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CERTIFICATION DIVISION

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CERTIFICATE OF COMPLIANCE

FCC PART 27 Certification

Applicant Name:

SAMSUNG Electronics Co., Ltd.
416, Maetan-3dong, Yeongtong-gu, Suwon-si,
Gyeonggi-do, Korea

Date of Issue: December 06, 2010

Test Site/Location:

HCT CO., LTD., 105-1, Jangam-ri, Majang-Myeon,
Icheon-si, Kyunggi-Do, Korea(Lab)

Test Report No.: HCTR1012FR03

FCC ID : **A3LSPI-2213282501**

APPLICANT : **SAMSUNG Electronics Co., Ltd.**

EUT Type : Mobile WiMAX Outdoor RAS
Manufacturer : SAMSUNG Electronics Co., Ltd.
Model name : SPI-2213282501
Frequency of Operation : 2 496 MHz ~ 2 596 MHz
FCC Rule Part(s) : FCC Part 27 Subpart (c).
Emission Designator : 4M 58G7D(QPSK), 4M58W7D(16QAM/64QAM)
Test Procedure(s) : ANSI/TIA-603C-2004
Application Type : CClass II Permissive Change
Data of issue : December 06, 2010

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that up on the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of FCC Part 27 of the FCC Rules under normal use and maintenance.

Chang Seok Choi

Report prepared by
: Chang Seok Choi
Test engineer of RF Team

Sang Jun Lee

Approved by
: Sang Jun Lee
Manager of RF Team

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Revision

TEST REPORT NO.	DATE	DESCRIPTION
HCTR1012FR03	December 06,2010	First Approval Report

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1. GENERAL INFORMATION

1.1. CLIENT INFORMATION

Company	Samsung Electronics Co., Ltd.
Contact Point	416, Maetan-3dong, Yeongtong-gu, Suwon-si, Gyeonggi-do, Korea
Contact person	Name: JOON-HO LEE / Senior Research Engineer E-mail : joonho@samsung.com Tel: +82-31-279-3552 Fax: +82-31-279-7576

1.2. PRODUCT INFORMATION

EUT TYPE	Mobile WiMAX Outdoor RAS
EMISSION DESIGNATOR	4M58G7D (QPSK), 4M58W7D(16QAM/64QAM)
OPERATING FREQUENCY	2496 MHz ~ 2596 MHz
TX OUTPUT POWER	2 W (33 dBm) / Carrier / Path
CHANNEL BANDWIDTH	5 MHz , 10 MHz
MODULATION TYPE	OFDMA (QPSK, 16QAM, 64QAM)
MAXIMUM NUMBER OF CARRIERS/SECTORS	2 Carriers / 3 Sectors
SYSTEM INPUT VOLTAGE	DC - 48 V

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1.3. INTRODUCTION OF EUT

The SPI-2213, RAS of Mobile WiMAX, is controlled by ACR and connects Mobile WiMAX calls to MS.

The SPI-2213 interfaces with MS via a wireless channel observing the Mobile WiMAX standard (IEEE 802.16) and provides high-speed data service and multimedia service in wireless broadband.

To this end, the SPI-2213 provides the following functions: modulation/demodulation of packet traffic signal, scheduling and radio bandwidth allocation to manage air resources efficiently and ensure Quality of Service (QoS), Automatic Repeat request (ARQ) processing, ranging function, connection control function to transmit the information on the SPI-2213 and set/hold/disconnect the packet call connection, handover control and ACR interface function and system operation management function.

Physically, the SPI-2213 consists of a Digital Unit (DU) and a Mobile WiMAX base station Remote Radio Head (RRH). The RRH is located remotely from the DU. The DU is a digital unit of 19 in. shelf form and can be installed in an indoor or outdoor 19 in. rack. It supports a capacity up to 2Carrier/3Sector. The DU is operated in omni or sector mode depending on the features of the installation location.

An RRH is a standalone RF unit. It is installed on an outdoor wall or pole.

The SPI-2213 supports up to 2Carrier/3Sector.

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2. TEST SUMMARY

2.1. STANDARDS

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance With **FCC Part 27**

SECTION	TEST ITEMS	RESULTS
2.1046, 27.50(h)	Conducted Output Power	Compliant
2.1049, 27.53(l)	Occupied Bandwidth	Compliant
2.1051, 27.53(l)	Spurious Emissions at Antenna Terminals	Compliant
2.1051, 27.53(l)	Band edge	Compliant
2.1053, 27.53(l)	Spurious Radiated Emissions.	Compliant
2.1055(a)(1), 27.54	Frequency Stability over Temperature variation	Compliant
2.1055(d), 27.54	Frequency stability over Voltage variation	Compliant

2.2. MODE OF OPERATION DURING THE TEST

The EUT was operated in a manner representative of the typical usage of the equipment.

During all testing, system components were manipulated within the confines of typical usage to maximize each emission. All Modulation (QPSK, 16QAM, and 64QAM) modes were tested, and the worst case was recorded in this test report.

The device does not supply antenna(s) with the system, so the dummy loads were connected to the RF output ports for radiated spurious emission testing.

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3. STANDARDS ENVIRONMENTAL TEST CONDITIONS

Temperature :	+ 15 °C to + 35 °C
Relative humidity:	30 % to 60 %
Air pressure	860 mbar to 1060 mbar

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4. TEST EQUIPMENT

Manufacturer	Model / Equipment	Serial No.	Calibration Due
Schwarzbeck	BBHA 9120D / Double Ridged Horn Antenna	296	09/23/2011
Schwarzbeck	BBHA 9120D / Double Ridged Horn Antenna	147	04/13/2011
Schwarzbeck	VULB 9168 / TRILOG Antenna	9168-200	01/06/2011
HD	MA240 / Antenna Position Tower	556	N/A
EMCO	1050 / Turn Table	114	N/A
HD GmbH	HD 100 / Controller	13	N/A
HD GmbH	KMS 560 / SlideBar	12	N/A
MITEQ	AFS44-00102650-42-10P44-PS	1532439	04/05/2011
EMCO	6502/Loop Antenna	9009-2536	01/13/2012
R&S	ESI40 / EMI TEST Receiver	831564/003	10/30/2011
Wainwright Instrument	WHF6.0/26.5G-6SS / High Pass Filter	1	05/12/2011
Agilent	6674A / DC Power Supply	3501A00901	05/14/2011
WEINSCHEL	67-30-33 / Attenuator	BU5347	01/06/2011
WEINSCHEL	67-30-33 / Attenuator	BR0530	01/14/2011
WEINSCHEL	AF117A-69-31 / STEP ATTENUATOR	11787	11/12/2011
WEINSCHEL	AF117A-69-31 / STEP ATTENUATOR	639	11/12/2011
Agilent	N9020A / MXA Signal Analyzer	US46220219	03/03/2011
Agilent	11636B / Power Divider	11377	12/24/2010

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5. CONDUCTED OUTPUT POWER

5.1. Applicable Standard

According to FCC §2.1046 & 27.50(h)

1) *Main, booster and base stations.* (i) The maximum EIRP of a main, booster or base station shall not exceed $33 \text{ dBW} + 10\log(X/Y) \text{ dBW}$, where X is the actual channel width in MHz and Y is either 6 MHz if prior to transition or the station is in the MBS following transition or 5.5 MHz if the station is in the LBS and UBS following transition, except as provided in paragraph (h)(1)(ii) of this section.

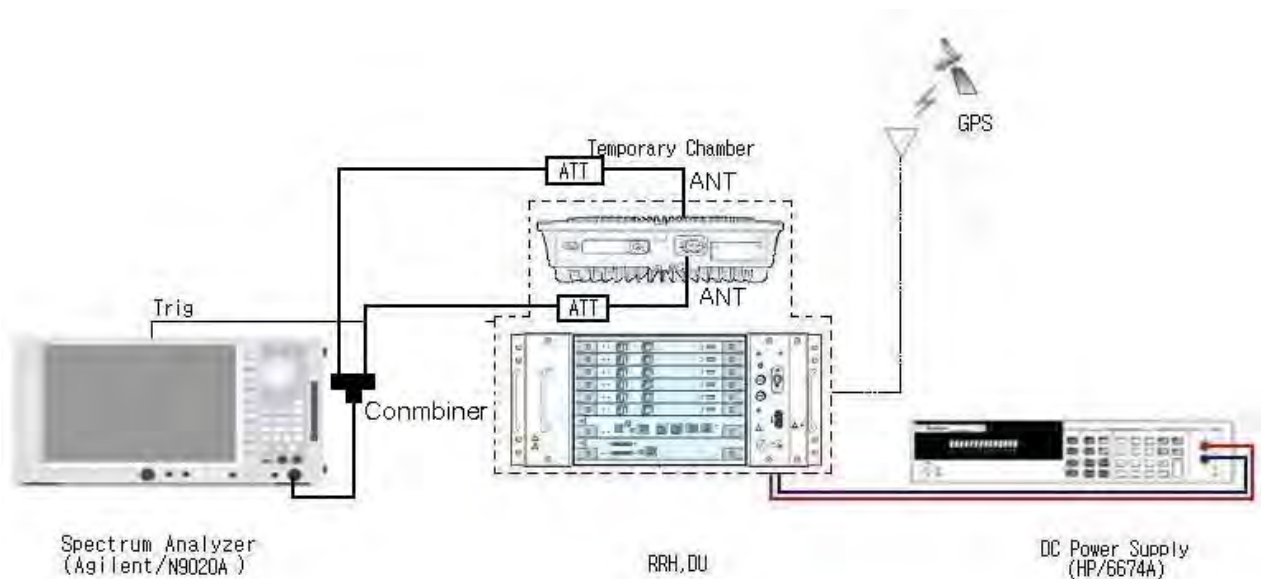
5.2. Test Equipment List and Details

Manufacturer	Model / Equipment	Serial No.	Calibration Due
Agilent	6674A / DC Power Supply	3501A00901	05/14/2011
WEINSCHTEL	67-30-33 / Attenuator	BU5347	01/06/2011
WEINSCHTEL	67-30-33 / Attenuator	BR0530	01/14/2011
WEINSCHTEL	AF117A-69-31 / STEP ATTENUATOR	11787	11/12/2011
WEINSCHTEL	AF117A-69-31 / STEP ATTENUATOR	639	11/12/2011
Agilent	N9020A / MXA Signal Analyzer	US46220219	03/03/2011
Agilent	11636B / Power Divider	11377	12/24/2010

5.3. Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

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According to FCC §2.1046 (A), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in § 2.1033(c). The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

- 1) The radio frequency load attached to the EUT antenna terminal was 50 Ohm. The loss of the cables the test system is calibrated to correct the reading.
- 2) The spectrum analyzer was set to RMS Detector function and Average mode.
- 3) The resolution bandwidth of the spectrum analyzer was comparable to the emission bandwidth.

5.3.1. Environmental Conditions:

Temperature:	27 °C
Relative Humidity:	25 %

5.4. Test Result

: PASS

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5.4.1. Test Data at Output Port 1

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
QPSK	Low	2499.00	32.94	1.968
	Middle	2543.25	32.73	1.875
	High	2593.00	33.06	2.023
16QAM	Low	2499.00	32.91	1.954
	Middle	2543.25	32.63	1.832
	High	2593.00	32.94	1.968
64QAM	Low	2499.00	32.88	1.941
	Middle	2543.25	32.66	1.845
	High	2593.00	32.81	1.910

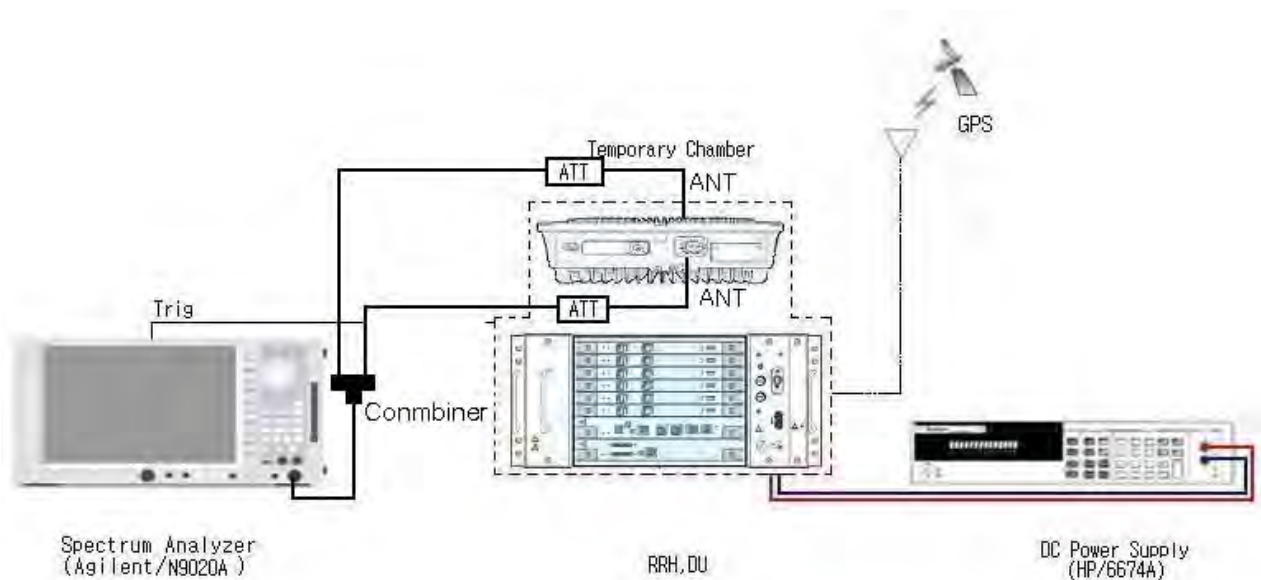
5.4.2. Test Data at Output Port 2

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
QPSK	Low	2499.00	33.44	2.208
	Middle	2543.25	33.20	2.089
	High	2593.00	33.49	2.234
16QAM	Low	2499.00	33.47	2.223
	Middle	2543.25	33.18	2.080
	High	2593.00	33.44	2.208
64QAM	Low	2499.00	33.46	2.218
	Middle	2543.25	33.20	2.089
	High	2593.00	33.44	2.208

5.4.3. Combined Test Data at Output Port

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
QPSK	Low	2499.00	34.84	3.048
	Middle	2543.25	34.78	3.006
	High	2593.00	33.52	2.249
16QAM	Low	2499.00	34.95	3.126
	Middle	2543.25	34.80	3.020
	High	2593.00	33.65	2.317
64QAM	Low	2499.00	34.88	3.076
	Middle	2543.25	34.74	2.979
	High	2593.00	33.52	2.249

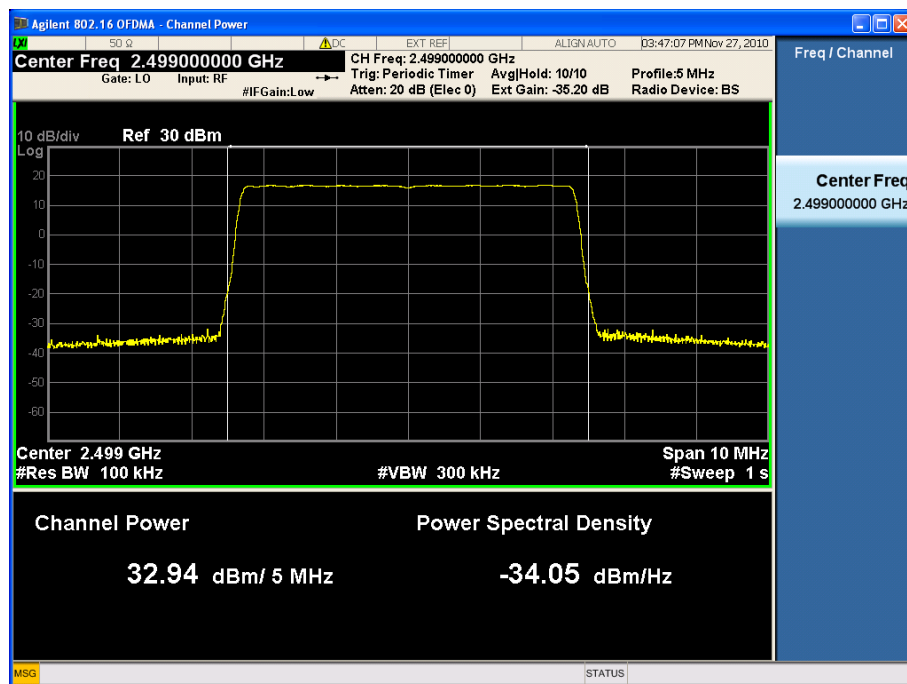
[Combine test diagram]



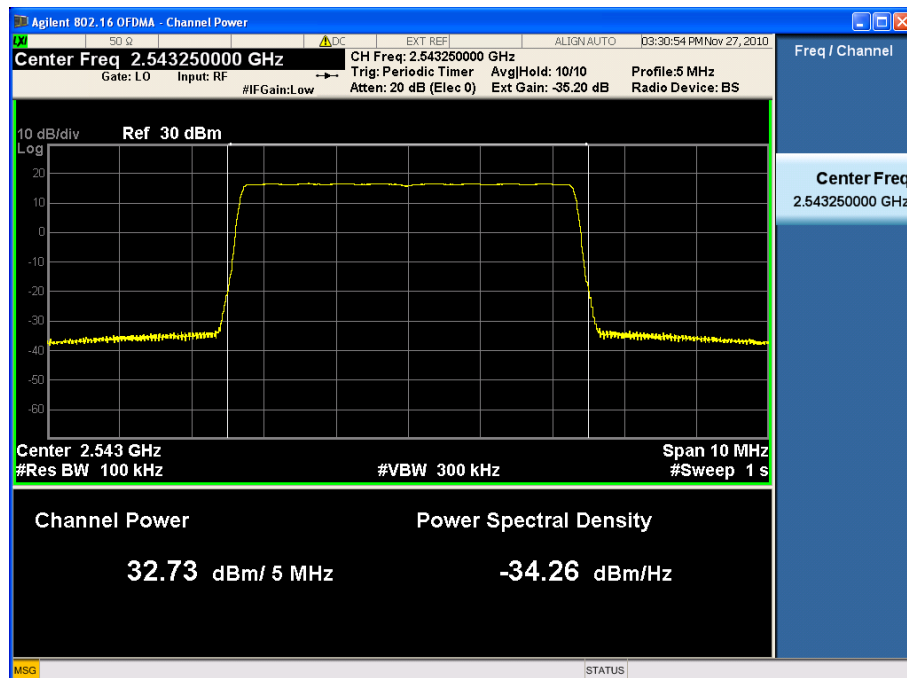
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5.4.4. Plot Data for Output Port 1 (Conducted Output Power)

(QPSK Low Channel)

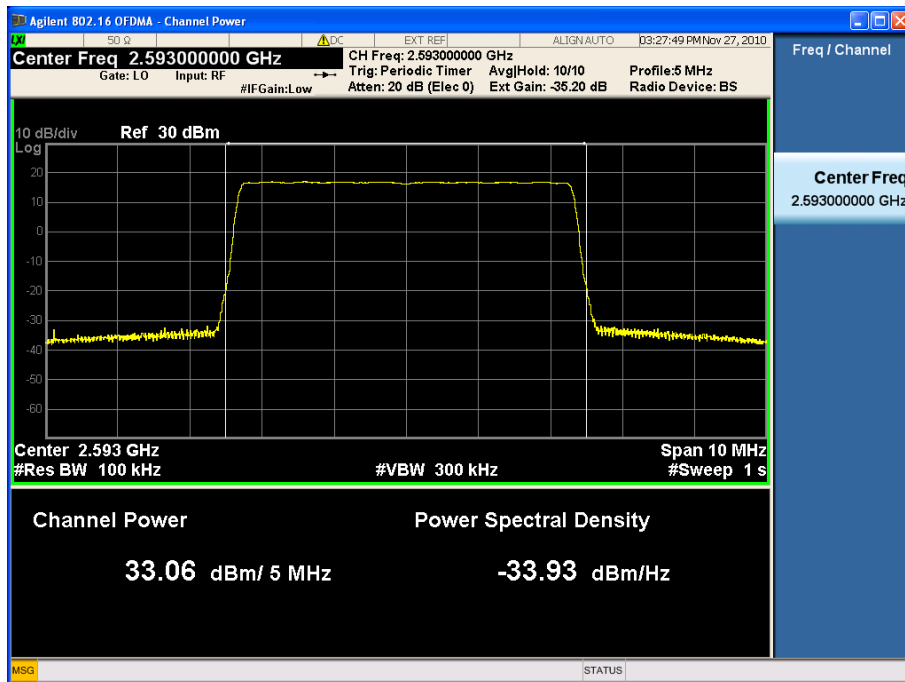


(QPSK Middle Channel)

