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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 22, 2010

Test Site/Location:

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

Test Report No.: HCTR1012FR18

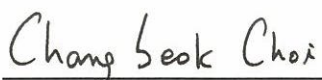
FCC ID : **A3LSPI-22132825WB**

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

EUT Type : Mobile WiMAX Outdoor RAS
Manufacturer : SAMSUNG Electronics Co., Ltd.
Model name : SPI-22132825WB
Frequency of Operation : 2 496 MHz ~ 2 690 MHz
TX Output Power : 10W (40 dBm) @avg power per carrier/sector
FCC Rule Part(s) : FCC Part 27 Subpart (c).
Emission Designator : 4M58G7D(QPSK), 4M58W7D(16QAM/64QAM)
Test Procedure(s) : ANSI/TIA-603C-2004
Application Type : Class II Permissive Change
Data of issue : December 22, 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 upon 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.



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



Approved by
: Sang Jun Lee
Manager of RF Team

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Revision

TEST REPORT NO.	DATE	DESCRIPTION
HCTR1012FR18	December 22,2010	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	2 496 MHz ~ 2 690 MHz
TX OUTPUT POWER	10W (40 dBm) @avg power per carrier/sector
CHANNEL BANDWIDTH	5 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. The RRH can be operated as follows depending on the type.

- RRH-2 (RRH-2LB/RRH-2UB): 2Tx/2Rx RF path, MIMO mode
- RRH-2WB: 4Tx/4Rx RF path, 4T4R with CDD (Matrix A/B + CDD) mode

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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(m)	Occupied Bandwidth	Compliant
2.1051, 27.53(m)	Spurious Emissions at Antenna Terminals	Compliant
2.1051, 27.53(m)	Band edge	Compliant
2.1053, 27.53(m)	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
WEINSCHTEL	67-30-33 / Attenuator	BU5347	01/06/2011
WEINSCHTEL	67-30-33 / Attenuator	BR0530	01/14/2011
Agilent	8498A / Attenuator	51161	01/06/2011
Agilent	8498A / Attenuator	51162	01/06/2011
Agilent	N9020A / MXA Signal Analyzer	US46220219	03/03/2011
CERNEX	CDPU5260404K / Power Divider	14695	02/08/2011

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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.

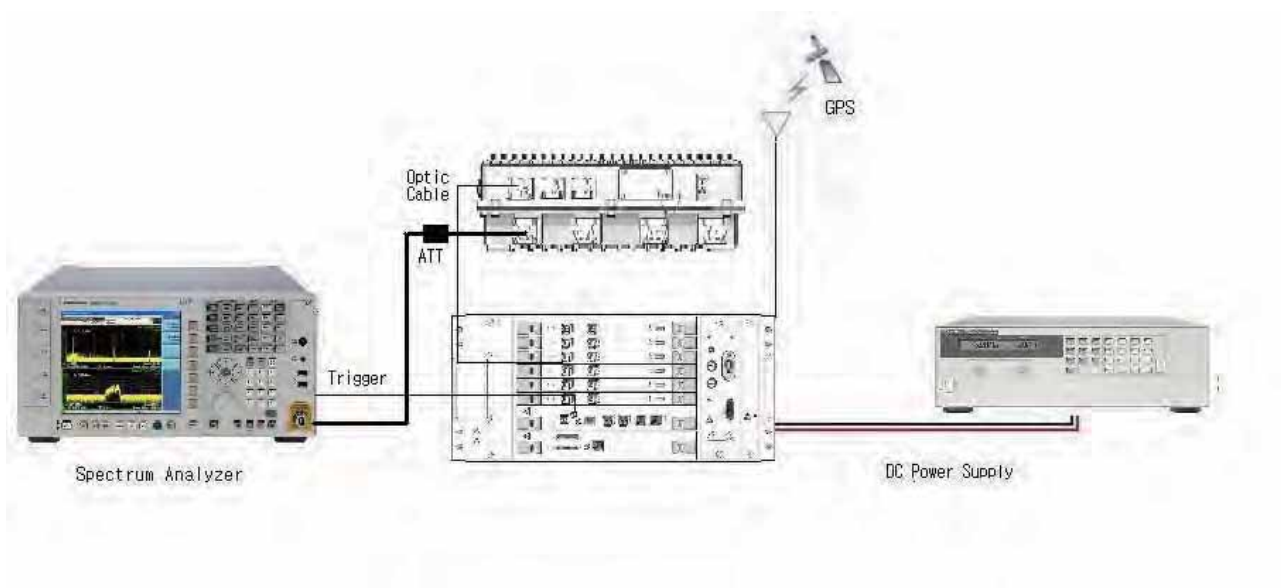
5.2. Test Equipment List and Details

Manufacturer	Model / Equipment	Serial No.	Calibration Due
Agilent	6674A / DC Power Supply	3501A00901	05/14/2011
WEINSCHEL	67-30-33 / Attenuator	BU5347	01/06/2011
WEINSCHEL	67-30-33 / Attenuator	BR0530	01/14/2011
Agilent	8498A / Attenuator	51161	01/06/2011
Agilent	8498A / Attenuator	51162	01/06/2011
Agilent	N9020A / MXA Signal Analyzer	US46220219	03/03/2011
CERNEX	CDPU5260404K / Power Divider	14695	02/08/2011

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 in 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.

5.4. 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	33.80	2.399
	Middle	2593.00	33.90	2.455
	High	2686.75	33.57	2.275
16QAM	Low	2499.00	33.84	2.421
	Middle	2593.00	33.88	2.443
	High	2686.75	33.53	2.254
64QAM	Low	2499.00	33.82	2.410
	Middle	2593.00	33.88	2.443
	High	2686.75	33.54	2.259

5.4.2. Test Data at Output Port 2

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
QPSK	Low	2499.00	33.92	2.466
	Middle	2593.00	33.93	2.472
	High	2686.75	33.63	2.307
16QAM	Low	2499.00	33.88	2.443
	Middle	2593.00	33.94	2.477
	High	2686.75	33.60	2.291
64QAM	Low	2499.00	33.88	2.443
	Middle	2593.00	33.95	2.483
	High	2686.75	33.61	2.296

5.4.3. Test Data at Output Port 3

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
QPSK	Low	2499.00	33.43	2.203
	Middle	2593.00	33.28	2.128
	High	2686.75	33.10	2.042
16QAM	Low	2499.00	33.45	2.213
	Middle	2593.00	33.38	2.178
	High	2686.75	33.10	2.042
64QAM	Low	2499.00	33.50	2.239
	Middle	2593.00	33.35	2.163
	High	2686.75	33.09	2.037

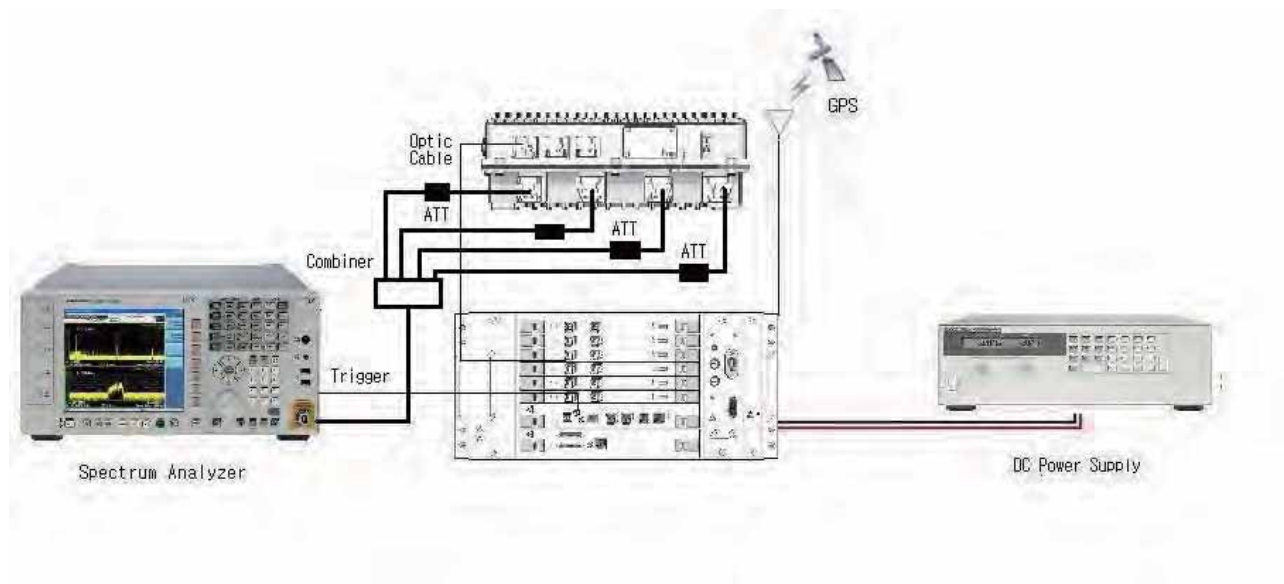
5.4.4. Test Data at Output Port 4

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
QPSK	Low	2499.00	33.49	2.234
	Middle	2593.00	33.48	2.228
	High	2686.75	33.06	2.023
16QAM	Low	2499.00	33.53	2.254
	Middle	2593.00	33.48	2.228
	High	2686.75	33.17	2.075
64QAM	Low	2499.00	33.53	2.254
	Middle	2593.00	33.44	2.208
	High	2686.75	33.20	2.089

5.4.5. Combined Test Data at Output Port

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
QPSK	Low	2499.00	39.70	9.333
	Middle	2593.00	39.69	9.311
	High	2686.75	38.48	7.047
16QAM	Low	2499.00	39.68	9.290
	Middle	2593.00	39.74	9.419
	High	2686.75	37.89	6.152
64QAM	Low	2499.00	39.74	9.419
	Middle	2593.00	39.75	9.441
	High	2686.75	38.11	6.471

[Combine test diagram]



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5.4.6. 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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5.4.7. 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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5.4.8. Plot Data for Output Port 3 (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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5.4.9. Plot Data for Output Port 4 (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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5.4.10. 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. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 36 of 142

(QPSK High Channel)



(16QAM Low Channel)



FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 37 of 142

(16QAM Middle Channel)



(16QAM High Channel)



FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 38 of 142

(64QAM Low Channel)



(64QAM Middle Channel)



FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 39 of 142

(64QAM High Channel)



FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 40 of 142

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.

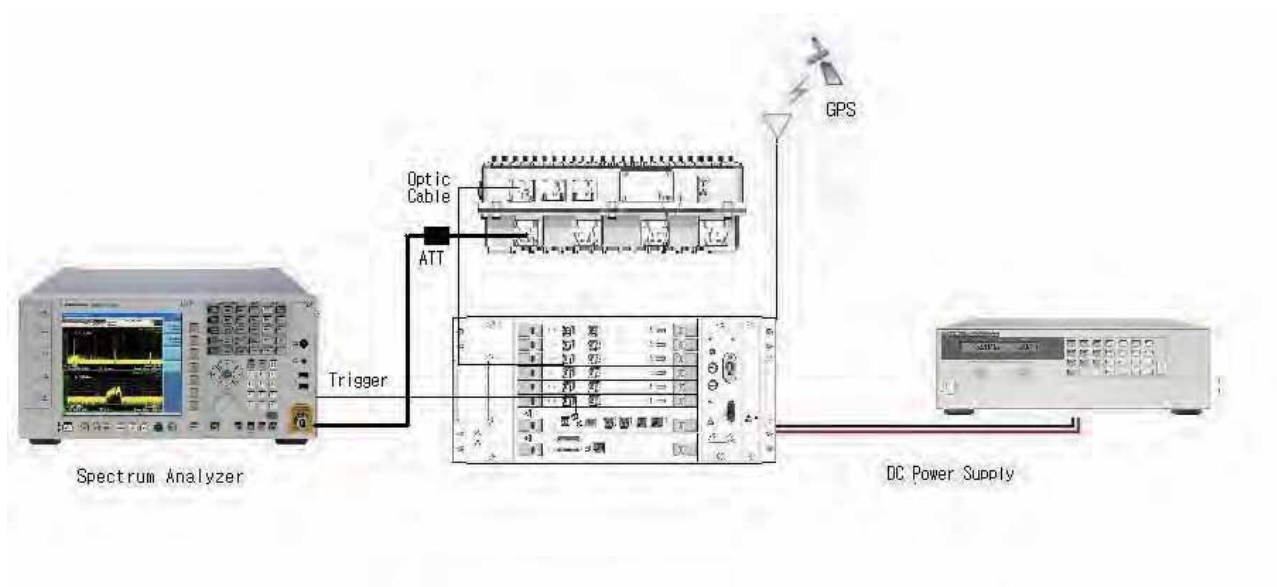
6.2. Test Equipment List and Details

Manufacturer	Model / Equipment	Serial No.	Calibration Due
Agilent	6674A / DC Power Supply	3501A00901	05/14/2011
WEINSCHTEL	67-30-33 / Attenuator	BU5347	01/06/2011
WEINSCHTEL	67-30-33 / Attenuator	BR0530	01/14/2011
Agilent	8498A / Attenuator	51161	01/06/2011
Agilent	8498A / Attenuator	51162	01/06/2011
Agilent	N9020A / MXA Signal Analyzer	US46220219	03/03/2011
CERNEX	CDPU5260404K / Power Divider	14695	02/08/2011

6.3. Test Procedure

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

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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.

6.4. Test Result

: PASS

FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 42 of 142

6.4.1. Test Data at Output Port 1

Modulation	Channel	Frequency	Measured Bandwidth	
			99 %	26 dB
QPSK	Low	2499.00	4.5925	4.867
	Middle	2593.00	4.5883	4.859
	High	2686.75	4.5887	4.859
16QAM	Low	2499.00	4.5895	4.858
	Middle	2593.00	4.5887	4.857
	High	2686.75	4.5888	4.858
64QAM	Low	2499.00	4.5889	4.858
	Middle	2593.00	4.5897	4.860
	High	2686.75	4.5887	4.857

6.4.2. Test Data at Output Port 2

Modulation	Channel	Frequency	Measured Bandwidth	
			99 %	26 dB
QPSK	Low	2499.00	4.5893	4.859
	Middle	2593.00	4.5890	4.861
	High	2686.75	4.5891	4.857
16QAM	Low	2499.00	4.5886	4.862
	Middle	2593.00	4.5888	4.860
	High	2686.75	4.5892	4.859
64QAM	Low	2499.00	4.5890	4.859
	Middle	2593.00	4.5894	4.862
	High	2686.75	4.5888	4.858

FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
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6.4.3. Test Data at Output Port 3

Modulation	Channel	Frequency	Measured Bandwidth	
			99 %	26 dB
QPSK	Low	2499.00	4.5900	4.861
	Middle	2593.00	4.5894	4.859
	High	2686.75	4.5890	4.863
16QAM	Low	2499.00	4.5890	4.860
	Middle	2593.00	4.5892	4.858
	High	2686.75	4.5894	4.860
64QAM	Low	2499.00	4.5902	4.863
	Middle	2593.00	4.5891	4.863
	High	2686.75	4.5890	4.857

6.4.4. Test Data at Output Port 4

Modulation	Channel	Frequency	Measured Bandwidth	
			99 %	26 dB
QPSK	Low	2499.00	4.5885	4.860
	Middle	2593.00	4.5889	4.861
	High	2686.75	4.5890	4.860
16QAM	Low	2499.00	4.5896	4.861
	Middle	2593.00	4.5893	4.861
	High	2686.75	4.5899	4.859
64QAM	Low	2499.00	4.5898	4.859
	Middle	2593.00	4.5888	4.859
	High	2686.75	4.5894	4.860

FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 44 of 142

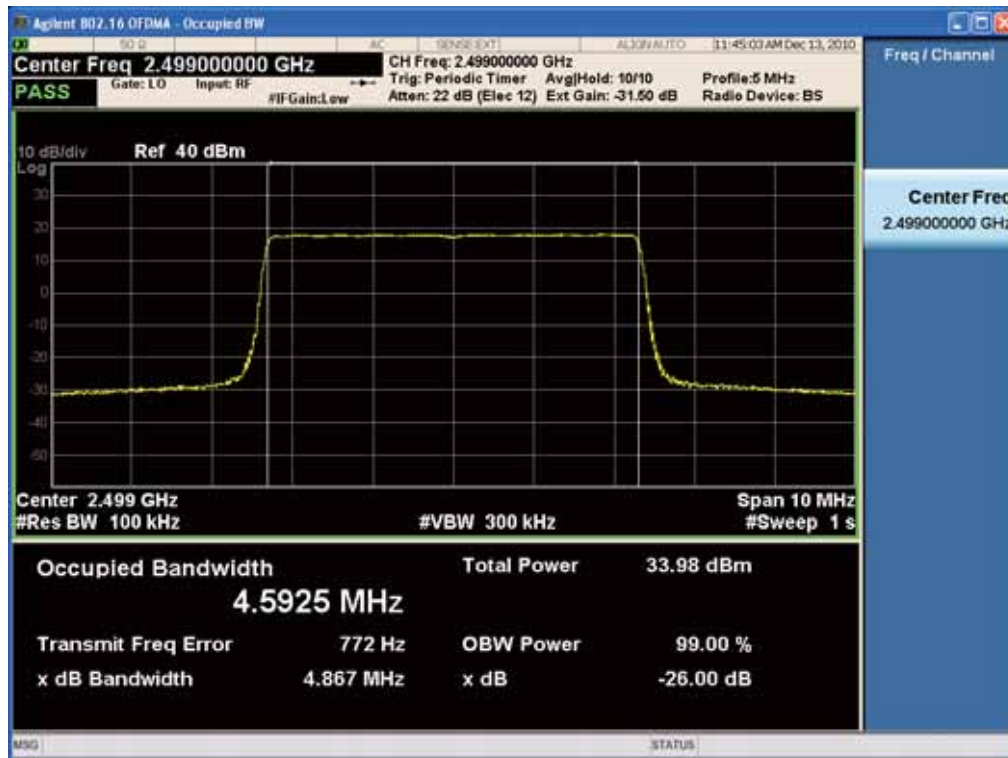
6.4.5. Combined Test Data at Output Port

Modulation	Channel	Frequency	Measured Bandwidth	
			99 %	26 dB
QPSK	Low	2499.00	4.5595	4.847
	Middle	2593.00	4.5588	4.859
	High	2686.75	4.5519	4.856
16QAM	Low	2499.00	4.5608	4.848
	Middle	2593.00	4.5598	4.858
	High	2686.75	4.5504	4.845
64QAM	Low	2499.00	4.5605	4.847
	Middle	2593.00	4.5593	4.847
	High	2686.75	4.5506	4.845

