COMPLIANCE WORLDWIDE INC.
TEST REPORT 249-08R2

In Accordance with the Requirements of

FCC PART 15.407, Subpart E
INDUSTRY CANADA RSS 210, ISSUE 7, ANNEX 9

Low Power License-Exempt Radio Communication Devices
Intentional Radiators

Issued to

Bluesocket, Inc.
10 North Avenue
Burlington, MA 01803
(781) 328-0888

for

BlueSecure™ BSAP-1800(N)

FCC ID: TIH-BSAP1800N
IC: 6023A-BSAP1800N

Report Issued on October 20, 2008

Tested by

Brian F. Breault

Reviewed by

Larry K. Stillings

Table of Contents

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1. Scope

This test report certifies that the Bluesocket BlueSecure™ Access Point 1800, BSAP-1800(N), as tested, meets the FCC Part 15.407, Subpart E and Industry Canada RSS 210, Issue 7, Annex 9 requirements. The changes to this unit are:

- The original 2.4 GHz transmitter module has been replaced by a Wistron NeWeb Corp. (WNC) model DNMA-83 transmitter module, FCC ID: NKR-DNMA83, IC: 4441A-DNMA83.
- Added passive filter modules between transmitters and antenna array (2.4 and 5 GHz respectively).
- Enabled HT40 (40 MHz mode on 2. 4 and 5 GHz band radios.)

The scope of this test report is limited to the test sample provided by the client, only in as much as that sample represents other production units. If any significant changes are made to the unit, the changes shall be evaluated and a retest may be required.

2. Product Details

2.1. Manufacturer: Bluesocket, Inc.

2.2. Model Number: BlueSecure™ BSAP-1800(N)

2.3. Serial Number: None

2.4. Description: The BlueSecure™ Access Point 1800 (BSAP-1800(N)) is an enterprise-class 802.11a/b/g Wi-Fi certified AP to use MIMO technology. This approach achieves more than 30 percent better range and overall performance, using your existing standard 802.11a/b/g clients, than APs using legacy 802.11 technologies. ISM Channels 48 and 52 to 60 that require Dynamic Frequency Selection (DFS) and Transmit Power Control (TPC) have been disabled. ISM Channel 165 is also disabled.

2.5. Power Source: 48 Volts DC via Power Over Ethernet or
48 Volts DC Power Adapter

2.6. EMC Modifications: None

3. Product Configuration

3.1. Support Equipment

Device	Manufacturer	Model	Serial No.	Comment
Notebook PC	Dell	Inspiron 5160	CN-0T5326-12961-4C1-5477	Remotely located
Notebook PC	Compaq	Presario 1600	1V02DCJ7L3K0	Remotely located
AP Controller	Bluesocket	BSC-600	06000308010782	Remotely located

3.2. Cables

Cable Type	Length	Shield	From	To
CAT 5 Ethernet (UTP)	1.5 Meters	No	Notebook PC	PoE Injector
CAT 5 Ethernet (UTP)	10 Meters	No	PoIP Injector	BSAP-1800

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3. Product Configuration (continued)

3.3. Operational Characteristics & Software

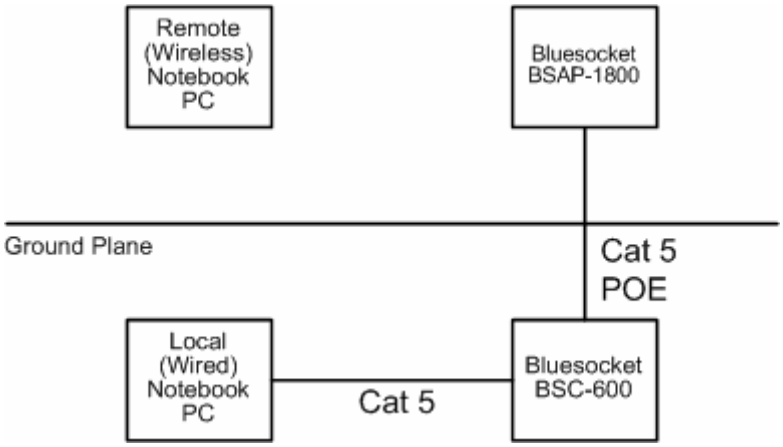
Remote (Wireless) Notebook PC:

1. Log on to the Compaq notebook. The username and password is provided on a label near the keyboard.
2. Run the Bluesocket "iPerf.bat" utility

Local (Wired) Notebook PC:

1. Log on to the Bluesocket Dell notebook. The username and password is provided on a label near the keyboard.
2. Open a web browser and navigate through the BSAP-1800 web based interface to set the AP channel and channel bandwidth.
3. Click on the "iPerf" icon on the desktop to begin generating data flow to the remote PC.

3.4. Block Diagram



Note: The Remote (Wireless) Notebook PC has been located in such a manner as to ensure that it does not affect the measurements of the DUT.

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4. Measurements Parameters

4.1. Measurement Equipment Used to Perform Test

Device	Manufacturer	Model No.	Serial No.	Cal Due
Spectrum Analyzer	Agilent	E4407B	MY45104493	07/09/2010
Spectrum Analyzer	Hewlett Packard	8593E	3829A03887	09/17/2009
EMI Receiver	Hewlett Packard	8546A	3330A00115	9/26/2009
Microwave Preamp	Hewlett Packard	8449B	3008A01323	9/22/2010
Bilog Antenna	Com-Power	AC220	25509	8/6/2009
1 – 18 GHz Horn Antenna	Electro-Metrics	EM-6961	6337	7/22/2009
18 – 40 GHz Horn Antenna	Com-Power	AH-840	3075	7/23/2009
26.5 - 40 GHz Harmonic Mixer	Hewlett Packard	11970A	3003A08210	N/A
26.5 - 40 GHz Horn Antenna	Alpha Industries	861A/599	324	N/A
2.4 GHz Band Reject Filter	Micro-Tronics	BRM50702	014	11/15/2008
6.4 - 18 GHz Band Pass Filter	Micro-Tronics	HPM50112	014	8/12/2009
2.0 – 4.2 GHz Power Splitter	Mini-Circuits	ZB3PD-4-S	134600708	9/23/2009
4.6 – 5.8 GHz Power Splitter	Mini-Circuits	ZB4PD1-5.8-S+	697600801	9/23/2009
DC Power Supply, 0-60 Volts	Hewlett Packard	6296A	7M0599	N/A
Handheld Multi-meter	Fluke	187	79690058	2/19/2009
Temperature Chamber	Associated	E-0029	N/A	N/A
LISN	EMCO	3825/2	9109-1860	2/18/2009

4.2. Measurement & Equipment Setup

Test Date:	8/29/2008
Test Engineer:	Brian Breault
Normal Site Temperature (15 - 35°C):	21.6
Relative Humidity (20 -75%RH):	33
Frequency Range:	30 MHz to 40 GHz
Measurement Distance:	3 Meters

4.3. Test Procedure

The test measurements contained in this report are based on the requirements detailed in FCC Part 15, Subpart E—Unlicensed National Information Infrastructure Devices, operating in the 5.15–5.35 GHz, 5.47–5.725 GHz and 5.725–5.825 GHz bands.

The test methods used to generate the data is this test report are in accordance with ANSI C63.4: 2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

In accordance with ANSI C63.4-2003, section 13.1.4.1, c, the device under test was rotated through three orthogonal axes to determine which attitude produced the highest emission relative to the limit. The attitude that produced the highest emission relative to the limit was used for all radiated emission measurements.

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4. Measurements Parameters

4.3. Test Procedure (continued)

Note: The Bluesocket BlueSecure device channel numbers detailed in the tables of this report refer to the channels selected using the Bluesocket web based interface. The channel frequencies are set based on the transmitter bandwidth (40 MHz) utilized.

5. Measurement Summary

Test Requirement	FCC Part 15.407 Reference	Test Report Section	Result	Comment
Equivalent Isotropic Radiated Power/Maximum Peak Conducted Output Power	15.407(a)(1) 15.407(a)(3)	6.1	Compliant	
Peak Power Spectral Density	15.407(a)(5)	6.2	Compliant	
26 dB Emission Bandwidth	15.407(a)(1)	6.3	N/A	
99% Power Bandwidth	N/A	6.4	N/A	IC RSS 210
Peak Excursion of the Modulation Envelope	15.407(a)(6)	6.5	Compliant	
Spurious Radiated Emissions	15.209 15.407(b)(1) 15.407(b)(4)	6.7 - 6.10	Compliant	
Lower and Upper Band Edges	15.407(b)(1) 15.215 (c) 15.407(b)(4)	6.11	Compliant	
Public Exposure to RF Energy Levels	15.407(f)	6.12	Compliant	(1.1307 (b)(1)) RSS-GEN 5.5, RSS 102
Frequency Stability	15.407(g)	6.13	Compliant	
Conducted Emissions	15.207	6.14	Compliant	

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6. Measurement Data

6.1. Equivalent Isotropic Radiated Power

6.1.1. Field Strength Measurements

Note: The following equation was used to determine the output power from the measured field strength:

$$P = \frac{(E \times d)^2}{(30 \times G)}$$

E = the measured maximum field in V/m
G = the numeric gain of the transmitting antenna over an isotropic radiator.
d = the distance in meters of the field strength measurement.
P = the power in Watts.

Resolution Bandwidth : 1 MHz
Video Bandwidth : 3 MHz
Sweep Time : 20 mSec

6.1.1.1. Equivalent Isotropic Radiated Power 15.407(a)(1)

Requirement: For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or [4 dBm + 10 log B], where B is the 26–dB emission bandwidth in MHz.

20 MHz Signal Bandwidth

Channel	Channel Frequency	Peak Field Strength	Antenna Gain	Power		Limit		Result
	GHz	dBµV	Numeric	mW	dBm	mW	dBm	
36	5.180	118.27	5.54	36.35896	15.606	199.50	23	Compliant
40	5.200	118.05	5.54	34.56300	15.386	199.50	23	Compliant
44	5.220	117.88	5.54	33.23621	15.216	199.50	23	Compliant

40 MHz Signal Bandwidth

Channel	Channel Frequency	Peak Field Strength	Antenna Gain	Power		Limit		Result
	GHz	dBµV	Numeric	mW	dBm	mW	dBm	
36 (38)	5.190	114.24	5.54	14.37512	11.576	199.50	23	Compliant
44 (46)	5.230	115.11	5.54	17.56352	12.446	199.50	23	Compliant

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6. Measurement Data (continued)

6.1. Equivalent Isotropic Radiated Power

6.1.1. Field Strength Measurements

6.1.1.2. Equivalent Isotropic Radiated Power 15.407(a)(3)

Requirement: For the band 5.725–5.825 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1 W or [17 dBm + 10 log B], where B is the 26-dB emission bandwidth in MHz.

20 MHz Signal Bandwidth

Channel	Channel Frequency	Peak Field Strength	Antenna Gain	Power		Limit		Result
	GHz	dBµV/m	Numeric	Watts	dBm	Watts	dBm	
149	5745	120.16	5.06	0.062	17.89	4	36	Compliant
153	5765	120.73	5.06	0.070	18.46	4	36	Compliant
161	5805	122.39	5.06	0.103	20.12	4	36	Compliant

40 MHz Signal Bandwidth

Channel	Channel Frequency	Peak Field Strength	Antenna Gain	Power		Limit		Result
	GHz	dBµV/m	Numeric	Watts	dBm	Watts	dBm	
149 (151)	5.755	123.45	5.06	0.131	21.18	4	36	Compliant
157 (159)	5.795	122.38	5.06	0.103	20.11	4	36	Compliant

[1] Reference section 6.3 for the 26 dB emissions bandwidth information.

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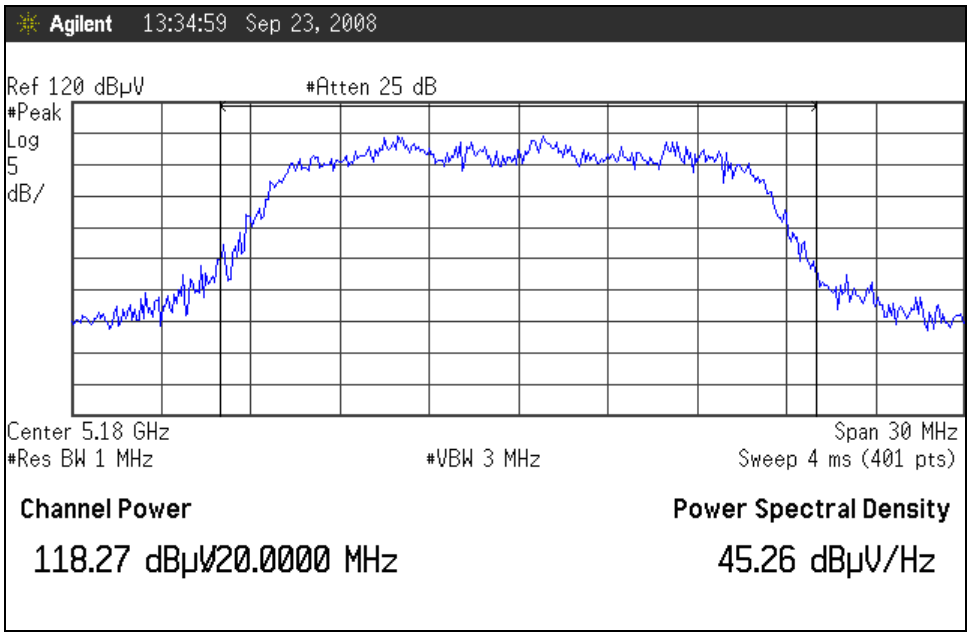
6. Measurement Data (continued)

6.1. Equivalent Isotropic Radiated Power

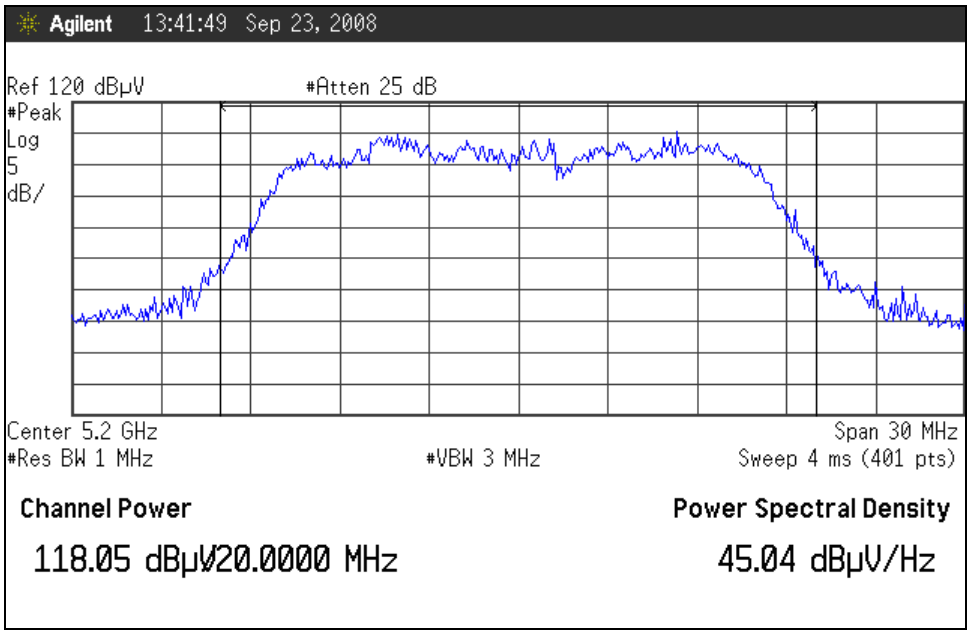
6.1.1. Field Strength Measurements

6.1.1.3. Equivalent Isotropic Radiated Power Plots

6.1.1.3.1. Plot: 20 MHz Signal Bandwidth - Channel 36



6.1.1.3.2. Plot: 20 MHz Signal Bandwidth - Channel 40



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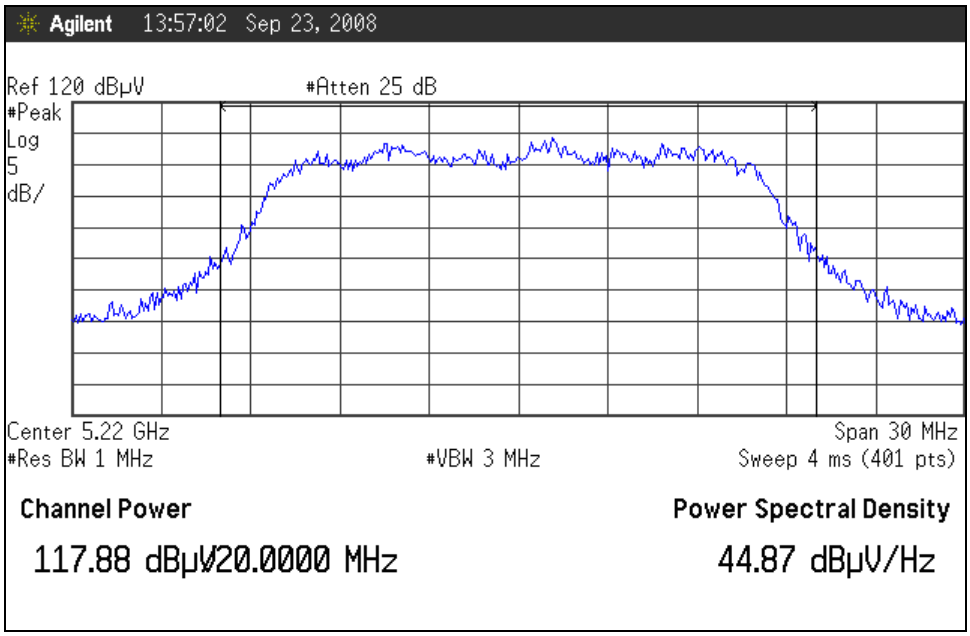
6. Measurement Data (continued)

6.1. Equivalent Isotropic Radiated Power

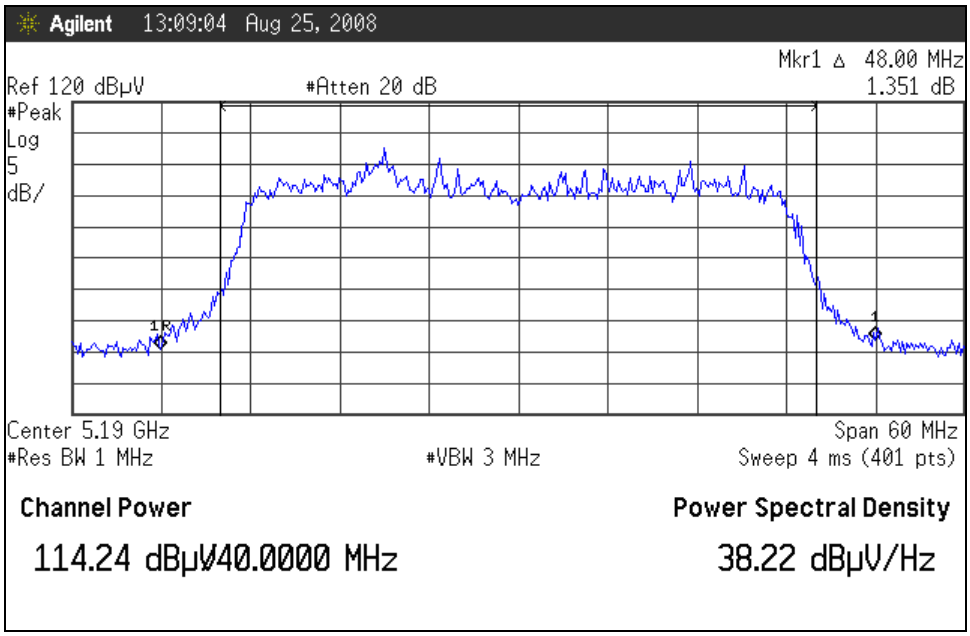
6.1.1. Field Strength Measurements

6.1.1.3. Equivalent Isotropic Radiated Power Plots

6.1.1.3.3. Plot: 20 MHz Signal Bandwidth - Channel 44



6.1.1.3.4. Plot: 40 MHz Signal Bandwidth - Channel 36 (38)



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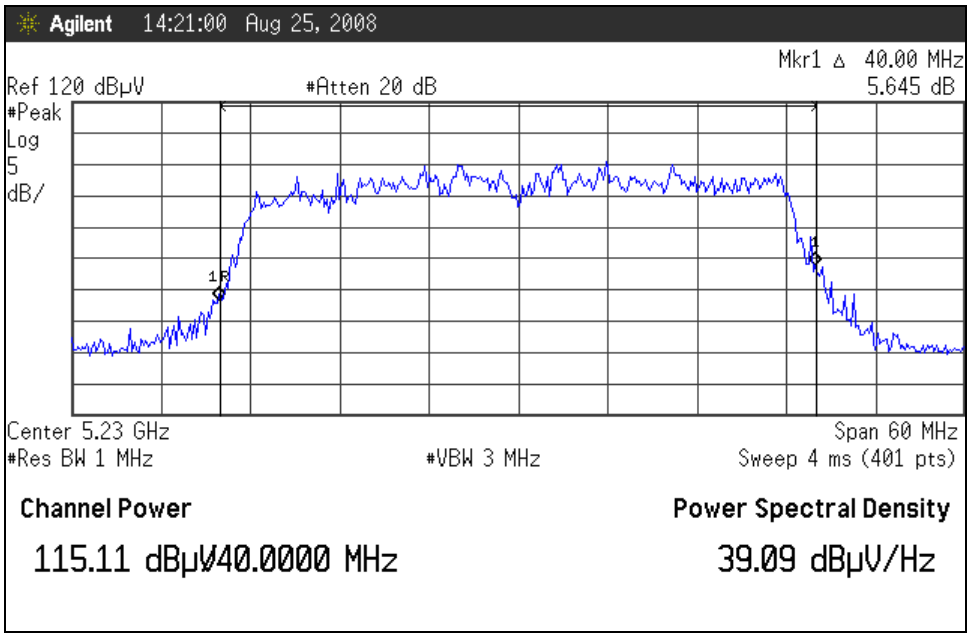
6. Measurement Data (continued)

6.1. Equivalent Isotropic Radiated Power

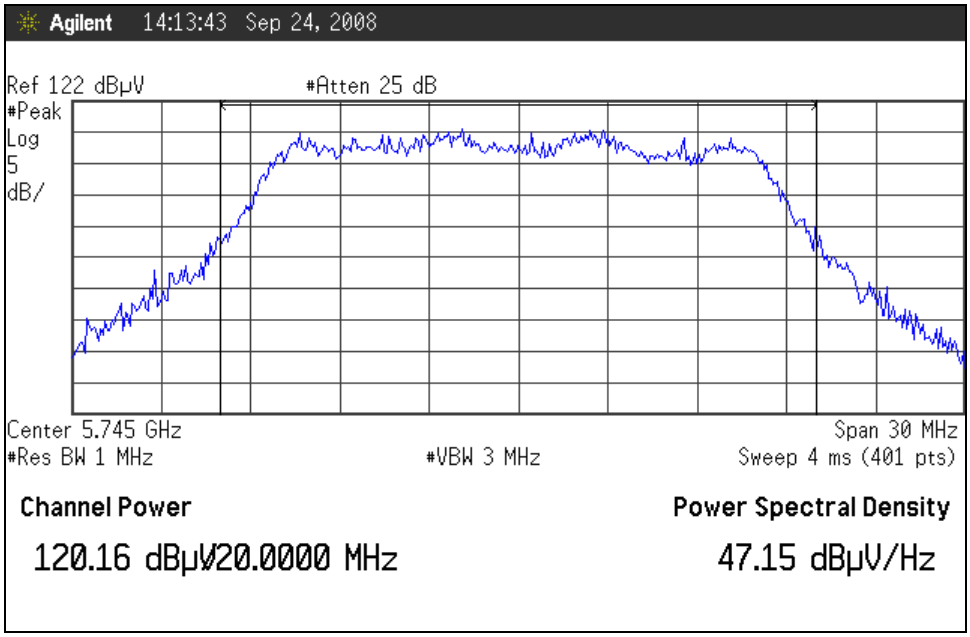
6.1.1. Field Strength Measurements

6.1.1.3. Equivalent Isotropic Radiated Power Plots

6.1.1.3.5. Plot: 40 MHz Signal Bandwidth - Channel 44 (46)



6.1.1.3.6. Plot: 20 MHz Signal Bandwidth - Channel 149



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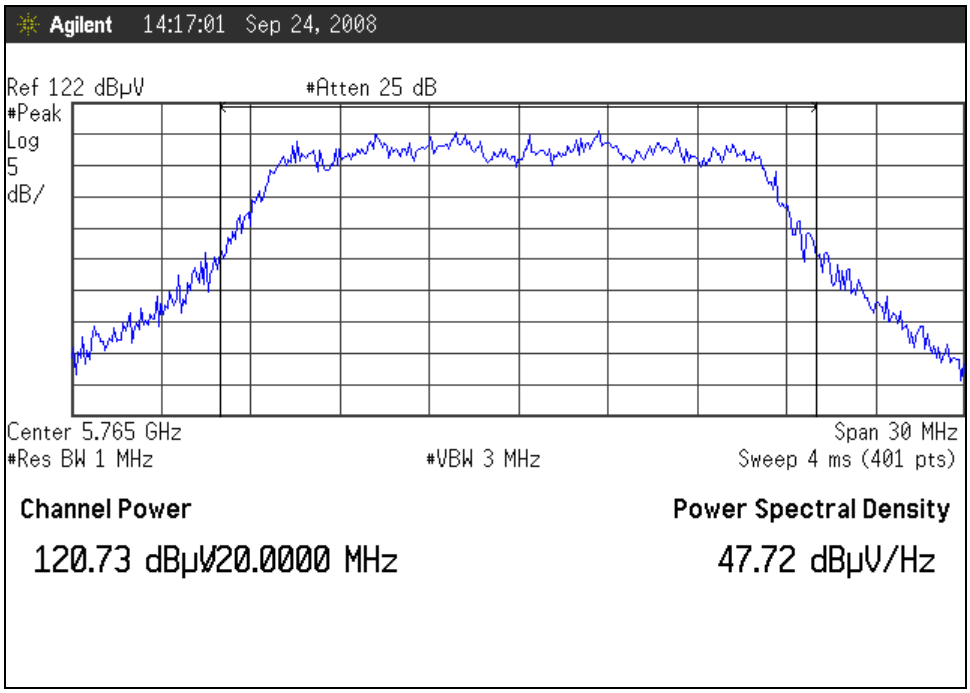
6. Measurement Data (continued)

6.1. Equivalent Isotropic Radiated Power

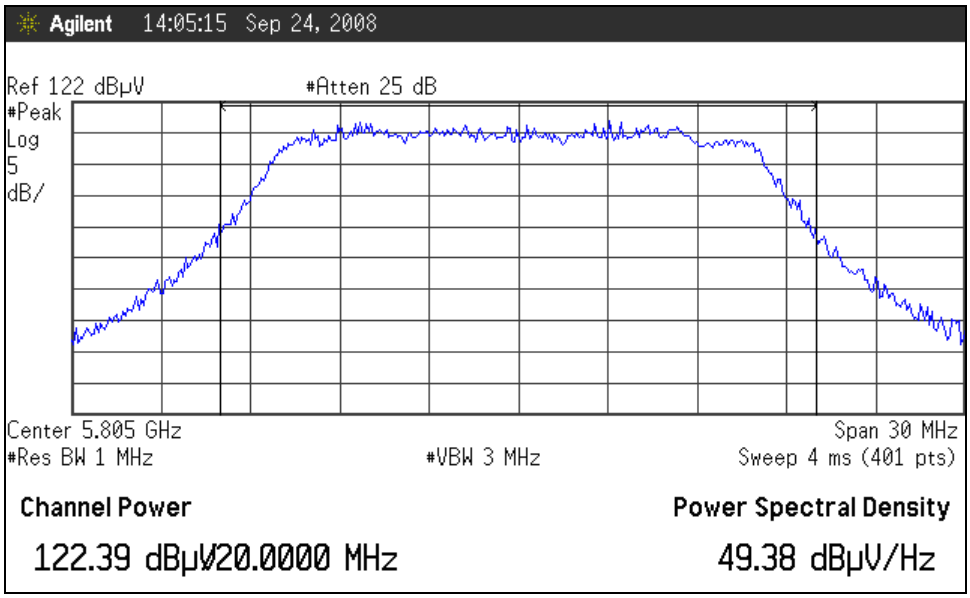
6.1.1. Field Strength Measurements

6.1.1.3. Equivalent Isotropic Radiated Power Plots

6.1.1.3.7. Plot: 20 MHz Signal Bandwidth - Channel 153



6.1.1.3.8. Plot: 20 MHz Signal Bandwidth - Channel 161



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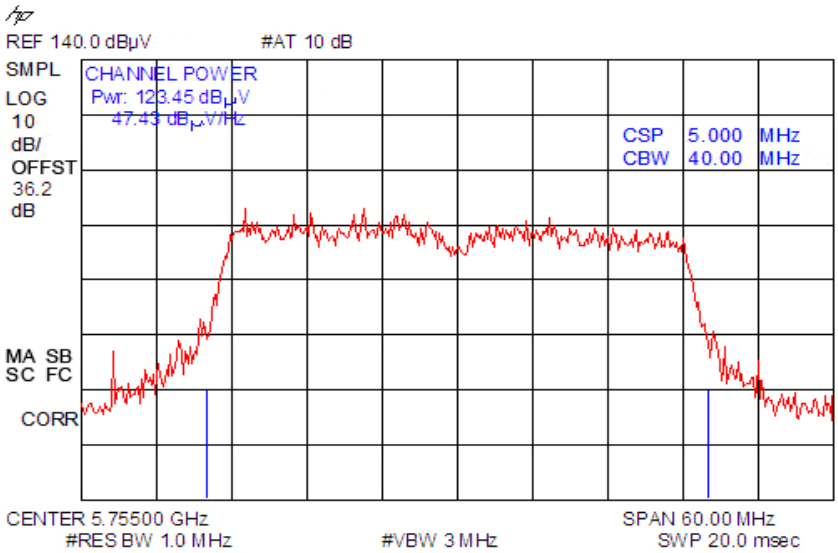
6. Measurement Data (continued)

6.1. Equivalent Isotropic Radiated Power

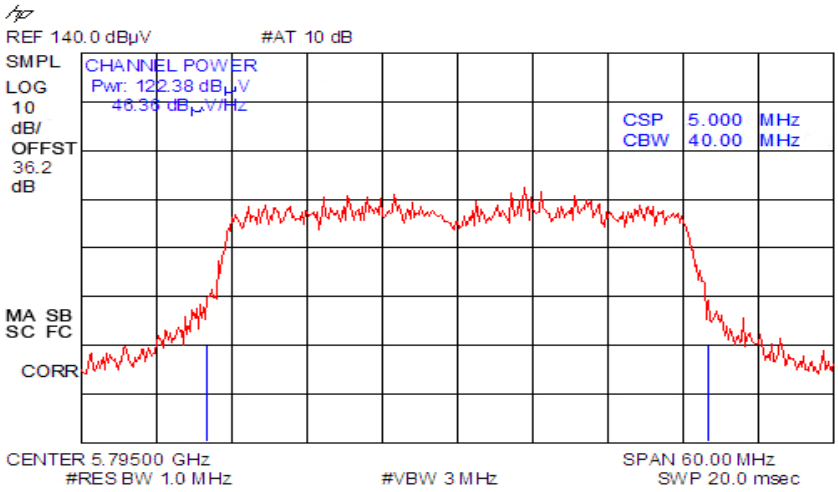
6.1.1. Field Strength Measurements

6.1.1.3. Equivalent Isotropic Radiated Power Plots

6.1.1.3.9. Plot: 40 MHz Signal Bandwidth - Channel 149 (151)



6.1.1.3.10. Plot: 40 MHz Signal Bandwidth - Channel 157 (159)



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6. Measurement Data

6.1. Maximum Peak Conducted Output Power

6.1.2. Conducted Mode Measurements

Requirement: For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands, the maximum conducted output power over the frequency band of operation shall not exceed: 1 Watt.

