HCT CO., LTD.

CERTIFICATE OF COMPLIANCE
FCC Certification

Applicant Name:
LG Electronics Inc.

Address:
19-1, Cheongho-ri, Jinwi-myeon, Pyeongtaek-si,
Gyeonggi-do 451-713, Korea

Date of Issue:
November 16, 2012

Test Site/Location:
HCT CO., LTD., 105-1, Jangam-ri, Majang-Myeon, Icheon-si, Kyunggi-Do, Korea

Report No.: HCTR1210FR08-4

HCT FRN: 0005866421

FCC ID:	**BEJLTTC10N**
APPLICANT:	**LG Electronics Inc.**

FCC Model(s):	TC10AF3NU
EUT Type:	CDMA/GSM/WCDMA/LTE Telematics
FCC Classification:	Licensed Portable Transmitter (PCB)
FCC Rule Part(s):	§2 , §27
Tx Frequency:	706.5 MHz – 713.5 MHz (LTE – Band 17), 1712.5 MHz – 1752.5 MHz (LTE – Band 4) 782 MHz (LTE–Band 13)
Max. Conducted Power:	Band 17 (5 MHz) : 0.216 W (QPSK) (23.35 dBm) 0.168 W (16-QAM) (22.25 dBm) Band 17 (10 MHz) : 0.205 W (QPSK) (23.12 dBm) 0.165 W (16-QAM) (22.17 dBm) Band 4 (5 MHz) : 0.200 W (QPSK) (23.00 dBm) 0.150 W (16-QAM) (21.77 dBm) Band 4 (10 MHz) : 0.200 W (QPSK) (23.00 dBm) 0.159 W (16-QAM) (22.01 dBm) Band 13 (10MHz) : 0.198 W (QPSK) (22.96 dBm) 0.157 W (16-QAM) (21.97 dBm)
Emission Designator(s):	Band 17 (5 MHz) : 4M51G7D (QPSK) / 4M50W7D (16-QAM) Band 17 (10 MHz) : 8M98G7D (QPSK) / 8M98W7D (16-QAM) Band 4 (5 MHz) : 4M51G7D (QPSK) / 4M49W7D (16-QAM) Band 4 (10 MHz) : 8M97G7D (QPSK) / 8M96W7D (16-QAM) Band 13 (10MHz) : 9M00G7D (QPSK) / 9M00W7D (16-QAM)

The measurements shown in this report were made in accordance with the procedures specified in §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 Chul Shin
Test engineer of RF Team

Approved by
: Sang Jun Lee
Manager of RF Team

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCTR1210FR08	October 05, 2012	First Approval Report
HCTR1210FR08-1	October 26, 2012	Corrected the ERP Sample calculation on page 14. Corrected the unit of PAR on page 17. Corrected the unit of the antenna gain in section 7.7
HCTR1210FR08-2	November 01, 2012	Corrected the EUT type.
HCTR1210FR08-3	November 14, 2012	Corrected the Max. RF Output Power on page 1 and 4. Corrected the table for the spurious emissions on page 26 ~ 28
HCTR1210FR08-4	November 16, 2012	Corrected the Max. RF Output Power on page 1 and 4.

Table of Contents

MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	LG Electronics Inc.
Address:	19-1, Cheongho-ri, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do 451-713, Korea
FCC ID:	BEJLTTC10N
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part(s):	§2 , §27
EUT Type:	CDMA/GSM/WCDMA/LTE Telematics
FCC Model(s):	TC10AF3NU
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Date(s) of Tests:	September 10, 2012 ~ October 05, 2012
Antenna Specification	Manufacturer: Laird Technologies Antenna type: MIMO capable vehicle dome antenna Peak Gain: Band 4: 0.61 dBi Band 17: 3.95 dBi Band 13: 2.11 dBi

2. INTRODUCTION

2.1. EUT DESCRIPTION

The LG Electronics Inc. TC10AF3NU CDMA/GSM/WCDMA/LTE Telematics consists of LTE 4, 13 and 17.

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.

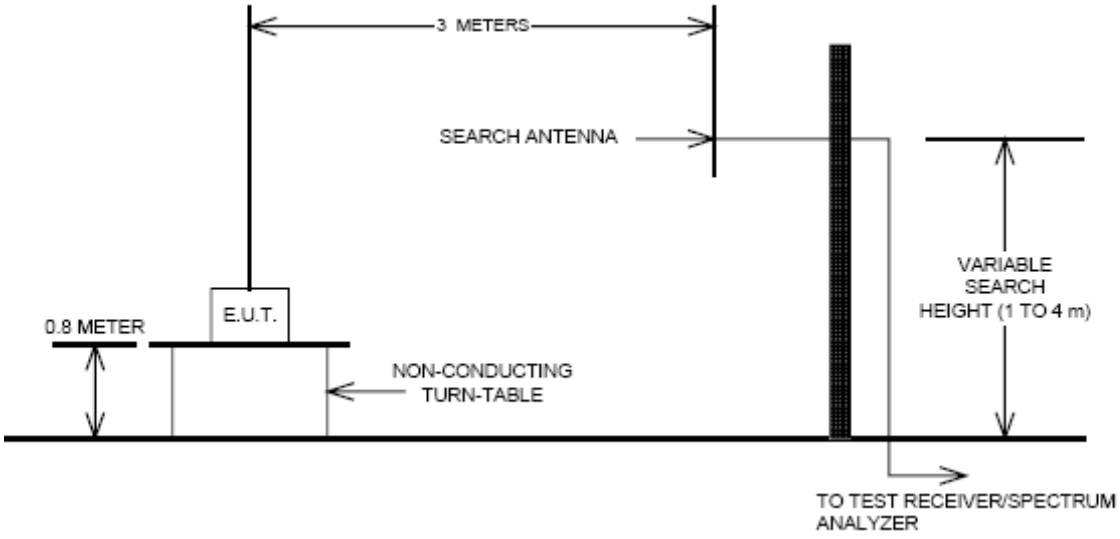
2.3. TEST FACILITY

The Fully-anechoic and conducted measurement facility used to collect the radiated data are located at the 105-1, Jangam-ri, Majang-Myeon, Icheon-si, Kyunggi-Do, 467-811, Korea. The site is constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated March 02, 2011 (Registration Number: 90661)

3. DESCRIPTION OF TESTS

3.1 EFFECTIVE RADIATED POWER/EQUIVALENT ISOTROPIC RADIATED POWER

Test Set-up



Test Procedure

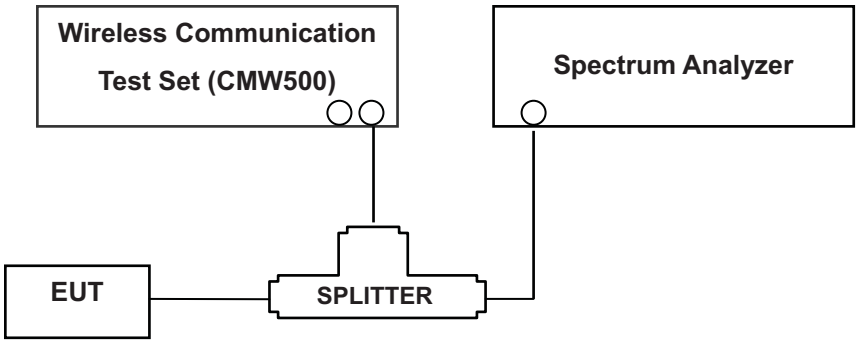
Radiated emission measurements were performed at an Fully-anechoic chamber.

The equipment under test is placed on a non-conductive table 3-meters from the receive antenna. A turntable was rotated 360° and the receiving antenna scanned from 1-4m in order to capture the maximum emission. A half wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the previously recorded signal was duplicated.

The maximum EIRP was calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps were carried out with the receiving antenna in both vertical and horizontal polarization. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic antenna are taken into consideration

3.2 OCCUPIED BANDWIDTH.

Test set-up



(Configuration of conducted Emission measurement)
Test Procedure

The EUT was setup to maximum output power at its lowest channel. The occupied bandwidth was measured using a spectrum analyzer. The measurements are repeated for the highest and a middle channel. The EUT's occupied bandwidth is measured as the width of the signal between two points, one below the carrier center frequency and one above the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. Plots of the EUT's occupied bandwidth are shown herein.

3.3 BLOCK B FREQUENCY RANGE (704 – 710 and 734 – 740 MHz, 777 – 792 MHz)

§27.5(b)

746–764 MHz and 776–794 MHz bands. The following frequencies are available for licensing pursuant to this part in the 746–764 MHz and 776–794 MHz bands:

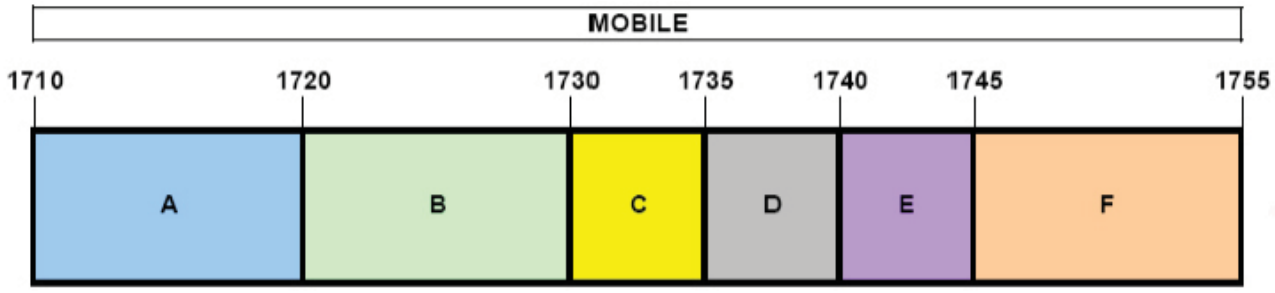
(1) Two paired channels of 1 megahertz each are available for assignment solely to Guard band managers. Block A: 746–747 MHz and 776–777 MHz. (2) Two paired channels of 2 megahertz each are available for assignment solely to Guard band managers. Block B: 762–764 MHz and 792–794 MHz. (3) Two paired channels of 5 megahertz each are available for assignment. Block C: 747–752 MHz and 777–782 MHz. (4) Two paired channels of 10 megahertz each are available for assignment. Block D: 752–762 MHz and 782–792 MHz.

§27.5(c)

Three paired channel blocks of 12 MHz each are available for assignment as follows : Block A: 698 – 704 MHz and 728 – 734 MHz ; Block B : 704 – 710 MHz and 734 – 740 MHz ; and Block C : 710 – 716 MHz and 740 – 746 MHz. Two unpaired channel blocks of 6 MHz each are available for assignment as follows : Block D : 716 – 722 MHz ; and Block E : 722- 728 MHz.

3.4 AWS – MOBILE FREQUENCY BLOCKS (1710 – 1755 MHz)

§27.5(h)



BLOCK 1: 1710 – 1720 MHz (A)

BLOCK 2: 1720 – 1730 MHz (B)

BLOCK 3: 1730 – 1735 MHz (C)

BLOCK 4: 1735 – 1740 MHz (D)

BLOCK 5: 1740 – 1745 MHz (E)

BLOCK 6: 1745 – 1755 MHz (F)

3.5 PEAK-AVERAGE RATIO.

§27.50(d)(5)

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a giver bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL.

Test Procedure

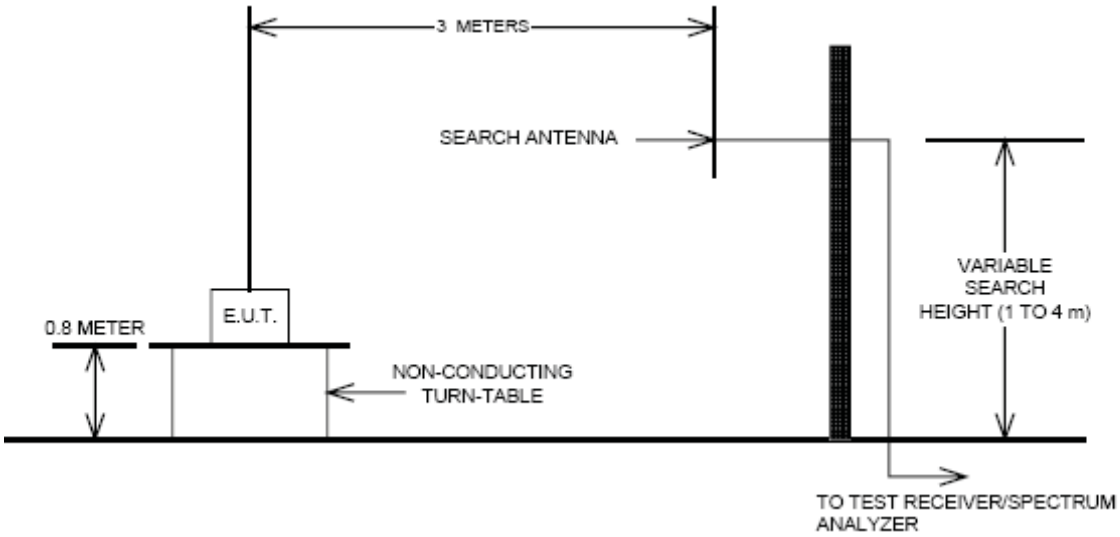
The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer.

The EUT was setup to maximum output power at its lowest channel. The Resolution BW of the analyzer is set to 1 % of the emission bandwidth to show compliance with the – 13 dBm limit, in the 1 MHz bands immediately outside and adjacent to the edge of the frequency block. The 1 MHz RBW was used to scan from 30 MHz to 26.5 GHz. A display line was placed at – 13 dBm to show compliance. The high, lowest and a middle channel were tested for out of band measurements.

- Band Edge Requirement : In the 1MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions. Limit, -13dBm.

3.7 RADIATED SPURIOUS AND HARMONIC EMISSIONS

Test Set-up



The measurement facilities used for this test have been documented in previous filings with the commission pursuant to section § 2.948. The Fully-anechoic chamber meets requirements in ANSI C63.4 –2003. A mast capable of lifting the receiving antenna from a height of one to four meters is used together with a rotatable platform mounted at three from the antenna mast.

1) The unit mounted on a turntable 1.5 m × 1.0 m × 0.80 m is 0.8 meter above test site ground level.
2) During the emission test, the turntable is rotated and the EUT is manipulated to find the configuration resulting in maximum emission under normal condition of installation and operation.
3) The antenna height and polarization are also varied from 1 to 4 meters until the maximum signal is found.
4) The spectrum shall be scanned up to the 10^{th} harmonic of the fundamental frequency.