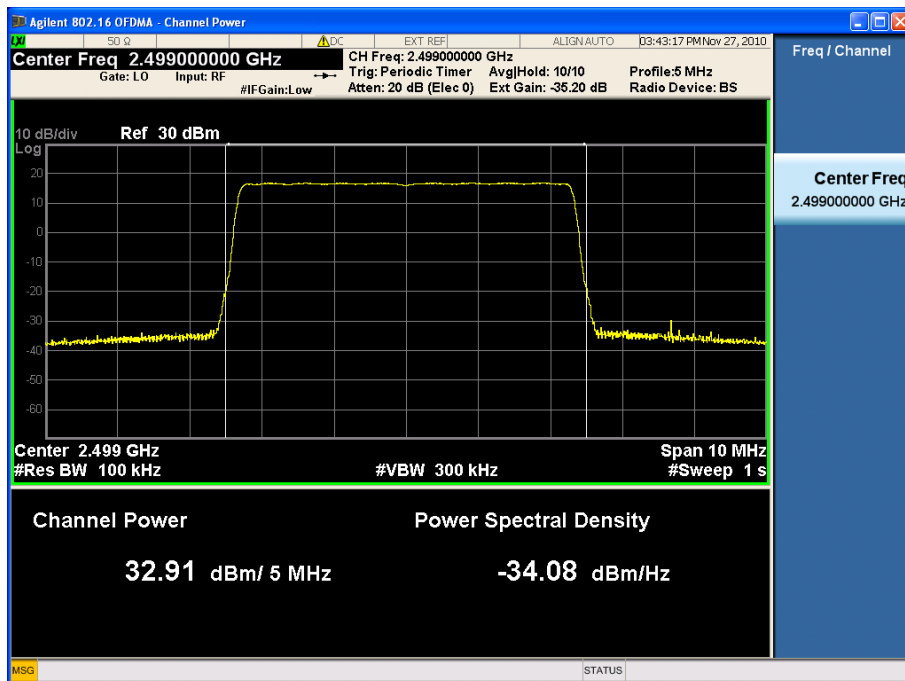


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(QPSK High Channel)

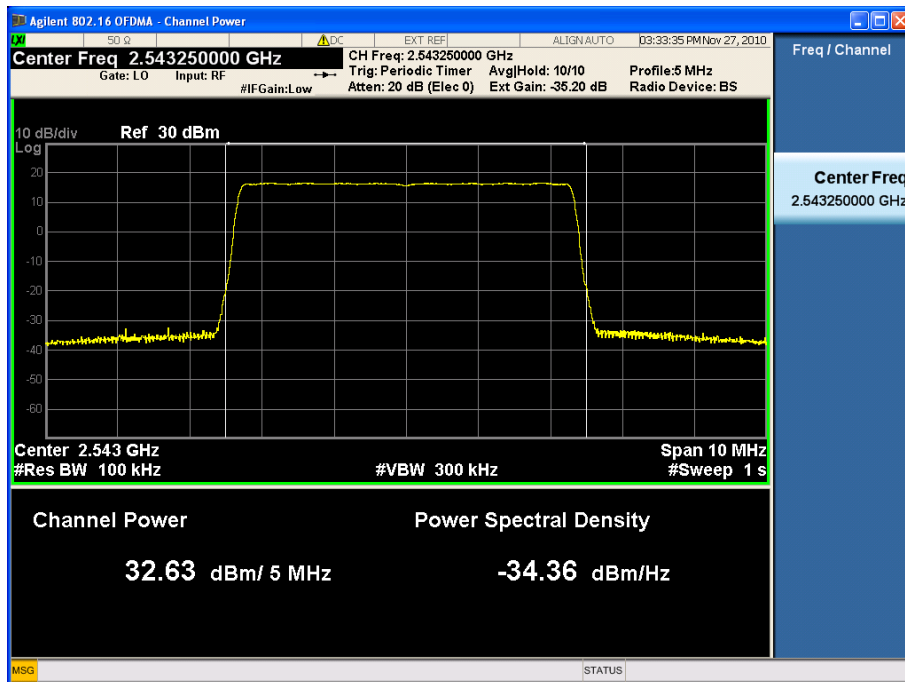


(16QAM Low Channel)

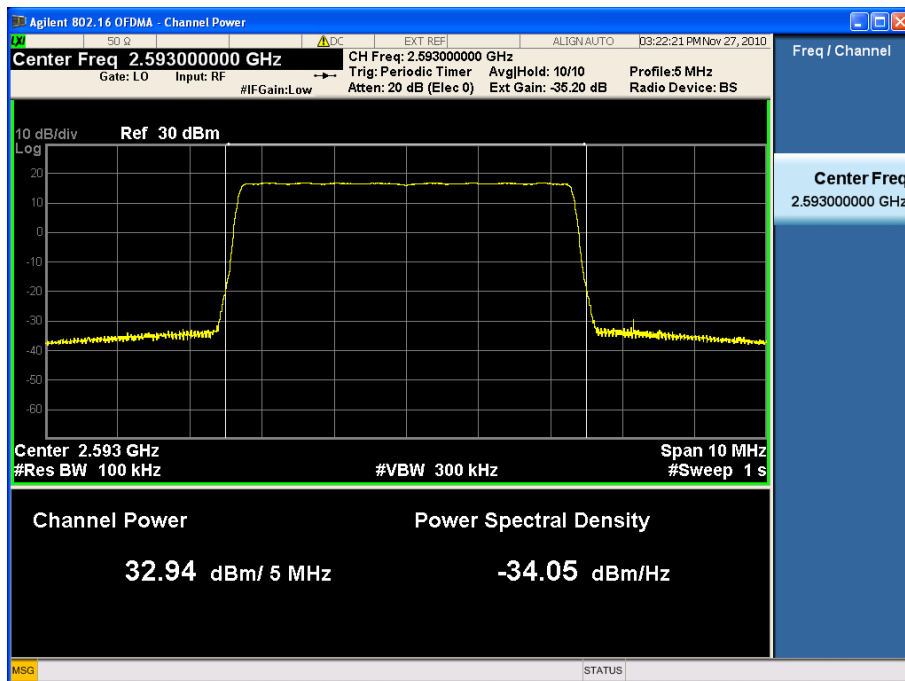


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(16QAM Middle Channel)

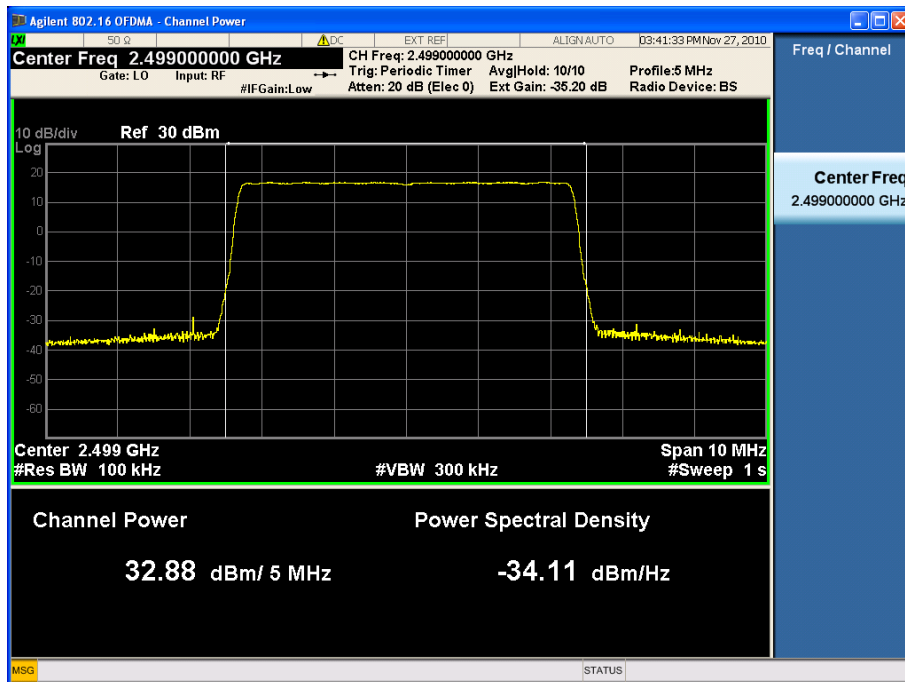


(16QAM High Channel)

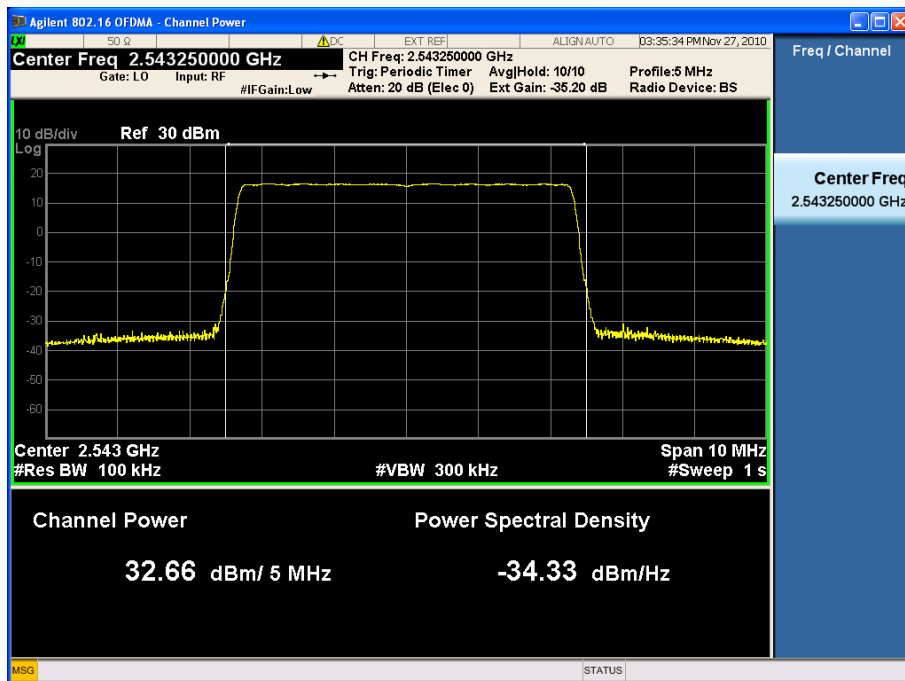


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(64QAM Low Channel)

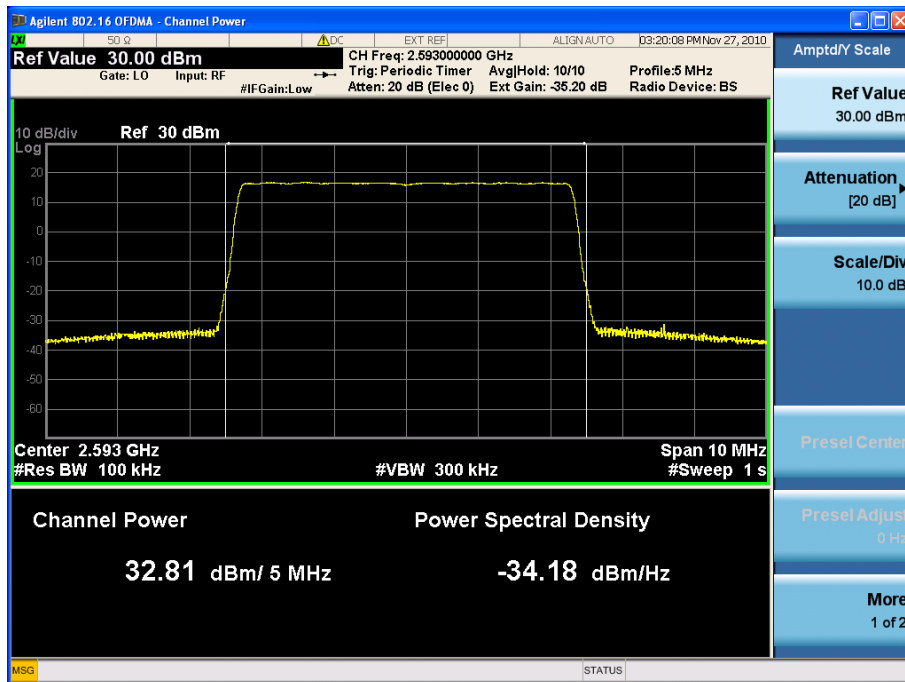


(64QAM Middle Channel)



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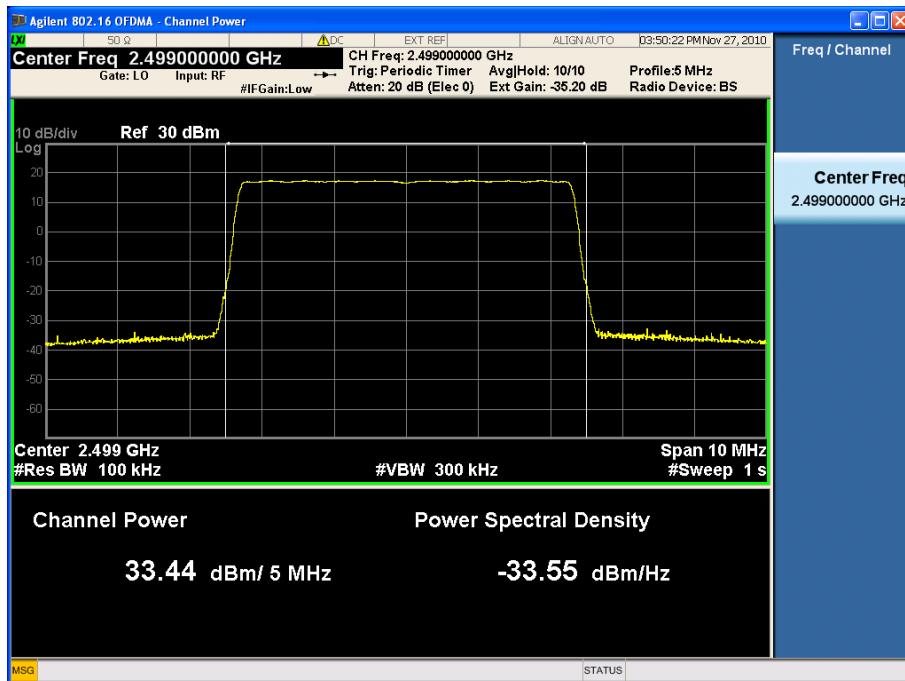
(64QAM High Channel)



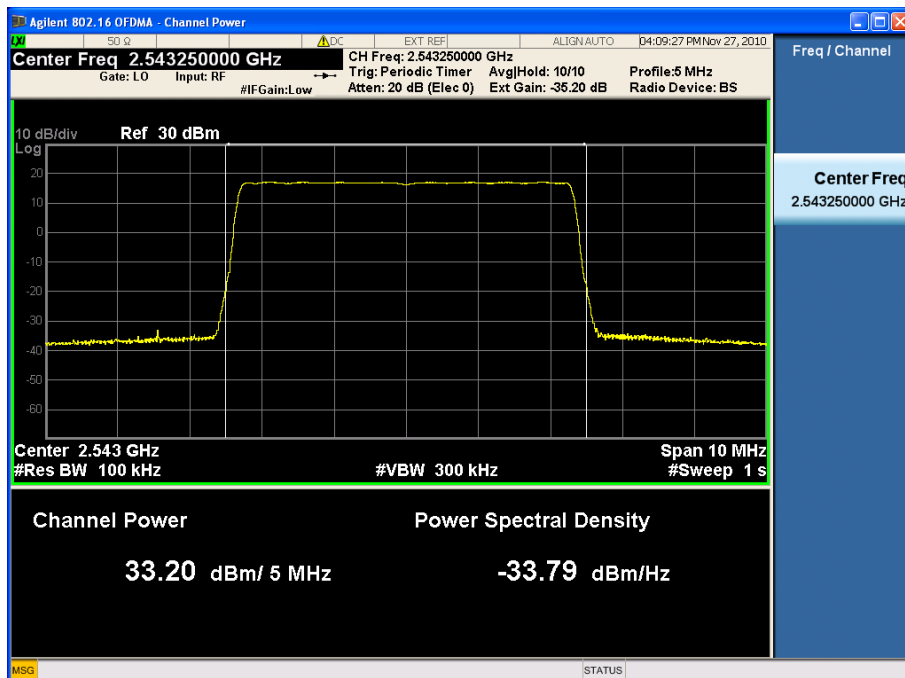
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5.4.5. Plot Data for Output Port 2 (Conducted Output Power)

(QPSK Low Channel)

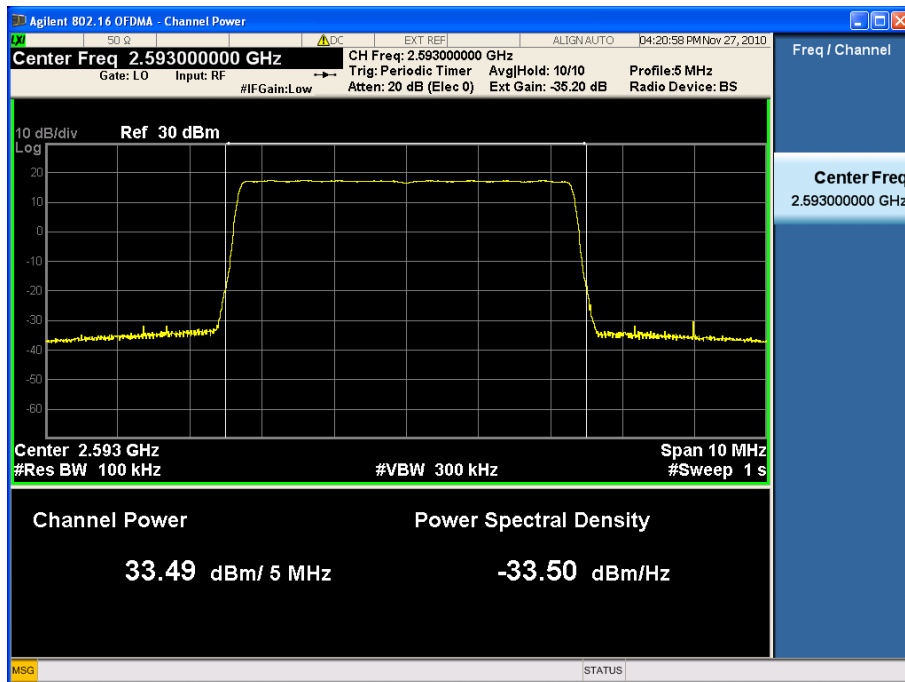


(QPSK Middle Channel)

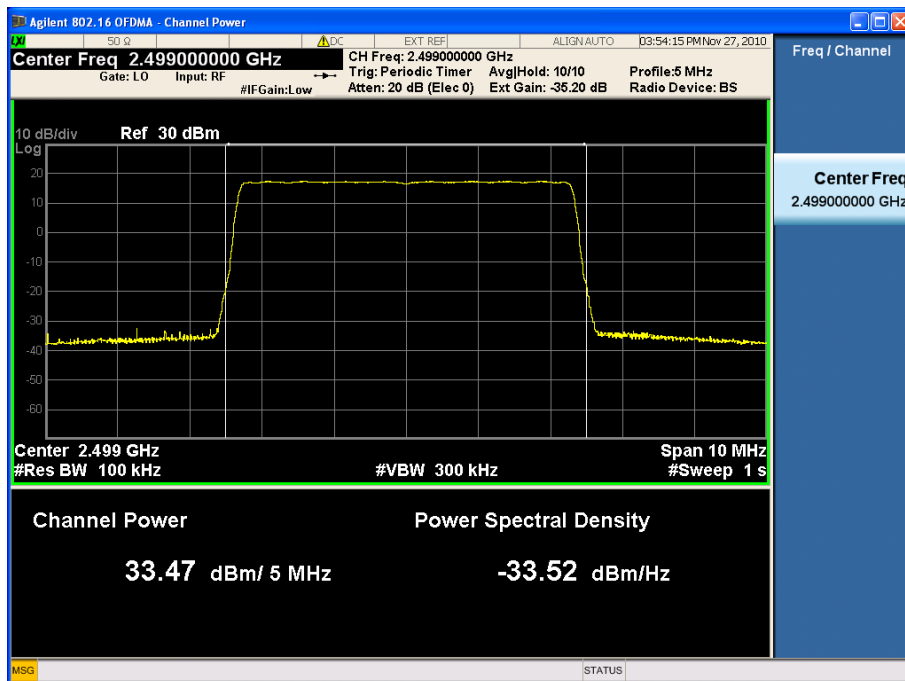


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(QPSK High Channel)

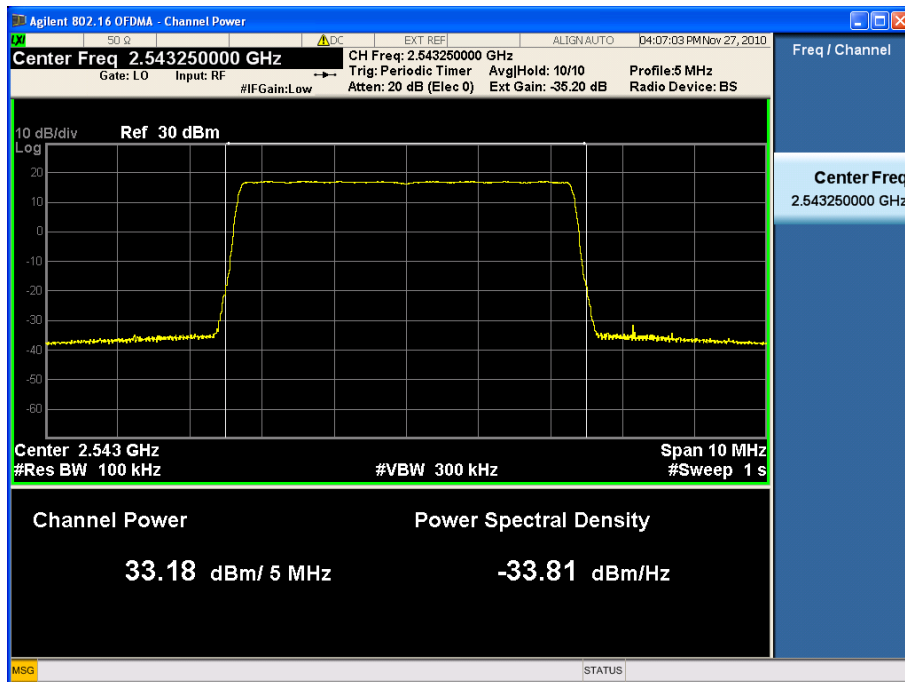


(16QAM Low Channel)

