HCT CO.,LTD.
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FCC LTE REPORT

Certification

Applicant Name:
LG Electronics MobileComm U.S.A., Inc.

Address:
1000 Sylvan Avenue, Englewood Cliffs NJ 07632

Date of Issue:
March 20, 2018
Location:
HCT CO., LTD.,
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
Report No.: HCT-RF-1803-FC010

FCC ID: **ZNFQ610FA**

APPLICANT: **LG Electronics MobileComm U.S.A., Inc.**

Model(s): LM-Q610FAW
Additional Model(s): LMQ610FAW, Q610FAW, LM-Q610FA, LMQ610FA, Q610FA, LM-Q610RM, LMQ610RM, Q610RM, LM-Q610FM, LMQ610FM, Q610FM, LM-Q610RS, LMQ610RS, Q610RS, LM-Q610FS, LMQ610FS, Q610FS, LM-Q610FSW, LMQ610FSW, Q610FSW
EUT Type: GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
FCC Classification: Licensed Portable Transmitter Held to Ear (PCE)
FCC Rule Part(s): §27, §2

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band66/4 (1.4)	1710.7 – 1779.3	1M09G7D	QPSK	0.134	21.28
		1M09W7D	16QAM	0.111	20.46
LTE – Band66/4 (3)	1711.5 – 1778.5	2M70G7D	QPSK	0.140	21.46
		2M70W7D	16QAM	0.114	20.56
LTE – Band66/4 (5)	1712.5 – 1777.5	4M50G7D	QPSK	0.138	21.41
		4M52W7D	16QAM	0.113	20.53
LTE – Band66/4 (10)	1715.0 – 1775.0	9M01G7D	QPSK	0.135	21.30
		8M99W7D	16QAM	0.110	20.40
LTE – Band66/4 (15)	1717.5 – 1772.5	13M5G7D	QPSK	0.136	21.33
		13M5W7D	16QAM	0.112	20.50
LTE – Band66/4 (20)	1720.0 – 1770.0	18M0G7D	QPSK	0.137	21.37
		18M0W7D	16QAM	0.114	20.56

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 : Kwon Jeong
Manager of Telecommunication Testing Center

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-1803-FC010	March 20, 2018	- First Approval Report

Table of Contents

MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	LG Electronics MobileComm U.S.A., Inc.
Address:	1000 Sylvan Avenue, Englewood Cliffs NJ 07632
FCC ID:	ZNFQ610FA
Application Type:	Certification
FCC Classification:	Licensed Portable Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§27, §2
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Model(s):	LM-Q610FAW
Additional Model(s):	LMQ610FAW, Q610FAW, LM-Q610FA, LMQ610FA, Q610FA, LM-Q610RM, LMQ610RM, Q610RM, LM-Q610FM, LMQ610FM, Q610FM, LM-Q610RS, LMQ610RS, Q610RS, LM-Q610FS, LMQ610FS, Q610FS, LM-Q610FSW, LMQ610FSW, Q610FSW
Tx Frequency:	1710.7 MHz – 1779.3 MHz (LTE – Band 66/4 (1.4 MHz)) 1711.5 MHz – 1778.5 MHz (LTE – Band 66/4 (3 MHz)) 1712.5 MHz – 1777.5 MHz (LTE – Band 66/4 (5 MHz)) 1715.0 MHz – 1775.0 MHz (LTE – Band 66/4 (10 MHz)) 1717.5 MHz – 1772.5 MHz (LTE – Band 66/4 (15 MHz)) 1720.0 MHz – 1770.0 MHz (LTE – Band 66/4 (20 MHz))
Date(s) of Tests:	March 05, 2018 ~ March 19, 2018

2. INTRODUCTION

2.1. Description of EUT

The EUT supports GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n.

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	- N/A (See SAR Report)
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 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.

3.3 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.

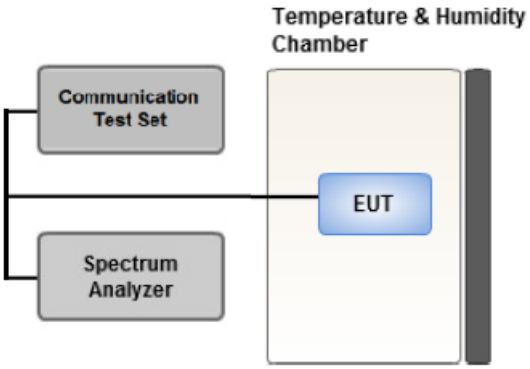
Test Settings

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 10th 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

3.4 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)

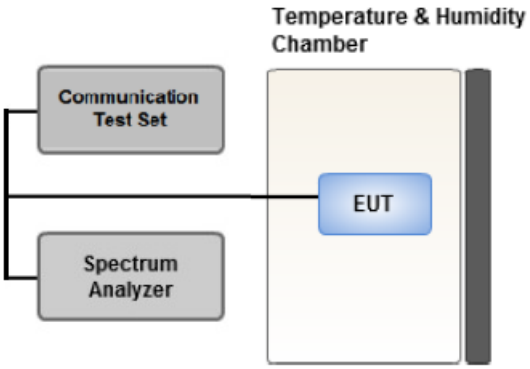
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

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%.

3.5 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.

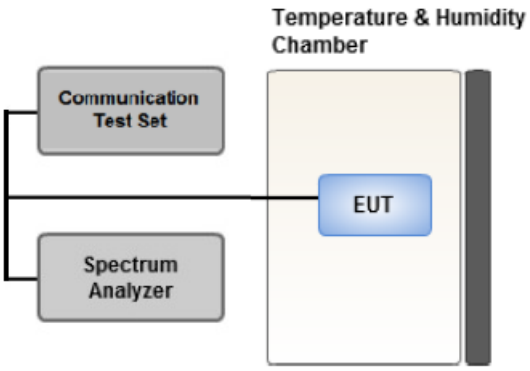
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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

3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

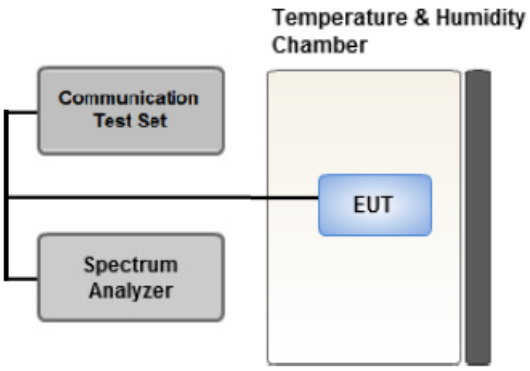
Test Overview

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

3.7 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

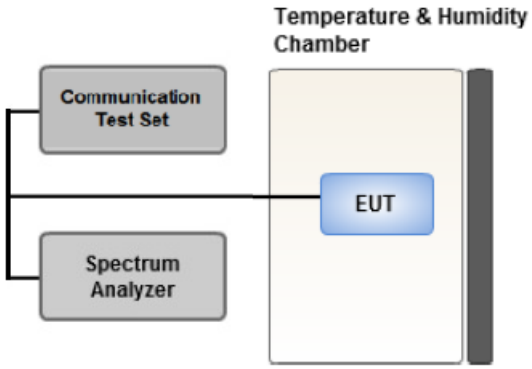
Test Notes

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.

3.8 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	93000718	07/21/2017	Annual	07/21/2018
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	04/19/2017	Biennial	04/19/2019
Schwarzbeck	VULB9160/ Bilog Antenna	3150	09/30/2016	Biennial	09/30/2018
Schwarzbeck	VULB9160/ Bilog Antenna	9360-3368	10/14/2016	Biennial	10/14/2018
Anritsu Corp.	MT8820C/Wideband Radio Communication Tester	6200863156	02/13/2018	Annual	02/13/2019
Anritsu Corp.	MT8820C/Wideband Radio Communication Tester	6201026545	02/08/2018	Annual	02/08/2019
REOHDE & SCHWARZ	SMB100A/ SIGNAL GENERATOR (100kHz~40GHz)	177633	07/18/2017	Annual	07/18/2018
REOHDE & SCHWARZ	FSV30/Spectrum Analyzer	100854	05/18/2017	Annual	05/18/2018
REOHDE & SCHWARZ	ESU / EMI TEST RECEIVER	100346	08/11/2017	Annual	08/11/2018
HCT CO., LTD.,	FCC LTE Mobile Conducted RF Automation Test Software	-	-	-	-

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, §27.53(h)	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions	PASS
Conducted Output Power	§2.1046	N/A	**See Note1**
Peak- to- Average Ratio	§27.50(d)(5)	< 13 dB	PASS
Frequency stability / variation of ambient temperature	§2.1055, §27.54	Emission must remain in band	PASS

Note:

1. See SAR Report

6.2 Test Condition : Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Equivalent Isotropic Radiated Power	§27.50(d)(4)	< 1 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§2.1053, §27.53(h)	< 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
20175	1,732.50	-15.75	18.45	9.90	1.76	H	0.456	26.59

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 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Mod (Bandwidth)	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1710.7	LTE B66/ B4 (1.4 MHz)	QPSK	-19.89	12.69	9.37	1.92	H	< 1.00	0.103	20.14
		16-QAM	-20.65	11.93	9.37	1.92	H		0.087	19.38
1745.0		QPSK	-19.15	13.47	9.49	1.94	H		0.126	21.02
		16-QAM	-19.87	12.75	9.49	1.94	H		0.107	20.30
1779.3		QPSK	-19.02	13.64	9.60	1.96	H		0.134	21.28
		16-QAM	-19.84	12.82	9.60	1.96	H		0.111	20.46

Freq (MHz)	Mod (Bandwidth)	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1711.5	LTE B66/ B4 (3 MHz)	QPSK	-19.77	12.81	9.37	1.92	H	< 1.00	0.106	20.26
		16-QAM	-20.57	12.01	9.37	1.92	H		0.088	19.46
1745.0		QPSK	-18.99	13.63	9.49	1.94	H		0.131	21.18
		16-QAM	-19.79	12.83	9.49	1.94	H		0.109	20.38
1778.5		QPSK	-18.83	13.83	9.59	1.96	H		0.140	21.46
		16-QAM	-19.73	12.93	9.59	1.96	H		0.114	20.56

Freq (MHz)	Mod (Bandwidth)	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1712.5	LTE B66/ B4 (5 MHz)	QPSK	-19.85	12.74	9.37	1.92	H	< 1.00	0.104	20.19
		16-QAM	-20.64	11.95	9.37	1.92	H		0.087	19.40
1745.0		QPSK	-19.01	13.61	9.49	1.94	H		0.131	21.16
		16-QAM	-19.81	12.81	9.49	1.94	H		0.109	20.36
1777.5		QPSK	-18.88	13.78	9.59	1.96	H		0.138	21.41
		16-QAM	-19.76	12.90	9.59	1.96	H		0.113	20.53

Freq (MHz)	Mod (Bandwidth)	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1715.0	LTE B66/ B4 (10 MHz)	QPSK	-19.81	12.78	9.39	1.92	H	< 1.00	0.106	20.24
		16-QAM	-20.61	11.98	9.39	1.92	H		0.088	19.44
1745.0		QPSK	-19.01	13.61	9.49	1.94	H		0.131	21.16
		16-QAM	-19.84	12.78	9.49	1.94	H		0.108	20.33
1775.0		QPSK	-18.98	13.68	9.58	1.96	H		0.135	21.30
		16-QAM	-19.88	12.78	9.58	1.96	H		0.110	20.40

Freq (MHz)	Mod (Bandwidth)	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1717.5	LTE B66/ B4 (15 MHz)	QPSK	-19.79	12.79	9.40	1.92	H	< 1.00	0.106	20.27
		16-QAM	-20.58	12.00	9.40	1.92	H		0.089	19.48
1745.0		QPSK	-19.03	13.59	9.49	1.94	H		0.130	21.14
		16-QAM	-19.84	12.78	9.49	1.94	H		0.108	20.33
1772.5		QPSK	-18.94	13.71	9.57	1.95	H		0.136	21.33
		16-QAM	-19.77	12.88	9.57	1.95	H		0.112	20.50

Freq (MHz)	Mod (Bandwidth)	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
1720.0	LTE B66/ B4 (20 MHz)	QPSK	-19.73	12.86	9.40	1.92	H	< 1.00	0.108	20.34
		16-QAM	-20.53	12.06	9.40	1.92	H		0.090	19.54
1745.0		QPSK	-18.95	13.67	9.49	1.94	H		0.132	21.22
		16-QAM	-19.78	12.84	9.49	1.94	H		0.109	20.39
1770.0		QPSK	-18.90	13.75	9.57	1.95	H		0.137	21.37
		16-QAM	-19.71	12.94	9.57	1.95	H		0.114	20.56

8.2 RADIATED SPURIOUS EMISSIONS

▣ OPERATING FREQUENTY: 1779.30 MHz

▣ MEASURED OUTPUT POWER: 21.28 dBm = 0.134 W

▣ MODE: LTE B66 / B4

▣ MODULATION SIGNAL: 1.4 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 $\log_{10}$ (W) = 34.28 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc
131979 (1710.7)	3,421.40	-46.13	12.19	-53.10	2.78	V	-43.69	64.97
	5,132.10	-47.93	12.76	-48.60	3.44	H	-39.28	60.56
	6,842.80	-54.01	12.06	-50.06	3.99	V	-41.99	63.27
132322 (1745.0)	3,490.00	-45.65	12.33	-52.00	2.81	V	-42.48	63.76
	5,235.00	-49.78	12.91	-51.19	3.47	H	-41.75	63.03
	6,980.00	-56.67	11.77	-51.41	4.04	H	-43.68	64.96
132665 (1779.3)	3,558.60	-46.25	12.39	-52.38	2.85	H	-42.84	64.12
	5,337.90	-53.24	13.04	-54.73	3.52	V	-45.21	66.49
	7,117.20	-57.02	11.73	-52.51	4.06	V	-44.84	66.12

▣ OPERATING FREQUENTY: 1778.50 MHz

▣ MEASURED OUTPUT POWER: 21.46 dBm = 0.140 W

▣ MODE: LTE B66 / B4

▣ MODULATION SIGNAL: 3 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 log_{10} (W) = 34.46 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc
131987 (1711.5)	3,423.00	-46.76	12.19	-53.71	2.78	V	-44.30	65.76
	5,134.50	-50.53	12.76	-51.18	3.44	V	-41.86	63.32
	6,846.00	-55.31	12.60	-51.95	3.99	H	-43.34	64.80
132322 (1745.0)	3,490.00	-52.81	12.33	-59.16	2.81	V	-49.64	71.10
	5,235.00	-53.23	12.90	-54.70	3.47	V	-45.27	66.73
	6,980.00	-54.81	11.77	-49.55	4.04	V	-41.82	63.28
132657 (1778.5)	3,557.00	-51.59	12.39	-57.61	2.85	H	-48.07	69.53
	5,335.50	-53.51	13.04	-55.05	3.52	V	-45.53	66.99
	7,114.00	-58.21	11.73	-53.82	4.06	V	-46.15	67.61