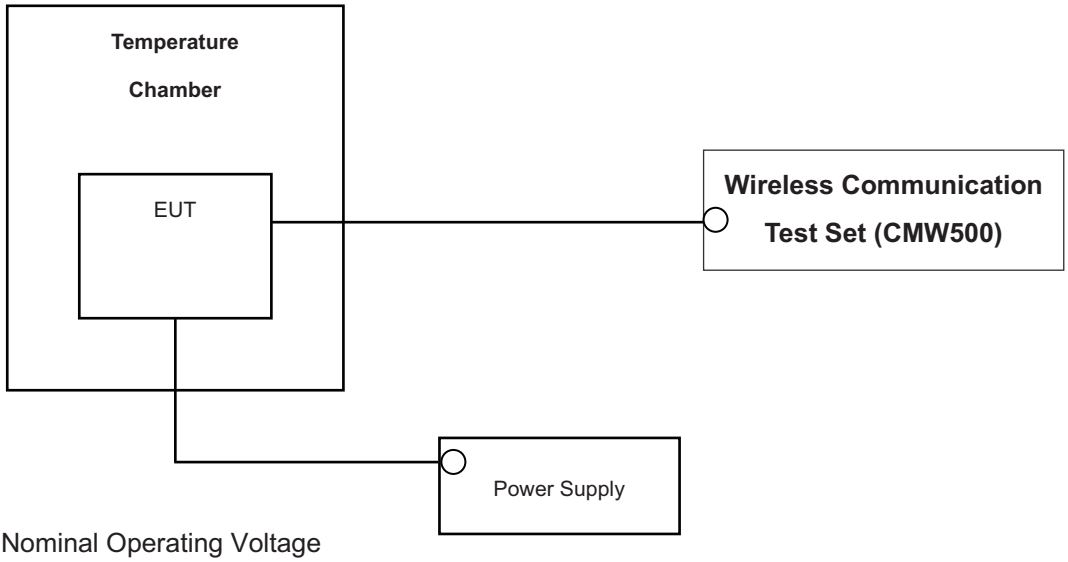
Test Procedure

The equipment under test is placed on a non-conductive table 3-meters from the receive antenna. A turntable was rotated 360° and the receiving antenna scanned from 1-4m in order to capture the maximum emission. A half wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the previously recorded signal was duplicated.

The maximum EIRP was calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps were carried out with the receiving antenna in both vertical and horizontal polarization. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic antenna are taken into consideration.

3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

Test Set-up



* Nominal Operating Voltage

Test Procedure

The frequency stability of the transmitter is measured by:
a.) **Temperature:** The temperature is varied from - 30 °C to + 50 °C using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from battery end point to 115 % of the voltage normally at the input to the device or at the power supply terminals if cables are not normally supplied.

Specification — the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ± 0.000 25 %(± 2.5 ppm) of the center frequency.

Time Period and Procedure:

The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
1. The equipment is turned on in a “standby” condition for one minute 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.

2. 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 Interval	Calibration Due
Agilent	E9327A/ Power Sensor	MY4442009	Annual	05/02/2013
R&S	CMW500/ Base Station	1201.0002K50_116858	Annual	01/17/2013
MITEQ	AMF-6D-001180-35-20P/AMP	1081666	Annual	09/11/2013
Wainwright	WHK1.2/15G-10EF/H.P.F	2	Annual	05/02/2013
Wainwright	WHK3.3/18G-10EF/H.P.F	1	Annual	05/02/2013
Hewlett Packard	11667B / Power Splitter	10126	Annual	11/04/2012
Digital	EP-3010/ Power Supply	3110117	Annual	11/07/2012
Schwarzbeck	UHAP/ Dipole Antenna	557	Biennial	03/11/2013
Schwarzbeck	UHAP/ Dipole Antenna	558	Biennial	03/11/2013
Korea Engineering	KR-1005L / Chamber	KRAB05063-3CH	Annual	11/07/2012
Schwarzbeck	BBHA 9120D/ Horn Antenna	296	Biennial	02/20/2014
Agilent	E4440A/Spectrum Analyzer	US45303008	Annual	05/02/2013
WEINSCHEL	ATTENUATOR	BR0592	Annual	11/07/2012
REOHDE&SCHWARZ	FSV40/Spectrum Analyzer	1307.9002K40-100931-NK	Annual	06/11/2013
Agilent	8960 (E5515C)/ Base Station	GB44400269	Annual	02/10/2013

5. SUMMARY OF TEST RESULTS

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result
2.1049, 27.53(h)(1)	Occupied Bandwidth	N/A	CONDUCTED	PASS
2.1051, 27.53(h)	Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	< 43 +10 $\log_{10}$ (P[Watts]) at Band Edge and for all-of-band emissions		PASS
27.50(d)(5)	Peak-Average Ratio	< 13 dB		PASS
2.1046	Conducted Output Power	N/A		PASS
2.1055, 27.54	Frequency stability / variation of ambient temperature	< 2.5 ppm		PASS
27.50(b)(3),(c)(3)	Effective Radiated Power (Band 13, 17)	< 3 Watts max. ERP	RADIATED	PASS
27.50(d)(4)	Equivalent Isotropic Radiated Powe (Band 4)	< 1 Watts max. EIRP		PASS
				PASS
2.1053, 27.53(h), 27.53(g)	Undesirable Out-of-Band Emissions	< 43 +10 $\log_{10}$ (P[Watts]) for all out-of-band emissions		PASS
2.1053,27.53(e)	Undesirable Emissions in the 1559 – 1610 MHz band	< -40dBm/MHz EIRP (wideband) < -50dBm EIRP (narrowband)		PASS

6. SAMPLE CALCULATION

A. ERP Sample Calculation

Mode	Ch./ Freq.		Measured Level(dBm)	Substitude LEVEL(dBm)	Ant. Gain (dBd)	C.L	Pol.	ERP	
	channel	Freq.(MHz)						W	dBm
LTE	23230	782	-10.59	37.59	-10.52	1.53	H	0.358	25.54

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

1) The EUT mounted on a wooden tripod is 0.8 meter above test site ground level.
2) During the test , the turn table is rotated and the antenna height is also varied from 1 to 4 meters 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 (**ERP**).

B. Emission Designator

QPSK Modulation

Emission Designator = 8M95G7D

LTE BW = 8.95 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Amplitude/Angle Modulated

16QAM Modulation

Emission Designator = 8M94W7D

LTE BW = 8.94 MHz

D = Amplitude/Angle Modulated

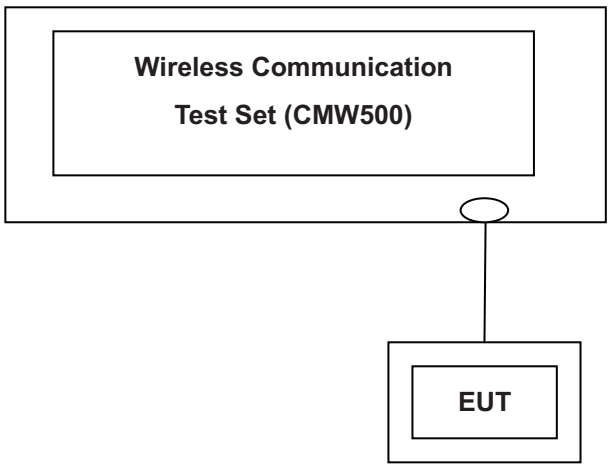
7 = Quantized/Digital Info

W = Combination (Audio/Data)

7. TEST DATA

7.1 CONDUCTED OUTPUT POWER

A base station simulator was used to establish communication with the EUT. The base station simulator parameters were set to produce the maximum power from the EUT. This device was tested under all configurations and the highest power is reported. Conducted Output Powers of EUT are reported below.



Test Result

Band	Band Width (MHz)	Frequency (MHz)	Channel	Resource Block Size	Resource Block Offset	Average Power [dBm]	
						QPSK	16-QAM
Band 4	5	1712.5	19975	1	0	23.00	21.77
				1	24	22.90	21.63
				12	6	21.82	20.82
				25	0	21.82	20.91
		1732.5	20175	1	0	22.81	21.56
				1	24	22.94	21.64
				12	6	21.72	20.58
				25	0	21.66	20.67
		1752.5	20375	1	0	22.60	21.35
				1	24	22.71	21.53
				12	6	21.73	20.61
				25	0	21.70	20.64

LTE Conducted Average Output Powers (5 MHz Band 4 LTE)

Band	Band Width (MHz)	Frequency (MHz)	Channel	Resource Block Size	Resource Block Offset	Average Power [dBm]	
						QPSK	16-QAM
Band 4	10	1715.0	20000	1	0	23.00	22.01
				1	49	22.79	21.81
				25	12	21.88	20.93
				50	0	21.76	20.86
		1732.5	20175	1	0	22.88	21.66
				1	49	22.60	21.40
				25	12	21.77	20.79
				50	0	21.74	20.69
		1750.0	20350	1	0	22.71	21.48
				1	49	22.66	21.46
				25	12	21.56	20.56
				50	0	21.52	20.54

LTE Conducted Average Output Powers (10 MHz Band 4 LTE)

Band	Band Width (MHz)	Frequency (MHz)	Channel	Resource Block Size	Resource Block Offset	Average Power [dBm]	
						QPSK	16-QAM
Band 17	5	706.5	23755	1	0	23.35	22.20
				1	24	23.20	22.00
				12	6	22.03	20.88
				25	0	21.93	20.88
		710.0	23790	1	0	23.18	21.93
				1	24	23.04	21.84
				12	6	22.06	20.99
				25	0	21.85	20.89
		713.5	23825	1	0	22.92	22.03
				1	24	23.07	22.25
				12	6	21.99	21.02
				25	0	21.91	20.86

LTE Conducted Average Output Powers (5 MHz Band 17 LTE)

Band	Band Width (MHz)	Frequency (MHz)	Channel	Resource Block Size	Resource Block Offset	Average Power [dBm]	
						QPSK	16-QAM
Band 17	10	709.0	23780	1	0	23.12	22.14
				1	49	22.90	21.92
				25	12	21.87	20.88
				50	0	21.74	20.68
		710.0	23790	1	0	23.08	22.10
				1	49	23.06	22.17
				25	12	21.79	20.84
				50	0	21.81	20.76
		711.0	23800	1	0	23.12	21.90
				1	49	23.12	22.05
				25	12	21.80	20.84
				50	0	21.73	20.72

LTE Conducted Average Output Powers (10 MHz Band 17 LTE)

Band	Band Width (MHz)	Frequency (MHz)	Channel	Resource Block Size	Resource Block Offset	Average Power [dBm]	
						QPSK	16-QAM
Band 13	10	782.0	23230	1	0	22.85	21.90
				1	49	22.96	21.97
				25	12	22.03	21.14
				50	0	21.77	20.86

LTE Conducted Average Output Powers (10 MHz Band 13 LTE)

Note : Detecting mode is average.

7.2 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Band 4	5 MHz	1732.5	QPSK	25	0	6.83
			16-QAM	25	0	8.32
	10 MHz	1732.5	QPSK	50	0	6.87
			16-QAM	50	0	8.13

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Band 17	5 MHz	710.0	QPSK	25	0	7.50
			16-QAM	25	0	9.00
	10 MHz	710.0	QPSK	50	0	7.80
			16-QAM	50	0	8.89

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Band 13	10 MHz	782.0	QPSK	50	0	9.00
			16-QAM	50	0	9.00

- Plots of the EUT's Peak- to- Average Ratio are shown Page 40 ~ 44

7.3 OCCUPIED BANDWIDTH

Band	Band Width (MHz)	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Band 4	5	1732.5	QPSK	25	0	4.5089
			16-QAM	25	0	4.4930
	10	1732.5	QPSK	50	0	8.9740
			16-QAM	50	0	8.9609

Band	Band Width (MHz)	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Band 17	5	710.0	QPSK	25	0	4.5144
			16-QAM	25	0	4.4949
	10	710.0	QPSK	50	0	8.9844
			16-QAM	50	0	8.9792

Band	Band Width (MHz)	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Band 13	10	782	QPSK	50	0	8.9983
			16-QAM	50	0	9.0038

- Plots of the EUT's Occupied Bandwidth are shown Page 35 ~ 39

7.4 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Frequency of Maximum Harmonic (GHz)	Maximum Data [dBm]
Band 4	5	1712.5	QPSK	1	0	3.4213	-33.142
		1732.5		1	24	3.4697	-33.559
		1752.5		1	24	3.5101	-36.310
	10	1715.0		1	0	3.4213	-33.239
		1732.5		1	0	3.4556	-35.478
		1750.0		1	0	3.4919	-32.769

Band	Band Width (MHz)	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Frequency of Maximum Harmonic (GHz)	Maximum Data [dBm]
Band 17	5	706.5	QPSK	1	0	2.1132	-32.917
		710.0		1	0	19.5056	-36.405
		713.5		1	24	2.1475	-33.933
	10	709.0		1	0	19.1308	-36.691
		710.0		1	0	19.0001	-36.716
		711.0		1	0	1.4128	-37.016

Band	Band Width (MHz)	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Frequency of Maximum Harmonic (GHz)	Maximum Data [dBm]
Band 13	10	782	QPSK	1	0	2.3333	-37.821

- Plots of the EUT's Conducted Spurious Emissions are shown Page 61 ~ 73

7.4.1 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 45 ~ 60

7.5 EFFECTIVE RADIATED POWER OUTPUT

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
706.5	5 MHz	QPSK	-10.64	37.91	-10.12	1.44	H	0.432	26.35
		16-QAM	-10.41	38.14	-10.12	1.44	H	0.455	26.58
710.0		QPSK	-10.68	37.87	-10.12	1.44	H	0.428	26.31
		16-QAM	-10.45	38.10	-10.12	1.44	H	0.451	26.54
713.5		QPSK	-10.73	37.82	-10.12	1.44	H	0.423	26.26
		16-QAM	-10.56	37.99	-10.12	1.44	H	0.440	26.43

Effective Radiated Power Data (Band 17 – 5 MHz)

Note: Worst case is 1 resource block.

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
709.0	10 MHz	QPSK	-10.50	38.05	-10.12	1.44	H	0.446	26.49
		16-QAM	-10.98	37.57	-10.12	1.44	H	0.399	26.01
710.0		QPSK	-10.62	37.93	-10.12	1.44	H	0.434	26.37
		16-QAM	-10.58	37.97	-10.12	1.44	H	0.438	26.41
711.0		QPSK	-10.74	37.81	-10.12	1.44	H	0.422	26.25
		16-QAM	-10.57	37.98	-10.12	1.44	H	0.439	26.42

Effective Radiated Power Data (Band 17 – 10 MHz)

Note: Worst case is 1 resource block.

NOTES:

Effective Radiated Power Output Measurements by Substitution Method

according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For 1 MHz BW signals, a peak detector is used, with RBW = VBW = 1 MHz. For 10 MHz BW signals, a peak detector is used, with RBW = VBW = 10 MHz. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the dipole is measured. The ERP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is z plane in LTE mode. Also worst case of detecting Antenna is horizontal polarization in LTE mode.

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
782.0	10 MHz	QPSK	-10.59	37.59	-10.52	1.53	V	0.358	25.54
		16-QAM	-10.43	37.75	-10.52	1.53	V	0.372	25.70

Effective Radiated Power Data (Band 13 – 10 MHz)

Note: Worst case is 1 resource block.

NOTES:

Effective Radiated Power Output Measurements by Substitution Method

according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For 1 MHz BW signals, a peak detector is used, with RBW = VBW = 1 MHz. For 10 MHz BW signals, a peak detector is used, with RBW = VBW = 10 MHz. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the dipole is measured. The ERP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is y plane in LTE mode. Also worst case of detecting Antenna is vertical polarization in LTE mode.

7.6 EQUIVALENT ISOTROPIC RADIATED POWER OUTPUT

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1712.5	5 MHz	QPSK	-12.90	18.85	10.03	1.71	H	0.521	27.17
		16-QAM	-12.65	19.10	10.03	1.71	H	0.552	27.42
1732.5		QPSK	-12.92	18.80	10.06	1.73	H	0.516	27.13
		16-QAM	-12.52	19.20	10.06	1.73	H	0.566	27.53
1752.5		QPSK	-12.52	19.21	10.10	1.73	H	0.573	27.58
		16-QAM	-12.06	19.67	10.10	1.73	H	0.637	28.04

Effective Radiated Power Data (Band 4 – 5 MHz)

Note: Worst case is 1 resource block.