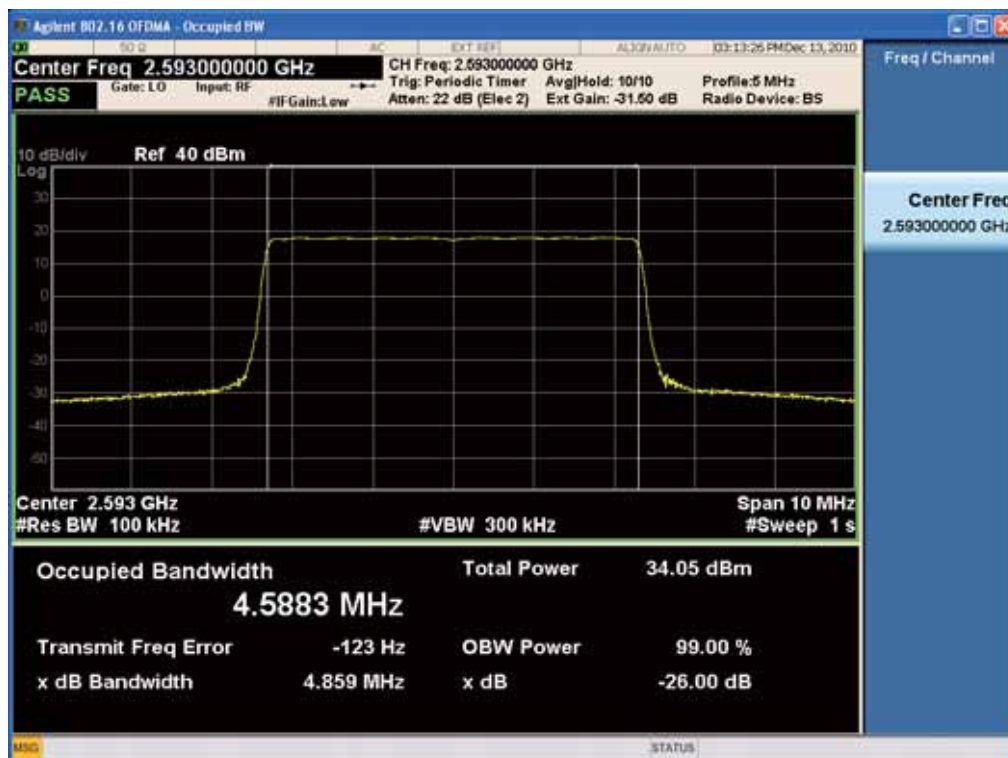
FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 45 of 142

6.4.6. Test Plot at Output Port 1

(QPSK Low Channel)

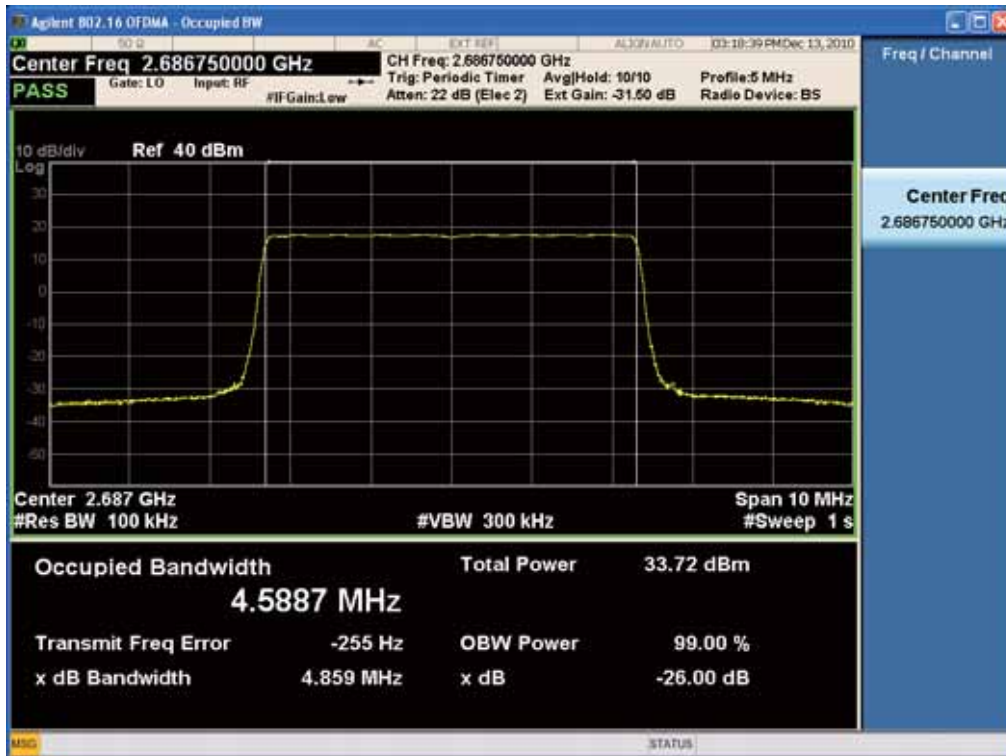


(QPSK Middle Channel)

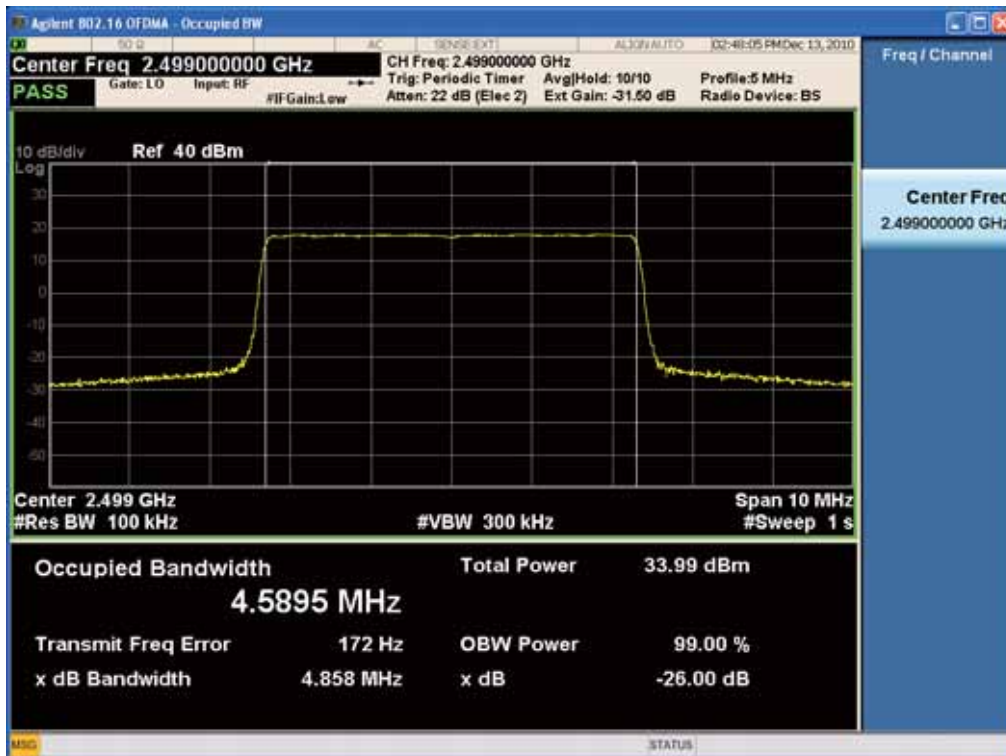


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 46 of 142

(QPSK High Channel)

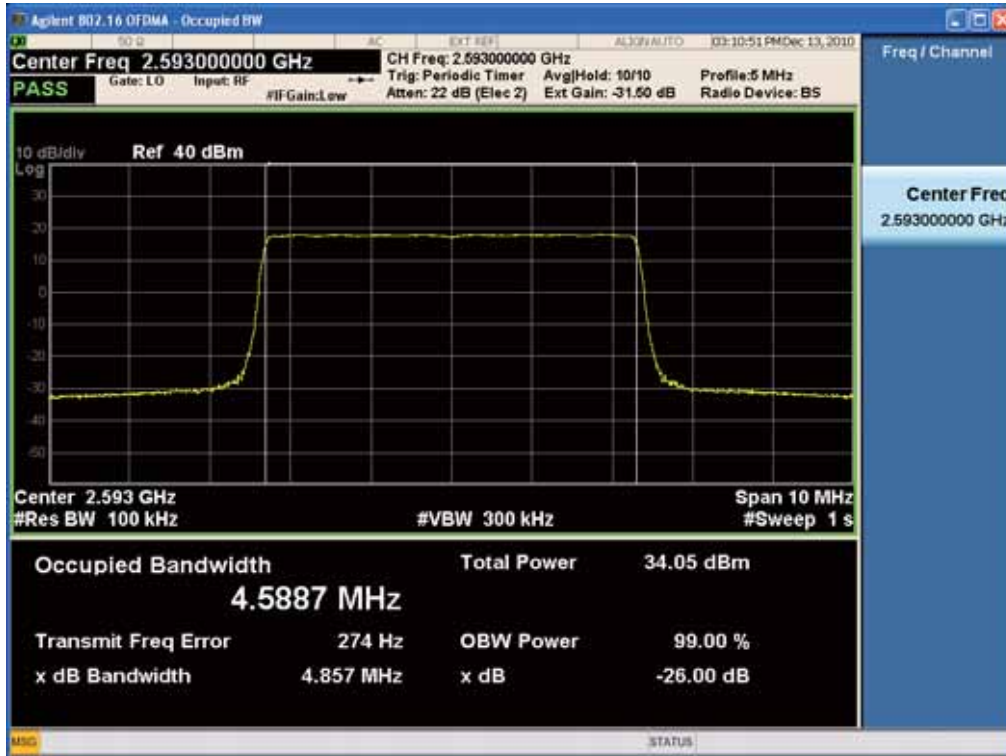


(16QAM Low Channel)

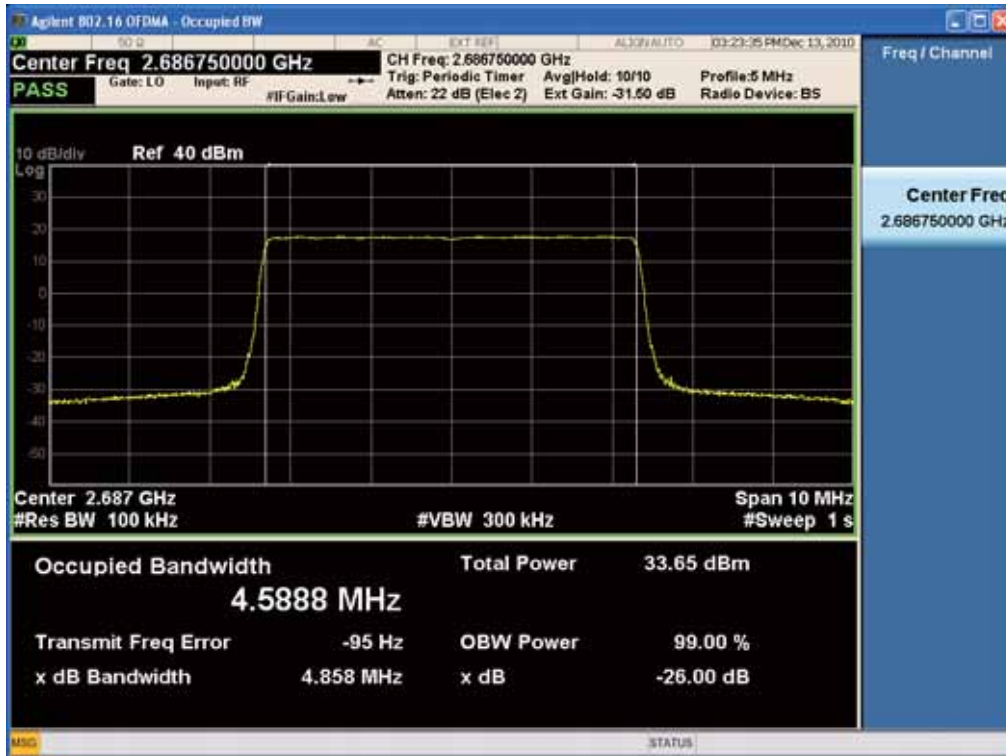


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 47 of 142

(16QAM Middle Channel)

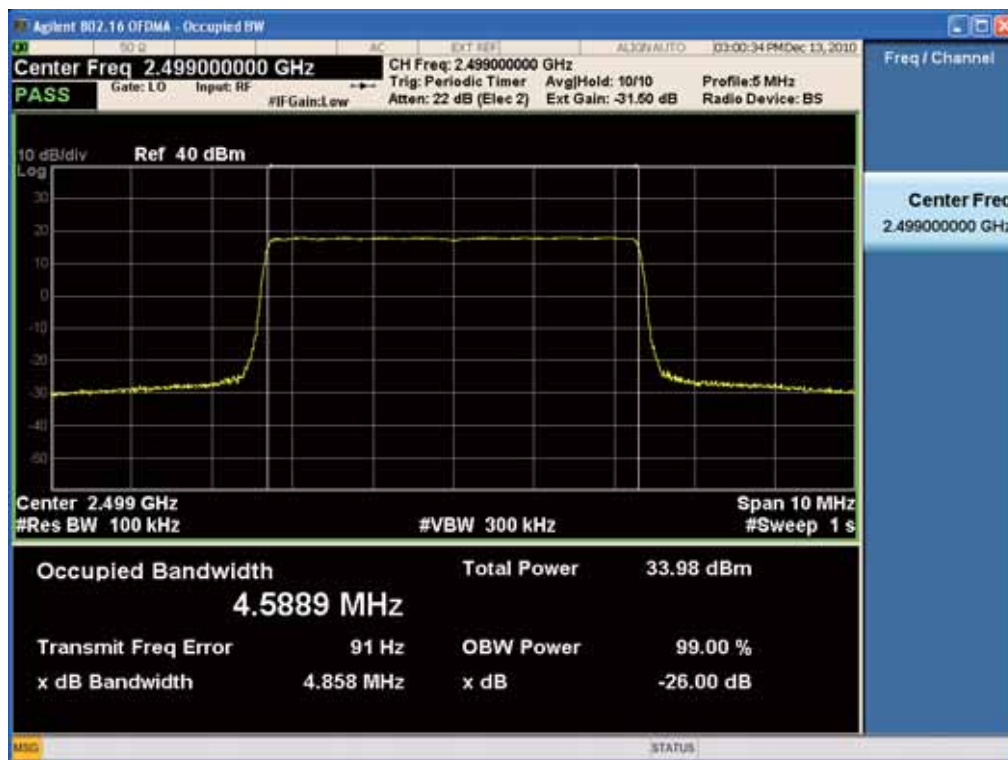


(16QAM High Channel)

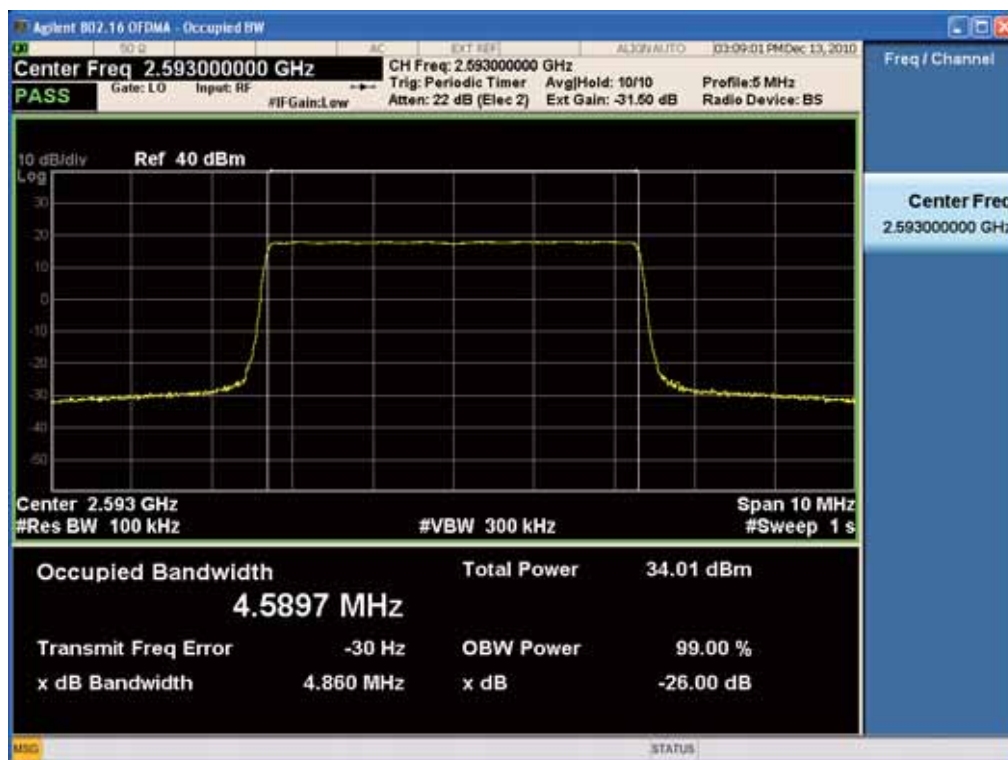


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 48 of 142

(64QAM Low Channel)

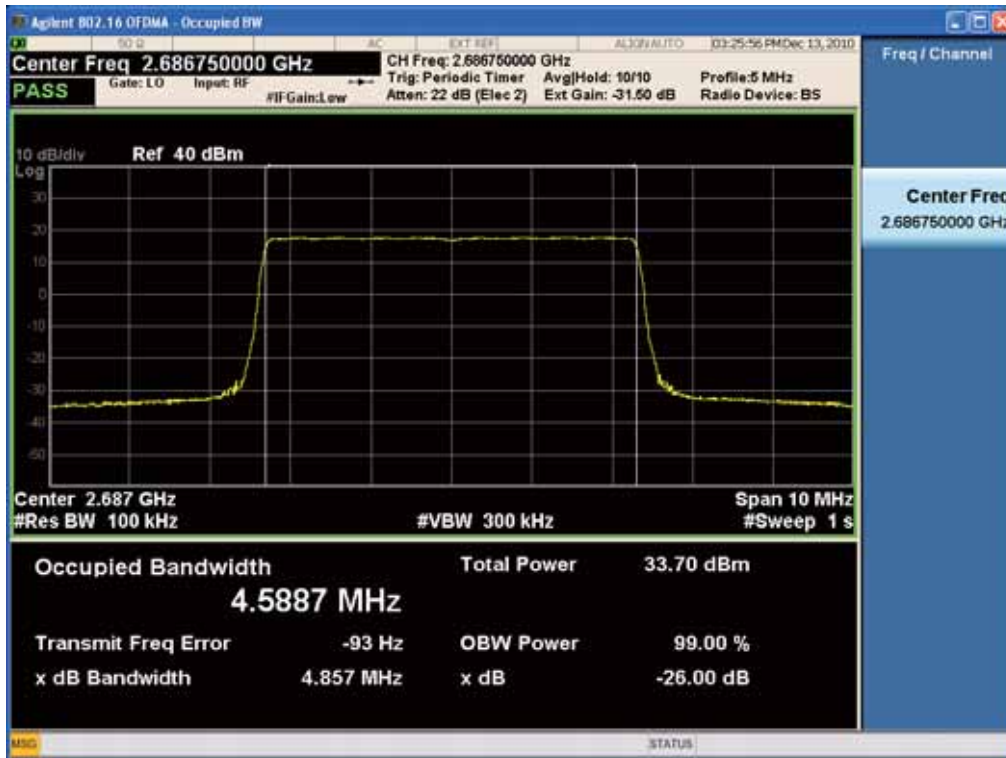


(64QAM Middle Channel)



FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 49 of 142

(64QAM High Channel)



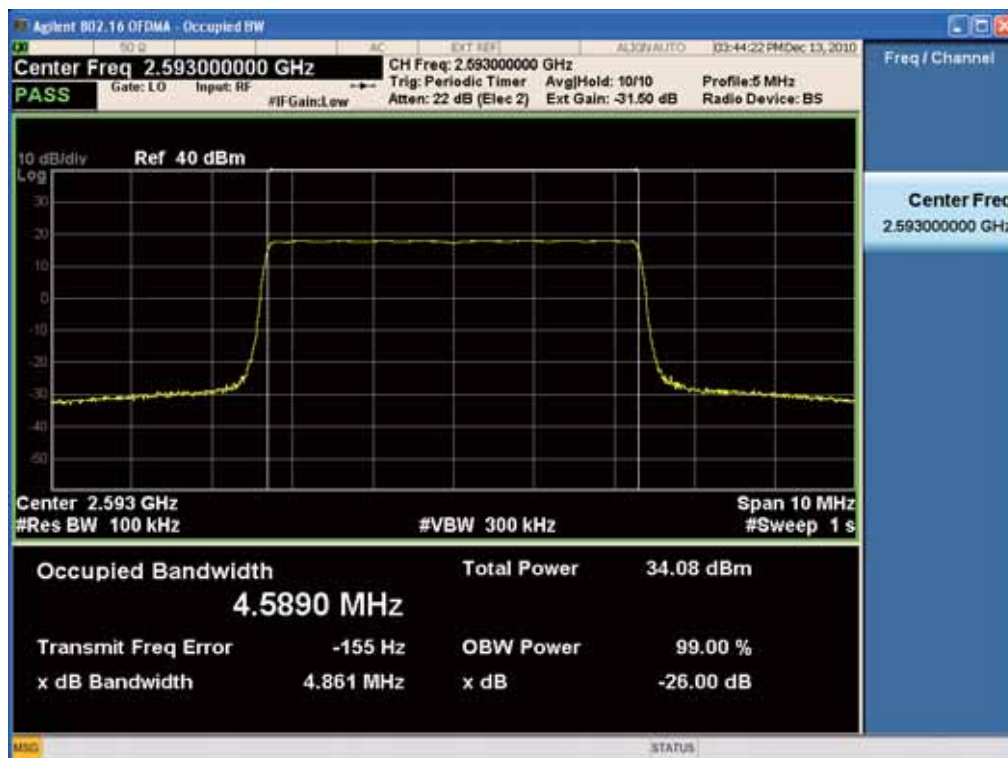
FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 50 of 142

6.4.7. Test Plot at Output Port 2

(QPSK Low Channel)

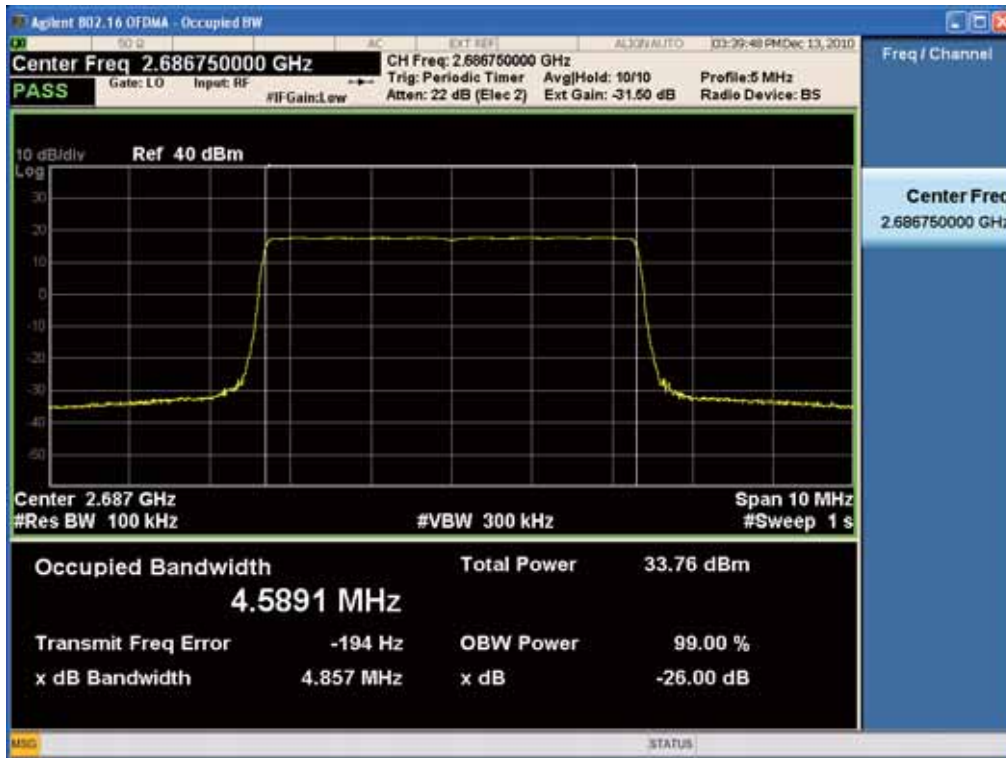


(QPSK Middle Channel)

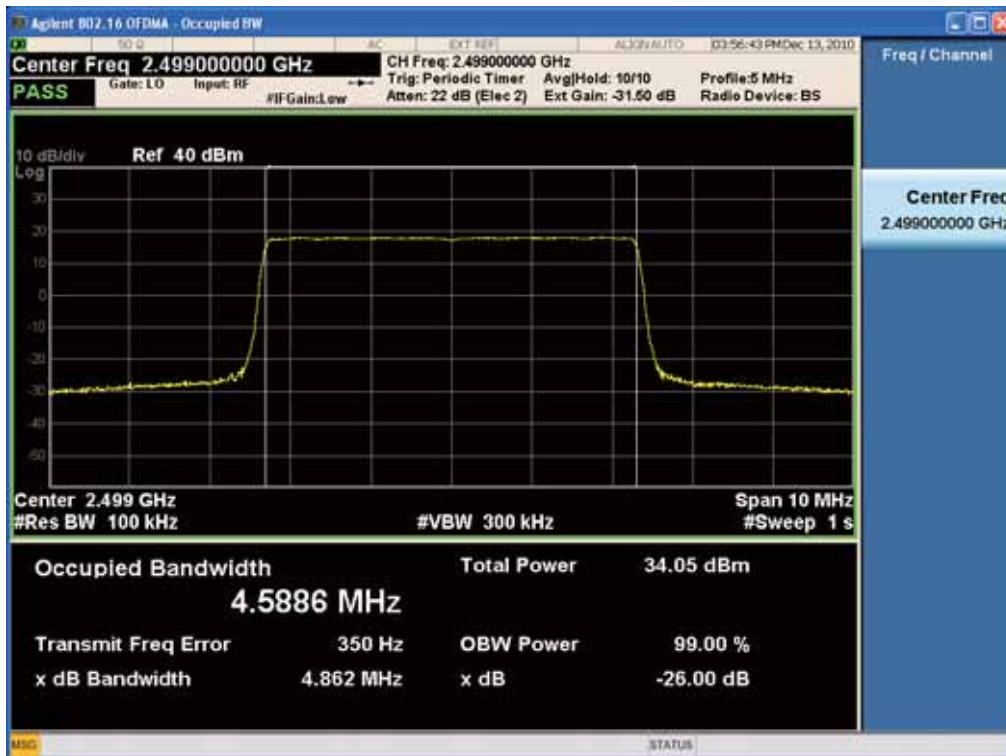


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
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(QPSK High Channel)

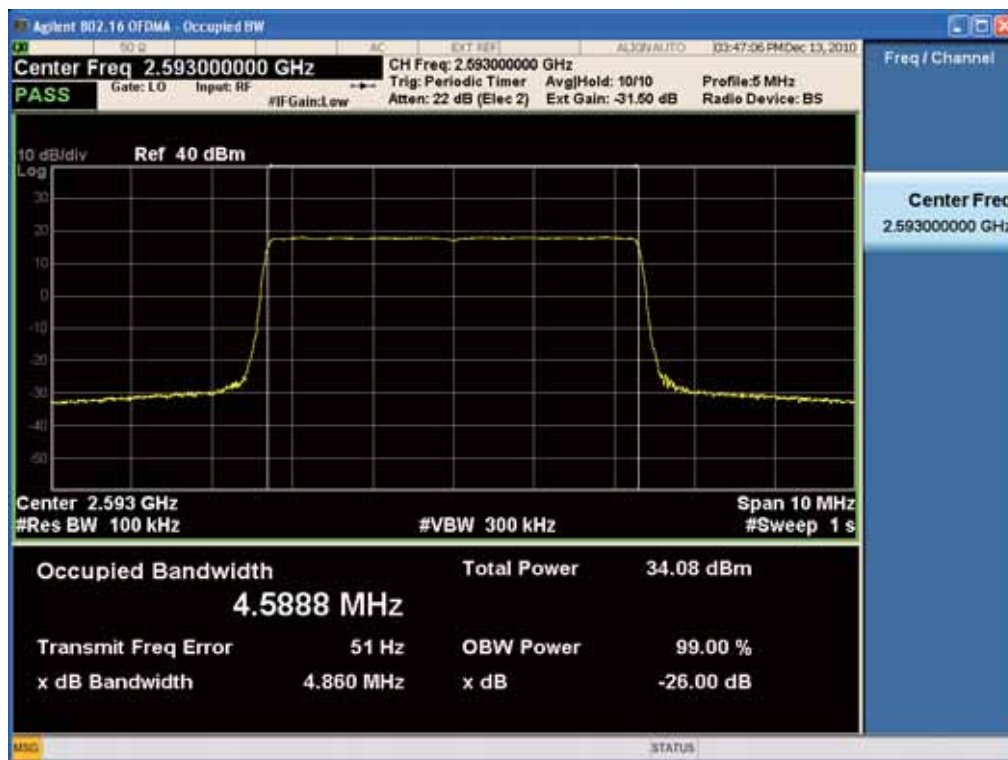


(16QAM Low Channel)

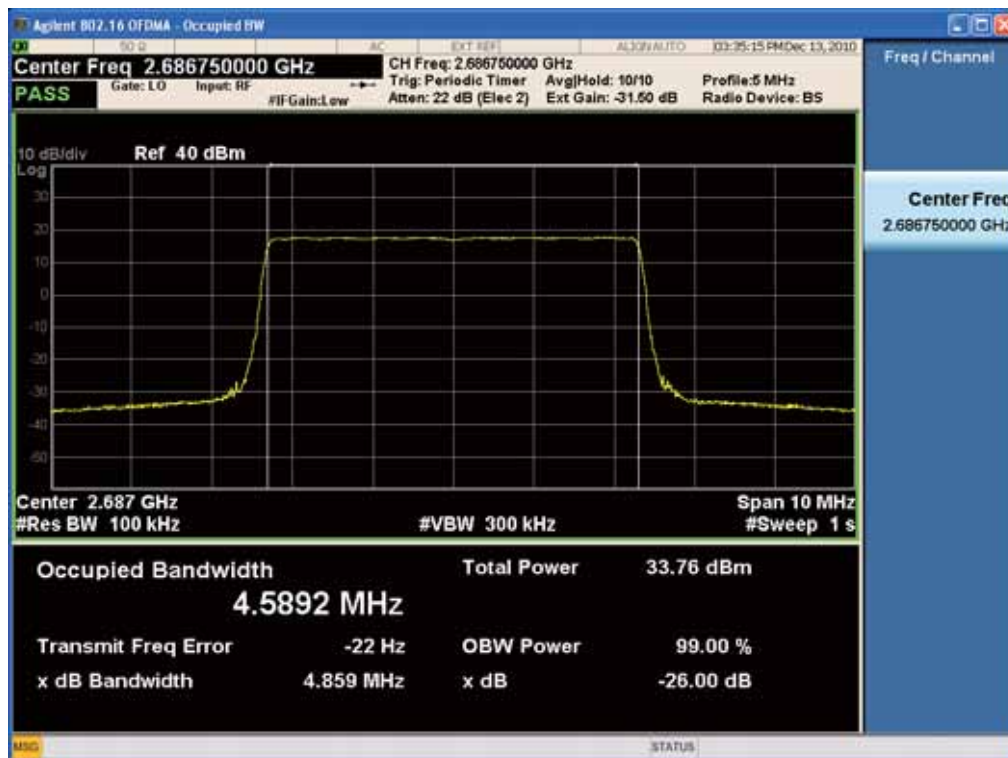


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 52 of 142

(16QAM Middle Channel)

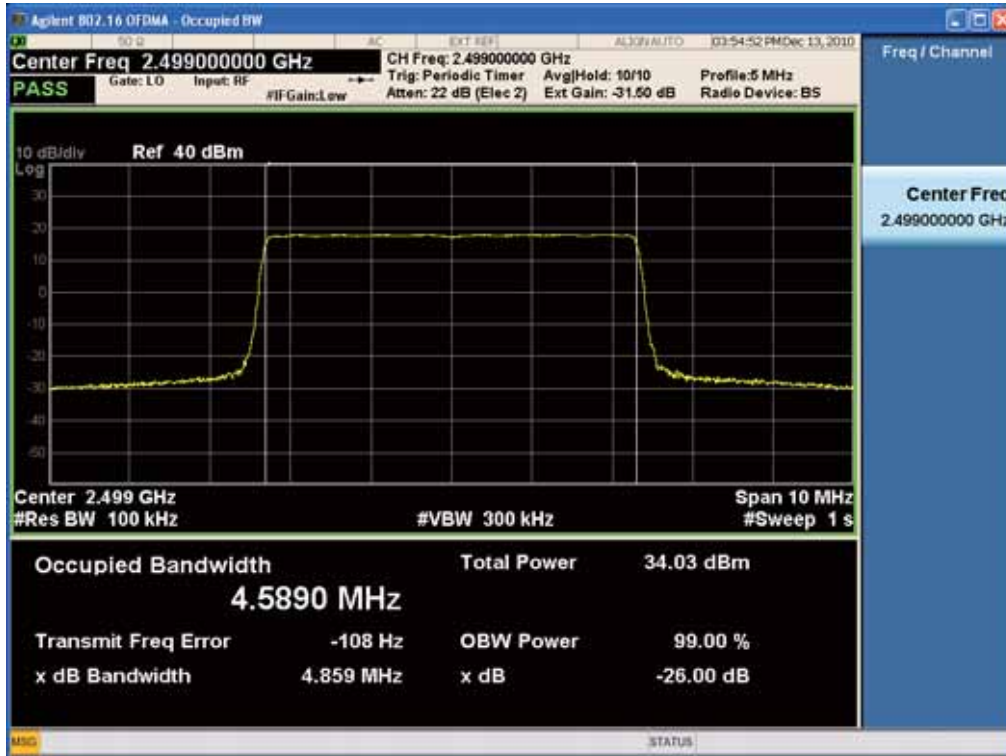


(16QAM High Channel)

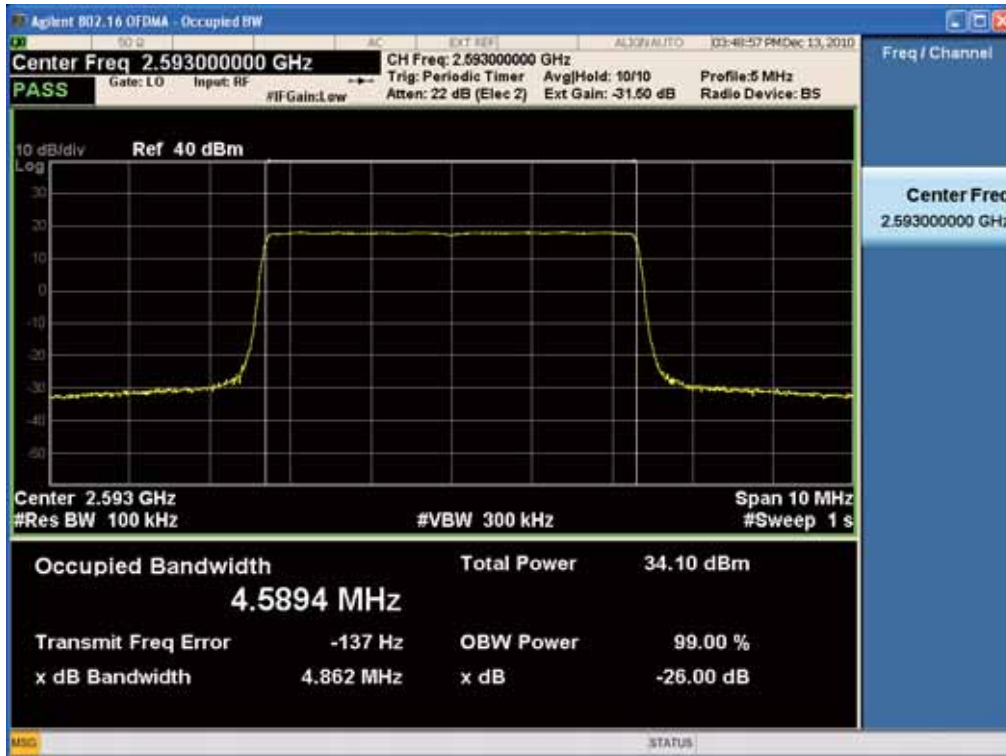


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 53 of 142

(64QAM Low Channel)

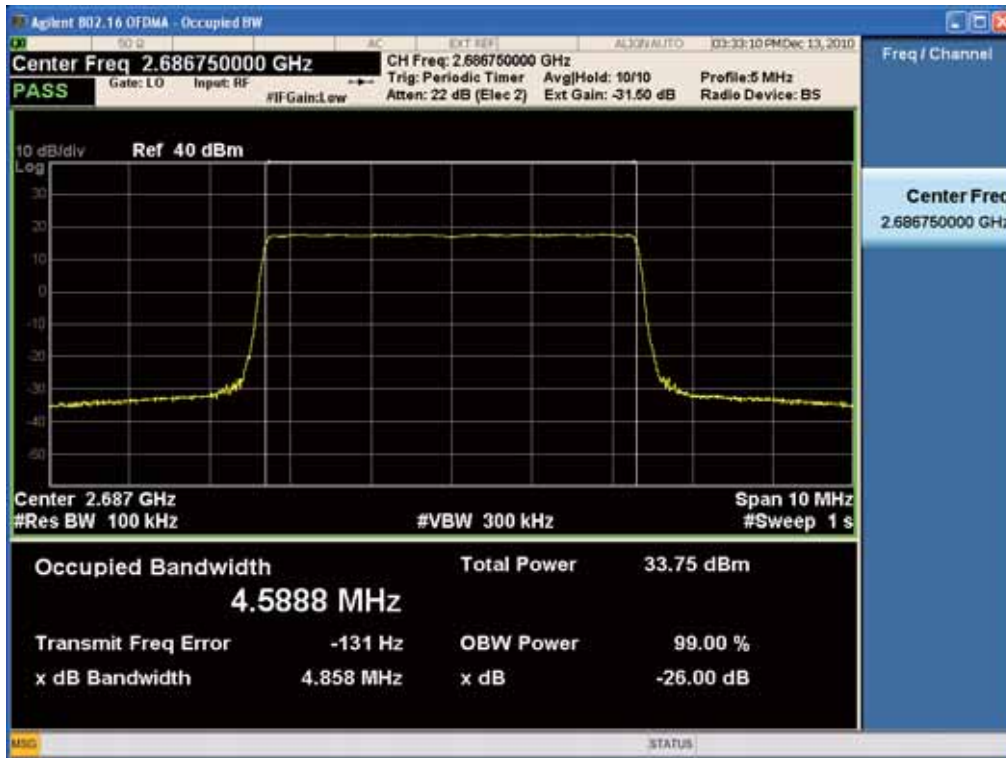


(64QAM Middle Channel)



FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 54 of 142

(64QAM High Channel)



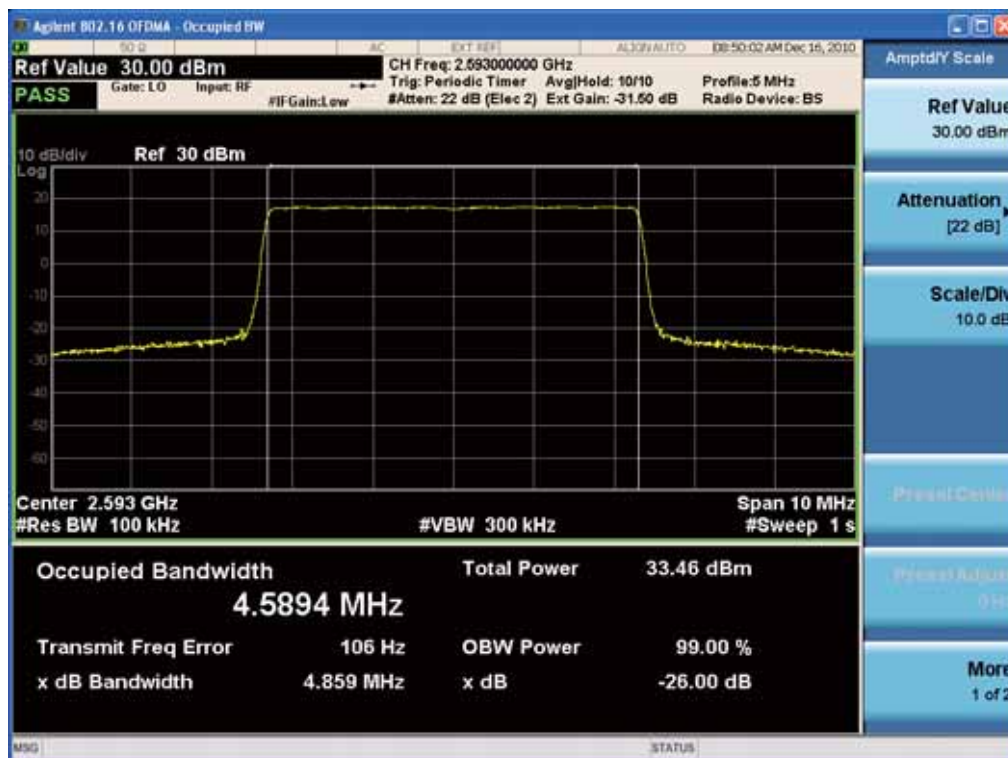
FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 55 of 142

6.4.8. Test Plot at Output Port 3

(QPSK Low Channel)

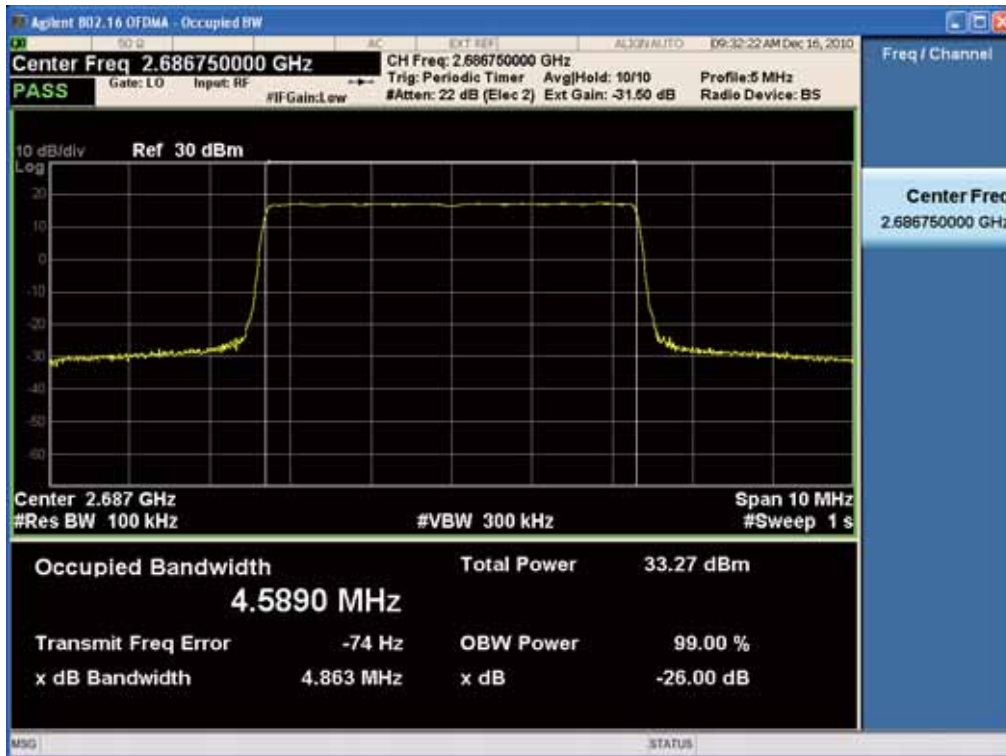


(QPSK Middle Channel)

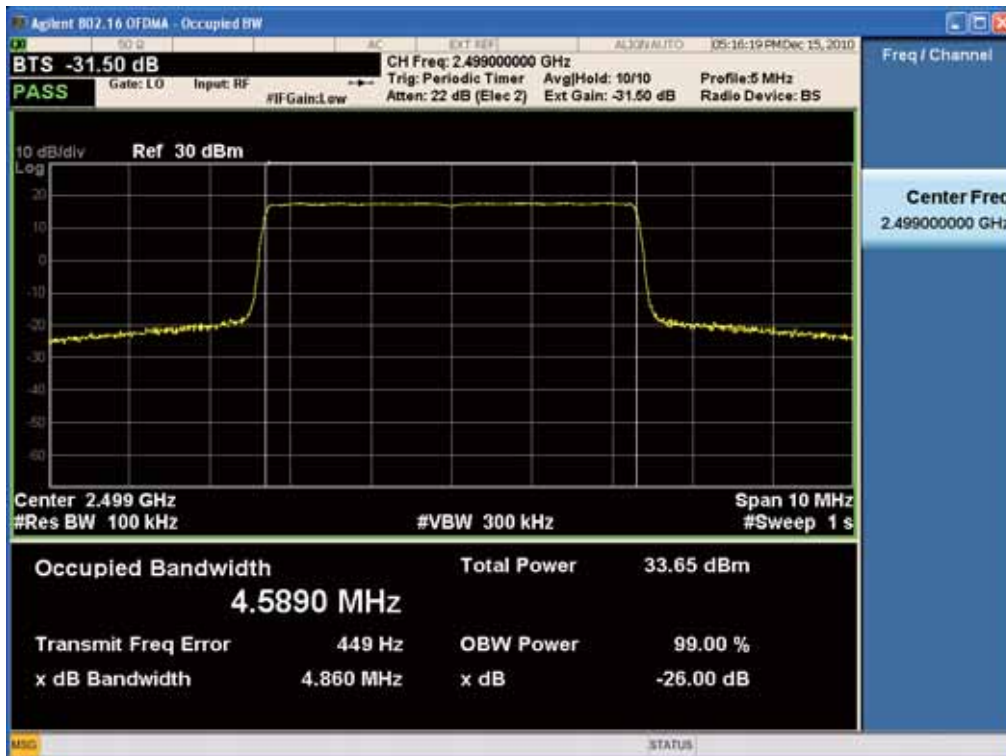


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 56 of 142

(QPSK High Channel)

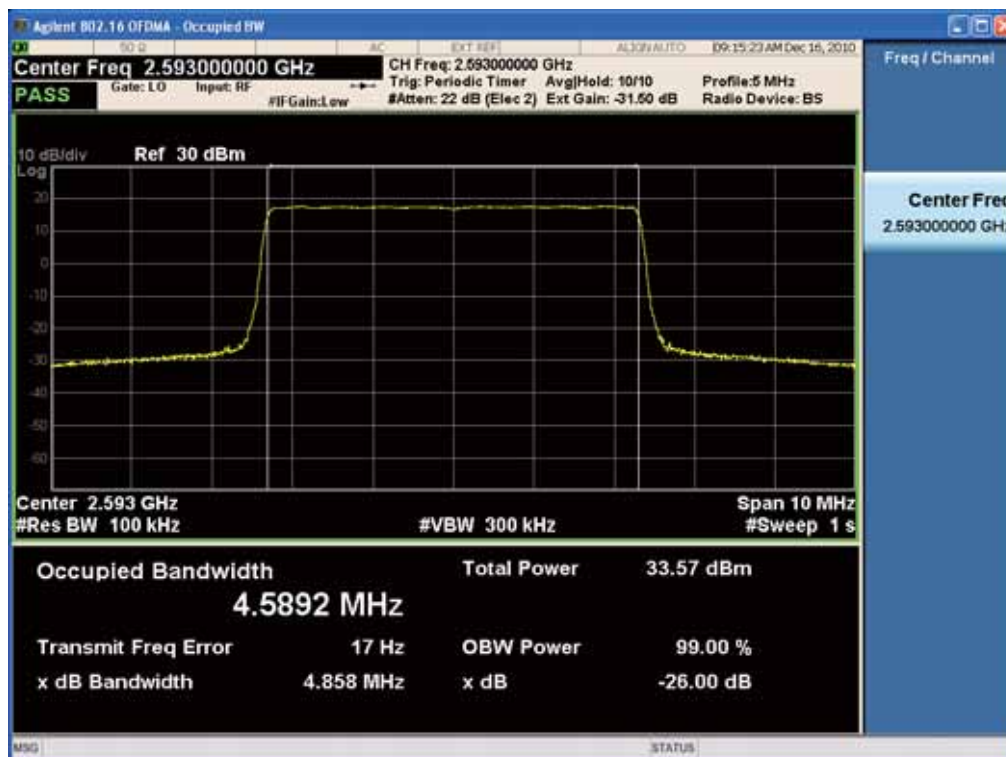


(16QAM Low Channel)

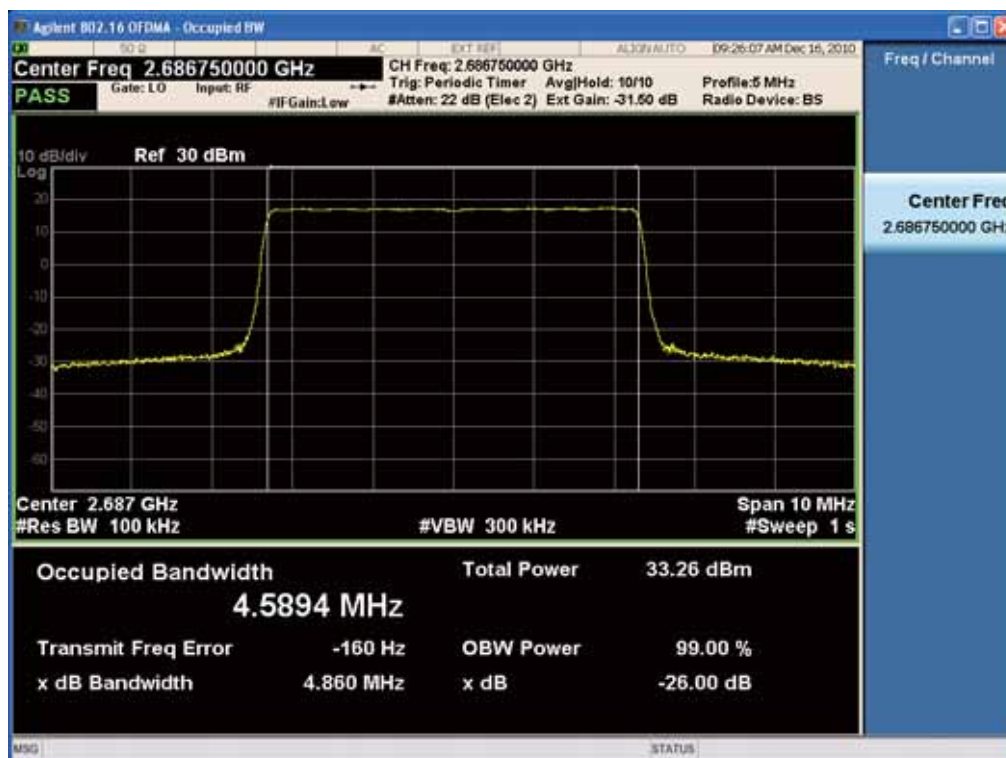


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 57 of 142

(16QAM Middle Channel)

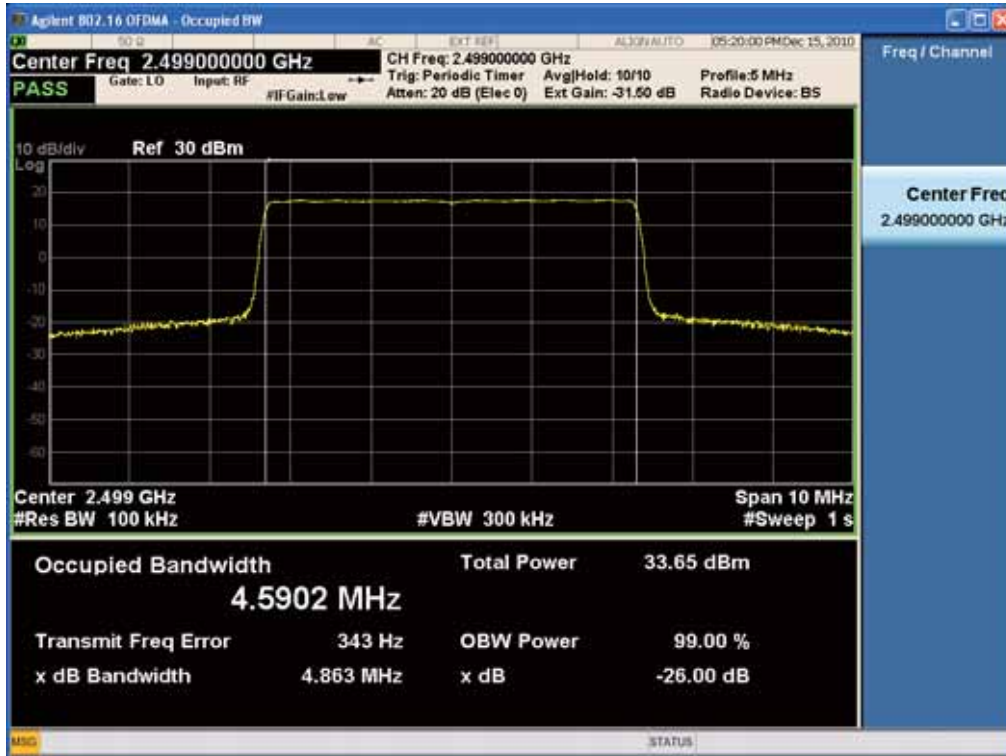


(16QAM High Channel)

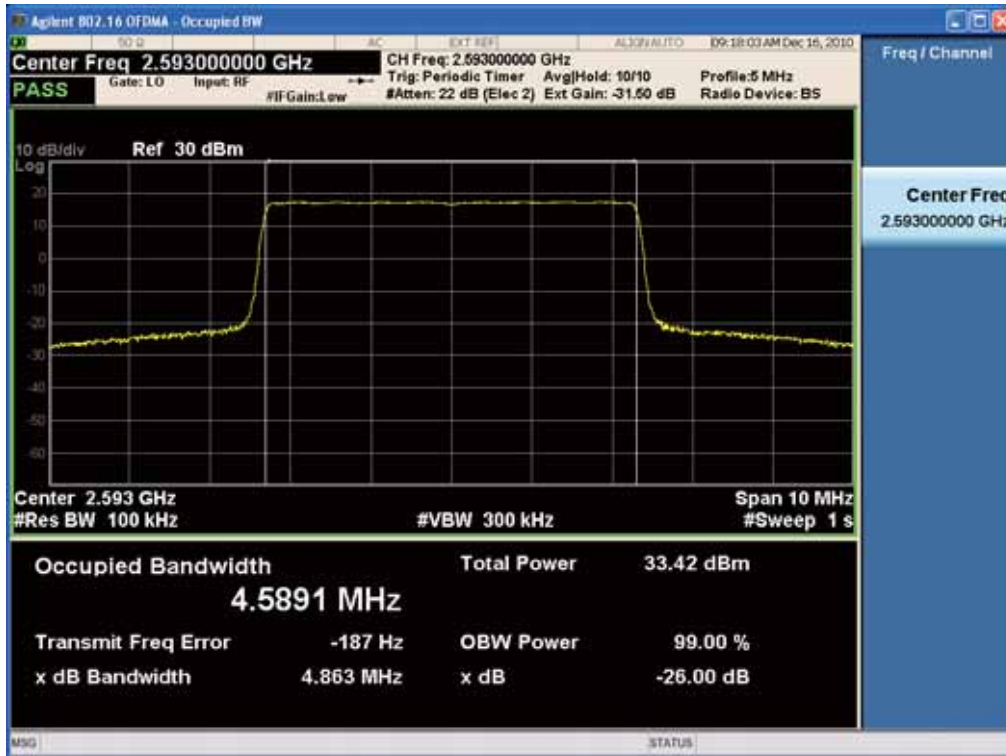


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 58 of 142

(64QAM Low Channel)



(64QAM Middle Channel)



