MET Laboratories, Inc. *Safety Certification - EMI - Telecom Environmental Simulation*
914 WEST PATAPSCO AVENUE • BALTIMORE, MARYLAND 21230-3432 • PHONE (410) 354-3300 • FAX (410) 354-3313
33439 WESTERN AVENUE • UNION CITY, CALIFORNIA 94587 • PHONE (510) 489-6300 • FAX (510) 489-6372
3162 BELICK STREET • SANTA CLARA, CA 95054 • PHONE (408) 748-3585 • FAX (510) 489-6372
13301 MCCALLEN PASS • AUSTIN, TEXAS 78753 • PHONE (512) 287-2500 • FAX (512) 287-2513

August 6, 2014

Fluidmesh Networks
1359 Barclay Blvd.
Buffalo Grove, Illinois 60089

Dear Alessandro Erta,

Enclosed is the EMC Wireless test report for compliance testing of the Fluidmesh Networks, FM1200V as tested to the requirements of Title 47 of the CFR, Ch. 1 (10-1-06 ed.), Title 47 of the CFR, Part 15.407 and RSS-210 Issue 8 December 2010 for Intentional Radiators.

Thank you for using the services of MET Laboratories, Inc. If you have any questions regarding these results or if MET can be of further service to you, please feel free to contact me.

Sincerely yours,
MET LABORATORIES, INC.

Jennifer Warnell
Documentation Department

Reference: (\Fluidmesh Networks\EMC40369-FCC407 Rev. 1)

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Electromagnetic Compatibility Criteria
Test Report

for the

Fluidmesh Networks
Model FM1200V

Tested under
the Certification Rules
contained in
Title 47 of the CFR, Part 15.407 & RSS-210
for Intentional Radiators

MET Report: EMC40369-FCC407 Rev. 1

August 6, 2014

Prepared For:

Fluidmesh Networks
1359 Barclay Blvd.
Buffalo Grove, Illinois 60089

Prepared By:
MET Laboratories, Inc.
914 W. Patapsco Ave.
Baltimore, MD 21230

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Djed Mouada, Project Engineer
Electromagnetic Compatibility Lab

Jennifer Warnell
Documentation Department

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of Part 15.407 of the FCC Rules and Industry Canada standard RSS-210 Issue 8 December 2010 under normal use and maintenance.

Asad Bajwa,
Director, Electromagnetic Compatibility Lab

Report Status Sheet

Revision	Report Date	Reason for Revision
∅	June 13, 2014	Initial Issue.
1	August 6, 2014	Editorial corrections.

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List of Terms and Abbreviations

AC	**A**lternating **C**urrent
ACF	**A**ntenna **C**orrection **F**actor
Cal	**Cal**ibration
d	**M**easurement **D**istance
dB	**D**eci**b**els
dBµA	**D**eci**b**els above one **micro**amp
dBµV	**D**eci**b**els above one **micro**volt
dBµA/m	**D**eci**b**els above one **micro**amp **per m**eter
dBµV/m	**D**eci**b**els above one **micro**volt **per m**eter
DC	**D**irect **C**urrent
E	**E**lectric Field
DSL	**D**igital **S**ubscriber **L**ine
ESD	**E**lectro**s**tatic **D**ischarge
EUT	**E**quipment **U**nder **T**est
f	**F**requency
FCC	**F**ederal **C**ommunications **C**ommission
GRP	**G**round **R**eference **P**lane
H	Magnetic Field
HCP	**H**orizontal **C**oupling **P**lane
Hz	**H**ert**z**
IEC	**I**nternational **E**lectrotechnical **C**ommission
kHz	**k**ilo**h**ert**z**
kPa	**k**ilo**pa**scal
kV	**k**ilo**v**olt
LISN	**L**ine **I**mpedance **S**tabilization **N**etwork
MHz	**M**ega**h**ertz
µH	**microh**enry
µ	**microf**arad
µs	**micros**econds
PRF	**P**ulse **R**epetition **F**requency
RF	**R**adio **F**requency
RMS	**R**oot-**M**ean-**S**quare
TWT	**T**raveling **W**ave **T**ube
V/m	**V**olts **per m**eter
VCP	**V**ertical **C**oupling **P**lane

I. Executive Summary

A. Purpose of Test

An EMC evaluation was performed to determine compliance of the Fluidmesh Networks FM1200V, with the requirements of Part 15, §15.407. All references are to the most current version of Title 47 of the Code of Federal Regulations in effect. In accordance with §2.1033, the following data is presented in support of the Certification of the FM1200V. Fluidmesh Networks should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the FM1200V, has been **permanently** discontinued.

B. Executive Summary

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, §15.407, in accordance with Fluidmesh Networks, purchase order number 4. All tests were conducted using measurement procedure ANSI C63.4-2003.

FCC Reference	IC Reference	Description	Results
§15.203	RSS-GEN 7.1.4	Antenna Requirements	Compliant
§15.207	RSS-GEN 7.2.2; RSS-210 2.2	AC Conducted Emissions 150KHz – 30MHz	Compliant
§15.403 (i)	A8.2	26dB Occupied Bandwidth	Compliant
§15.407 (a)(2)	A9.2(3)	Conducted Transmitter Output Power	Compliant
§15.407 (a)(2)	A9.2(3)	Power Spectral Density	Compliant
§15.407 (a)(6)	N/A	Peak Excursion	Compliant
§15.407 (b)(2), (3), (5), (6)	A9.3(4)	Undesirable Emissions (15.205/15.209 - General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Compliant
§15.407(f)	RSS-GEN	RF Exposure	Compliant
§15.407(g)	2.1	Frequency Stability	Compliant
15.407 (h)(2)(ii)	A9.2	Initial Channel Availability Check Time	Compliant
15.407 (h)	N/A	DFS Bandwidth	Compliant
15.407 (h)(1)	A9.2(2)(3)	TPC	Compliant
15.407 (h)(2)(ii)	A9.2	Radar Burst at the Beginning of Channel Availability Check Time	Compliant
15.407 (h)(2)(ii)	A9.2	Radar Burst at the End of Channel Availability Check Time	Compliant
15.407 (h)(2)(iii)	A9.2	Channel Move Time and Channel Closing Time	Compliant
15.407 (h)(2)(iv)	A9.2	Non-Occupancy Period	Compliant
15.407 (h)(2)	A9.2	Statistical Performance Check	Compliant

Table 1. Executive Summary of EMC Part 15.407 ComplianceTesting

II. Equipment Configuration

A. Overview

MET Laboratories, Inc. was contracted by Fluidmesh Networks to perform testing on the FM1200V, under Fluidmesh Networks's purchase order number 4.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the Fluidmesh Networks FM1200V.

The results obtained relate only to the item(s) tested.

Model(s) Tested:	FM1200V	
Model(s) Covered:	FM1200V	
EUT Specifications:	Primary Power: 120 VAC, 60 Hz	
	FCC ID: R5S-VOLO IC: 10745A-FV	
	Type of Modulations:	BPSK/QPSK/16-QAM/64-QAM
	Equipment Code:	NII
	Peak RF Output Power:	16.61 dBm
	EUT Frequency Ranges:	5280-5320 MHz 5500-5580 MHz 5670-5700 MHz
Analysis:	The results obtained relate only to the item(s) tested.	
Environmental Test Conditions:	Temperature: 15-35º C	
	Relative Humidity: 30-60%	
	Barometric Pressure: 860-1060 mbar	
Evaluated by:	Djed Mouada	
Report Date(s):	August 6, 2014	

Table 2. EUT Summary

B. References

CFR 47, Part 15, Subpart E	Unlicensed National Information Infrastructure Devices (UNII)
RSS-210 Issue 8 Dec. 2010	Low-power Licence-exempt Radiocommunications Devices (All Frequency Bands): Category I Equipment
RSS-GEN, Issue 3, Dec. 2010	General Requirements and Information for the Certification of Radio Apparatus
ANSI C63.4:2003	Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical And Electronic Equipment in the Range of 9 kHz to 40 GHz
ISO/IEC 17025:2005	General Requirements for the Competence of Testing and Calibration Laboratories
ANSI C63.10-2009	American National Standard for Testing Unlicensed Wireless Devices

Table 3. References

C. Test Site

All testing was performed at MET Laboratories, Inc., 914 W. Patapsco Ave., Baltimore, MD 21230. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

Radiated Emissions measurements were performed in a 3 meter semi-anechoic chamber (equivalent to an Open Area Test Site). In accordance with §2.948(a)(3), a complete site description is contained at MET Laboratories.

D. Description of Test Sample

The Fluidmesh Networks FM1200V, Equipment Under Test (EUT), is an WiFi AP with built-in 4.9GHz & 5GHz WLAN transceiver.

Photograph 1. Fluidmesh Networks FM1200V

E. Equipment Configuration

Ref. ID	Name / Description	Model Number	Part Number	Serial Number	Revision
NA	FM1200V	NA	NA	NA	NA

Table 4. Equipment Configuration

F. Support Equipment

Fluidmesh Networks supplied support equipment necessary for the operation and testing of the FM1200V. All support equipment supplied is listed in the following Support Equipment List.

Ref. ID	Name / Description	Manufacturer	Model Number
NA	PoE Adapter	NA	NA
NA	Notebook PC	NA	NA

Table 5. Support Equipment

G. Ports and Cabling Information

Ref. ID	Port Name on EUT	Cable Description	Qty.	Length (m)	Shielded (Y/N)	Termination Point
A	POE	Ethernet	1	NA	Y	NA
B	LAN	Ethernet	1	NA	Y	NA
C	NA	Power Cord	1	NA	N	NA

Table 6. Ports and Cabling Information

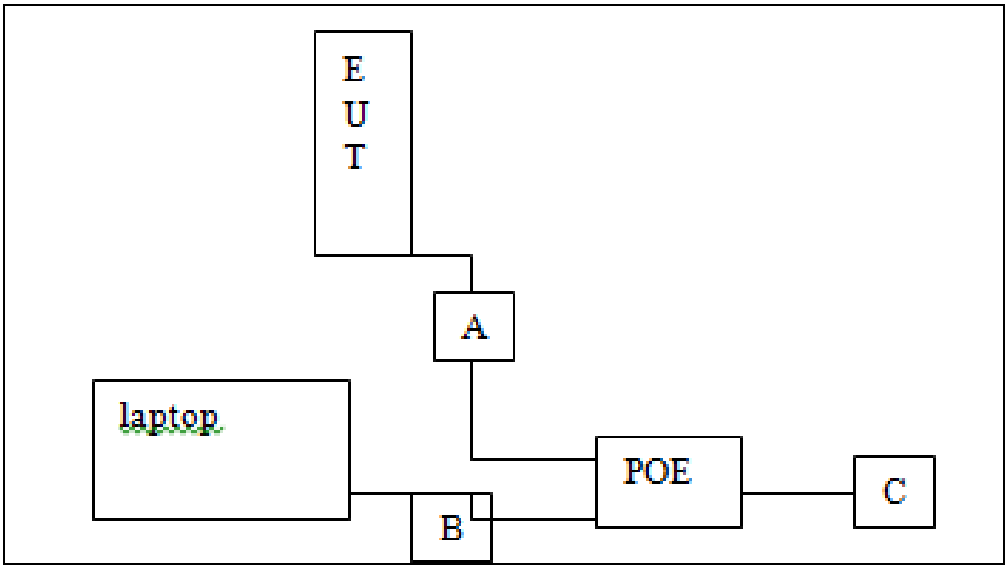


Figure 1. Block Diagram of Test Configuration

H. Mode of Operation

Refer to FM1200V Continuous transmission manual.pdf.
Modulations: BPSK, QPSK, 16-QAM, 64-QAM.
Data Rates: 20MHz/40MHz.

I. Modifications

a) Modifications to EUT

No modifications were made to the EUT.

b) Modifications to Test Standard

No modifications were made to the test standard.

J. Disposition of EUT

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to Fluidmesh Networks upon completion of testing.

III. Electromagnetic Compatibility Criteria for Intentional Radiators

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.203 Antenna Requirement

Test Requirement: **§ 15.203:** An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

The structure and application of the EUT were analyzed to determine compliance with Section 15.203 of the Rules. Section 15.203 states that the subject device must meet at least one of the following criteria:

a.) Antenna must be permanently attached to the unit.

b.) Antenna must use a unique type of connector to attach to the EUT.

c.) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

Results: The EUT as tested is compliant the criteria of §15.203. The EUT has an integral antenna.

Test Engineer(s): Djed Mouada

Test Date(s): 03/11/14

Electromagnetic Compatibility Criteria for Intentional Radiators

§15.207 Conducted Emissions Limits

Test Requirement(s): **§ 15.207 (a):** 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 30MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 Σ 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. The lower limit applies at the boundary between the frequency ranges.

Frequency range (MHz)	§ 15.207(a), Conducted Limit (dBμV)	
	Quasi-Peak	Average
* 0.15- 0.45	66 - 56	56 - 46
0.45 - 0.5	56	46
0.5 - 30	60	50

Table 7. Conducted Limits for Intentional Radiators from FCC Part 15 § 15.207(a)

Test Procedure: The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. The EUT was situated such that the back of the EUT was 0.4 m from one wall of the vertical ground plane, and the remaining sides of the EUT were no closer than 0.8 m from any other conductive surface. The EUT was powered from a 50 Ω/50 μH Line Impedance Stabilization Network (LISN). The EMC receiver scanned the frequency range from 150 kHz to 30 MHz. Conducted Emissions measurements were made in accordance with *ANSI C63.4-1992 "Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40 GHz"*. The measurements were performed over the frequency range of 0.15 MHz to 30 MHz using a 50 Ω/50 μH LISN as the input transducer to an EMC/field intensity meter.

Test Results: The EUT was compliant with the Class B requirement(s) of this section. Measured emissions were below the applicable limit.

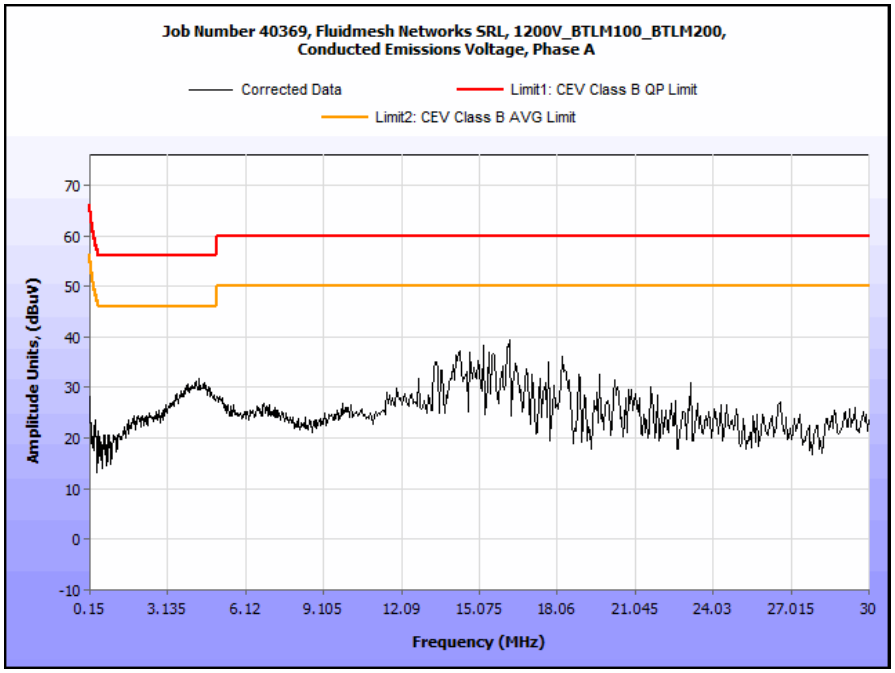
Test Engineer(s): Djed Mouada

Test Date(s): 03/20/14

Conducted Emissions - Voltage, AC Power

Frequency (MHz)	Uncorrected Meter Reading (dBuV) QP	Cable Loss (dB)	Corrected Measurement (dBuV) QP	Limit (dBuV) QP	Margin (dB) QP	Uncorrected Meter Reading (dBuV) Avg.	Cable Loss (dB)	Corrected Measurement (dBuV) Avg.	Limit (dBuV) Avg.	Margin (dB) Avg.
0.153	22.44	0	22.44	65.84	-43.4	10.67	0	10.67	55.84	-45.17
0.357	21.42	0	21.42	58.8	-37.38	10.75	0	10.75	48.8	-38.05
0.7602	15.21	0	15.21	56	-40.79	7.237	0	7.237	46	-38.763
4.33	26.36	0	26.36	56	-29.64	20.35	0	20.35	46	-25.65
15.53	18.98	0	18.98	60	-41.02	12.1	0	12.1	50	-37.9
23.1	22.97	0	22.97	60	-37.03	11.04	0	11.04	50	-38.96

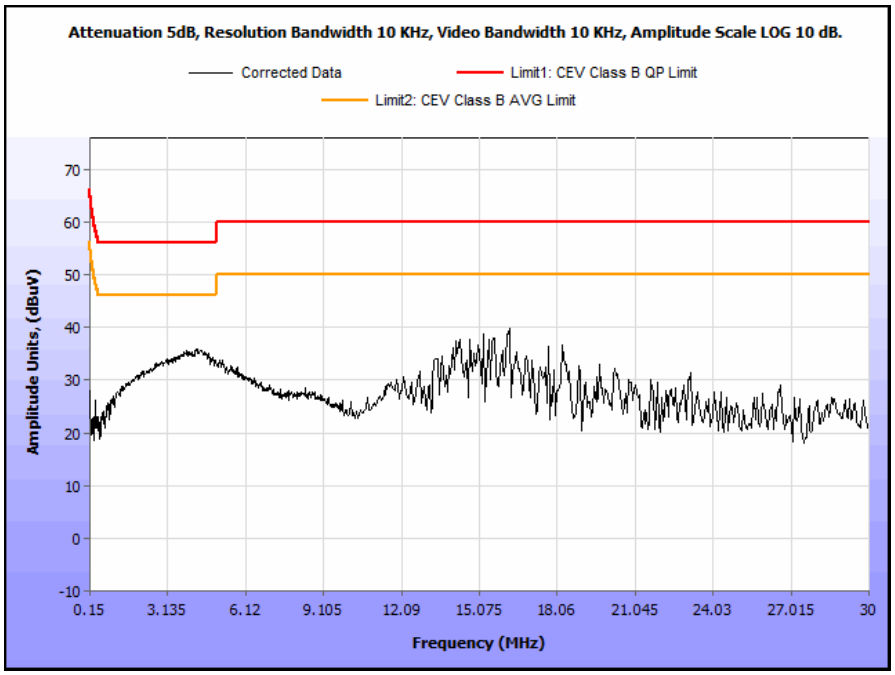
Table 8. Conducted Emissions - Voltage, AC Power, Phase Line



Plot 1. §15.207 Conducted Emissions, Phase Line

Frequency (MHz)	Uncorrected Meter Reading (dBuV) QP	Cable Loss (dB)	Corrected Measurement (dBuV) QP	Limit (dBuV) QP	Margin (dB) QP	Uncorrected Meter Reading (dBuV) Avg.	Cable Loss (dB)	Corrected Measurement (dBuV) Avg.	Limit (dBuV) Avg.	Margin (dB) Avg.
0.1522	23.26	0	23.26	65.88	-42.62	12.61	0	12.61	55.88	-43.27
0.3485	23.52	0	23.52	59	-35.48	18.5	0	18.5	49	-30.5
0.955	22.88	0	22.88	56	-33.12	17.61	0	17.61	46	-28.39
4.218	32.13	0	32.13	56	-23.87	26.86	0	26.86	46	-19.14
16.16	20.14	0	20.14	60	-39.86	12.19	0	12.19	50	-37.81
20.27	19.07	0	19.07	60	-40.93	13.53	0	13.53	50	-36.47

Table 9. Conducted Emissions - Voltage, AC Power, Neutral Line



Plot 2. §15.207 Conducted Emissions, Neutral Line

Conducted Emission Limits Test Setup

Photograph 2. Conducted Emissions, Test Setup

Electromagnetic Compatibility Criteria for Intentional Radiators

§15. 403(c) 26dB Bandwidth

Test Requirements: **§ 15.403 (i):** For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

Test Procedure: The transmitter was set to both operating frequencies at the highest output power and connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using a RBW approximately equal to 1% of the total emission bandwidth, VBW > RBW. The 26 dB Bandwidth was measured and recorded.

Test Results The 26 dB Bandwidth was compliant with the requirements of this section and was determined from the plots on the following pages.

Test Engineer(s): Djed Mouada

Test Date(s): 03/14/14

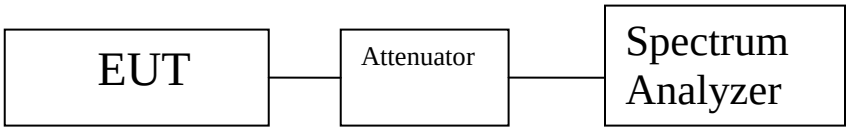


Figure 2. Occupied Bandwidth, Test Setup

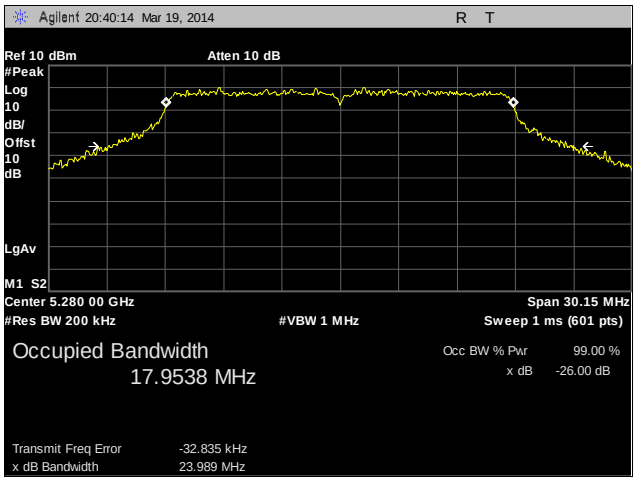
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
0	5280	23.989
	5300	23.243
	5310	50.548
	5320	24.209
	5500	23.834
	5510	46.678
	5550	48.528
	5580	24.926
	5670	47.189
	5700	23.868
1	5280	24.486
	5300	23.954
	5310	50.029
	5320	23.683
	5500	24.215
	5510	46.721
	5550	49.475
	5580	25.023
	5670	48.806
	5700	24.892

Table 10. 26 dB Occupied Bandwidth, Test Results

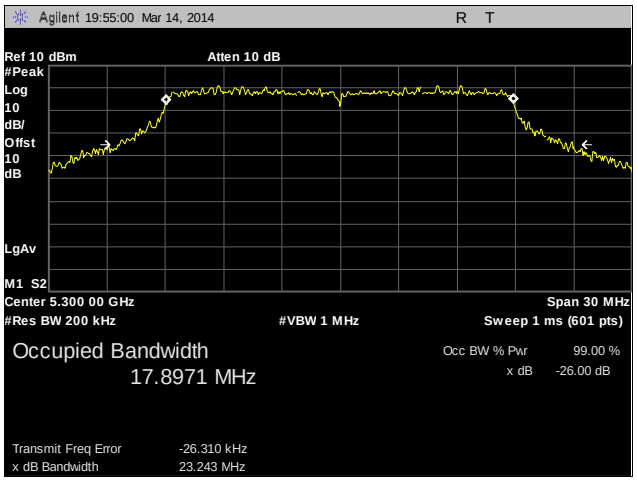
Channel	Frequency (MHz)	99% Bandwidth (MHz)
0	5280	17.5961
	5300	17.6794
	5310	36.1272
	5320	17.6790
	5500	17.7108
	5510	36.4193
	5550	36.2311
	5580	17.7815
	5670	36.2820
	5700	17.6757
1	5280	17.6713
	5300	17.7000
	5310	36.1617
	5320	17.6809
	5500	14.6959
	5510	36.3715
	5550	36.3962
	5580	17.7210
	5670	36.3209
	5700	17.7774

Table 11. 99% Occupied Bandwidth, Test Results

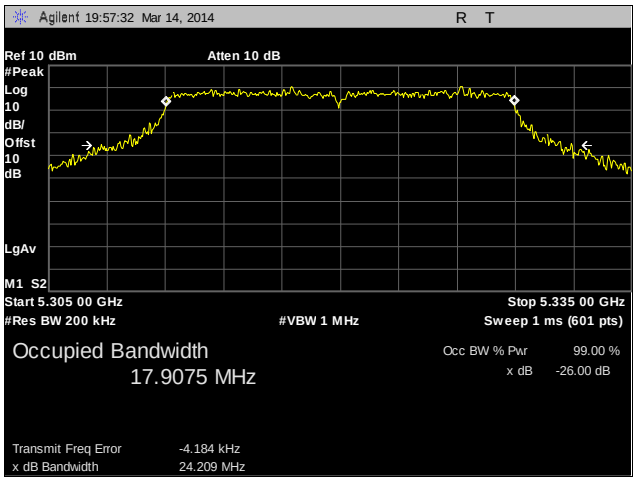
26 dB Occupied Bandwidth, 20 MHz, Channel 0



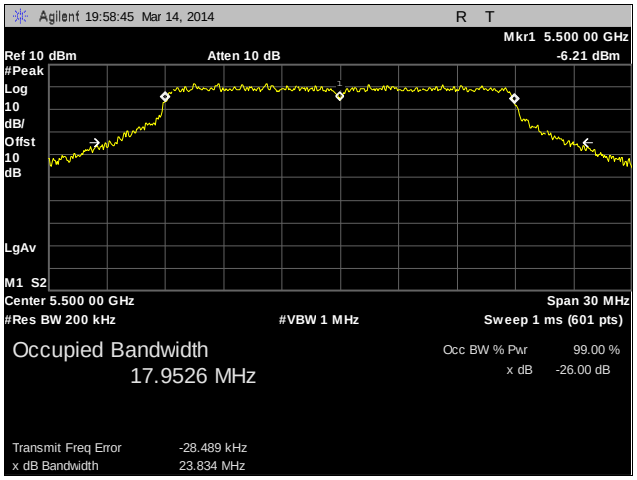
Plot 3. 26 dB Occupied Bandwidth, 20 MHz, 5280 MHz, Channel 0



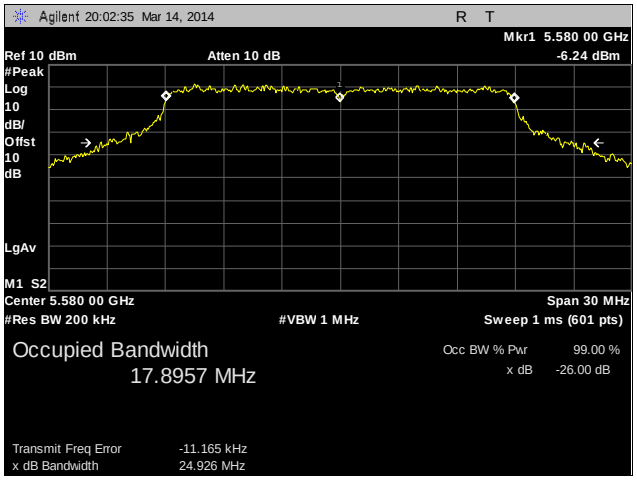
Plot 4. 26 dB Occupied Bandwidth, 20 MHz, 5300 MHz, Channel 0



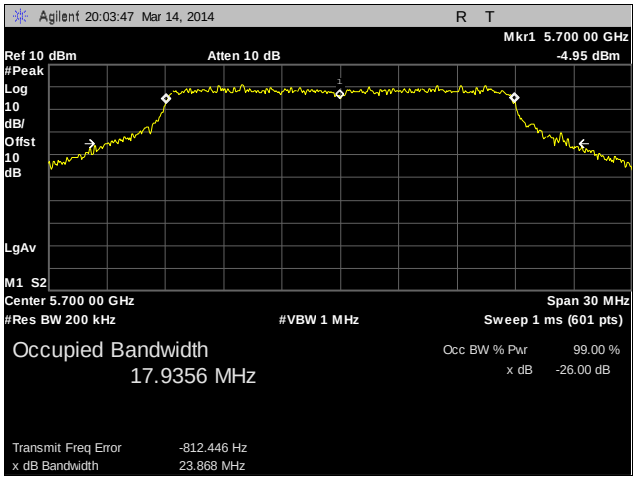
Plot 5. 26 dB Occupied Bandwidth, 20 MHz, 5320 MHz, Channel 0