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1715.0	10 MHz	QPSK	-12.86	18.89	10.03	1.71	H	0.526	27.21
		16-QAM	-12.72	19.03	10.03	1.71	H	0.543	27.35
1732.5		QPSK	-13.15	18.57	10.06	1.73	H	0.490	26.90
		16-QAM	-12.92	18.80	10.06	1.73	H	0.516	27.13
1750.0		QPSK	-12.72	19.01	10.10	1.73	H	0.547	27.38
		16-QAM	-11.83	19.90	10.10	1.73	H	0.671	28.27

Effective Radiated Power Data (Band 4 – 10 MHz)

Note: Worst case is 1 resource block.

NOTES:

Effective Radiated Power Output Measurements by Substitution Method

according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For 1 MHz BW signals, a peak detector is used, with RBW = VBW = 1 MHz. For 10 MHz BW signals, a peak detector is used, with RBW = VBW = 10 MHz. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the Horn antenna is measured. The difference between the gain of the horn and an isotropic antenna is taken into consideration and the EIRP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is z plane in LTE mode. Also worst case of detecting Antenna is horizontal polarization in LTE mode.

7.7 RADIATED SPURIOUS EMISSIONS

7.7.1 RADIATED SPURIOUS EMISSIONS (Band 4)

- ▣ OPERATING FREQUENCY : 1732.50 MHz
- ▣ MEASURED OUTPUT POWER: 28.04 dBm = 0.637W
- ▣ MODULATION SIGNAL: 5 MHz 16-QAM
- ▣ DISTANCE: 3 meters
- ▣ LIMIT: - (43 + 10 lo_{g10} (W) = - 41.04 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
20000 (1712.50)	3425.0	-21.23	12.16	-27.80	2.52	H	-18.16	-46.20
	5137.5	-26.57	12.61	-25.54	3.07	V	-16.00	-44.04
	6850.0	-53.72	11.61	-42.73	3.61	V	-34.73	-62.77
20175 (1732.50)	3465.0	-28.55	12.24	-35.02	2.49	H	-25.27	-53.31
	5197.5	-34.26	12.68	-33.37	3.16	H	-23.85	-51.89
	6930.0	-52.69	11.52	-41.69	3.68	H	-33.85	-61.89
20350 (1752.50)	3505.0	-32.32	12.34	-38.34	2.53	V	-28.53	-56.57
	5257.5	-36.00	12.74	-35.63	3.15	V	-26.04	-54.08
	7010.0	-54.89	11.44	-43.96	3.20	V	-35.72	-63.76

NOTES: 1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

2. The magnitude of spurious emissions attenuated more than 20dB below the limit above 5th Harmonic for all channel.

3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

4. Worst case is 1 resource block.

▣ OPERATING FREQUENCY : 1732.50 MHz

▣ MEASURED OUTPUT POWER: 28.27 dBm = 0.671W

▣ MODULATION SIGNAL: 10 MHz 16-QAM

▣ DISTANCE: 3 meters

▣ LIMIT: - (43 + 10 lo_{g10} (W) = - 41.27 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
20000 (1715.00)	3430.00	-20.42	12.16	-26.99	2.52	H	-17.35	-45.62
	5145.00	-27.70	12.61	-26.67	3.07	H	-17.13	-45.40
	6860.00	-53.00	11.61	-42.01	3.61	V	-34.01	-62.28
20175 (1732.50)	3465.00	-26.84	12.24	-33.31	2.49	H	-23.56	-51.83
	5197.50	-33.80	12.68	-32.91	3.16	H	-23.39	-51.66
	6930.00	-51.90	11.52	-40.90	3.68	V	-33.06	-61.33
20350 (1750.00)	3500.00	-32.19	12.34	-38.21	2.53	H	-28.40	-56.67
	5250.00	-36.14	12.74	-35.77	3.15	H	-26.18	-54.45
	7000.00	-54.92	11.44	-43.99	3.20	H	-35.75	-64.02

NOTES: 1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

2. The magnitude of spurious emissions attenuated more than 20dB below the limit above 5th Harmonic for all channel.

3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

4. Worst case is 1 resource block.

7.7.2 RADIATED SPURIOUS EMISSIONS (Band 17)

- ▣ OPERATING FREQUENCY : 706.50 MHz
- ▣ MEASURED OUTPUT POWER: 26.58 dBm = 0.455W
- ▣ MODULATION SIGNAL: 5 MHz 16-QAM
- ▣ DISTANCE: 3 meters
- ▣ LIMIT: - (43 + 10 lo_{g10} (W)) = - 39.58 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
23755 (706.50)	1413.00	-45.70	5.54	-52.49	2.44	H	-49.39	-75.74
	2119.50	-54.05	8.46	-61.10	3.24	H	-55.88	-82.23
	2826.00	-56.02	8.84	-60.01	3.72	V	-54.89	-81.24
23790 (710.00)	1420.00	-48.91	5.54	-55.70	2.44	H	-52.60	-79.18
	2130.00	-50.93	8.46	-57.98	3.24	H	-52.76	-79.34
	2840.00	-	-	-	-	-	-	-
23825 (713.50)	1427.00	-46.99	5.54	-53.78	2.44	H	-50.68	-77.03
	2140.50	-39.53	8.46	-46.58	3.24	H	-41.36	-67.71
	2854.00	-55.50	8.84	-59.49	3.72	V	-54.37	-80.72

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
2. The magnitude of spurious emissions attenuated more than 20dB below the limit above 5th Harmonic for all channel.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. Worst case is 1 resource block.

▣ OPERATING FREQUENCY : 710.00 MHz

▣ MEASURED OUTPUT POWER: 26.49 dBm = 0.446W

▣ MODULATION SIGNAL: 10 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: - (43 + 10 $\log_{10}$ (W)) = - 39.49 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
23780 (709.00)	1418.00	-46.98	5.54	-53.77	2.44	H	-50.67	-77.02
	2127.00	-53.24	8.46	-60.29	3.24	V	-55.07	-81.42
	2836.00	-56.12	8.84	-60.11	3.72	H	-54.99	-81.34
23790 (710.00)	1420.00	-51.05	5.54	-57.84	2.44	H	-54.74	-81.09
	2130.00	-53.19	8.46	-60.24	3.24	V	-55.02	-81.37
	2840.00	-	-	-	-	-	-	-
23800 (711.00)	1422.00	-49.87	5.54	-56.66	2.44	H	-53.56	-79.91
	2133.00	-52.92	8.46	-59.97	3.24	V	-54.75	-81.10
	2844.00	-	-	-	-	-	-	-

NOTES: 1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

2. The magnitude of spurious emissions attenuated more than 20dB below the limit above 5th Harmonic for all channel.

3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

4. Worst case is 1 resource block.

7.7.3 RADIATED SPURIOUS EMISSIONS (Band 13)

- ▣ OPERATING FREQUENCY : 782.00 MHz
- ▣ MEASURED OUTPUT POWER: 25.70 dBm = 0.372 W
- ▣ MODULATION SIGNAL: 10 MHz 16-QAM
- ▣ DISTANCE: 3 meters
- ▣ LIMIT: - (43 + 10 log_{10} (W)) = - 38.70 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
23230 (782.00)	2346.00	-55.46	8.42	-60.90	2.14	V	-54.62	-80.32
	3128.00	-56.31	9.26	-61.27	2.37	V	-54.38	-80.08
	3910.00	-	-	-	-	-	-	-

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
2. The magnitude of spurious emissions attenuated more than 20dB below the limit above 5th Harmonic for all channel.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. Worst case is 1 resource block.

7.7.3.1 RADIATED SPURIOUS EMISSIONS (1559 ~ 1610 MHz Band)

- ▣ OPERATING FREQUENCY : 782.00 MHz
- ▣ MODULATION SIGNAL: 10 MHz QPSK
- ▣ DISTANCE: 3 meters
- ▣ WIDEBAND EMISSION LIMIT: - 40 dBm/MHz

FREQUENCY (MHz)	EMISSION TYPE	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	MARGIN (dB)
1578.4	WIDEBAND	-44.15	6.76	-52.65	1.71	H	-47.60	-73.30

7.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

7.8.1 FREQUENCY STABILITY (LTE Band 4)

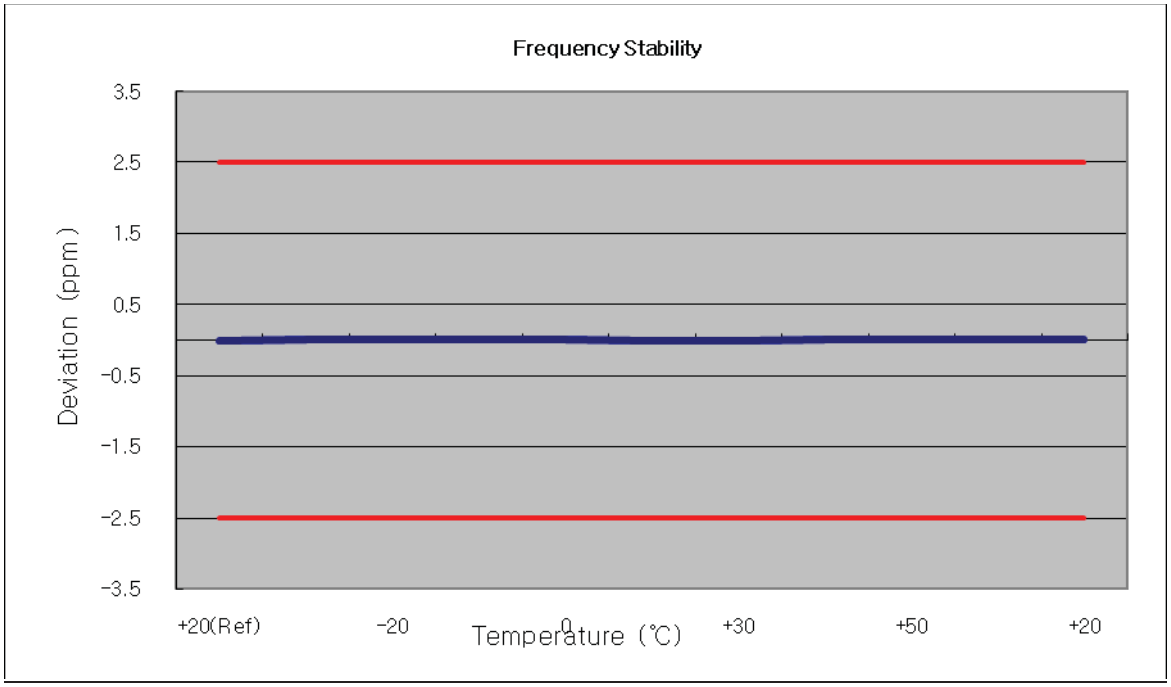
▣ OPERATING FREQUENCY: 1732,500,000 Hz

▣ CHANNEL: 20175 (5 MHz)

▣ REFERENCE VOLTAGE: 12.0 VDC

▣ DEVIATION LIM IT: ± 0.000 25 % or 2.5 ppm

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.0	+20(Ref)	1732 499 996	0	0.000 000	0.000
100%		−30	1732 499 998	2.70	0.000 000	0.002
100%		−20	1732 499 999	2.96	0.000 000	0.002
100%		−10	1732 499 996	0.17	0.000 000	0.000
100%		0	1732 500 000	3.88	0.000 000	0.002
100%		+10	1732 499 993	−2.99	0.000 000	−0.002
100%		+30	1732 499 995	−1.06	0.000 000	−0.001
100%		+40	1732 500 001	5.59	0.000 000	0.003
100%		+50	1732 500 000	3.91	0.000 000	0.002
115%	13.8	+20	1732 500 002	6.35	0.000 000	0.004
85%	10.2	+20	1732 499 999	3.12	0.000 000	0.002



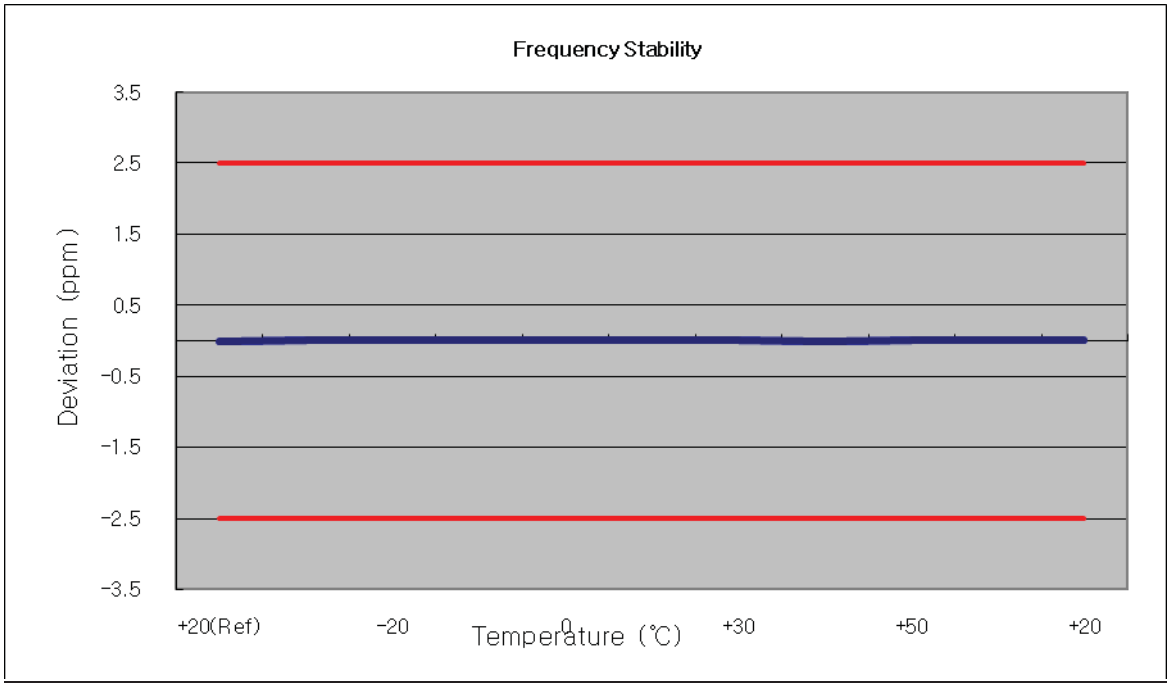
▣ OPERATING FREQUENCY: 1732,500,000 Hz

▣ CHANNEL: 20175 (10 MHz)

▣ REFERENCE VOLTAGE: 12.0 VDC

▣ DEVIATION LIM IT: ± 0.000 25 % or 2.5 ppm

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.0	+20(Ref)	1732 499 997	0	0.000 000	0.000
100%		-30	1732 500 000	2.62	0.000 000	0.002
100%		-20	1732 500 004	7.37	0.000 000	0.004
100%		-10	1732 499 998	0.56	0.000 000	0.000
100%		0	1732 500 003	6.31	0.000 000	0.004
100%		+10	1732 500 002	4.48	0.000 000	0.003
100%		+30	1732 500 003	6.15	0.000 000	0.004
100%		+40	1732 499 997	-0.33	0.000 000	0.000
100%		+50	1732 500 005	7.72	0.000 000	0.004
115%	13.8	+20	1732 500 001	4.42	0.000 000	0.003
85%	10.2	+20	1732 499 999	1.72	0.000 000	0.001