▣ OPERATING FREQUENTY: 1777.50 MHz

▣ MEASURED OUTPUT POWER: 21.41 dBm = 0.138 W

▣ MODE: LTE B66 / B4

▣ MODULATION SIGNAL: 5 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 log_{10} (W) = 34.41 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc
131997 (1712.5)	3,425.00	-47.04	12.19	-53.99	2.78	V	-44.58	65.99
	5,137.50	-49.68	12.76	-50.33	3.44	V	-41.01	62.42
	6,850.00	-54.36	12.04	-50.25	4.00	V	-42.21	63.62
132322 (1745.0)	3,490.00	-51.35	12.33	-57.70	2.81	V	-48.18	69.59
	5,235.00	-50.94	12.90	-52.41	3.47	V	-42.98	64.39
	6,980.00	-56.22	11.77	-50.96	4.04	V	-43.23	64.64
132647 (1777.5)	3,555.00	-51.52	12.39	-57.54	2.85	H	-48.00	69.41
	5,332.50	-53.22	13.04	-54.76	3.52	V	-45.24	66.65
	7,110.00	-58.35	11.73	-53.96	4.06	H	-46.29	67.70

▣ OPERATING FREQUENTY: 1775.00 MHz

▣ MEASURED OUTPUT POWER: 21.30 dBm = 0.135 W

▣ MODE: LTE B66 / B4

▣ MODULATION SIGNAL: 10 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 log_{10} (W) = 34.30 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc
132022 (1715.0)	3,430.00	-46.88	12.21	-54.03	2.78	V	-44.60	65.90
	5,145.00	-50.10	12.77	-50.88	3.40	H	-41.51	62.81
	6,860.00	-56.62	12.01	-52.38	4.02	V	-44.39	65.69
132322 (1745.0)	3,490.00	-49.06	12.33	-55.41	2.81	V	-45.89	67.19
	5,235.00	-51.53	12.90	-53.00	3.47	V	-43.57	64.87
	6,980.00	-56.99	11.77	-51.73	4.04	V	-44.00	65.30
132622 (1775.0)	3,550.00	-49.03	12.39	-55.05	2.85	H	-45.51	66.81
	5,325.00	-50.51	13.03	-52.15	3.52	V	-42.64	63.94
	7,100.00	-58.59	11.73	-54.62	4.08	V	-46.97	68.27

▣ OPERATING FREQUENTY: 1772.50 MHz

▣ MEASURED OUTPUT POWER: 21.33 dBm = 0.136 W

▣ MODE: LTE B66 / B4

▣ MODULATION SIGNAL: 15 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 log_{10} (W) = 34.33 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc
132047 (1717.5)	3,435.00	-46.96	12.21	-54.11	2.78	V	-44.68	66.01
	5,152.50	-48.89	12.79	-49.28	3.45	V	-39.94	61.27
	6,870.00	-56.74	11.99	-52.77	4.03	H	-44.81	66.14
132322 (1745.0)	3,490.00	-51.92	12.33	-58.27	2.81	V	-48.75	70.08
	5,235.00	-52.64	12.90	-54.11	3.47	V	-44.68	66.01
	6,980.00	-55.53	11.77	-50.27	4.04	H	-42.54	63.87
132597 (1772.5)	3,545.00	-49.75	12.39	-56.05	2.85	V	-46.51	67.84
	5,317.50	-52.02	13.02	-53.59	3.52	V	-44.09	65.42
	7,090.00	-58.37	11.73	-54.57	4.10	H	-46.94	68.27

▣ OPERATING FREQUENTY: 1770.00 MHz

▣ MEASURED OUTPUT POWER: 21.37 dBm = 0.137 W

▣ MODE: LTE B66 / B4

▣ MODULATION SIGNAL: 20 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 log_{10} (W) = 34.37 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc
132072 (1720.0)	3,440.00	-43.70	12.23	-50.62	2.77	V	-41.16	62.53
	5,160.00	-52.40	12.80	-53.23	3.46	H	-43.89	65.26
	6,880.00	-57.01	11.97	-53.00	4.04	V	-45.07	66.44
132322 (1745.0)	3,490.00	-47.99	12.33	-54.34	2.81	V	-44.82	66.19
	5,235.00	-52.44	12.90	-53.91	3.47	H	-44.48	65.85
	6,980.00	-56.35	11.77	-51.09	4.04	V	-43.36	64.73
132572 (1770.0)	3,540.00	-46.84	12.39	-53.14	2.85	V	-43.60	64.97
	5,310.00	-51.87	13.02	-53.44	3.52	H	-43.94	65.31
	7,080.00	-58.12	11.73	-54.08	4.11	V	-46.46	67.83

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
66/4	1.4 MHz	1745.0	QPSK	6	0	5.43
			16-QAM	6		6.05
	3 MHz		QPSK	15		5.45
			16-QAM	15		6.22
	5 MHz		QPSK	25		5.36
			16-QAM	25		6.18
	10 MHz		QPSK	50		5.42
			16-QAM	50		6.11
	15 MHz		QPSK	75		5.36
			16-QAM	75		6.14
	20 MHz		QPSK	100		5.31
			16-QAM	100		6.08

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 45 ~ 50.

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
66/4	1.4 MHz	1745.0	QPSK	6	0	1.0929
			16-QAM	6		1.0945
	3 MHz		QPSK	15		2.7012
			16-QAM	15		2.7032
	5 MHz		QPSK	25		4.4991
			16-QAM	25		4.5152
	10 MHz		QPSK	50		9.0102
			16-QAM	50		8.9891
	15 MHz		QPSK	75		13.498
			16-QAM	75		13.531
	20 MHz		QPSK	100		18.000
			16-QAM	100		18.044

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 39 ~ 44.

8.5 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
66/4	1.4	1710.7	3.4213	27.976	-71.829	-43.853	-13.00
		1745.0	3.4896	27.976	-73.076	-45.100	
		1779.3	3.5599	27.976	-70.760	-42.784	
	3	1711.5	3.4213	27.976	-72.478	-44.502	
		1745.0	3.4881	27.976	-73.873	-45.897	
		1778.5	3.5604	27.976	-70.851	-42.875	
	5	1712.5	3.4213	27.976	-71.887	-43.911	
		1745.0	3.4861	27.976	-72.976	-45.000	
		1777.5	3.5599	27.976	-71.660	-43.684	
	10	1715.0	3.4218	27.976	-71.507	-43.531	
		1745.0	3.4816	27.976	-70.978	-43.002	
		1775.0	3.5594	27.976	-71.756	-43.780	
	15	1717.5	3.4228	27.976	-76.600	-48.624	
		1745.0	3.4771	27.976	-70.053	-42.077	
		1772.5	3.5589	27.976	-70.312	-42.336	
	20	1720.0	3.4228	27.976	-72.087	-44.111	
		1745.0	3.4726	27.976	-71.150	-43.174	
		1770.0	3.5584	27.976	-72.331	-44.355	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 69 ~ 86.
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

8.7 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 51 ~ 68.

8.6 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

▣ MODE: LTE B66 / B4

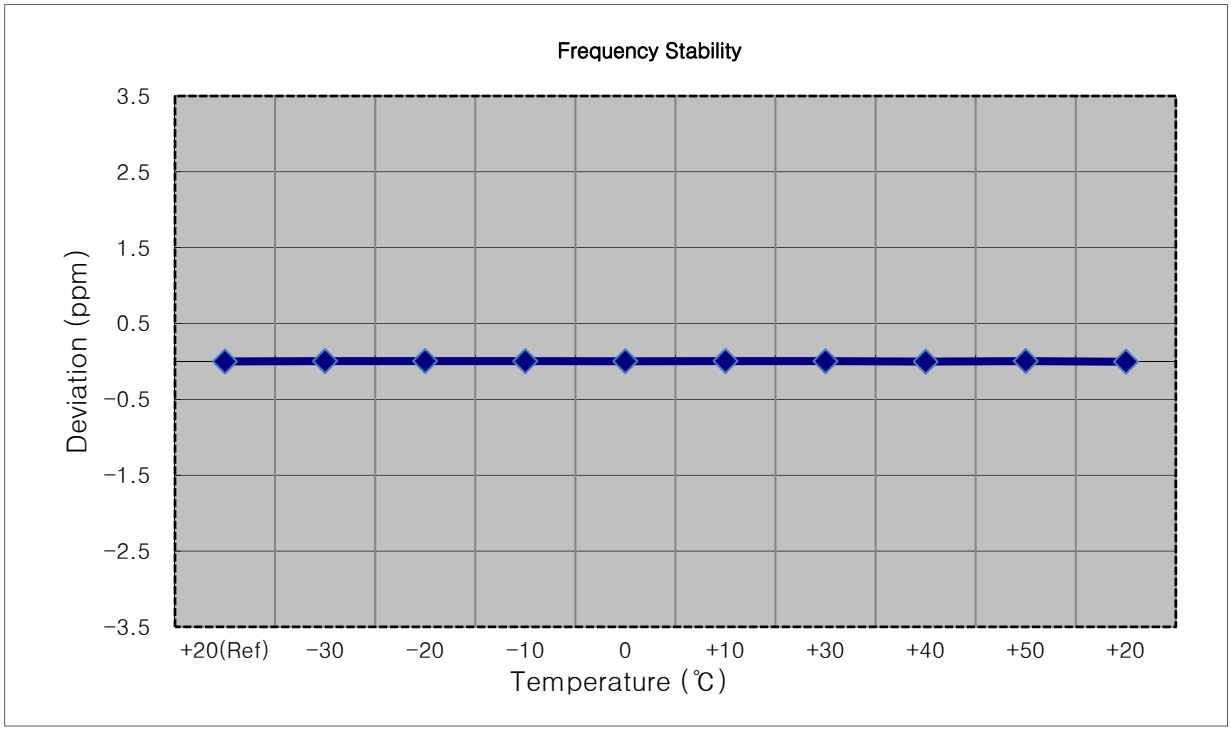
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (1.4 MHz)

▣ REFERENCE VOLTAGE: 4.00 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	4.00	+20(Ref)	1745 000 006	0.0	0.000 000	0.000
100%		-30	1745 000 014	8.4	0.000 000	0.005
100%		-20	1745 000 014	7.9	0.000 000	0.005
100%		-10	1745 000 013	7.3	0.000 000	0.004
100%		0	1745 000 011	5.5	0.000 000	0.003
100%		+10	1745 000 014	8.2	0.000 000	0.005
100%		+30	1745 000 013	7.2	0.000 000	0.004
100%		+40	1745 000 001	-4.7	0.000 000	-0.003
100%		+50	1745 000 015	9.1	0.000 001	0.005
Batt. Endpoint	3.70	+20	1744 999 999	-6.5	0.000 000	-0.004



▣ MODE: LTE B66 / B4

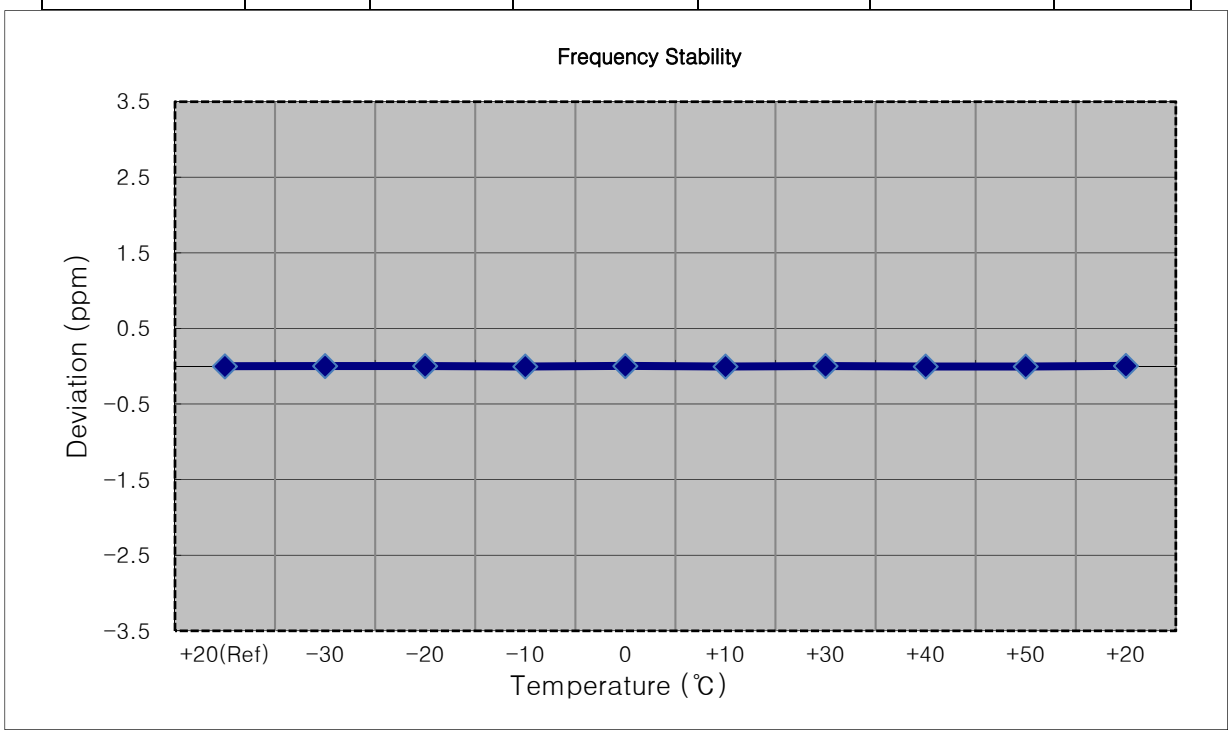
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (3 MHz)

▣ REFERENCE VOLTAGE: 4.00 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	4.00	+20(Ref)	1745 000 004	0.0	0.000 000	0.000
100%		-30	1745 000 009	5.0	0.000 000	0.003
100%		-20	1745 000 008	4.3	0.000 000	0.002
100%		-10	1744 999 999	-5.4	0.000 000	-0.003
100%		0	1745 000 011	7.0	0.000 000	0.004
100%		+10	1744 999 998	-6.3	0.000 000	-0.004
100%		+30	1745 000 008	4.4	0.000 000	0.003
100%		+40	1744 999 999	-5.5	0.000 000	-0.003
100%		+50	1744 999 999	-5.5	0.000 000	-0.003
Batt. Endpoint	3.70	+20	1745 000 012	8.0	0.000 000	0.005



▣ MODE: LTE B66 / B4

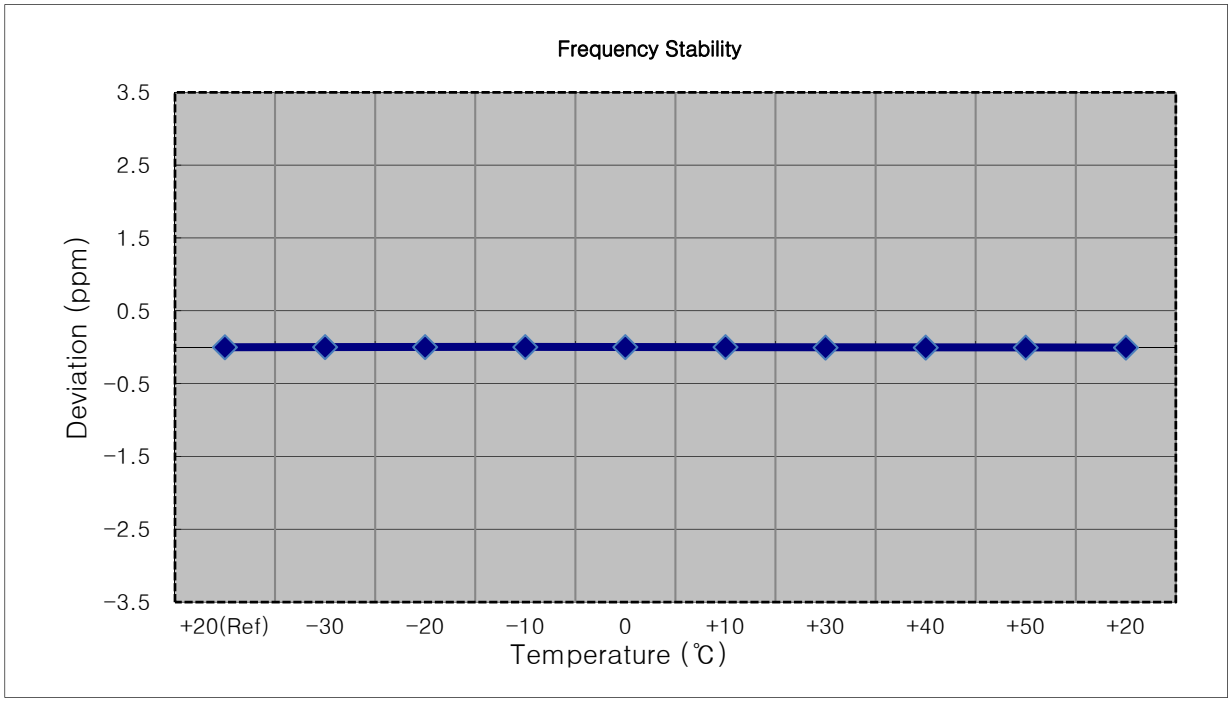
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (5 MHz)