Plot 6. 26 dB Occupied Bandwidth, 20 MHz, 5500 MHz, Channel 0

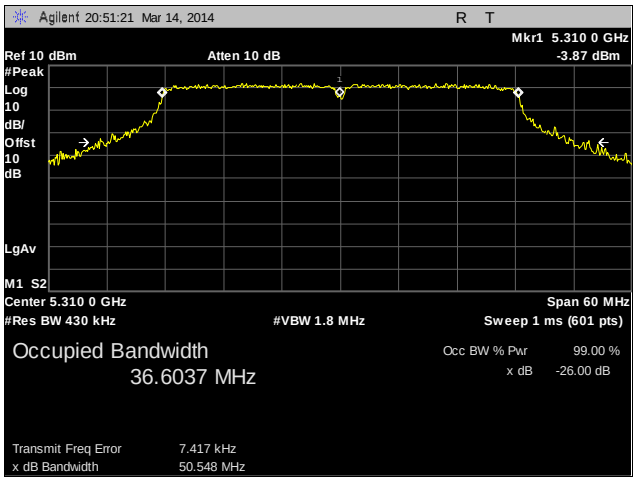


Plot 7. 26 dB Occupied Bandwidth, 20 MHz, 5580 MHz, Channel 0

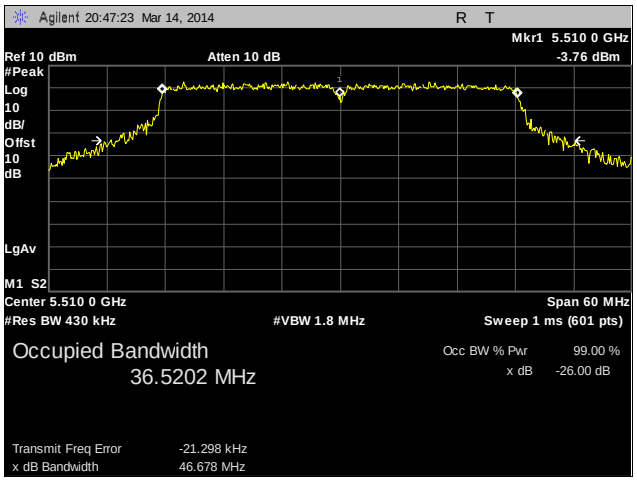


Plot 8. 26 dB Occupied Bandwidth, 20 MHz, 5700 MHz, Channel 0

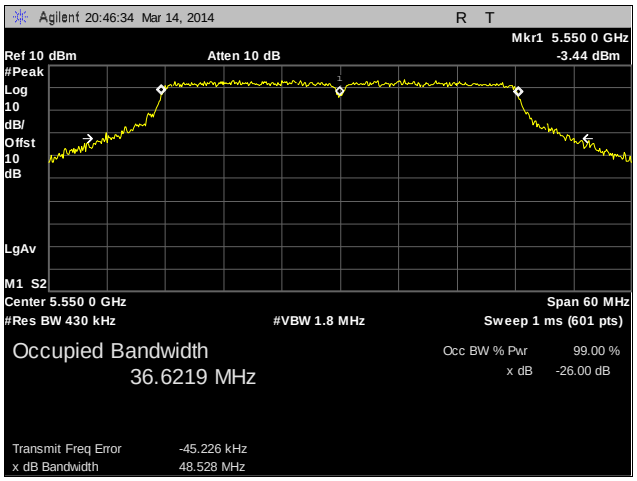
26 dB Occupied Bandwidth, 40 MHz, Channel 0



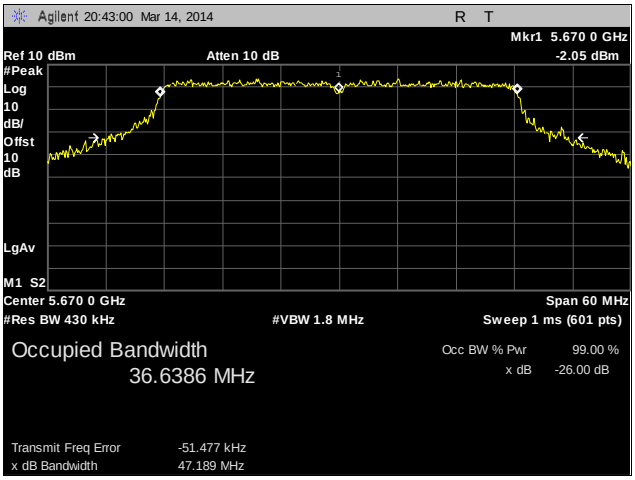
Plot 9. 26 dB Occupied Bandwidth, 40 MHz, 5310 MHz, Channel 0



Plot 10. 26 dB Occupied Bandwidth, 40 MHz, 5510 MHz, Channel 0

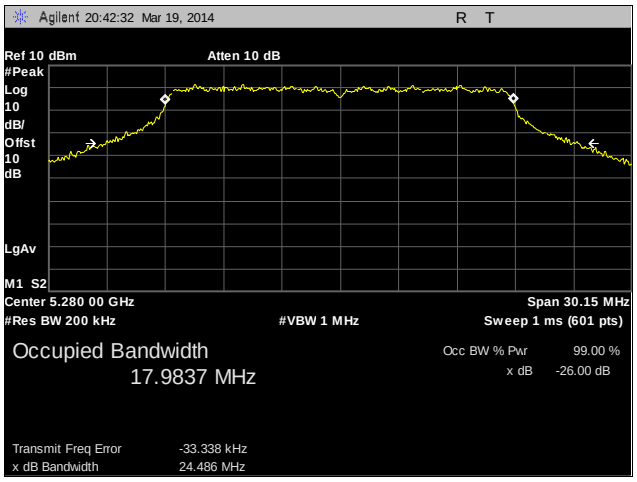


Plot 11. 26 dB Occupied Bandwidth, 40 MHz, 5550 MHz, Channel 0

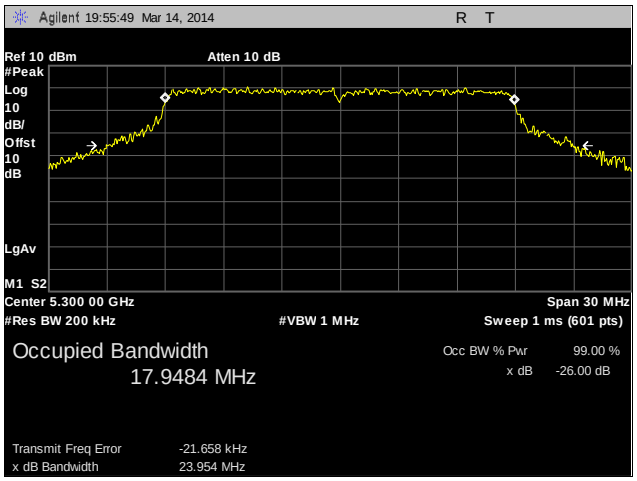


Plot 12. 26 dB Occupied Bandwidth, 40 MHz, 5670 MHz, Channel 0

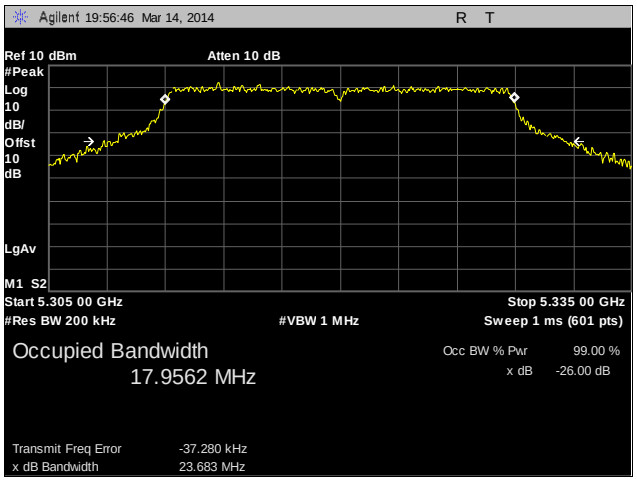
26 dB Occupied Bandwidth, 20 MHz, Channel 1



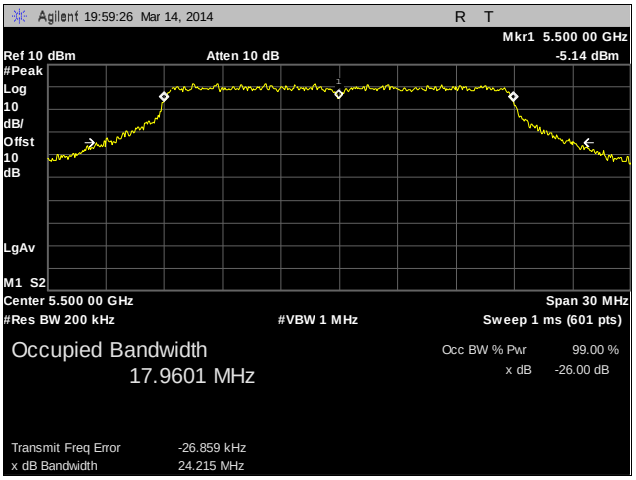
Plot 13. 26 dB Occupied Bandwidth, 20 MHz, 5280 MHz, Channel 1



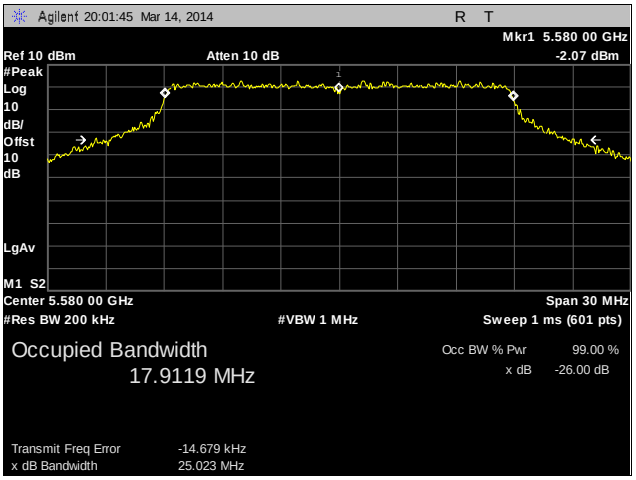
Plot 14. 26 dB Occupied Bandwidth, 20 MHz, 5300 MHz, Channel 1



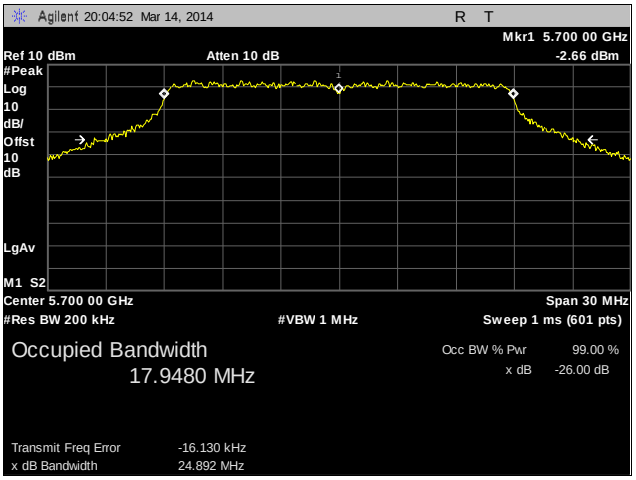
Plot 15. 26 dB Occupied Bandwidth, 20 MHz, 5320 MHz, Channel 1



Plot 16. 26 dB Occupied Bandwidth, 20 MHz, 5500 MHz, Channel 1

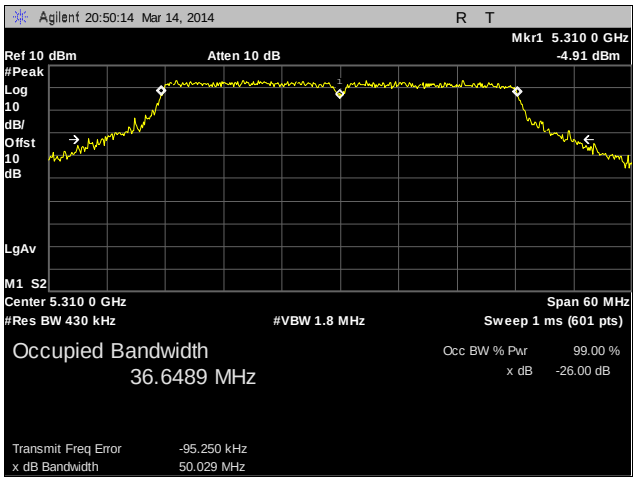


Plot 17. 26 dB Occupied Bandwidth, 20 MHz, 5580 MHz, Channel 1

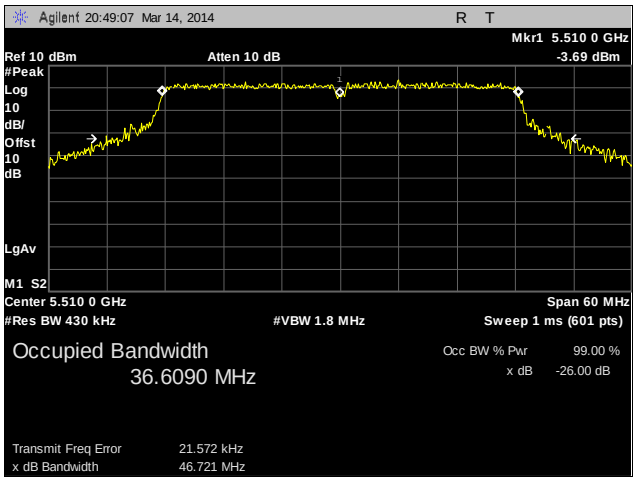


Plot 18. 26 dB Occupied Bandwidth, 20 MHz, 5700 MHz, Channel 1

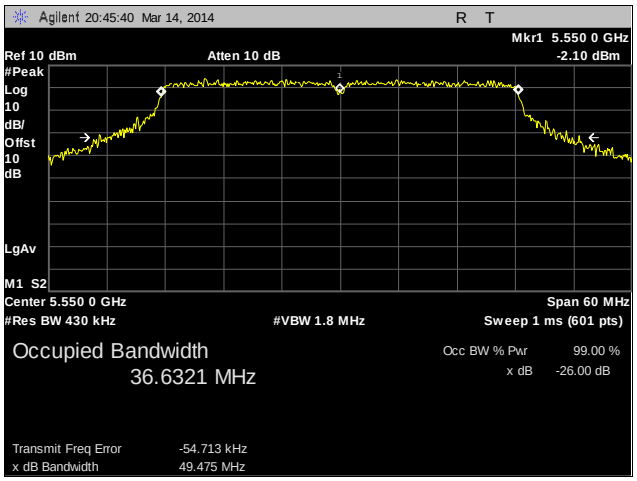
26 dB Occupied Bandwidth, 40 MHz, Channel 1



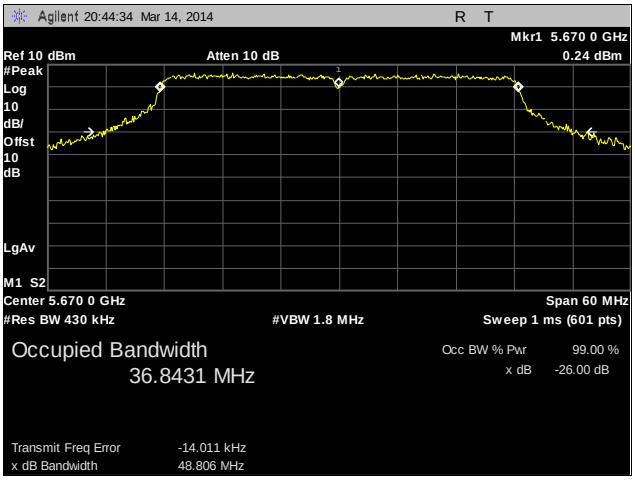
Plot 19. 26 dB Occupied Bandwidth, 40 MHz, 5310 MHz, Channel 1



Plot 20. 26 dB Occupied Bandwidth, 40 MHz, 5510 MHz, Channel 1

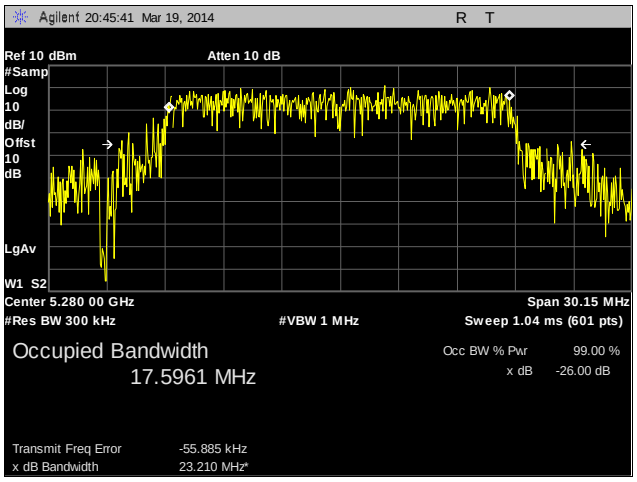


Plot 21. 26 dB Occupied Bandwidth, 40 MHz, 5550 MHz, Channel 1

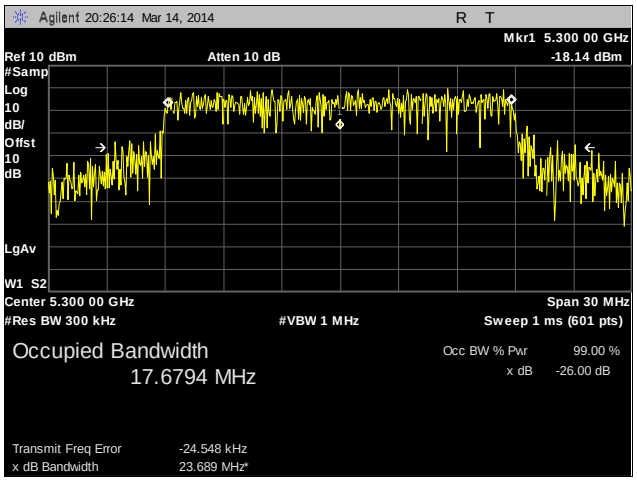


Plot 22. 26 dB Occupied Bandwidth, 40 MHz, 5670 MHz, Channel 1

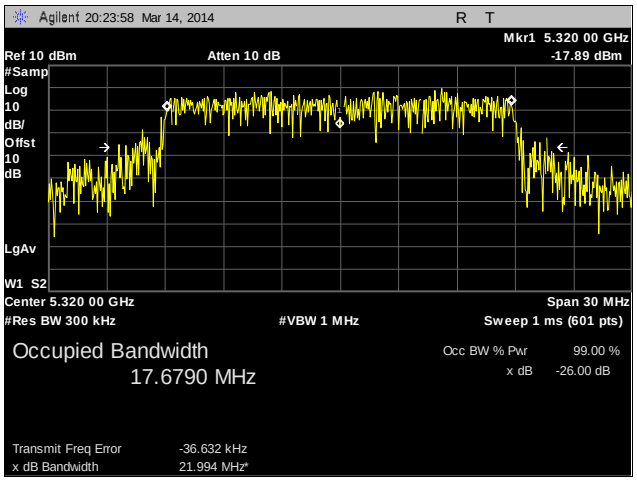
99% Occupied Bandwidth, 20 MHz, Channel 0



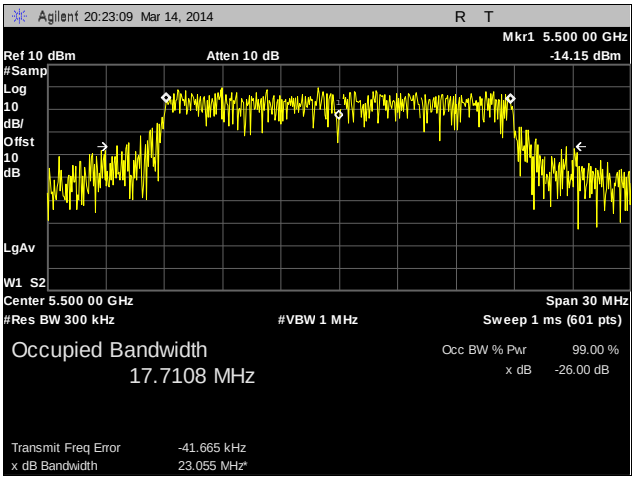
Plot 23. 99% Occupied Bandwidth, 20 MHz, 5280 MHz, Channel 0



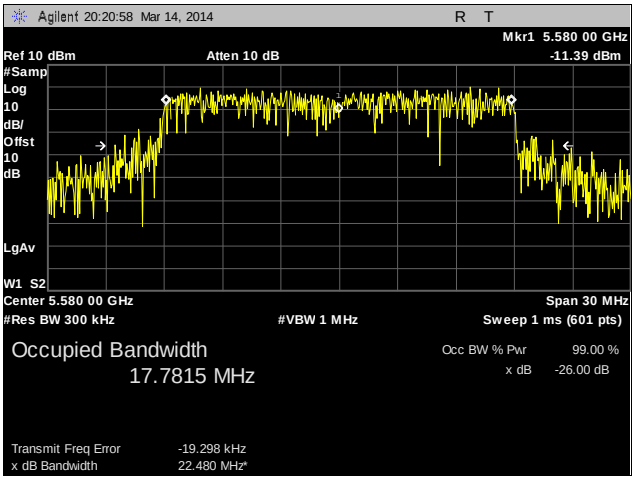
Plot 24. 99% Occupied Bandwidth, 20 MHz, 5300 MHz, Channel 0



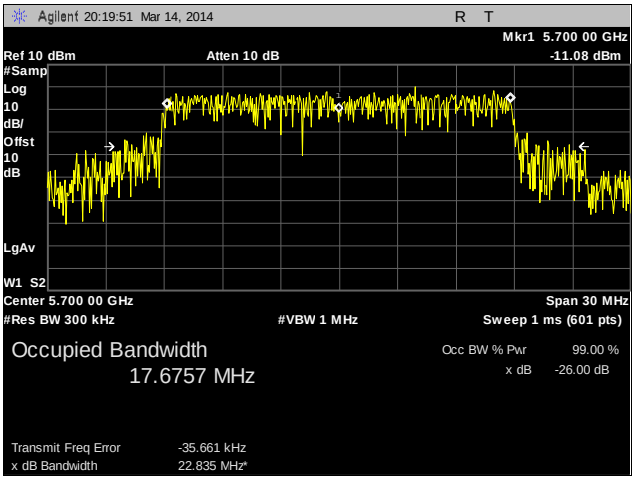
Plot 25. 99% Occupied Bandwidth, 20 MHz, 5320 MHz, Channel 0



Plot 26. 99% Occupied Bandwidth, 20 MHz, 5500 MHz, Channel 0

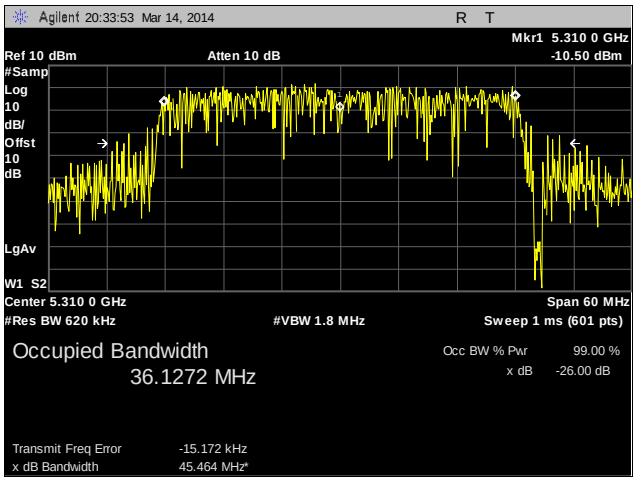


Plot 27. 99% Occupied Bandwidth, 20 MHz, 5580 MHz, Channel 0

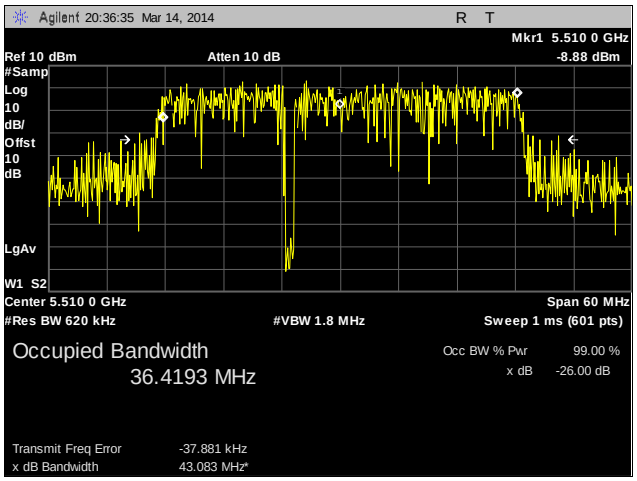


Plot 28. 99% Occupied Bandwidth, 20 MHz, 5700 MHz, Channel 0

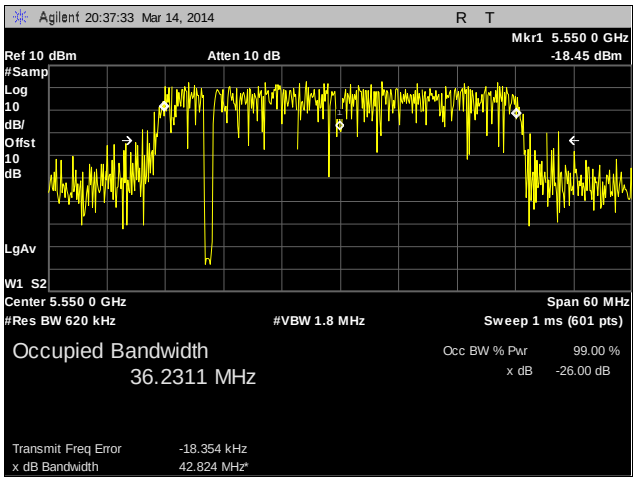
99% Occupied Bandwidth, 40 MHz, Channel 0



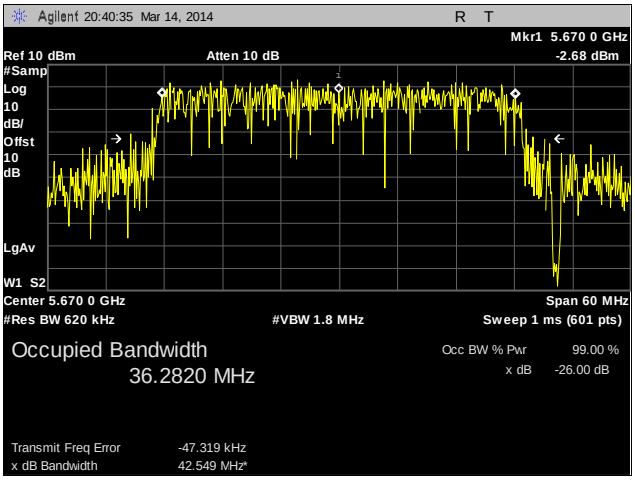
Plot 29. 99% Occupied Bandwidth, 40 MHz, 5310 MHz, Channel 0