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



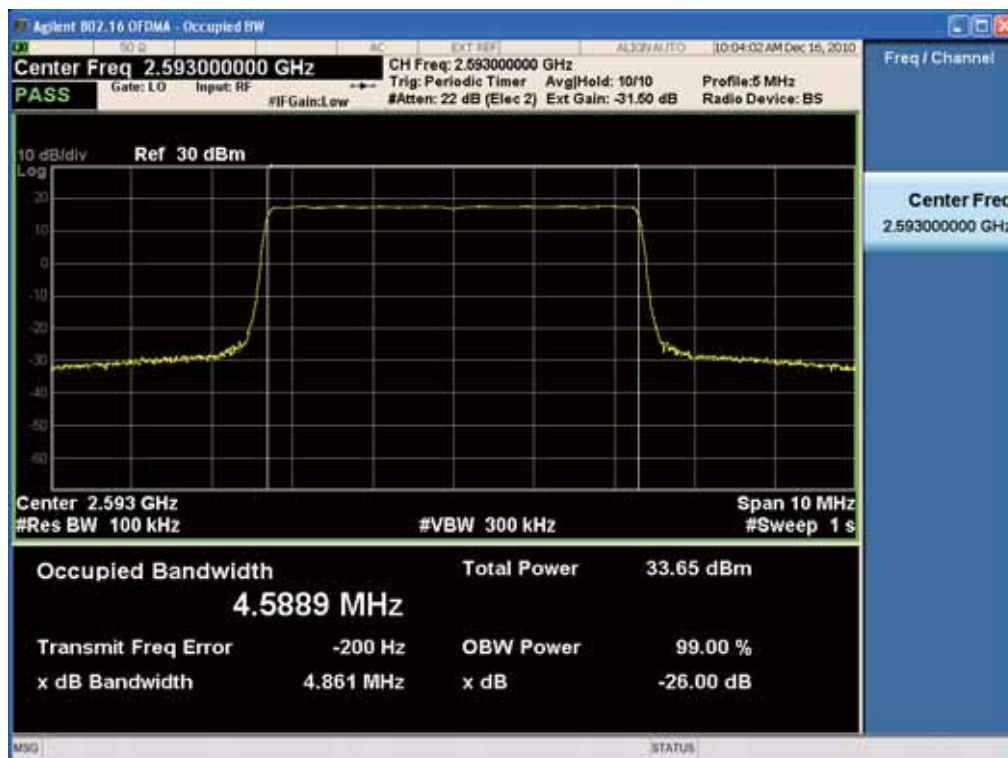
FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 60 of 142

6.4.9. Test Plot at Output Port 4

(QPSK Low Channel)

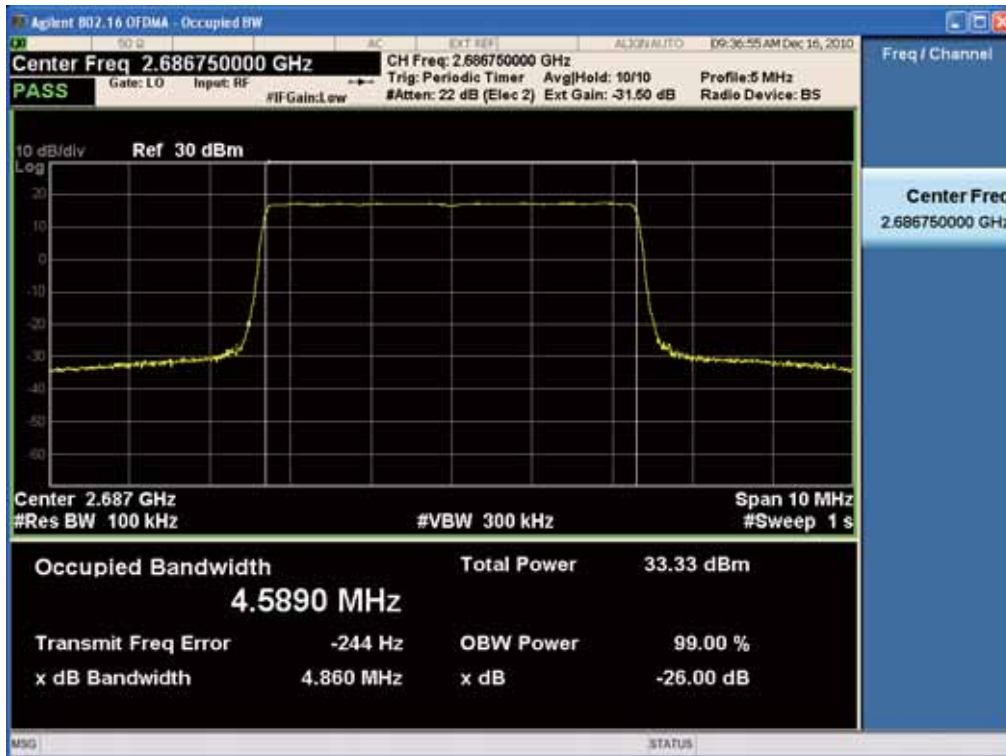


(QPSK Middle Channel)

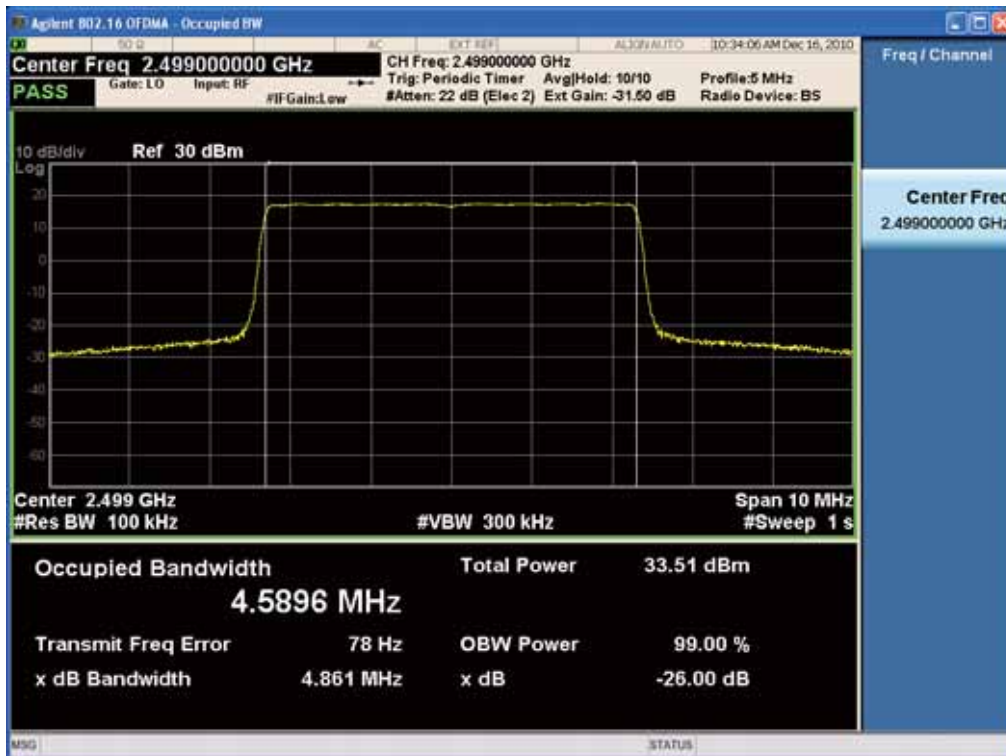


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 61 of 142

(QPSK High Channel)

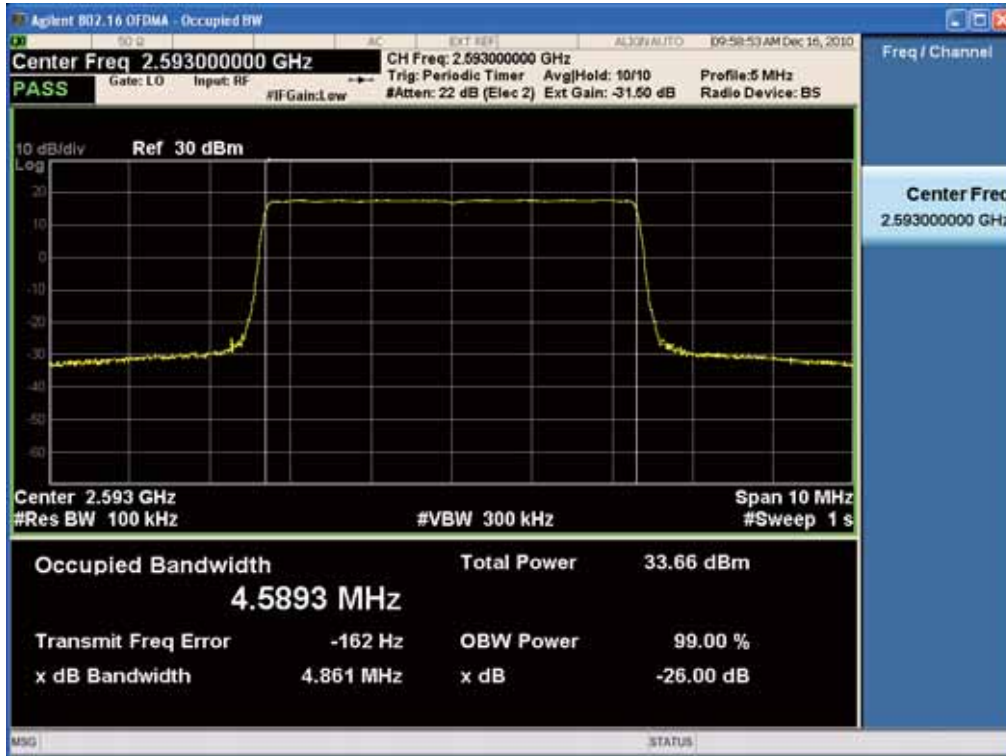


(16QAM Low Channel)

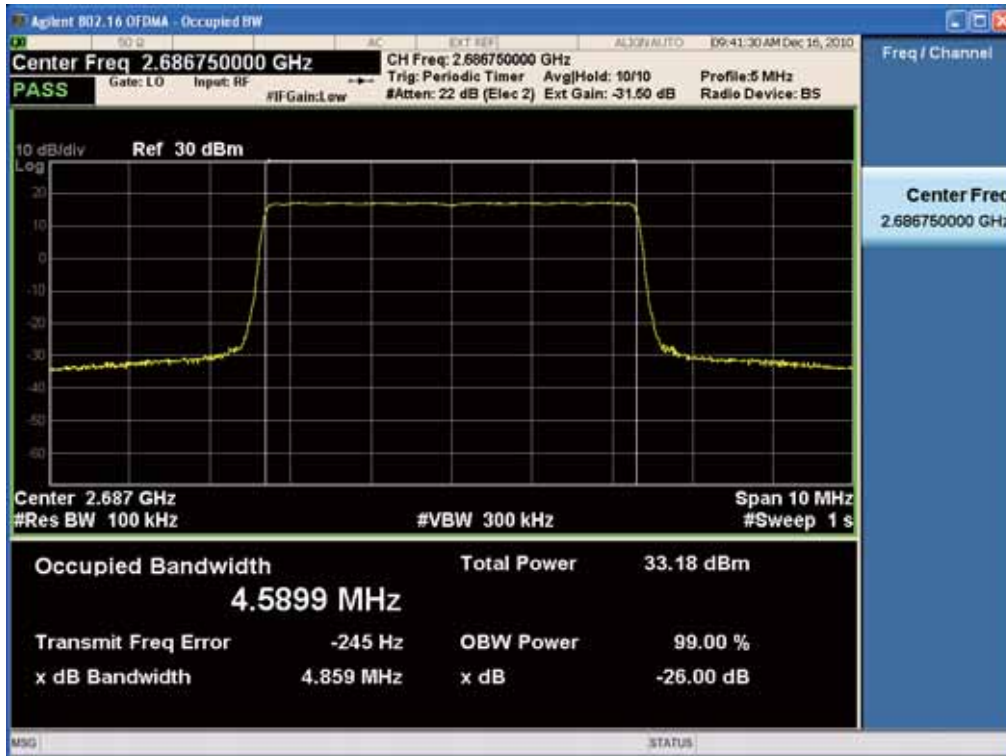


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 62 of 142

(16QAM Middle Channel)

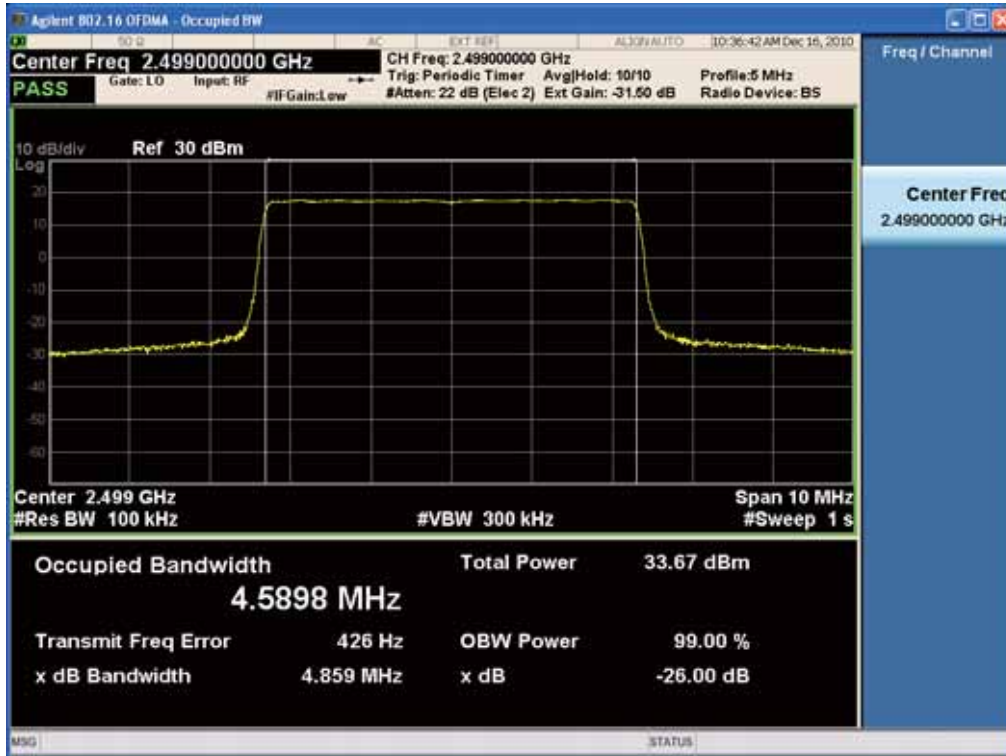


(16QAM High Channel)

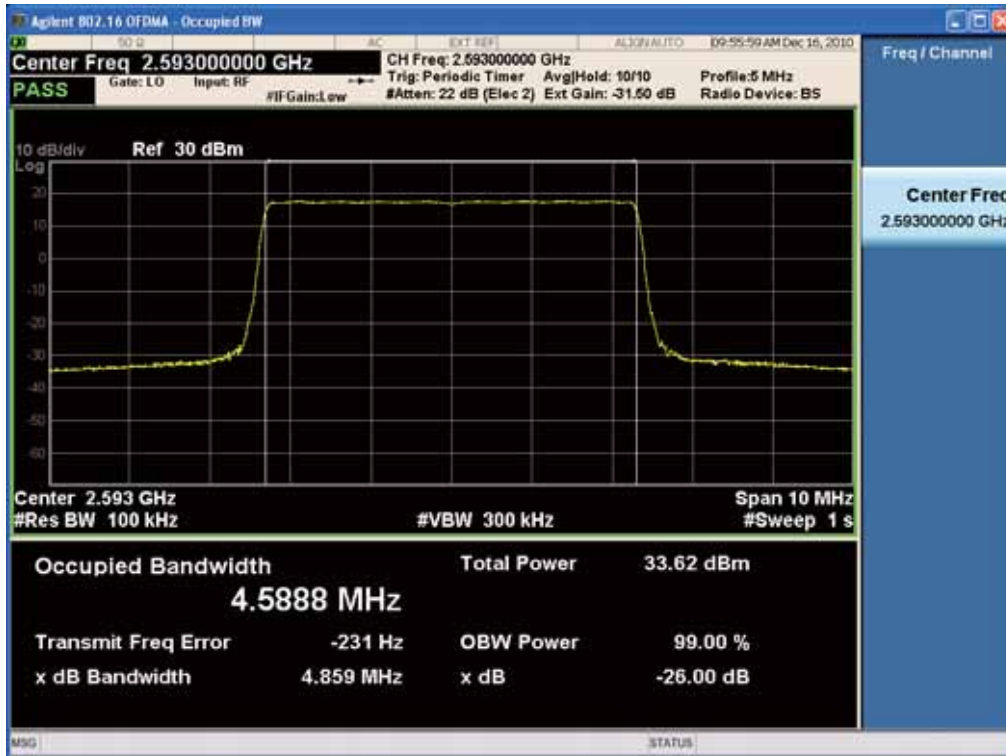


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 63 of 142

(64QAM Low Channel)

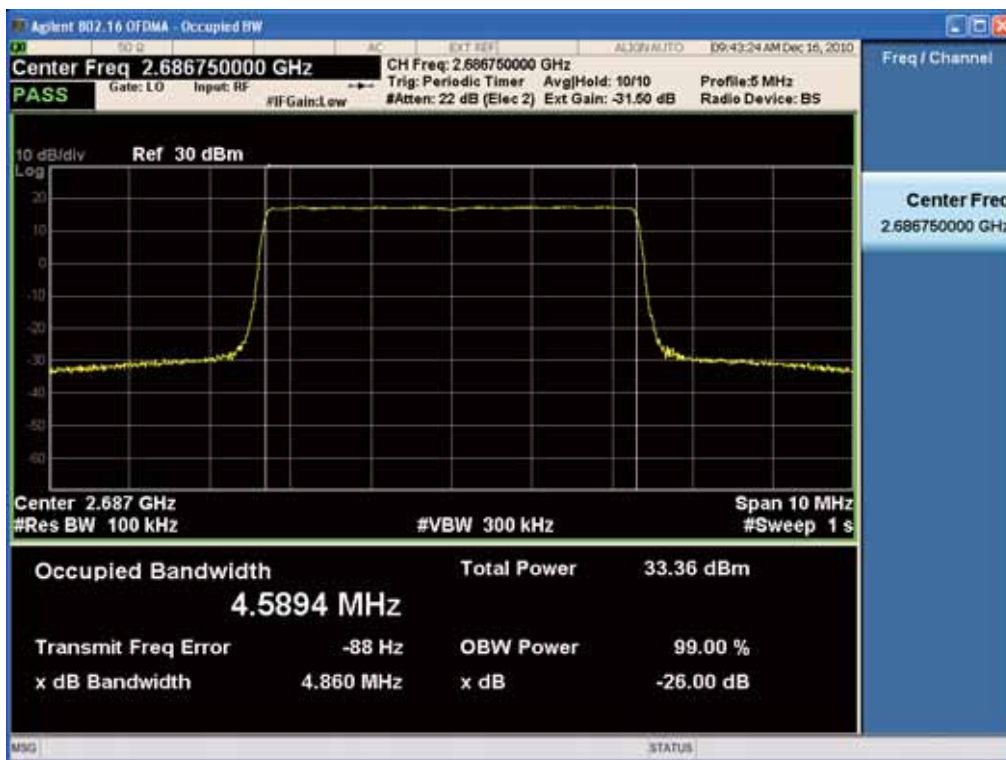


(64QAM Middle Channel)



FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 64 of 142

(64QAM High Channel)