The EUT consists of three transmitters and three receivers for the 3x3 MIMO array. Each individual transmitter was measured and the power was summed below mathematically.

The power was calculated using the spectrum analyzer power integration function with the following settings:

Resolution Bandwidth : 1 MHz
Video Bandwidth : 3 MHz
Frequency Span : 30 MHz
Channel Bandwidth : 20 MHz
Sweep Time : 20 mSec

Total Pwr (dBm) = 10_{LOG} ((10^(Chain 0 Pwr/10)) + (10^(Chain 1 Pwr/10))) + (10^(Chain 2 Pwr/10))

6.1.2.1. Maximum Peak Conducted Output Power 15.407(a)(1)

Requirement: For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or [4 dBm + 10 log B], where B is the 26–dB emission bandwidth in MHz.

20 MHz Signal Bandwidth

Channel	Channel Frequency	Power Meas. Chain 0	Power Meas. Chain 1	Power Meas. Chain 2	Power		Limit		Result
	GHz	dBm	dBm	dBm	dBm	mW	dBm	mW	
36	5.180	10.56	10.32	13.13	16.30	42.700	16.99	50	Compliant
40	5.200	11.61	10.67	12.75	16.53	44.992	16.99	50	Compliant
44	5.220	10.80	10.22	13.46	16.51	44.724	16.99	50	Compliant

40 MHz Signal Bandwidth

Channel	Channel Frequency	Power Meas. Chain 0	Power Meas. Chain 1	Power Meas. Chain 2	Power		Limit		Result
	GHz	dBm	dBm	dBm	dBm	mW	dBm	mW	
36 (38)	5.190	11.24	-2.54	8.02	13.05	20.20	16.99	50	Compliant
44 (46)	5.230	11.64	-2.92	11.21	14.52	28.31	16.99	50	Compliant

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6. Measurement Data

6.1. Maximum Peak Conducted Output Power

6.1.2. Conducted Mode Measurements

6.1.2.2. Maximum Conducted Output Power 15.407(a)(3)

Requirement: For the band 5.725–5.825 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1 W or [17 dBm + 10 log B], where B is the 26-dB emission bandwidth in MHz.

20 MHz Signal Bandwidth

Channel	Channel Frequency	Power Meas. Chain 0	Power Meas. Chain 1	Power Meas. Chain 2	Power		Limit		Result
	GHz	dBm	dBm	dBm	dBm	mW	dBm	W	
149	5.745	10.06	9.31	9.60	14.44	27.790	30	1	Compliant
153	5.765	9.69	9.02	10.20	14.43	27.762	30	1	Compliant
161	5.805	9.51	10.50	10.59	15.00	31.608	30	1	Compliant

40 MHz Signal Bandwidth

Channel	Channel Frequency	Power Meas. Chain 0	Power Meas. Chain 1	Power Meas. Chain 2	Power		Limit		Result
	GHz	dBm	dBm	dBm	dBm	W	dBm	W	
149 (151)	5.755	18.00	17.19	17.10	22.22	.167	30	1	Compliant
157 (159)	5.795	17.39	17.10	17.25	22.02	.159	30	1	Compliant

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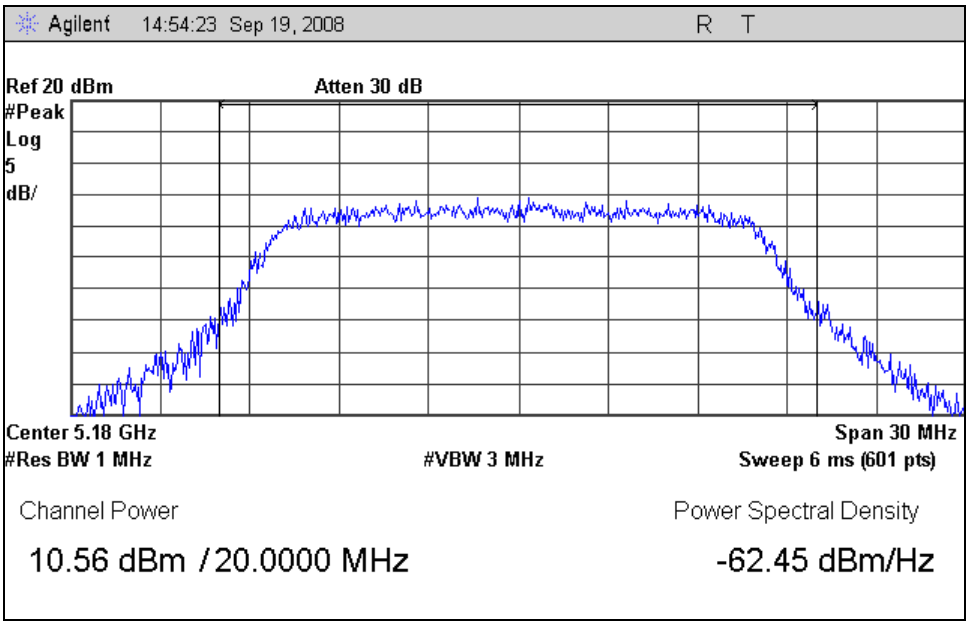
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (continued)

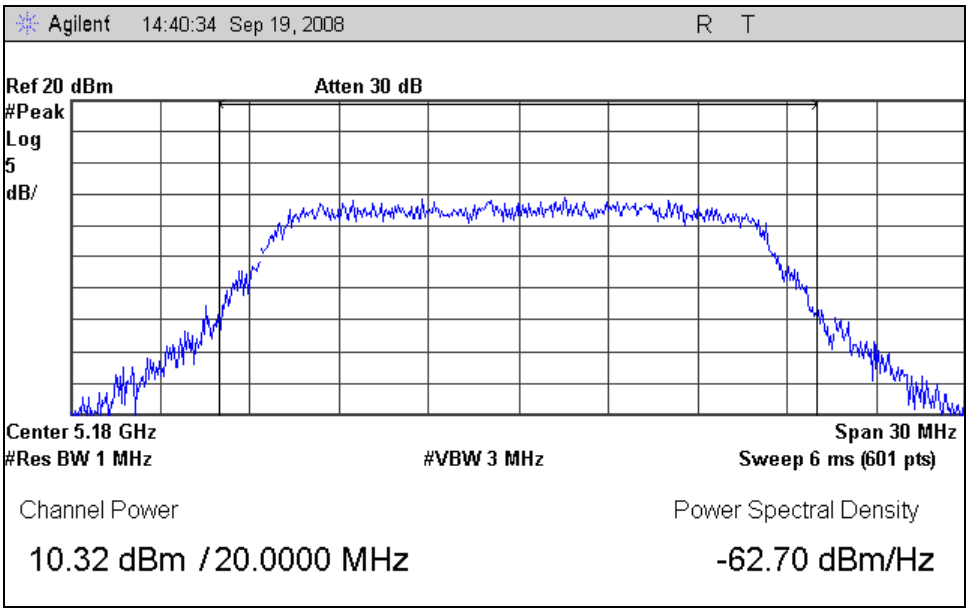
6.1.2. Conducted Mode Measurements (continued)

6.1.2.3. Maximum Peak Conducted Output Power – Plots

6.1.2.3.1. Plot: 20 MHz Signal Bandwidth - Channel 36, Chain 0



6.1.2.3.2. Plot: 20 MHz Signal Bandwidth - Channel 36, Chain 1



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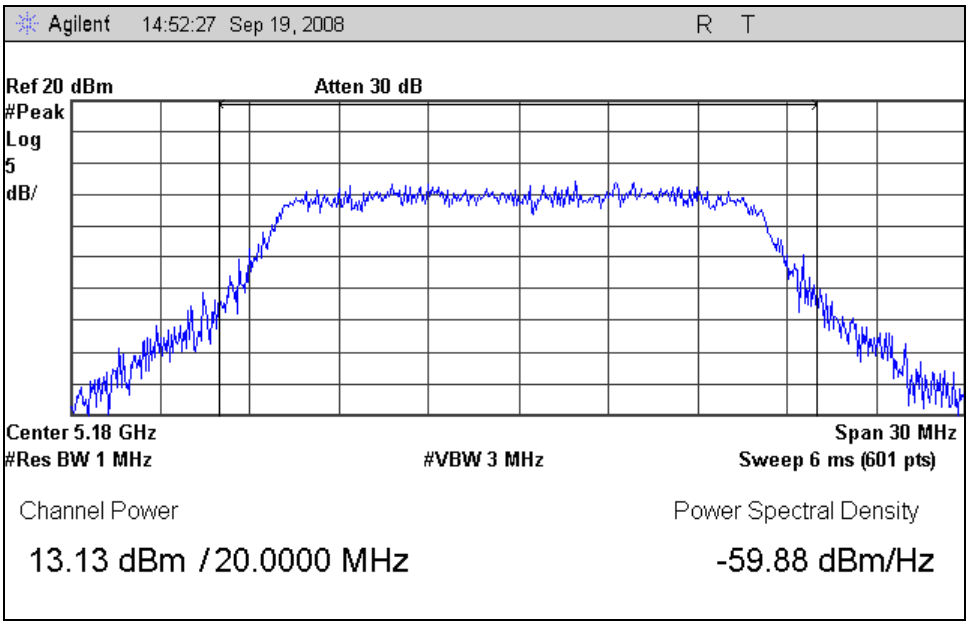
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (continued)

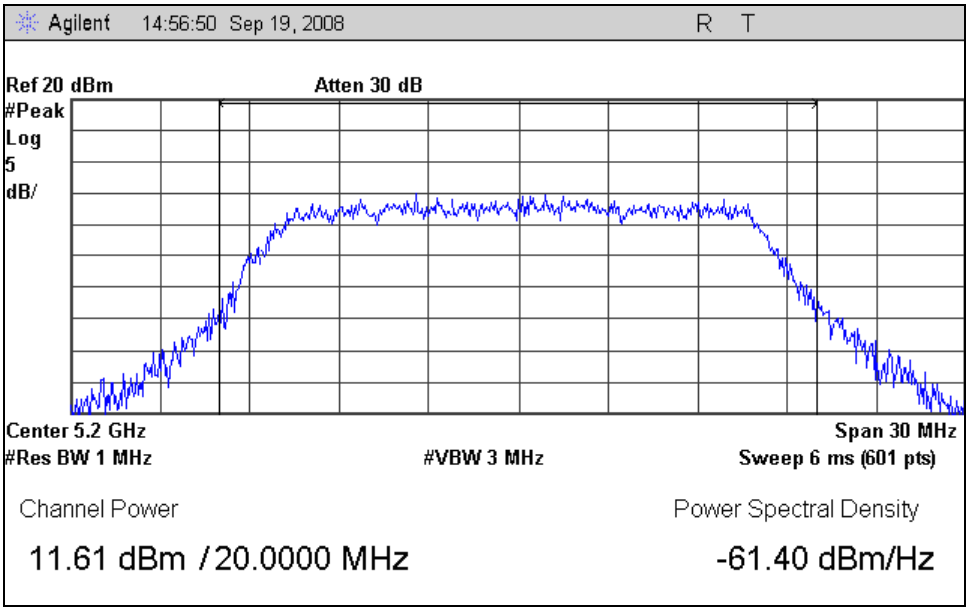
6.1.2. Conducted Mode Measurements (continued)

6.1.2.3. Maximum Peak Conducted Output Power – Plots

6.1.2.3.3. Plot: 20 MHz Signal Bandwidth - Channel 36, Chain 2



6.1.2.3.4. Plot: 20 MHz Signal Bandwidth - Channel 40, Chain 0



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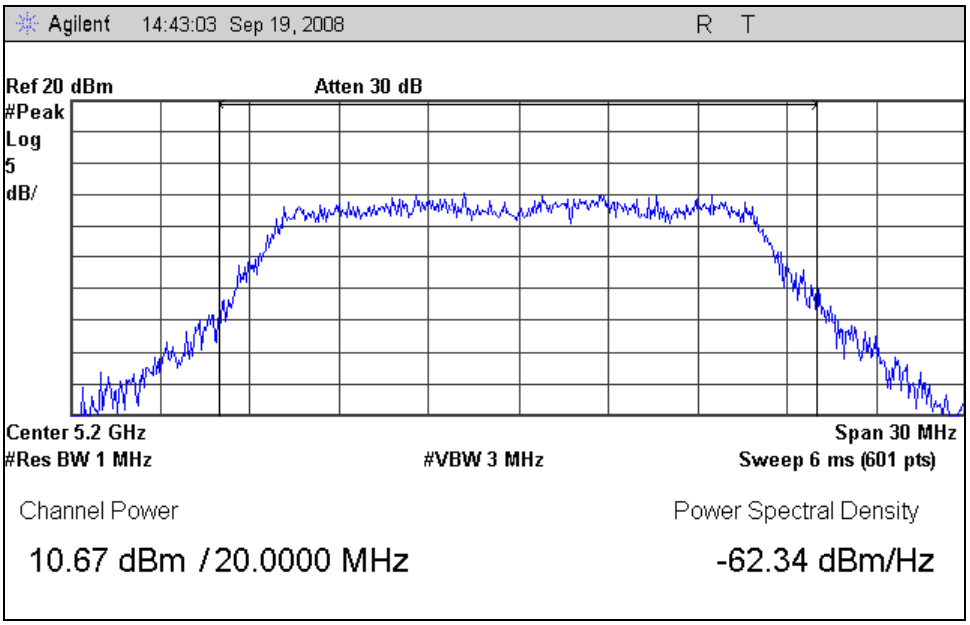
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (continued)

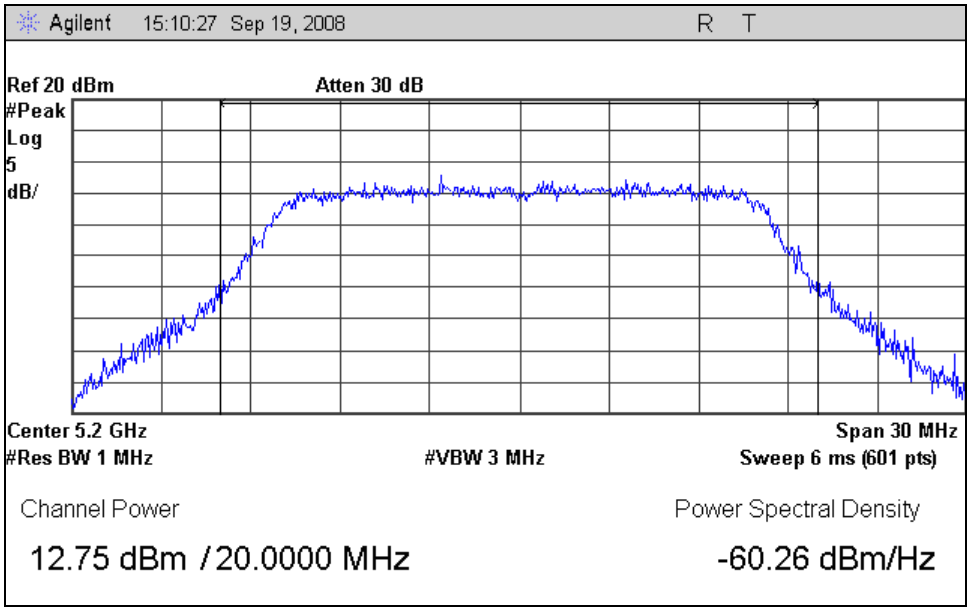
6.1.2. Conducted Mode Measurements (continued)

6.1.2.3. Maximum Peak Conducted Output Power – Plots

6.1.2.3.5. Plot: 20 MHz Signal Bandwidth - Channel 40, Chain 1



6.1.2.3.6. Plot: 20 MHz Signal Bandwidth - Channel 40, Chain 2



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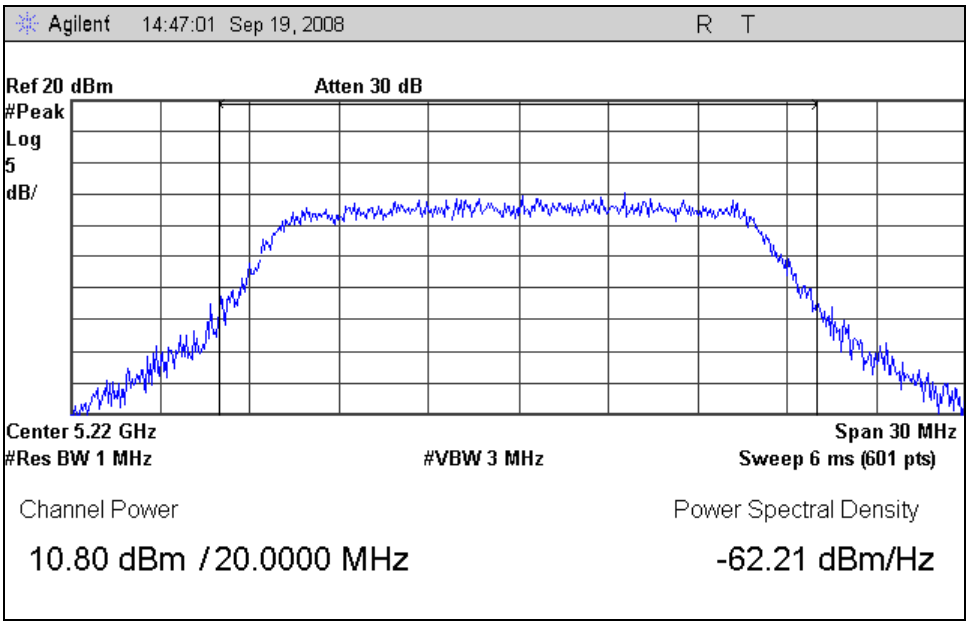
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (continued)

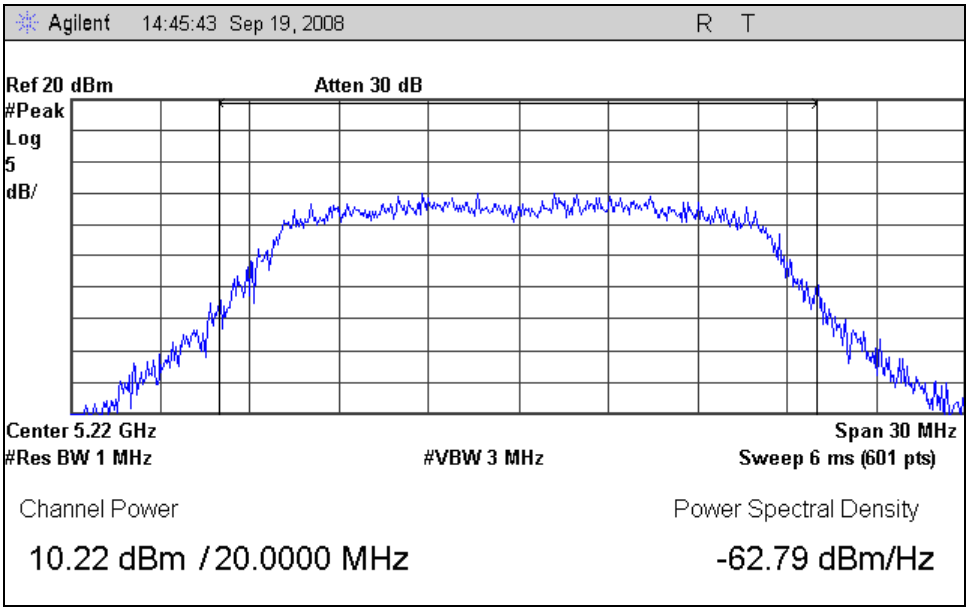
6.1.2. Conducted Mode Measurements (continued)

6.1.2.3. Maximum Peak Conducted Output Power – Plots

6.1.2.3.7. Plot: 20 MHz Signal Bandwidth - Channel 44, Chain 0



6.1.2.3.8. Plot: 20 MHz Signal Bandwidth - Channel 44, Chain 1



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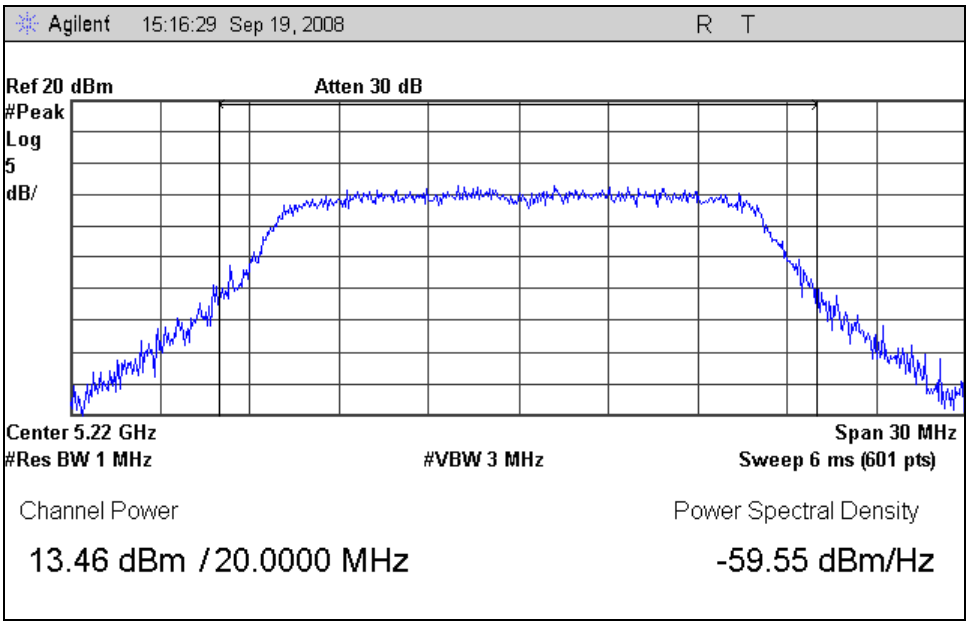
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (continued)

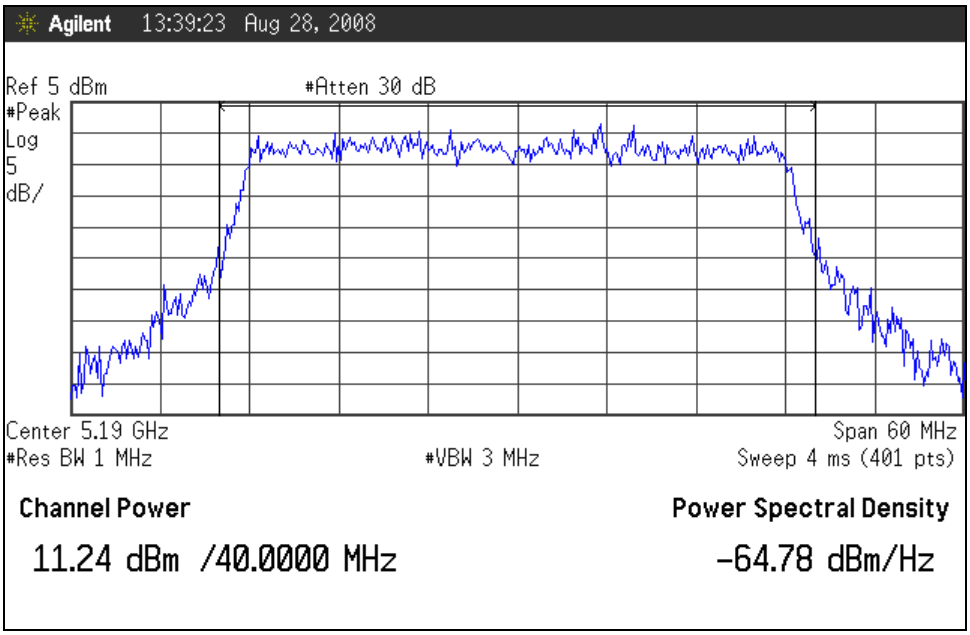
6.1.2. Conducted Mode Measurements (continued)