Plot 30. 99% Occupied Bandwidth, 40 MHz, 5510 MHz, Channel 0

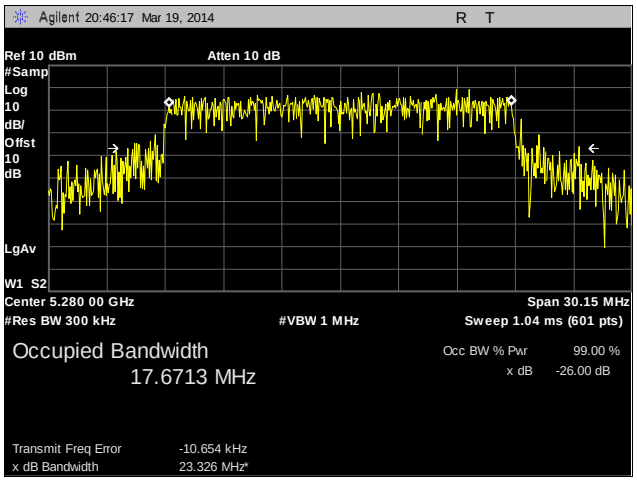


Plot 31. 99% Occupied Bandwidth, 40 MHz, 5550 MHz, Channel 0

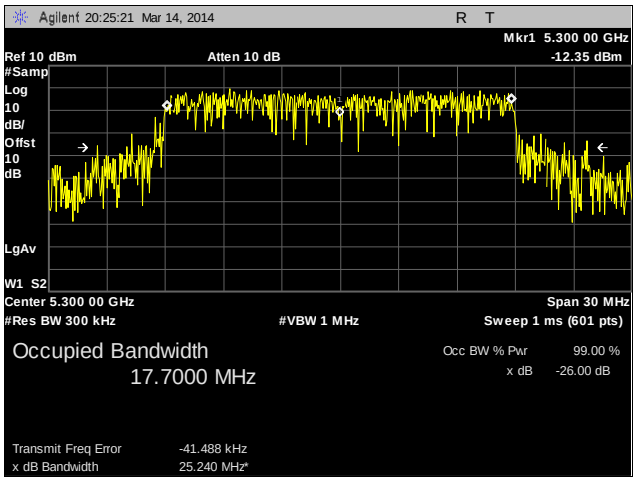


Plot 32. 99% Occupied Bandwidth, 40 MHz, 5670 MHz, Channel 0

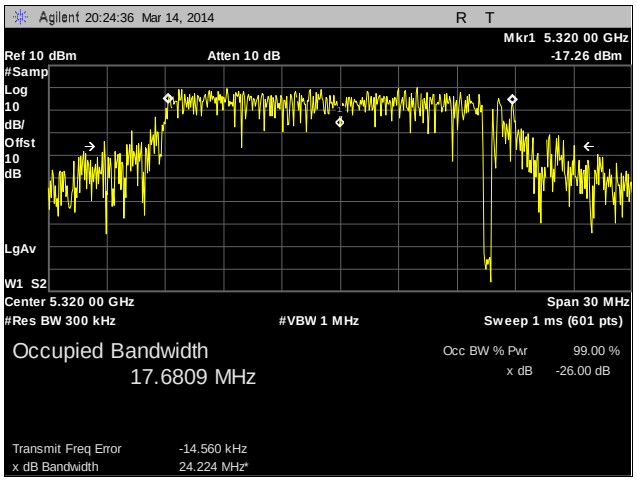
99% Occupied Bandwidth, 20 MHz, Channel 1



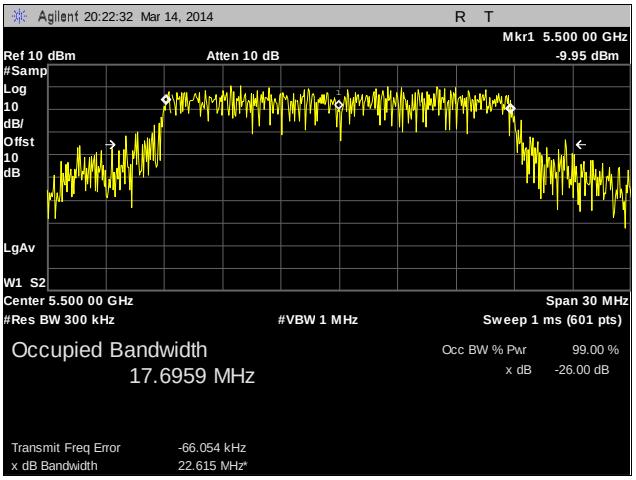
Plot 33. 99% Occupied Bandwidth, 20 MHz, 5280 MHz, Channel 1



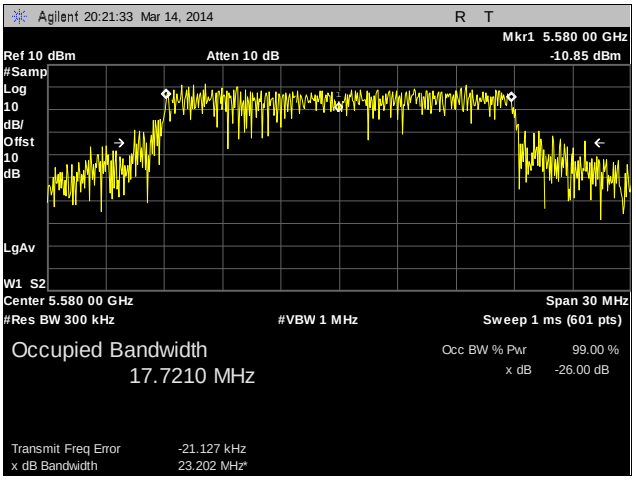
Plot 34. 99% Occupied Bandwidth, 20 MHz, 5300 MHz, Channel 1



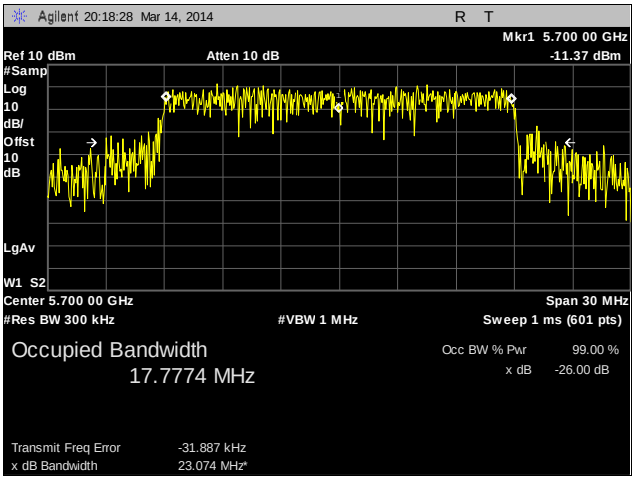
Plot 35. 99% Occupied Bandwidth, 20 MHz, 5320 MHz, Channel 1



Plot 36. 99% Occupied Bandwidth, 20 MHz, 5500 MHz, Channel 1

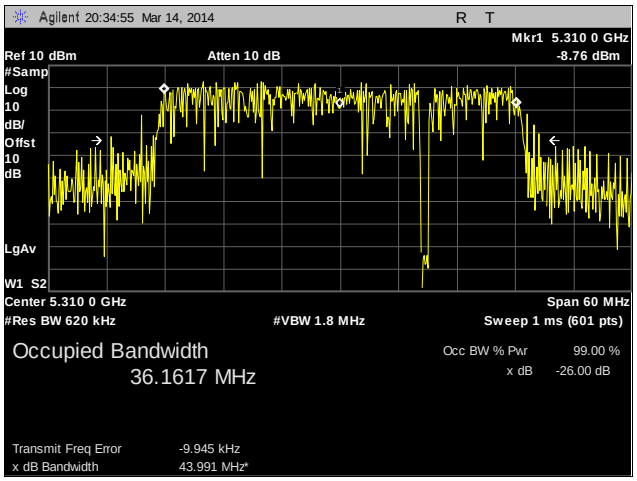


Plot 37. 99% Occupied Bandwidth, 20 MHz, 5580 MHz, Channel 1

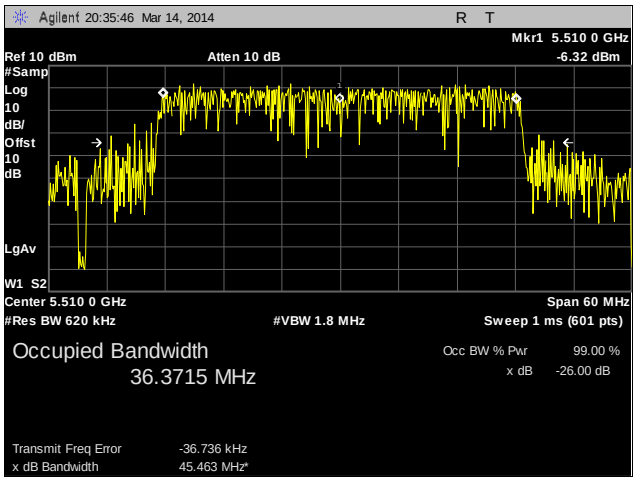


Plot 38. 99% Occupied Bandwidth, 20 MHz, 5700 MHz, Channel 1

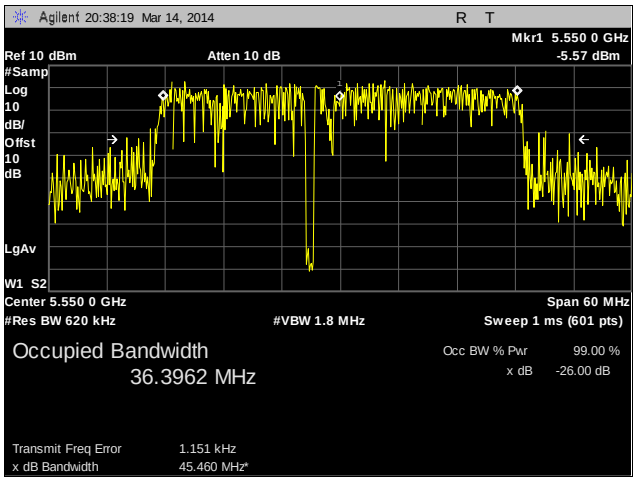
99% Occupied Bandwidth, 40 MHz, Channel 1



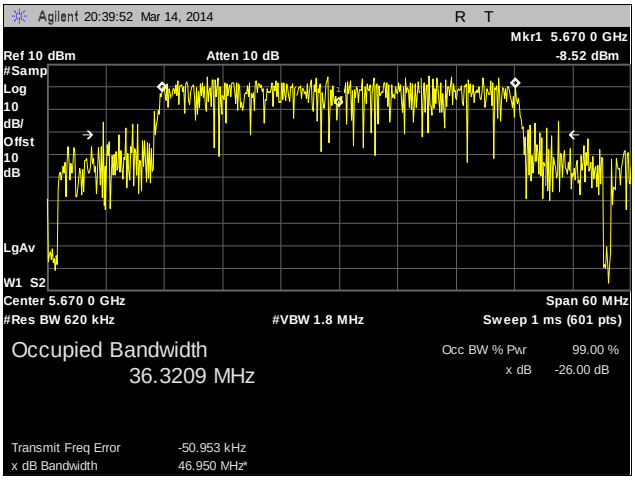
Plot 39. 99% Occupied Bandwidth, 40 MHz, 5310 MHz, Channel 1



Plot 40. 99% Occupied Bandwidth, 40 MHz, 5510 MHz, Channel 1



Plot 41. 99% Occupied Bandwidth, 40 MHz, 5550 MHz, Channel 1



Plot 42. 99% Occupied Bandwidth, 40 MHz, 5670 MHz, Channel 1

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15. 407(a)(2) RF Power Output

Test Requirements: **§15.407(a)(2):** The maximum output power of the intentional radiator shall not exceed the following:

§15.407(a) (2): For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26 dB emission bandwidth in megahertz.

Test Procedure: The EUT was connected to a Spectrum Analyzer. The power was measured on both channels.

Test Results: Equipment was compliant with the Peak Power Output limits of **§ 15.401(a)(2)**.

Test Engineer(s): Djed Mouada

Test Date(s): 03/13/14

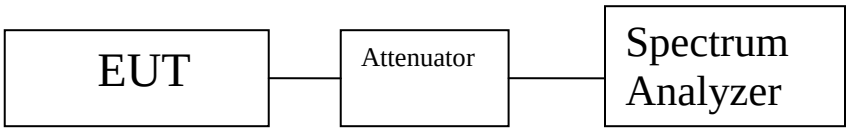
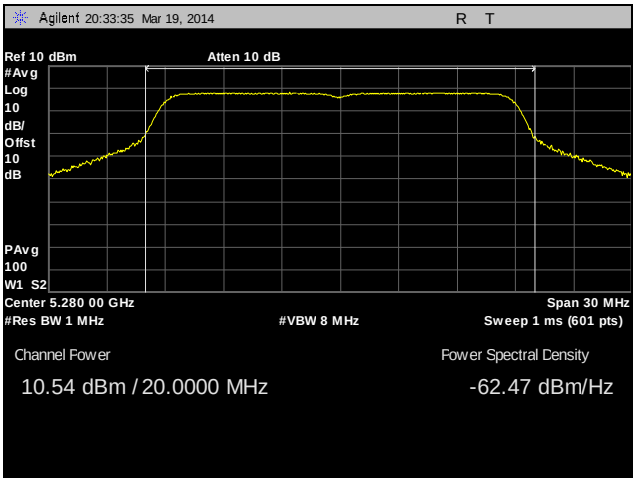


Figure 3. Power Output Test Setup

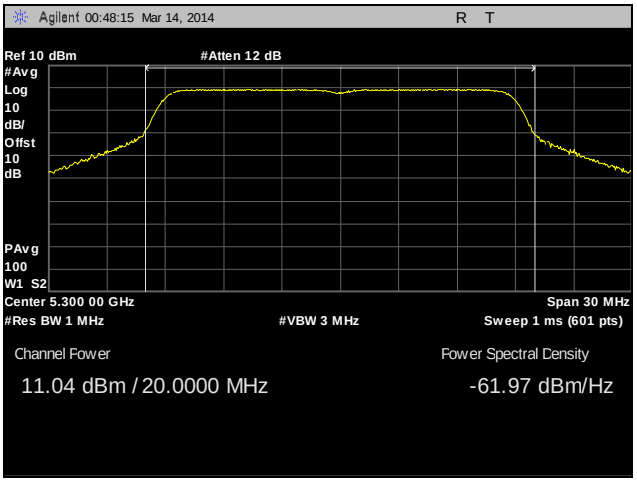
Frequency (MHz)	Bandwidth	Channel 0 Power (dBm)	Channel 1 Power (dBm)	Summed Power (dBm)	Antenna Gain (dBi)	Limit (dBm)	Limit With gain Correction	Margin (dB)
5280	20 MHz	11.51	10.54	14.06	13.30	23.98	16.68	-2.62
5300	20 MHz	11.04	12.33	14.74	13.30	23.98	16.68	-1.94
5320	20 MHz	11.40	11.99	14.72	13.30	23.98	16.68	-1.96
5500	20 MHz	11.48	12.07	14.80	13.30	23.98	16.68	-1.88
5580	20 MHz	11.68	13.46	15.67	13.30	23.98	16.68	-1.01
5700	20 MHz	11.16	13.13	15.27	13.30	23.98	16.68	-1.41
5310	40 MHz	12.8	13.61	16.23	13.30	23.98	16.68	-0.45
5510	40 MHz	13.51	13.73	16.63	13.30	23.98	16.68	-0.05
5550	40 MHz	13.45	13.75	16.61	13.30	23.98	16.68	-0.07
5670	40 MHz	13.14	13.99	16.60	13.30	23.98	16.68	-0.08

Table 12. RF Power Output, Test Results

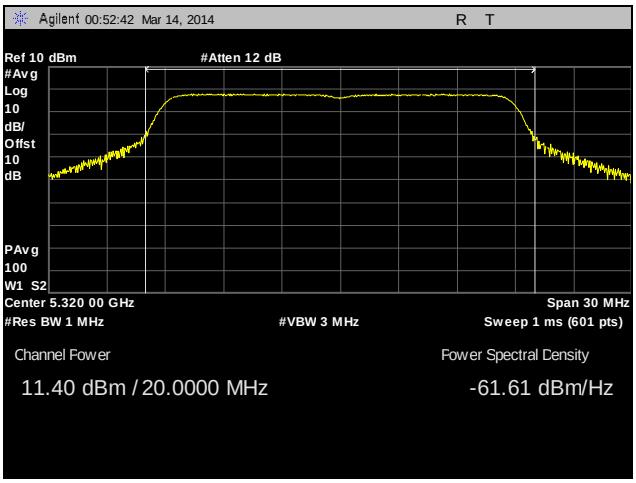
Output Power, 20 MHz, Channel 0



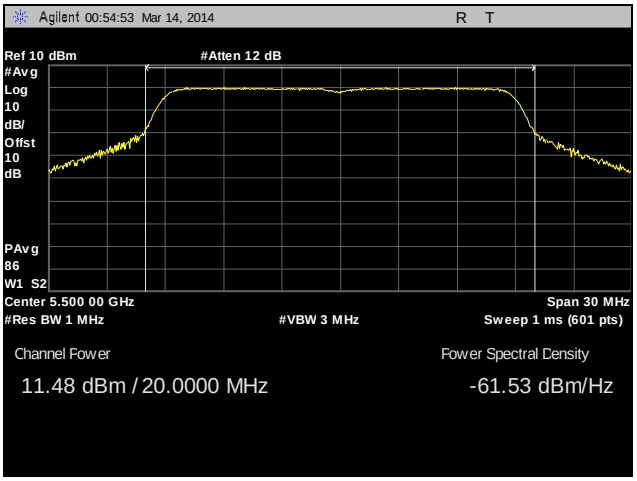
Plot 43. Output Power, 20 MHz, 5280 MHz, Channel 0



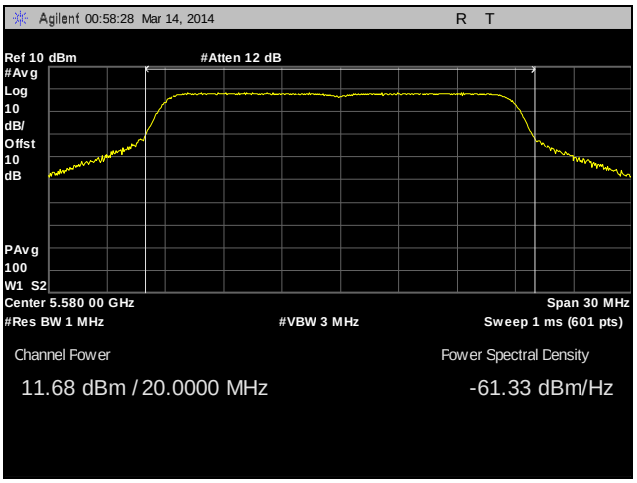
Plot 44. Output Power, 20 MHz, 5300 MHz, Channel 0



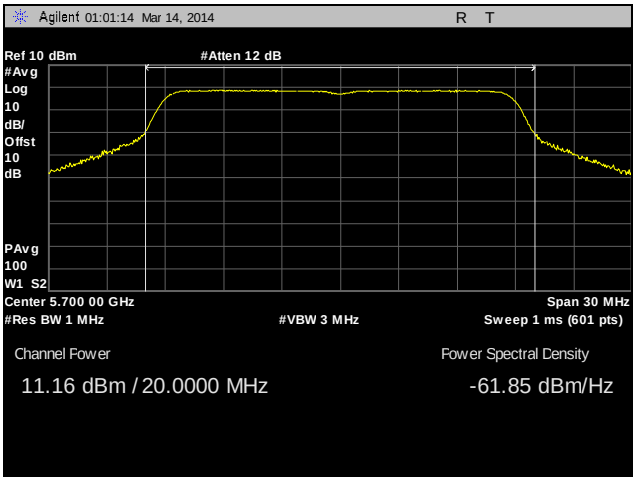
Plot 45. Output Power, 20 MHz, 5320 MHz, Channel 0



Plot 46. Output Power, 20 MHz, 5500 MHz, Channel 0

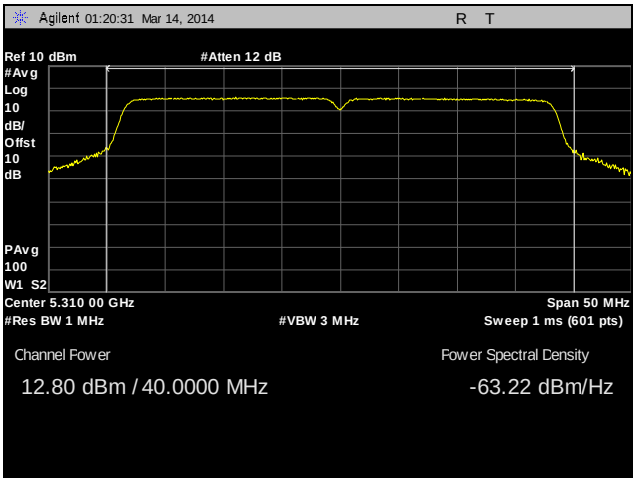


Plot 47. Output Power, 20 MHz, 5580 MHz, Channel 0

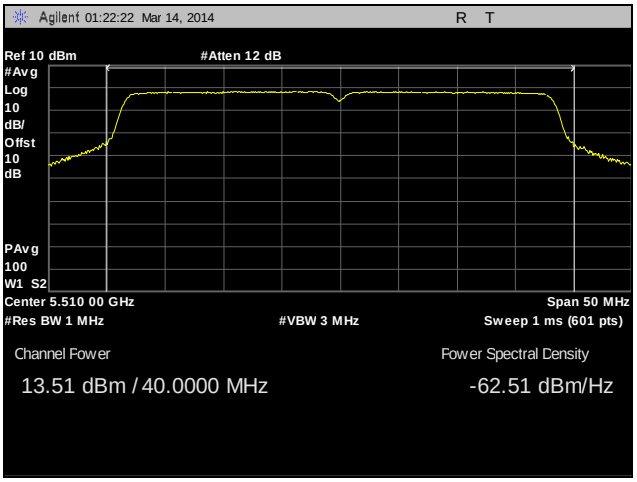


Plot 48. Output Power, 20 MHz, 5700 MHz, Channel 0

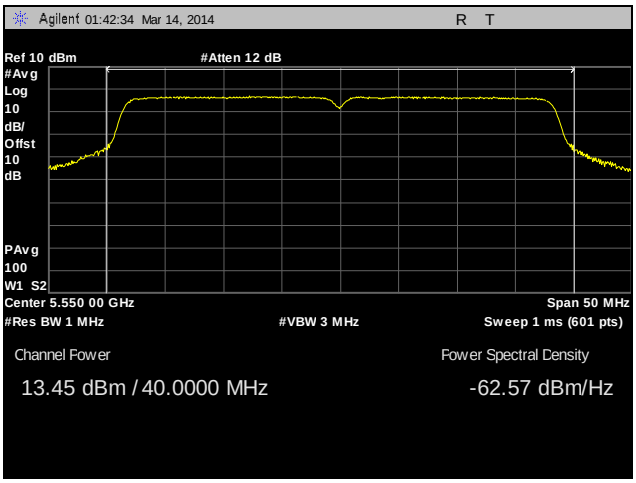
Output Power, 40 MHz, Channel 0



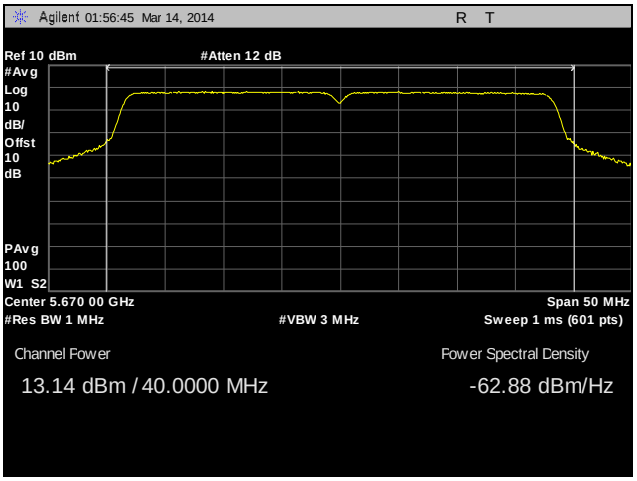
Plot 49. Output Power, 40 MHz, 5310 MHz, Channel 0



Plot 50. Output Power, 40 MHz, 5510 MHz, Channel 0

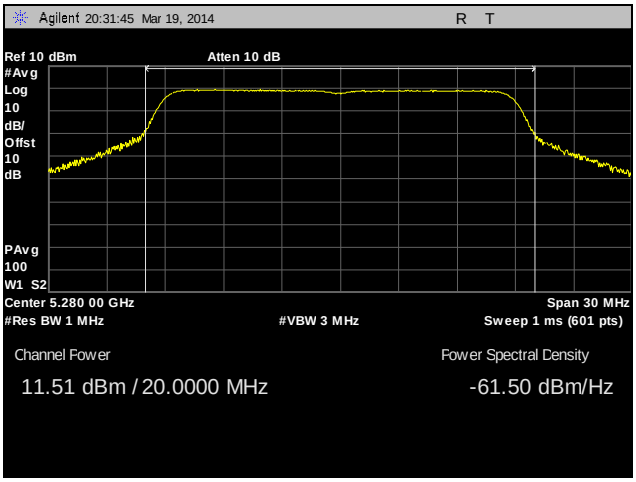


Plot 51. Output Power, 40 MHz, 5550 MHz, Channel 0

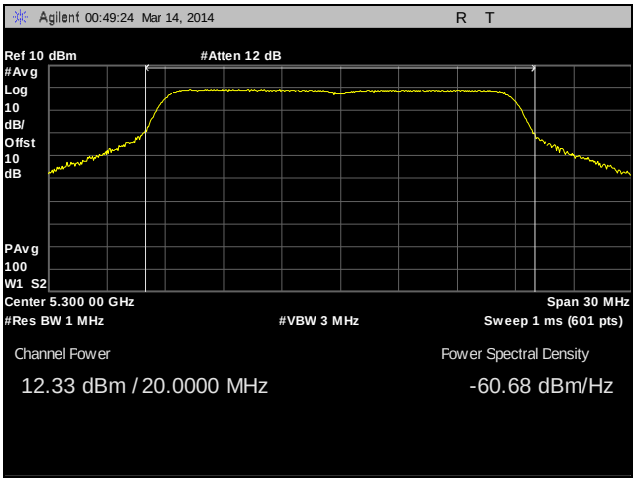


Plot 52. Output Power, 40 MHz, 5670 MHz, Channel 0

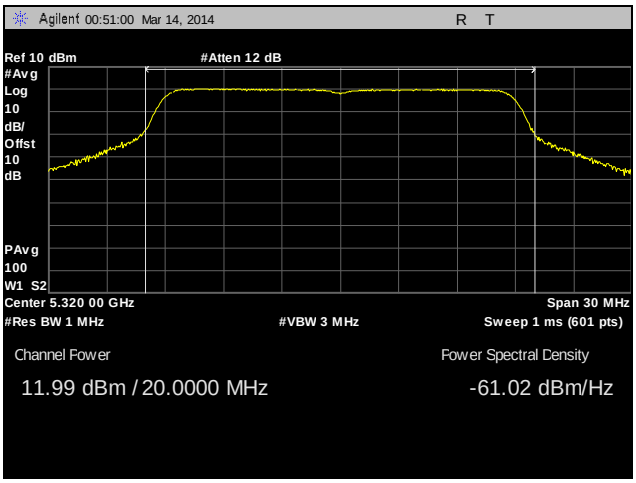
Output Power, 20 MHz, Channel 1



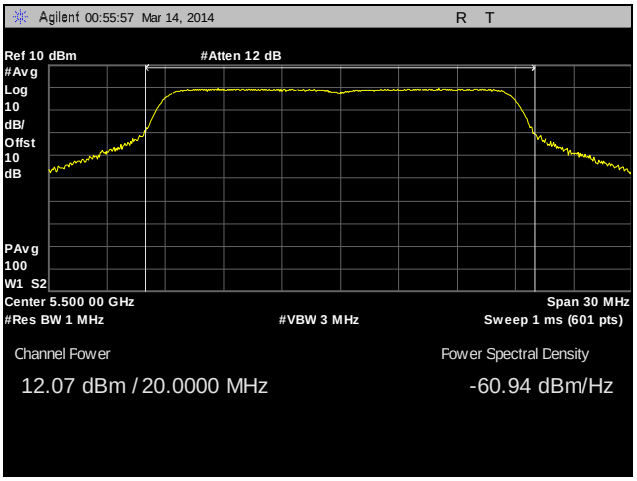
Plot 53. Output Power, 20 MHz, 5280 MHz, Channel 1