▣ REFERENCE VOLTAGE: 4.00 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	4.00	+20(Ref)	1744 999 995	0.0	0.000 000	0.000
100%		-30	1744 999 999	3.8	0.000 000	0.002
100%		-20	1745 000 001	5.8	0.000 000	0.003
100%		-10	1744 999 999	3.8	0.000 000	0.002
100%		0	1745 000 001	5.7	0.000 000	0.003
100%		+10	1745 000 001	5.8	0.000 000	0.003
100%		+30	1744 999 991	-4.3	0.000 000	-0.002
100%		+40	1744 999 990	-4.6	0.000 000	-0.003
100%		+50	1744 999 990	-5.0	0.000 000	-0.003
Batt. Endpoint	3.70	+20	1744 999 988	-7.5	0.000 000	-0.004



▣ MODE: LTE B66 / B4

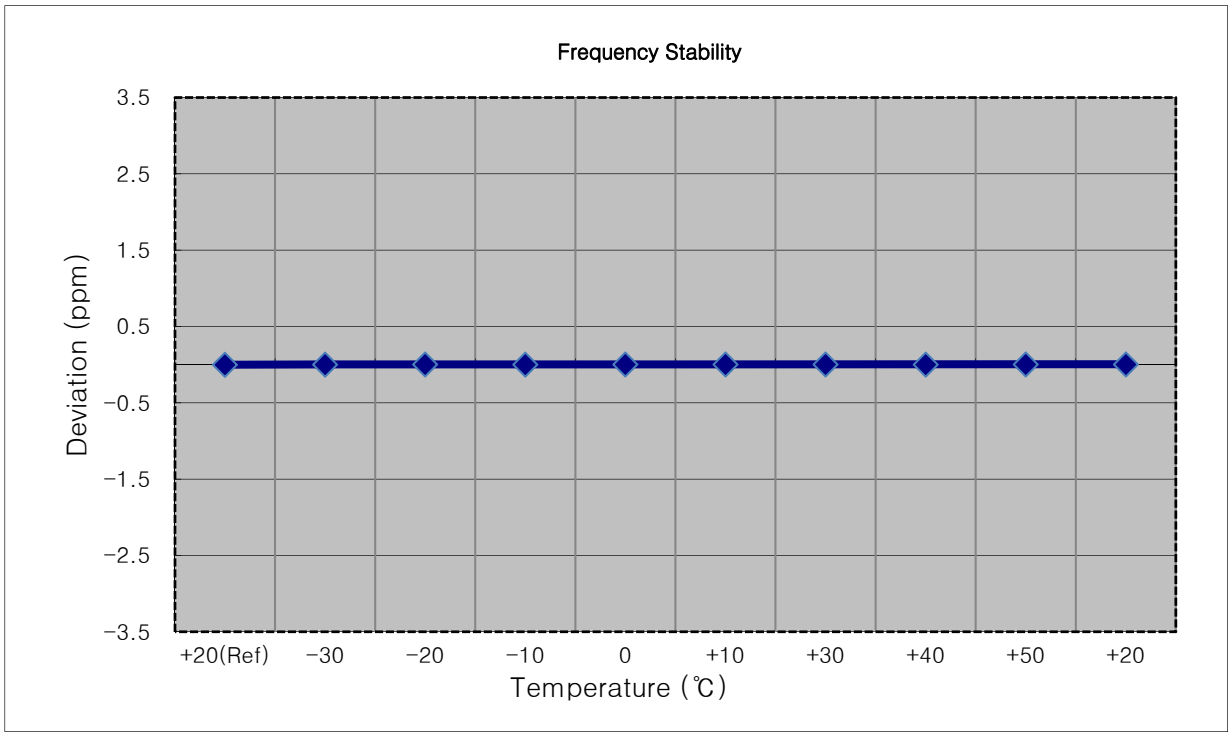
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (10 MHz)

▣ REFERENCE VOLTAGE: 4.00 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	4.00	+20(Ref)	1744 999 995	0.0	0.000 000	0.000
100%		-30	1745 000 000	5.0	0.000 000	0.003
100%		-20	1745 000 002	6.7	0.000 000	0.004
100%		-10	1745 000 000	4.9	0.000 000	0.003
100%		0	1745 000 001	6.0	0.000 000	0.003
100%		+10	1745 000 003	7.9	0.000 000	0.005
100%		+30	1745 000 001	6.6	0.000 000	0.004
100%		+40	1744 999 999	4.4	0.000 000	0.003
100%		+50	1745 000 004	9.0	0.000 001	0.005
Batt. Endpoint	3.70	+20	1745 000 004	8.7	0.000 000	0.005



▣ MODE: LTE B66 / B4

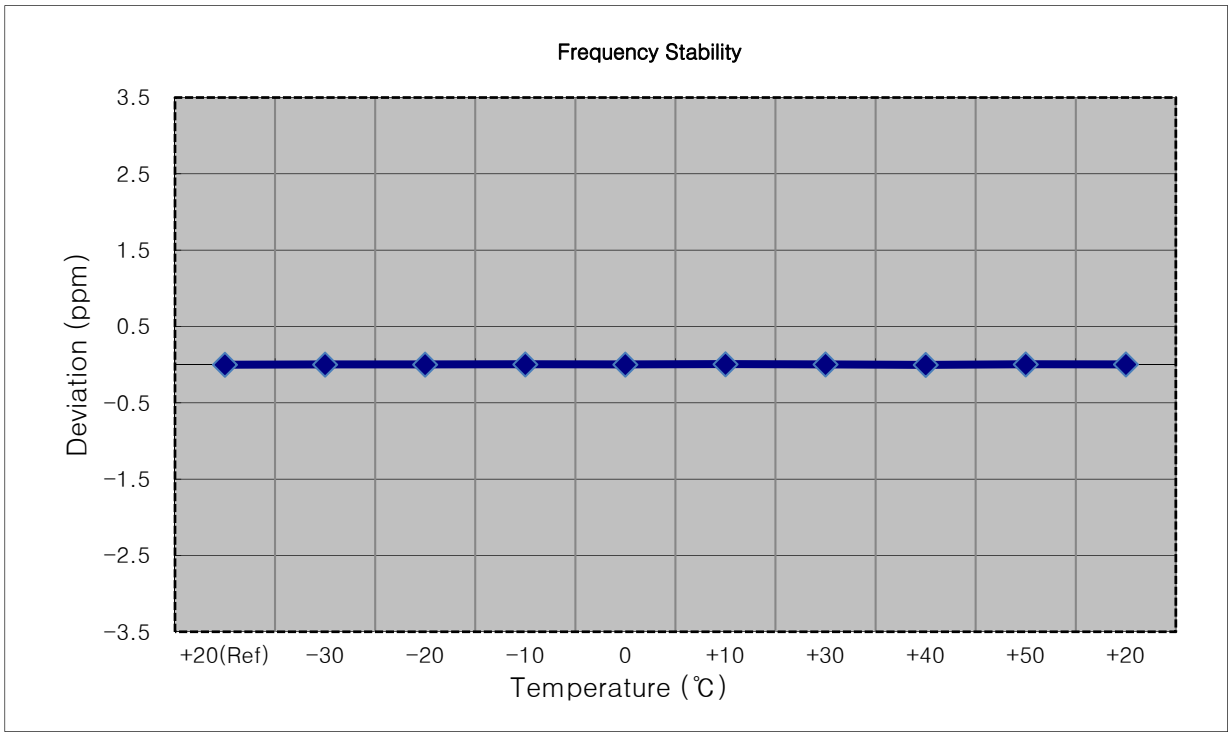
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (15 MHz)

▣ REFERENCE VOLTAGE: 4.00 VDC

▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	4.00	+20(Ref)	1745 000 004	0.0	0.000 000	0.000
100%		-30	1745 000 009	4.1	0.000 000	0.002
100%		-20	1745 000 010	5.5	0.000 000	0.003
100%		-10	1745 000 014	9.2	0.000 001	0.005
100%		0	1745 000 009	4.7	0.000 000	0.003
100%		+10	1745 000 016	11.2	0.000 001	0.006
100%		+30	1745 000 011	6.4	0.000 000	0.004
100%		+40	1745 000 000	-4.7	0.000 000	-0.003
100%		+50	1745 000 013	8.7	0.000 000	0.005
Batt. Endpoint	3.70	+20	1745 000 010	5.6	0.000 000	0.003



▣ MODE: LTE B66 / B4

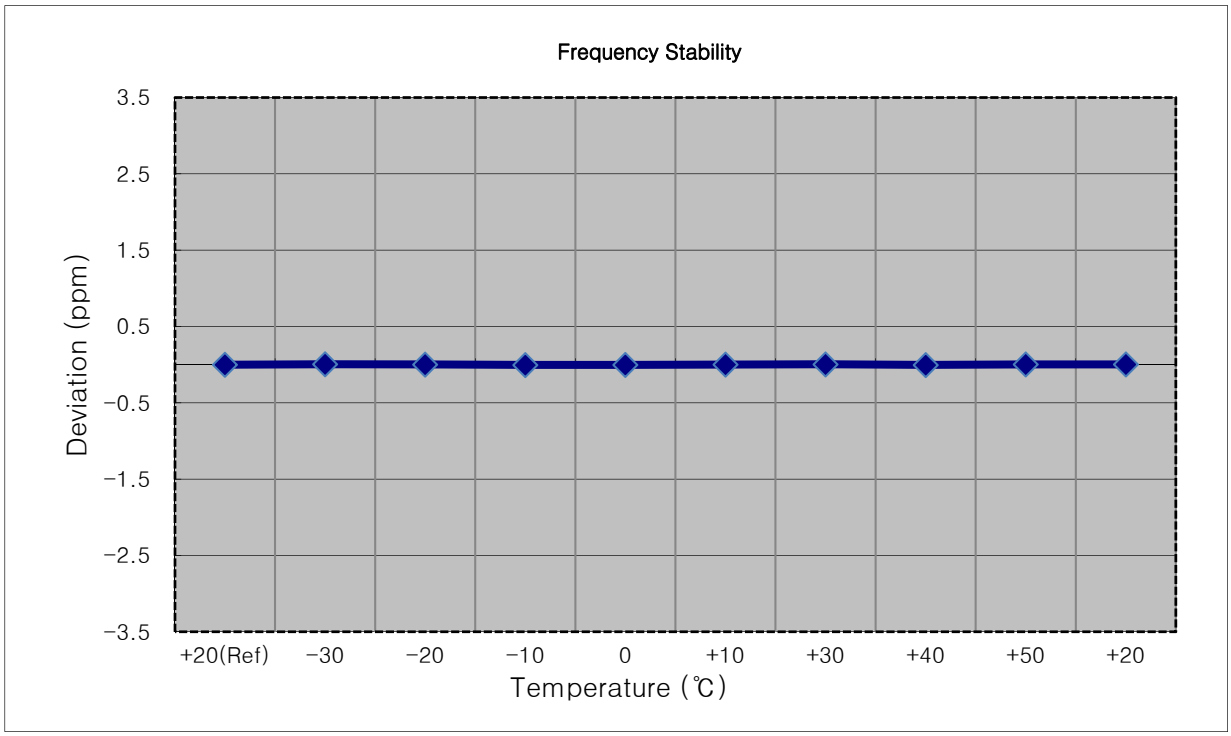
▣ OPERATING FREQUENCY: 1745,000,000 Hz

▣ CHANNEL: 132322 (20 MHz)

▣ REFERENCE VOLTAGE: 4.00 VDC

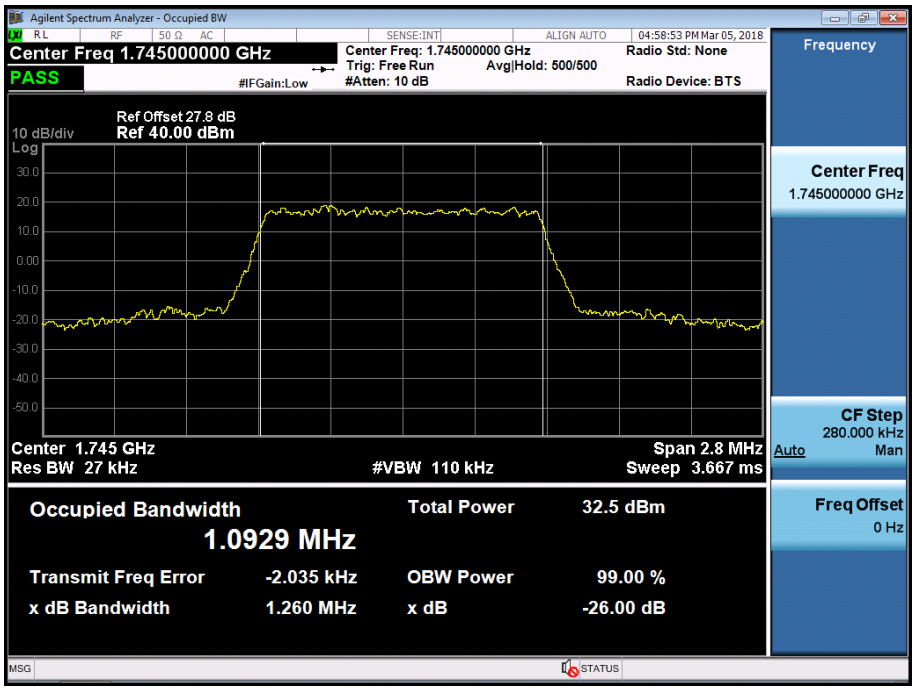
▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	4.00	+20(Ref)	1744 999 996	0.0	0.000 000	0.000
100%		-30	1745 000 005	9.8	0.000 001	0.006
100%		-20	1744 999 999	3.8	0.000 000	0.002
100%		-10	1744 999 990	-5.8	0.000 000	-0.003
100%		0	1744 999 991	-4.6	0.000 000	-0.003
100%		+10	1744 999 999	3.4	0.000 000	0.002
100%		+30	1745 000 003	7.5	0.000 000	0.004
100%		+40	1744 999 990	-5.8	0.000 000	-0.003
100%		+50	1745 000 002	6.4	0.000 000	0.004
Batt. Endpoint	3.70	+20	1745 000 002	6.2	0.000 000	0.004

