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, CALIFORNIA 95054 ● PHONE (408) 748-3585 ● FAX (510) 489-6372
13501 MCCALLEN PASS ● AUSTIN, TX 78753 ● PHONE (512) 287-2500 ● FAX (512) 287-2513

October 9, 2017

Ubiquiti Networks
1250 S. Grove Ave. Suite 100
Barrington, IL 60010

Dear Alex Pavlos,

Enclosed is the EMC Wireless test report for compliance testing of the Ubiquiti Networks, AirFiber 5XHD 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, Subpart E (UNII 1).

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.

Joel Huna
Documentation Department

Reference: (\Ubiquiti Networks\ EMC94950-FCC407 UNII 1 Rev. 3)

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Electromagnetic Compatibility Criteria
Test Report

for the

Ubiquiti Networks
Model AirFiber 5XHD

Tested under
The FCC Certification Rules
contained in
Title 47 of the CFR
15.407 Subpart E

MET Report: EMC94950-FCC407 UNII 1 Rev. 3

October 9, 2017

Prepared For:

Ubiquiti Networks
1250 S. Grove Ave. Suite 100
Barrington, IL 60010

Prepared By:
MET Laboratories, Inc.
914 West Patapsco Avenue, Baltimore, MD 21230

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15.407 Subpart E

Donald Salguero, Project Engineer
Electromagnetic Compatibility Lab

Joel Huna
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 under normal use and maintenance.

John Mason,
Director, Electromagnetic Compatibility Lab

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Report Status Sheet

Revision	Report Date	Reason for Revision
∅	September 22, 2017	Initial Issue.
1	September 28, 2017	Editorial corrections.
2	October 6, 2017	Updated information reflect 13 dBi.
3	October 9, 2017	Removed 13 dBi omnidirectional antenna on fixed point-to-point operation data. Added 5350 MHz band edge plots.

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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

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I. Executive Summary

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A. Purpose of Test

An EMC evaluation was performed to determine compliance of the Ubiquiti Networks AirFiber 5XHD, 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 AirFiber 5XHD. Ubiquiti Networks should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the AirFiber 5XHD, 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 Ubiquiti Networks, purchase order number US101490. All tests were conducted using measurement procedure ANSI C63.4-2014.

FCC Reference	Description	Results
§15.203	Antenna Requirement	Compliant
§15.403(i)	26dB Occupied Bandwidth	Compliant
§15.407 (a)(1)	Maximum Conducted Output Power	Compliant
§15.407 (a)(1)	Maximum Power Spectral Density	Compliant
§15.407 (b)(1)& (6 - 7)	Undesirable Emissions	Compliant
§15.407(b)(6)	Conducted Emission Limits	Compliant
§15.407(f)	RF Exposure	Compliant
§15.407(g)	Frequency Stability	Compliant

Table 1. Executive Summary of EMC Part 15.407 ComplianceTesting

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II. Equipment Configuration

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A. Overview

MET Laboratories, Inc. was contracted by Ubiquiti Networks to perform testing on the AirFiber 5XHD, under Ubiquiti Networks's purchase order number US101490.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the Ubiquiti Networks AirFiber 5XHD.

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

Model(s) Tested:	AirFiber 5XHD	
Model(s) Covered:	AirFiber 5XHD	
EUT Specifications:	Primary Power: 120 VAC, 60Hz	
	FCC ID: SWX-AF5XHD	
	Type of Modulations:	OFDM
	Equipment Code:	NII
	Max. RF Output Power:	17.11 dBm with 34dBi antenna
	EUT Frequency Ranges:	5155 – 5245 MHz
	Bandwidths:	10/20/30/40/50/60/80/100 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	
Type of Filing:	Original	
Evaluated by:	Donald Salguero	
Report Date(s):	October 9, 2017	

Table 2. EUT Summary

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B. References

CFR 47, Part 15, Subpart E	Unlicensed National Information Infrastructure Devices (UNII)
ANSI C63.4:2014	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 C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices
789033 D02 General UNII Test Procedures New Rules v01	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E

Table 3. References

C. Test Site

All testing was performed at MET Laboratories, Inc., 914 West Patapsco Avenue, 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 Ubiquiti Networks AirFiber 5XHD, Equipment Under Test (EUT), is 5.150GHz – 5.850GHz, Digital Transmission radio that uses OFDM MIMO Uncorrelated Cross-Polarized communication with a 100/80/60/50MHz/40MHz/30MHz/28MHz/ 20MHz/10MHz/ 7MHz/5MHz/3.5MHz bandwidth configuration. The EUT would be used outdoors and pole mounted. It is powered from a PoE adapter. The reverse-polarized connectorized has the ability when professionally installed by a user with cross-polarized antennas. This is the only matter that would be able to create a functional link to work.

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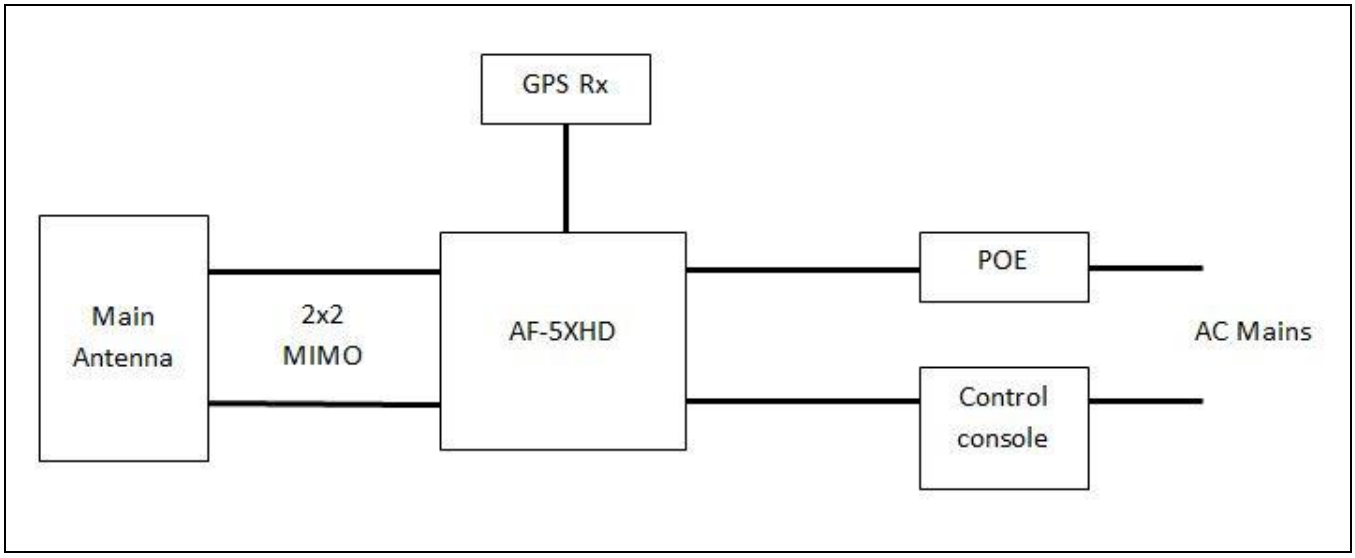

Figure 1. Block Diagram of Test Configuration

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E. Equipment Configuration

The EUT was set up as outlined in Figure 1, Block Diagram of Test Setup. All cards, racks, etc., incorporated as part of the EUT is included in the following list.

Ref. ID	Name / Description	Model Number	Part Number	Serial Number	Revision
1	Switching Gigabit Power Supply	GP-H240-100G-4	1514	0000936	--
3	5 GHz 34dBi Slant 45 Antenna	AF-5G34-S45	AF5C	07623	--
4	Ethernet Cables	N/A	N/A	N/A	--
5	GPS Antenna	N/A	N/A	N/A	--
6	Sector Antenna	N/A	N/A	N/A	--
7	5GHz 23dBi Slant 45 Antenna	AF-5G23-S45	N/A	N/A	--

Table 4. Equipment Configuration

F. Support Equipment

Support equipment necessary for the operation and testing of the EUT is included in the following list.

Ref. ID	Name / Description	Manufacturer	Model Number	*Customer Supplied Calibration Data
1	Laptop	HP	Pro Book 430 G1	N/A
2	Laptop	ASUS	X502C	N/A
3	Laptop	Apple	MacBook Pro	N/A

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
1	Management Port	RJ45 Ethernet	1	2	Yes	
2	Data Port	RJ45 Ethernet	1	2	Yes	
3	RP sma CH0	RF coax	1	2	Yes	
4	RP sma CH1	RF coax	1	2	Yes	

Table 6. Ports and Cabling Information

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H. Mode of Operation

Using internal test modes only for testing purposes the radio is set up in a continuous transmit mode. This allows for frequency, power, and channel bandwidth to be adjusted for measurement purposes. Scripts and specific command line commands are used to manipulate the radio in test mode.

I. Method of Monitoring EUT Operation

1. A blinking green "Data" LED will indicate error-free data is being transferred on the test cable.

2. Any other LED status besides the blinking green LED (i.e. LED light off, etc) will indicate error-free data is not being transferred on the test cable.

J. 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.

K. Disposition of EUT

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

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III. Electromagnetic Compatibility Criteria for Intentional Radiators

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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 antenna is professionally installed. The gains of the antennae are 22dBi, 23dBi, and 34dBi. They are used for point-to-point operation.

Test Engineer(s): Donald Salguero

Test Date(s): August 30, 2017

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Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15. 403(i) 26dB Bandwidth

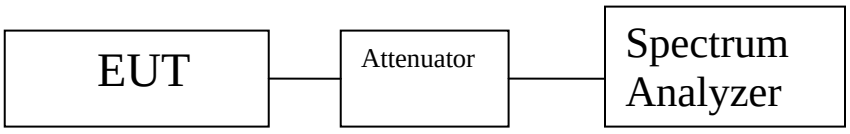
Test Requirements: **§ 15.403(i):** For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of 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 low, mid, and high 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.

Test Engineer(s): Donald Salguero

Test Date(s): August 30, 2017



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	Center Frequency (MHz)	26dB Occupied Bandwidth (MHz)
10	5155	10.342
	5200	10.377
	5245	10.414
20	5160	20.875
	5200	20.85
	5240	20.911
30	5165	31.248
	5200	31.223
	5235	31.298
40	5170	41.584
	5200	41.471
	5230	41.486
50	5175	52.785
	5200	52.574
	5225	52.802
60	5180	62.848
	5200	62.727
	5220	62.807
80	5190	83.212
	5200	83.703
	5210	83.063
100	5200	104.216

Table 7. 26 dB Occupied Bandwidth, Test Results

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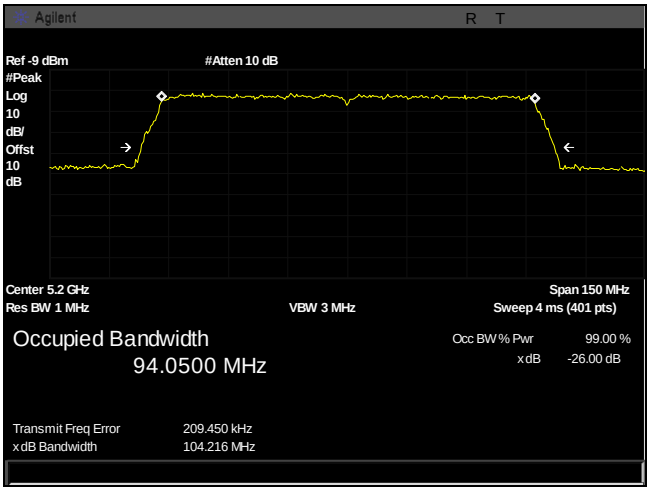
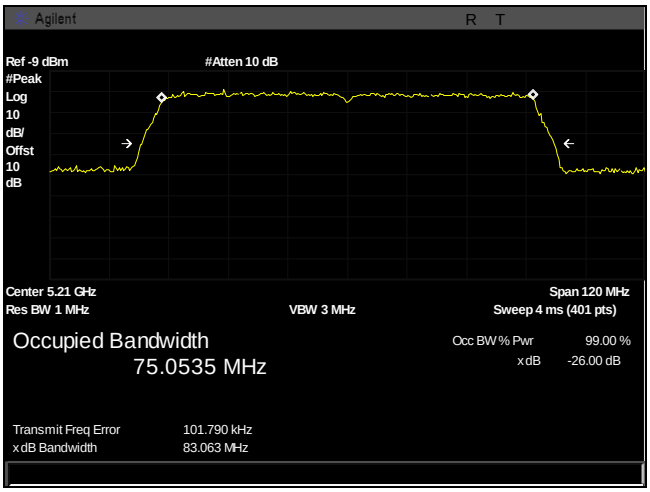
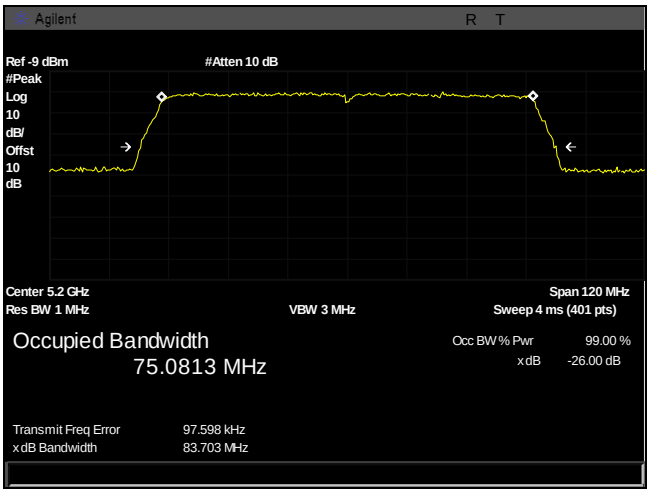


Plot 1. 26 dB Occupied Bandwidth, 100M, 5200



Plot 2. 26 dB Occupied Bandwidth, 80M, 5210



Plot 3. 26 dB Occupied Bandwidth, 80M, 5200

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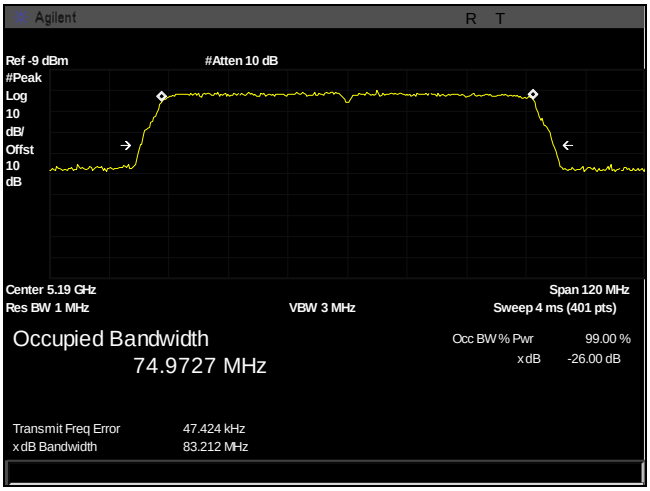
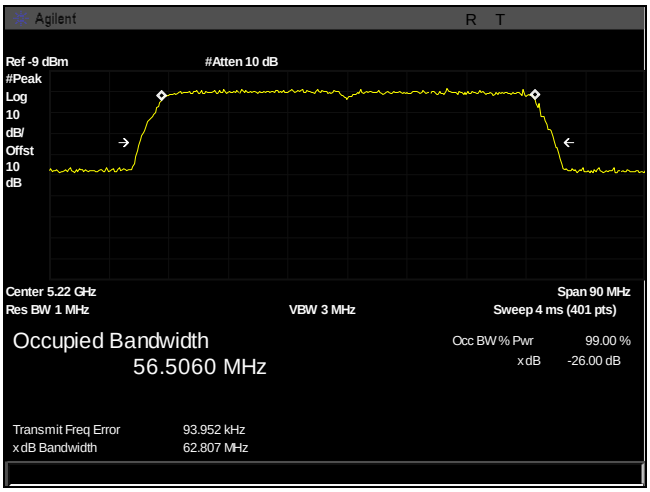
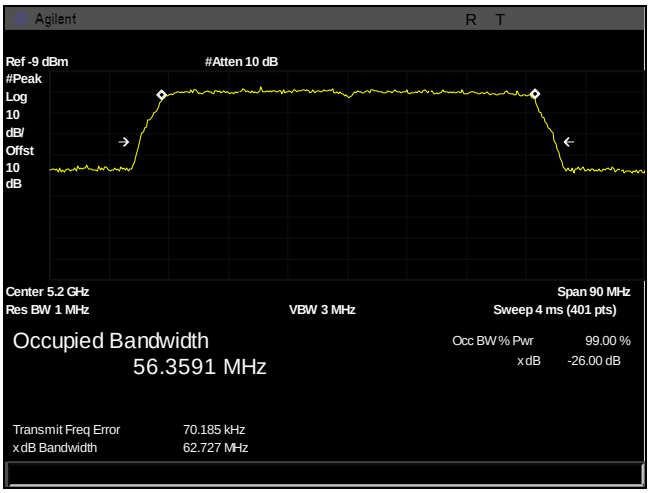


Plot 4. 26 dB Occupied Bandwidth, 80M, 5190



Plot 5. 26 dB Occupied Bandwidth, 60M, 5220



Plot 6. 26 dB Occupied Bandwidth, 60M, 5200

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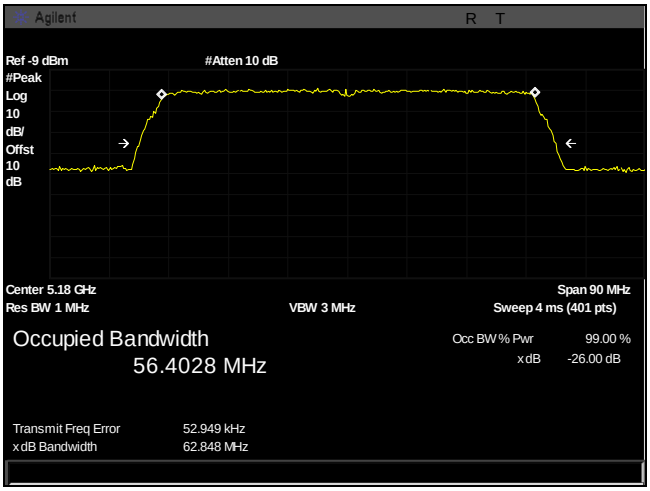
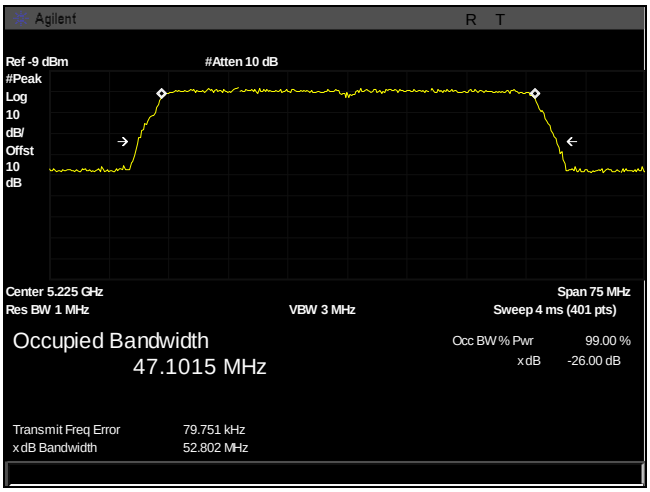
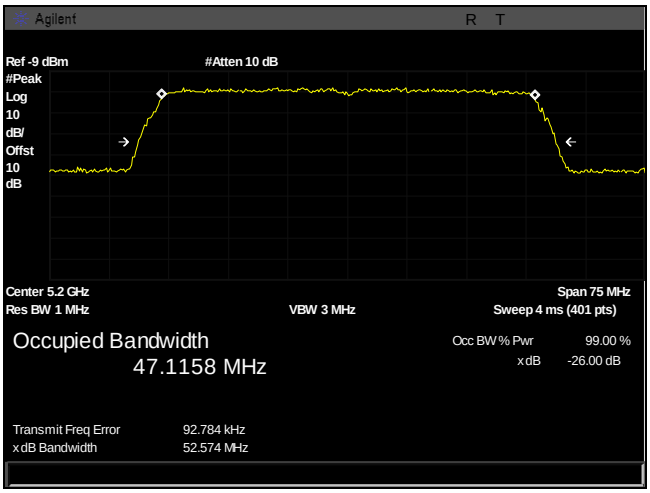


Plot 7. 26 dB Occupied Bandwidth, 60M, 5180



Plot 8. 26 dB Occupied Bandwidth, 50M, 5225



Plot 9. 26 dB Occupied Bandwidth, 50M, 5200

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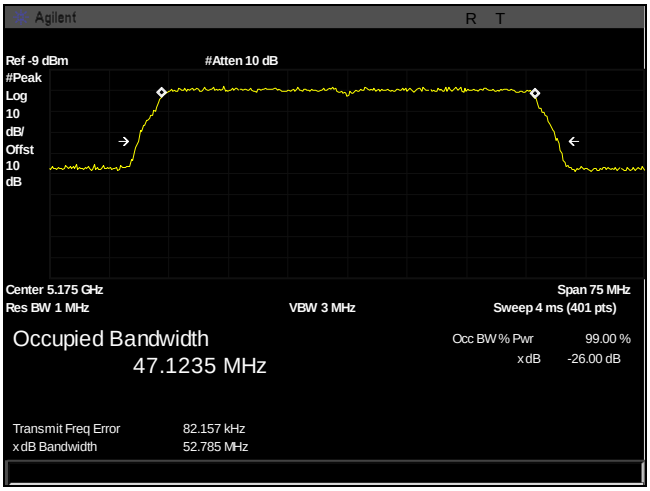
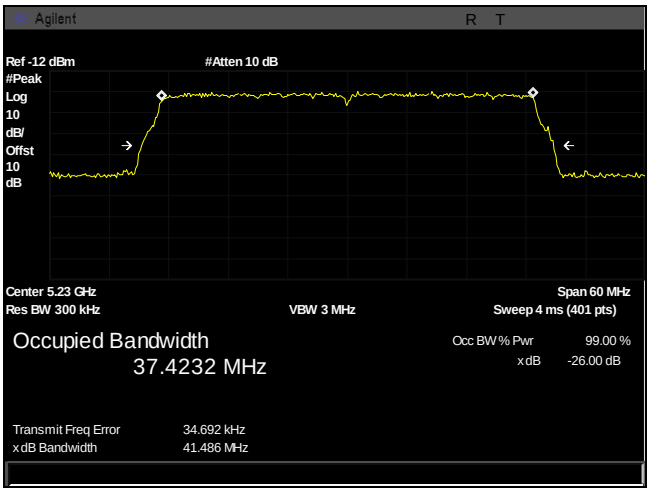
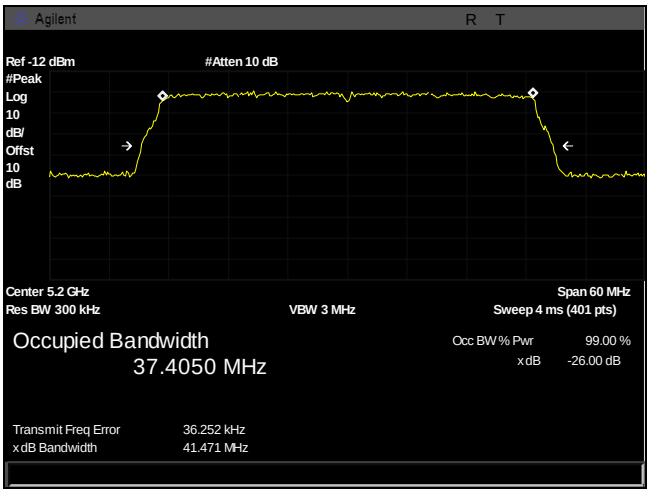


Plot 10. 26 dB Occupied Bandwidth, 50M, 5175



Plot 11. 26 dB Occupied Bandwidth, 40M, 5230



Plot 12. 26 dB Occupied Bandwidth, 40M, 5200

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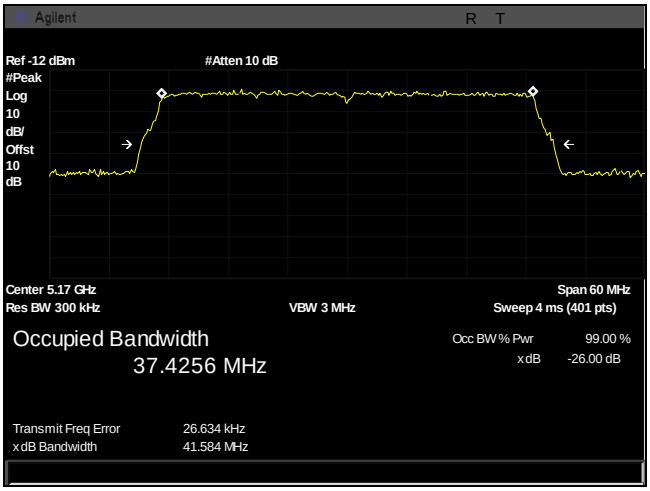
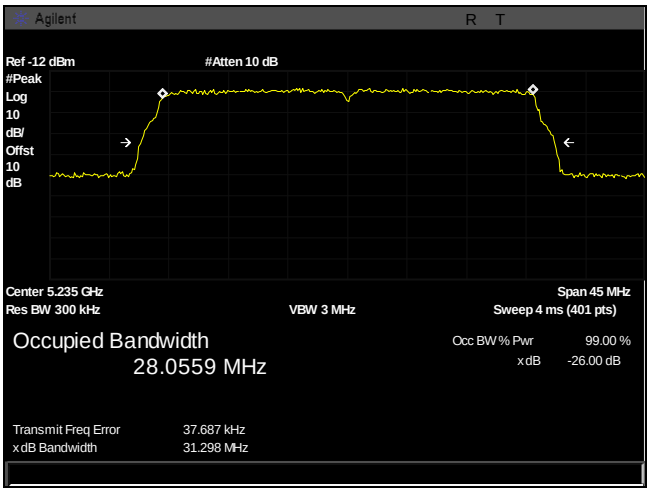
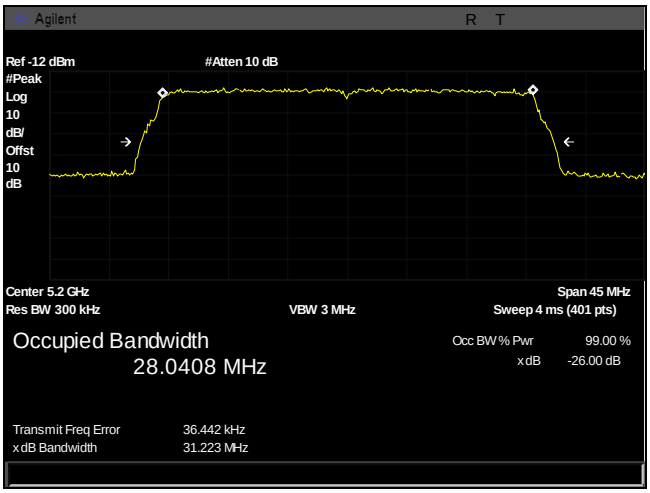


Plot 13. 26 dB Occupied Bandwidth, 40M, 5170



Plot 14. 26 dB Occupied Bandwidth, 30M, 5235



Plot 15. 26 dB Occupied Bandwidth, 30M, 5200

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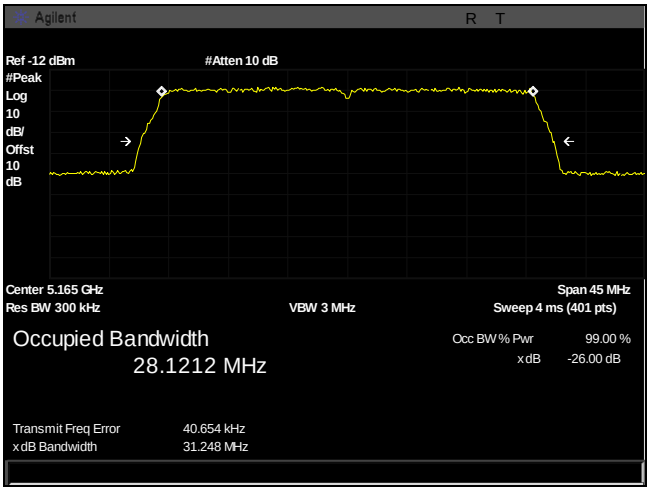
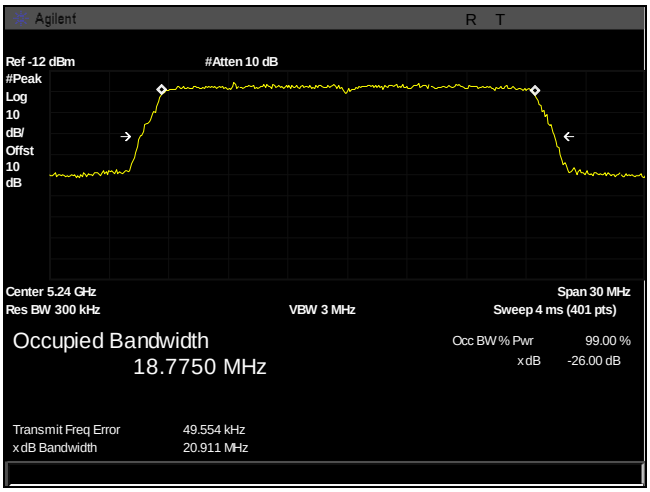
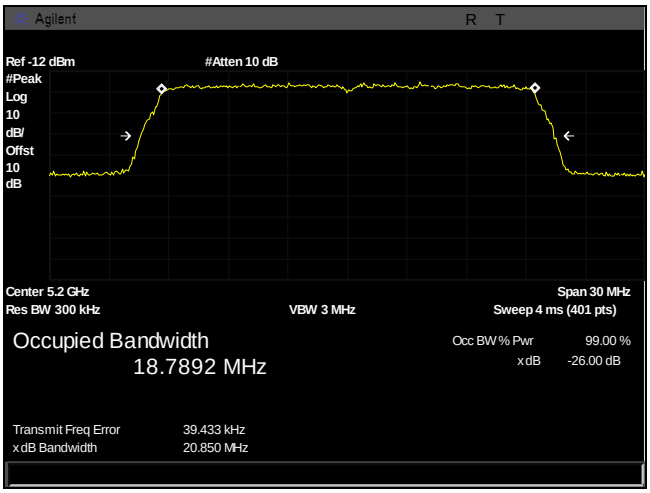


Plot 16. 26 dB Occupied Bandwidth, 30M, 5165



Plot 17. 26 dB Occupied Bandwidth, 20M, 5240



Plot 18. 26 dB Occupied Bandwidth, 20M, 5200

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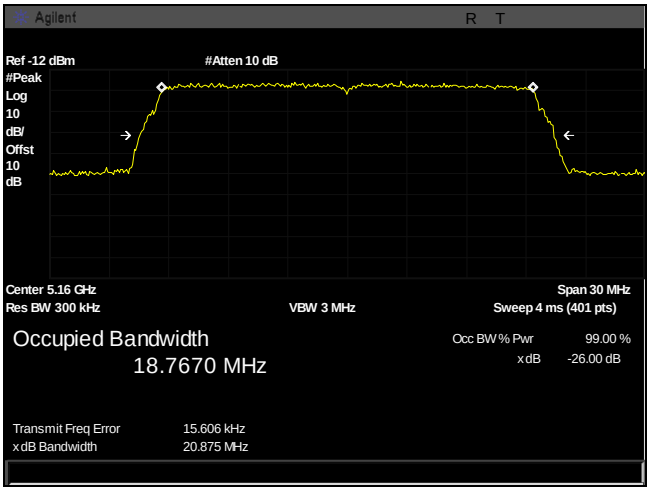
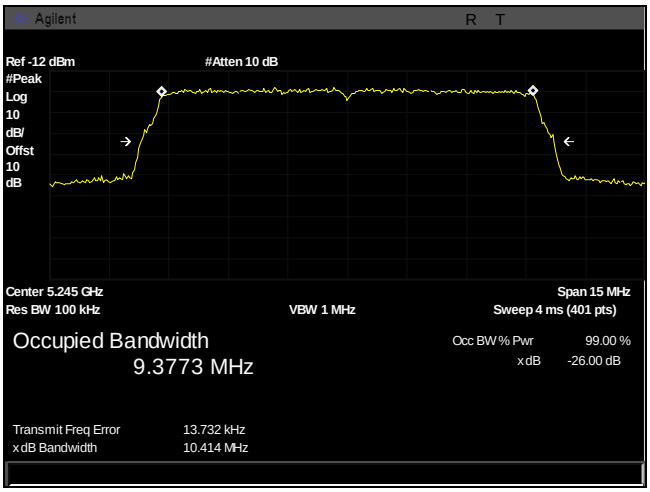
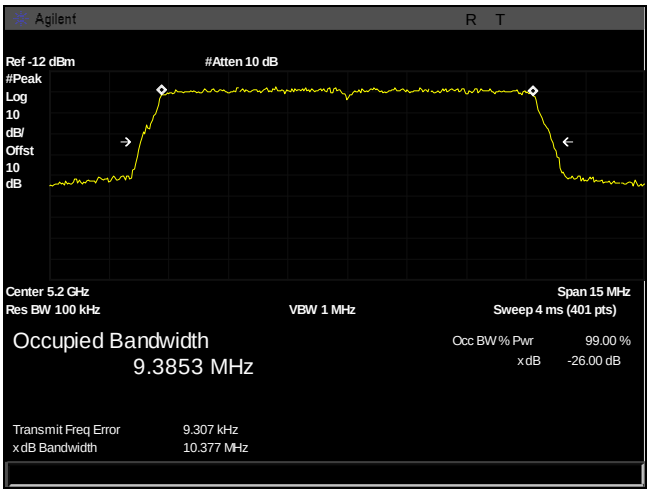


Plot 19. 26 dB Occupied Bandwidth, 20M, 5160



Plot 20. 26 dB Occupied Bandwidth, 10M, 5245



Plot 21. 26 dB Occupied Bandwidth, 10M, 5200

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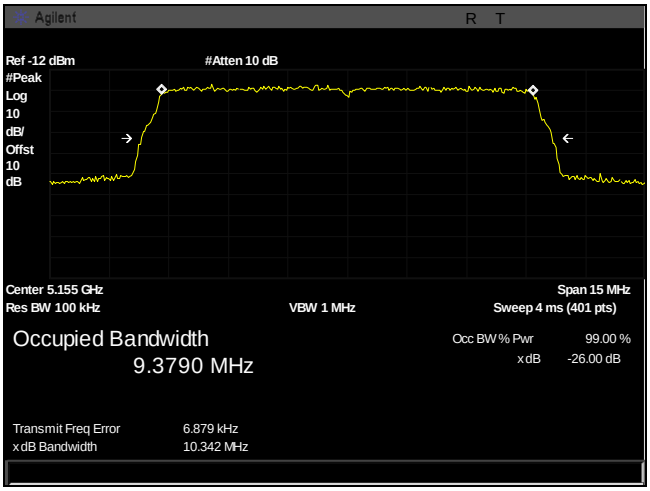

Plot 22. 26 dB Occupied Bandwidth, 10M, 5155

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Electromagnetic Compatibility Criteria for Intentional Radiators

§15. 407(a)(1) Maximum Conducted Output Power

Test Requirements:

§15.407(a)(1)(i): For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.
If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

§15.407(a)(1)(ii): For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.
If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

§15.407(a)(1)(iii): For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.
Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.

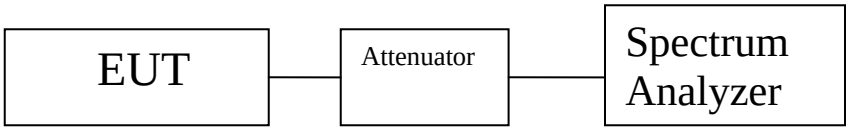
§15.407(a)(1)(iv): For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.
If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test Procedure: The EUT was connected to a spectrum analyzer through a cable and attenuator. Measurements were taken with the EUT set to transmit continuously on its low, mid, and high channels. Its power was measured according to measurement method SA-1, as described in 789033 D02 General UNII Test Procedures v01.

Test Results: The EUT as tested is compliant with the requirements of this section.

Test Engineer(s): Donald Salguero

Test Date(s): August 30, 2017



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Conducted Output Power, 22 dBi

Channel	Frequency	Chain 0	Chain 1	Sum	Limit	Antenna Gain	Final Limit	Margin
BW (MHz)	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dBi)	(dBm)	(dB)
10	5155	4.22	3.87	7.059	30	22	30	-22.941
	5200	22.9	22.81	25.87	30	22	30	-4.134
	5245	22.57	22.65	25.62	30	22	30	-4.379
20	5160	6.53	6.4	9.476	30	22	30	-20.524
	5200	17.05	16.73	19.9	30	22	30	-10.096
	5240	24.86	24.61	27.75	30	22	30	-2.252
30	5165	7.01	6.94	9.986	30	22	30	-20.014
	5200	16.51	16.21	19.37	30	22	30	-10.627
	5235	25.65	25.55	28.61	30	22	30	-1.389
40	5170	8	7.94	10.98	30	22	30	-19.019
	5200	11.16	10.79	13.99	30	22	30	-16.01
	5230	21.51	21.54	24.54	30	22	30	-5.464
50	5175	9.05	8.88	11.98	30	22	30	-18.023
	5200	10.1	10.03	13.08	30	22	30	-16.924
	5225	15.66	15.71	18.7	30	22	30	-11.304
60	5180	8.89	8.81	11.86	30	22	30	-18.139
	5200	11.07	11.3	14.2	30	22	30	-15.803
	5220	14.87	14.72	17.81	30	22	30	-12.194
80	5190	10.12	9.87	13.01	30	22	30	-16.992
	5200	10.41	10.43	13.43	30	22	30	-16.569
	5210	11.05	10.91	13.99	30	22	30	-16.009
100	5200	10.22	10.37	13.31	30	22	30	-16.694

Table 8. Conducted Transmitter Power Output, fixed ptp, 22 dBi, 2x2, Test Results

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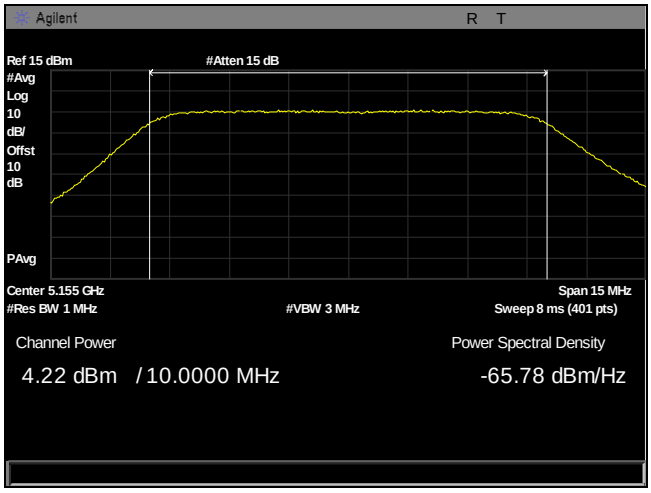
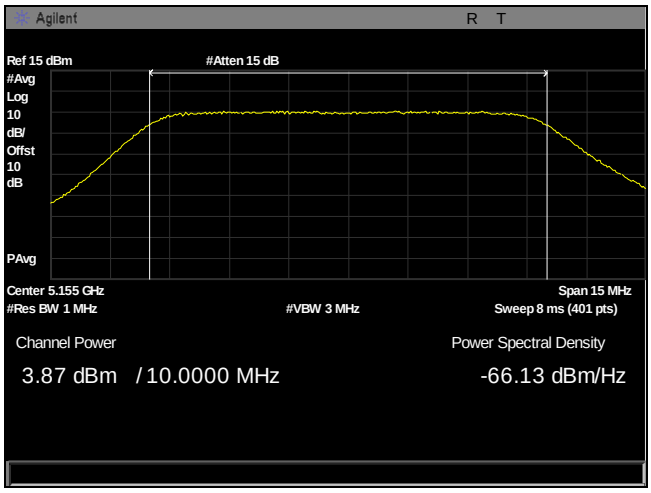
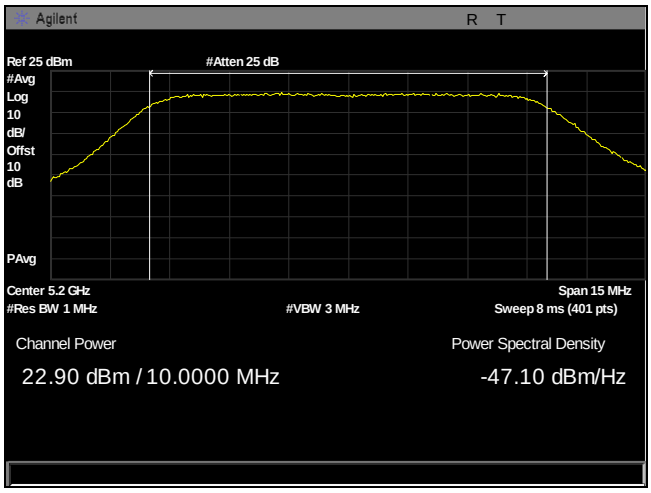
Conducted Output Power, 22 dBi



Plot 23. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 10M, 5155M, c0



Plot 24. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 10M, 5155M, c1



Plot 25. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 10M, 5200M, c0

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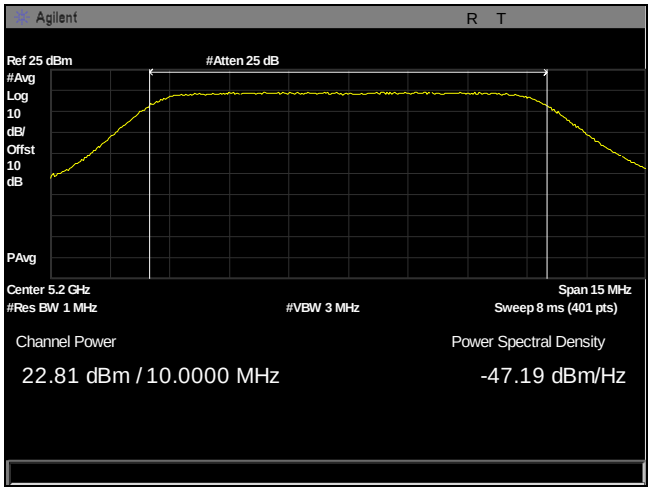
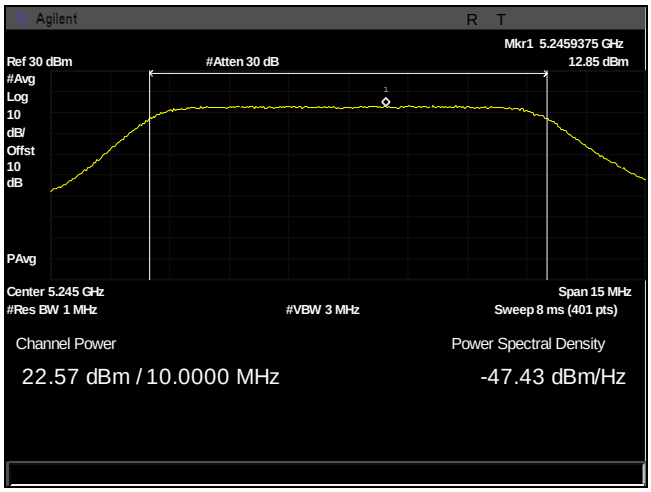
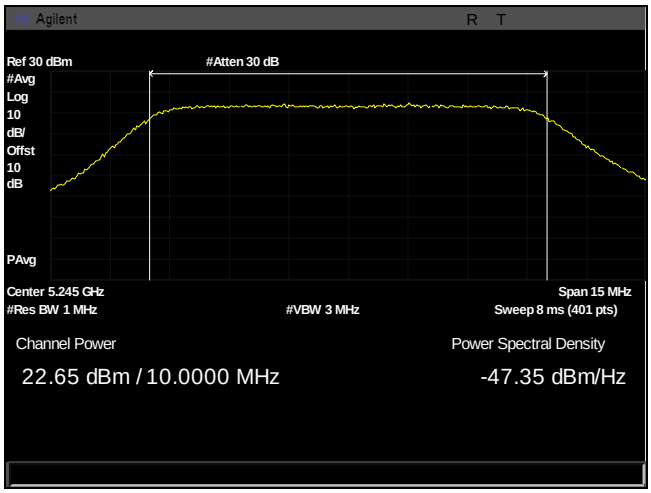


Plot 26. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 10M, 5200M, c1



Plot 27. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 10M, 5245M, c0



Plot 28. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 10M, 5245M, c1

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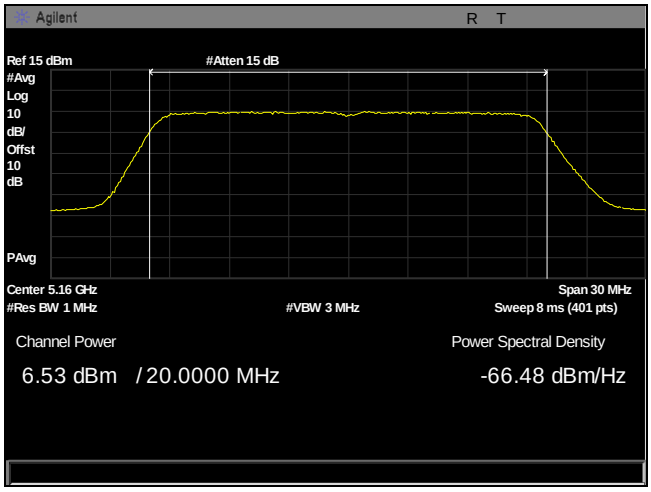
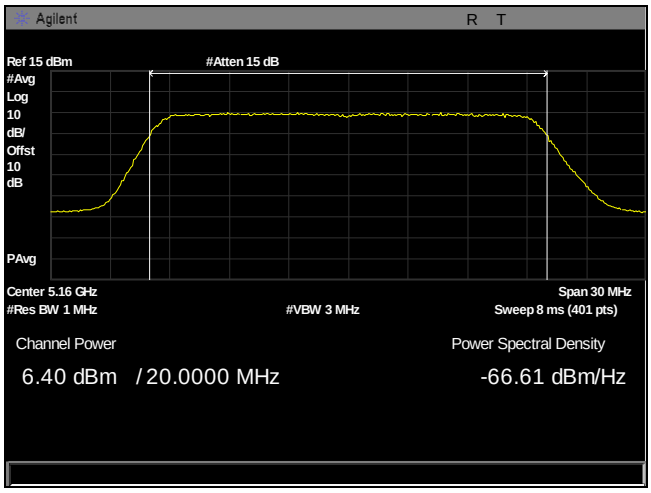
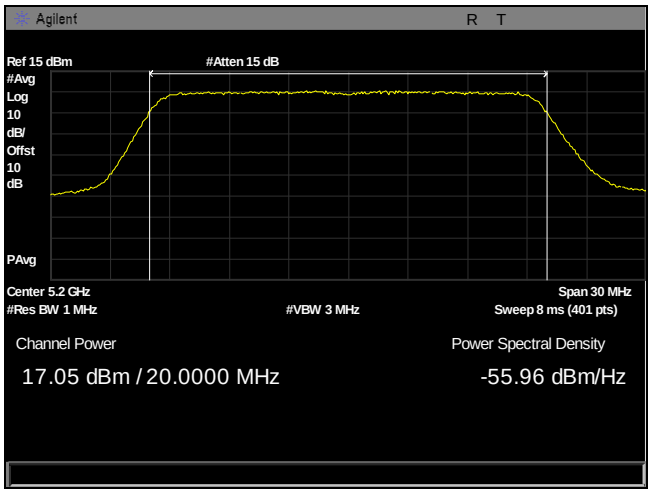


Plot 29. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 20M, 5160M, c0



Plot 30. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 20M, 5160M, c1



Plot 31. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 20M, 5200M, c0

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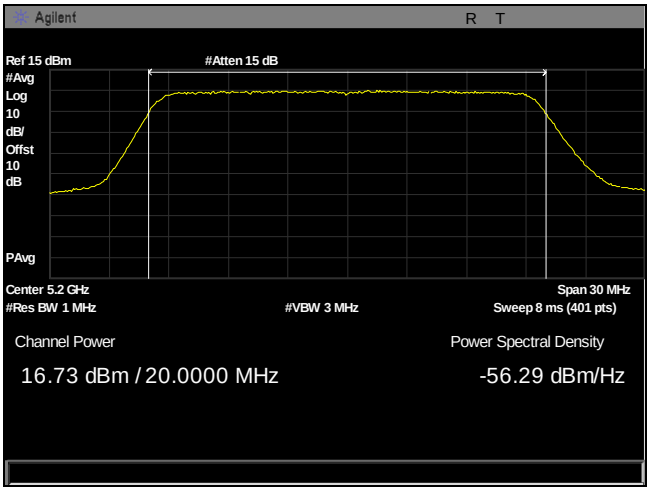
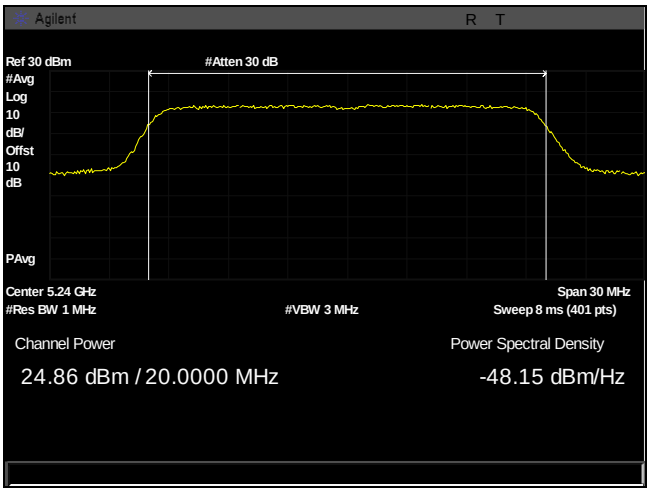
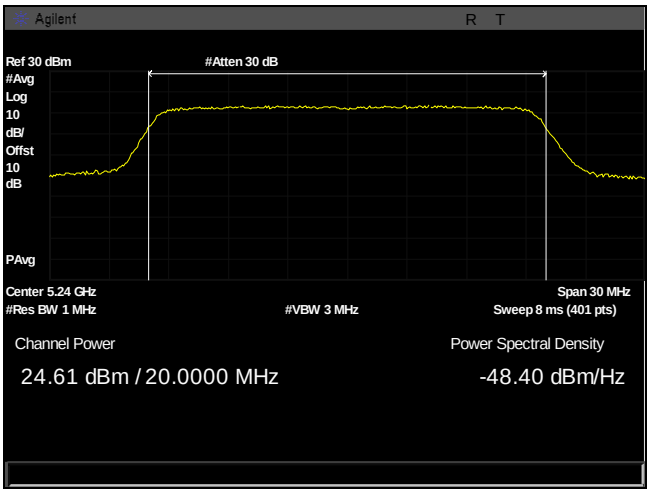


Plot 32. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 20M, 5200M, c1



Plot 33. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 20M, 5240M, c0



Plot 34. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 20M, 5240M, c1

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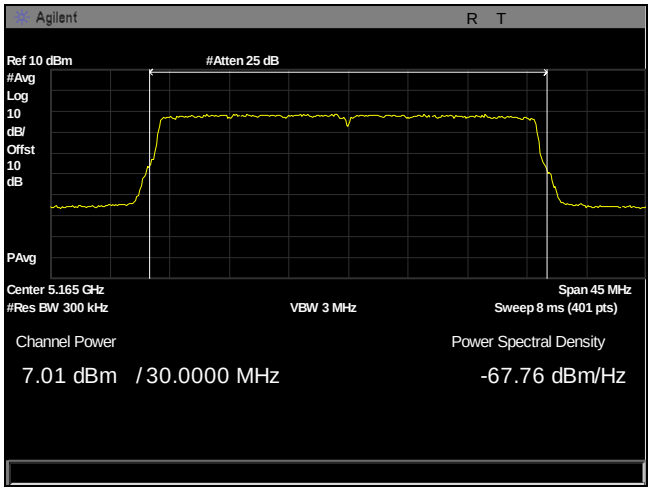
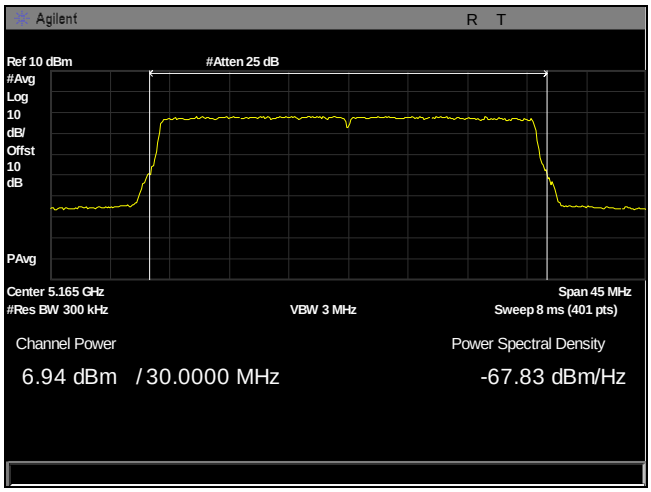
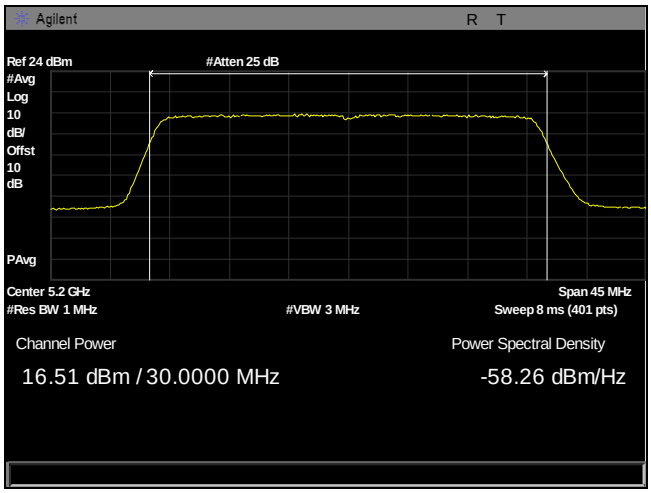


Plot 35. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 30M, 5165M, c0



Plot 36. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 30M, 5165M, c1



Plot 37. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 30M, 5200M, c0

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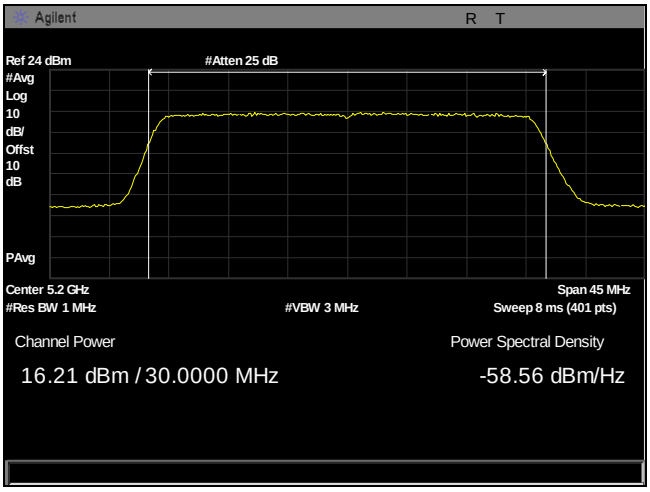
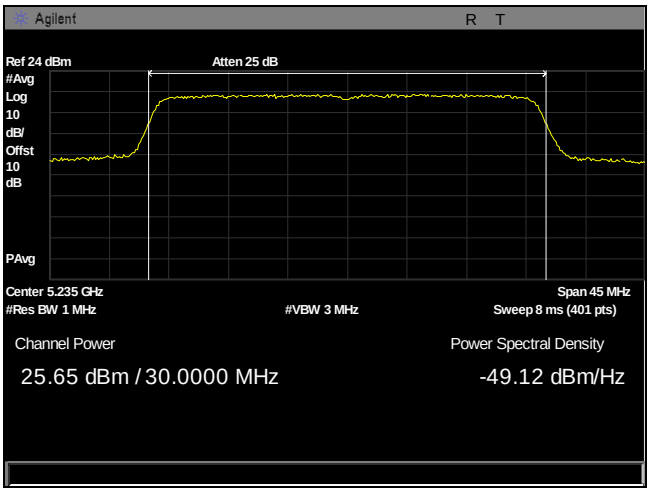
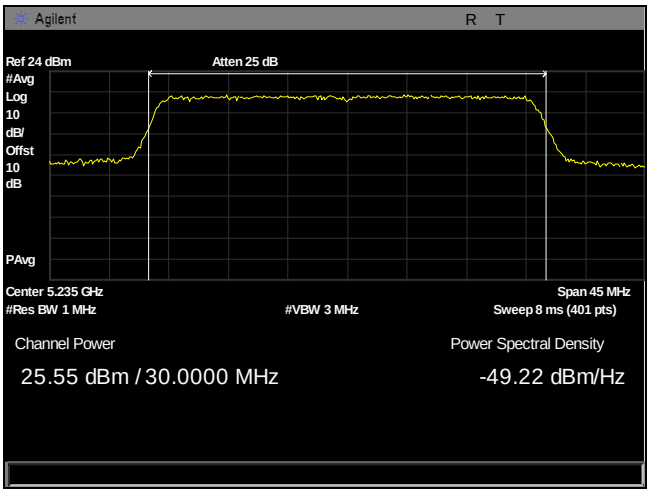


Plot 38. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 30M, 5200M, c1



Plot 39. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 30M, 5235M, c0



Plot 40. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 30M, 5235M, c1

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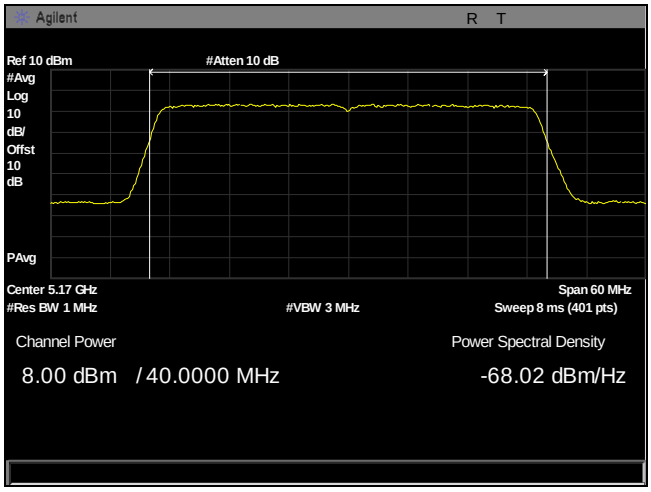
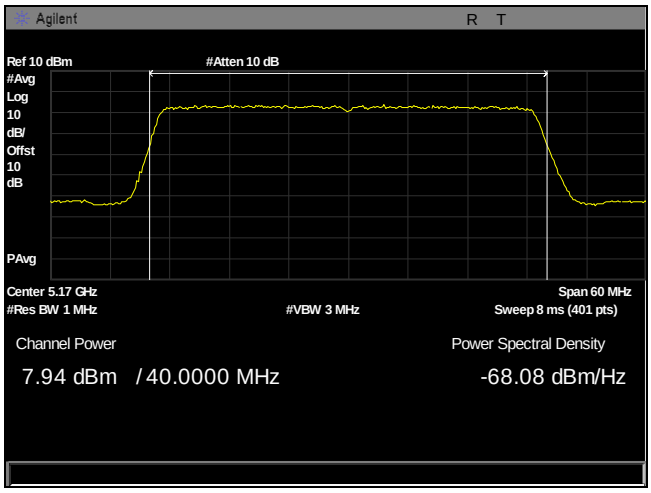
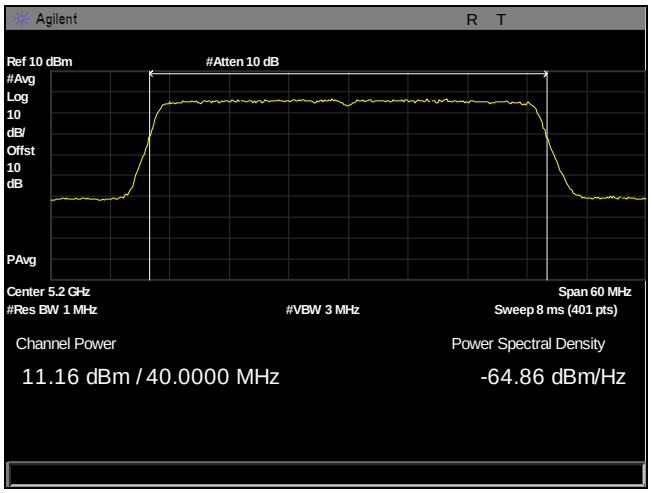


