



PCTEST ENGINEERING LABORATORY, INC.

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CERTIFICATE OF COMPLIANCE FCC Part 27 Certification

Applicant Name:

Samsung Electronics, Co. Ltd.
18600 Broadwick St.
Rancho Dominguez, CA 90220
United States

Date of Testing:

March 5, 2009

Test Site/Location:

PCTEST Lab., Columbia, MD, USA

Test Report Serial No.:

0902260333.A3L

FCC ID:

A3LSWDM100

APPLICANT:

SAMSUNG ELECTRONICS, CO. LTD.

Application Type:

Certification

FCC Classification:

Licensed Non-Broadcast Transmitter (TNB)

FCC Rule Part(s):

§2; §27 Subpart M

EUT Type:

Wimax Hand-held with Bluetooth and WLAN

Model(s):

SWD-M100

Tx Frequency Range:

2498.5 - 2687.5MHz (WiMAX using 5MHz BW)

2501 - 2685MHz (WiMAX using 10MHz BW)

Max. RF Output Power:

0.479 W EIRP WiMAX using 5MHz BW (26.8 dBm)

0.28 W EIRP WiMAX using 10MHz BW (24.47 dBm)

Emission Designator(s):

4M73G7D (QPSK) / 4M72W7D (16QAM) WiMAX using 5MHz BW

9M39G7D (QPSK) / 9M39W7D (16QAM) WiMAX using 10MHz BW

Test Device Serial No.:

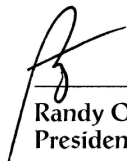
identical prototype [S/N: FG-013-B]

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Grant Conditions: Power output listed is EIRP for Part 27.

PCTEST certifies that no party to this application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.


Randy Ortanez
President

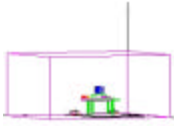


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MEASUREMENT REPORT

FCC Part 27

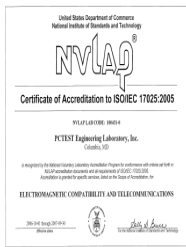


§2.1033 General Information

APPLICANT: Samsung Electronics, Co. Ltd.
APPLICANT ADDRESS: 18600 Broadwick St.
 Rancho Dominguez, CA 90220
TEST SITE: PCTEST ENGINEERING LABORATORY, INC.
TEST SITE ADDRESS: 6660-B Dobbin Road, Columbia, MD 21045 USA
FCC RULE PART(S): §2; §27(M)
BASE MODEL: SWD-M100
FCC ID: A3LSWDM100
FCC CLASSIFICATION: Licensed Non-Broadcast Transmitter (TNB)
EMISSION DESIGNATOR(S): 4M73G7D (QPSK) / 4M72W7D (16QAM) WiMAX using 5MHz BW
 9M39G7D (QPSK) / 9M39W7D (16QAM) WiMAX using 10MHz BW
MODE: WiMAX
FREQUENCY TOLERANCE: Emission must remain in band
Test Device Serial No.: FG-013-B ☐ Production ☒ Pre-Production ☐ Engineering
DATE(S) OF TEST: March 5, 2009
TEST REPORT S/N: 0902260333.A3L

Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab. located in Columbia, MD 21045, U.S.A.



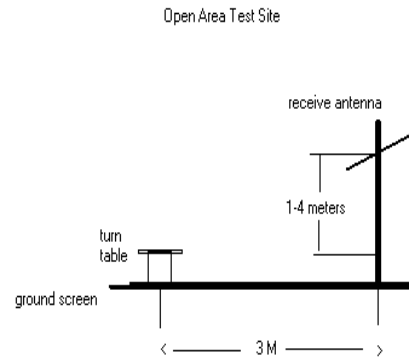
- PCTEST facility is an FCC registered (PCTEST Reg. No. 90864) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (IC-2451).
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025:2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.
- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
- PCTEST facility is an IC registered (IC-2451) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.

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1.0 INTRODUCTION

1.1 Measurement Procedure

The radiated spurious measurements were made outdoors at a 3-meter test range (see Figure 1-1). The equipment under test is placed on a wooden turntable 3-meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. 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. This level is recorded. 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.



Deviation from Measurement Procedure.....None

Figure 1-1. Diagram of 3-meter outdoor test range

1.2 Scope

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission.

1.3 Testing Facility

These measurements were conducted at the PCTEST Engineering Laboratory, Inc. facility in New Concept Business Park, Guilford Industrial Park, Columbia, Maryland. The site address is 6660-B Dobbin Road, Columbia, MD 21045. The test site is one of the highest points in the Columbia area with an elevation of 390 feet above mean sea level. The site coordinates are 39° 11'15" N latitude and 76° 49'38" W longitude. The facility is 1.5 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. There are no FM or TV transmitters within 15 miles of the site. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2003 on January 27, 2006 and Industry Canada.

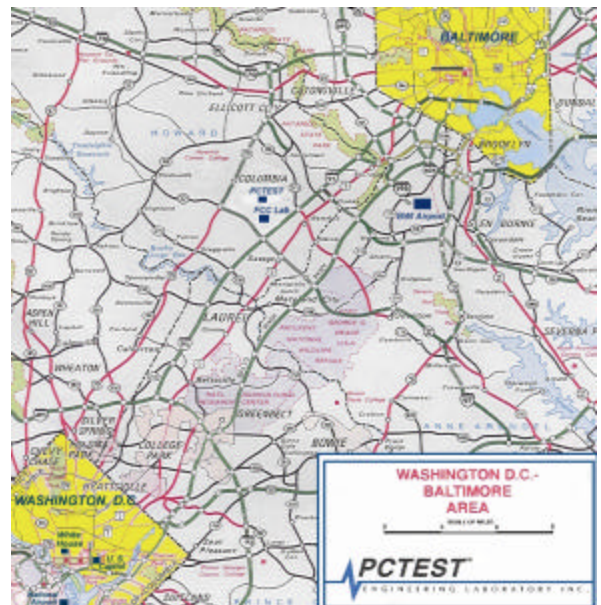


Figure 1-2. Map of the Greater Baltimore and Metropolitan Washington, D.C. area.

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Wimax Hand-held with Bluetooth and WLAN FCC ID: A3LSWDM100**. The test data contained in this report pertains only to the emissions due to the EUT's WiMAX function. The EUT consisted of the following component(s):

Trade Name / Base Model	FCC ID	Description
Samsung / Model: SWD-M100	A3LSWDM100	Wimax Hand-held with Bluetooth and WLAN

Table 2-1. EUT Equipment Description

The EUT was set to transmit at full power through test software installed in a laptop computer. Each of the four available types of modulations was tested to determine the configuration producing the worst case emissions. An external trigger was used so that all measurements were made during the transmitter's "on" period.

2.2 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

2.3 Labeling Requirements

Per 2.925

The FCC identifier shall be permanently affixed to the equipment and shall be readily visible to the purchaser at the time of purchase.

Per 15.19; Docket 95-19

In addition to this requirement, a device subject to certification shall be labeled as follows:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name and FCC ID must be displayed on the device per Section 15.19(b)(2).

Please see attachment for FCC ID label and label location.

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3.0 DESCRIPTION OF TESTS

3.1 Occupied Bandwidth Emission Limits

§2.1049, §27.53(l)(6)

- On any frequency outside but within 5.5MHz from the band edge of a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB. At frequencies greater than 5.5MHz from any in-band channel edge, the transmitter power (P) shall be attenuated by at least $55 + 10 \log(P)$ dB.
- Compliance with these provisions 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. 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 emission are attenuated at least 26 dB below the transmitter power.
- When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.
- The measurement of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

3.2 EBS/BRS - Frequency Blocks

§27.5(i)



**BLOCK A: 2496MHz – 2502MHz
(BRS)**

**BLOCK B: 2502MHz – 2572MHz
(EBS)**

**BLOCK C: 2572MHz – 2602MHz
(EBS)**

**BLOCK D: 2602MHz – 2614MHz
(BRS)**

**BLOCK E: 2614MHz – 2615MHz
(BRS)**

**BLOCK F: 2615MHz – 2616MHz
(EBS)**

**BLOCK G: 2616MHz – 2640.5MHz
(BRS)**

**BLOCK H: 2640.5MHz – 2657MHz
(EBS)**

**BLOCK A: 2657MHz – 2690MHz
(BRS)**

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3.3 Spurious and Harmonic Emissions at Antenna Terminal

§2.1051, §27.53(I)(4)(6)

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic.

3.4 Radiated Spurious and Harmonic Emissions

§2.1053, §27.53(I)(4)(6)

Spurious and harmonic radiated emissions are measured outdoors at our 3-meter test range. The equipment under test is placed on a wooden turntable 3-meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer reading. This level is recorded. For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration. This device was tested under all configurations and the worst case is reported with BAMC2*3 16QAM1/2 modulation.

3.5 Frequency Stability / Temperature Variation

§2.1055, §27.54

The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Specification – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Time Period and Procedure:

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

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4.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST).

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	No.165	(30MHz - 1000MHz) RG58 Coax Cable	N/A		N/A	N/A
-	No.166	(1000-26500MHz) Microwave RF Cable	N/A		N/A	N/A
-	No.167	(100kHz - 100MHz) RG58 Coax Cable	N/A		N/A	N/A
Agilent	11713A	Attenuation/Switch Driver	12/4/2008	Annual	12/4/2009	3439A02645
Agilent	8447D	Broadband Amplifier	N/A		N/A	1937A03348
Agilent	8447D	Broadband Amplifier	N/A		N/A	2443A01900
Agilent	8449B	(1-26.5GHz) Pre-Amplifier	12/4/2008	Annual	12/4/2009	3008A00985
Agilent	85650A	Quasi-Peak Adapter	3/13/2008	Annual	3/13/2009	2043A00301
Agilent	8566B	(100Hz-22GHz) Spectrum Analyzer	12/5/2008	Annual	12/5/2009	3638A08713
Agilent	8566B	Opt. 462 Impulse Bandwidth	12/5/2008	Annual	12/5/2009	3701A22204
Agilent	8591A	(9kHz-1.8GHz) Spectrum Analyzer	8/19/2008	Annual	8/19/2009	3144A02458
Agilent	E4407B	ESA Spectrum Analyzer	3/13/2008	Annual	3/13/2009	US39210313
Agilent	E4448A	(3Hz-50GHz) Spectrum Analyzer	12/5/2008	Annual	12/5/2009	US42510244
Agilent	E8257D	(250kHz-20GHz) Signal Generator	3/8/2007	Biennial	3/8/2009	MY45470194
Emco	3115	Horn Antenna (1-18GHz)	9/24/2007	Biennial	9/24/2009	9704-5182
Emco	3115	Horn Antenna (1-18GHz)	10/4/2007	Biennial	10/4/2009	9205-3874
MiniCircuits	VHF-3100+	High Pass Filter	N/A		N/A	30721
Rohde & Schwarz	NRVD	Dual Channel Power Meter	8/20/2008	Biennial	8/20/2010	101695
Rohde & Schwarz	NRVS	Single Channel Power Meter	7/3/2007	Biennial	7/3/2009	835360/0079
Rohde & Schwarz	NRV-Z32	Peak Power Sensor (100uW-2W)	12/5/2008	Biennial	12/5/2010	100155
Rohde & Schwarz	NRV-Z33	Peak Power Sensor (1mW-20W)	12/5/2008	Biennial	12/5/2010	100004
Rohde & Schwarz	NRV-Z53	Power Sensor	7/3/2007	Biennial	7/3/2009	846076/0007
Solar Electronics	8012-50-R-24-BNC	LISN	11/8/2007	Biennial	11/8/2009	310233
Sunol	DRH-118	Horn Antenna (1 - 18GHz)	5/9/2007	Biennial	5/9/2009	A050307

Table 4-1. Test Equipment

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5.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 9M62G7D

WiMAX BW = 9.62 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Amplitude/Angle Modulated

16QAM Modulation

Emission Designator = 9M45D7W

WiMAX BW = 9.45 MHz

D = Amplitude/Angle Modulated

7 = Quantized/Digital Info

W = Combination (Audio/Data)

Spurious Radiated Emission – WiMAX Band

Example: Middle Channel WiMAX Mode 2nd Harmonic (5200 MHz)

The receive analyzer reading at 3 meters with the EUT on the turntable was –81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of –81.0 dBm on the receive analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 3.2 dB at 5200 MHz. So 4.9 dB is added to the signal generator reading of –30.00 dBm yielding –25.1 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm – (-25.1) = 50.6 dBc.