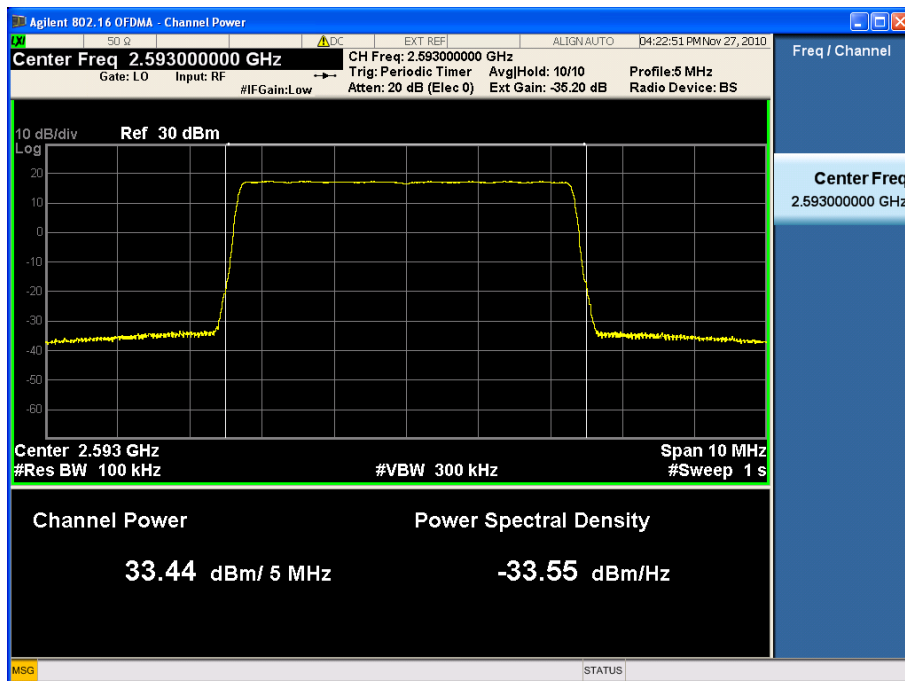


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(16QAM Middle Channel)

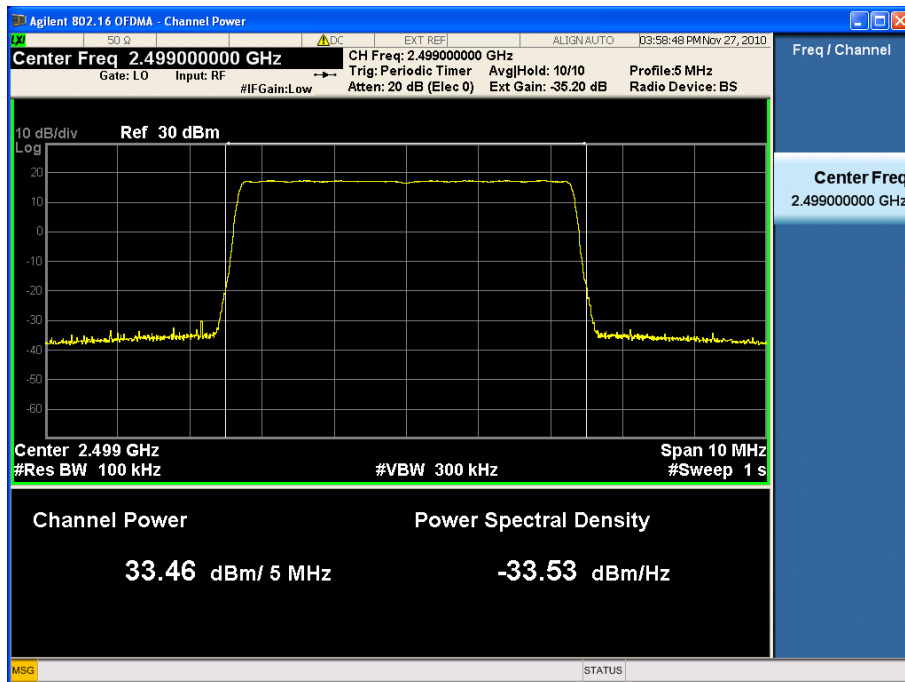


(16QAM High Channel)

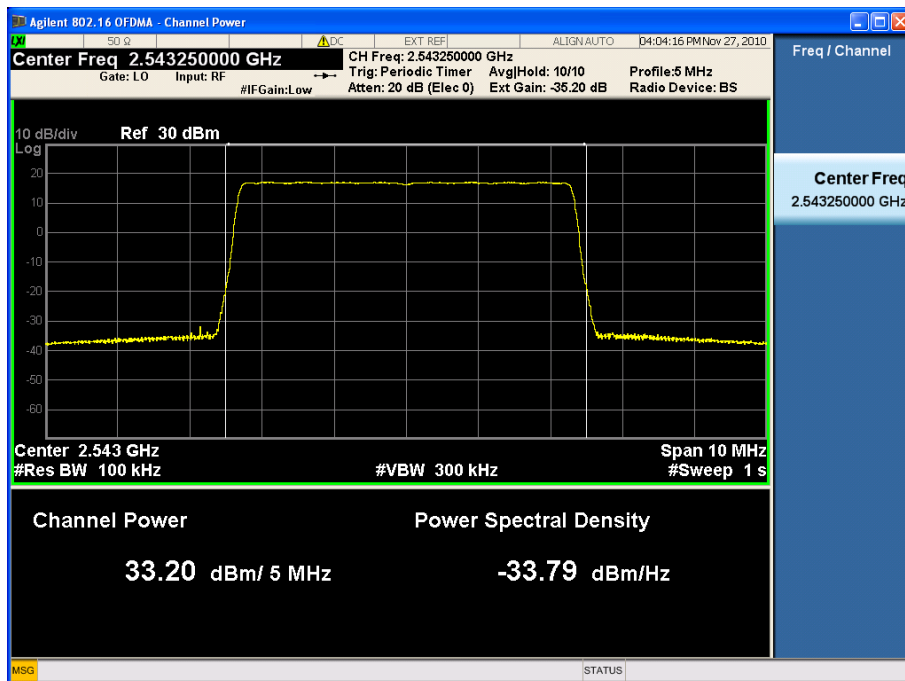


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(64QAM Low Channel)

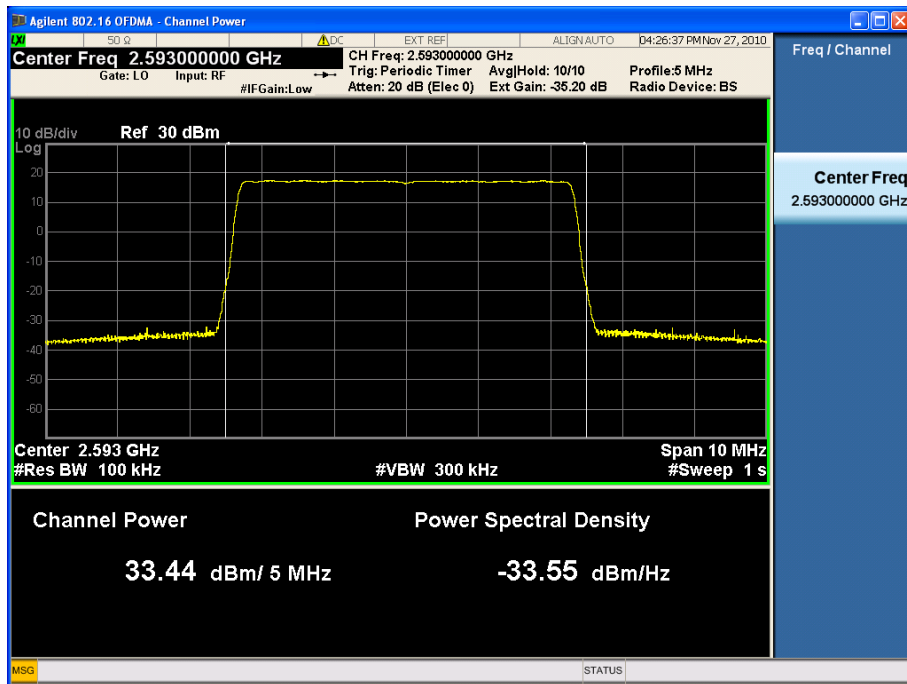


(64QAM Middle Channel)



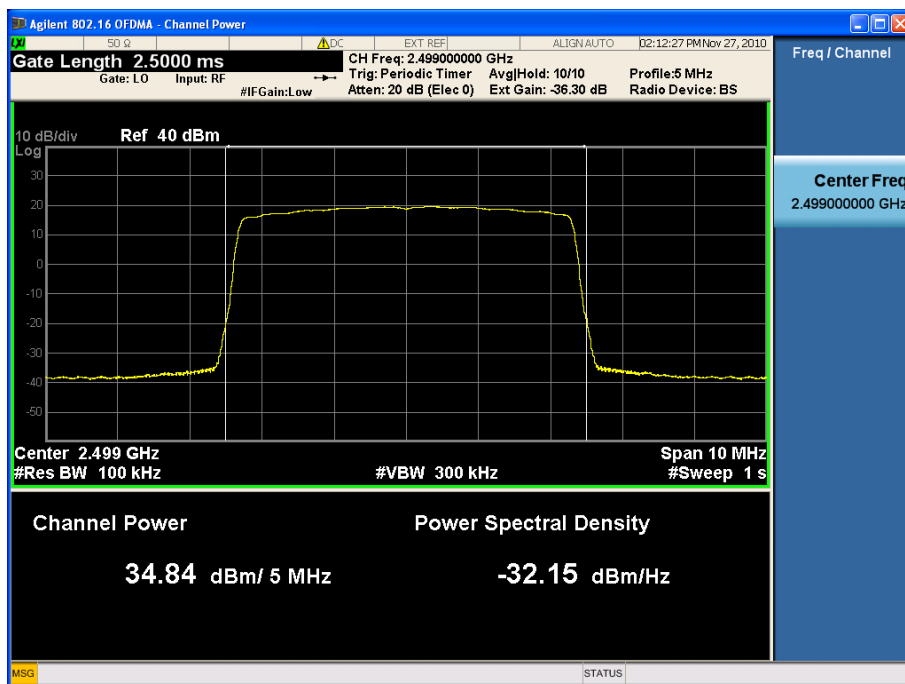
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(64QAM High Channel)

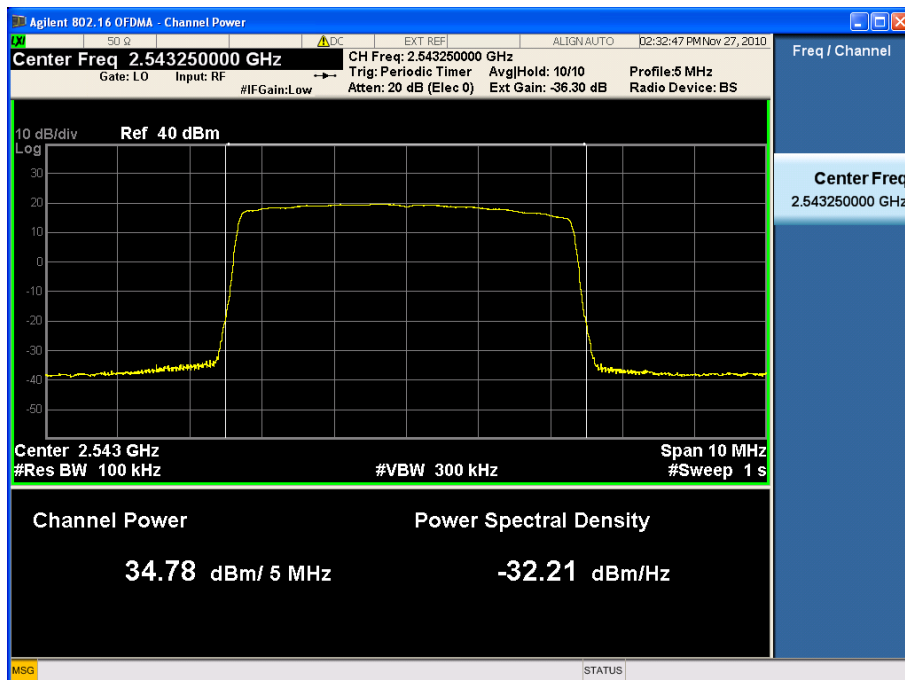


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5.4.6. Combined Plot Data for Output (Conducted Output Power) (QPSK Low Channel)

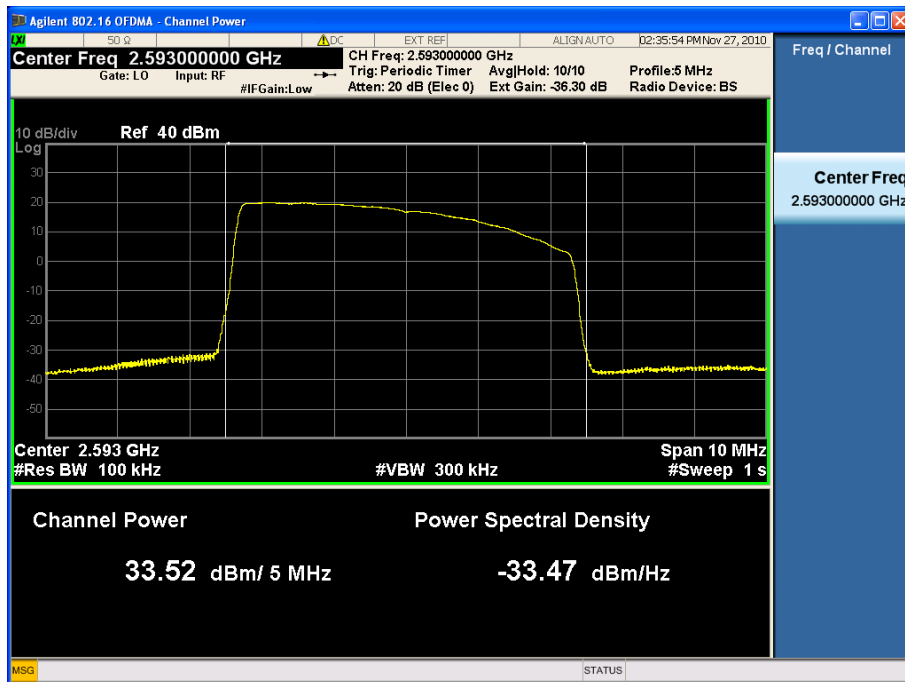


(QPSK Middle Channel)

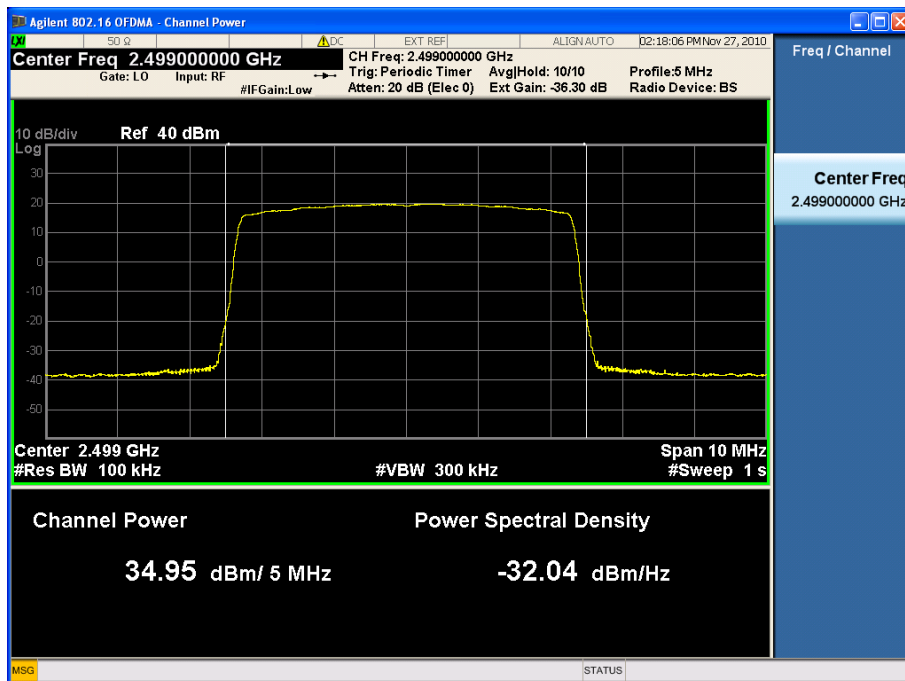


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 24 of 95

(QPSK High Channel)

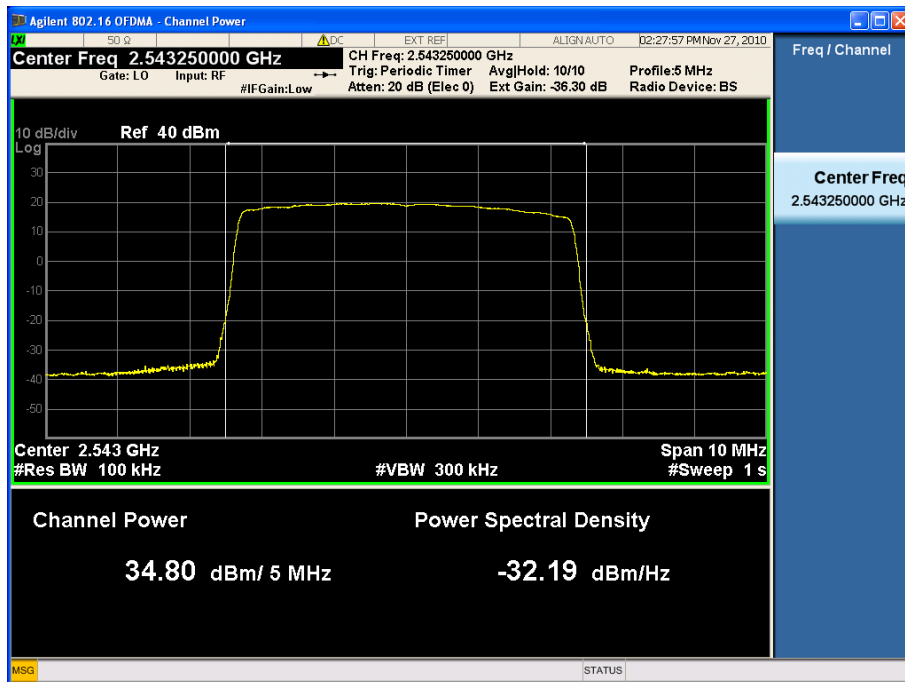


(16QAM Low Channel)

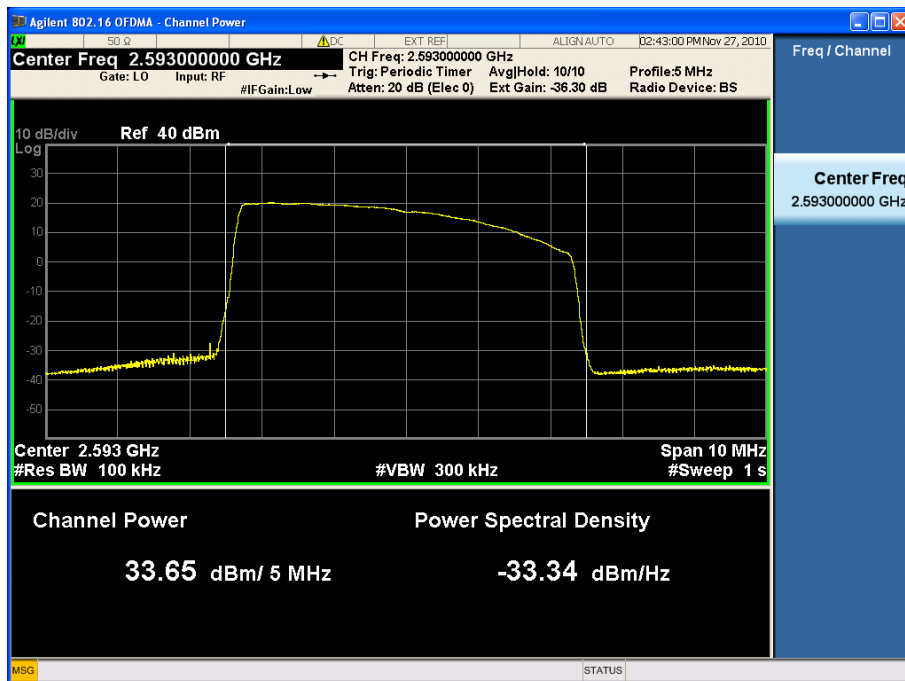


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 25 of 95

(16QAM Middle Channel)

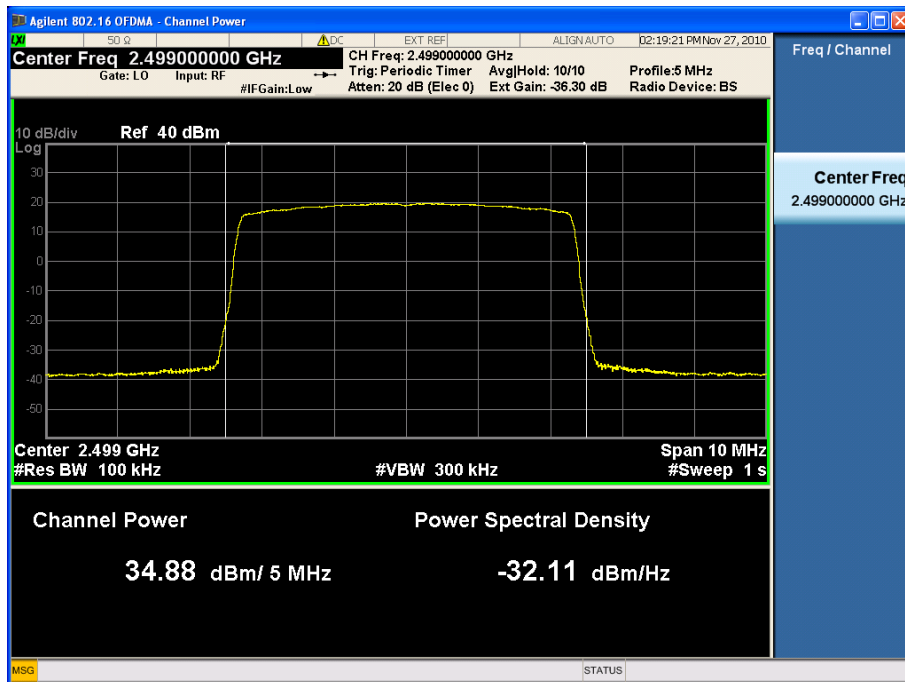


(16QAM High Channel)