Plot 41. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 40M, 5170M, c0



Plot 42. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 40M, 5170M, c1



Plot 43. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 40M, 5200M, c0

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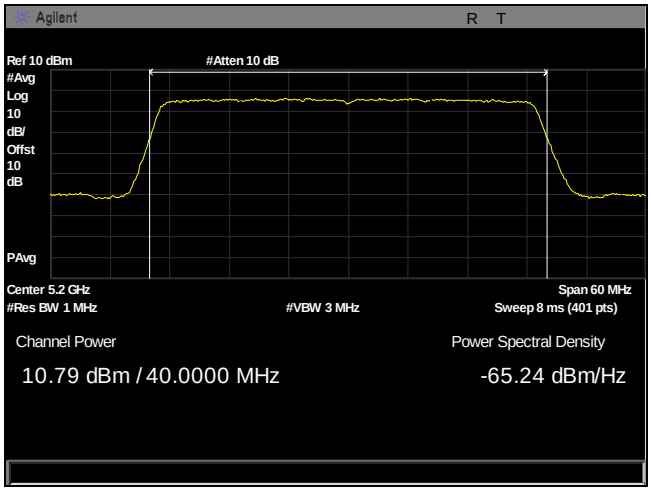
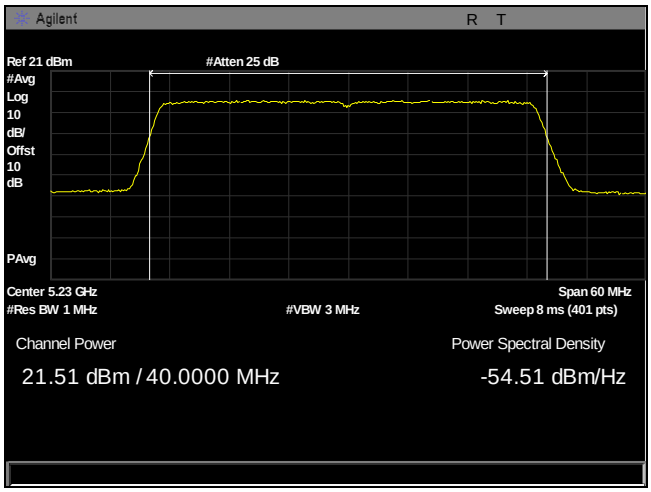
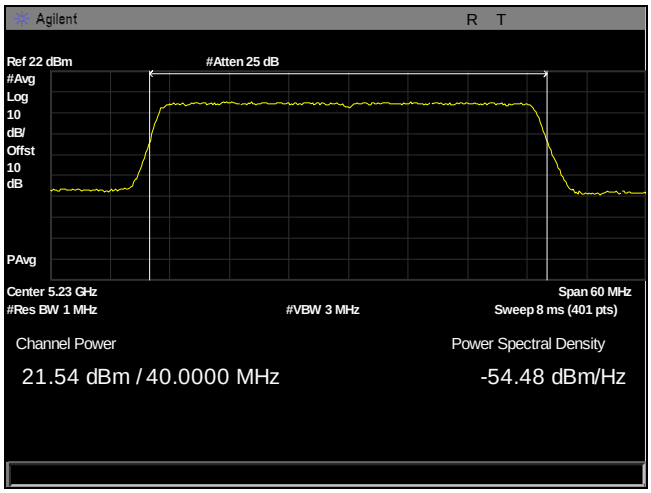


Plot 44. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 40M, 5200M, c1



Plot 45. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 40M, 5230M, c0



Plot 46. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 40M, 5230M, c1

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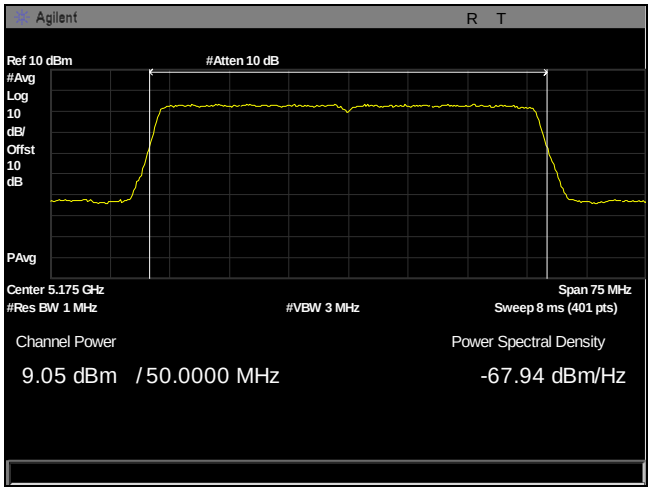
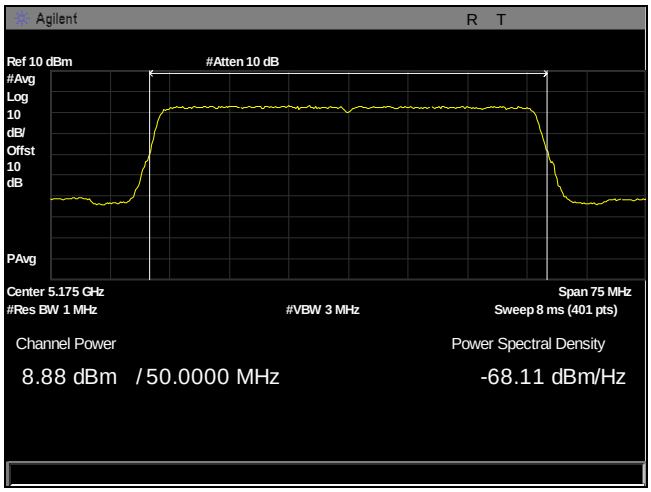
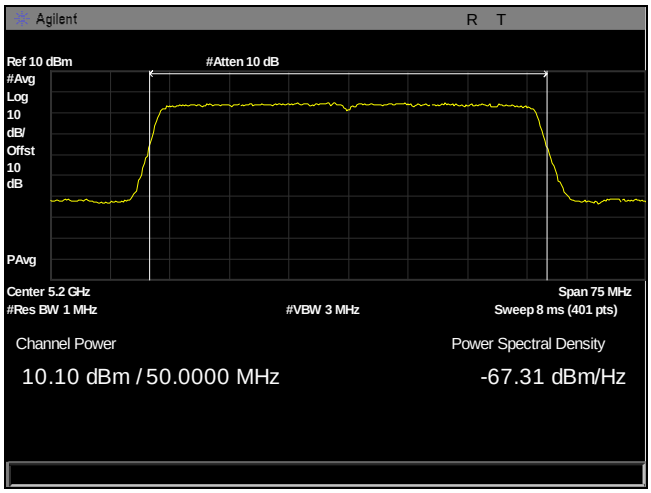


Plot 47. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 50M, 5175M, c0



Plot 48. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 50M, 5175M, c1



Plot 49. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 50M, 5200M, c0

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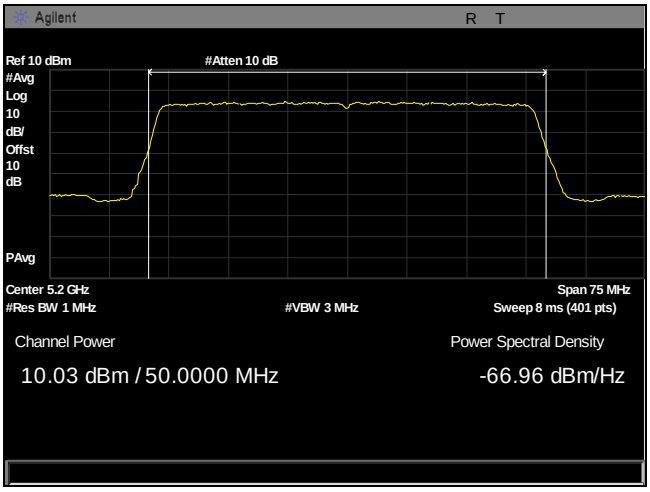
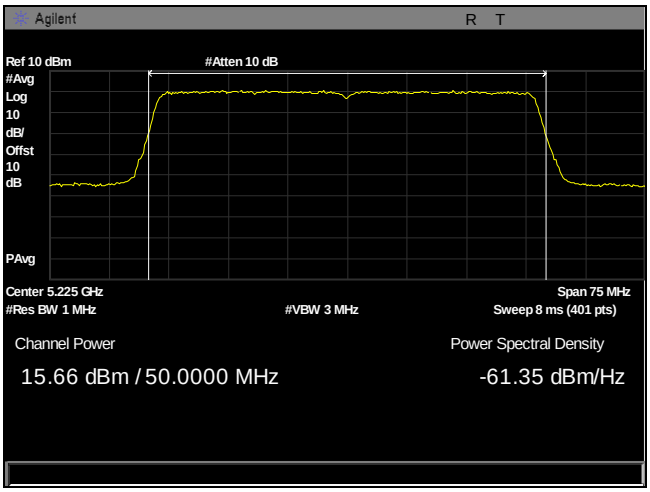
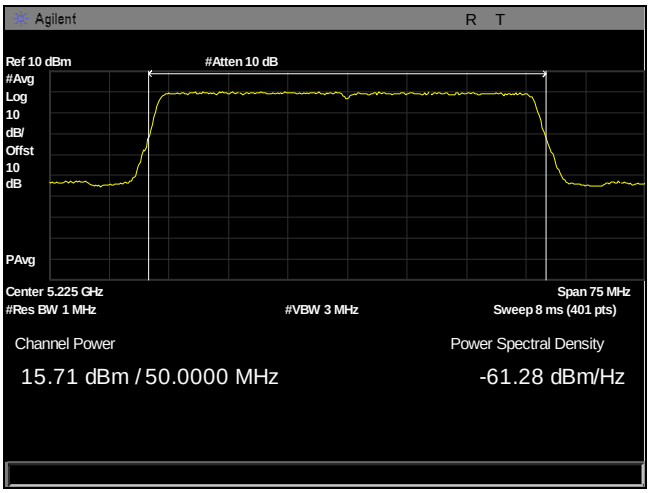


Plot 50. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 50M, 5200M, c1



Plot 51. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 50M, 5225M, c0



Plot 52. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 50M, 5225M, c1

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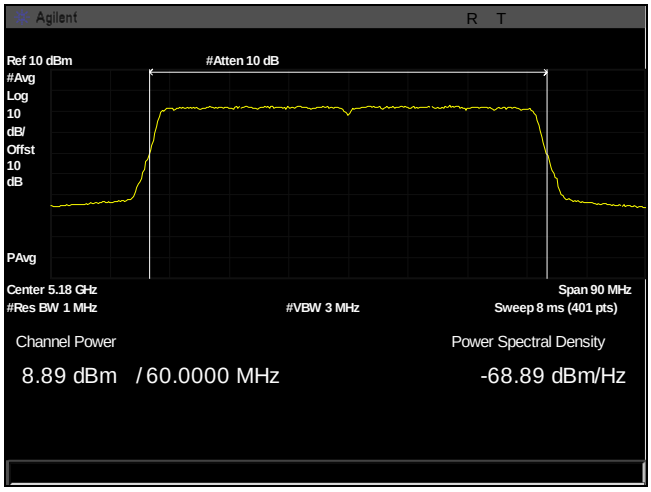
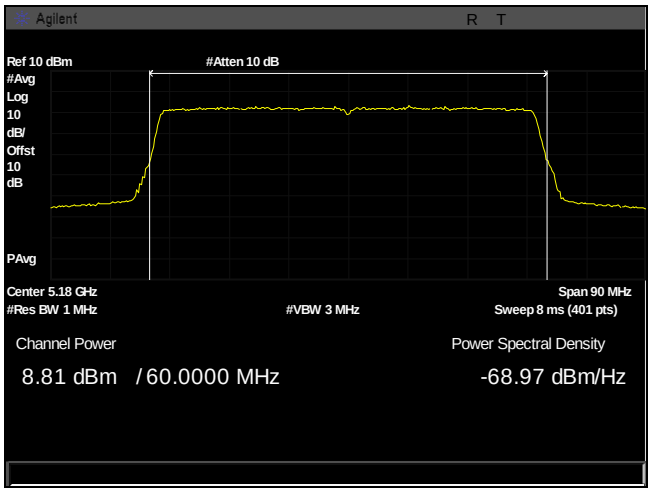
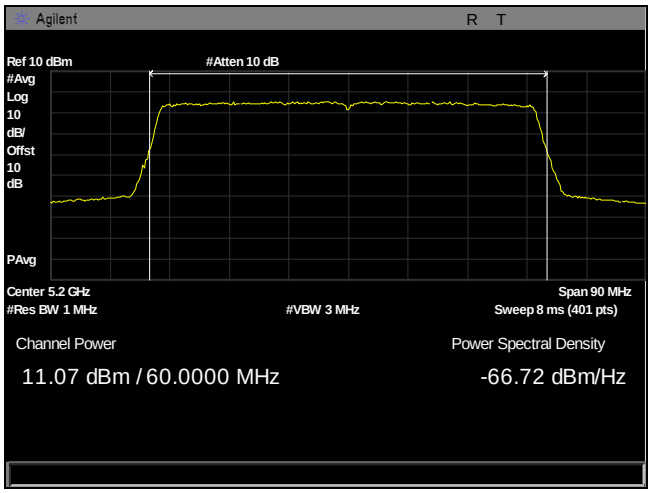


Plot 53. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 60M, 5180M, c0



Plot 54. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 60M, 5180M, c1



Plot 55. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 60M, 5200M, c0

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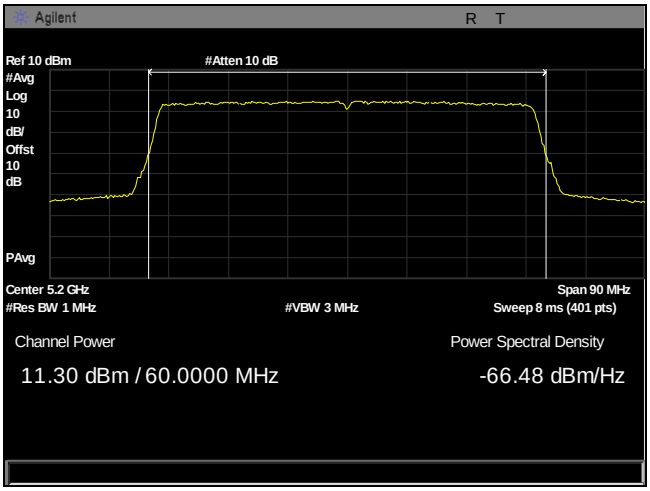
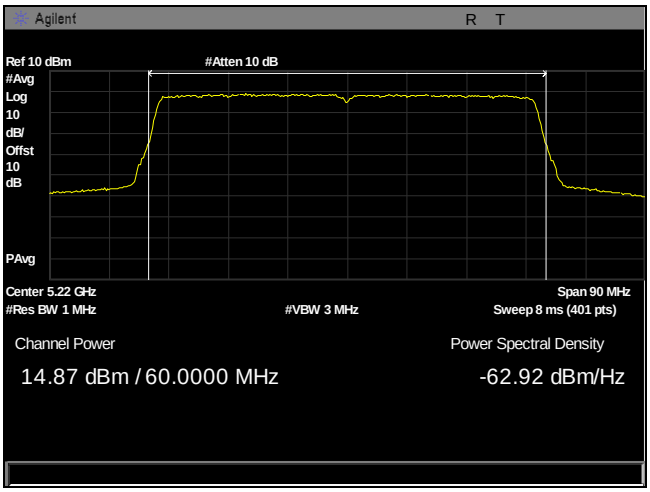
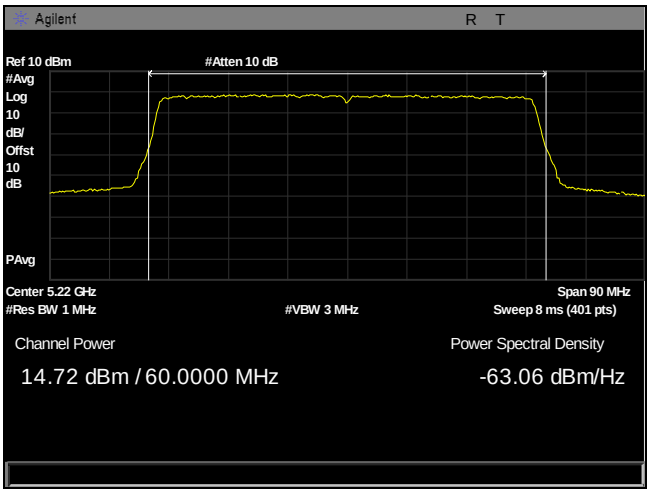


Plot 56. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 60M, 5200M, c1



Plot 57. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 60M, 5220M, c0



Plot 58. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 60M, 5220M, c1

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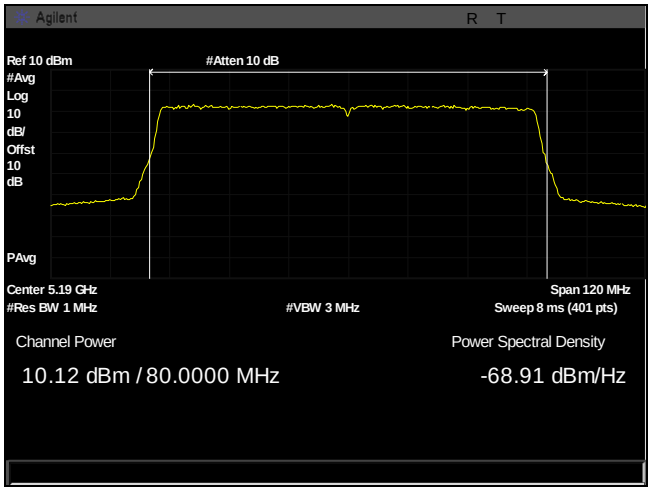
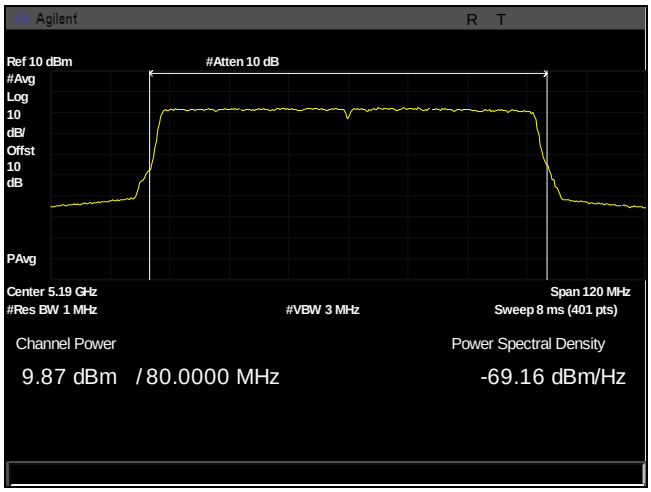
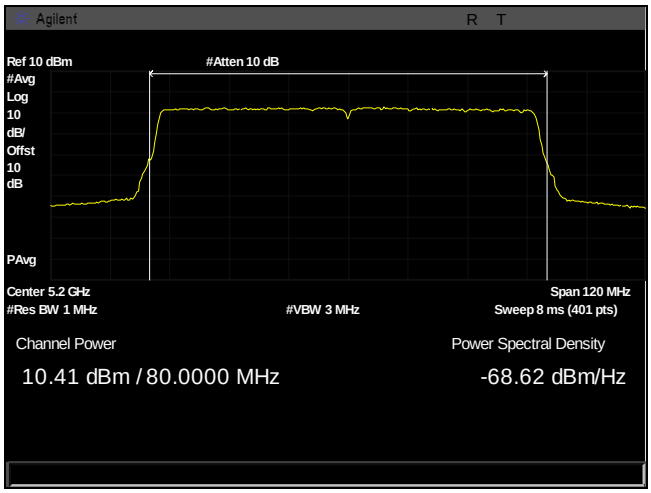


Plot 59. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 80M, 5190M, c0



Plot 60. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 80M, 5190M, c1



Plot 61. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 80M, 5200M, c0

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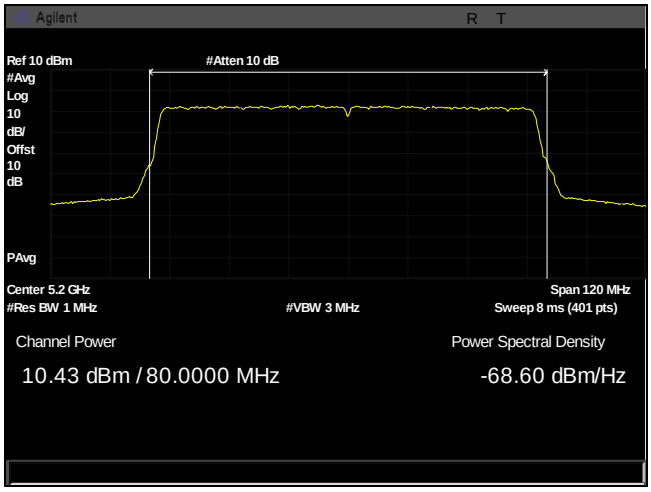
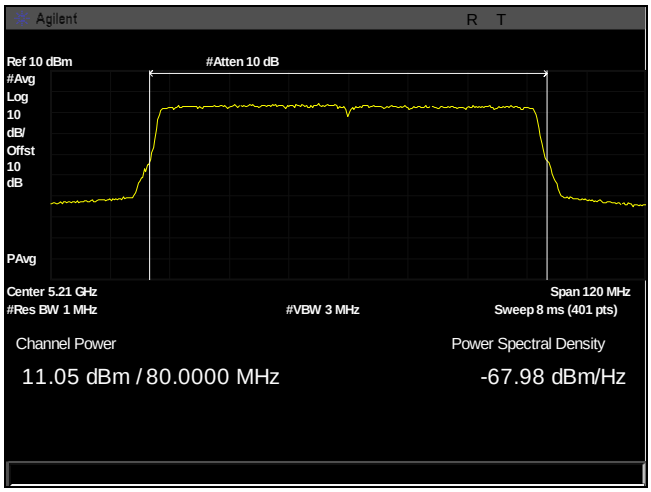
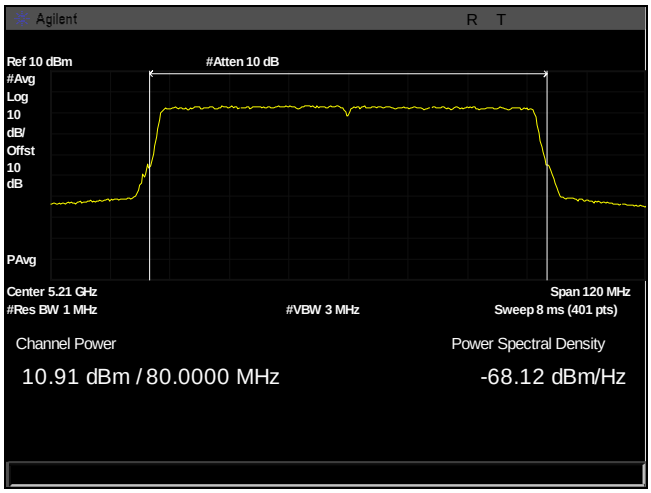


Plot 62. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 80M, 5200M, c1



Plot 63. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 80M, 5210M, c0



Plot 64. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 80M, 5210M, c1

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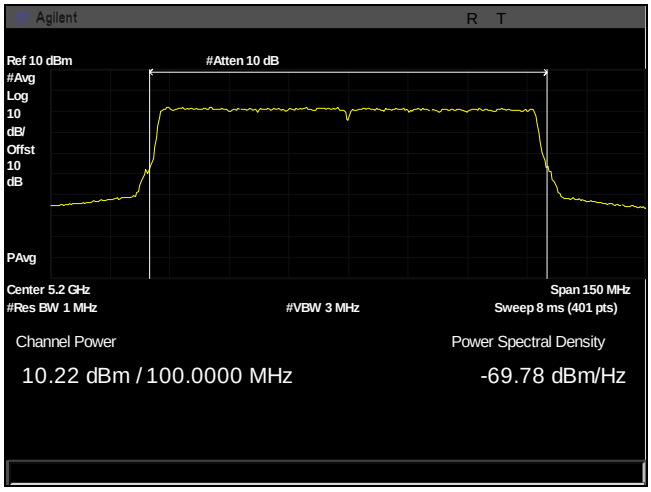
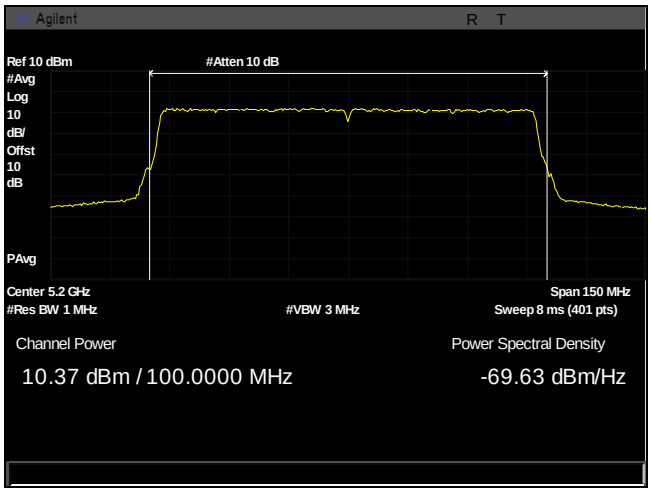


Plot 65. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 100M, 5200M, c0



Plot 66. Conducted Transmitter Output Power, 22 dBi, fixed ptp, 100M, 5200M, c1

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Conducted Output Power, 23 dBi

Channel	Frequency	Chain 0	Chain 1	Sum	Limit	Antenna Gain	Final Limit	Margin
BW (MHz)	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dBi)	(dBm)	(dB)
10	5155	-4.88	-4.71	-1.783	30	23	30	-31.783
	5200	10.06	10.4	13.24	30	23	30	-16.756
	5245	22.57	22.65	25.62	30	23	30	-4.379
20	5160	-2.7	-2.65	0.336	30	23	30	-29.664
	5200	9.51	9.44	12.49	30	23	30	-17.514
	5240	21.71	21.65	24.69	30	23	30	-5.309
30	5165	-1.95	-1.97	1.051	30	23	30	-28.949
	5200	4.41	4.35	7.391	30	23	30	-22.609
	5235	12.91	12.79	15.86	30	23	30	-14.139
40	5170	-1.64	-1.79	1.296	30	23	30	-28.704
	5200	-0.17	-0.19	2.831	30	23	30	-27.169
	5230	8.15	8.04	11.11	30	23	30	-18.894
50	5175	-0.3	-0.44	2.641	30	23	30	-27.359
	5200	-2.04	-1.78	1.103	30	23	30	-28.897
	5225	4.19	4.37	7.292	30	23	30	-22.708
60	5180	-2.13	-2.42	0.738	30	23	30	-29.262
	5200	0.67	0.76	3.726	30	23	30	-26.274
	5220	2.75	2.48	5.628	30	23	30	-24.372
80	5190	-0.06	0.01	2.986	30	23	30	-27.014
	5200	0.41	0.26	3.346	30	23	30	-26.654
	5210	0.61	0.67	3.651	30	23	30	-26.349
100	5200	1.55	1.56	4.566	30	23	30	-25.434

Table 9. Conducted Transmitter Output Power, fixed ptp, 23 dBi, 2x2, Test Results

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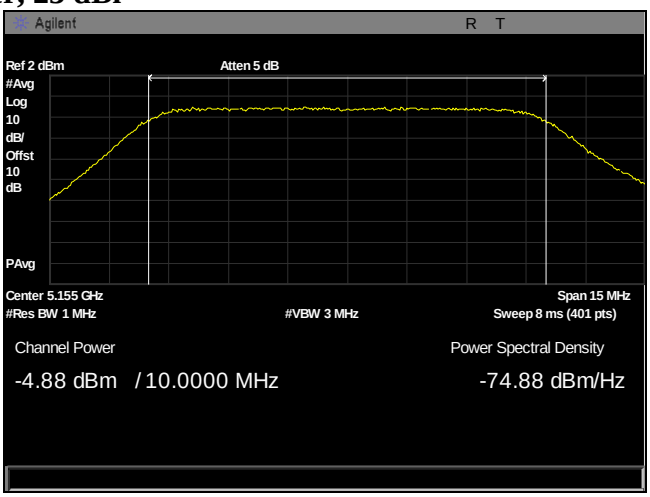
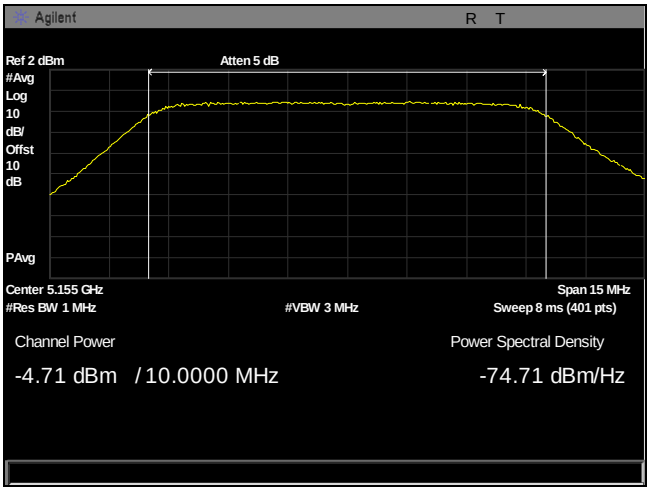
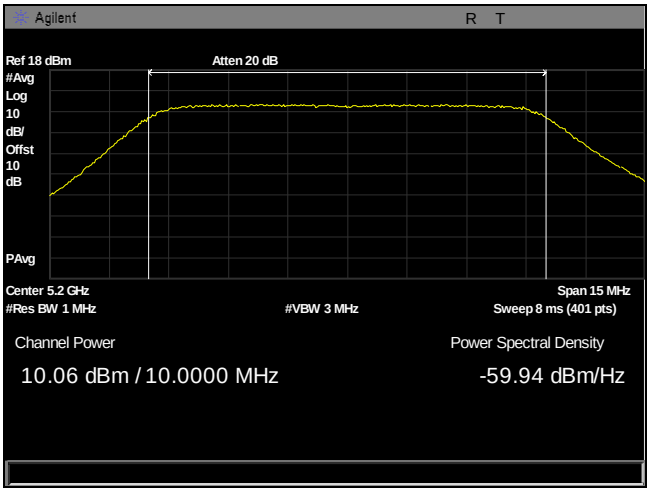
Conducted Output Power, 23 dBi



Plot 67. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 10M, 5155M, c0



Plot 68. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 10M, 5155M, c1



Plot 69. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 10M, 5200M, c0

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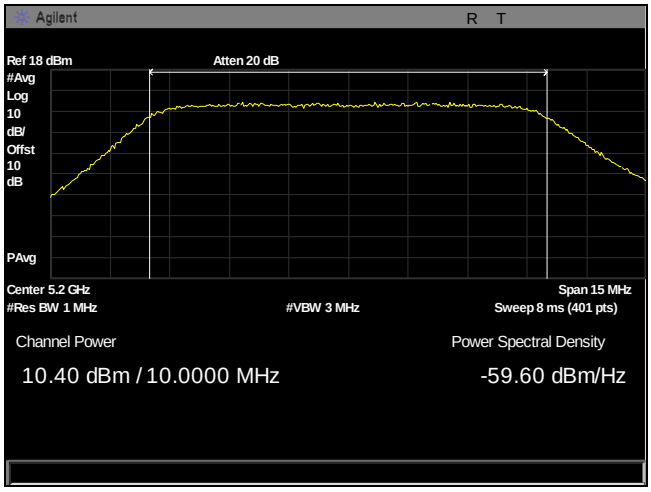
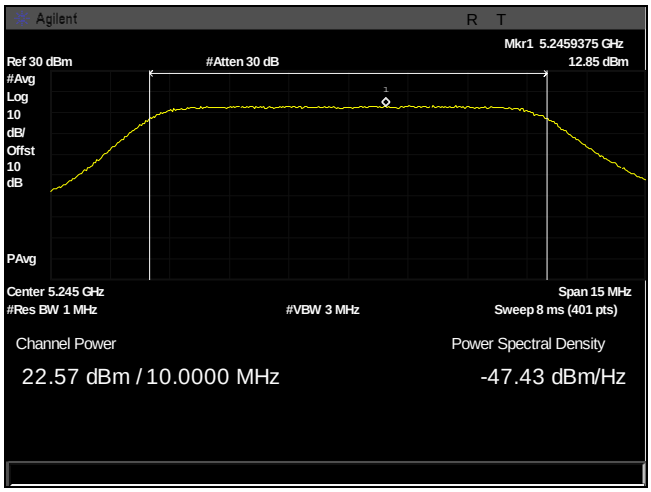
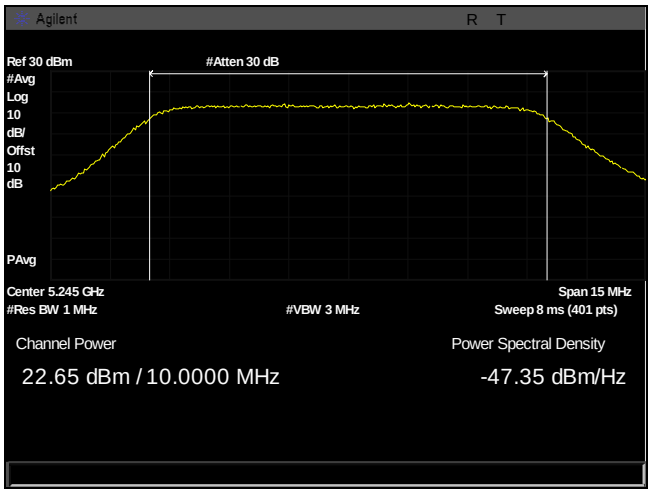


Plot 70. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 10M, 5200M, c1



Plot 71. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 10M, 5245M, c0



Plot 72. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 10M, 5245M, c1

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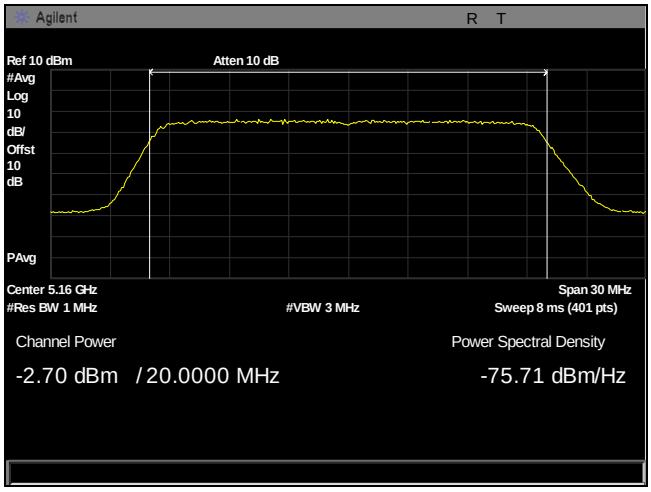
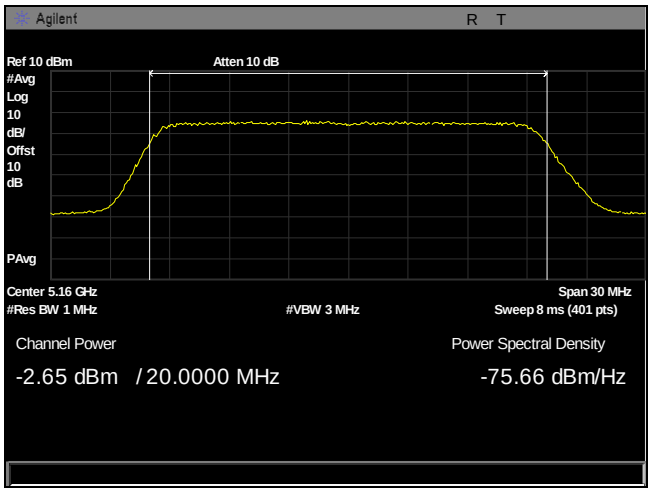
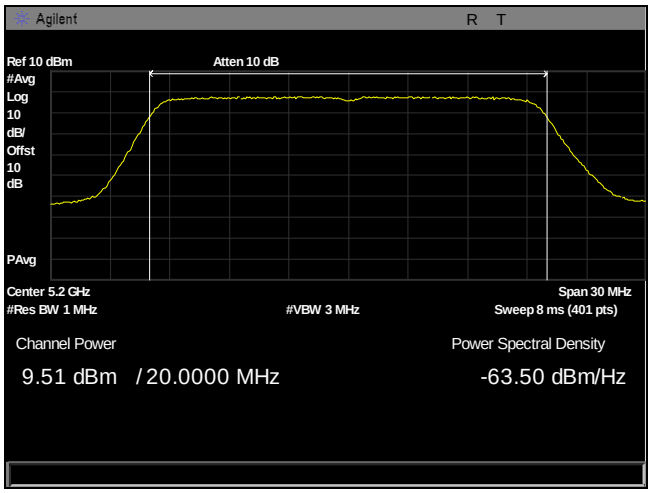


Plot 73. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 20M, 5160M, c0



Plot 74. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 20M, 5160M, c1



Plot 75. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 20M, 5200M, c0

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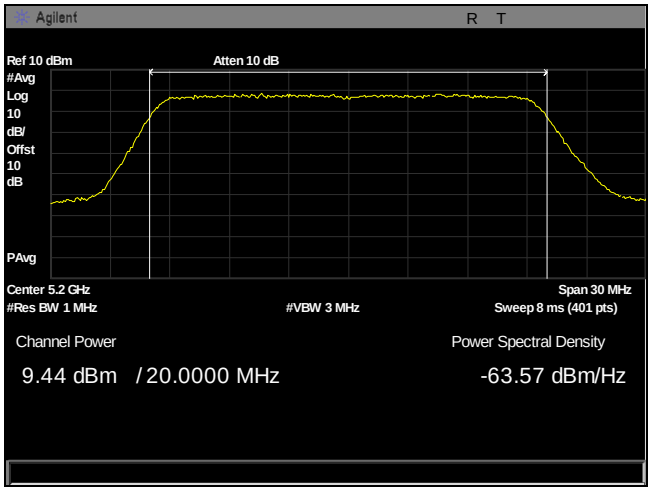
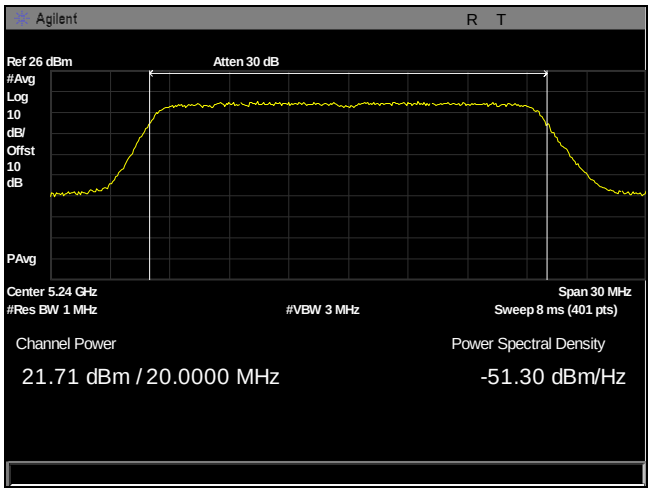
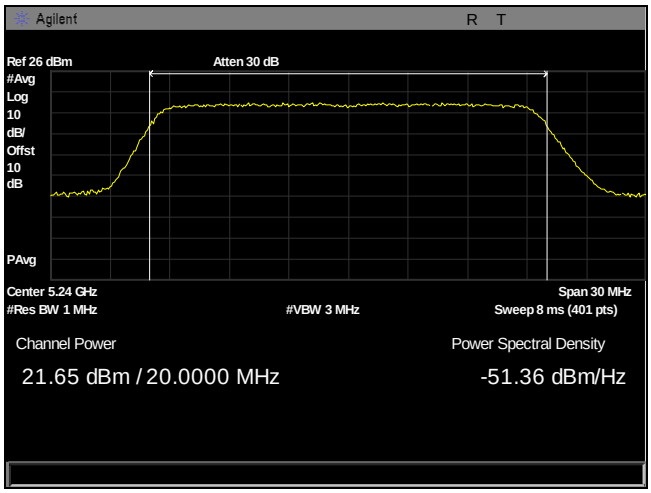


Plot 76. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 20M, 5200M, c1



Plot 77. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 20M, 5240M, c0



Plot 78. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 20M, 5240M, c1

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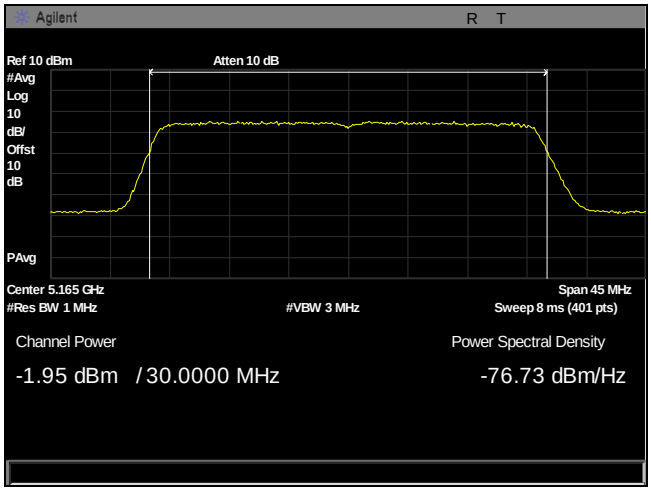
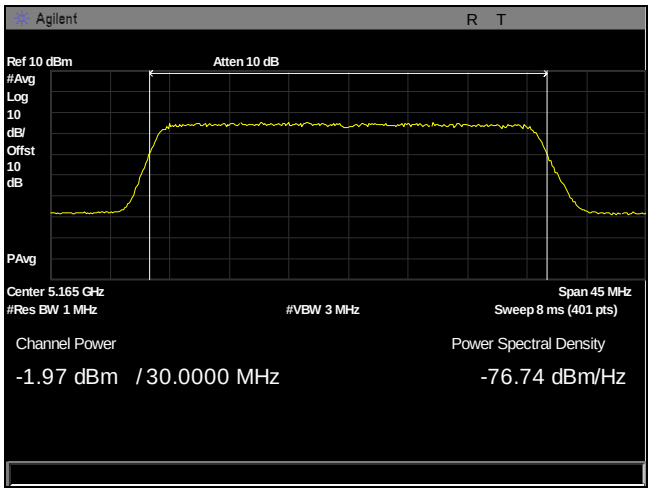
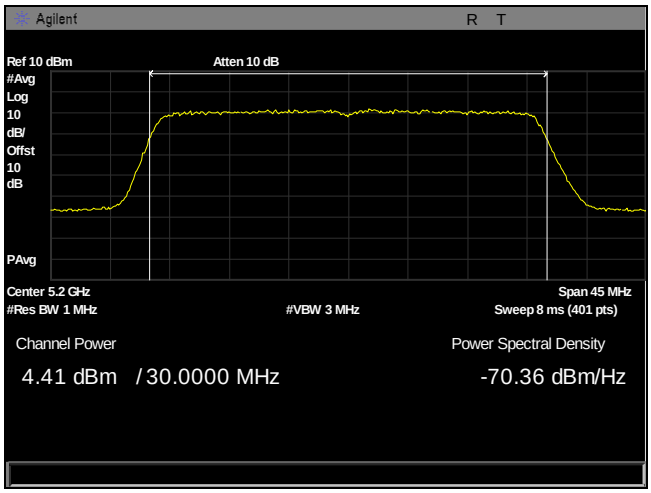


Plot 79. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 30M, 5165M, c0



Plot 80. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 30M, 5165M, c1



Plot 81. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 30M, 5200M, c0

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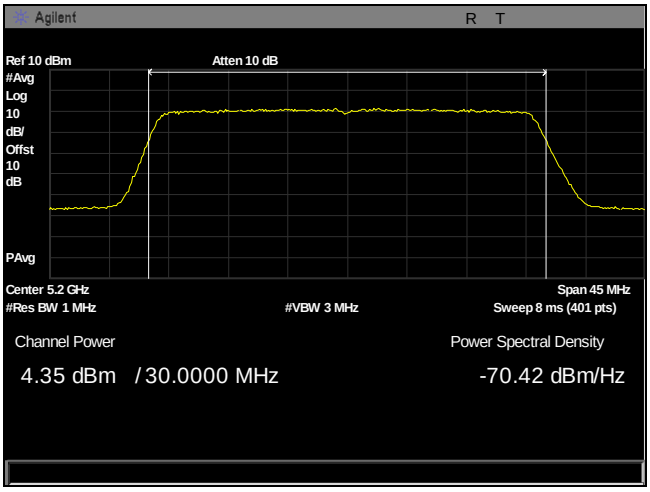
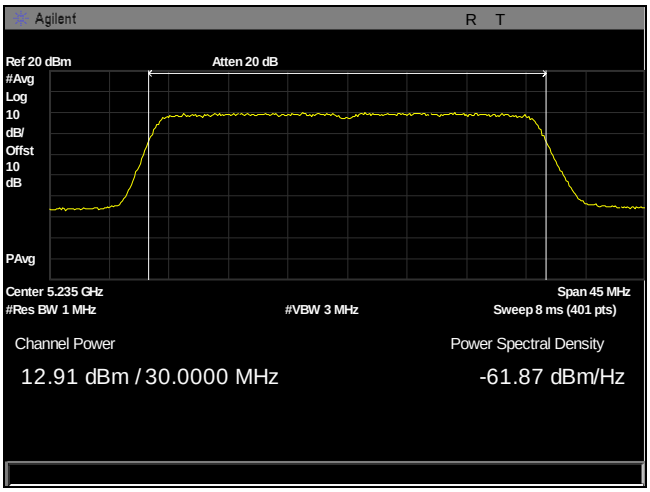
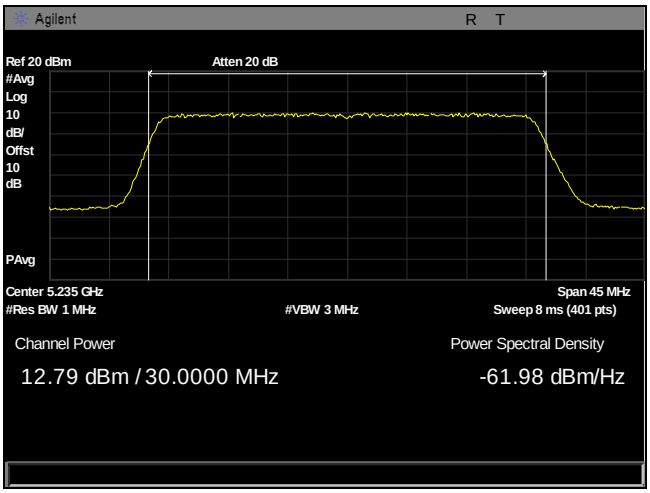


Plot 82. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 30M, 5200M, c1



Plot 83. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 30M, 5235M, c0



Plot 84. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 30M, 5235M, c1

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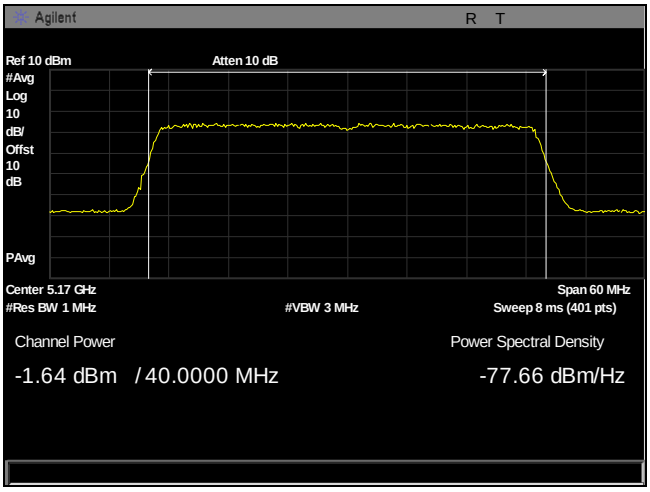
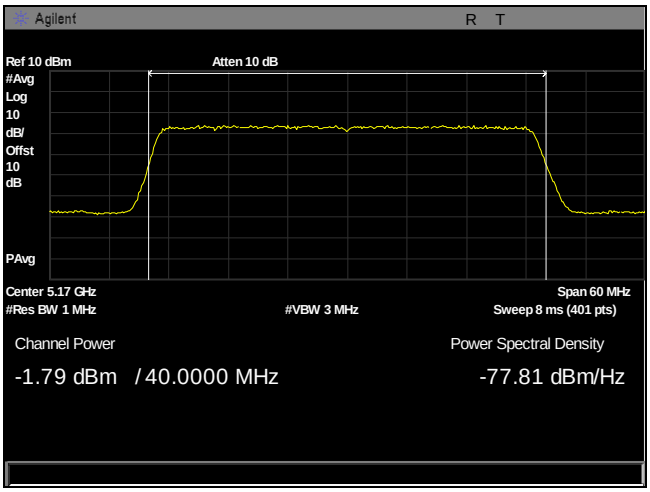
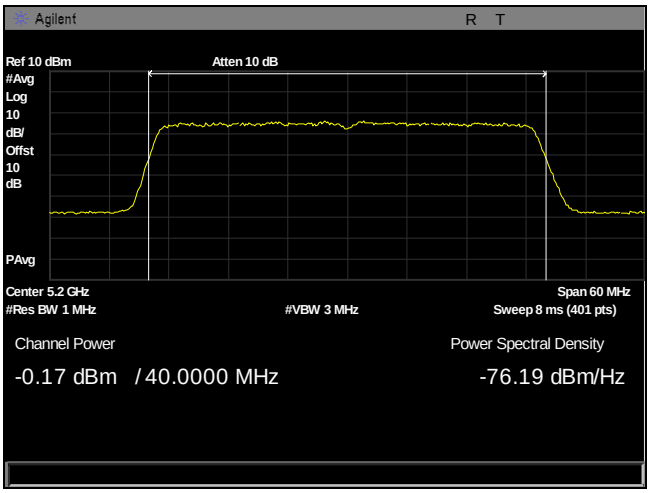


Plot 85. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 40M, 5170M, c0



Plot 86. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 40M, 5170M, c1



Plot 87. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 40M, 5200M, c0

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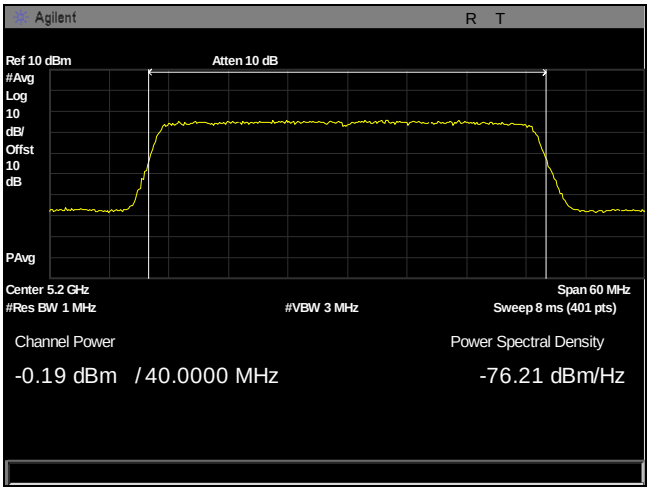
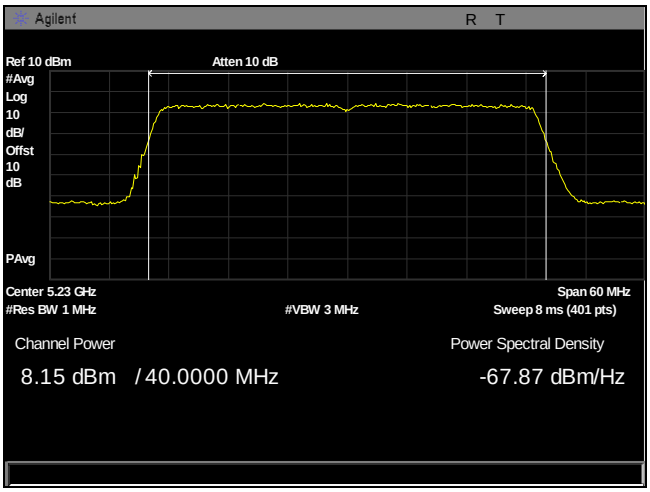
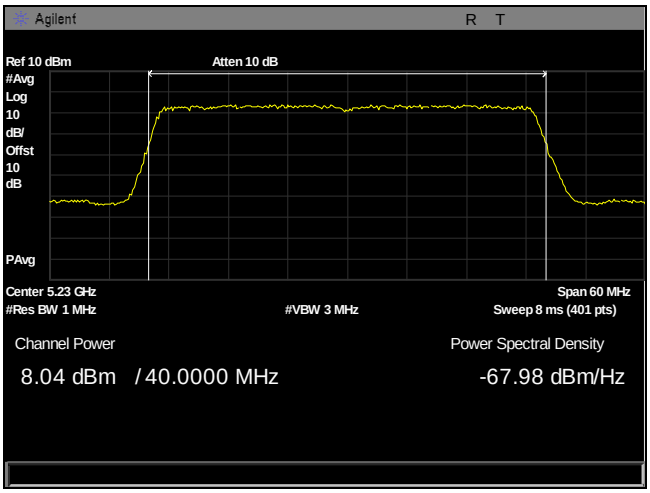


Plot 88. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 40M, 5200M, c1



Plot 89. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 40M, 5230M, c0



Plot 90. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 40M, 5230M, c1

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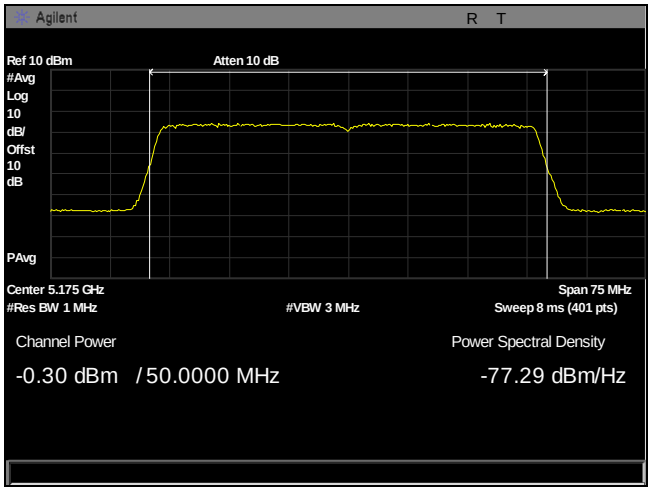
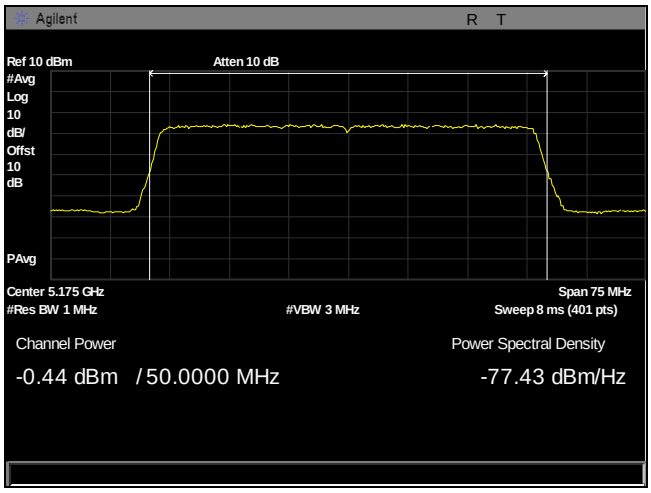
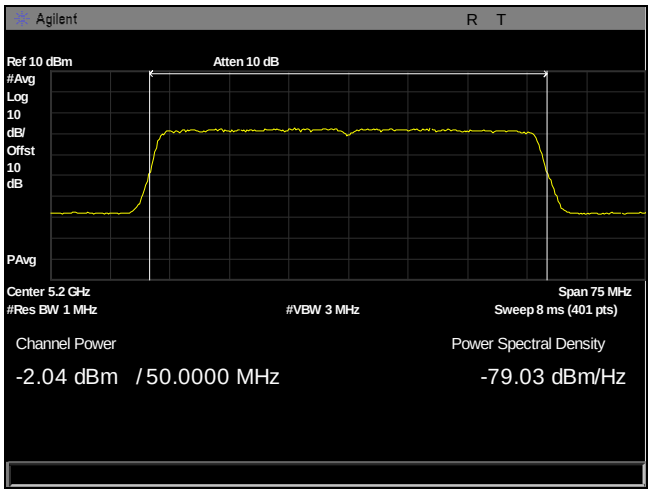


Plot 91. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 50M, 5175M, c0



Plot 92. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 50M, 5175M, c1



Plot 93. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 50M, 5200M, c0

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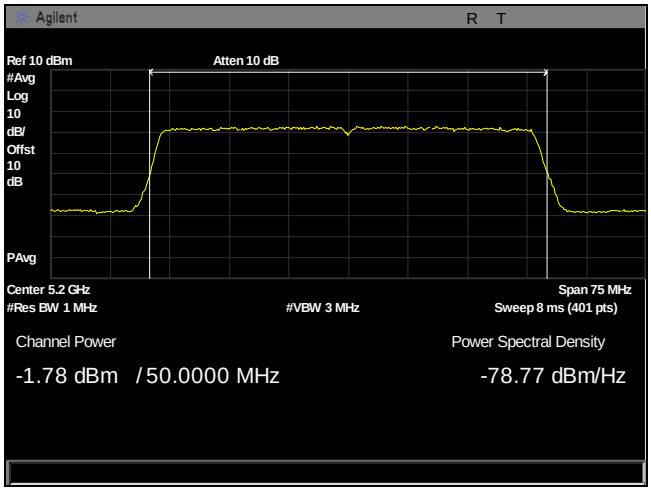
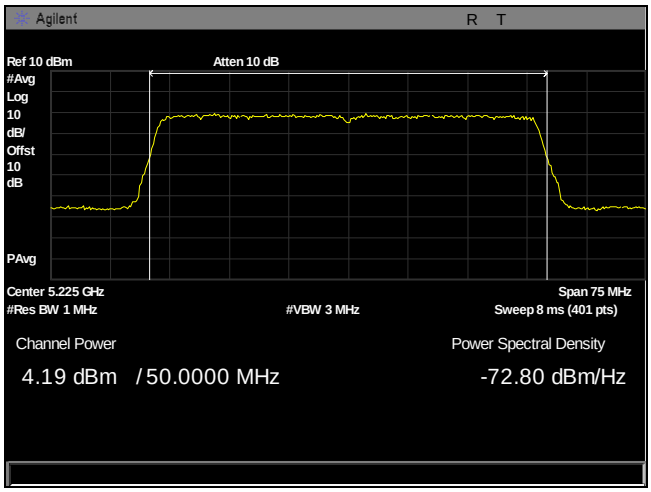
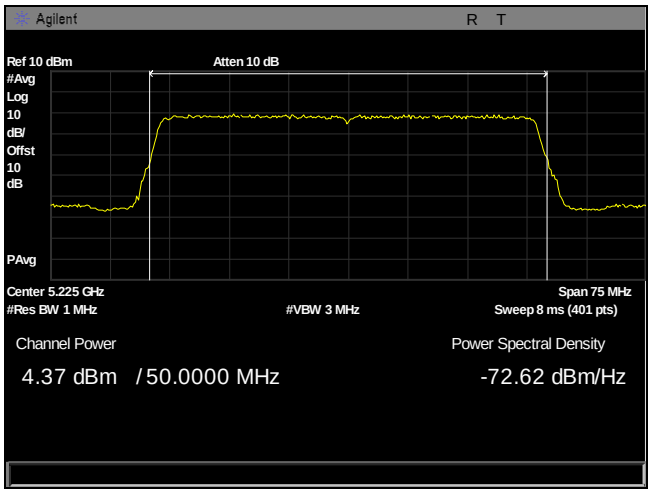