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6.0 TEST RESULTS

6.1 Summary

Company Name: Samsung Electronics, Co. Ltd.
 FCC ID: A3LSWDM100
 FCC Classification: Licensed Non-Broadcast Transmitter (TNB)
 Mode(s): WiMAX

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE (Tx)					
2.1049, 27.53(l)(6)	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section 7.0
2.1051, 27.53(l)(4)(6)	Band Edge	< 43 + 10log ₁₀ (P[Watts]) within 5.5MHz from the band edge		PASS	Section 7.0
2.1051, 27.53(l)(4)(6)	Conducted Spurious Emissions	< 55 + 10log ₁₀ (P[Watts]) for all emissions greater than 5.5MHz from the band edge		PASS	Section 7.0
2.1046	Transmitter Conducted Output Power Measurements	N/A		PASS	Section 6.2
27.50(h)(2)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP	RADIATED	PASS	Section 6.3
2.1053, 27.53(l)(4)	Undesirable Emissions	< 55 + 10log ₁₀ (P[Watts]) for all out-of-band emissions		PASS	Section 6.4
2.1055, 27.54	Frequency Stability	Fundamental emissions must stay within the allotted band		PASS	Section 6.6
RECEIVER MODE (Rx) / DIGITAL EMISSIONS					
15.107	AC Conducted Emissions 150kHz – 30MHz	< FCC 15.107 limits	LINE CONDUCTED	PASS	Pt. 15B Test Report
15.109	General Field Strength Limits (Restricted Bands and Radiated Emissions Limits)	< FCC 15.109 limits	RADIATED (30MHz-1GHz) (1-25 GHz)	PASS	Pt. 15B Test Report

Table 6-1. Summary of Test Results

FCC ID: A3LSWDM100		FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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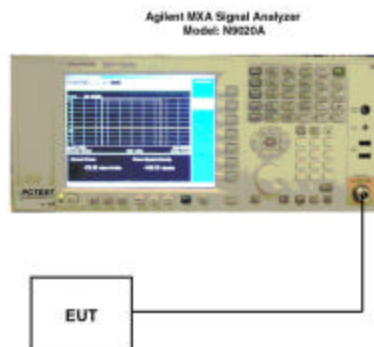
6.2 Transmitter Conducted Output Power

§2.1046

A gate function triggered during when the burst is “on” is used as an trigger source to a spectrum analyzer. The trigger was set in such a way that the analyzer recorded power measurements only during the times in which the EUT’s was transmitting. The WiMAX conducted powers are reported below as well as a test setup diagram.

Frequency[MHz]	Modulation	10MHz	5MHz
Low Channel 2501(for 10MHz) / 2498.5 (for 5MHz)	PUSC_QPSK1/2	22.8	22.7
	PUSC_16QAM1/2	22.9	23.1
	BAMC2*3_QPSK1/2	23.5	23.4
	BAMC2*3_16QAM1/2	23.3	23.6
	PUSC_QPSK3/4	23.4	23
	PUSC_16QAM3/4	23	22.4
	BAMC2*3_QPSK3/4	23.2	23.5
	BAMC2*3_16QAM3/4	23	23.5
Mid Channel 2600 (for 10 MHz and 5MHz)	PUSC_QPSK1/2	23.3	23
	PUSC_16QAM1/2	23.1	23
	BAMC2*3_QPSK1/2	22.8	23.5
	BAMC2*3_16QAM1/2	23.1	23.3
	PUSC_QPSK3/4	23.2	23.2
	PUSC_16QAM3/4	22.8	22.7
	BAMC2*3_QPSK3/4	22.9	23
	BAMC2*3_16QAM3/4	23.3	23.5
High Channel 2685 (for 10MHz)/ 2687.5 (for 5MHz)	PUSC_QPSK1/2	22.8	22.9
	PUSC_16QAM1/2	23.3	22.7
	BAMC2*3_QPSK1/2	23.4	22.8
	BAMC2*3_16QAM1/2	22.9	22.8
	PUSC_QPSK3/4	23	22.8
	PUSC_16QAM3/4	23.4	22.6
	BAMC2*3_QPSK3/4	23.2	23.4
	BAMC2*3_16QAM3/4	23	22.9

Table 6-2. WiMAX Conducted Output Power



FCC ID: A3LSWDM100		FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Figure 6-1. WiMAX Conducted Power Test Setup Diagram

6.3 Equivalent Isotropic Radiated Power Output Data §27.50(h)(2)

POWER: Maximum (WiMAX Mode)

Frequency [MHz]	Modulation	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Battery Type
2501.00	16QAM	-25.700	14.97	8.00	H	22.97	0.198	Standard
2600.00	16QAM	-24.400	16.27	8.00	H	24.27	0.267	Standard
2685.00	16QAM	-24.200	16.47	8.00	H	24.47	0.280	Standard
2685.00	QPSK	-25.650	15.03	8.00	H	23.03	0.201	Standard

Table 6-3. Equivalent Isotropic Radiated Power Output Data – 10MHz Wimax

Frequency [MHz]	Modulation	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Battery Type
2498.50	16QAM	-21.940	18.06	8.00	V	26.06	0.404	Standard
2600.00	16QAM	-21.200	18.80	8.00	V	26.80	0.479	Standard
2687.50	16QAM	-23.650	16.35	8.00	V	24.35	0.272	Standard
2600.00	QPSK	-21.400	18.60	8.00	V	26.60	0.457	Standard

Table 6-4. Equivalent Isotropic Radiated Power Output Data – 5MHz Wimax

NOTES:

Equivalent Isotropic Radiated Power Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn 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 WiMAX signals, a peak detector is used, with RBW = VBW = 1 MHz. A Horn antenna was substituted in place of the EUT. This Horn 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.

This device was tested under all configurations and the worst case is reported with BAMC2*3 16QAM1/2 modulation. This unit was tested with its standard battery.

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6.4 10MHz WiMAX Radiated Measurements

§2.1053, §27.53(l)(4)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 2501.00 MHz
 CHANNEL: LBS
 MEASURED OUTPUT POWER: 24.470 dBm = 0.280 W
 MODULATION SIGNAL: WiMAX (Internal)
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10} (W) =$ 49.47 dBc

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
5002.00	-44.93	10.50	-34.43	H	58.9
7503.00	-41.69	10.60	-31.09	H	55.6
10004.00	-85.51	12.00	-73.51	H	98.0
12505.00	-78.47	12.50	-65.97	H	90.4
15006.00	-72.37	13.03	-59.34	H	83.8

Table 6-4. Radiated Spurious Data (WiMAX Mode)

NOTES:

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

The EUT was placed on a wooden turn 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 WiMAX signals, a peak detector is used, with RBW = VBW = 1 MHz. A Horn antenna was substituted in place of the EUT. This Horn 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.

This device was tested under all configurations and the worst case is reported with BAMC2*3 16QAM1/2 modulation. This unit was tested with its standard battery.

FCC ID: A3LSWDM100		FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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10MHz WiMAX Radiated Measurements (Cont'd)

§2.1053, §27.53(l)(4)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 2600.00 MHz
 CHANNEL: MBS
 MEASURED OUTPUT POWER: 24.470 dBm = 0.280 W
 MODULATION SIGNAL: WiMAX (Internal)
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W) =$ 49.47 dBc

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
5200.00	-43.04	10.46	-32.58	H	57.0
7800.00	-38.98	10.84	-28.14	H	52.6
10400.00	-85.13	12.16	-72.97	H	97.4
13000.00	-76.49	12.30	-64.19	H	88.7
15600.00	-76.58	15.30	-61.28	H	85.7

Table 6-5. Radiated Spurious Data (WiMAX Mode)

NOTES:

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

The EUT was placed on a wooden turn 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 WiMAX signals, a peak detector is used, with RBW = VBW = 1 MHz. A Horn antenna was substituted in place of the EUT. This Horn 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.

This device was tested under all configurations and the worst case is reported with BAMC2*3 16QAM1/2 modulation. This unit was tested with its standard battery.

FCC ID: A3LSWDM100		FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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10MHz WiMAX Radiated Measurements (Cont'd)

§2.1053, §27.53(l)(4)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 2685.00 MHz
 CHANNEL: UBS
 MEASURED OUTPUT POWER: 24.470 dBm = 0.280 W
 MODULATION SIGNAL: WiMAX (Internal)
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W) =$ 49.47 dBc

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
5370.00	-42.76	10.43	-32.33	H	56.8
8055.00	-39.92	11.03	-28.89	H	53.4
10740.00	-84.63	12.49	-72.14	H	96.6
13425.00	-75.25	12.30	-62.95	H	87.4
16110.00	-76.62	15.46	-61.17	H	85.6

Table 6-6. Radiated Spurious Data (WiMAX Mode)

NOTES:

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

The EUT was placed on a wooden turn 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 WiMAX signals, a peak detector is used, with RBW = VBW = 1 MHz. A Horn antenna was substituted in place of the EUT. This Horn 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.

This device was tested under all configurations and the worst case is reported with BAMC2*3 16QAM1/2 modulation. This unit was tested with its standard battery.

FCC ID: A3LSWDM100		FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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6.5 5MHz WiMAX Radiated Measurements

§2.1053, §27.53(l)(4)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 2498.50 MHz
 CHANNEL: LBS
 MEASURED OUTPUT POWER: 26.800 dBm = 0.479 W
 MODULATION SIGNAL: WiMAX (Internal)
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10} (W) =$ 51.80 dBc

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
4997.00	-37.67	10.50	-27.17	H	54.0
7495.50	-42.39	10.60	-31.79	H	58.6
9994.00	-85.58	12.00	-73.59	H	100.4
12492.50	-79.01	12.49	-66.52	H	93.3
14991.00	-73.07	12.97	-60.10	H	86.9

Table 6-7. Radiated Spurious Data (WiMAX Mode)

NOTES:

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

The EUT was placed on a wooden turn 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 WiMAX signals, a peak detector is used, with RBW = VBW = 1 MHz. A Horn antenna was substituted in place of the EUT. This Horn 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.

This device was tested under all configurations and the worst case is reported with BAMC2*3 16QAM1/2 modulation. This unit was tested with its standard battery.

FCC ID: A3LSWDM100		FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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5MHz WiMAX Radiated Measurements (Cont'd)

§2.1053, §27.53(l)(4)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 2600.00 MHz
 CHANNEL: MBS
 MEASURED OUTPUT POWER: 26.800 dBm = 0.479 W
 MODULATION SIGNAL: WiMAX (Internal)
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10} (W) =$ 51.80 dBc

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
5200.00	-50.31	10.46	-39.85	H	66.7
7800.00	-44.41	10.84	-33.56	H	60.4
10400.00	-85.28	12.16	-73.12	H	99.9
13000.00	-77.07	12.30	-64.77	H	91.6
15600.00	-75.91	15.30	-60.61	H	87.4

Table 6-8. Radiated Spurious Data (WiMAX Mode)

NOTES:

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

The EUT was placed on a wooden turn 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 WiMAX signals, a peak detector is used, with RBW = VBW = 1 MHz. A Horn antenna was substituted in place of the EUT. This Horn 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.

This device was tested under all configurations and the worst case is reported with BAMC2*3 16QAM1/2 modulation. This unit was tested with its standard battery.