7.8.2 FREQUENCY STABILITY (LTE Band 17)

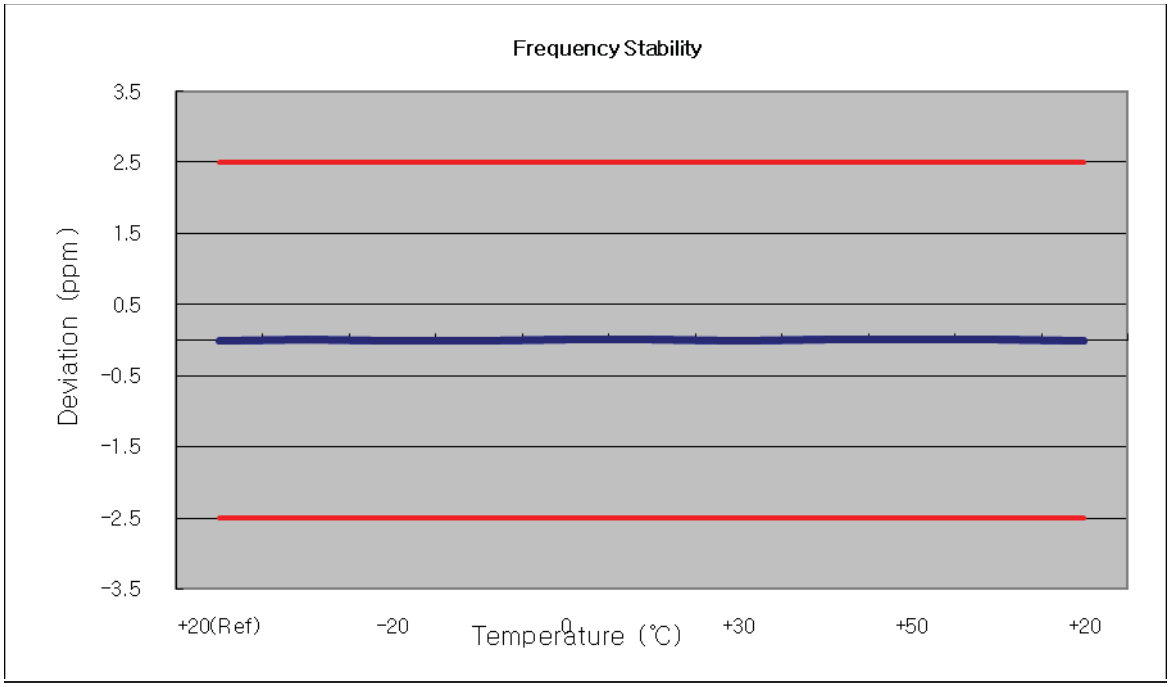
▣ OPERATING FREQUENCY: 710,000,000 Hz

▣ CHANNEL: 23790 (5 MHz)

▣ REFERENCE VOLTAGE: 12.0 VDC

▣ DEVIATION LIM IT: ± 0.000 25 % or 2.5 ppm

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.0	+20(Ref)	710 000 001	0	0.000 000	0.000
100%		−30	710 000 002	1.24	0.000 000	0.002
100%		−20	710 000 000	−0.51	0.000 000	−0.001
100%		−10	709 999 999	−1.56	0.000 000	−0.002
100%		0	710 000 002	1.83	0.000 000	0.003
100%		+10	710 000 003	2.19	0.000 000	0.003
100%		+30	710 000 000	−0.20	0.000 000	0.000
100%		+40	710 000 001	0.20	0.000 000	0.000
100%		+50	710 000 001	0.62	0.000 000	0.001
115%	13.8	+20	710 000 002	1.17	0.000 000	0.002
85%	10.2	+20	709 999 999	−1.80	0.000 000	−0.003



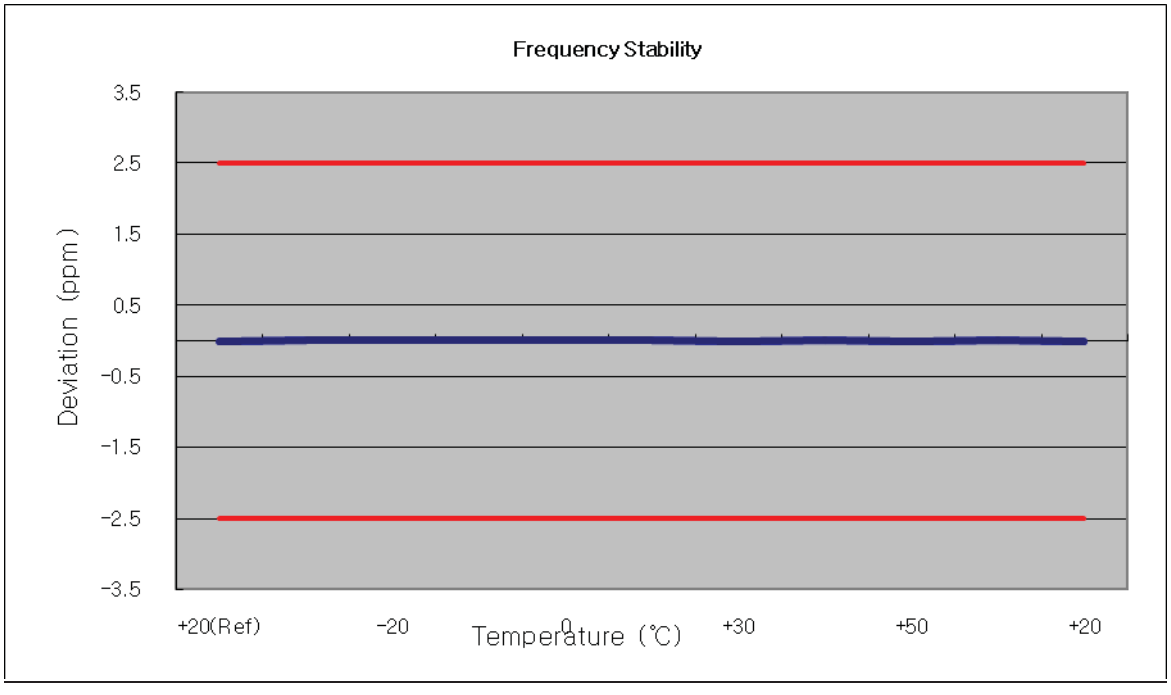
▣ OPERATING FREQUENCY: 710,000,000 Hz

▣ CHANNEL: 23790 (10 MHz)

▣ REFERENCE VOLTAGE: 12.0 VDC

▣ DEVIATION LIM IT: ± 0.000 25 % or 2.5 ppm

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.0	+20(Ref)	710 000 000	0	0.000 000	0.000
100%		−30	710 000 002	1.32	0.000 000	0.002
100%		−20	710 000 001	0.84	0.000 000	0.001
100%		−10	710 000 002	1.37	0.000 000	0.002
100%		0	710 000 002	2.10	0.000 000	0.003
100%		+10	710 000 001	0.33	0.000 000	0.000
100%		+30	709 999 999	−1.02	0.000 000	−0.001
100%		+40	710 000 004	4.15	0.000 001	0.006
100%		+50	709 999 998	−2.68	0.000 000	−0.004
115%	13.8	+20	710 000 003	2.82	0.000 000	0.004
85%	10.2	+20	709 999 997	−2.80	0.000 000	−0.004



7.8.3 FREQUENCY STABILITY (LTE Band 13)

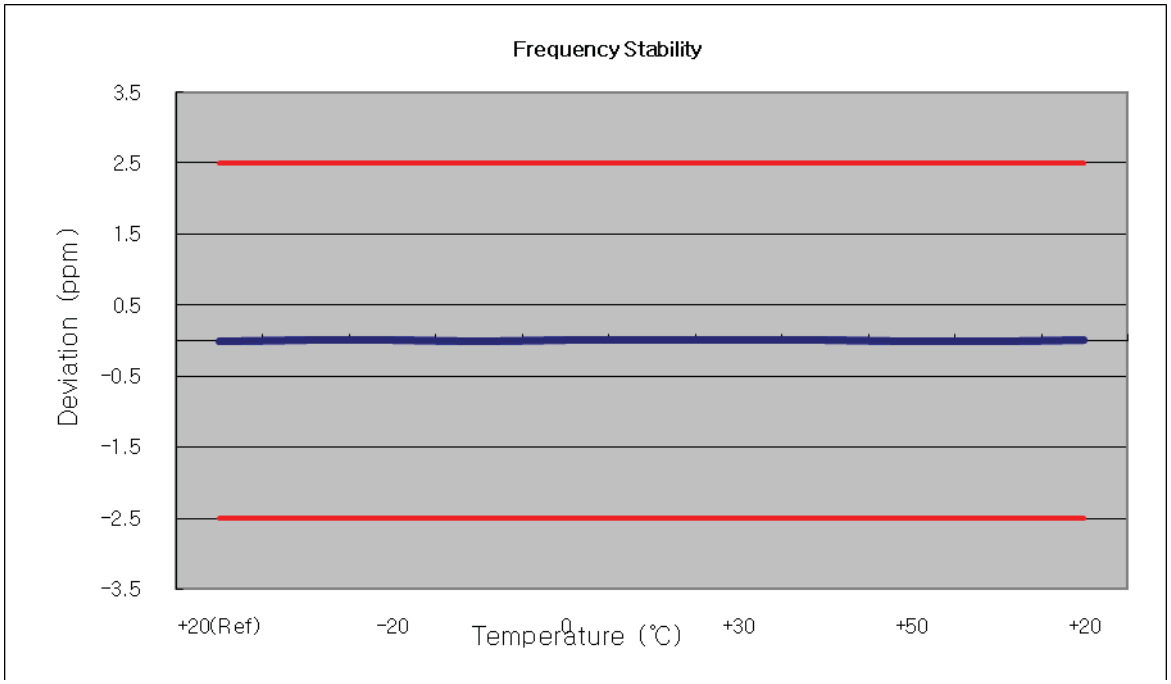
▣ OPERATING FREQUENCY: 782,000,000 Hz

▣ CHANNEL: 23230 (10 MHz)

▣ REFERENCE VOLTAGE: 12.0 VDC

▣ DEVIATION LIM IT: ± 0.000 25 % or 2.5 ppm

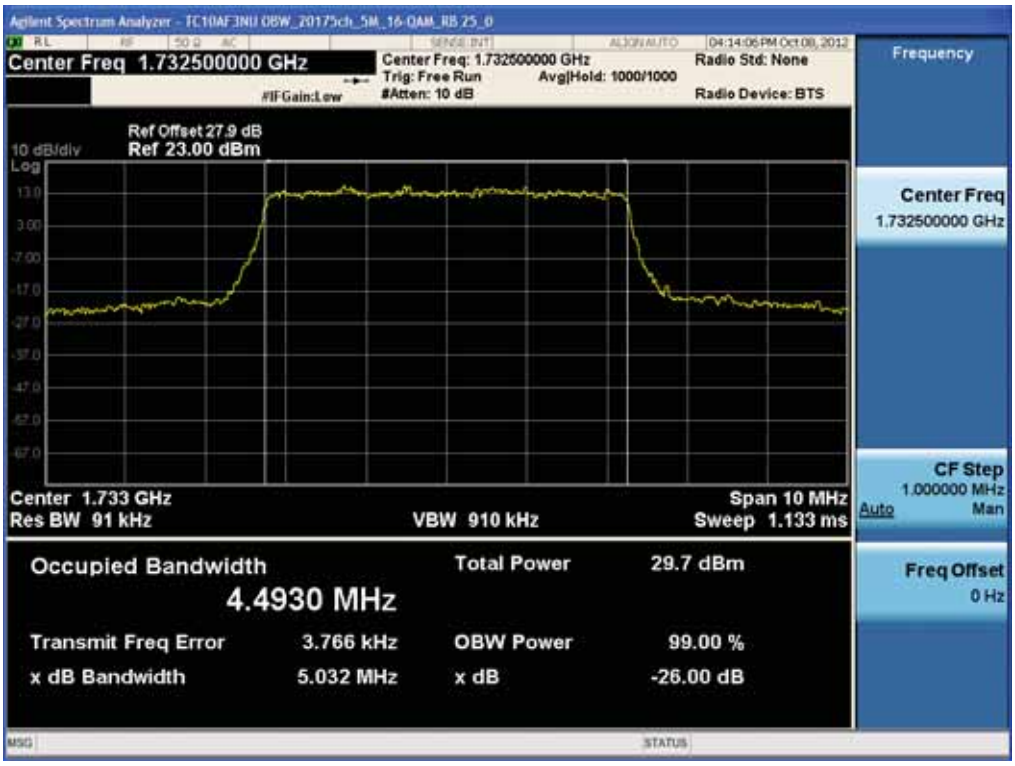
Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	12.0	+20(Ref)	782 000 001	0	0.000 000	0.000
100%		−30	782 000 001	0.63	0.000 000	0.001
100%		−20	782 000 002	1.60	0.000 000	0.002
100%		−10	781 999 999	−1.34	0.000 000	−0.002
100%		0	782 000 001	0.66	0.000 000	0.001
100%		+10	782 000 003	2.96	0.000 000	0.004
100%		+30	782 000 002	1.56	0.000 000	0.002
100%		+40	782 000 003	2.19	0.000 000	0.003
100%		+50	782 000 000	−0.34	0.000 000	0.000
115%	13.8	+20	781 999 997	−3.52	0.000 000	−0.005
85%	10.2	+20	782 000 001	0.38	0.000 000	0.000



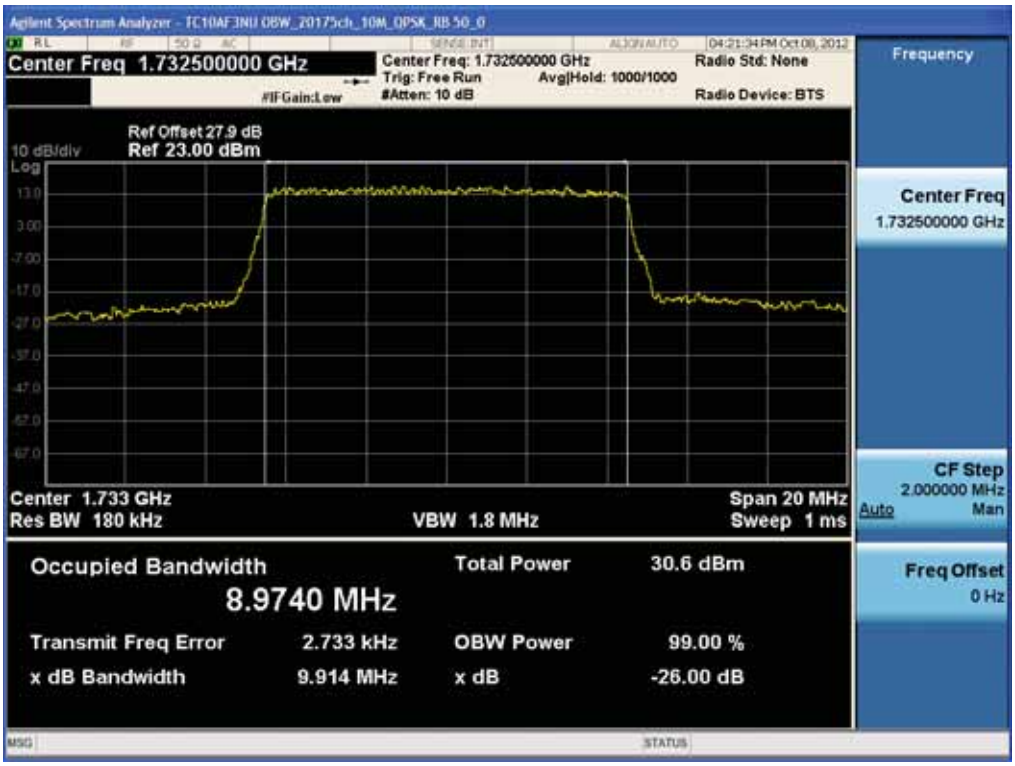
8. TEST PLOTS

BAND 4. Occupied Bandwidth Plot (20175ch_5MHz_QPSK_RB Size 25)