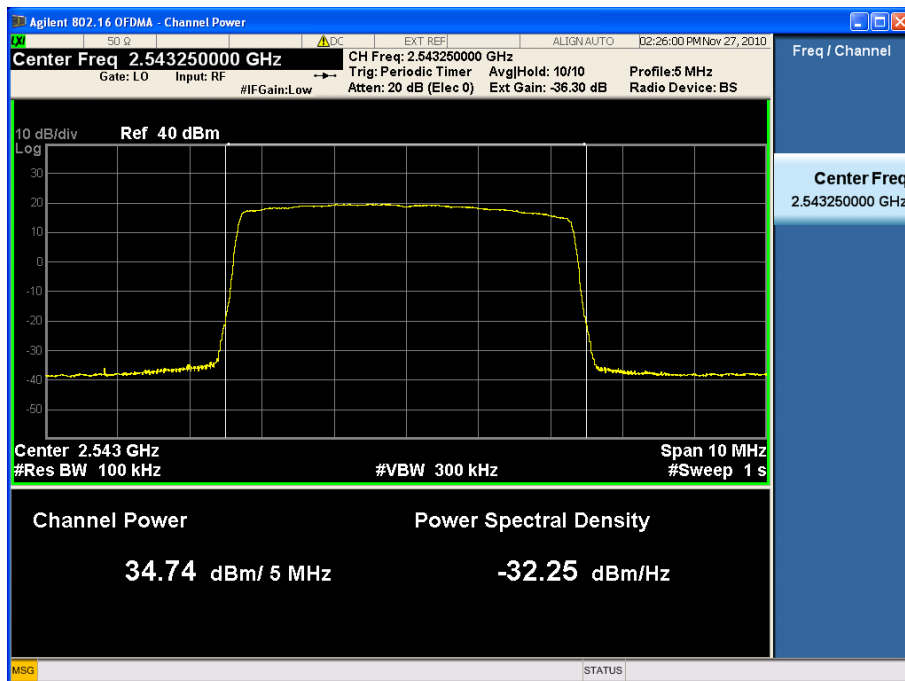


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 26 of 95

(64QAM Low Channel)

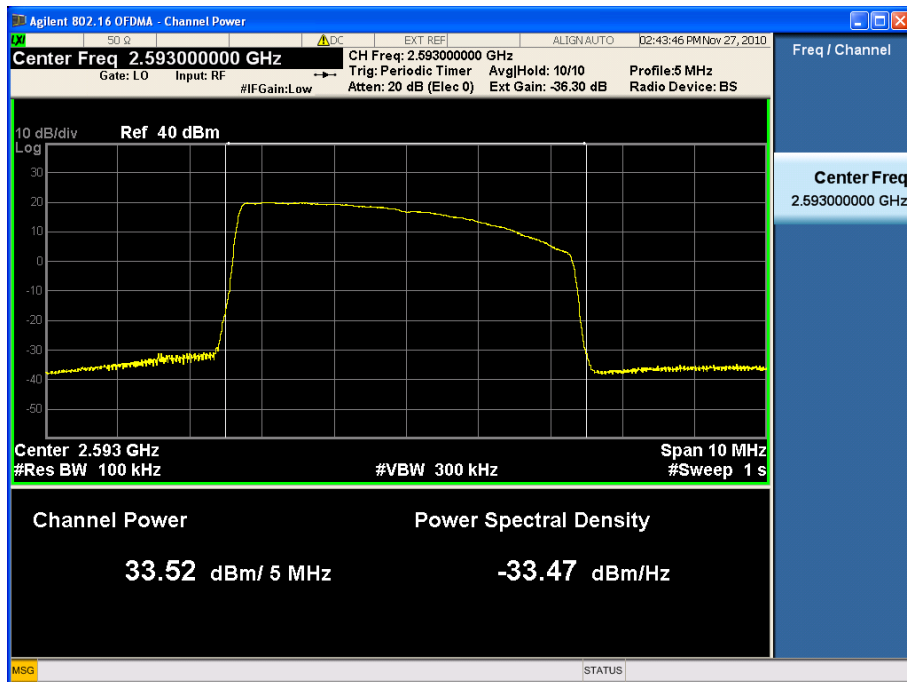


(64QAM Middle Channel)



FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 27 of 95

(64QAM High Channel)



FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 28 of 95

6. OCCUPIED BANDWIDTH

6.1. Applicable Standard

Requirements: CFR 47, Section 27.53(m)(6) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, 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. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

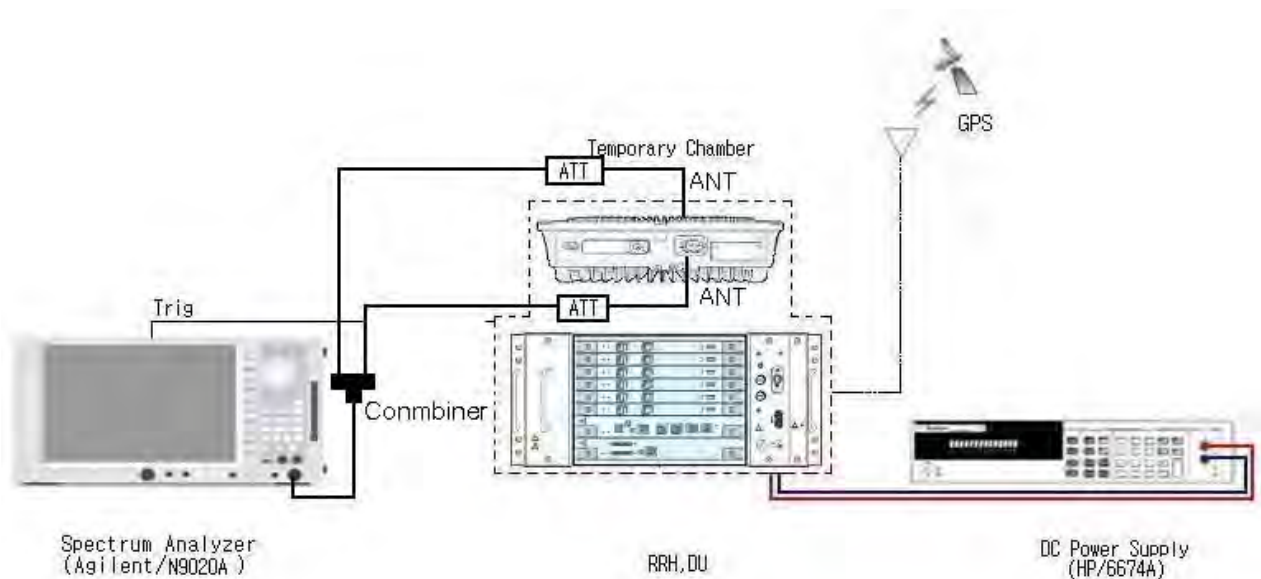
6.2. Test Equipment List and Details

Manufacturer	Model / Equipment	Serial No.	Calibration Due
Agilent	6674A / DC Power Supply	3501A00901	05/14/2011
WEINSCHEL	67-30-33 / Attenuator	BU5347	01/06/2011
WEINSCHEL	67-30-33 / Attenuator	BR0530	01/14/2011
WEINSCHEL	AF117A-69-31 / STEP ATTENUATOR	11787	11/12/2011
WEINSCHEL	AF117A-69-31 / STEP ATTENUATOR	639	11/12/2011
Agilent	N9020A / MXA Signal Analyzer	US46220219	03/03/2011
Agilent	11636B / Power Divider	11377	12/24/2010

6.3. Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
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The EUT was connected to a spectrum analyzer enabled with an occupied bandwidth function via its antenna port. Measurements were performed to determine the occupied bandwidth in accordance with FCC Part 2.1049. The occupied bandwidth was measured from the fundamental emission at the bottom, middle and top channels. The occupied bandwidth was measured using the built in occupied bandwidth function of the spectrum analyzer. It was set to measure the bandwidth where 99% of the signal power was contained. The analyzer automatically configures the measurement bandwidths to make an accurate measurement based on the channel bandwidth and channel spacing of the EUT.

6.3.1. Environmental Conditions:

Temperature:	25 °C
Relative Humidity:	29 %

6.4. Test Result

: PASS

FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 30 of 95

6.4.1. Test Data at Output 1

Modulation	Channel	Frequency	Measured Bandwidth	
			99 %	26 dB
QPSK	Low	2499.00	4.5884	4.858
	Middle	2543.25	4.5889	4.860
	High	2593.00	4.5884	4.859
16QAM	Low	2499.00	4.5882	4.859
	Middle	2543.25	4.5881	4.862
	High	2593.00	4.5880	4.862
64QAM	Low	2499.00	4.5882	4.858
	Middle	2543.25	4.5891	4.858
	High	2593.00	4.5885	4.857

6.4.2. Test Data at Output Port 2

Modulation	Channel	Frequency	Measured Bandwidth	
			99 %	26 dB
QPSK	Low	2499.00	4.5885	4.859
	Middle	2543.25	4.5882	4.862
	High	2593.00	4.5889	4.861
16QAM	Low	2499.00	4.5890	4.861
	Middle	2543.25	4.5880	4.861
	High	2593.00	4.5887	4.858
64QAM	Low	2499.00	4.5885	4.860
	Middle	2543.25	4.5890	4.860
	High	2593.00	4.5887	4.861

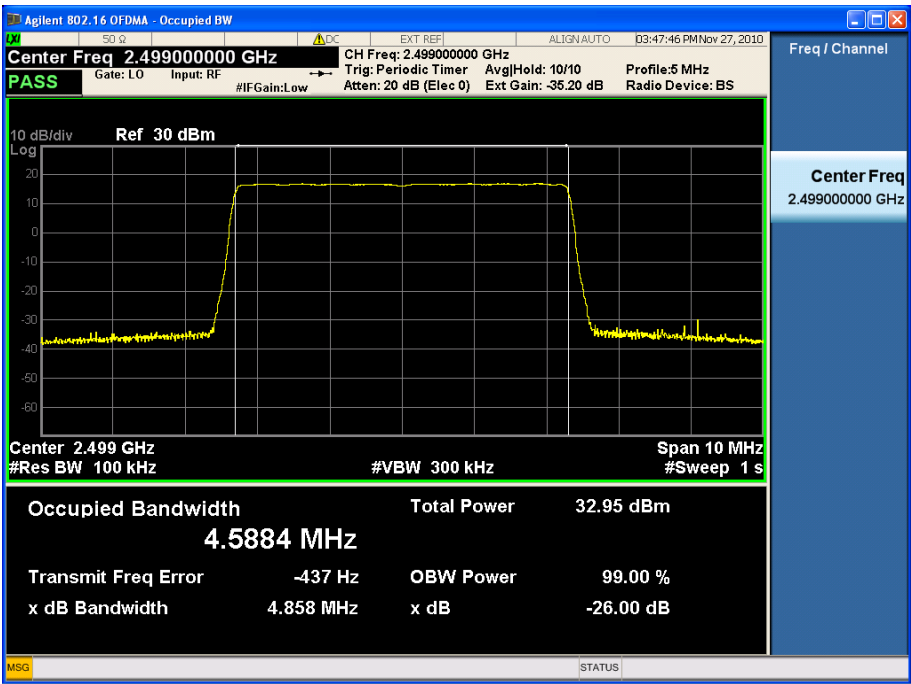
6.4.3. Combined Test Data at Output Port

Modulation	Channel	Frequency	Measured Bandwidth	
			99 %	26 dB
QPSK	Low	2499.00	4.5420	4.833
	Middle	2543.25	4.5368	4.830
	High	2593.00	4.2055	4.784
16QAM	Low	2499.00	4.5423	4.830
	Middle	2543.25	4.5369	4.829
	High	2593.00	4.2063	4.785
64QAM	Low	2499.00	4.5415	4.832
	Middle	2543.25	4.5367	4.830
	High	2593.00	4.2050	4.784

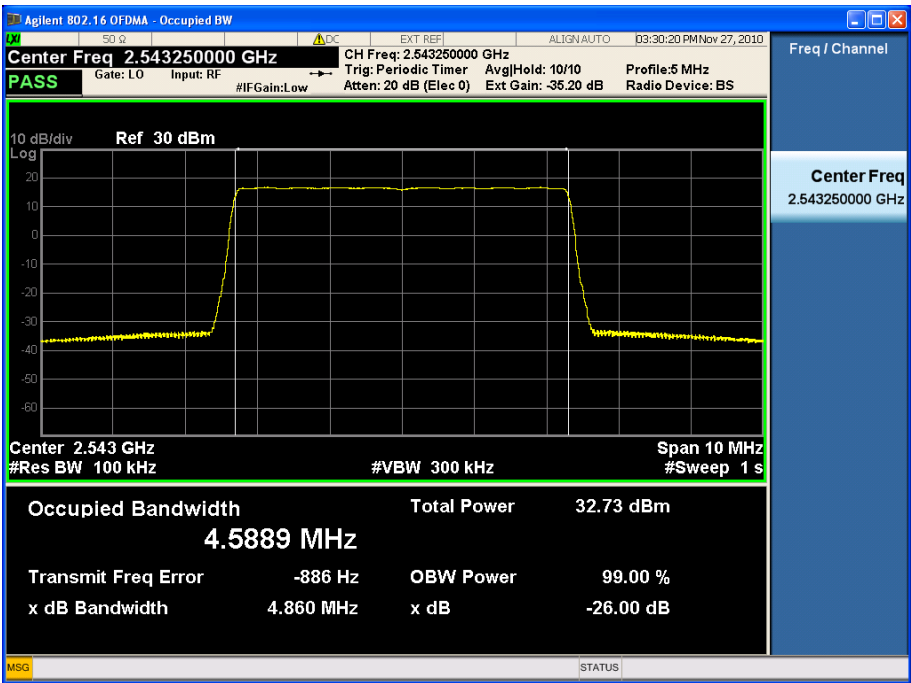
FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 32 of 95

6.4.4. Test Plot at Output Port 1

(QPSK Low Channel)

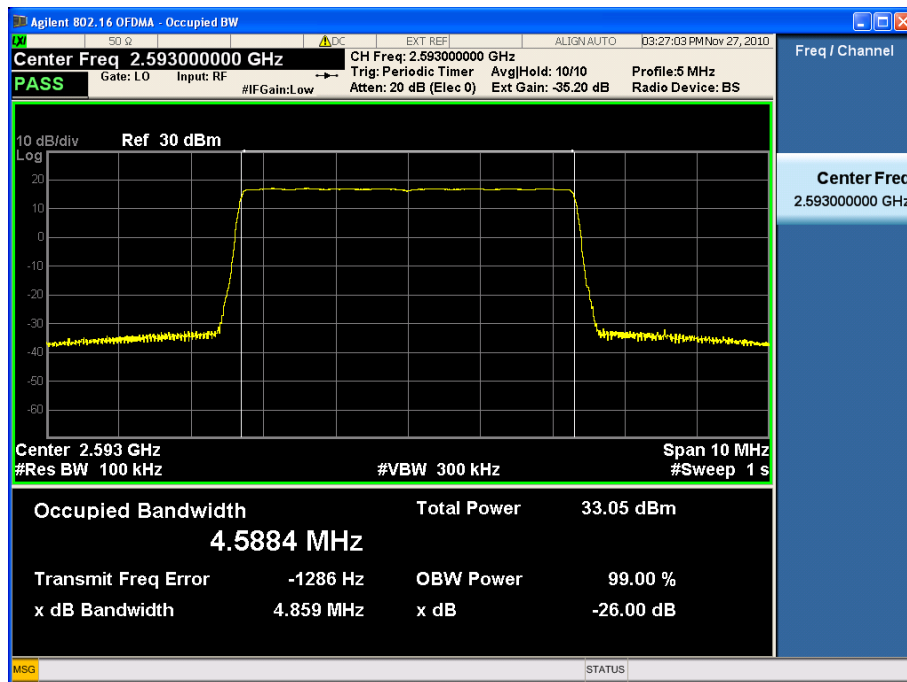


(QPSK Middle Channel)

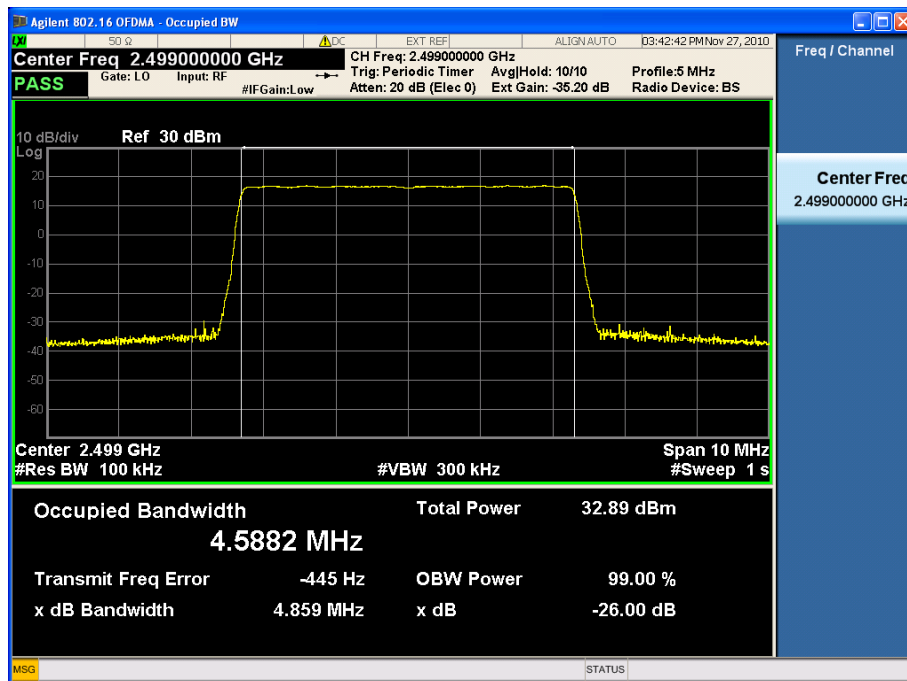


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 33 of 95

(QPSK High Channel)

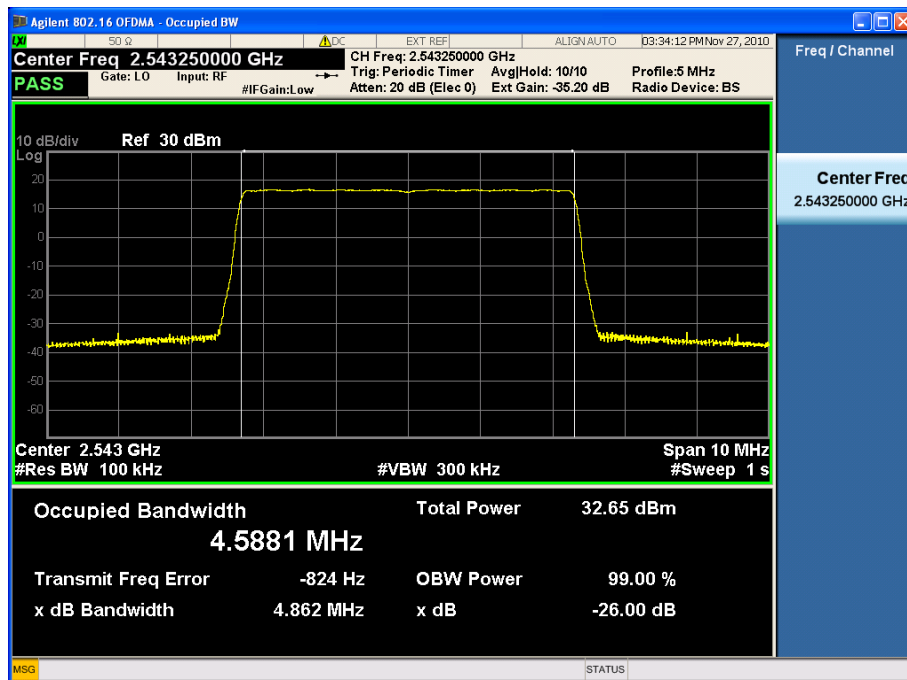


(16QAM Low Channel)