FCC ID: A3LSWDM100		FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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5MHz WiMAX Radiated Measurements (Cont'd)

§2.1053, §27.53(l)(4)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 2687.50 MHz
 CHANNEL: UBS
 MEASURED OUTPUT POWER: 26.800 dBm = 0.479 W
 MODULATION SIGNAL: WiMAX (Internal)
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10} (W) =$ 51.80 dBc

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
5375.00	-44.40	10.42	-33.97	H	60.8
8062.50	-43.50	11.04	-32.46	H	59.3
10750.00	-84.83	12.50	-72.33	H	99.1
13437.50	-75.84	12.30	-63.54	H	90.3
16125.00	-74.75	15.48	-59.28	H	86.1

Table 6-9. Radiated Spurious Data (WiMAX Mode)

NOTES:

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

The EUT was placed on a wooden turn 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 WiMAX signals, a peak detector is used, with RBW = VBW = 1 MHz. A Horn antenna was substituted in place of the EUT. This Horn 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.

This device was tested under all configurations and the worst case is reported with BAMC2*3 16QAM1/2 modulation. This unit was tested with its standard battery.

FCC ID: A3LSWDM100		FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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6.6 10MHz WiMAX Frequency Stability Measurements

§2.1055, §27.54

OPERATING FREQUENCY: 2,600,000,000 Hz

CHANNEL: MBS

REFERENCE VOLTAGE: 3.7 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQ. (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	2,600,002,895	2,895.00	0.000111
100 %		- 30	2,599,994,755	-5,245	-0.000202
100 %		- 20	2,599,995,748	-4,252	-0.000164
100 %		- 10	2,600,006,247	6,247	0.000240
100 %		0	2,600,001,033	1,033	0.000040
100 %		+ 10	2,599,999,175	-825	-0.000032
100 %		+ 20	2,600,005,250	5,250	0.000202
100 %		+ 30	2,600,001,423	1,423	0.000055
100 %		+ 40	2,600,002,405	2,405	0.000092
100 %		+ 50	2,600,003,518	3,518	0.000135
115 %		+ 20	2,599,995,090	-4,909.99	-0.000189
BATT. ENDPOINT	3.40	+ 20	2,599,995,412	-4,587.98	-0.000176

Table 6-10. Frequency Stability Data (WiMAX Mode)

Note:

The frequency deviation was measured to ensure that the channels emissions remained within the authorized band with varying temperature and voltage.

FCC ID: A3LSWDM100		FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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WiMAX Frequency Stability Measurements (Cont'd)

\$2.1055, \$27.54

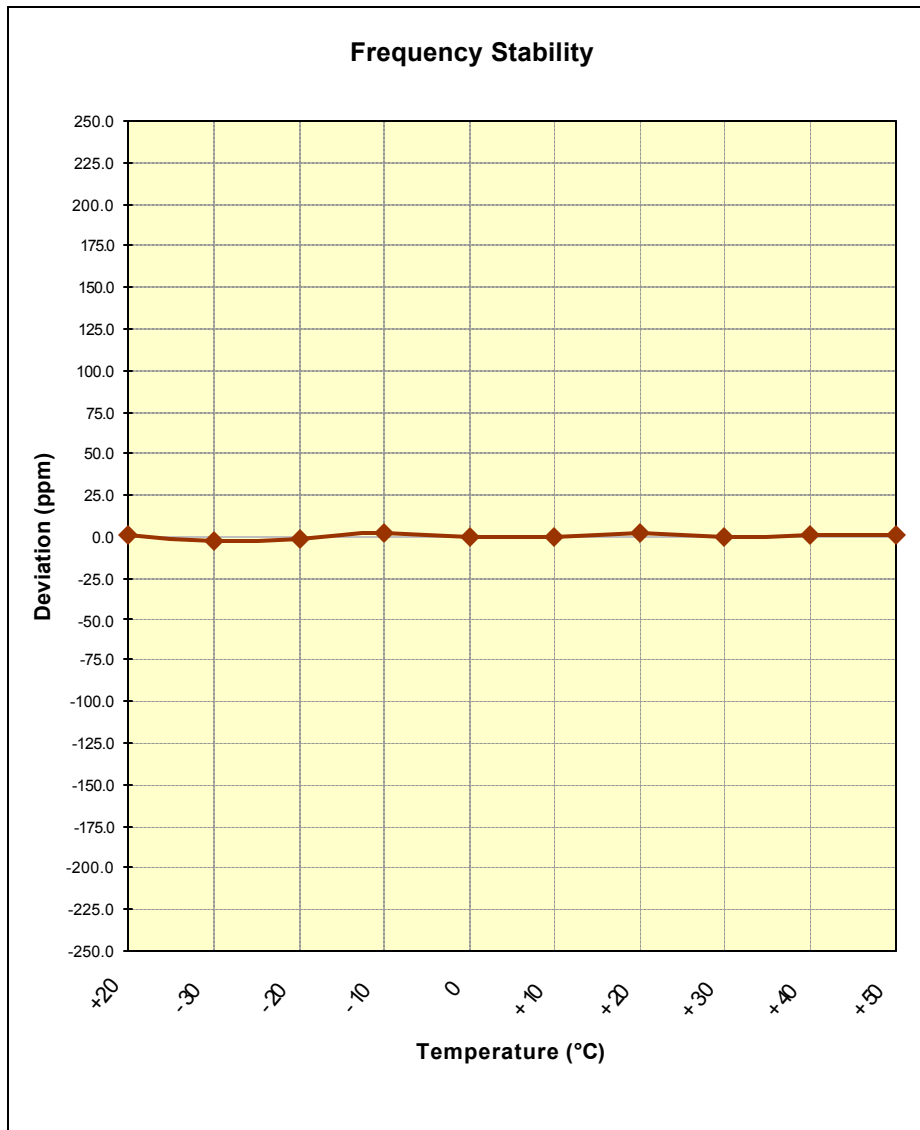


Figure 6-2. Frequency Stability Graph (WiMAX Mode)

Note:

The frequency deviation was measured to ensure that the channels emissions remained within the authorized band with varying temperature and voltage.

FCC ID: A3LSWDM100		FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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6.7 5MHz WiMAX Frequency Stability Measurements

\$2.1055, \$27.54

OPERATING FREQUENCY: 2,600,000,000 Hz

CHANNEL: MBS

REFERENCE VOLTAGE: 3.7 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQ. (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	2,599,999,056	-944	-0.000036
100 %		- 30	2,599,998,729	-1271	-0.000049
100 %		- 20	2,599,995,256	-4744	-0.000182
100 %		- 10	2,600,001,622	1622	0.000062
100 %		0	2,599,993,937	-6063	-0.000233
100 %		+ 10	2,600,006,596	6596	0.000254
100 %		+ 20	2,599,998,861	-1139	-0.000044
100 %		+ 30	2,599,995,161	-4839	-0.000186
100 %		+ 40	2,600,001,734	1734	0.000067
100 %		+ 50	2,600,004,853	4853	0.000187
115 %		+ 20	2,599,999,425	-575	-0.000022
BATT. ENDPOINT	9.45	+ 20	2,599,995,115	-4885	-0.000188

Table 6-11. Frequency Stability Data (WiMAX Mode)

Note:

The frequency deviation was measured to ensure that the channels emissions remained within the authorized band with varying temperature and voltage.

FCC ID: A3LSWDM100		FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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WiMAX Frequency Stability Measurements (Cont'd)

§2.1055, §27.54

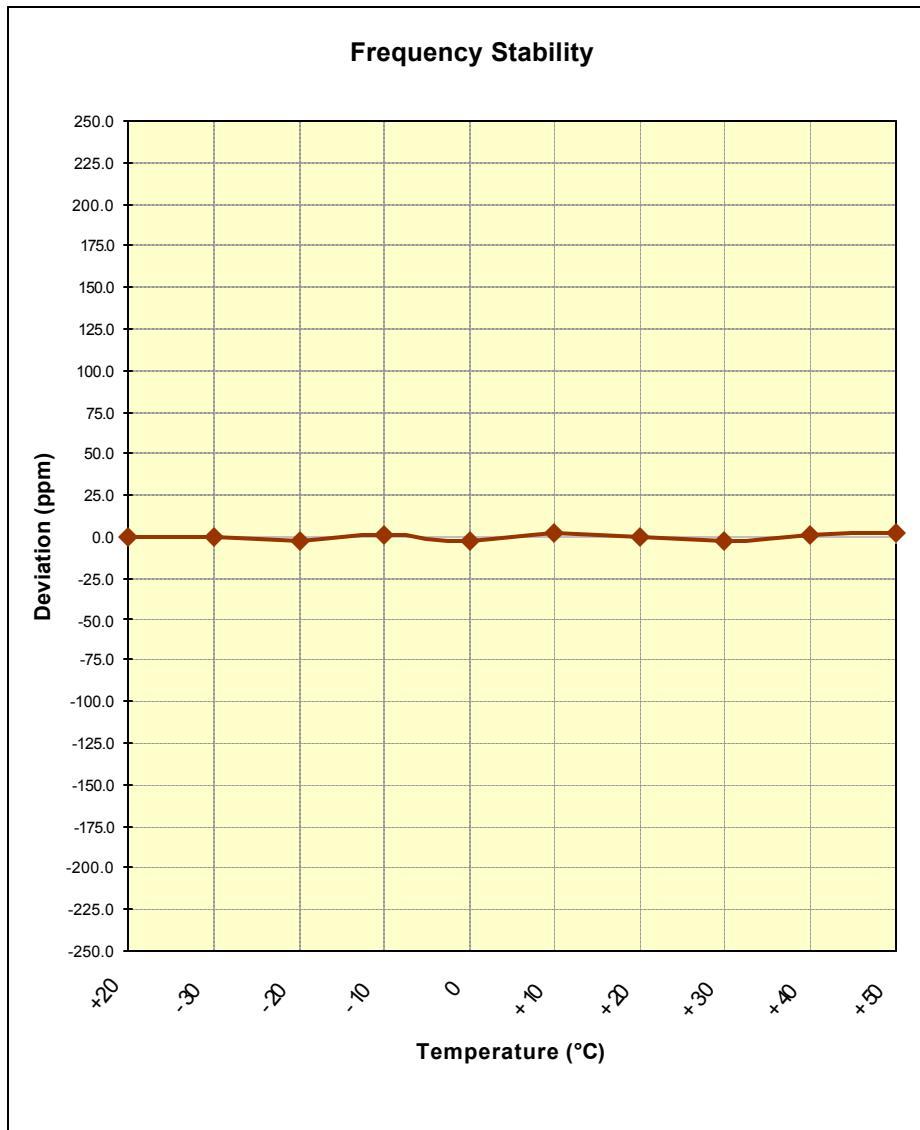


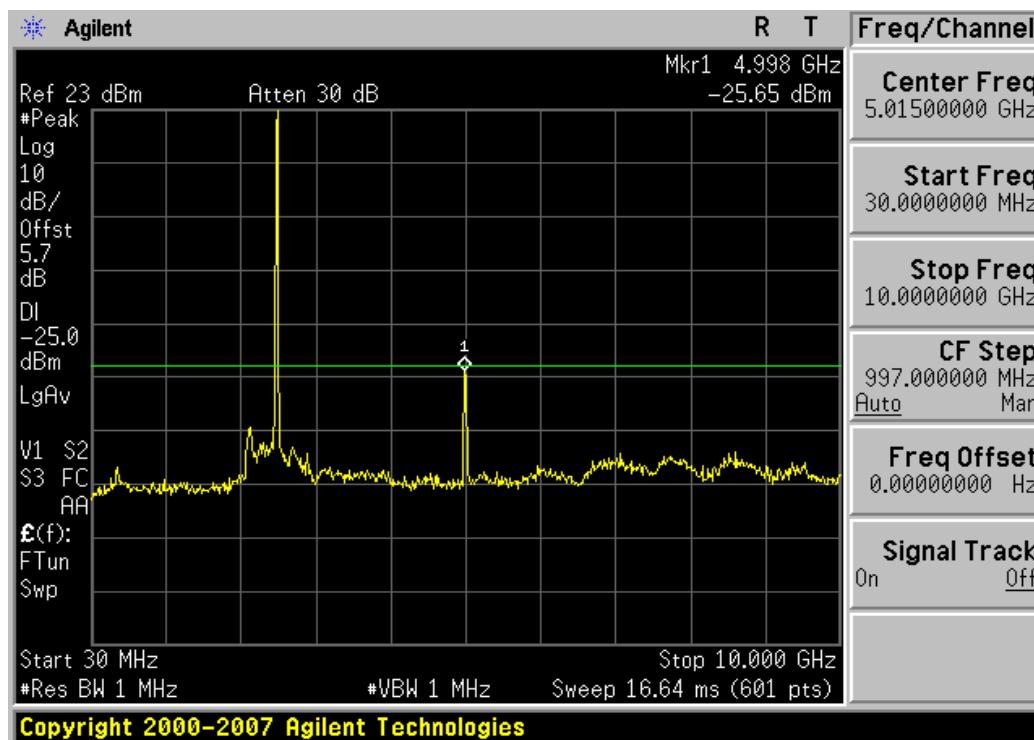
Figure 6-3. Frequency Stability Graph (WiMAX Mode)