6.1.2.3. Maximum Peak Conducted Output Power – Plots

6.1.2.3.9. Plot: 20 MHz Signal Bandwidth - Channel 44, Chain 2



6.1.2.3.10. Plot: 40 MHz Signal Bandwidth - Channel 36 (38), Chain 0



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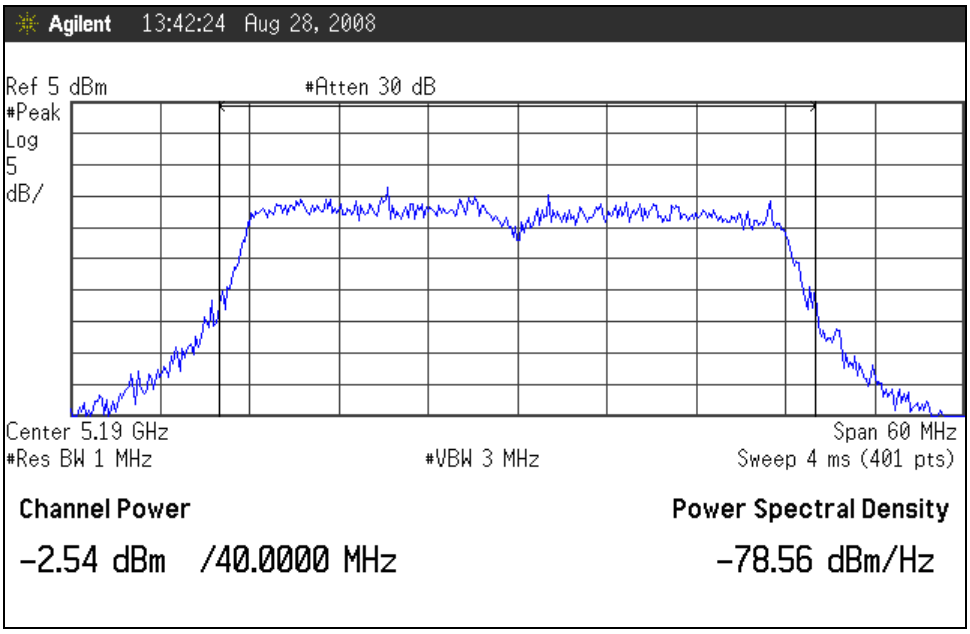
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (continued)

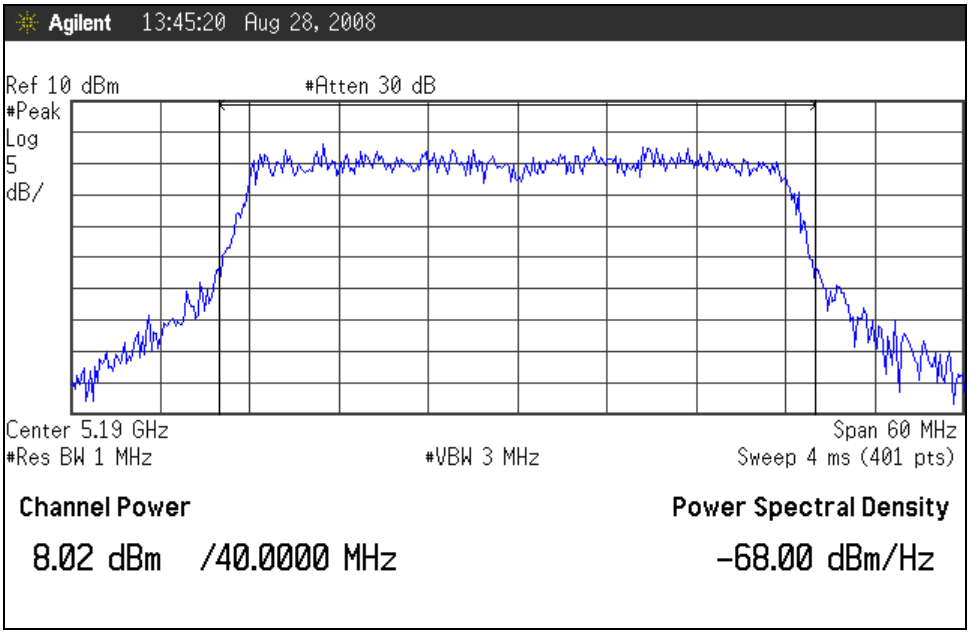
6.1.2. Conducted Mode Measurements (continued)

6.1.2.3. Maximum Peak Conducted Output Power – Plots

6.1.2.3.11. Plot: 40 MHz Signal Bandwidth - Channel 36 (38), Chain 1



6.1.2.3.12. Plot: 40 MHz Signal Bandwidth - Channel 36 (38), Chain 2



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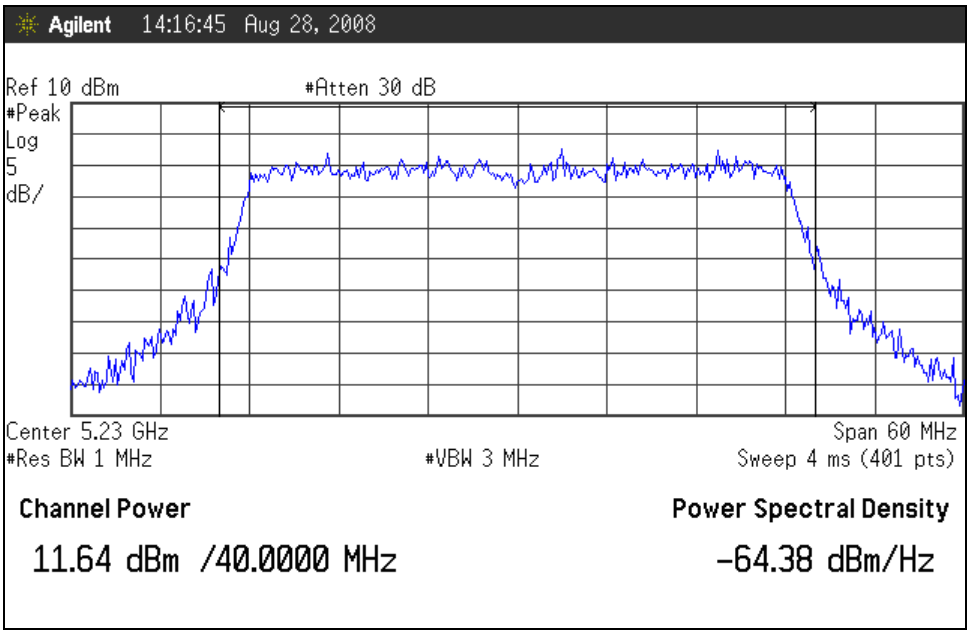
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (continued)

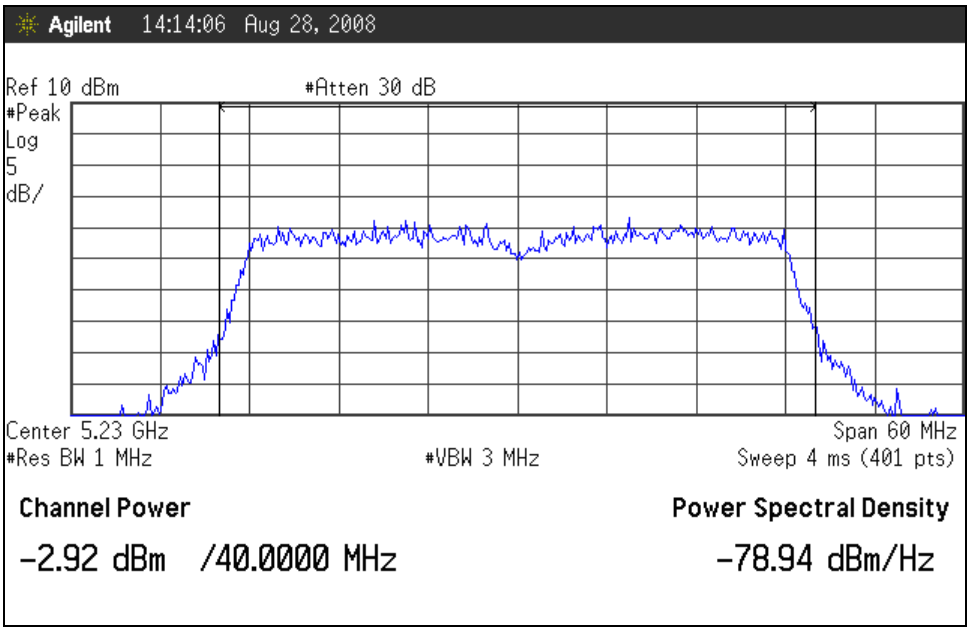
6.1.2. Conducted Mode Measurements (continued)

6.1.2.3. Maximum Peak Conducted Output Power – Plots

6.1.2.3.13. Plot: 40 MHz Signal Bandwidth - Channel 44 (46), Chain 0



6.1.2.3.14. Plot: 40 MHz Signal Bandwidth - Channel 44 (46), Chain 1



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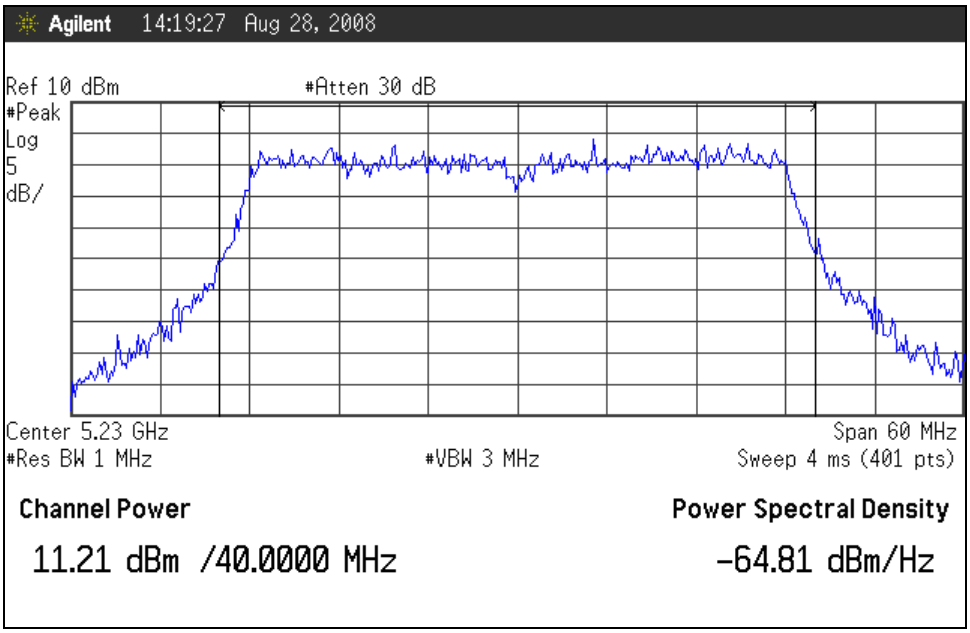
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (continued)

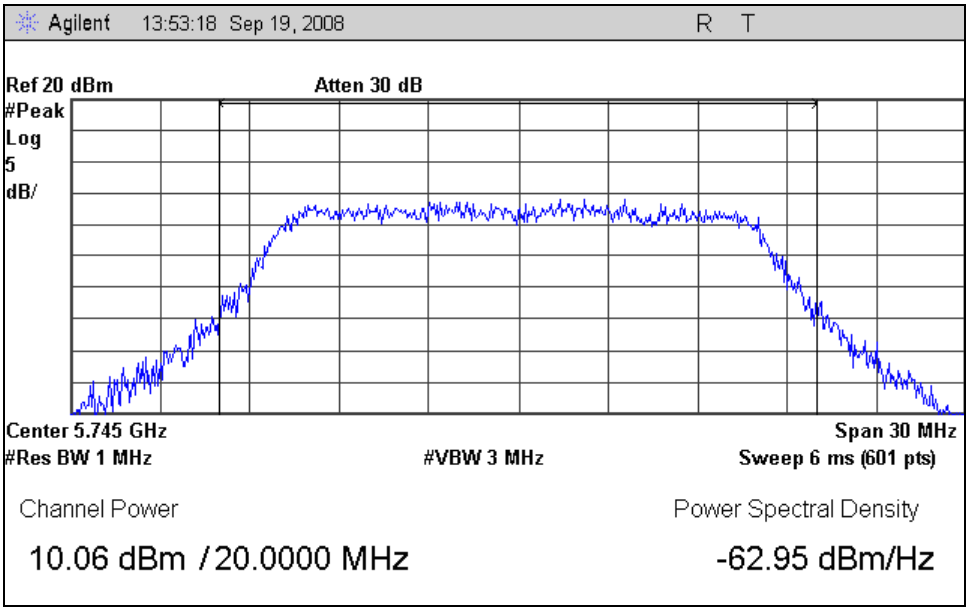
6.1.2. Conducted Mode Measurements (continued)

6.1.2.3. Maximum Peak Conducted Output Power – Plots

6.1.2.3.15. Plot: 40 MHz Signal Bandwidth - Channel 44 (46), Chain 2



6.1.2.3.16. Plot: 20 MHz Signal Bandwidth - Channel 149, Chain 0



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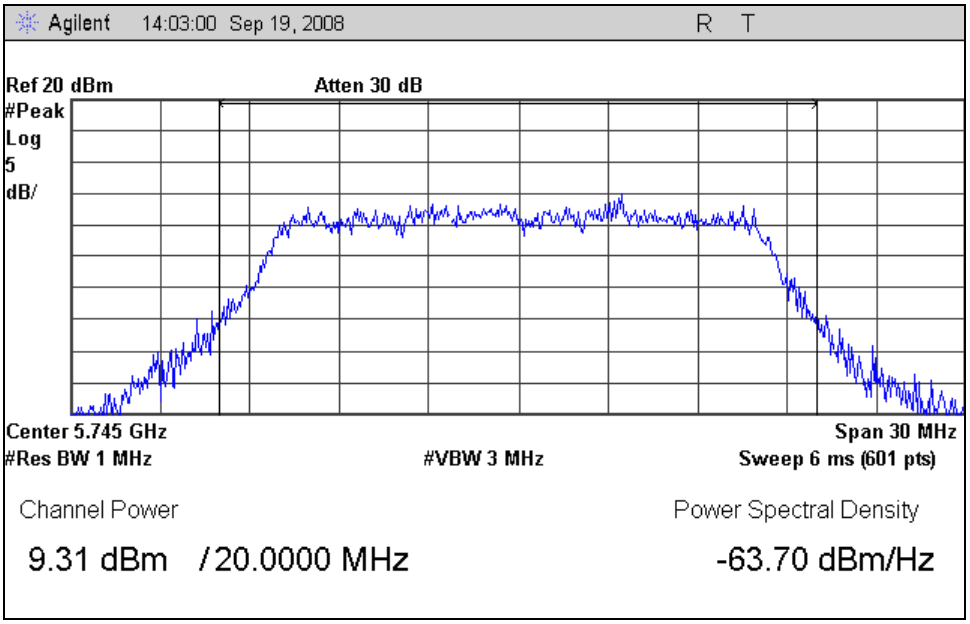
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (continued)

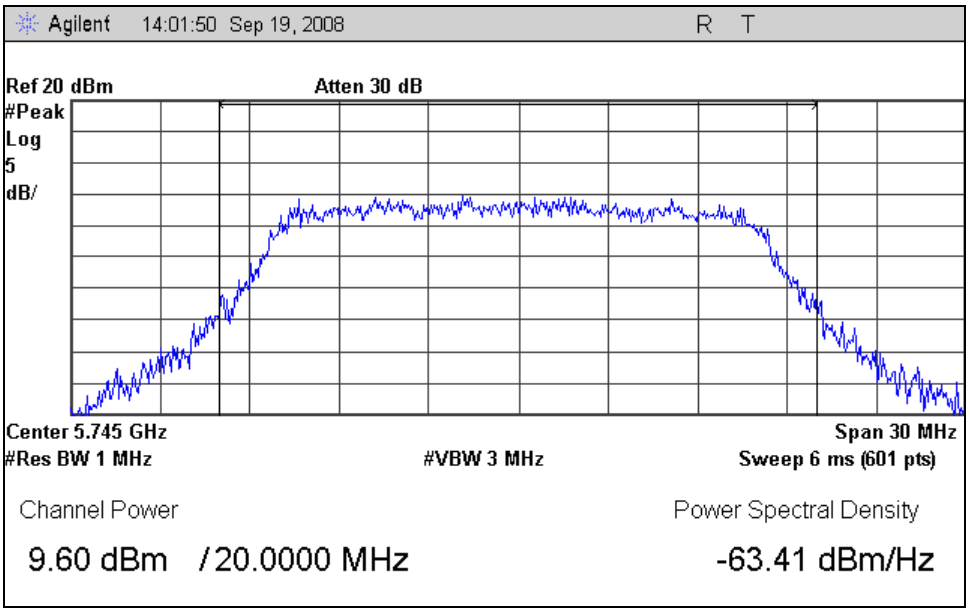
6.1.2. Conducted Mode Measurements (continued)

6.1.2.3. Maximum Peak Conducted Output Power – Plots

6.1.2.3.17. Plot: 20 MHz Signal Bandwidth - Channel 149, Chain 1



6.1.2.3.18. Plot: 20 MHz Signal Bandwidth - Channel 149, Chain 2



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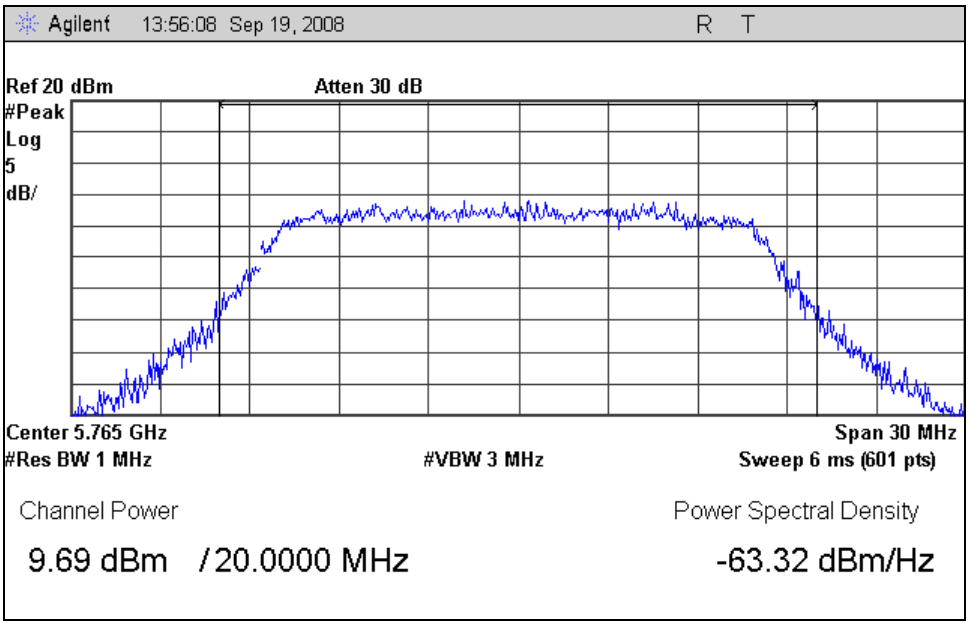
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (continued)

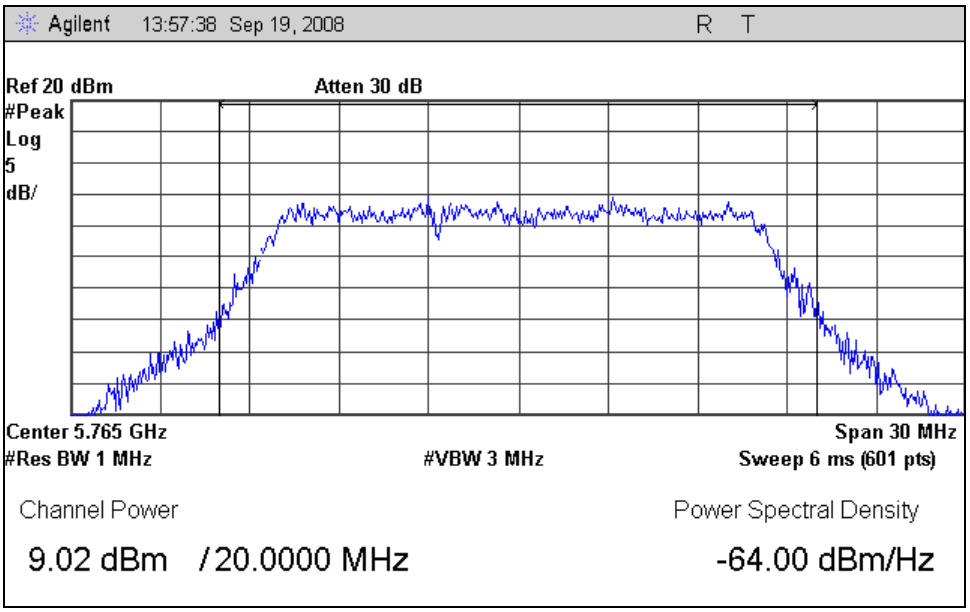
6.1.2. Conducted Mode Measurements (continued)

6.1.2.3. Maximum Peak Conducted Output Power – Plots

6.1.2.3.19. Plot: 20 MHz Signal Bandwidth - Channel 153, Chain 0



6.1.2.3.20. Plot: 20 MHz Signal Bandwidth - Channel 153, Chain 1



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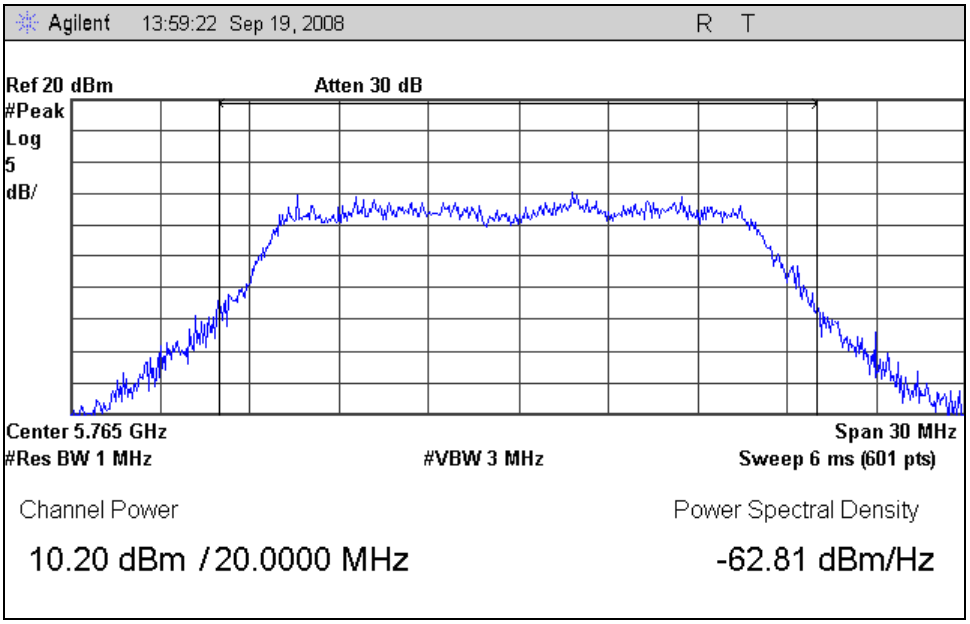
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (continued)

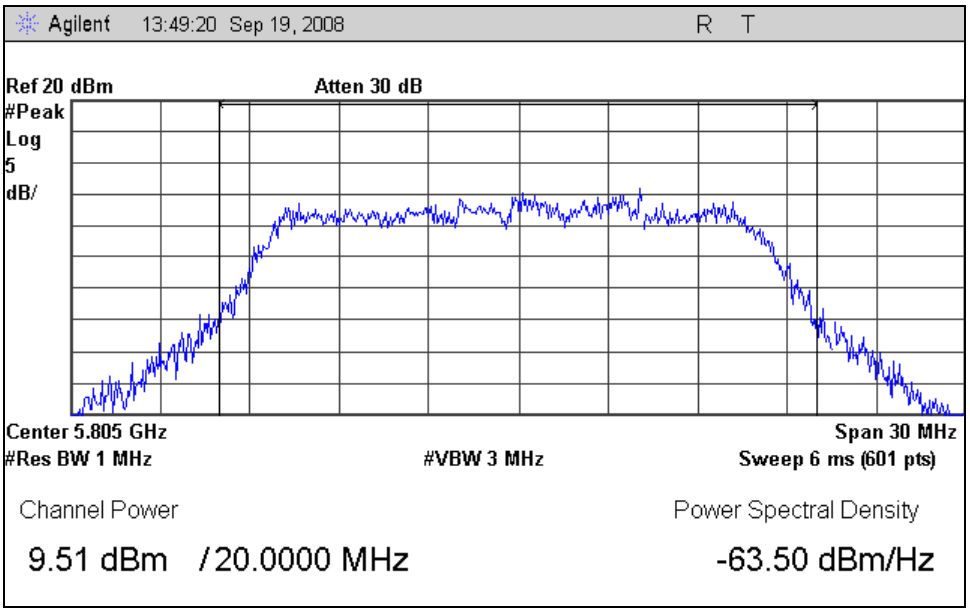
6.1.2. Conducted Mode Measurements (continued)

6.1.2.3. Maximum Peak Conducted Output Power – Plots

6.1.2.3.21. Plot: 20 MHz Signal Bandwidth - Channel 153, Chain 2



6.1.2.3.22. Plot: 20 MHz Signal Bandwidth - Channel 161, Chain 0



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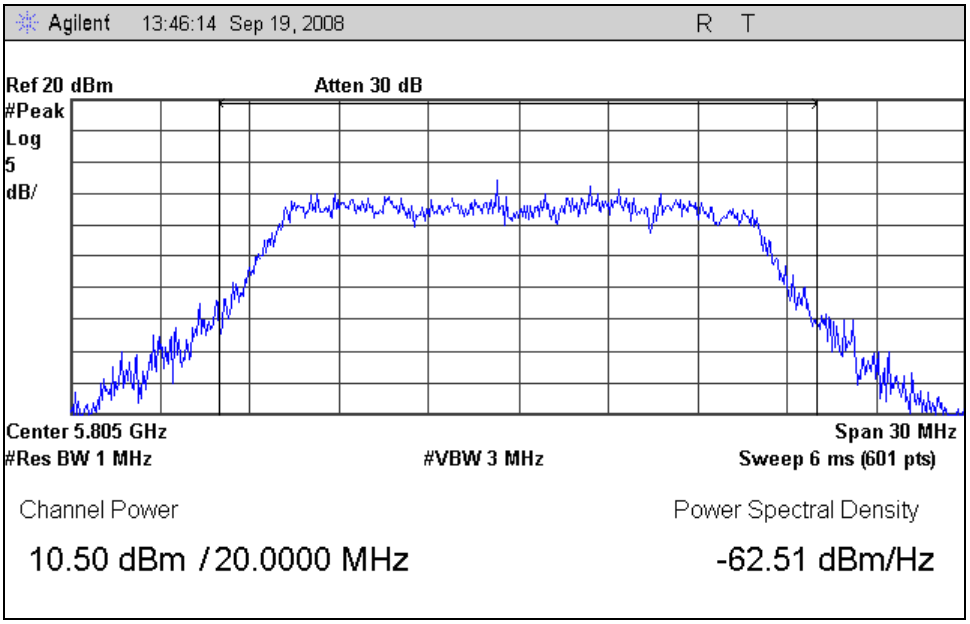
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (continued)