Plot 94. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 50M, 5200M, c1



Plot 95. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 50M, 5225M, c0



Plot 96. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 50M, 5225M, c1

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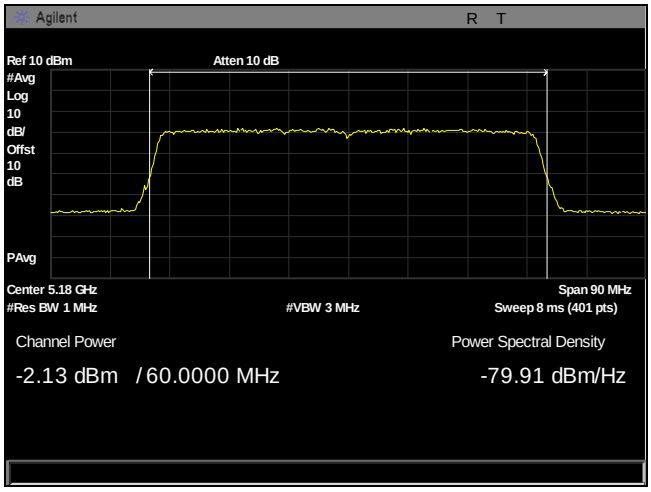
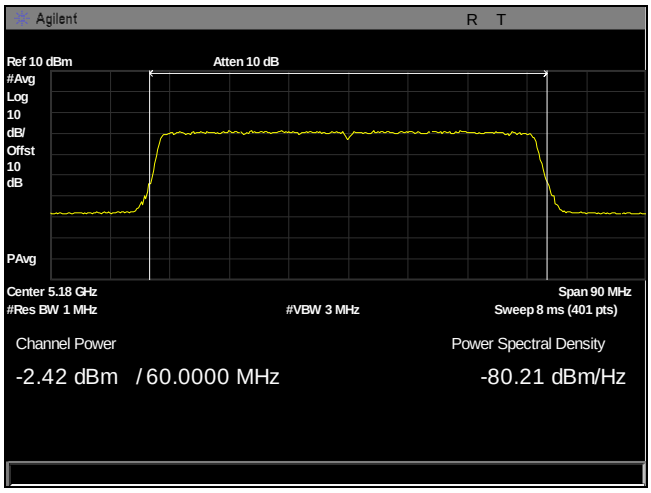
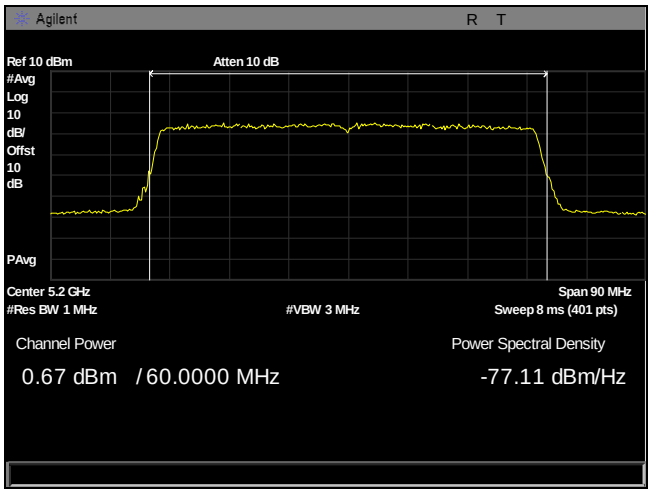


Plot 97. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 60M, 5180M, c0



Plot 98. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 60M, 5180M, c1



Plot 99. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 60M, 5200M, c0

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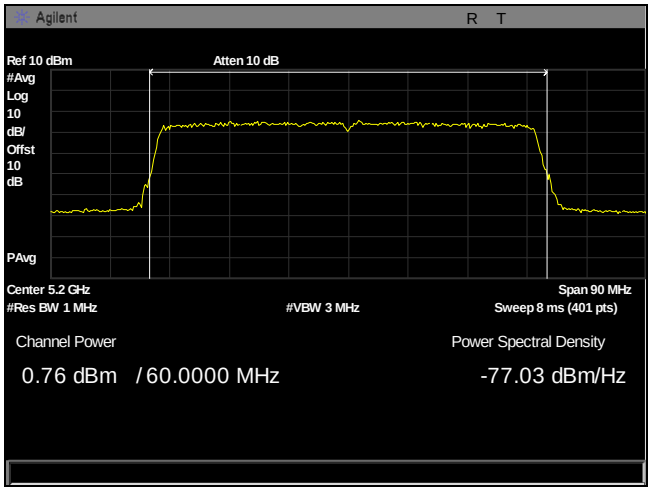
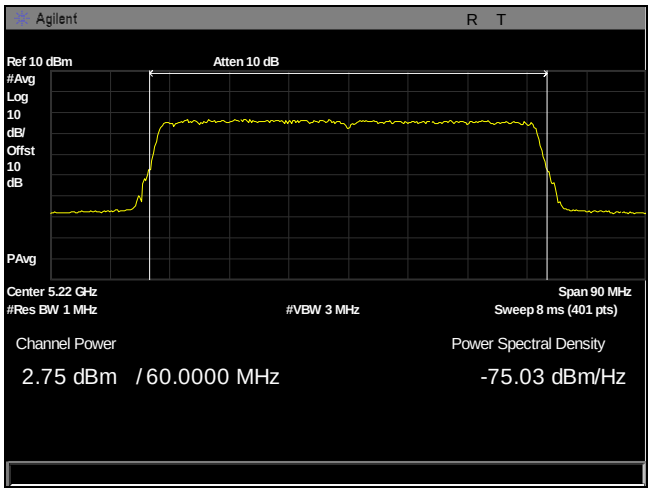
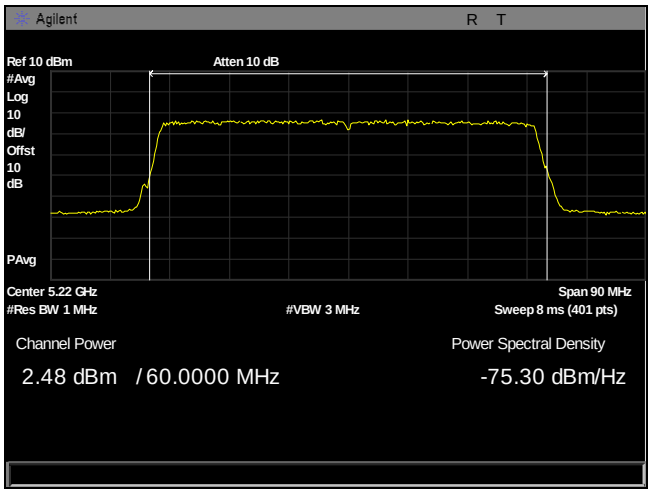


Plot 100. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 60M, 5200M, c1



Plot 101. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 60M, 5220M, c0



Plot 102. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 60M, 5220M, c1

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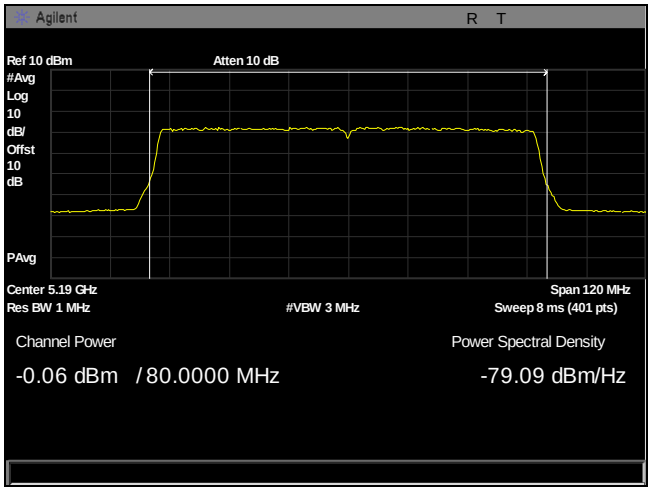
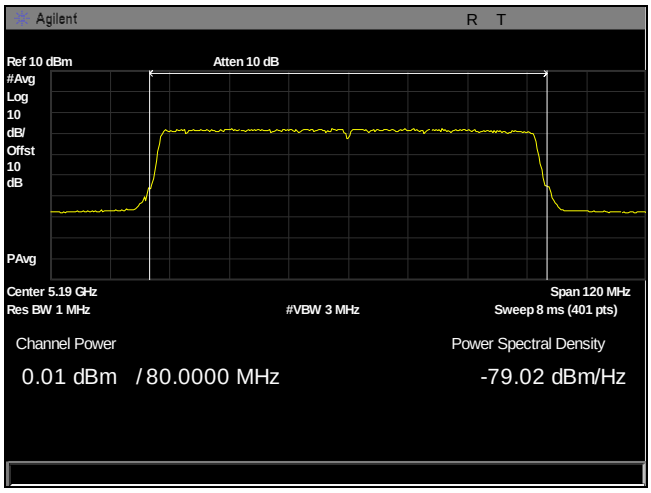
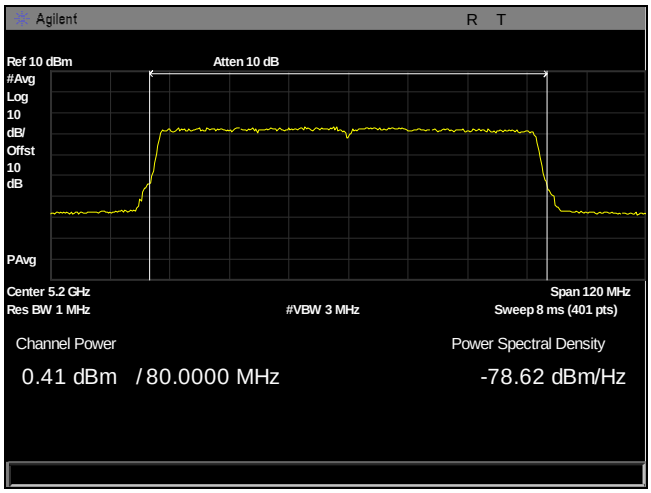


Plot 103. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 80M, 5190M, c0



Plot 104. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 80M, 5190M, c1



Plot 105. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 80M, 5200M, c0

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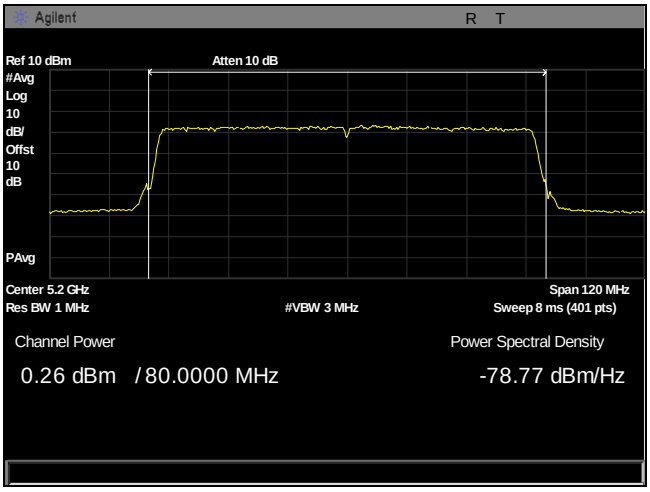
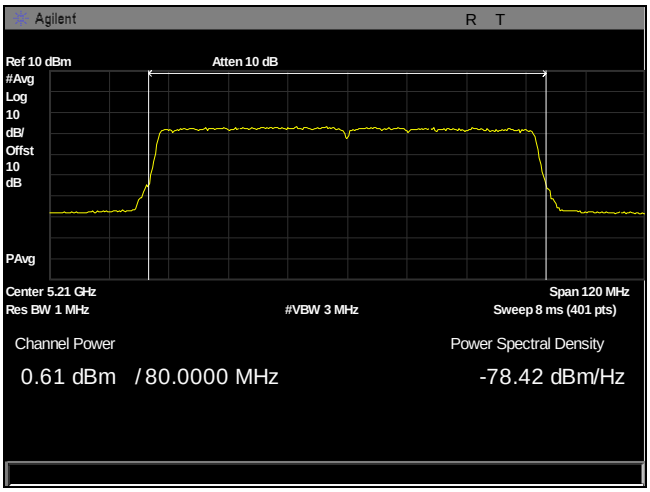
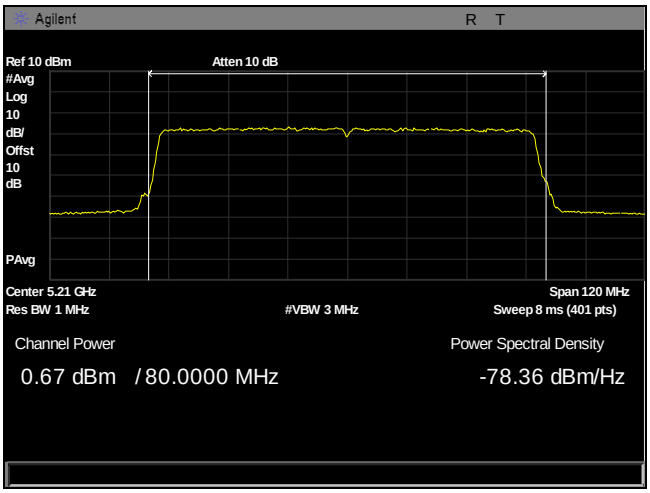


Plot 106. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 80M, 5200M, c1



Plot 107. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 80M, 5210M, c0



Plot 108. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 80M, 5210M, c1

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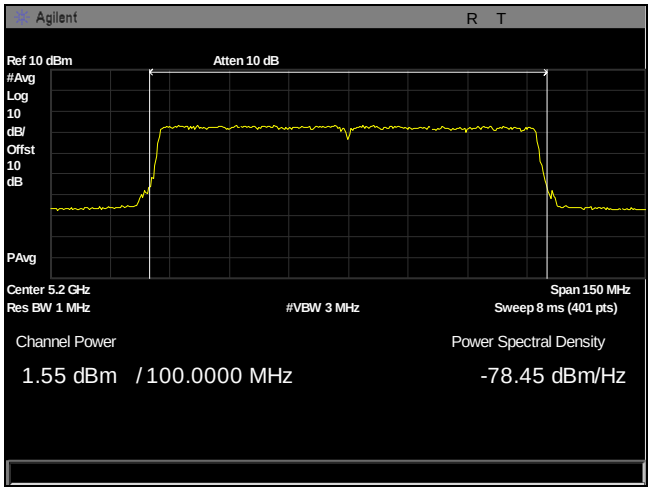
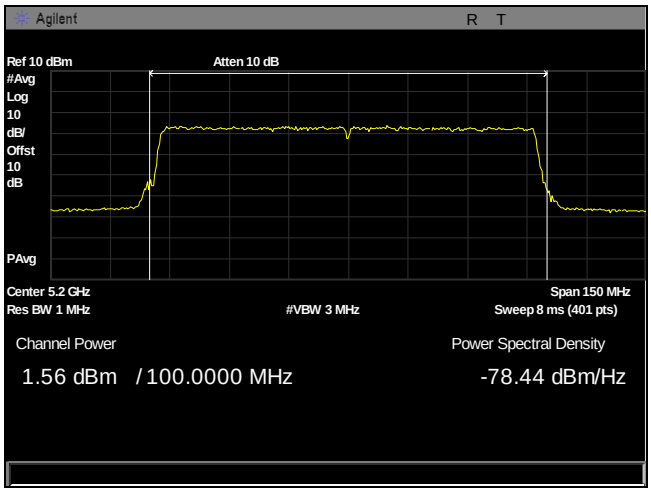


Plot 109. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 100M, 5200M, c0



Plot 110. Conducted Transmitter Output Power, 23 dBi, fixed ptp, 100M, 5200M, c1

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Conducted Output Power, 34 dBi

Channel	Frequency	Chain 0	Chain 1	Sum	Limit	Antenna Gain	Final Limit	Margin
BW (MHz)	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dBi)	(dBm)	(dB)
10	5155	-5.65	-5.74	-2.684	30	34	19	-21.684
	5200	11.95	11.75	14.86	30	34	19	-4.138
	5245	10.99	11.18	14.1	30	34	19	-4.903
20	5160	-3.03	-3.24	-0.123	30	34	19	-19.123
	5200	5.2	5.29	8.256	30	34	19	-10.744
	5240	14.17	14.02	17.11	30	34	19	-1.894
30	5165	-0.62	-0.65	2.376	30	34	19	-16.624
	5200	5.26	5.12	8.201	30	34	19	-10.799
	5235	11.43	11.34	14.4	30	34	19	-4.604
40	5170	0.25	0.38	3.326	30	34	19	-15.674
	5200	1.35	1.51	4.442	30	34	19	-14.558
	5230	8.76	8.61	11.7	30	34	19	-7.304
50	5175	-0.11	-0.08	2.916	30	34	19	-16.084
	5200	0.29	0.17	3.241	30	34	19	-15.759
	5225	11.41	11.06	14.25	30	34	19	-4.751
60	5180	0.18	0.27	3.236	30	34	19	-15.764
	5200	1.09	1.13	4.121	30	34	19	-14.879
	5220	3.22	3.35	6.296	30	34	19	-12.704
80	5190	0.23	0.01	3.132	30	34	19	-15.868
	5200	2.79	2.81	5.811	30	34	19	-13.189
	5210	1.6	1.69	4.656	30	34	19	-14.344
100	5200	0.68	1.03	3.869	30	34	19	-15.131

Table 10. Conducted Transmitter Output Power, fixed ptp, 34 dBi, 2x2, Test Results

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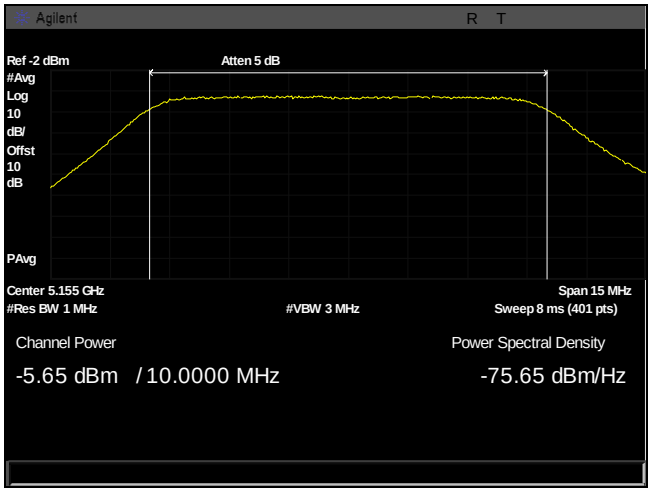
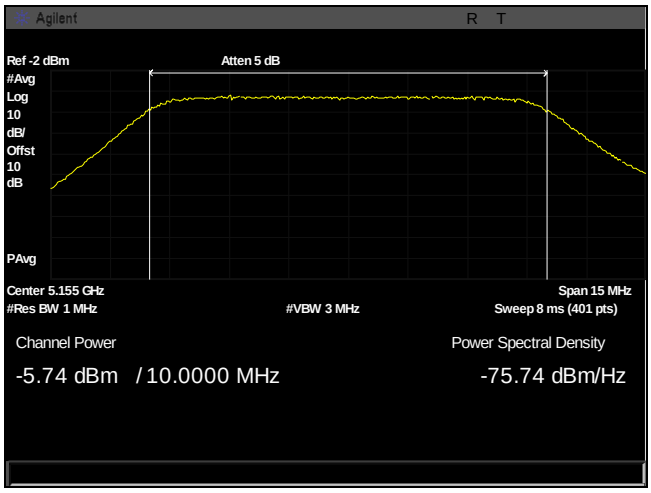
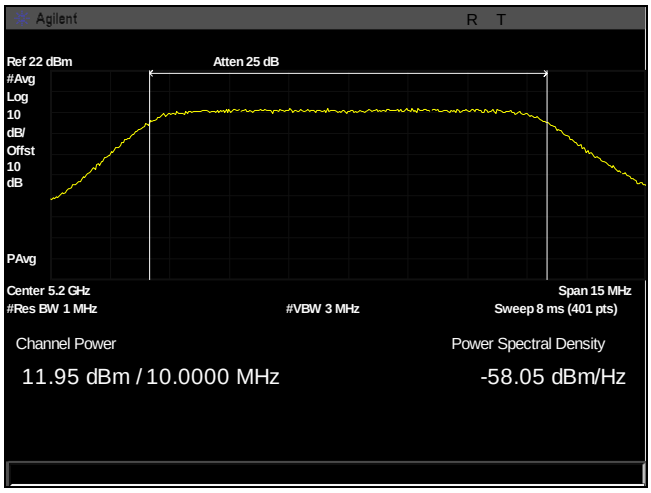
Conducted Output Power, 34 dBi



Plot 111. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 10M, 5155, c0



Plot 112. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 10M, 5155, c1



Plot 113. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 10M, 5200, c0

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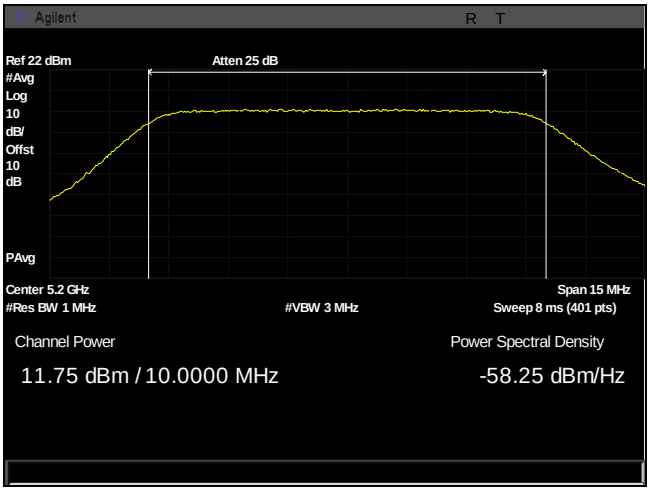
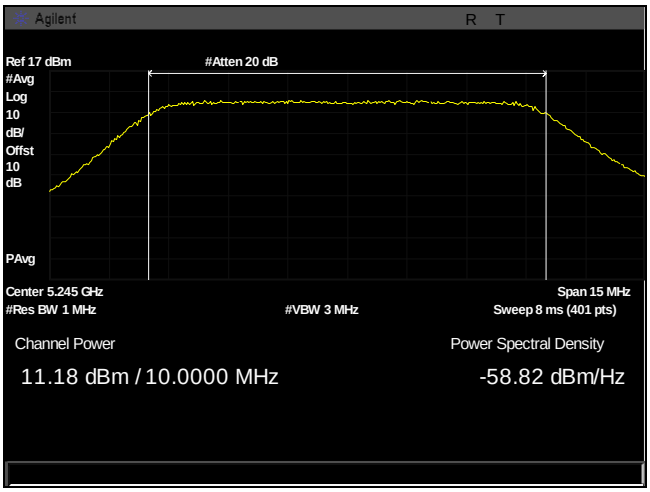
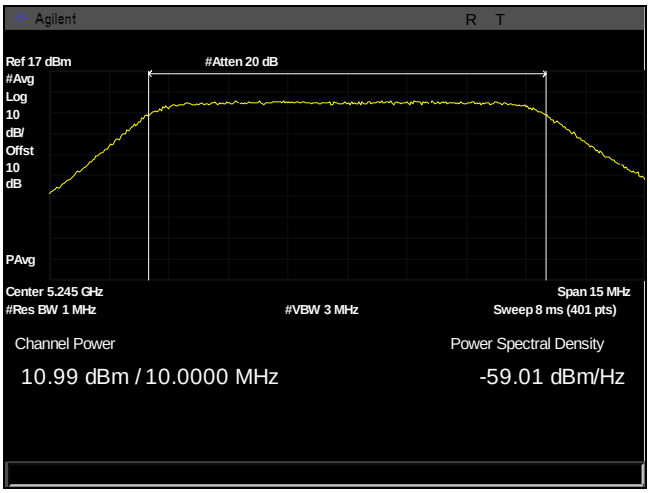


Plot 114. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 10M, 5200, c1



Plot 115. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 10M, 5245, c0



Plot 116. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 10M, 5245, c1

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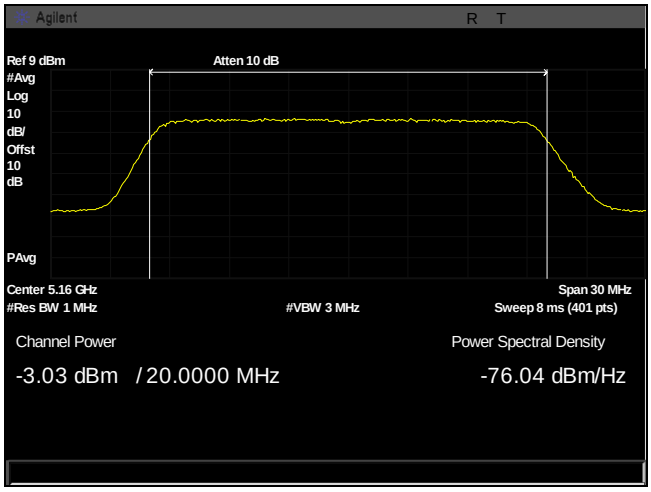
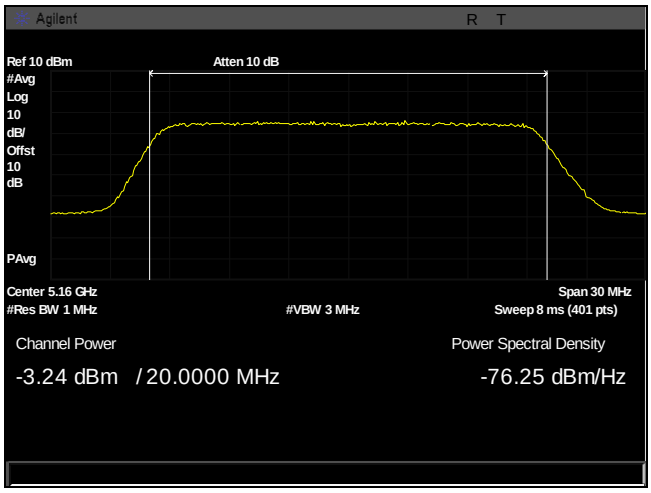
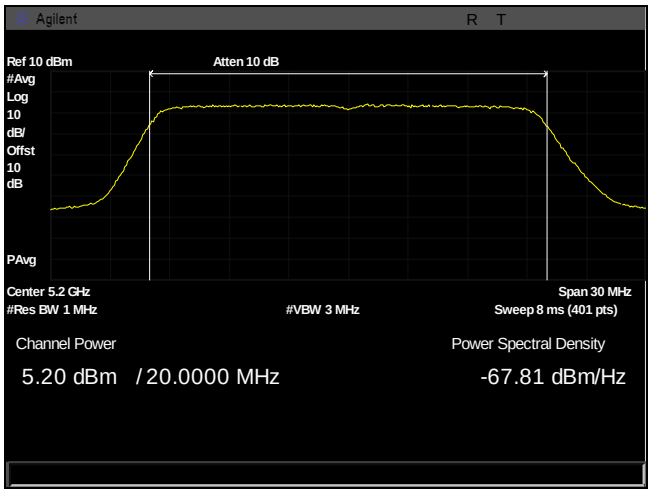


Plot 117. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 20M, 5160, c0



Plot 118. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 20M, 5160, c1



Plot 119. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 20M, 5200, c0

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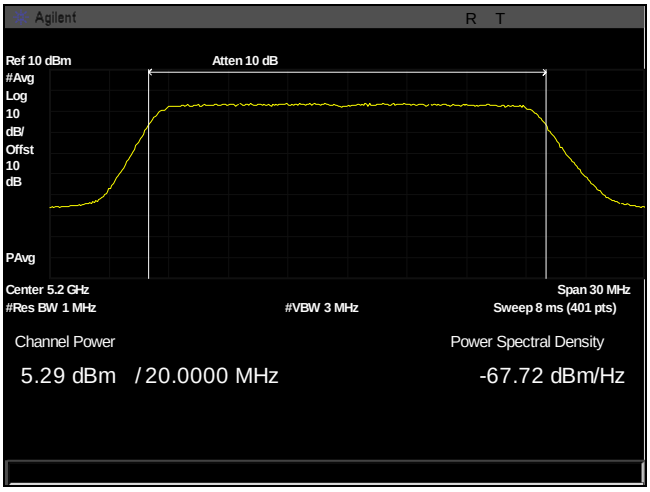
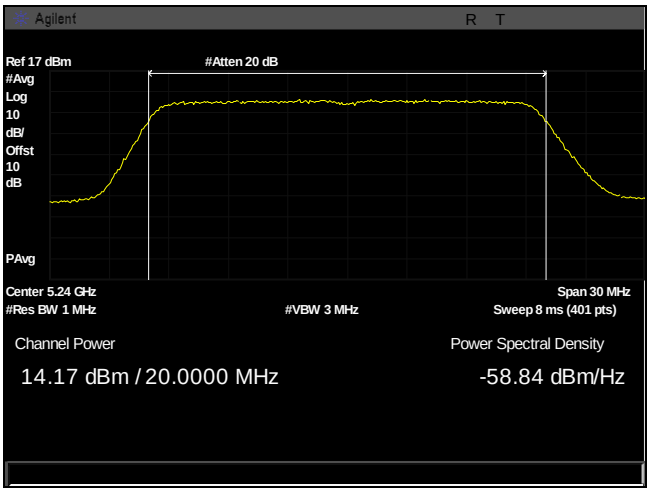
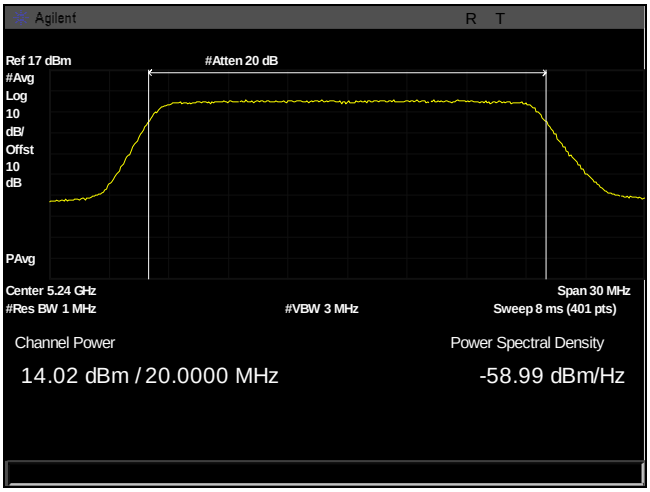


Plot 120. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 20M, 5200, c1



Plot 121. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 20M, 5240, c0



Plot 122. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 20M, 5240, c1

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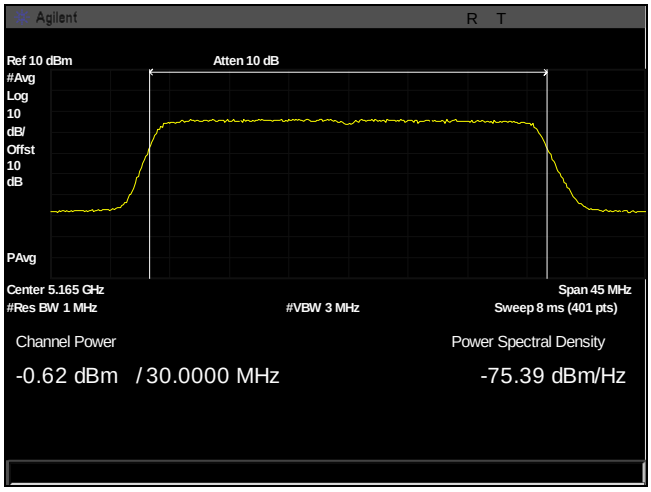
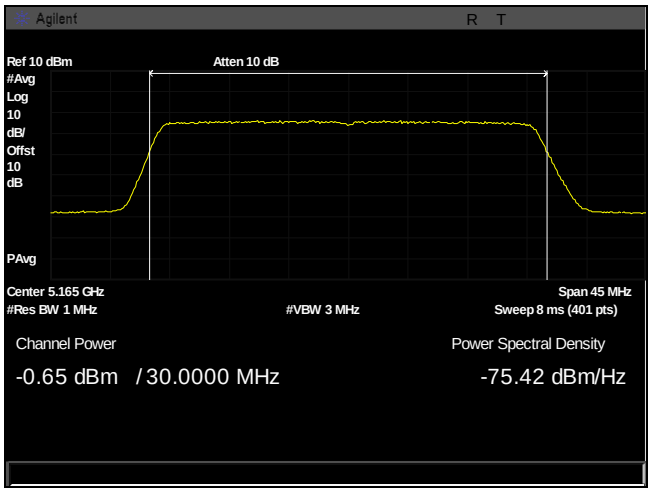
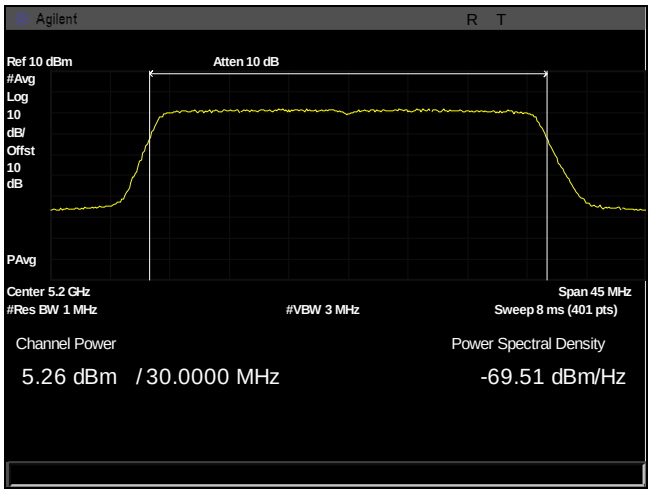


Plot 123. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 30M, 5165, c0



Plot 124. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 30M, 5165, c1



Plot 125. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 30M, 5200, c0

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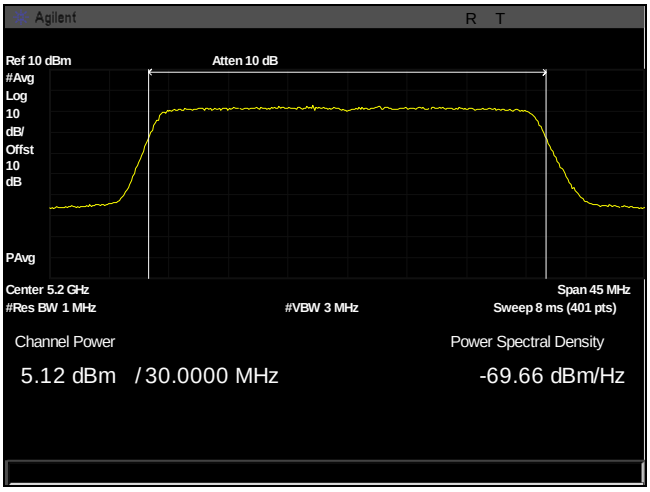
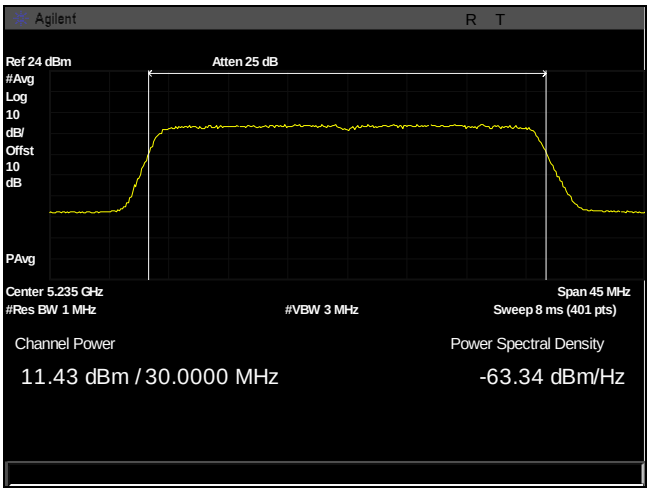
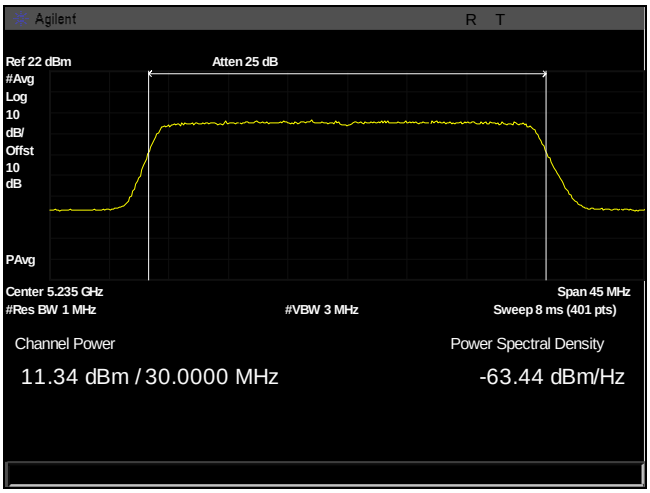


Plot 126. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 30M, 5200, c1



Plot 127. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 30M, 5235, c0



Plot 128. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 30M, 5235, c1

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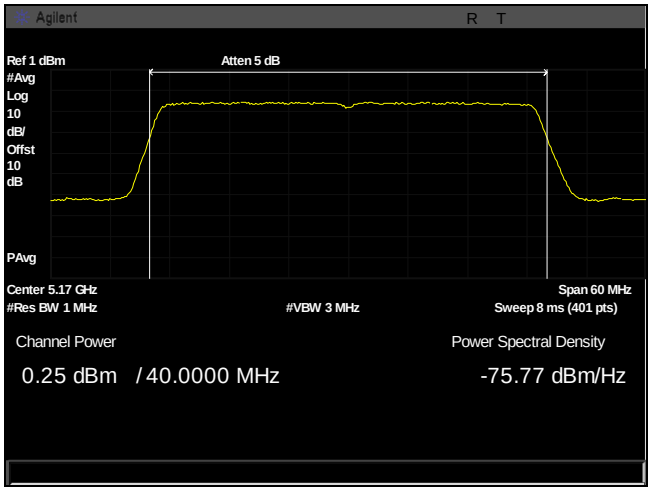
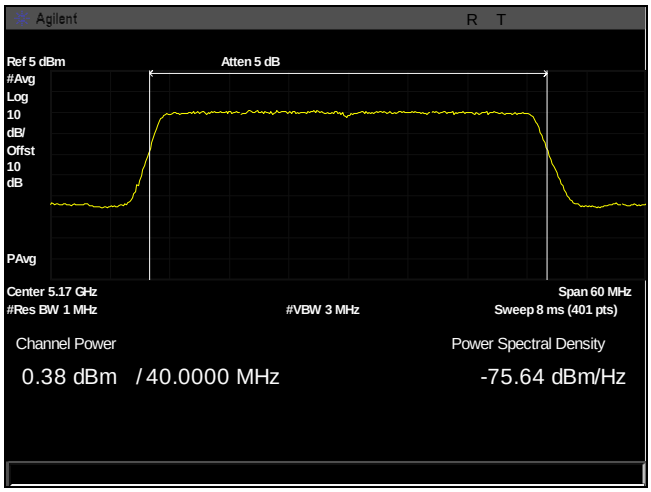
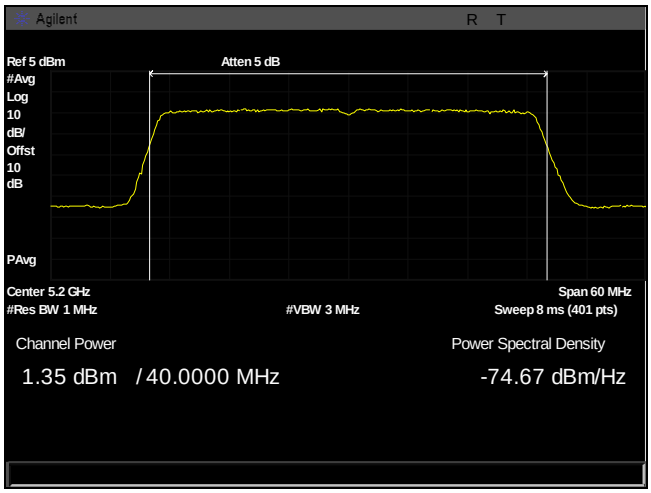


Plot 129. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 40M, 5170, c0



Plot 130. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 40M, 5170, c1



Plot 131. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 40M, 5200, c0

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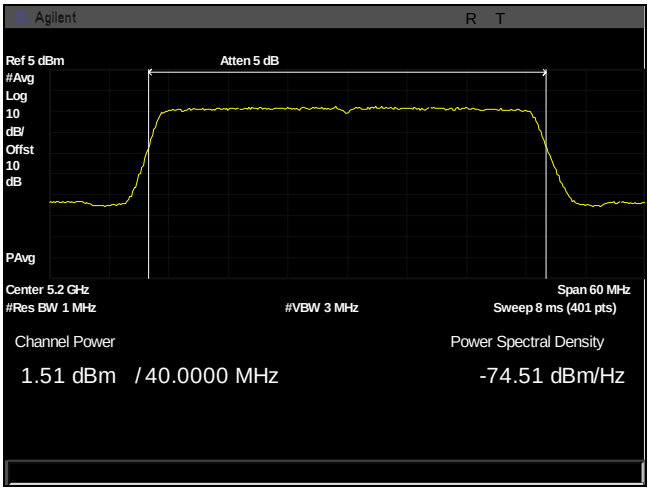
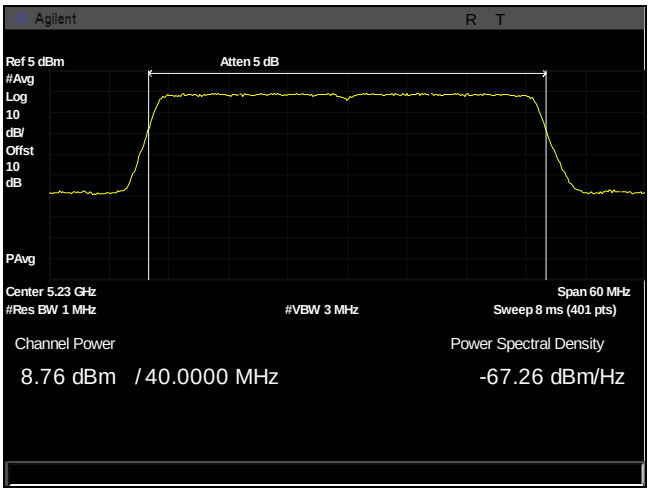
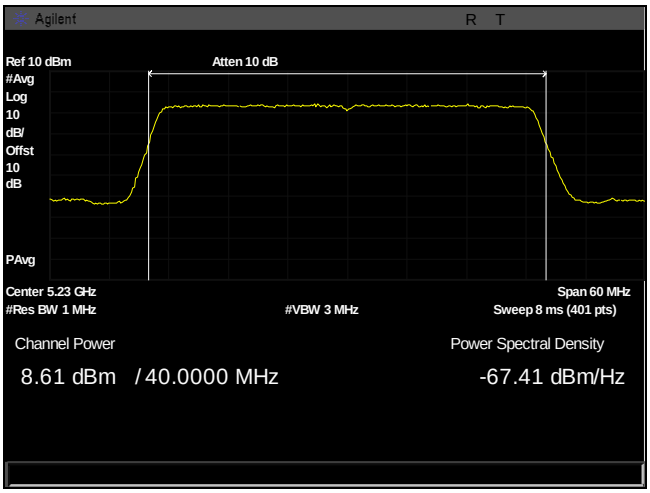


Plot 132. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 40M, 5200, c1



Plot 133. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 40M, 5230, c0



Plot 134. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 40M, 5230, c1

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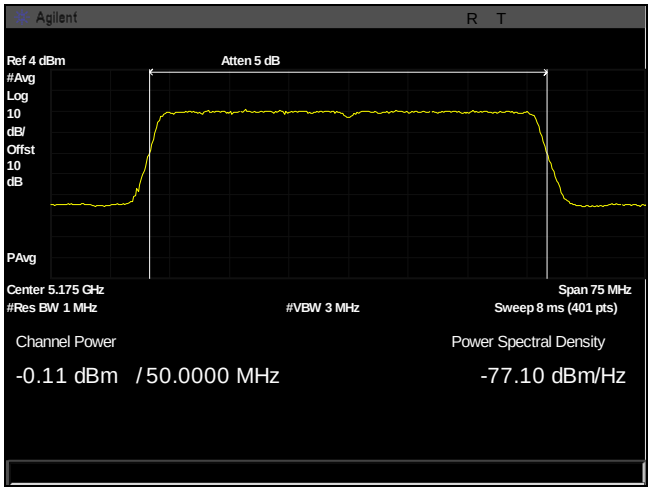
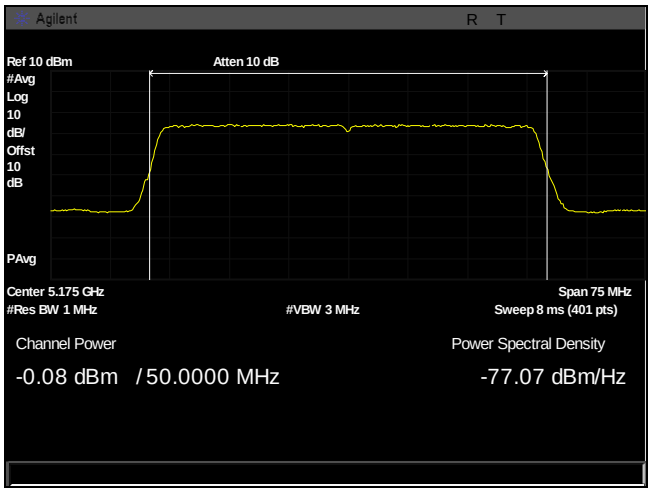
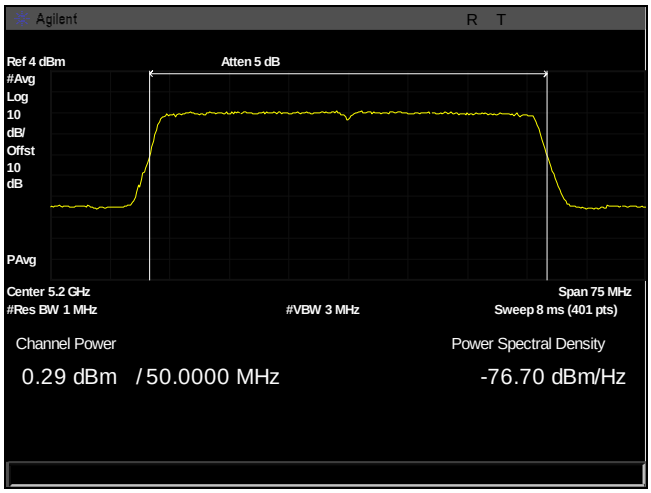


Plot 135. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 50M, 5175, c0



Plot 136. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 50M, 5175, c1



Plot 137. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 50M, 5200, c0

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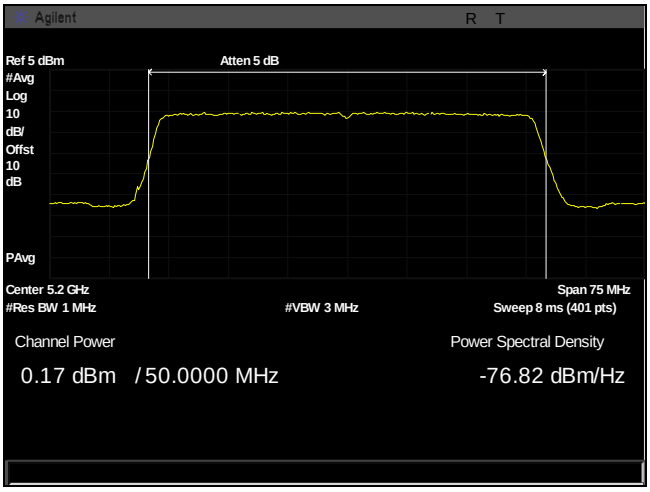
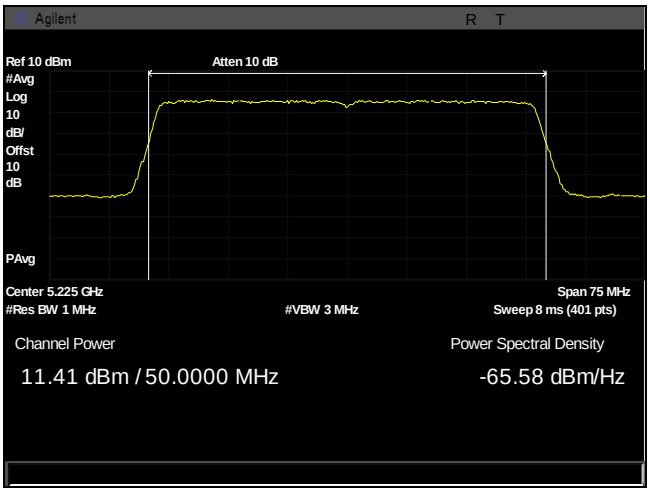
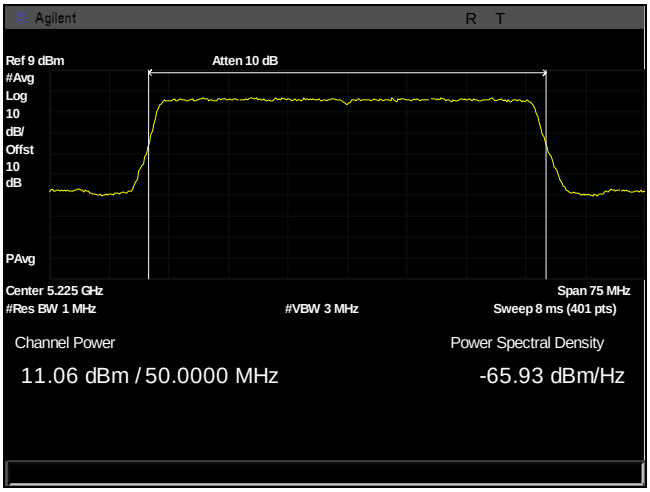


Plot 138. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 50M, 5200, c1



Plot 139. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 50M, 5225, c0



Plot 140. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 50M, 5225, c1

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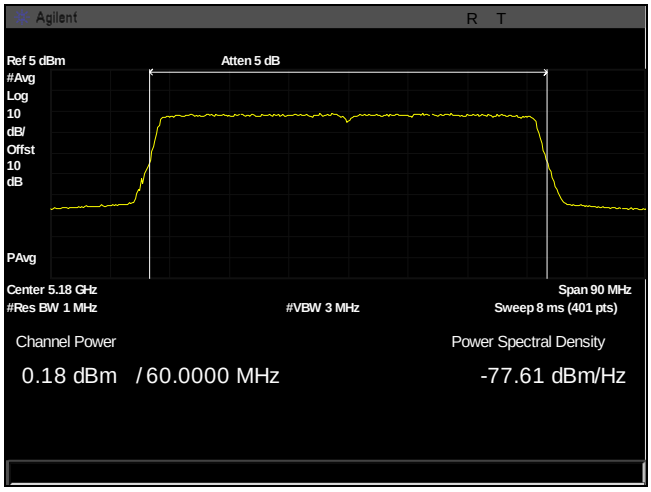
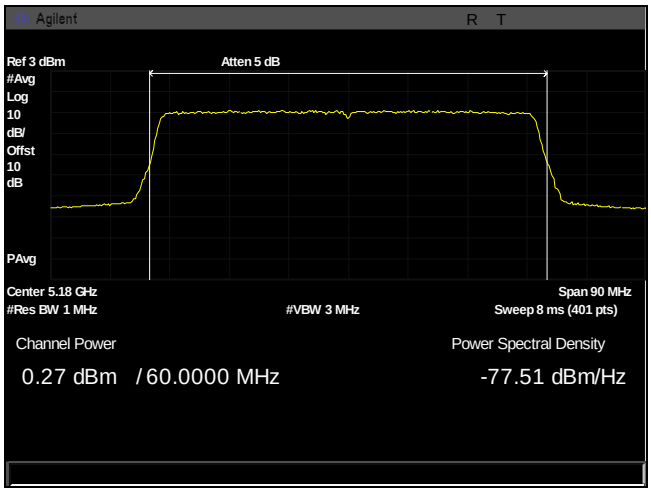
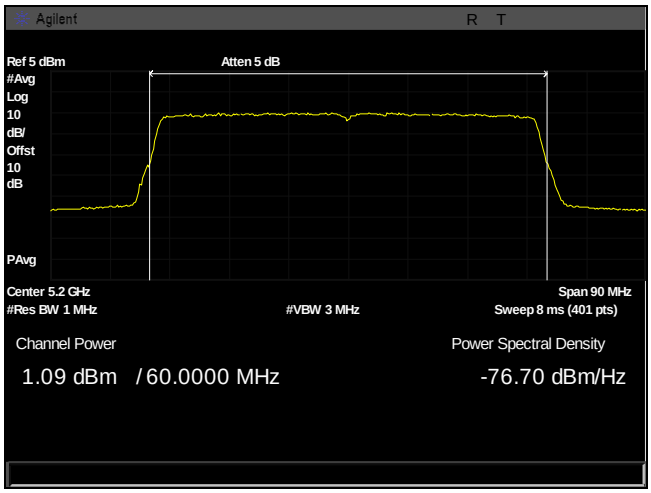


Plot 141. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 60M, 5180, c0



Plot 142. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 60M, 5180, c1



Plot 143. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 60M, 5200, c0

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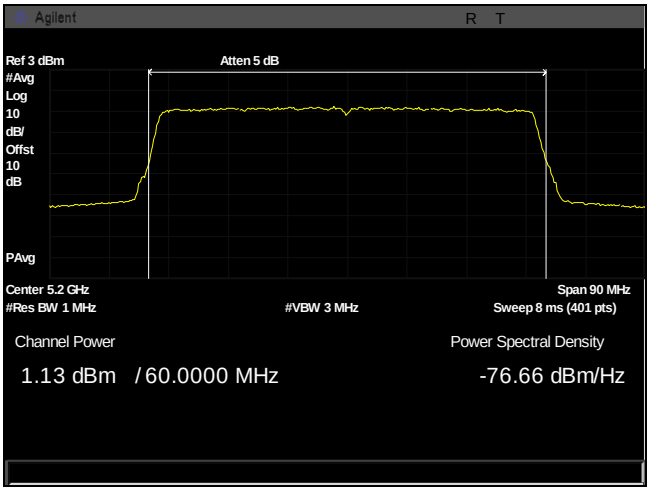
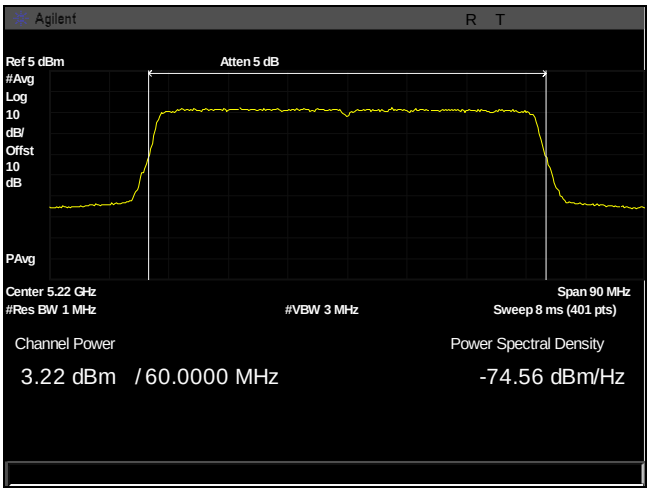
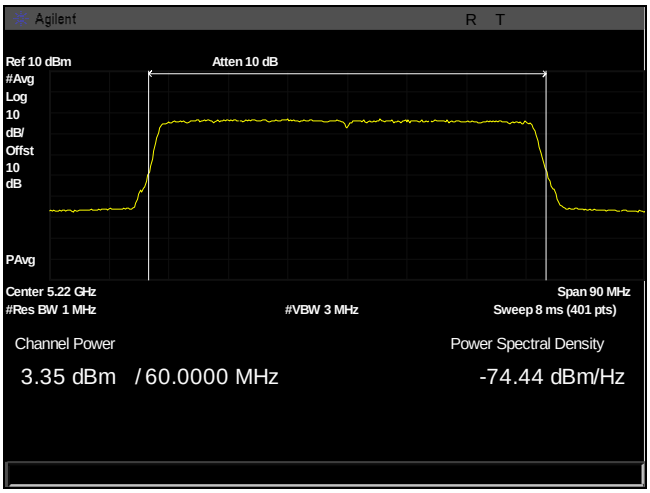


Plot 144. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 60M, 5200, c1



Plot 145. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 60M, 5220, c0



Plot 146. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 60M, 5220, c1

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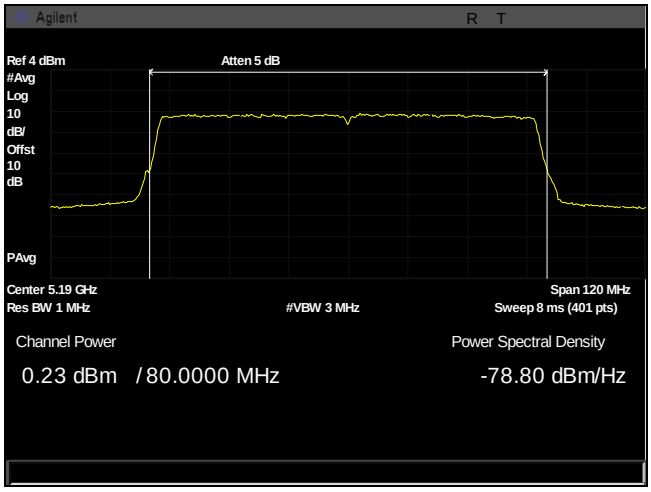
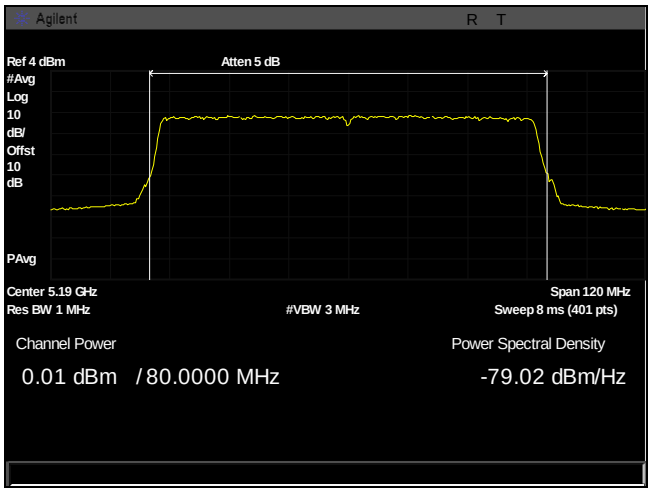
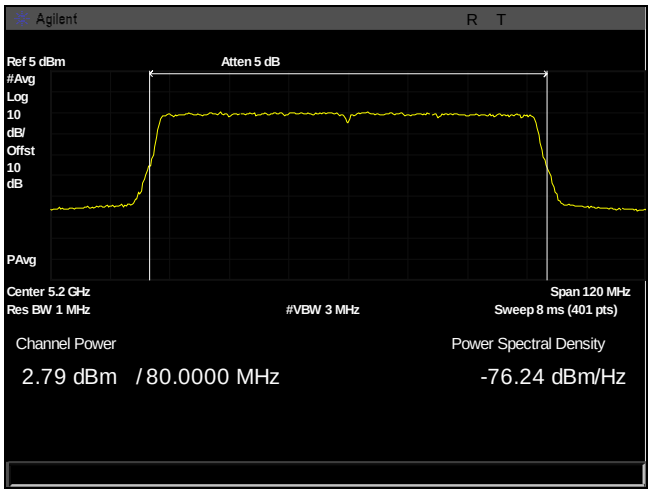


Plot 147. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 80M, 5190, c0



Plot 148. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 80M, 5190, c1



Plot 149. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 80M, 5200, c0

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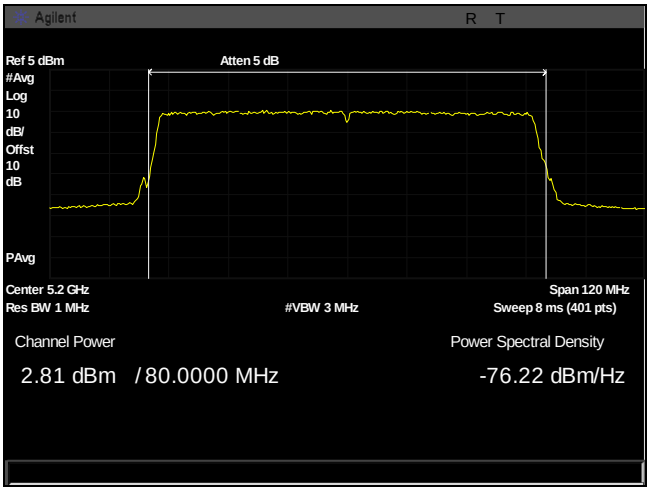
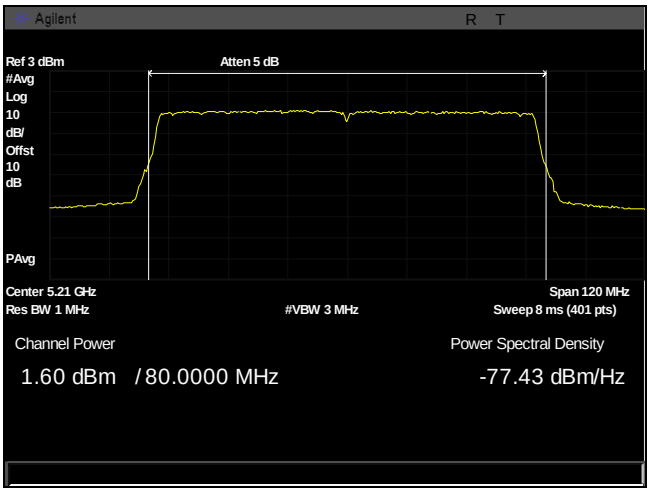
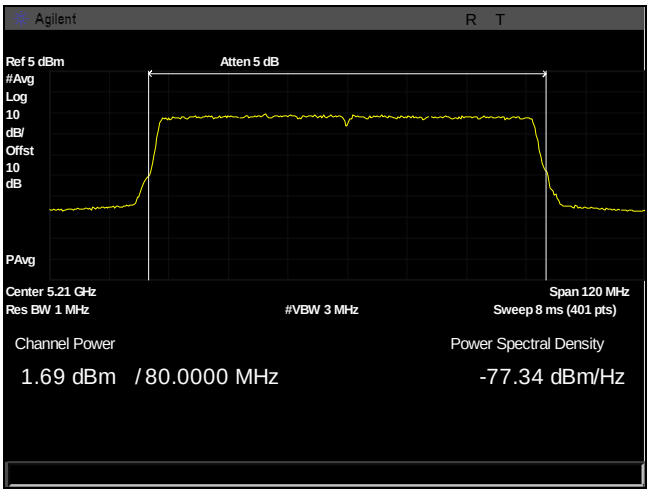


Plot 150. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 80M, 5200, c1



Plot 151. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 80M, 5210, c0



Plot 152. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 80M, 5210, c1

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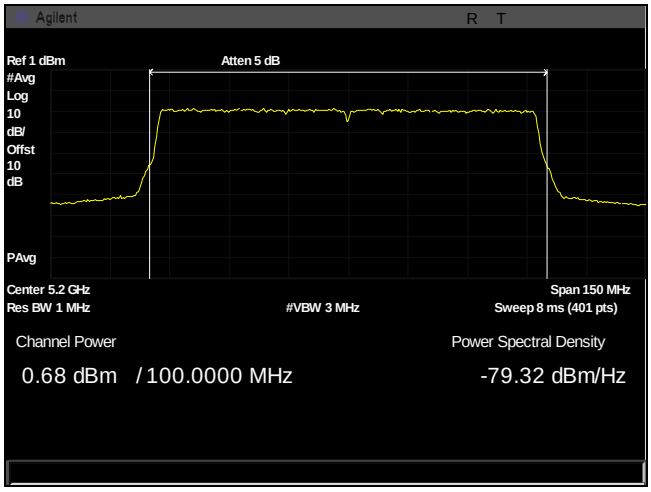
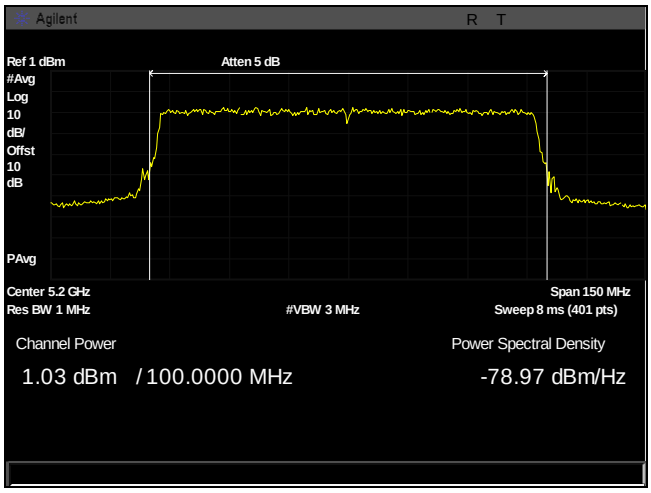


Plot 153. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 100M, 5200, c0



Plot 154. Conducted Transmitter Output Power, 34 dBi, fixed ptp, 100M, 5200, c1

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Electromagnetic Compatibility Criteria for Intentional Radiators

§15.407(a)(1) Maximum Power Spectral Density

Test Requirements:

§15.407(a)(1)(i): In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

§15.407(a)(1)(ii): In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi..

