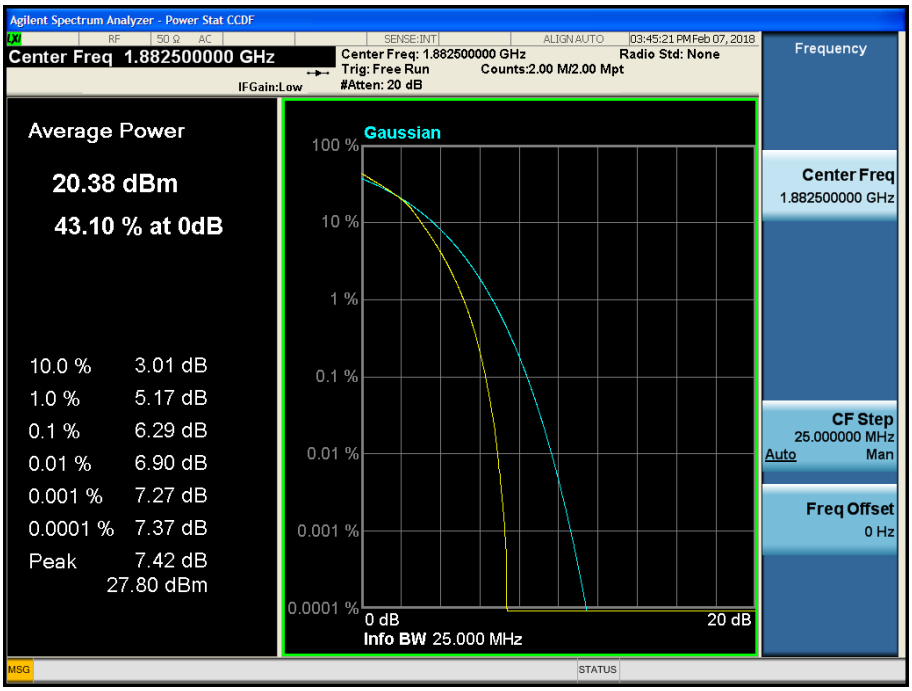
BAND 25. PAR Plot (10M BW Ch. 26365 16QAM RB 50_0)



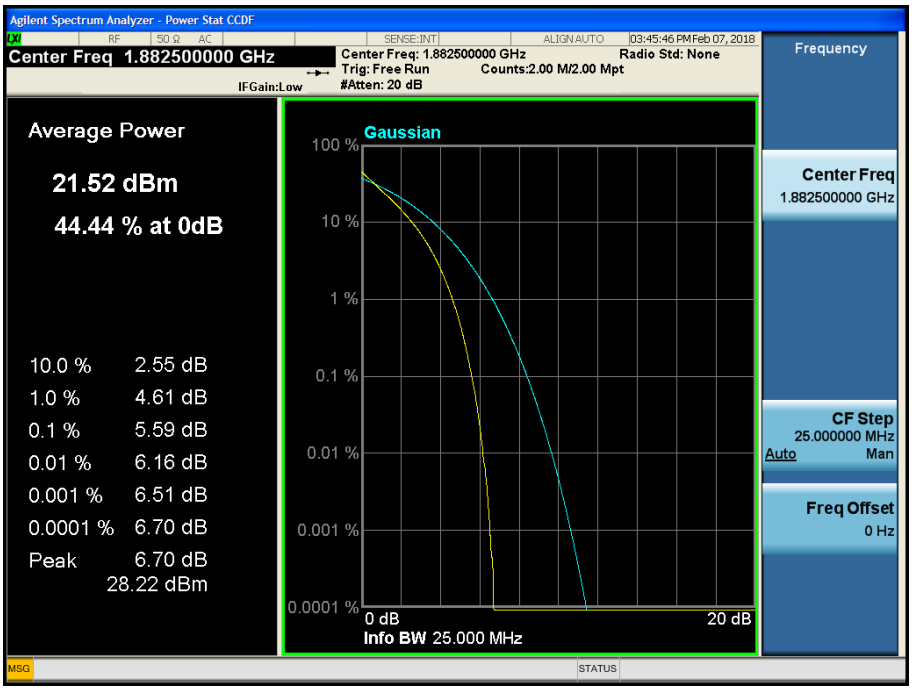
BAND 25. PAR Plot (15M BW Ch. 26365 QPSK RB 75_0)



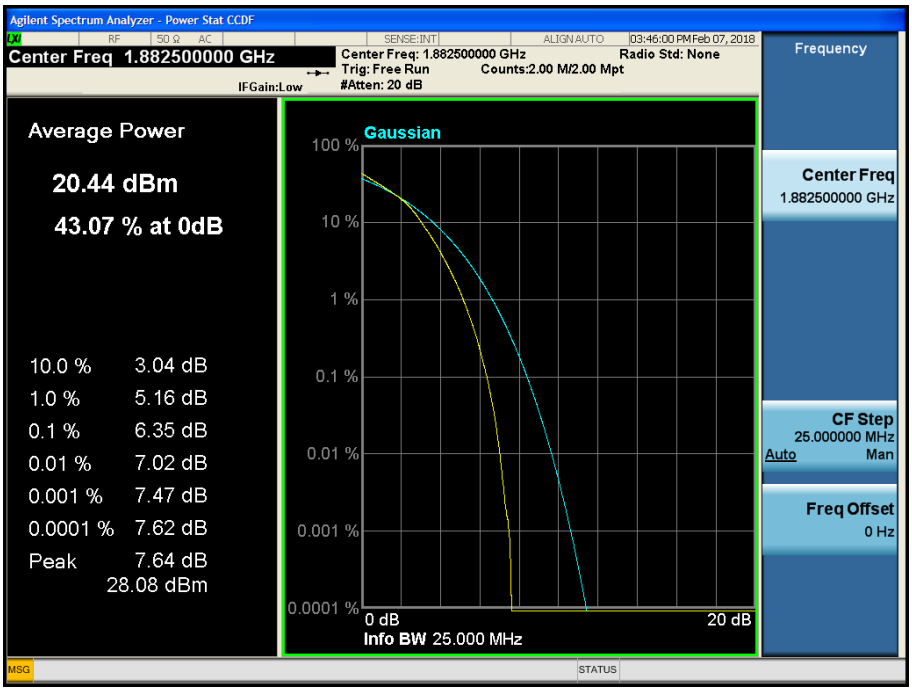
BAND 25. PAR Plot (15M BW Ch. 26365 16QAM RB 75_0)



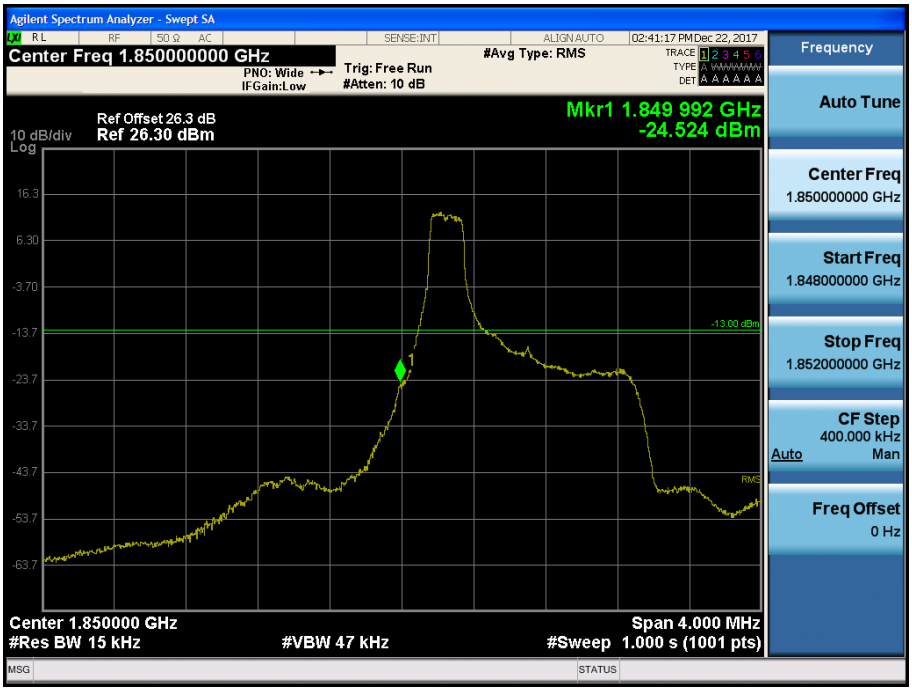
BAND 25. PAR Plot (20M BW Ch. 26365 QPSK RB 100_0)



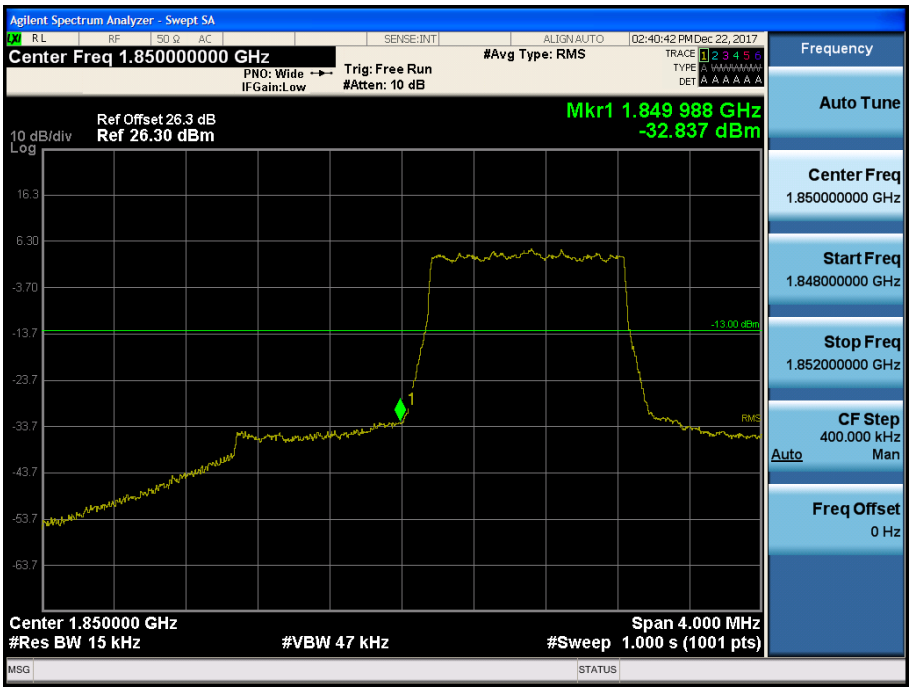
BAND 25. PAR Plot (20M BW Ch. 26365 16QAM RB 100_0)



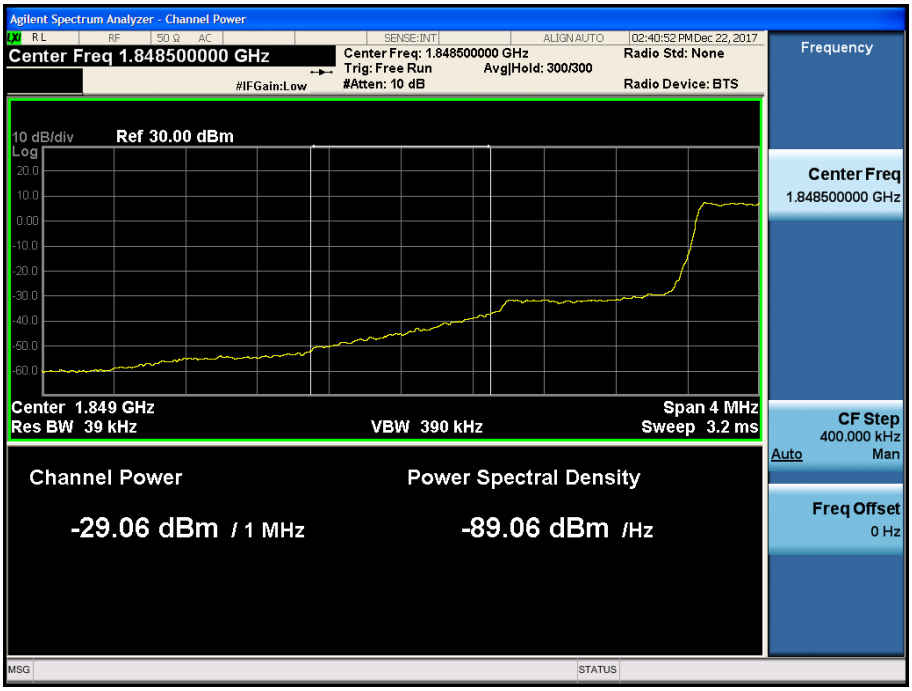
BAND 25. Lower Band Edge Plot (1.4M BW Ch.26047 QPSK_RB1_Offset 0) -1



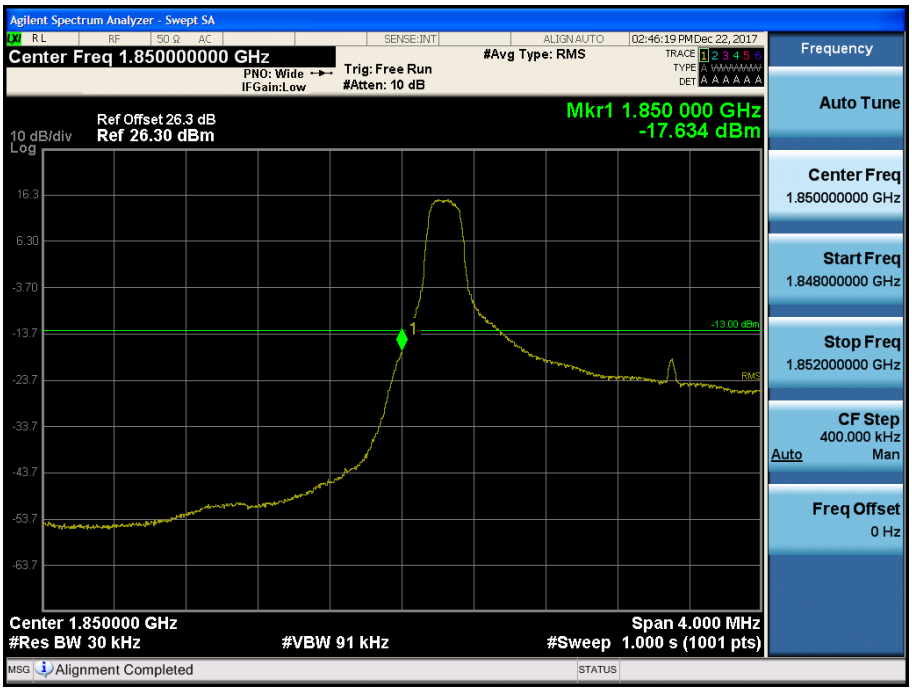
BAND 25. Lower Band Edge Plot (1.4M BW Ch. 26047 QPSK_RB6_Offset 0) -2