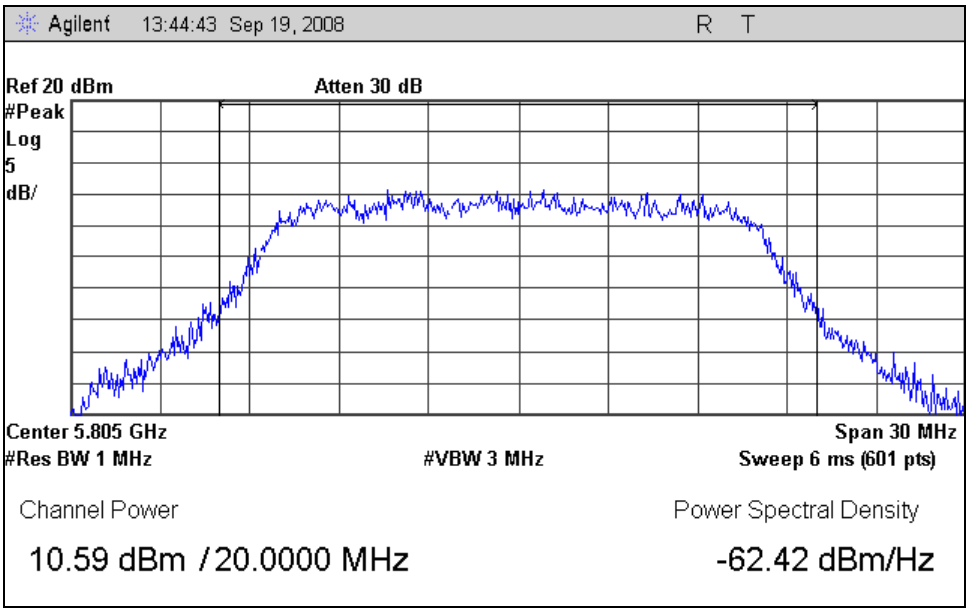
6.1.2. Conducted Mode Measurements (continued)

6.1.2.3. Maximum Peak Conducted Output Power – Plots

6.1.2.3.23. Plot: 20 MHz Signal Bandwidth - Channel 161, Chain 1



6.1.2.3.24. Plot: 20 MHz Signal Bandwidth - Channel 161, Chain 2



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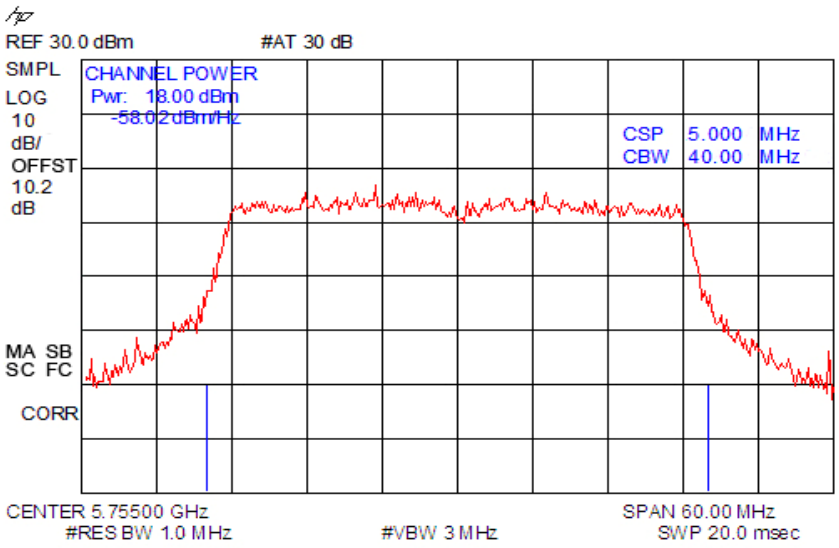
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (continued)

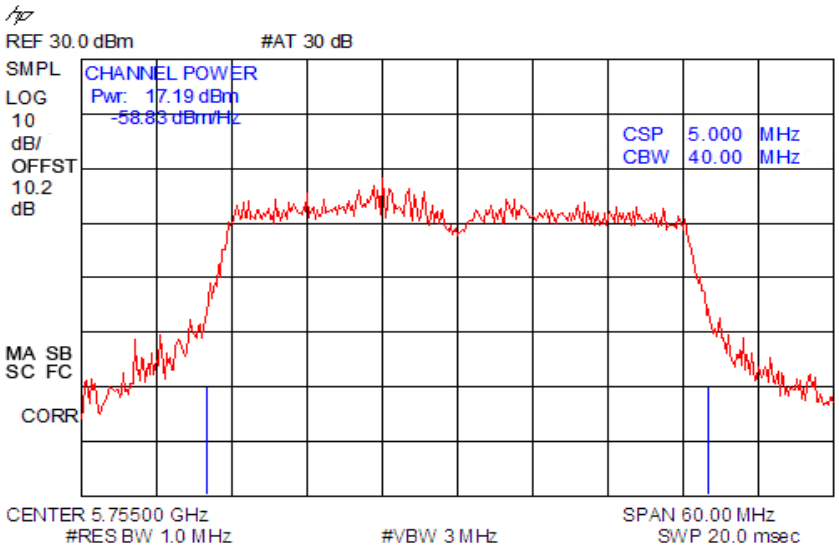
6.1.2. Conducted Mode Measurements (continued)

6.1.2.3. Maximum Peak Conducted Output Power – Plots

6.1.2.3.25. Plot: 40 MHz Signal Bandwidth - Channel 149 (151), Chain 0



6.1.2.3.26. Plot: 40 MHz Signal Bandwidth - Channel 149 (151), Chain 1



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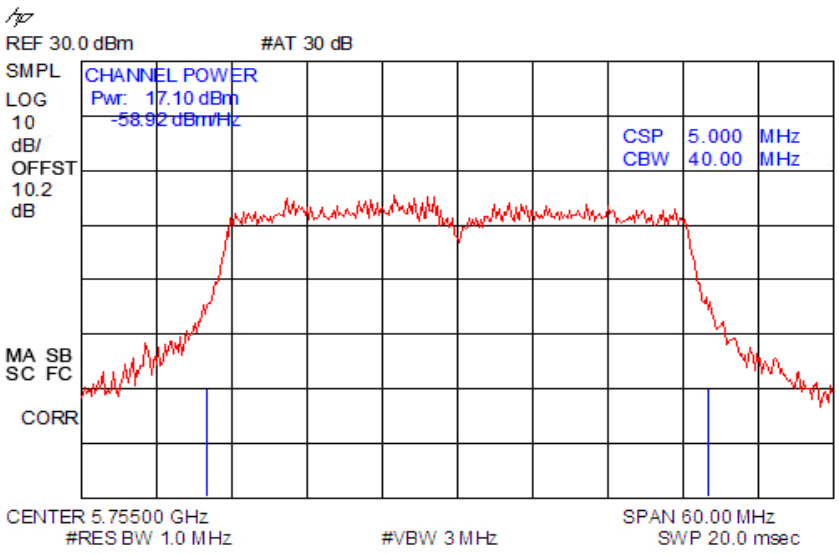
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (continued)

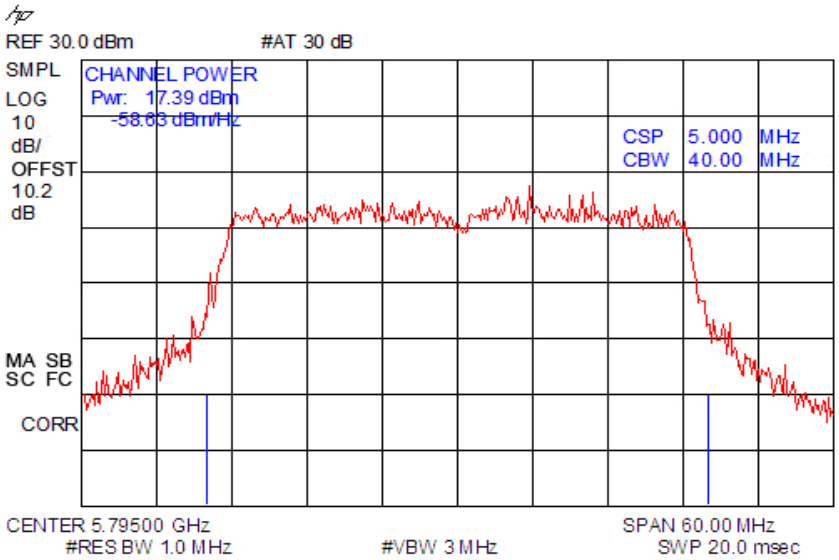
6.1.2. Conducted Mode Measurements (continued)

6.1.2.3. Maximum Peak Conducted Output Power – Plots

6.1.2.3.27. Plot: 40 MHz Signal Bandwidth - Channel 149 (151), Chain 2



6.1.2.3.28. Plot: 40 MHz Signal Bandwidth - Channel 157 (159), Chain 0



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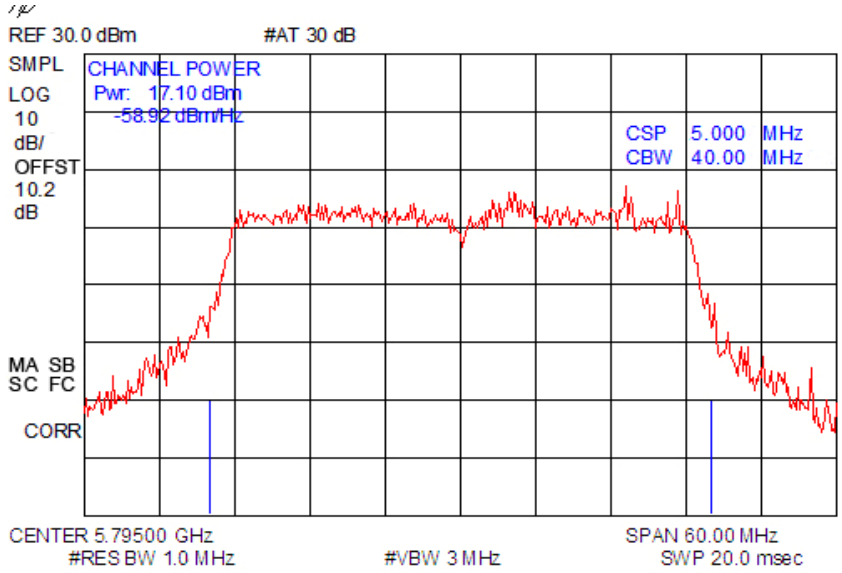
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (continued)

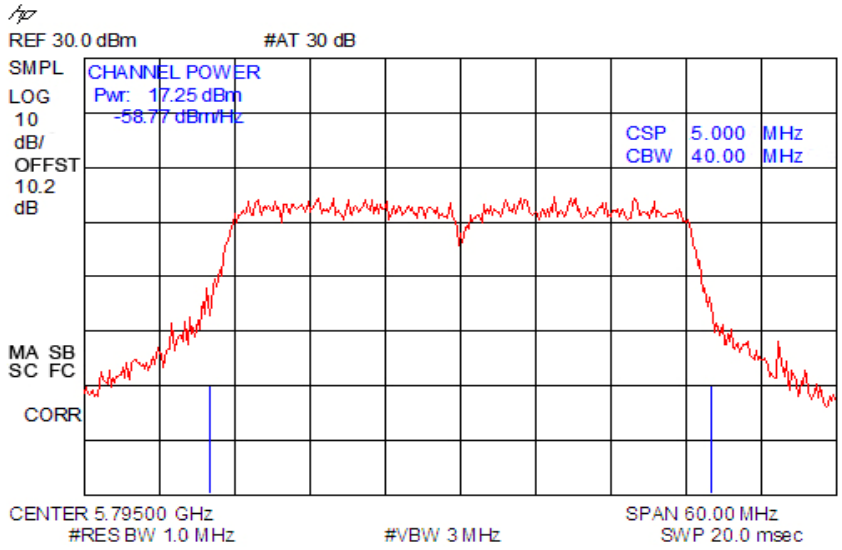
6.1.2. Conducted Mode Measurements (continued)

6.1.2.3. Maximum Peak Conducted Output Power – Plots

6.1.2.3.29. Plot: 40 MHz Signal Bandwidth - Channel 157 (159), Chain 1



6.1.2.3.30. Plot: 40 MHz Signal Bandwidth - Channel 157 (159), Chain 2



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6. Measurement Data (continued)

6.2. Power Spectral Density (15.407(a)(1)) (15.407(a)(3))

Requirement: (15.407(a)(1)) For the band 5.15–5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1–MHz band.

(15.407(a)(3)) For the band For the 5.725–5.825 GHz, the peak power spectral density shall not exceed 17 dBm in any 1–MHz band.

Note: This test was performed in accordance with the information outlined in Measurement of Digital Transmission Systems Operating under Section 15.247, March 23 2005, Section 15.247(d): Power spectral density (PSD), PSD Option 1. Refer to the graphs in Section 6.1.2 of this report for the noise power density values used for the following table. A 35 dB correction factor was used to convert dBµV /Hz or dBm/Hz values to a 3 kHz Resolution Bandwidth.

dBm = dBµV – 107.

6.2.1. Measurement Results (From Radiated Measurements)

20 MHz Signal Bandwidth

Channel	Channel Frequency	Noise Pwr Density	BW Corr Factor	Power Spectral Density		Limit	Result
	GHz	dBµV/Hz	dB	mW	dBm	dBm	
36	5.180	45.26	60	0.6699	-1.74	4	Compliant
40	5.200	45.04	60	0.6368	-1.96	4	Compliant
44	5.220	44.87	60	0.6124	-2.13	4	Compliant
149	5.745	47.15	60	1.0351	0.15	17	Compliant
153	5.765	47.72	60	1.1803	0.72	17	Compliant
161	5.805	49.38	60	1.7298	2.38	17	Compliant

40 MHz Signal Bandwidth

Channel	Channel Frequency	Noise Pwr Density	BW Corr Factor	Power Spectral Density		Limit	Result
	GHz	dBµV/Hz	dB	mW	dBm	dBm	
36 (38)	5.190	38.22	60	0.1324	-8.78	4	Compliant
44 (46)	5.230	39.09	60	0.1618	-7.91	4	Compliant
149 (151)	5.755	47.43	60	1.1041	0.43	17	Compliant
157 (159)	5.795	46.36	60	0.8630	-0.64	17	Compliant

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6. Measurement Data (continued)

6.2. Power Spectral Density (15.407(a)(1)) (15.407(a)(3))

6.2.2. Measurement Results (From Conducted Measurements)

20 MHz Signal Bandwidth

Chan.	Channel Frequency	Noise Power Density Chain 0	Noise Power Density Chain 1	Noise Power Density Chain 2	BW Correction Factor	Power Spectral Density	Limit	Result
	GHz	dBm/Hz	dBm/Hz	dBm/Hz	dB	dBm	dBm	
36	5.180	-62.45	-62.70	-59.88	60	3.29	17	Compliant
40	5.200	-61.40	-62.34	-60.26	60	3.52	17	Compliant
44	5.220	-62.21	-62.79	-59.55	60	3.50	17	Compliant
149	5.745	-62.95	-63.70	-63.41	60	1.3896	17	Compliant
153	5.765	-63.32	-64.00	-62.81	60	1.3873	17	Compliant
161	5.805	-63.50	-62.51	-62.42	60	1.5805	17	Compliant

40 MHz Signal Bandwidth

Chan.	Channel Frequency	Noise Power Density Chain 0	Noise Power Density Chain 1	Noise Power Density Chain 2	BW Correction Factor	Power Spectral Density	Limit	Result
	GHz	dBm/Hz	dBm/Hz	dBm/Hz	dB	dBm	dBm	
36 (38)	5.190	-64.78	-78.56	-68.00	60	-2.97	4	Compliant
44 (46)	5.230	-64.38	-78.94	-64.81	60	-1.50	4	Compliant
149 (151)	5.755	-58.02	-58.83	-58.92	60	6.20	17	Compliant
157 (159)	5.795	-58.63	-58.92	-58.77	60	6.00	17	Compliant

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6. Measurement Data (continued)

6.3. 26 dB Emission Bandwidth (15.407(a)(1))

20 MHz Signal Bandwidth

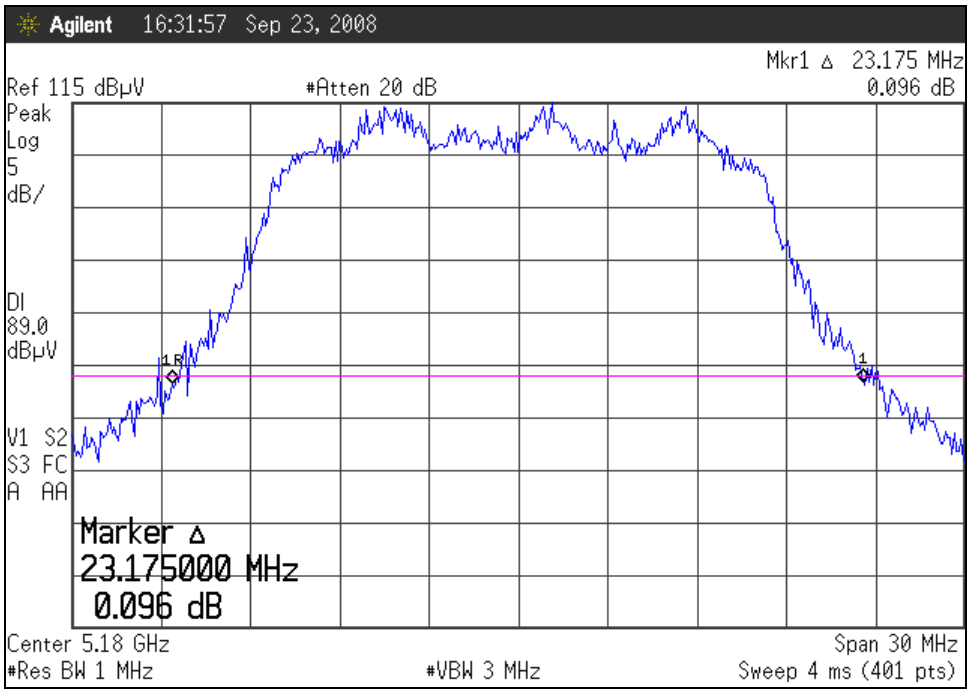
Channel	Channel Frequency	Emission Bandwidth	Channel	Channel Frequency	Emission Bandwidth
	GHz	MHz		GHz	MHz
36	5.180	23.18	149	5.745	23.55
40	5.200	23.85	153	5.765	24.45
44	5.220	23.40	161	5.805	24.83

40 MHz Signal Bandwidth

Channel	Channel Frequency	Emission Bandwidth	Channel	Channel Frequency	Emission Bandwidth
	GHz	MHz		GHz	MHz
36/38	5.190	43.80	149/151	5.755	43.95
44/46	5.230	45.15	157/159	5.795	42.60

6.3.1. 26 dB Emission Bandwidth Measurement Plots

6.3.1.1. Plot: 20 MHz Signal Bandwidth - Channel 36



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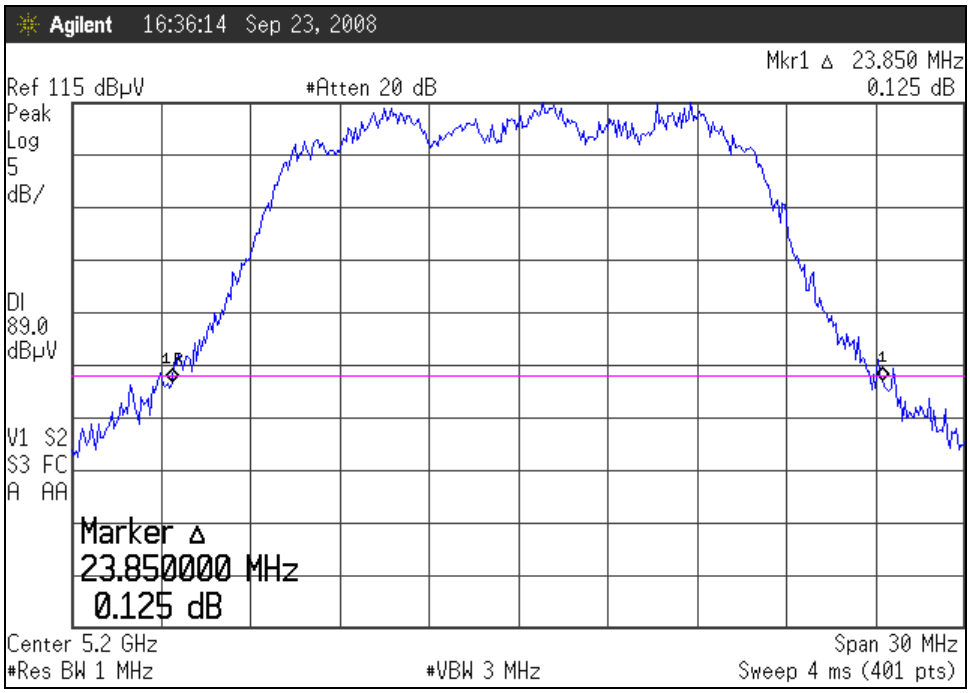
6. Measurement Data (continued)

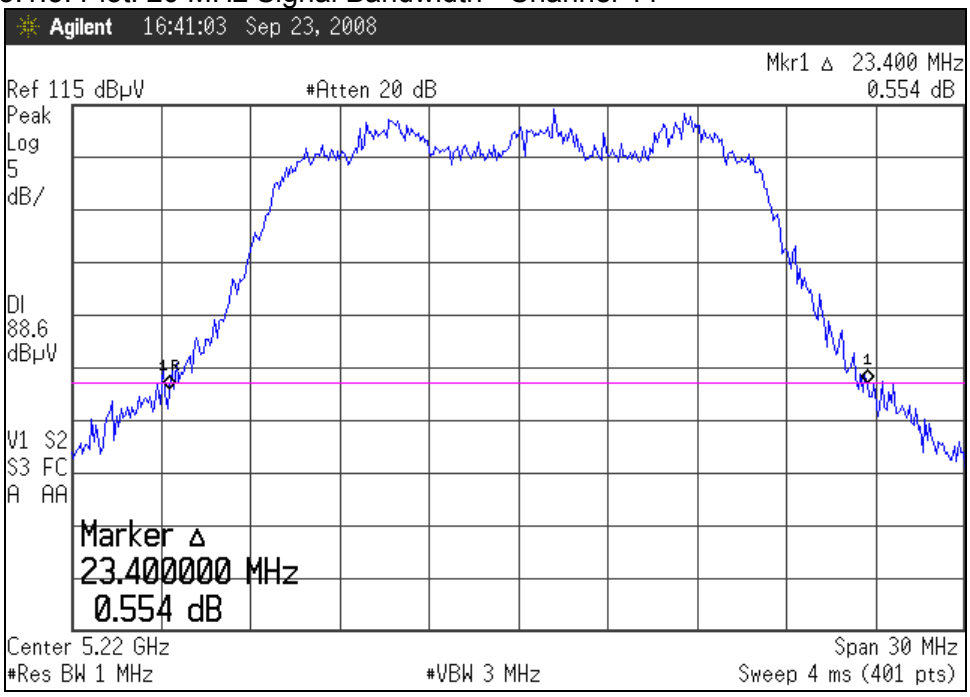
6.3. 26 dB Emission Bandwidth (15.407(a)(1))

6.3.1. 26 dB Emission Bandwidth Measurement Plots

6.3.1.2. Plot: 20 MHz Signal Bandwidth - Channel 40



6.3.1.3. Plot: 20 MHz Signal Bandwidth - Channel 44



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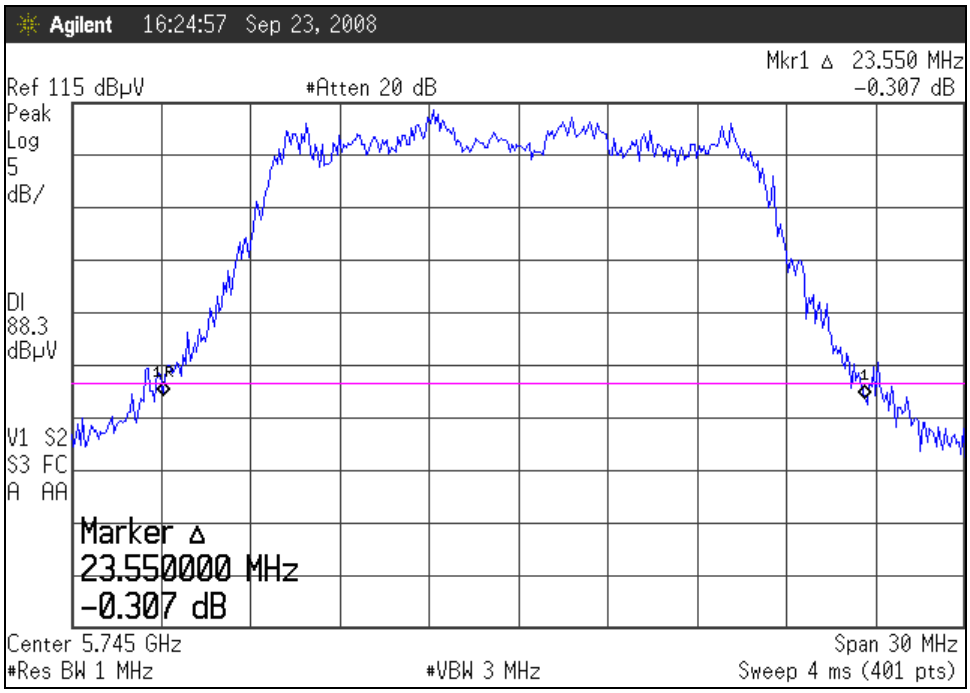
6. Measurement Data (continued)

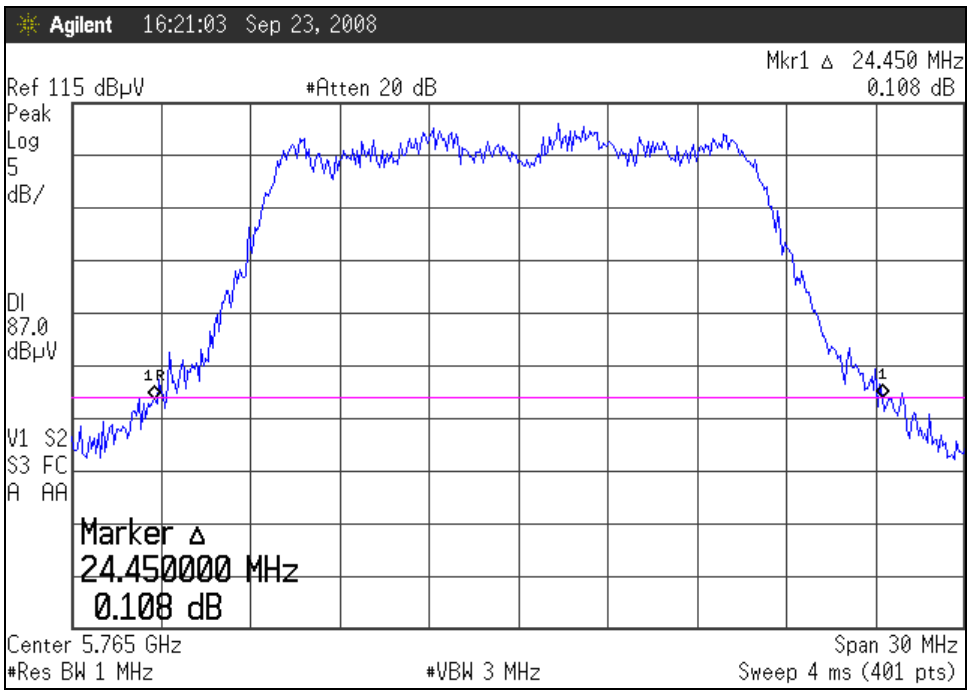
6.3. 26 dB Emission Bandwidth (15.407(a)(1))