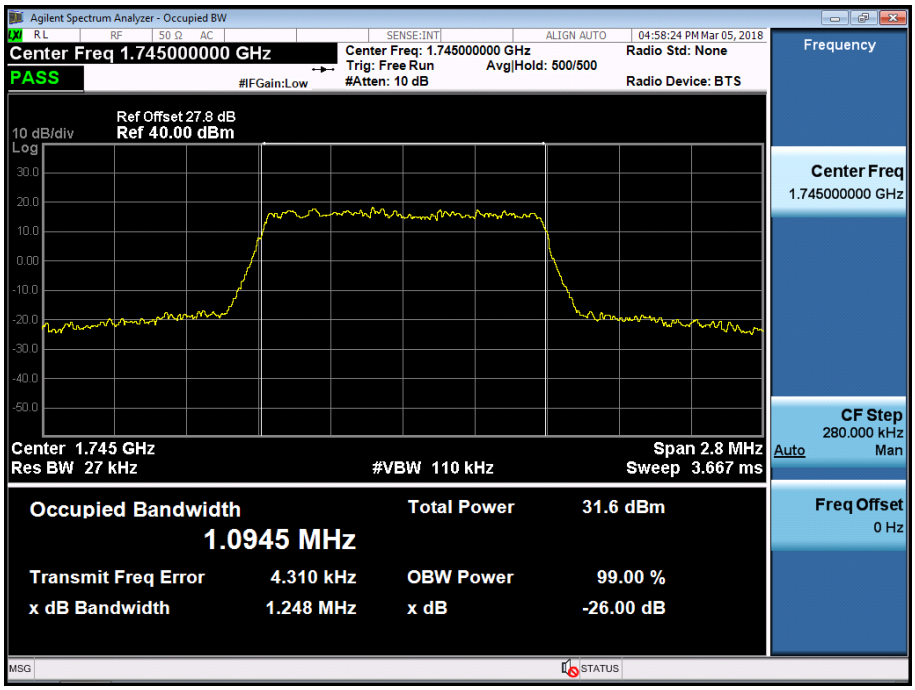


9. TEST PLOTS

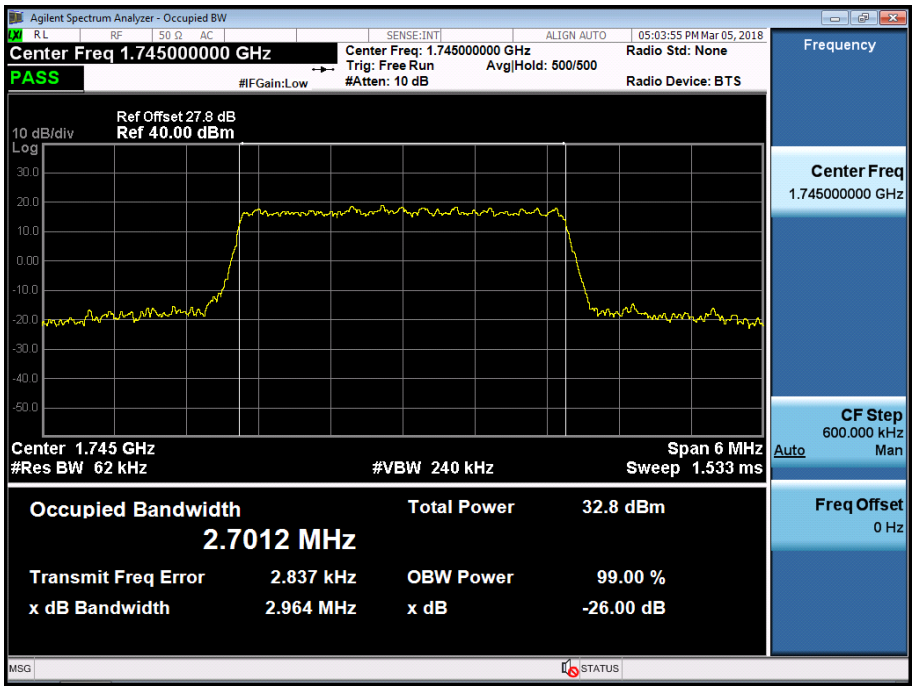
BAND 66/4. Occupied Bandwidth Plot (1.4M BW Ch.132322 QPSK RB 6)



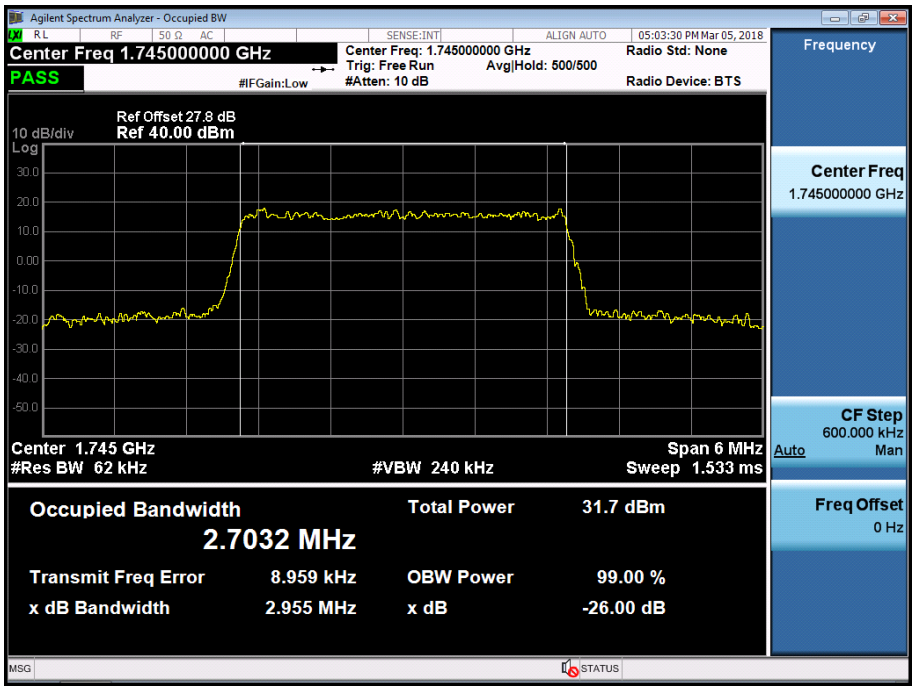
BAND 66/4. Occupied Bandwidth Plot (1.4M BW Ch.132322 16QAM RB 6)



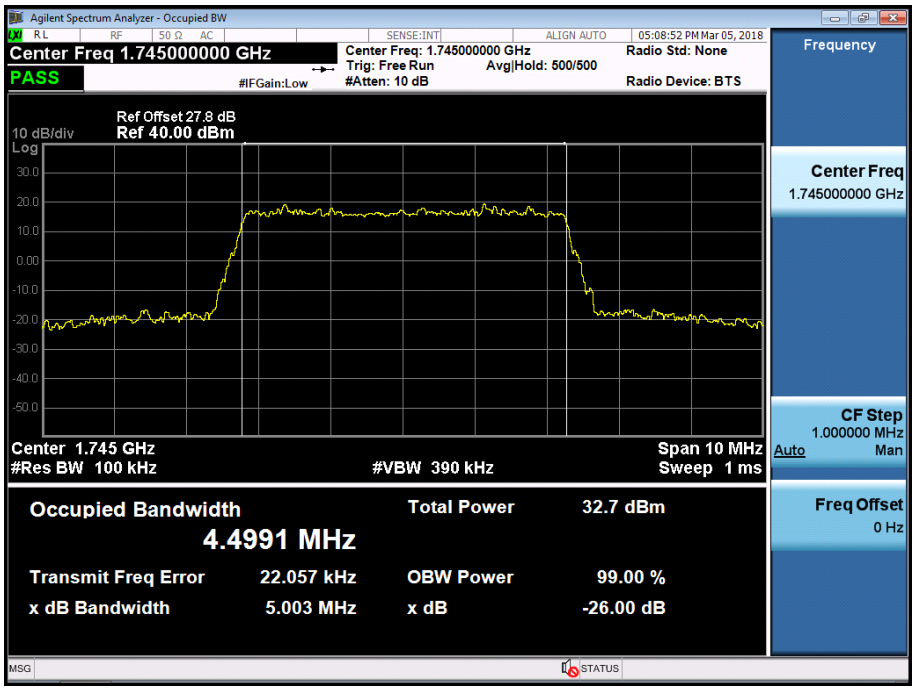
BAND 66/4. Occupied Bandwidth Plot (3M BW Ch.132322 QPSK RB 15)



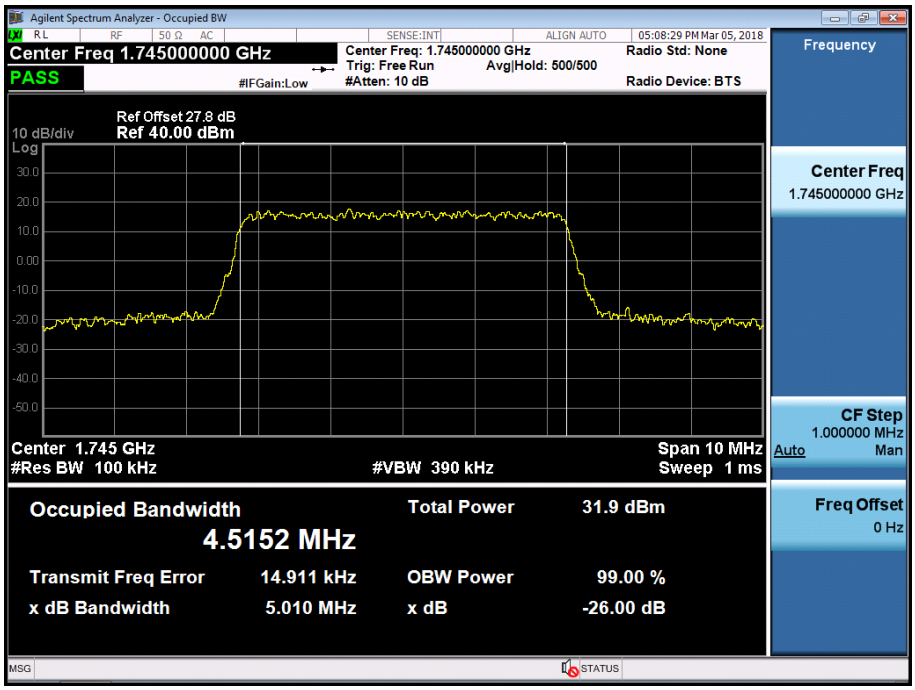
BAND 66/4. Occupied Bandwidth Plot (3M BW Ch.132322 16QAM RB 15)



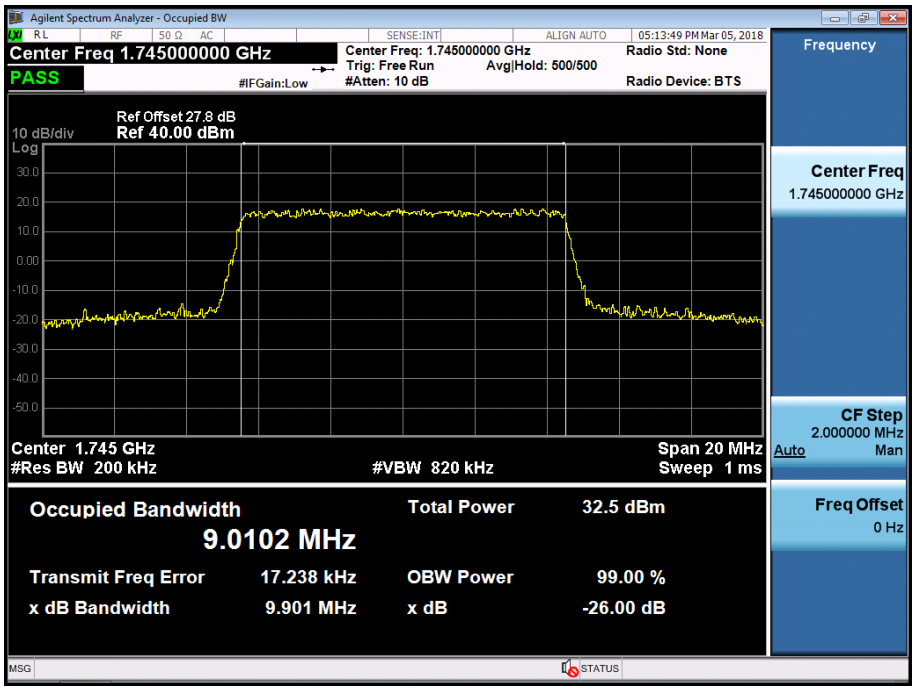
BAND 66/4. Occupied Bandwidth Plot (5M BW Ch.132322 QPSK RB 25)



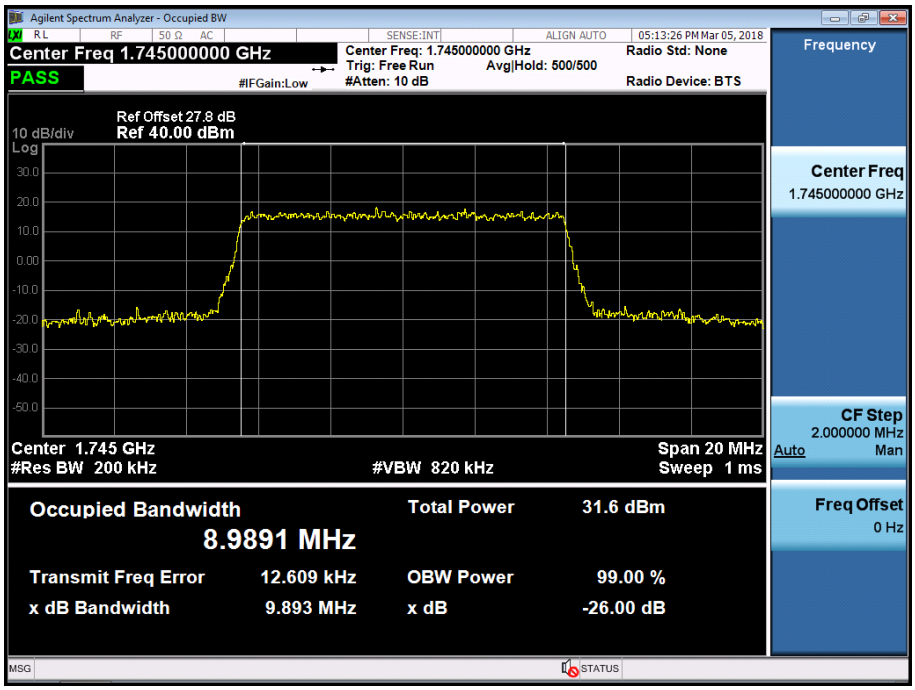
BAND 66/4. Occupied Bandwidth Plot (5M BW Ch.132322 16QAM RB 25)