Note:

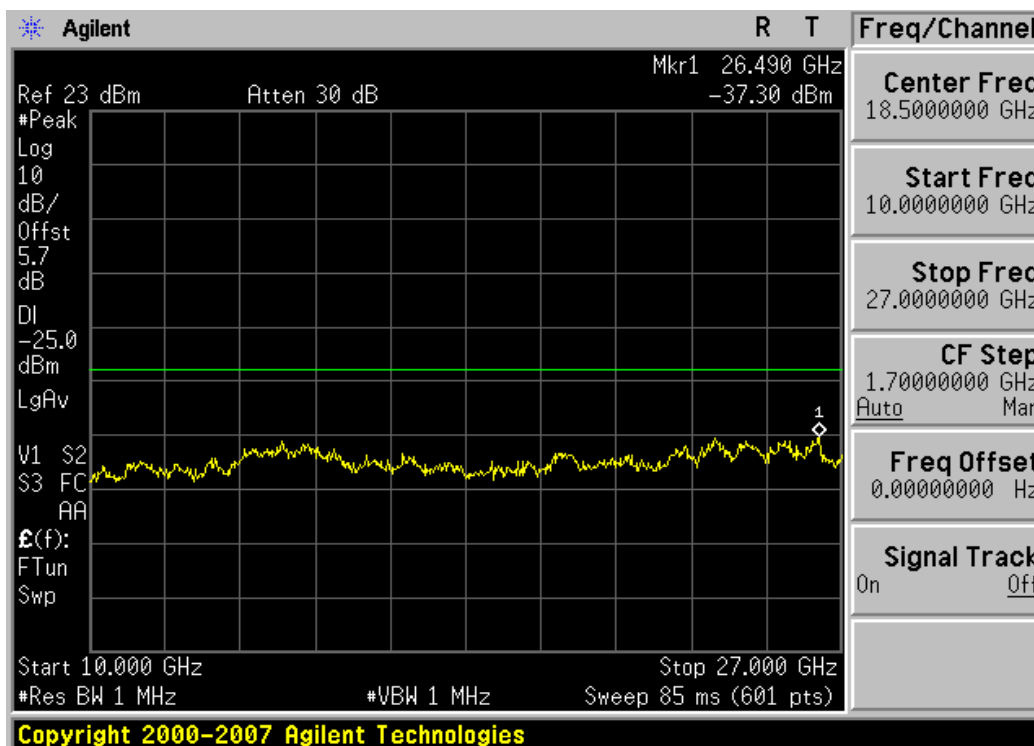
The frequency deviation was measured to ensure that the channels emissions remained within the authorized band with varying temperature and voltage.

FCC ID: A3LSWDM100		FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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7.0 10MHZ WIMAX PLOT(S) OF EMISSIONS

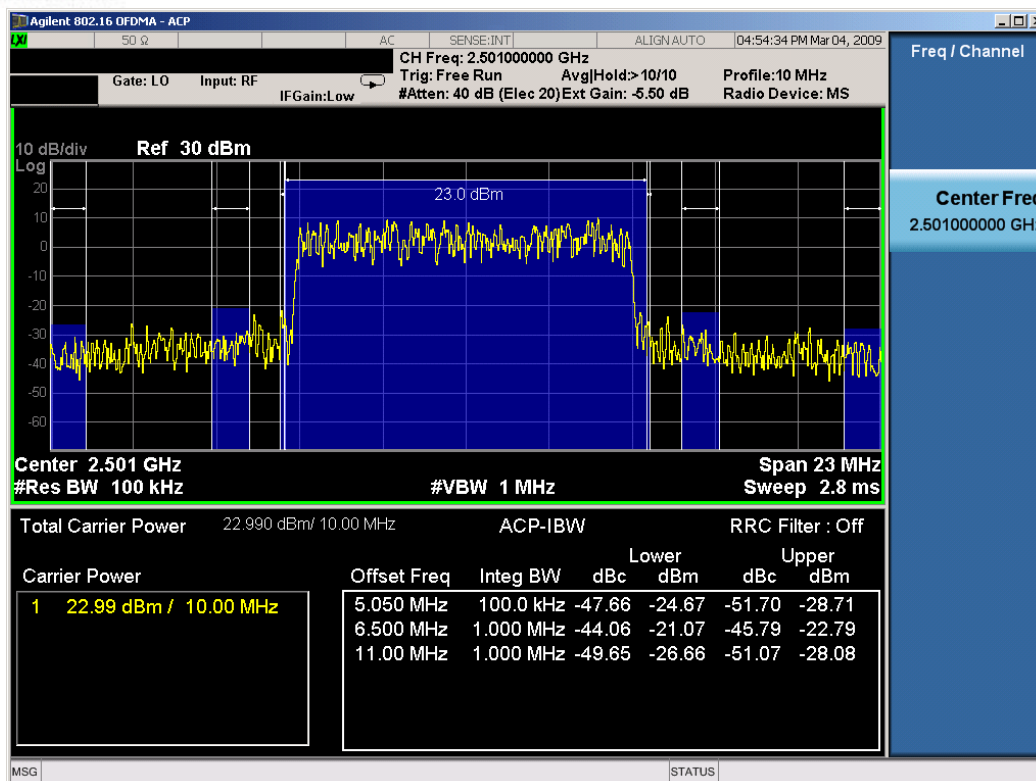


Plot 7-1. Conducted Spurious Plot (WiMAX Mode – Low Channel)

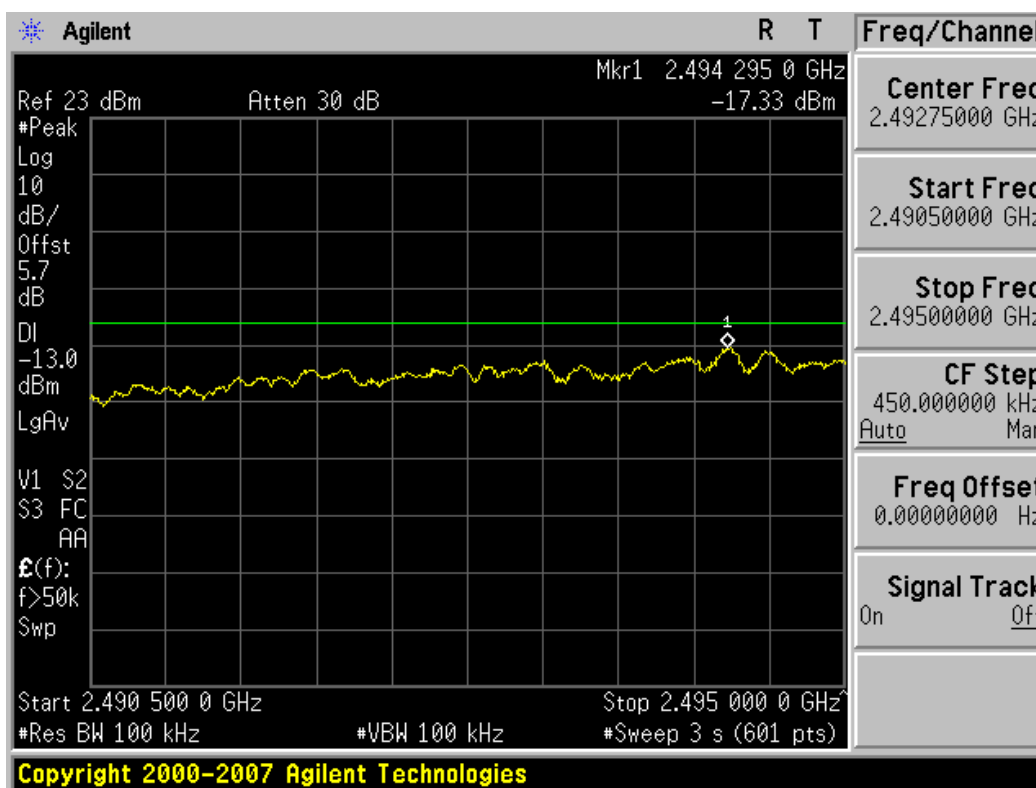


Plot 7-2. Conducted Spurious Plot (WiMAX Mode – Low Channel)

FCC ID: A3LSWDM100		FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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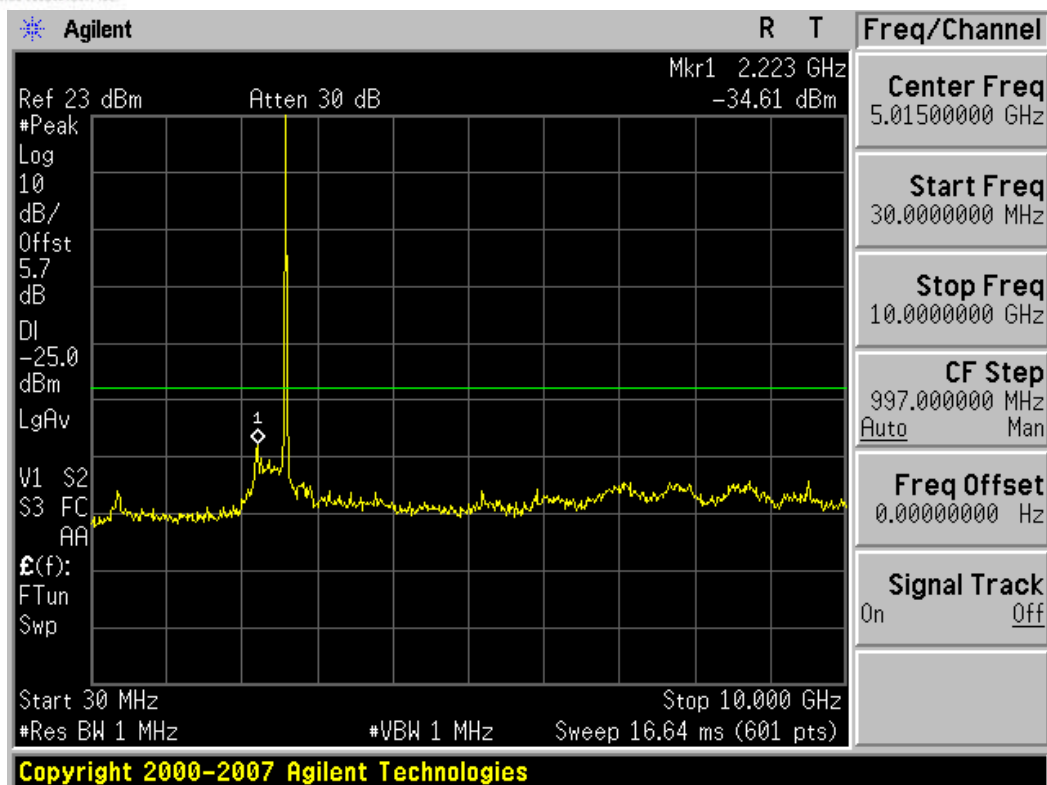