§15.407(a)(1)(iii): In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.

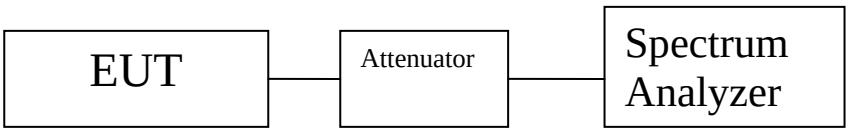
§15.407(a)(1)(iv): In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test Procedure: The EUT was connected to a spectrum analyzer through a cable and attenuator. Measurements were taken with the EUT set to transmit continuously on its low, mid, and high channels. Its power was measured according KDB 789033 D02 General UNII Test Procedures v01.

Test Results: The EUT as tested is compliant with the requirements of this section.

Test Engineer(s): Donald Salguero

Test Date(s): August 30, 2017



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Power Spectral Density, 22 dBi

Channel BW (MHz)	Frequency (MHz)	Chain 0 (dBm)	Chain 1 (dBm)	Sum (dBm)	Limit (dBm)	Antenna Gain (dBi)	Final Limit (dBm)	Margin (dB)
10	5155	-4.104	-4.599	-1.334	17	22	17	-18.334
	5200	13.97	13.97	16.981	17	22	17	-0.019
	5245	13.95	13.89	16.931	17	22	17	-0.069
20	5160	-4.933	-5.44	-2.168	17	22	17	-19.168
	5200	5.444	5.326	8.396	17	22	17	-8.604
	5240	13.73	13.48	16.618	17	22	17	-0.382
30	5165	-7.381	-7.143	-4.25	17	22	17	-21.25
	5200	3.822	3.485	6.668	17	22	17	-10.332
	5235	12.81	12.11	15.485	17	22	17	-1.515
40	5170	-5.962	-6.043	-2.992	17	22	17	-19.992
	5200	-3.295	-3.689	-0.477	17	22	17	-17.477
	5230	6.941	7.153	10.059	17	22	17	-6.941
50	5175	-5.983	-6.619	-3.279	17	22	17	-20.279
	5200	-5.195	-5.07	-2.121	17	22	17	-19.121
	5225	0.334	0.101	3.23	17	22	17	-13.77
60	5180	-6.898	-7.424	-4.142	17	22	17	-21.142
	5200	-4.869	-4.812	-1.83	17	22	17	-18.83
	5220	-1.454	-1.457	1.555	17	22	17	-15.445
80	5190	-7.653	-7.529	-4.58	17	22	17	-21.58
	5200	-7.055	-7.301	-4.165	17	22	17	-21.165
	5210	-6.115	-6.476	-3.281	17	22	17	-20.281
100	5200	-8.058	-7.842	-4.938	17	22	17	-21.938

Table 11. Power Spectral Density, fixed ptp, 22 dBi, 2x2, Test Results

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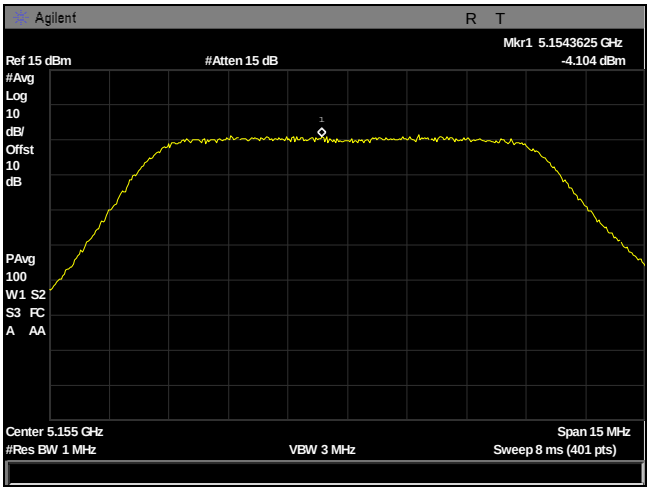
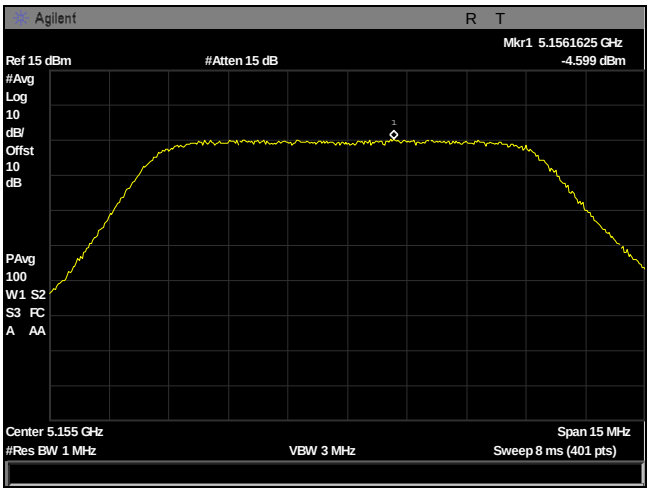
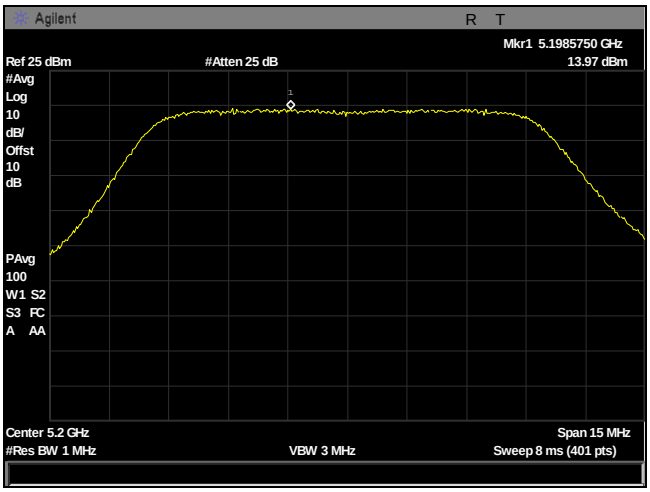
Power Spectral Density, 22 dBi



Plot 155. Power Spectral Density, 22 dBi, fixed ptp, 10M, 5155M, c0



Plot 156. Power Spectral Density, 22 dBi, fixed ptp, 10M, 5155M, c1



Plot 157. Power Spectral Density, 22 dBi, fixed ptp, 10M, 5200M, c0

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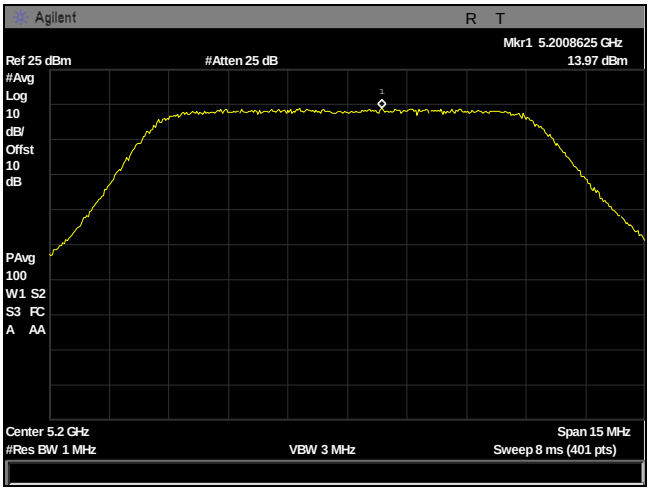
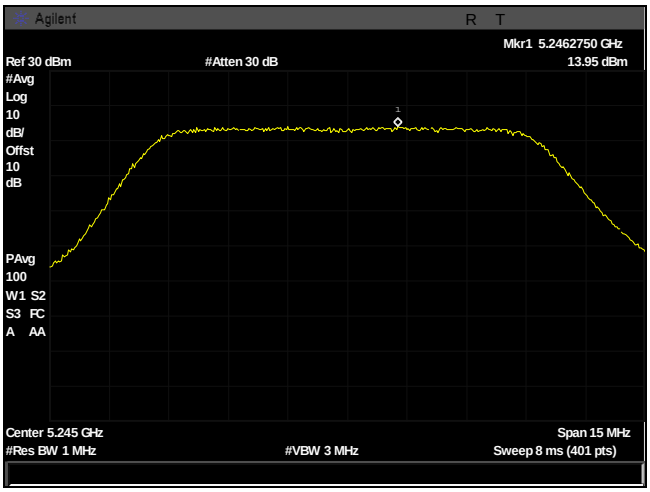
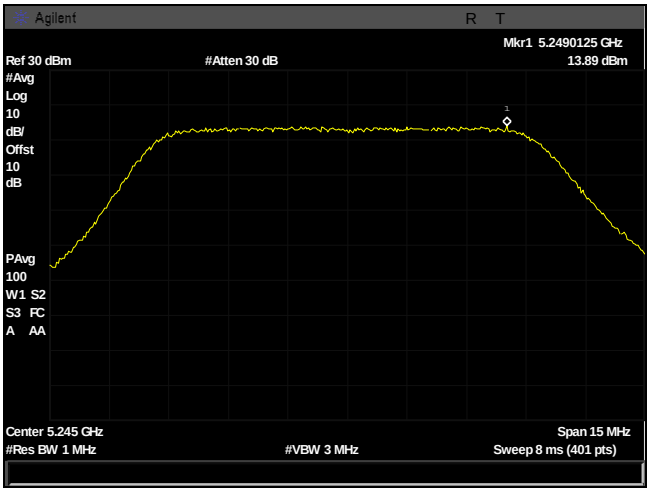


Plot 158. Power Spectral Density, 22 dBi, fixed ptp, 10M, 5200M, c1



Plot 159. Power Spectral Density, 22 dBi, fixed ptp, 10M, 5245M, c0



Plot 160. Power Spectral Density, 22 dBi, fixed ptp, 10M, 5245M, c1

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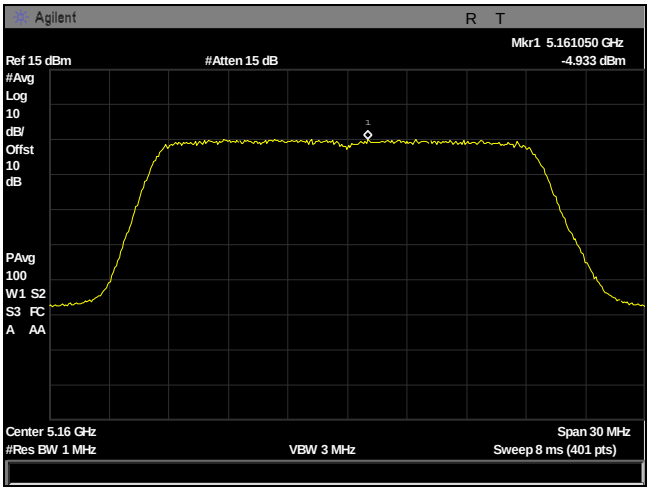
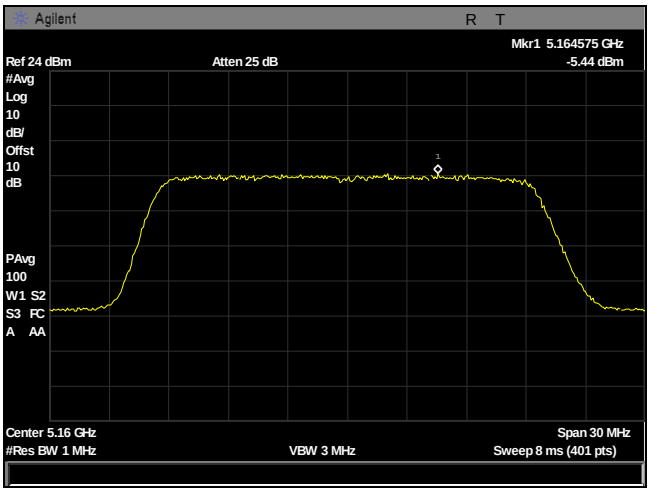
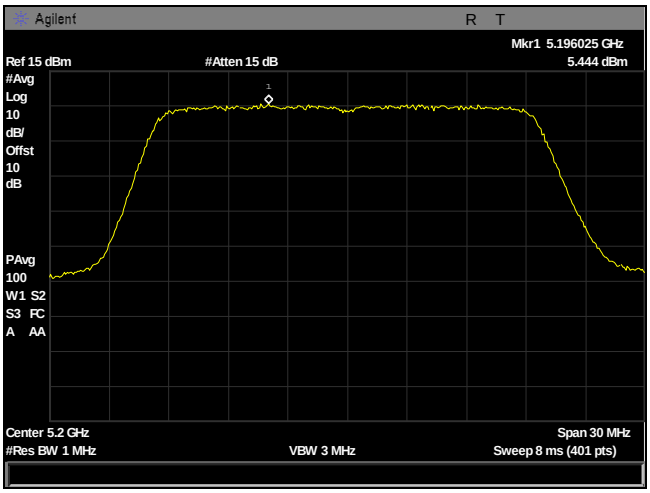


Plot 161. Power Spectral Density, 22 dBi, fixed ptp, 20M, 5160M, c0



Plot 162. Power Spectral Density, 22 dBi, fixed ptp, 20M, 5160M, c1



Plot 163. Power Spectral Density, 22 dBi, fixed ptp, 20M, 5200M, c0

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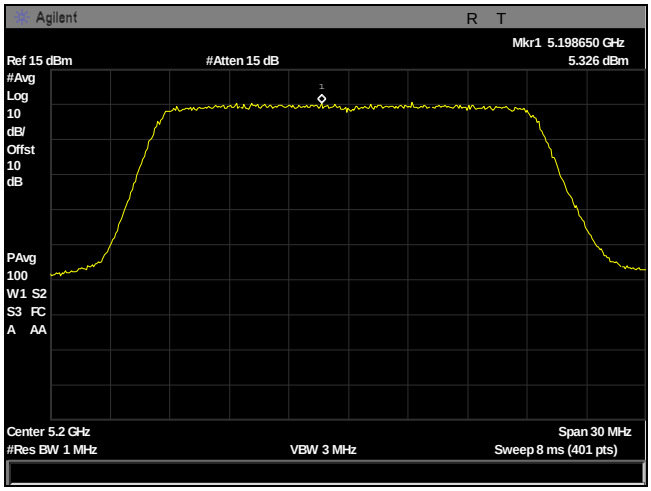
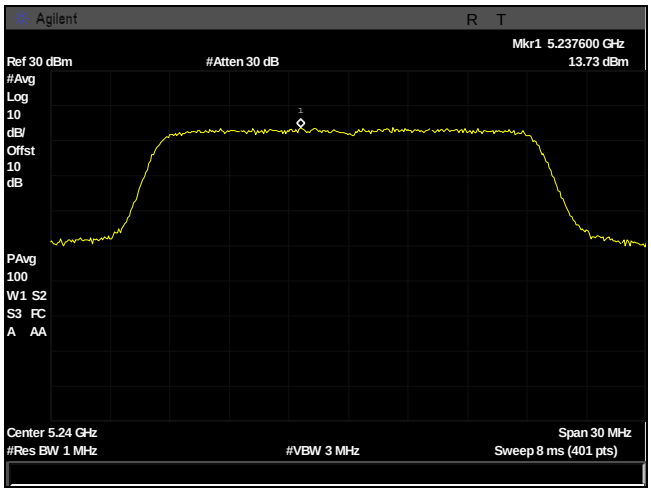
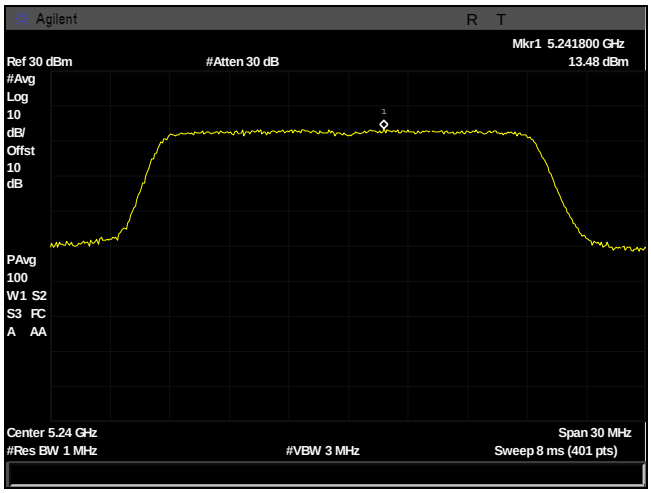


Plot 164. Power Spectral Density, 22 dBi, fixed ptp, 20M, 5200M, c1



Plot 165. Power Spectral Density, 22 dBi, fixed ptp, 20M, 5240M, c0



Plot 166. Power Spectral Density, 22 dBi, fixed ptp, 20M, 5240M, c1

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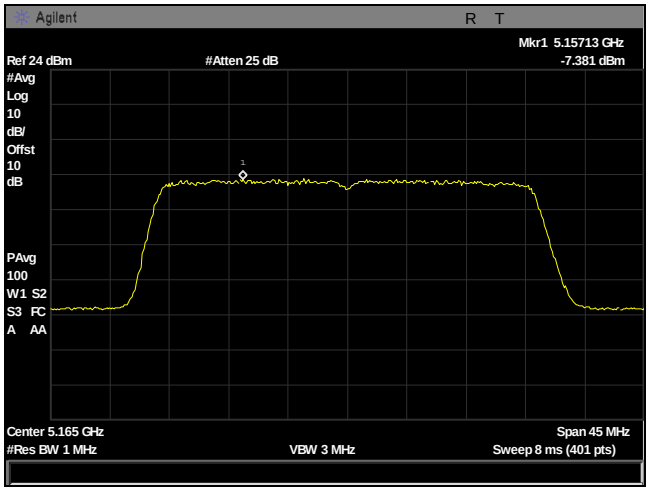
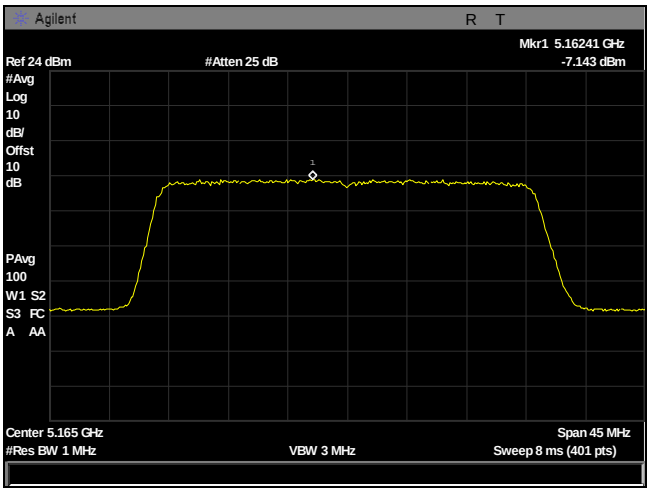
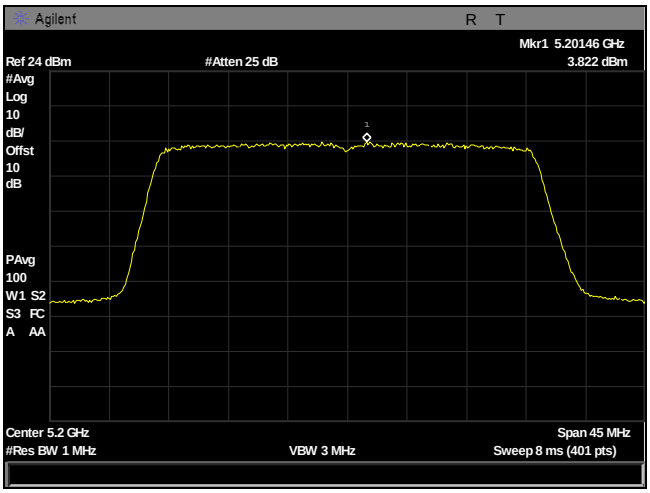


Plot 167. Power Spectral Density, 22 dBi, fixed ptp, 30M, 5165M, c0



Plot 168. Power Spectral Density, 22 dBi, fixed ptp, 30M, 5165M, c1



Plot 169. Power Spectral Density, 22 dBi, fixed ptp, 30M, 5200M, c0

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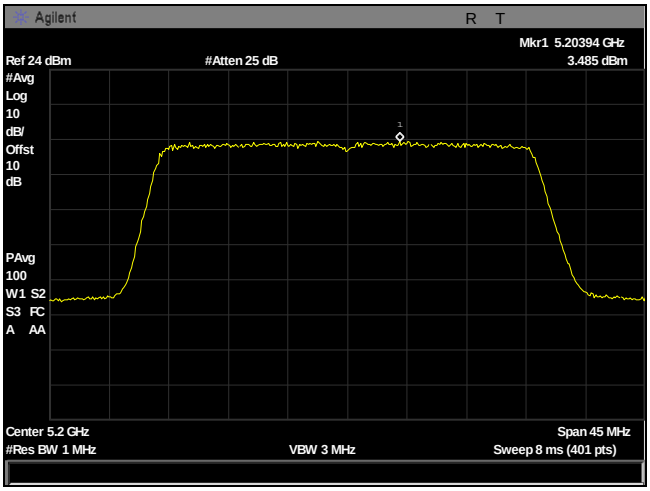
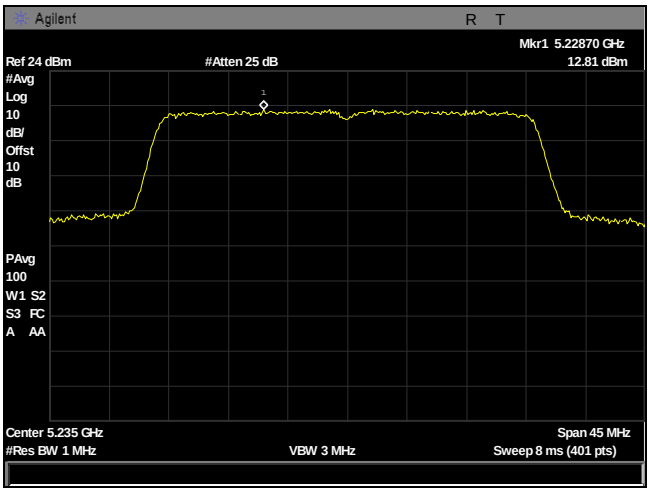
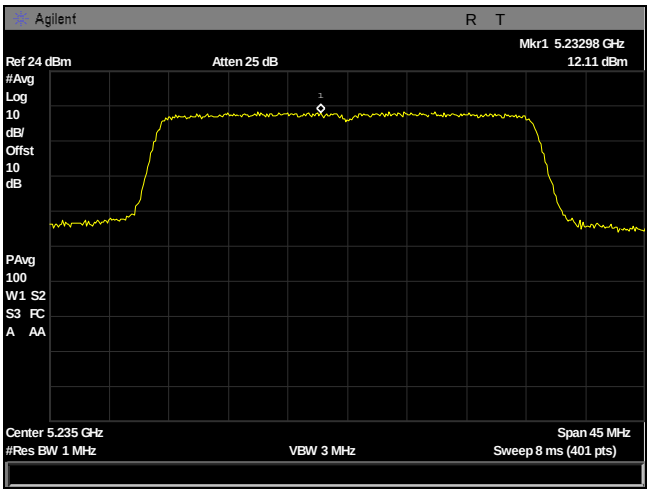


Plot 170. Power Spectral Density, 22 dBi, fixed ptp, 30M, 5200M, c1



Plot 171. Power Spectral Density, 22 dBi, fixed ptp, 30M, 5235M, c0



Plot 172. Power Spectral Density, 22 dBi, fixed ptp, 30M, 5235M, c1

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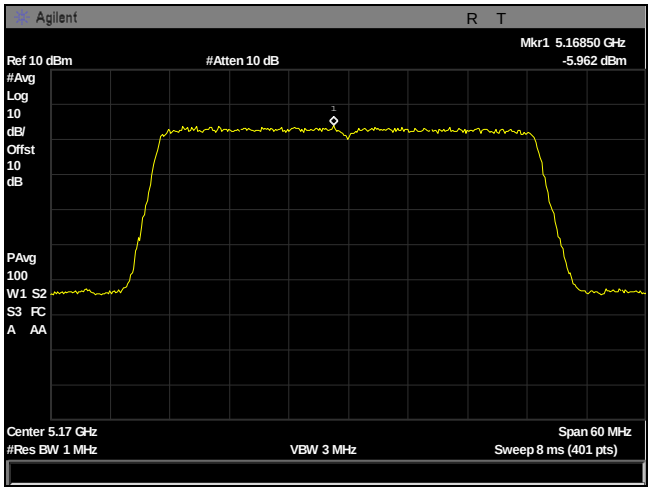
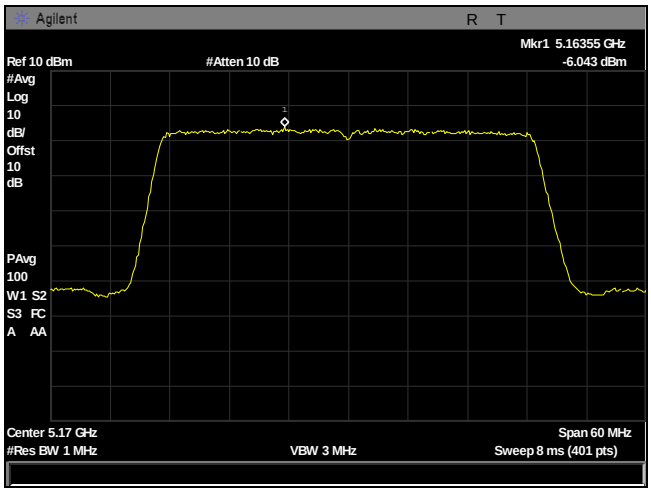
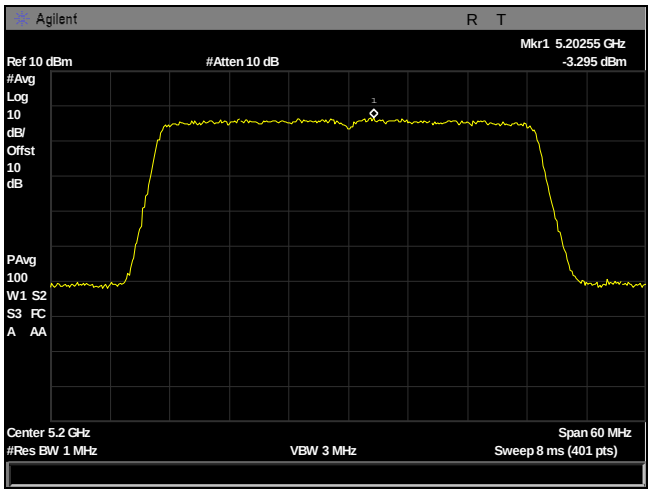


Plot 173. Power Spectral Density, 22 dBi, fixed ptp, 40M, 5170M, c0



Plot 174. Power Spectral Density, 22 dBi, fixed ptp, 40M, 5170M, c1



Plot 175. Power Spectral Density, 22 dBi, fixed ptp, 40M, 5200M, c0

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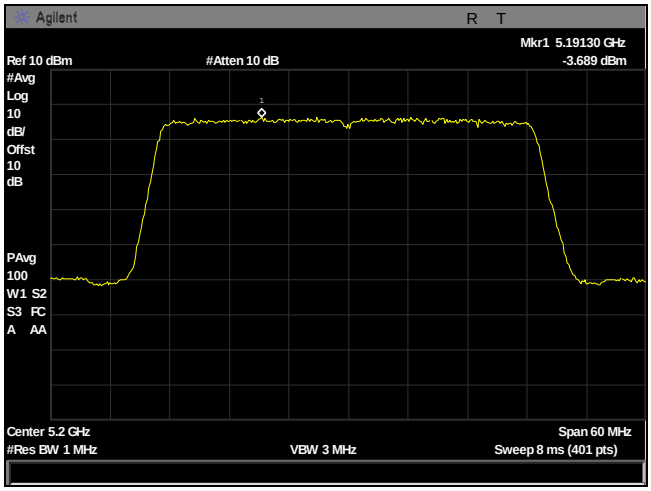
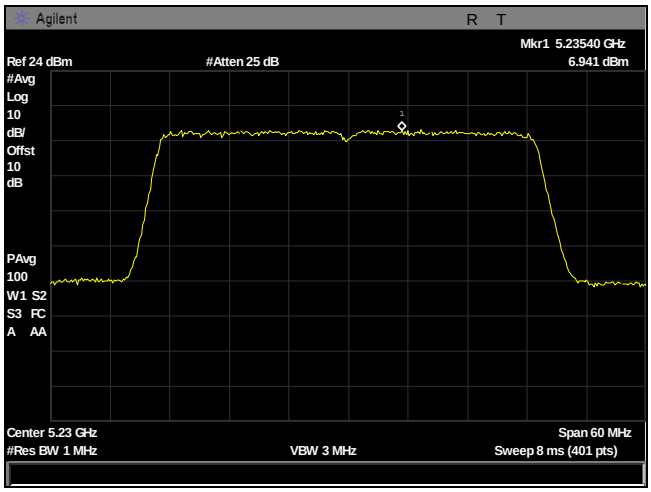
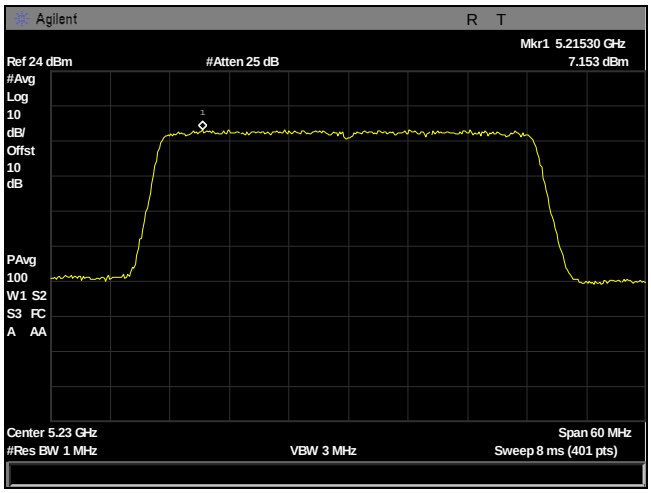


Plot 176. Power Spectral Density, 22 dBi, fixed ptp, 40M, 5200M, c1



Plot 177. Power Spectral Density, 22 dBi, fixed ptp, 40M, 5230M, c0



Plot 178. Power Spectral Density, 22 dBi, fixed ptp, 40M, 5230M, c1

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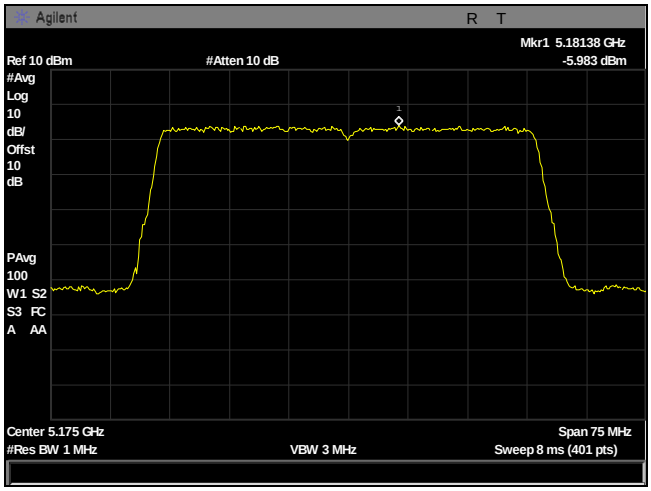
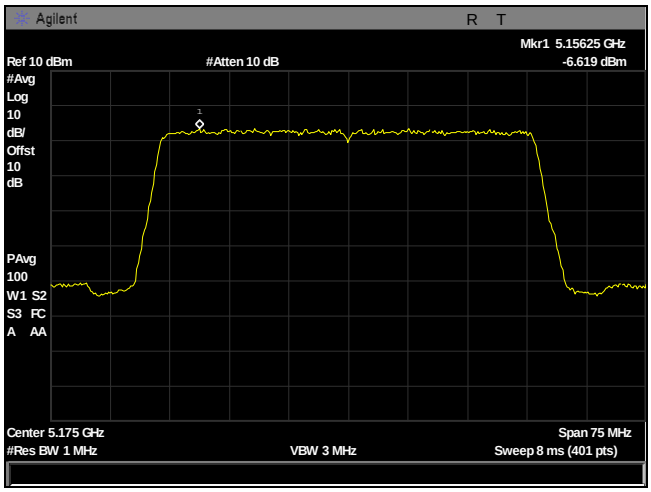
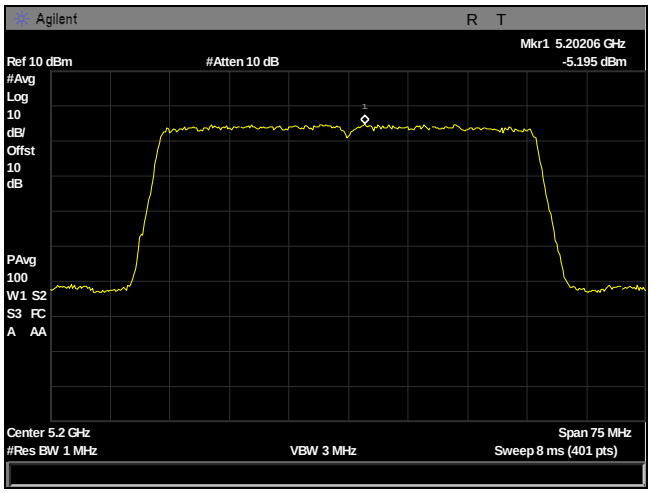


Plot 179. Power Spectral Density, 22 dBi, fixed ptp, 50M, 5175M, c0



Plot 180. Power Spectral Density, 22 dBi, fixed ptp, 50M, 5175M, c1



Plot 181. Power Spectral Density, 22 dBi, fixed ptp, 50M, 5200M, c0

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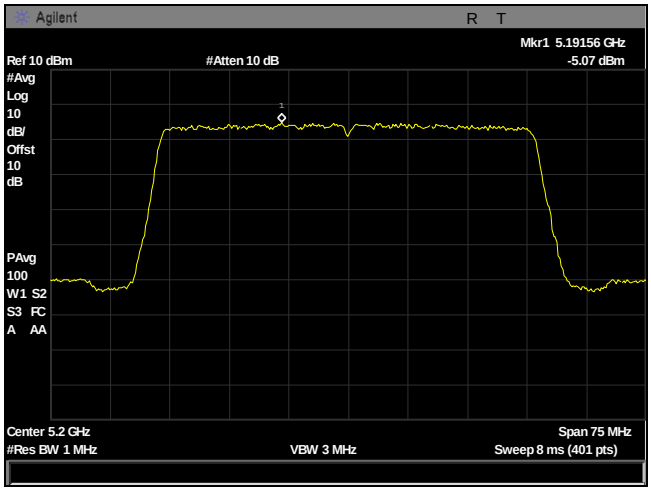
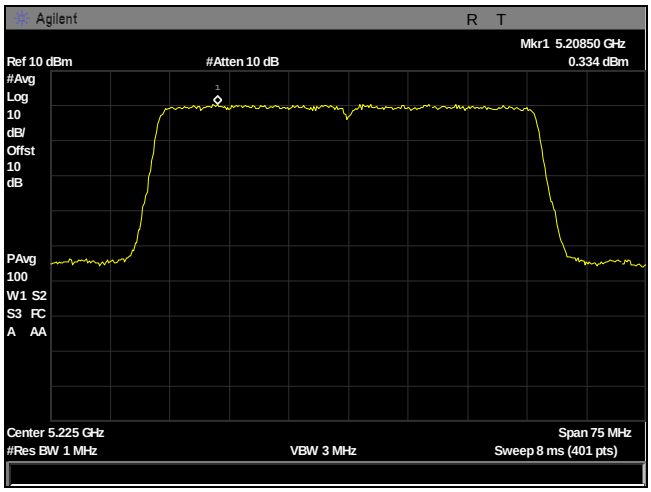
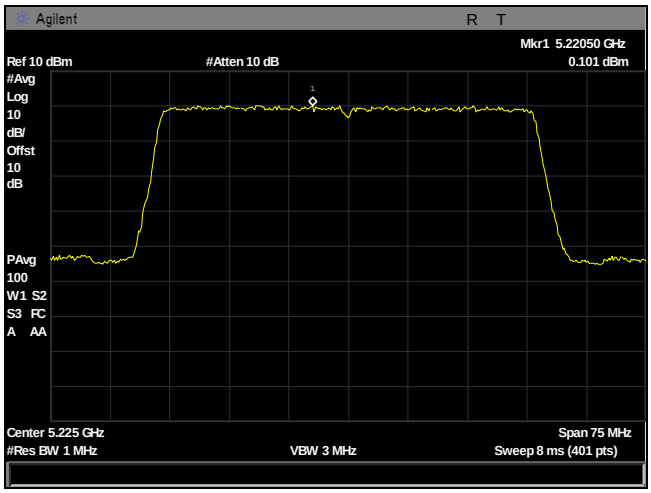


Plot 182. Power Spectral Density, 22 dBi, fixed ptp, 50M, 5200M, c1



Plot 183. Power Spectral Density, 22 dBi, fixed ptp, 50M, 5225M, c0



Plot 184. Power Spectral Density, 22 dBi, fixed ptp, 50M, 5225M, c1

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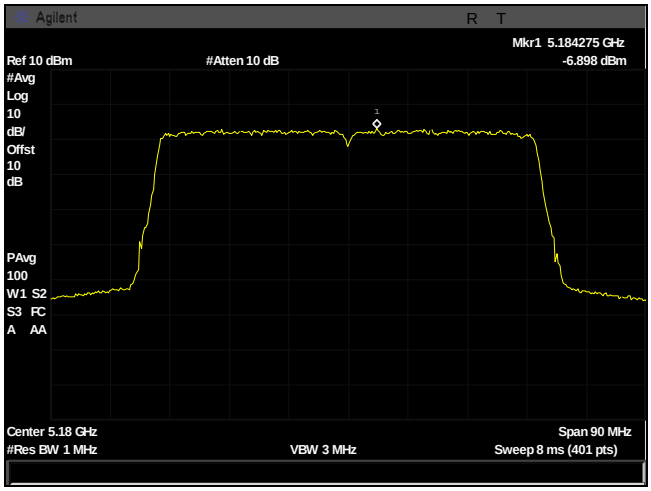
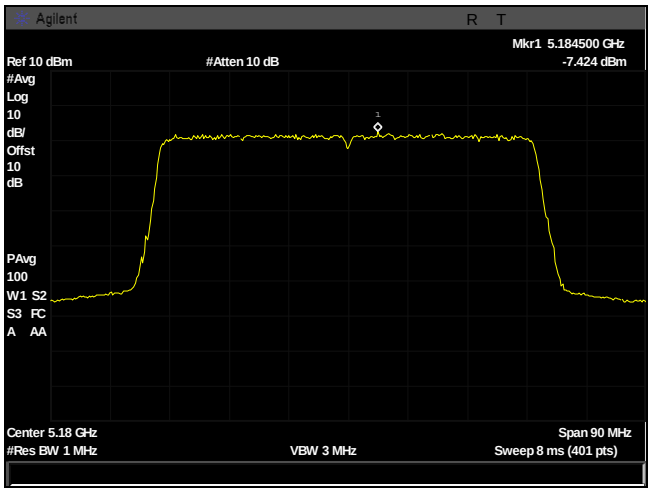
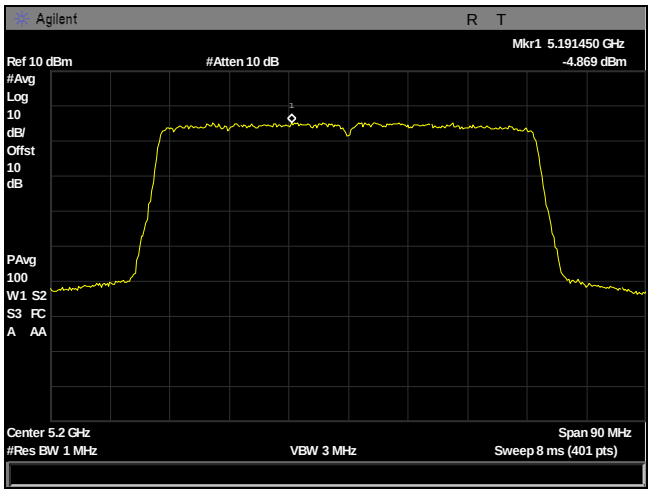


Plot 185. Power Spectral Density, 22 dBi, fixed ptp, 60M, 5180M, c0



Plot 186. Power Spectral Density, 22 dBi, fixed ptp, 60M, 5180M, c1



Plot 187. Power Spectral Density, 22 dBi, fixed ptp, 60M, 5200M, c0

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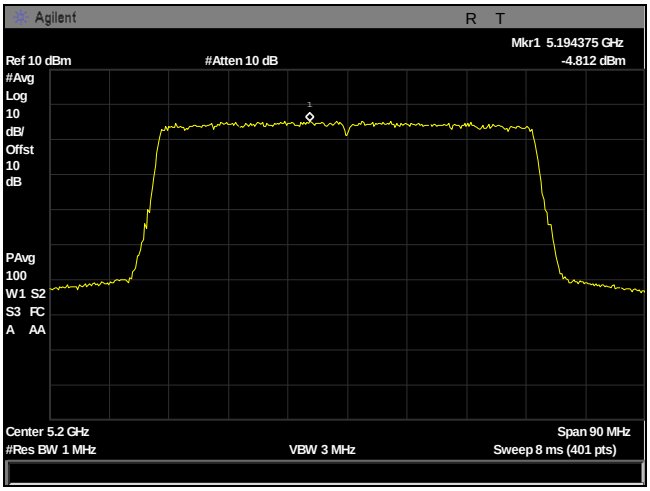
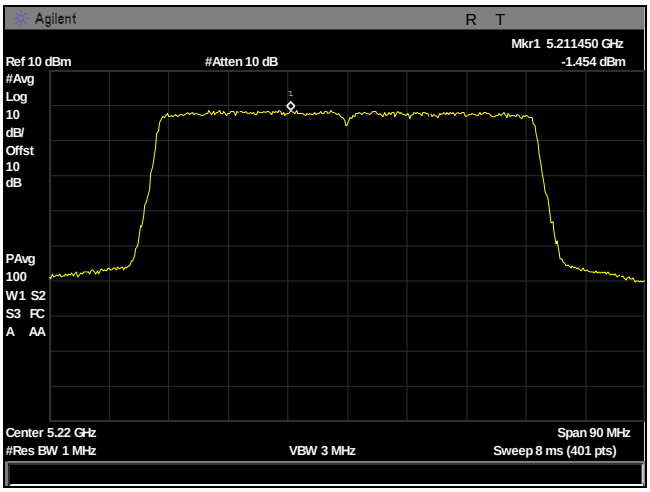
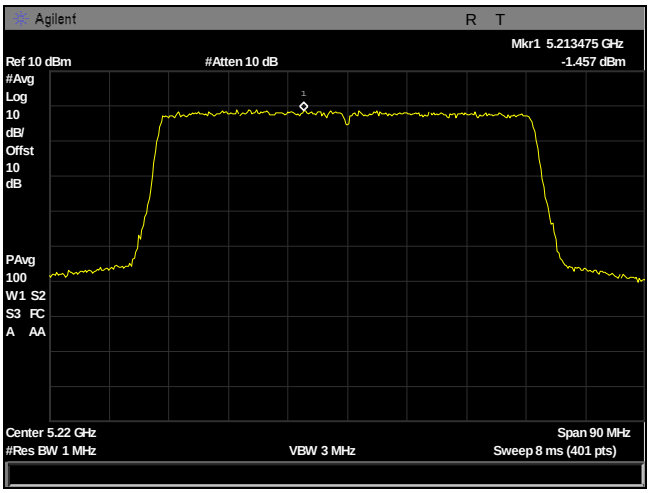


Plot 188. Power Spectral Density, 22 dBi, fixed ptp, 60M, 5200M, c1



Plot 189. Power Spectral Density, 22 dBi, fixed ptp, 60M, 5220M, c0



Plot 190. Power Spectral Density, 22 dBi, fixed ptp, 60M, 5220M, c1

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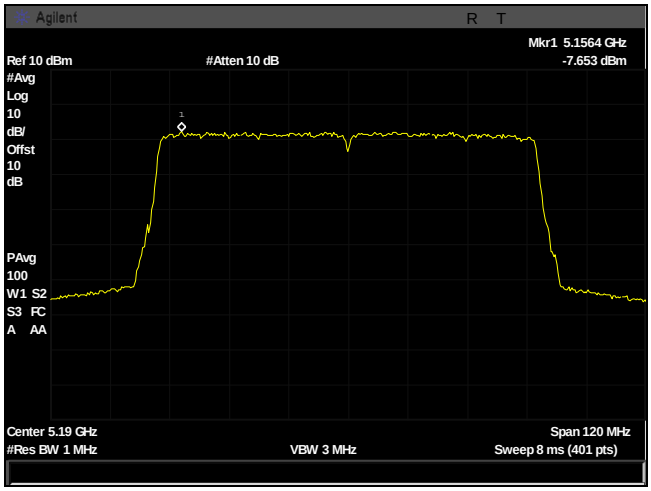
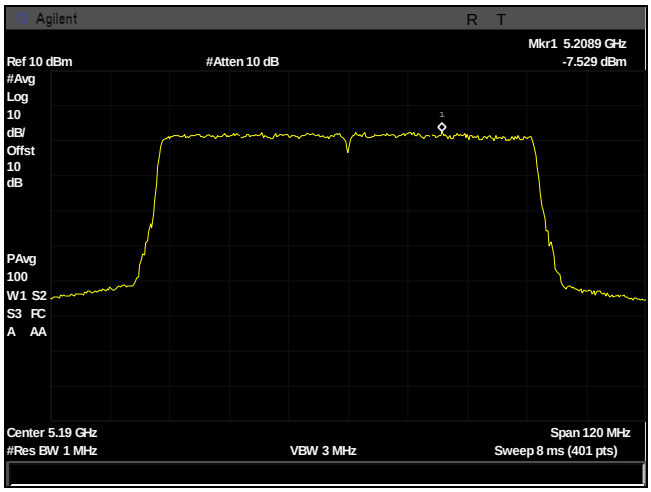
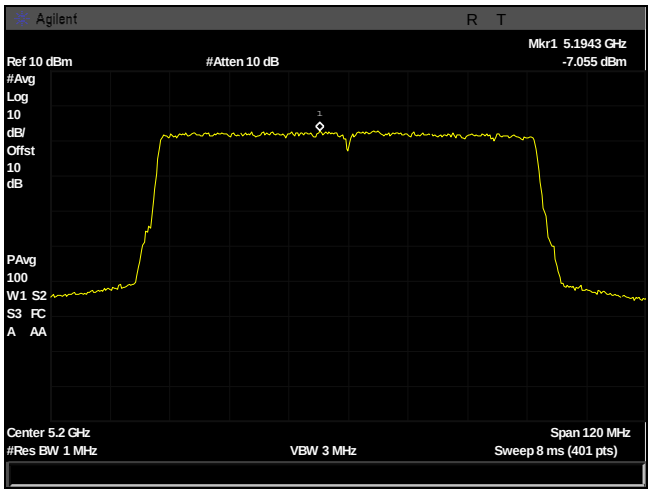


Plot 191. Power Spectral Density, 22 dBi, fixed ptp, 80M, 5190M, c0



Plot 192. Power Spectral Density, 22 dBi, fixed ptp, 80M, 5190M, c1



Plot 193. Power Spectral Density, 22 dBi, fixed ptp, 80M, 5200M, c0

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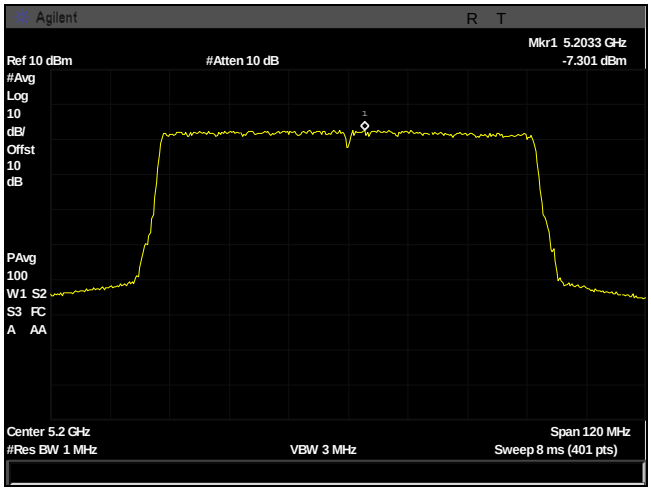
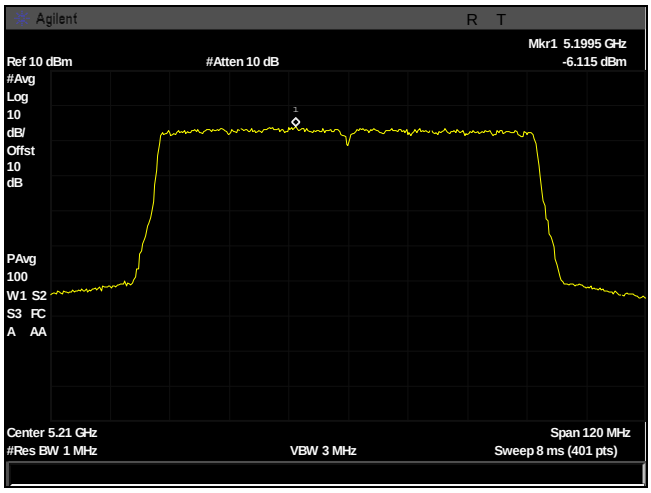
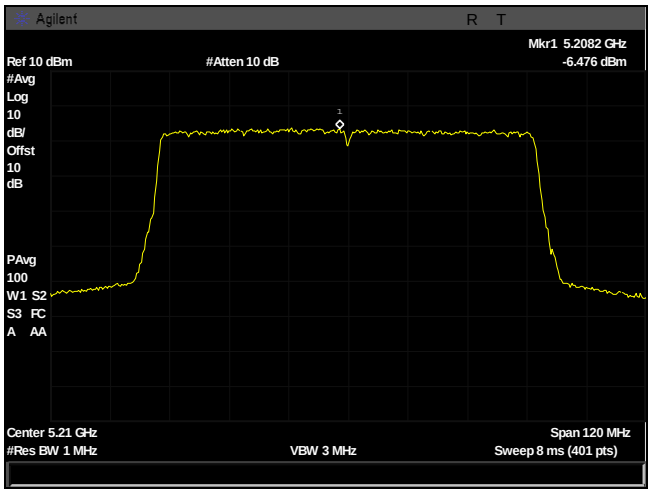


Plot 194. Power Spectral Density, 22 dBi, fixed ptp, 80M, 5200M, c1



Plot 195. Power Spectral Density, 22 dBi, fixed ptp, 80M, 5210M, c0



Plot 196. Power Spectral Density, 22 dBi, fixed ptp, 80M, 5210M, c1

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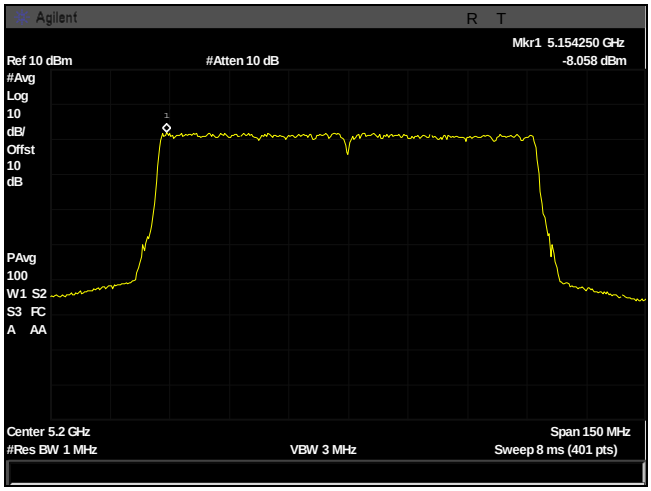
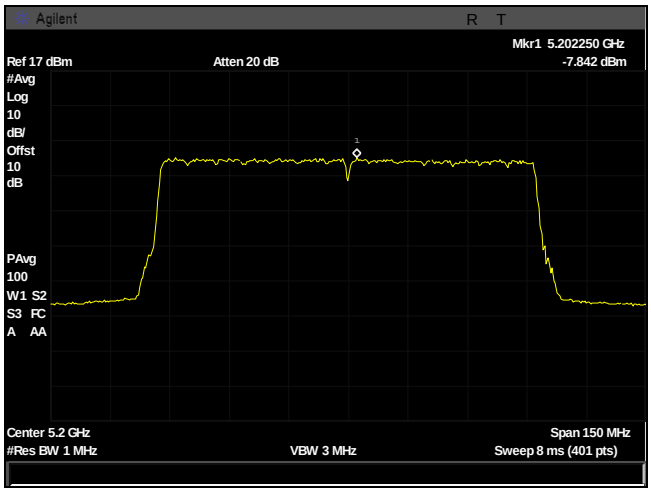


Plot 197. Power Spectral Density, 22 dBi, fixed ptp, 100M, 5200M, c0



Plot 198. Power Spectral Density, 22 dBi, fixed ptp, 100M, 5200M, c1

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Power Spectral Density, 23 dBi

Channel BW (MHz)	Frequency (MHz)	Chain 0 (dBm)	Chain 1 (dBm)	Sum (dBm)	Limit (dBm)	Antenna Gain (dBi)	Final Limit (dBm)	Margin (dB)
10	5155	-13.29	-13.67	-10.465	17	23	17	-27.465
	5200	1.736	1.73	4.744	17	23	17	-12.256
	5245	13.95	13.89	16.931	17	23	17	-0.069
20	5160	-14.15	-14.74	-11.424	17	23	17	-28.424
	5200	-2.06	-1.983	0.989	17	23	17	-16.011
	5240	10.59	10.98	13.8	17	23	17	-3.2
30	5165	-15.12	-14.9	-11.998	17	23	17	-28.998
	5200	-8.899	-8.684	-5.779	17	23	17	-22.779
	5235	0.004	-0.008	3.009	17	23	17	-13.991
40	5170	-15.86	-16.05	-12.943	17	23	17	-29.943
	5200	-14.28	-14.5	-11.378	17	23	17	-28.378
	5230	-6.045	-6.337	-3.178	17	23	17	-20.178
50	5175	-16.58	-15.95	-13.243	17	23	17	-30.243
	5200	-17.45	-17.15	-14.287	17	23	17	-31.287
	5225	-10.97	-10.94	-7.944	17	23	17	-24.944
60	5180	-18.39	-18.5	-15.434	17	23	17	-32.434
	5200	-15.62	-15.2	-12.394	17	23	17	-29.394
	5220	-13.17	-13.8	-10.463	17	23	17	-27.463
80	5190	-17.79	-17.84	-14.804	17	23	17	-31.804
	5200	-17.04	-17.28	-14.148	17	23	17	-31.148
	5210	-17.19	-16.92	-14.042	17	23	17	-31.042
100	5200	-16.96	-16.65	-13.791	17	23	17	-30.791

Table 12. Power Spectral Density, fixed ptp, 23 dBi, 2x2, Test Results

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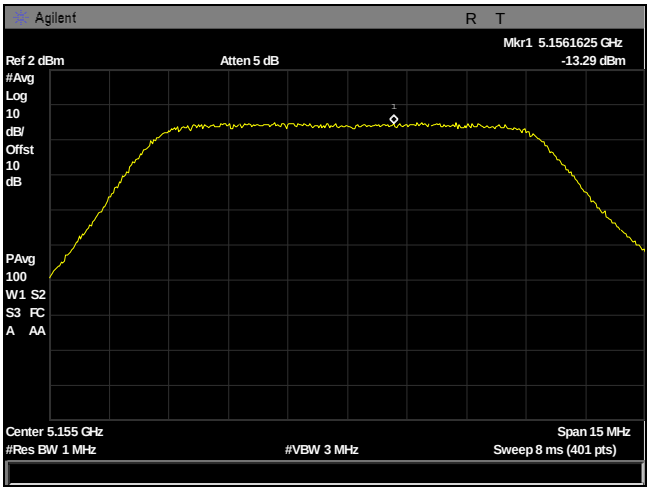
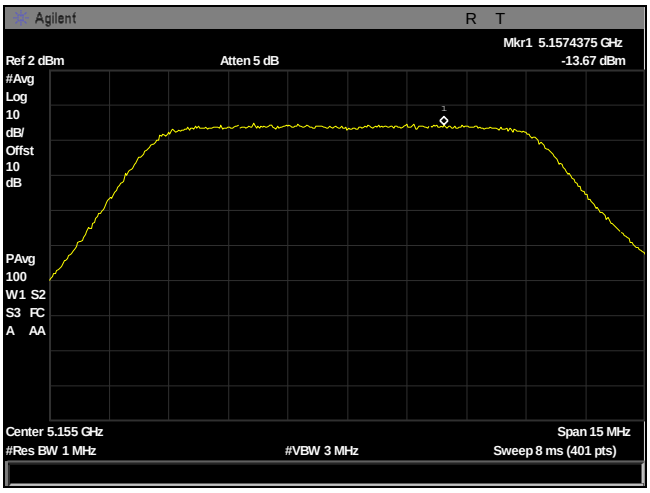
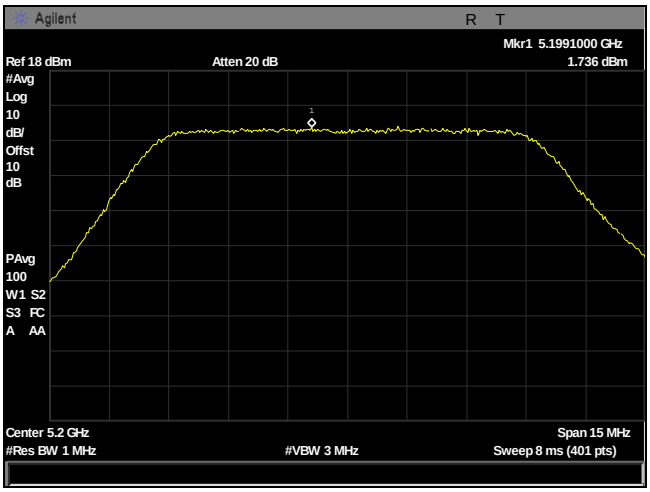
Power Spectral Density, 23 dBi