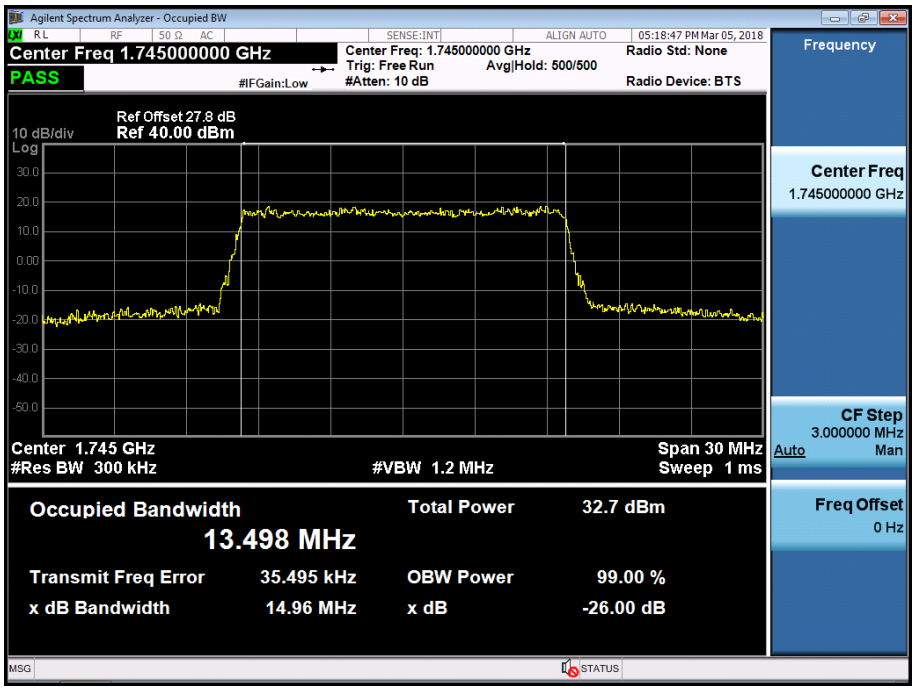
BAND 66/4. Occupied Bandwidth Plot (10M BW Ch.132322 QPSK RB 50)



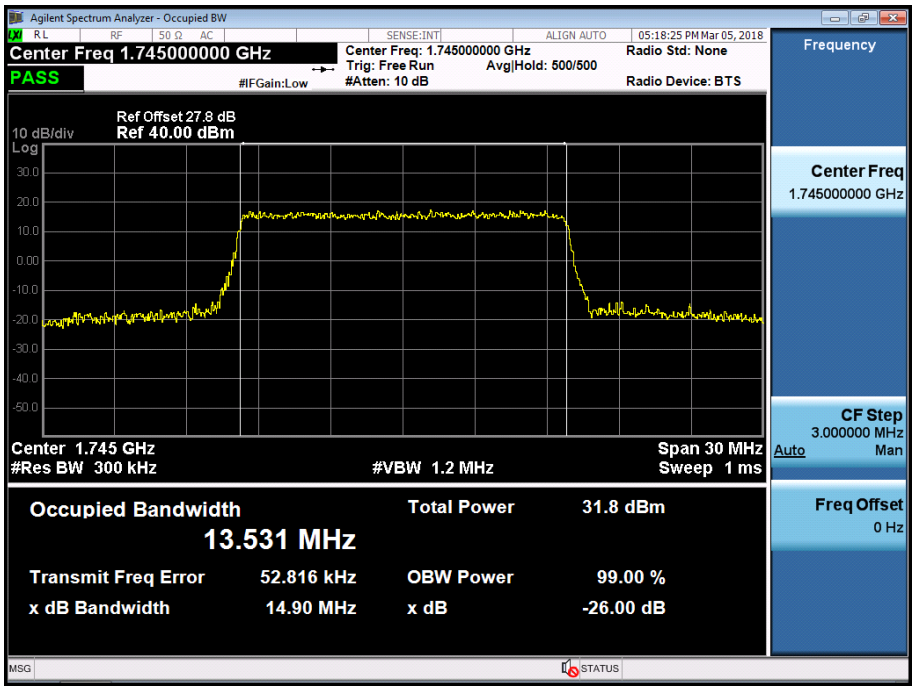
BAND 66/4. Occupied Bandwidth Plot (10M BW Ch.132322 16QAM RB 50)



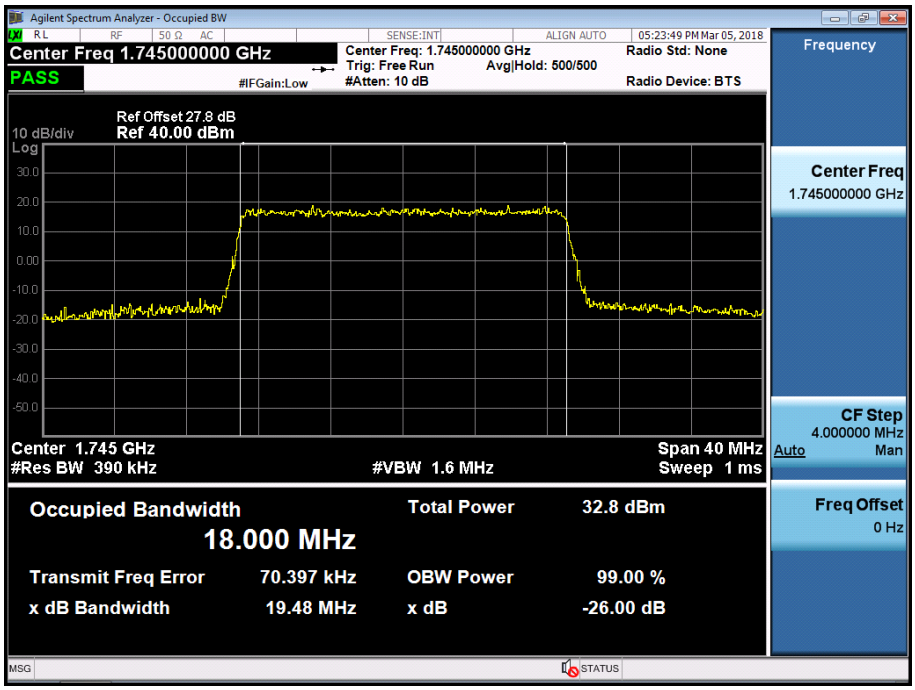
BAND 66/4. Occupied Bandwidth Plot (15M BW Ch.132322 QPSK RB 75)



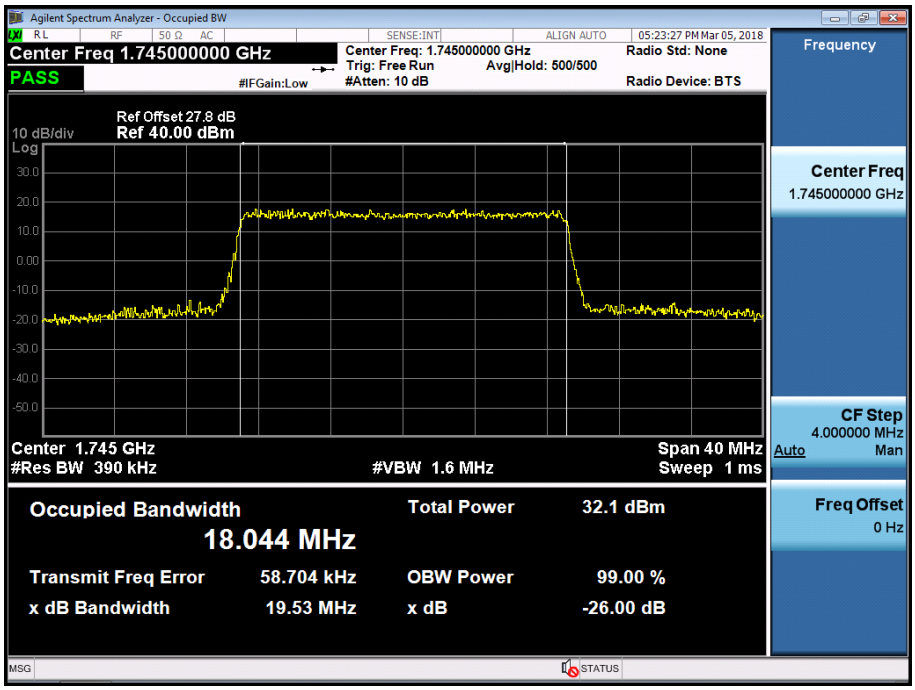
BAND 66/4. Occupied Bandwidth Plot (15M BW Ch.132322 16QAM RB 75)



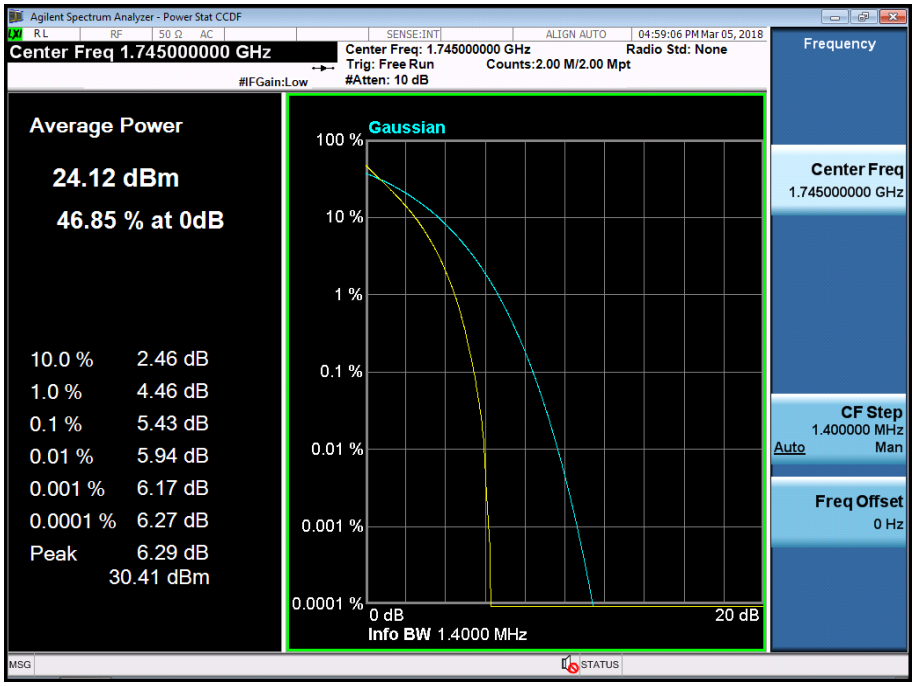
BAND 66/4. Occupied Bandwidth Plot (20M BW Ch.132322 QPSK RB 100)



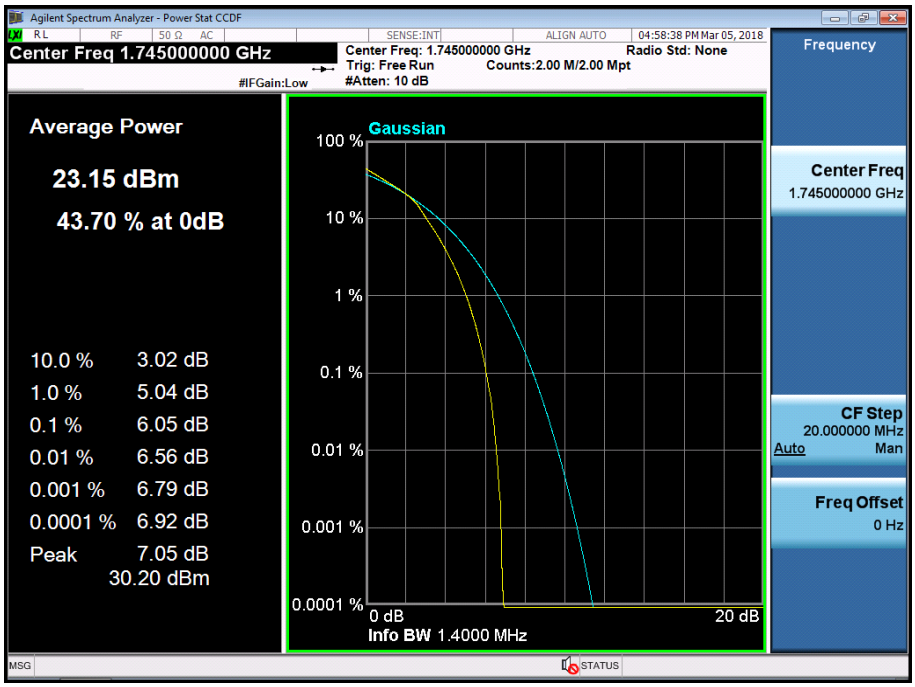
BAND 66/4. Occupied Bandwidth Plot (20M BW Ch.132322 16QAM RB 100)



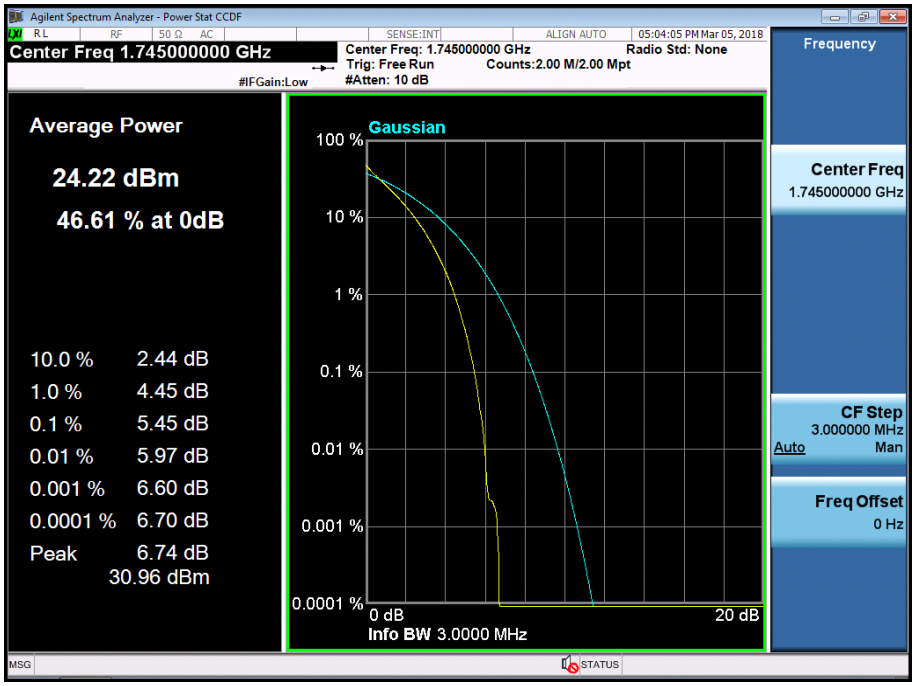
BAND 66/4. PAR Plot (1.4M BW_Ch.132322_QPSK_RB6_0)



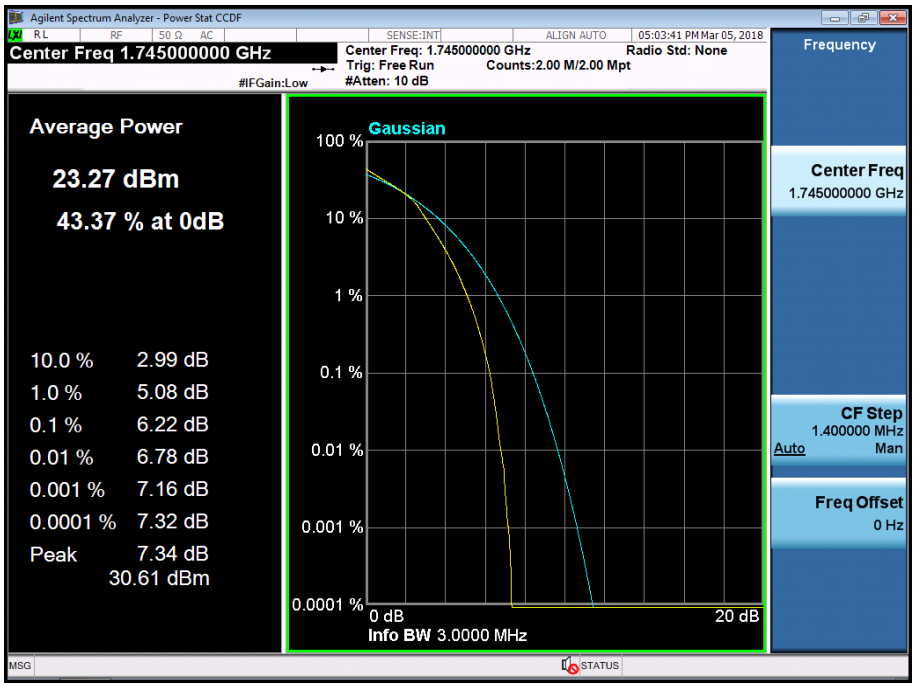
BAND 66/4. PAR Plot (1.4M BW_Ch.132322_16QAM_RB6_0)