Plot 7-3. Band Edge Plot (WiMAX Mode – Low Channel)

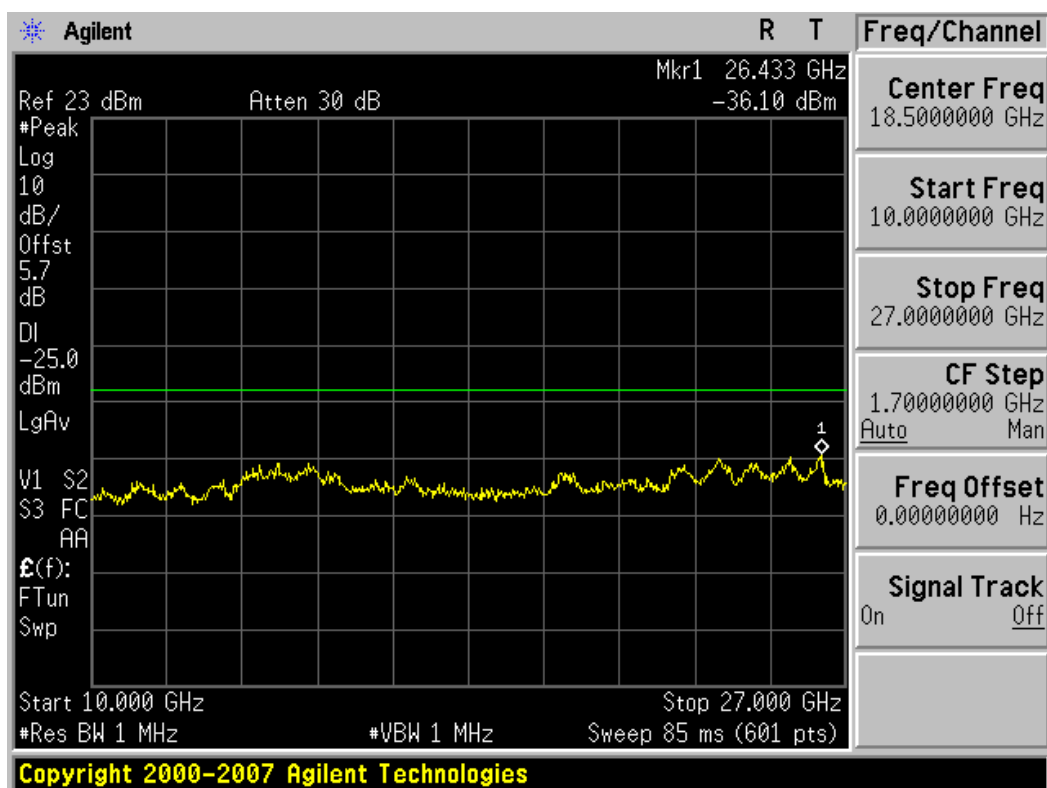


Plot 7-4. 5.5MHz Band Edge Plot (WiMAX Mode – Low Channel)

FCC ID: A3LSWDM100	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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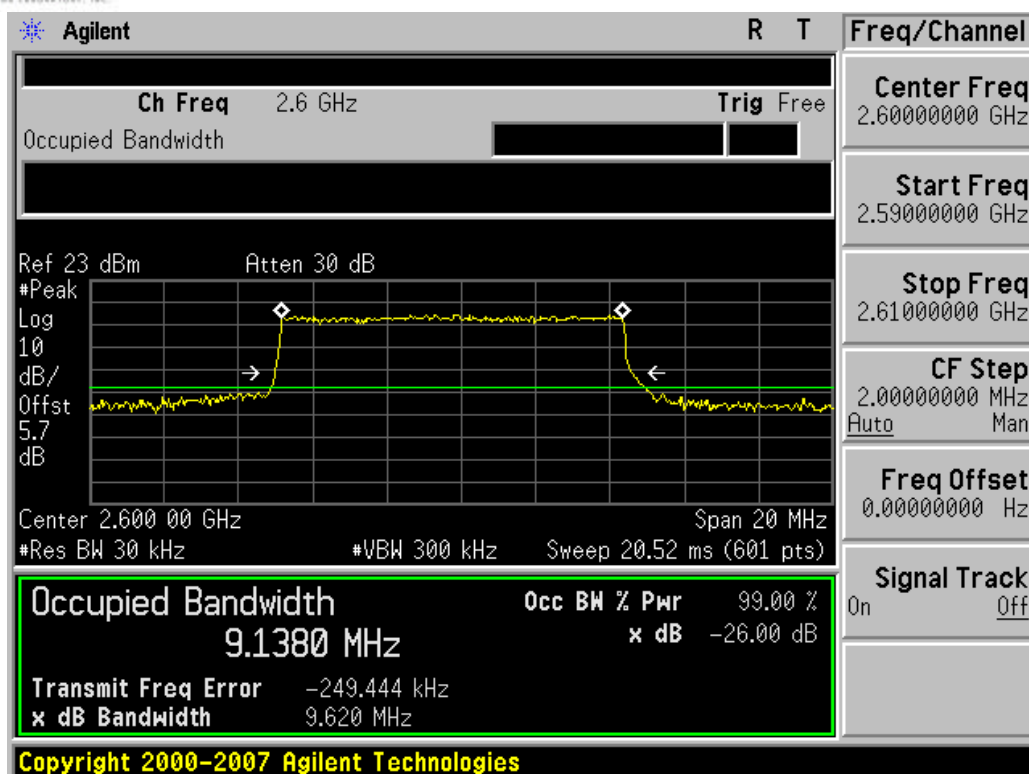


Plot 7-5. Conducted Spurious Plot (WiMAX Mode – Mid Channel)

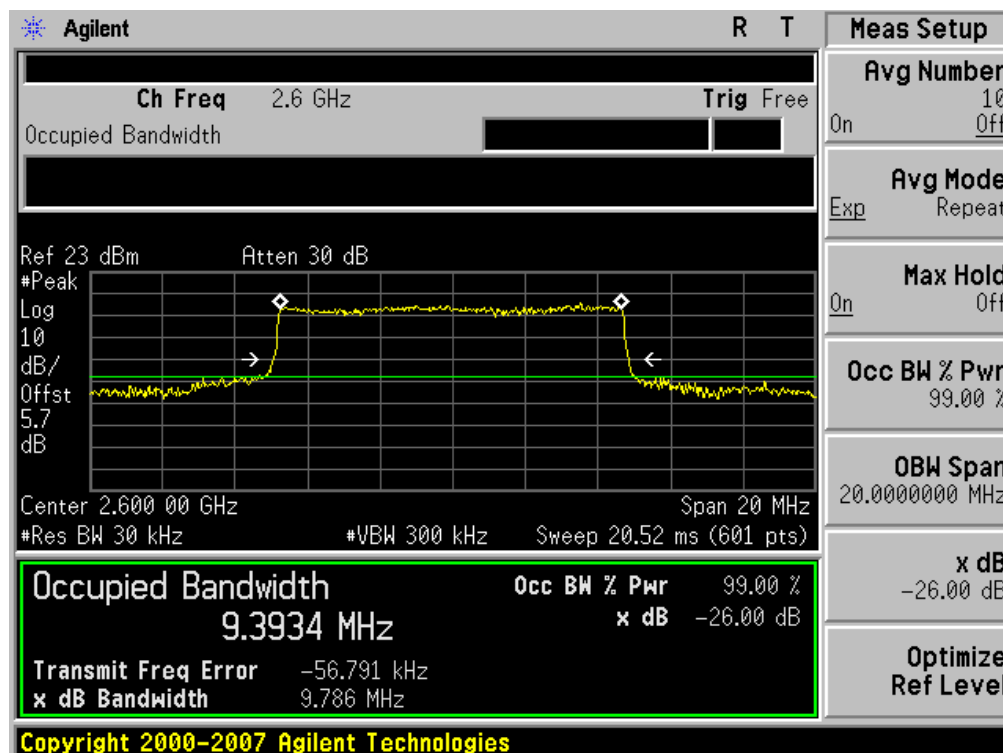


Plot 7-6. Conducted Spurious Plot (WiMAX Mode – Mid Channel)

FCC ID: A3LSWDM100	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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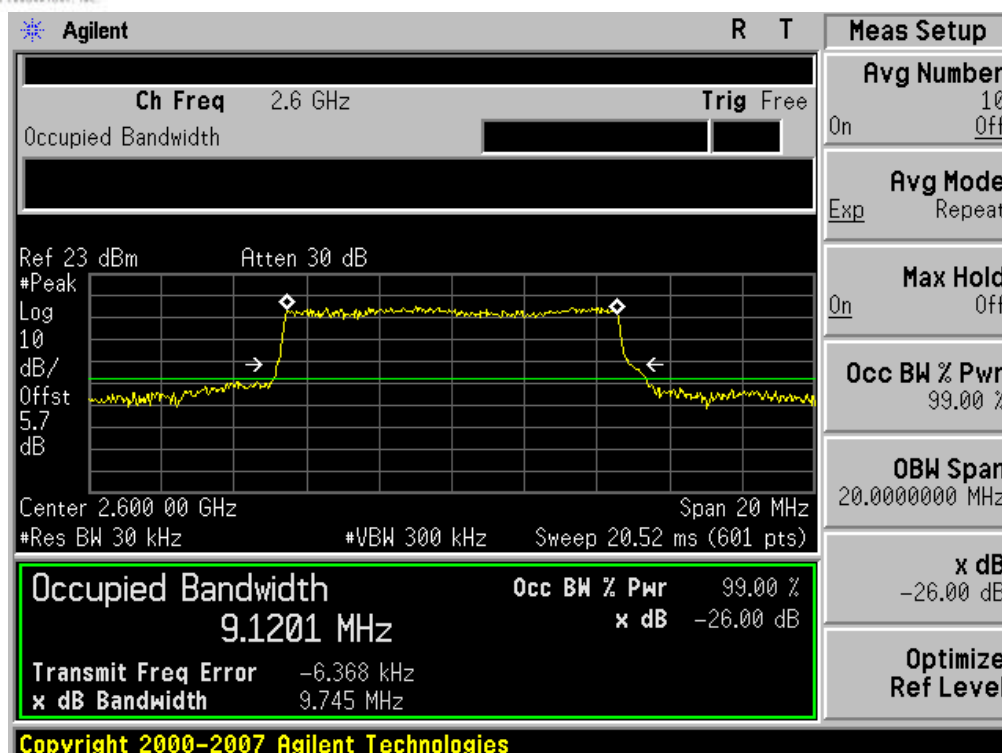


Plot 7-7. Occupied Bandwidth with PUSC QPSK Modulation Plot (WiMAX Mode – Mid Channel)