BAND 4. Occupied Bandwidth Plot (20175ch_5MHz_16-QAM_RB 25)

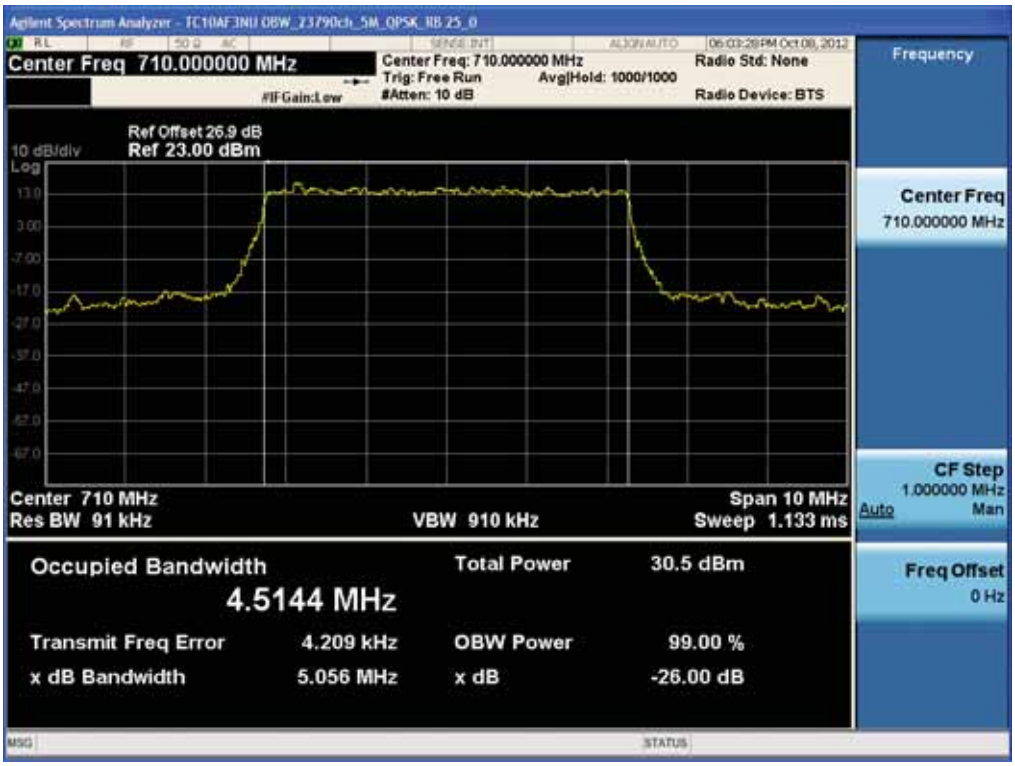


BAND 4. Occupied Bandwidth Plot (20175ch_10MHz_QPSK_RB 50)

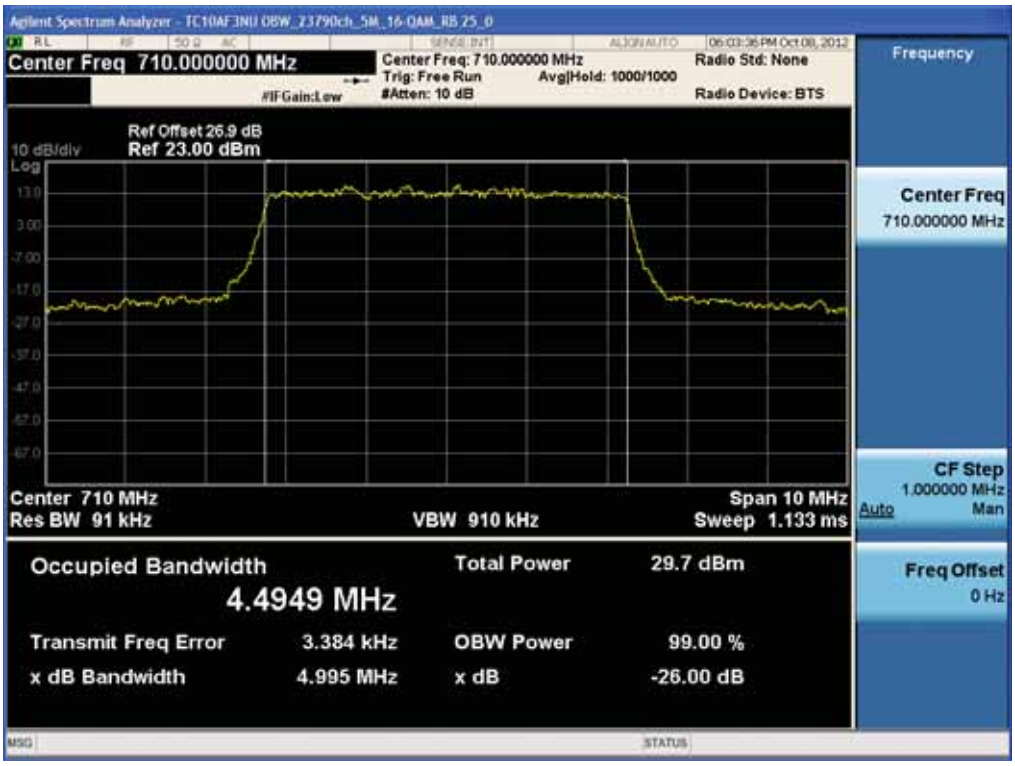


BAND 4. Occupied Bandwidth Plot (20175ch_10MHz_16-QAM_RB 50)

BAND 17. Occupied Bandwidth Plot (23790ch_5MHz_QPSK_RB 25)

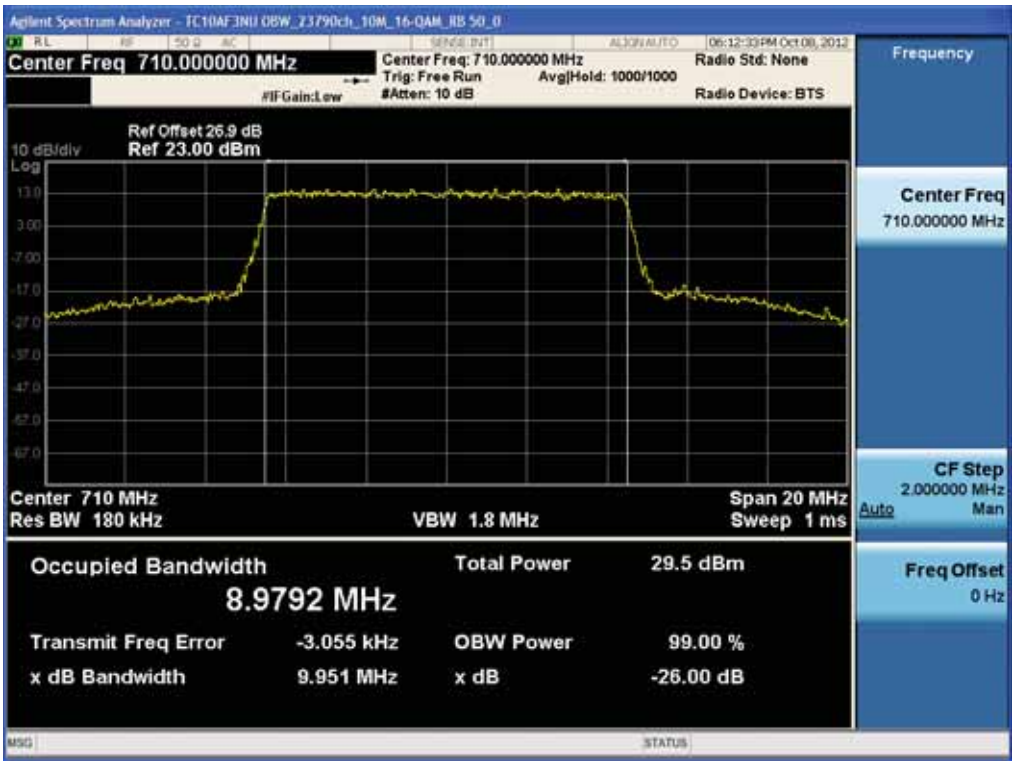


BAND 17. Occupied Bandwidth Plot (23790ch_5MHz_16-QAM_RB 25)



BAND 17. Occupied Bandwidth Plot (23790ch_10MHz_QPSK_RB 50)

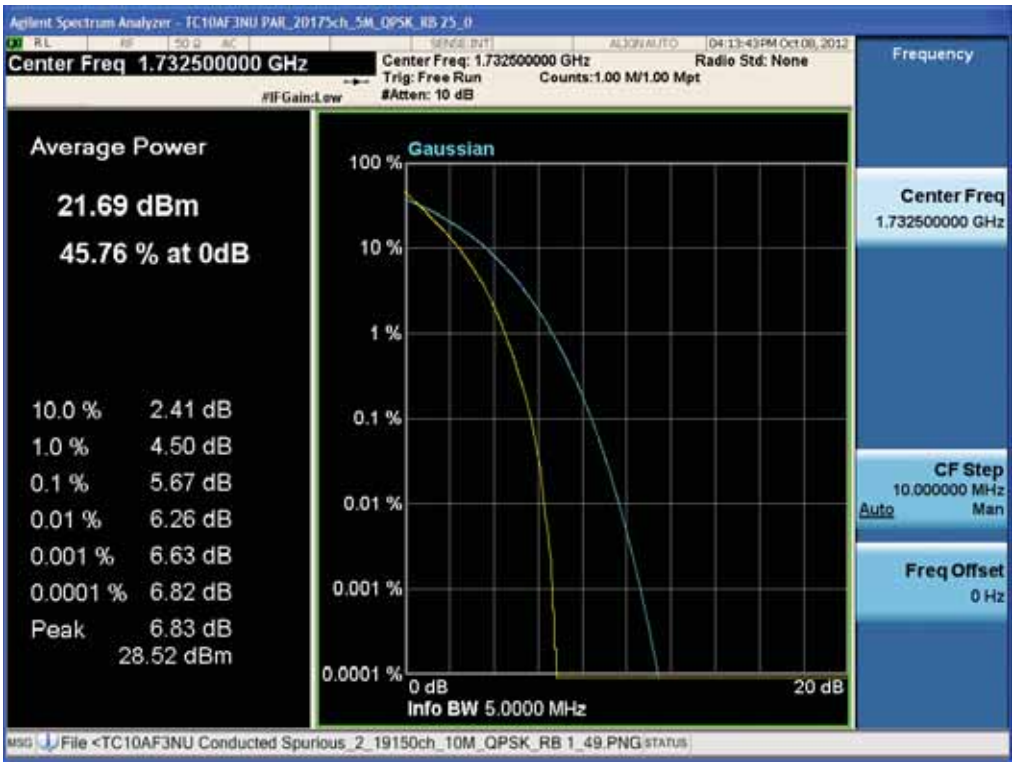
BAND 17. Occupied Bandwidth Plot (23790ch_10MHz_16-QAM_RB 50)



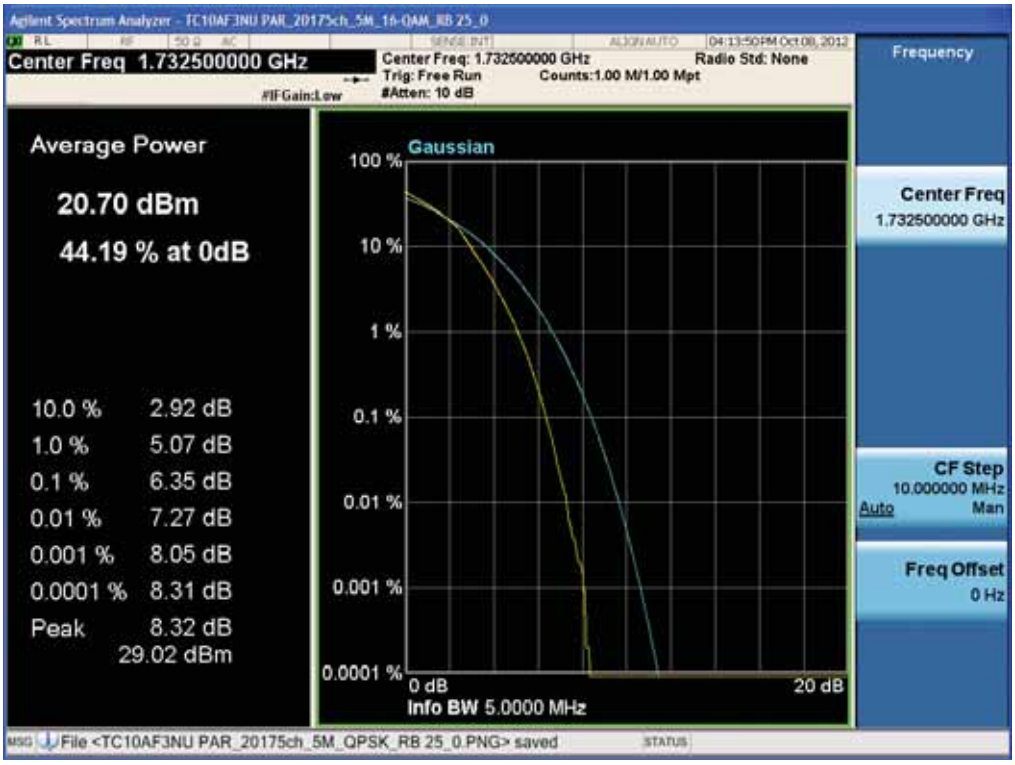
BAND 13. Occupied Bandwidth Plot (23230ch_10MHz_QPSK_RB 50)

BAND 13. Occupied Bandwidth Plot (23230ch_10MHz_16-QAM_RB 50)