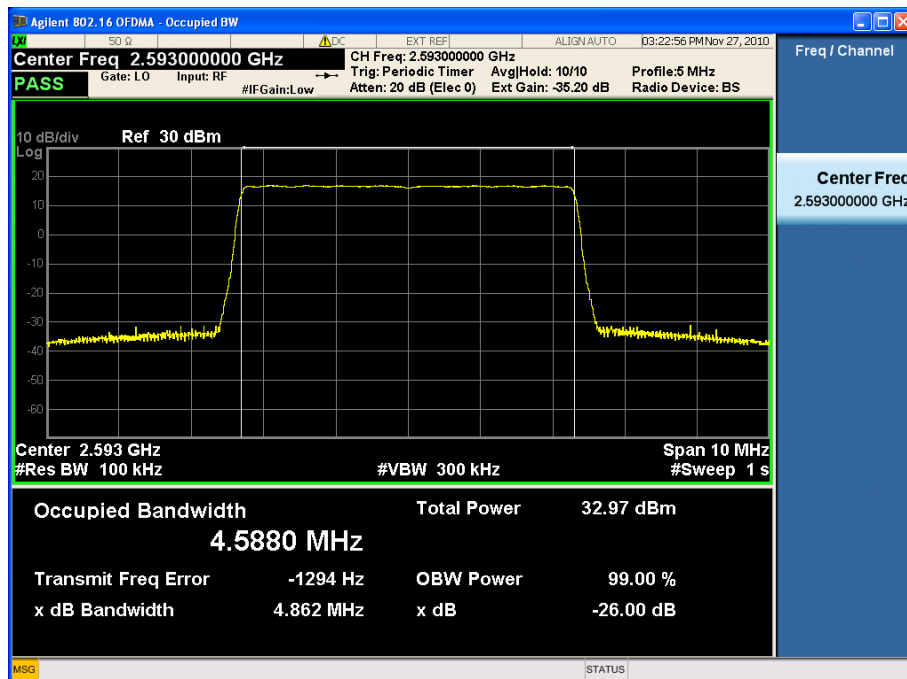


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 34 of 95

(16QAM Middle Channel)

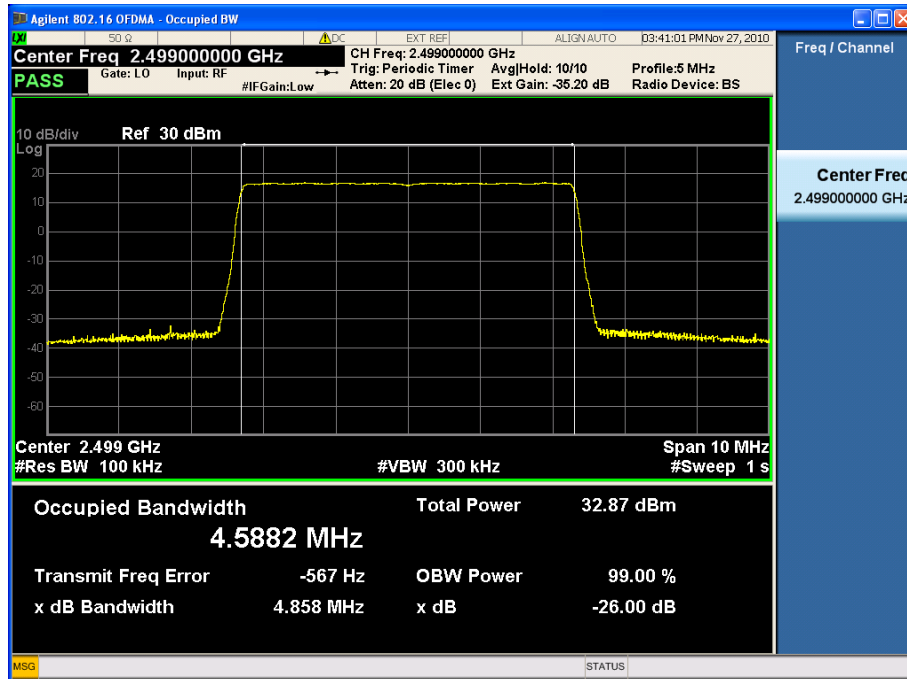


(16QAM High Channel)

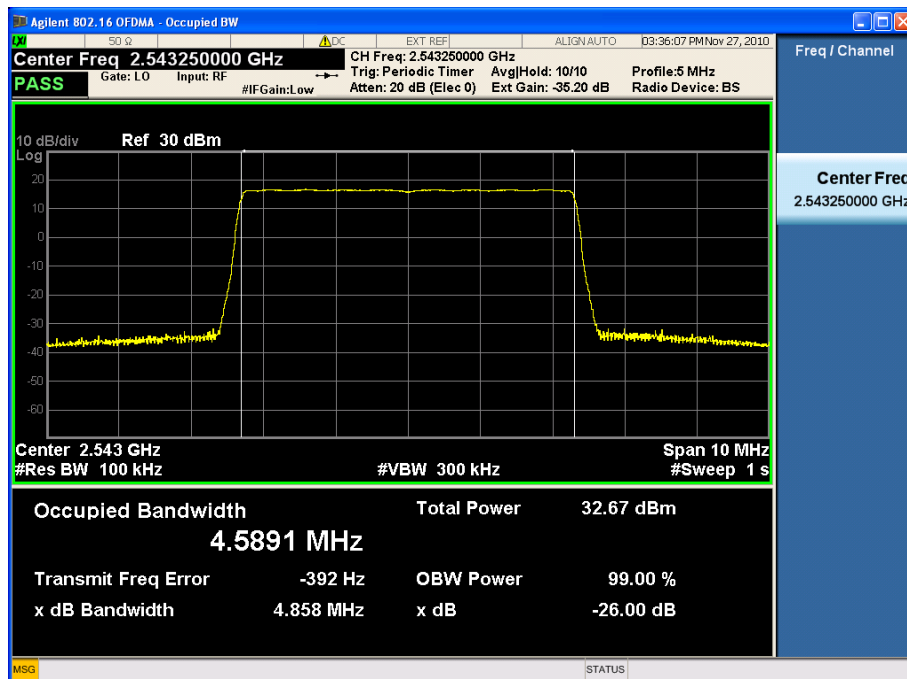


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 35 of 95

(64QAM Low Channel)

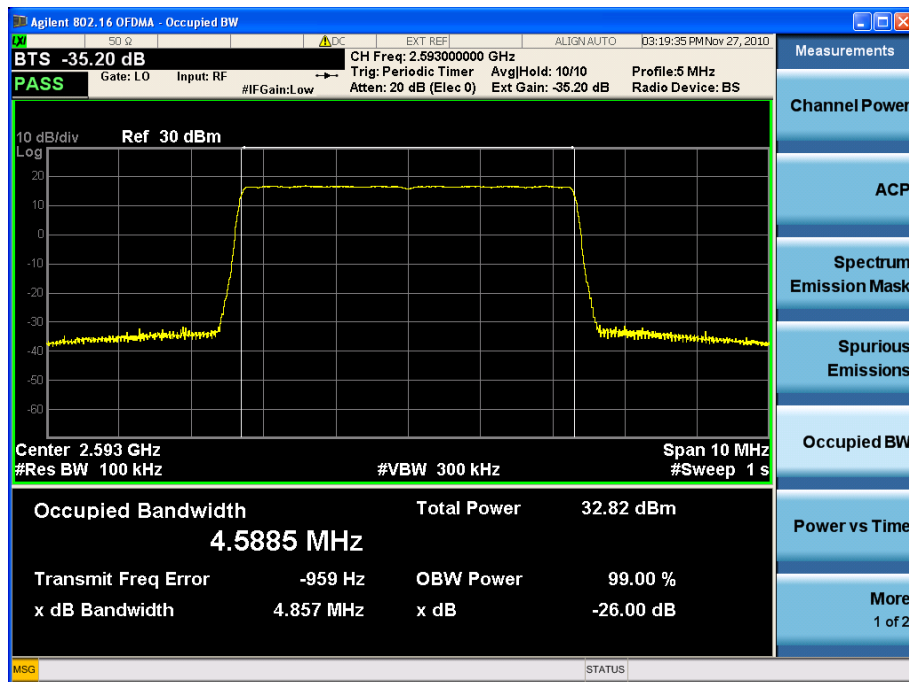


(64QAM Middle Channel)



FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 36 of 95

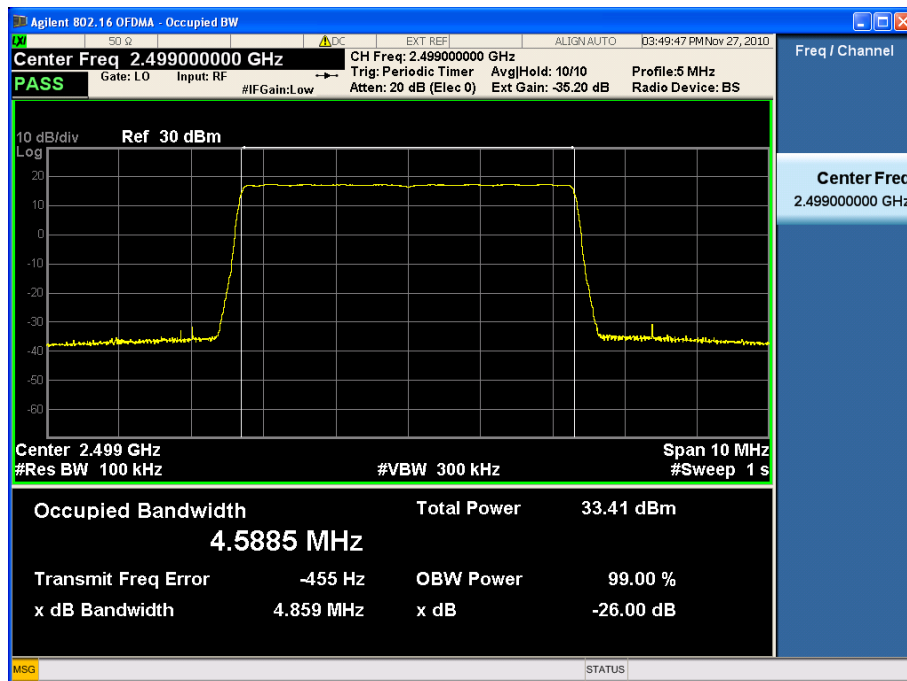
(64QAM High Channel)



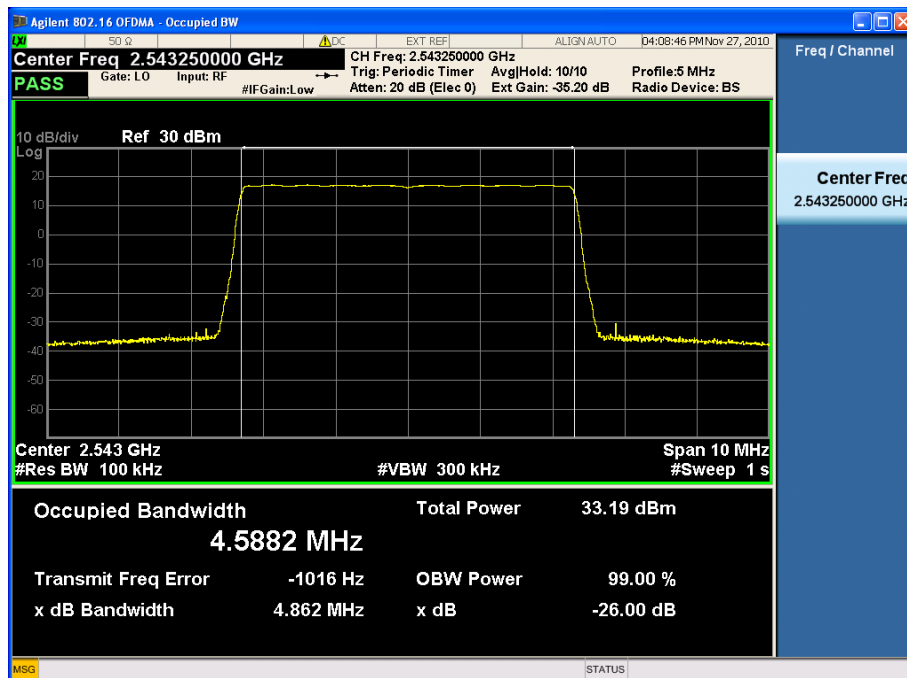
FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 37 of 95

6.4.5. Test Plot at Output Port 2

(QPSK Low Channel)

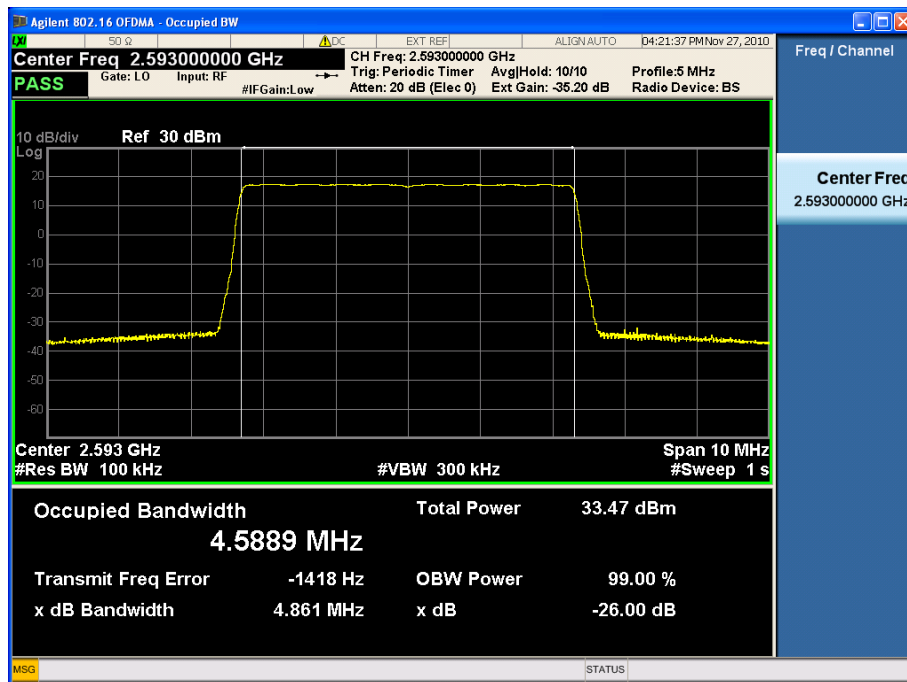


(QPSK Middle Channel)

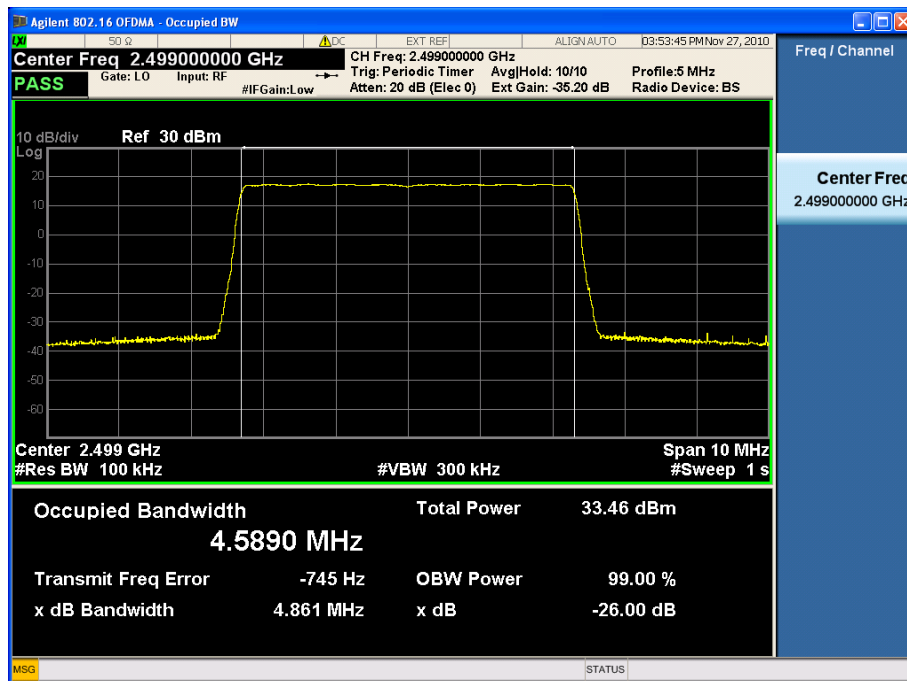


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 38 of 95

(QPSK High Channel)

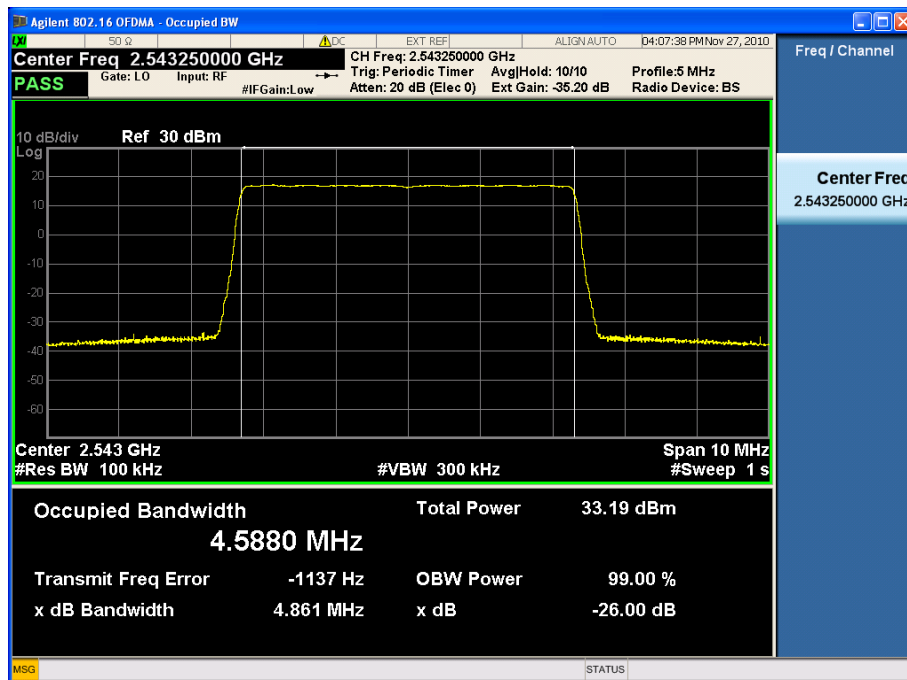


(16QAM Low Channel)

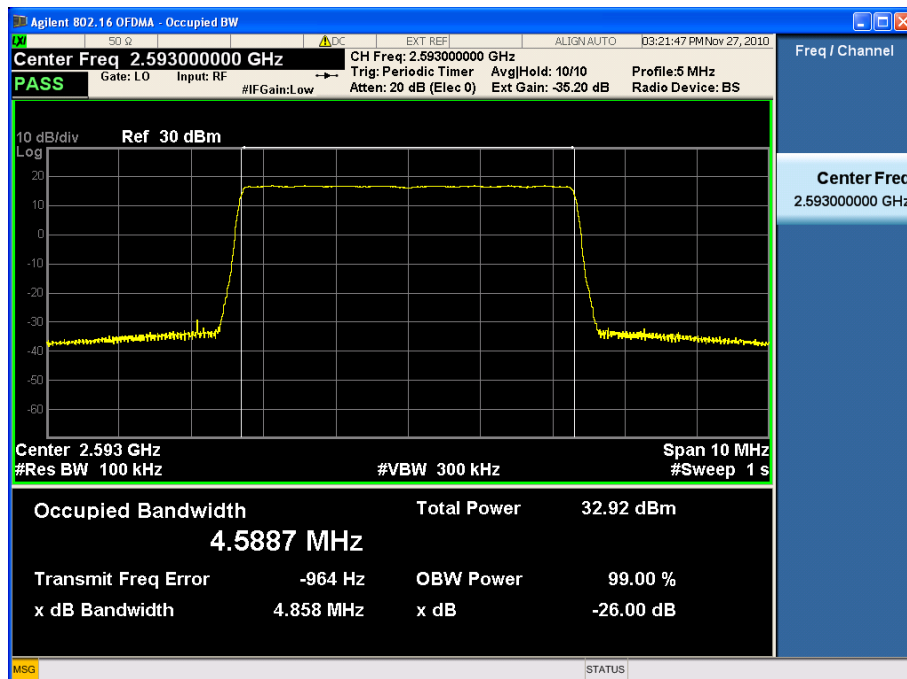


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 39 of 95

(16QAM Middle Channel)

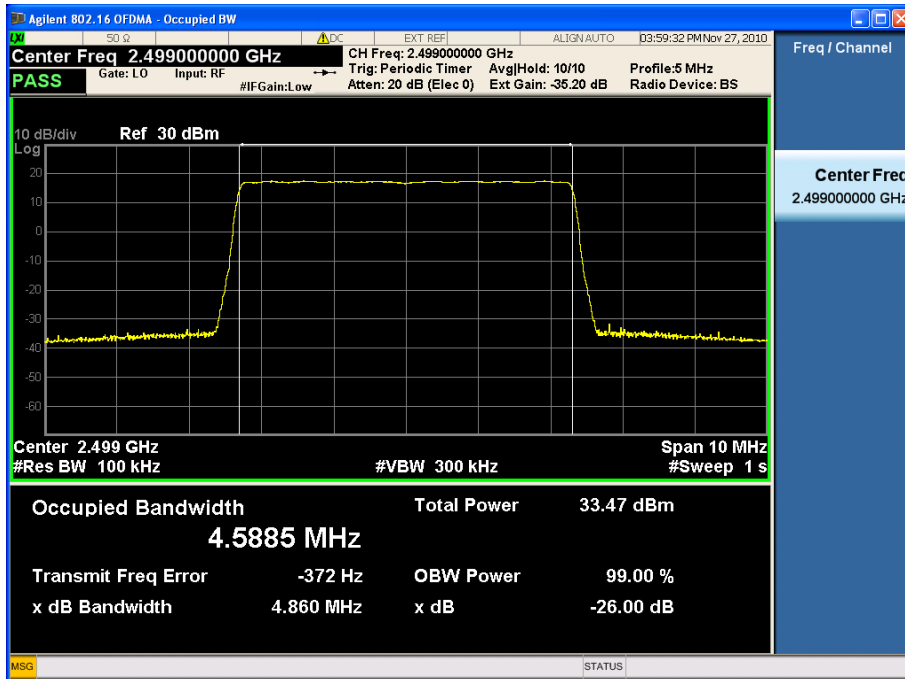


(16QAM High Channel)