Plot 199. Power Spectral Density, 23 dBi, fixed ptp, 10M, 5155M, c0



Plot 200. Power Spectral Density, 23 dBi, fixed ptp, 10M, 5155M, c1



Plot 201. Power Spectral Density, 23 dBi, fixed ptp, 10M, 5200M, c0

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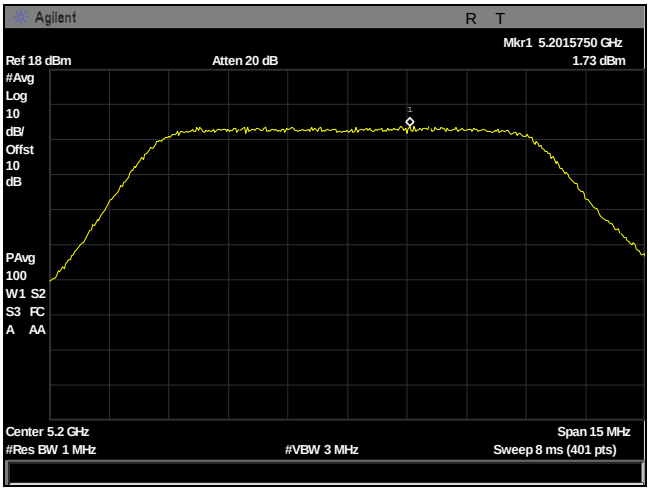
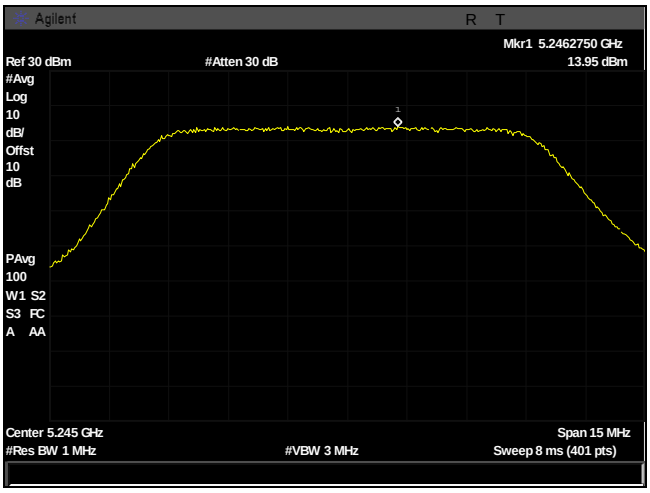
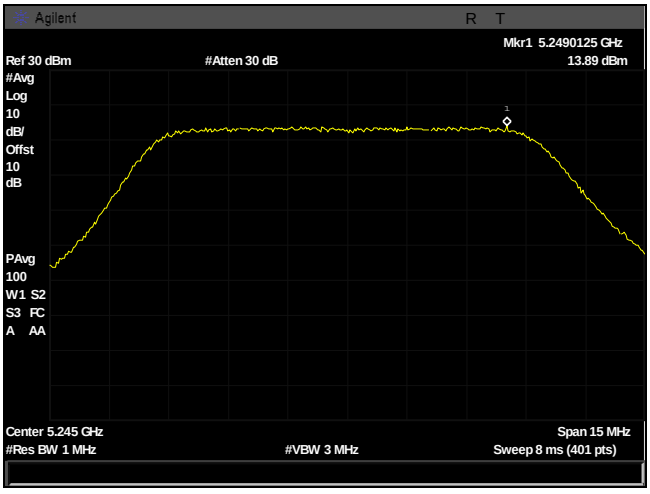


Plot 202. Power Spectral Density, 23 dBi, fixed ptp, 10M, 5200M, c1



Plot 203. Power Spectral Density, 23 dBi, fixed ptp, 10M, 5245M, c0



Plot 204. Power Spectral Density, 23 dBi, fixed ptp, 10M, 5245M, c1

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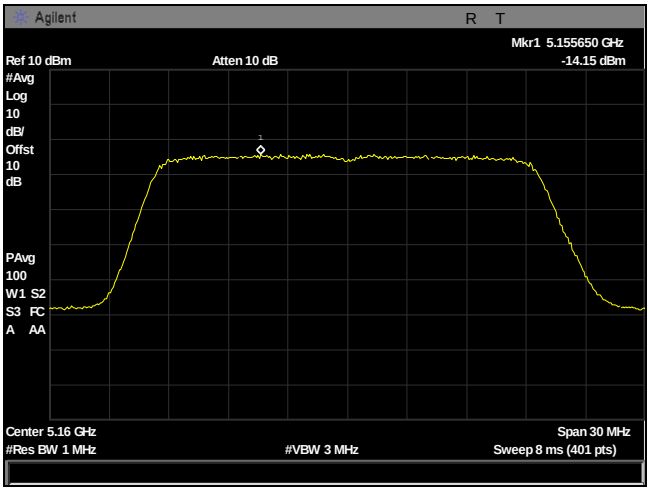
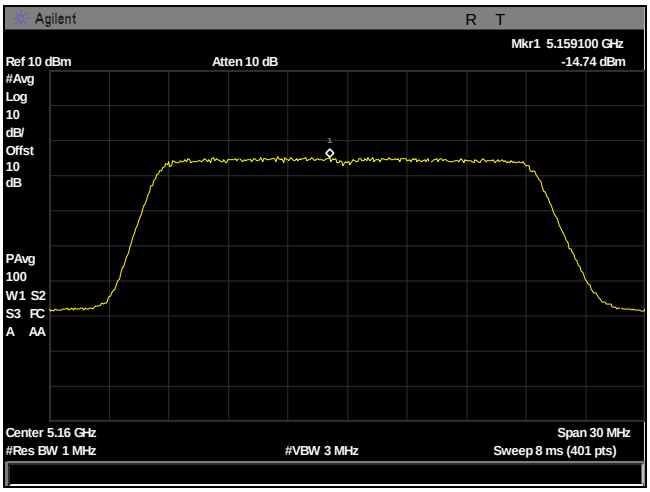
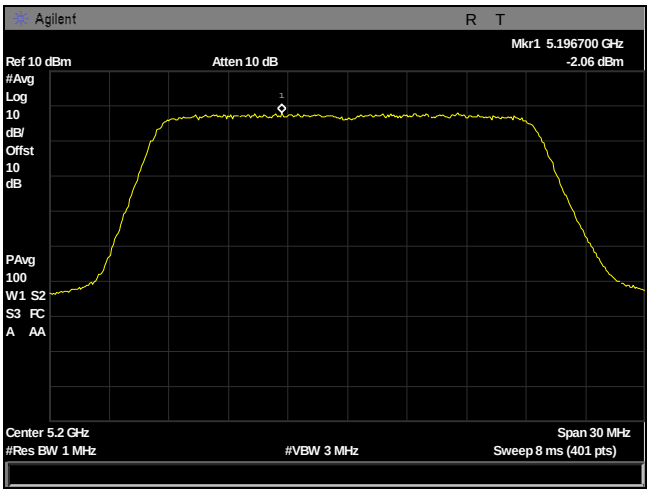


Plot 205. Power Spectral Density, 23 dBi, fixed ptp, 20M, 5160M, c0



Plot 206. Power Spectral Density, 23 dBi, fixed ptp, 20M, 5160M, c1



Plot 207. Power Spectral Density, 23 dBi, fixed ptp, 20M, 5200M, c0

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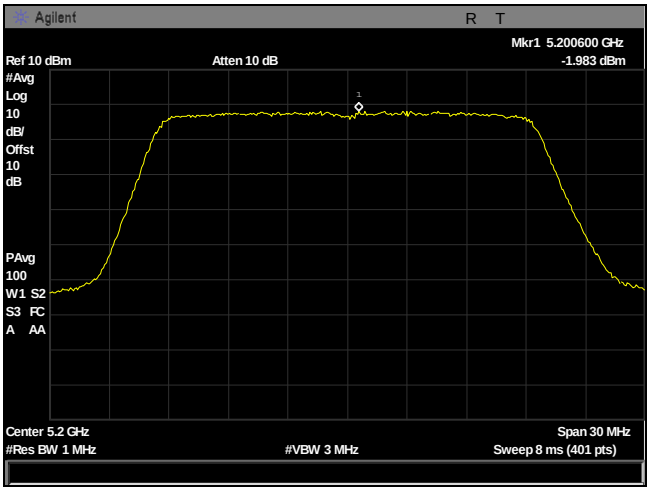
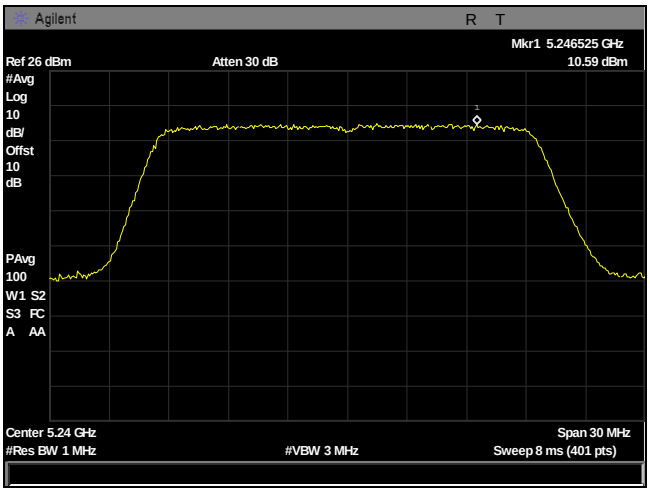
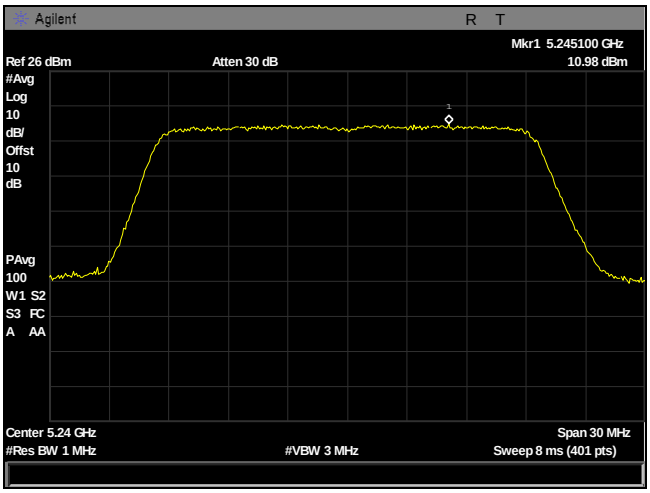


Plot 208. Power Spectral Density, 23 dBi, fixed ptp, 20M, 5200M, c1



Plot 209. Power Spectral Density, 23 dBi, fixed ptp, 20M, 5240M, c0



Plot 210. Power Spectral Density, 23 dBi, fixed ptp, 20M, 5240M, c1

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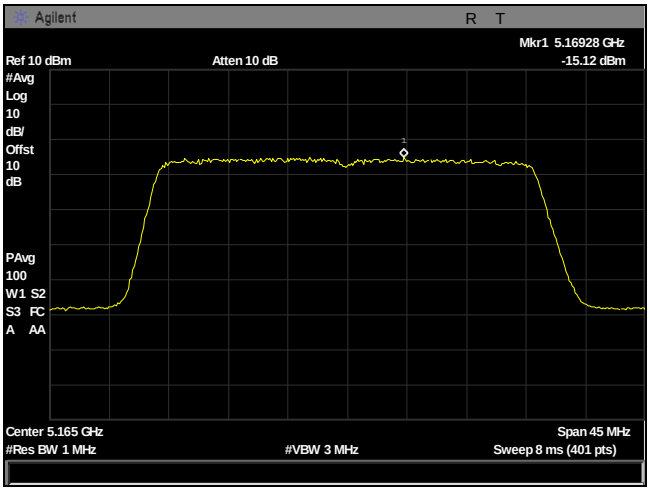
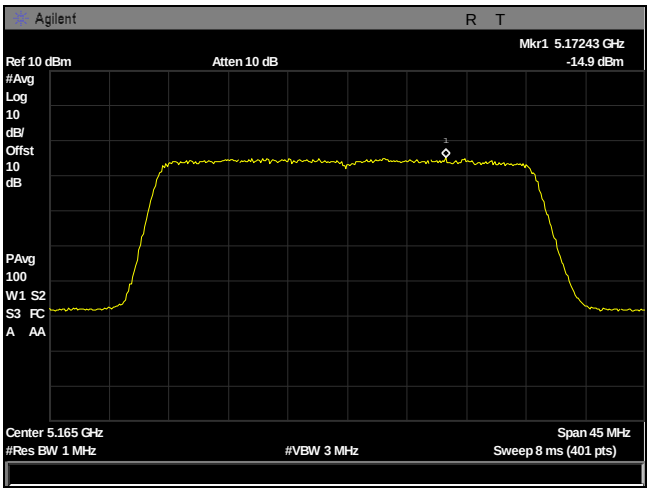
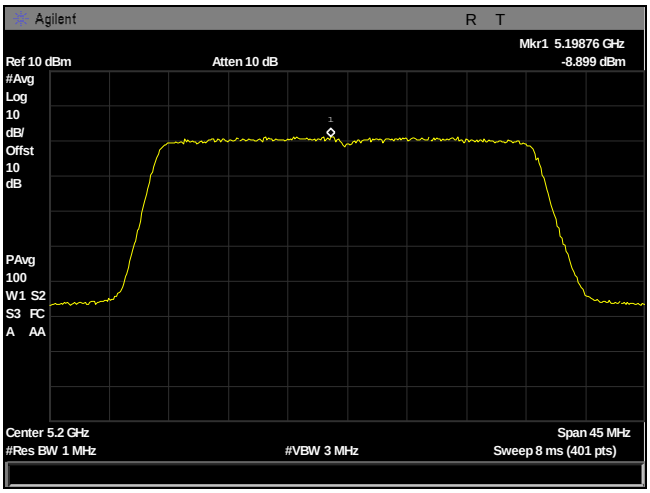


Plot 211. Power Spectral Density, 23 dBi, fixed ptp, 30M, 5165M, c0



Plot 212. Power Spectral Density, 23 dBi, fixed ptp, 30M, 5165M, c1



Plot 213. Power Spectral Density, 23 dBi, fixed ptp, 30M, 5200M, c0

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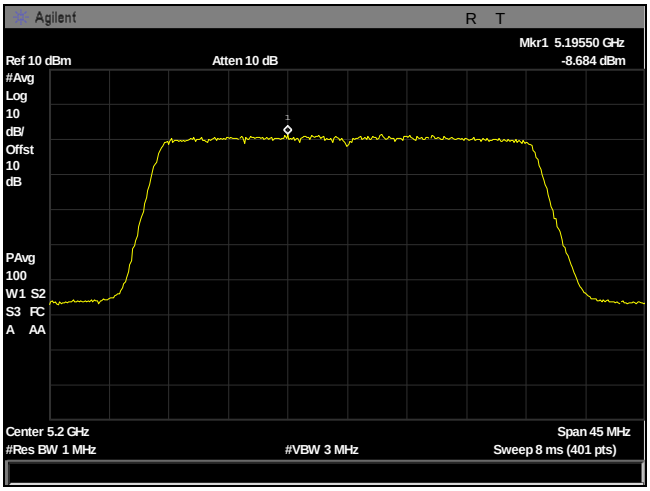
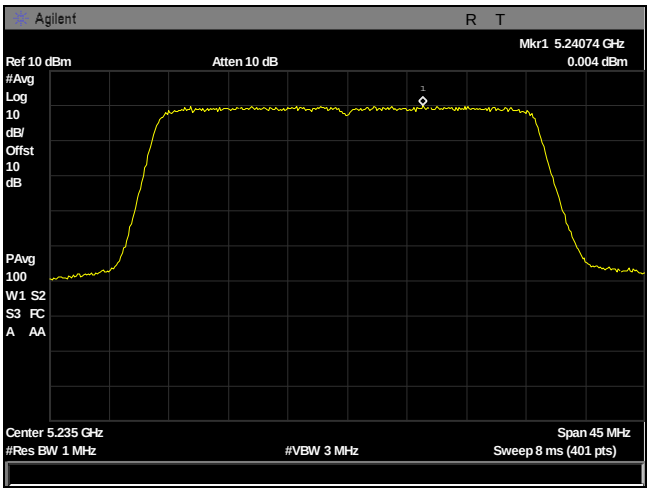
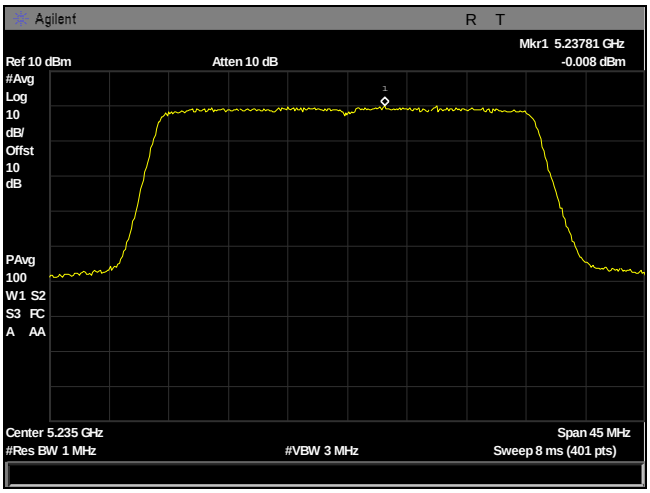


Plot 214. Power Spectral Density, 23 dBi, fixed ptp, 30M, 5200M, c1



Plot 215. Power Spectral Density, 23 dBi, fixed ptp, 30M, 5235M, c0



Plot 216. Power Spectral Density, 23 dBi, fixed ptp, 30M, 5235M, c1

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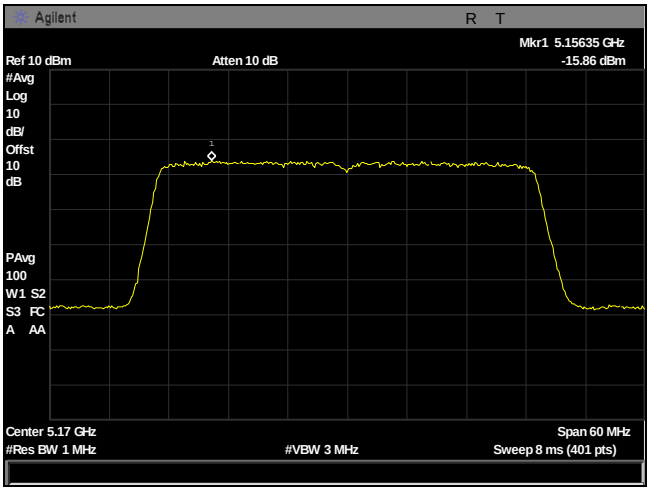
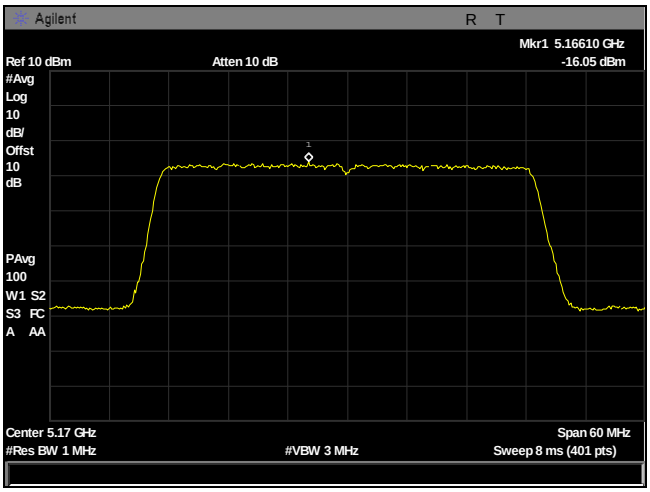
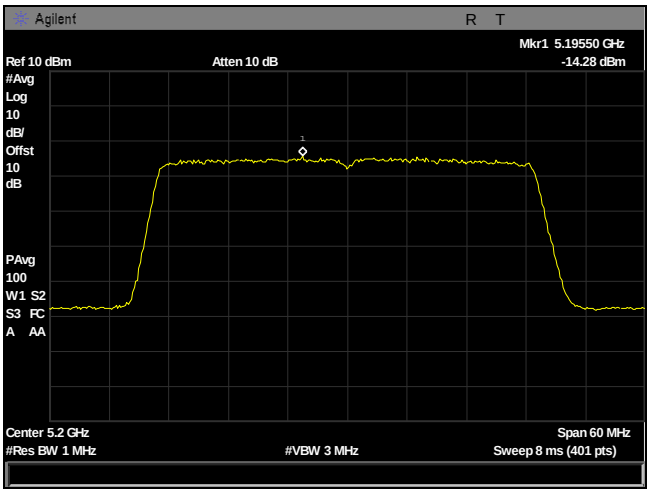


Plot 217. Power Spectral Density, 23 dBi, fixed ptp, 40M, 5170M, c0



Plot 218. Power Spectral Density, 23 dBi, fixed ptp, 40M, 5170M, c1



Plot 219. Power Spectral Density, 23 dBi, fixed ptp, 40M, 5200M, c0

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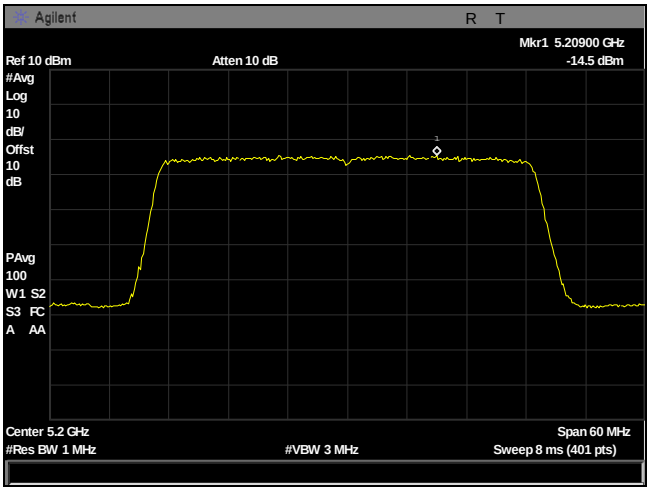
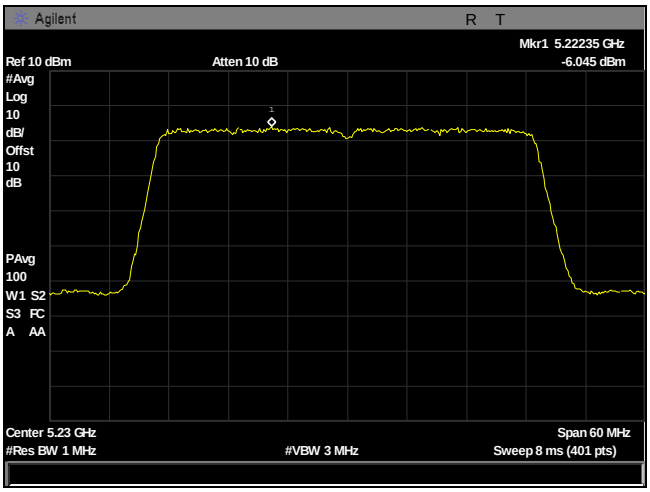
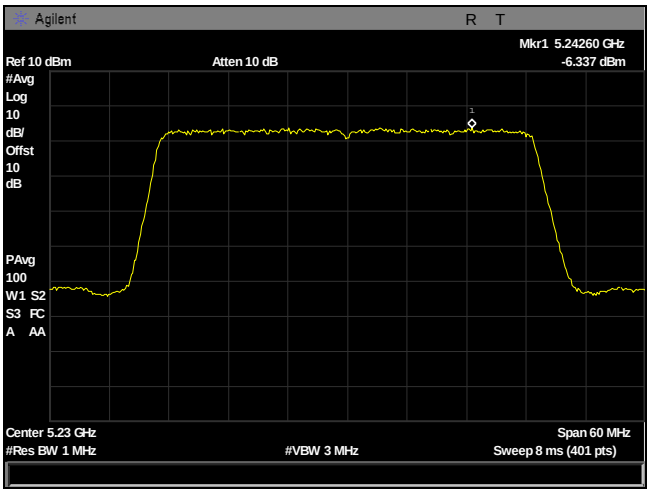


Plot 220. Power Spectral Density, 23 dBi, fixed ptp, 40M, 5200M, c1



Plot 221. Power Spectral Density, 23 dBi, fixed ptp, 40M, 5230M, c0



Plot 222. Power Spectral Density, 23 dBi, fixed ptp, 40M, 5230M, c1

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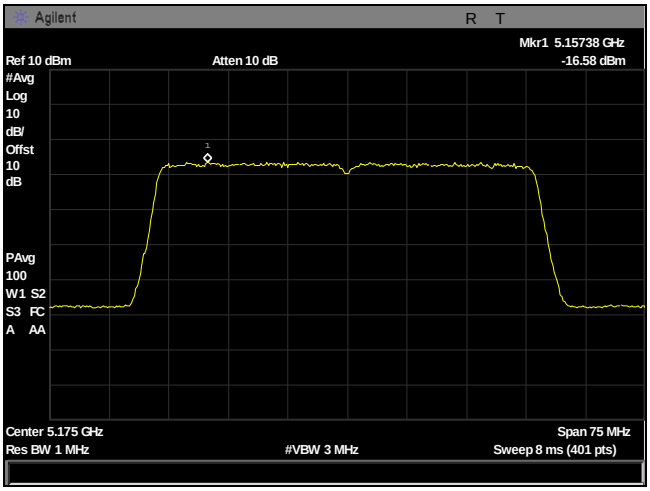
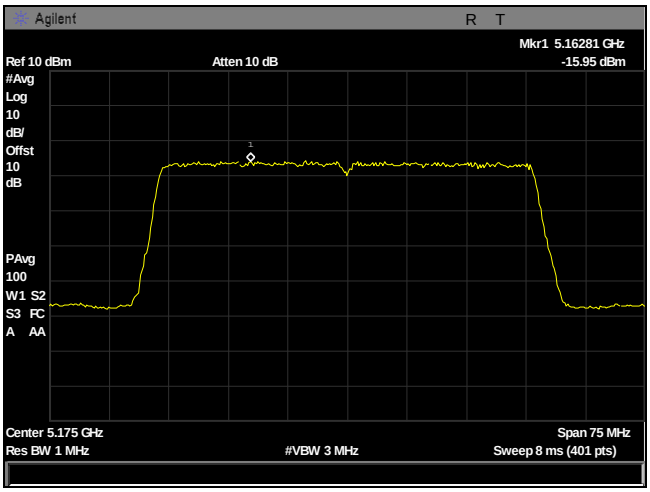
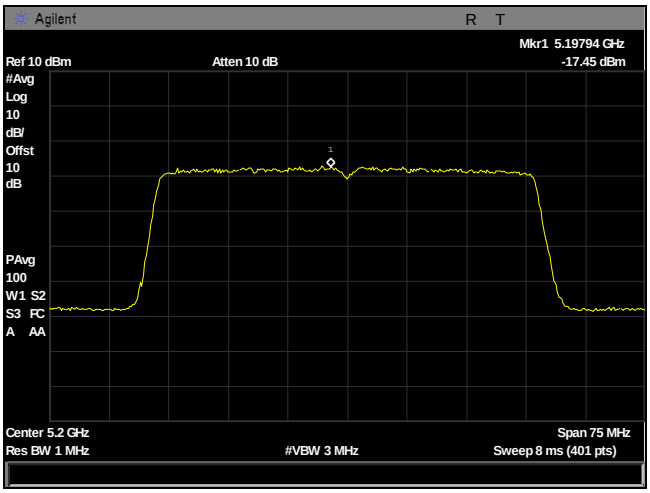


Plot 223. Power Spectral Density, 23 dBi, fixed ptp, 50M, 5175M, c0



Plot 224. Power Spectral Density, 23 dBi, fixed ptp, 50M, 5175M, c1



Plot 225. Power Spectral Density, 23 dBi, fixed ptp, 50M, 5200M, c0

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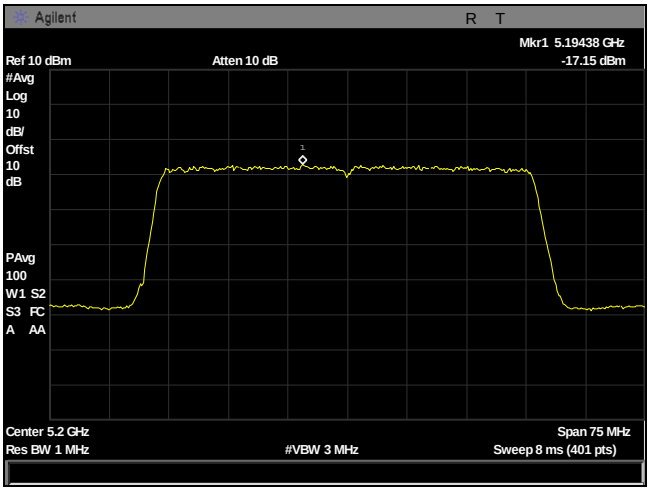
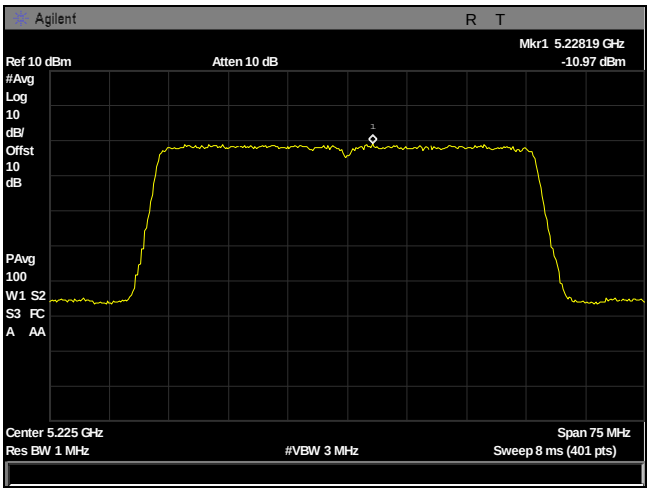
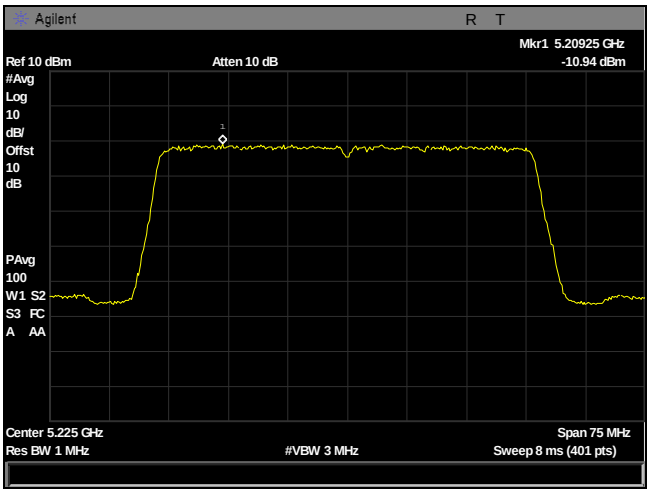


Plot 226. Power Spectral Density, 23 dBi, fixed ptp, 50M, 5200M, c1



Plot 227. Power Spectral Density, 23 dBi, fixed ptp, 50M, 5225M, c0



Plot 228. Power Spectral Density, 23 dBi, fixed ptp, 50M, 5225M, c1

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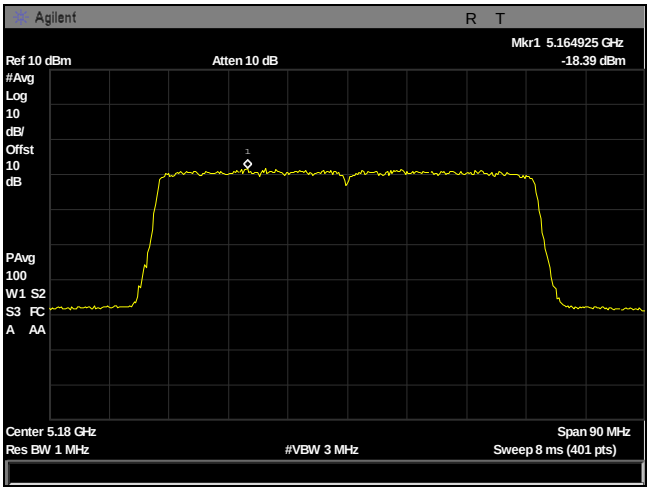
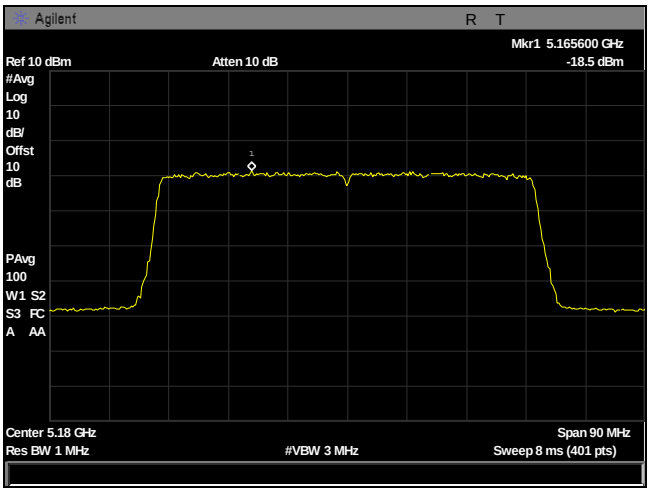
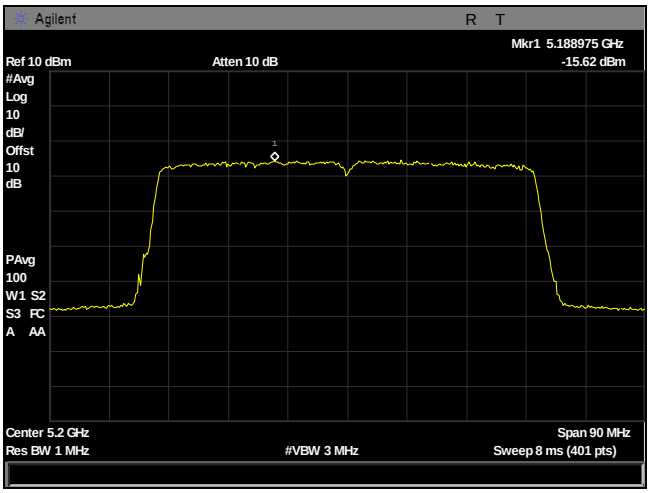


Plot 229. Power Spectral Density, 23 dBi, fixed ptp, 60M, 5180M, c0



Plot 230. Power Spectral Density, 23 dBi, fixed ptp, 60M, 5180M, c1



Plot 231. Power Spectral Density, 23 dBi, fixed ptp, 60M, 5200M, c0

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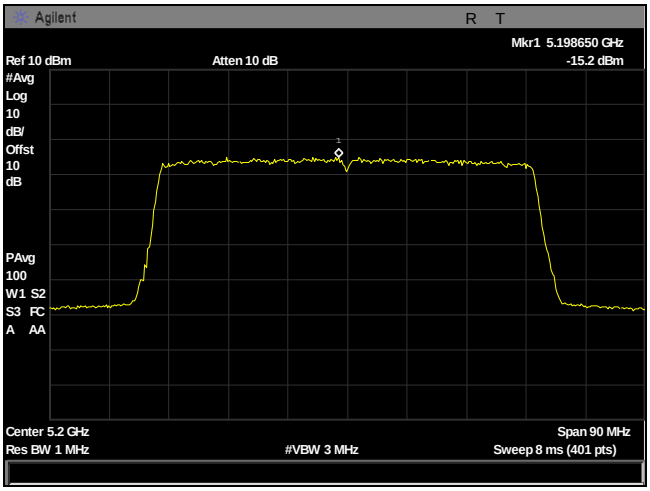
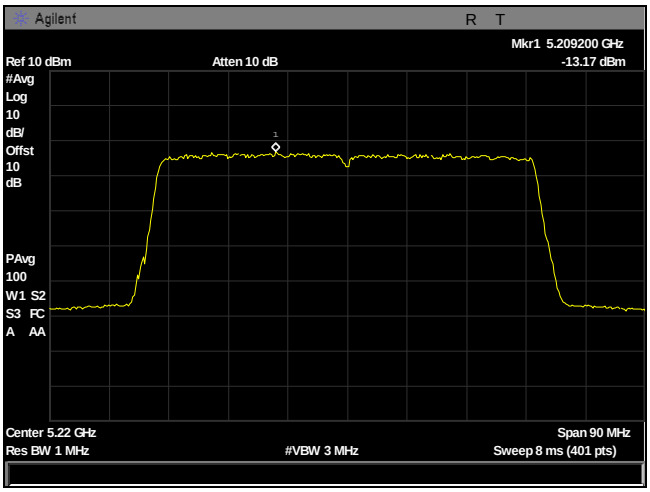
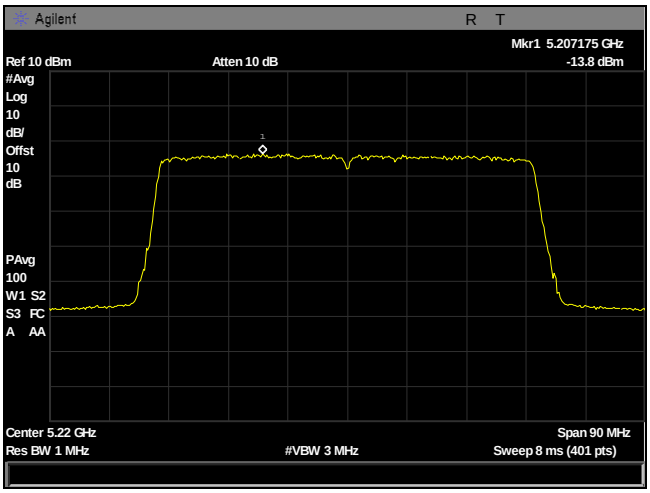


Plot 232. Power Spectral Density, 23 dBi, fixed ptp, 60M, 5200M, c1



Plot 233. Power Spectral Density, 23 dBi, fixed ptp, 60M, 5220M, c0



Plot 234. Power Spectral Density, 23 dBi, fixed ptp, 60M, 5220M, c1

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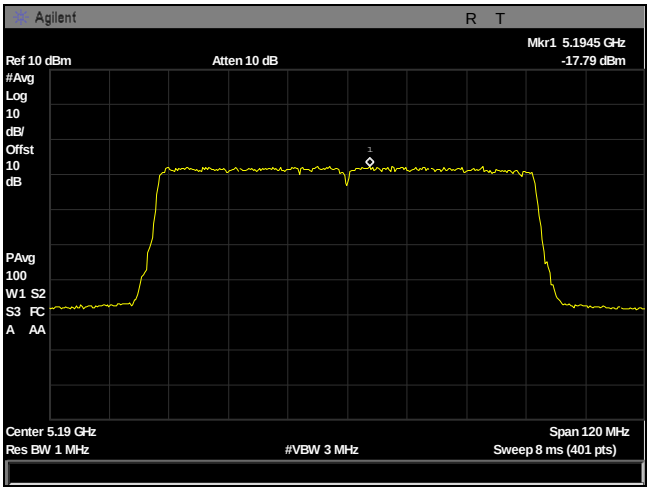
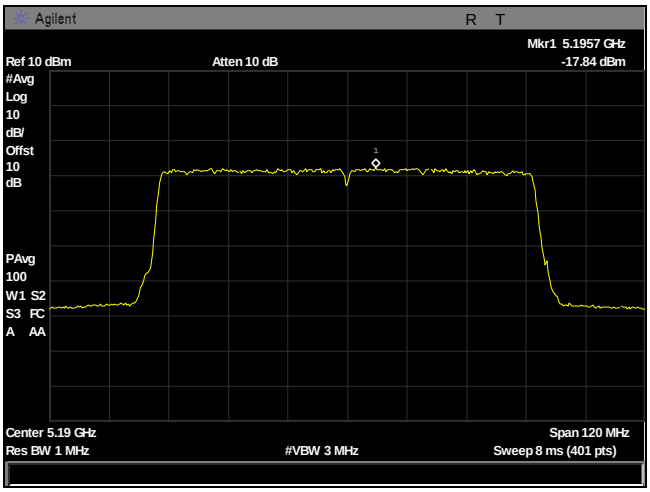
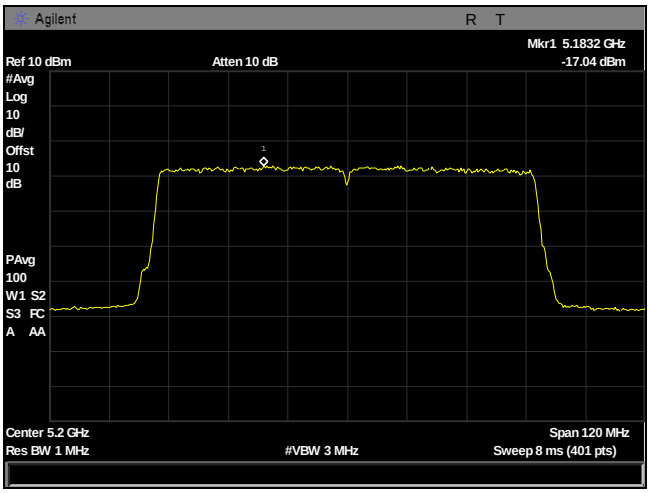


Plot 235. Power Spectral Density, 23 dBi, fixed ptp, 80M, 5190M, c0



Plot 236. Power Spectral Density, 23 dBi, fixed ptp, 80M, 5190M, c1



Plot 237. Power Spectral Density, 23 dBi, fixed ptp, 80M, 5200M, c0

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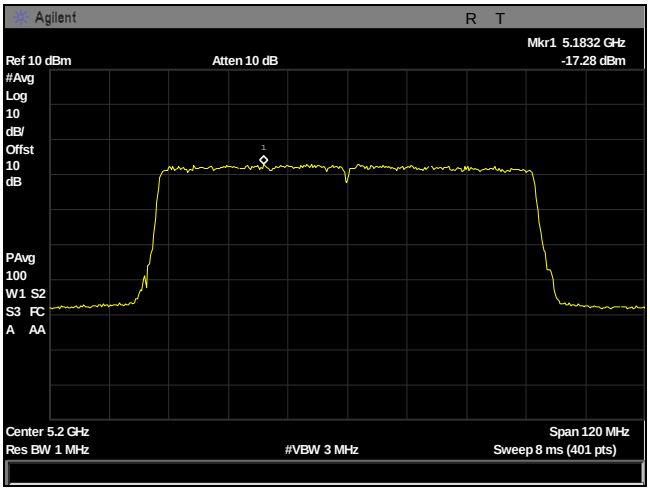
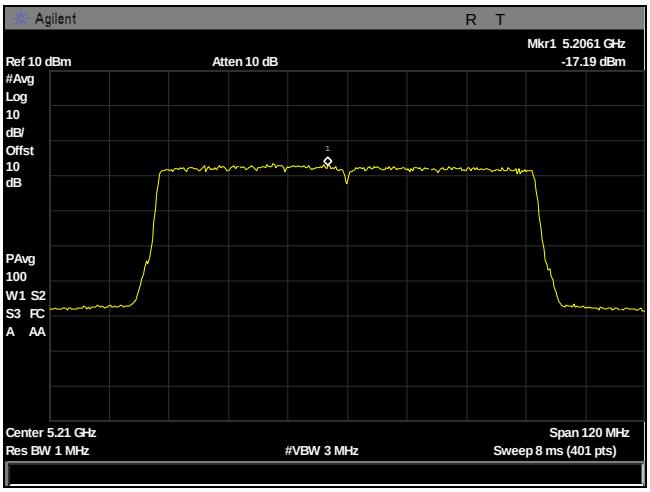
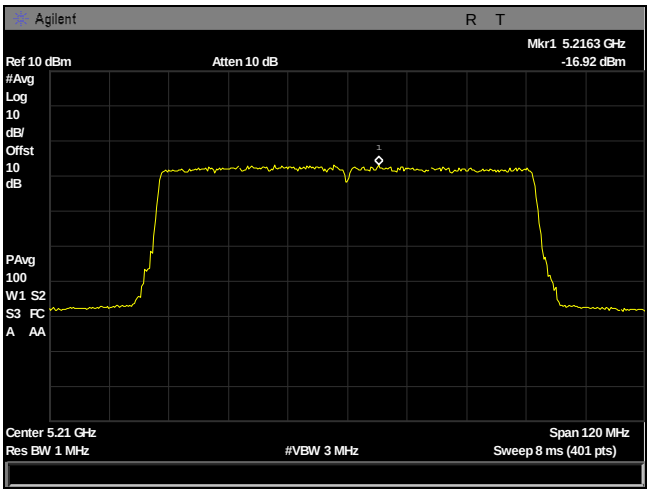


Plot 238. Power Spectral Density, 23 dBi, fixed ptp, 80M, 5200M, c1



Plot 239. Power Spectral Density, 23 dBi, fixed ptp, 80M, 5210M, c0



Plot 240. Power Spectral Density, 23 dBi, fixed ptp, 80M, 5210M, c1

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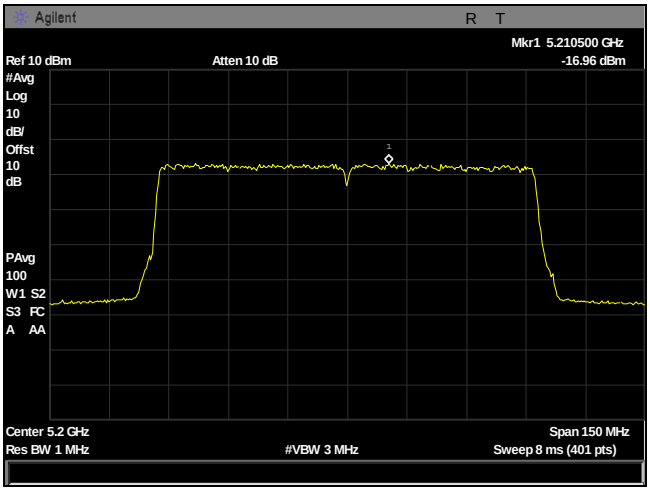
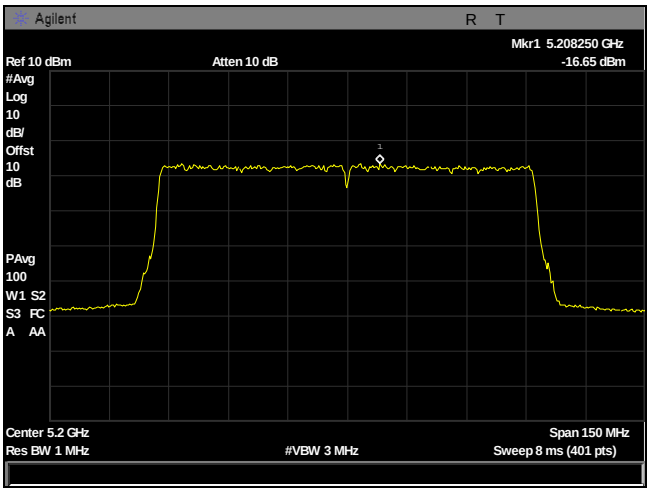


Plot 241. Power Spectral Density, 23 dBi, fixed ptp, 100M, 5200M, c0



Plot 242. Power Spectral Density, 23 dBi, fixed ptp, 100M, 5200M, c1

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Power Spectral Density, 34 dBi

Channel BW (MHz)	Frequency (MHz)	Chain 0 (dBm)	Chain 1 (dBm)	Sum (dBm)	Limit (dBm)	Antenna Gain (dBi)	Final Limit (dBm)	Margin (dB)
10	5155	-13.93	-14.36	-11.129	17	34	6	-17.129
	5200	3.009	2.946	5.988	17	34	6	-0.012
	5245	2.957	2.927	5.953	17	34	6	-0.047
20	5160	-14.67	-14.66	-11.654	17	34	6	-17.654
	5200	-6.258	-6.297	-3.267	17	34	6	-9.267
	5240	3.088	2.774	5.945	17	34	6	-0.055
30	5165	-13.71	-13.12	-10.394	17	34	6	-16.394
	5200	-7.215	-7.949	-4.556	17	34	6	-10.556
	5235	-1.924	-2.045	1.027	17	34	6	-4.973
40	5170	-14.2	-13.96	-11.068	17	34	6	-17.068
	5200	-13.01	-12.82	-9.903	17	34	6	-15.903
	5230	-5.637	-5.952	-2.781	17	34	6	-8.781
50	5175	-15.32	-15.19	-12.244	17	34	6	-18.244
	5200	-15.08	-15.35	-12.202	17	34	6	-18.202
	5225	-3.936	-4.353	-1.129	17	34	6	-7.129
60	5180	-16.06	-15.91	-12.974	17	34	6	-18.974
	5200	-14.53	-15.01	-11.753	17	34	6	-17.753
	5220	-12.47	-12.67	-9.558	17	34	6	-15.558
80	5190	-17.28	-17.28	-14.269	17	34	6	-20.269
	5200	-14.81	-15.09	-11.937	17	34	6	-17.937
	5210	-15.84	-15.89	-12.854	17	34	6	-18.854
100	5200	-17.76	-17.31	-14.518	17	34	6	-20.518

Table 13. Power Spectral Density, fixed ptp, 34 dBi, 2x2, Test Results

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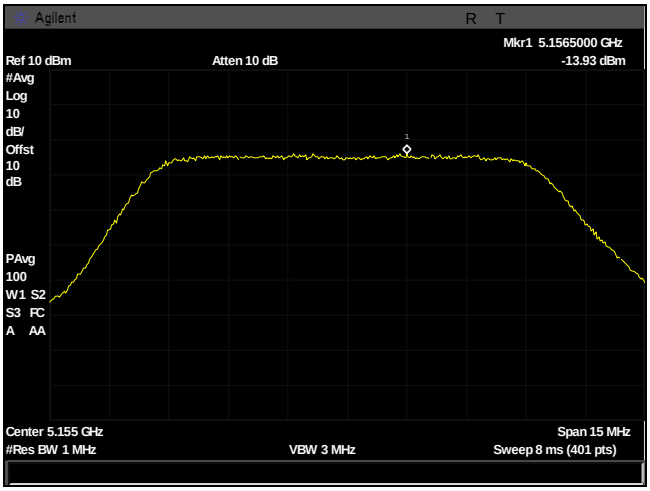
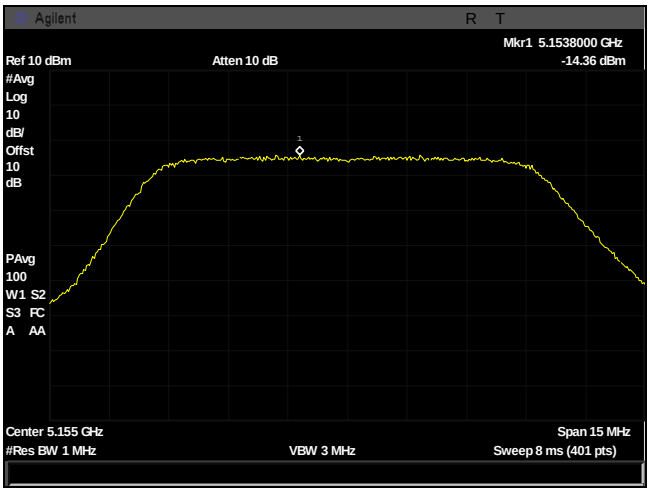
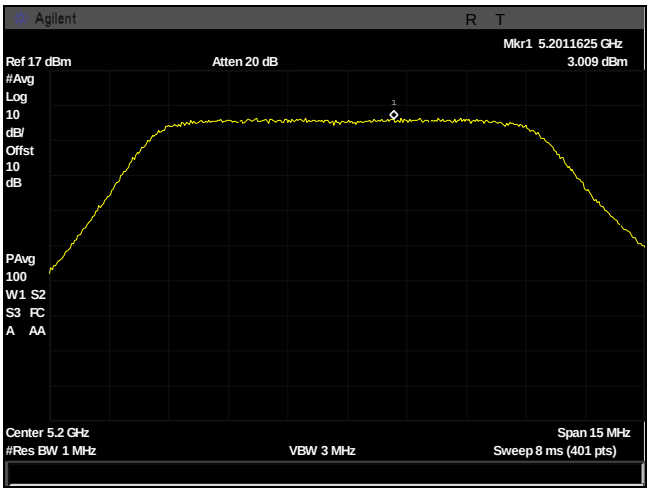
Power Spectral Density, 34 dBi



Plot 243. Power Spectral Density, 34 dBi, fixed ptp, 10M, 5155, c0



Plot 244. Power Spectral Density, 34 dBi, fixed ptp, 10M, 5155, c1



Plot 245. Power Spectral Density, 34 dBi, fixed ptp, 10M, 5200, c0

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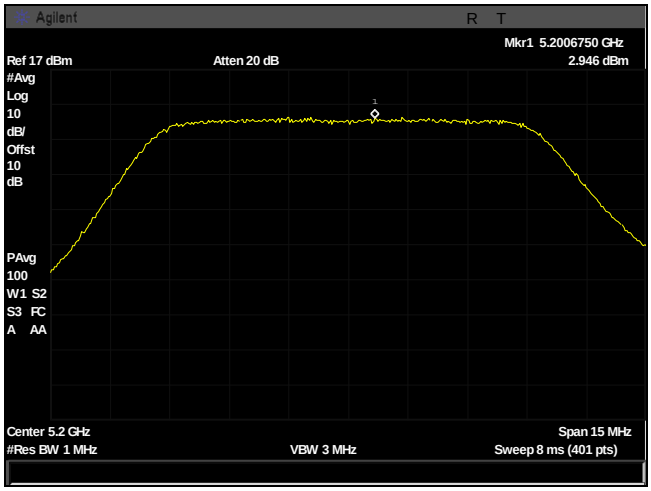
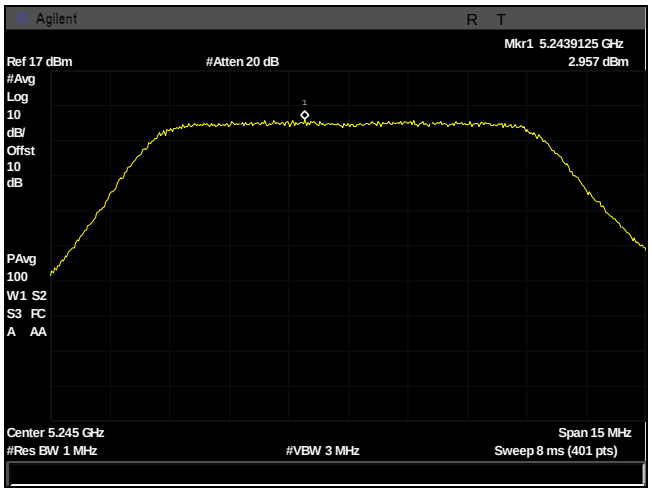
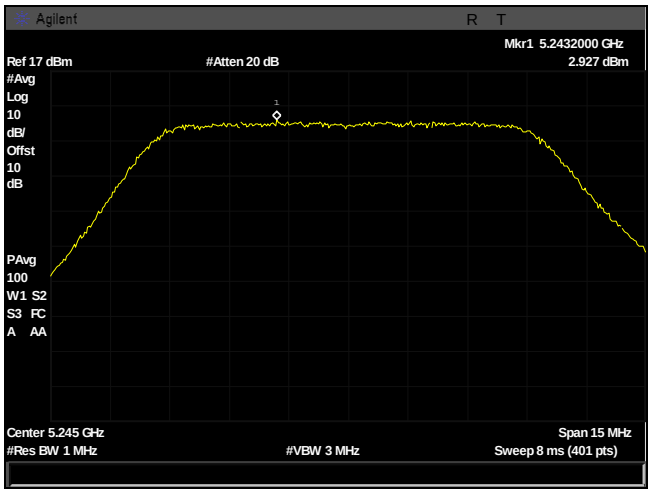


Plot 246. Power Spectral Density, 34 dBi, fixed ptp, 10M, 5200, c1



Plot 247. Power Spectral Density, 34 dBi, fixed ptp, 10M, 5245, c0



Plot 248. Power Spectral Density, 34 dBi, fixed ptp, 10M, 5245, c1

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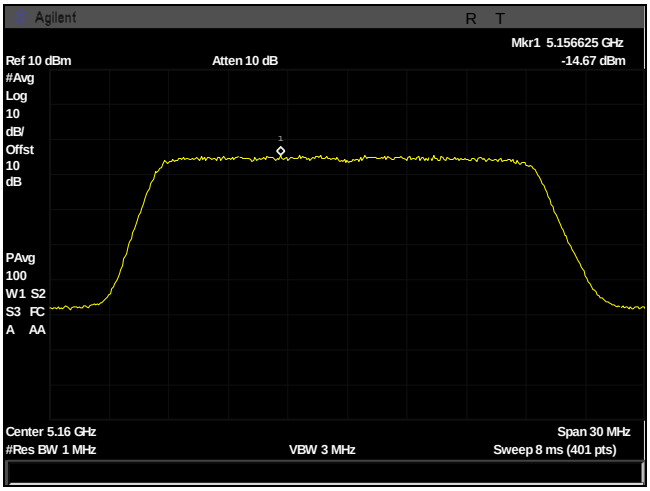
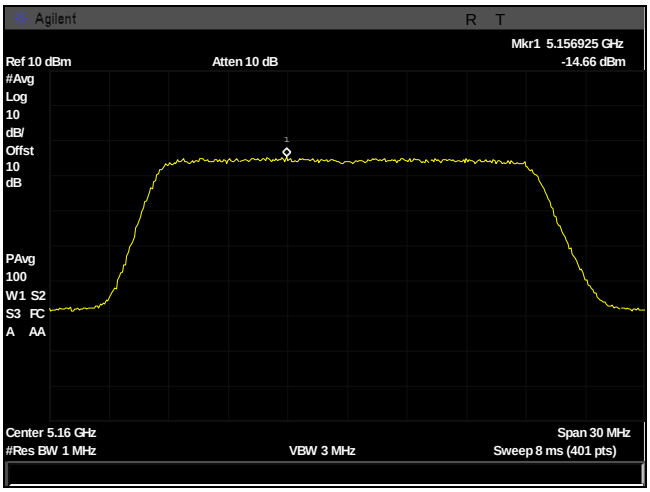
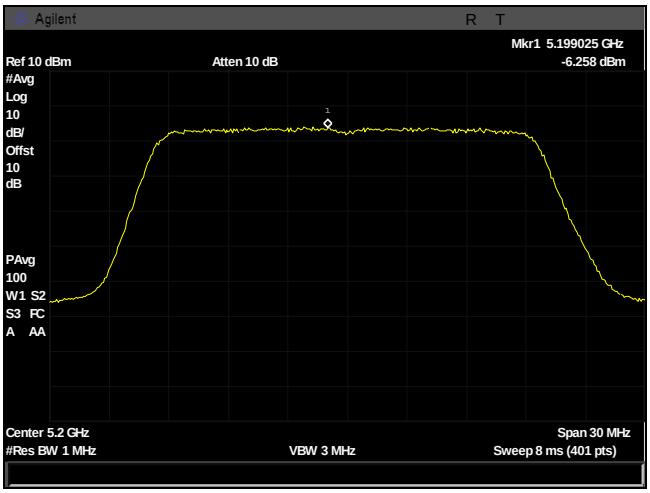