6.3.1. 26 dB Emission Bandwidth Measurement Plots

6.3.1.4. Plot: 20 MHz Signal Bandwidth - Channel 149



6.3.1.5. Plot: 20 MHz Signal Bandwidth - Channel 153



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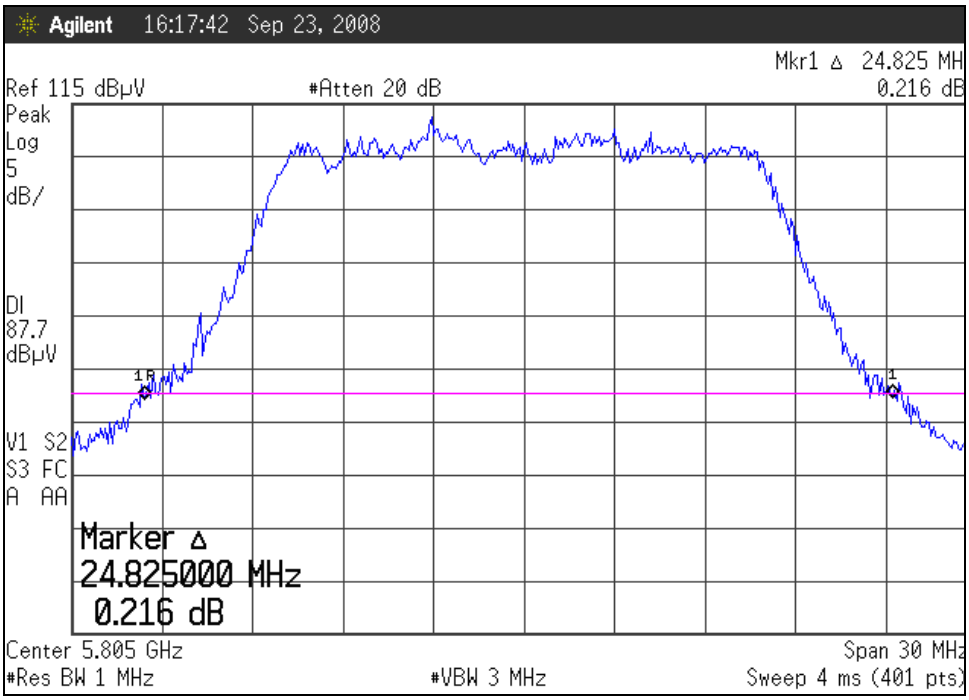
6. Measurement Data (continued)

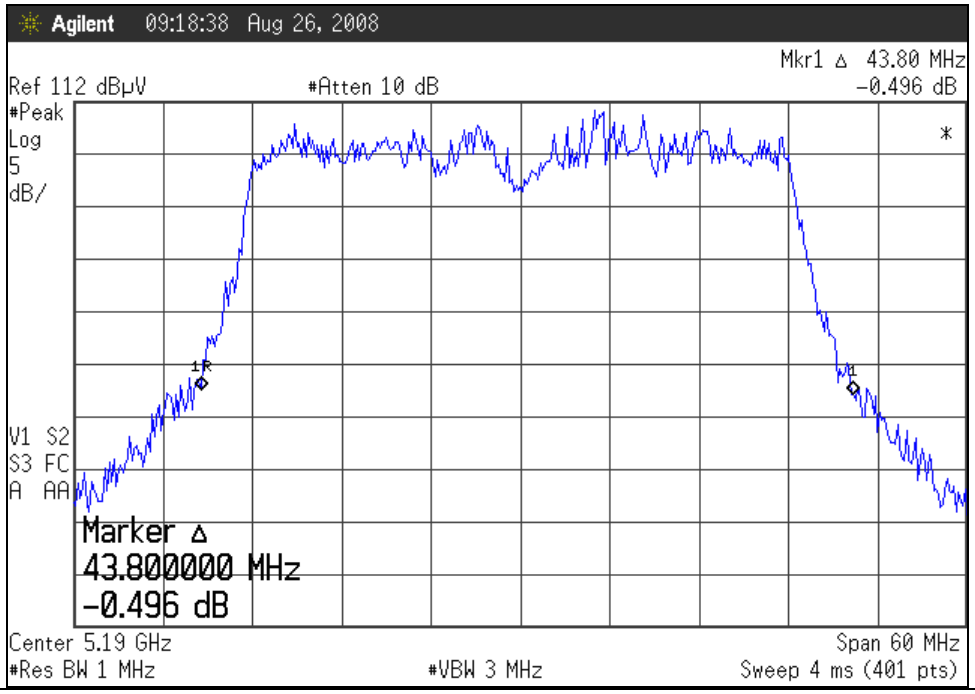
6.3. 26 dB Emission Bandwidth (15.407(a)(1))

6.3.1. 26 dB Emission Bandwidth Measurement Plots

6.3.1.6. Plot: 20 MHz Signal Bandwidth - Channel 161



6.3.1.7. Plot: 40 MHz Signal Bandwidth - Channel 36 (38)



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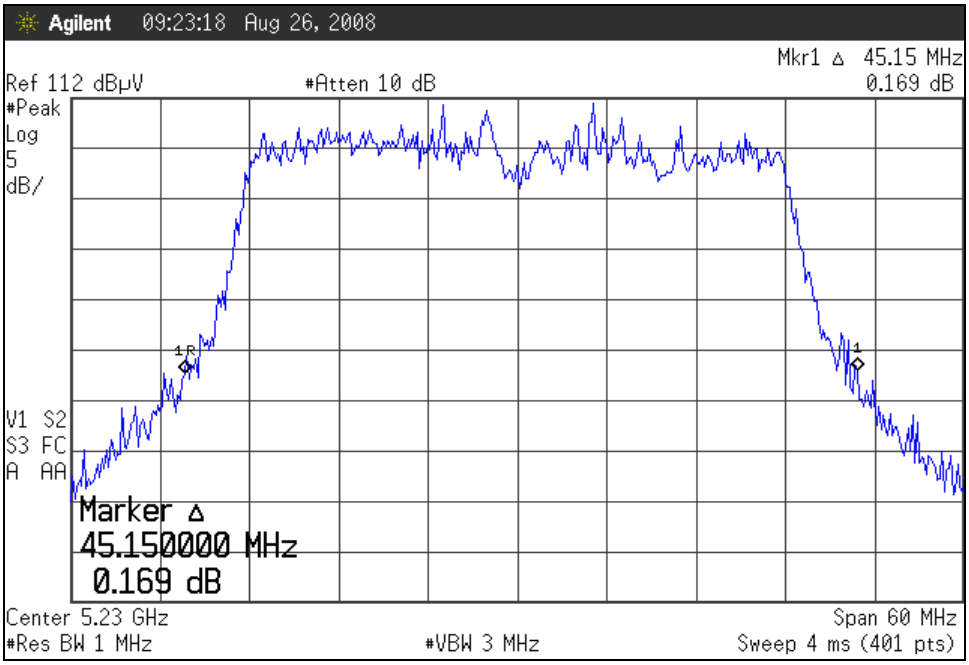
6. Measurement Data (continued)

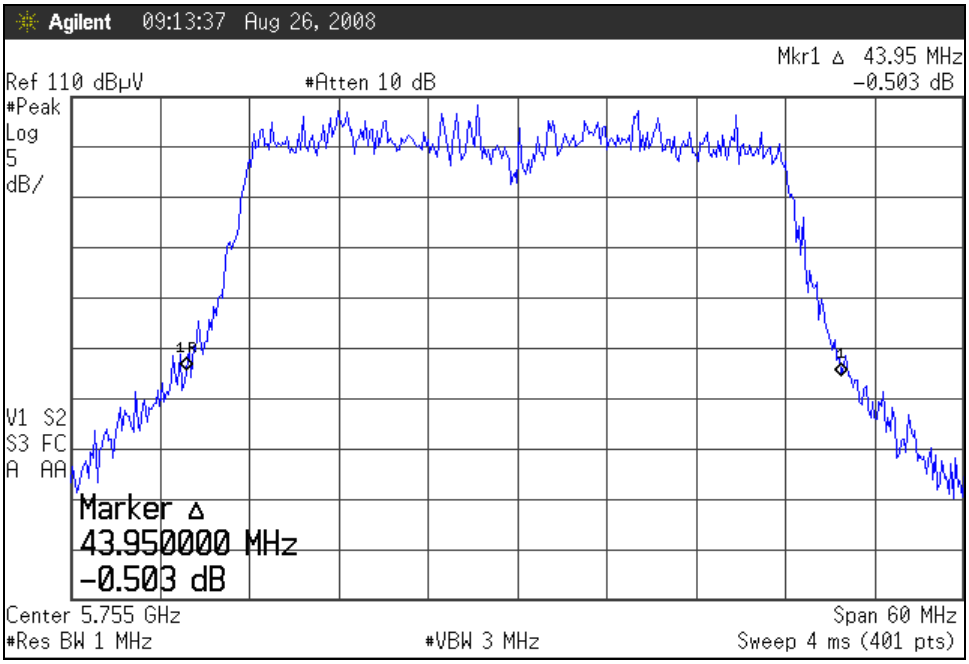
6.3. 26 dB Emission Bandwidth (15.407(a)(1))

6.3.1. 26 dB Emission Bandwidth Measurement Plots

6.3.1.8. Plot: 40 MHz Signal Bandwidth - Channel 44 (46)



6.3.1.9. Plot: 40 MHz Signal Bandwidth - Channel 149 (151)



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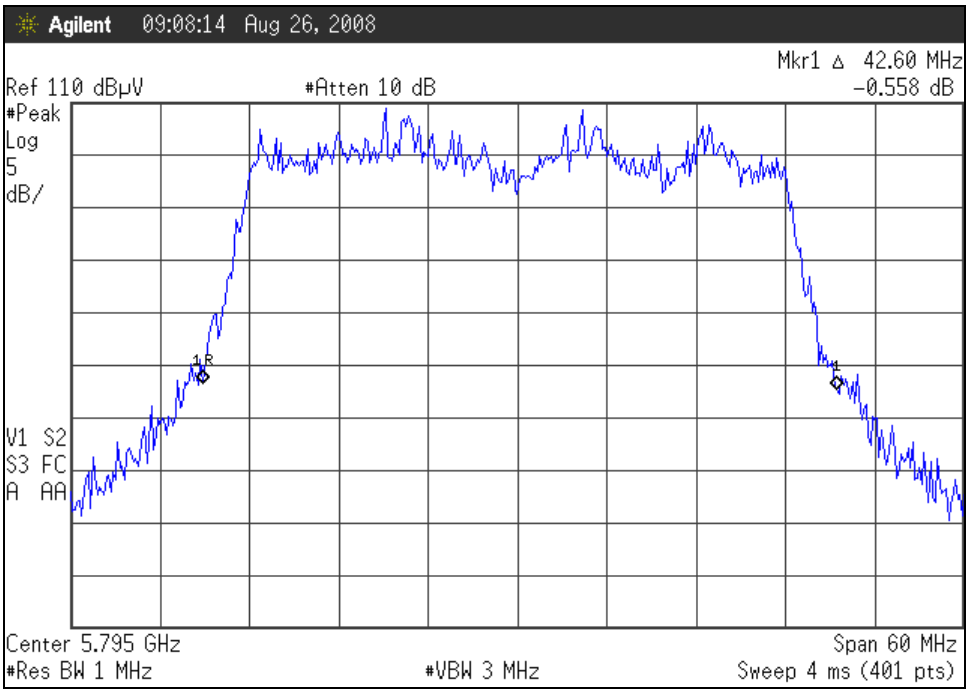
6. Measurement Data (continued)

6.3. 26 dB Emission Bandwidth (15.407(a)(1))

6.3.1. 26 dB Emission Bandwidth Measurement Plots

6.3.1.10. Plot: 40 MHz Signal Bandwidth - Channel 157 (159)



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6. Measurement Data (continued)

6.4. 99% Power Bandwidth (IC RSS 210)

20 MHz Signal Bandwidth

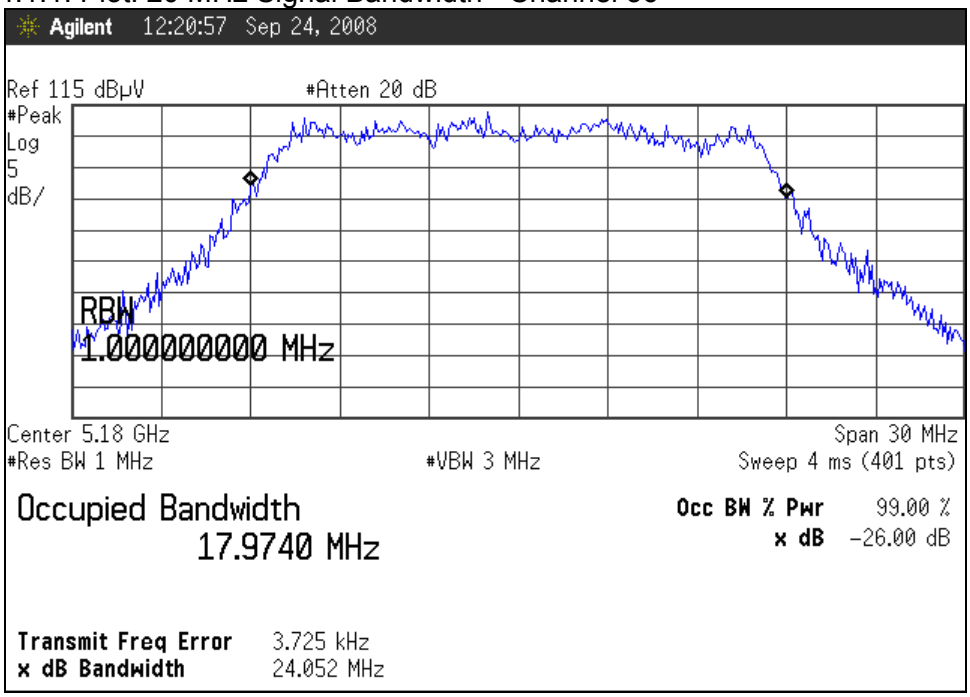
Channel	Channel Frequency	99% Power Bandwidth	Channel	Channel Frequency	99% Power Bandwidth
	GHz	MHz		GHz	MHz
36	5.180	17.97	149	5.745	17.85
40	5.200	17.98	153	5.765	17.78
44	5.220	18.13	161	5.805	17.57

40 MHz Signal Bandwidth

Channel	Channel Frequency	99% Power Bandwidth	Channel	Channel Frequency	99% Power Bandwidth
	GHz	MHz		GHz	MHz
36/38	5.190	36.96	149/151	5.755	37.08
44/46	5.230	36.88	157/159	5.795	36.78

6.4.1. 99% Power Bandwidth Emission Bandwidth Measurement Plots

6.4.1.1. Plot: 20 MHz Signal Bandwidth - Channel 36



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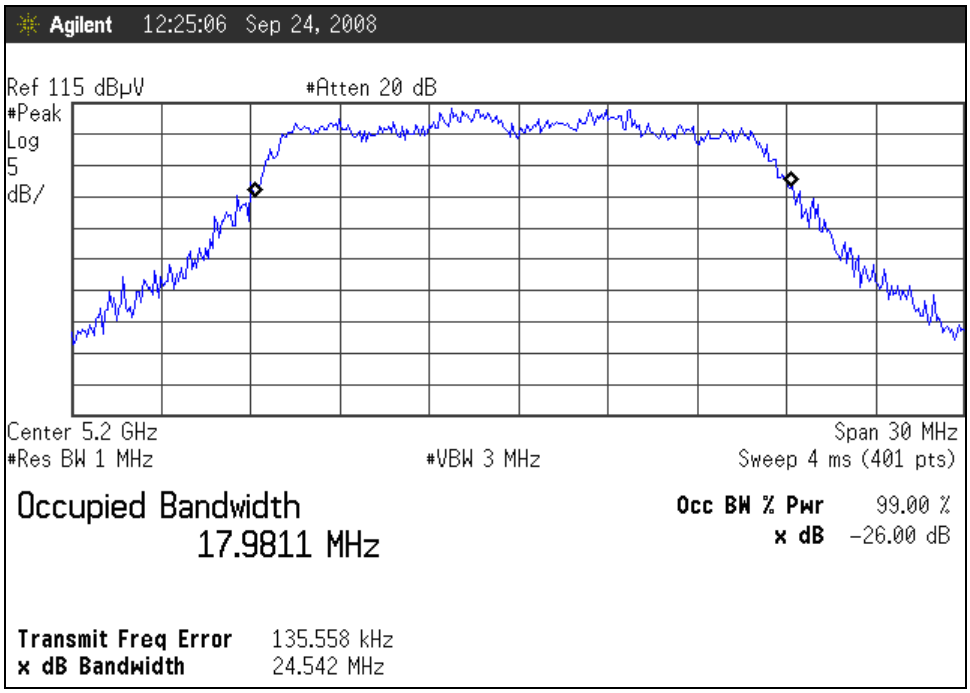
6. Measurement Data (continued)

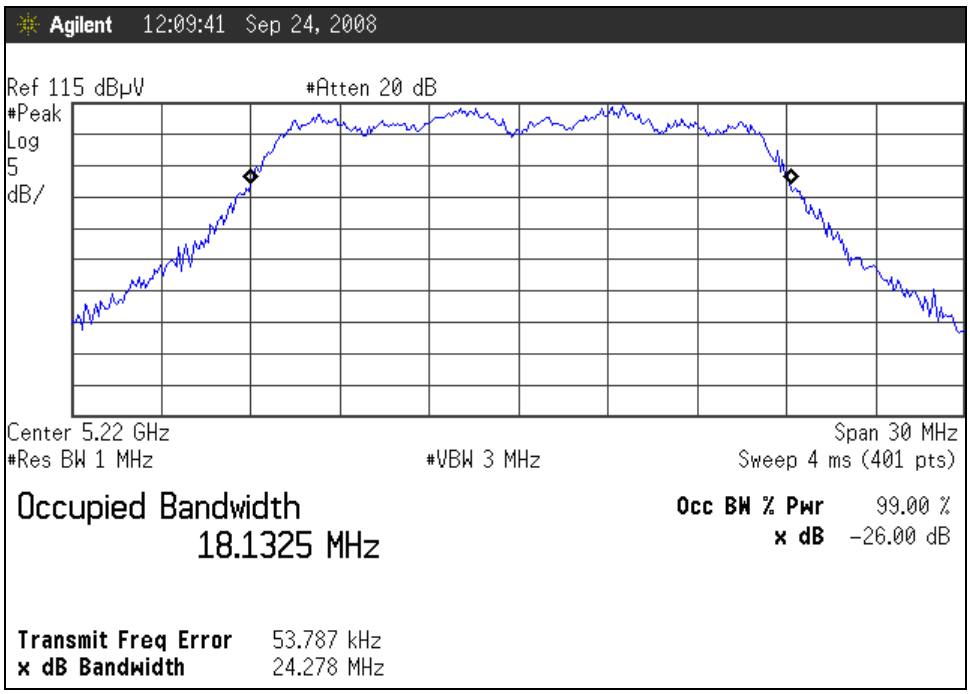
6.4. 99% Power Bandwidth (IC RSS 210)

6.4.1. 99% Power Bandwidth Emission Bandwidth Measurement Plots

6.4.1.2. Plot: 20 MHz Signal Bandwidth - Channel 40



6.4.1.3. Plot: 20 MHz Signal Bandwidth - Channel 44



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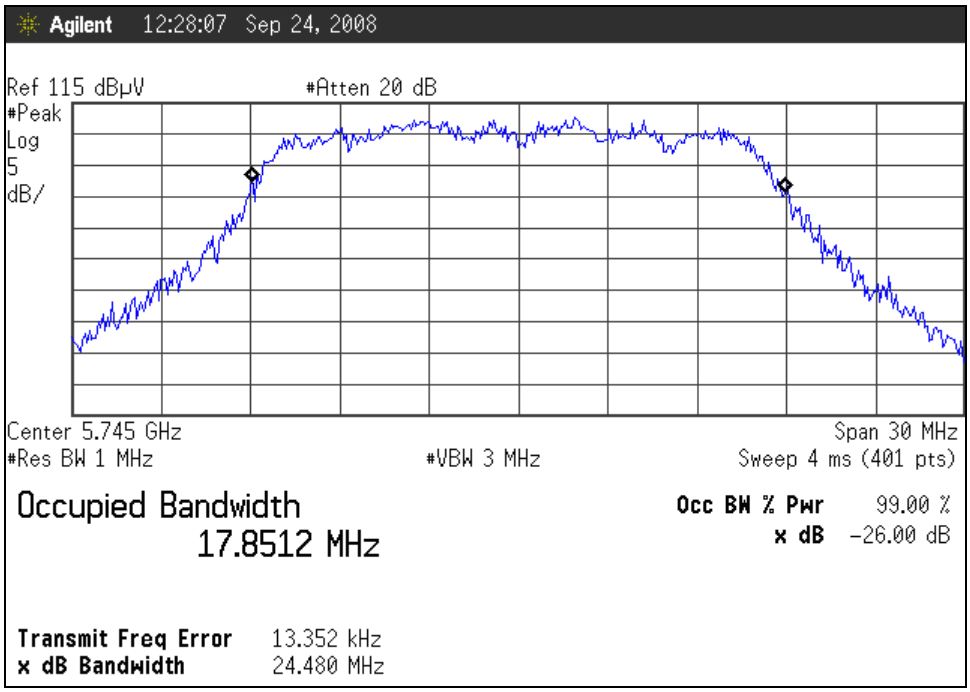
6. Measurement Data (continued)

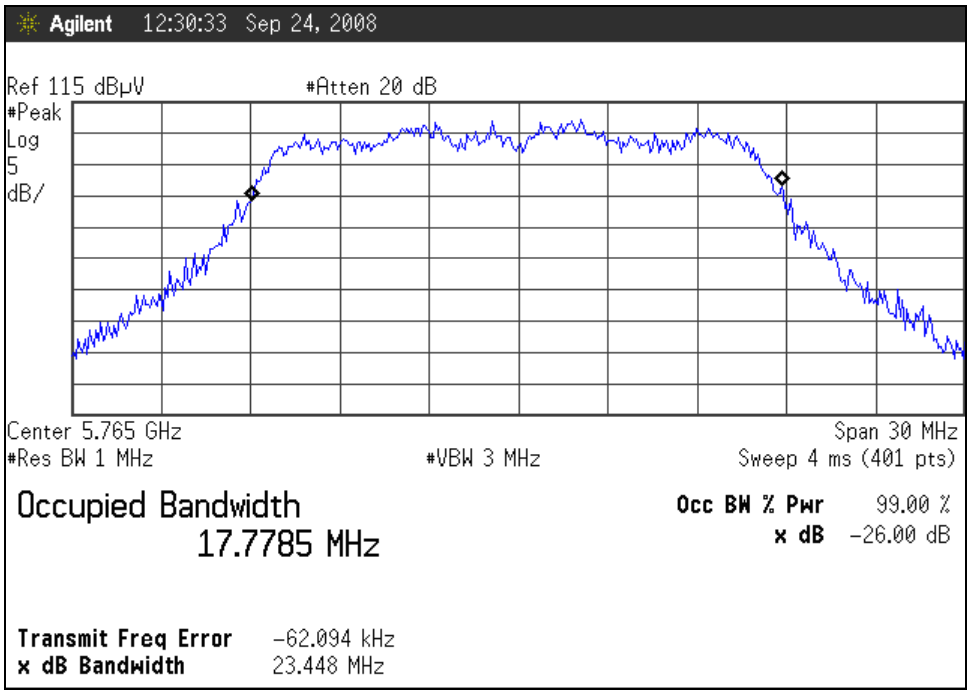
6.4. 99% Power Bandwidth (IC RSS 210)

6.4.1. 99% Power Bandwidth Emission Bandwidth Measurement Plots

6.4.1.4. Plot: 20 MHz Signal Bandwidth - Channel 149



6.4.1.5. Plot: 20 MHz Signal Bandwidth - Channel 153



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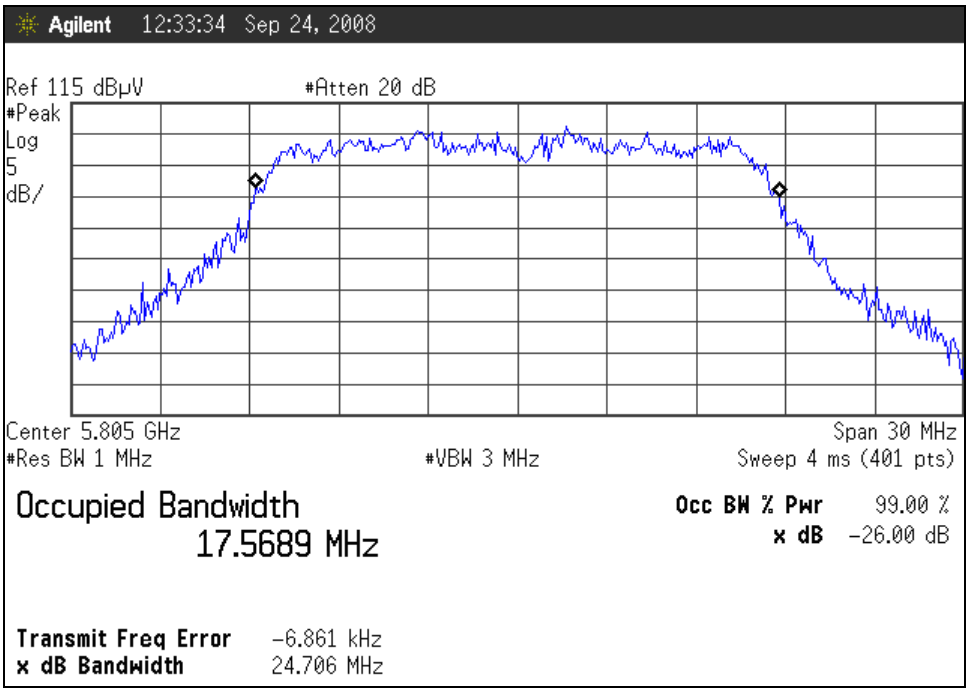
6. Measurement Data (continued)

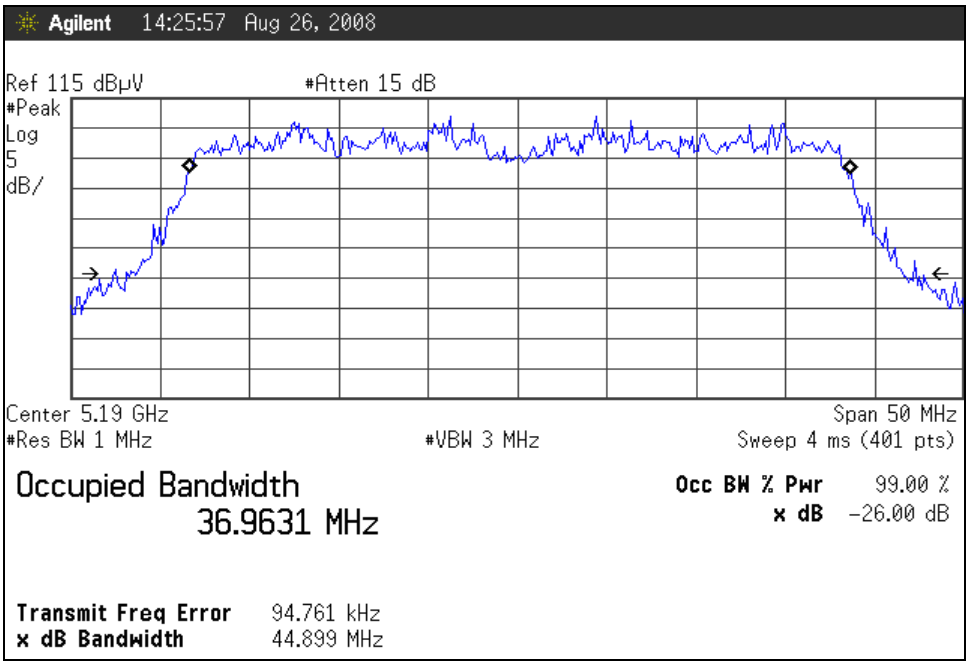
6.4. 99% Power Bandwidth (IC RSS 210)