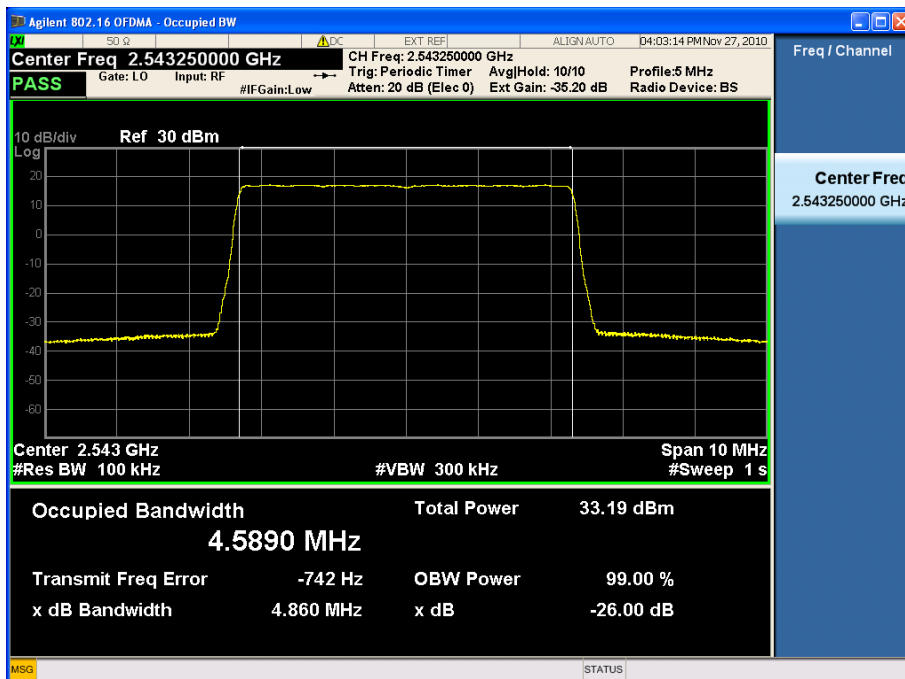


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 40 of 95

(64QAM Low Channel)

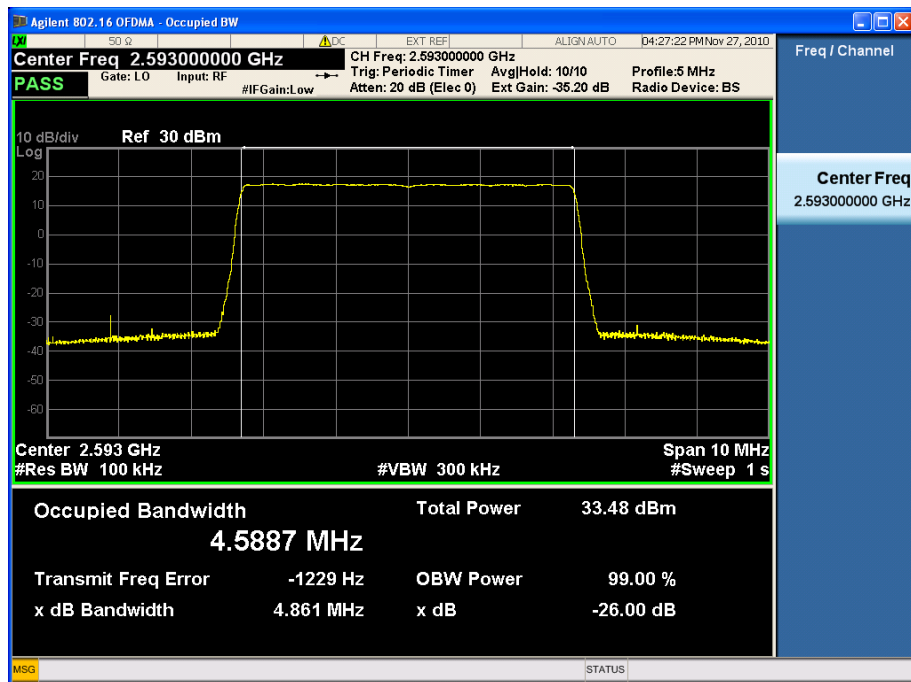


(64QAM Middle Channel)



FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 41 of 95

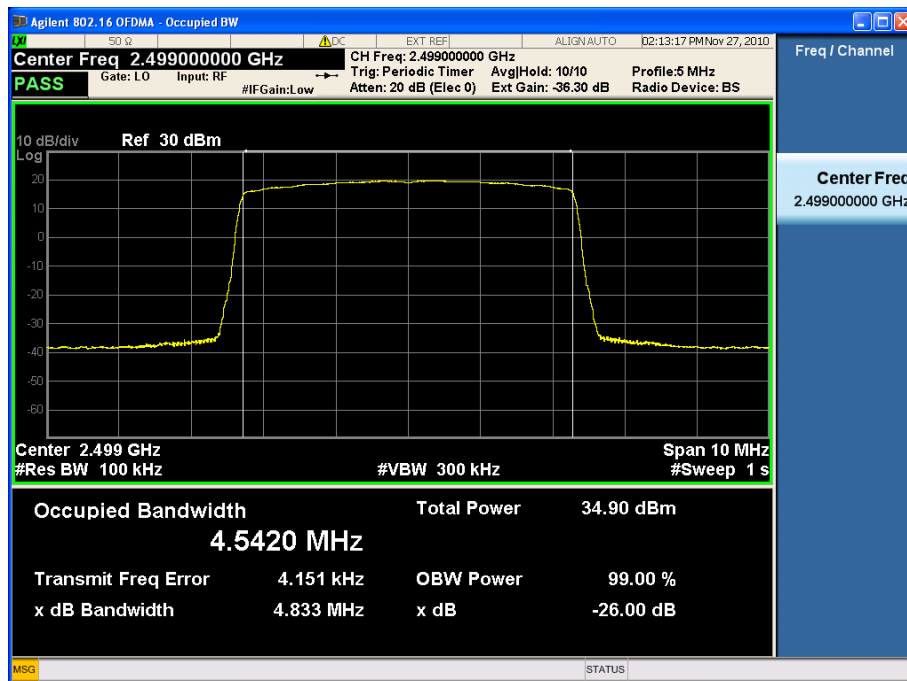
(64QAM High Channel)



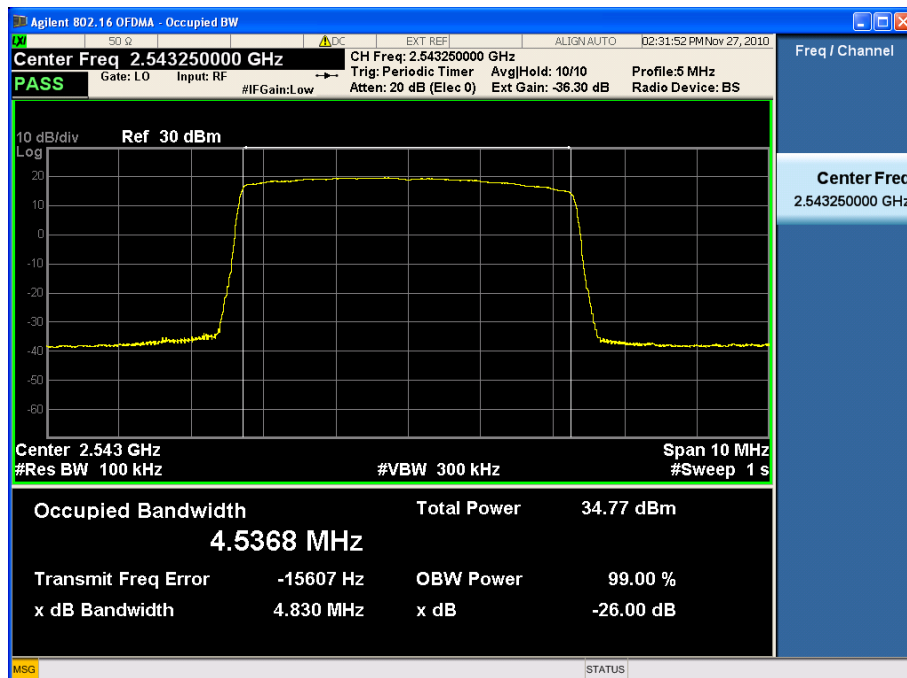
FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 42 of 95

6.4.6. Combined Test Plot at Output Port

(QPSK Low Channel)

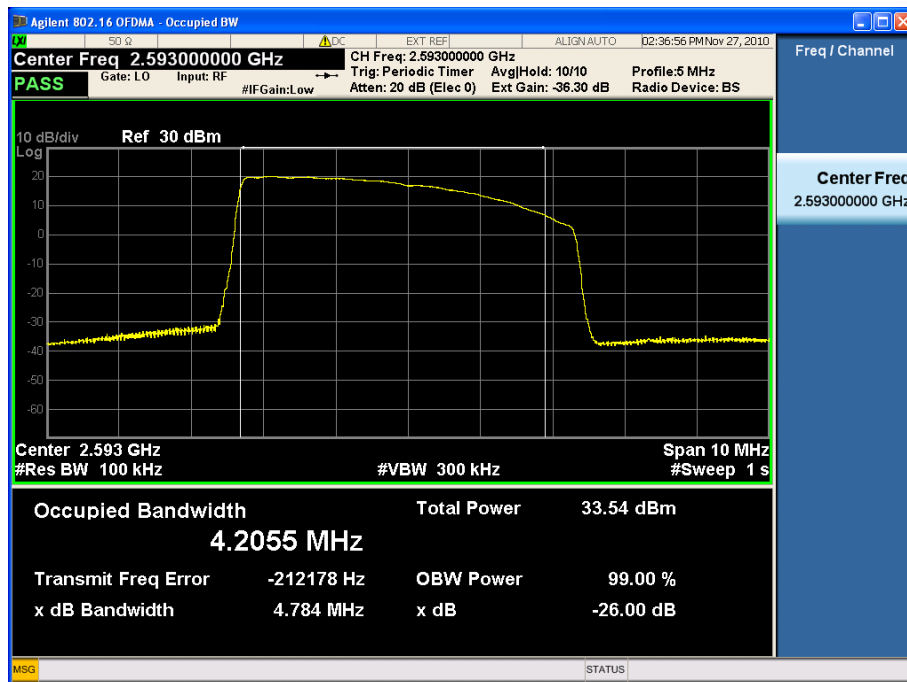


(QPSK Middle Channel)

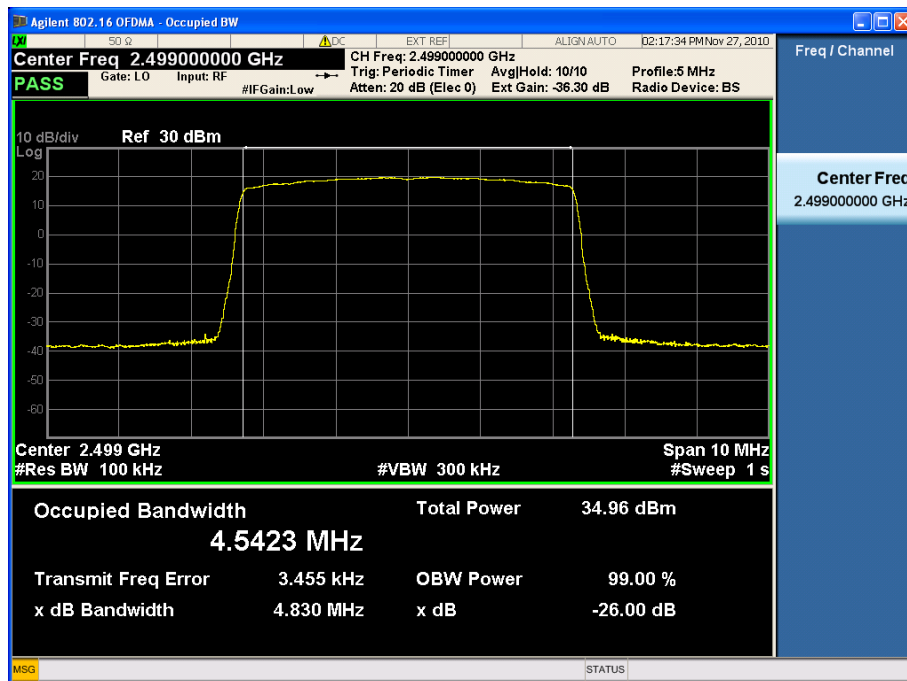


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 43 of 95

(QPSK High Channel)

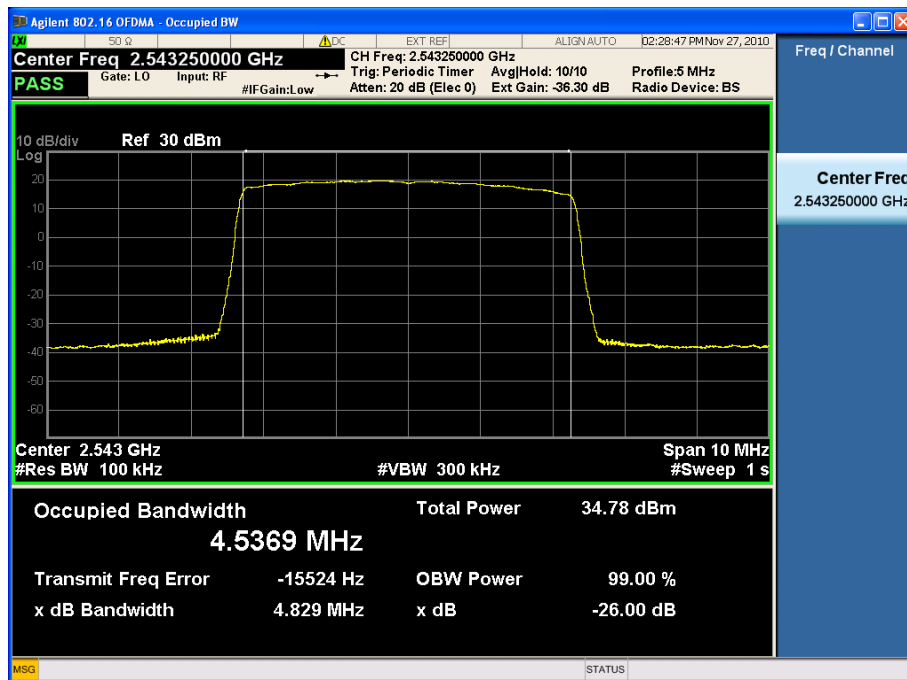


(16QAM Low Channel)

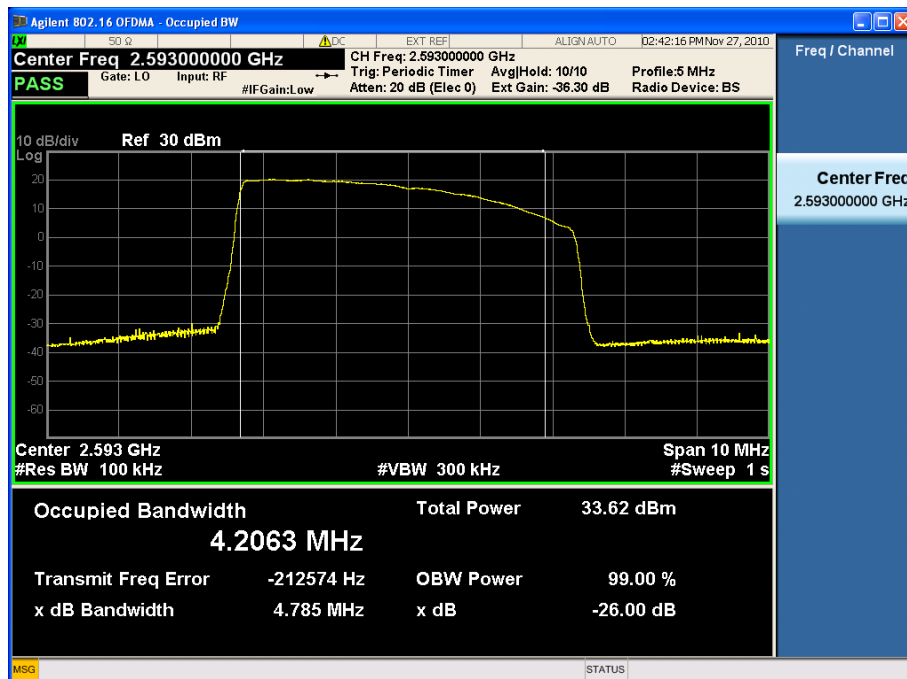


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 44 of 95

(16QAM Middle Channel)

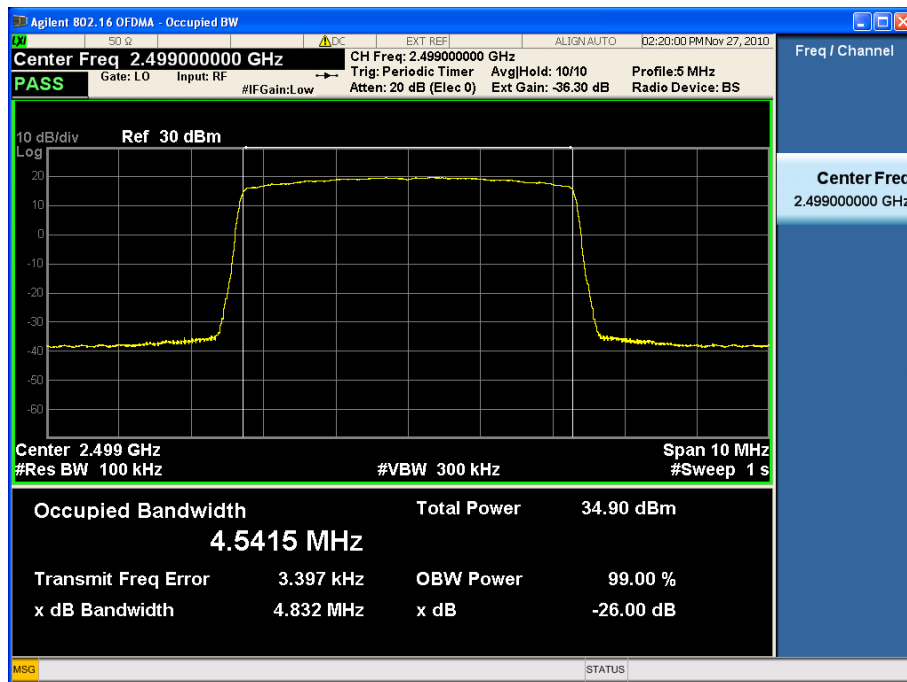


(16QAM High Channel)

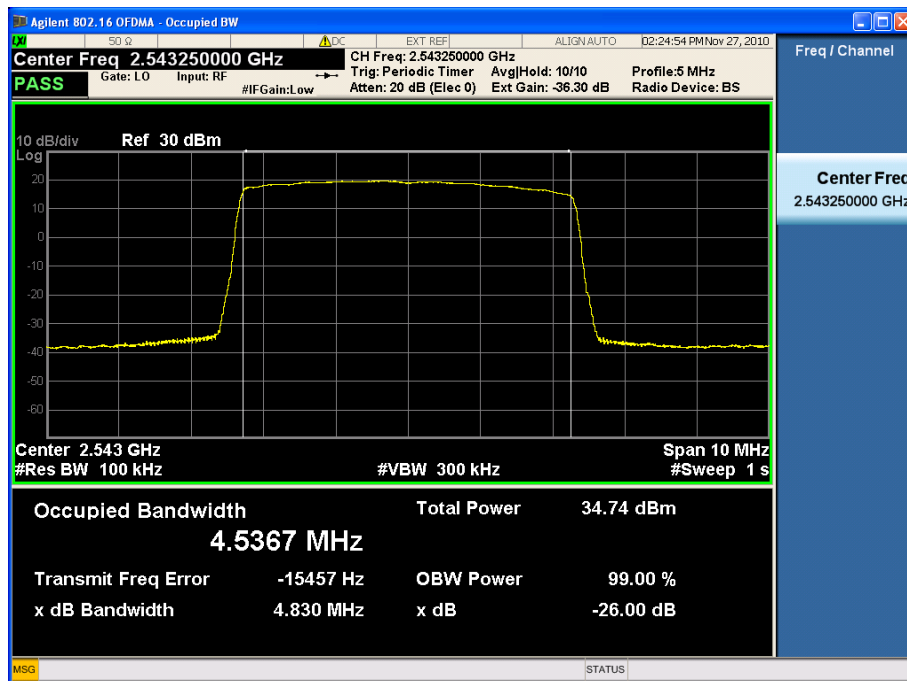


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 45 of 95

(64QAM Low Channel)