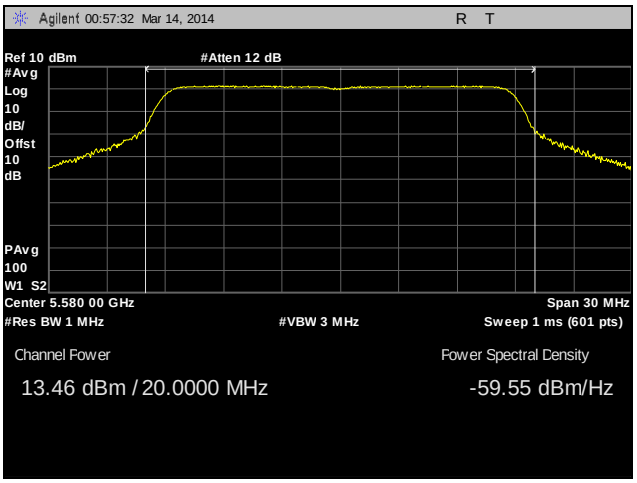
Plot 54. Output Power, 20 MHz, 5300 MHz, Channel 1



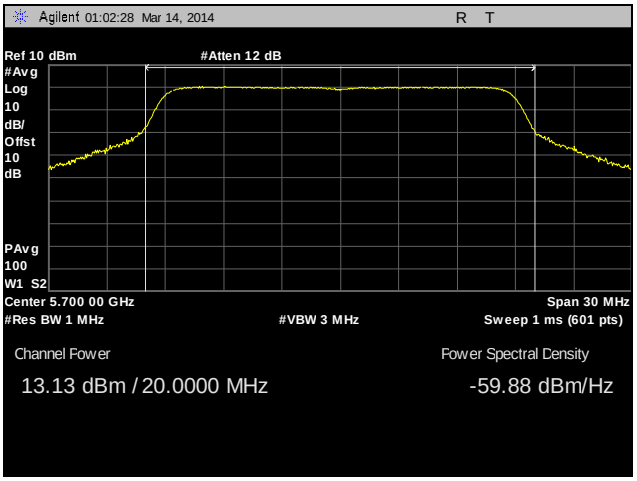
Plot 55. Output Power, 20 MHz, 5320 MHz, Channel 1



Plot 56. Output Power, 20 MHz, 5500 MHz, Channel 1

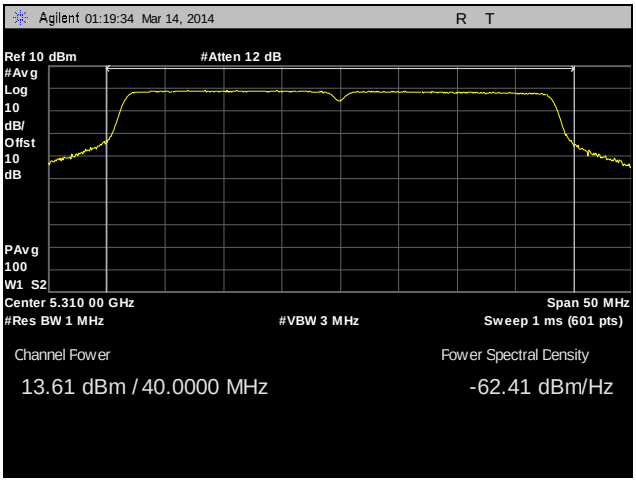


Plot 57. Output Power, 20 MHz, 5580 MHz, Channel 1

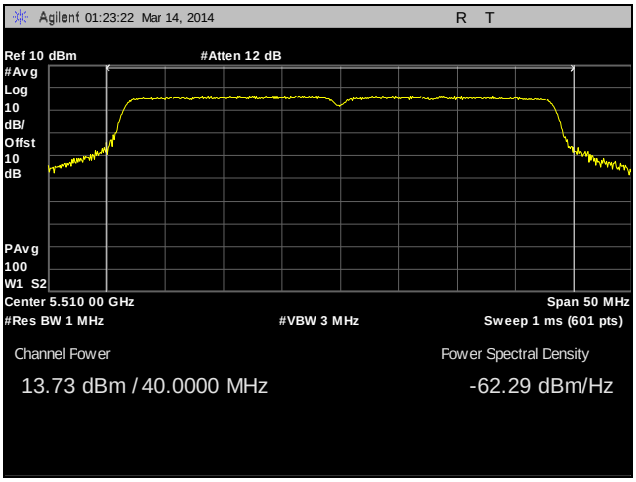


Plot 58. Output Power, 20 MHz, 5700 MHz, Channel 1

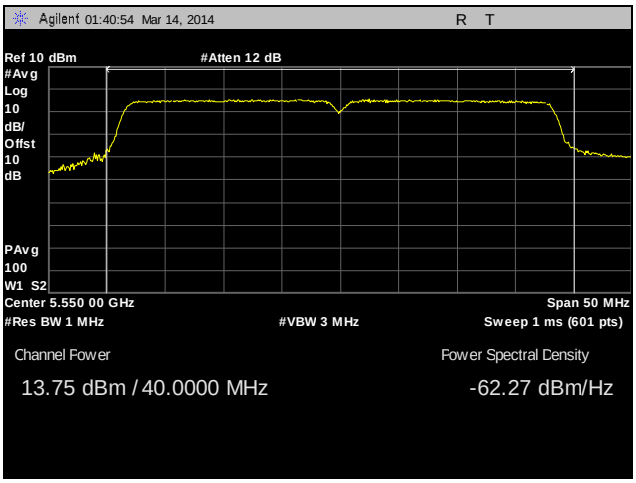
Output Power, 40 MHz, Channel 1



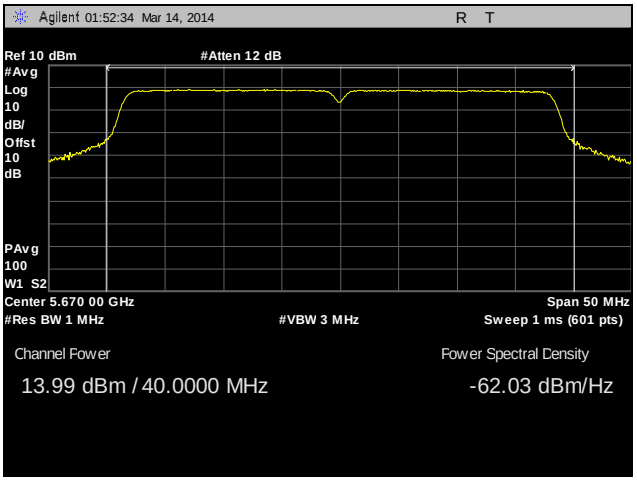
Plot 59. Output Power, 40 MHz, 5310 MHz, Channel 1



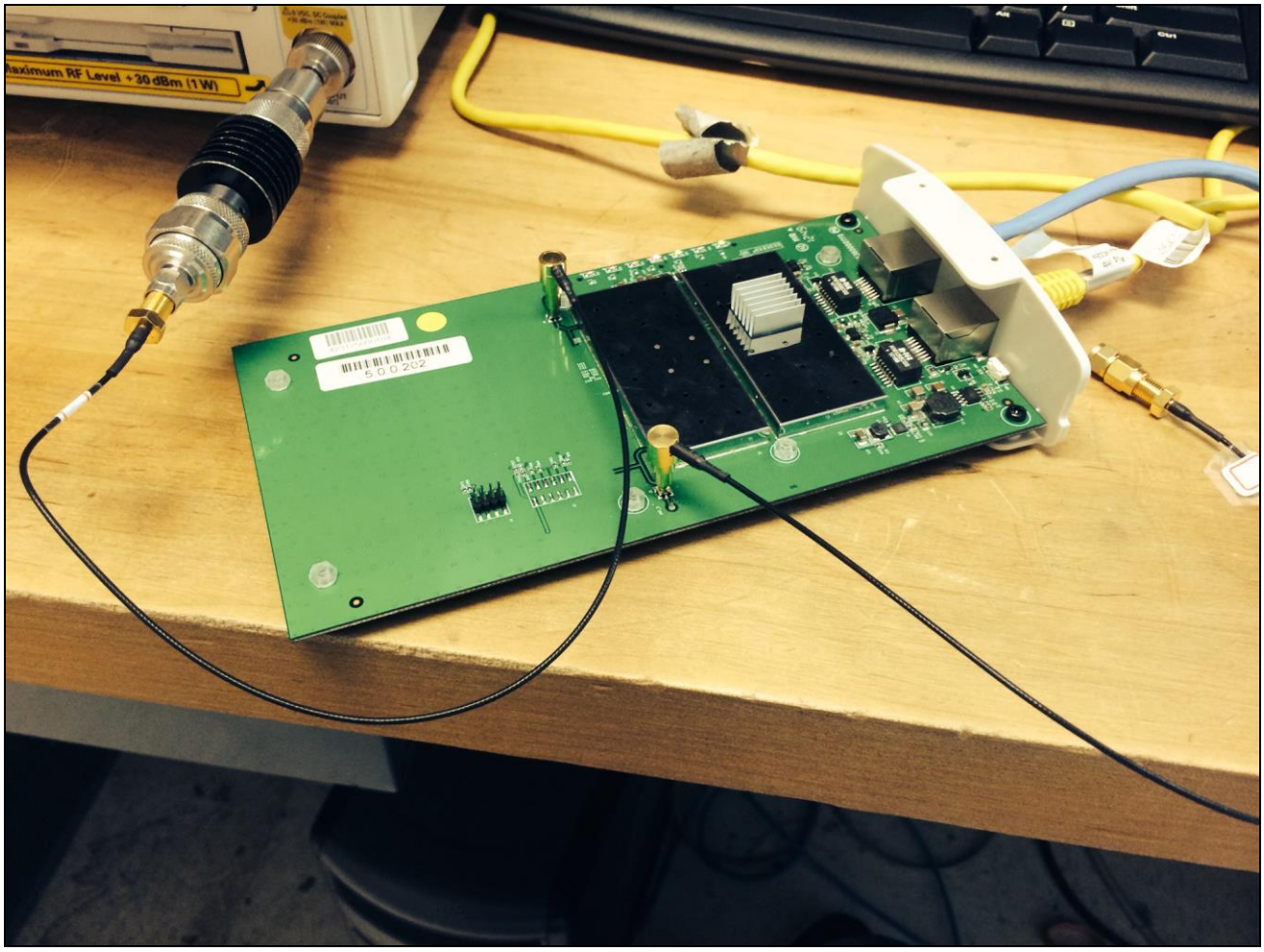
Plot 60. Output Power, 40 MHz, 5510 MHz, Channel 1



Plot 61. Output Power, 40 MHz, 5550 MHz, Channel 1



Plot 62. Output Power, 40 MHz, 5670 MHz, Channel 1



Photograph 3. Output Power, Test Setup

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15. 407(a)(2) Transmit Power Control

Test Requirements: **§15.407(a)(2):** The maximum output power of the intentional radiator shall not exceed the following:

§15.407(a) (2): For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26 dB emission bandwidth in megahertz.

Test Procedure: The EUT was connected to a Spectrum Analyzer. The power was measured on both channels.

Test Results: Equipment was compliant with the transmit power control requirements of **§ 15.401(a)(2)**.

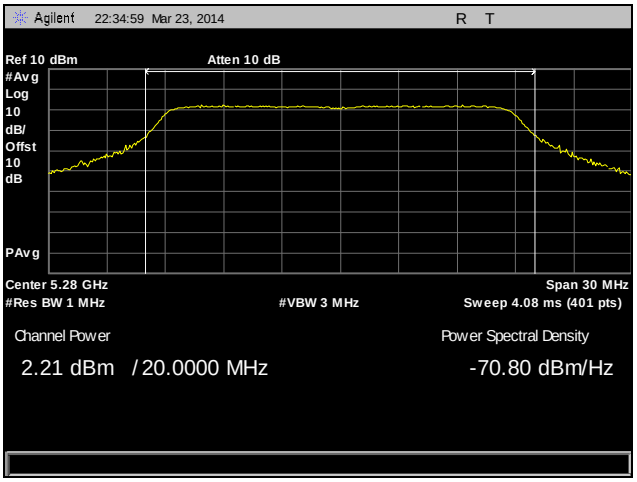
Test Engineer(s): Djed Mouada

Test Date(s): 05/30/14

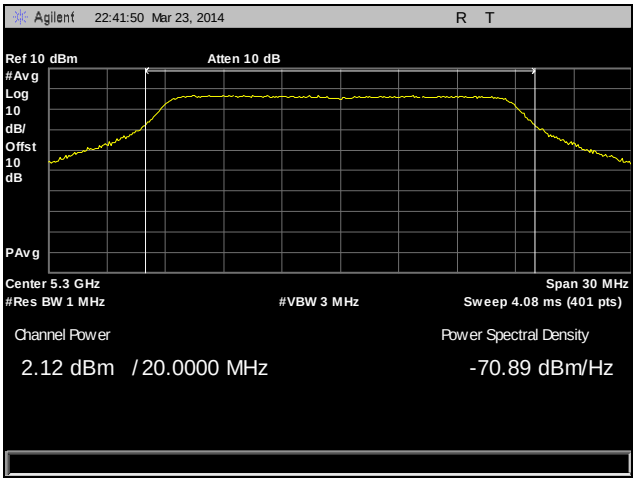
Frequency (MHz)	Bandwidth	Channel 0 Power (dBm)	Channel 1 Power (dBm)	Summed Power (dBm)	Antenna Gain (dBi)	Limit (dBm)	Limit With gain Correction	Margin (dB)
5280	20 MHz	2.21	2.97	5.62	13.30	23.98	16.68	-11.06
5300	20 MHz	2.12	2.92	5.55	13.30	23.98	16.68	-11.13
5320	20 MHz	2.03	2.97	5.54	13.30	23.98	16.68	-11.14
5500	20 MHz	2.88	2.58	5.74	13.30	23.98	16.68	-10.94
5580	20 MHz	2.79	3	5.91	13.30	23.98	16.68	-10.77
5700	20 MHz	2.1	2.12	5.12	13.30	23.98	16.68	-11.56
5310	40 MHz	4.43	4.6	7.53	13.30	23.98	16.68	-9.15
5510	40 MHz	4.07	4.1	7.10	13.30	23.98	16.68	-9.58
5550	40 MHz	4.91	4.87	7.90	13.30	23.98	16.68	-8.78
5670	40 MHz	4.2	4.86	7.55	13.30	23.98	16.68	-9.13

Table 13. Transmit Power Control, Test Results

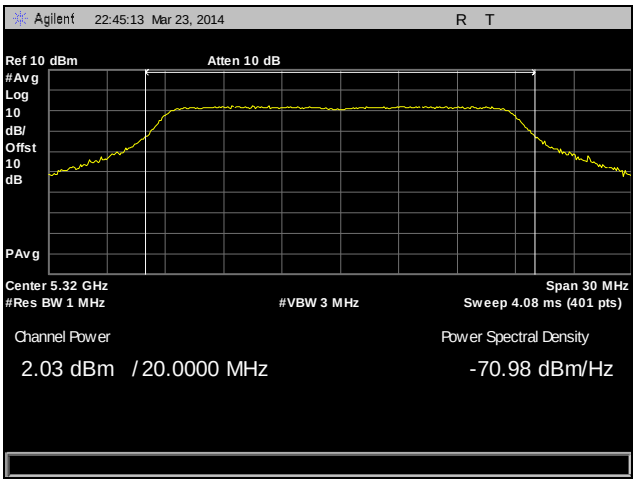
Transmit Power Control, 20 MHz, Channel 0



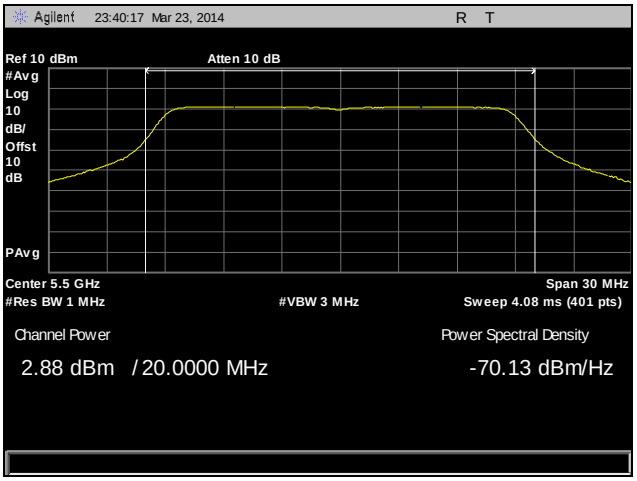
Plot 63. Transmit Power Control, 20 MHz, 5280 MHz, Channel 0



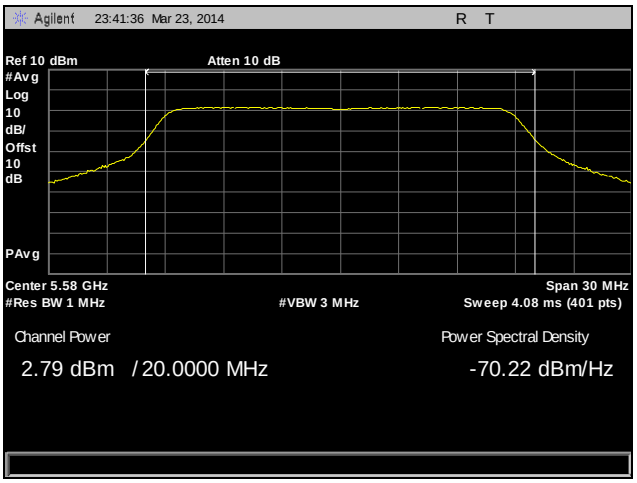
Plot 64. Transmit Power Control, 20 MHz, 5300 MHz, Channel 0



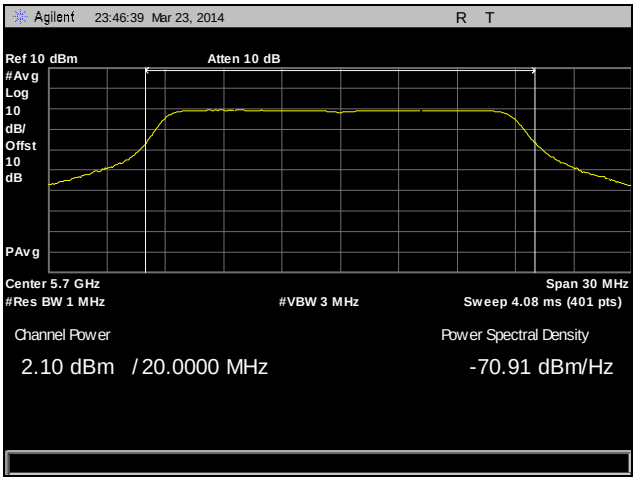
Plot 65. Transmit Power Control, 20 MHz, 5320 MHz, Channel 0



Plot 66. Transmit Power Control, 20 MHz, 5500 MHz, Channel 0

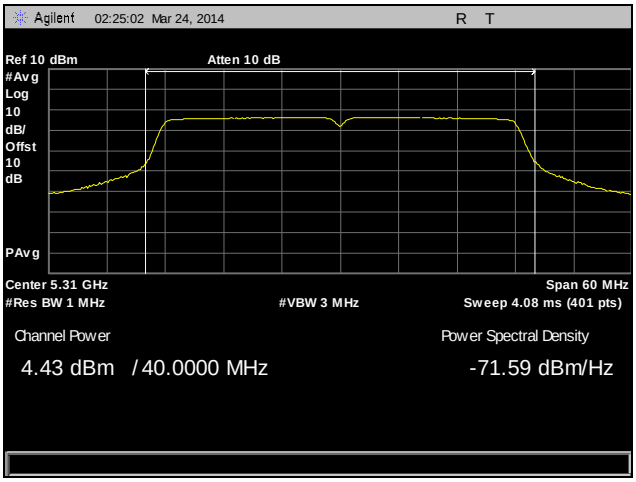


Plot 67. Transmit Power Control, 20 MHz, 5580 MHz, Channel 0

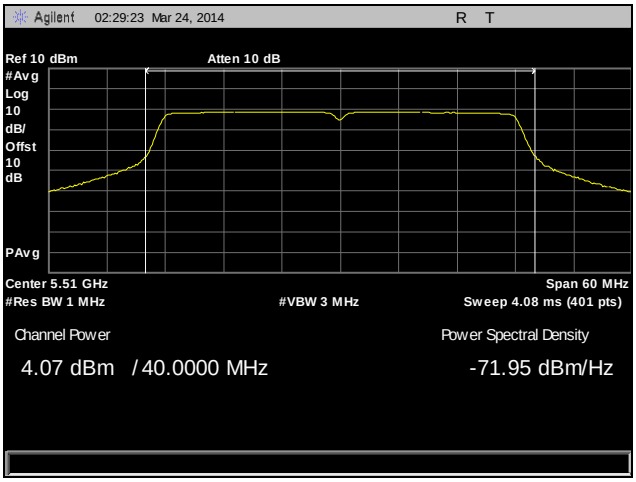


Plot 68. Transmit Power Control, 20 MHz, 5700 MHz, Channel 0

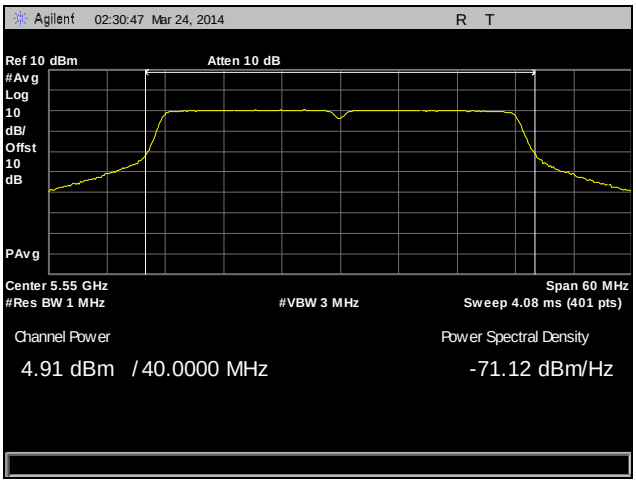
Transmit Power Control, 40 MHz, Channel 0



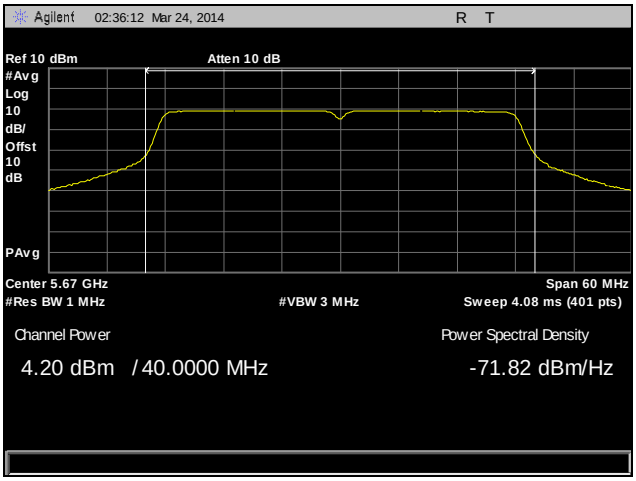
Plot 69. Transmit Power Control, 40 MHz, 5310 MHz, Channel 0



Plot 70. Transmit Power Control, 40 MHz, 5510 MHz, Channel 0

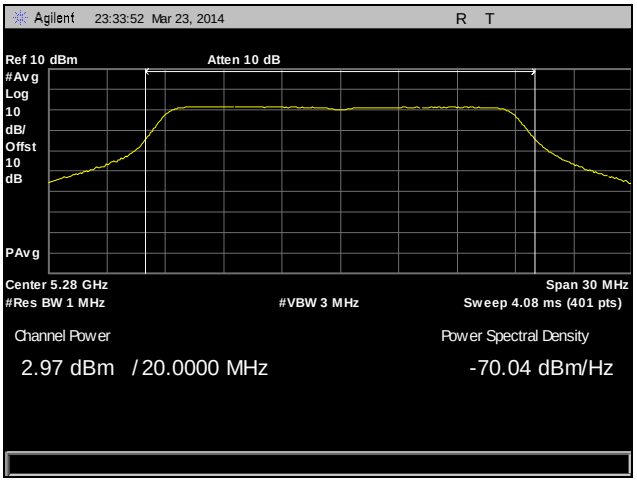


Plot 71. Transmit Power Control, 40 MHz, 5550 MHz, Channel 0

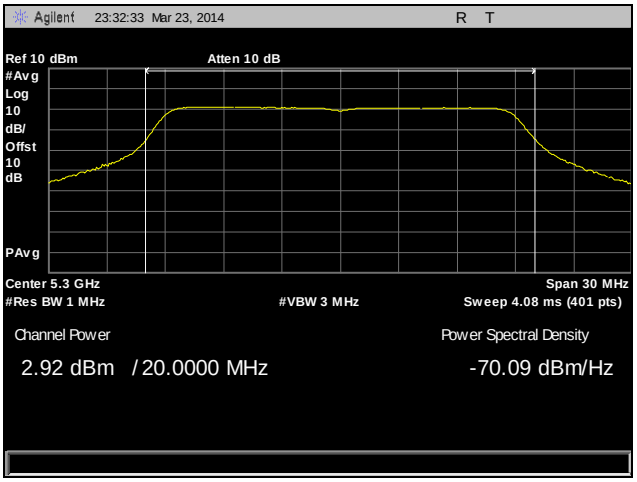


Plot 72. Transmit Power Control, 40 MHz, 5670 MHz, Channel 0

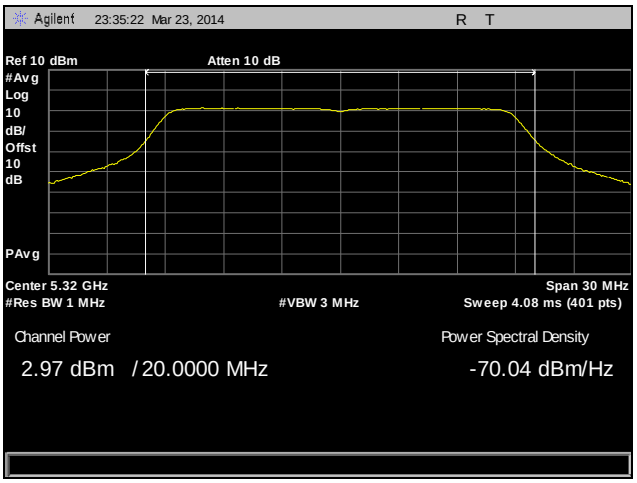
Transmit Power Control, 20 MHz, Channel 1



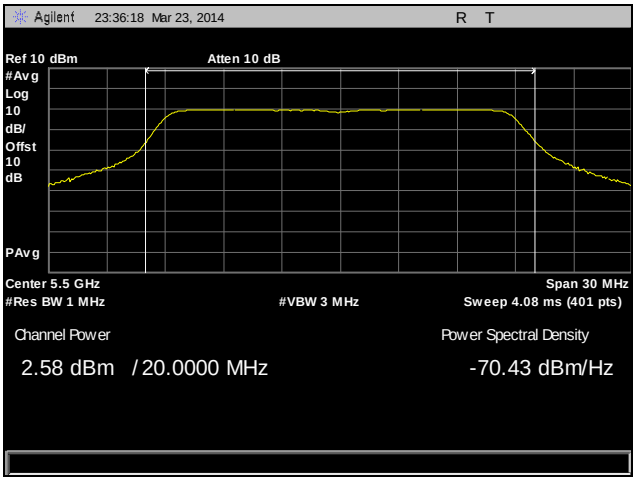
Plot 73. Transmit Power Control, 20 MHz, 5280 MHz, Channel 1



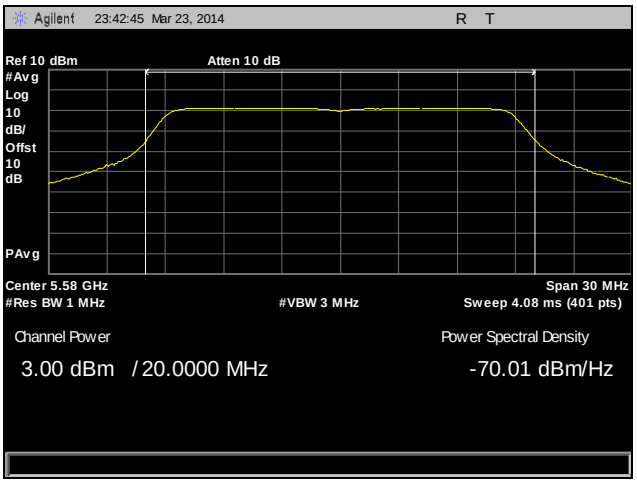
Plot 74. Transmit Power Control, 20 MHz, 5300 MHz, Channel 1