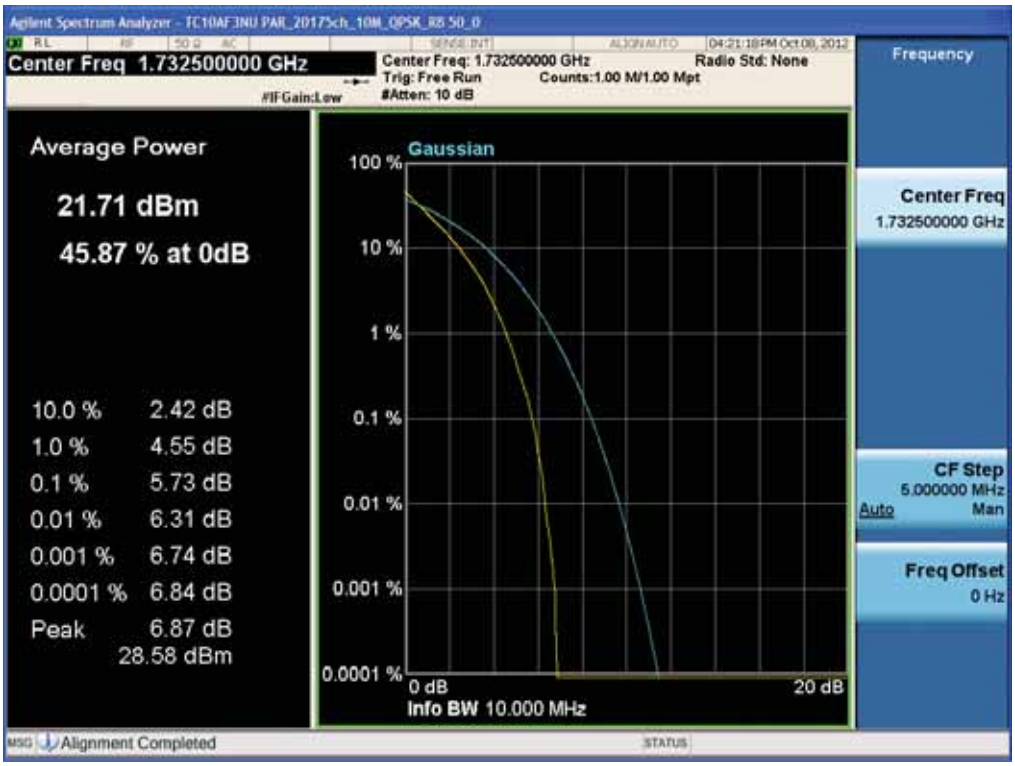
BAND 4. PAR Plot (20175ch_5MHz_QPSK_RB 25)



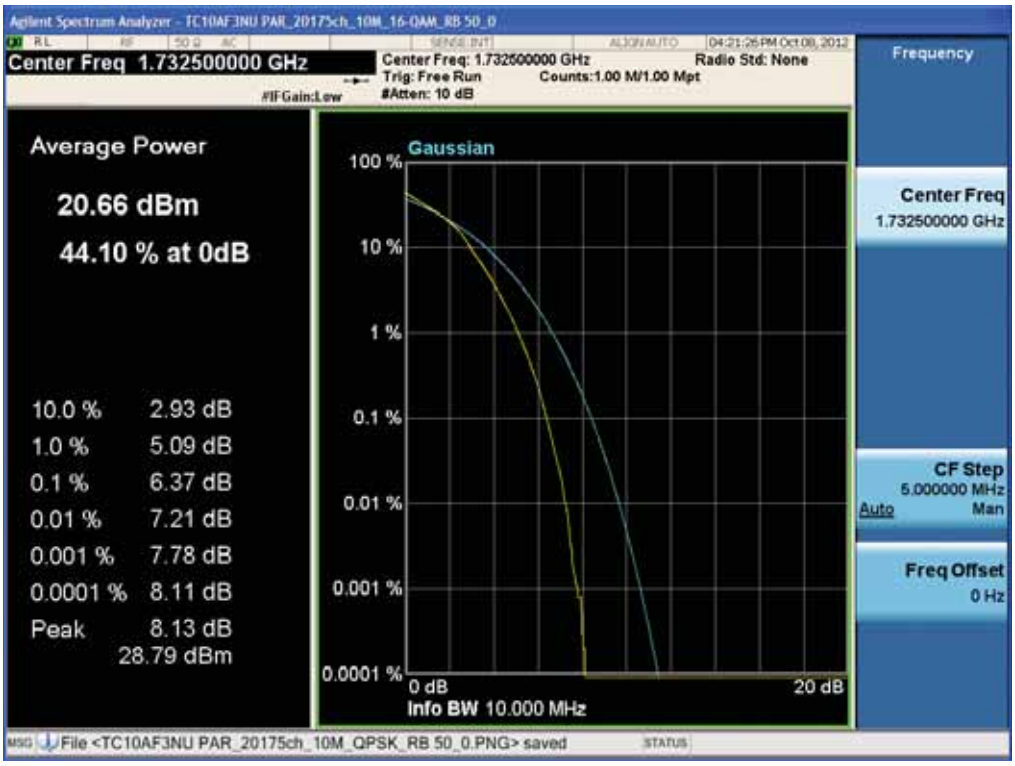
BAND 4. PAR Plot (20175ch_5MHz_16-QAM_RB 25)



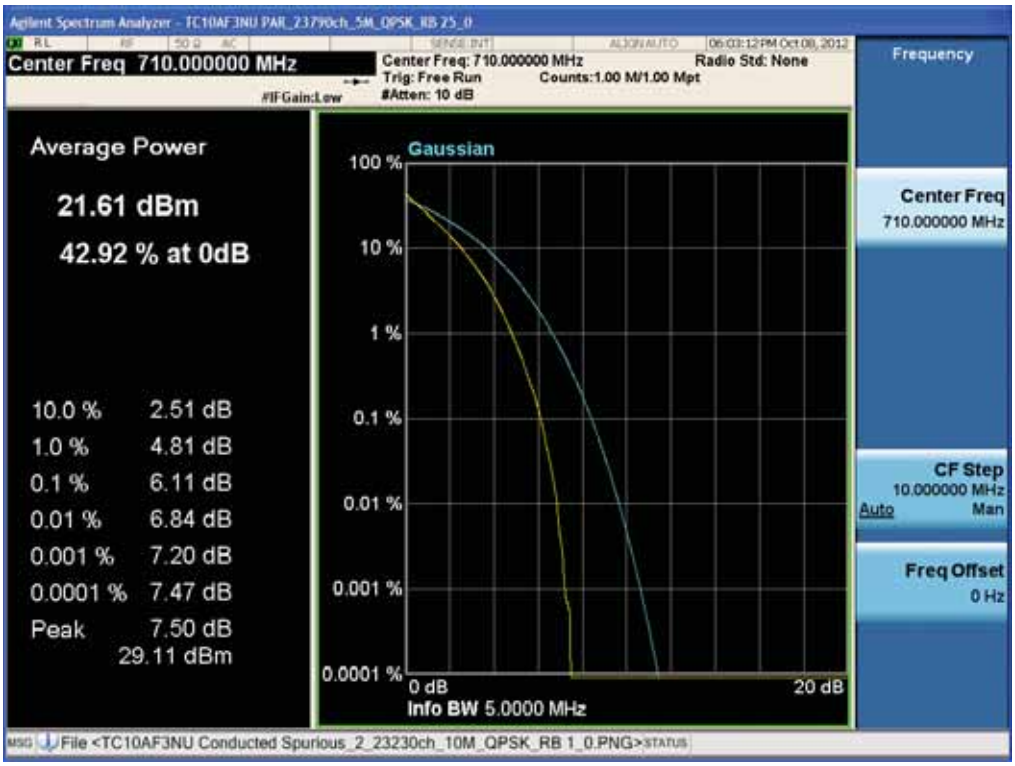
BAND 4. PAR Plot (20175ch_10MHz_QPSK_RB 50)



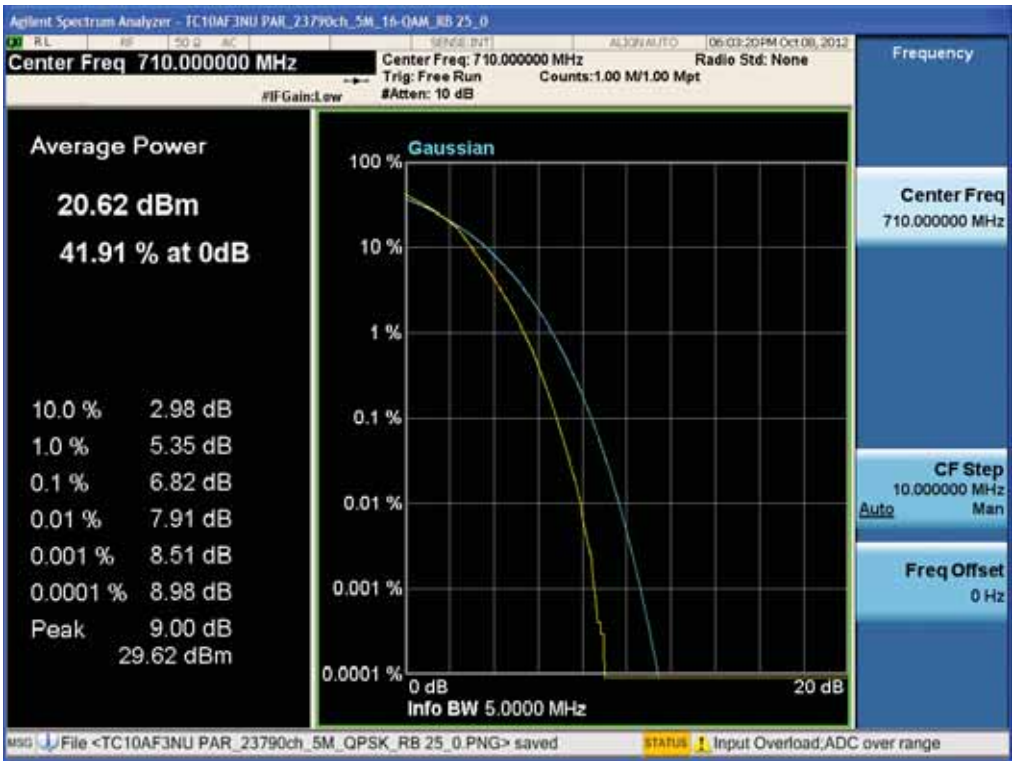
BAND 4. PAR Plot (20175ch_10MHz_16-QAM_RB 50)



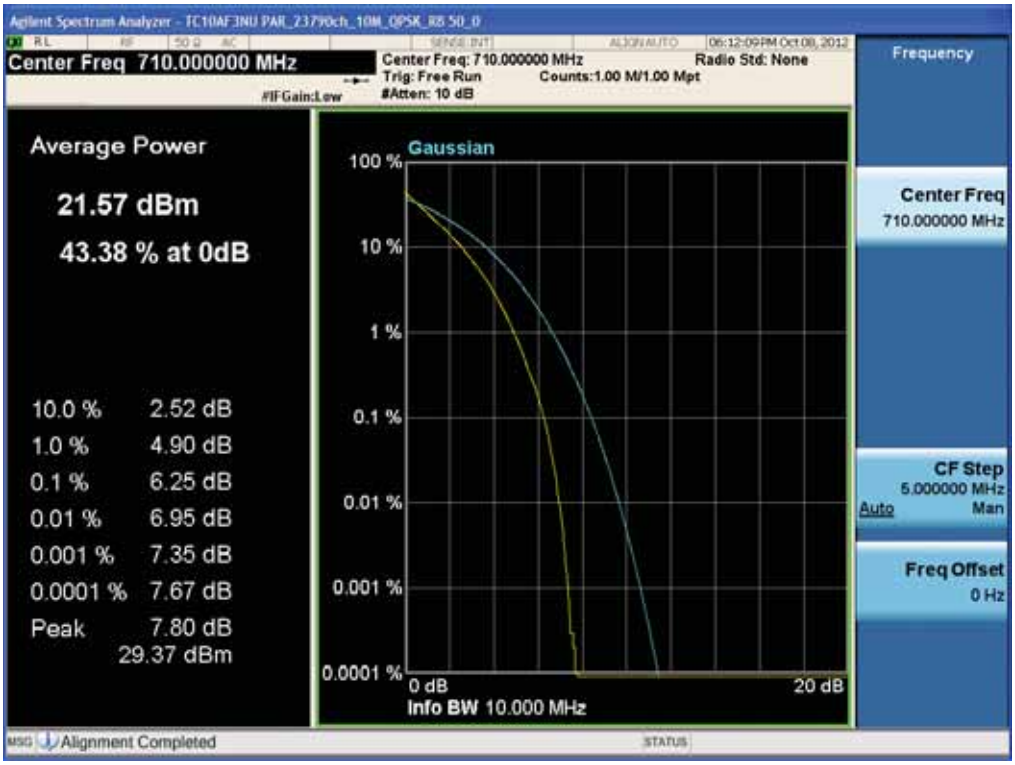
BAND 17. PAR Plot (23790ch_5MHz_QPSK_RB 25)



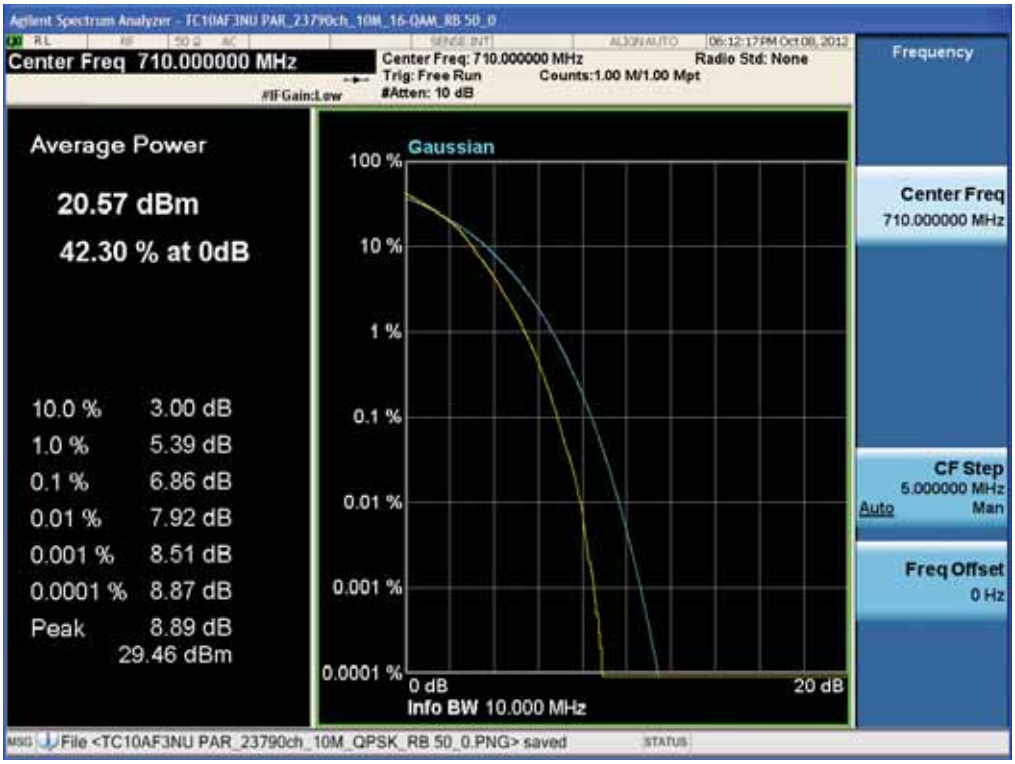
BAND 17. PAR Plot (23790ch_5MHz_16-QAM_RB 25)



BAND 17. PAR Plot (23790ch_10MHz_QPSK_RB 50)