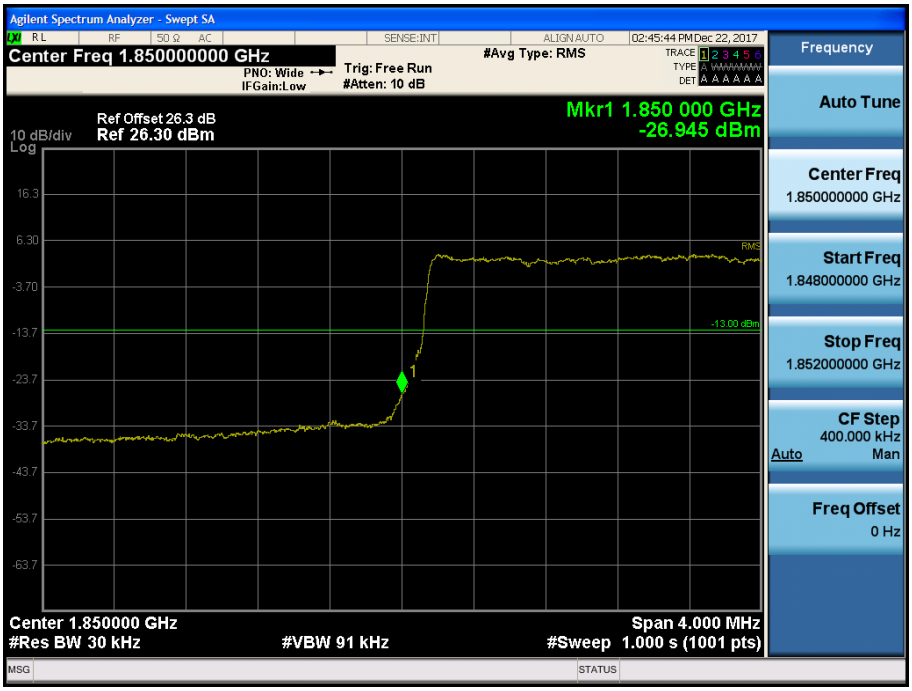
BAND 25. Lower Extended Band Edge Plot (1.4M BW Ch. 26047 QPSK_RB6_0) -3



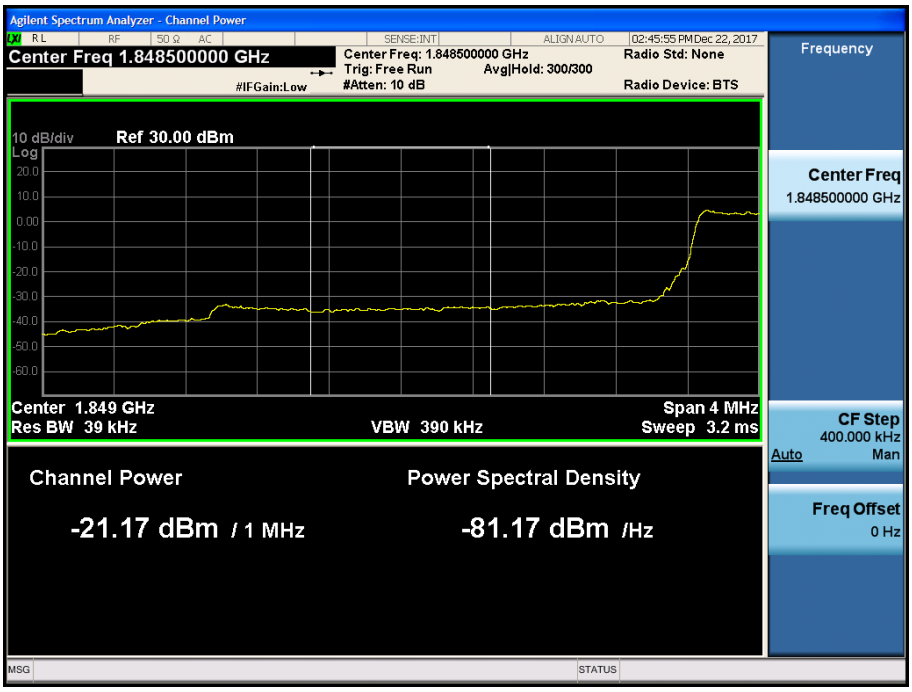
BAND 25. Lower Band Edge Plot (3M BW Ch.26055 QPSK_RB1_Offset 0) -1



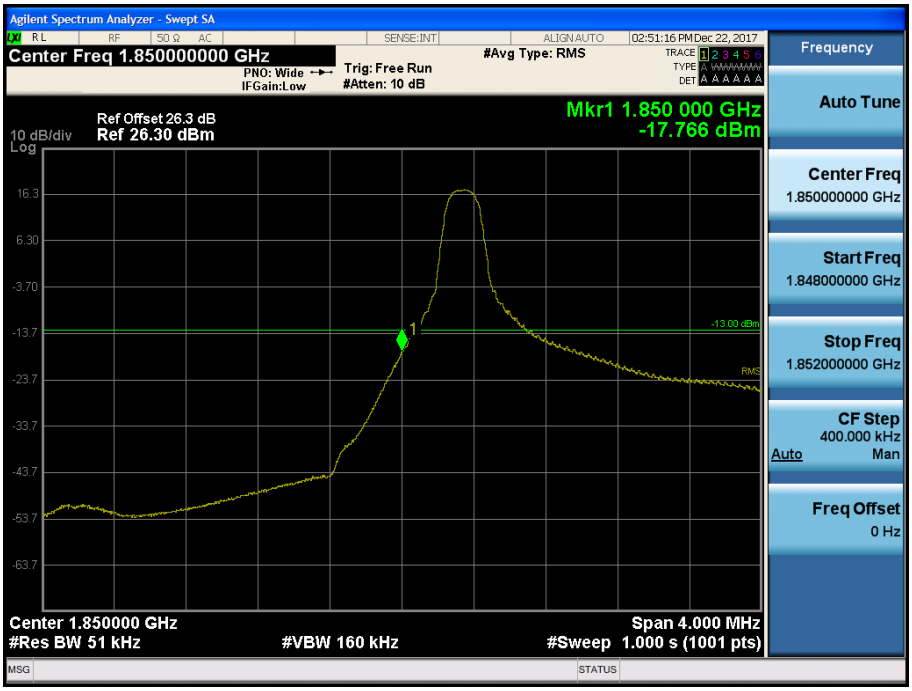
BAND 25. Lower Band Edge Plot (3M BW Ch. 26055 QPSK_RB15_Offset 0) -2



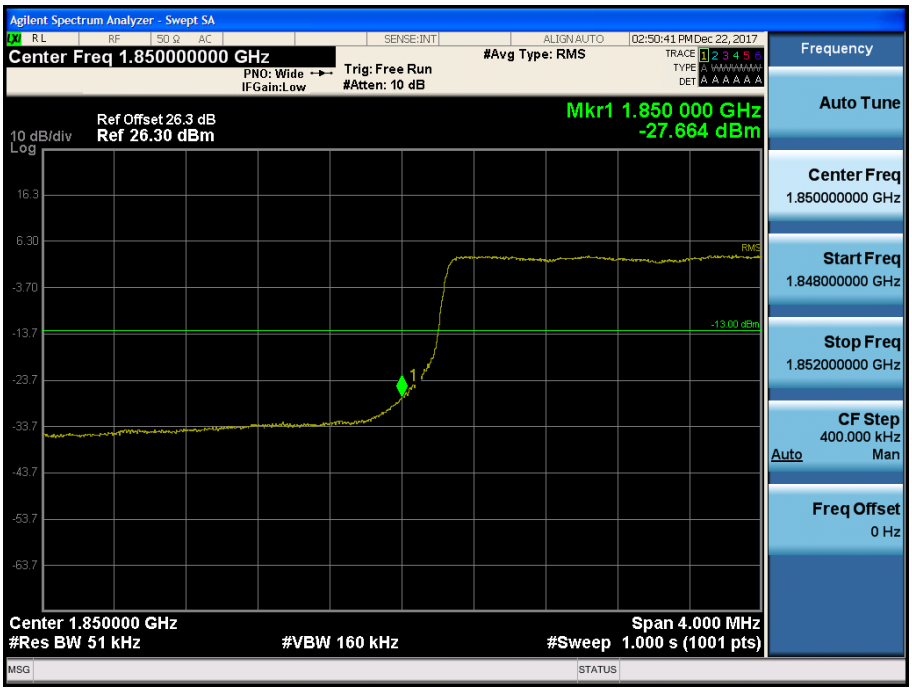
BAND 25. Lower Extended Band Edge Plot (3M BW Ch. 26055 QPSK_RB15_0) -3



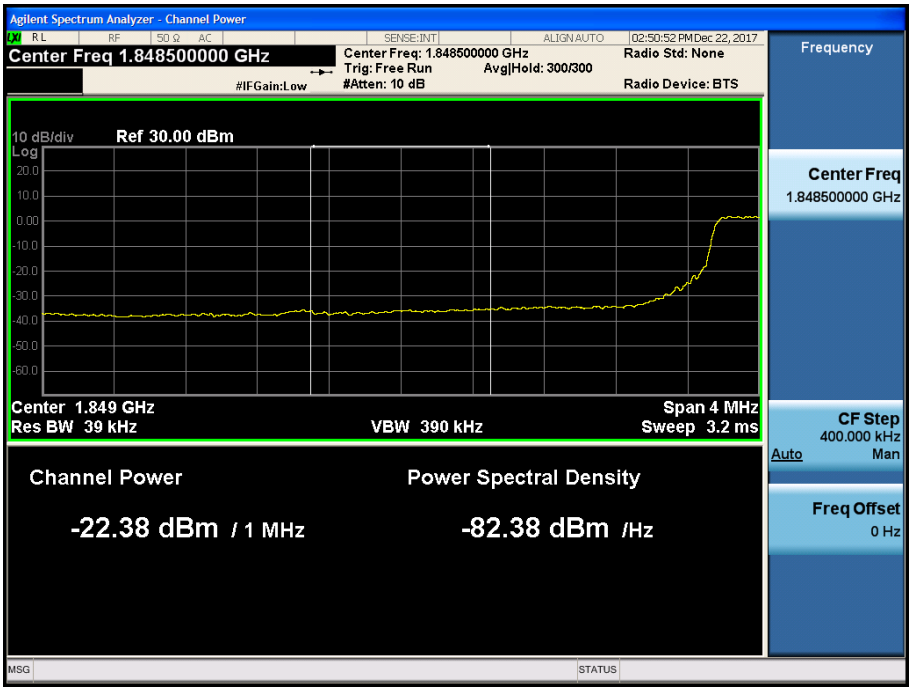
BAND 25. Lower Band Edge Plot (5M BW Ch.26065 QPSK_RB1_Offset 0) -1



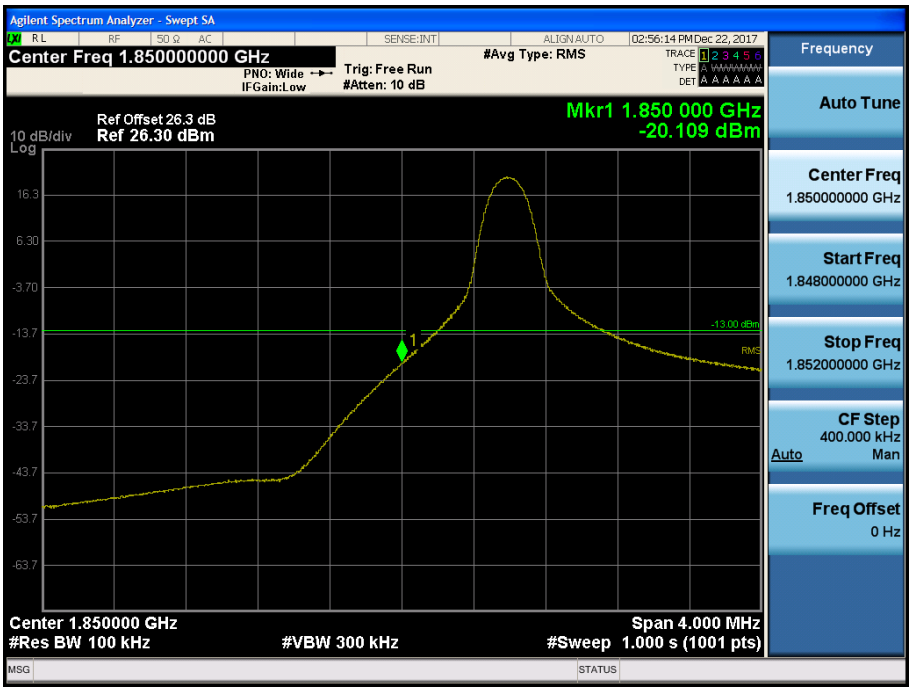
BAND 25. Lower Band Edge Plot (5M BW Ch. 26065 QPSK_RB25_Offset 0) -2