6.4.1. 99% Power Bandwidth Emission Bandwidth Measurement Plots

6.4.1.6. Plot: 20 MHz Signal Bandwidth - Channel 161



6.4.1.7. Plot: 40 MHz Signal Bandwidth - Channel 36 (38)



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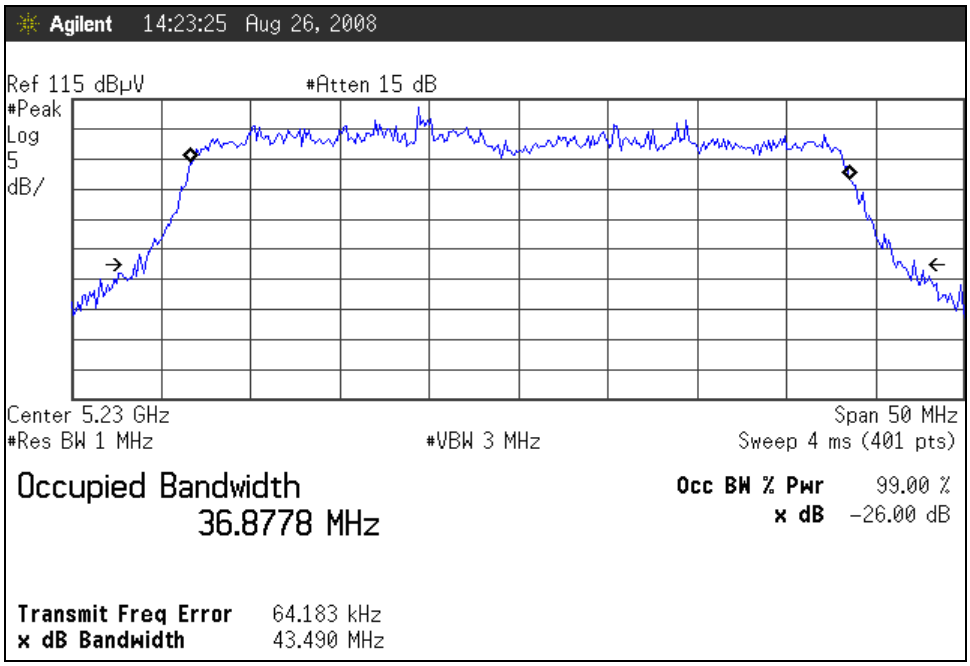
6. Measurement Data (continued)

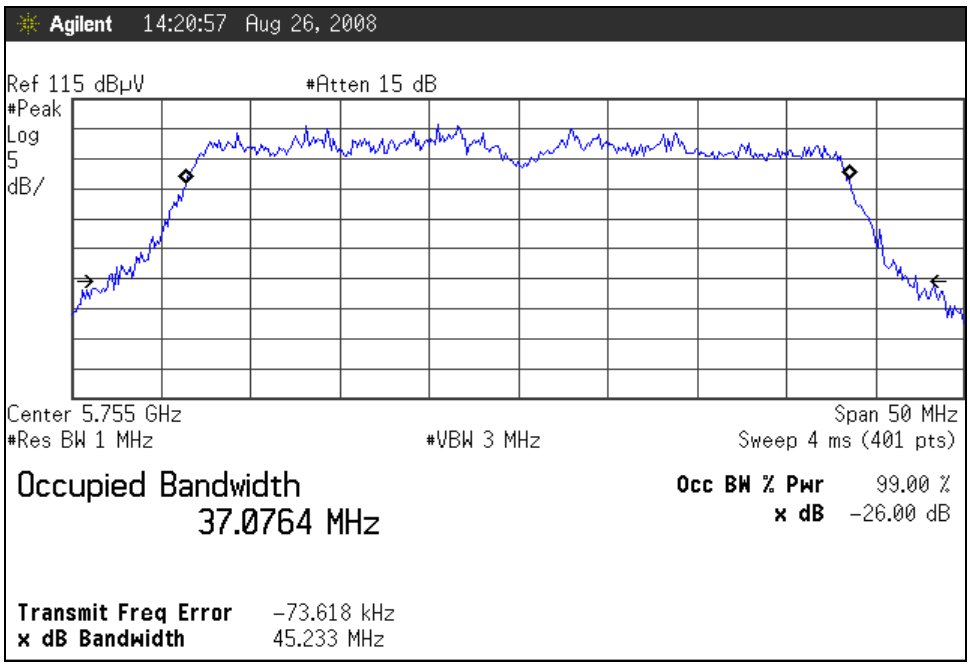
6.4. 99% Power Bandwidth (IC RSS 210)

6.4.1. 99% Power Bandwidth Emission Bandwidth Measurement Plots

6.4.1.8. Plot: 40 MHz Signal Bandwidth - Channel 44 (46)



6.4.1.9. Plot: 40 MHz Signal Bandwidth - Channel 149 (151)



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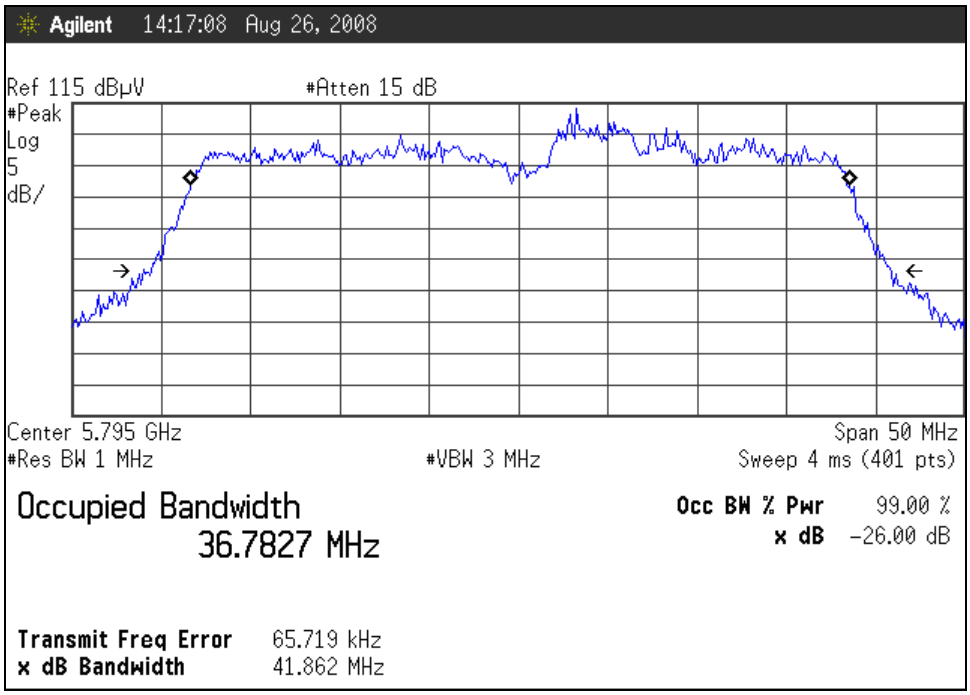
6. Measurement Data (continued)

6.4. 99% Power Bandwidth (IC RSS 210)

6.4.1. 99% Power Bandwidth Emission Bandwidth Measurement Plots

6.4.1.9. Plot: 40 MHz Signal Bandwidth - Channel 157 (159)



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6. Measurement Data (continued)

6.5. Peak Excursion of the Modulation Envelope (15.407(a)(6))

Requirement: The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission band-width whichever is less.

20 MHz Signal Bandwidth

Channel	Channel Frequency	Peak Excursion	Limit	Result
	GHz	dB	dB	
36	5.180	7.32	13	Compliant
40	5.200	7.53	13	Compliant
44	5.220	6.53	13	Compliant
149	5.745	8.37	13	Compliant
153	5.765	7.86	13	Compliant
161	5.805	8.25	13	Compliant

40 MHz Signal Bandwidth

Channel	Channel Frequency	Peak Excursion	Limit	Result
	GHz	dB	dB	
36/38	5.190	9.59	13	Compliant
44/46	5.230	8.67	13	Compliant
149/151	5.755	8.38	13	Compliant
157/159	5.795	8.47	13	Compliant

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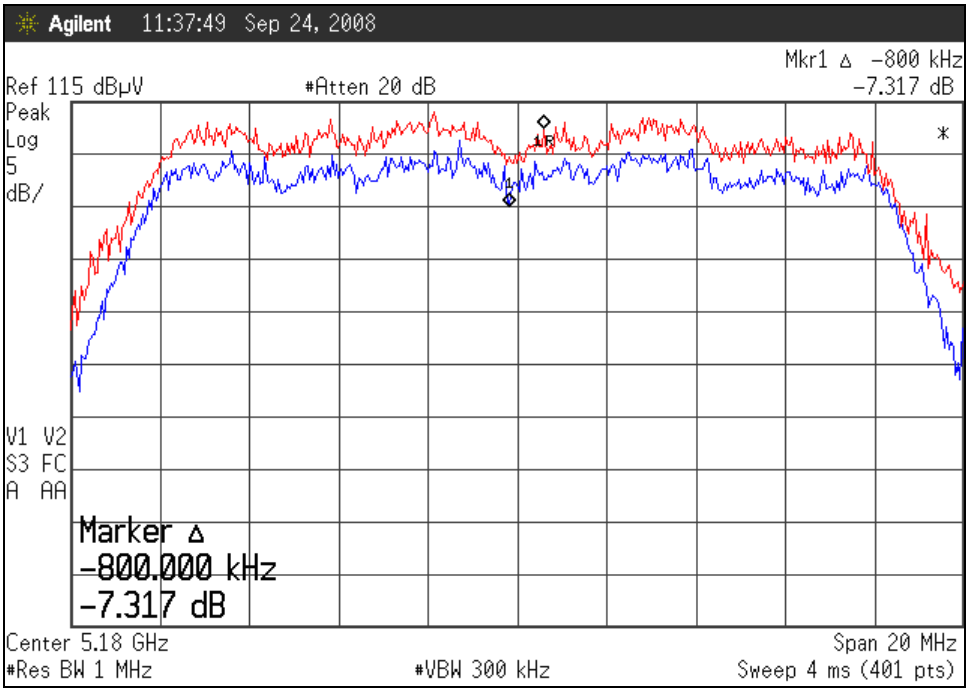
6. Measurement Data (continued)

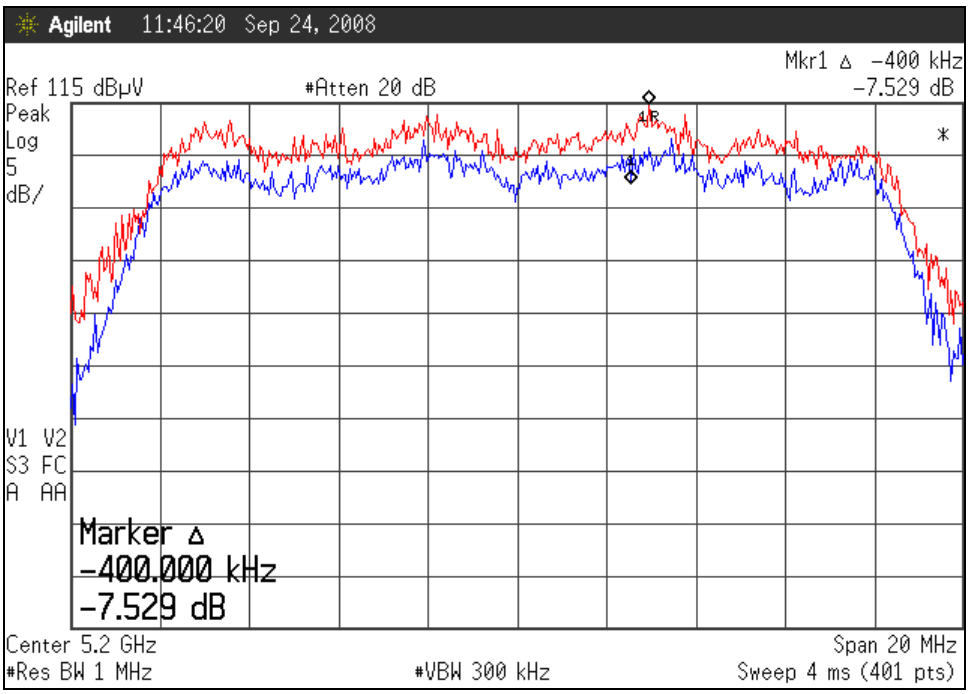
6.5. Peak Excursion of the Modulation Envelope (15.407(a)(6))

6.5.1. Peak Excursion of the Modulation Envelope Measurement Plots

6.5.1.1. Plot: 20 MHz Signal Bandwidth - Channel 36



6.5.1.2. Plot: 20 MHz Signal Bandwidth - Channel 40



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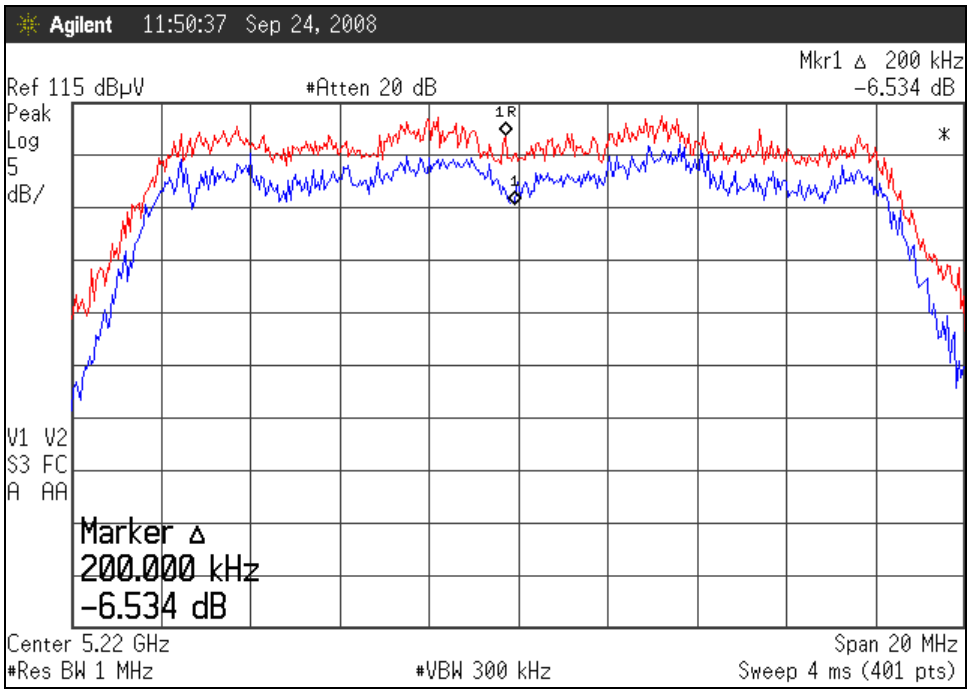
6. Measurement Data (continued)

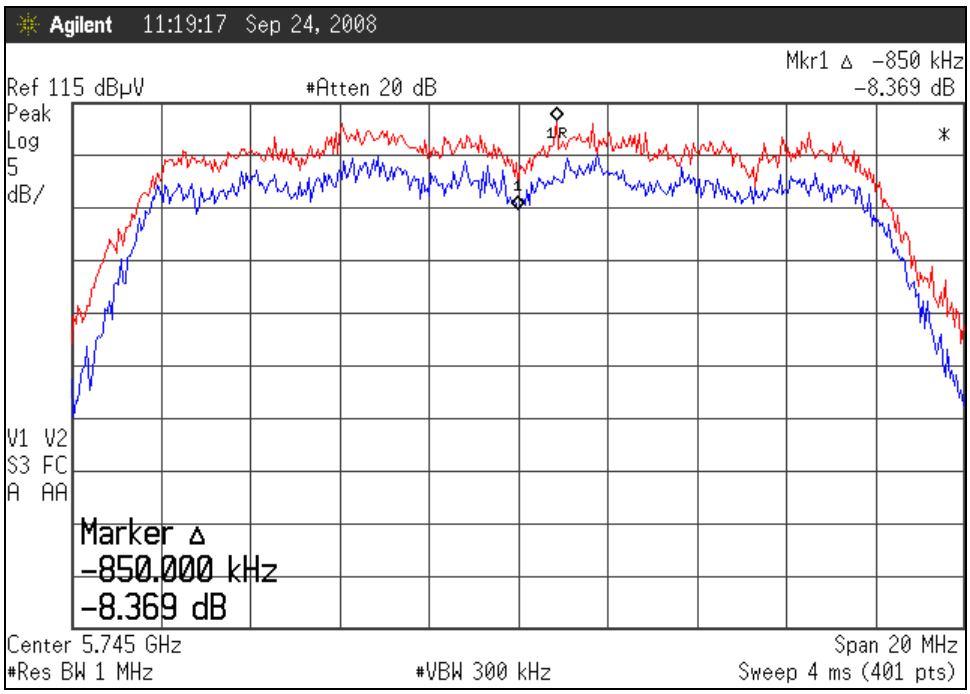
6.5. Peak Excursion of the Modulation Envelope (15.407(a)(6))

6.5.1. Peak Excursion of the Modulation Envelope Measurement Plots

6.5.1.3. Plot: 20 MHz Signal Bandwidth - Channel 44



6.5.1.4. Plot: 20 MHz Signal Bandwidth - Channel 149



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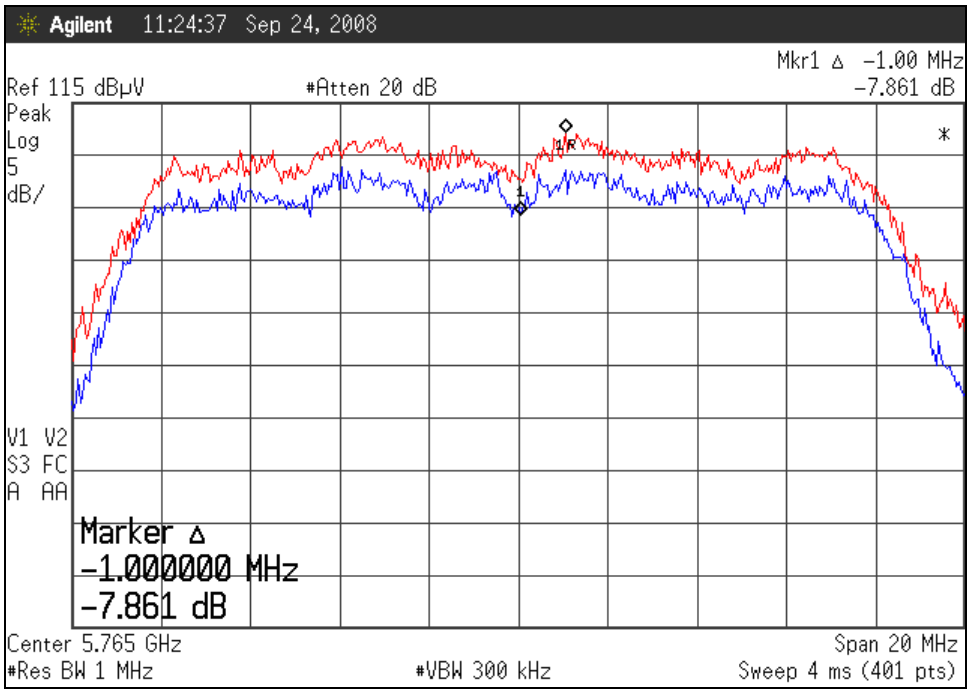
6. Measurement Data (continued)

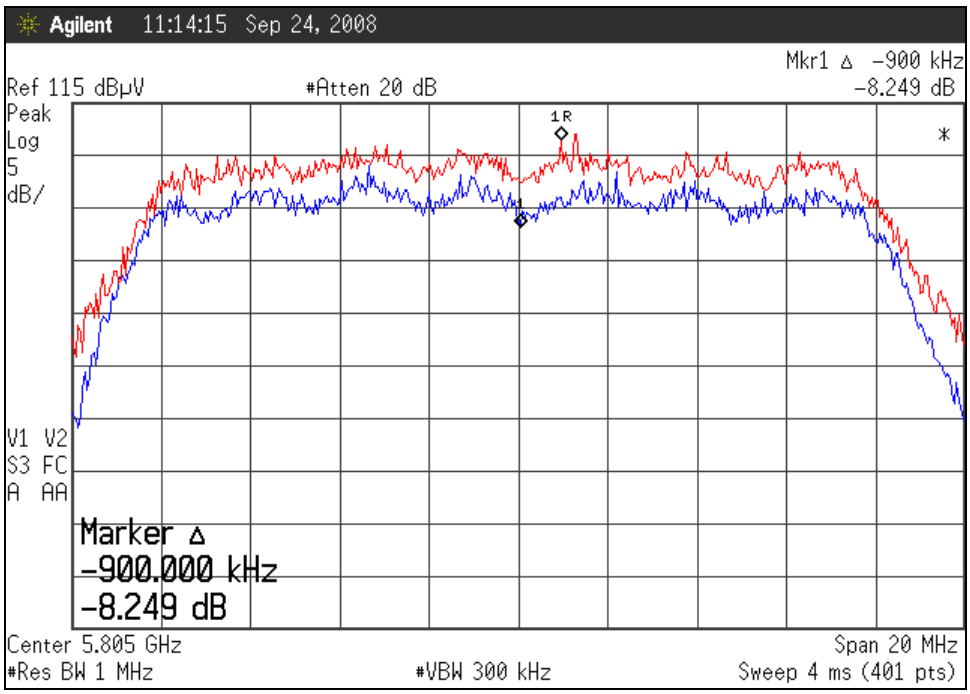
6.5. Peak Excursion of the Modulation Envelope (15.407(a)(6))

6.5.1. Peak Excursion of the Modulation Envelope Measurement Plots

6.5.1.5. Plot: 20 MHz Signal Bandwidth - Channel 153



6.5.1.6. Plot: 20 MHz Signal Bandwidth - Channel 161



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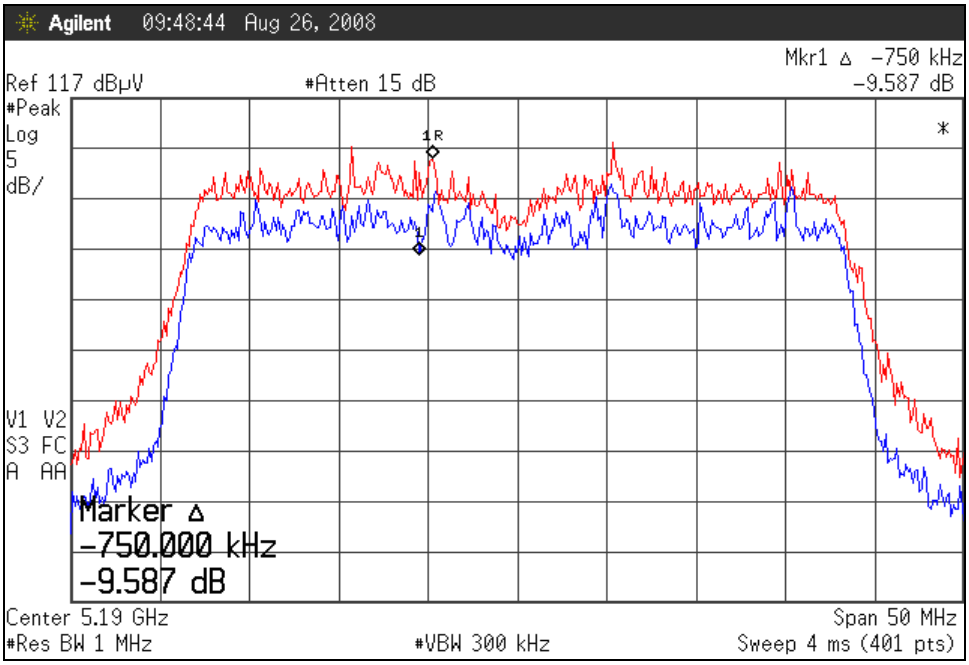
6. Measurement Data (continued)

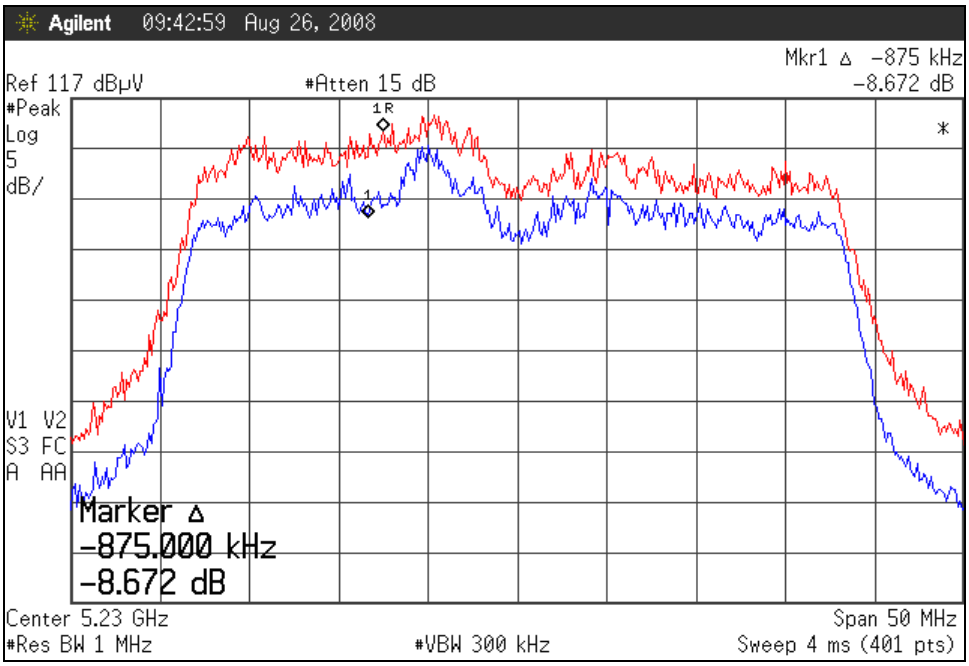
6.5. Peak Excursion of the Modulation Envelope (15.407(a)(6))

6.5.1. Peak Excursion of the Modulation Envelope Measurement Plots

6.5.1.7. Plot: 40 MHz Signal Bandwidth - Channel 36 (38)



6.5.1.8. Plot: 40 MHz Signal Bandwidth - Channel 44 (46)



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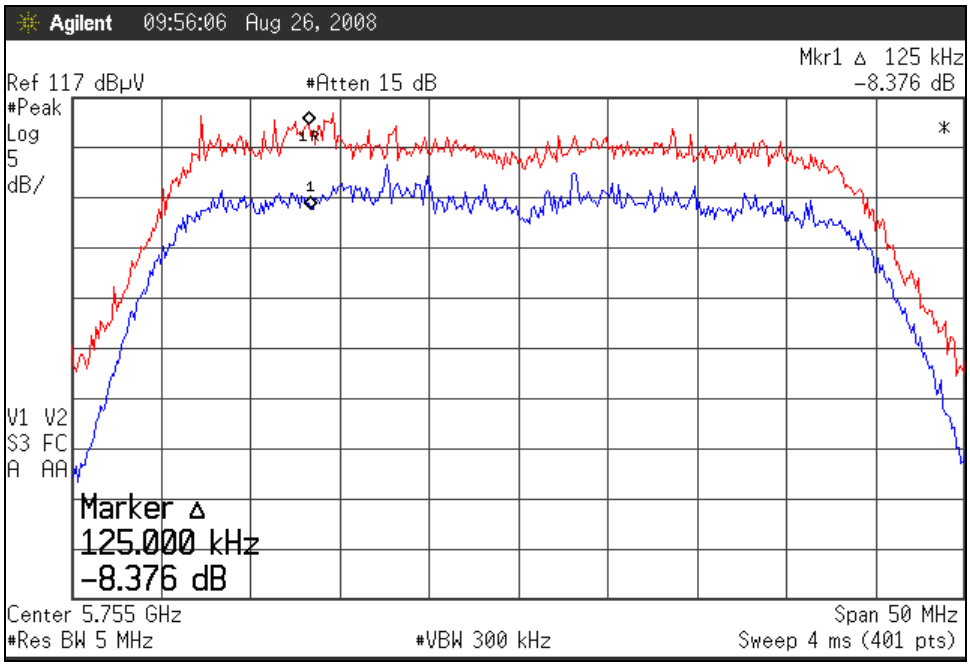
6. Measurement Data (continued)

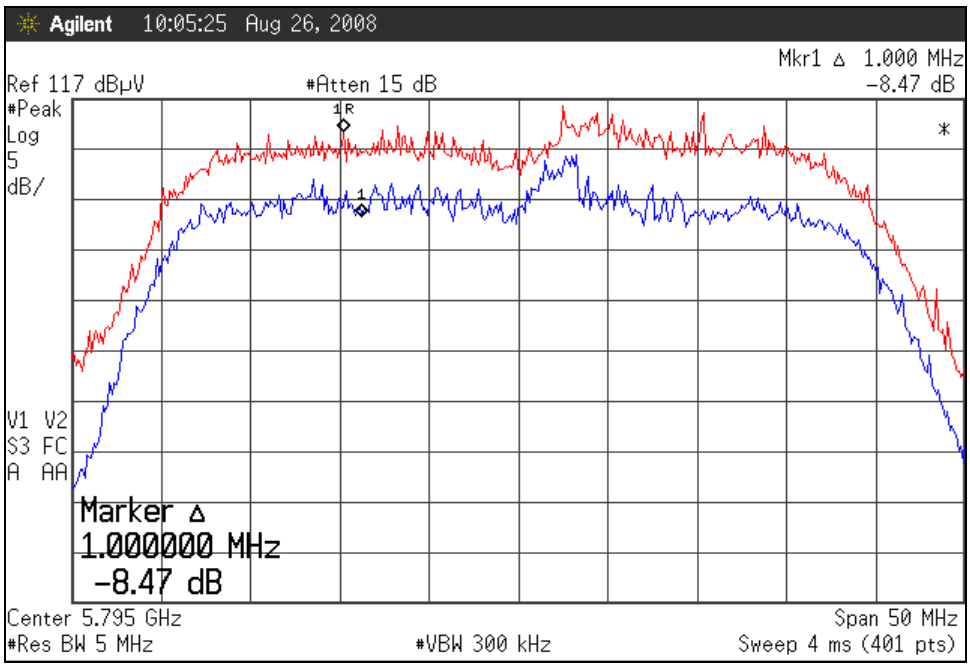
6.5. Peak Excursion of the Modulation Envelope (15.407(a)(6))

6.5.1. Peak Excursion of the Modulation Envelope Measurement Plots

6.5.1.9. Plot: 40 MHz Signal Bandwidth - Channel 149 (151)



6.5.1.10. Plot: 40 MHz Signal Bandwidth - Channel 157 (159)



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6. Measurement Data (continued)

6.6. Spurious Radiated Emissions (30 MHz to 1 GHz)

6.6.1. Regulatory Limit: FCC Part 209, Quasi-Peak

Frequency Range (MHz)	Distance (Meters)	Limit (dBµV/m)
30 to 88	3	40.0
88 to 216	3	43.5
216 to 960	3	46.0
960 to 1000	3	54.0

6.6.2. Measurement & Equipment Setup

Test Date:	08/29/2008
Test Engineer:	Brian Breault
Site Temperature (°C):	21.3
Relative Humidity (%RH):	31
Frequency Range:	30 MHz to 1 GHz
Measurement Distance:	3 Meters
EMI Receiver IF Bandwidth:	120 kHz
EMI Receiver Avg Bandwidth:	300 kHz
Detector Functions:	Peak and Quasi-Peak.
Antenna Height:	1 to 4 meters

6.6.3. Test Procedure

Test measurements were made in accordance with ANSI C63.4-2003, Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz.