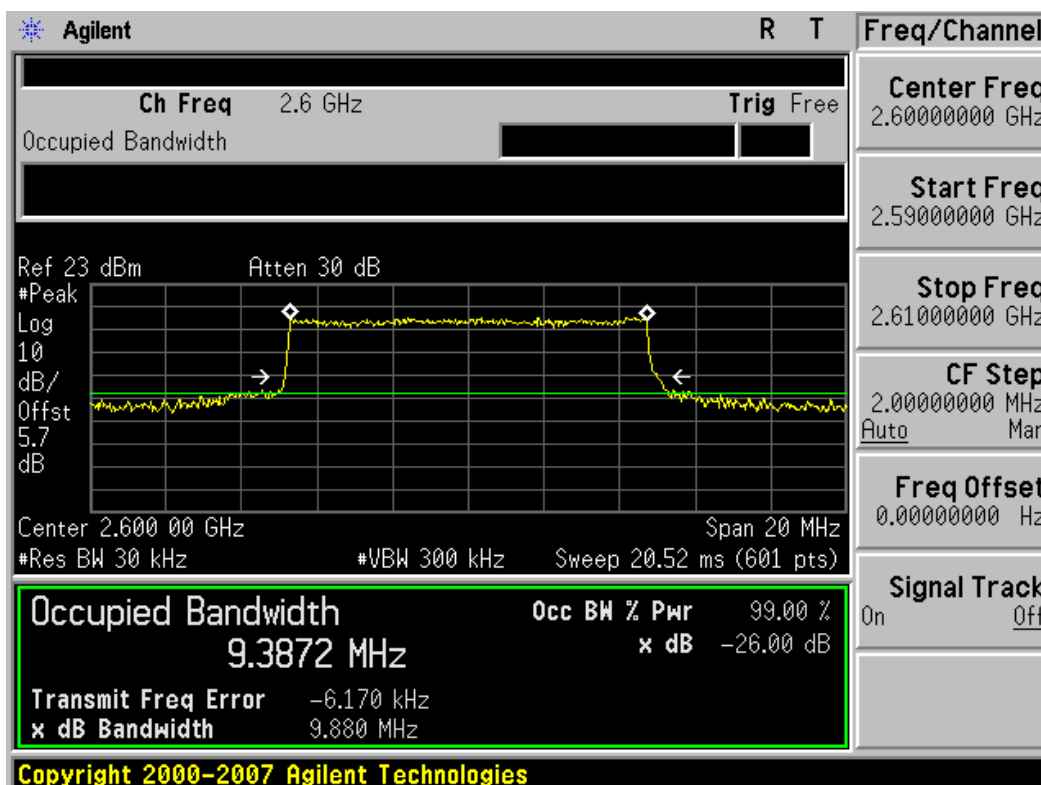


Plot 7-8. Occupied Bandwidth with BAMC QPSK Modulation Plot (WiMAX Mode – Mid Channel)

FCC ID: A3LSWDM100	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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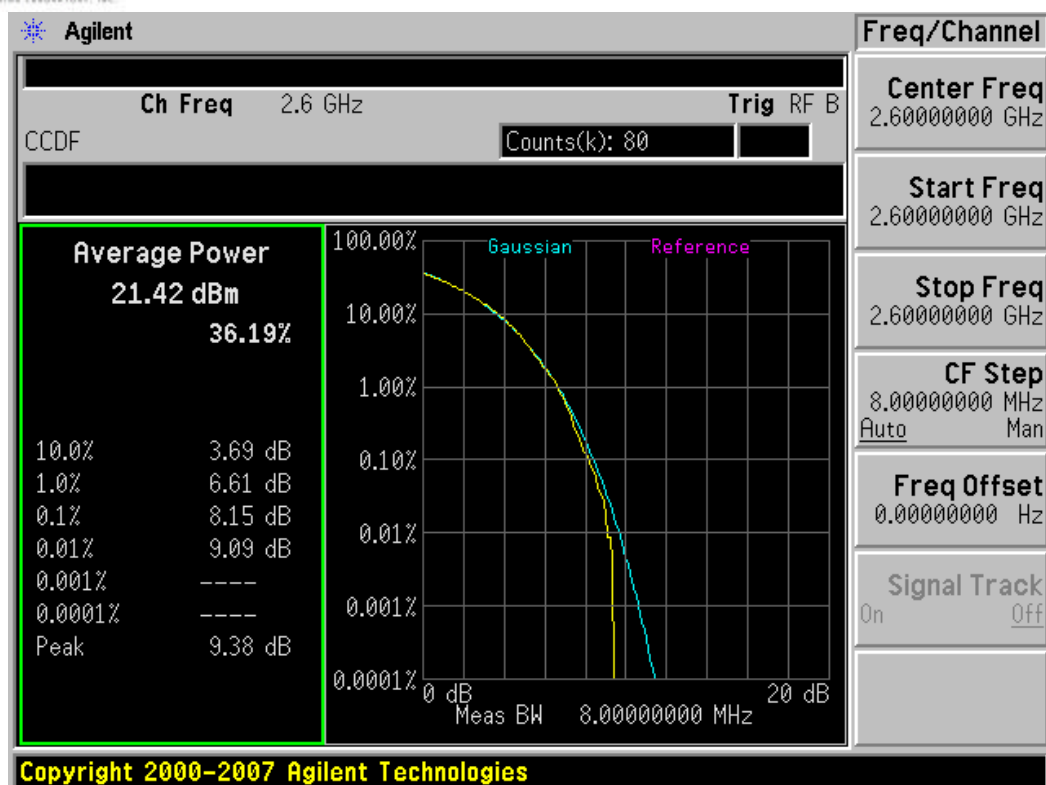


Plot 7-9. Occupied Bandwidth with PUSC 16QAM Modulation Plot (WiMAX Mode – Mid Channel)

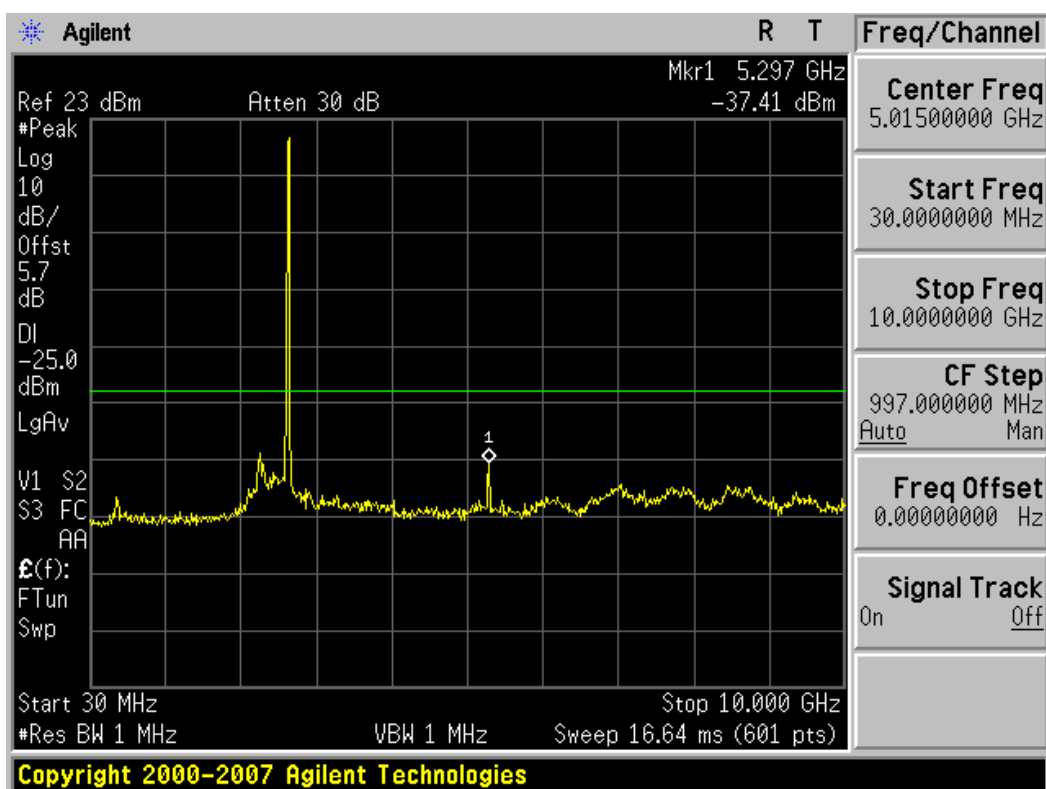


Plot 7-10. Occupied Bandwidth with BAMC 16QAM Modulation Plot (WiMAX Mode – Mid Channel)

FCC ID: A3LSWDM100	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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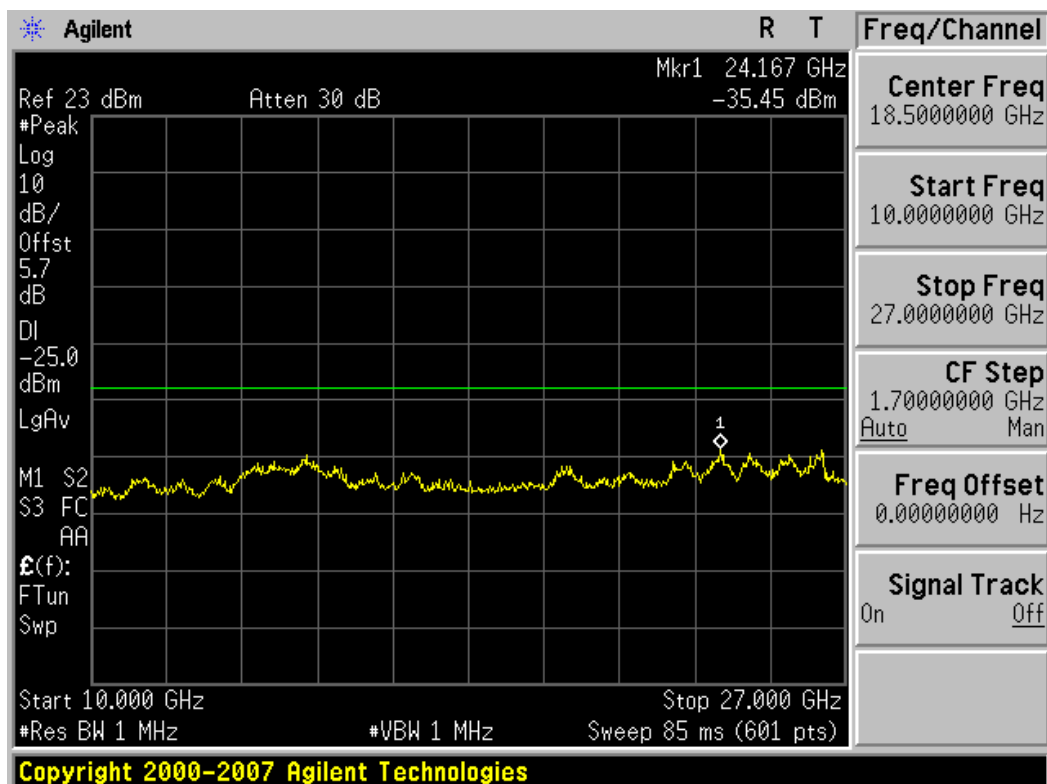


Peak to Average Power Ratio (PAR) Plot (10MHz WiMAX Mode – Mid Channel)

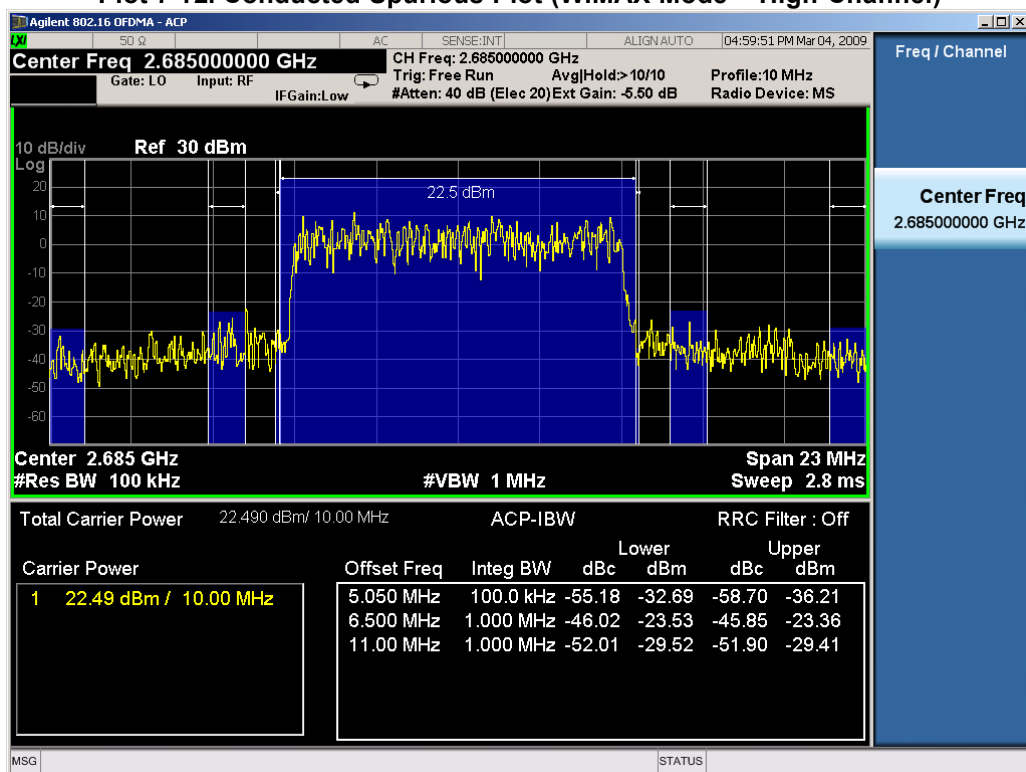


Plot 7-11. Conducted Spurious Plot (WiMAX Mode – High Channel)