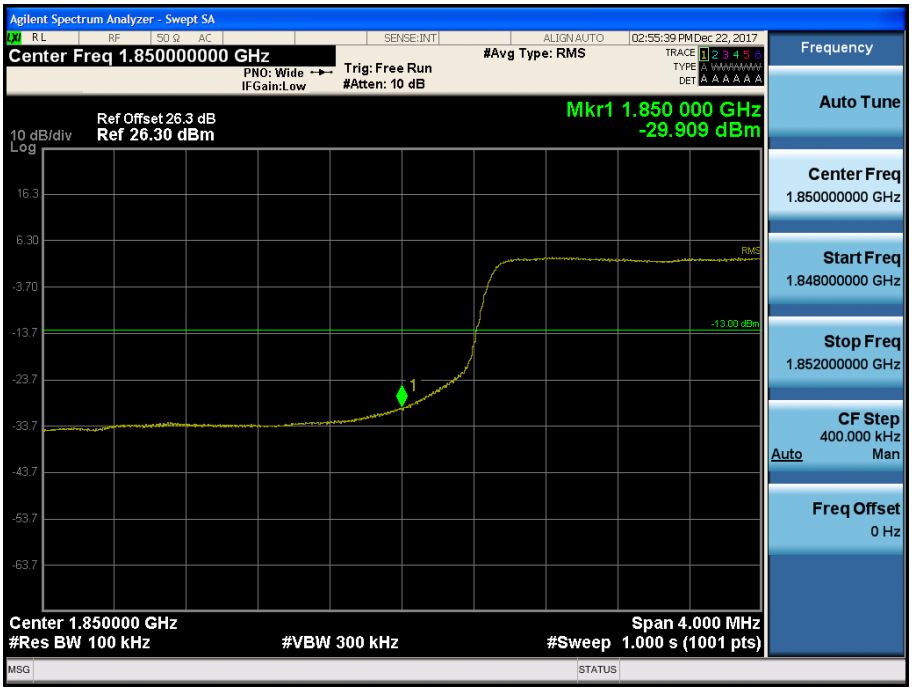
BAND 25. Lower Extended Band Edge Plot (5M BW Ch. 26065 QPSK_RB25_0) -3



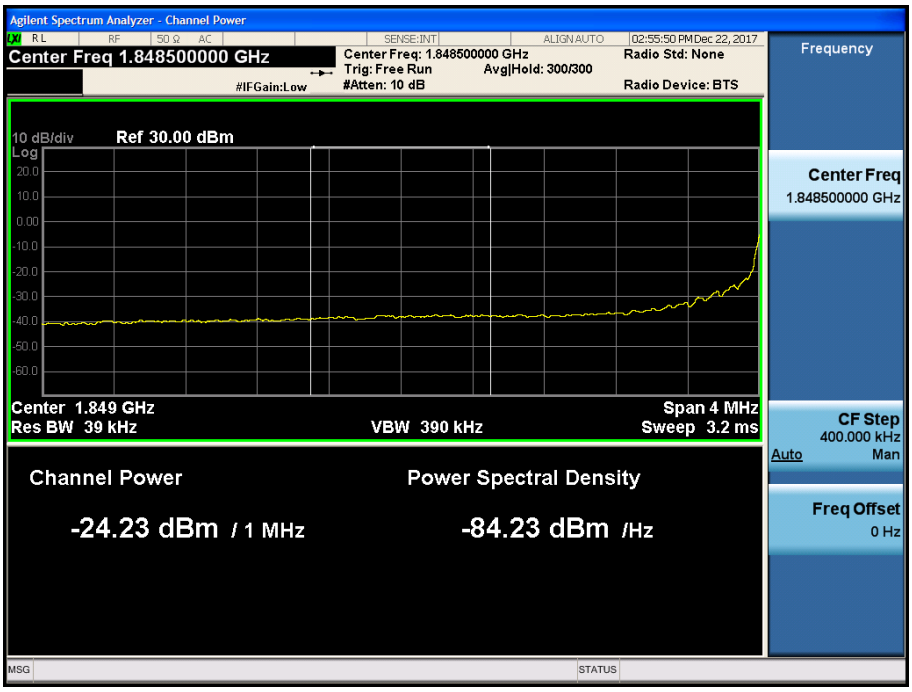
BAND 25. Lower Band Edge Plot (10M BW Ch.26090 QPSK_RB1_Offset 0) -1



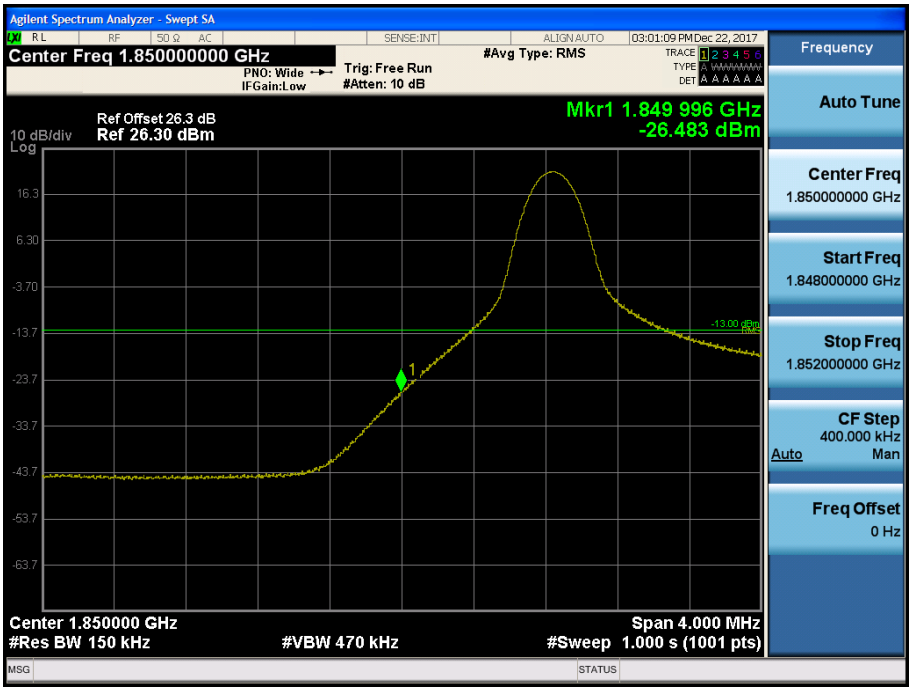
BAND 25. Lower Band Edge Plot (10M BW Ch. 26090 QPSK_RB50_Offset 0) -2



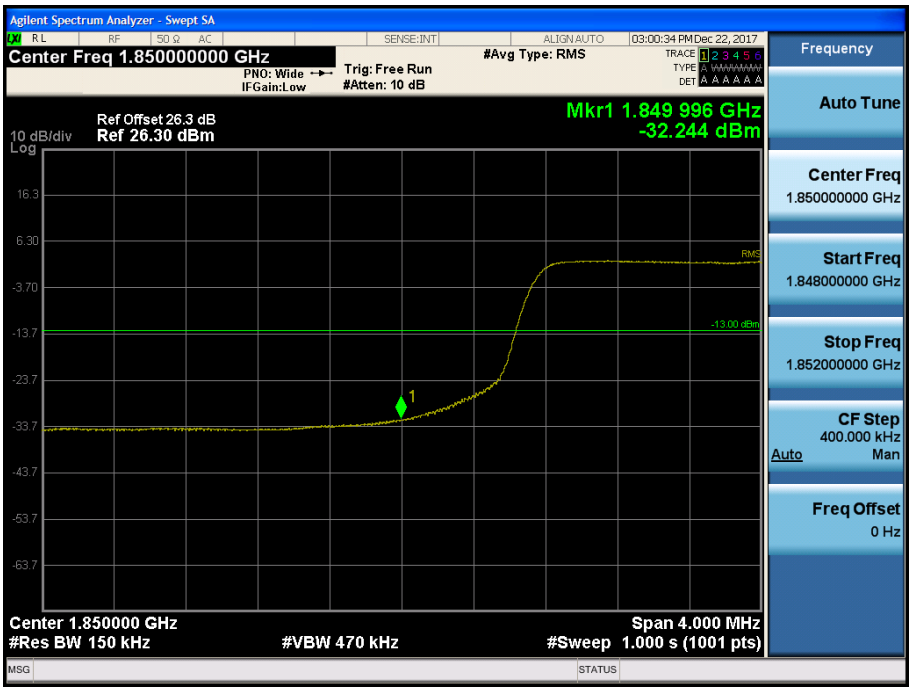
BAND 25. Lower Extended Band Edge Plot (10M BW Ch. 26090 QPSK_RB50_0) -3



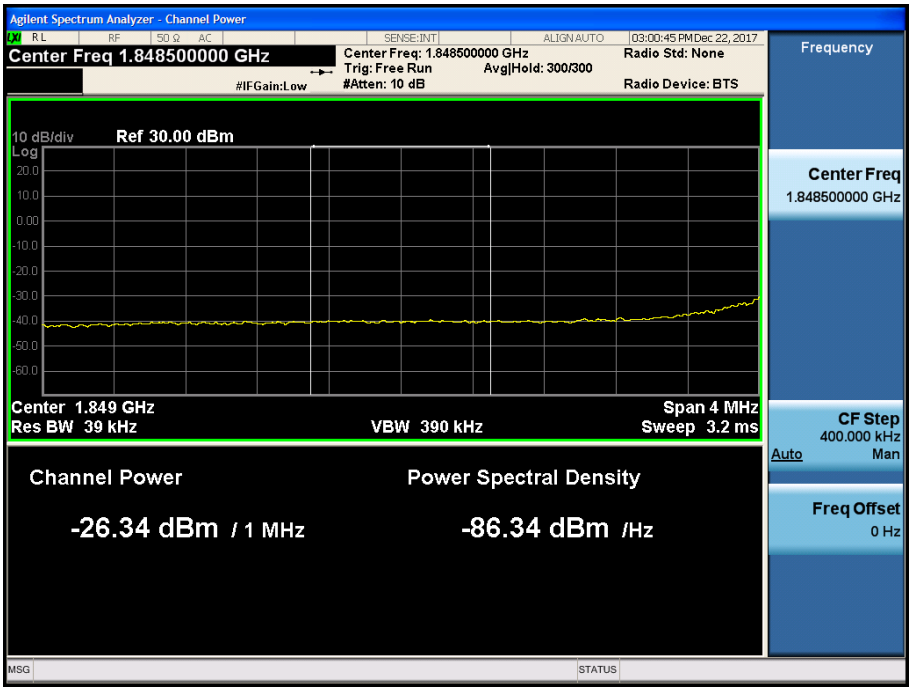
BAND 25. Lower Band Edge Plot (15M BW Ch.26115 QPSK_RB75_Offset 0) -1



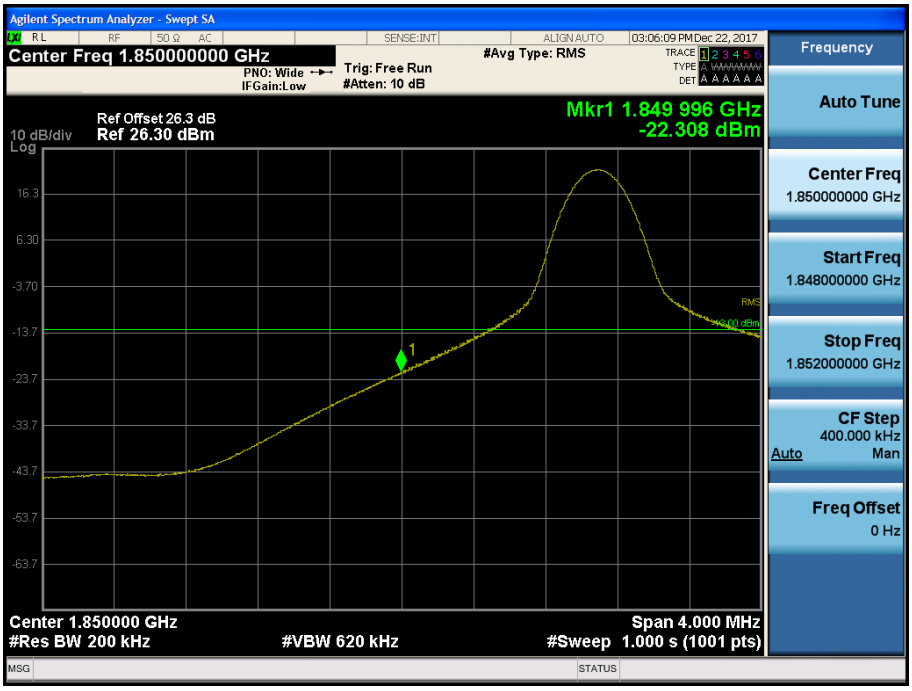
BAND 25. Lower Band Edge Plot (15M BW Ch. 26115 QPSK_RB75_Offset 0) -2



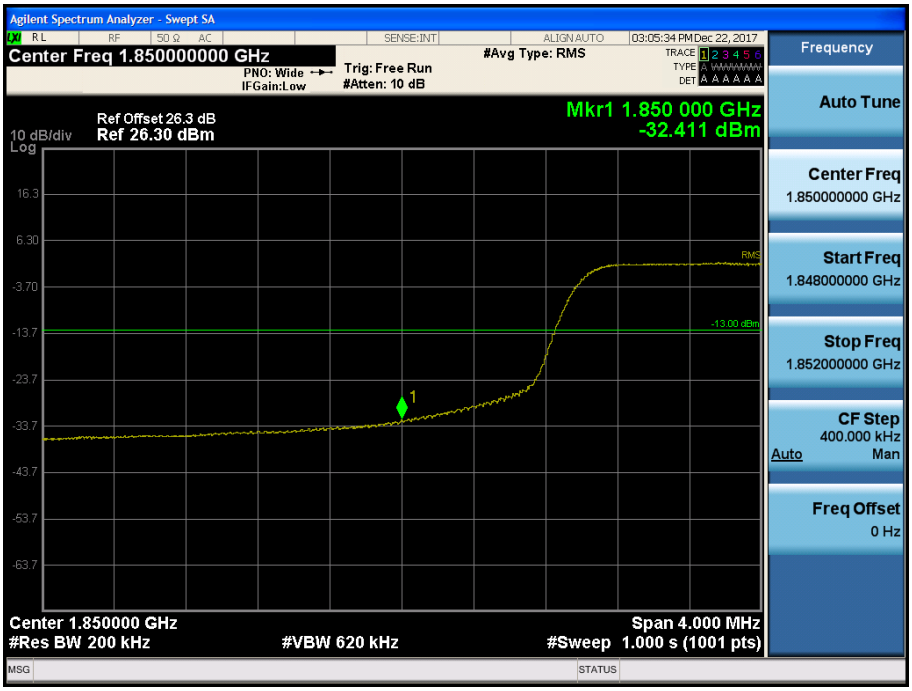
BAND 25. Lower Extended Band Edge Plot (15M BW Ch. 26115 QPSK_RB75_0) -3