Plot 249. Power Spectral Density, 34 dBi, fixed ptp, 20M, 5160, c0



Plot 250. Power Spectral Density, 34 dBi, fixed ptp, 20M, 5160, c1



Plot 251. Power Spectral Density, 34 dBi, fixed ptp, 20M, 5200, c0

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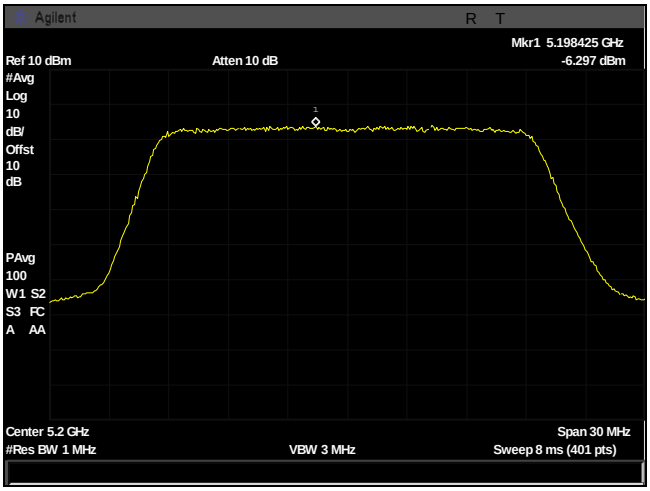
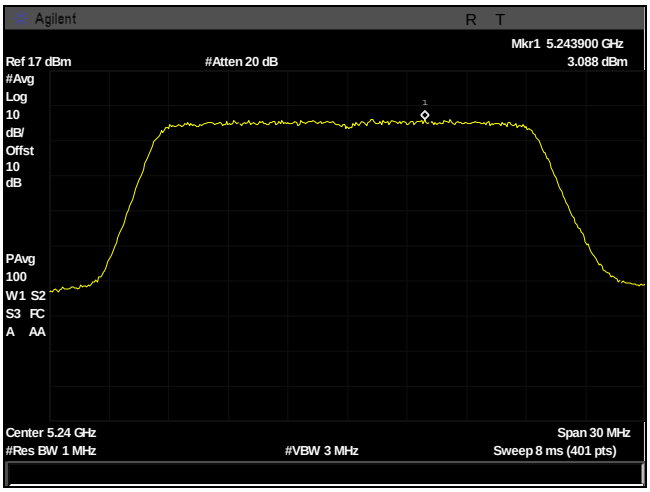
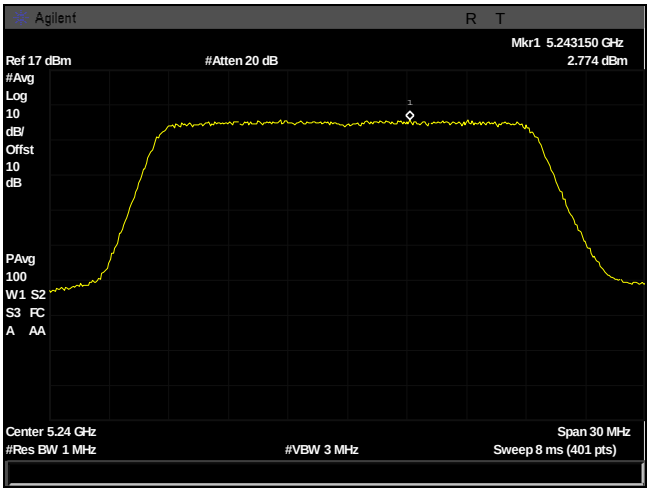


Plot 252. Power Spectral Density, 34 dBi, fixed ptp, 20M, 5200, c1



Plot 253. Power Spectral Density, 34 dBi, fixed ptp, 20M, 5240, c0



Plot 254. Power Spectral Density, 34 dBi, fixed ptp, 20M, 5240, c1

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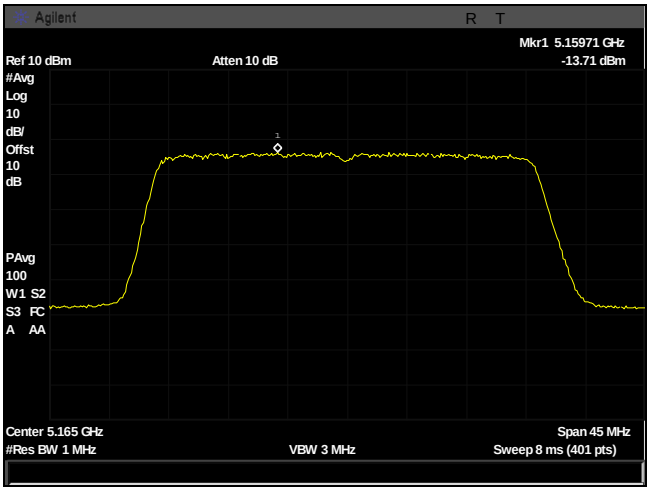
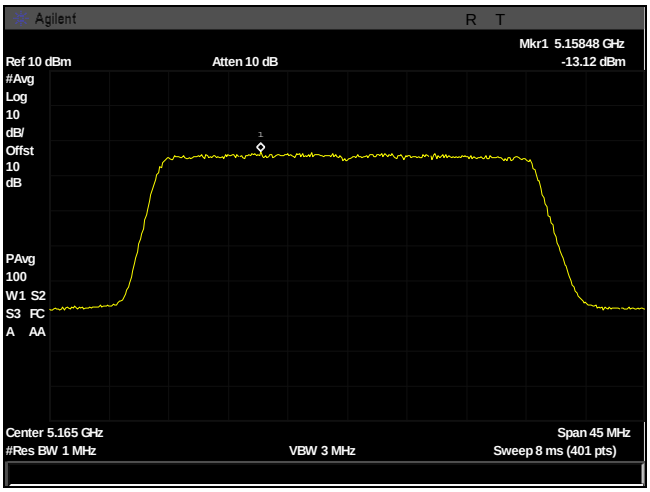
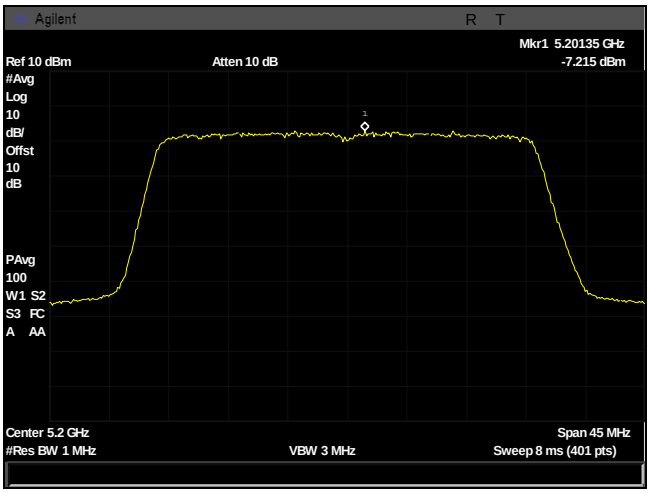


Plot 255. Power Spectral Density, 34 dBi, fixed ptp, 30M, 5165, c0



Plot 256. Power Spectral Density, 34 dBi, fixed ptp, 30M, 5165, c1



Plot 257. Power Spectral Density, 34 dBi, fixed ptp, 30M, 5200, c0

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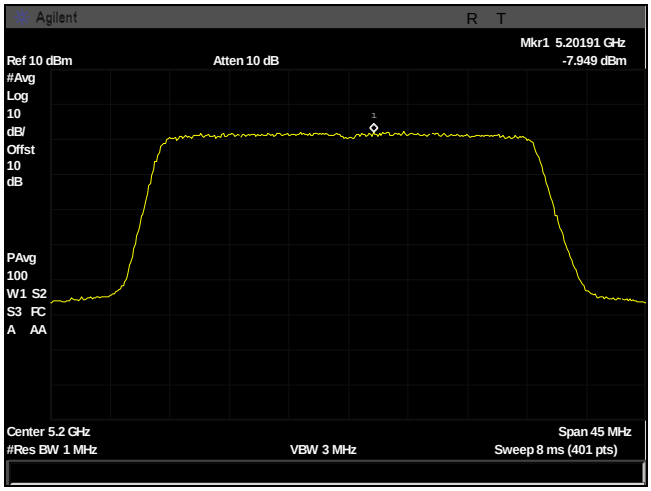
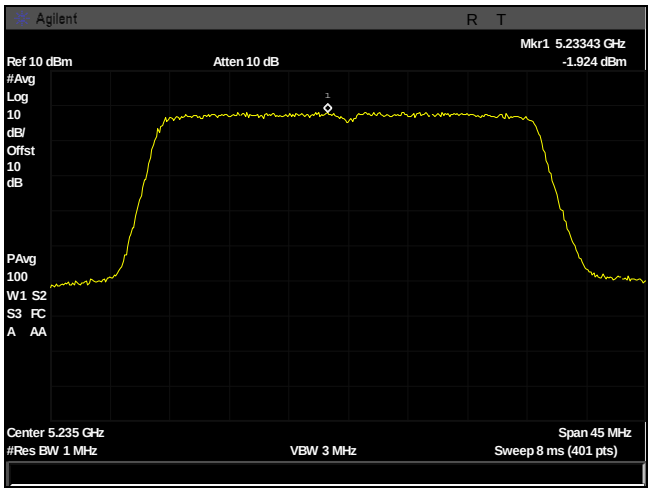
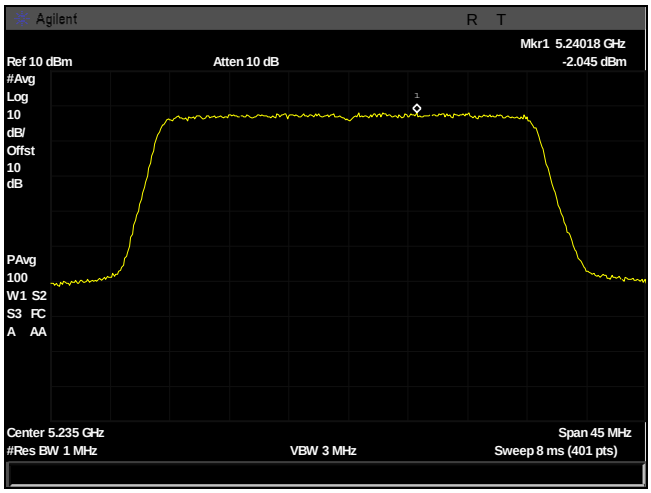


Plot 258. Power Spectral Density, 34 dBi, fixed ptp, 30M, 5200, c1



Plot 259. Power Spectral Density, 34 dBi, fixed ptp, 30M, 5235, c0



Plot 260. Power Spectral Density, 34 dBi, fixed ptp, 30M, 5235, c1

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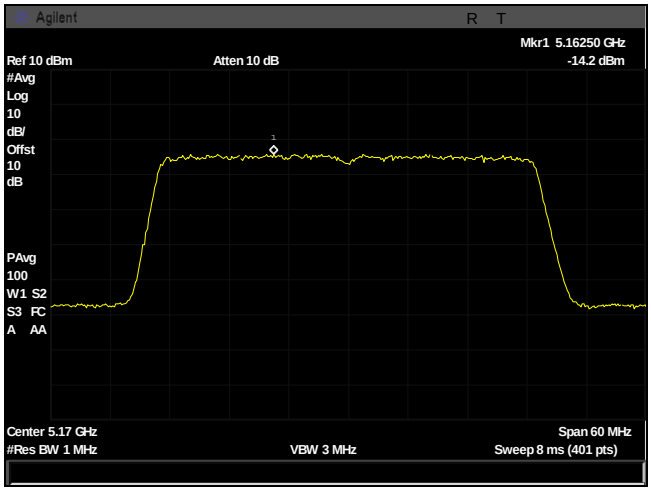
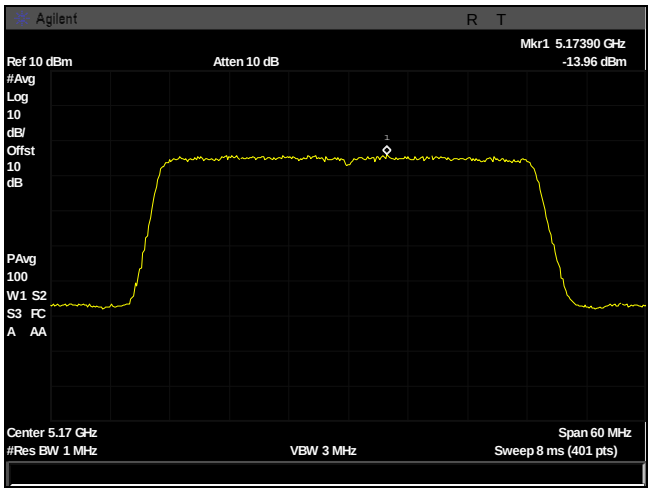
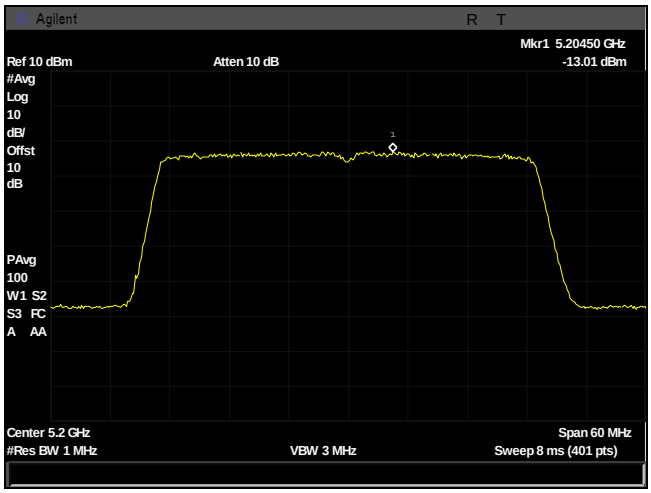


Plot 261. Power Spectral Density, 34 dBi, fixed ptp, 40M, 5170, c0



Plot 262. Power Spectral Density, 34 dBi, fixed ptp, 40M, 5170, c1



Plot 263. Power Spectral Density, 34 dBi, fixed ptp, 40M, 5200, c0

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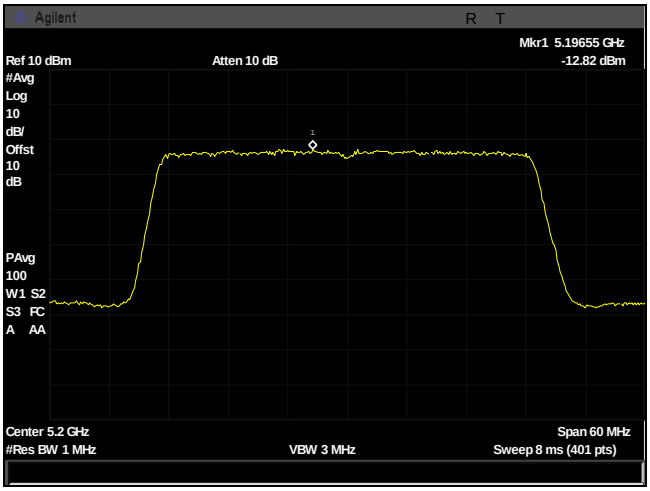
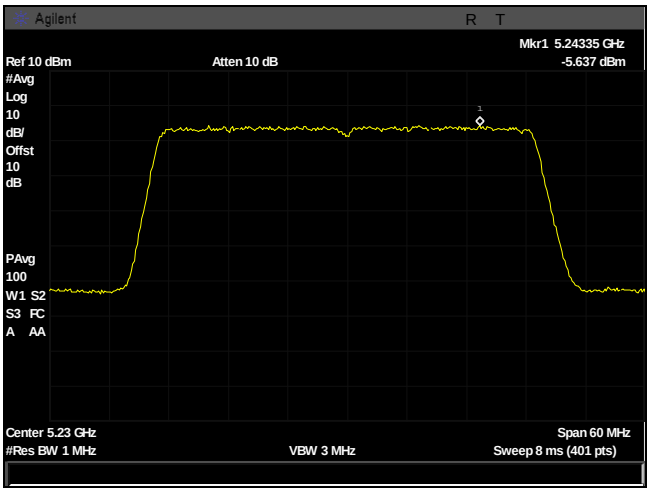
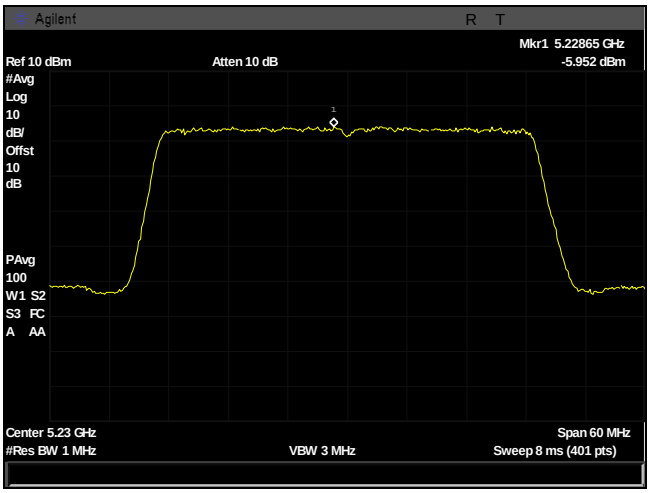


Plot 264. Power Spectral Density, 34 dBi, fixed ptp, 40M, 5200, c1



Plot 265. Power Spectral Density, 34 dBi, fixed ptp, 40M, 5230, c0



Plot 266. Power Spectral Density, 34 dBi, fixed ptp, 40M, 5230, c1

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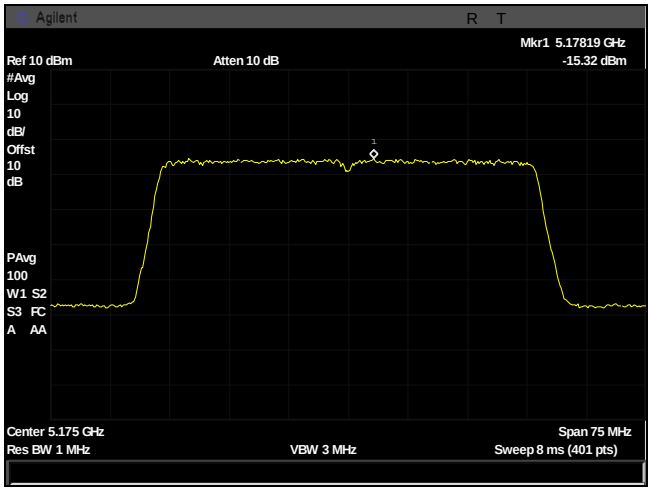
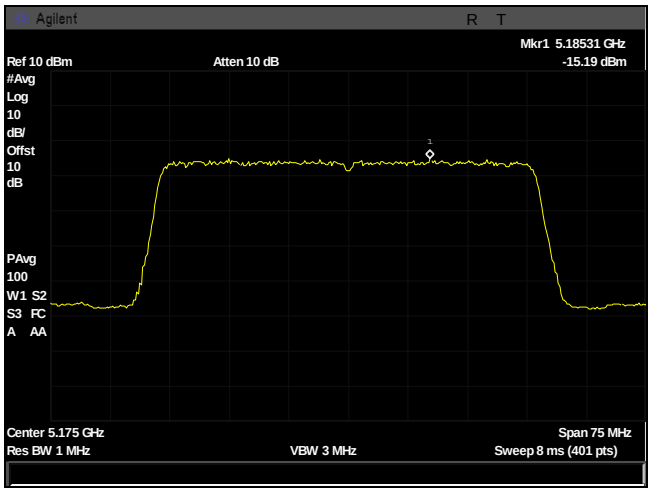
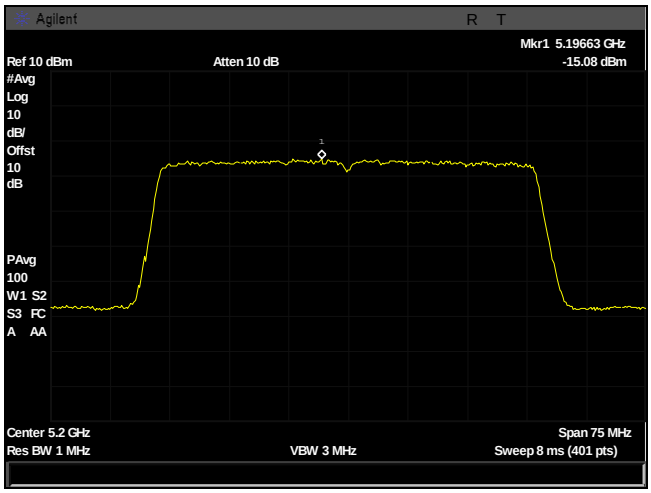


Plot 267. Power Spectral Density, 34 dBi, fixed ptp, 50M, 5175, c0



Plot 268. Power Spectral Density, 34 dBi, fixed ptp, 50M, 5175, c1



Plot 269. Power Spectral Density, 34 dBi, fixed ptp, 50M, 5200, c0

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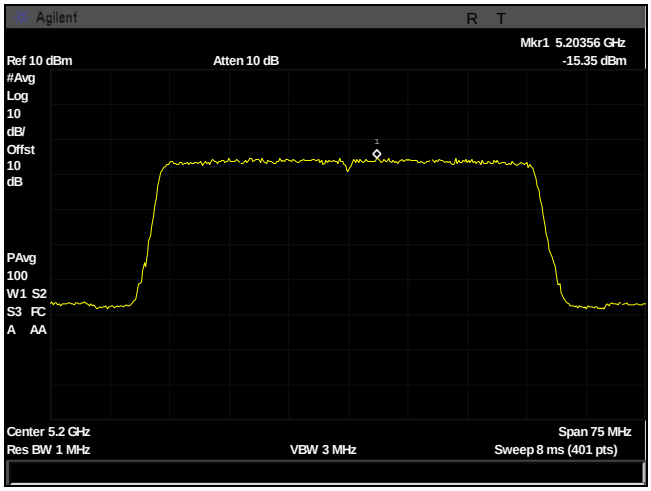
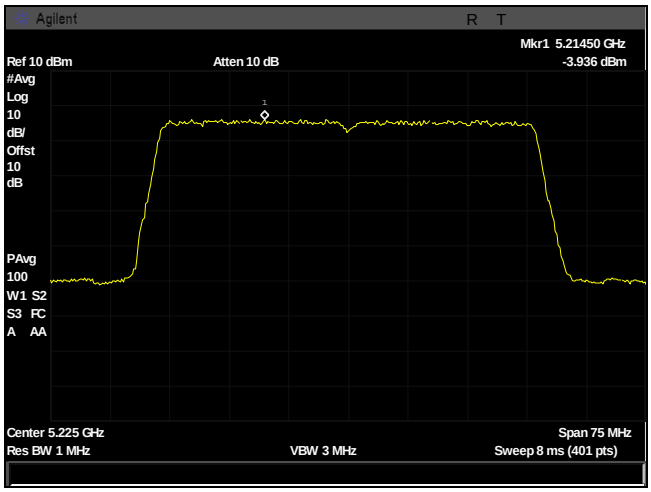
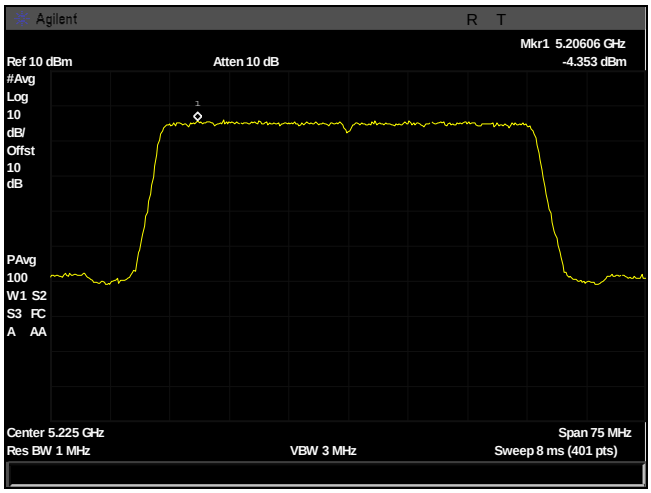


Plot 270. Power Spectral Density, 34 dBi, fixed ptp, 50M, 5200, c1



Plot 271. Power Spectral Density, 34 dBi, fixed ptp, 50M, 5225, c0



Plot 272. Power Spectral Density, 34 dBi, fixed ptp, 50M, 5225, c1

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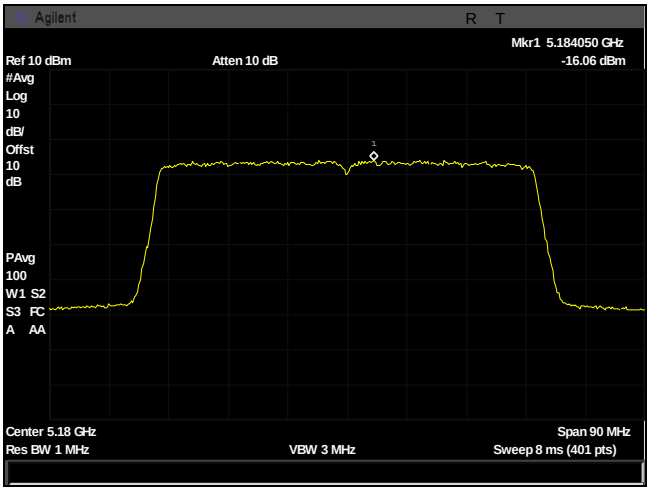
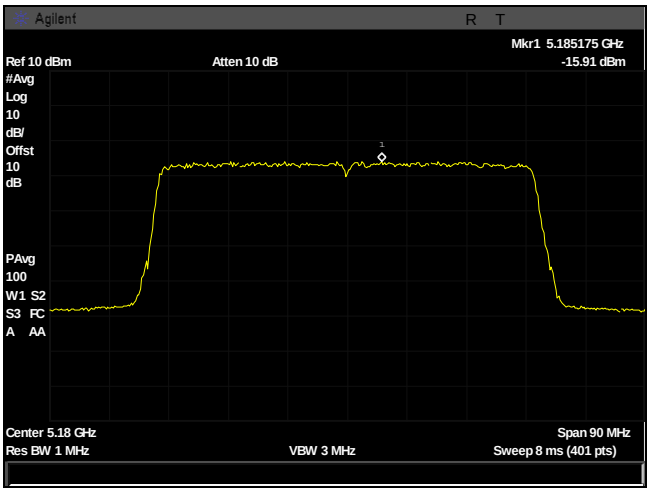
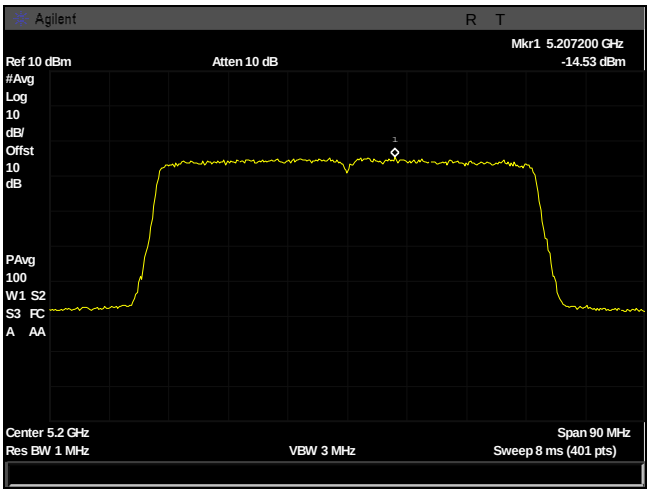


Plot 273. Power Spectral Density, 34 dBi, fixed ptp, 60M, 5180, c0



Plot 274. Power Spectral Density, 34 dBi, fixed ptp, 60M, 5180, c1



Plot 275. Power Spectral Density, 34 dBi, fixed ptp, 60M, 5200, c0

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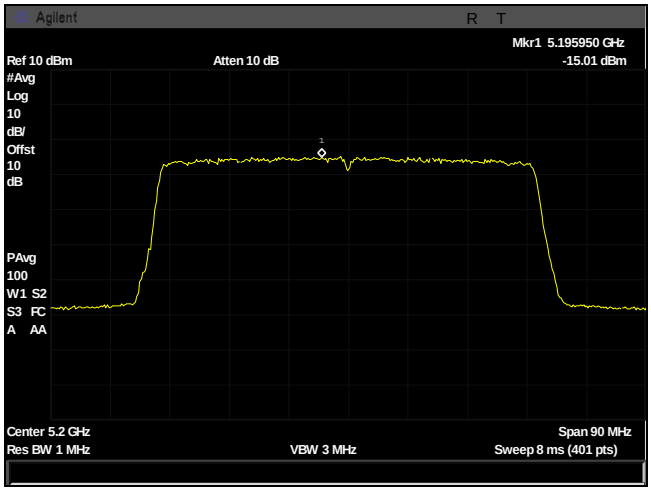
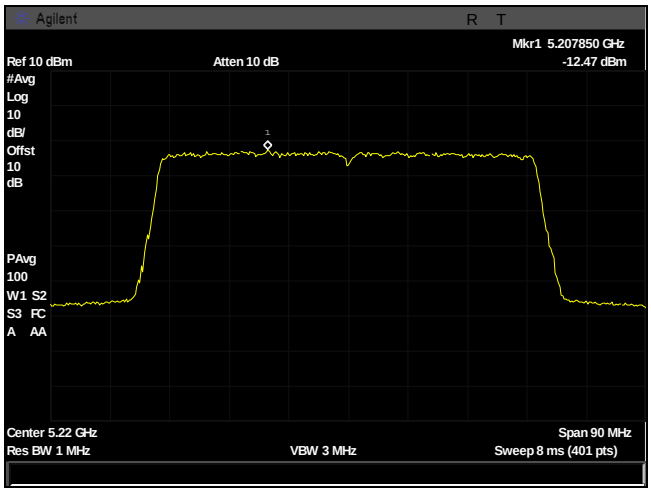
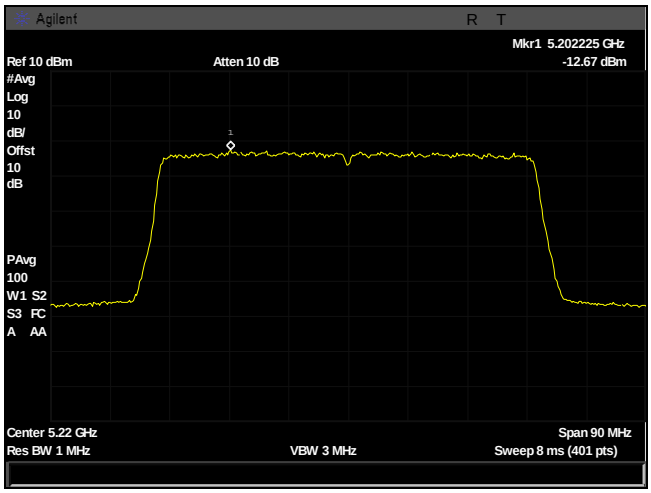


Plot 276. Power Spectral Density, 34 dBi, fixed ptp, 60M, 5200, c1



Plot 277. Power Spectral Density, 34 dBi, fixed ptp, 60M, 5220, c0



Plot 278. Power Spectral Density, 34 dBi, fixed ptp, 60M, 5220, c1

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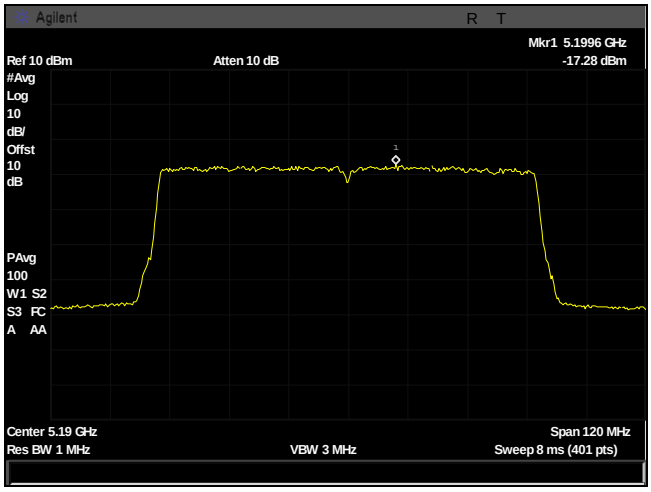
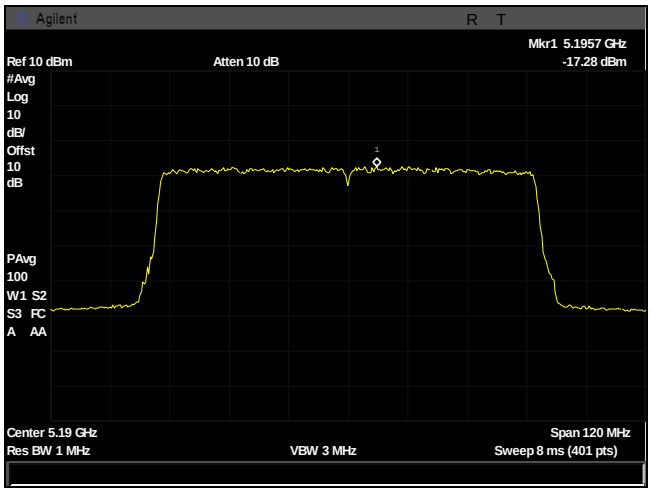
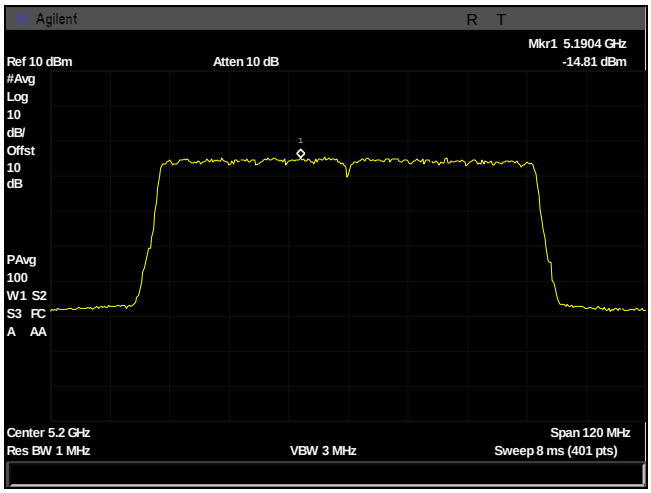


Plot 279. Power Spectral Density, 34 dBi, fixed ptp, 80M, 5190, c0



Plot 280. Power Spectral Density, 34 dBi, fixed ptp, 80M, 5190, c1



Plot 281. Power Spectral Density, 34 dBi, fixed ptp, 80M, 5200, c0

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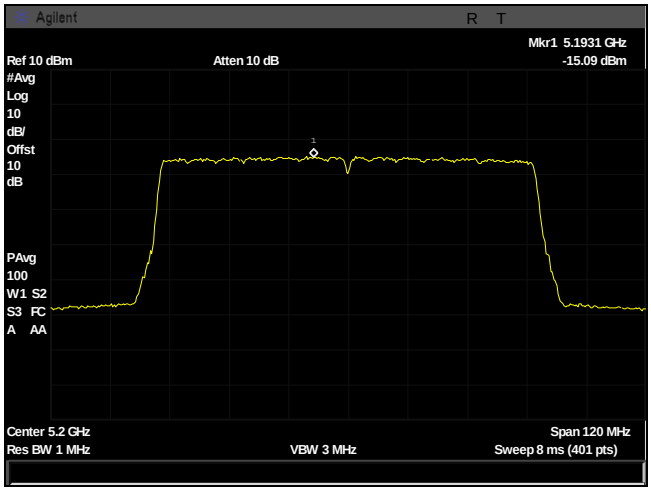
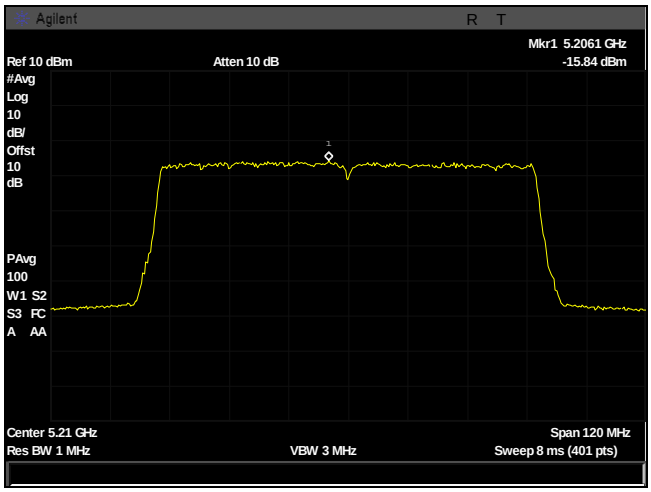
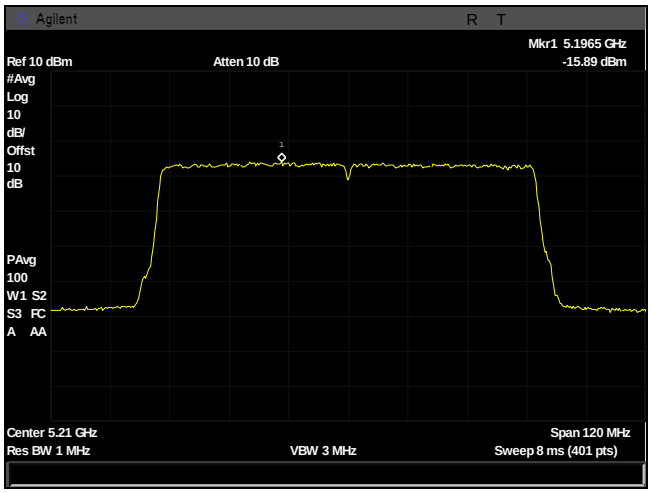


Plot 282. Power Spectral Density, 34 dBi, fixed ptp, 80M, 5200, c1



Plot 283. Power Spectral Density, 34 dBi, fixed ptp, 80M, 5210, c0



Plot 284. Power Spectral Density, 34 dBi, fixed ptp, 80M, 5210, c1

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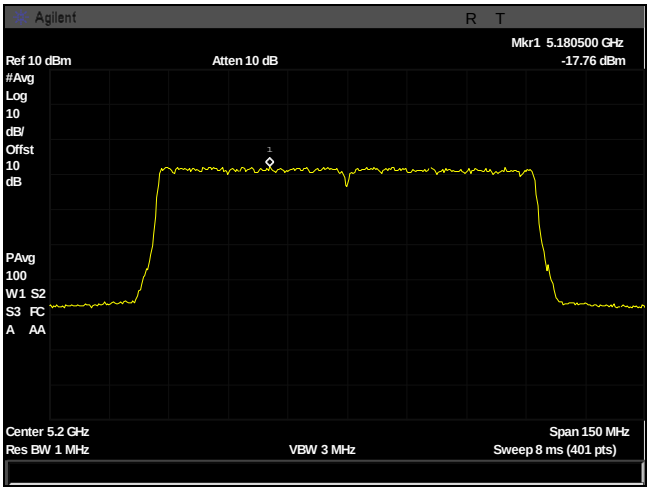
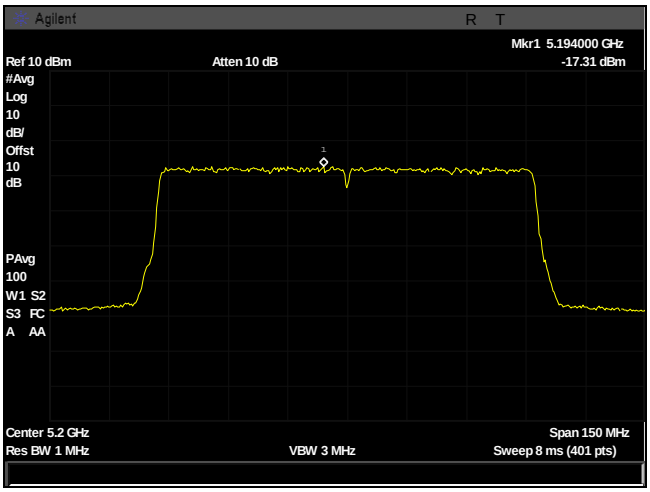


Plot 285. Power Spectral Density, 34 dBi, fixed ptp, 100M, 5200, c0



Plot 286. Power Spectral Density, 34 dBi, fixed ptp, 100M, 5200, c1

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Electromagnetic Compatibility Criteria for Intentional Radiators

§15.407(b)(1) & (6 – 7) Undesirable Emissions

Test Requirements: **§ 15.407(b)(1):** 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.

§ 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 EUT was placed on a non-conducting stand on a turntable in a chamber. To find the maximum emission the EUT was set to transmit on low, mid, and high channels. Additionally, the turntable was rotated 360 degrees, the EUT was oriented through its three orthogonal axes, and the receive antenna height was varied in order to maximize emissions.

For frequencies from 30 MHz to 1 GHz, measurements were first made using a peak detector with a 100 kHz resolution bandwidth. Emissions which exceeded the limits were re-measured using a quasi-peak detector with a 120 kHz resolution bandwidth.

Above 1 GHz, measurements were made pursuant the method described in FCC KDB 789033 D02 General UNII Test Procedure New Rules v01. The equation, **EIRP= E + 20 log D – 104.8** was used to convert field strength to EIRP (**E** = field strength (dBµV/m) and **D** = Reference measurement distance**).**

For emissions above 1 GHz and in restricted bands, measurements of the field strength were made with a peak detector and an average detector and compared with the limits of 15.209.

As an alternative, according to FCC KDB 789033 D02 General UNII Test Procedure New Rules v01, all emissions above 1 GHz that comply with the peak and average limits of 15.209 satisfy the requirements of unwanted emissions in 15.407.

Test Results: For below 1 GHz, the EUT was compliant with the requirements of this section. The worst case configuration is used to show compliance with the requirements.

For above 1 GHz, the EUT was compliant with the requirements of this section. Plots 375-438 have been corrected for antenna correction factor and cable loss, units are dBuV/m

Above 18GHz, only noise floor was seen.

Test Engineer(s): Donald Salguero

Test Date(s): August 30, 2017

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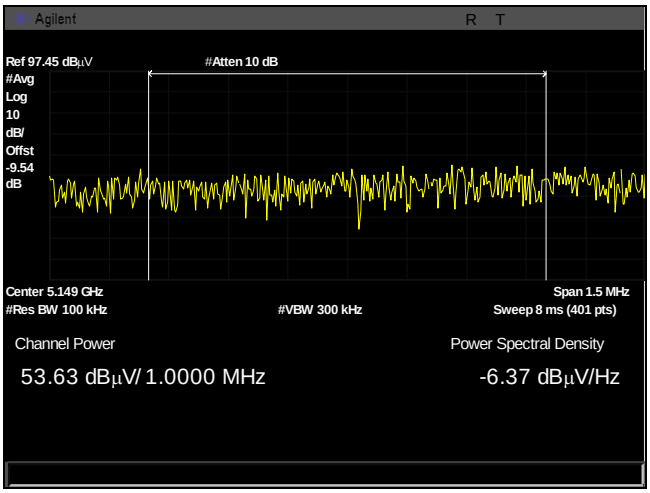
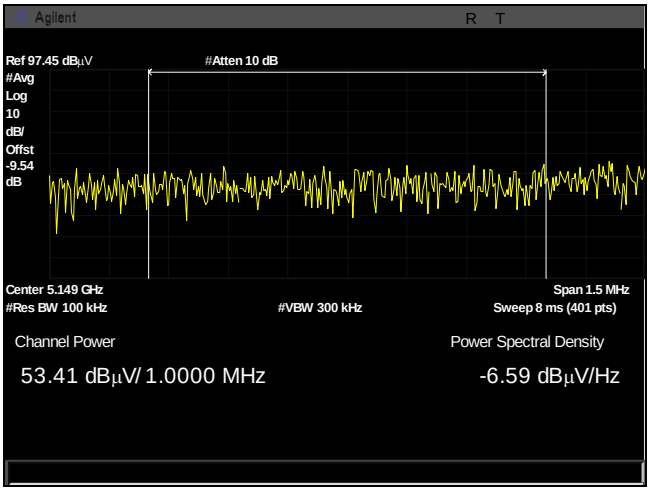
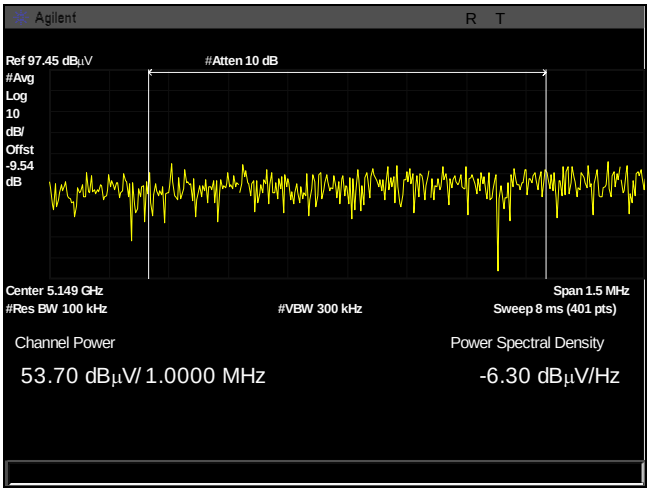


Plot 287. Undesirable Emissions, AVG, 5150 bandedge, 22dBi, 10M, 5155M, power integration



Plot 288. Undesirable Emissions, AVG, 5150 bandedge, 22dBi, 20M, 5160M, power integration



Plot 289. Undesirable Emissions, AVG, 5150 bandedge, 22dBi, 30M, 5165M, power integration

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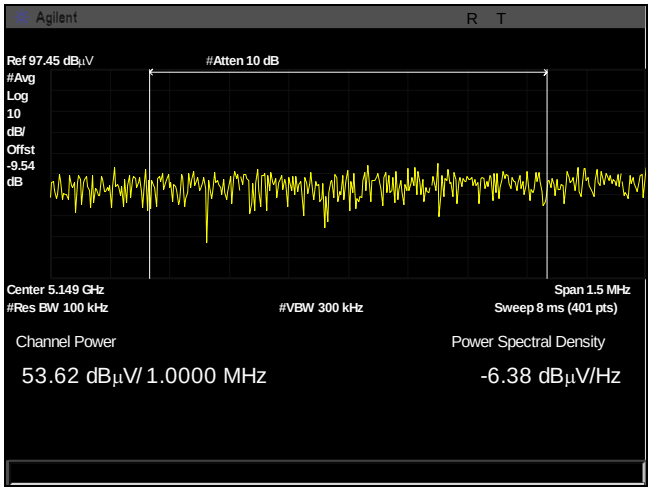
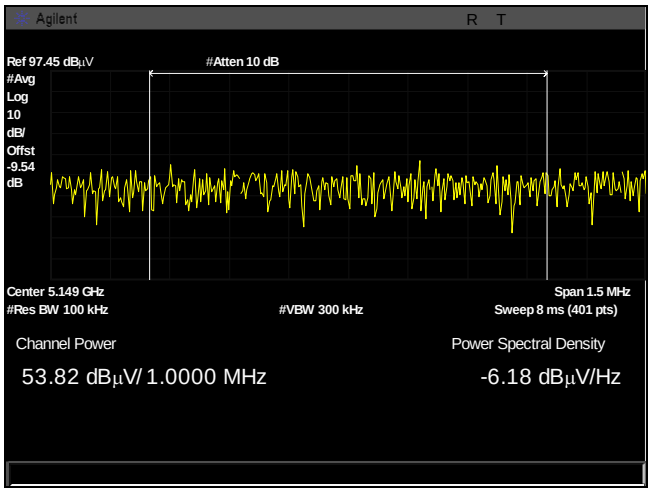
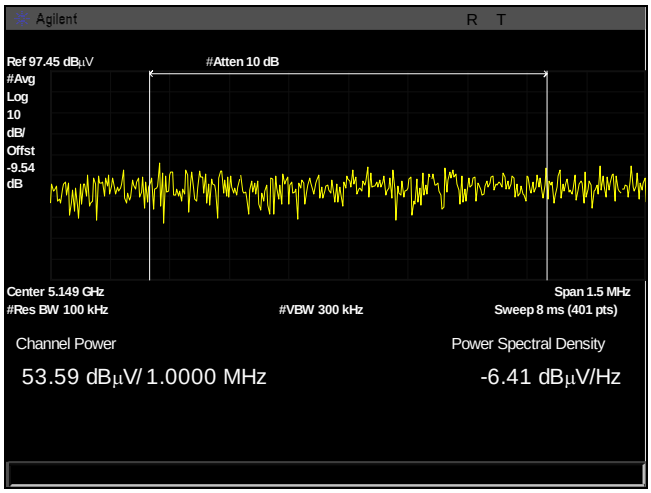


Plot 290. Undesirable Emissions, AVG, 5150 bandedge, 22dBi, 40M, 5170M, power integration



Plot 291. Undesirable Emissions, AVG, 5150 bandedge, 22dBi, 50M, 5175M, power integration



Plot 292. Undesirable Emissions, AVG, 5150 bandedge, 22dBi, 60M, 5180M, power integration

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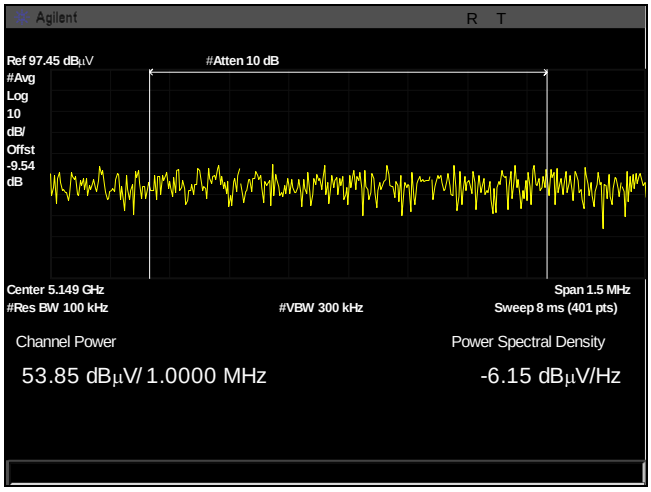
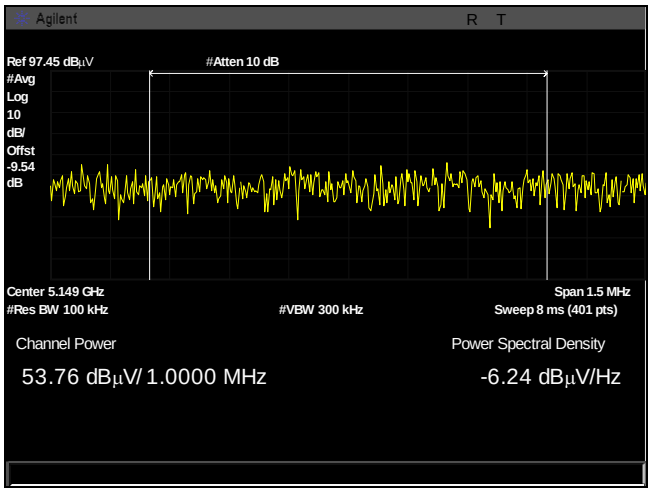
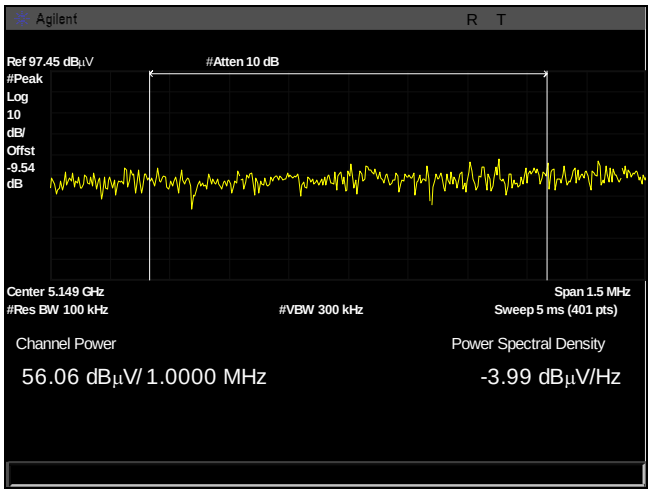


Plot 293. Undesirable Emissions, AVG, 5150 bandedge, 22dBi, 80M, 5190M, power integration



Plot 294. Undesirable Emissions, AVG, 5150 bandedge, 22dBi, 100M, 5200M, power integration



Plot 295. Undesirable Emissions, PK, 5150 bandedge, 22dBi, 10M, 5155M, power integration

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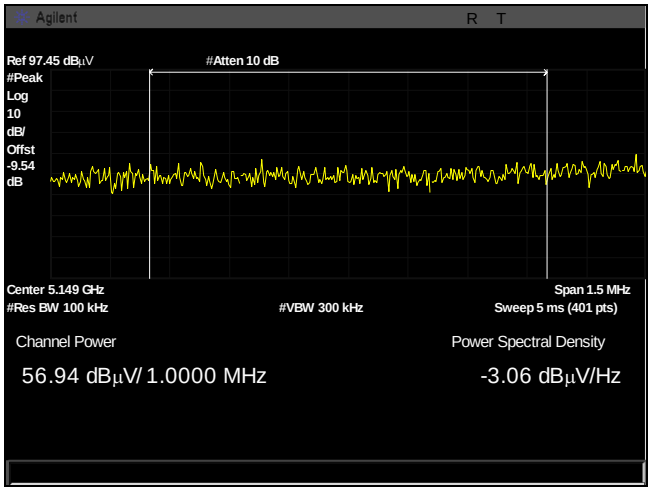
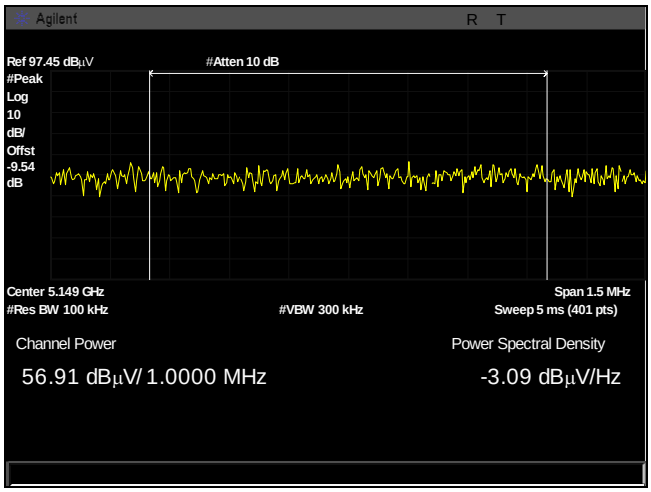
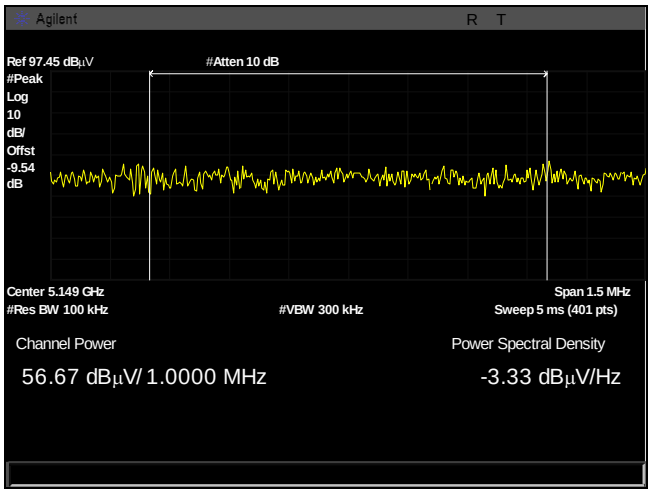


Plot 296. Undesirable Emissions, PK, 5150 bandedge, 22dBi, 20M, 5160M, power integration



Plot 297. Undesirable Emissions, PK, 5150 bandedge, 22dBi, 30M, 5165M, power integration



Plot 298. Undesirable Emissions, PK, 5150 bandedge, 22dBi, 40M, 5170M, power integration

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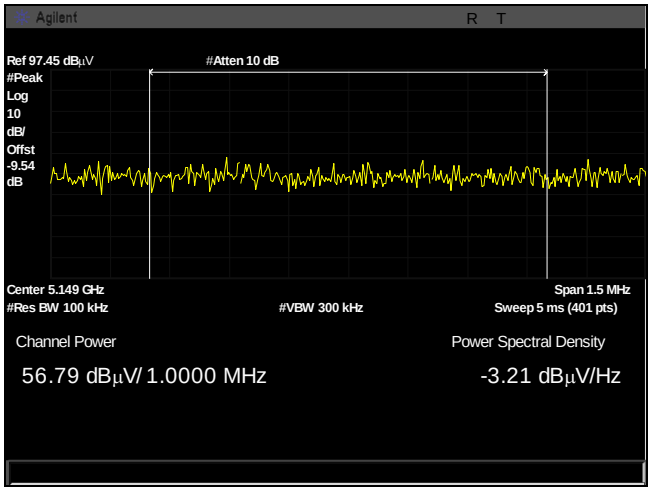
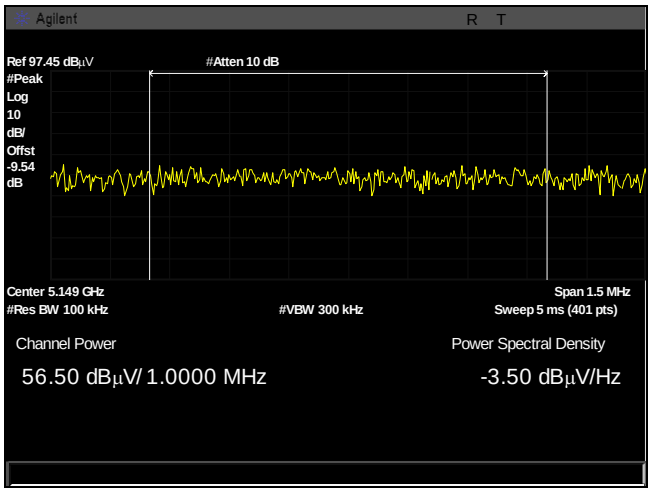
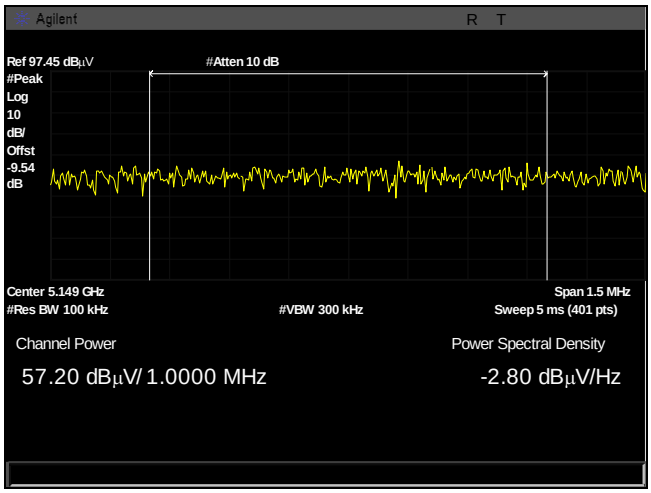


Plot 299. Undesirable Emissions, PK, 5150 bandedge, 22dBi, 50M, 5175M, power integration



Plot 300. Undesirable Emissions, PK, 5150 bandedge, 22dBi, 60M, 5180M, power integration



Plot 301. Undesirable Emissions, PK, 5150 bandedge, 22dBi, 80M, 5190M, power integration