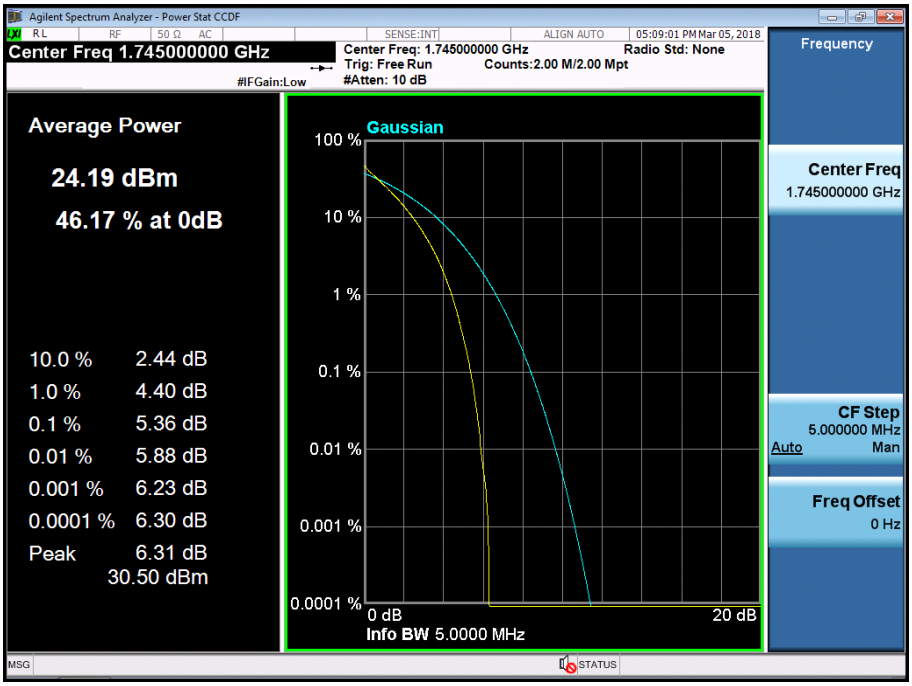
BAND 66/4. PAR Plot (3M BW_Ch.132322_QPSK_RB15_0)



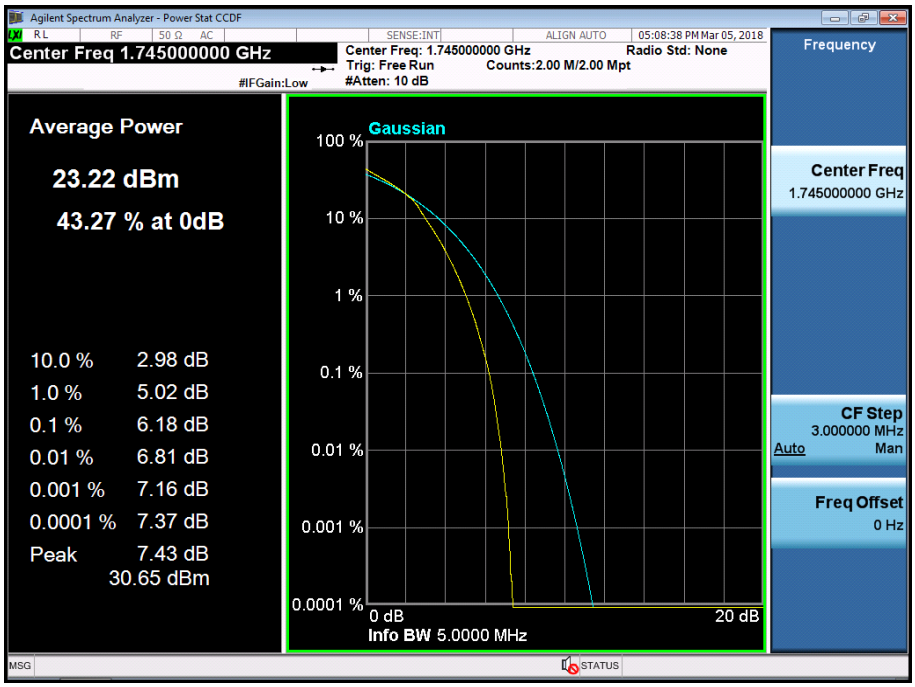
BAND 66/4. PAR Plot (3M BW_Ch.132322_16QAM_RB15_0)



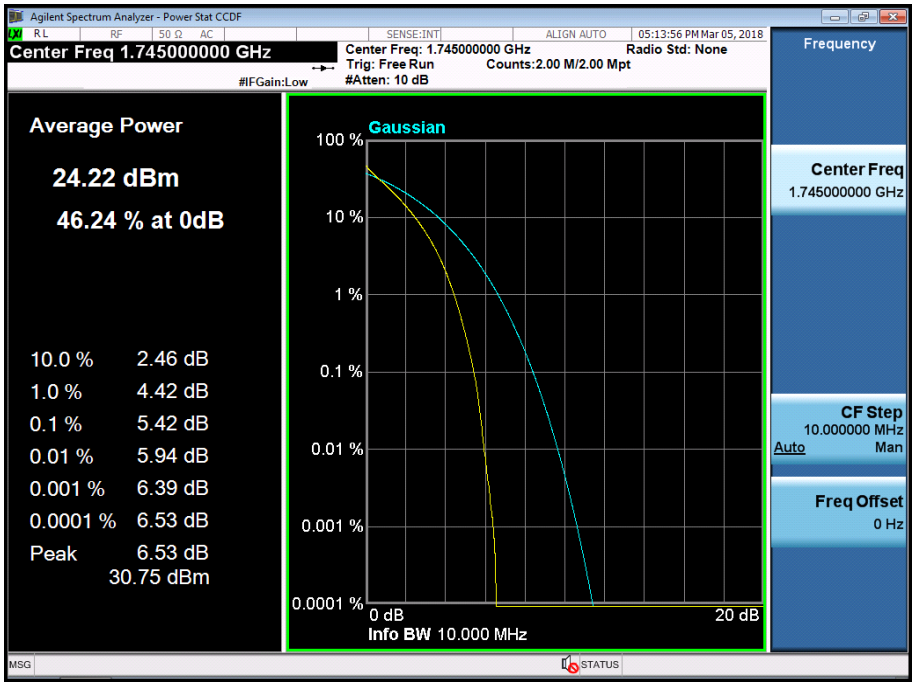
BAND 66/4. PAR Plot (5M BW_Ch.132322_QPSK_RB25_0)



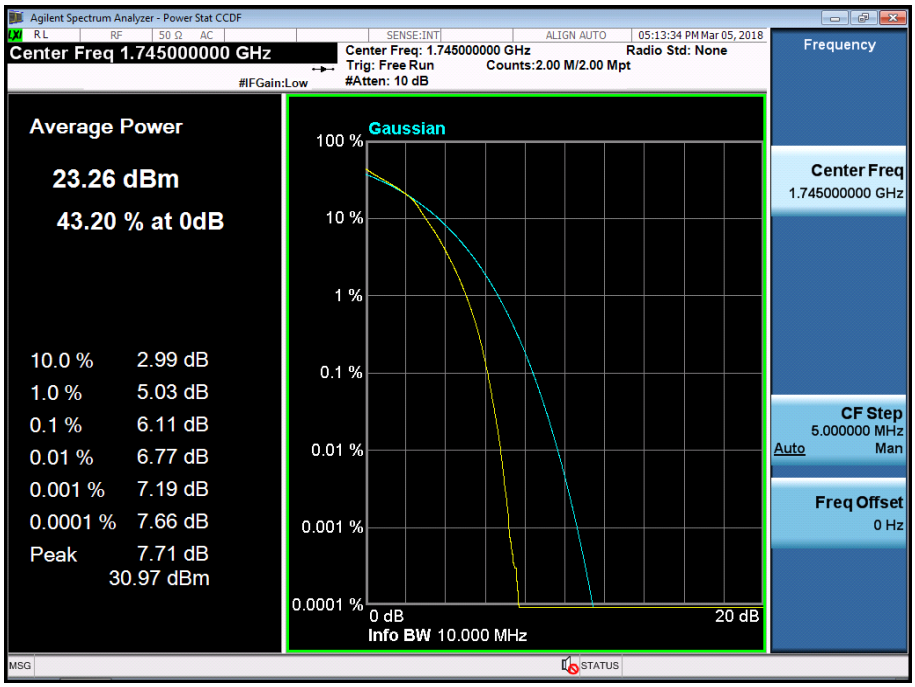
BAND 66/4. PAR Plot (5M BW_Ch.132322_16QAM_RB25_0)



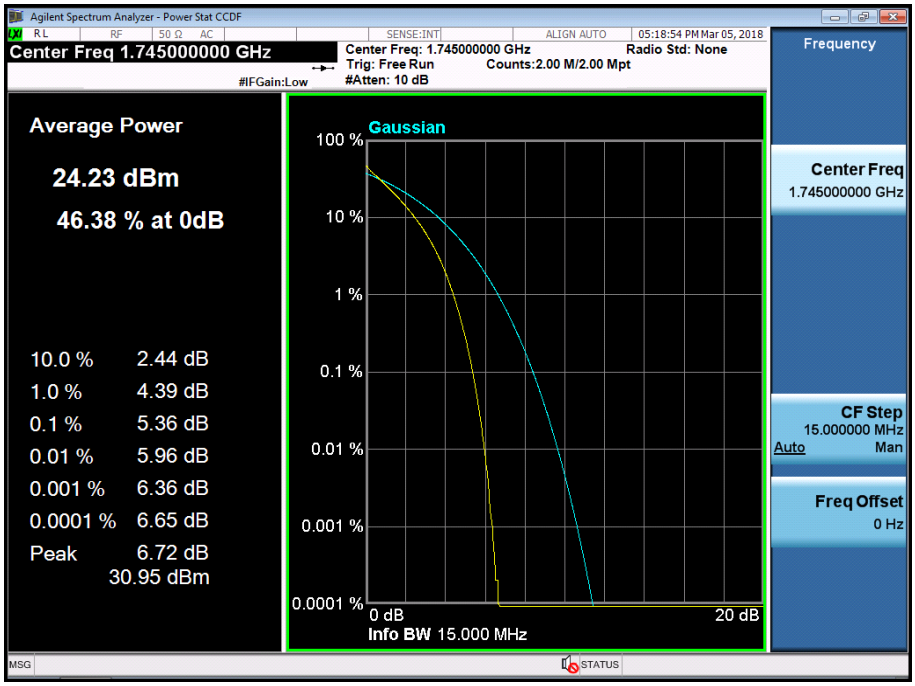
BAND 66/4. PAR Plot (10M BW_Ch.132322_QPSK_RB50_0)



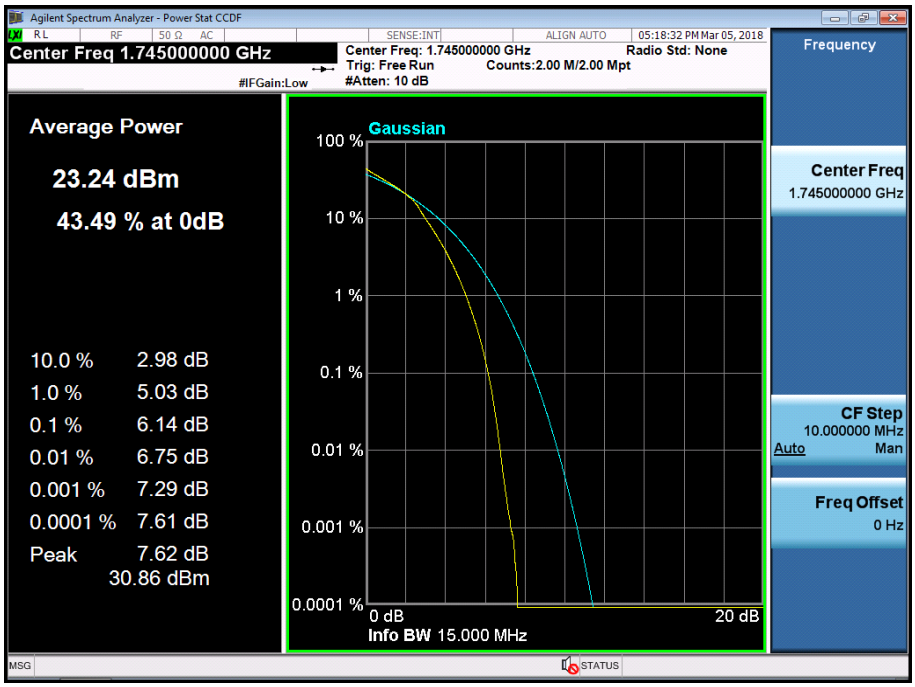
BAND 66/4. PAR Plot (10M BW_Ch.132322_16QAM_RB50_0)



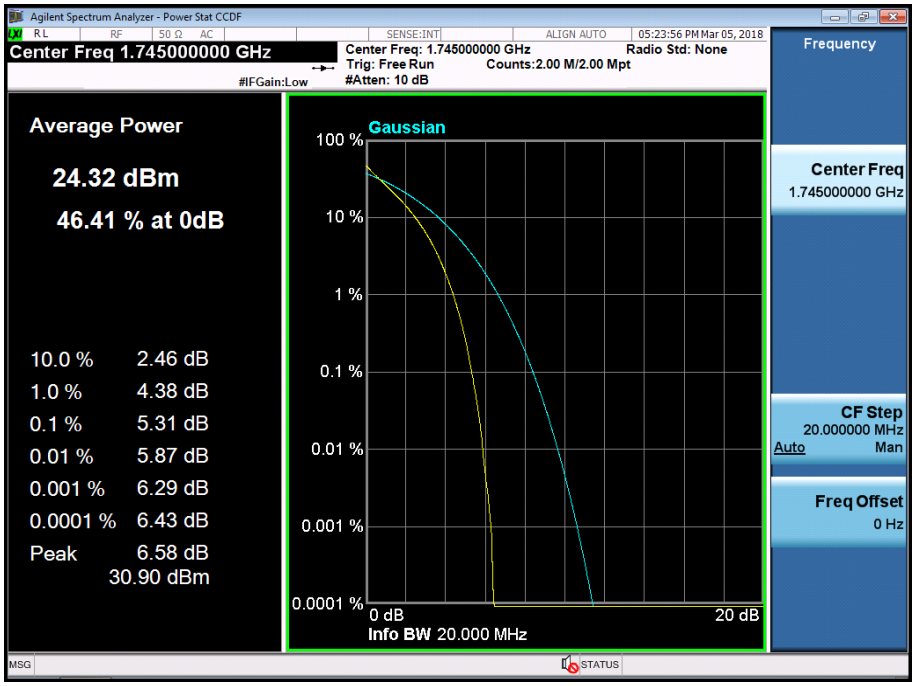
BAND 66/4. PAR Plot (15M BW_Ch.132322_QPSK_RB75_0)