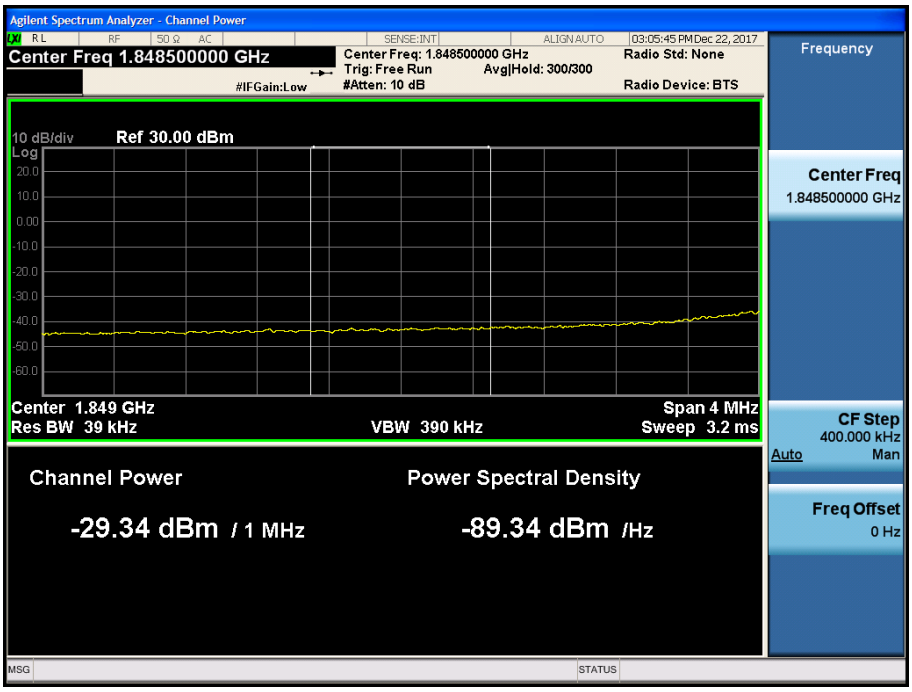
BAND 25. Lower Band Edge Plot (20M BW Ch.26140 QPSK_RB1_Offset 0) -1



BAND 25. Lower Band Edge Plot (20M BW Ch. 26140 QPSK_RB100_Offset 0) -2



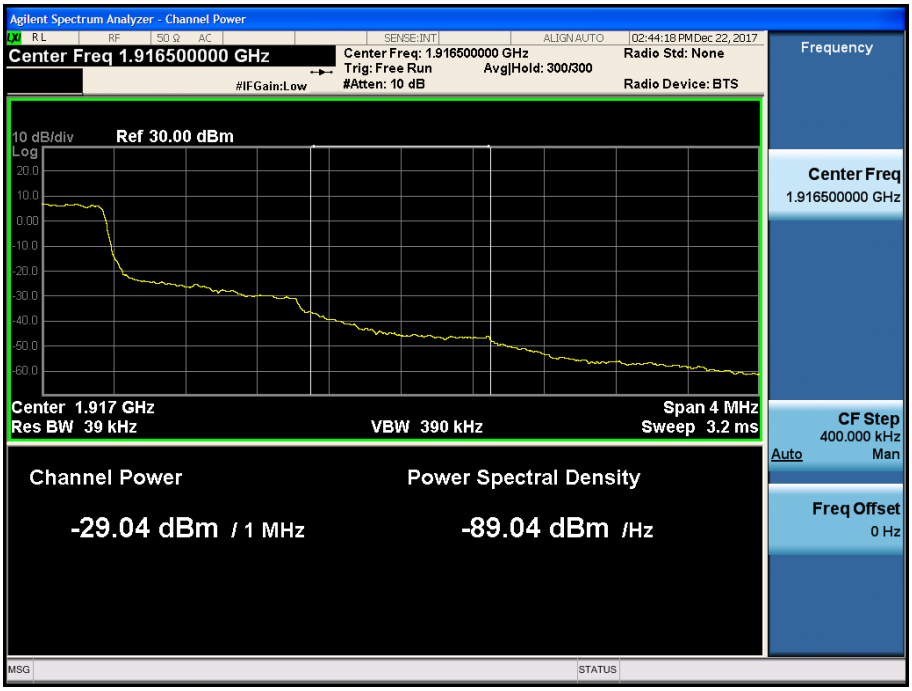
BAND 25. Lower Extended Band Edge Plot (20M BW Ch. 26140 QPSK_RB100_0) -3



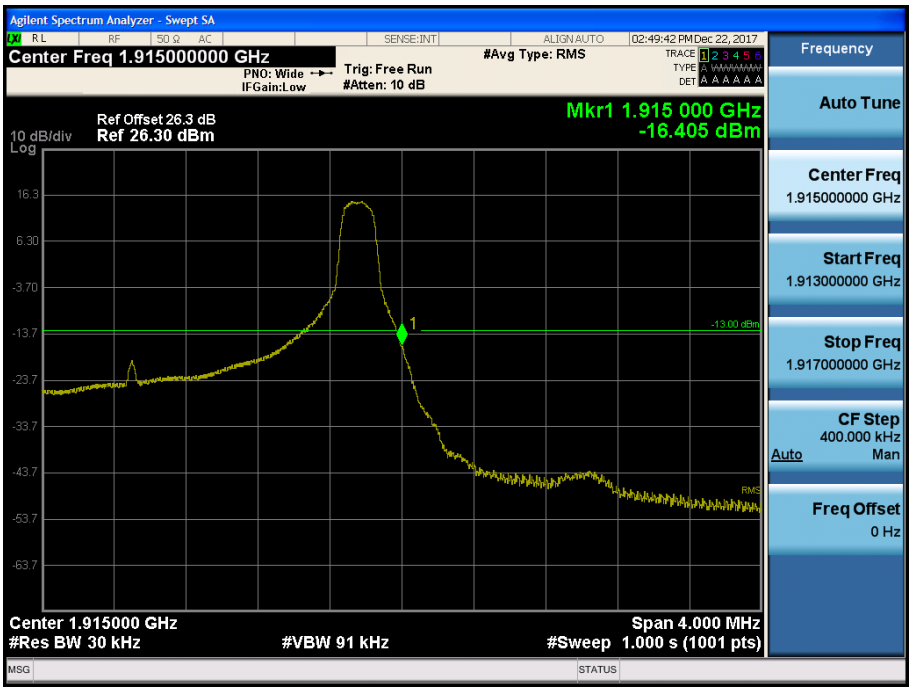
BAND 25. Upper Band Edge Plot (1.4M BW Ch.26683 QPSK_RB1_Offset 5) -1

BAND 25. Upper Band Edge Plot (1.4M BW Ch. 26683 QPSK_RB6_Offset 0) -2

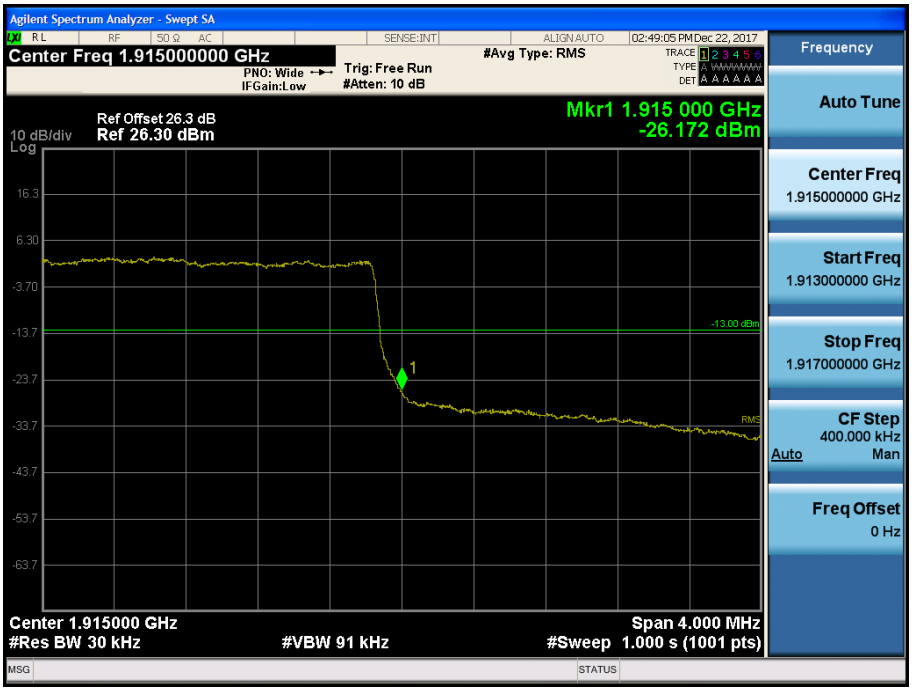
BAND 25. Upper Extended Band Edge Plot (1.4M BW Ch. 26683 QPSK_RB6_0) -3



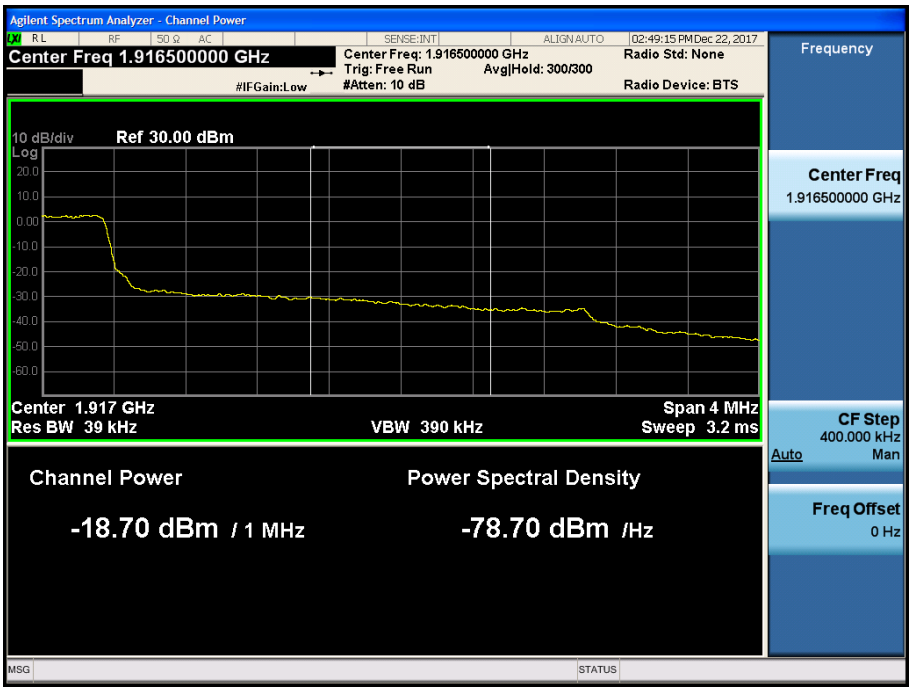
BAND 25. Upper Band Edge Plot (3M BW Ch.26675 QPSK_RB1_Offset 14) -1



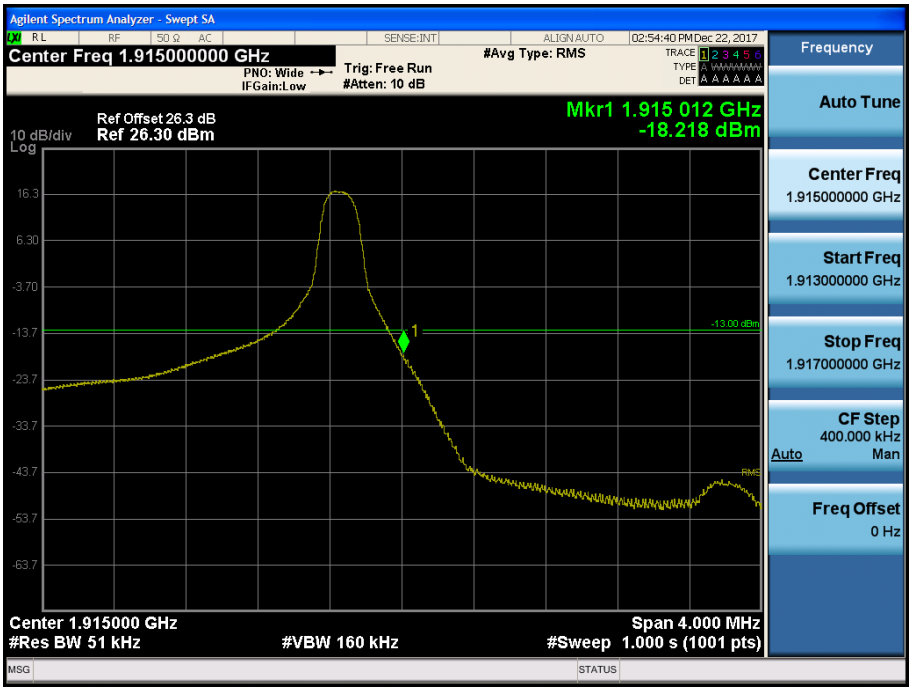
BAND 25. Upper Band Edge Plot (3M BW Ch. 26675 QPSK_RB15_Offset 0) -2



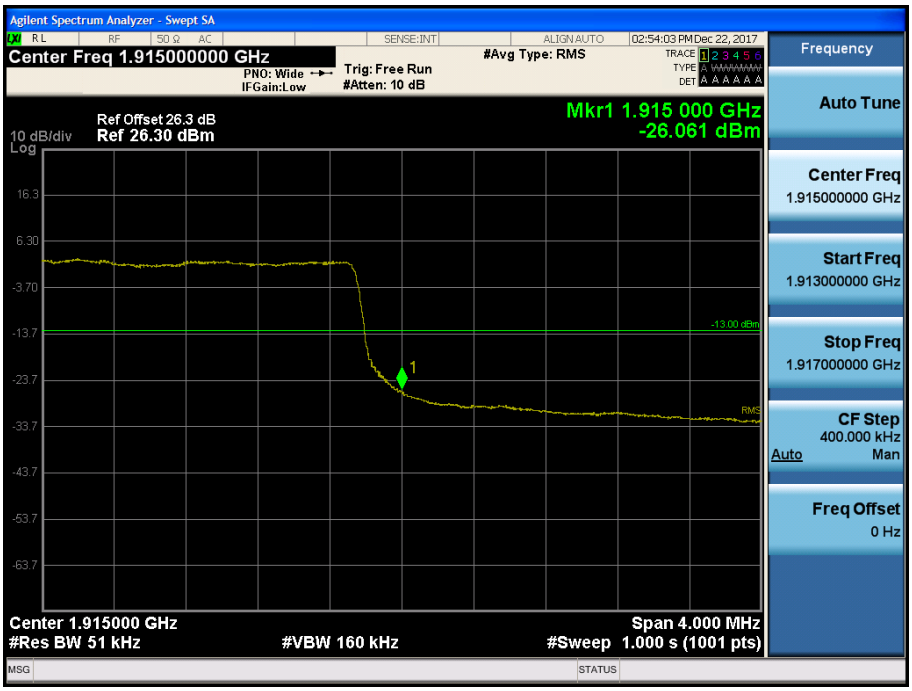
BAND 25. Upper Extended Band Edge Plot (3M BW Ch. 26675 QPSK_RB15 0) -3