FCC ID: A3LSWDM100	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0902260333.A3L	Test Dates: March 5, 2009	EUT Type: Wimax Hand-held with Bluetooth and WLAN		Page 28 of 35

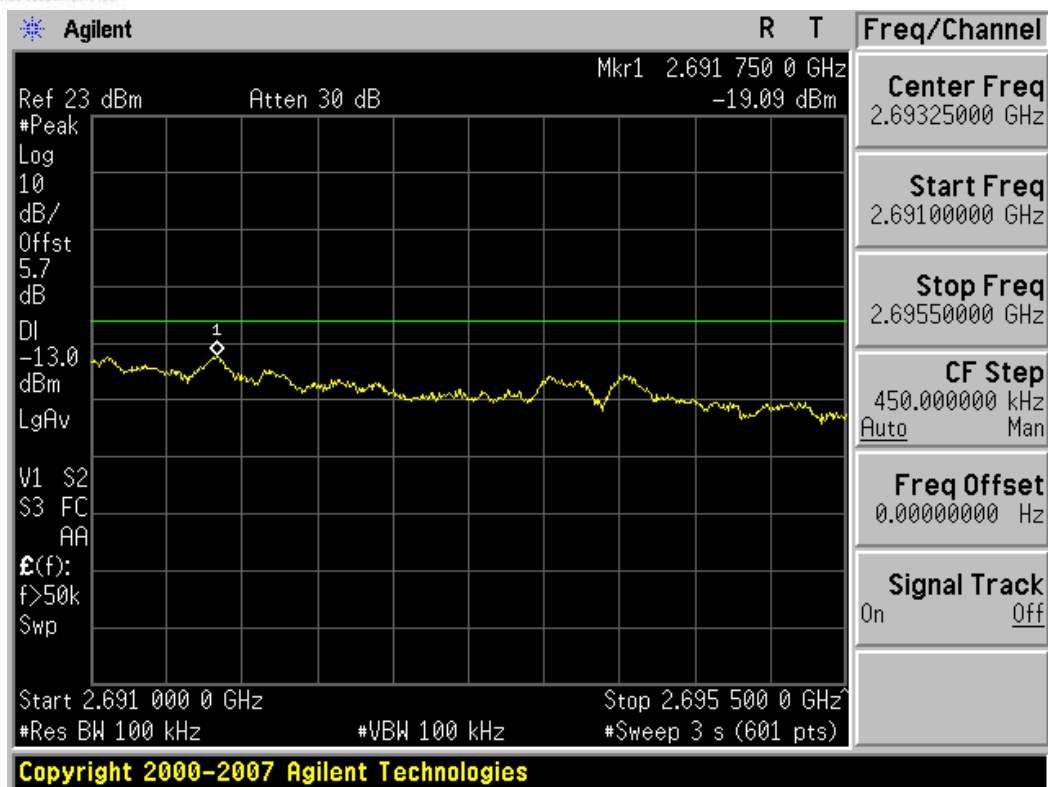


Plot 7-12. Conducted Spurious Plot (WiMAX Mode – High Channel)



Plot 7-13. Band Edge Plot (WiMAX Mode – High Channel)

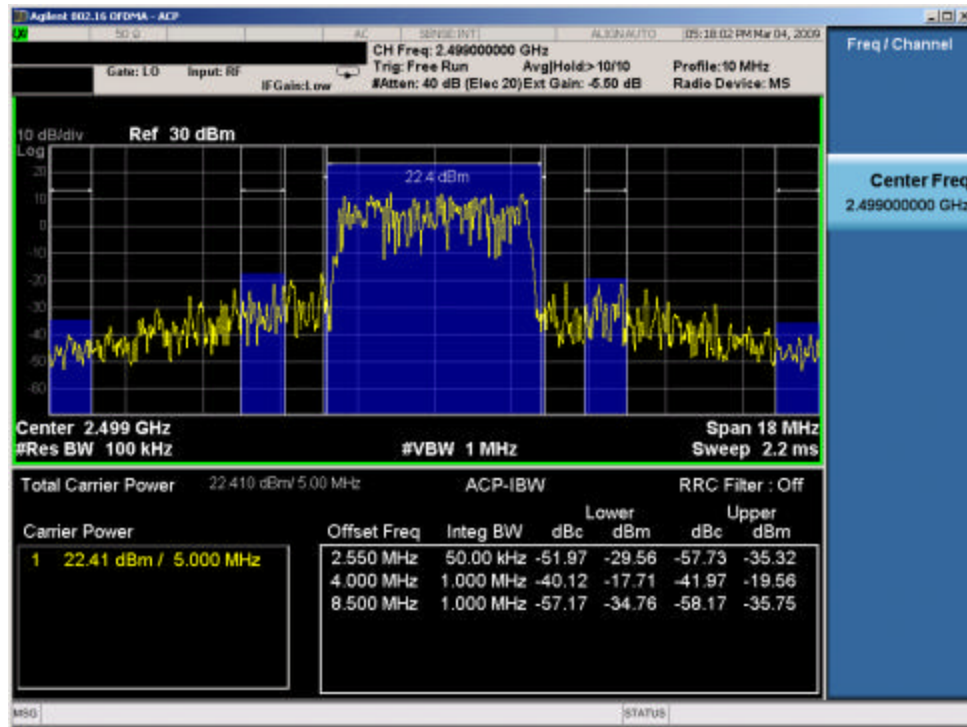
FCC ID: A3LSWDM100	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0902260333.A3L	Test Dates: March 5, 2009	EUT Type: Wimax Hand-held with Bluetooth and WLAN		Page 29 of 35



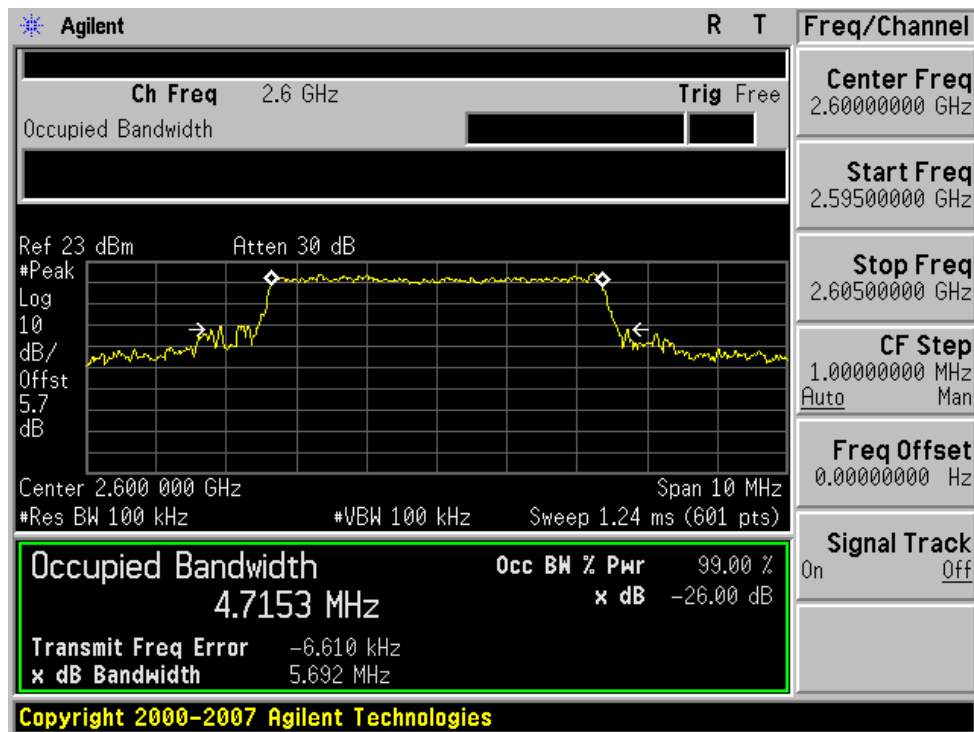
Plot 7-14. 5.5MHz Band Edge Plot (WiMAX Mode – High Channel)

FCC ID: A3LSWDM100	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0902260333.A3L	Test Dates: March 5, 2009	EUT Type: Wimax Hand-held with Bluetooth and WLAN		Page 30 of 35

8.0 5 MHz WIMAX - PLOT(S) OF EMISSIONS

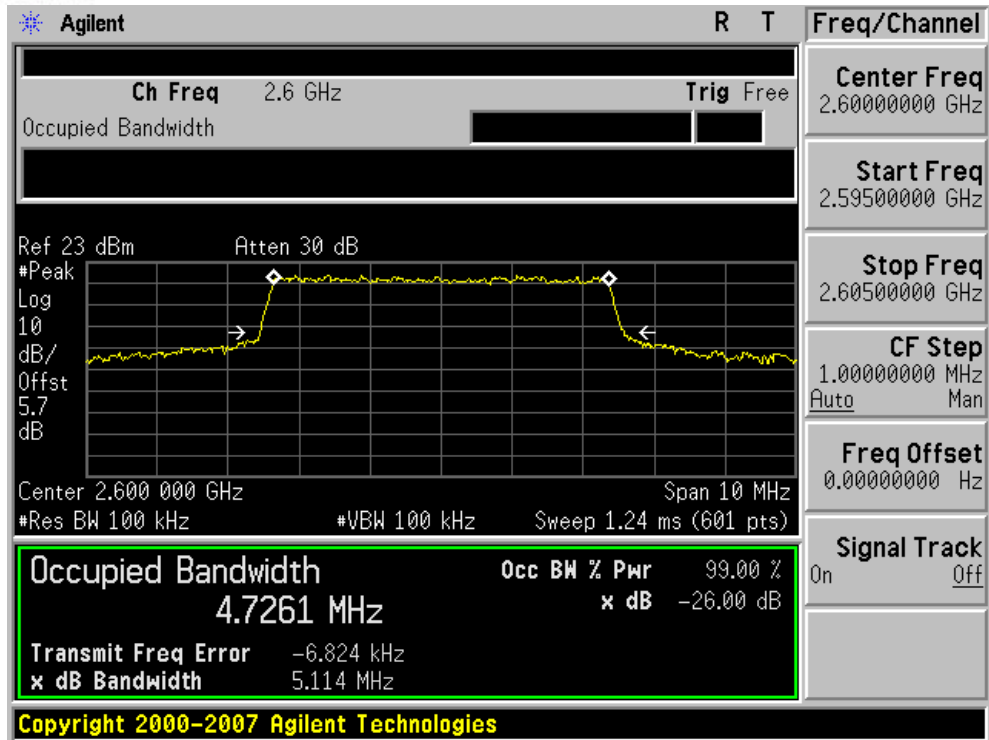


Plot 8-1. BandEdge Plot (WiMAX Mode – Low Channel)