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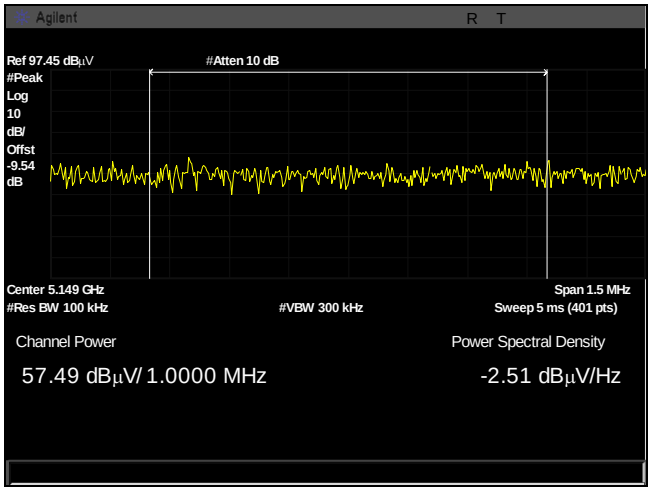
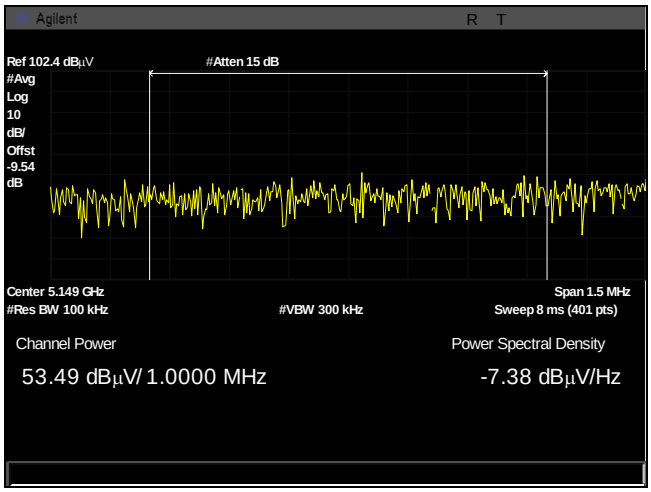
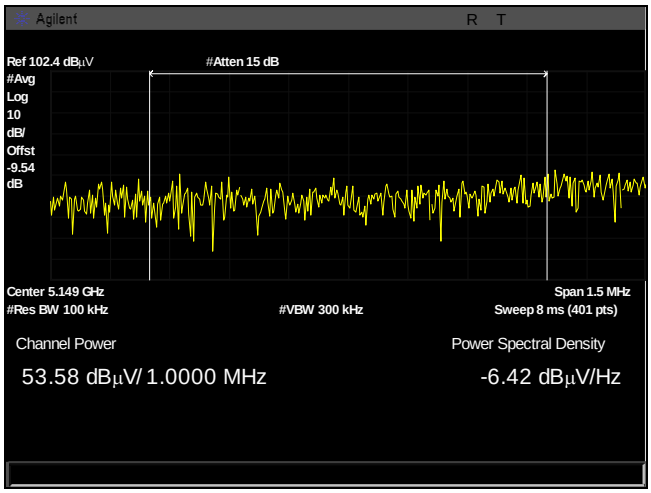


Plot 302. Undesirable Emissions, PK, 5150 bandedge, 22dBi, 100M, 5200M, power integration



Plot 303. Undesirable Emissions, AVG, 5150 bandedge, 23dBi, 10M, 5155M, power integration



Plot 304. Undesirable Emissions, AVG, 5150 bandedge, 23dBi, 20M, 5160M, power integration

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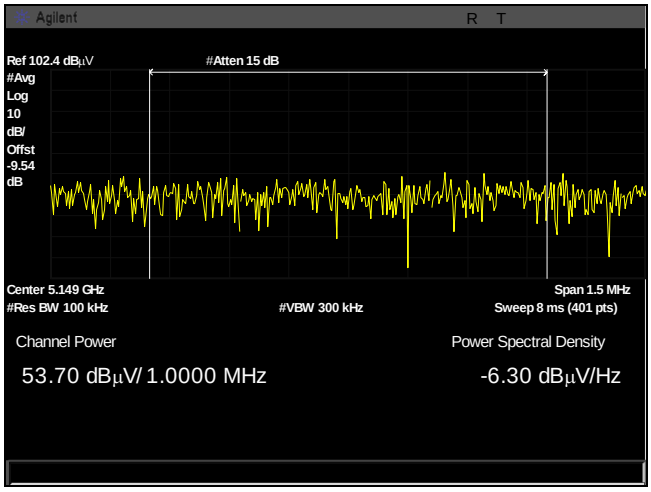
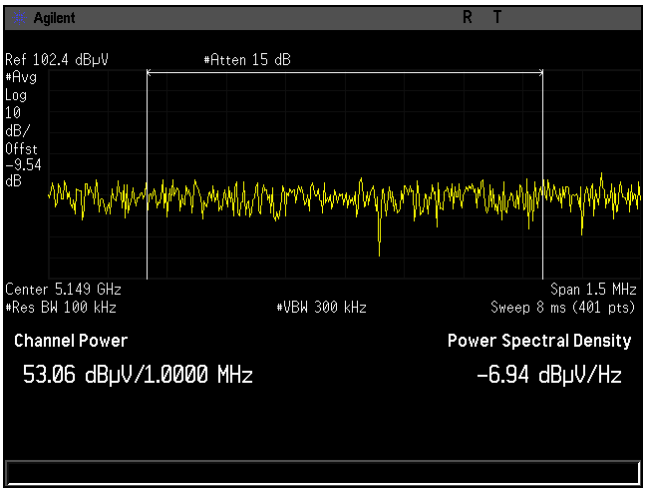
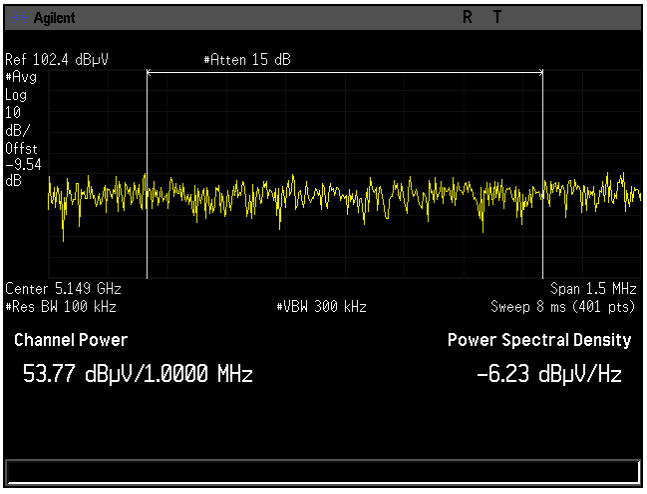


Plot 305. Undesirable Emissions, AVG, 5150 bandedge, 23dBi, 30M, 5165M, power integration



Plot 306. Undesirable Emissions, AVG, 5150 bandedge, 23dBi, 40M, 5170M, power integration



Plot 307. Undesirable Emissions, AVG, 5150 bandedge, 23dBi, 50M, 5175M, power integration

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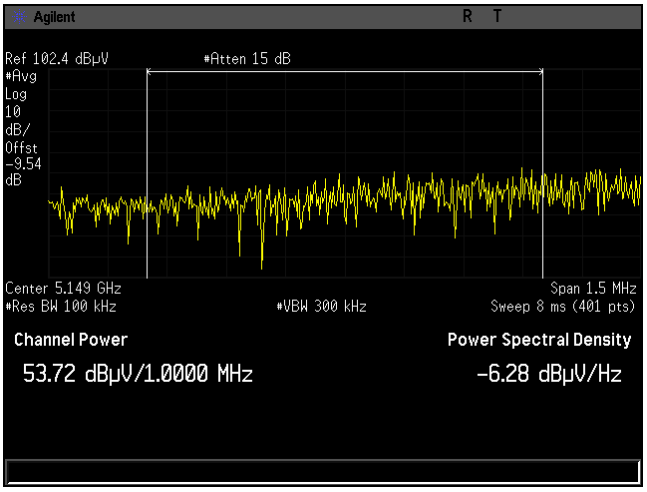
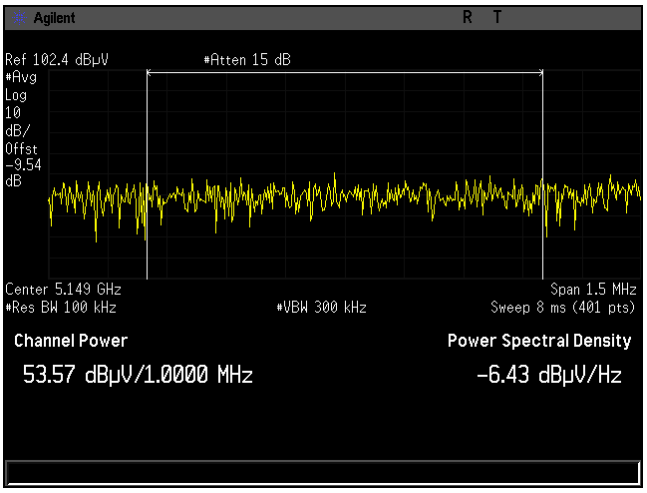
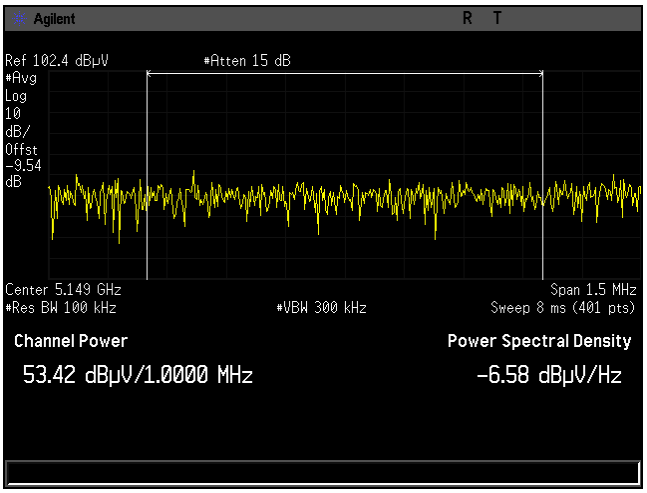


Plot 308. Undesirable Emissions, AVG, 5150 bandedge, 23dBi, 60M, 5180M, power integration



Plot 309. Undesirable Emissions, AVG, 5150 bandedge, 23dBi, 80M, 5190M, power integration



Plot 310. Undesirable Emissions, AVG, 5150 bandedge, 23dBi, 100M, 5200M, power integration

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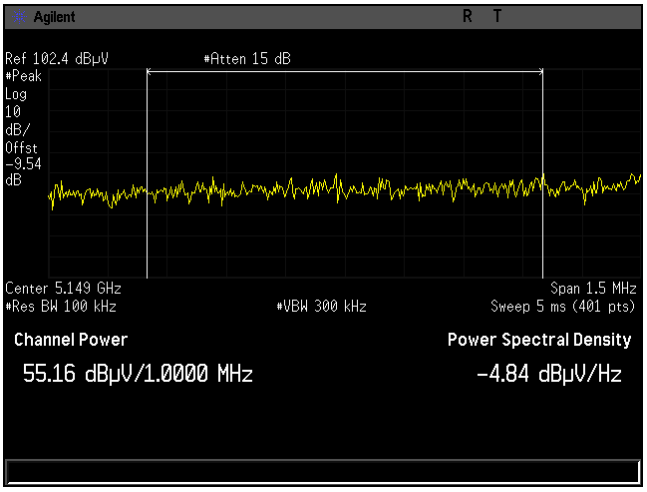
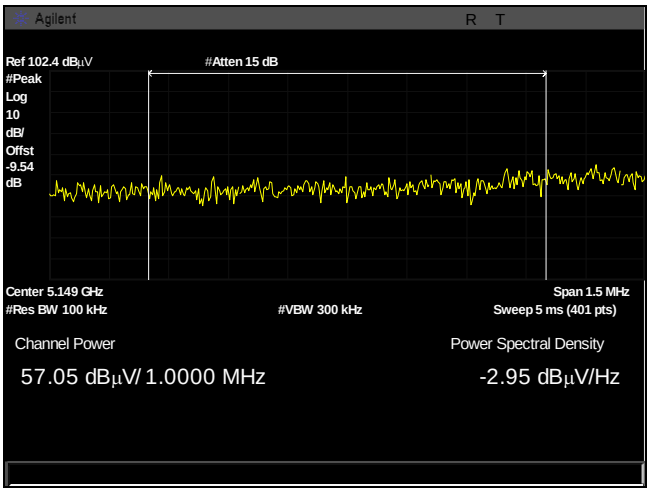
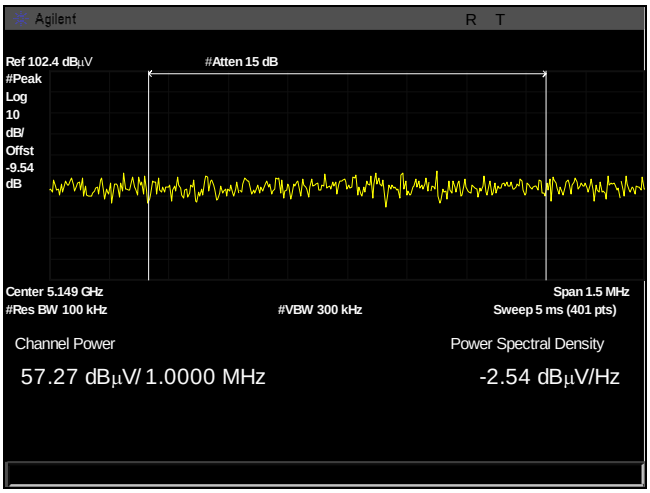


Plot 311. Undesirable Emissions, PK, 5150 bandedge, 23dBi, 10M, 5155M, power integration



Plot 312. Undesirable Emissions, PK, 5150 bandedge, 23dBi, 20M, 5160M, power integration



Plot 313. Undesirable Emissions, PK, 5150 bandedge, 23dBi, 30M, 5165M, power integration

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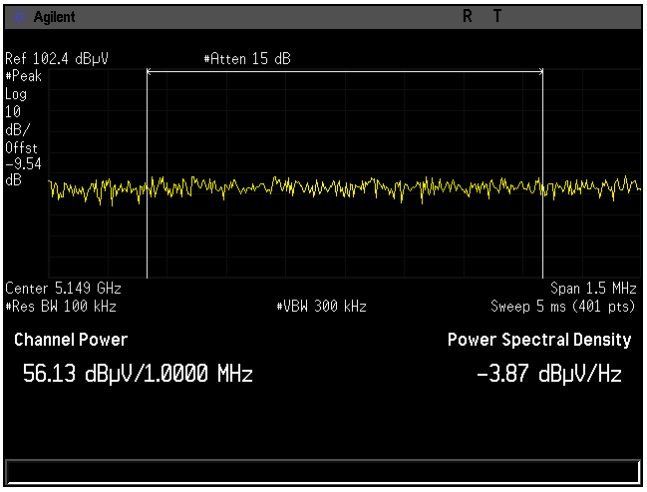
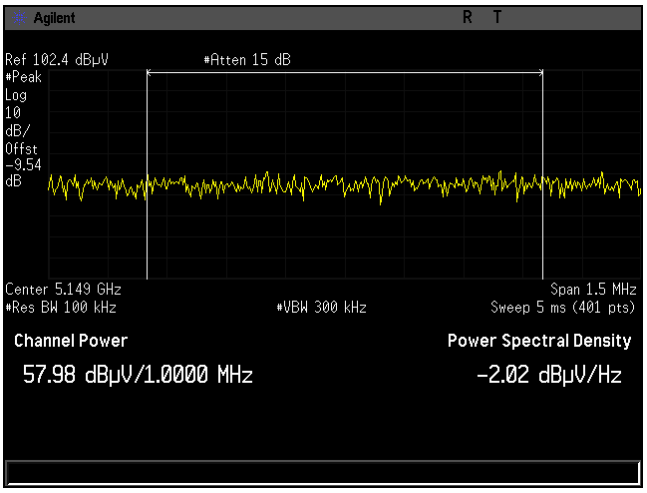
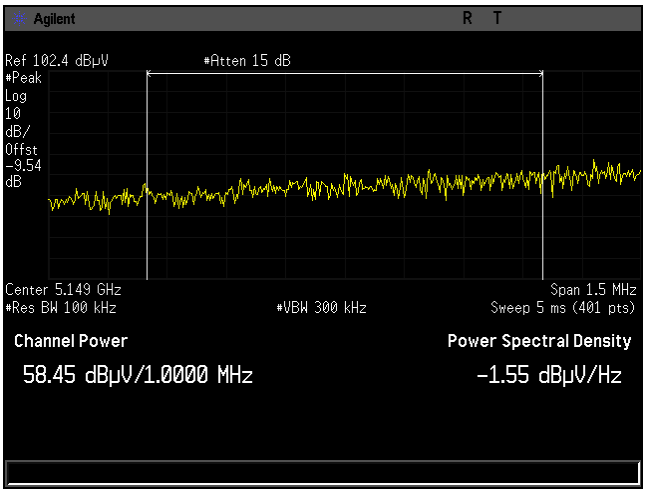


Plot 314. Undesirable Emissions, PK, 5150 bandedge, 23dBi, 40M, 5170M, power integration



Plot 315. Undesirable Emissions, PK, 5150 bandedge, 23dBi, 50M, 5175M, power integration



Plot 316. Undesirable Emissions, PK, 5150 bandedge, 23dBi, 60M, 5180M, power integration

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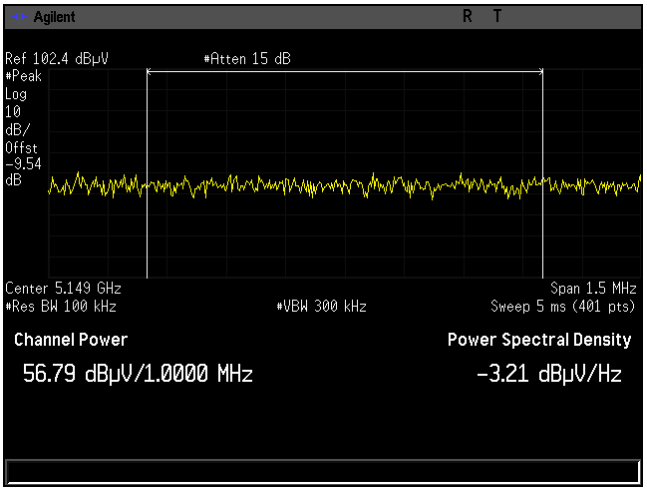
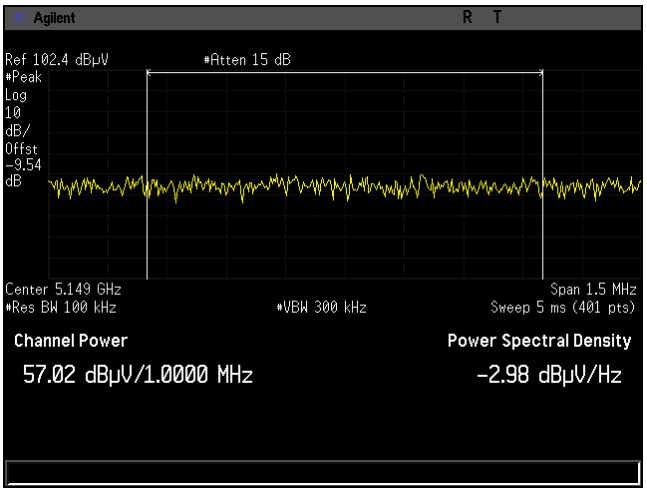
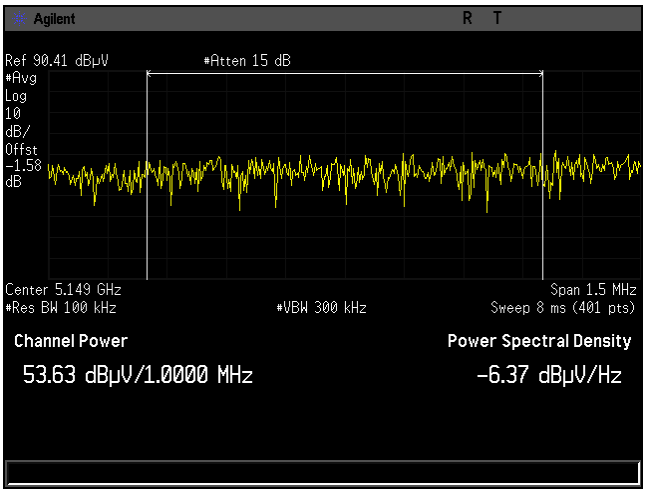


Plot 317. Undesirable Emissions, PK, 5150 bandedge, 23dBi, 80M, 5190M, power integration



Plot 318. Undesirable Emissions, PK, 5150 bandedge, 23dBi, 100M, 5200M, power integration



Plot 319. Undesirable Emissions, AVG, 5150 bandedge, 34dBi, 10M, 5155M, power integration

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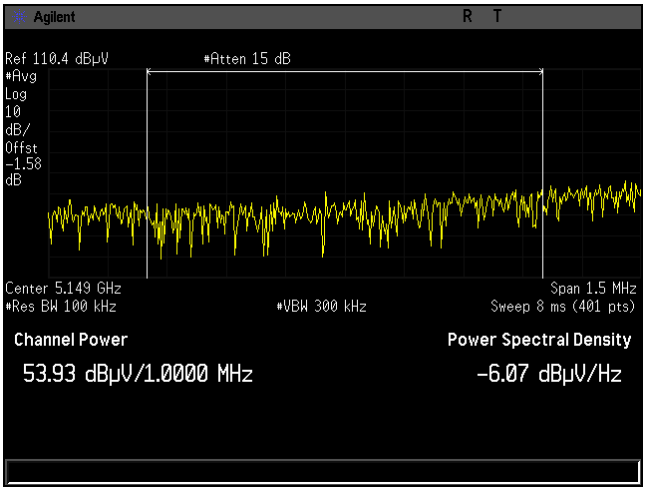
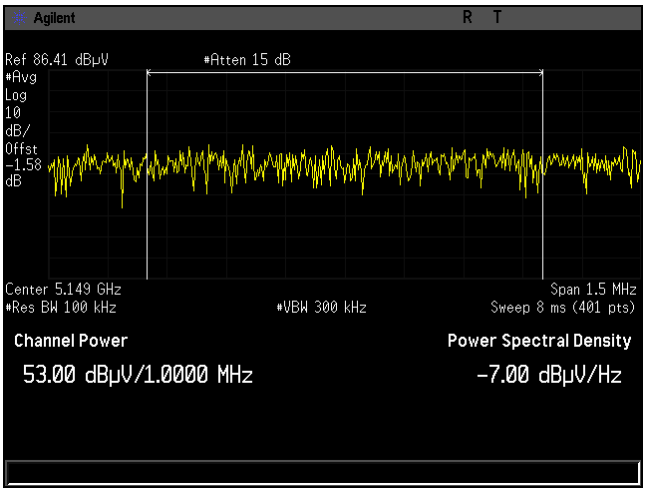
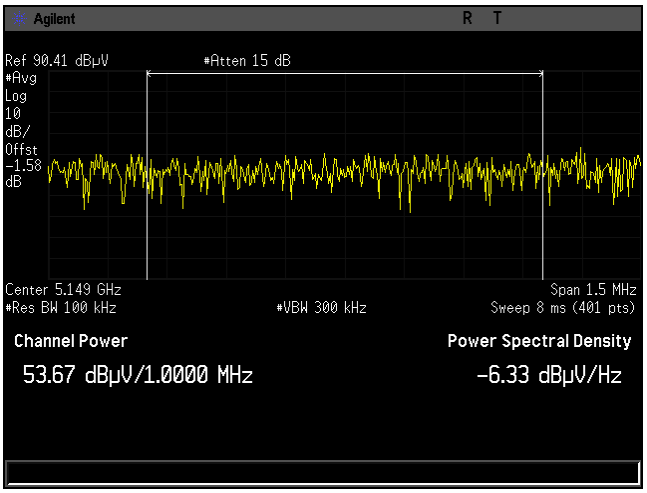


Plot 320. Undesirable Emissions, AVG, 5150 bandedge, 34dBi, 20M, 5160M, power integration



Plot 321. Undesirable Emissions, AVG, 5150 bandedge, 34dBi, 30M, 5165M, power integration



Plot 322. Undesirable Emissions, AVG, 5150 bandedge, 34dBi, 40M, 5170M, power integration

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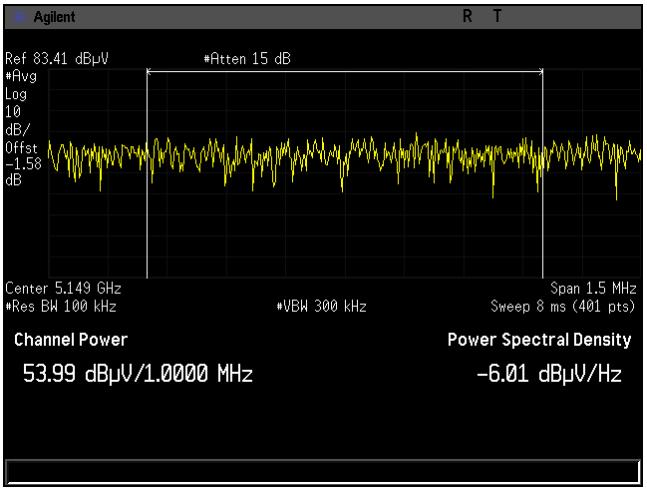
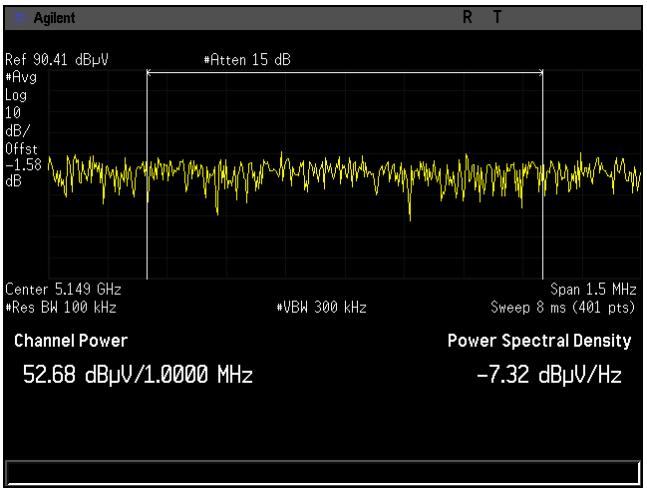
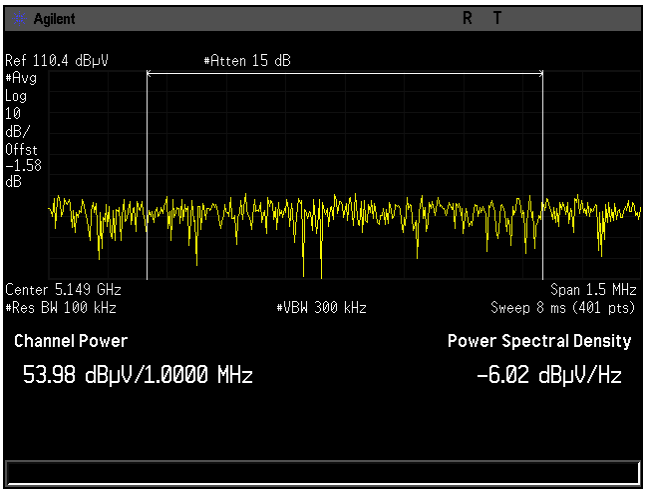


Plot 323. Undesirable Emissions, AVG, 5150 bandedge, 34dBi, 50M, 5175M, power integration



Plot 324. Undesirable Emissions, AVG, 5150 bandedge, 34dBi, 60M, 5180M, power integration



Plot 325. Undesirable Emissions, AVG, 5150 bandedge, 34dBi, 80M, 5190M, power integration

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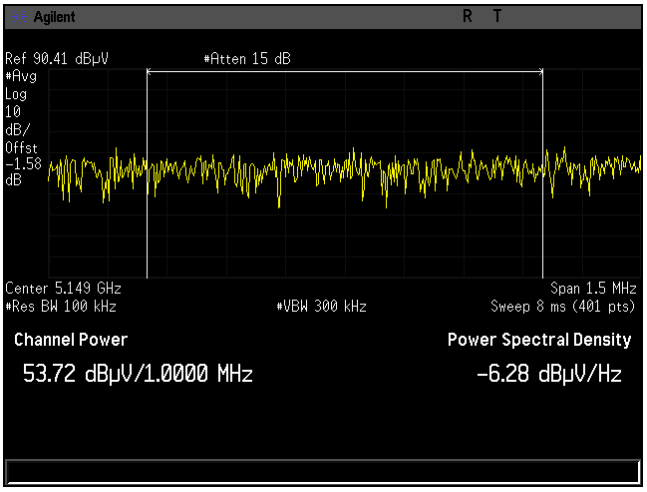
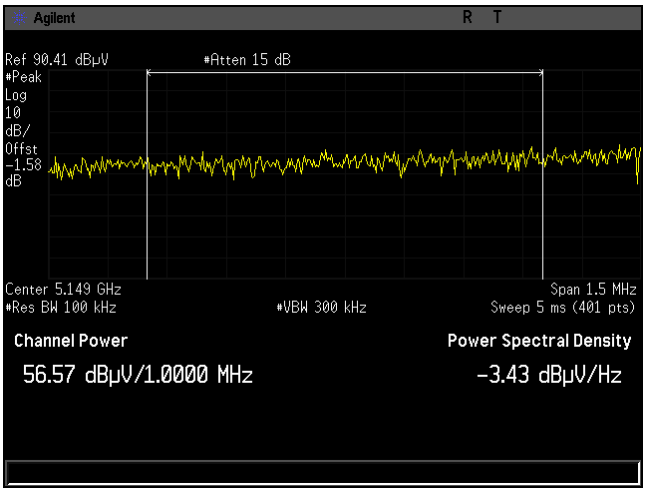
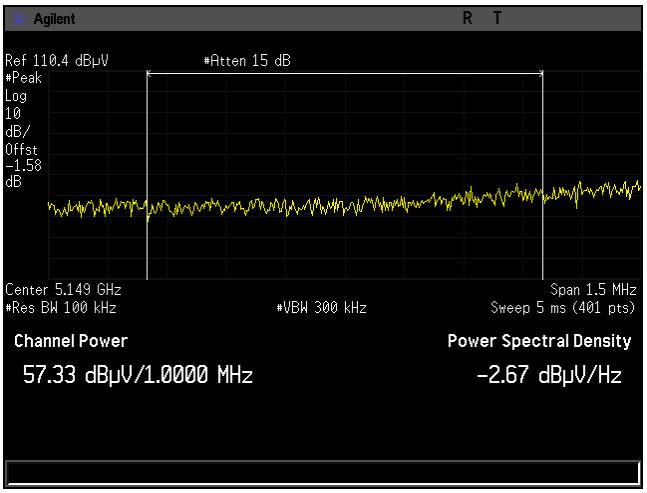


Plot 326. Undesirable Emissions, AVG, 5150 bandedge, 34dBi, 100M, 5200M, power integration



Plot 327. Undesirable Emissions, PK, 5150 bandedge, 34dBi, 10M, 5155M, power integration



Plot 328. Undesirable Emissions, PK, 5150 bandedge, 34dBi, 20M, 5160M, power integration

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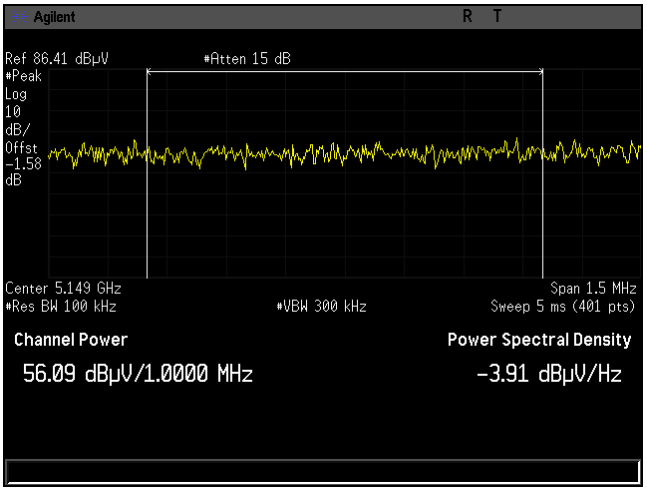
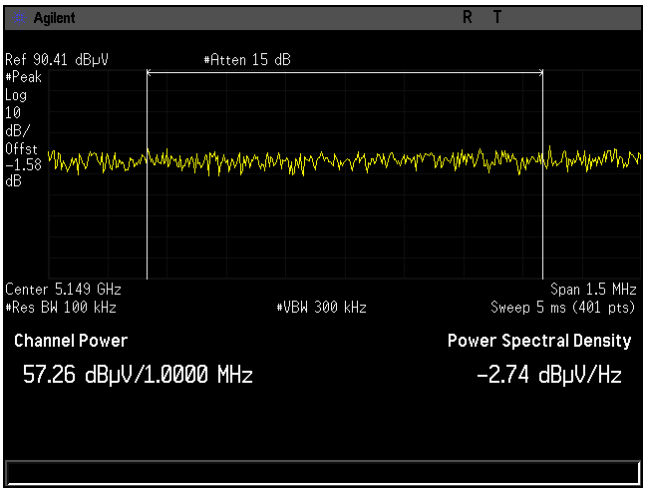
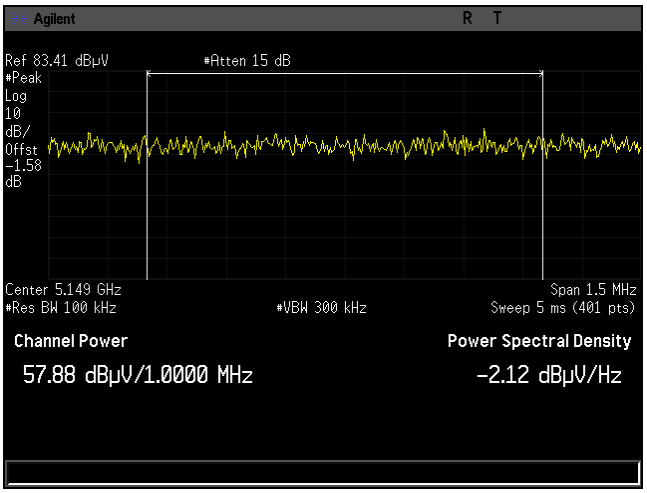


Plot 329. Undesirable Emissions, PK, 5150 bandedge, 34dBi, 30M, 5165M, power integration



Plot 330. Undesirable Emissions, PK, 5150 bandedge, 34dBi, 40M, 5170M, power integration



Plot 331. Undesirable Emissions, PK, 5150 bandedge, 34dBi, 50M, 5175M, power integration

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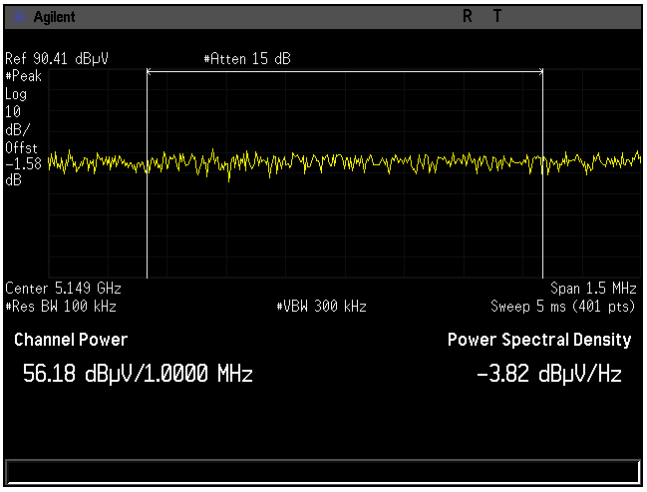
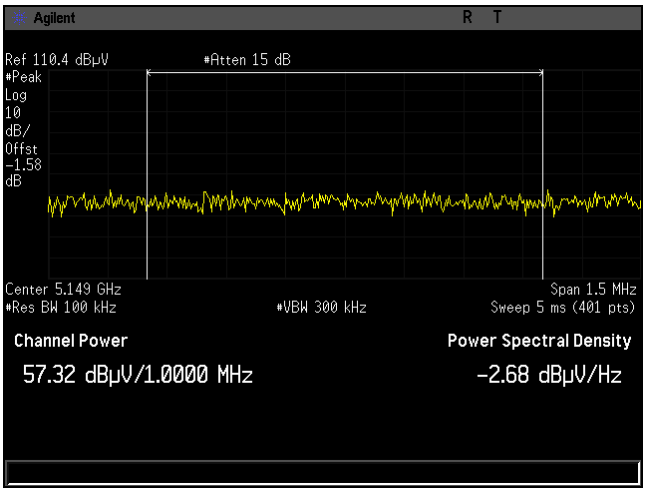
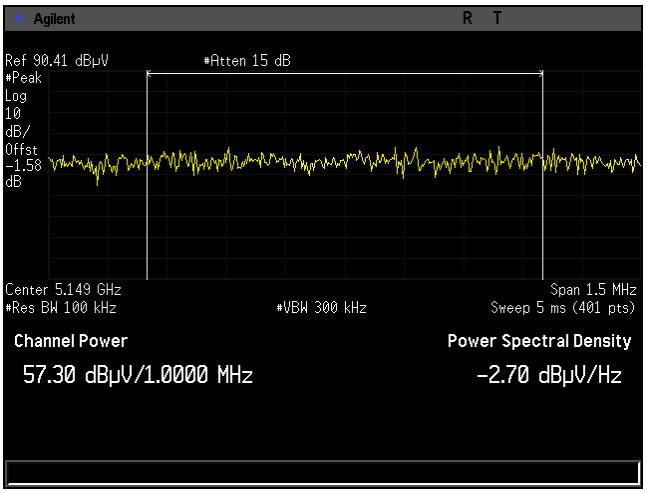


Plot 332. Undesirable Emissions, PK, 5150 bandedge, 34dBi, 60M, 5180M, power integration



Plot 333. Undesirable Emissions, PK, 5150 bandedge, 34dBi, 80M, 5190M, power integration



Plot 334. Undesirable Emissions, PK, 5150 bandedge, 34dBi, 100M, 5200M, power integration

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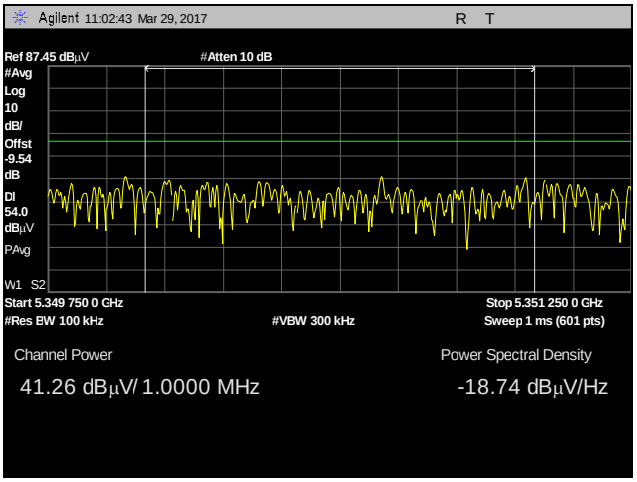
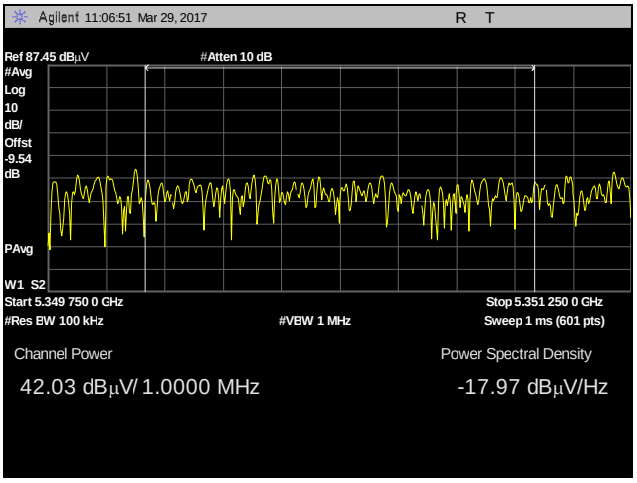
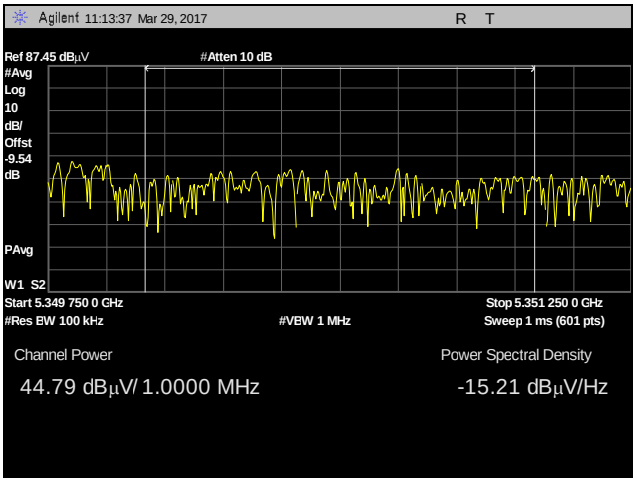
Band Edge, 5350 MHz, 22 dBi



Plot 335. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 22 dBi, 10 MHz, 5245 MHz, PWR Integration



Plot 336. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 22 dBi, 20 MHz, 5240 MHz, PWR Integration



Plot 337. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 22 dBi, 30 MHz, 5235 MHz, PWR Integration

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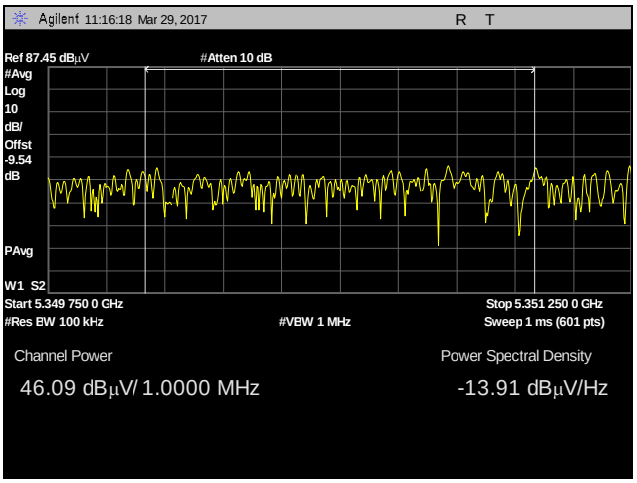
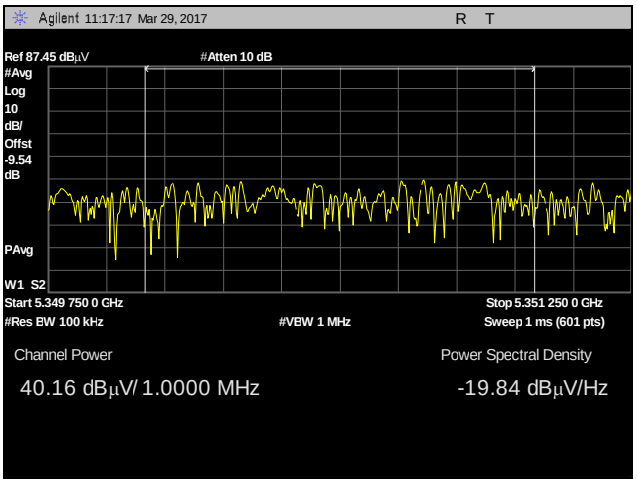
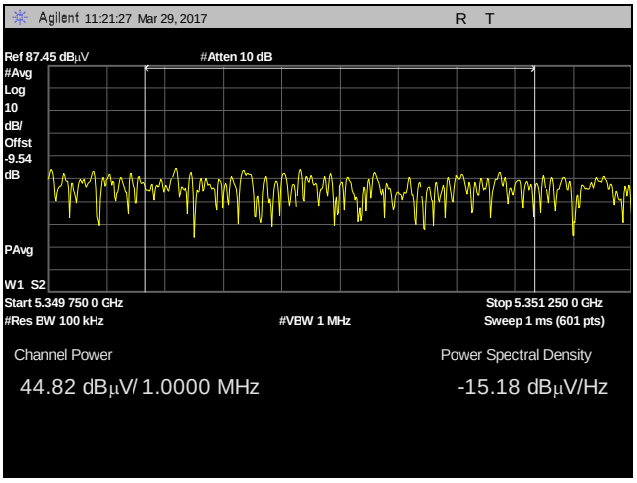


Plot 338. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 22 dBi, 40 MHz, 5230 MHz, PWR Integration



Plot 339. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 22 dBi, 50 MHz, 5225 MHz, PWR Integration



Plot 340. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 22 dBi, 60 MHz, 5220 MHz, PWR Integration

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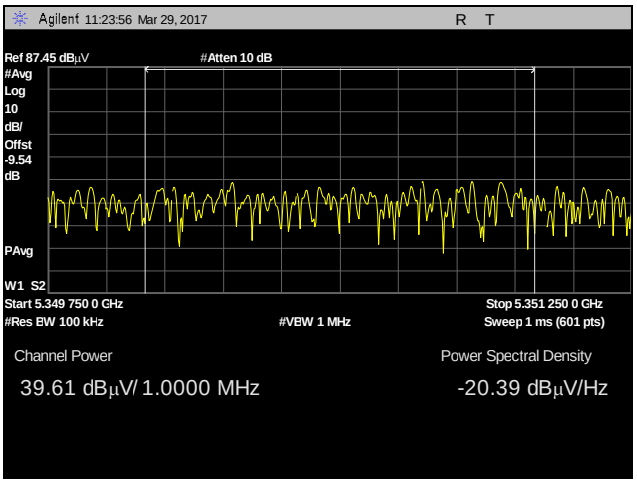
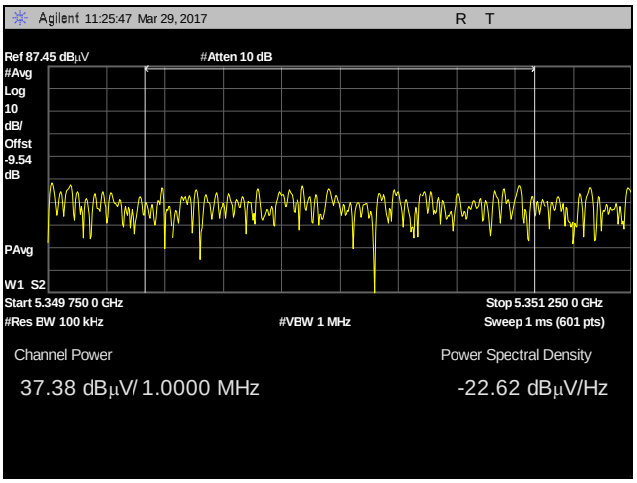
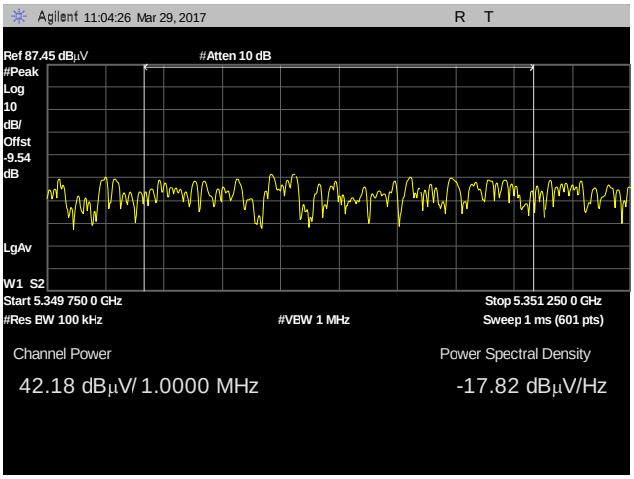


Plot 341. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 22 dBi, 80 MHz, 5210 MHz, PWR Integration



Plot 342. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 22 dBi, 100 MHz, 5200 MHz, PWR Integration



Plot 343. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 22 dBi, 10 MHz, 5245 MHz, PWR Integration

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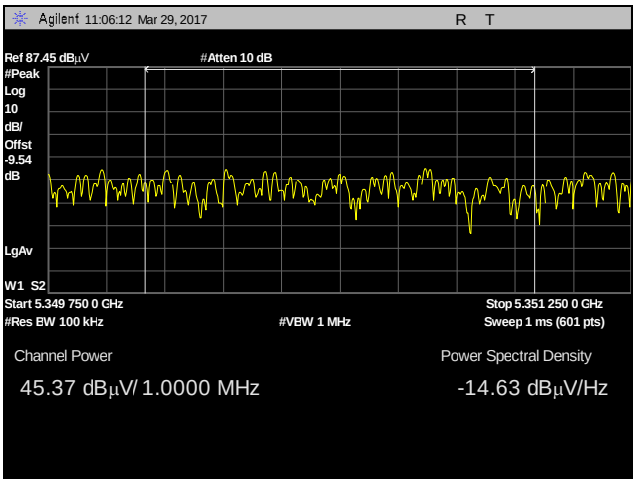
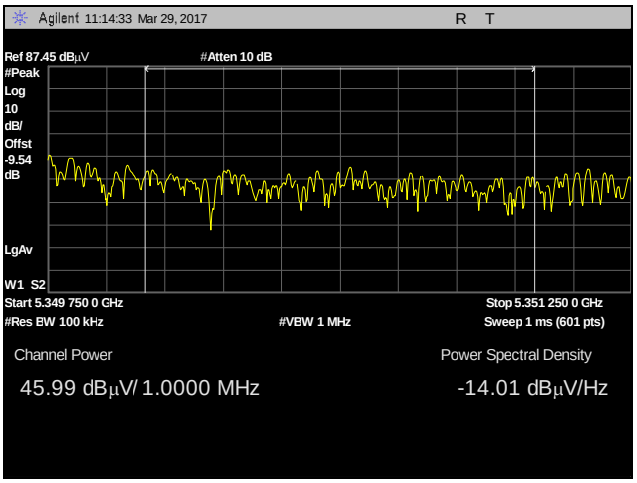
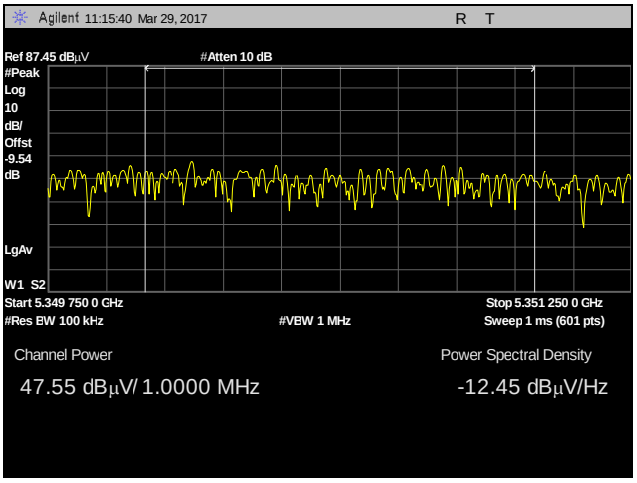


Plot 344. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 22 dBi, 20 MHz, 5240 MHz, PWR Integration



Plot 345. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 22 dBi, 30 MHz, 5235 MHz, PWR Integration



Plot 346. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 22 dBi, 40 MHz, 5230 MHz, PWR Integration

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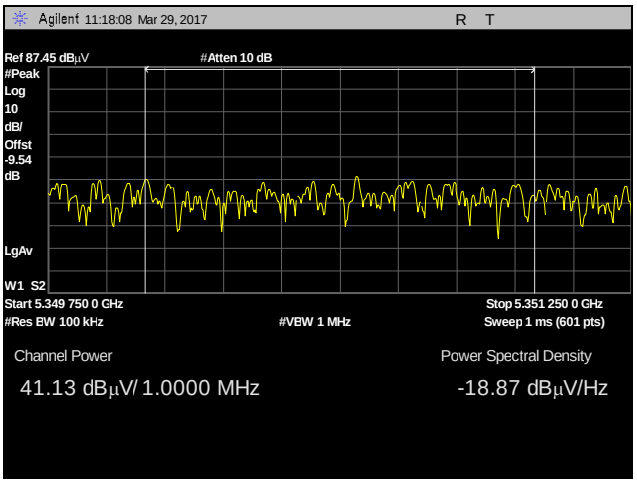
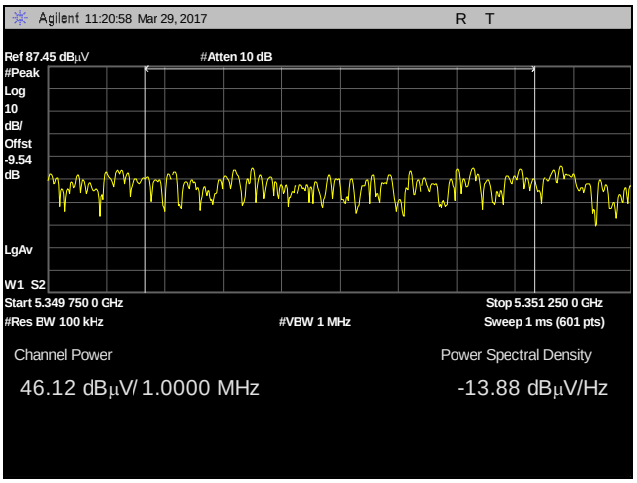
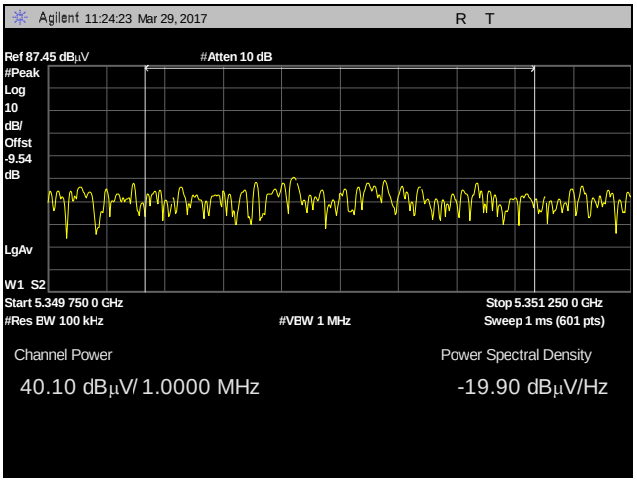


Plot 347. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 22 dBi, 50 MHz, 5225 MHz, PWR Integration



Plot 348. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 22 dBi, 60 MHz, 5220 MHz, PWR Integration



Plot 349. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 22 dBi, 80 MHz, 5210 MHz, PWR Integration

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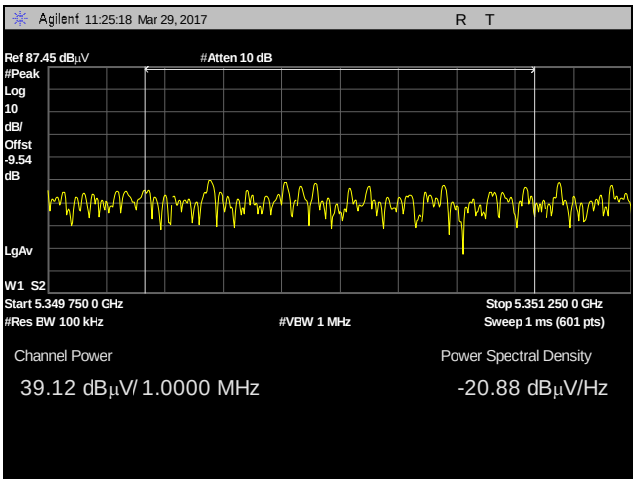

Plot 350. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 22 dBi, 100 MHz, 5200 MHz, PWR Integration

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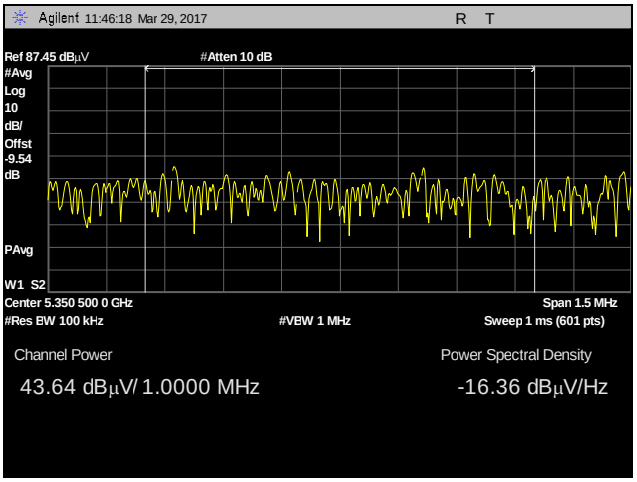
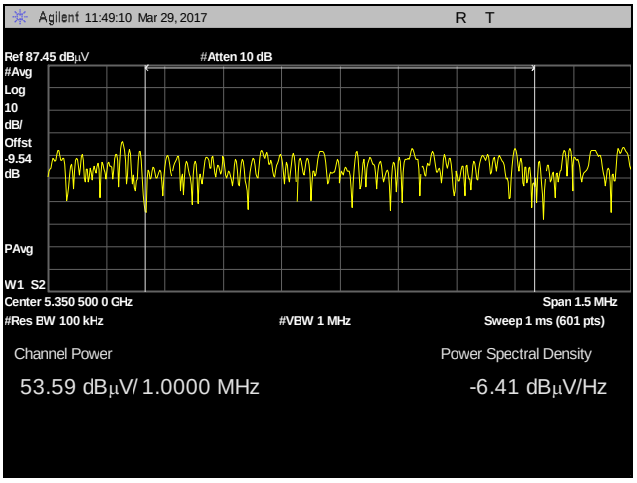
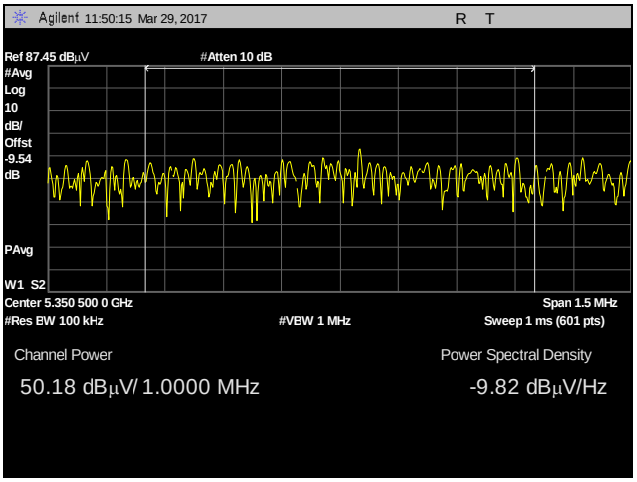
Band Edge, 5350 MHz, 23 dBi



Plot 351. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 23 dBi, 10 MHz, 5245 MHz, PWR Integration



Plot 352. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 23 dBi, 20 MHz, 5240 MHz, PWR Integration



Plot 353. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 23 dBi, 30 MHz, 5235 MHz, PWR Integration

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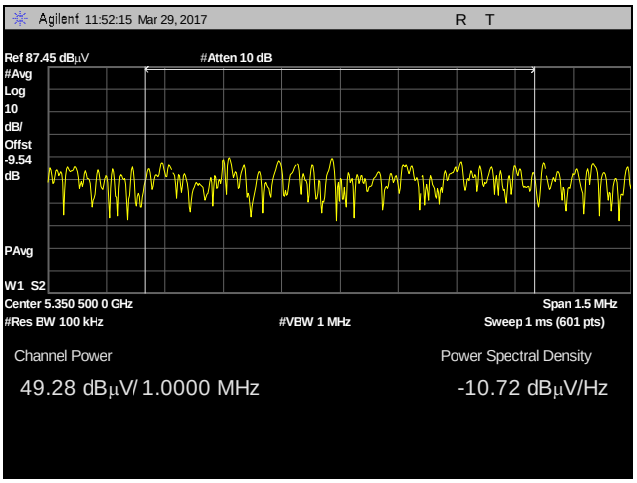
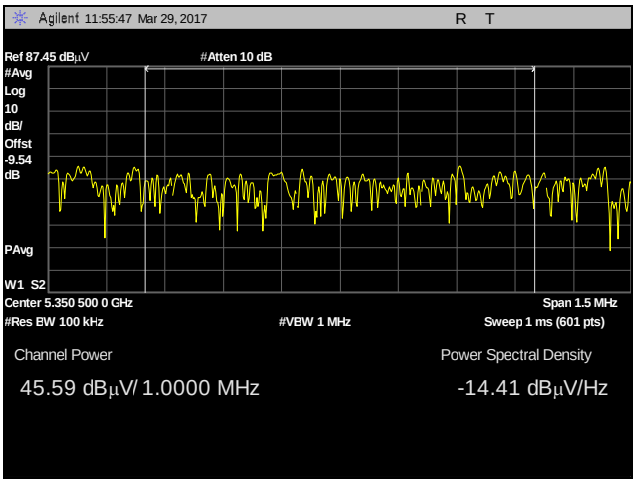
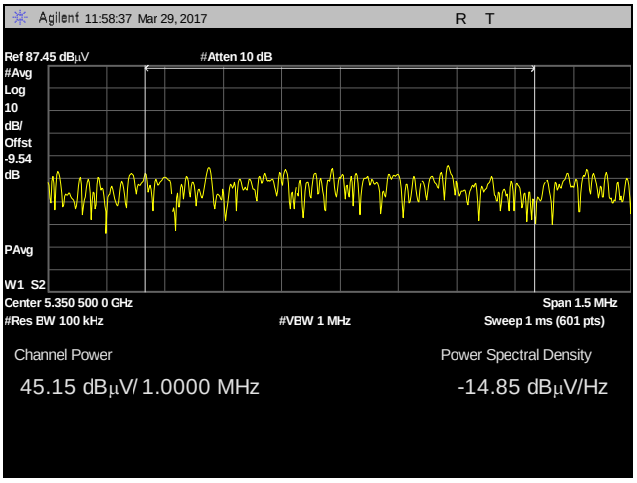


Plot 354. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 23 dBi, 40 MHz, 5230 MHz, PWR Integration