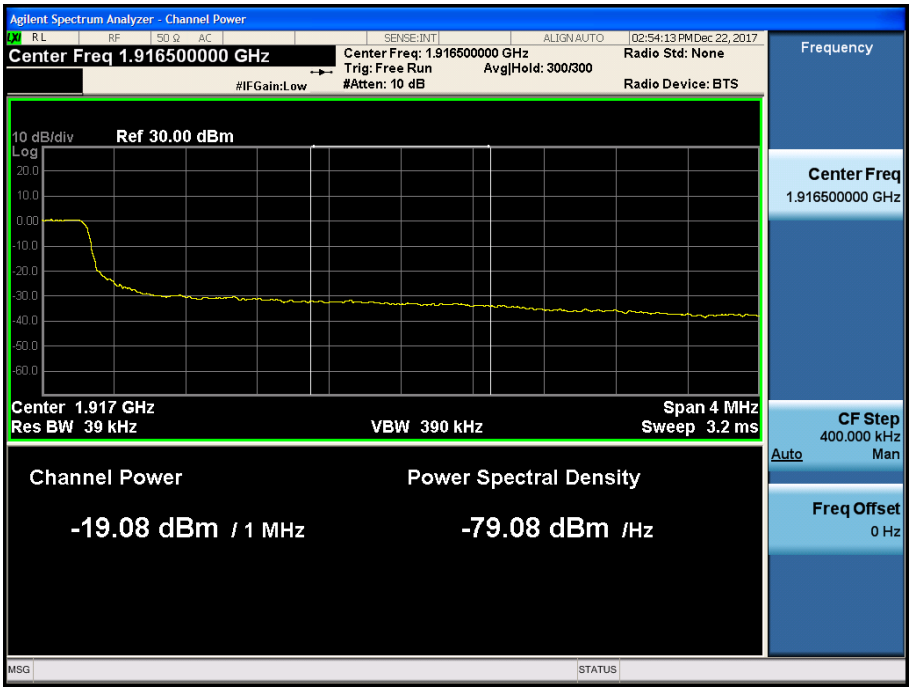
BAND 25. Upper Band Edge Plot (5M BW Ch.26665 QPSK_RB1_Offset 24) -1



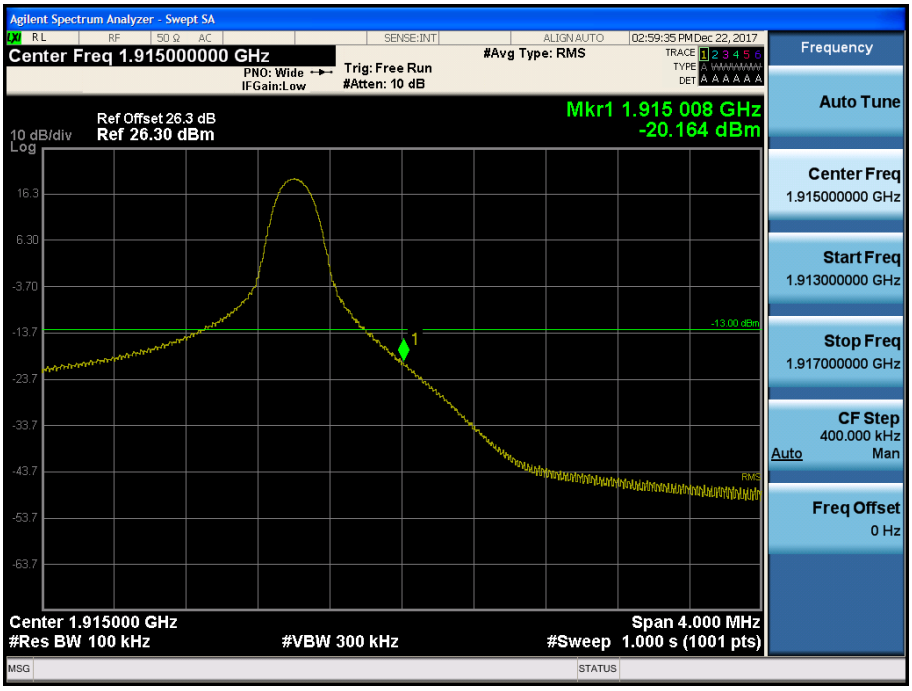
BAND 25. Upper Band Edge Plot (5M BW Ch. 26665 QPSK_RB25_Offset 0) -2



BAND 25. Upper Extended Band Edge Plot (5M BW Ch. 26665 QPSK_RB25_0) -3

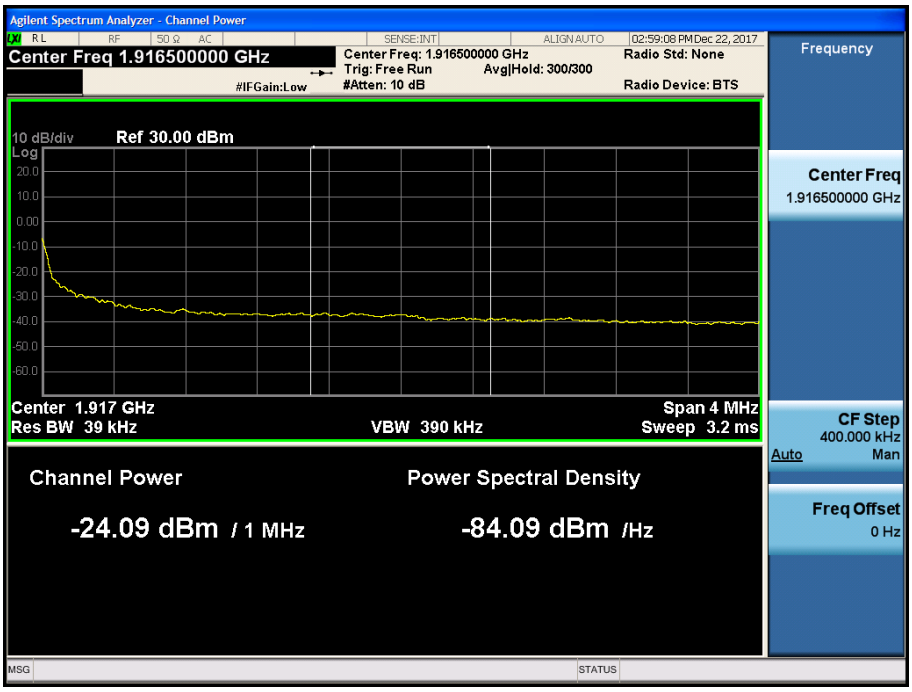


BAND 25. Upper Band Edge Plot (10M BW Ch.26640 QPSK_RB1_Offset 49) -1

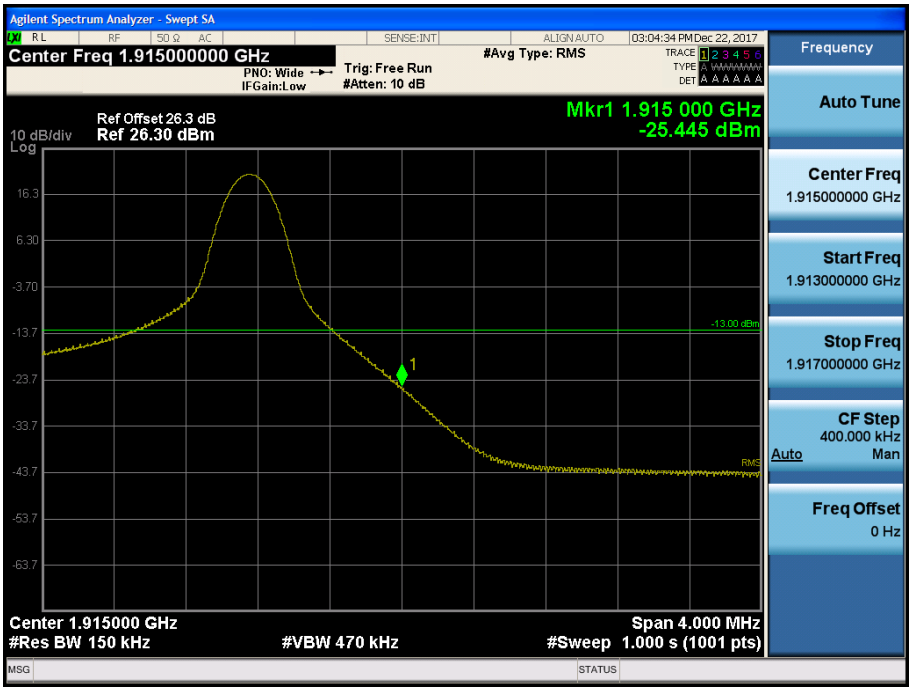


BAND 25. Upper Band Edge Plot (10M BW Ch. 26640 QPSK_RB50_Offset 0) -2

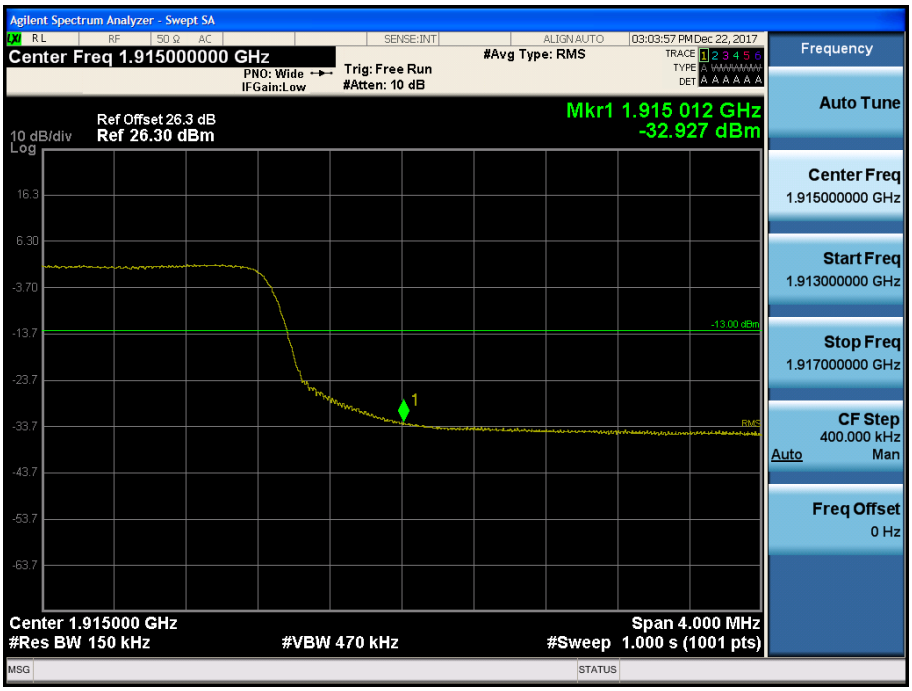
BAND 25. Upper Extended Band Edge Plot (10M BW Ch. 26640 QPSK_RB50_0) -3



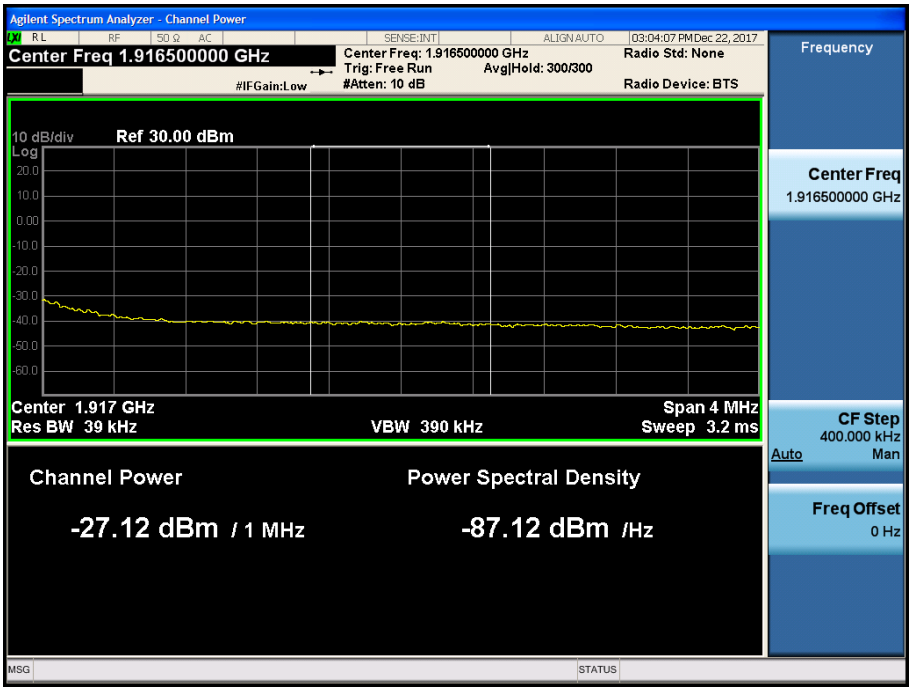
BAND 25. Upper Band Edge Plot (15M BW Ch.26615 QPSK_RB1_Offset 74) -1