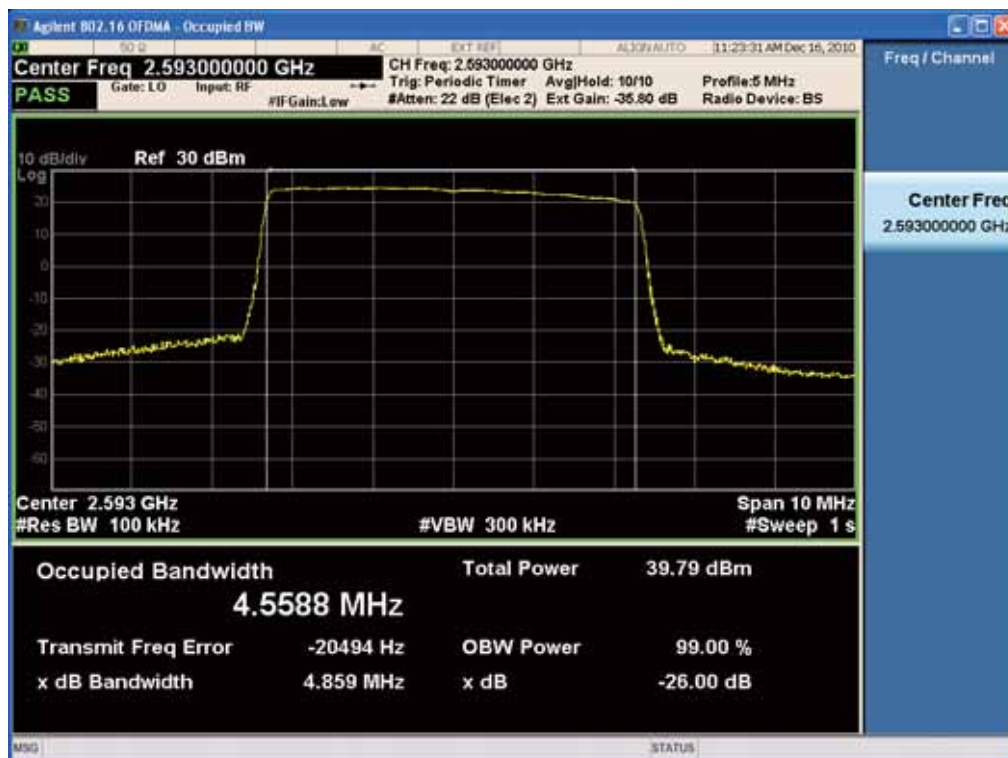
FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 65 of 142

6.4.10. Combined Test Plot at Output Port

(QPSK Low Channel)

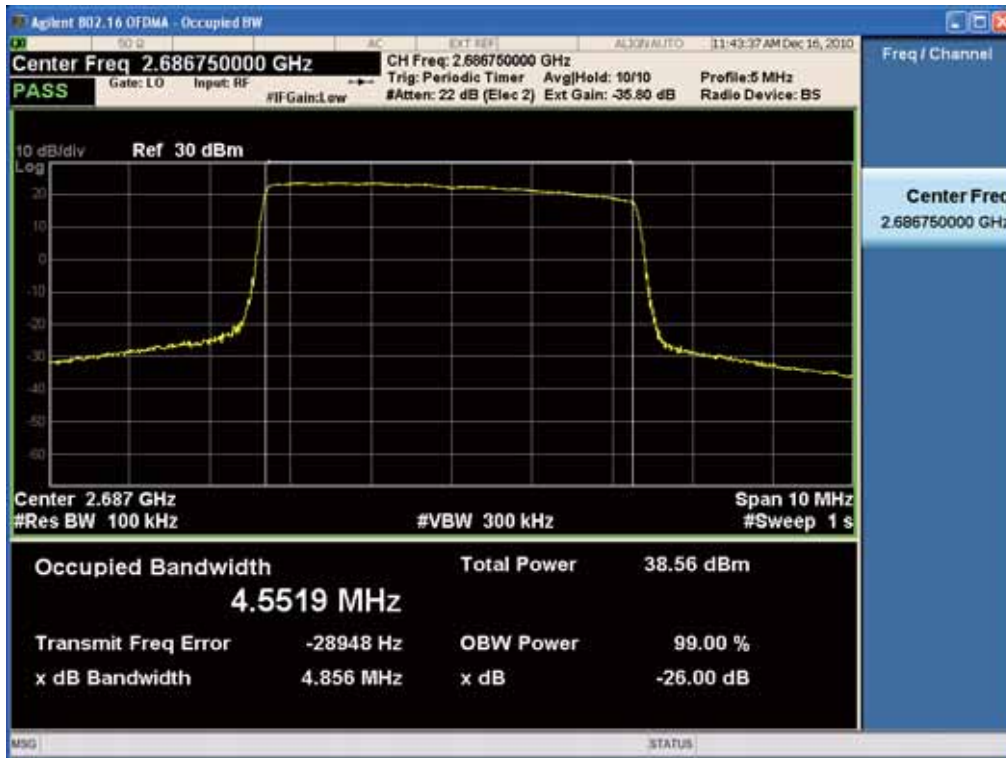


(QPSK Middle Channel)

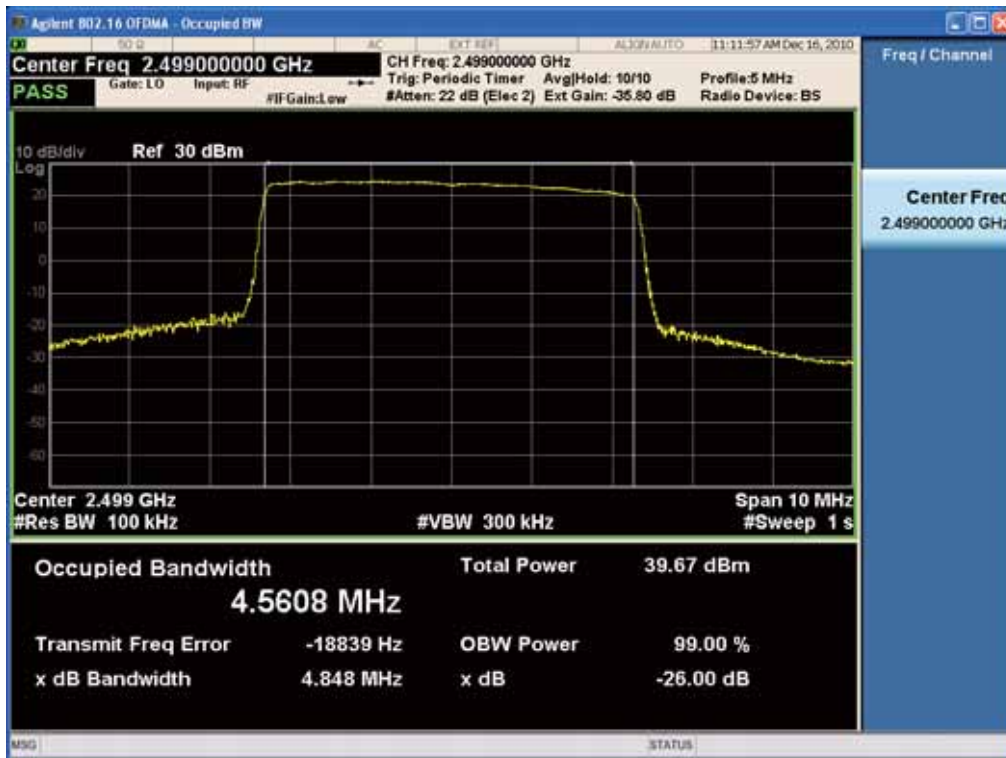


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 66 of 142

(QPSK High Channel)

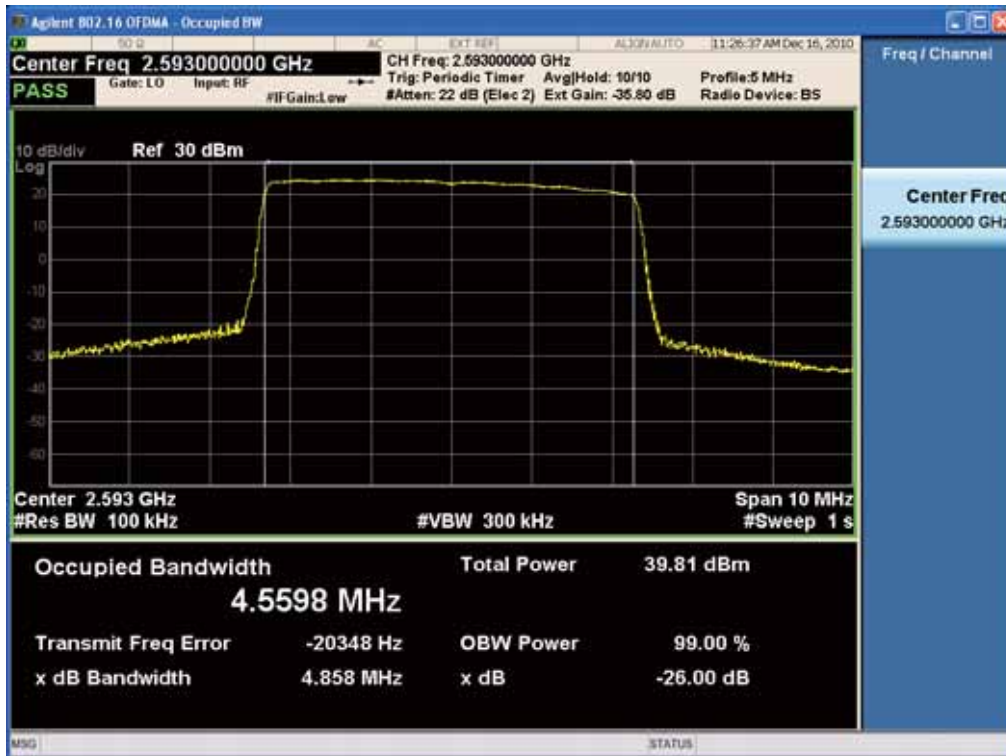


(16QAM Low Channel)

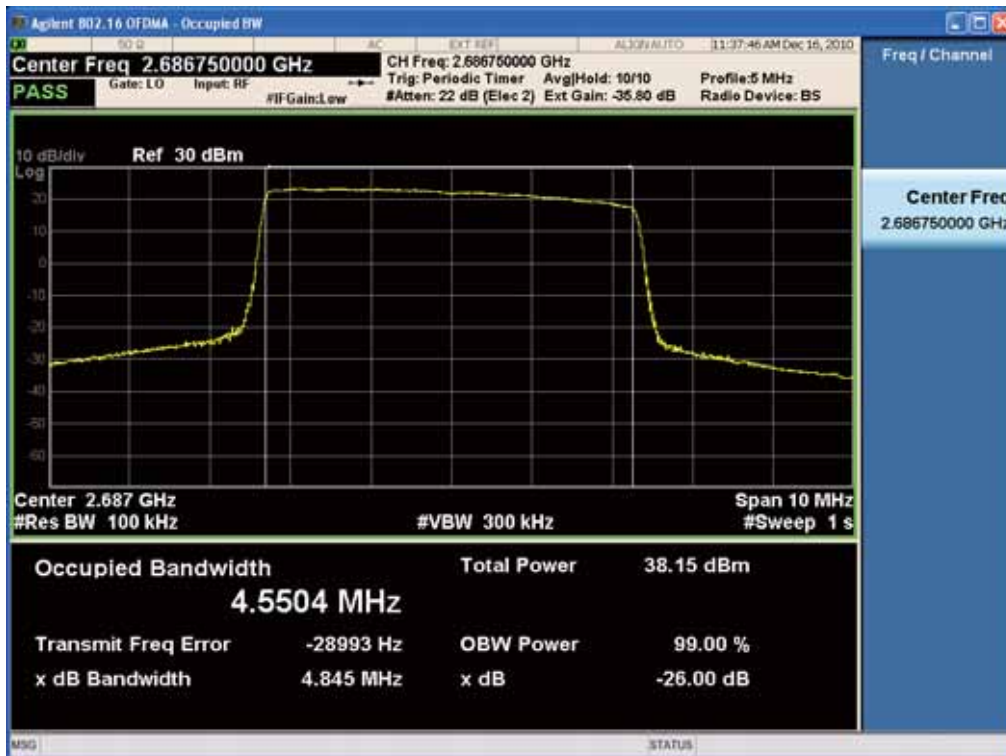


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 67 of 142

(16QAM Middle Channel)

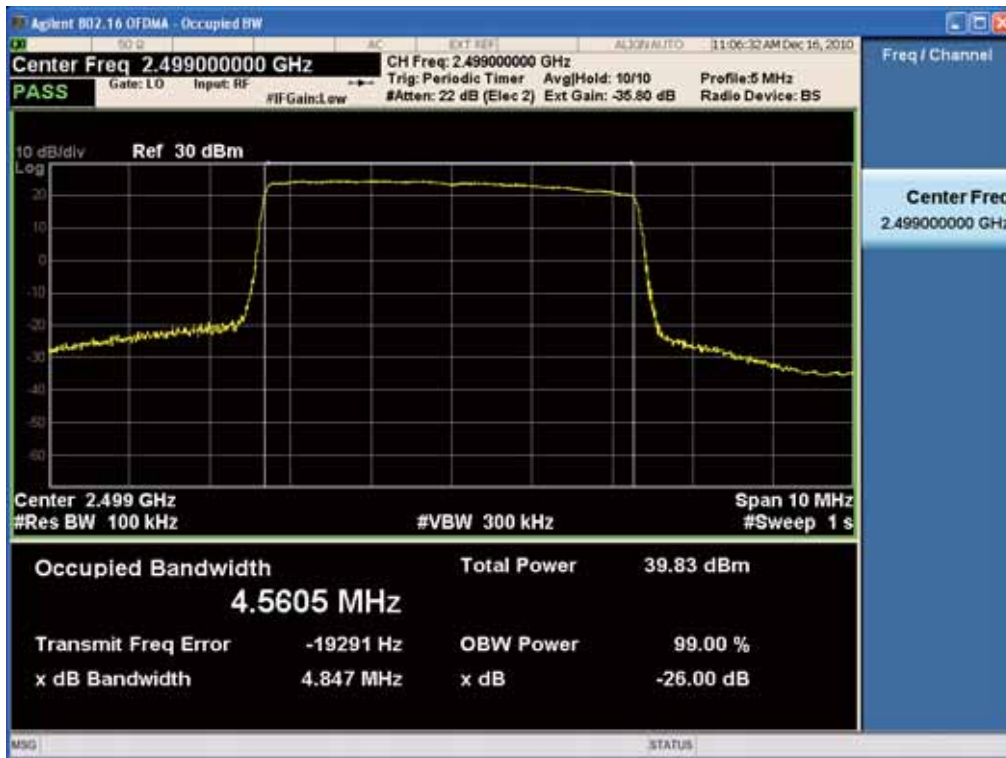


(16QAM High Channel)

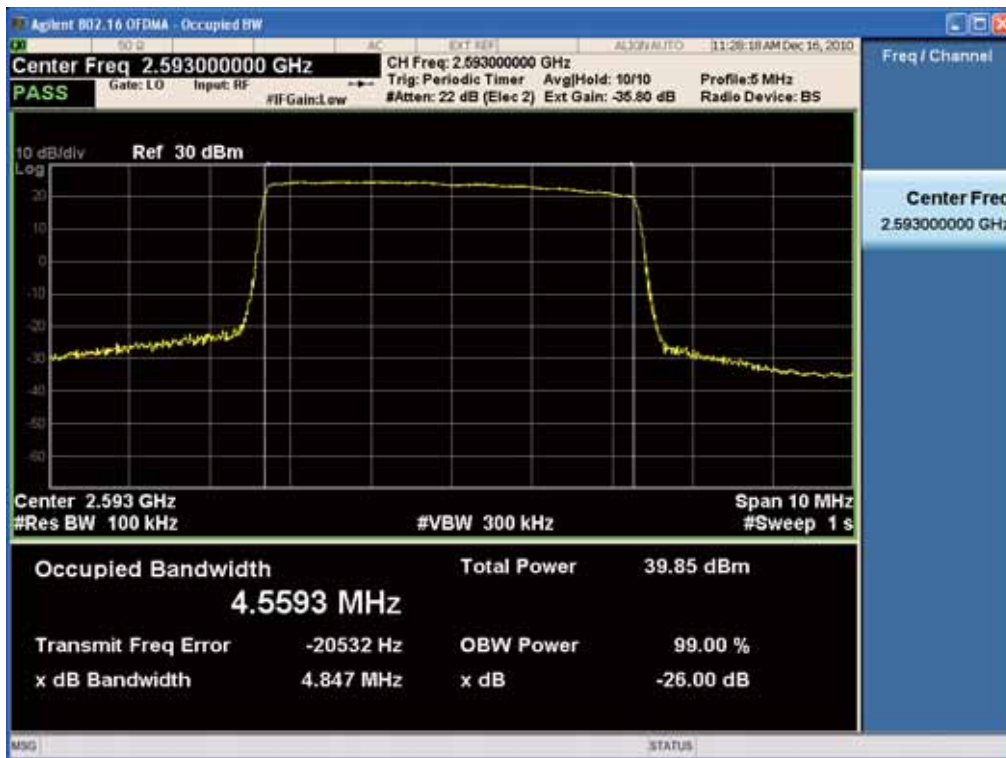


FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
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(64QAM Low Channel)

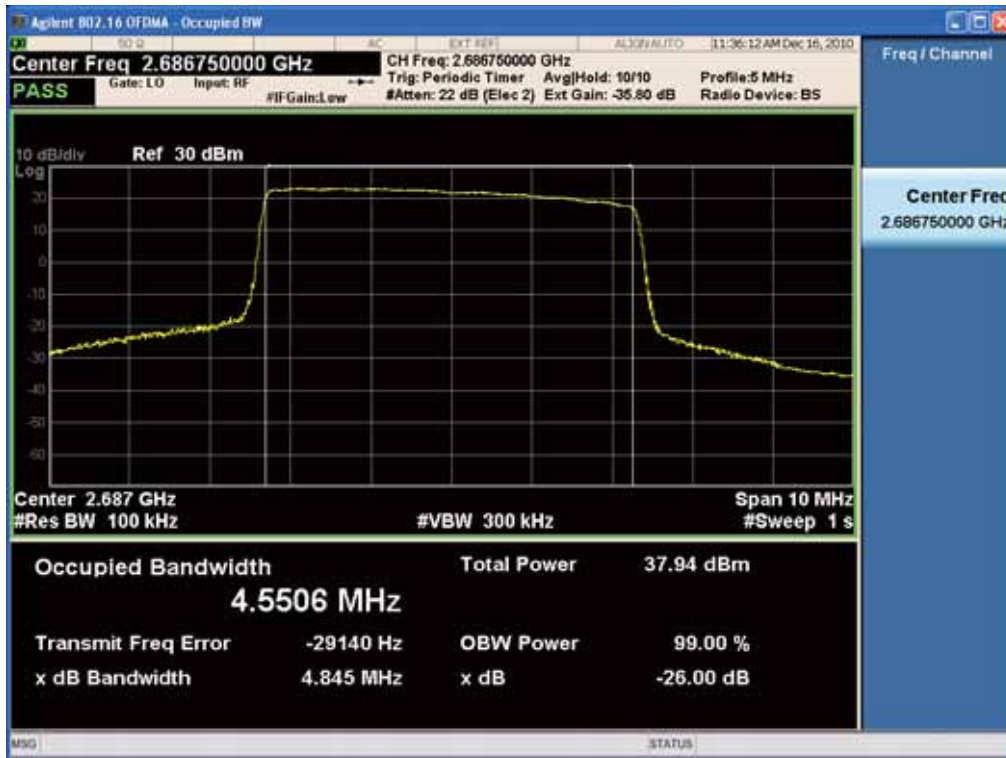


(64QAM Middle Channel)