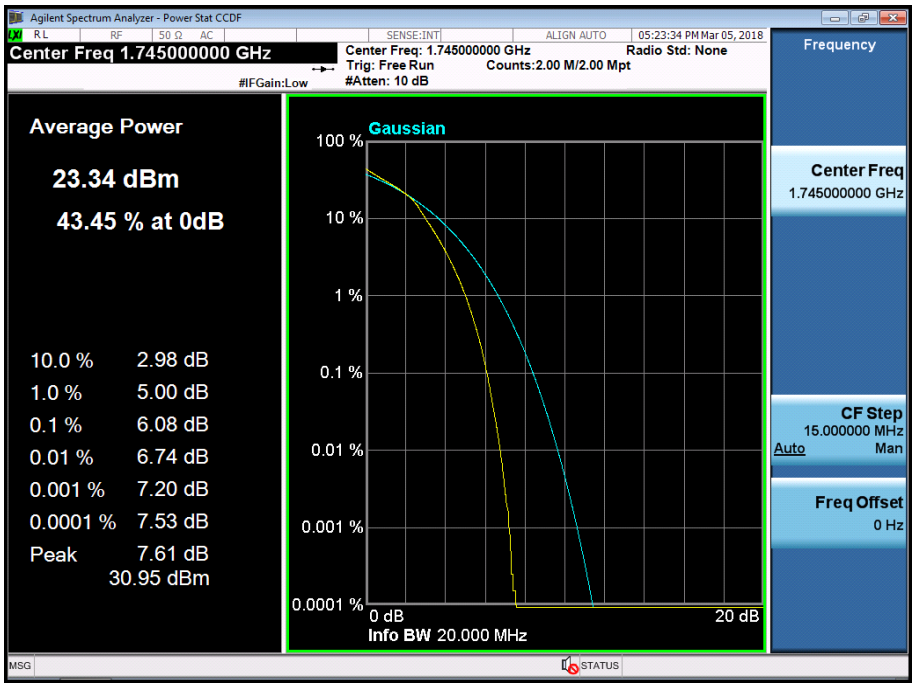
BAND 66/4. PAR Plot (15M BW_Ch.132322_16QAM_RB75_0)



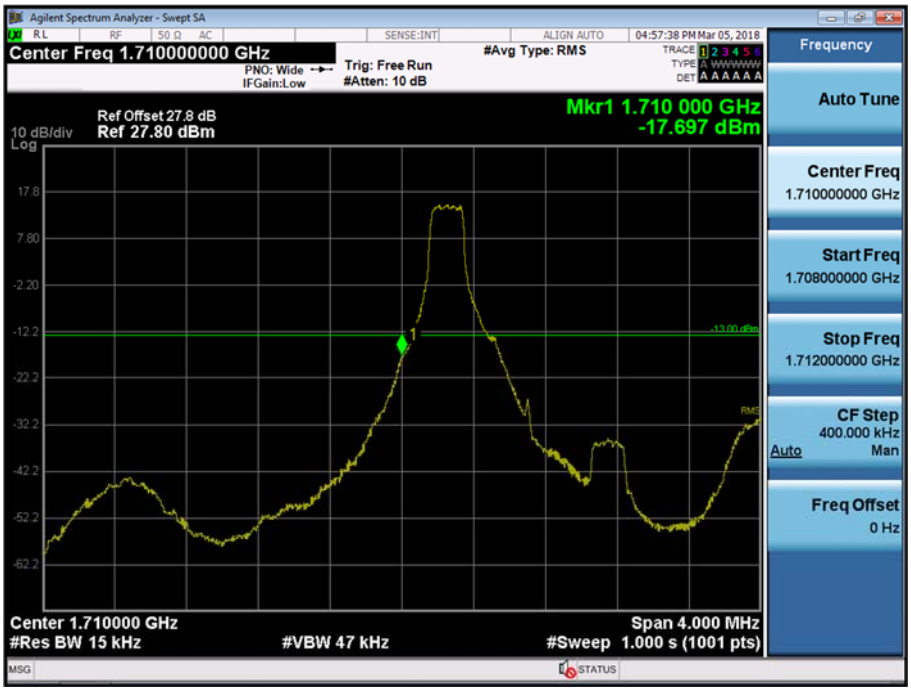
BAND 66/4. PAR Plot (20M BW_Ch.132322_QPSK_RB100_0)



BAND 66/4. PAR Plot (20M BW_Ch.132322_16QAM_RB100_0)

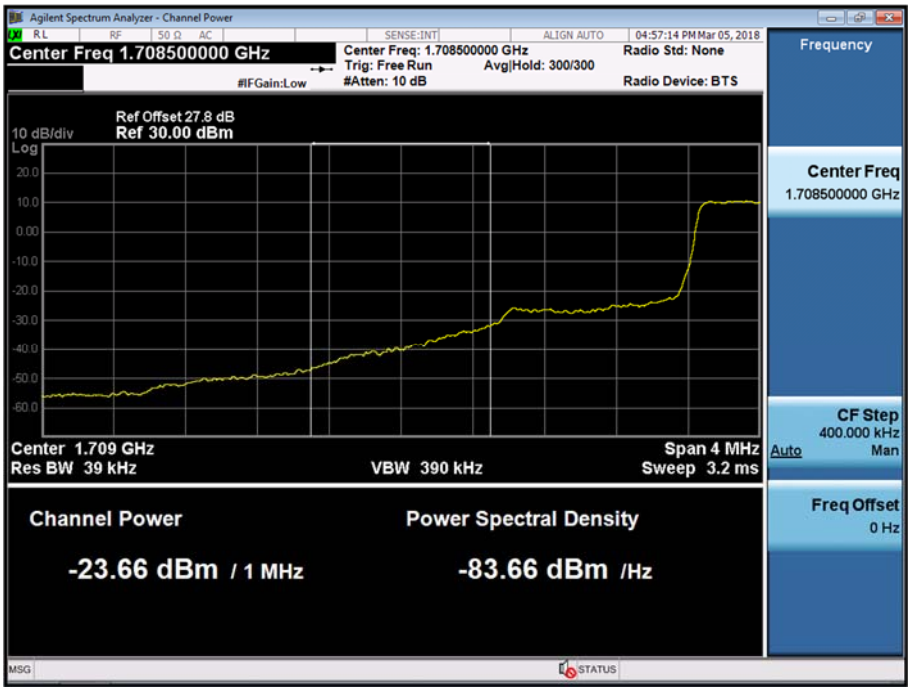


BAND 66/4. Lower Band Edge Plot (1.4M BW Ch.131979 QPSK RB 1, Offset 0) -1



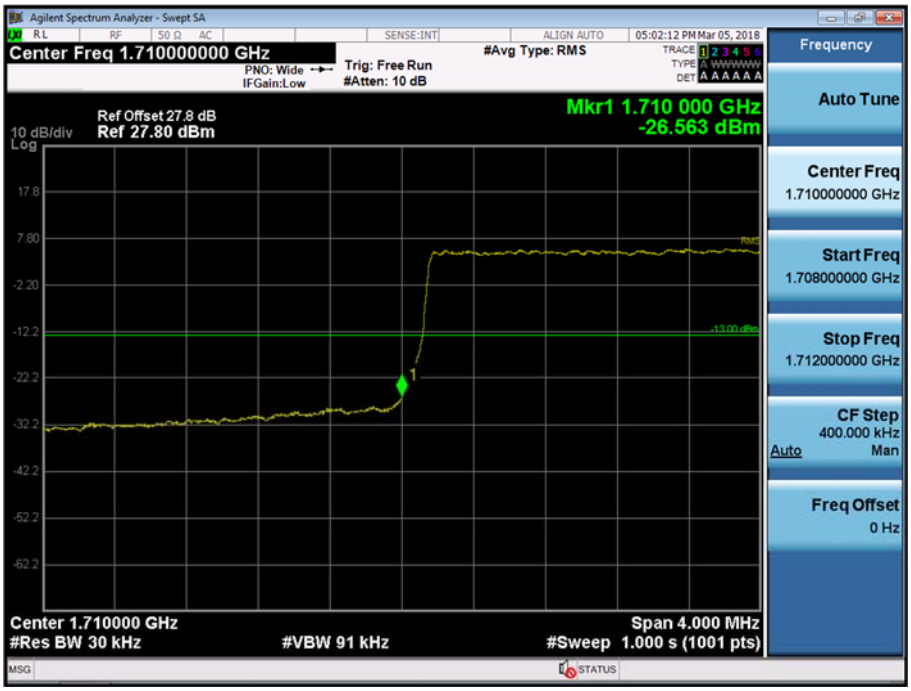
BAND 66/4. Lower Band Edge Plot (1.4M BW Ch. 131979 QPSK RB 6) -2

BAND 66/4. Lower Extended Band Edge Plot (1.4M BW Ch. 131979 QPSK_RB6_0) -3

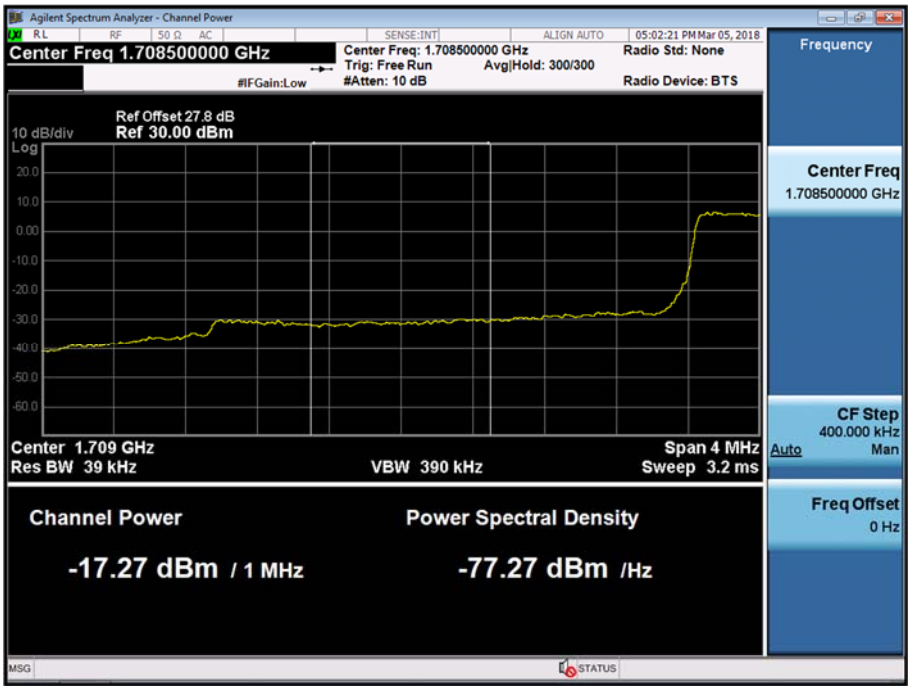


BAND 66/4. Lower Band Edge Plot (3M BW Ch. 131987 QPSK RB 1, Offset 0) -1

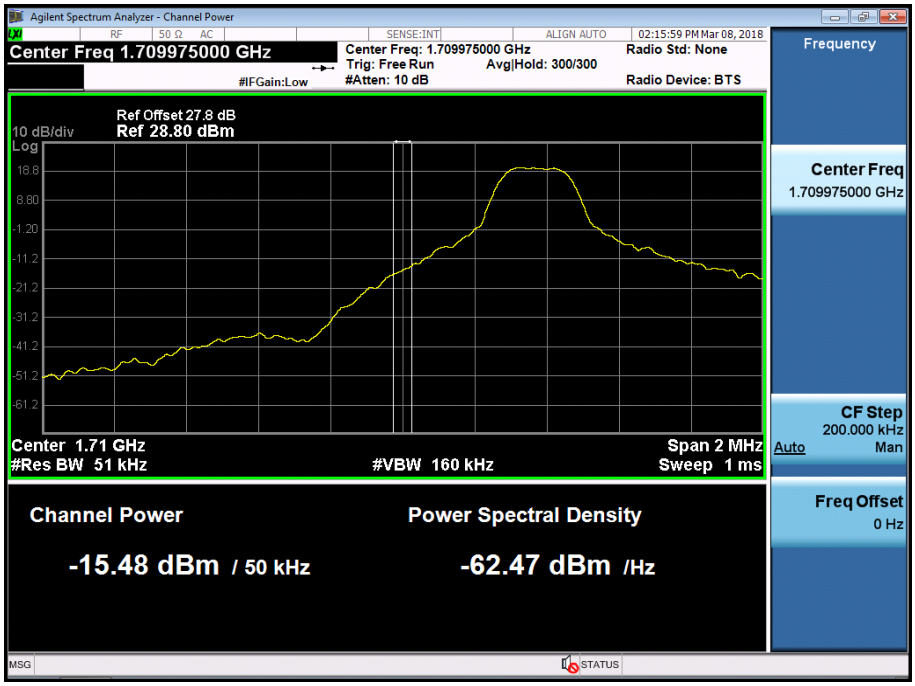
BAND 66/4. Lower Band Edge Plot (3M BW Ch. 131987 QPSK RB 15) -2



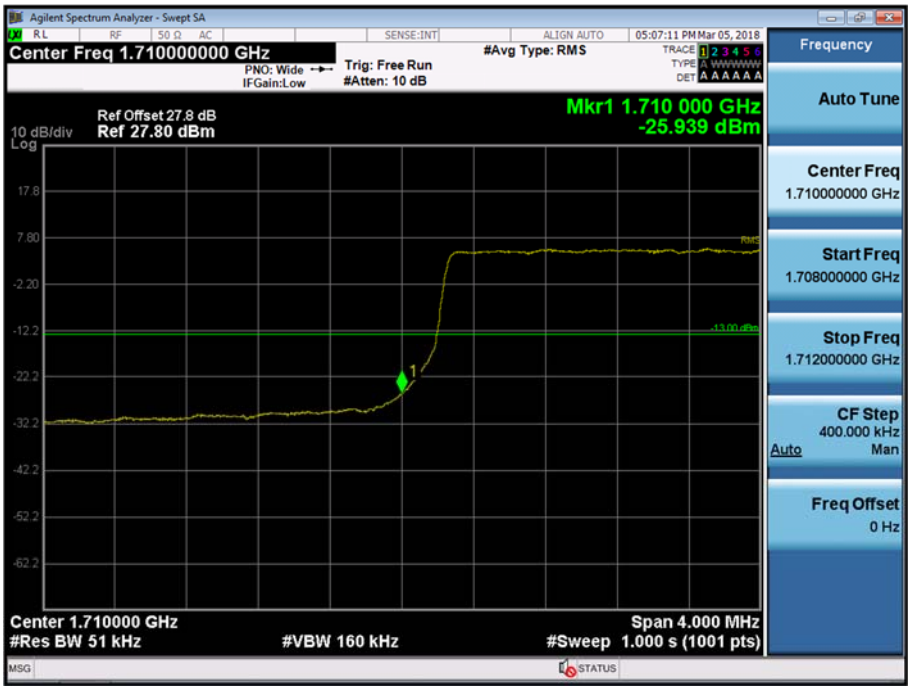
BAND 66/4. Lower Extended Band Edge Plot (3M BW Ch. 131987 QPSK_RB15_0) -3