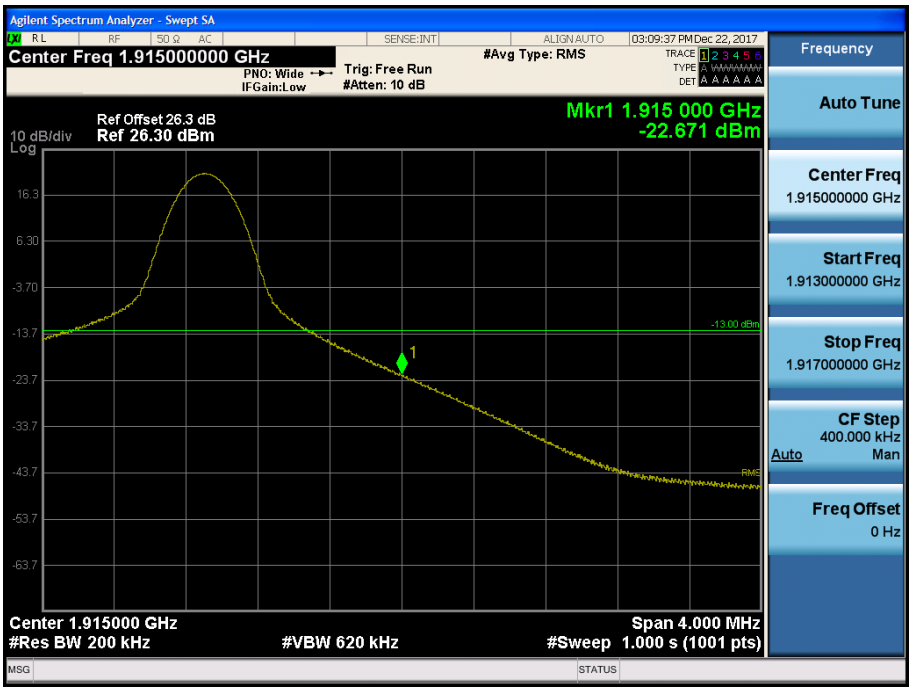
BAND 25. Upper Band Edge Plot (15M BW Ch. 26615 QPSK_RB75_Offset 0) -2



BAND 25. Upper Extended Band Edge Plot (15M BW Ch. 26615 QPSK_RB75_0) -3

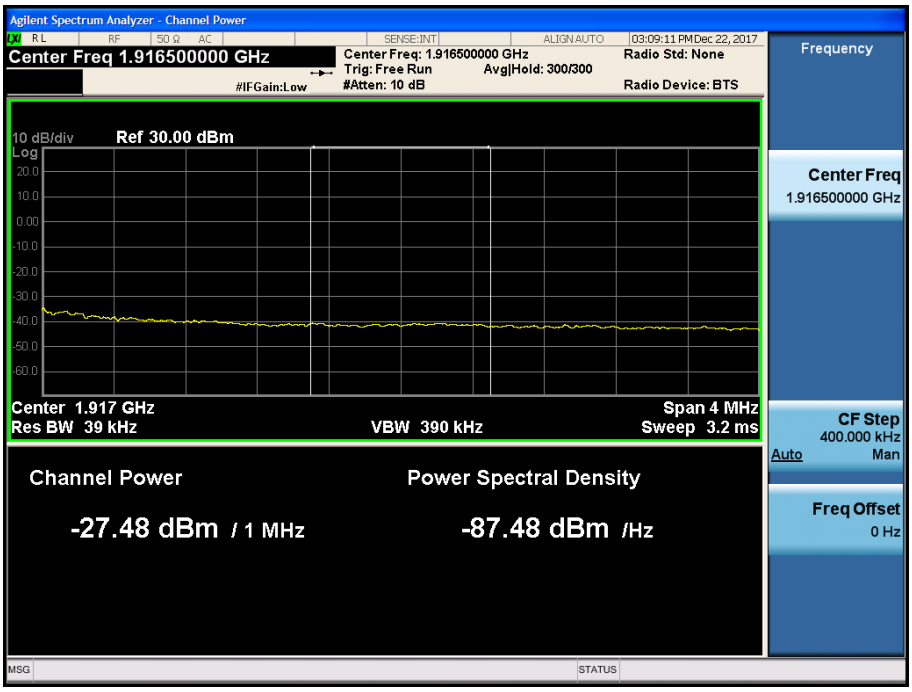


BAND 25. Upper Band Edge Plot (20M BW Ch.26590 QPSK_RB1_Offset 99) -1

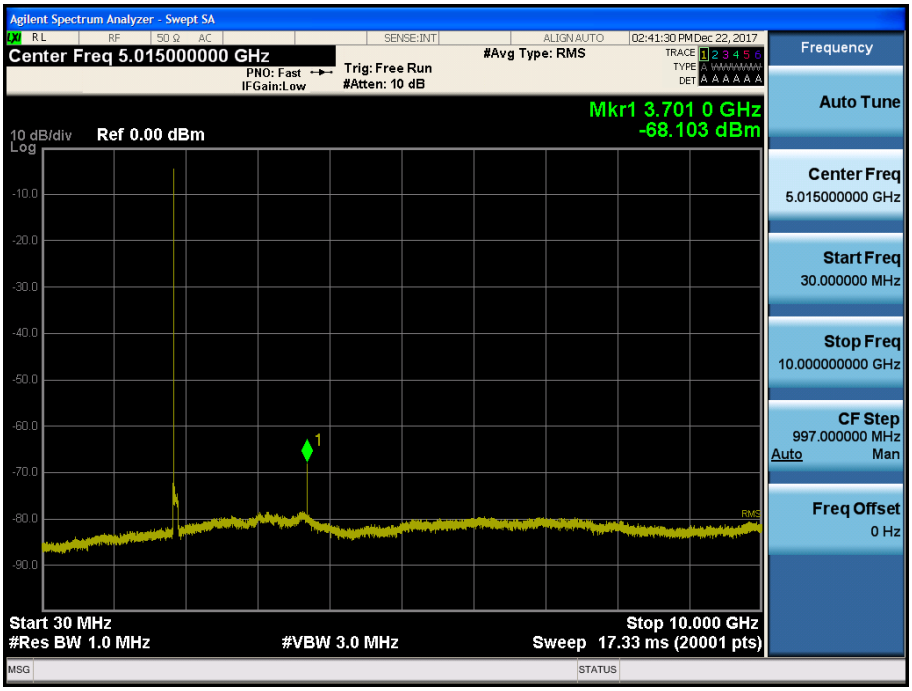


BAND 25. Upper Band Edge Plot (20M BW Ch. 26590 QPSK_RB100_Offset 0) -2

BAND 25. Upper Extended Band Edge Plot (20M BW Ch. 26590 QPSK_RB100_0) -3

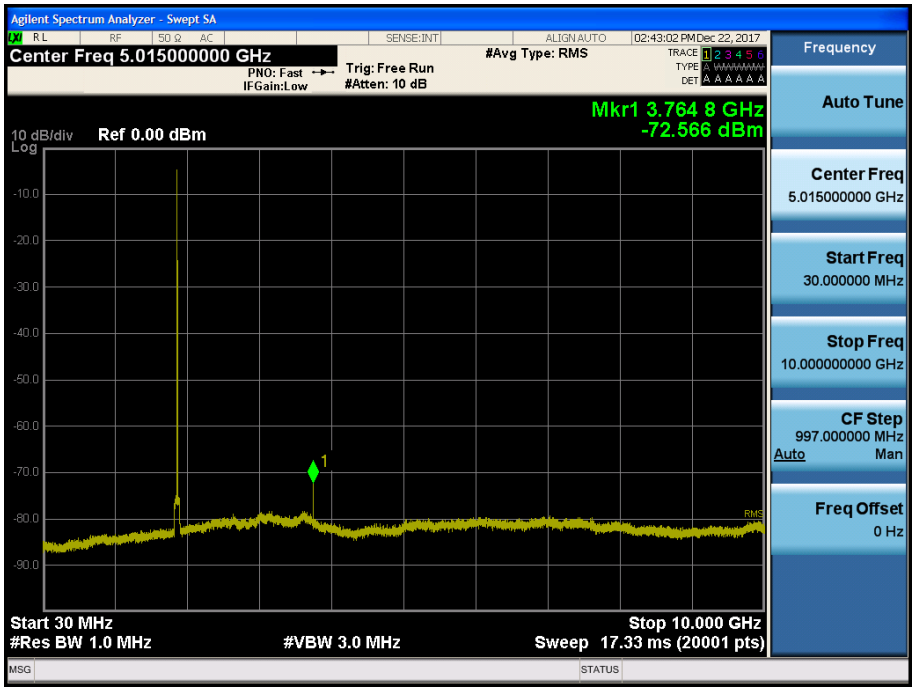


BAND 25. Conducted Spurious_1 (26047ch_1.4MHz_QPSK_RB 1_0)



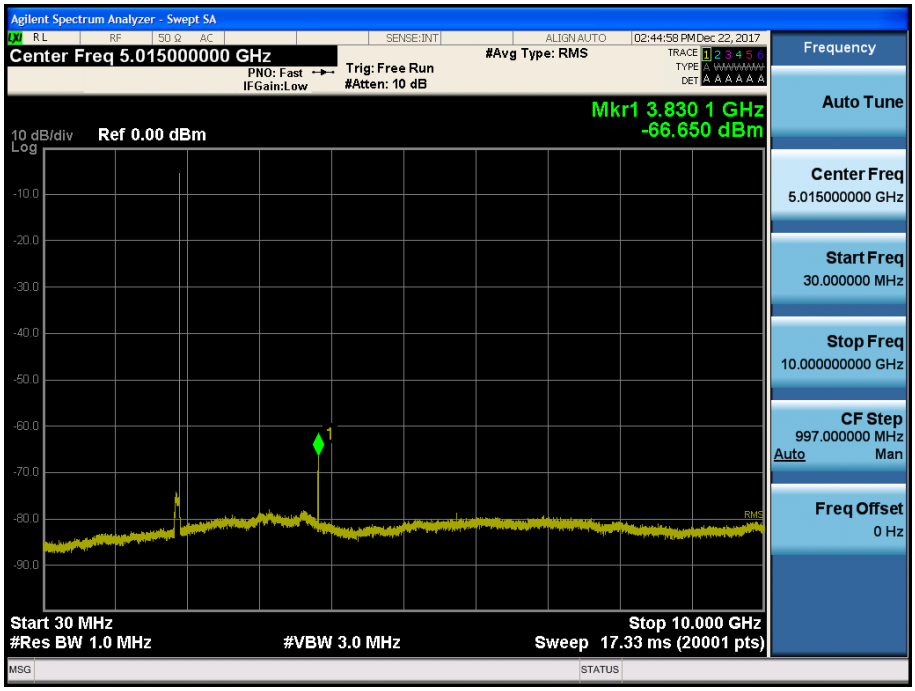
BAND 25. Conducted Spurious_2 (26047ch_1.4MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26365 ch_1.4MHz_QPSK_RB 1_0)



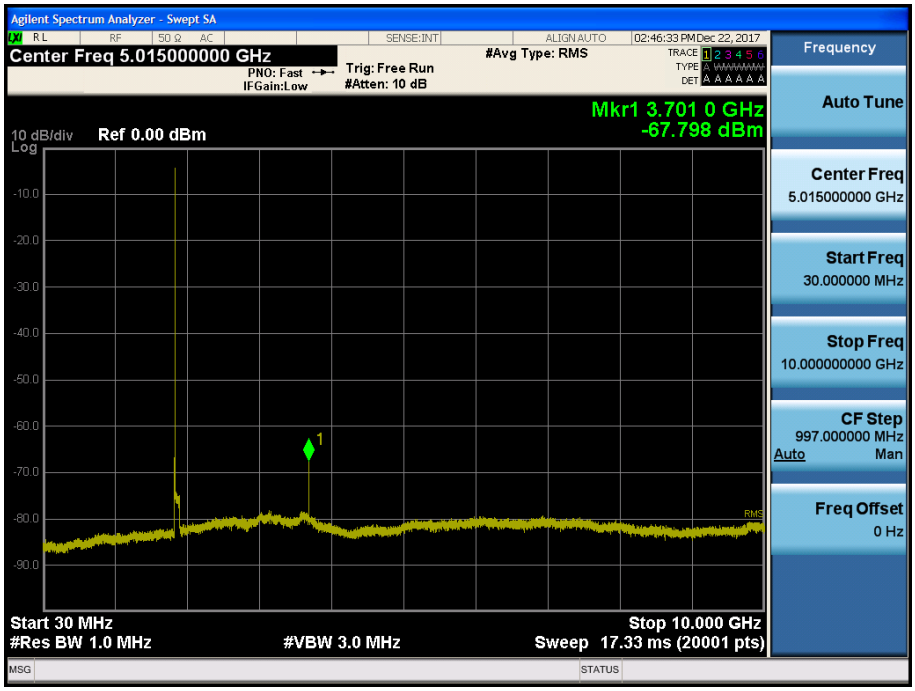
BAND 25. Conducted Spurious_2 (26365ch_1.4MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26683 ch_1.4MHz_QPSK_RB 1_0)



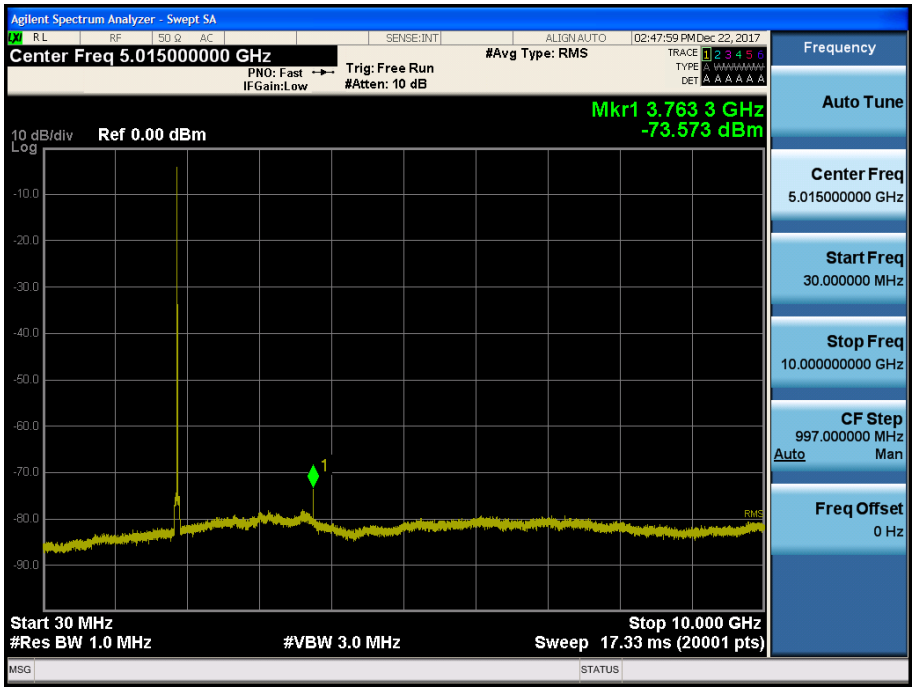
BAND 25. Conducted Spurious_2 (26683 ch_1.4MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26055 ch_3MHz_QPSK_RB 1_0)