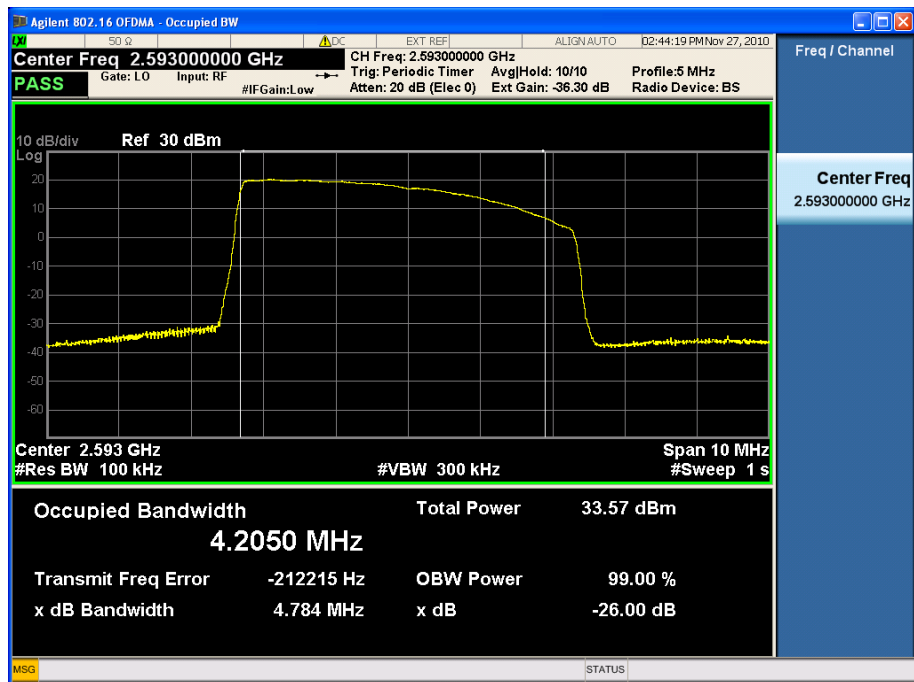


(64QAM Middle Channel)



FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 46 of 95

(64QAM High Channel)



FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 47 of 95

7. BAND EDGES

7.1. Applicable Standard

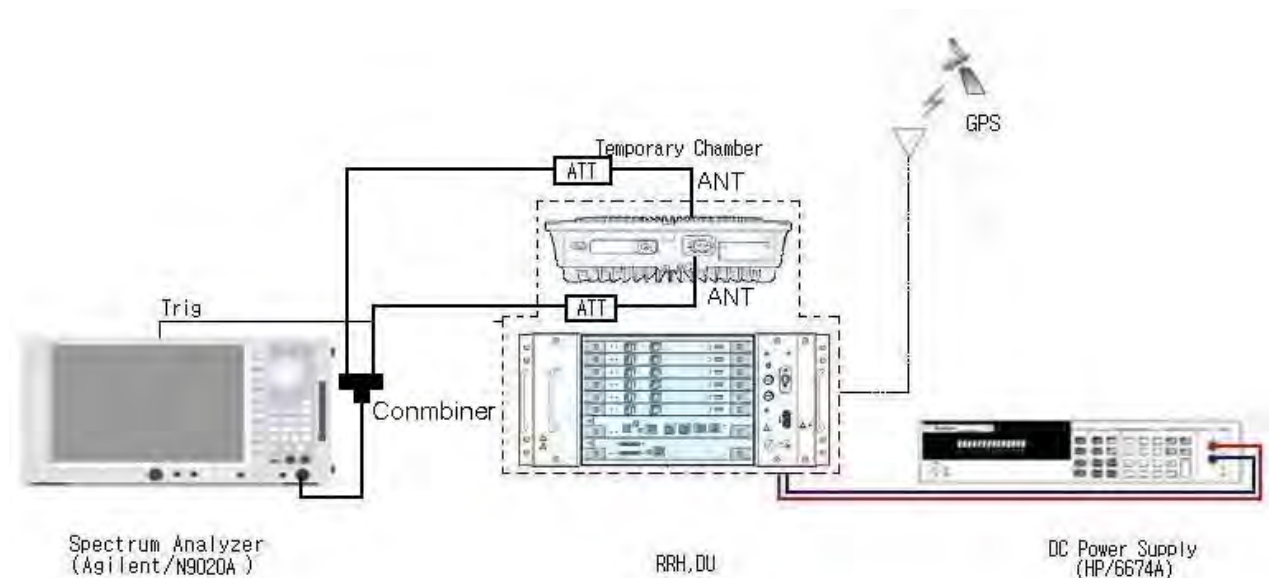
According to §27.53(m), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (p) by a factor of at least $43 + 10 \log (p)$ dB.

7.2. Test Equipment List and Details

Manufacturer	Model / Equipment	Serial No.	Calibration Due
Agilent	6674A / DC Power Supply	3501A00901	05/14/2011
WEINSCHEL	67-30-33 / Attenuator	BU5347	01/06/2011
WEINSCHEL	67-30-33 / Attenuator	BR0530	01/14/2011
WEINSCHEL	AF117A-69-31 / STEP ATTENUATOR	11787	11/12/2011
WEINSCHEL	AF117A-69-31 / STEP ATTENUATOR	639	11/12/2011
Agilent	N9020A / MXA Signal Analyzer	US46220219	03/03/2011
Agilent	11636B / Power Divider	11377	12/24/2010

7.3. Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.



The center of the spectrum analyzer was set to block edge frequency.

FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 48 of 95

The EUT provides the MIMO function which is able to transmit on the same channel with same data simultaneously therefore a combiner is used to sum the individual transmitter output power.

The test data is shown as a combined output in the report.

7.3.1. Environmental Conditions

Temperature:	25 °C
Relative Humidity:	26 %

7.4. Test Result

: PASS

7.4.1. Test data at Output 1

Modulation	Channel	Measured Frequency (MHz)	Max. Measured Value (dBm)	Limit (dBm)
QPSK	Low	2499.00	-38.450	-13.0
	High	2593.00	-35.936	
16QAM	Low	2499.00	-35.002	
	High	2593.00	-36.279	
64QAM	Low	2499.00	-37.737	
	High	2593.00	-40.091	

7.4.2. Test data at Output 2

Modulation	Channel	Measured Frequency (MHz)	Max. Measured Value (dBm)	Limit (dBm)
QPSK	Low	2499.00	-37.811	-13.0
	High	2593.00	-35.546	
16QAM	Low	2499.00	-40.101	
	High	2593.00	-37.036	
64QAM	Low	2499.00	-39.128	
	High	2593.00	-38.487	

FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 49 of 95

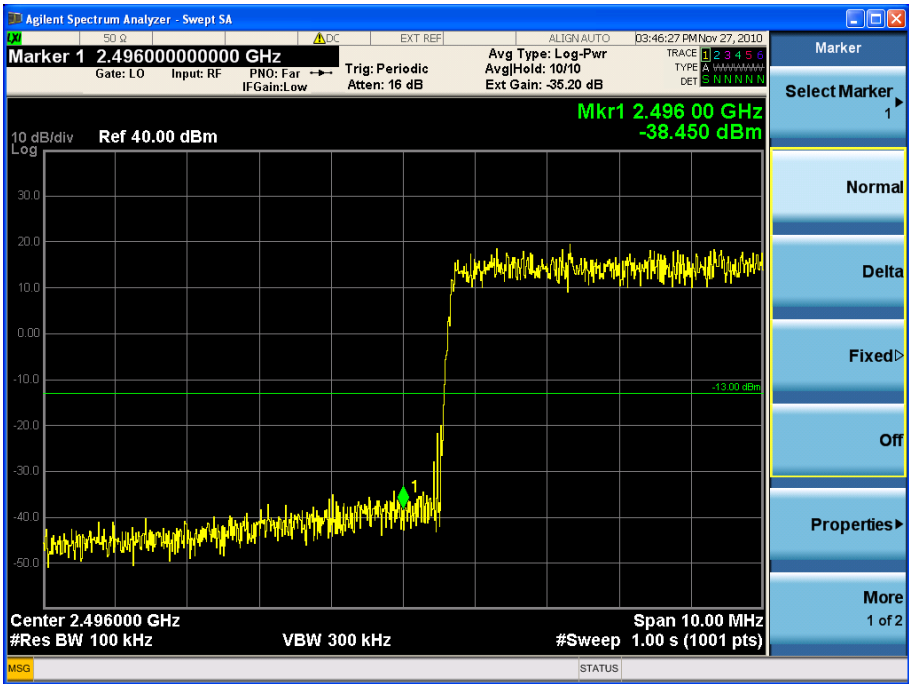
7.4.3. Combined Test data at Output

Modulation	Channel	Measured Frequency (MHz)	Max. Measured Value (dBm)	Limit (dBm)
QPSK	Low	2499.00	-41.101	-13.0
	High	2593.00	-37.708	
16QAM	Low	2499.00	-41.218	
	High	2593.00	-40.370	
64QAM	Low	2499.00	-40.765	
	High	2593.00	-39.668	

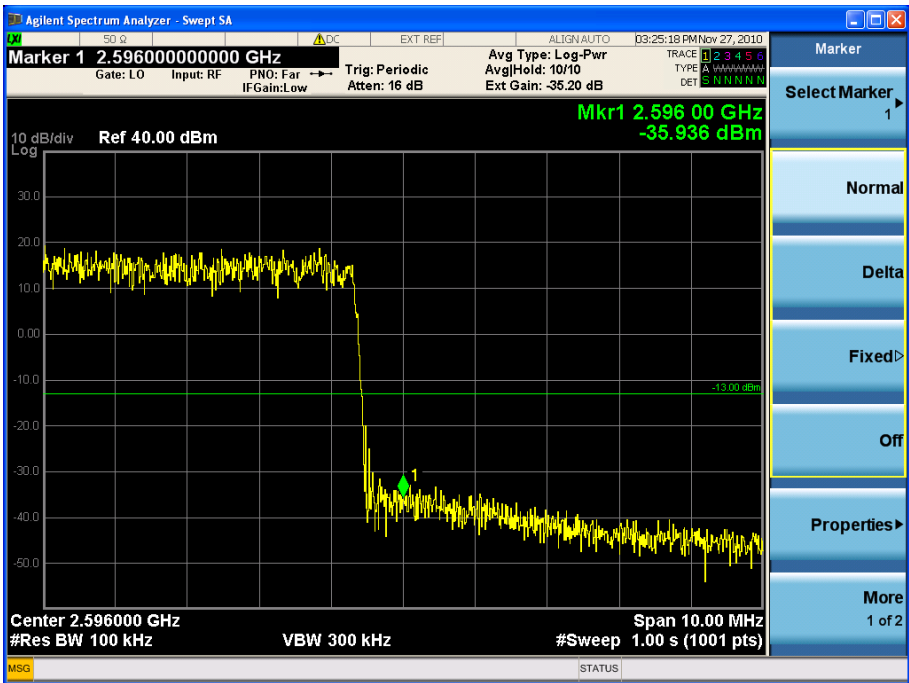
FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 50 of 95

7.4.4. Plot Data at Output 1

(QPSK Low Channel)

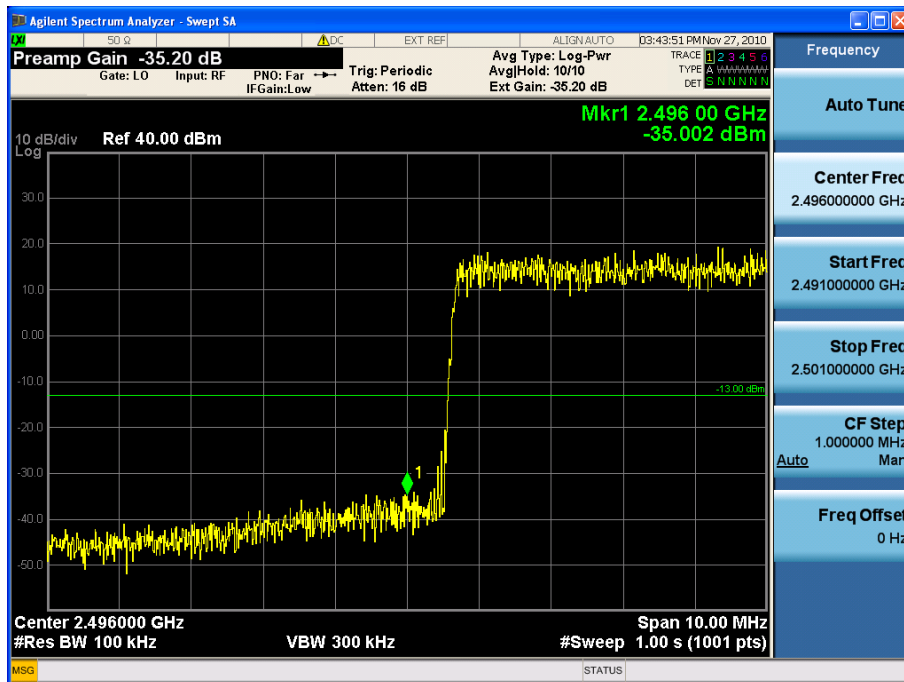


(QPSK High Channel)

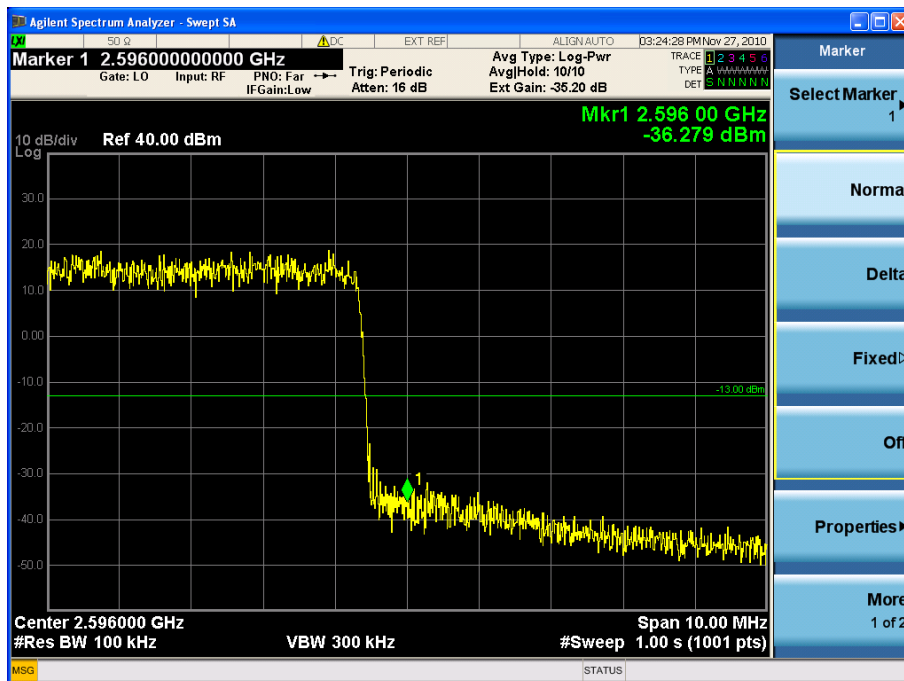


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR03	Date of Issue: December 06, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-2213282501	Page 51 of 95

(16QAM Low Channel)

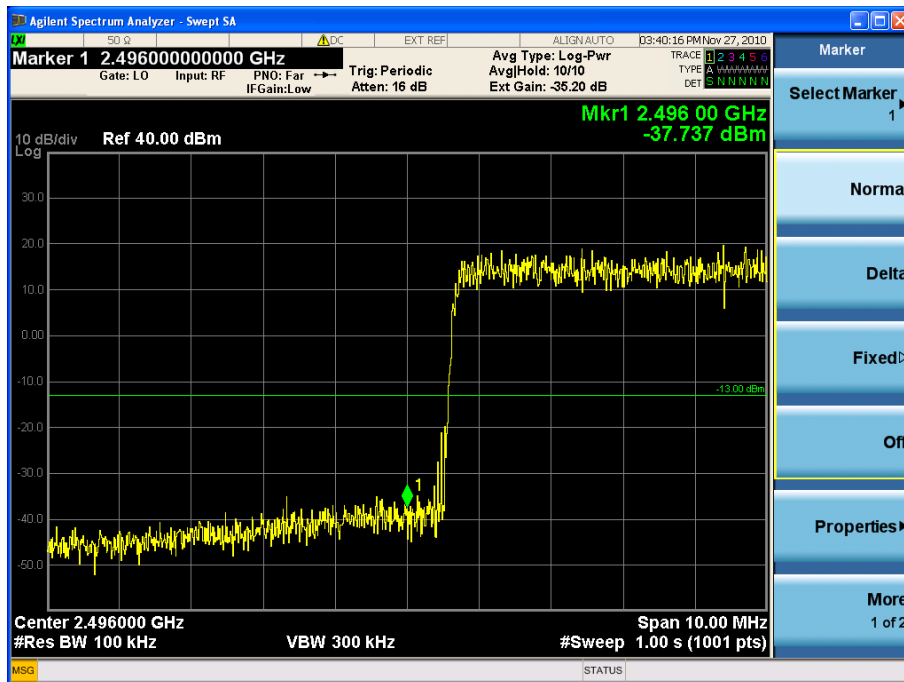


(16QAM High Channel)

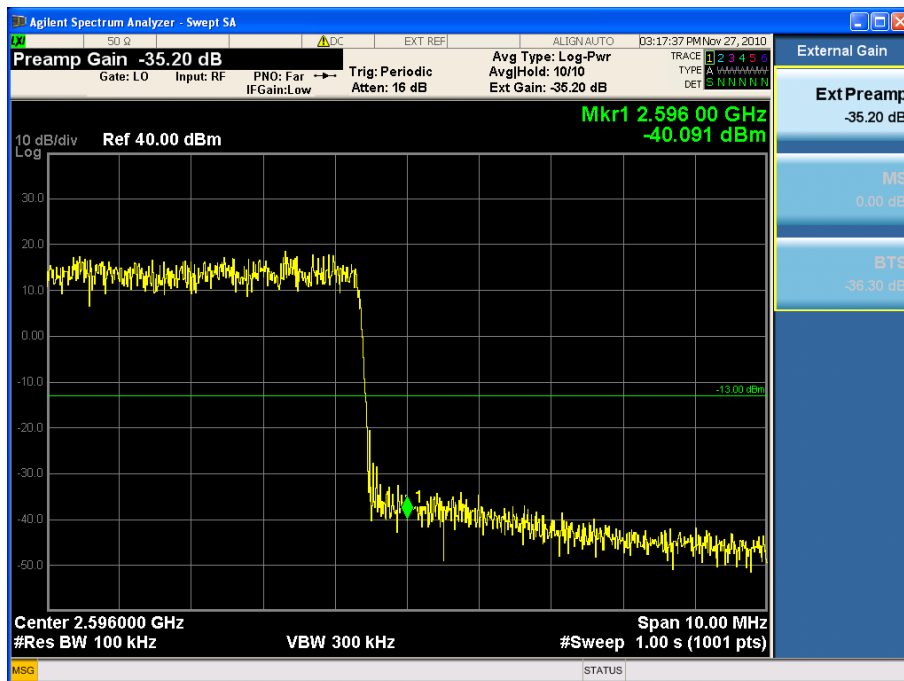


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
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(64QAM Low Channel)



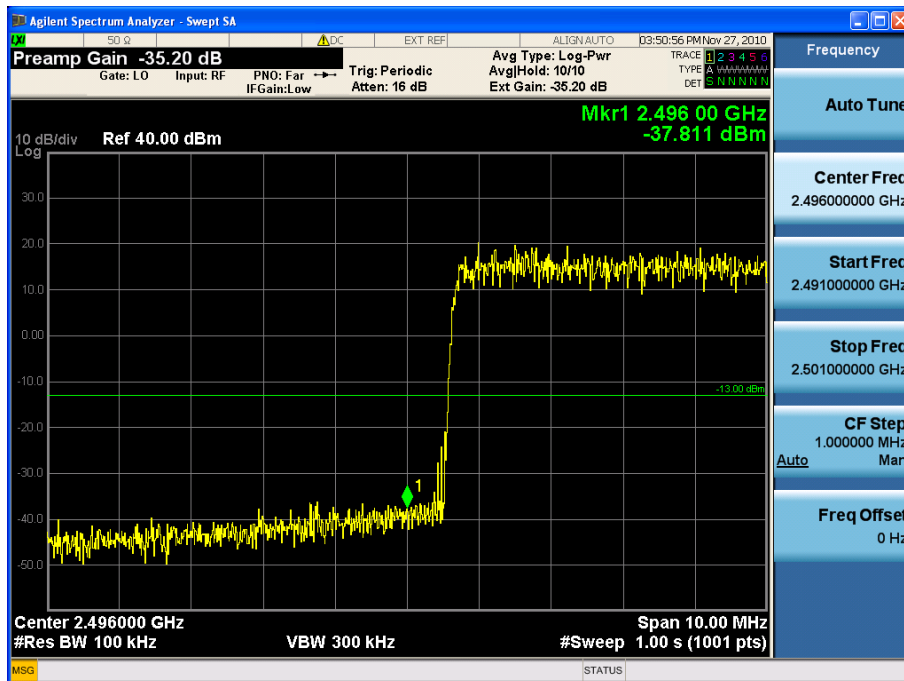
(64QAM High Channel)