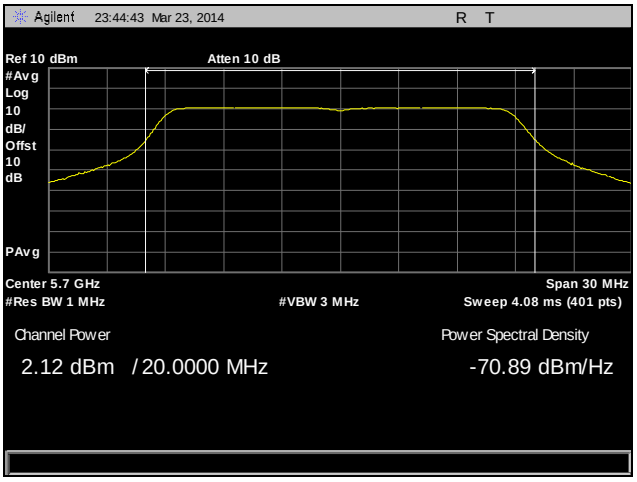
Plot 75. Transmit Power Control, 20 MHz, 5320 MHz, Channel 1



Plot 76. Transmit Power Control, 20 MHz, 5500 MHz, Channel 1

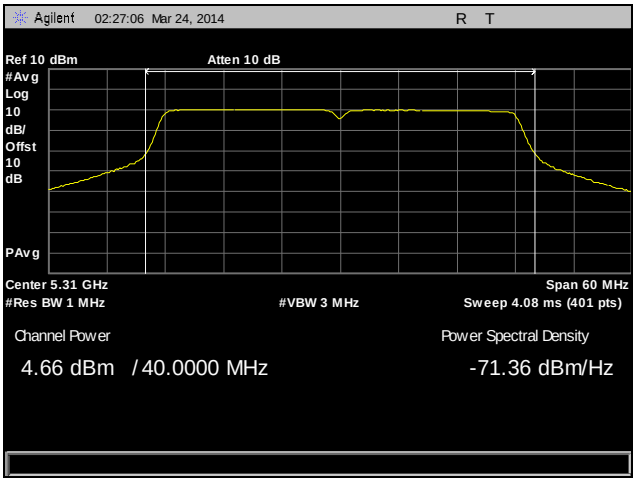


Plot 77. Transmit Power Control, 20 MHz, 5580 MHz, Channel 1

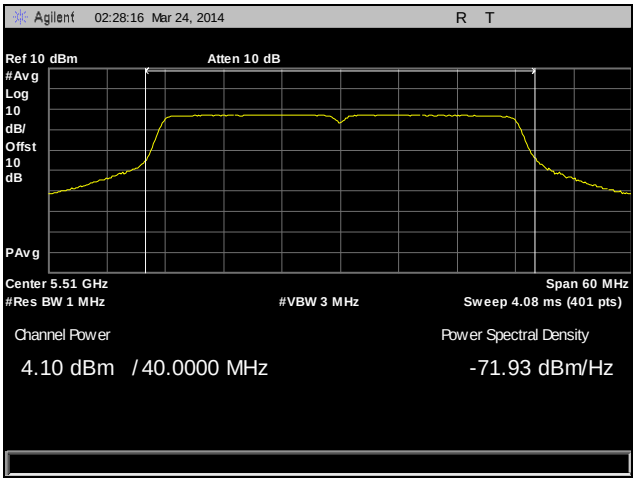


Plot 78. Transmit Power Control, 20 MHz, 5700 MHz, Channel 1

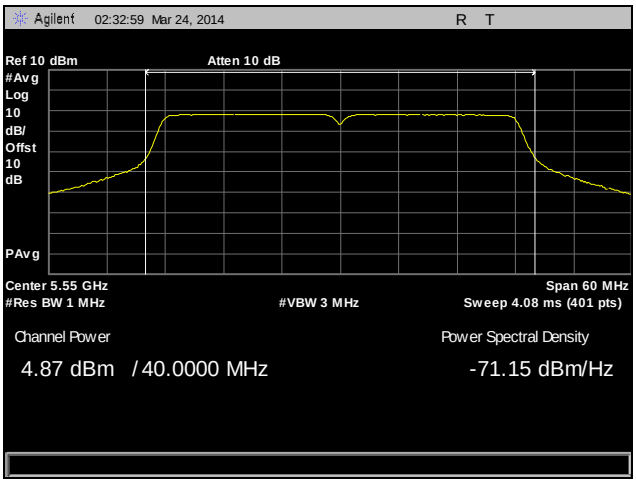
Transmit Power Control, 40 MHz, Channel 1



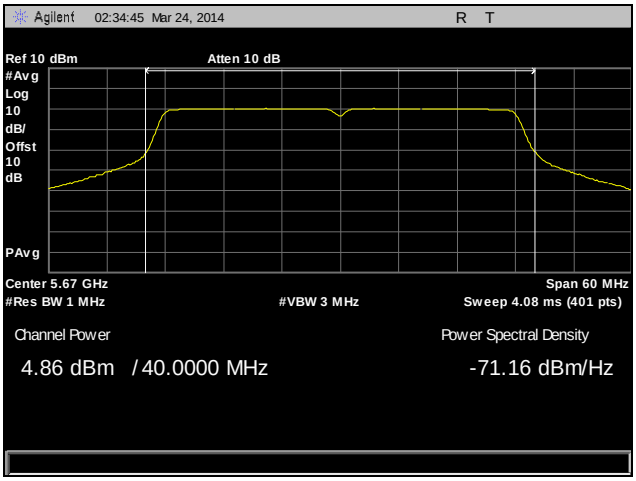
Plot 79. Transmit Power Control, 40 MHz, 5310 MHz, Channel 1



Plot 80. Transmit Power Control, 40 MHz, 5510 MHz, Channel 1



Plot 81. Transmit Power Control, 40 MHz, 5550 MHz, Channel 1



Plot 82. Transmit Power Control, 40 MHz, 5670 MHz, Channel 1

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.407(a)(2) Peak Power Spectral Density

Test Requirements: **§ 15.407(a)(2):** In addition, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz band.

Test Procedure: The transmitter was connected directly to a Spectrum Analyzer through an attenuator. The power level was set to the maximum level on the EUT. The RBW was set to 1MHz and the VBW was set to 3MHz. The method of measurement #2 from the FCC Public Notice DA 02-2138 was used.

Test Results: Equipment was compliant with the peak power spectral density limits of **§ 15.407 (a)(2).** The peak power spectral density was determined from plots on the following page(s).

Test Engineer(s): Djed Mouada

Test Date(s): 03/13/14

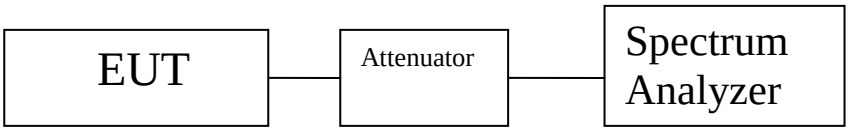
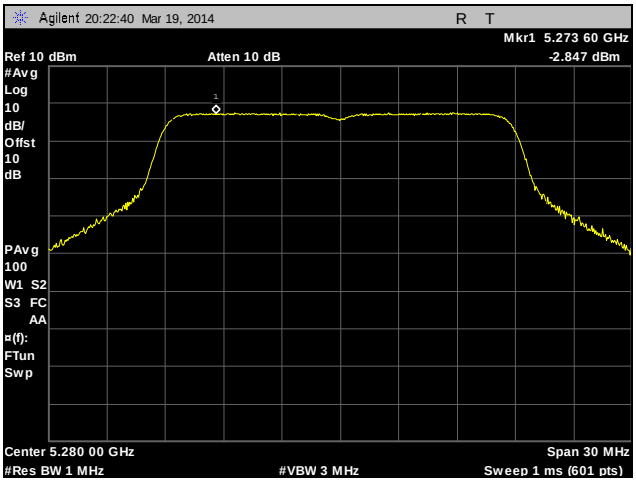


Figure 4. Power Spectral Density Test Setup

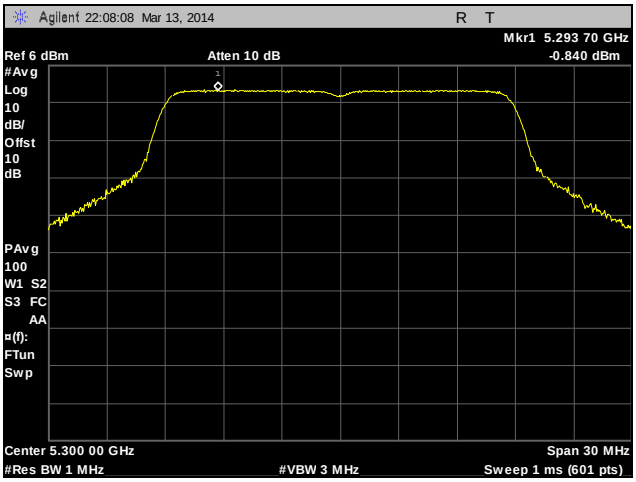
Frequency (MHz)	Bandwidth	Channel 0 PSD (dBm)	Channel 1 PSD (dBm)	Summed PSD (dBm)	Antenna Gain (dBi)	Limit (dBm)	Limit With gain Correction	Margin (dB)
5280	20 MHz	-2.49	0.42	2.21	13.30	11.00	3.70	-1.49
5300	20 MHz	-0.84	-0.06	2.58	13.30	11.00	3.70	-1.12
5320	20 MHz	-0.95	-0.36	2.37	13.30	11.00	3.70	-1.33
5500	20 MHz	-0.74	-0.33	2.48	13.30	11.00	3.70	-1.22
5580	20 MHz	-0.39	1.07	3.41	13.30	11.00	3.70	-0.29
5700	20 MHz	-1.49	0.80	2.81	13.30	11.00	3.70	-0.89
5310	40 MHz	-1.41	-0.09	2.31	13.30	11.00	3.70	-1.39
5510	40 MHz	-0.506	-0.387	2.56	13.30	11.00	3.70	-1.14
5550	40 MHz	-0.176	0.256	3.06	13.30	12.00	4.70	-1.64
5670	40 MHz	-0.371	1.251	3.53	13.30	11.00	3.70	-0.17

Table 14. Power Spectral Density, Test Results

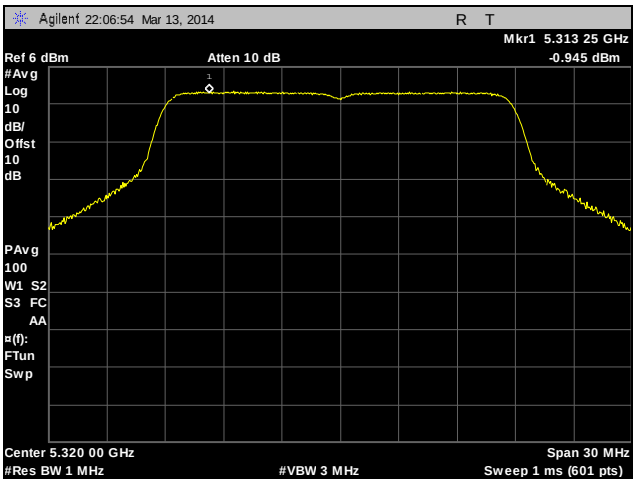
Peak Power Spectral Density, 20 MHz, Channel 0



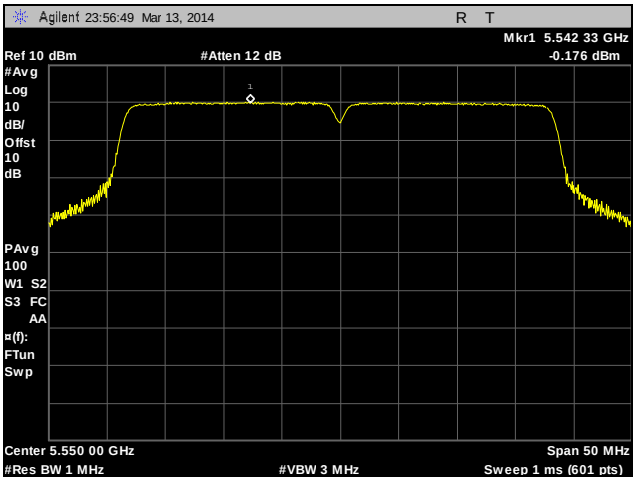
Plot 83. Peak Power Spectral Density, 20 MHz, 5280 MHz, Channel 0



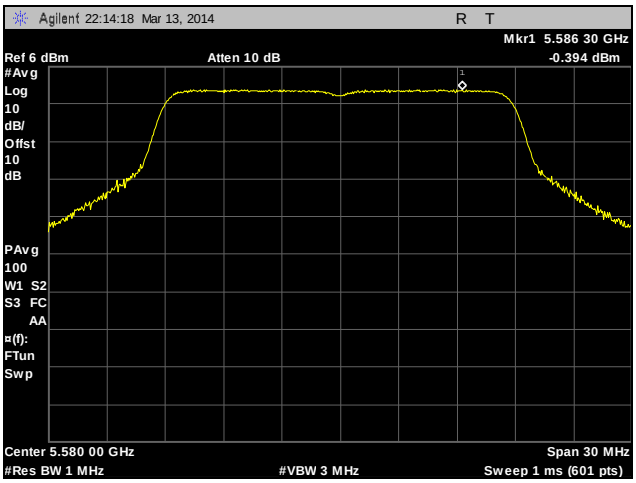
Plot 84. Peak Power Spectral Density, 20 MHz, 5300 MHz, Channel 0



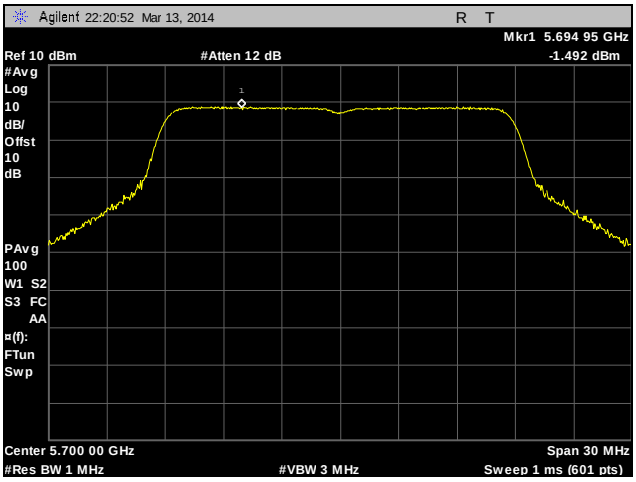
Plot 85. Peak Power Spectral Density, 20 MHz, 5320 MHz, Channel 0



Plot 86. Peak Power Spectral Density, 20 MHz, 5500 MHz, Channel 0

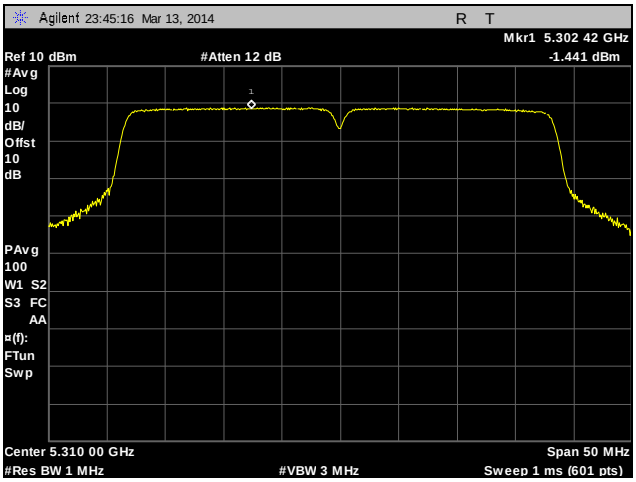


Plot 87. Peak Power Spectral Density, 20 MHz, 5580 MHz, Channel 0

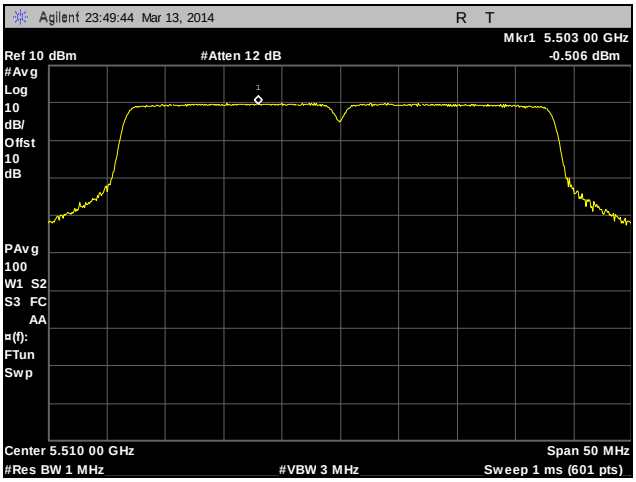


Plot 88. Peak Power Spectral Density, 20 MHz, 5700 MHz, Channel 0

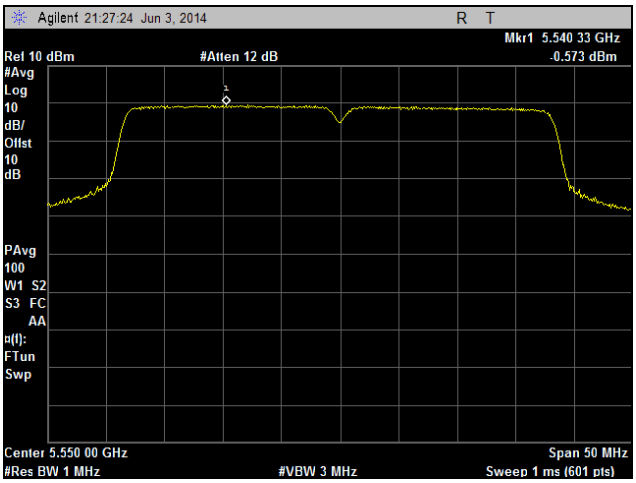
Peak Power Spectral Density, 40 MHz, Channel 0



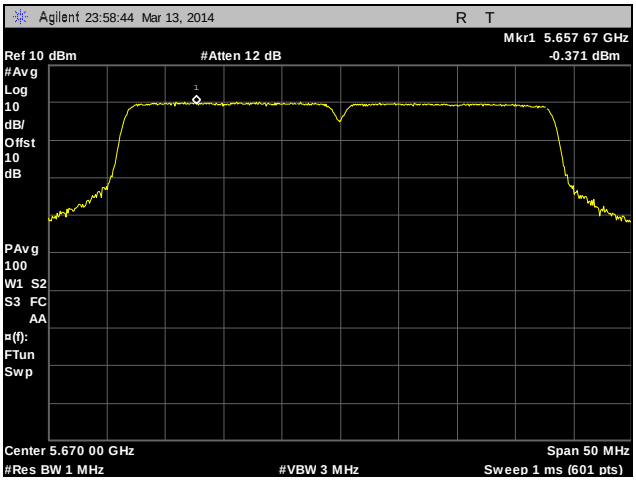
Plot 89. Peak Power Spectral Density, 40 MHz, 5310 MHz, Channel 0



Plot 90. Peak Power Spectral Density, 40 MHz, 5510 MHz, Channel 0

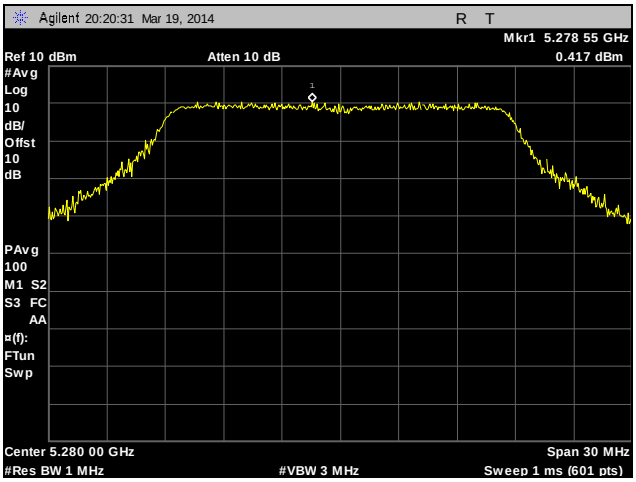


Plot 91. Peak Power Spectral Density, 40 MHz, 5550 MHz, Channel 0

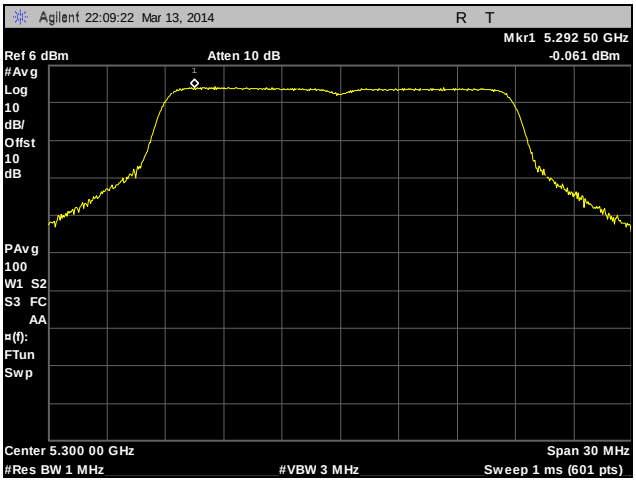


Plot 92. Peak Power Spectral Density, 40 MHz, 5670 MHz, Channel 0

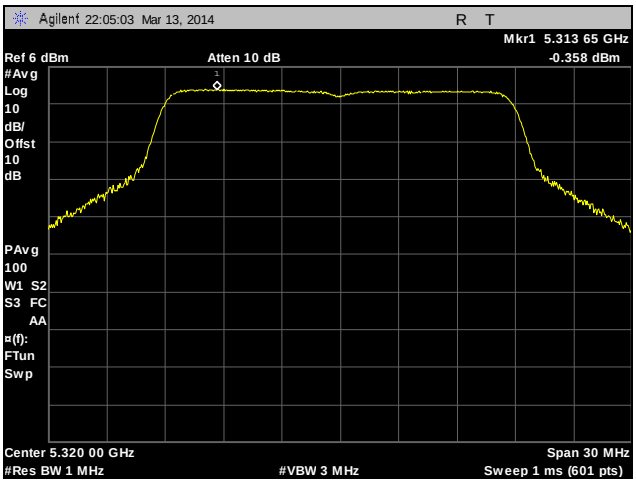
Peak Power Spectral Density, 20 MHz, Channel 1



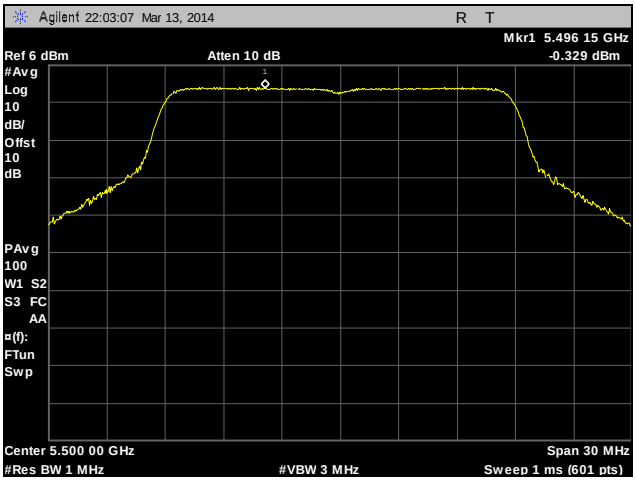
Plot 93. Peak Power Spectral Density, 20 MHz, 5280 MHz, Channel 1



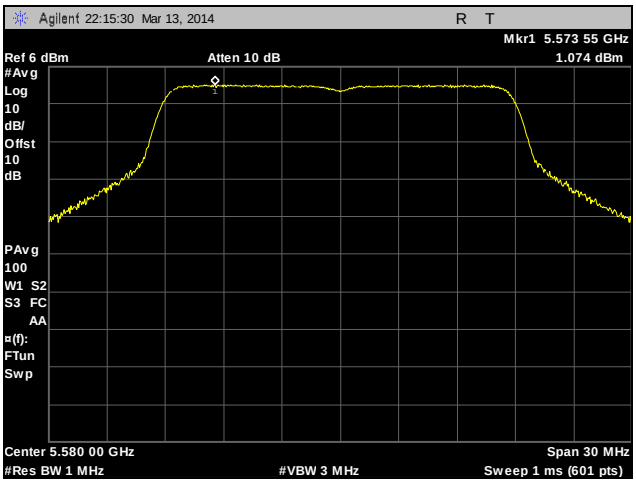
Plot 94. Peak Power Spectral Density, 20 MHz, 5300 MHz, Channel 1



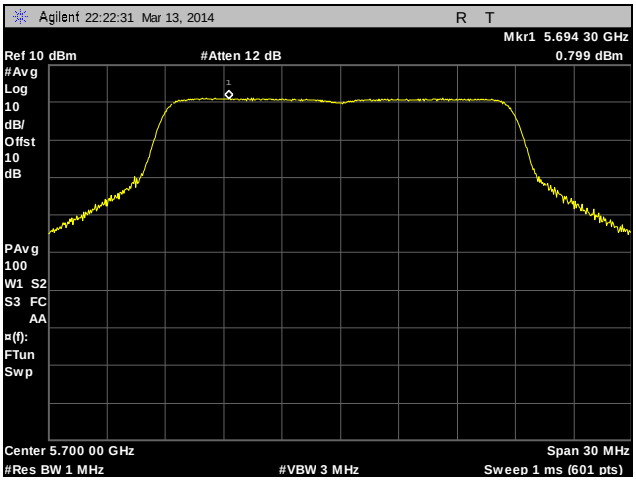
Plot 95. Peak Power Spectral Density, 20 MHz, 5320 MHz, Channel 1



Plot 96. Peak Power Spectral Density, 20 MHz, 5500 MHz, Channel 1

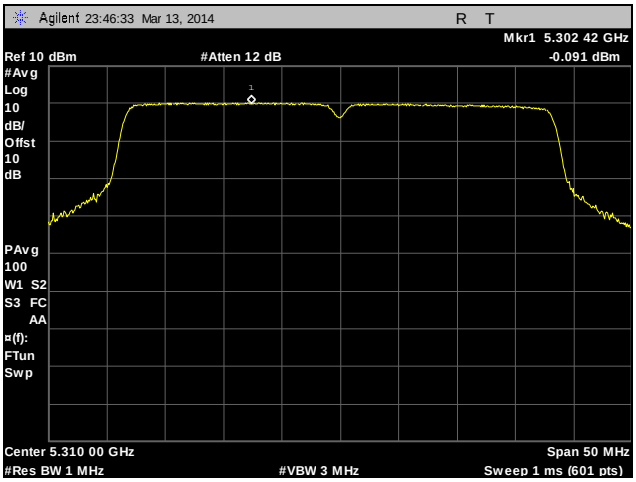


Plot 97. Peak Power Spectral Density, 20 MHz, 5580 MHz, Channel 1

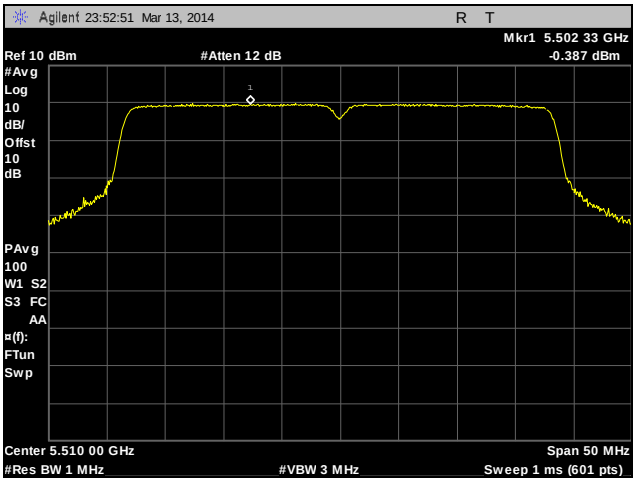


Plot 98. Peak Power Spectral Density, 20 MHz, 5700 MHz, Channel 1

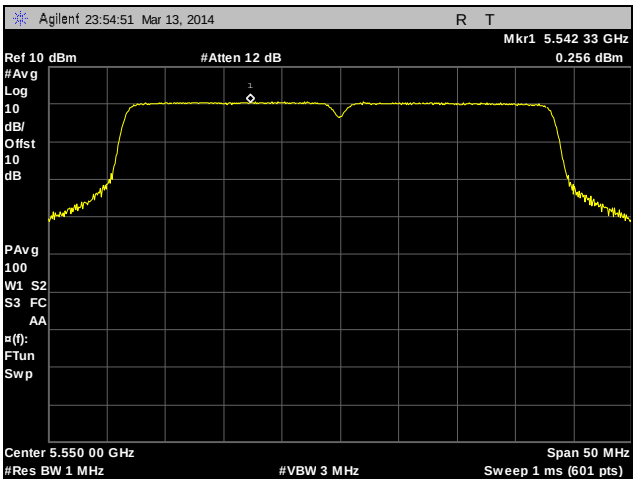
Peak Power Spectral Density, 40 MHz, Channel 1