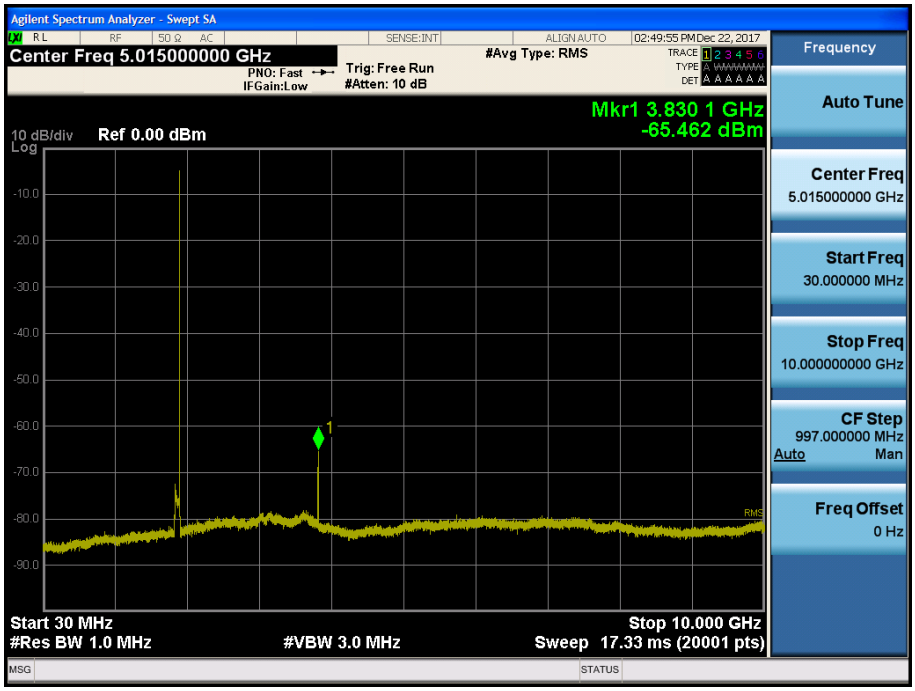
BAND 25. Conducted Spurious_2 (26055 ch_3MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26365 ch_3MHz_QPSK_RB 1_0)



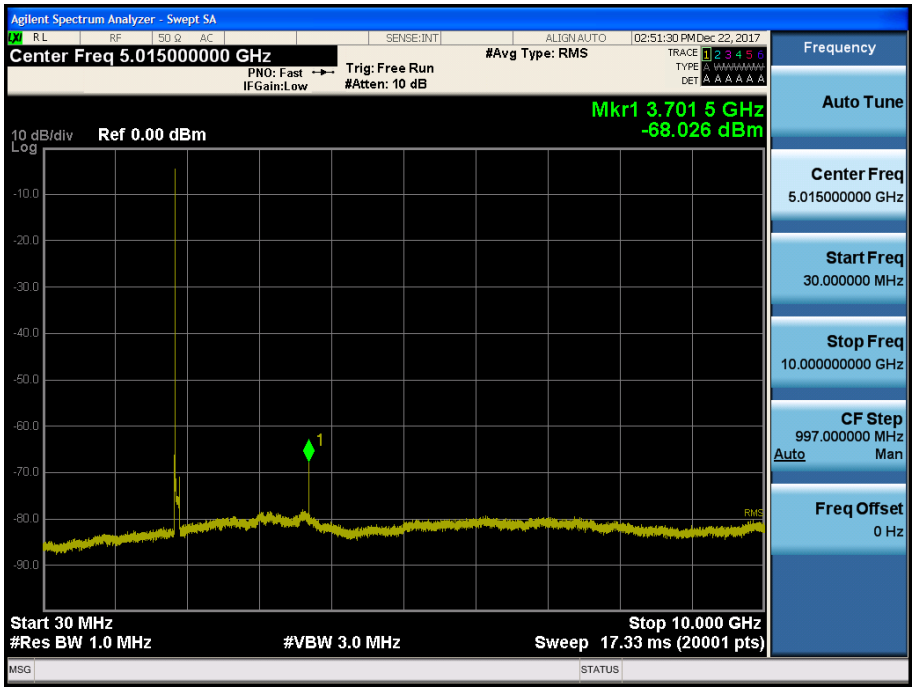
BAND 25. Conducted Spurious_2 (26365 ch_3MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26675 ch_3MHz_QPSK_RB 1_0)



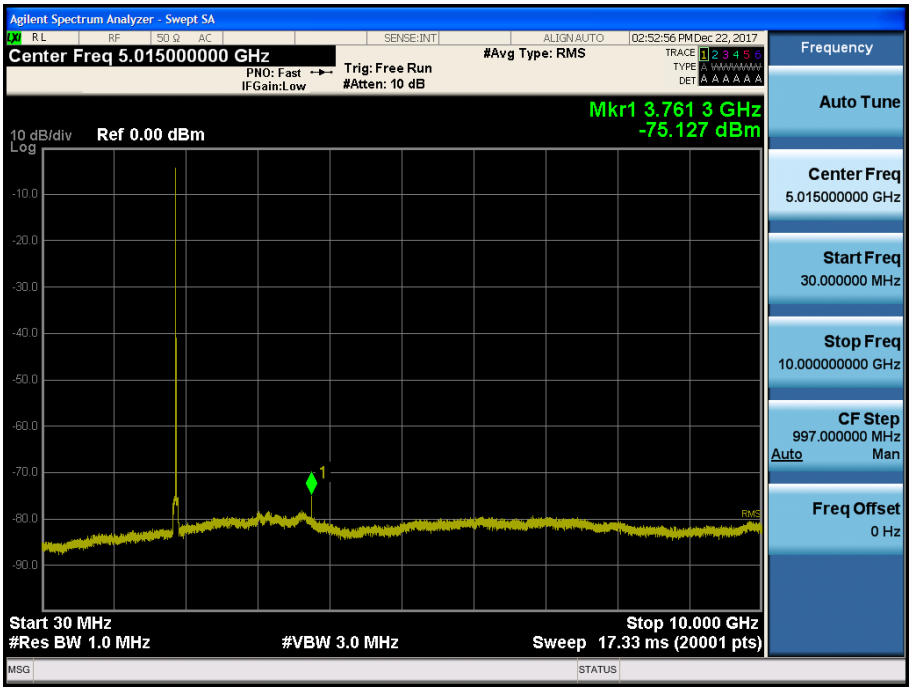
BAND 25. Conducted Spurious_2 (26675 ch_3MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26065 ch_5MHz_QPSK_RB 1_0)



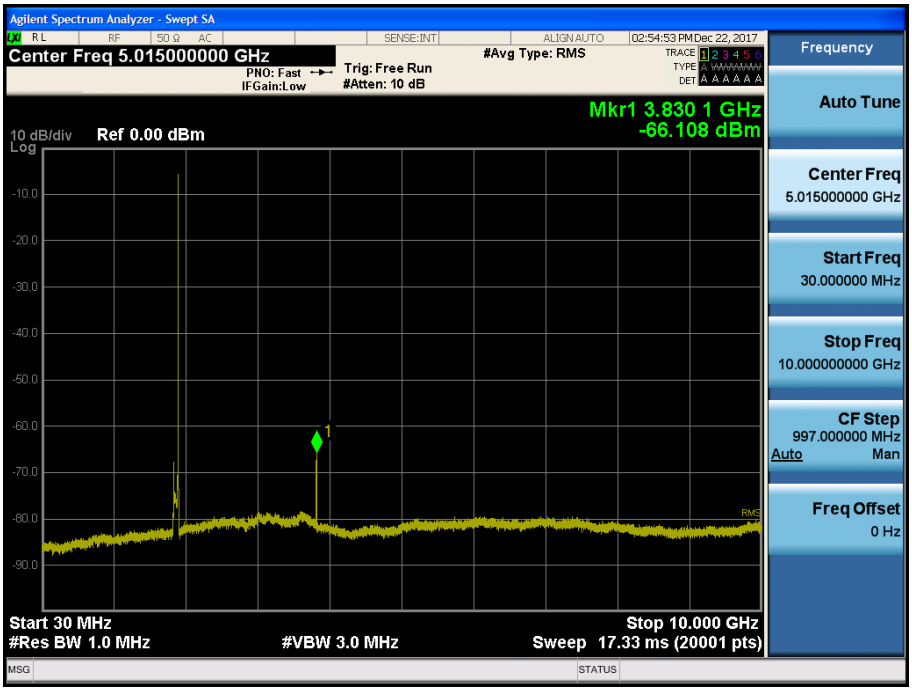
BAND 25. Conducted Spurious_2 (26065 ch_5MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26365 ch_5MHz_QPSK_RB 1_0)



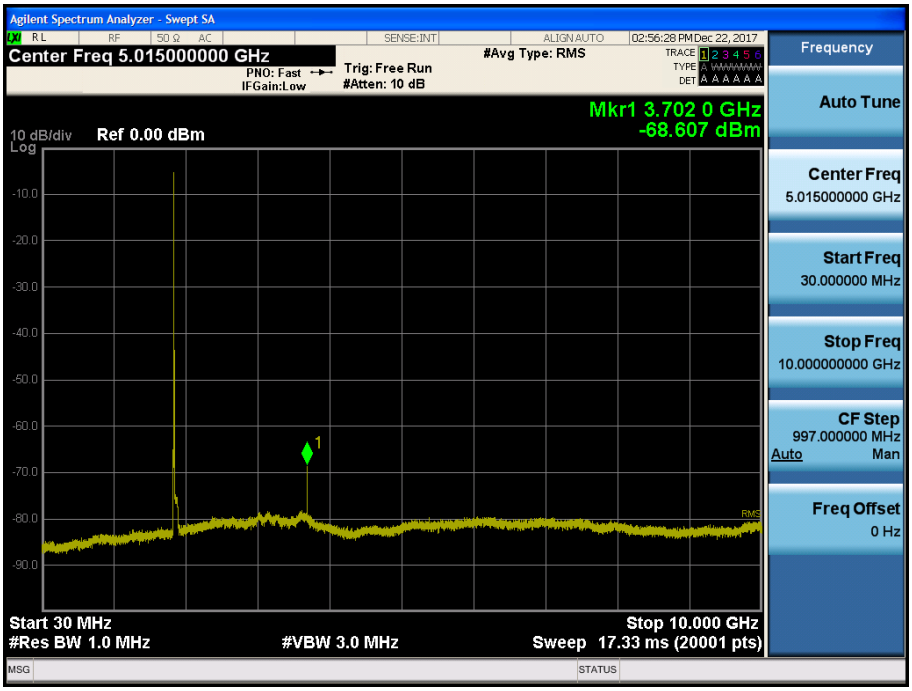
BAND 25. Conducted Spurious_2 (26365 ch_5MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26665 ch_5MHz_QPSK_RB 1_0)



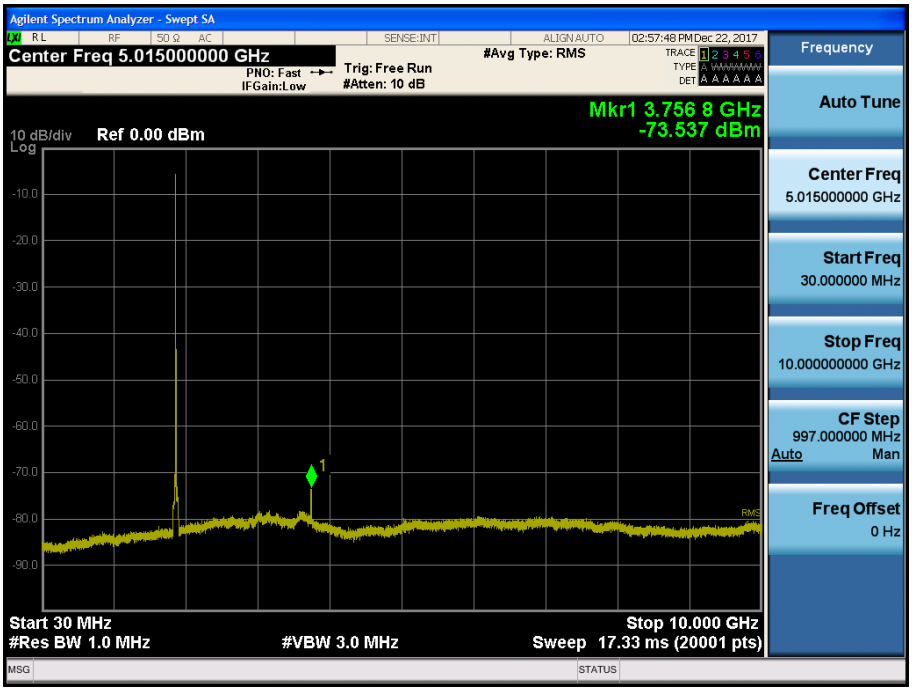
BAND 25. Conducted Spurious_2 (26665 ch_5MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26090 ch_10MHz_QPSK_RB 1_0)