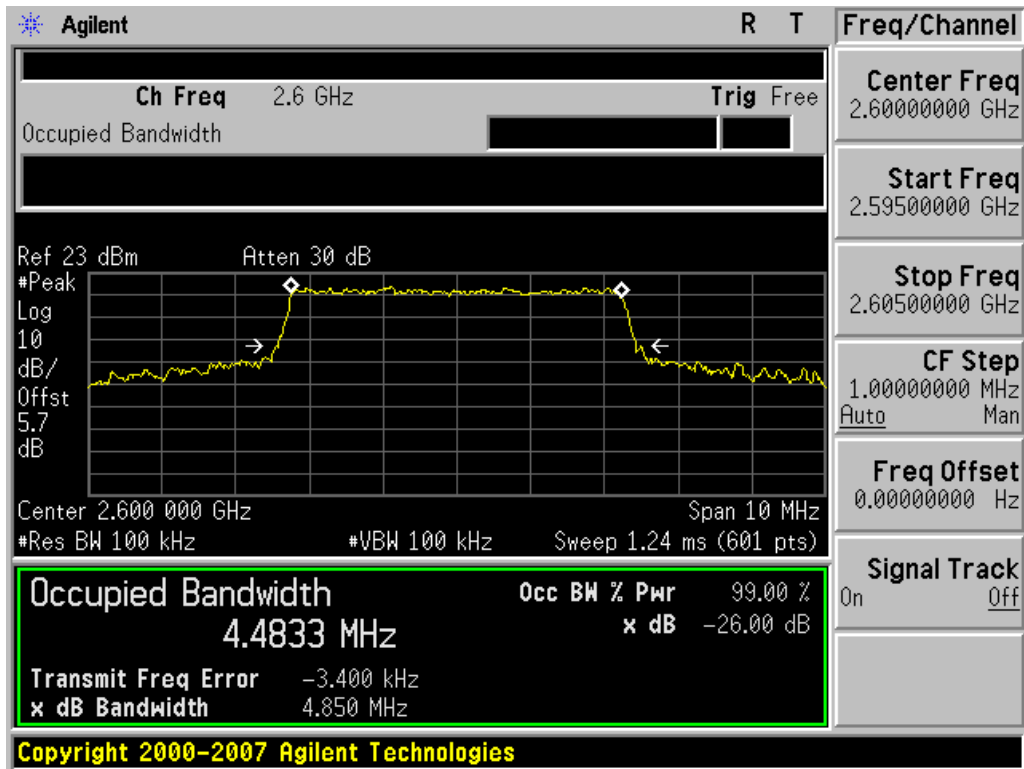


Plot 8-2. Occupied Bandwidth with BAMC 16QAM Modulation Plot (WiMAX Mode – Mid Channel)

FCC ID: A3LSWDM100	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0902260333.A3L	Test Dates: March 5, 2009	EUT Type: Wimax Hand-held with Bluetooth and WLAN		Page 31 of 35

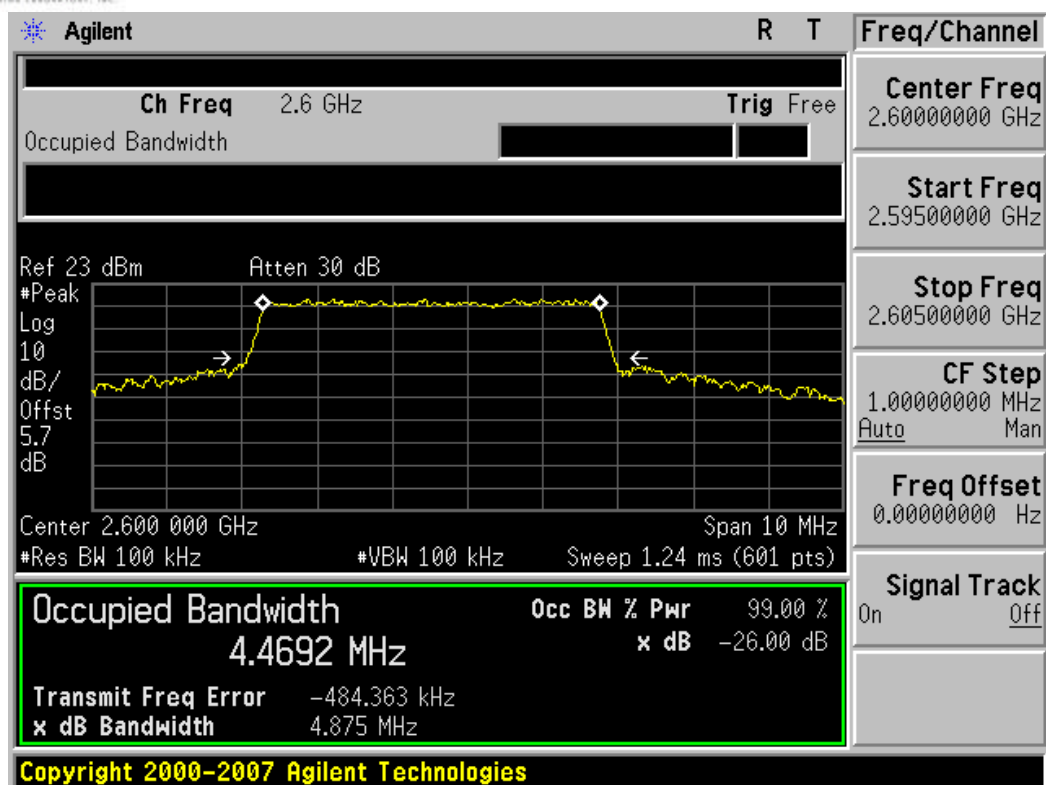


Plot 8-3. Occupied Bandwidth with BAMC QPSK Modulation Plot (WiMAX Mode – Mid Channel)

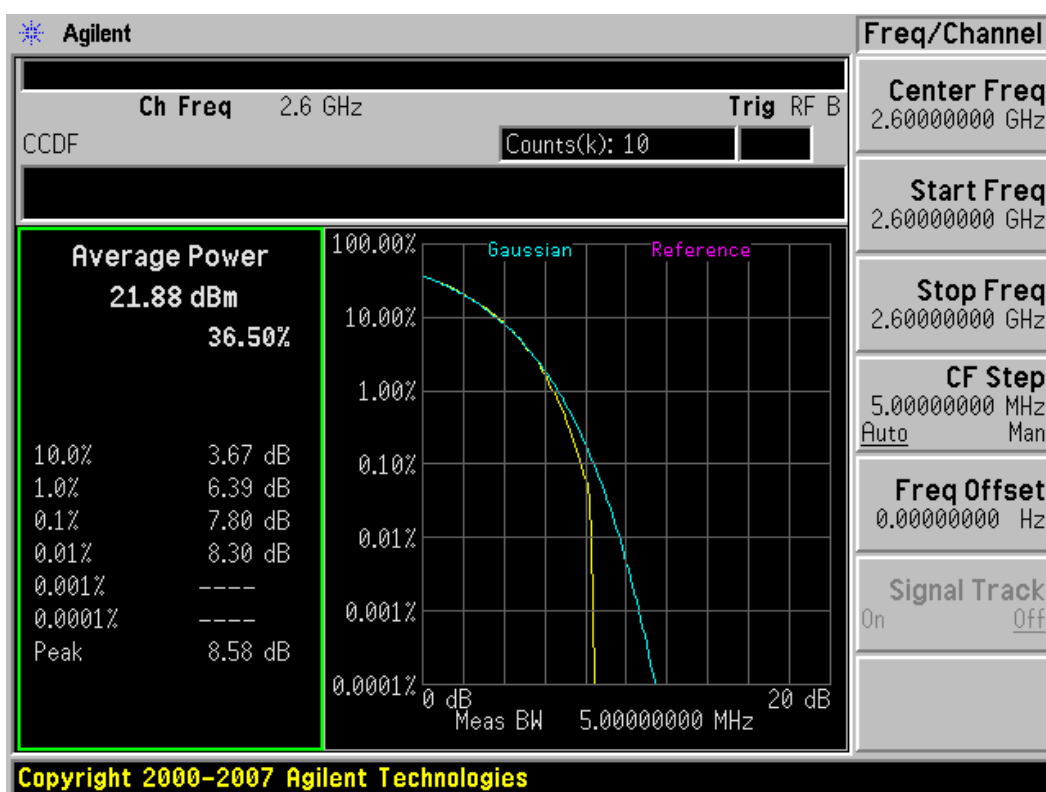


Plot 8-4. Occupied Bandwidth with PUSC 16QAM Modulation Plot (WiMAX Mode – Mid Channel)

FCC ID: A3LSWDM100	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0902260333.A3L	Test Dates: March 5, 2009	EUT Type: Wimax Hand-held with Bluetooth and WLAN		Page 32 of 35

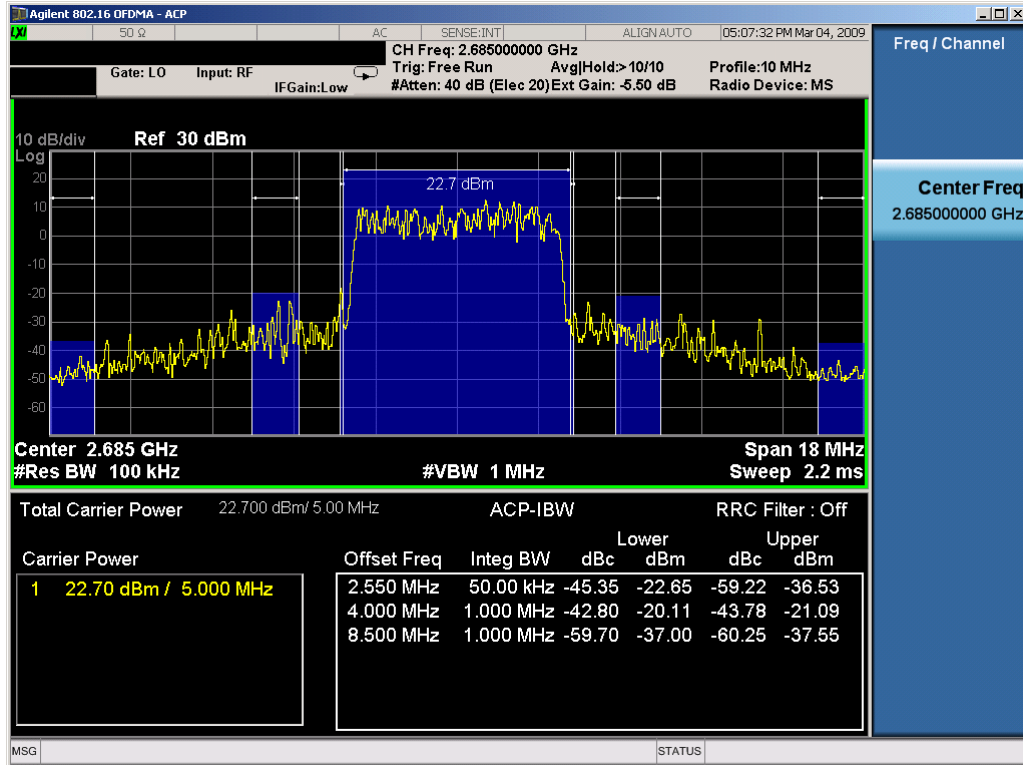


Plot 8-5. Occupied Bandwidth with PUSC QPSK Modulation Plot (WiMAX Mode – Mid Channel)



Peak to Average Power Ratio (PAR) Plot (5MHz WiMAX Mode – Mid Channel)

FCC ID: A3LSWDM100	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0902260333.A3L	Test Dates: March 5, 2009	EUT Type: Wimax Hand-held with Bluetooth and WLAN		Page 33 of 35



Plot 8-6. BandEdge Plot (WiMAX Mode – HighChannel)

FCC ID: A3LSWDM100	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0902260333.A3L	Test Dates: March 5, 2009	EUT Type: Wimax Hand-held with Bluetooth and WLAN		Page 34 of 35

9.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Wimax Hand-held with Bluetooth and WLAN FCC ID: A3LSWDM100** complies with all the requirements of Parts 2 and 27 of the FCC rules.

FCC ID: A3LSWDM100		FCC Pt. 27 / 802.16e WiMAX MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0902260333.A3L	Test Dates: March 5, 2009	EUT Type: Wimax Hand-held with Bluetooth and WLAN		Page 35 of 35