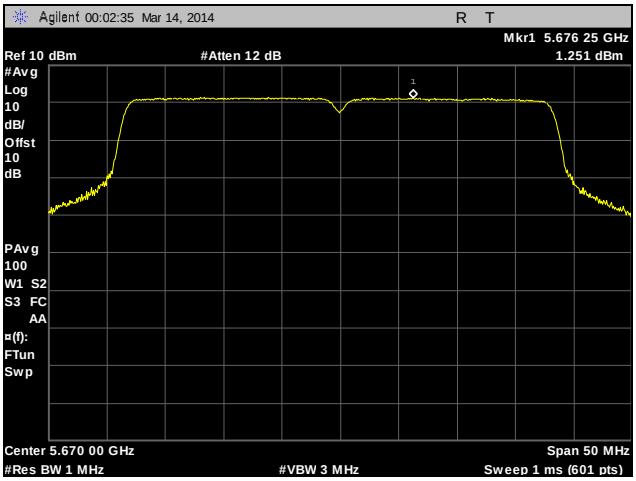
Plot 99. Peak Power Spectral Density, 40 MHz, 5310 MHz, Channel 1



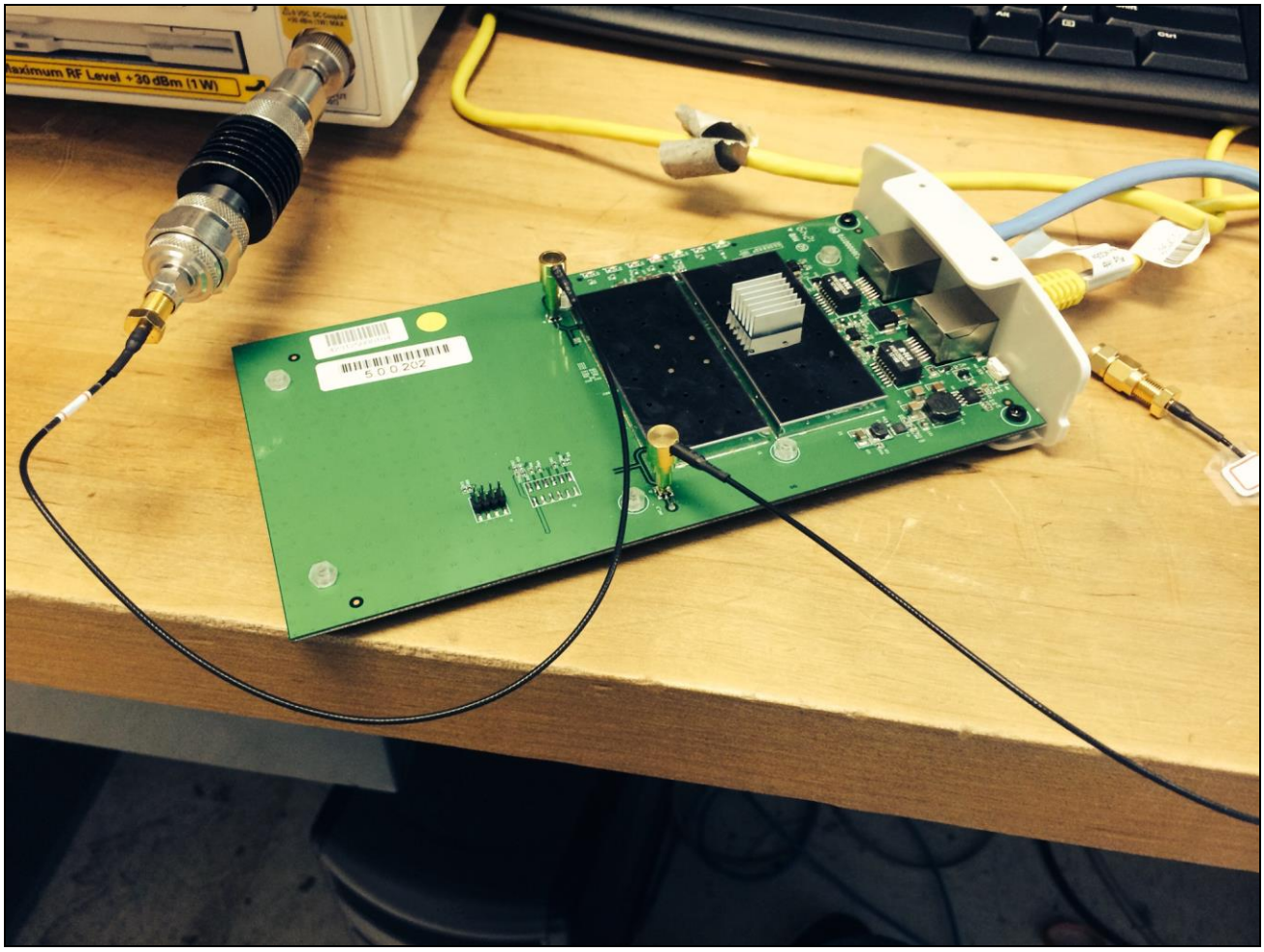
Plot 100. Peak Power Spectral Density, 40 MHz, 5510 MHz, Channel 1



Plot 101. Peak Power Spectral Density, 40 MHz, 5550 MHz, Channel 1



Plot 102. Peak Power Spectral Density, 40 MHz, 5670 MHz, Channel 1



Photograph 4. Peak Power Spectral Density, Test Setup

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.407(a)(6) Peak Excursion Ratio

Test Requirements: **§ 15.407(a)(6):** 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 bandwidth whichever is less.

Test Procedure: The EUT was connected directly to the spectrum analyzer through cabling and attenuation. The 1st trace on the spectrum analyzer was set to RBW=1MHz, VBW=3MHz. The peak detector mode was used and the trace max held. The 2nd trace on the spectrum analyzer was set according to measurement method #1 from the FCC Public Notice DA 02-2138 for making conducted power measurements.

Test Results: Equipment was compliant with the peak excursion ratio limits of **§ 15.407(a)(6).** The peak excursion ratio was determined from plots on the following page(s).

Test Engineer(s): Djed Mouada

Test Date(s): 03/14/14

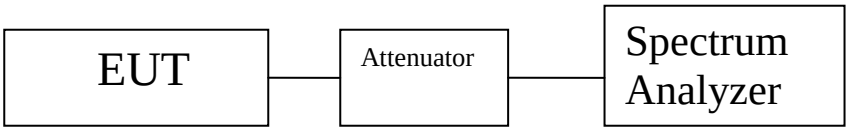
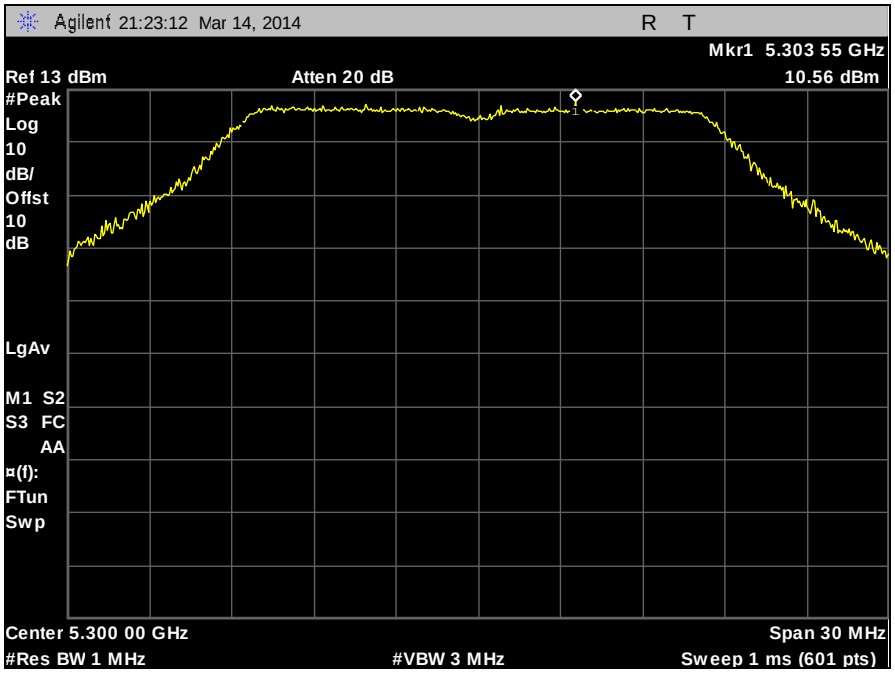


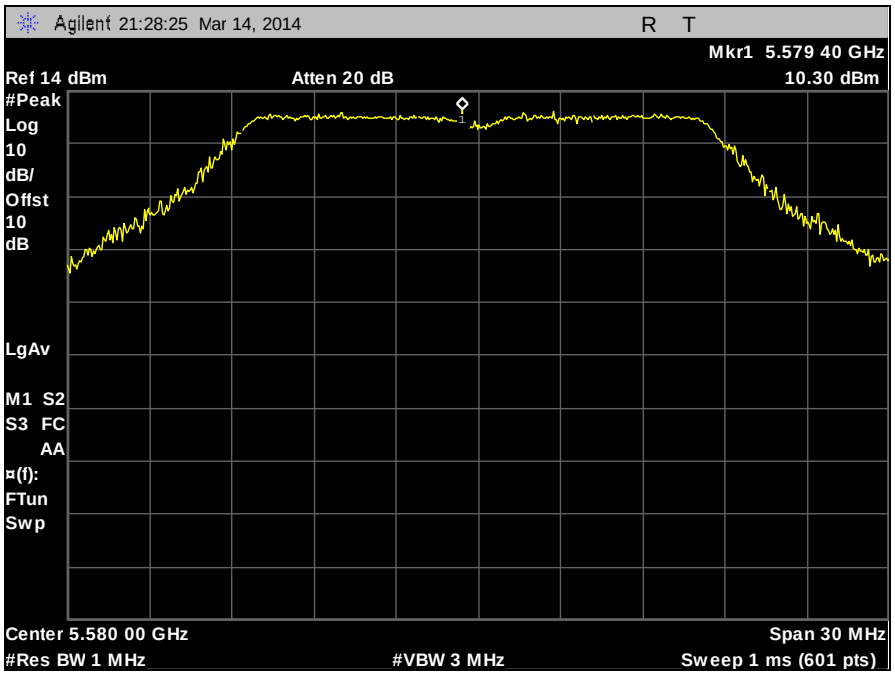
Figure 5. Peak Excursion Ration Test Setup

Frequency (MHz)	Peak Max Hold Value (dBm)	Peak PSD Value (dBm)	Ratio	Limit	Margin
5300(20MHZ BW)	10.56	-0.061	10.621	13	-2.379
5580(20MHZ BW)	10.3	1.074	9.226	13	-3.774
5310(40MHZ BW)	7.47	-0.91	8.38	13	-4.62
5550(20MHZ BW)	8.14	0.256	7.884	13	-5.116

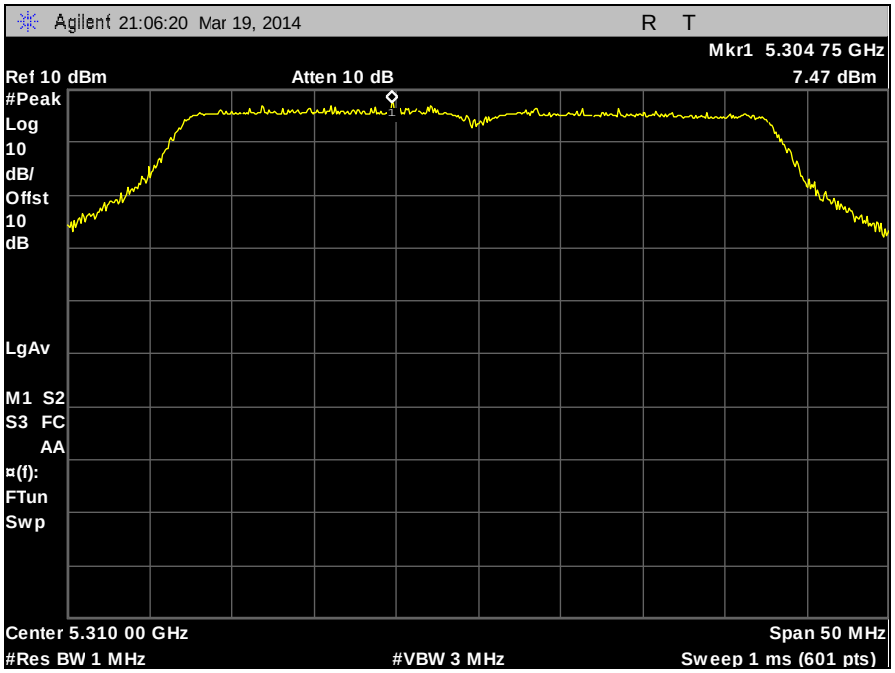
Photograph 5. Peak Excursion Ration, Test Results



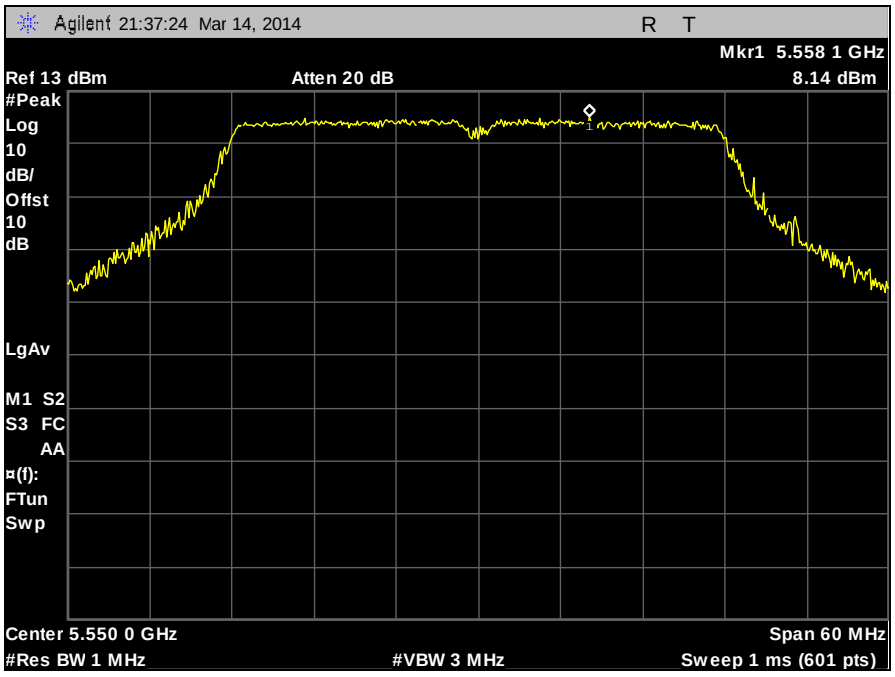
Plot 103. Peak Excursion Ratio, 20 MHz, 5300 MHz



Plot 104. Peak Excursion Ratio, 20 MHz, 5580 MHz



Plot 105. Peak Excursion Ratio, 40 MHz, 5310 MHz



Plot 106. Peak Excursion Ratio, 40 MHz, 5550 MHz

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.407(b)(2), (3), (6), (7) Undesirable Emissions

Test Requirements: **§ 15.407(b)(2), (3), (6), (7)**; **§15.205:** Emissions outside the frequency band.

§ 15.407(b)(2): For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.

§ 15.407(b)(3): For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz**.**

§ 15.407(b)(6): Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in Section 15.207.

§ 15.407(b)(7): The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

Test Procedure: The transmitter was placed on an acrylic stand inside in a semi-anechoic chamber. Measurements were performed with the EUT rotated 360 degrees and varying the adjustable antenna mast height to determine worst case orientation for maximum emissions.

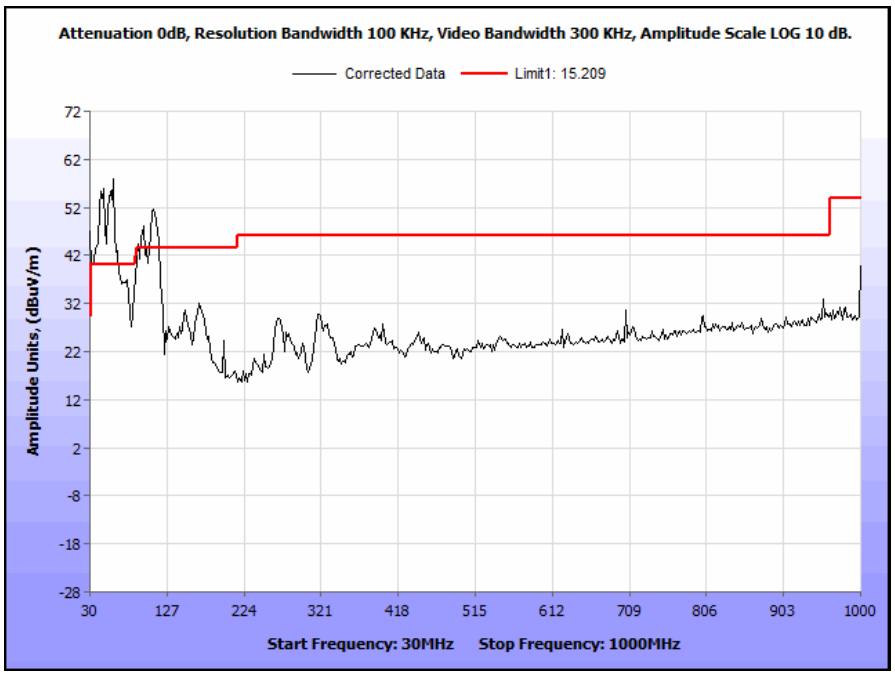
For frequencies from 30 MHz to 1 GHz, measurements were made using a quasi-peak detector with a 120 kHz bandwidth.

For measurements above 1 GHz, measurements were made with a Peak detector with 1 MHz resolution bandwidth. Where the spurious emissions fell into a restricted band, measurements were also made with an average detector to make sure they complied with 15.209 limits. Emissions were explored up to 40 GHz.
The equation, **EIRP= E + 20 log D – 104.8** was used to convert an EIRP limit to a field strength limit.
E = field strength (dBUv/m)
D = Reference measurement distance

Test Results: The EUT was compliant with the Radiated Emission limits for Intentional Radiators. See following pages for detailed test results.

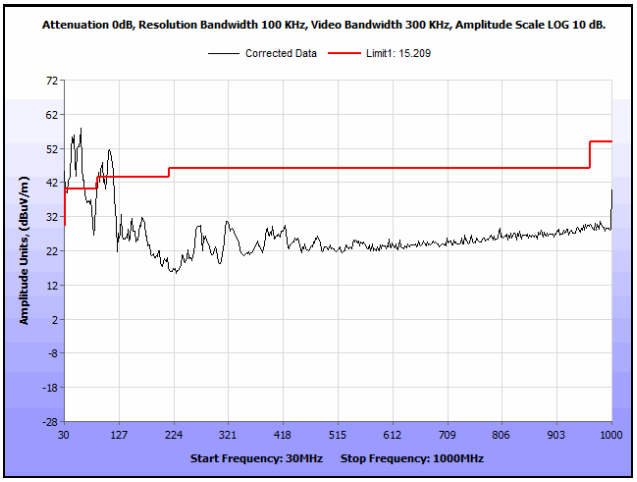
Test Engineer(s): Djed Mouada

Test Date(s): 05/30/14

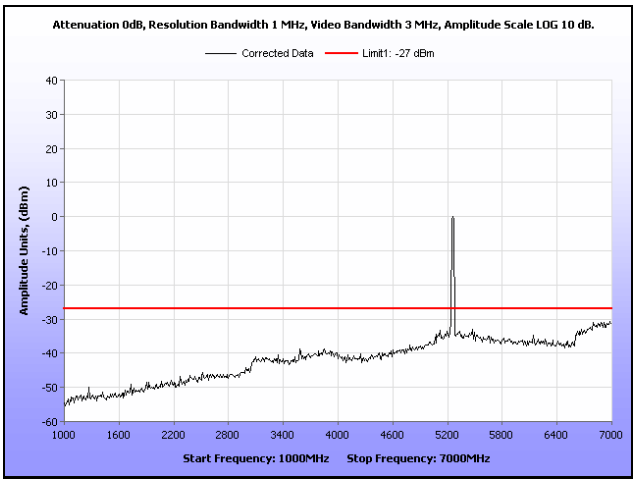


Plot 107. Radiated Spurious Emissions, Radio Off, Digital Emissions

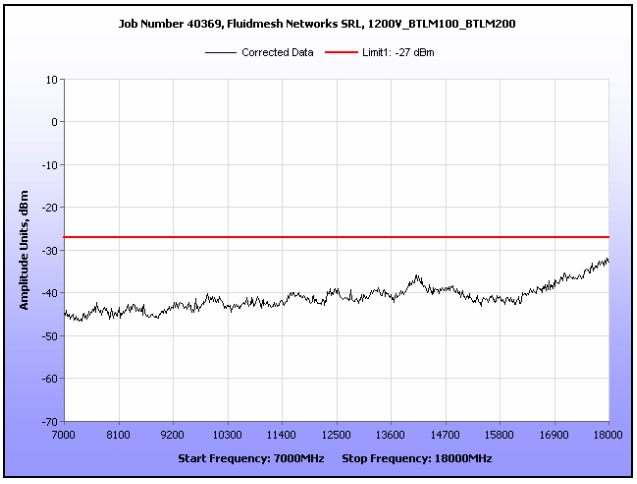
Radiated Spurious Emissions, 20 MHz, -27 dBm



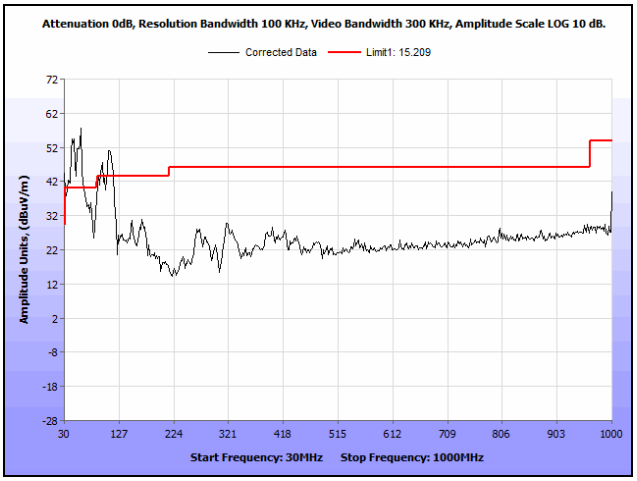
Plot 108. Radiated Spurious Emissions, 20 MHz, 5280 MHz, 30 MHz – 1 GHz, -27 dBm



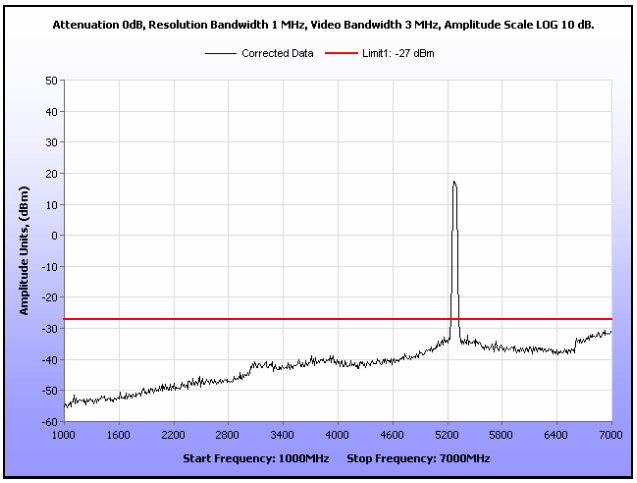
Plot 109. Radiated Spurious Emissions, 20 MHz, 5280 MHz, 1 GHz – 7 GHz, -27 dBm



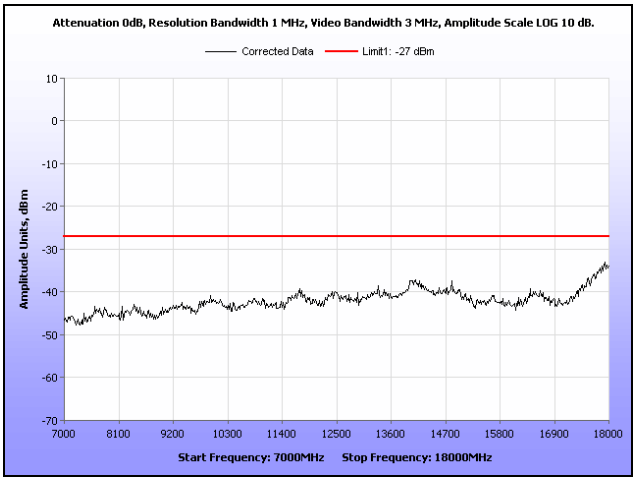
Plot 110. Radiated Spurious Emissions, 20 MHz, 5280 MHz, 7 GHz – 18 GHz, -27 dBm



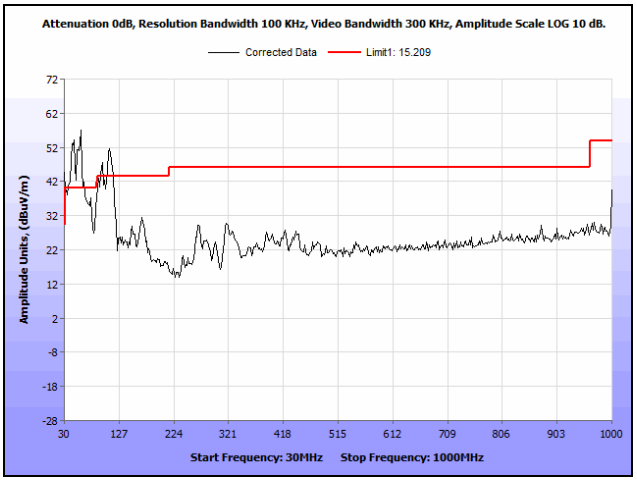
Plot 111. Radiated Spurious Emissions, 20 MHz, 5300 MHz, 30 MHz – 1 GHz, -27 dBm



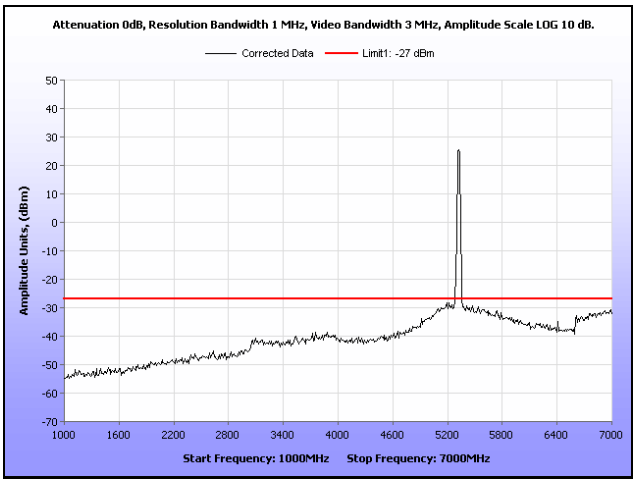
Plot 112. Radiated Spurious Emissions, 20 MHz, 5300 MHz, 1 GHz – 7 GHz, -27 dBm