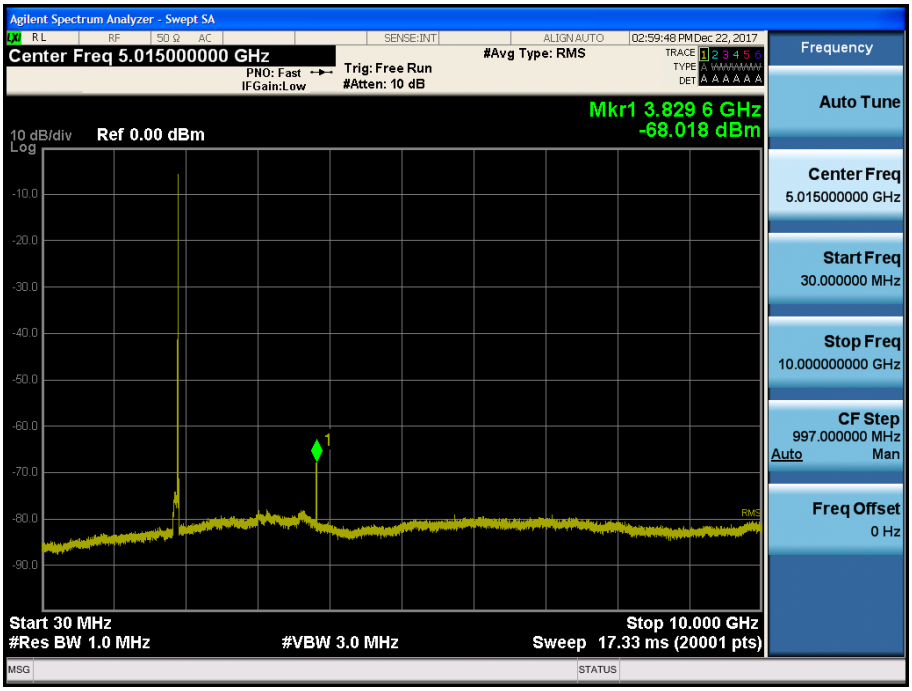
BAND 25. Conducted Spurious_2 (26090 ch_10MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26365 ch_10MHz_QPSK_RB 1_0)



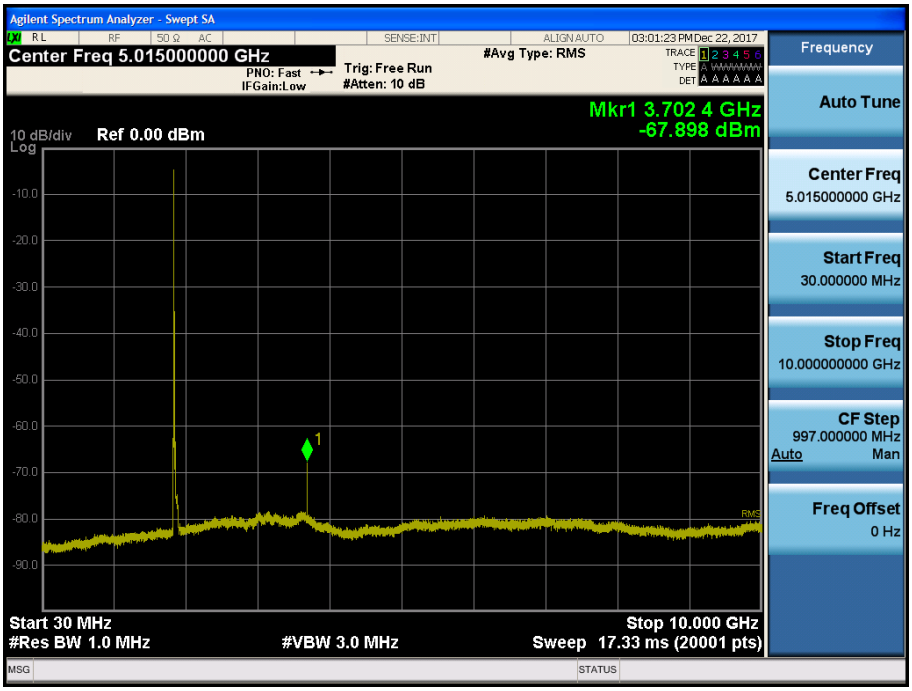
BAND 25. Conducted Spurious_2 (26365 ch_10MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26640 ch_10MHz_QPSK_RB 1_0)



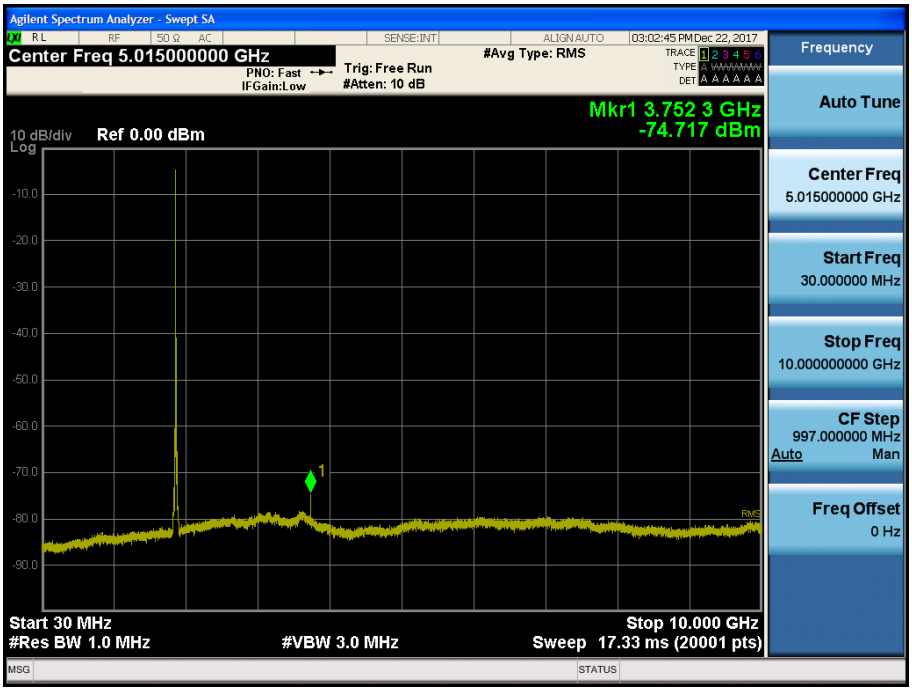
BAND 25. Conducted Spurious_2 (26640 ch_10MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26115 ch_15MHz_QPSK_RB 1_0)



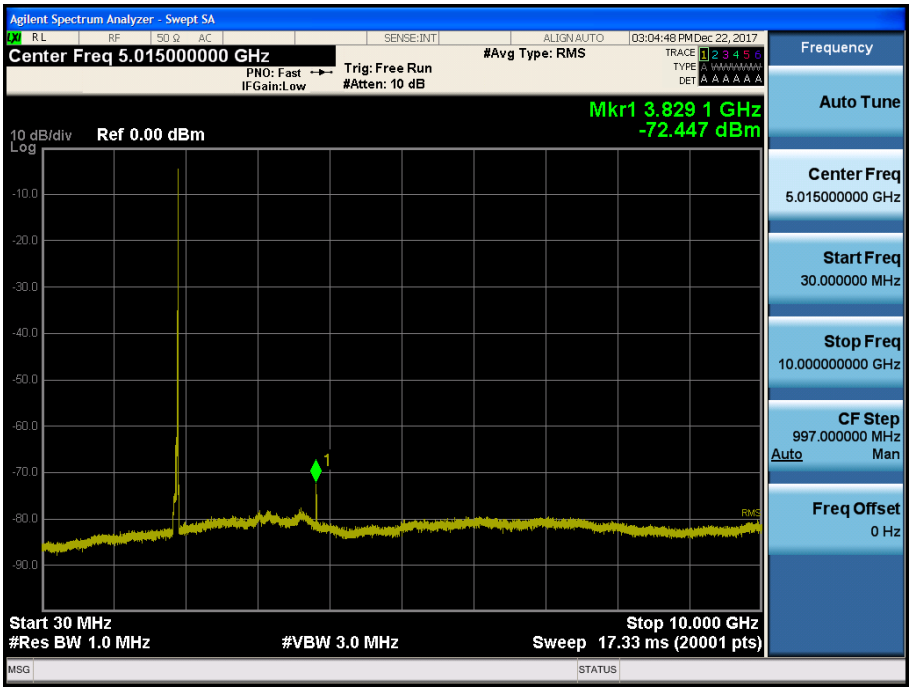
BAND 25. Conducted Spurious_2 (26115 ch_15MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26365 ch_15MHz_QPSK_RB 1_0)



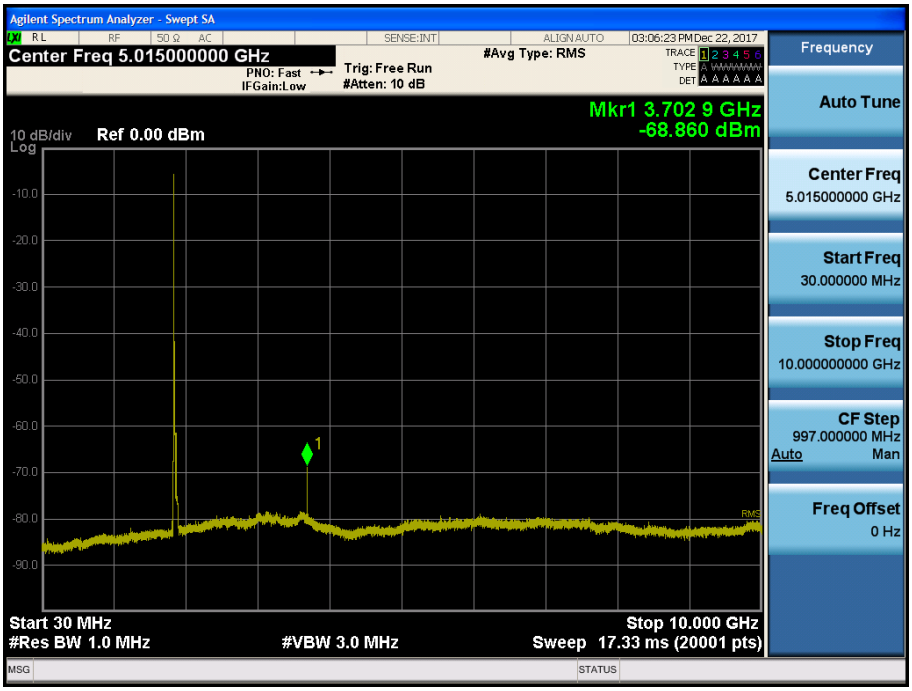
BAND 25. Conducted Spurious_2 (26365 ch_15MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26615 ch_15MHz_QPSK_RB 1_0)



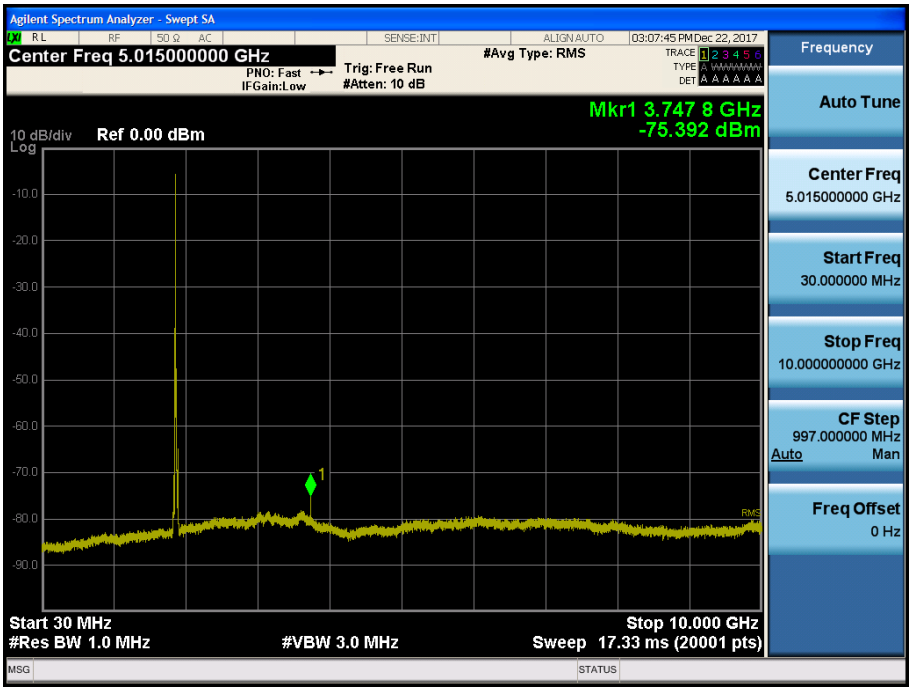
BAND 25. Conducted Spurious_2 (26615 ch_15MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26140 ch_20MHz_QPSK_RB 1_0)



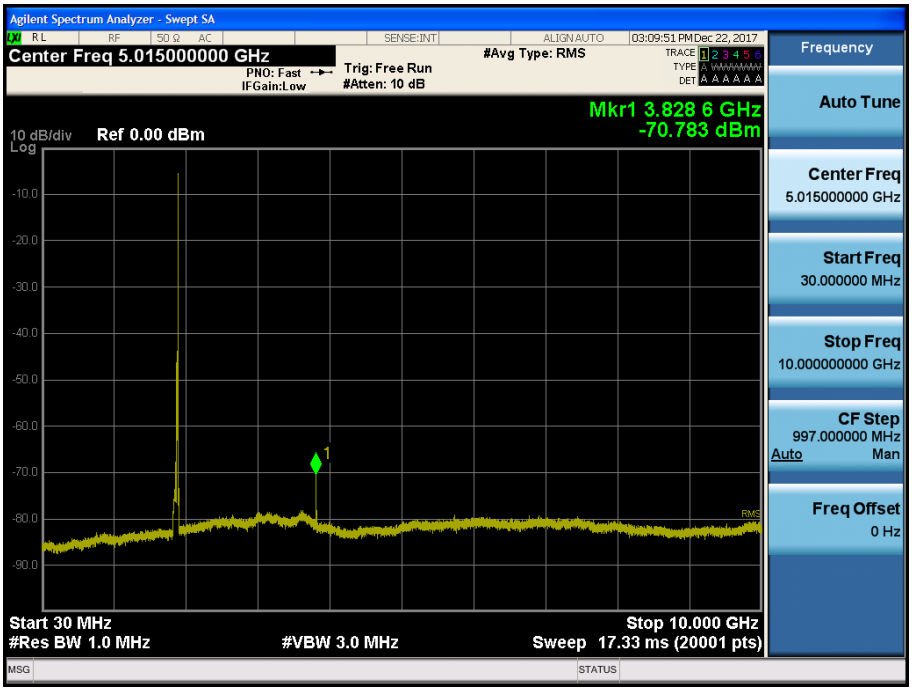
BAND 25. Conducted Spurious_2 (26140 ch_20MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26365 ch_20MHz_QPSK_RB 1_0)



BAND 25. Conducted Spurious_2 (26365 ch_20MHz_QPSK_RB 1_0)

BAND 25. Conducted Spurious_1 (26590 ch_20MHz_QPSK_RB 1_0)



BAND 25. Conducted Spurious_2 (26590 ch_20MHz_QPSK_RB 1_0)