6.6.4. Spurious Radiated Emissions (30 MHz to 1 GHz) Test Results

An emissions comparison of the DUT with and without the transmitter modules was made. There were no measurable emissions that could be attributed to the BlueSecure BSAP-1800 transmitter modules.

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6. Measurement Data (continued)

6.7. Spurious Radiated Emissions (Above 1 GHz) Part 1

6.7.1. Regulatory Limit: FCC Part 209, Average

Frequency Range (MHz)	Distance (Meters)	Limit (dBµV/m)
Above 1 GHz	3	54.0

6.7.2. Measurement & Equipment Setup

Test Date:	08/29/2008
Test Engineer:	Brian Breault
Site Temperature (°C):	21.3
Relative Humidity (%RH):	31
Frequency Range:	1 GHz to 40 GHz
Measurement Distance:	3 Meters
EMI Receiver IF Bandwidth:	1 MHz
EMI Receiver Avg Bandwidth:	3 MHz
Detector Functions:	Peak and Average
Antenna Height:	1 to 4 meters

6.7.3. Test Procedure

Test measurements were made in accordance with ANSI C63.4-2003, Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz.

6.7.4. Spurious Radiated Emissions (Above 1 GHz) Test Results

An emissions comparison of the DUT with and without the transmitter modules was made. There were no measurable emissions that could be attributed to the BlueSecure BSAP-1800 transmitter modules.

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6. Measurement Data (continued)

6.8. Spurious Radiated Emissions (Above GHz) Test Part 2

6.8.1. Channel 36 (5.15 – 5.25 GHz, Low Channel) 20 MHz Signal Bandwidth

Frequency (MHz)	Peak (dBµV)	Avg (dBµV)	Corr Factor (dB)	Average (dBµV/m)	Limit (dB)	Margin (dB)	Polarity (H/V)	Height (cm)	TT Pos (Deg)	Note
5180.000	---	---	---	---	---	---	---	---	---	Fundamental
10360.000	38.15	24.27	10.59	34.86	54.00	-19.14	V	102	300	
15540.000	37.98	24.63	10.23	34.86	54.00	-19.14	H	112	355	
20720.000	40.09	27.08	8.84	35.92	54.00	-18.08	V	100	300	Noise floor
25900.000	43.18	30.43	6.57	37.00	54.00	-17.00	---	---	---	Noise floor
31080.000	31.32		Included	17.97	54.00	-36.03	---	---	---	Noise floor
36260.000	31.08		Included	18.14	54.00	-35.86	---	---	---	Noise floor

6.8.2. Channel 40 (5.15 – 5.25 GHz, Middle Channel) 20 MHz Signal Bandwidth

Frequency (MHz)	Peak (dBµV)	Avg (dBµV)	Corr Factor (dB)	Average (dBµV/m)	Limit (dB)	Margin (dB)	Polarity (H/V)	Height (cm)	TT Pos (Deg)	Note
5200.000	---	---	---	---	---	---	---	---	---	Fundamental
10400.000	40.81	24.19	10.73	34.92	54.00	-19.08	H	139	85	
15600.000	37.67	25.49	10.26	35.75	54.00	-18.25	H	107	275	
20800.000	39.70	26.79	8.95	35.74	54.00	-18.26	V	100	300	Noise floor
26000.000	44.70	31.42	4.90	36.32	54.00	-17.68	---	---	---	Noise floor
31200.000	31.14		Included	18.01	54.00	-35.99	---	---	---	Noise floor
36400.000	31.37		Included	18.09	54.00	-35.91	---	---	---	Noise floor

6.8.3. Channel 44 (5.15 – 5.25 GHz, High Channel) 20 MHz Signal Bandwidth

Frequency (MHz)	Peak (dBµV)	Avg (dBµV)	Corr Factor (dB)	Average (dBµV/m)	Limit (dB)	Margin (dB)	Polarity (H/V)	Height (cm)	TT Pos (Deg)	Note
5220.000	---	---	---	---	---	---	---	---	---	Fundamental
10440.000	37.96	24.14	10.88	35.02	54.00	-18.98	H	112	80	
15660.000	38.17	24.88	10.30	35.18	54.00	-18.82	H	105	275	
20880.000	39.93	26.43	8.92	35.35	54.00	-18.65	V	105	290	Noise floor
26100.000	44.96	31.37	4.90	36.27	54.00	-17.73	---	---	---	Noise floor
31320.000	29.96		Included	17.92	54.00	-36.08	---	---	---	Noise floor
36540.000	28.99		Included	18.11	54.00	-35.89	---	---	---	Noise floor

6.8.4. Channel 149 (5.725 – 5.825 GHz, Low Channel) 20 MHz Signal Bandwidth

Frequency (MHz)	Peak (dBµV)	Avg (dBµV)	Corr Factor (dB)	Average (dBµV/m)	Limit (dB)	Margin (dB)	Polarity (H/V)	Height (cm)	TT Pos (Deg)	Note
5745.000	---	---	---	---	---	---	---	---	---	Fundamental
11490.000	43.18	28.11	8.51	36.62	54.00	-17.38	H	100	0	
17235.000	30.44	16.91	17.60	34.51	54.00	-19.49	H	100	80	
22980.000	37.31	23.11	11.88	34.99	54.00	-19.01	H	100	80	Noise floor
28725.000	31.47		Included	18.30	54.00	-35.70	---	---	---	Noise floor
34470.000	30.85		Included	18.31	54.00	-35.69	---	---	---	Noise floor

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6. Measurement Data (continued)

6.8. Spurious Radiated Emissions (Above GHz) Test Part 2

6.8.5. Channel 153 (5.725 – 5.825 GHz, Middle Channel) 20 MHz Signal Bandwidth

Frequency (MHz)	Peak (dBµV)	Avg (dBµV)	Corr Factor (dB)	Average (dBµV/m)	Limit (dB)	Margin (dB)	Polarity (H/V)	Height (cm)	TT Pos (Deg)	Note
5765.000	---	---	---	---	---	---	---	---	---	Fundamental
11530.000	39.58	26.62	8.54	35.16	54.00	-18.84	H	100	5	
17295.000	29.73	16.41	18.21	34.62	54.00	-19.38	H	112	275	
23060.000	37.13	23.14	11.78	34.92	54.00	-19.08	H	100	5	Noise floor
28825.000	32.10		Included	18.77	54.00	-35.23	---	---	---	Noise floor
34590.000	31.49		Included	18.21	54.00	-35.79	---	---	---	Noise floor

6.8.6. Channel 161 (5.725 – 5.825 GHz, High Channel) 20 MHz Signal Bandwidth

Frequency (MHz)	Peak (dBµV)	Avg (dBµV)	Corr Factor (dB)	Average (dBµV/m)	Limit (dB)	Margin (dB)	Polarity (H/V)	Height (cm)	TT Pos (Deg)	Note
5805.000	---	---	---	---	---	---	---	---	---	Fundamental
11610.000	39.89	26.76	8.69	35.45	54.00	-18.55	H	105	85	
17415.000	28.44	14.73	19.40	34.13	54.00	-19.87	H	105	280	
23220.000	36.67	22.77	11.90	34.67	54.00	-19.33	H	105	280	Noise floor
29025.000	30.78		Included	18.16	54.00	-35.84	---	---	---	Noise floor
34830.000	30.32		Included	18.72	54.00	-35.28	---	---	---	Noise floor

6.8.7. Channel 36 (38) (5.15 – 5.25 GHz, Low Channel) 40 MHz Signal Bandwidth

Frequency (MHz)	Peak (dBµV)	Avg (dBµV)	Corr Factor (dB)	Average (dBµV/m)	Limit (dB)	Margin (dB)	Polarity (H/V)	Height (cm)	TT Pos (Deg)	Note
5190.000	---	---	---	---	---	---	---	---	---	Fundamental
10380.000	49.52	35.36	7.98	43.34	54.00	-10.66	H	120	80	
15570.000	49.90	36.12	10.38	46.50	54.00	-7.50	V	137	90	
20760.000	48.76	35.88	8.82	44.70	54.00	-9.30	---	---	---	Noise floor
25950.000	50.93	37.87	13.90	51.14	54.00	-2.86	---	---	---	Noise floor
31140.000	35.16	21.45	Included	21.45	54.00	-32.55	---	---	---	Noise floor
36330.000	35.37	21.39	Included	21.39	54.00	-32.61	---	---	---	Noise floor

6.8.8. Channel 44 (46) (5.15 – 5.25 GHz, High Channel) 40 MHz Signal Bandwidth

Frequency (MHz)	Peak (dBµV)	Avg (dBµV)	Corr Factor (dB)	Avg (dBµV/m)	Limit (dB)	Margin (dB)	Polarity (H/V)	Height (cm)	TT Pos (Deg)	Note
5230.000	---	---	---	---	---	---	---	---	---	Fundamental
10460.000	48.85	35.01	8.52	43.53	54.00	-10.47	H	121	280	
15690.000	48.93	35.96	10.95	46.91	54.00	-7.09	H	120	80	
20920.000	47.90	34.55	8.86	43.41	54.00	-10.59	---	---	---	Noise floor
26150.000	49.44	36.16	13.89	50.05	54.00	-3.95	---	---	---	Noise floor
31380.000	34.70	21.68	Included	21.68	54.00	-32.32	---	---	---	Noise floor
36610.000	34.40	21.12	Included	21.12	54.00	-32.88	---	---	---	Noise floor

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6. Measurement Data (continued)

6.8. Spurious Radiated Emissions (Above GHz) Test Part 2

6.8.9. Channel 149 (151) (5.725 – 5.825 GHz, Low Channel) 40 MHz Signal Bandwidth

Frequency (MHz)	Peak (dBµV)	Avg (dBµV)	Corr Factor (dB)	Avg (dBµV/m)	Limit (dB)	Margin (dB)	Polarity (H/V)	Height (cm)	TT Pos (Deg)	Note
5755.000	---	---	---	---	---	---	---	---	---	Fundamental
11510.000	46.76	35.09	8.51	43.60	54.00	-10.40	V	100	280	
17265.000	47.55	35.24	12.57	47.81	54.00	-6.19	---	---	---	Noise floor
23020.000	47.41	33.94	13.22	47.16	54.00	-6.84	---	---	---	Noise floor
28775.000	36.51	23.31	Included	23.31	54.00	-30.69	---	---	---	Noise floor
34530.000	34.12	21.38	Included	21.38	54.00	-32.62	---	---	---	Noise floor

6.8.10. Chan. 157 (159) (5.725 – 5.825 GHz, High Channel) 40 MHz Signal Bandwidth

Frequency (MHz)	Peak (dBµV)	Avg (dBµV)	Corr Factor (dB)	Avg (dBµV/m)	Limit (dB)	Margin (dB)	Polarity (H/V)	Height (cm)	TT Pos (Deg)	Note
5795.000	---	---	---	---	---	---	---	---	---	Fundamental
11590.000	48.68	35.51	8.59	44.10	54.00	-9.90	H	120	80	
17385.000	48.18	35.98	12.61	48.59	54.00	-5.41	H	120	80	
23180.000	48.67	34.96	11.88	46.84	54.00	-7.16	---	---	---	Noise floor
28975.000	36.69	23.17	Included	23.17	54.00	-30.83	---	---	---	Noise floor
34770.000	35.19	21.46	Included	21.46	54.00	-32.54	---	---	---	Noise floor

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6. Measurement Data (continued)

6.9. Band Edge Measurements

6.9.1. Lower and Upper Band Edge (15.407(b)(1)), 15.215(c)

Requirement: For transmitters operating in the 5.15–5.25 GHz band: All emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. In addition, the provisions of § 15.205 apply to intentional radiators operating under this section. Also under 15.215(c) the emission at the band edge shall be 20 dB down from the carrier.

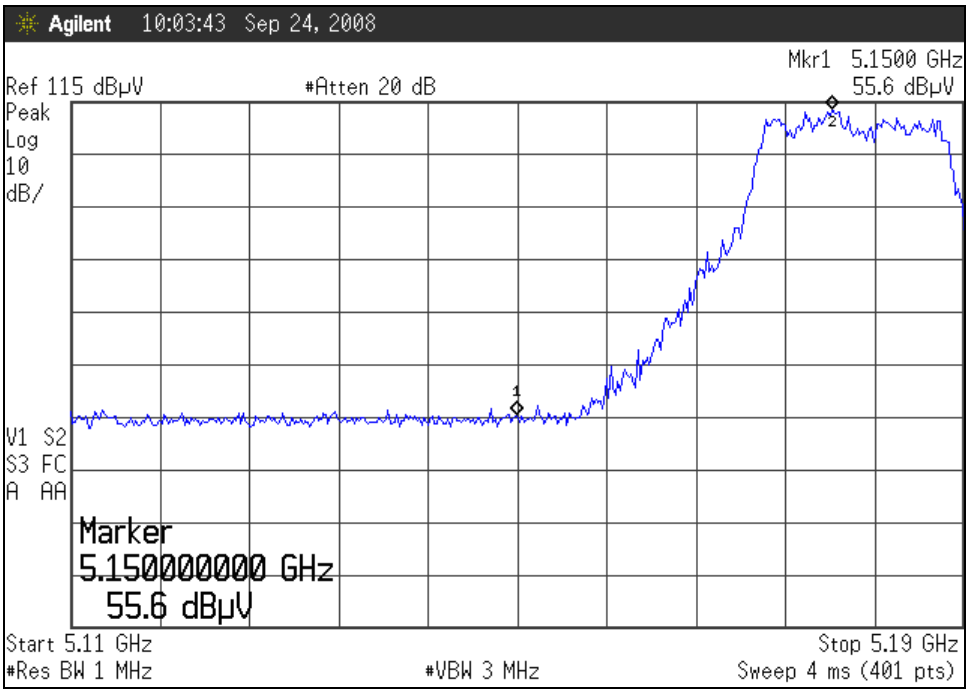
20 MHz Signal Bandwidth

Chan.	Chan. Freq.	Field Strength Peak	Band Edge	Field Strength Average	15.407 Limit		15.205 Limit Average	Result
	GHz	dBµV/m	GHz	dBµV/m	EIRP	dBµV/m	dBµV/m	
36	5.180	113.50	5.150	46.4	-27 dBm/MHz	68.30	54.0	Compliant
44	5.220	112.40	5.350	45.7	-27 dBm/MHz	68.30	54.0	Compliant

40 MHz Signal Bandwidth

Chan.	Chan. Freq.	Field Strength Peak	Band Edge	Field Strength Average	15.407 Limit		15.205 Limit Average	Result
	GHz	dBµV/m	GHz	dBµV/m	EIRP	dBµV/m	dBµV/m	
36 (38)	5.190	112.80	5.150	44.3	-27 dBm/MHz	68.30	54.0	Compliant
44 (46)	5.230	111.60	5.350	43.4	-27 dBm/MHz	68.30	54.0	Compliant

6.9.1.1. Lower Band Edge – Channel 36, 20 MHz Signal Bandwidth



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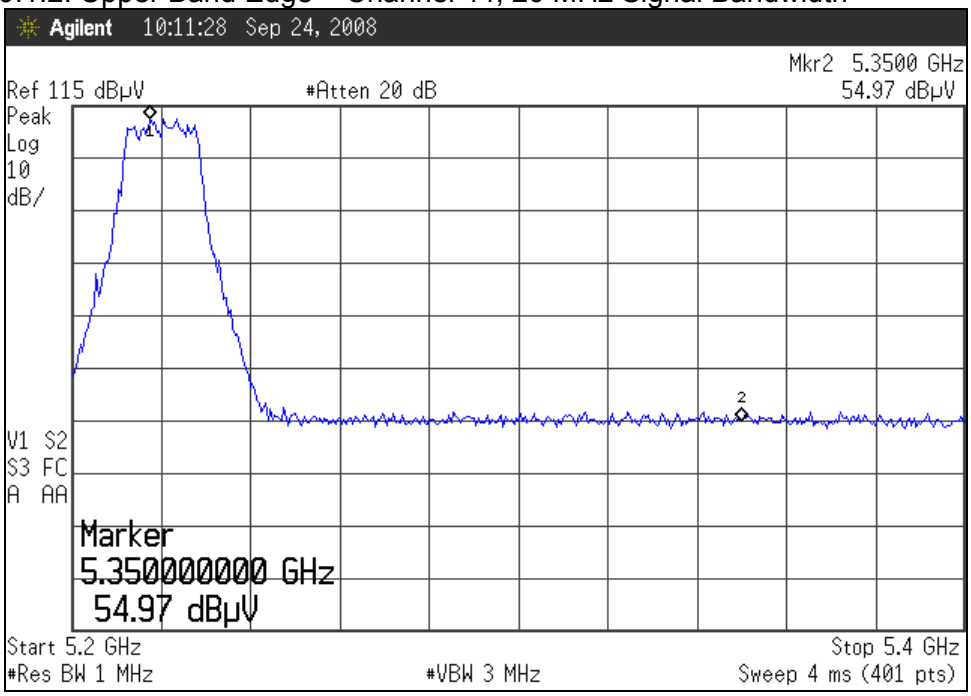
6. Measurement Data (continued)

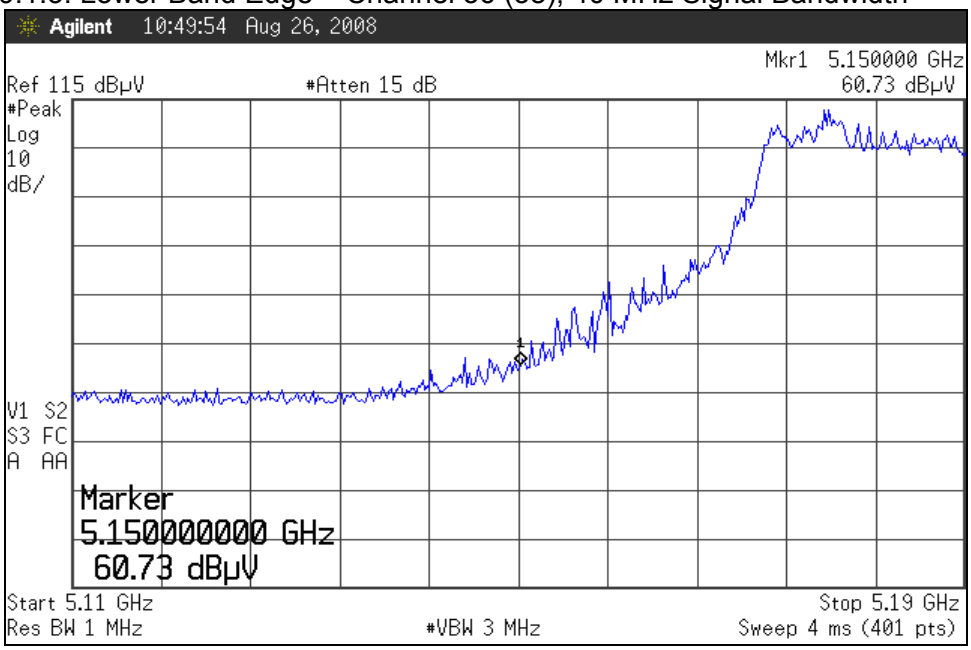
6.9. Band Edge Measurements

6.9.1. Lower and Upper Band Edge (15.407(b)(1)), 15.215(c)

6.9.1.2. Upper Band Edge – Channel 44, 20 MHz Signal Bandwidth



6.9.1.3. Lower Band Edge – Channel 36 (38), 40 MHz Signal Bandwidth



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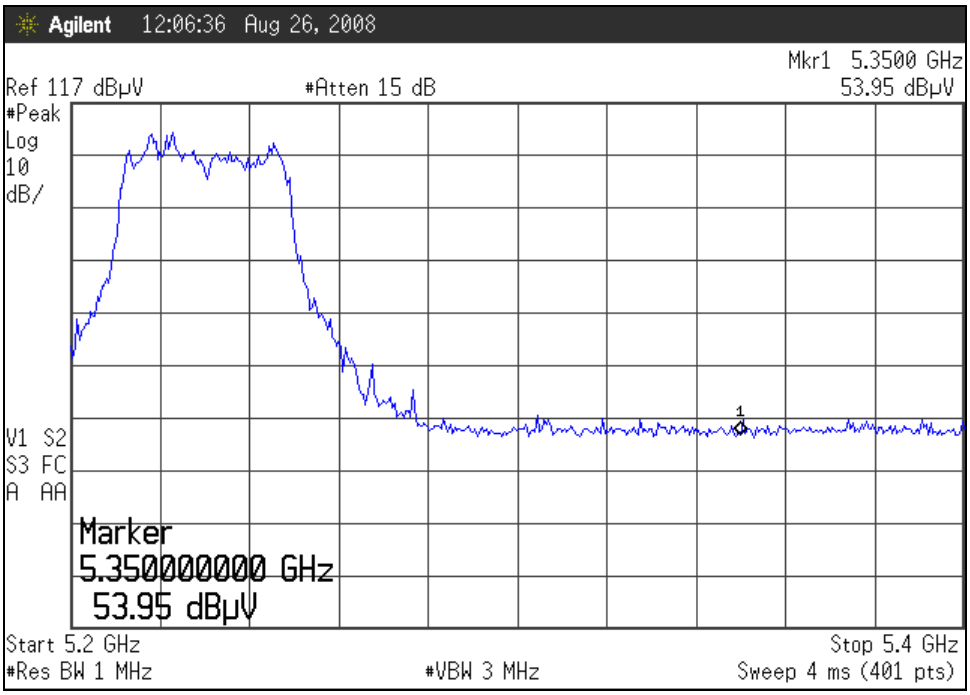
6. Measurement Data (continued)

6.9. Band Edge Measurements

6.9.1. Lower and Upper Band Edge (15.407(b)(1)), 15.215(c)

6.9.1.4. Upper Band Edge – Channel 44 (46), 40 MHz Signal Bandwidth



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6. Measurement Data (continued)

6.9. Band Edge Measurements

6.9.2. Lower and Upper Band Edge (15.407(b)(4))

Requirement: For transmitters operating in the 5.725–5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of –17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of –27 dBm/MHz.