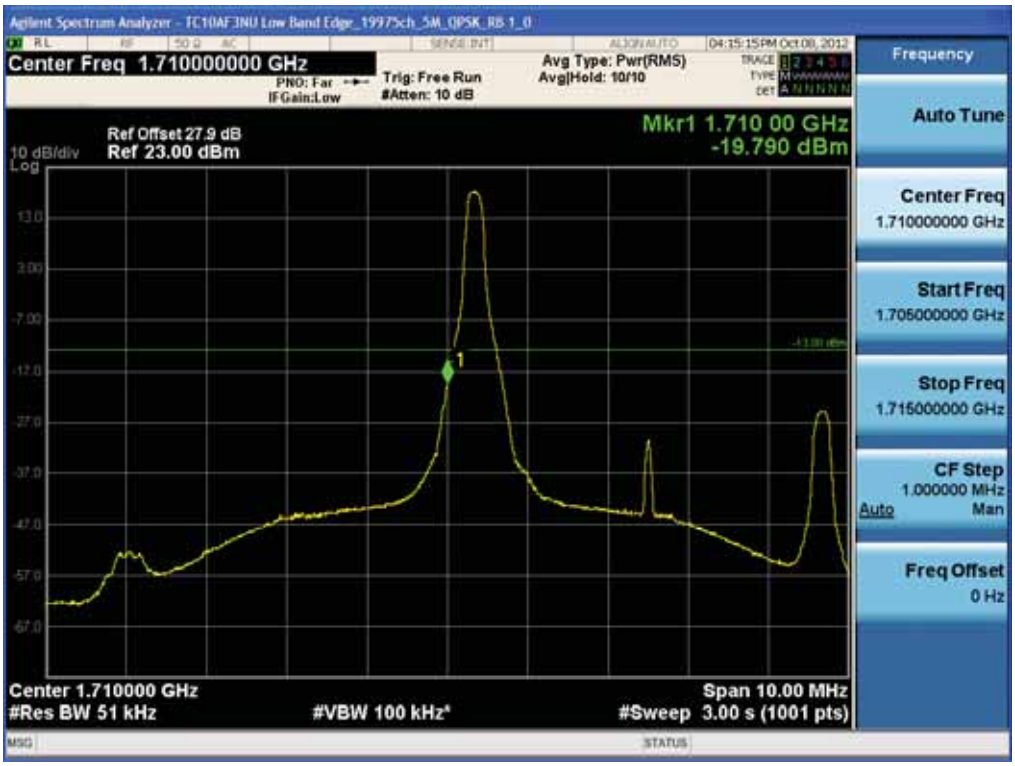
BAND 17. PAR Plot (23790ch_10MHz_16-QAM_RB 50)



BAND 13. PAR Plot (23230ch_10MHz_QPSK_RB 50)

BAND 13. PAR Plot (23230ch_10MHz_16-QAM_RB 50)

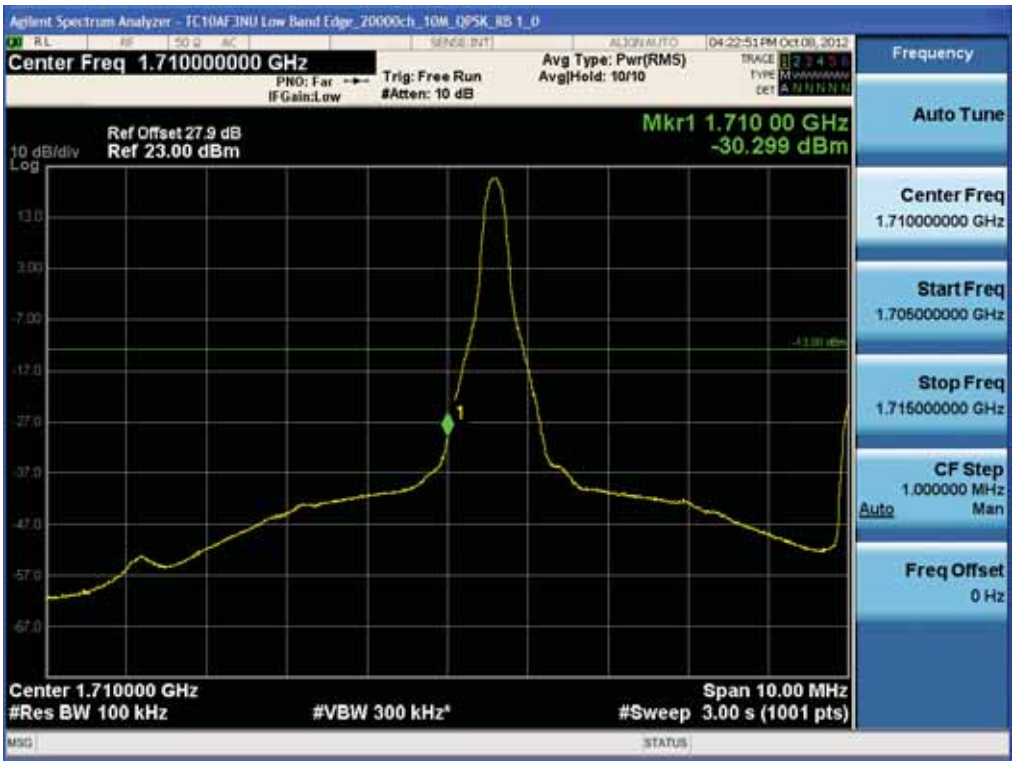
BAND 4. Low Band Edge Plot (19975ch_5MHz_QPSK_RB 1_0)



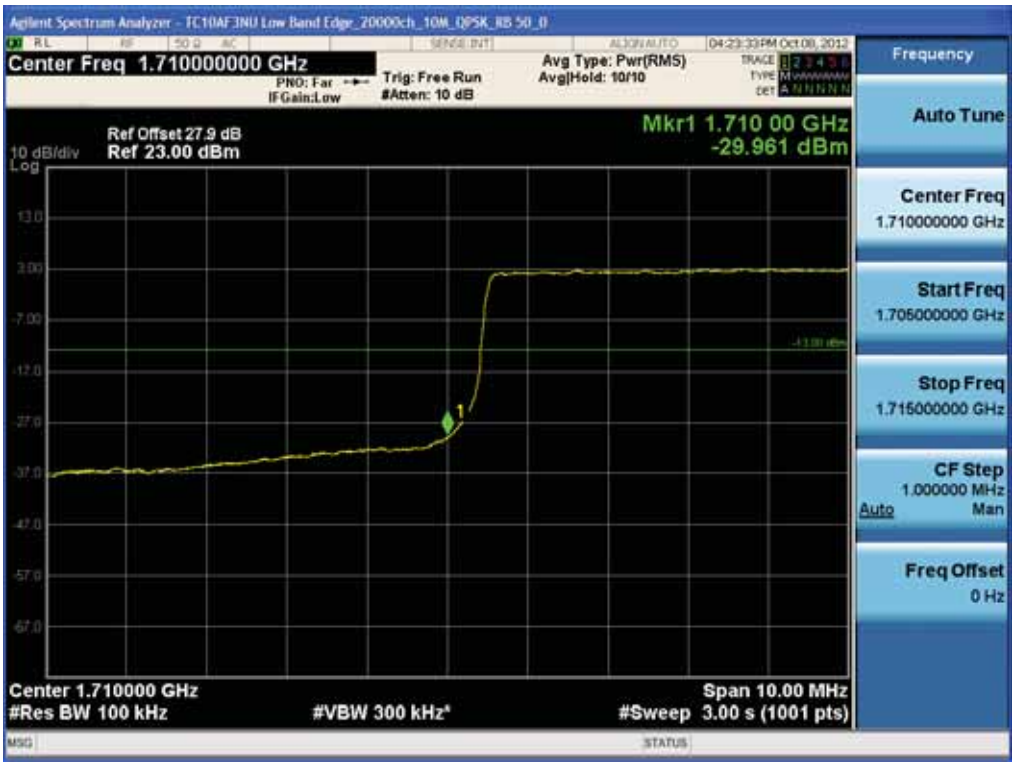
BAND 4. Low Band Edge Plot (19975ch_5MHz_QPSK_RB 25_0)

BAND 4. Low Extended Band Edge Plot (19975_5MHz_QPSK_RB 25_0)

BAND 4. Low Band Edge Plot (20000ch_10MHz_QPSK_RB 1_0)

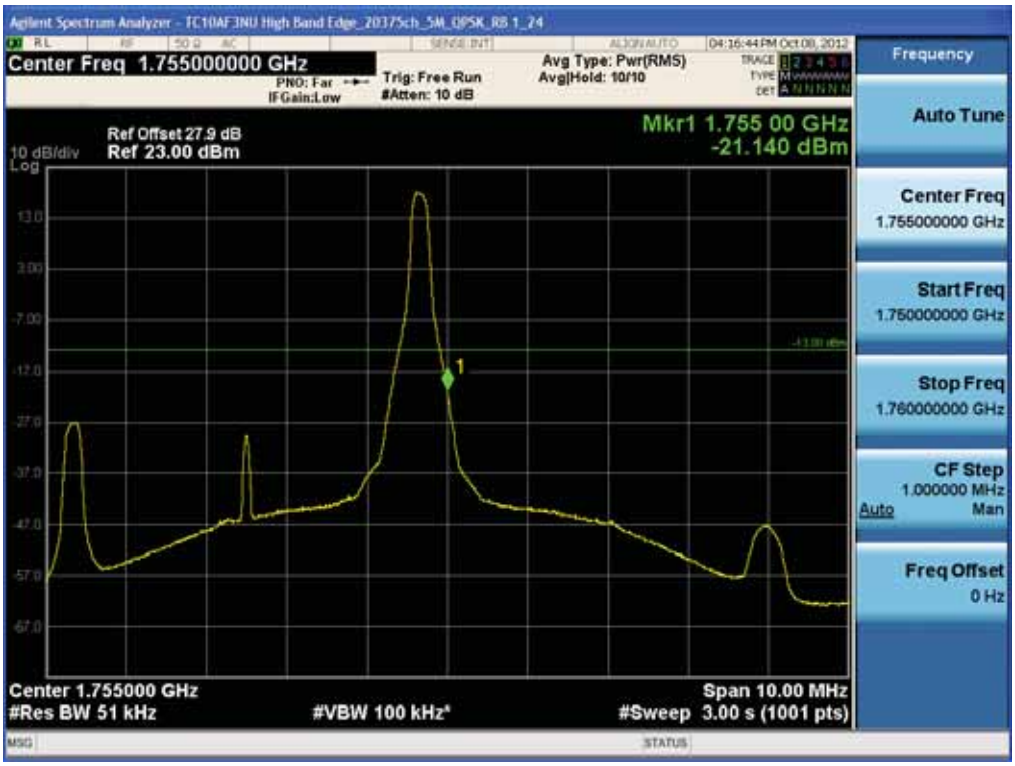


BAND 4. Low Band Edge Plot (20000ch_10MHz_QPSK_RB 50_0)



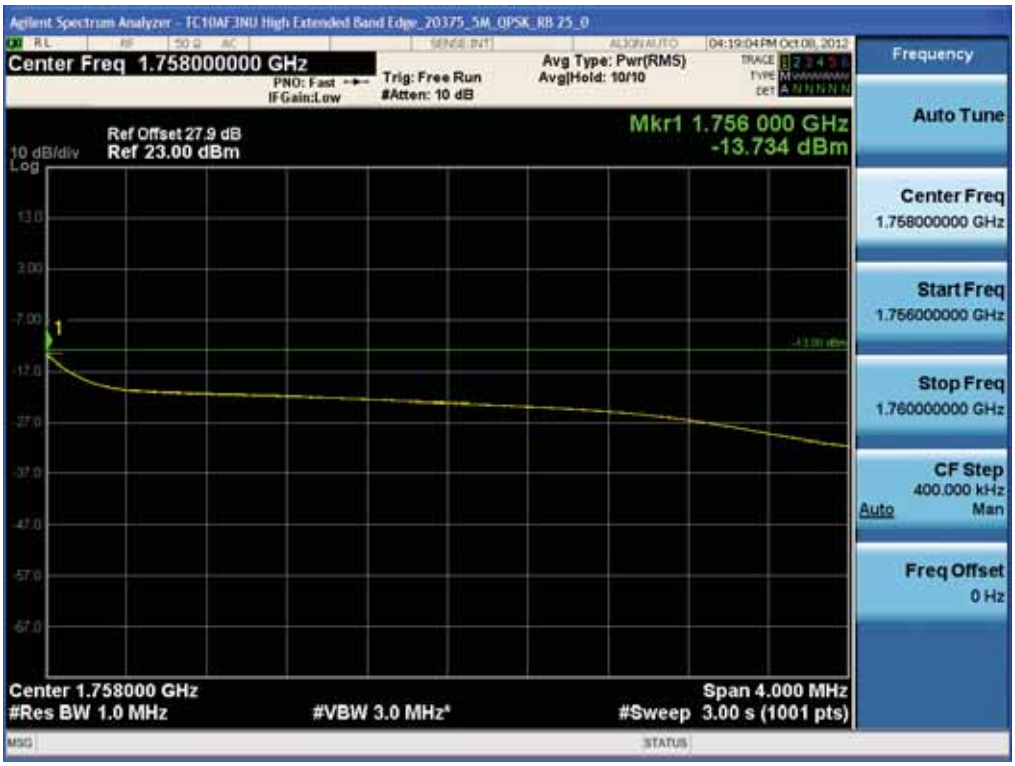
BAND 4. Low Extended Band Edge (20000ch_10MHz_QPSK_RB 50_0)

BAND 4. High Band Edge Plot (20375ch_5MHz_QPSK_RB 1_24)



BAND 4. High Band Edge Plot (20375ch_5MHz_QPSK_RB 25_0)

BAND 4. High Extended Band Edge Plot (20375ch_5MHz_QPSK_RB 25_0)

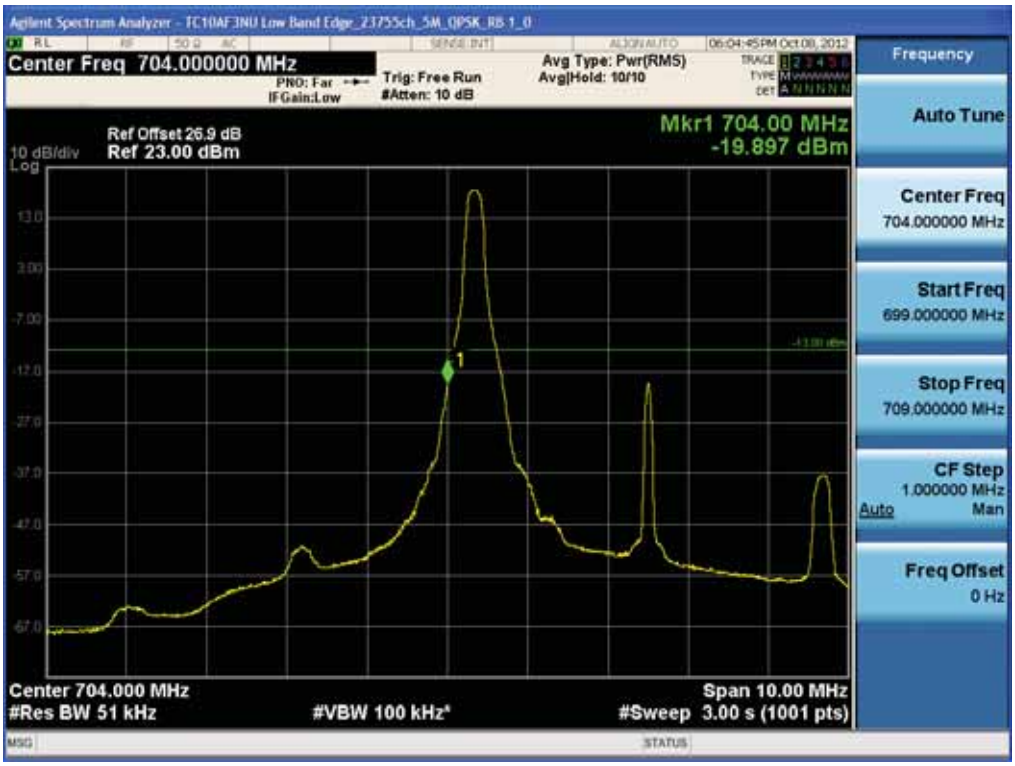


BAND 4. High Band Edge Plot (20350ch_10MHz_QPSK_RB 1_49)