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



FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
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7. BAND EDGES

7.1. Applicable Standard

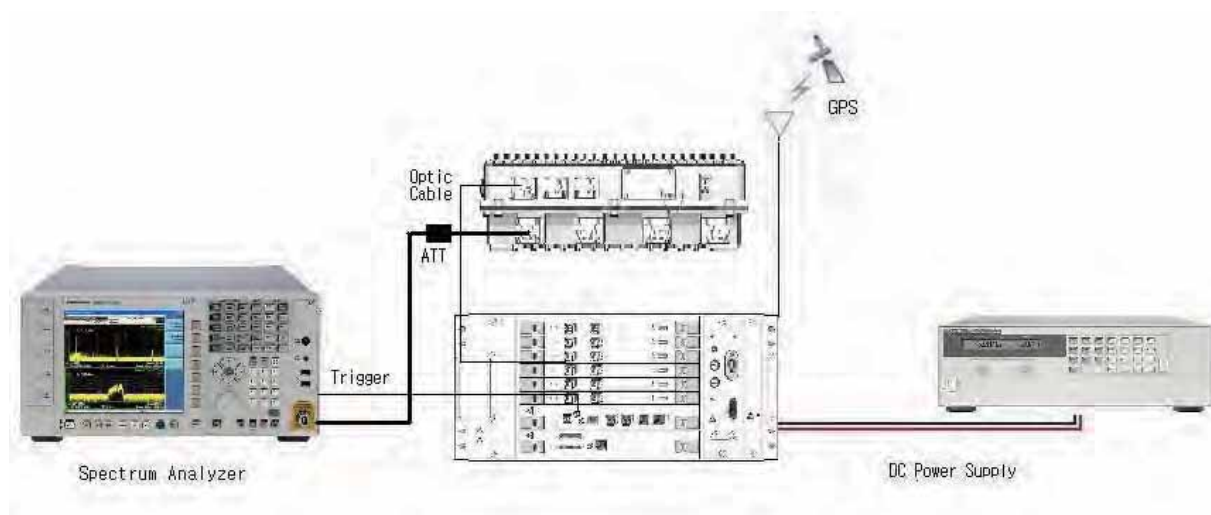
According to §27.53(m), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (p) by a factor of at least $43 + 10 \log (p)$ dB.

7.2. Test Equipment List and Details

Manufacturer	Model / Equipment	Serial No.	Calibration Due
Agilent	6674A / DC Power Supply	3501A00901	05/14/2011
WEINSCHTEL	67-30-33 / Attenuator	BU5347	01/06/2011
WEINSCHTEL	67-30-33 / Attenuator	BR0530	01/14/2011
Agilent	8498A / Attenuator	51161	01/06/2011
Agilent	8498A / Attenuator	51162	01/06/2011
Agilent	N9020A / MXA Signal Analyzer	US46220219	03/03/2011
CERNEX	CDPU5260404K / Power Divider	14695	02/08/2011

7.3. Test Procedure

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



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

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.

7.4. 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	-28.995	-13.0
	High	2686.75	-32.221	
16QAM	Low	2499.00	-26.645	
	High	2686.75	-32.475	
64QAM	Low	2499.00	-27.934	
	High	2686.75	-33.468	

7.4.2. Test data at Output 2

Modulation	Channel	Measured Frequency (MHz)	Max. Measured Value (dBm)	Limit (dBm)
QPSK	Low	2499.00	-26.114	-13.0
	High	2686.75	-32.645	
16QAM	Low	2499.00	-28.372	
	High	2686.75	-33.199	
64QAM	Low	2499.00	-27.649	
	High	2686.75	-33.255	

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7.4.3. Test data at Output 3

Modulation	Channel	Measured Frequency (MHz)	Max. Measured Value (dBm)	Limit (dBm)
QPSK	Low	2499.00	-21.349	-13.0
	High	2686.75	-28.226	
16QAM	Low	2499.00	-23.683	
	High	2686.75	-27.327	
64QAM	Low	2499.00	-21.461	
	High	2686.75	-28.868	

7.4.4. Test data at Output 4

Modulation	Channel	Measured Frequency (MHz)	Max. Measured Value (dBm)	Limit (dBm)
QPSK	Low	2499.00	-27.279	-13.0
	High	2686.75	-33.252	
16QAM	Low	2499.00	-27.917	
	High	2686.75	-30.505	
64QAM	Low	2499.00	-27.381	
	High	2686.75	-30.897	

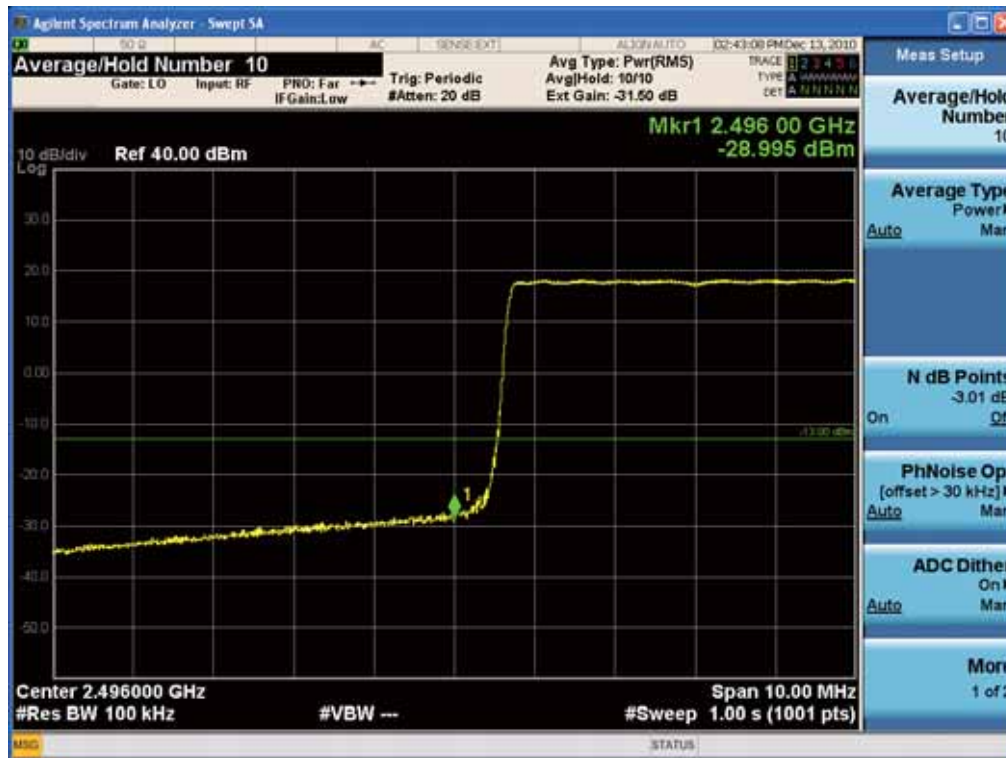
7.4.5. Combined Test data at Output

Modulation	Channel	Measured Frequency (MHz)	Max. Measured Value (dBm)	Limit (dBm)
QPSK	Low	2499.00	-20.085	-13.0
	High	2686.75	-32.064	
16QAM	Low	2499.00	-20.380	
	High	2686.75	-29.570	
64QAM	Low	2499.00	-19.295	
	High	2686.75	-33.552	

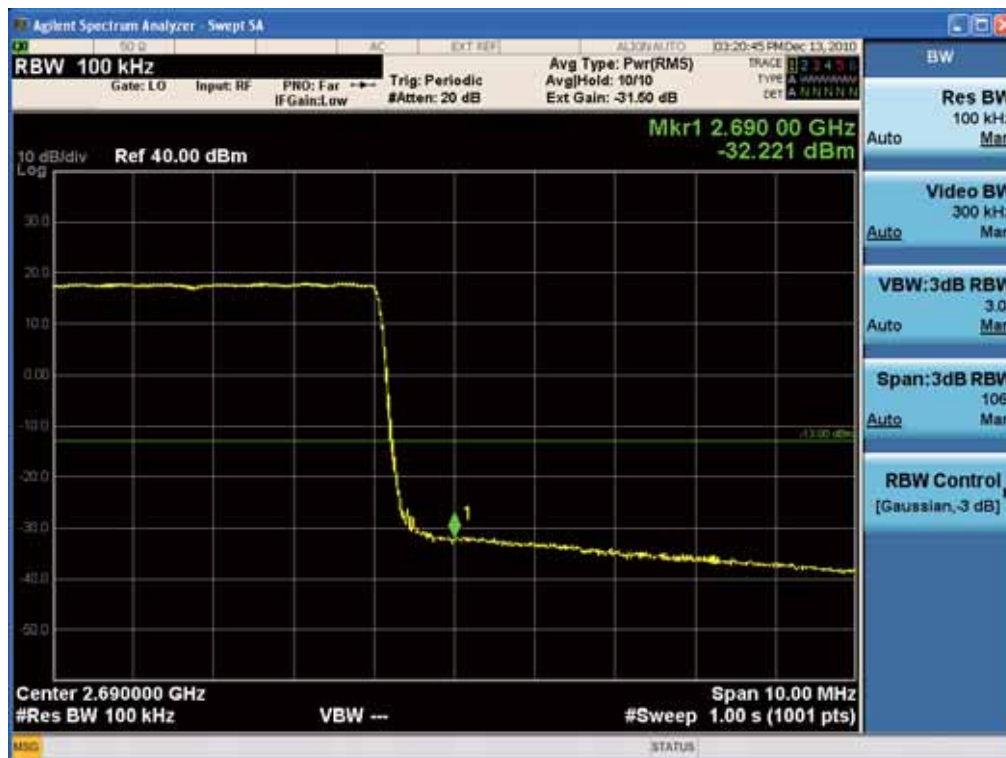
FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
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7.4.6. Plot Data at Output 1

(QPSK Low Channel)

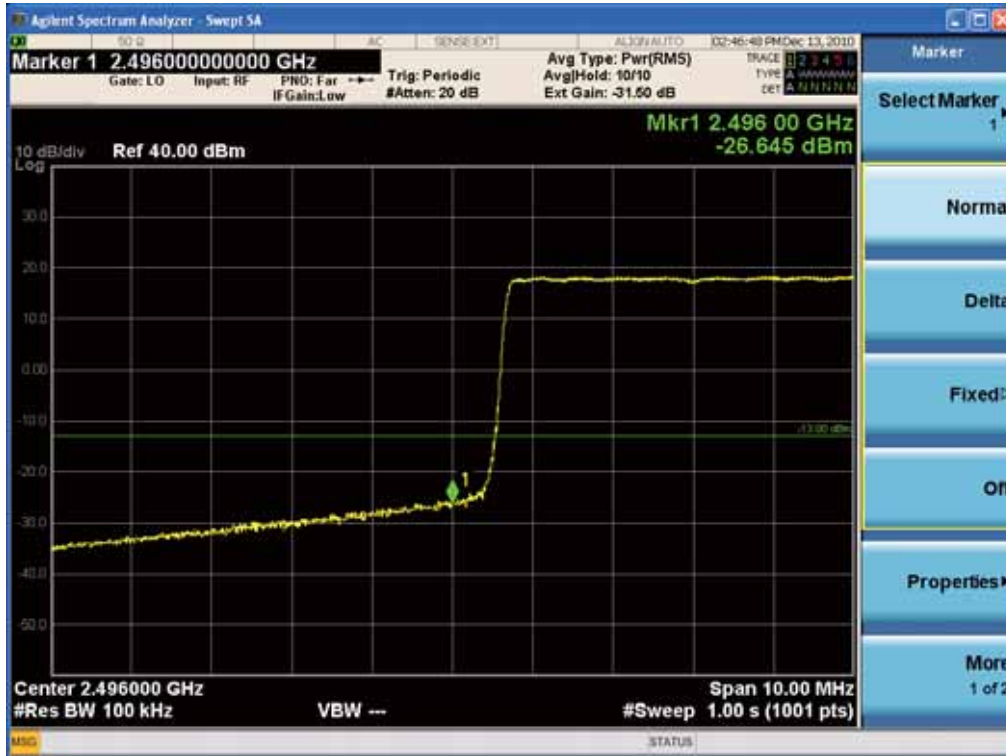


(QPSK High Channel)



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

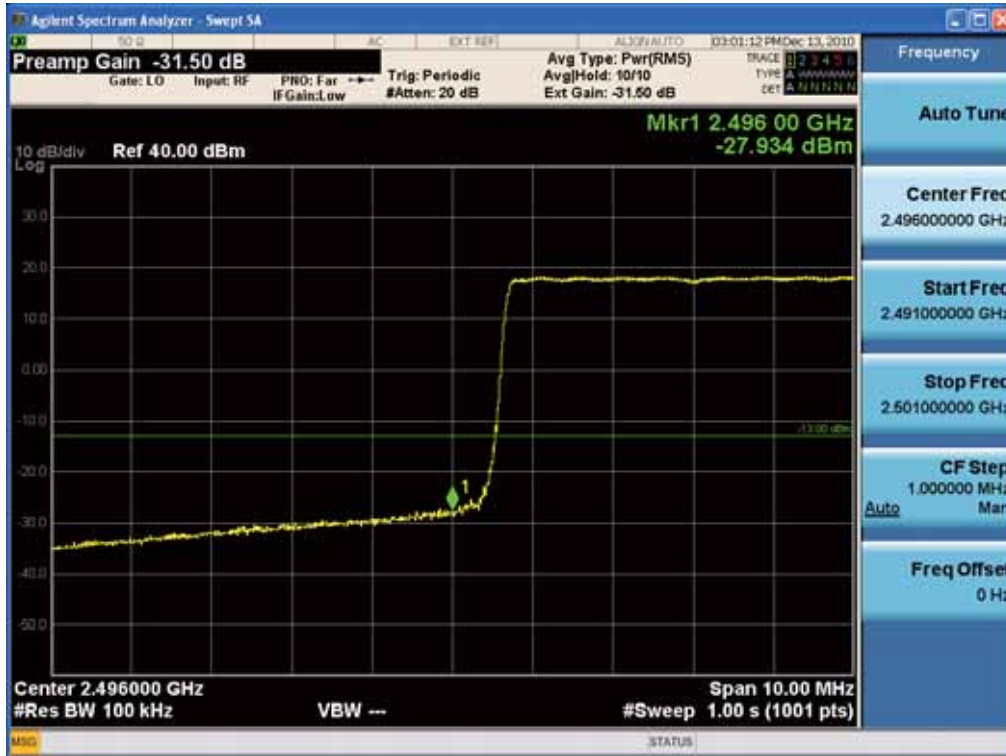


(16QAM High Channel)



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



(64QAM High Channel)



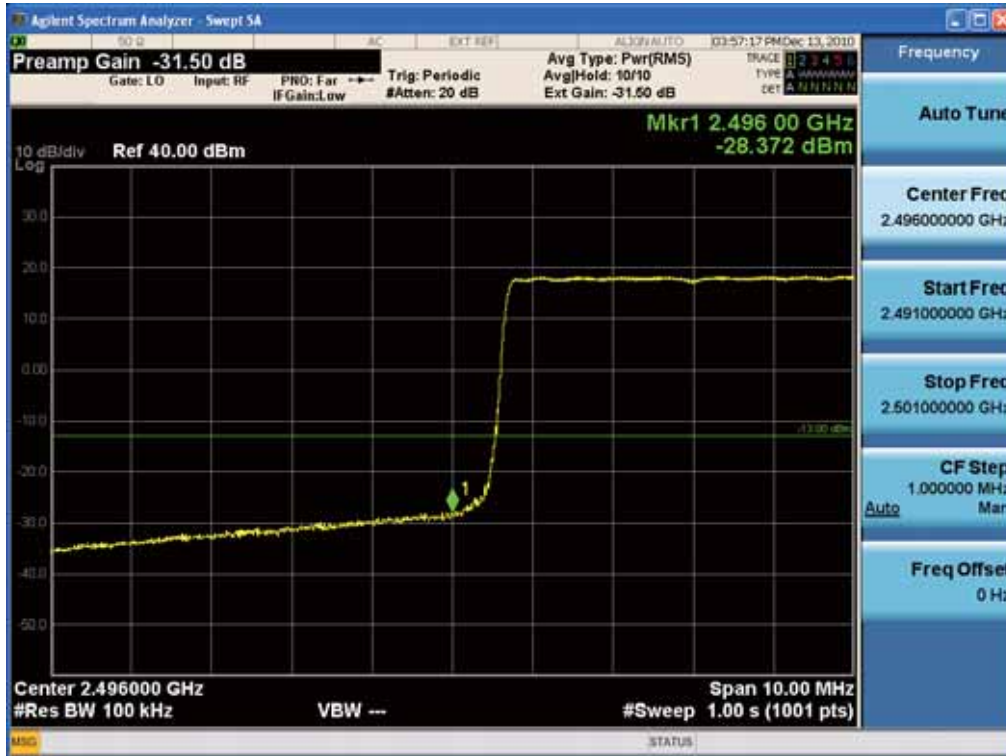
FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
Test Report No. HCTR1012FR18	Date of Issue: December 22, 2010	EUT Type: Mobile WiMAX Outdoor RAS	FCC ID: A3LSPI-22132825WB	Page 76 of 142

(QPSK Low Channel)



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(16QAM Low Channel)