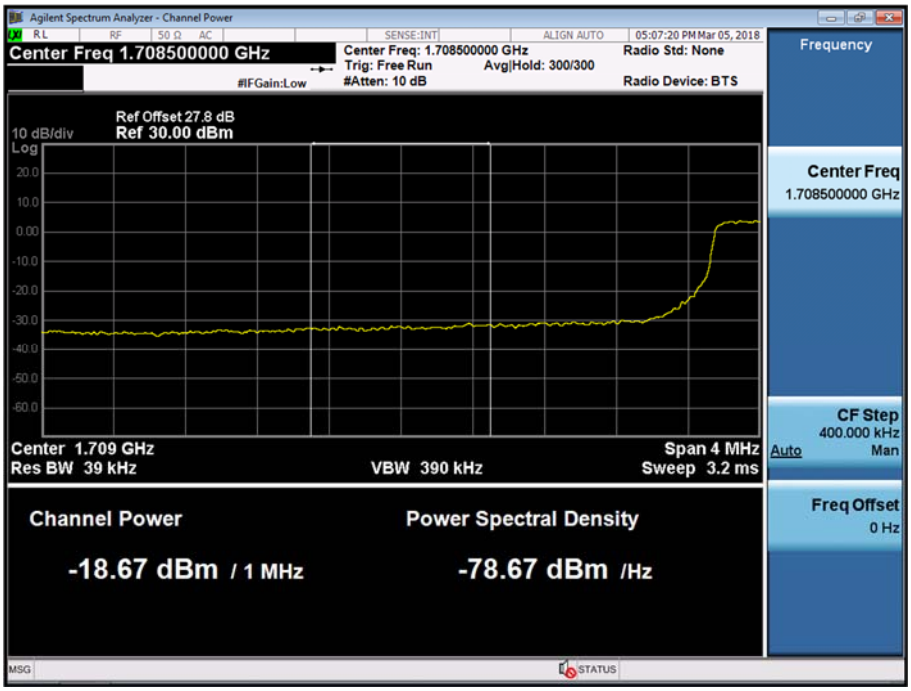
BAND 66/4. Lower Band Edge Plot (5M BW Ch. 131997 QPSK RB 1, Offset 0) -1



BAND 66/4. Lower Band Edge Plot (5M BW Ch. 131997 QPSK RB 25) -2



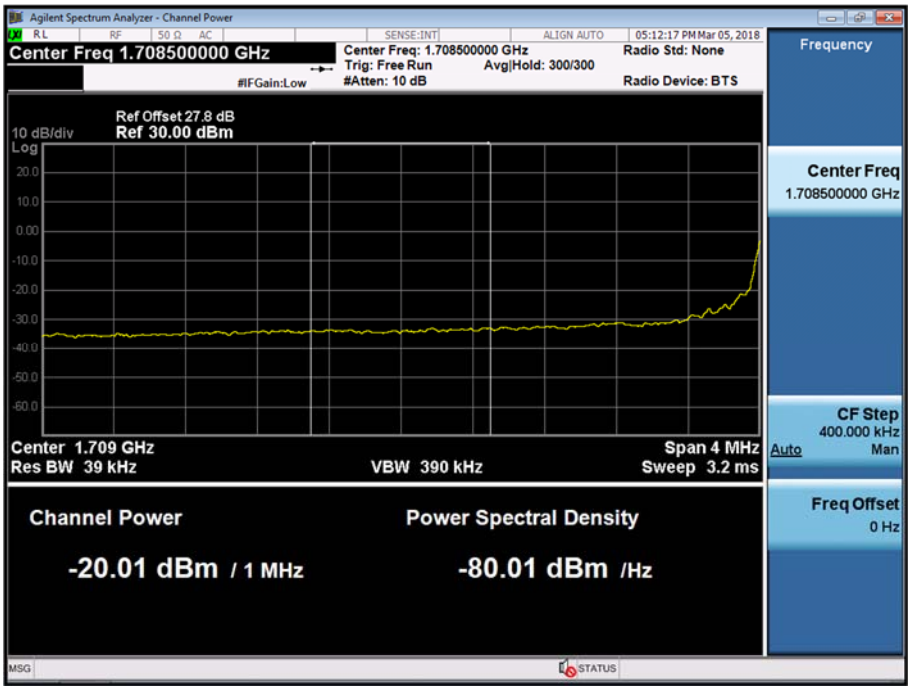
BAND 66/4. Lower Extended Band Edge Plot (5M BW Ch. 131997 QPSK_RB25_0) -3



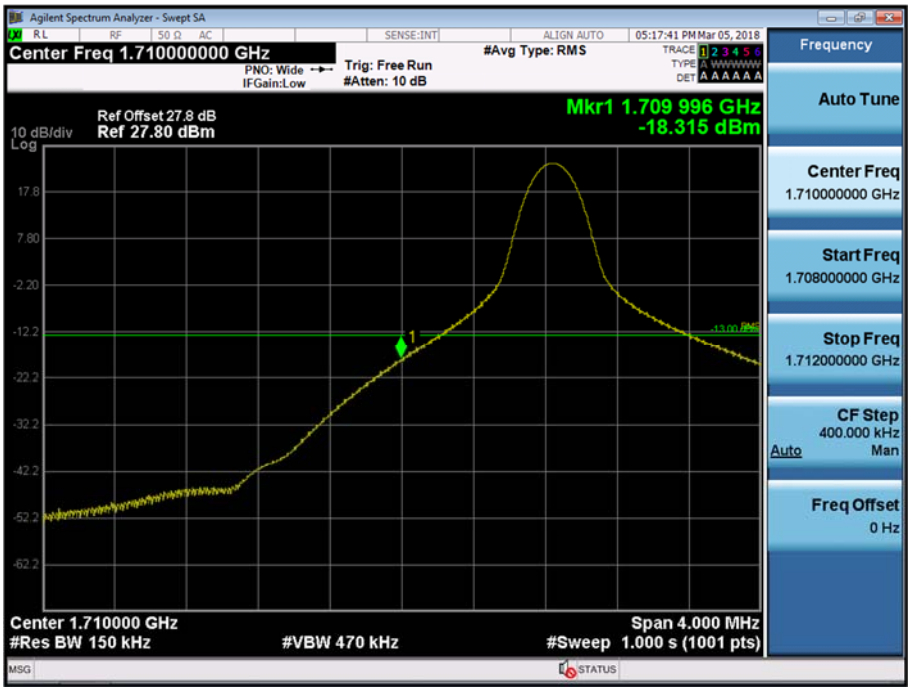
BAND 66/4. Lower Band Edge Plot (10M BW Ch. 132022 QPSK RB 1, Offset 0) -1

BAND 66/4. Lower Band Edge Plot (10M BW Ch. 132022 QPSK RB 50) -2

BAND 66/4. Lower Extended Band Edge Plot (10M BW Ch. 132022 QPSK_RB50_0) -3

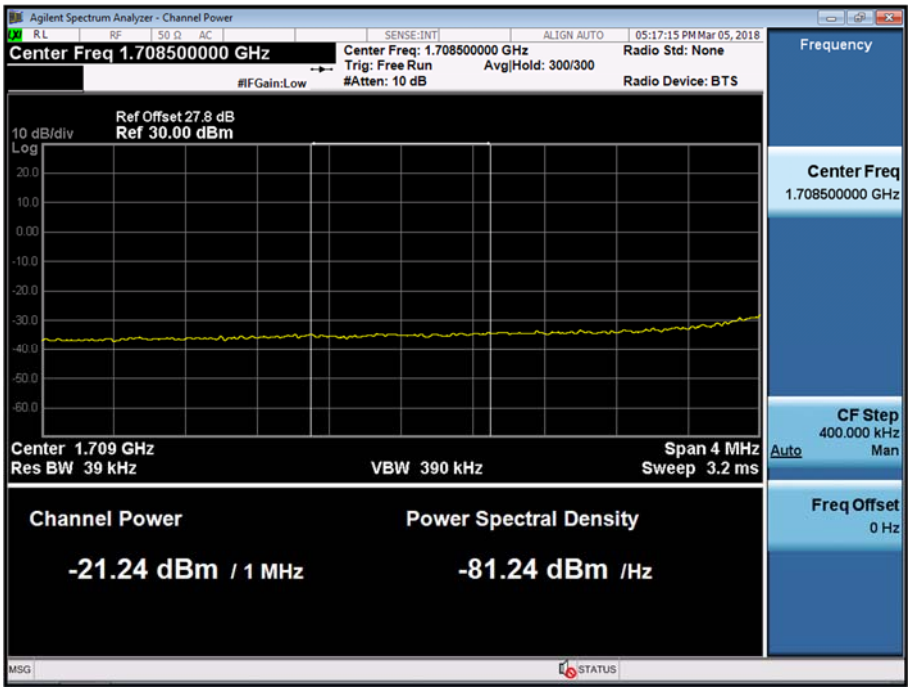


BAND 66/4. Lower Band Edge Plot (15M BW Ch. 132047 QPSK RB 1, Offset 0) -1

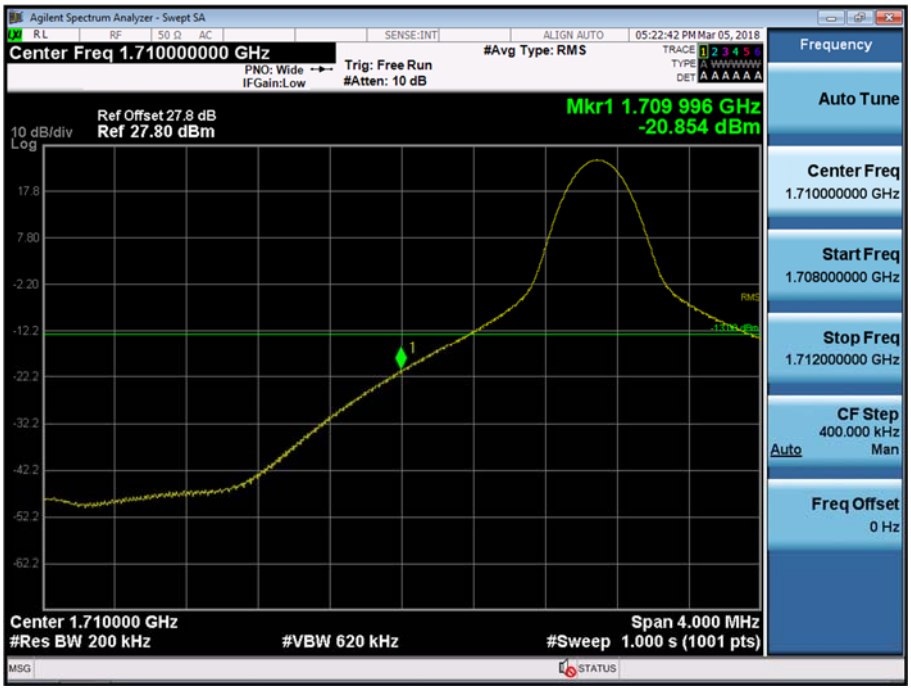


BAND 66/4. Lower Band Edge Plot (15M BW Ch. 132047 QPSK RB 75) -2

BAND 66/4. Lower Extended Band Edge Plot (15M BW Ch. 132047 QPSK_RB75_0) -3

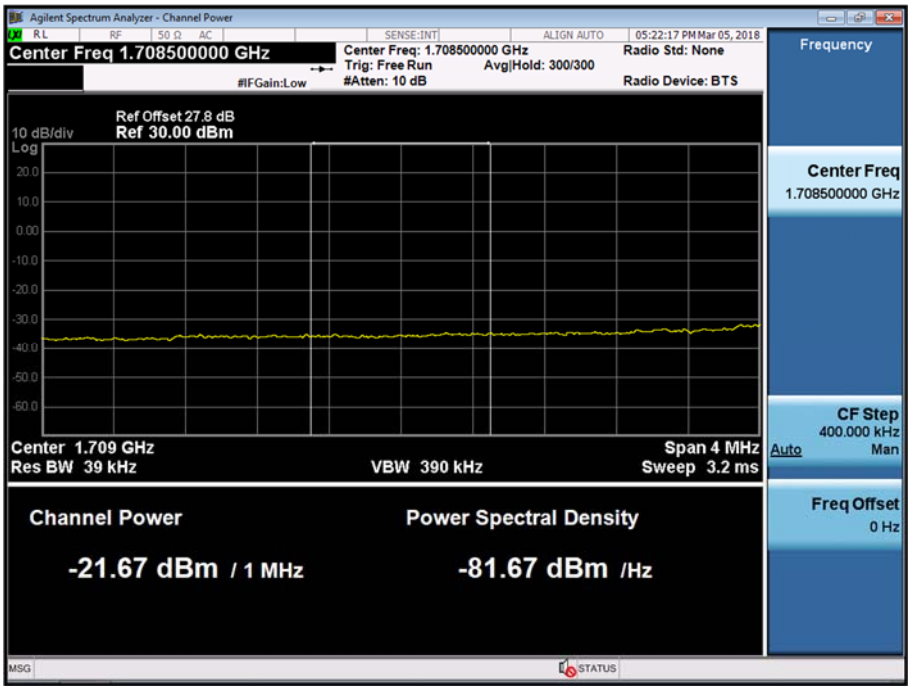


BAND 66/4. Lower Band Edge Plot (20M BW Ch. 132072 QPSK RB 1, Offset 0) -1

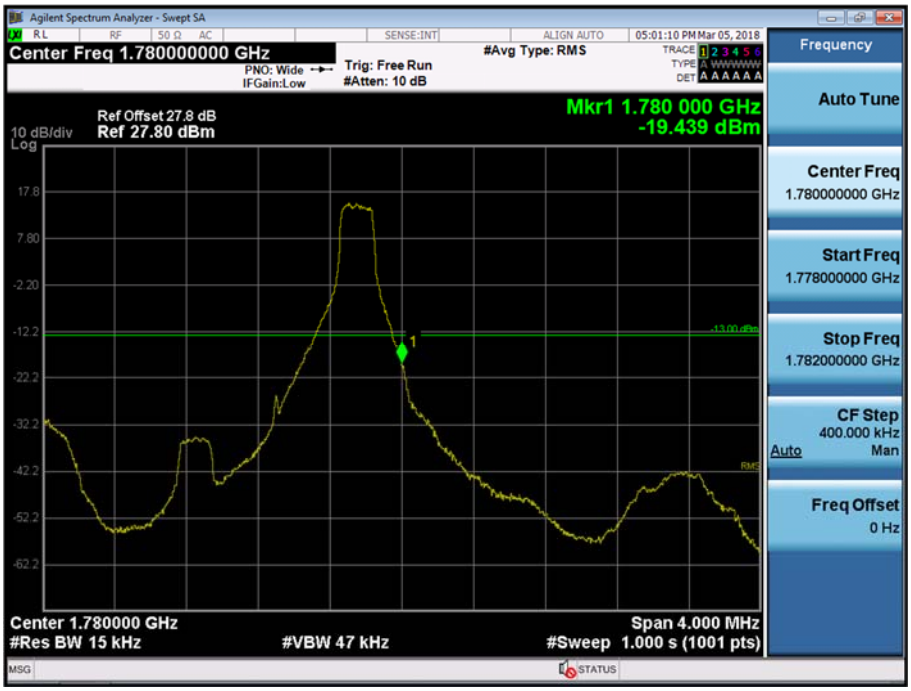


BAND 66/4. Lower Band Edge Plot (20M BW Ch. 132072 QPSK RB 100) -2

BAND 66/4. Lower Extended Band Edge Plot (20M BW Ch. 132072 QPSK_RB100_0) -3



BAND 66/4. Upper Band Edge Plot (1.4M BW Ch. 132665 QPSK_RB1_Offset 5) -1



BAND 66/4. Upper Band Edge Plot (1.4M BW Ch. 132665 QPSK_RB6) -2