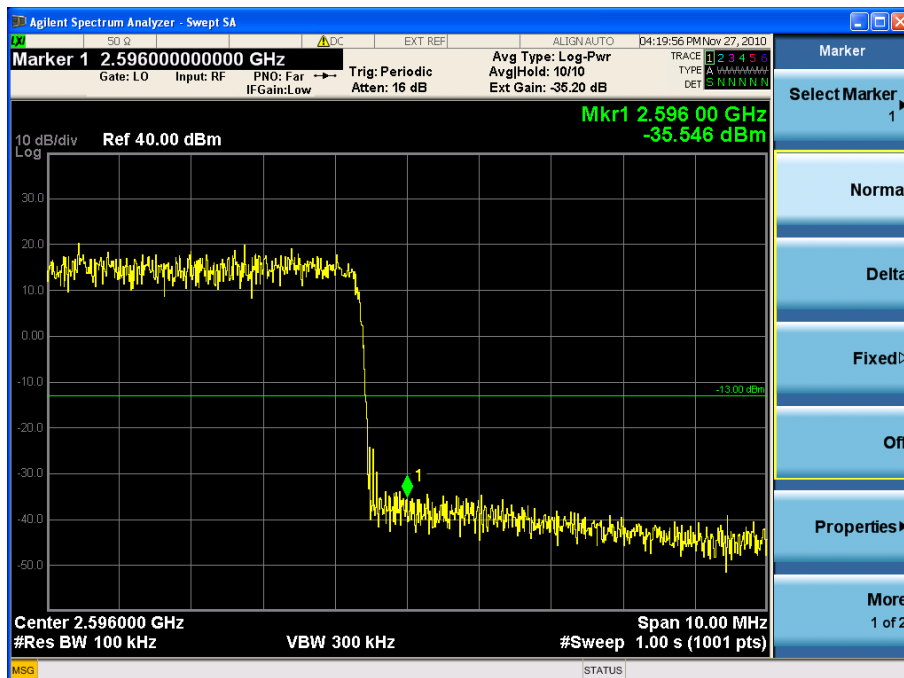
FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
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7.4.5. Plot Data at Output 2

(QPSK Low Channel)

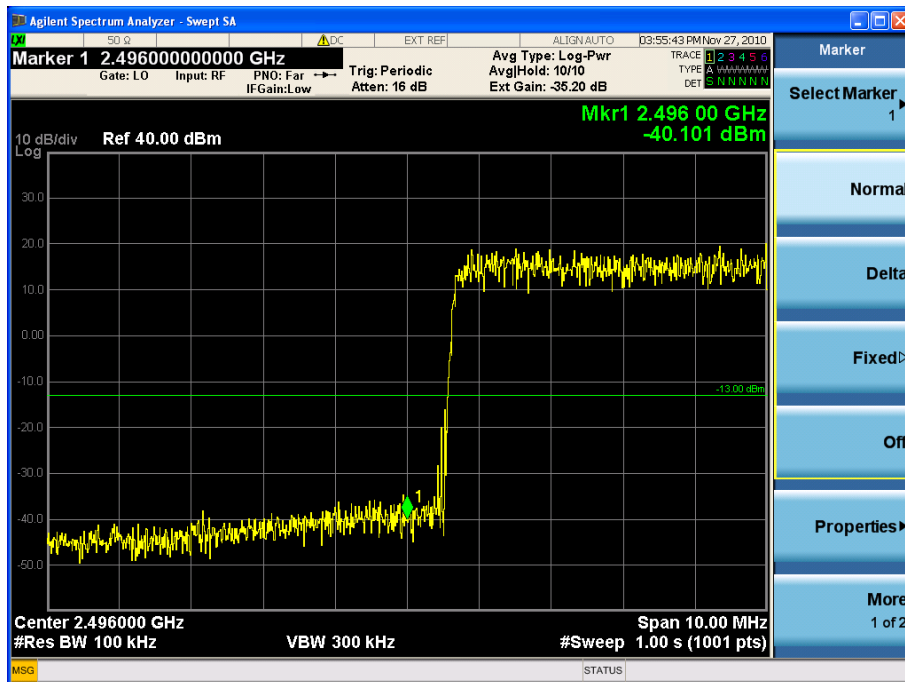


(QPSK High Channel)

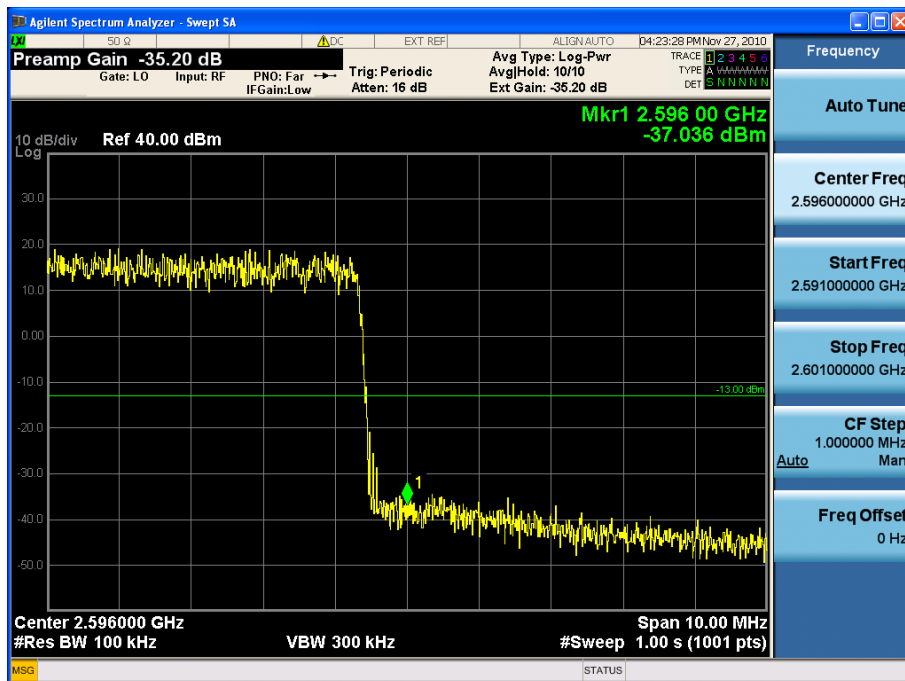


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
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(16QAM Low Channel)

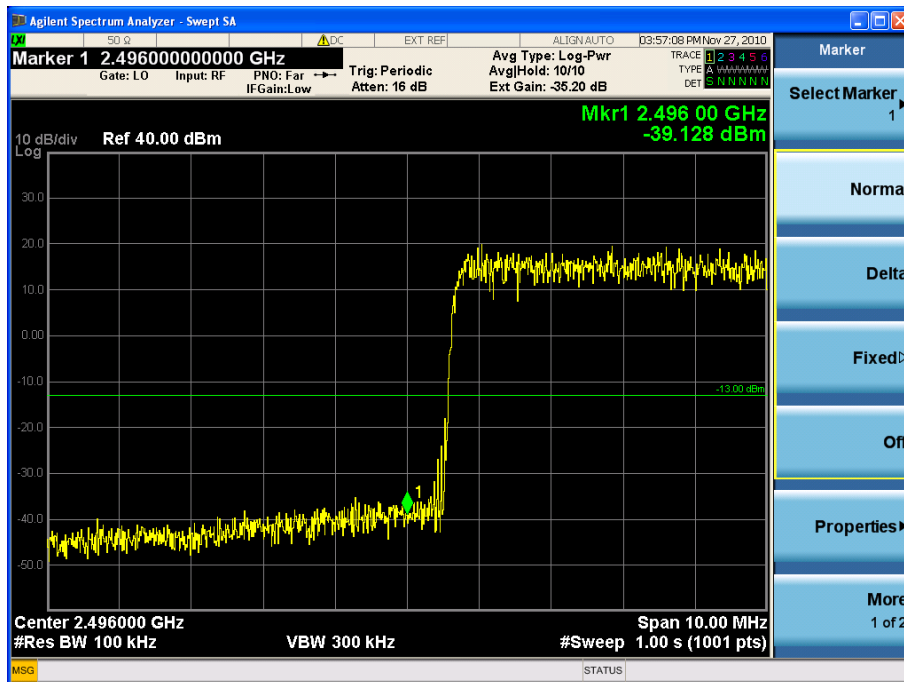


(16QAM High Channel)

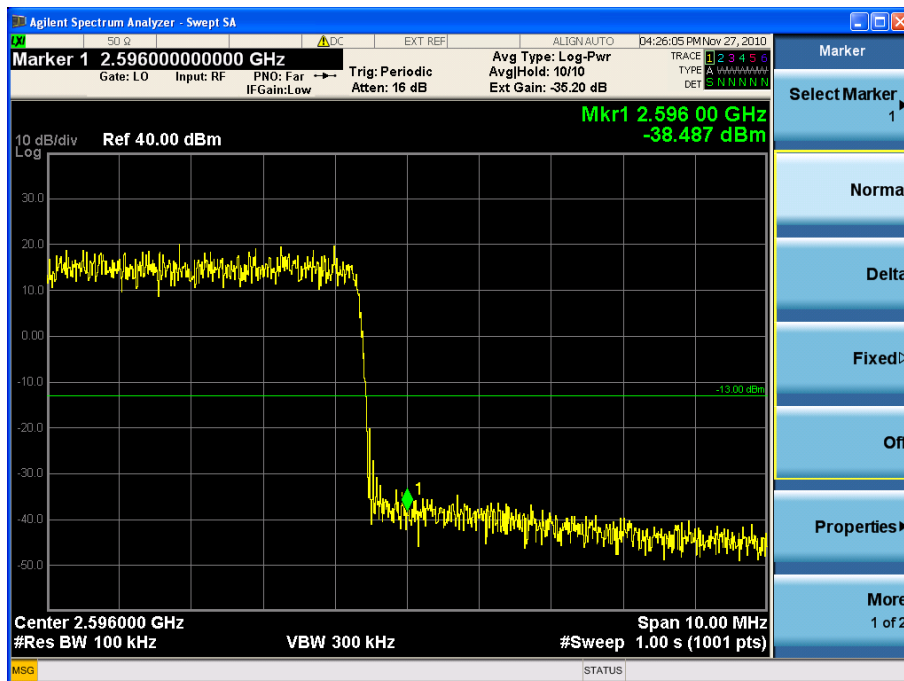


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
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(64QAM Low Channel)



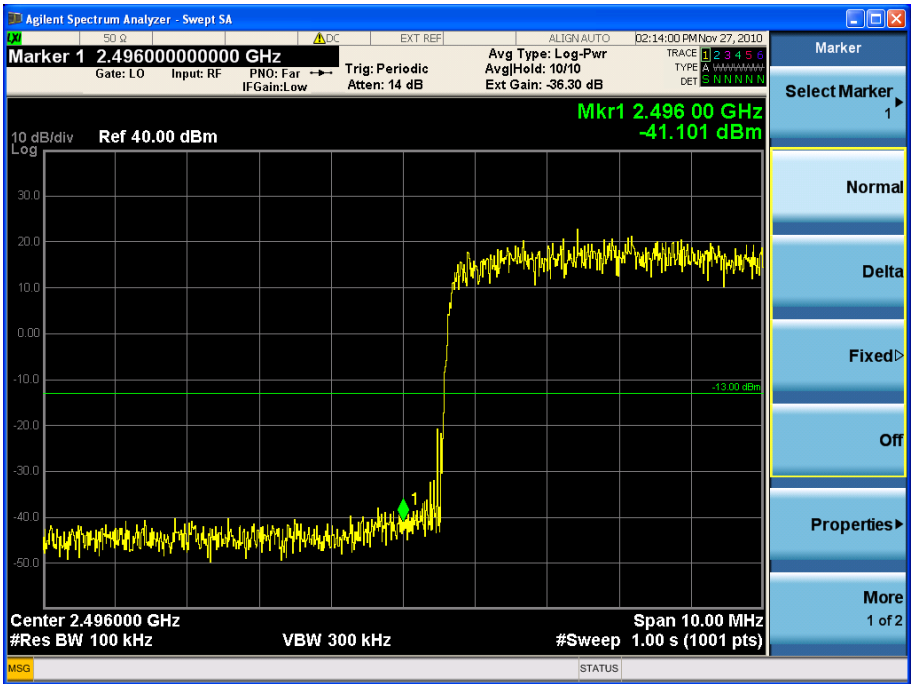
(64QAM High Channel)



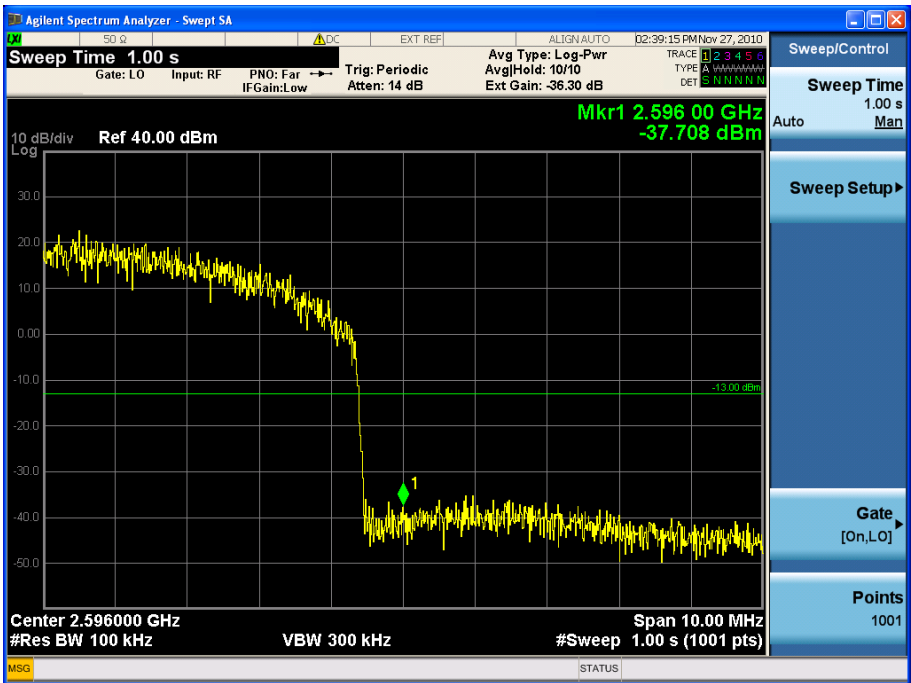
FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
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7.4.6. Combined Plot Data at Output

(QPSK Low Channel)

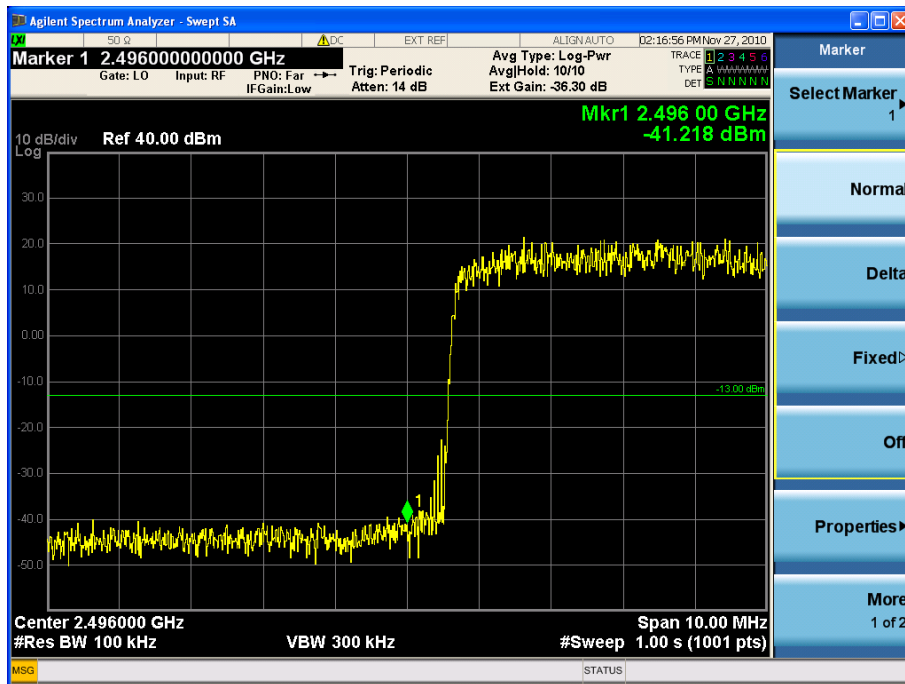


(QPSK High Channel)

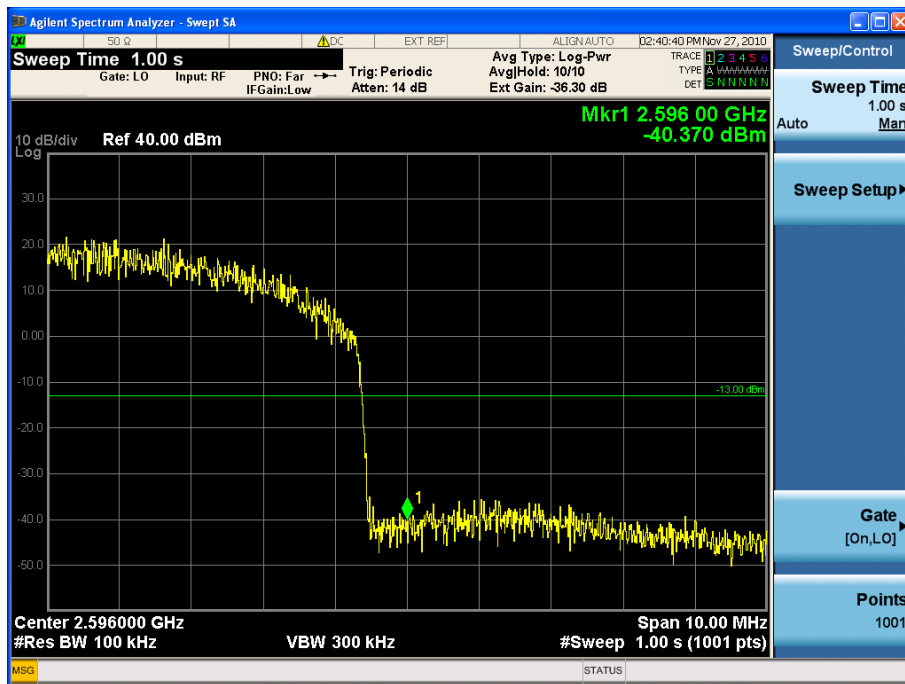


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
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(16QAM Low Channel)

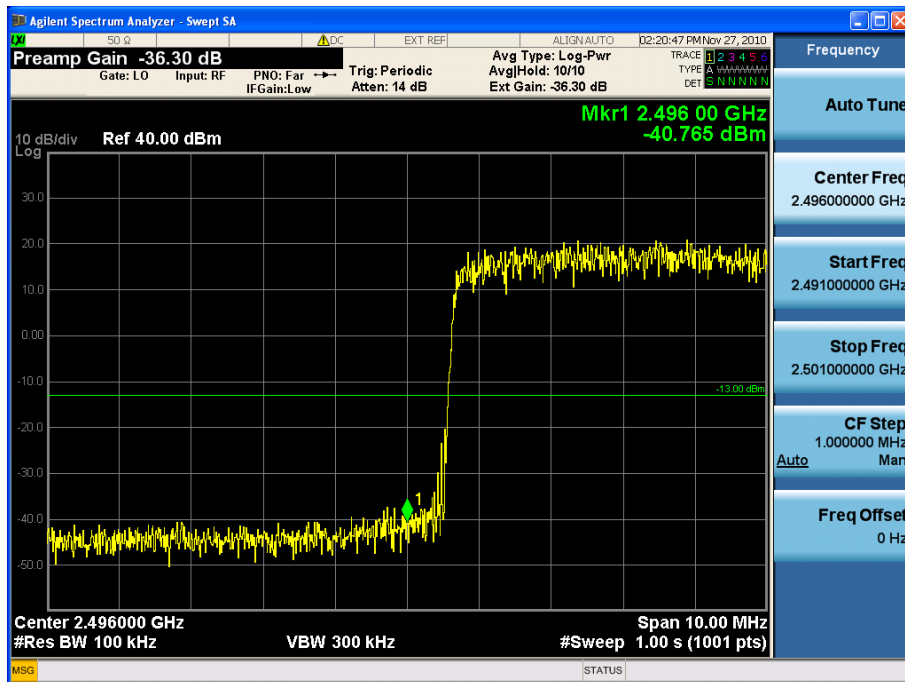


(16QAM High Channel)

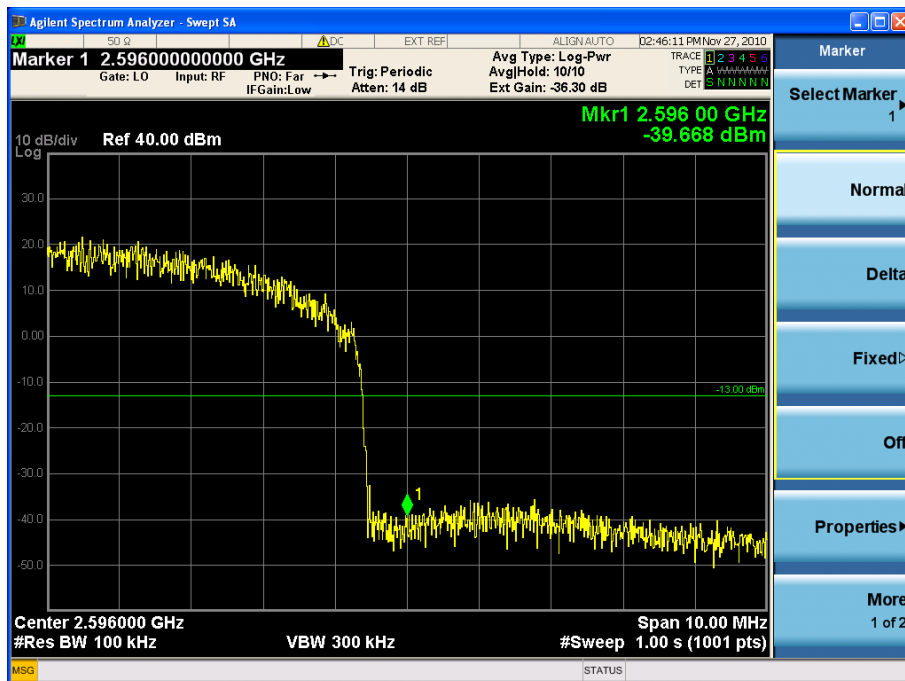


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
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(64QAM Low Channel)



(64QAM High Channel)



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