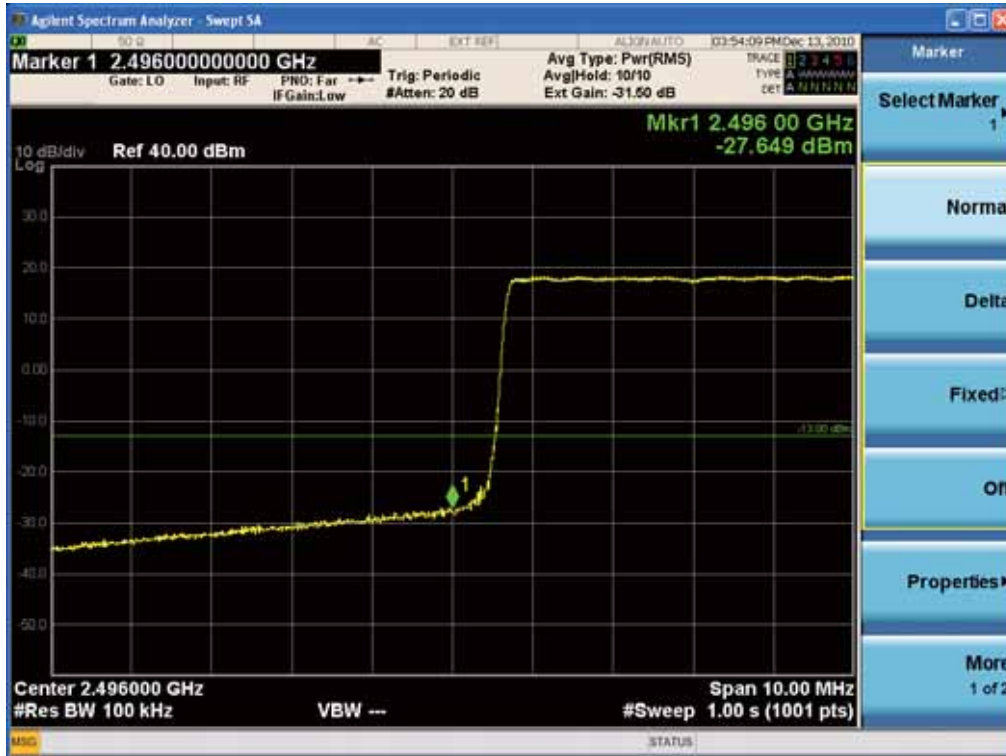


(16QAM High Channel)



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



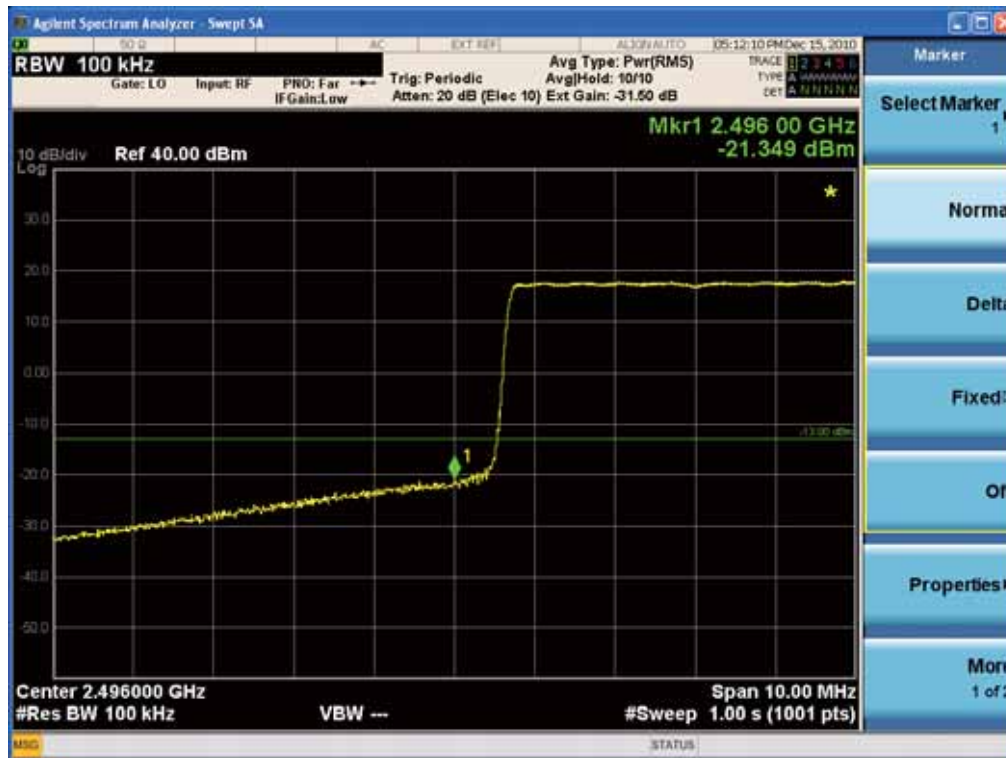
(64QAM High Channel)



FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
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7.4.8. Plot Data at Output 3

(QPSK Low Channel)

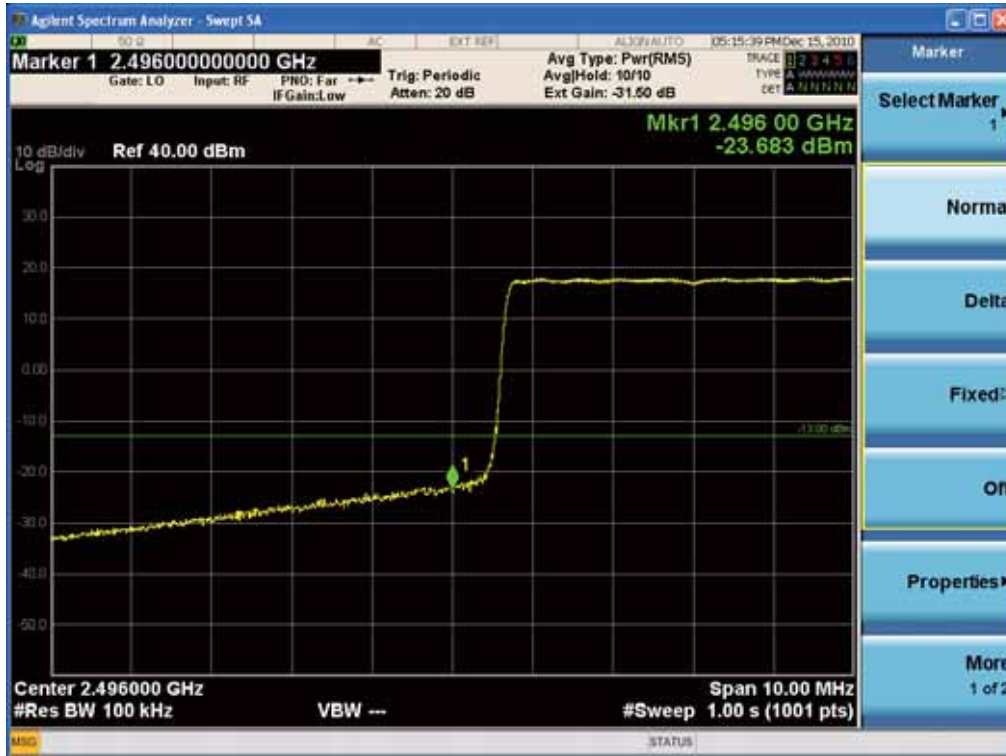


(QPSK High Channel)



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

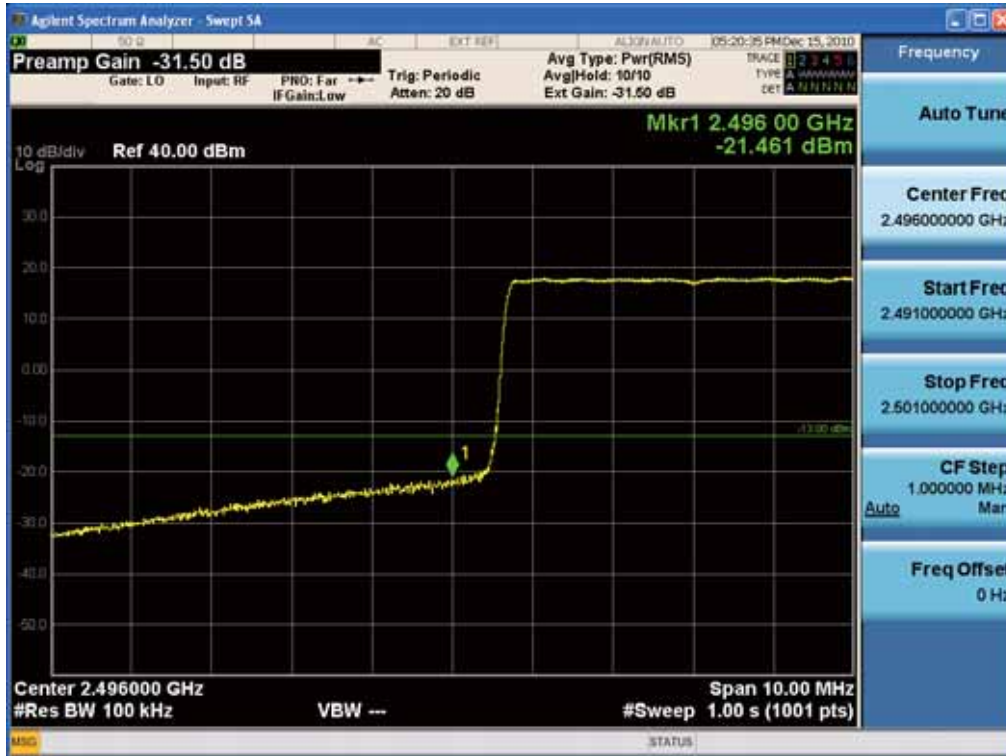


(16QAM High Channel)



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



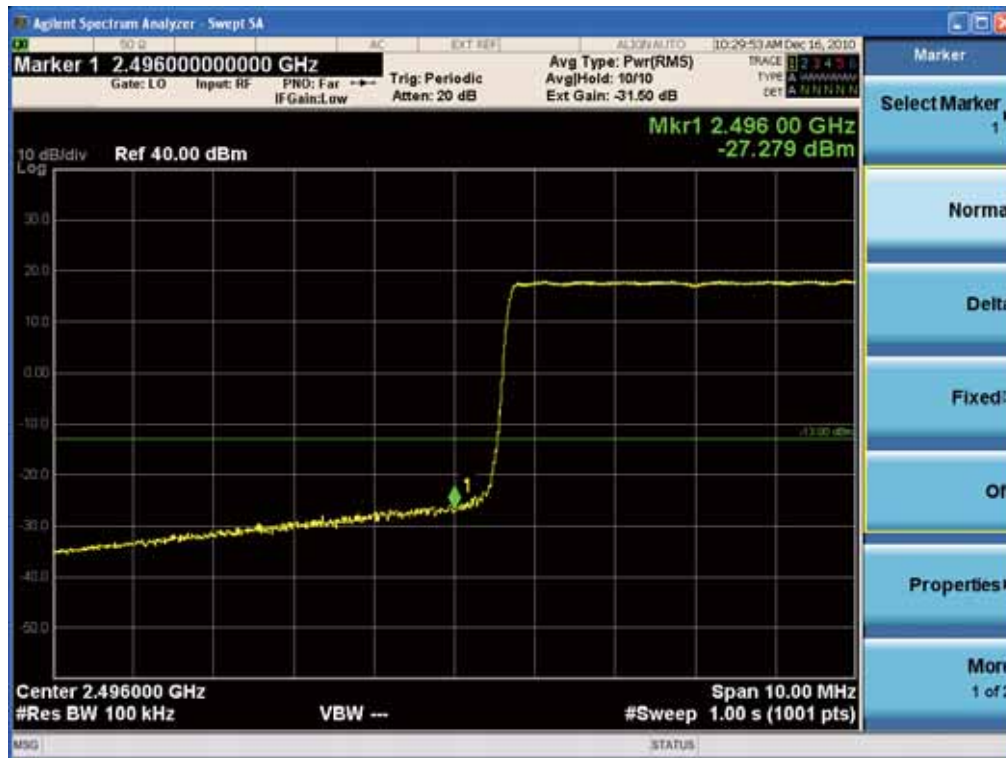
(64QAM High Channel)



FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
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7.4.9. Plot Data at Output 4

(QPSK Low Channel)

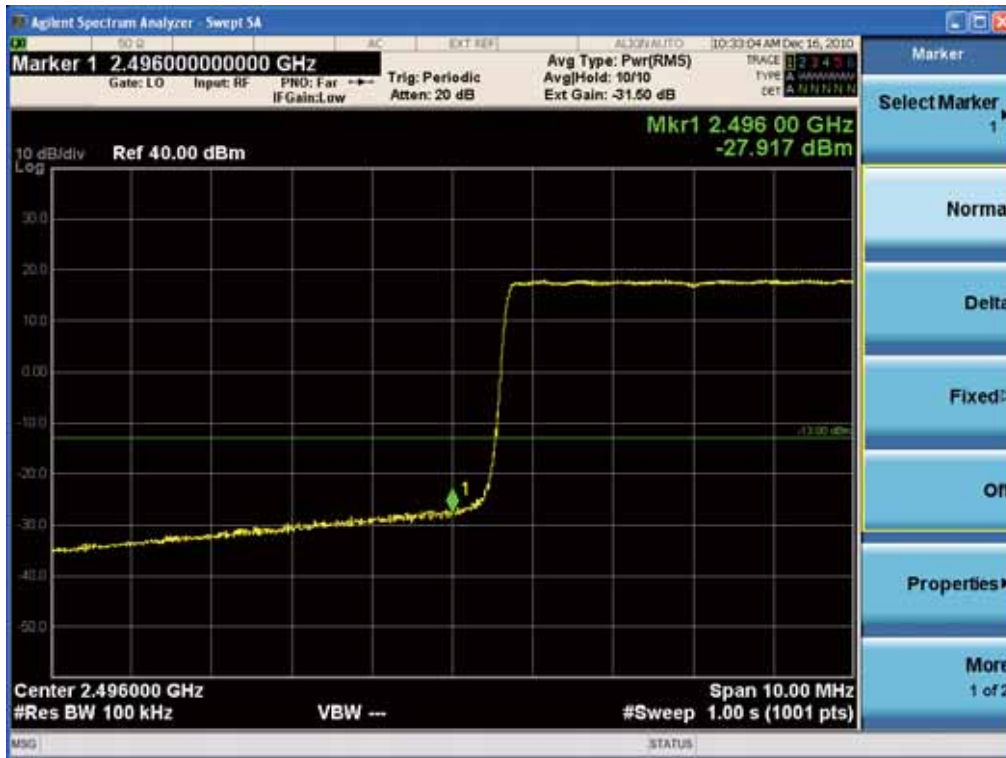


(QPSK High Channel)



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

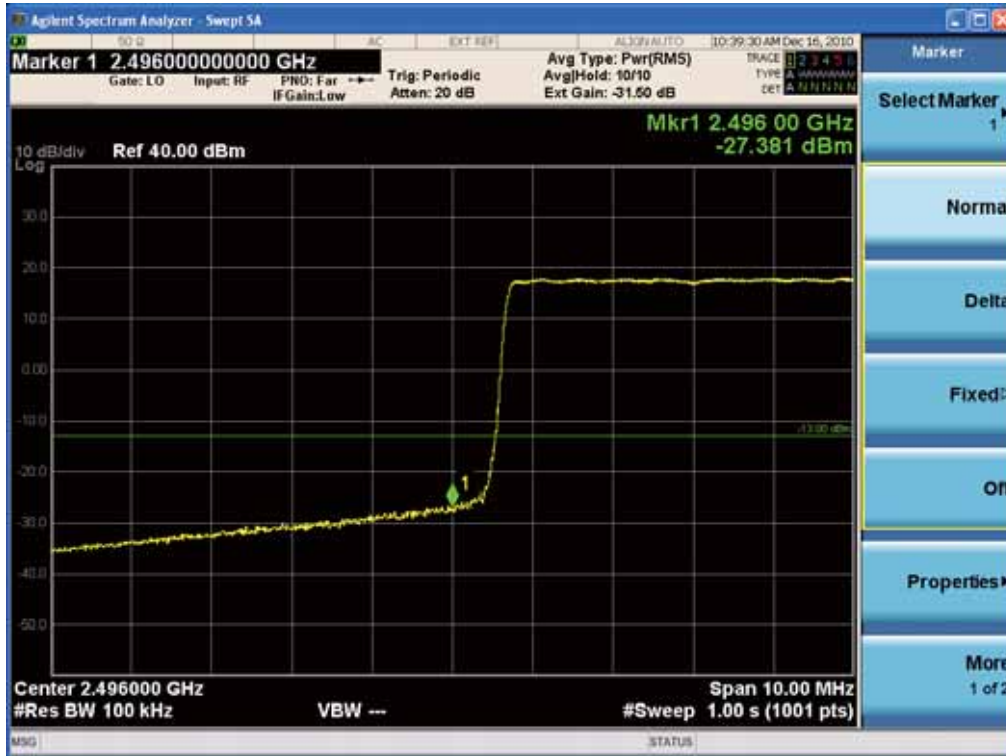


(16QAM High Channel)



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



(64QAM High Channel)



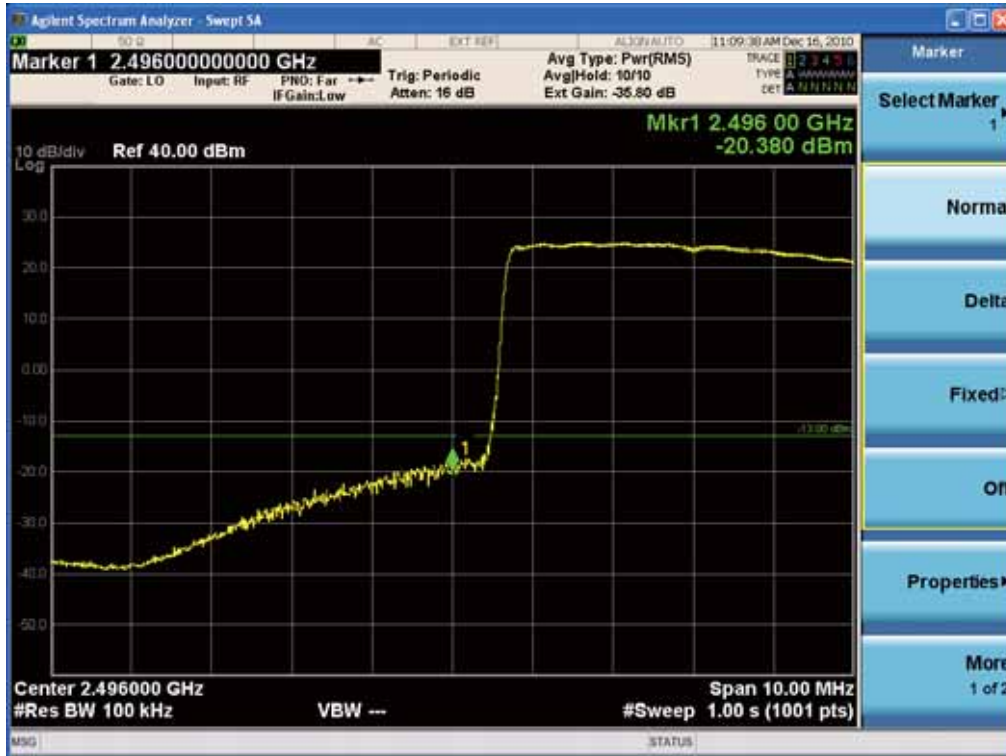
FCC PT.27 TEST REPORT	FCC CERTIFICATION REPORT			HCT PT.27 TEST REPORT
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(QPSK Low Channel)



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(16QAM Low Channel)



(16QAM High Channel)



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(64QAM Low Channel)