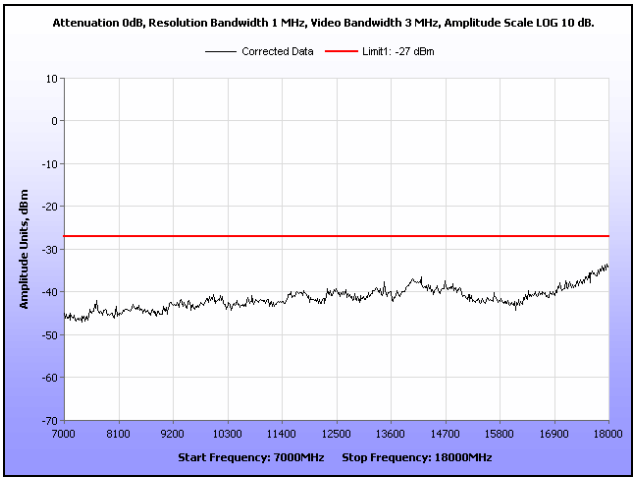
Plot 113. Radiated Spurious Emissions, 20 MHz, 5300 MHz, 7 GHz – 18 GHz, -27 dBm



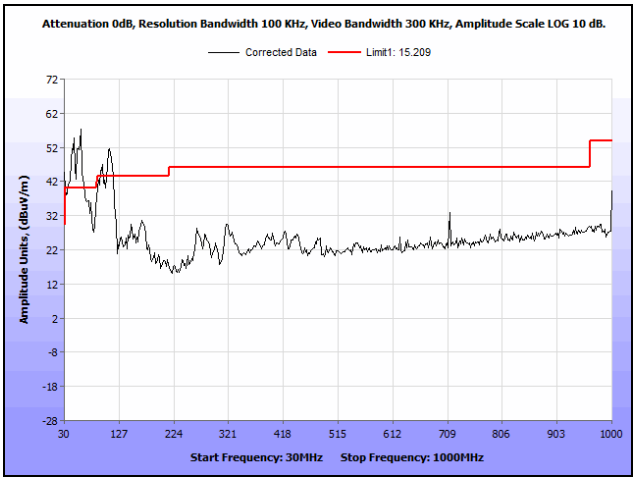
Plot 114. Radiated Spurious Emissions, 20 MHz, 5320 MHz, 30 MHz – 1 GHz, -27 dBm



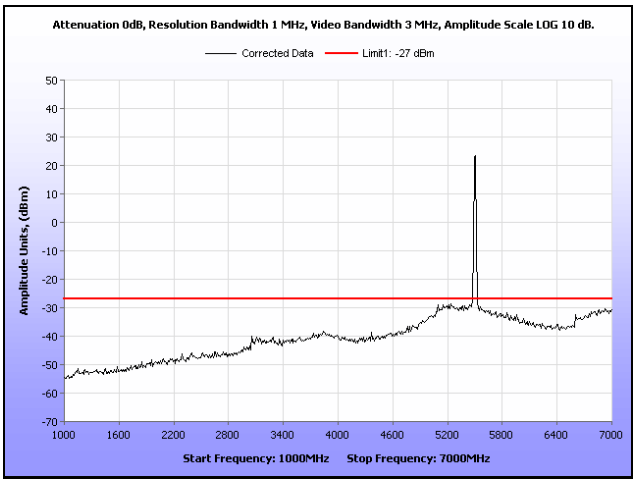
Plot 115. Radiated Spurious Emissions, 20 MHz, 5320 MHz, 1 GHz – 7 GHz, -27 dBm



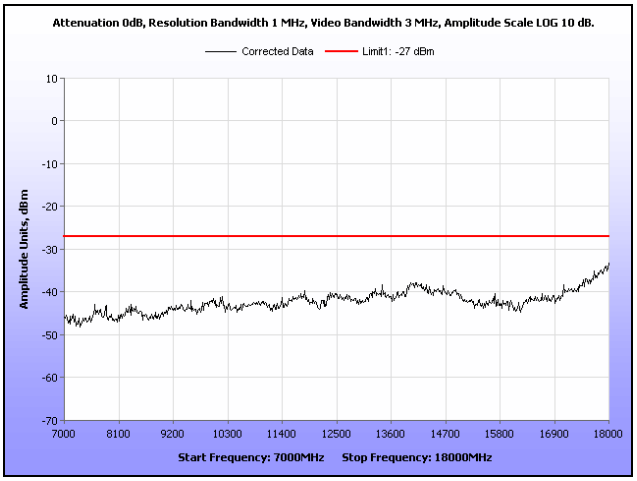
Plot 116. Radiated Spurious Emissions, 20 MHz, 5320 MHz, 7 GHz – 18 GHz, -27 dBm



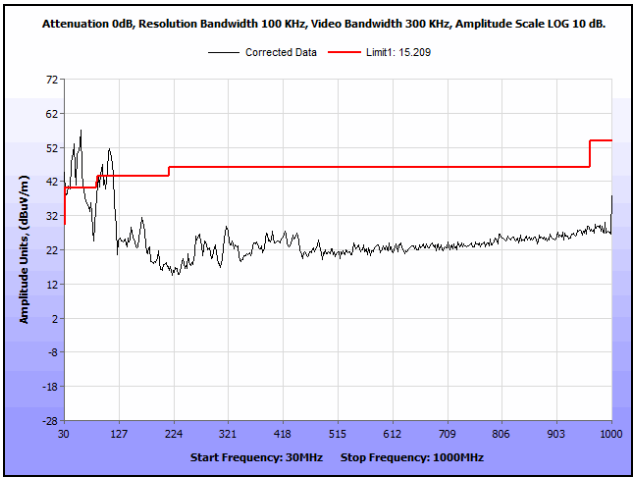
Plot 117. Radiated Spurious Emissions, 20 MHz, 5500 MHz, 30 MHz – 1 GHz, -27 dBm



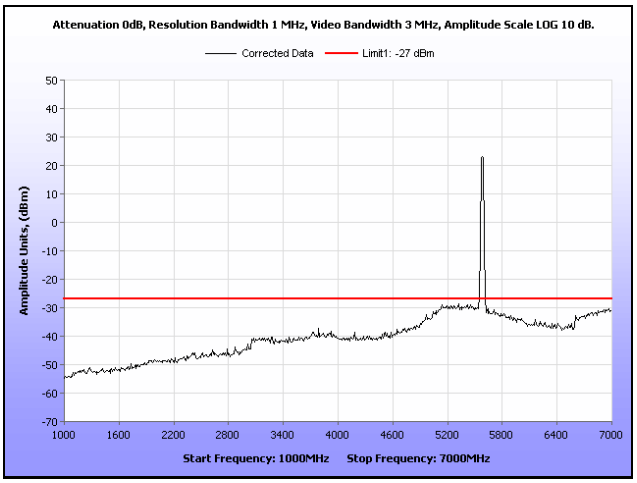
Plot 118. Radiated Spurious Emissions, 20 MHz, 5500 MHz, 1 GHz – 7 GHz, -27 dBm



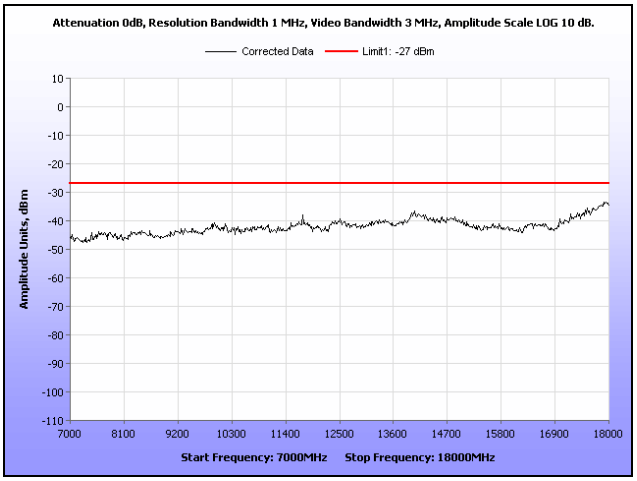
Plot 119. Radiated Spurious Emissions, 20 MHz, 5500 MHz, 7 GHz – 18 GHz, -27 dBm



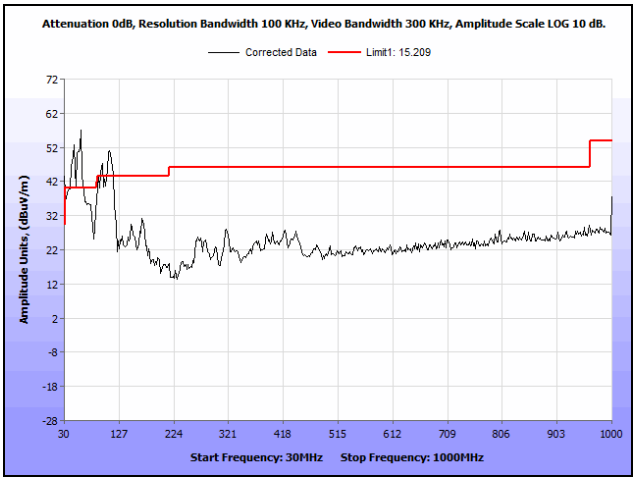
Plot 120. Radiated Spurious Emissions, 20 MHz, 5580 MHz, 30 MHz – 1 GHz, -27 dBm



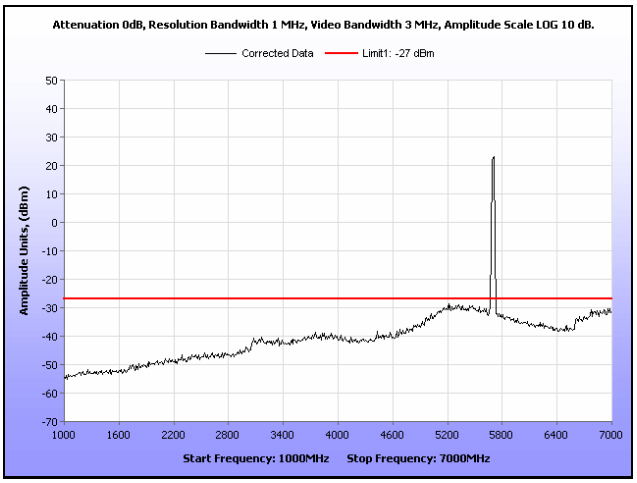
Plot 121. Radiated Spurious Emissions, 20 MHz, 5580 MHz, 1 GHz – 7 GHz, -27 dBm



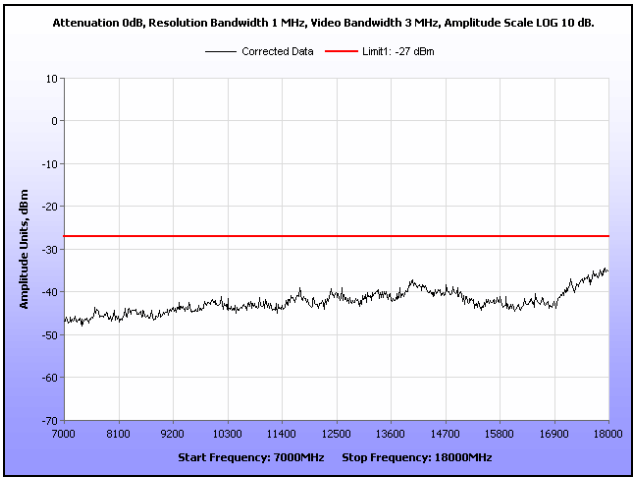
Plot 122. Radiated Spurious Emissions, 20 MHz, 5580 MHz, 7 GHz – 18 GHz, -27 dBm



Plot 123. Radiated Spurious Emissions, 20 MHz, 5700 MHz, 30 MHz – 1 GHz, -27 dBm

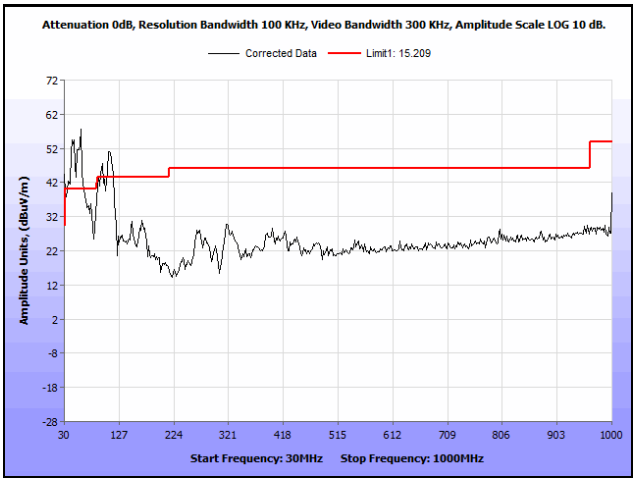


Plot 124. Radiated Spurious Emissions, 20 MHz, 5700 MHz, 1 GHz – 7 GHz, -27 dBm

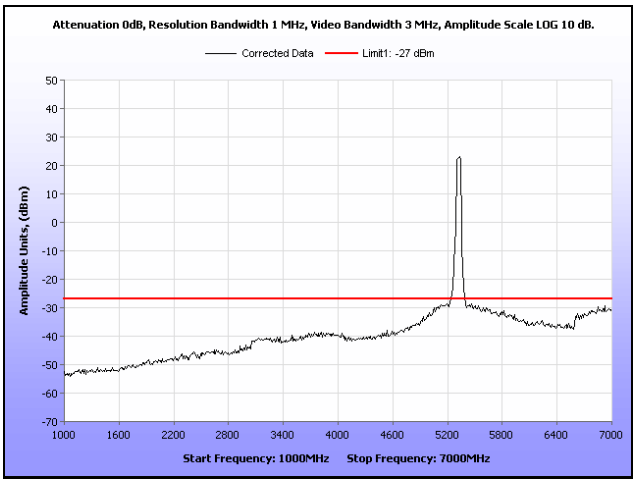


Plot 125. Radiated Spurious Emissions, 20 MHz, 5700 MHz, 7 GHz – 18 GHz, -27 dBm

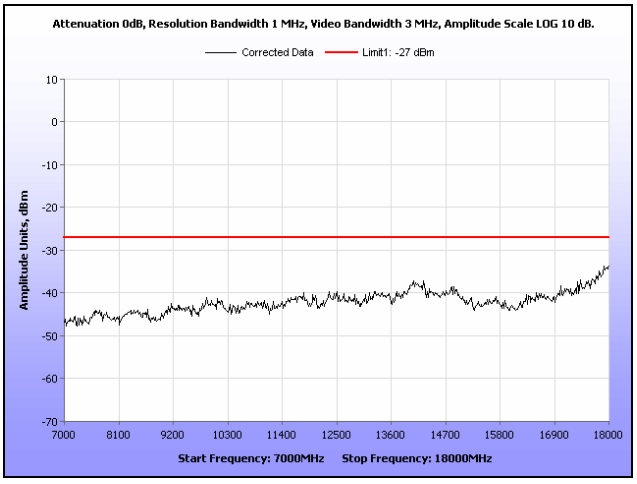
Radiated Spurious Emissions, 40 MHz, -27 dBm



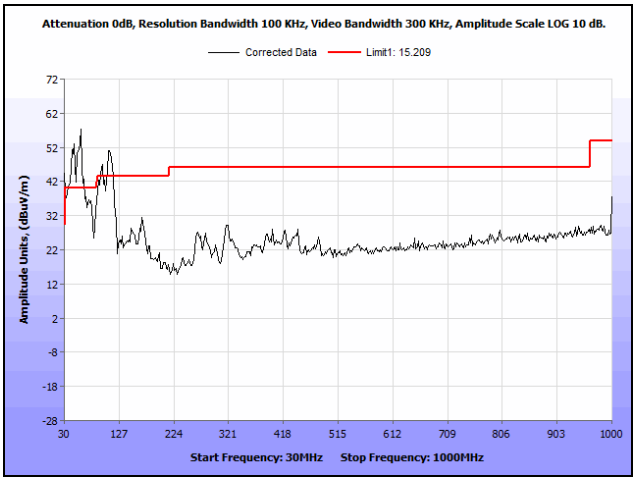
Plot 126. Radiated Spurious Emissions, 40 MHz, 5310 MHz, 30 MHz – 1 GHz, -27 dBm



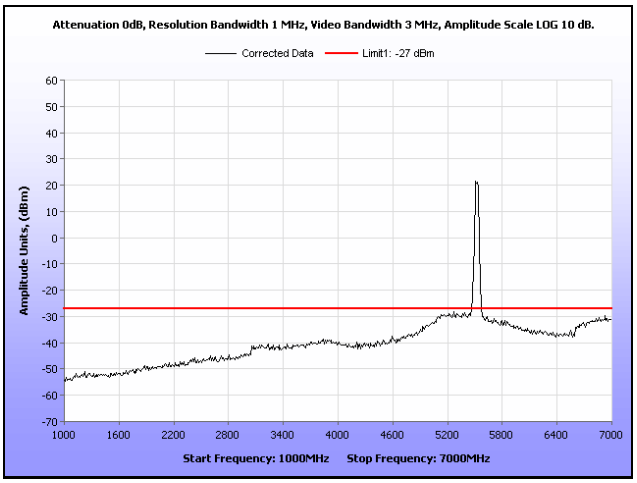
Plot 127. Radiated Spurious Emissions, 40 MHz, 5310 MHz, 1 GHz – 7 GHz, -27 dBm



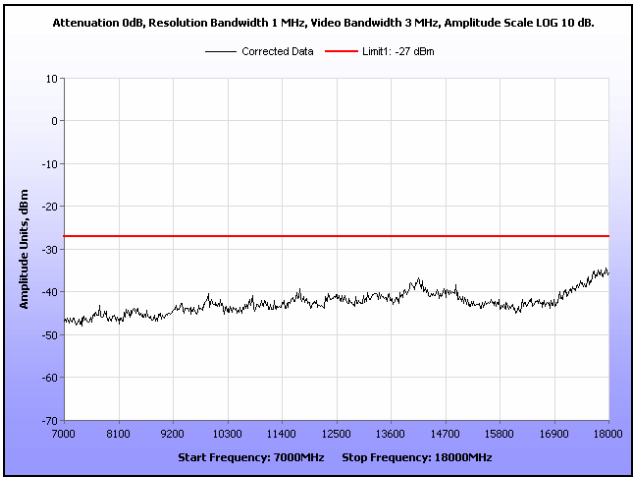
Plot 128. Radiated Spurious Emissions, 40 MHz, 5310 MHz, 7 GHz – 18 GHz, -27 dBm



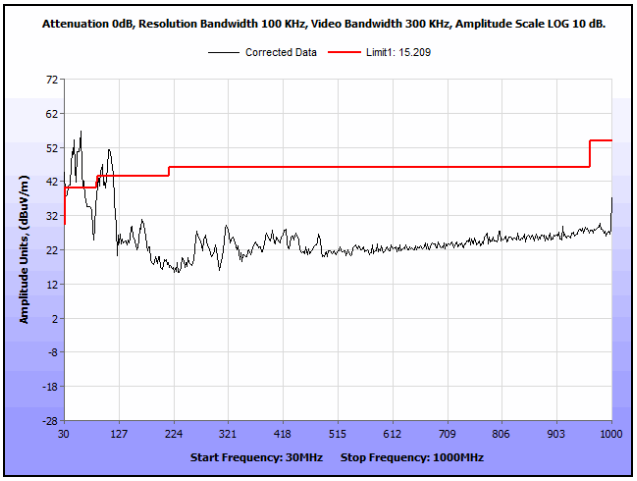
Plot 129. Radiated Spurious Emissions, 40 MHz, 5510 MHz, 30 MHz – 1 GHz, -27 dBm



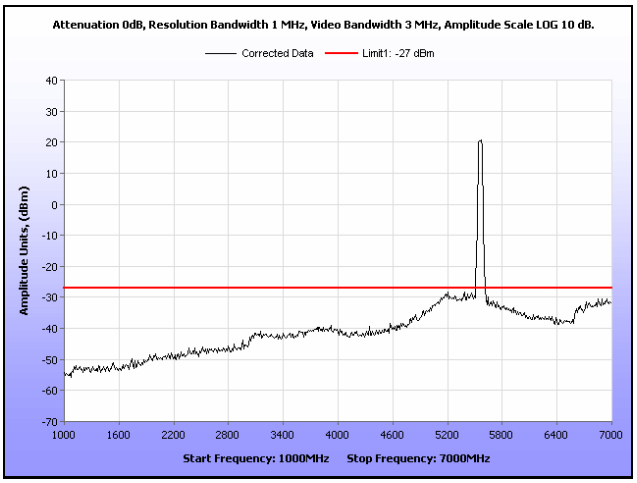
Plot 130. Radiated Spurious Emissions, 40 MHz, 5510 MHz, 1 GHz – 7 GHz, -27 dBm



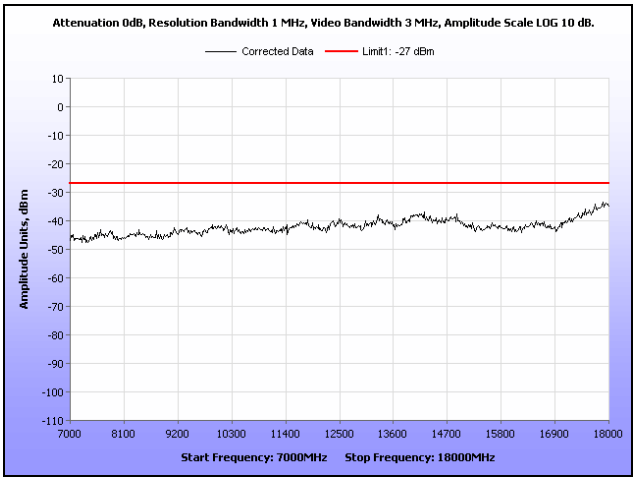
Plot 131. Radiated Spurious Emissions, 40 MHz, 5510 MHz, 7 GHz – 18 GHz, -27 dBm



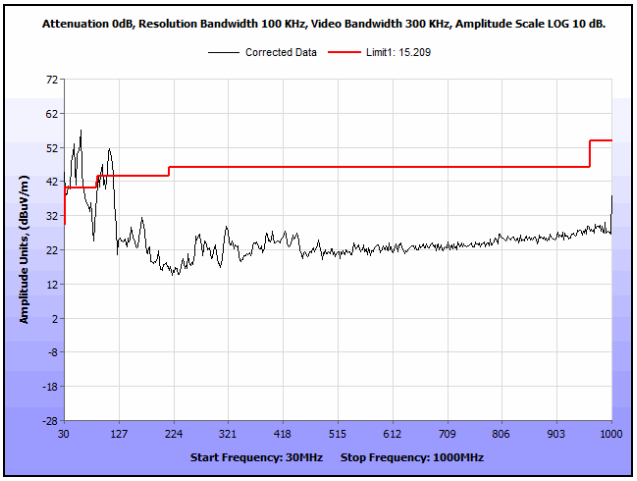
Plot 132. Radiated Spurious Emissions, 40 MHz, 5550 MHz, 30 MHz – 1 GHz, -27 dBm



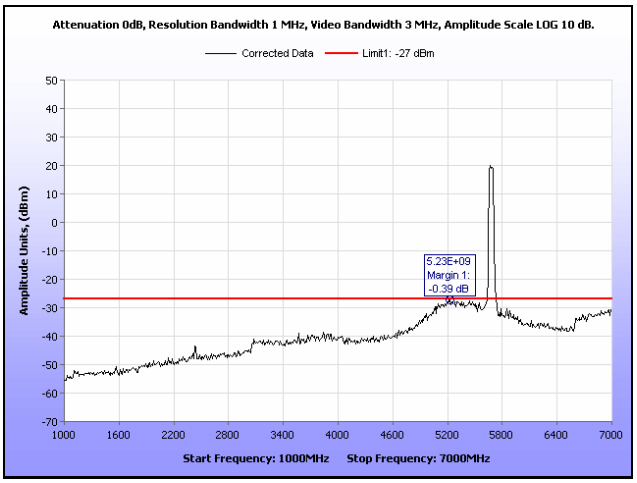
Plot 133. Radiated Spurious Emissions, 40 MHz, 5550 MHz, 1 GHz – 7 GHz, -27 dBm



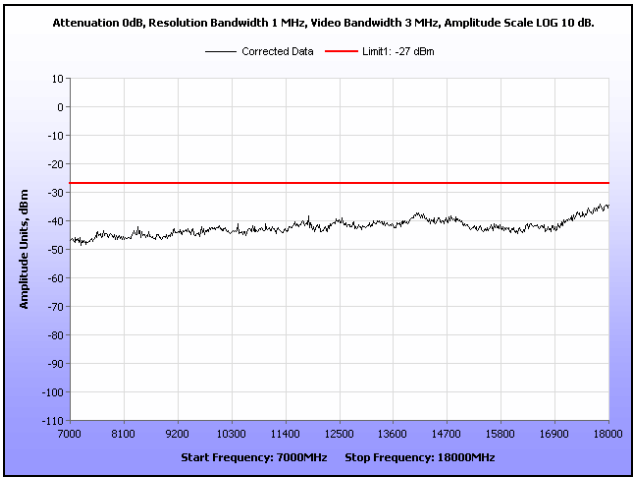
Plot 134. Radiated Spurious Emissions, 40 MHz, 5550 MHz, 7 GHz – 18 GHz, -27 dBm