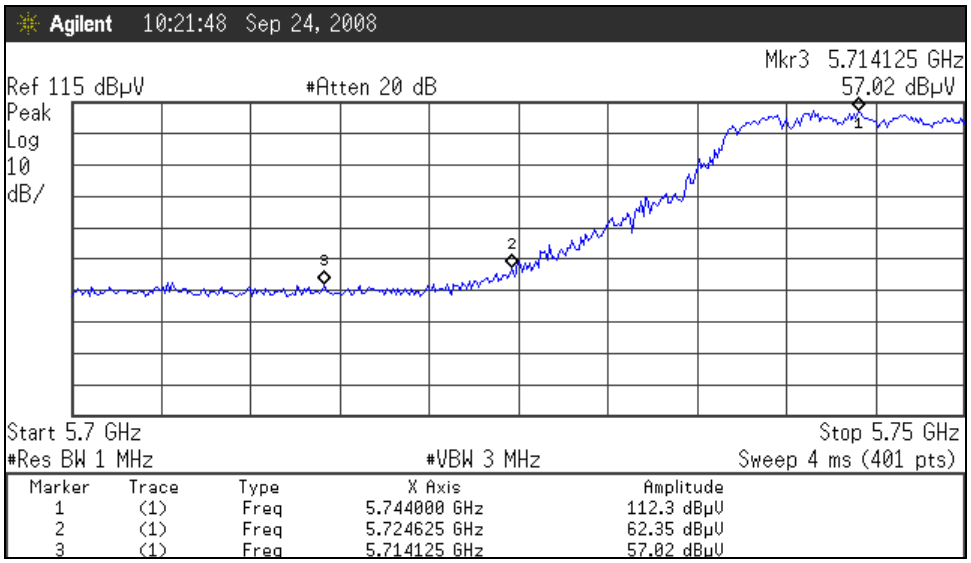
20 MHz Signal Bandwidth

Chan	Chan. Freq.	Worst Case Emission - 1st 10 MHz Band				Worst Case Emission - >10 MHz				Result
		Freq	Field Strength	15.407 Limit		Freq	Field Strength	15.407 Limit		
	GHz	GHz	dBµV/m	EIRP (dBm/MHz)	dBµV/m (Av)	GHz	dBµV/m	EIRP (dBm/MHz)	dBµV/m (Av)	
149	5.745	5.72463	47.46	-17	78.3	5.71413	45.60	-27	68.3	Compliant
161	5.805	5.82538	47.47	-17	78.3	5.84325	45.81	-27	68.3	Compliant

40 MHz Signal Bandwidth

Chan	Chan. Freq.	Worst Case Emission - 1st 10 MHz Band				Worst Case Emission - >10 MHz				Result
		Freq	Field Strength	15.407 Limit		Freq	Field Strength	15.407 Limit		
	GHz	GHz	dBµV/m	EIRP (dBm/MHz)	dBµV/m (Av)	GHz	dBµV/m	EIRP (dBm/MHz)	dBµV/m (Av)	
149 (151)	5.755	5.72388	46.43	-17	78.3	5.71425	44.72	-27	68.3	Compliant
157 (159)	5.795	5.82575	44.91	-17	78.3	5.83575	44.84	-27	68.3	Compliant

6.9.2.1. Lower Band Edge – Channel 149, 20 MHz Signal Bandwidth



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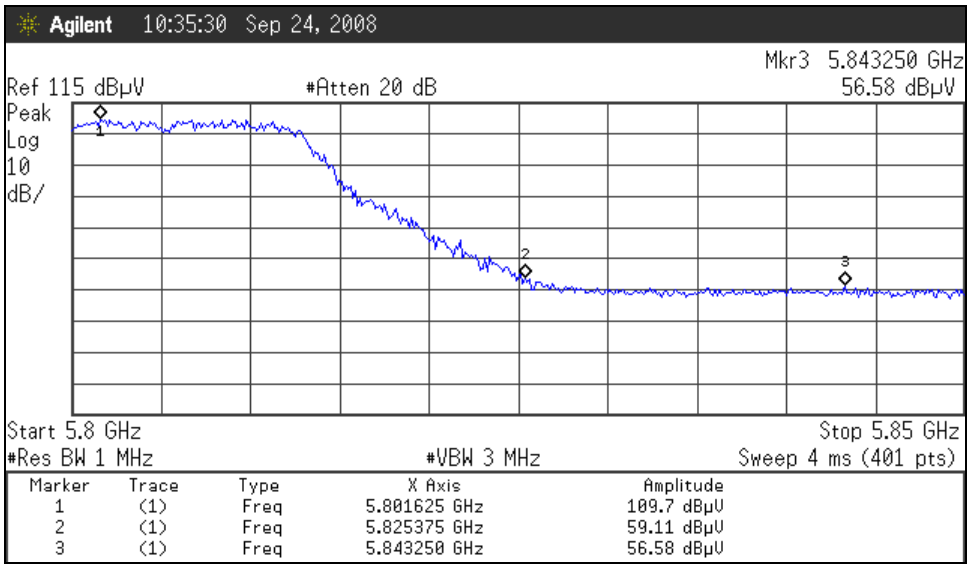
6. Measurement Data (continued)

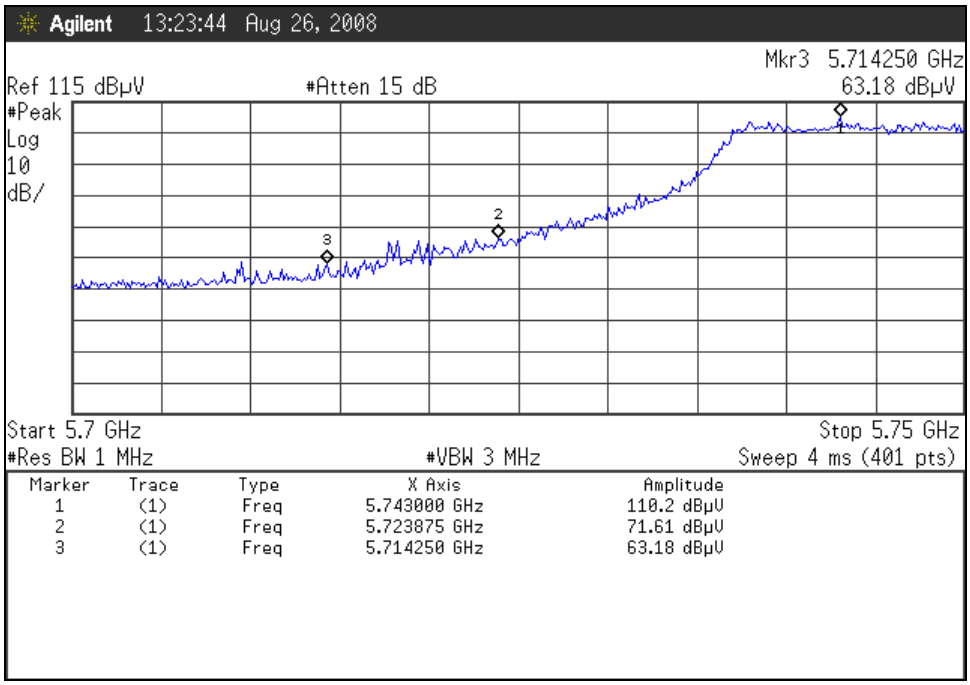
6.9. Band Edge Measurements

6.9.2. Lower and Upper Band Edge (15.407(b)(4))

6.9.2.2. Upper Band Edge – Channel 161, 20 MHz Signal Bandwidth



6.9.2.3. Lower Band Edge - Channel 149 (151), 40 MHz Signal Bandwidth



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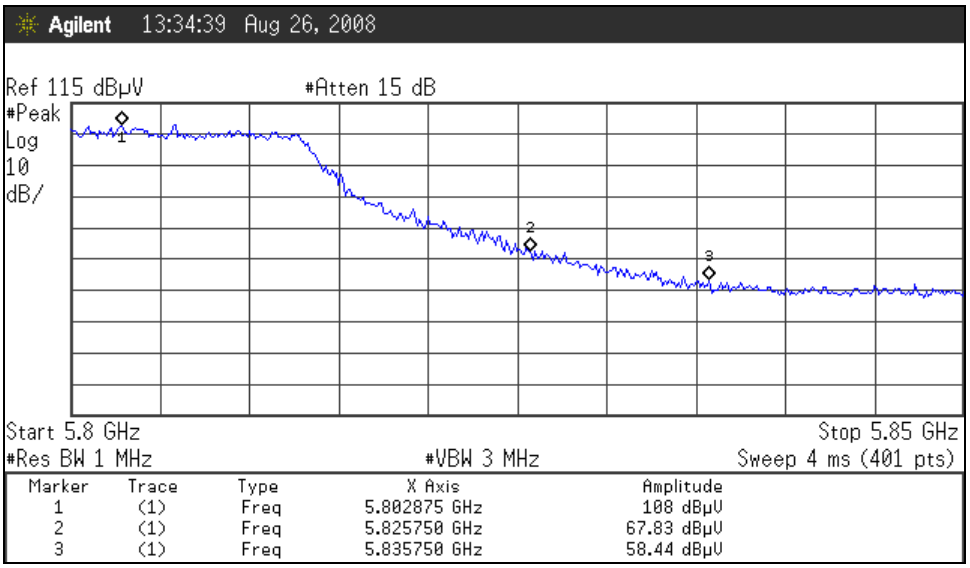
6. Measurement Data (continued)

6.9. Band Edge Measurements

6.9.2. Lower and Upper Band Edge (15.407(b)(4))

6.9.2.4. Upper Band Edge - Channel 157 (159), 40 MHz Signal Bandwidth



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6. Measurement Data (continued)

6.10. Public Exposure to Radio Frequency Energy Levels (15.407(f))

20 MHz Signal Bandwidth

Channel	MPE Distance (cm)	DUT Output Power (dBm)	DUT Antenna Gain (dBi)	Power Density		Limit (mW/cm^2)	Result
				(mW/cm^2)	(W/m^2)		
	(1)	(2)	(3)	(4)		(5)	
36	20	15.61	5.54	0.0259	0.2590	1	Compliant
40	20	15.39	5.54	0.0246	0.2462	1	Compliant
44	20	15.22	5.54	0.0237	0.2368	1	Compliant
149	20	17.89	5.06	0.0392	0.3924	1	Compliant
153	20	18.46	5.06	0.0447	0.4474	1	Compliant
161	20	20.12	5.06	0.0656	0.6557	1	Compliant

40 MHz Signal Bandwidth

Channel	MPE Distance (cm)	DUT Output Power (dBm)	DUT Antenna Gain (dBi)	Power Density		Limit (mW/cm^2)	Result
				(mW/cm^2)	(W/m^2)		
	(1)	(2)	(3)	(4)		(5)	
36 (38)	20	11.58	5.54	0.0103	0.1025	1	Compliant
44 (46)	20	12.45	5.54	0.0125	0.1252	1	Compliant
149 (151)	20	21.18	5.06	0.0837	0.8370	1	Compliant
157 (159)	20	20.11	5.06	0.0654	0.6542	1	Compliant

$$PD = \frac{OP + AG}{(4 \times \pi \times d^2)}$$

PD = Power Density
OP = DUT Output Power
AG = DUT Antenna Gain
d = MPE Distance

1. Reference CFR 2.1093(b): For purposes of this section, a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user.
2. Section 6.1.1 of this test report.
3. Data supplied by the client.
4. Power density is calculated from field strength measurement and antenna gain.
5. Reference CFR 1.1310, Table 1: Limits for Maximum Permissible Exposure (MPE), Section (B): Limits for General Population/Uncontrolled Exposure.

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6. Measurement Data (continued)

6.11. Frequency Stability (15.407(g))

Requirement: Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

20 MHz Signal Bandwidth

Chan.	Channel Freq.	Temp.	Operating Voltage	Meas. Frequency	Deviation		Limit	Result
	GHz	Deg. C[1]	VDC[2]	GHz	kHz	%	%	
36	5.180	0	40.8	5.1799937	0.0063	-0.000121	0.02	Compliant
			48.0	5.1799987	0.0013	-0.000024	0.02	Compliant
			55.2	5.1800025	0.0025	0.000048	0.02	Compliant
		21.6	40.8	5.1799862	0.0138	-0.000267	0.02	Compliant
			48.0	5.1799888	0.0112	-0.000216	0.02	Compliant
			55.2	5.1799824	0.0176	-0.000340	0.02	Compliant
		55	40.8	5.1799975	0.0025	-0.000049	0.02	Compliant
			48.0	5.1800000	0.0000	0.000000	0.02	Compliant
			55.2	5.1799786	0.0214	-0.000413	0.02	Compliant
40	5.200	0	40.8	5.2000013	0.0013	0.000024	0.02	Compliant
			48.0	5.1999925	0.0075	-0.000145	0.02	Compliant
			55.2	5.1999987	0.0013	-0.000024	0.02	Compliant
		21.6	40.8	5.1999437	0.0563	-0.001082	0.02	Compliant
			48.0	5.1999474	0.0526	-0.001011	0.02	Compliant
			55.2	5.1999525	0.0475	-0.000914	0.02	Compliant
		55	40.8	5.1999862	0.0138	-0.000266	0.02	Compliant
			48.0	5.1999899	0.0101	-0.000193	0.02	Compliant
			55.2	5.1999899	0.0101	-0.000193	0.02	Compliant
44	5.220	0	40.8	5.2199899	0.0101	-0.000193	0.02	Compliant
			48.0	5.2199959	0.0041	-0.000078	0.02	Compliant
			55.2	5.2199935	0.0065	-0.000124	0.02	Compliant
		21.6	40.8	5.2199874	0.0126	-0.000241	0.02	Compliant
			48.0	5.2199824	0.0176	-0.000337	0.02	Compliant
			55.2	5.2199600	0.0400	-0.000766	0.02	Compliant
		55	40.8	5.2199887	0.0113	-0.000217	0.02	Compliant
			48.0	5.2199987	0.0013	-0.000024	0.02	Compliant
			55.2	5.2199887	0.0113	-0.000217	0.02	Compliant

[1] Ambient conditions at the time of the test were 21.6 degrees at 31.6% RH
[2] External DC power supply voltage was varied ±15%

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6. Measurement Data (continued)

6.11. Frequency Stability (15.407(g)) (continued)

Requirement: Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

20 MHz Signal Bandwidth (continued)

Chan.	Channel Freq.	Temp.	Operating Voltage	Meas. Frequency	Deviation		Limit	Result
	GHz	Deg. C[1]	VDC[2]	GHz	kHz	%	%	
149	5.745	0	40.8	5.7449975	0.0025	-0.000044	0.02	Compliant
			48.0	5.7449912	0.0088	-0.000153	0.02	Compliant
			55.2	5.7449925	0.0075	-0.000131	0.02	Compliant
		21.6	40.8	5.7449761	0.0239	-0.000415	0.02	Compliant
			48.0	5.7449713	0.0287	-0.000499	0.02	Compliant
			55.2	5.7449749	0.0251	-0.000437	0.02	Compliant
		55	40.8	5.7450063	0.0063	0.000109	0.02	Compliant
			48.0	5.7449825	0.0175	-0.000305	0.02	Compliant
			55.2	5.7449888	0.0113	-0.000196	0.02	Compliant
153	5.765	0	40.8	5.7650148	0.0148	0.000258	0.02	Compliant
			48.0	5.7650075	0.0075	0.000131	0.02	Compliant
			55.2	5.7650151	0.0151	0.000261	0.02	Compliant
		21.6	40.8	5.7649462	0.0538	-0.000934	0.02	Compliant
			48.0	5.7649474	0.0526	-0.000912	0.02	Compliant
			55.2	5.7649512	0.0488	-0.000846	0.02	Compliant
		55	40.8	5.7649887	0.0113	-0.000196	0.02	Compliant
			48.0	5.7650109	0.0109	0.000190	0.02	Compliant
			55.2	5.7650050	0.0050	0.000087	0.02	Compliant
161	5.805	0	40.8	5.8050151	0.0151	0.000260	0.02	Compliant
			48.0	5.8050136	0.0136	0.000235	0.02	Compliant
			55.2	5.8050149	0.0149	0.000256	0.02	Compliant
		21.6	40.8	5.8049814	0.0186	-0.000321	0.02	Compliant
			48.0	5.8049799	0.0201	-0.000346	0.02	Compliant
			55.2	5.8049686	0.0314	-0.000541	0.02	Compliant
		55	40.8	5.8050013	0.0013	0.000022	0.02	Compliant
			48.0	5.8049975	0.0025	-0.000043	0.02	Compliant
			55.2	5.8049987	0.0013	-0.000022	0.02	Compliant

[1] Ambient conditions at the time of the test were 21.6 degrees at 31.6% RH
[2] External DC power supply voltage was varied ±15%

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6. Measurement Data (continued)

6.11. Frequency Stability (15.407(g)) (continued)

Requirement: Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

40 MHz Signal Bandwidth

Chan.	Channel Freq.	Temp.	Operating Voltage	Meas. Frequency	Deviation		Limit	Result
	GHz	Deg. C[1]	VDC[2]	GHz	kHz	%	%	
36/38	5.190	0	40.8	5.1899025	0.0975	-0.001879	0.02	Compliant
			48.0	5.1899913	0.0088	-0.000169	0.02	Compliant
			55.2	5.1900000	0.0000	0.000000	0.02	Compliant
		21.6	40.8	5.1899698	0.0303	-0.000583	0.02	Compliant
			48.0	5.1899700	0.0300	-0.000578	0.02	Compliant
			55.2	5.1899688	0.0313	-0.000602	0.02	Compliant
		55	40.8	5.1899943	0.0058	-0.000111	0.02	Compliant
			48.0	5.1900033	0.0032	0.000063	0.02	Compliant
			55.2	5.1900043	0.0042	0.000082	0.02	Compliant
44/46	5.230	0	40.8	5.2299988	0.0013	-0.000024	0.02	Compliant
			48.0	5.2296600	0.3400	-0.006501	0.02	Compliant
			55.2	5.2300100	0.0100	0.000191	0.02	Compliant
		21.6	40.8	5.2299873	0.0128	-0.000244	0.02	Compliant
			48.0	5.2299850	0.0150	-0.000287	0.02	Compliant
			55.2	5.2299843	0.0158	-0.000301	0.02	Compliant
		55	40.8	5.2300063	0.0063	0.000120	0.02	Compliant
			48.0	5.2300025	0.0025	0.000048	0.02	Compliant
			55.2	5.2300000	0.0000	0.000000	0.02	Compliant
149/151	5.755	0	40.8	5.7550075	0.0075	0.000130	0.02	Compliant
			48.0	5.7549925	0.0075	-0.000130	0.02	Compliant
			55.2	5.7550100	0.0100	0.000174	0.02	Compliant
		21.6	40.8	5.7549550	0.0450	-0.000782	0.02	Compliant
			48.0	5.7549600	0.0400	-0.000695	0.02	Compliant
			55.2	5.7549575	0.0425	-0.000738	0.02	Compliant
		55	40.8	5.7550263	0.0263	0.000456	0.02	Compliant
			48.0	5.7549888	0.0113	-0.000195	0.02	Compliant
			55.2	5.7549950	0.0050	-0.000087	0.02	Compliant
157/159	5.795	0	40.8	5.7950625	0.0625	0.001079	0.02	Compliant
			48.0	5.7950825	0.0825	0.001424	0.02	Compliant
			55.2	5.7941656	0.8344	-0.014400	0.02	Compliant
		21.6	40.8	5.7940000	1.0000	-0.017259	0.02	Compliant
			48.0	5.7942500	0.7500	-0.012944	0.02	Compliant
			55.2	5.7942750	0.7250	-0.012512	0.02	Compliant
		55	40.8	5.7950165	0.0165	0.000285	0.02	Compliant
			48.0	5.7950138	0.0138	0.000237	0.02	Compliant
			55.2	5.7950230	0.0230	0.000397	0.02	Compliant

[1] Ambient conditions at the time of the test were 21.6 degrees at 31.6% RH
[2] External DC power supply voltage was varied ±15%

6. Measurement Data (continued)

6.12. Power Line Conducted Emissions (15.207)

Requirement: For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

Test Note: A D-Link model DSA-0421S-50 1 24 power adapter was used to power the BSAP-1800. The power adapter was not serialized.

6.12.1 Power Line Conducted Emissions Test Setup

6.12.1.1 Regulatory Limit: (15.207) (FCC Part 15, Class B)

Frequency Range (MHz)	Limits (dBµV)	
	Quasi-Peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5.0	56	46
5.0 to 30.0	60	50
* Decreases with the logarithm of the frequency.		

6.12.1.2 Measurement Equipment Used to Perform Test

Device	Manufacturer	Model	Serial No.	Cal Due
EMI Receiver	Hewlett Packard	8546A	3330A00115	9/26/2009
LISN	EMCO	3825/2	9109-1860	2/18/2009

6.12.1.3 Measurement & Equipment Setup

Test Date:	8/29/2008
Test Engineer:	Brian Breault
Site Temperature (°C):	20.8
Relative Humidity (%RH):	30
Frequency Range:	0.15 MHz to 30 MHz
EMI Receiver IF Bandwidth:	9 kHz
EMI Receiver Avg Bandwidth:	30 kHz
Detector Functions:	Peak, Quasi-Peak. & Average

6.12.1.4 Test Procedure

Test measurements were made in accordance with ANSI C63.4-2003, Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz.

Note: The conducted emissions test data was taken from test number 173-08. The Bluesocket BlueSecure™ Access Point 1800 used for that test was also used for the testing outlined in this report.

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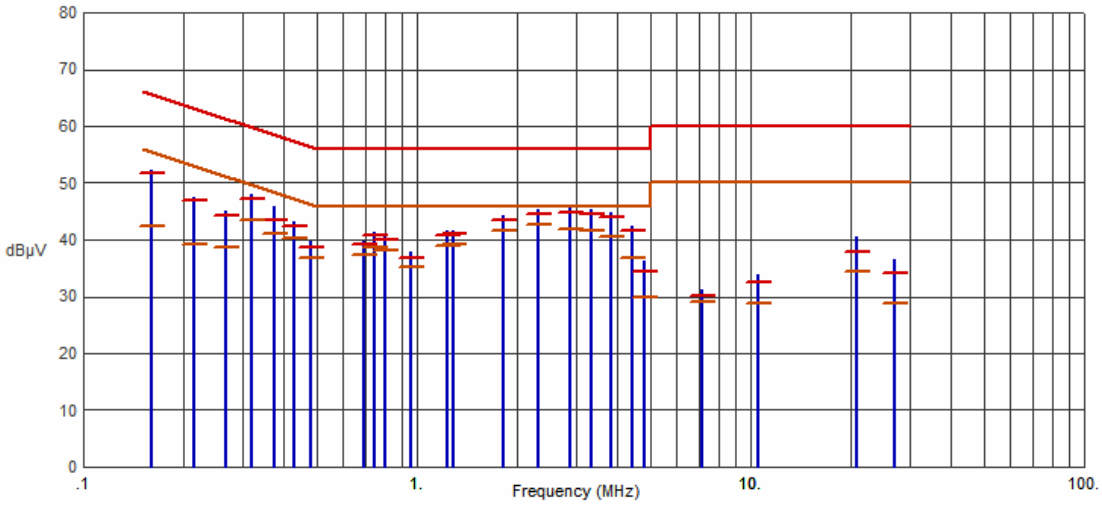
6. Measurement Data (continued)

6.12. Power Line Conducted Emissions Test Data (15.207) (continued)

6.12.2 Conducted Emissions Test Data

6.12.2.1 120 Volts, 60 Hz Phase

Test No.: 173-08, 120 Volts, 60 Hz Phase FCC, Class B



Frequency (MHz)	Pk Amp (dBµV)	QP Amp (dBµV)	QP Limit (dBµV)	QP Margin (dB)	Avg Amp (dBµV)	Avg Limit (dBµV)	Avg Margin (dB)	Comments
.1600	52.40	51.65	65.46	-13.81	42.49	55.46	-12.97	
.2141	47.49	46.86	63.04	-16.18	39.16	53.04	-13.88	
.2674	45.11	44.36	61.20	-16.84	38.54	51.20	-12.66	
.3212	47.87	47.27	59.68	-12.41	43.49	49.68	-6.19	
.3745	45.76	43.51	58.40	-14.89	41.12	48.40	-7.28	
.4279	43.16	42.43	57.29	-14.86	40.15	47.29	-7.14	
.4818	39.70	38.67	56.31	-17.64	36.74	46.31	-9.57	
.6952	39.83	39.12	56.00	-16.88	37.39	46.00	-8.61	
.7493	41.39	40.72	56.00	-15.28	38.72	46.00	-7.28	
.8019	41.03	39.88	56.00	-16.12	38.15	46.00	-7.85	
.9632	37.75	36.68	56.00	-19.32	35.23	46.00	-10.77	
1.2314	41.49	40.87	56.00	-15.13	38.99	46.00	-7.01	
1.2849	41.71	41.09	56.00	-14.91	39.29	46.00	-6.71	
1.8201	44.35	43.58	56.00	-12.42	41.56	46.00	-4.44	
2.3017	45.37	44.64	56.00	-11.36	42.75	46.00	-3.25	
2.8898	45.73	44.70	56.00	-11.30	41.85	46.00	-4.15	
3.3178	45.37	44.52	56.00	-11.48	41.61	46.00	-4.39	
3.8003	44.85	43.96	56.00	-12.04	40.50	46.00	-5.50	
4.4424	42.42	41.48	56.00	-14.52	36.80	46.00	-9.20	
4.8181	36.33	34.42	56.00	-21.58	29.98	46.00	-16.02	
7.1719	31.24	30.13	60.00	-29.87	29.07	50.00	-20.93	
10.4911	33.94	32.40	60.00	-27.60	28.68	50.00	-21.32	
20.8188	40.55	37.97	60.00	-22.03	34.38	50.00	-15.62	
26.9212	36.47	34.02	60.00	-25.98	28.67	50.00	-21.33	

Result: Passed

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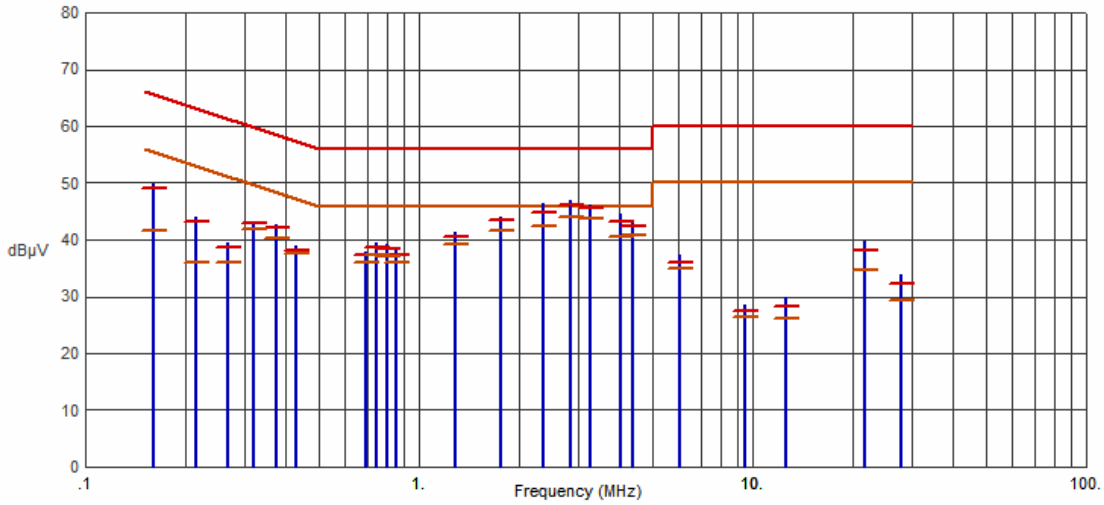
6. Measurement Data (continued)

6.12. Power Line Conducted Emissions (15.207) (continued)

6.12.2 Conducted Emissions Test Data (continued)

6.12.2.2 120 Volts, 60 Hz Neutral

Test No.: 173-08, 120 Volts, 60 Hz Neutral FCC, Class B



Frequency (MHz)	Pk Amp (dBµV)	QP Amp (dBµV)	QP Limit (dBµV)	QP Margin (dB)	Avg Amp (dBµV)	Avg Limit (dBµV)	Avg Margin (dB)	Comments
.1602	49.81	48.95	65.45	-16.50	41.58	55.45	-13.87	
.2138	44.03	43.33	63.06	-19.73	36.03	53.06	-17.03	
.2680	39.45	38.62	61.18	-22.56	35.87	51.18	-15.31	
.3212	43.17	42.81	59.68	-16.87	41.80	49.68	-7.88	
.3742	42.79	42.11	58.41	-16.30	40.22	48.41	-8.19	
.4284	38.81	38.20	57.28	-19.08	37.64	47.28	-9.64	
.6951	37.98	37.35	56.00	-18.65	36.07	46.00	-9.93	
.7490	39.58	38.76	56.00	-17.24	37.35	46.00	-8.65	
.8032	39.23	38.38	56.00	-17.62	37.09	46.00	-8.91	
.8558	38.55	37.26	56.00	-18.74	35.90	46.00	-10.10	
1.2848	41.35	40.47	56.00	-15.53	39.15	46.00	-6.85	
1.7658	44.05	43.40	56.00	-12.60	41.68	46.00	-4.32	
2.3556	46.28	44.72	56.00	-11.28	42.45	46.00	-3.55	
2.8359	47.00	46.09	56.00	-9.91	44.10	46.00	-1.90	
3.2649	46.17	45.55	56.00	-10.45	43.65	46.00	-2.35	
4.0143	44.49	43.16	56.00	-12.84	40.59	46.00	-5.41	
4.3890	43.40	42.49	56.00	-13.51	40.69	46.00	-5.31	
6.0473	37.45	35.91	60.00	-24.09	34.93	50.00	-15.07	
9.5280	28.52	27.48	60.00	-32.52	26.27	50.00	-23.73	
12.6312	29.86	28.21	60.00	-31.79	26.02	50.00	-23.98	
21.7871	39.85	38.01	60.00	-21.99	34.58	50.00	-15.42	
27.8874	33.98	32.21	60.00	-27.79	29.29	50.00	-20.71	

Result: Passed

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7. Test Site Description

Compliance Worldwide is located at 357 Main Street in Sandown, New Hampshire. The test sites at Compliance Worldwide are used for conducted and radiated emissions testing in accordance with Federal Communications Commission (FCC) and Industry Canada standards. A description of the test sites is on file with the FCC (registration number **96392**) and Industry Canada (file number **IC 3023)**.

The radiated emissions test site is a 3 and 10 meter enclosed open area test site (OATS). Personnel, support equipment and test equipment are located in the basement beneath the OATS ground plane.

The conducted emissions site is part of a 16' x 20' x 12' ferrite tile chamber and uses one of the walls for the vertical ground plane required by EN 55022.

Both sites are designed to test products or systems 1.5 meter W x 1.5 meter L x 2.0 meter H, floor standing or table top.

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