BAND 4. High Band Edge Plot (20350ch_10MHz_QPSK_RB 50_0)

BAND 4. High Extended Band Edge Plot (20350ch_10MHz_QPSK_RB 50_0)

BAND 17. Low Band Edge Plot (23755ch_5MHz_QPSK_RB 1_0)

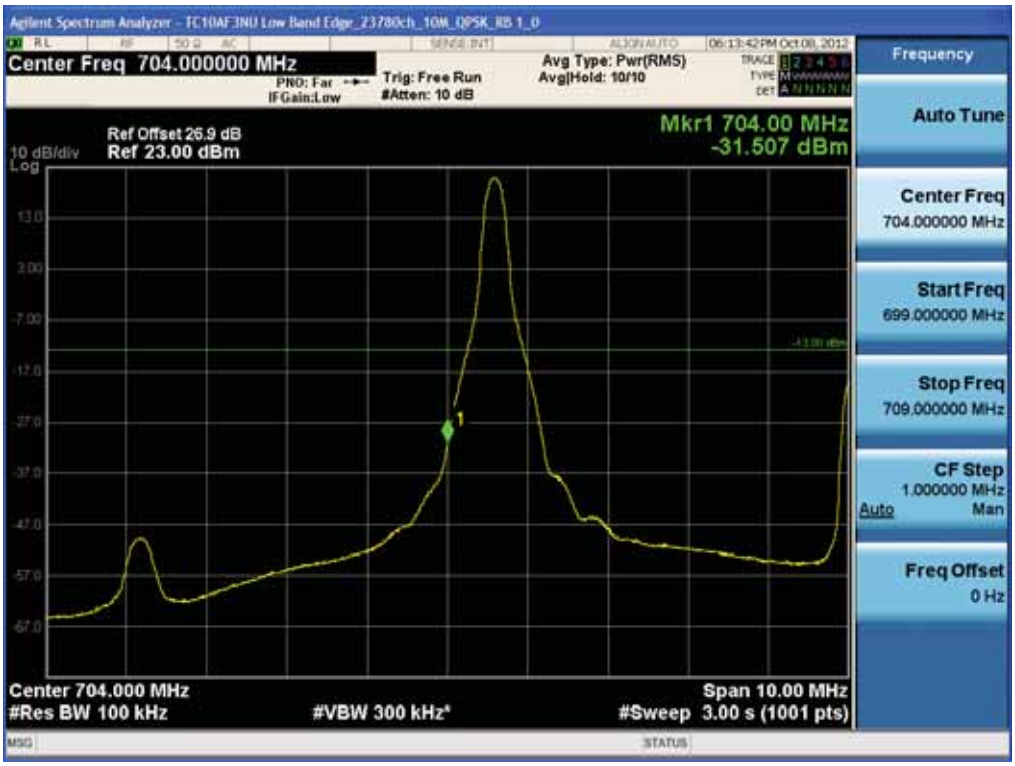


BAND 17. Low Band Edge Plot (23755ch_5MHz_QPSK_RB 25_0)

BAND 17. Low Extended Band Edge Plot _1 (23755ch_5MHz_QPSK_RB 25_0)

BAND 17. Low Extended Band Edge Plot (23755ch_5MHz_QPSK_RB 25_0)

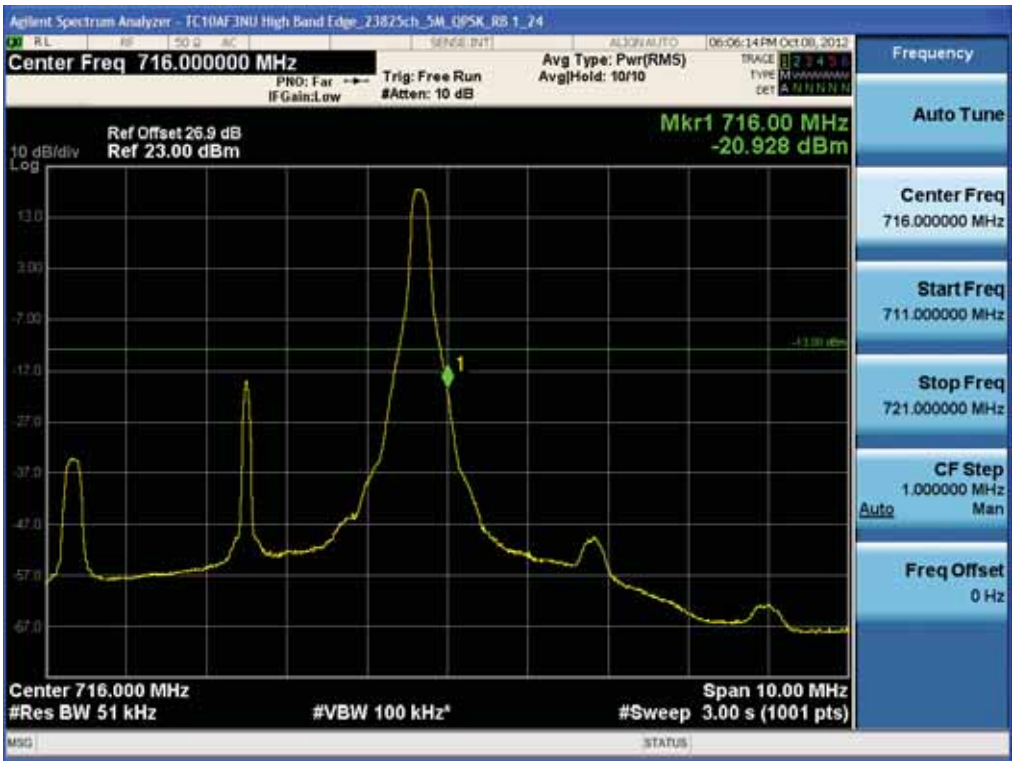
BAND 17. Low Band Edge Plot (23780ch_10MHz_QPSK_RB 1_0)



BAND 17. Low Band Edge Plot (23780ch_10MHz_QPSK_RB 50_0)

BAND 17. Low Extended Band Edge Plot (23780ch_10MHz_QPSK_RB 50_0)

BAND 17. High Band Edge Plot (23825ch_5MHz_QPSK_RB 1_24)

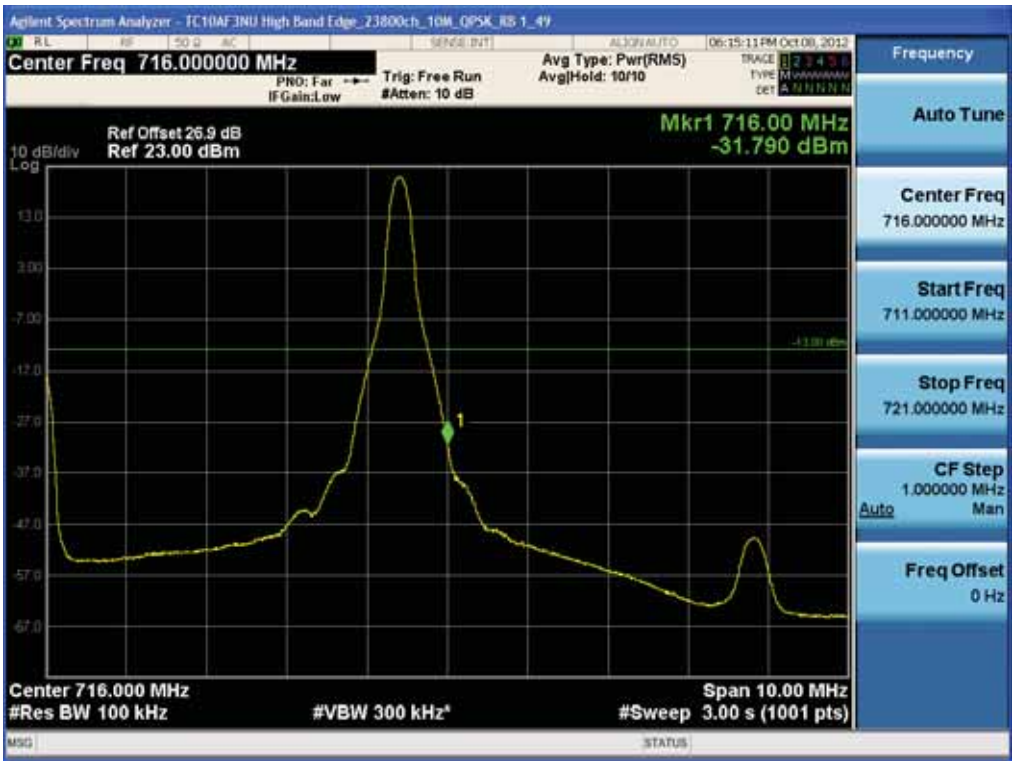


BAND 17. High Band Edge Plot (23825ch_5MHz_QPSK_RB 25_0)

BAND 17. High Extended Band Edge Plot_1 (23825_5M_QPSK_RB 25_0)

BAND 17. High Extended Band Edge Plot (23825ch_5MHz_QPSK_RB 25_0)

BAND 17. High Band Edge Plot (23800ch_10MHz_QPSK_RB 1_49)



BAND 17. High Band Edge Plot (23800ch_10MHz_QPSK_RB 50_0)

BAND 17. High Extended Band Edge Plot (23800ch_10MHz_QPSK_RB 50_0)

BAND 13. Low Band Edge Plot (23230ch_10MHz_QPSK_RB 1_0)

BAND 13. Low Band Edge Plot (23230ch_10MHz_QPSK_RB 50_0)

BAND 13. Low Extended Band Edge Plot (23230ch_10MHz_QPSK_RB 25_0)

BAND 13. High Band Edge Plot (23230ch_10MHz_QPSK_RB 1_49)

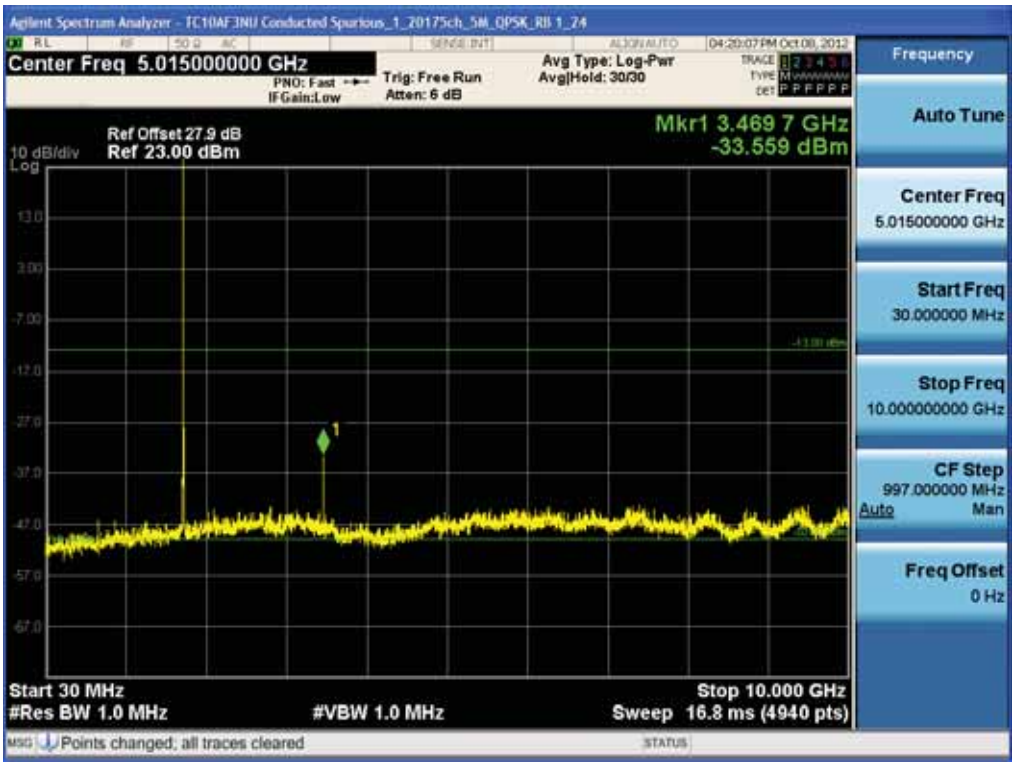
BAND 13. High Band Edge Plot (23230ch_10MHz_QPSK_RB 50_0)

BAND 13. High Extended Band Edge Plot (23230ch_10MHz_QPSK_RB 25_0)

BAND 4. Conducted Spurious Plot_1 (19975ch_5MHz_QPSK_RB 1_0)

BAND 4. Conducted Spurious Plot_2 (19975ch_5MHz_QPSK_RB 1_0)

BAND 4. Conducted Spurious Plot_1 (20175ch_5MHz_QPSK_RB 1_24)



BAND 4. Conducted Spurious Plot_2 (20175ch_5MHz_QPSK_RB 1_24)

BAND 4. Conducted Spurious Plot_1 (20375ch_5MHz_QPSK_RB 1_24)

BAND 4 . Conducted Spurious Plot_2 (20375ch_5MHz_QPSK_RB 1_24)

BAND 4. Conducted Spurious Plot_1 (20000ch_10MHz_QPSK_RB 1_0)

BAND . Conducted Spurious Plot_2 (20000ch_10MHz_QPSK_RB 1_0)

BAND 4. Conducted Spurious Plot_1 (20175ch_10MHz_QPSK_RB 1_0)

BAND 4. Conducted Spurious Plot_2 (20175ch_10MHz_QPSK_RB 1_0)

BAND 4. Conducted Spurious Plot_1 (20350ch_10MHz_QPSK_RB 1_0)

BAND 4. Conducted Spurious Plot_2 (20350ch_10MHz_QPSK_RB 1_0)

BAND 17. Conducted Spurious Plot_1 (23755ch_5MHz_QPSK_RB 1_0)

BAND 17. Conducted Spurious Plot_2 (23755ch_5MHz_QPSK_RB 1_0)

BAND 17. Conducted Spurious Plot_1 (23790ch_5MHz_QPSK_RB 1_0)

BAND 17. Conducted Spurious Plot_2 (23790ch_5MHz_QPSK_RB 1_0)

BAND 17. Conducted Spurious Plot_1 (23825ch_5MHz_QPSK_RB 1_24)

BAND 17. Conducted Spurious Plot_2 (23825ch_5MHz_QPSK_RB 1_24)

BAND 17. Conducted Spurious Plot_1 (23780ch_10MHz_QPSK_RB 1_0)

BAND 17. Conducted Spurious Plot_2 (23780ch_10MHz_QPSK_RB 1_0)

BAND 17. Conducted Spurious Plot_1 (23790ch_10MHz_QPSK_RB 1_0)

BAND 17. Conducted Spurious Plot_2 (23790ch_10MHz_QPSK_RB 1_0)

BAND 17. Conducted Spurious Plot_1 (23800ch_10MHz_QPSK_RB 1_0)

BAND 17. Conducted Spurious Plot_2 (23800ch_10MHz_QPSK_RB 1_0)

BAND 13. Conducted Spurious Plot_1 (23230ch_10MHz_QPSK_RB 1_0)

BAND 13. Conducted Spurious Plot_2 (23230ch_10MHz_QPSK_RB 1_0)