Plot 135. Radiated Spurious Emissions, 40 MHz, 5670 MHz, 30 MHz – 1 GHz, -27 dBm

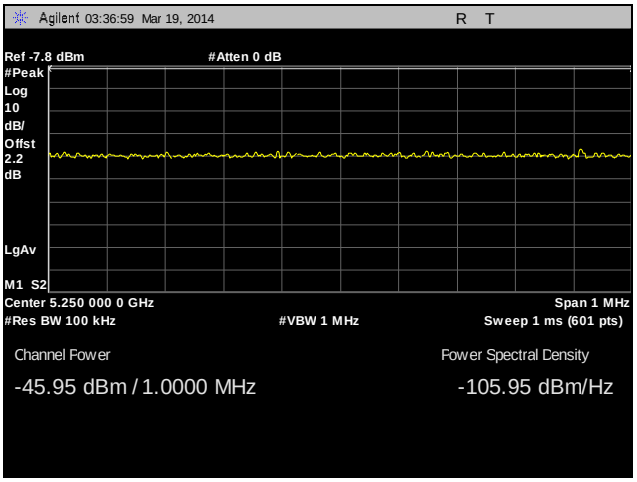


Plot 136. Radiated Spurious Emissions, 40 MHz, 5670 MHz, 1 GHz – 7 GHz, -27 dBm

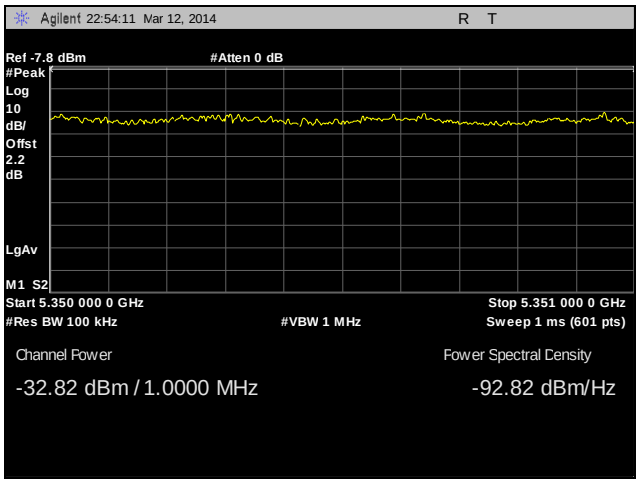


Plot 137. Radiated Spurious Emissions, 40 MHz, 5670 MHz, 7 GHz – 18 GHz, -27 dBm

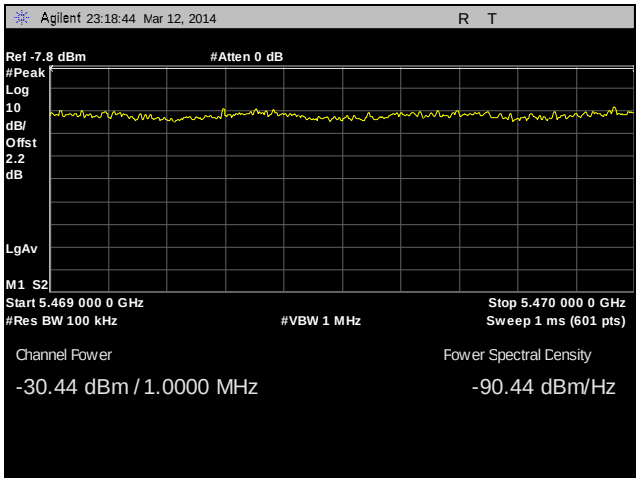
Out of Band Emissions, 20 MHz



Plot 138. Radiated Out of Band Emissions, 20 MHz, 5280 MHz, -27 dBm, 100 kHz RBW

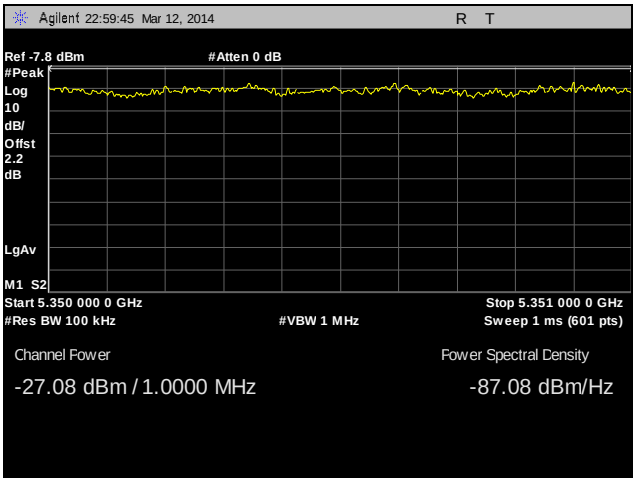


Plot 139. Radiated Out of Band Emissions, 20 MHz, 5320 MHz, -27 dBm, 100 kHz RBW

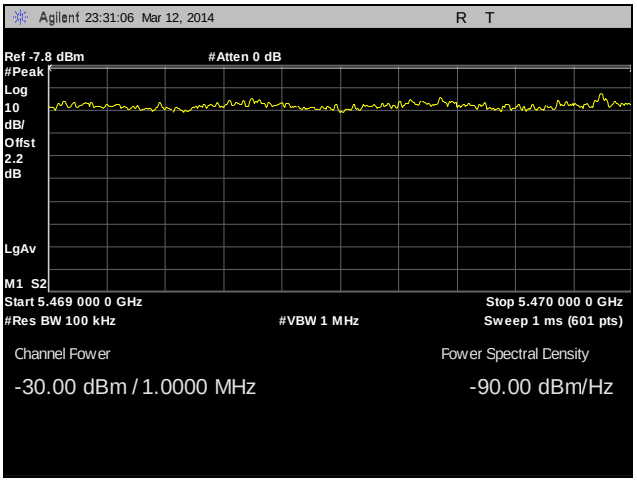


Plot 140. Radiated Out of Band Emissions, 20 MHz, 5500 MHz, -27 dBm, 100 kHz RBW

Out of Band Emissions, 40 MHz

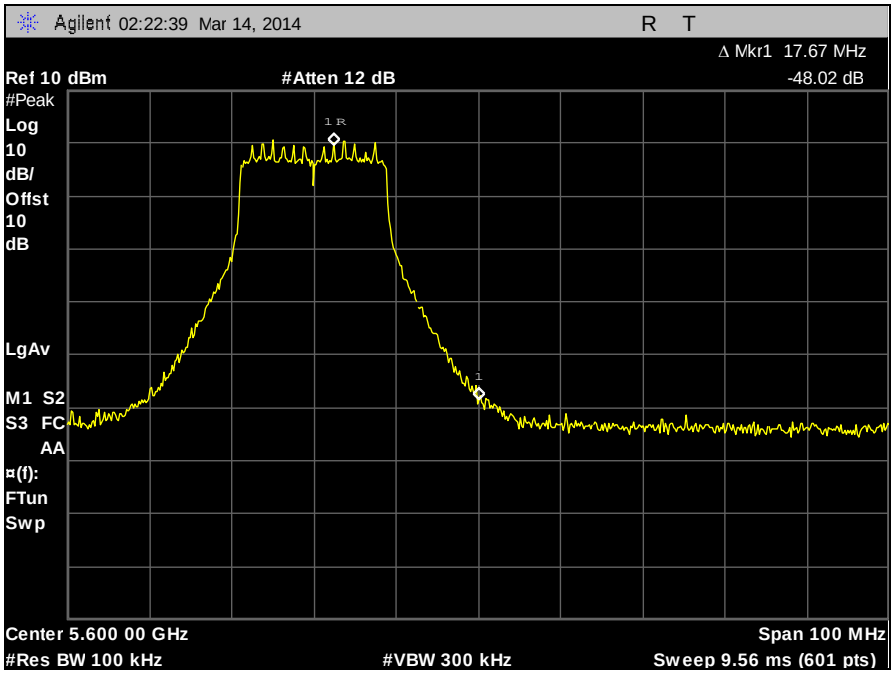


Plot 141. Radiated Out of Band Emissions, 40 MHz, 5310 MHz, -27 dBm, 100 kHz RBW

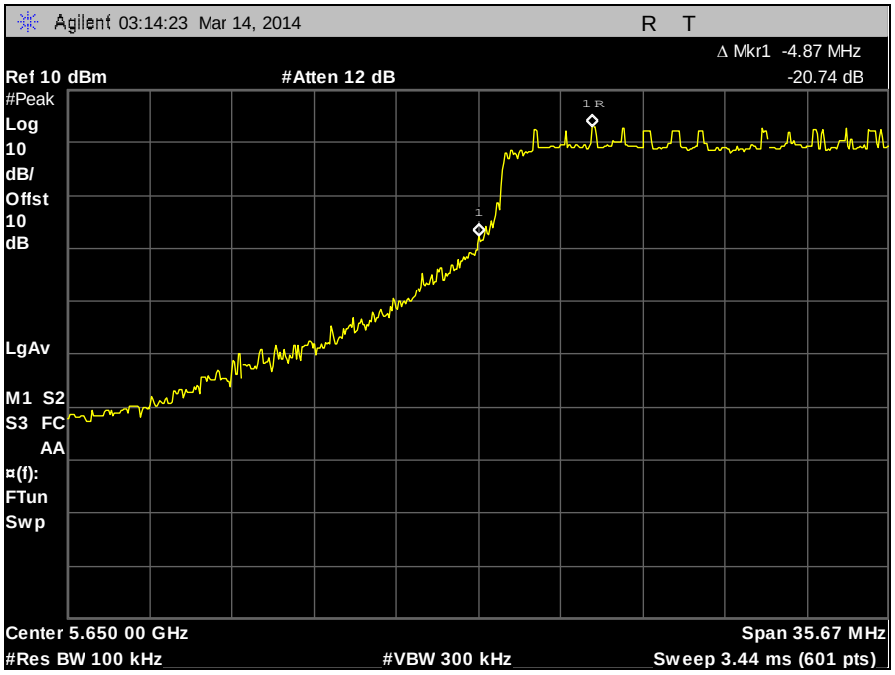


Plot 142. Radiated Out of Band Emissions, 40 MHz, 5510 MHz, -27 dBm, 100 kHz RBW

Weather Radar Band, 20 MHz, Channel 0

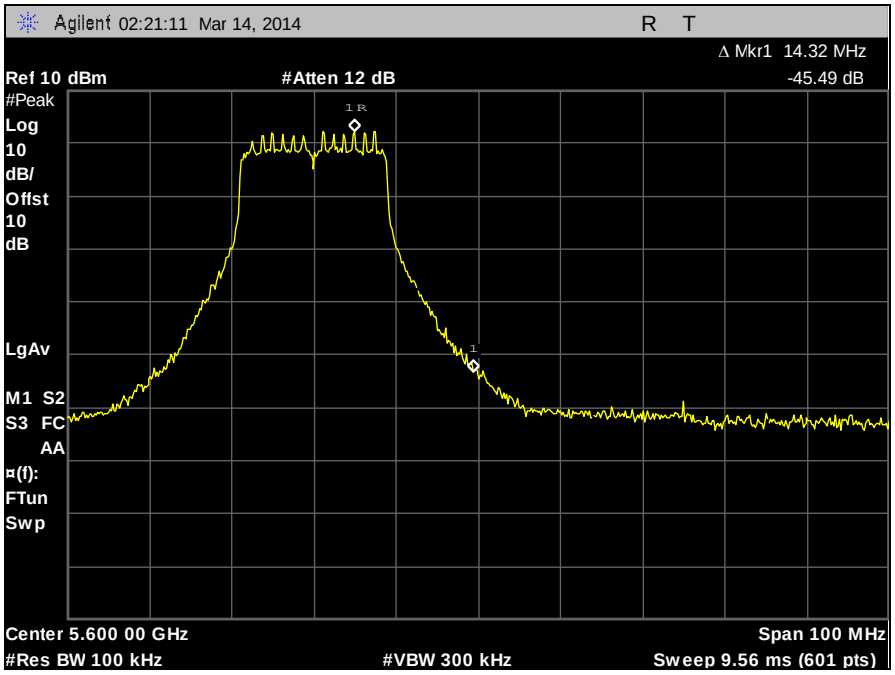


Plot 143. Radiated Weather Radar Band, 20 MHz, 5580 MHz, Channel 0

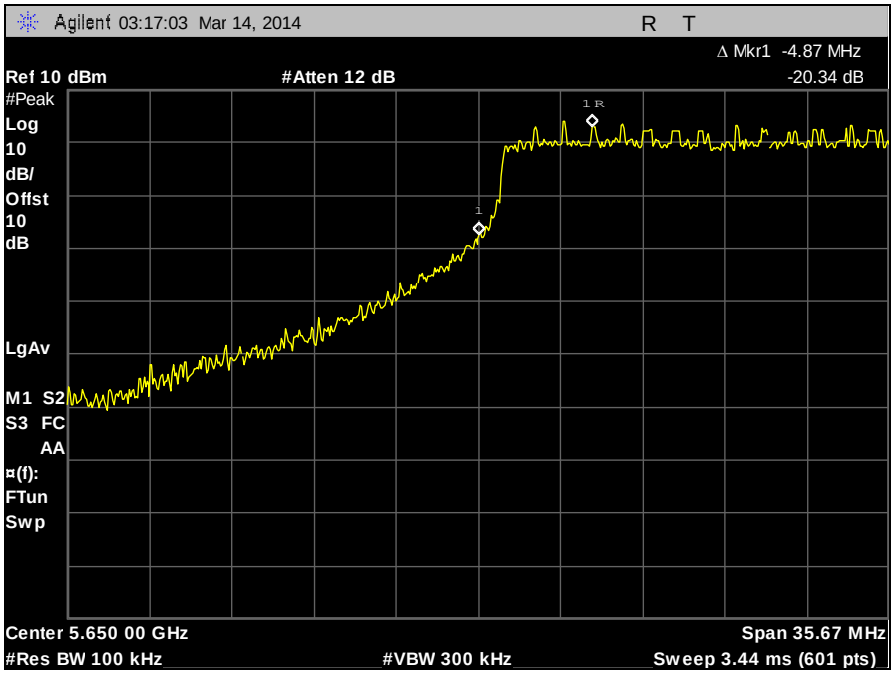


Plot 144. Radiated Weather Radar Band, 20 MHz, 5660 MHz, Channel 0

Weather Radar Band, 20 MHz, Channel 1

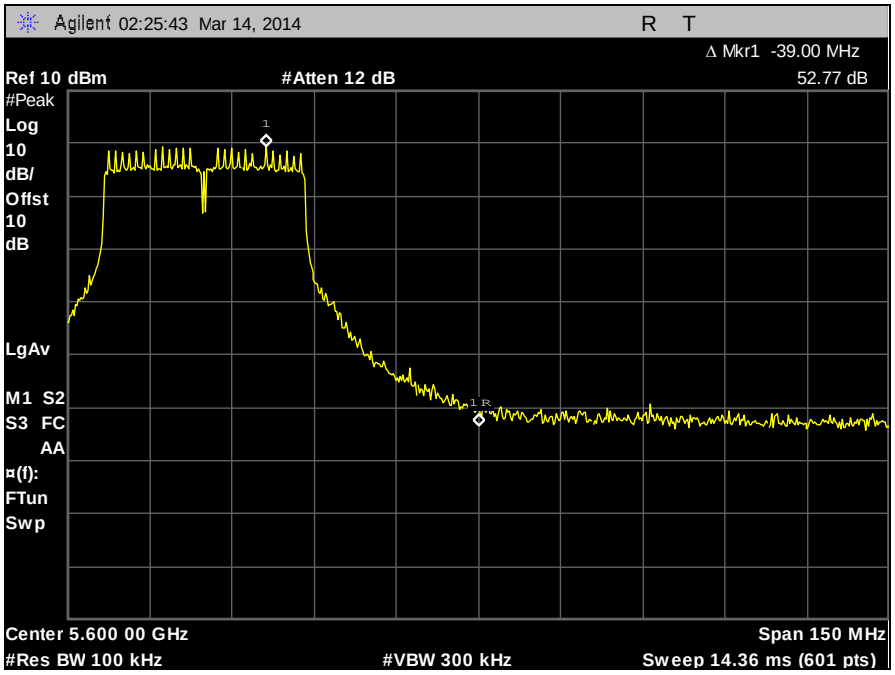


Plot 145. Radiated Weather Radar Band, 20 MHz, 5580 MHz, Channel 1

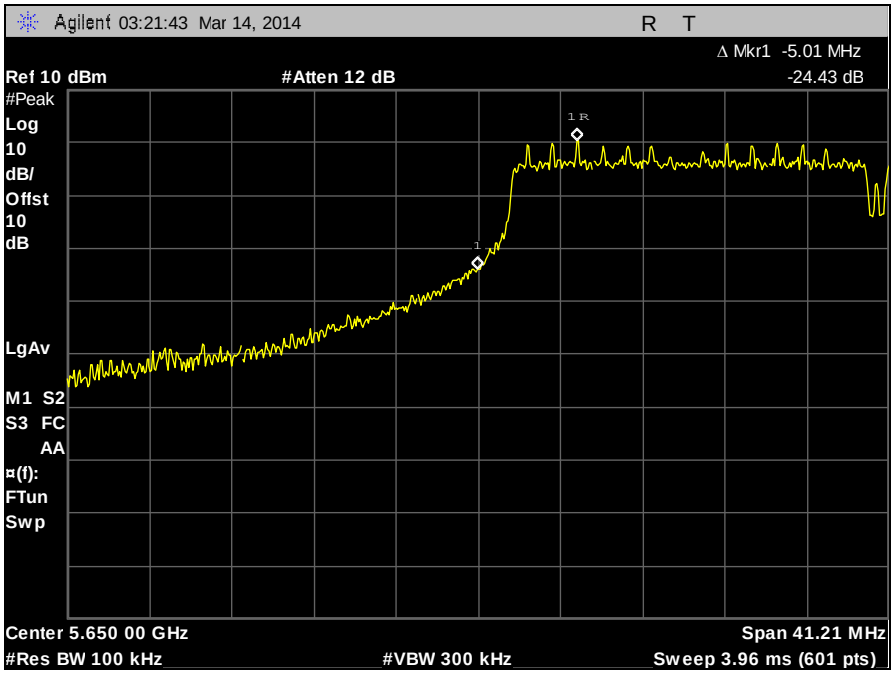


Plot 146. Radiated Weather Radar Band, 20 MHz, 5660 MHz, Channel 1

Weather Radar Band, 40 MHz, Channel 0

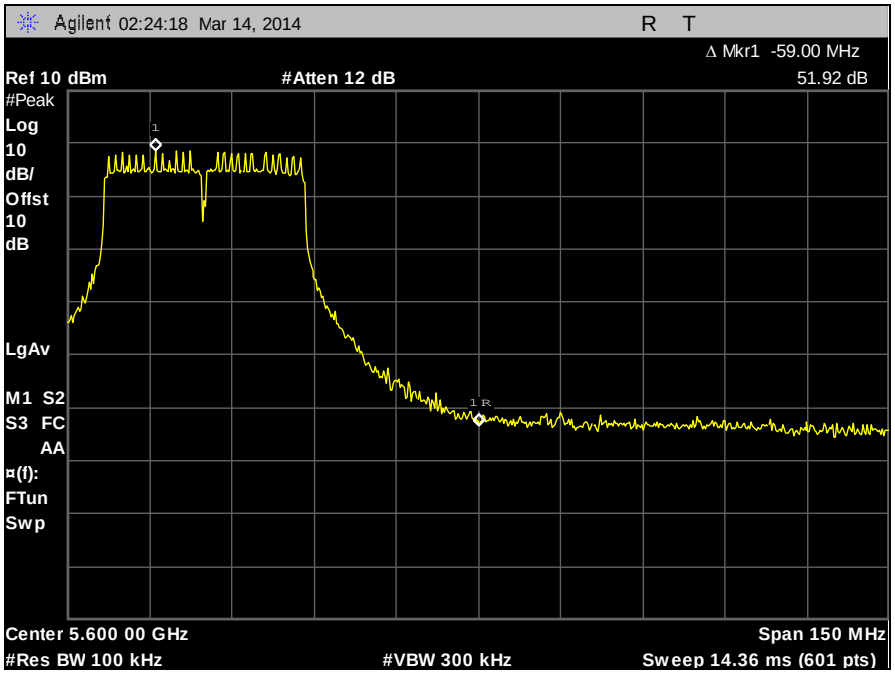


Plot 147. Radiated Weather Radar Band, 40 MHz, 5550 MHz, Channel 0

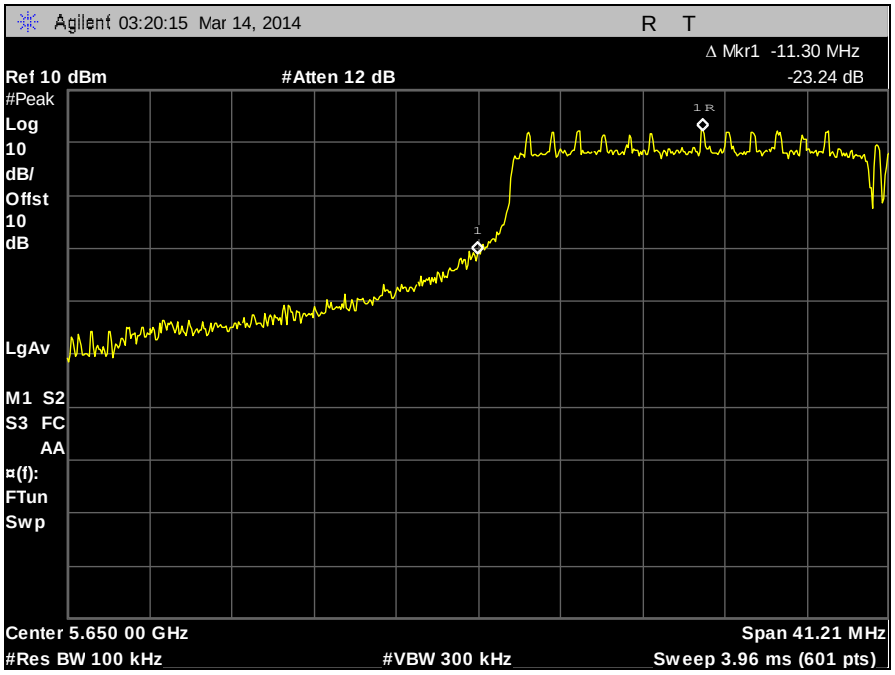


Plot 148. Radiated Weather Radar Band, 40 MHz, 5650 MHz, Channel 0

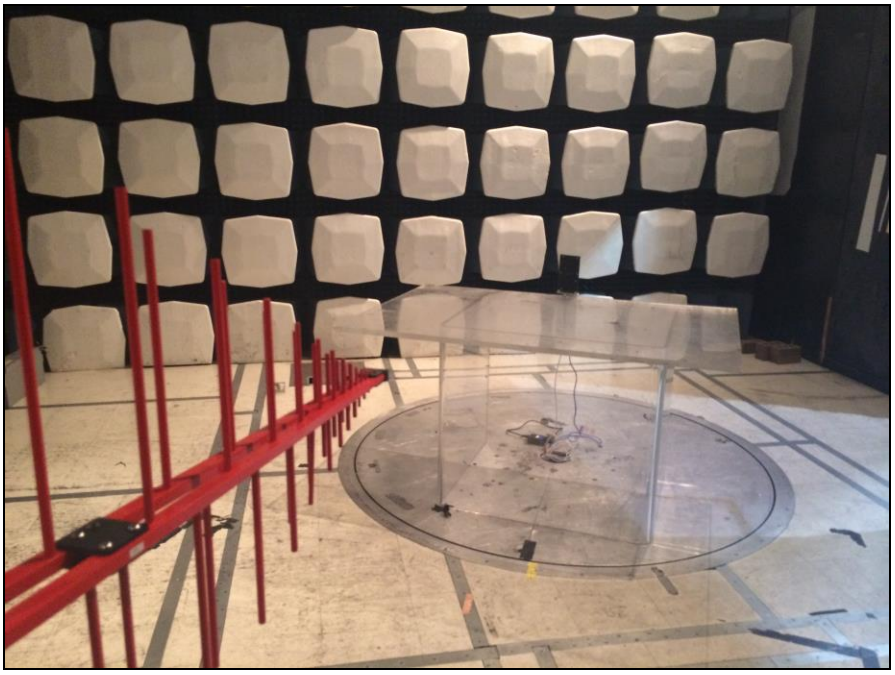
Weather Radar Band, 40 MHz, Channel 1



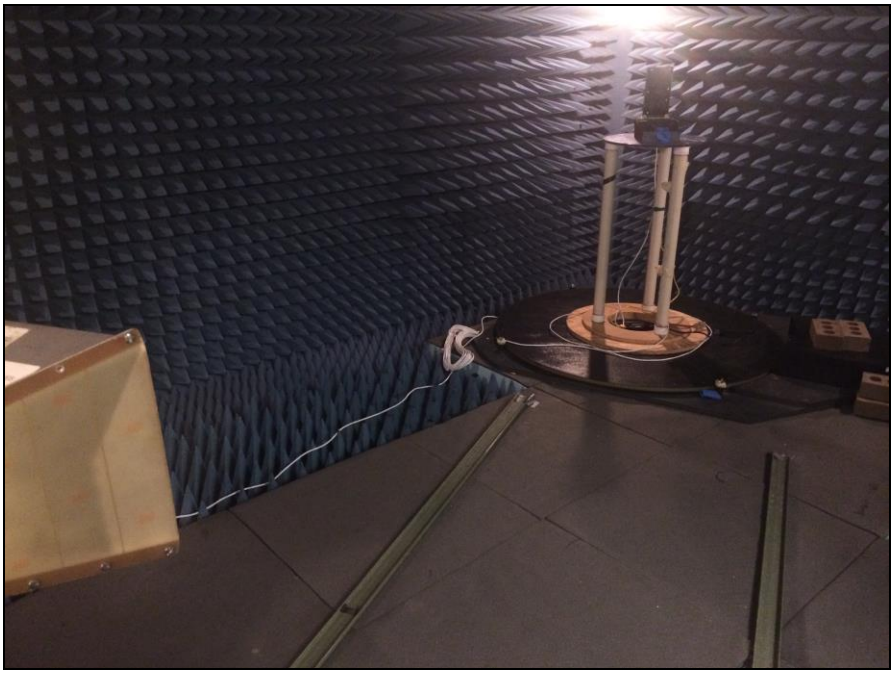
Plot 149. Radiated Weather Radar Band, 40 MHz, 5550 MHz, Channel 1



Plot 150. Radiated Weather Radar Band, 40 MHz, 5650 MHz, Channel 1



Photograph 6. Radiated Spurious Emissions, 30 MHz – 1 GHz



Photograph 7. Radiated Spurious Emissions, 1 GHz – 18 GHz

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.407(f) RF Exposure

RF Exposure Requirements: **§1.1307(b)(1) and §1.1307(b)(2):** Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

RF Radiation Exposure Limit: **§1.1310:** As specified in this section, the Maximum Permissible Exposure (MPE) Limit shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in Sec. 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of Sec. 2.1093 of this chapter.

Peak Conducted Power of Transceiver= 16.63dBm = 46.02mW
The limit for maximum RF exposure for 5GHz device is 1mW/cm^2
The formula for calculating RF exposure is given as $S= \frac{PG}{4\pi R^2}$
P=46.02 mW, G=13.3dBi = 21.37 (Linear) & R=20cm, then S comes out to be 0.195mW/cm^2

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.407(g) Frequency Stability

Test Requirements: **§ 15.407(g):** 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.

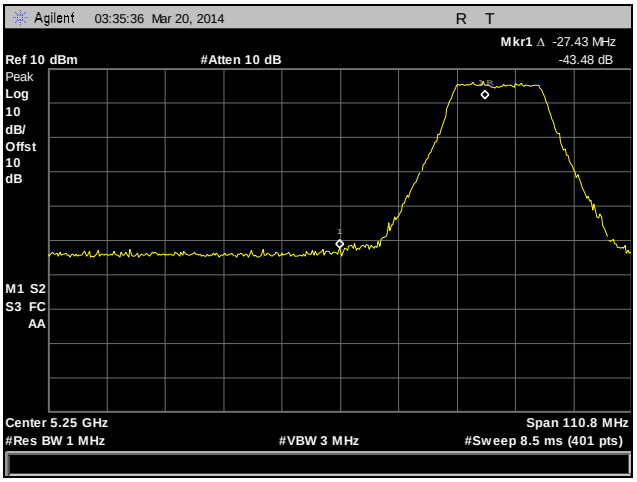
Test Procedure: The EUT was connected directly to a spectrum analyzer through an attenuator. The resolution band width of the spectrum analyzer was set to 1 MHz. We vary the voltage and the temperature and observe the -26 dB point of the signal. The -26dB point has to remain within the band limits. The plots below show the band limit as the center frequency and a delta marker was used to prove that the difference between the peak of the emission and the sub-band edge is at least 26 dB.

Test Results: The EUT was compliant with the requirements of **§15.407(g)**.

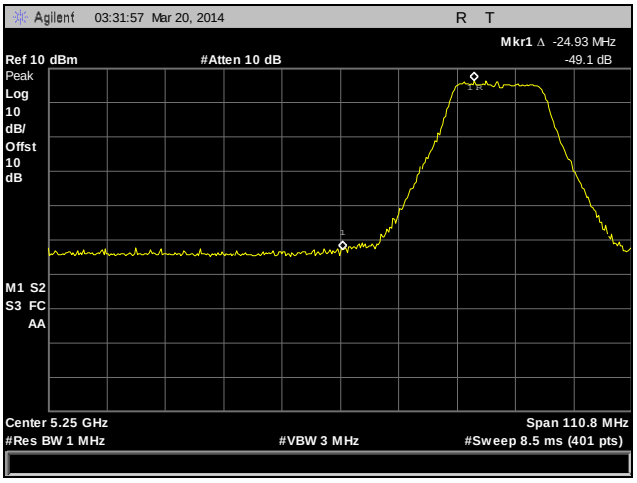
Test Engineer(s): Djed Mouada

Test Date(s): 03/21/14

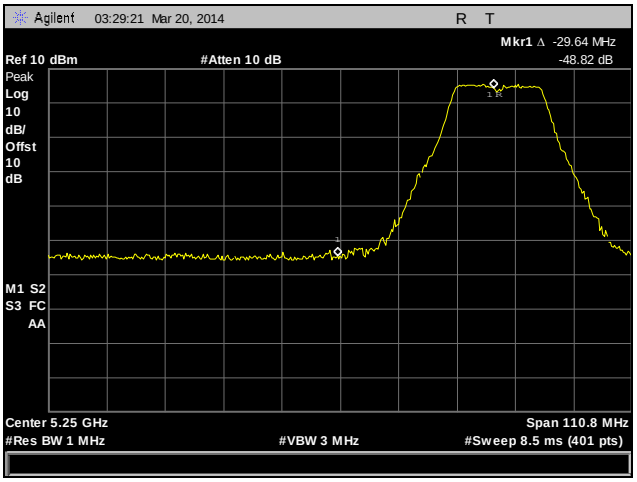
Frequency Stability, 20 MHz



Plot 151. Frequency Stability, 20 MHz, 5280 MHz, 5250 MHz Edge, -30°C, 120 VAC



Plot 152. Frequency Stability, 20 MHz, 5280 MHz, 5250 MHz Edge, -20°C, 120 VAC



Plot 153. Frequency Stability, 20 MHz, 5280 MHz, 5250 MHz Edge, -10°C, 120 VAC