Plot 355. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 23 dBi, 50 MHz, 5225 MHz, PWR Integration



Plot 356. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 23 dBi, 60 MHz, 5220 MHz, PWR Integration

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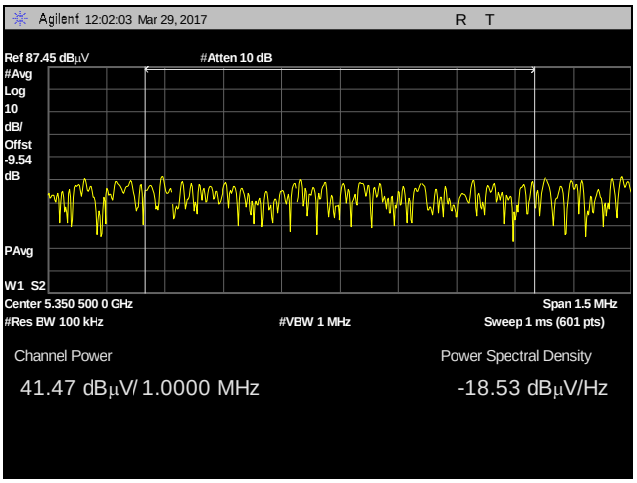
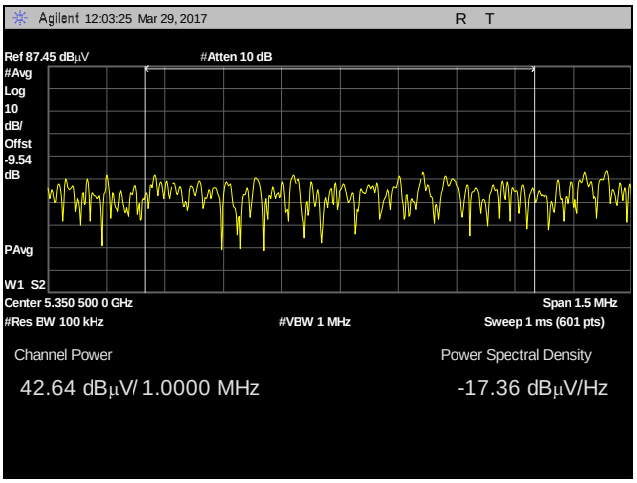
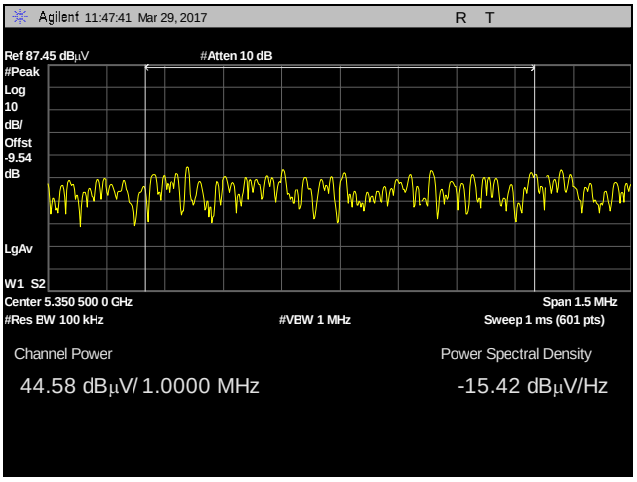


Plot 357. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 23 dBi, 80 MHz, 5210 MHz, PWR Integration



Plot 358. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 23 dBi, 100 MHz, 5200 MHz, PWR Integration



Plot 359. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 23 dBi, 10 MHz, 5245 MHz, PWR Integration

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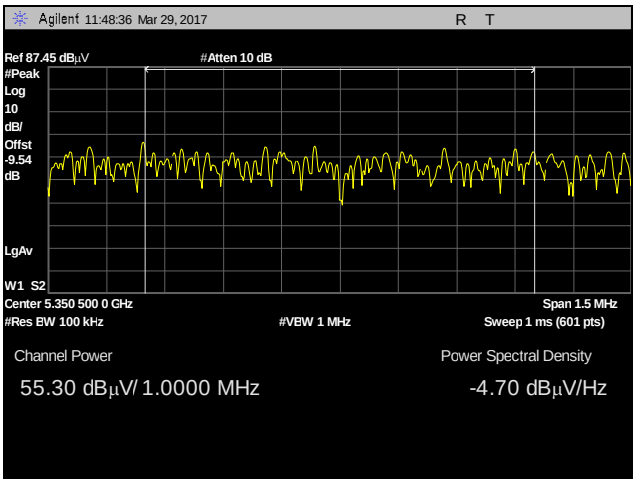
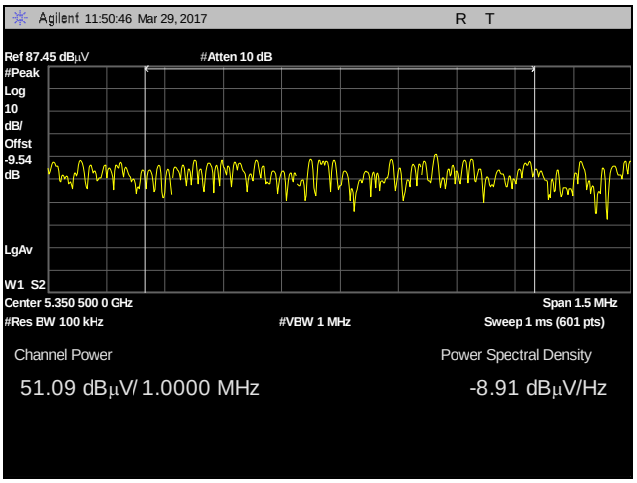
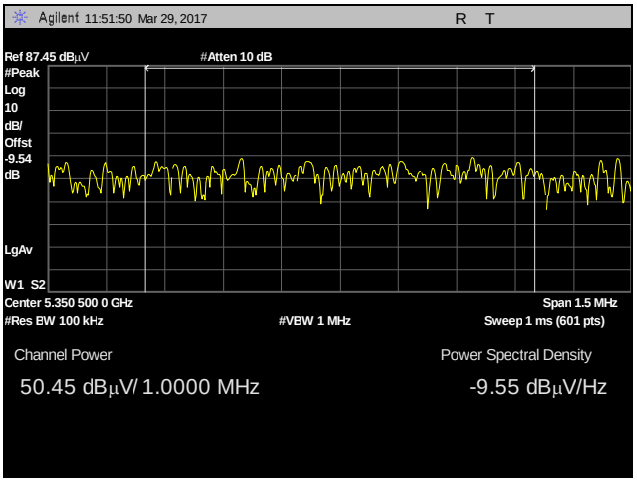


Plot 360. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 23 dBi, 20 MHz, 5240 MHz, PWR Integration



Plot 361. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 23 dBi, 30 MHz, 5235 MHz, PWR Integration



Plot 362. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 23 dBi, 40 MHz, 5230 MHz, PWR Integration

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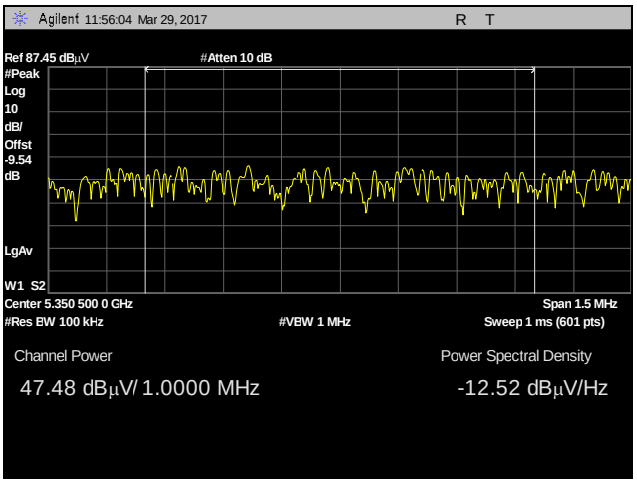
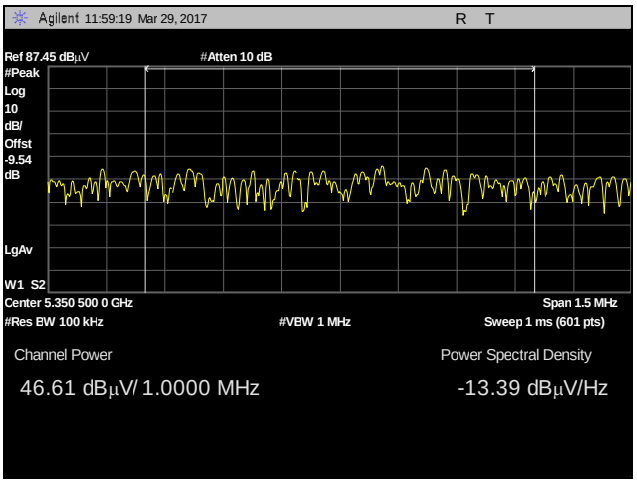
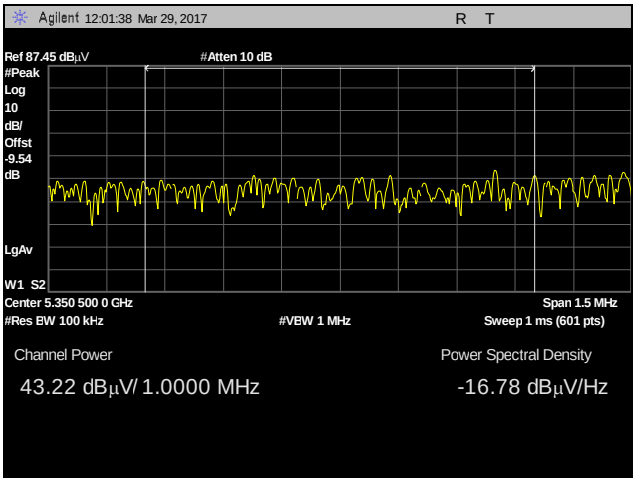


Plot 363. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 23 dBi, 50 MHz, 5225 MHz, PWR Integration



Plot 364. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 23 dBi, 60 MHz, 5220 MHz, PWR Integration



Plot 365. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 23 dBi, 80 MHz, 5210 MHz, PWR Integration

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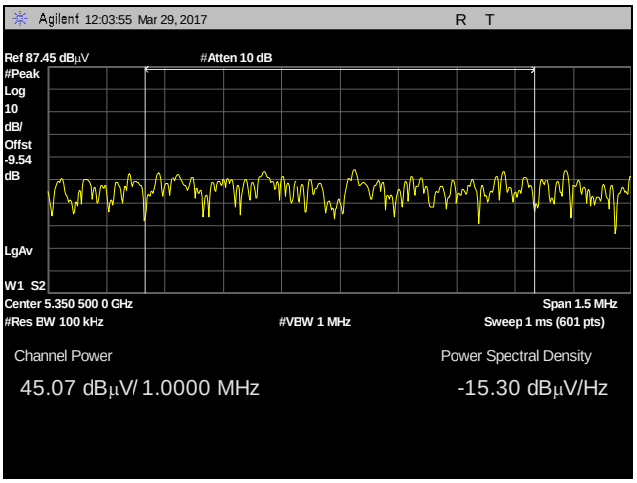

Plot 366. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 23 dBi, 100 MHz, 5200 MHz, PWR Integration

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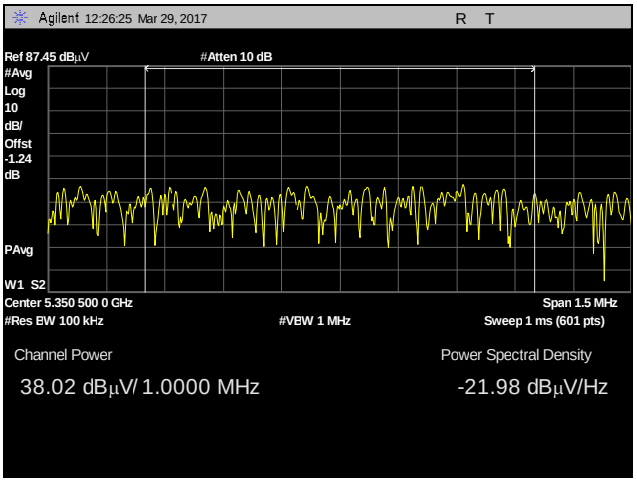
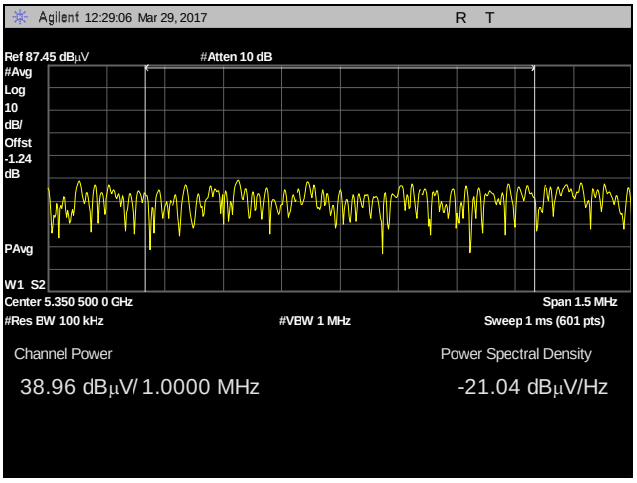
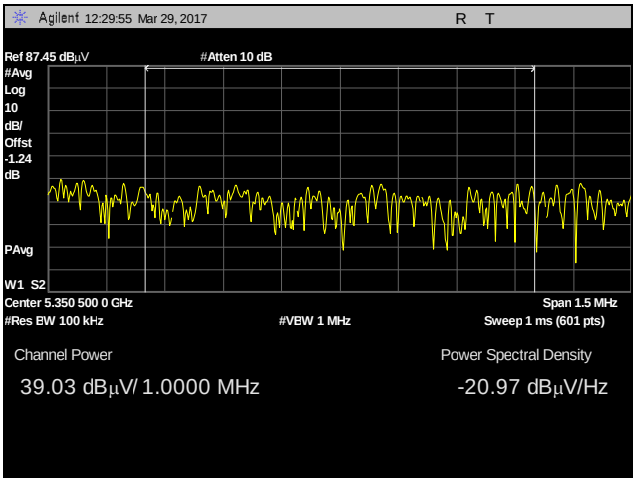
Band Edge, 5350 MHz, 34 dBi



Plot 367. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 34 dBi, 10 MHz, 5245 MHz, PWR Integration



Plot 368. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 34 dBi, 20 MHz, 5240 MHz, PWR Integration



Plot 369. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 34 dBi, 30 MHz, 5235 MHz, PWR Integration

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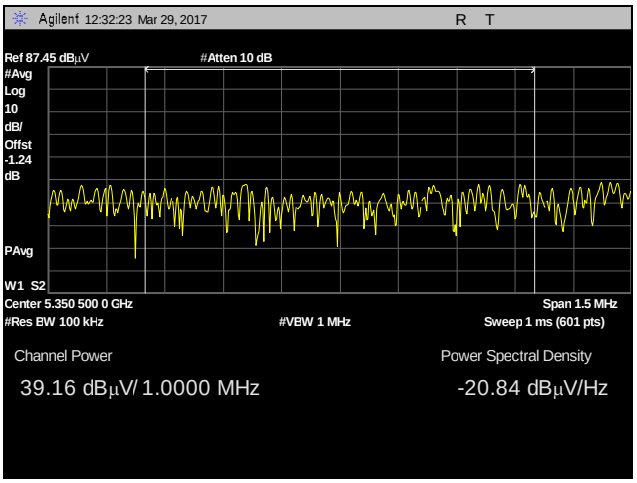
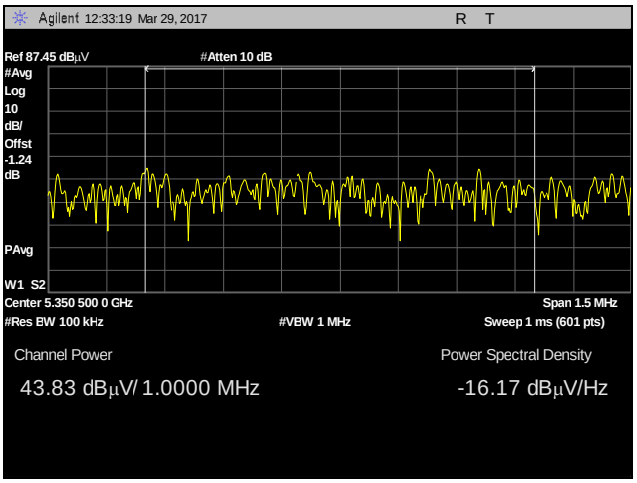
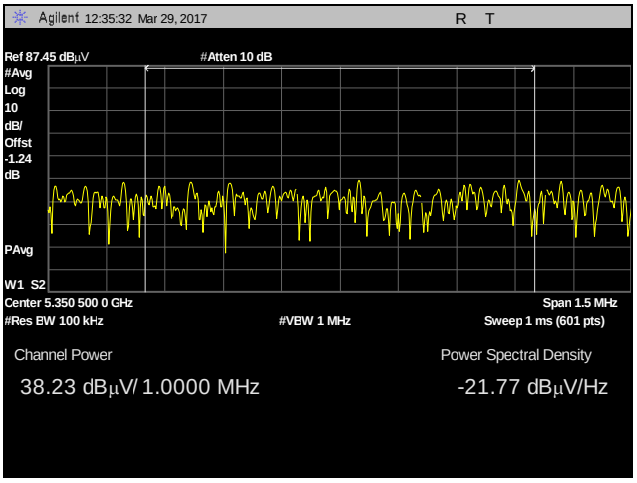


Plot 370. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 34 dBi, 40 MHz, 5230 MHz, PWR Integration



Plot 371. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 34 dBi, 50 MHz, 5225 MHz, PWR Integration



Plot 372. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 34 dBi, 60 MHz, 5220 MHz, PWR Integration

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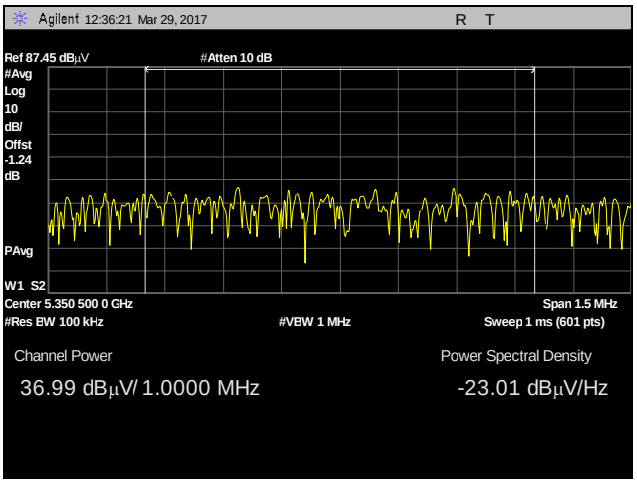
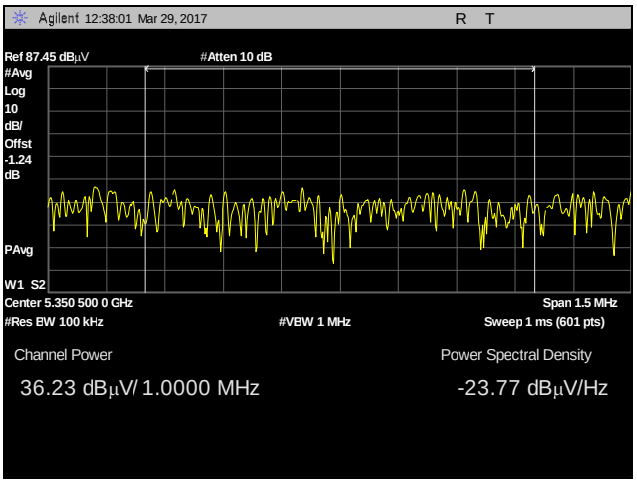
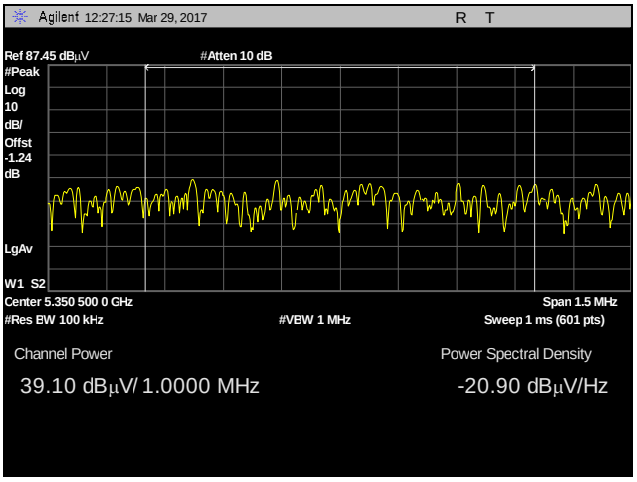


Plot 373. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 34 dBi, 80 MHz, 5210 MHz, PWR Integration



Plot 374. Radiated Spurious Emissions, Average, 5350 MHz Band Edge, 34 dBi, 100 MHz, 5200 MHz, PWR Integration



Plot 375. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 34 dBi, 10 MHz, 5245 MHz, PWR Integration

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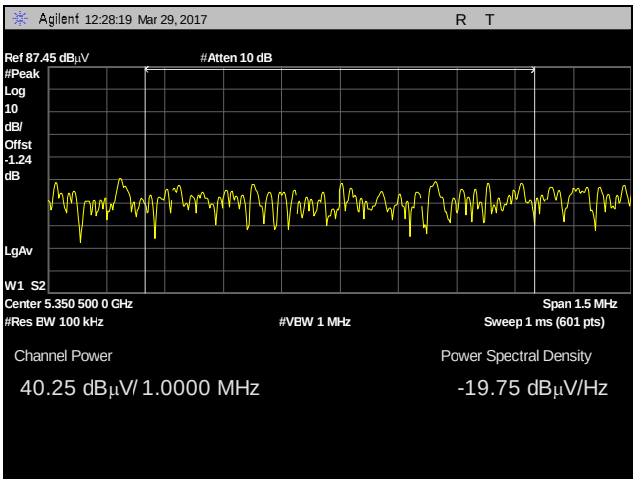
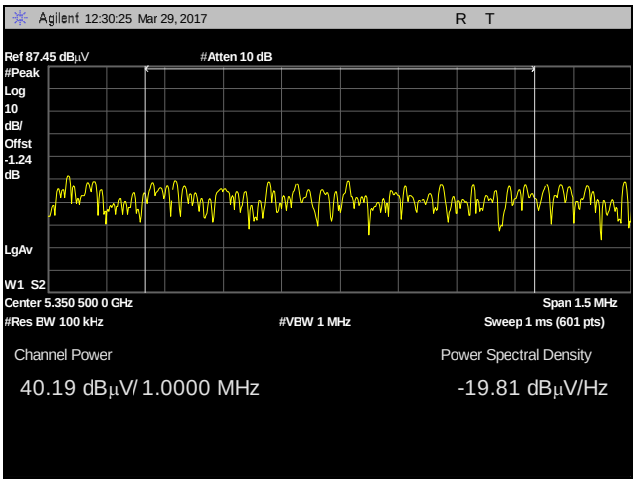
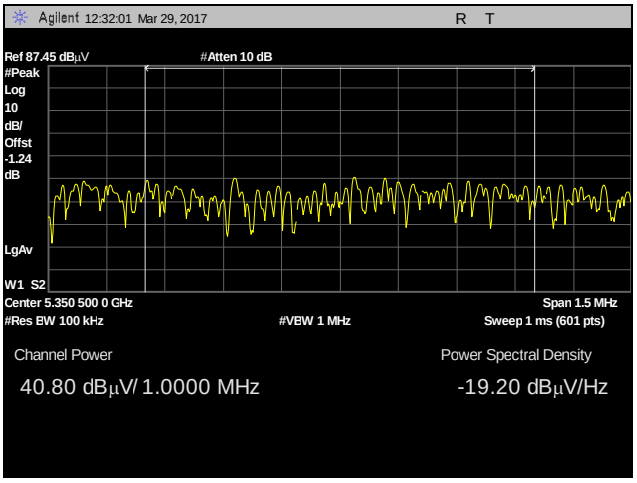


Plot 376. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 34 dBi, 20 MHz, 5240 MHz, PWR Integration



Plot 377. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 34 dBi, 30 MHz, 5235 MHz, PWR Integration



Plot 378. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 34 dBi, 40 MHz, 5230 MHz, PWR Integration

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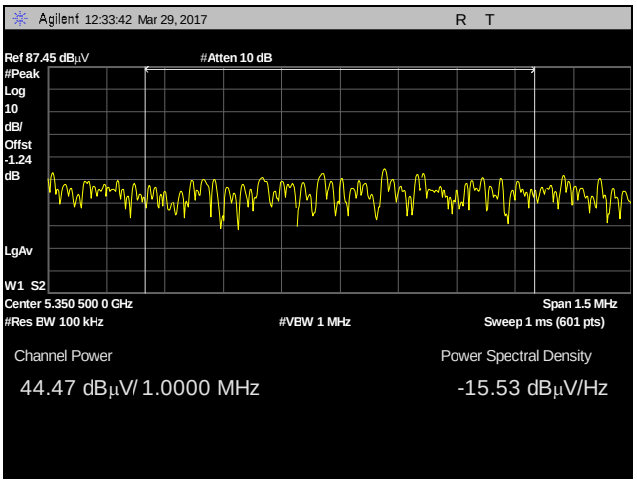
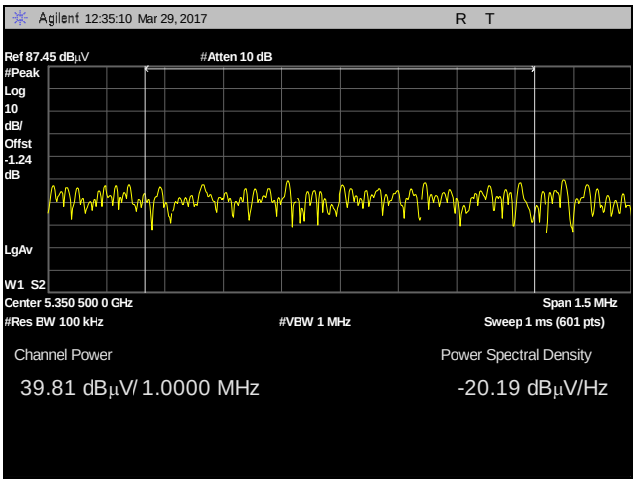
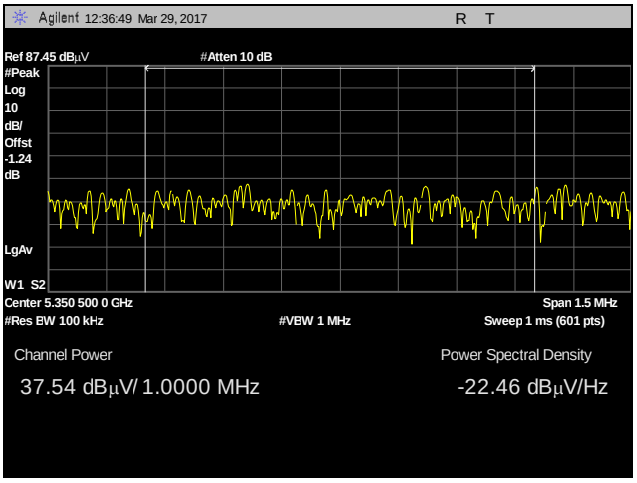


Plot 379. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 34 dBi, 50 MHz, 5225 MHz, PWR Integration



Plot 380. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 34 dBi, 60 MHz, 5220 MHz, PWR Integration



Plot 381. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 34 dBi, 80 MHz, 5210 MHz, PWR Integration

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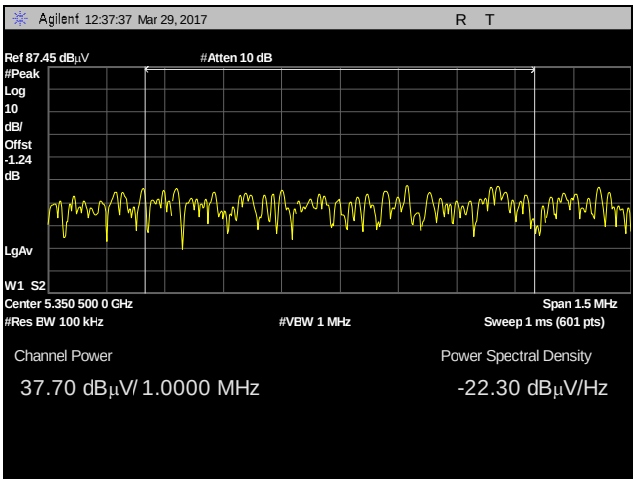

Plot 382. Radiated Spurious Emissions, Peak, 5350 MHz Band Edge, 34 dBi, 100 MHz, 5200 MHz, PWR Integration

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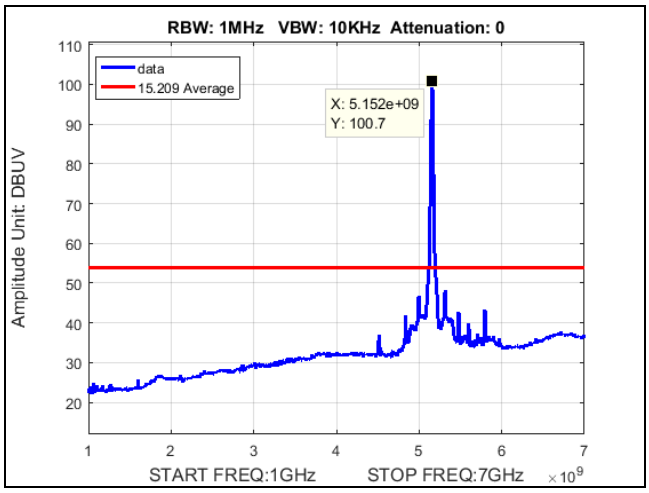
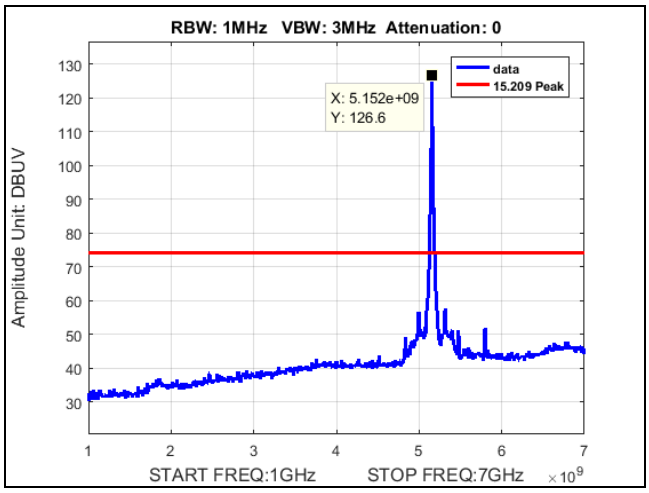
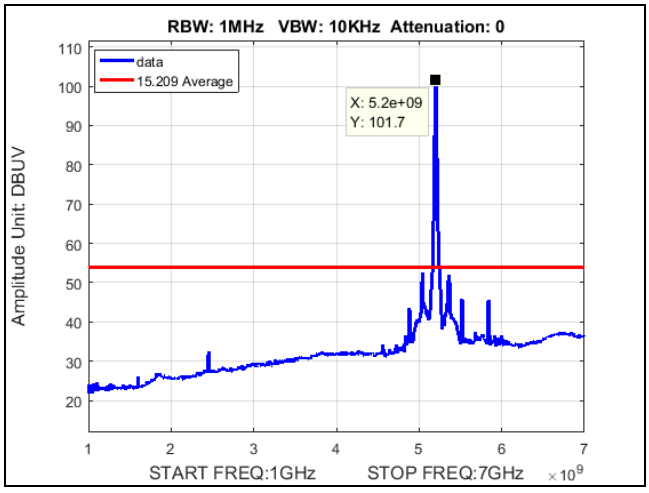


Plot 383. Undesirable Emissions, Test, BW 10M, Ch 5155M, AVG, radiated spurious, 22dBi ant, 1-7GHz



Plot 384. Undesirable Emissions, Test, BW 10M, Ch 5155M, PK, radiated spurious, 22dBi ant, 1-7GHz



Plot 385. Undesirable Emissions, Test, BW 10M, Ch 5200M, AVG, radiated spurious, 22dBi ant, 1-7GHz

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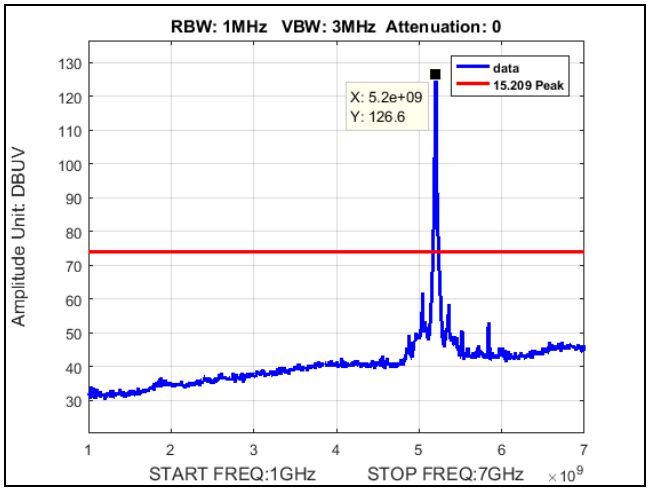
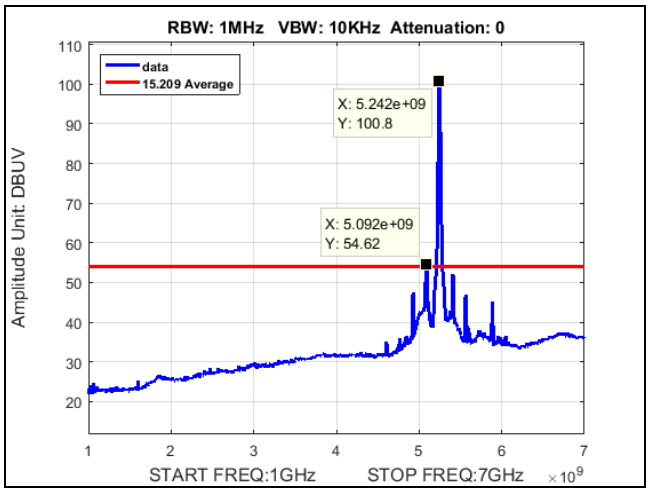
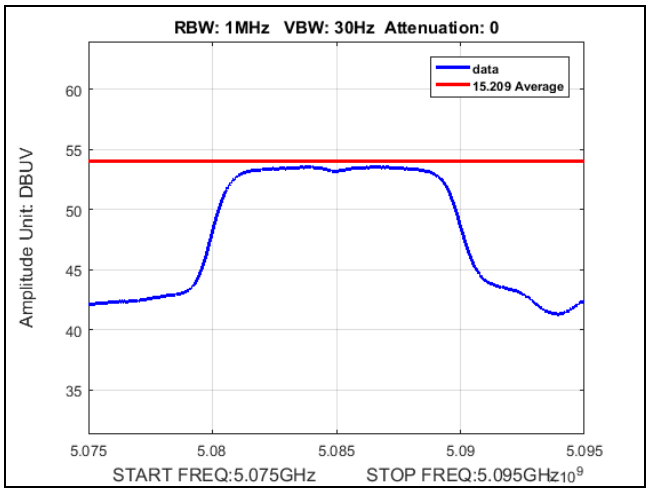


Plot 386. Undesirable Emissions, Test, BW 10M, Ch 5200M, PK, radiated spurious, 22dBi ant, 1-7GHz



Plot 387. Undesirable Emissions, Test, BW 10M, Ch 5245M, AVG, radiated spurious, 22dBi ant, 1-7GHz



Plot 388. Undesirable Emissions, Test, BW 10M, Ch 5245M, AVG, radiated spurious, 22dBi ant, zoomed in 5.085GHz spurious emission

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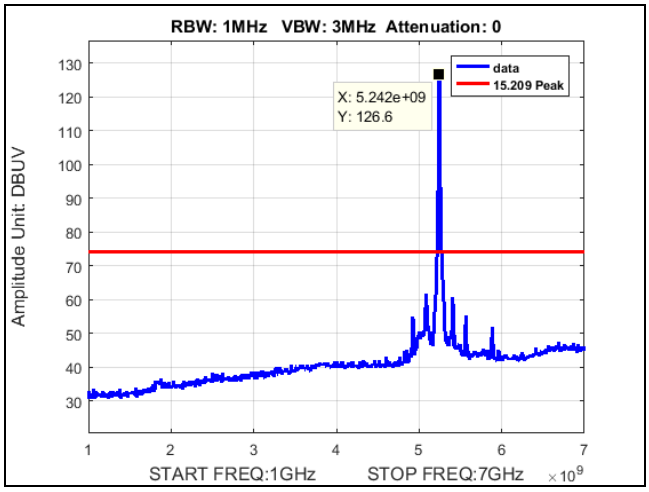
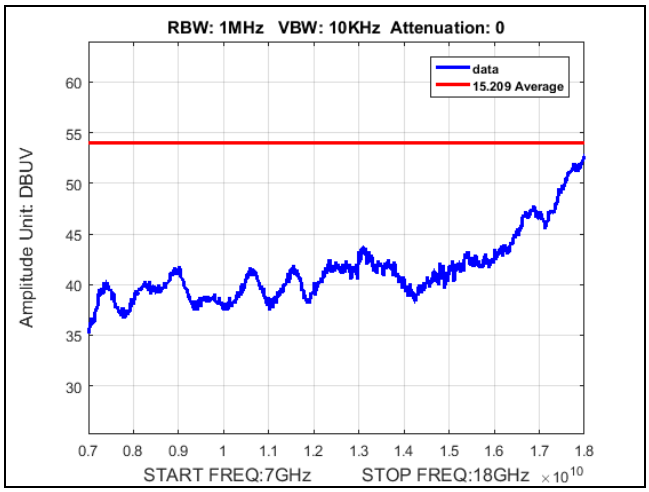
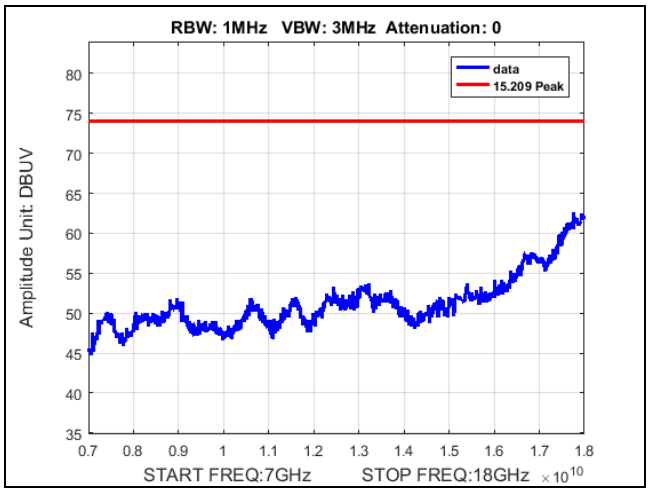


Plot 389. Undesirable Emissions, Test, BW 10M, Ch 5245M, PK, radiated spurious, 22dBi ant, 1-7GHz



Plot 390. Undesirable Emissions, Test, Worst Case, AVG, radiated spurious, 22dBi ant, 7-18GHz



Plot 391. Undesirable Emissions, Test, Worst Case, PK, radiated spurious, 22dBi ant, 7-18GHz

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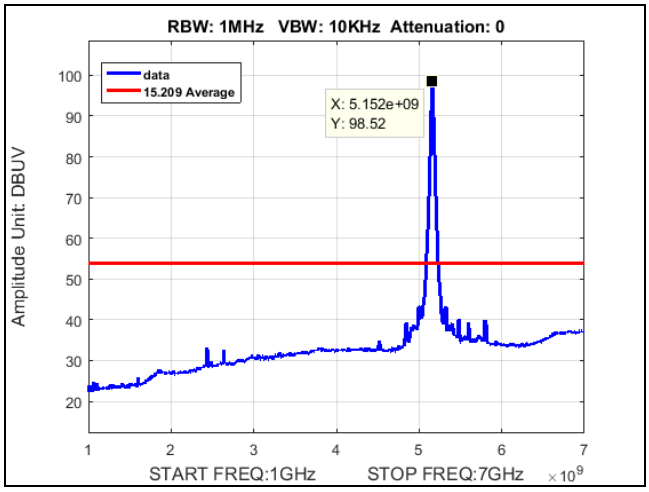
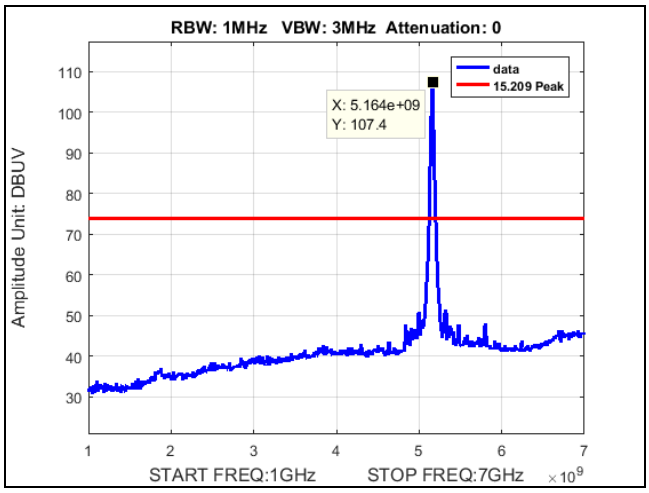
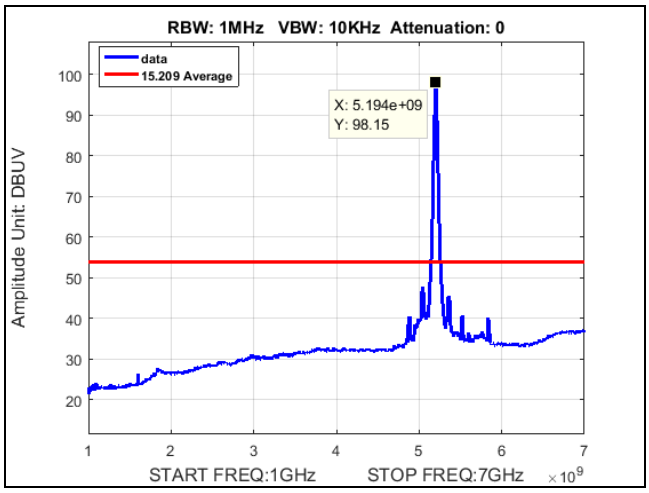


Plot 392. Undesirable Emissions, Test, BW 20M, Ch 5160M, AVG, radiated spurious, 22dBi ant, 1-7GHz



Plot 393. Undesirable Emissions, Test, BW 20M, Ch 5160M, PK, radiated spurious, 22dBi ant, 1-7GHz



Plot 394. Undesirable Emissions, Test, BW 20M, Ch 5200M, AVG, radiated spurious, 22dBi ant, 1-7GHz

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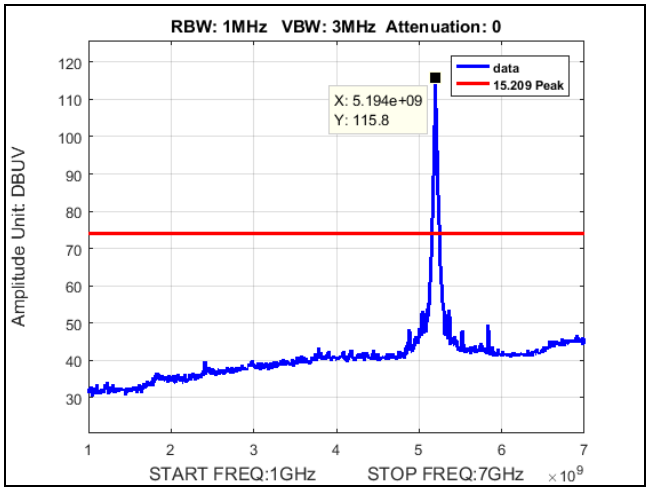
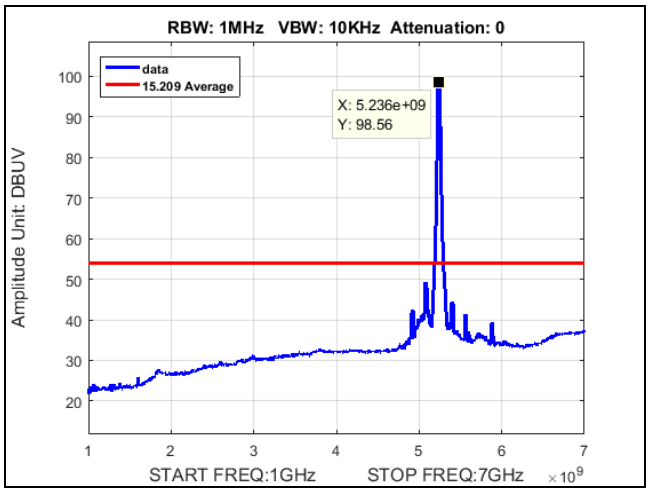
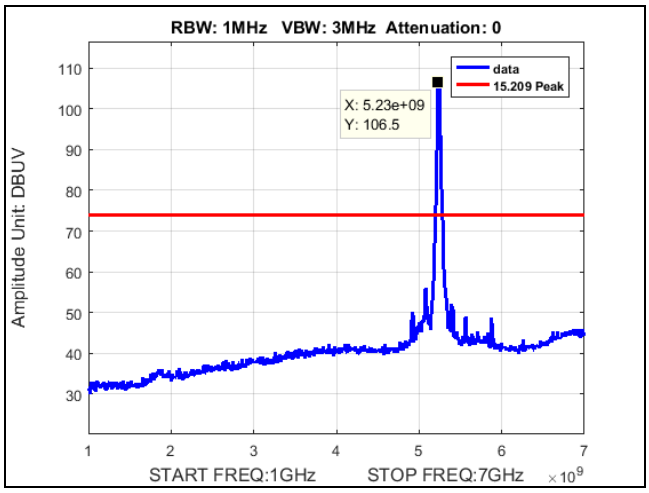


Plot 395. Undesirable Emissions, Test, BW 20M, Ch 5200M, PK, radiated spurious, 22dBi ant, 1-7GHz



Plot 396. Undesirable Emissions, Test, BW 20M, Ch 5240M, AVG, radiated spurious, 22dBi ant, 1-7GHz



Plot 397. Undesirable Emissions, Test, BW 20M, Ch 5240M, PK, radiated spurious, 22dBi ant, 1-7GHz

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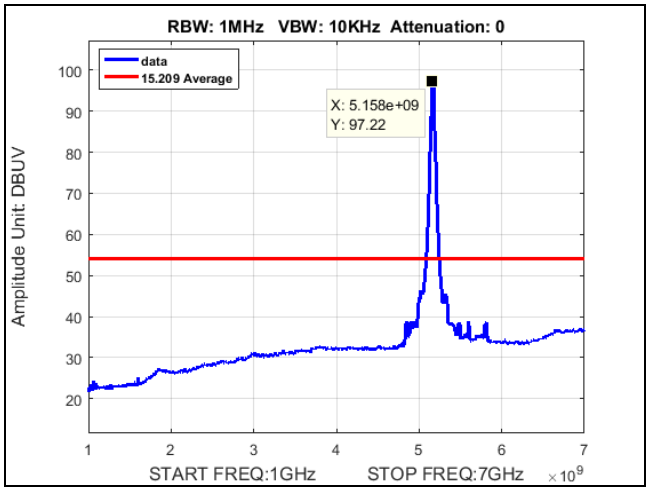
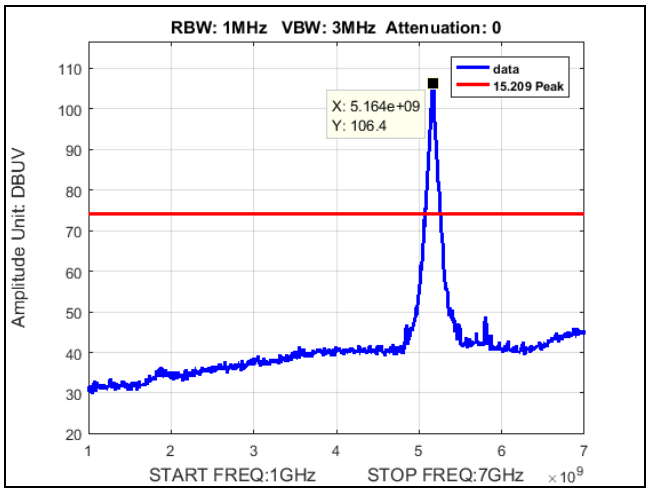
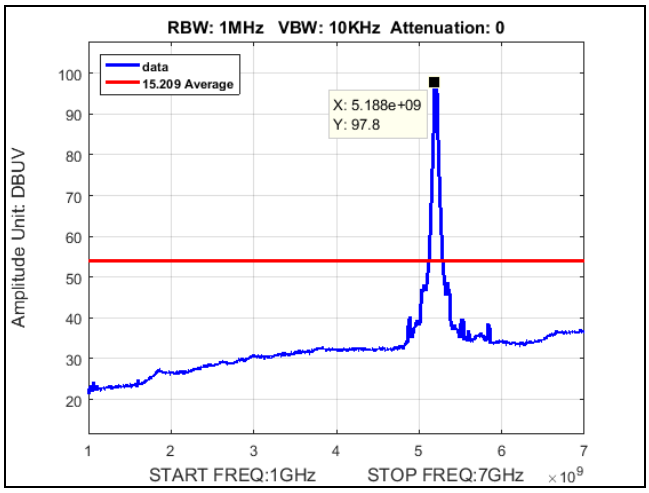


Plot 398. Undesirable Emissions, Test, BW 30M, Ch 5165M, AVG, radiated spurious, 22dBi ant, 1-7GHz



Plot 399. Undesirable Emissions, Test, BW 30M, Ch 5165M, PK, radiated spurious, 22dBi ant, 1-7GHz



Plot 400. Undesirable Emissions, Test, BW 30M, Ch 5200M, AVG, radiated spurious, 22dBi ant, 1-7GHz

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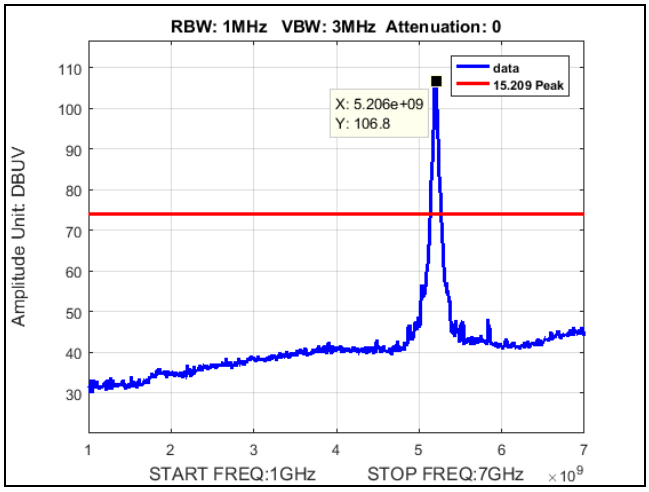
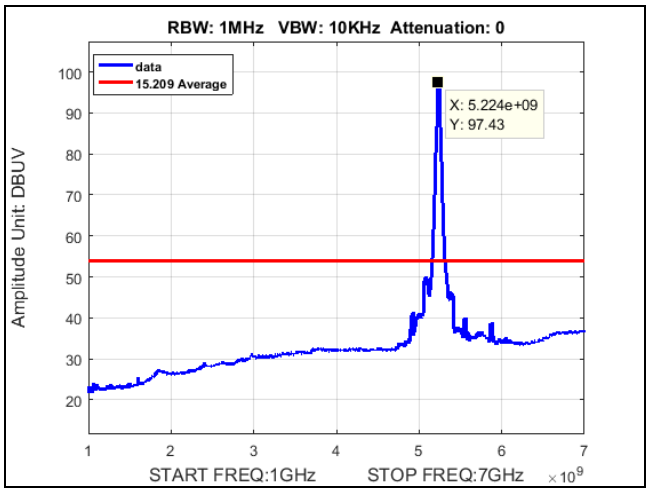
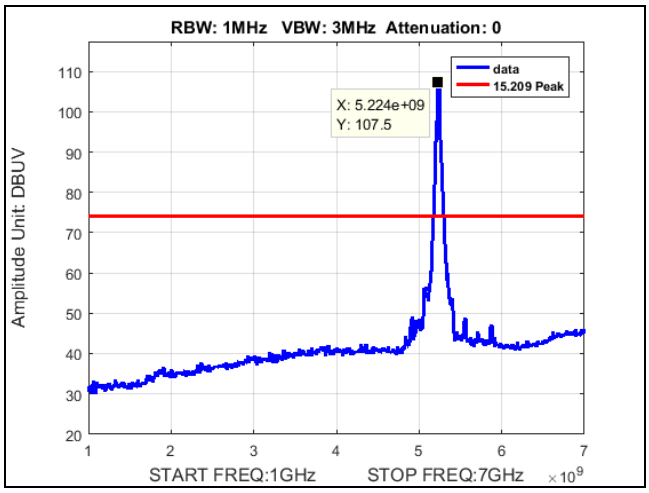


Plot 401. Undesirable Emissions, Test, BW 30M, Ch 5200M, PK, radiated spurious, 22dBi ant, 1-7GHz



Plot 402. Undesirable Emissions, Test, BW 30M, Ch 5235M, AVG, radiated spurious, 22dBi ant, 1-7GHz



Plot 403. Undesirable Emissions, Test, BW 30M, Ch 5235M, PK, radiated spurious, 22dBi ant, 1-7GHz

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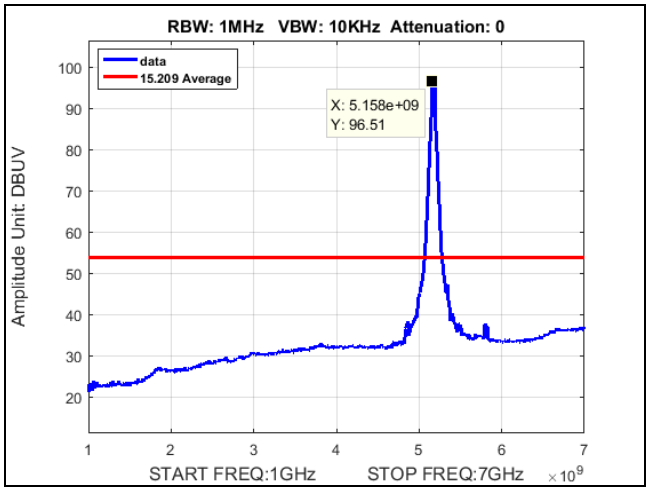
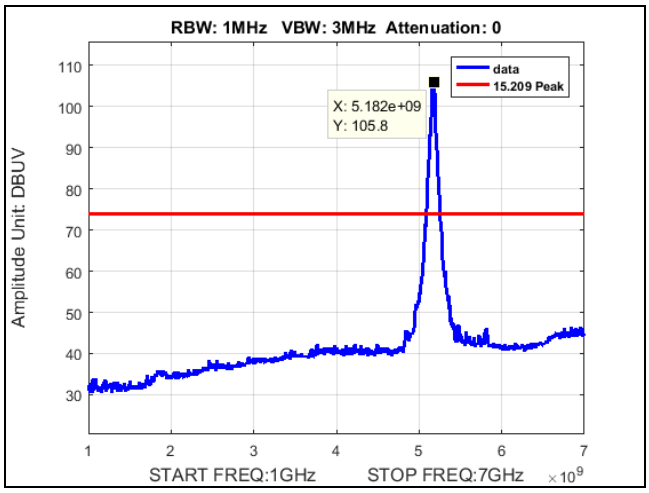
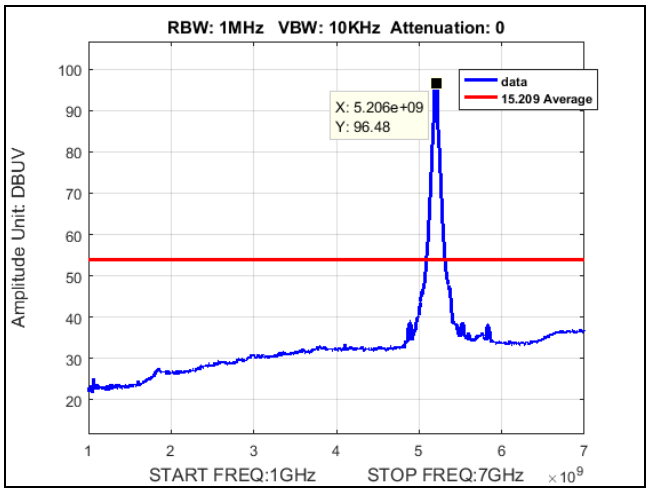


Plot 404. Undesirable Emissions, Test, BW 40M, Ch 5170M, AVG, radiated spurious, 22dBi ant, 1-7GHz



Plot 405. Undesirable Emissions, Test, BW 40M, Ch 5170M, PK, radiated spurious, 22dBi ant, 1-7GHz



Plot 406. Undesirable Emissions, Test, BW 40M, Ch 5200M, AVG, radiated spurious, 22dBi ant, 1-7GHz

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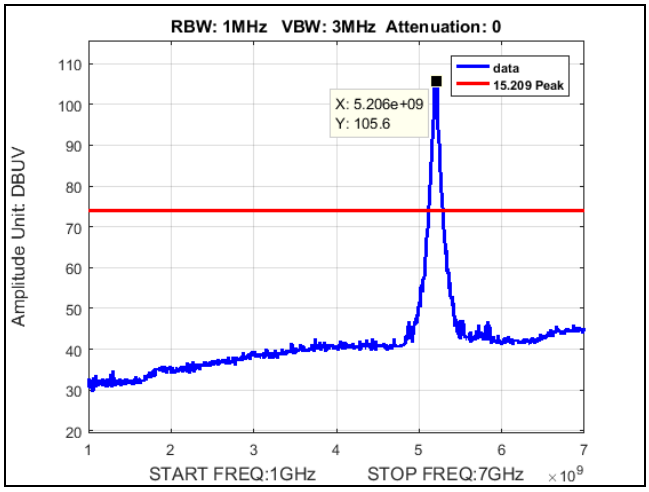
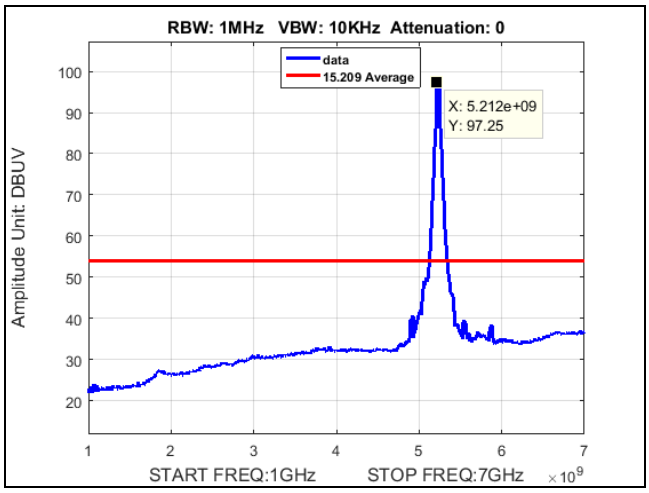
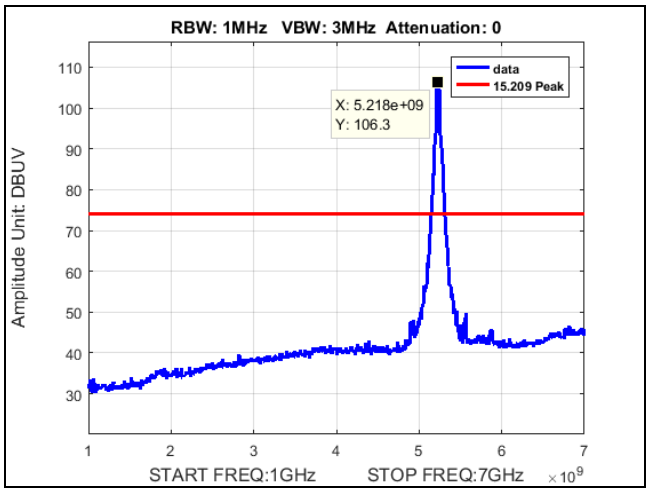


Plot 407. Undesirable Emissions, Test, BW 40M, Ch 5200M, PK, radiated spurious, 22dBi ant, 1-7GHz



Plot 408. Undesirable Emissions, Test, BW 40M, Ch 5230M, AVG, radiated spurious, 22dBi ant, 1-7GHz



Plot 409. Undesirable Emissions, Test, BW 40M, Ch 5230M, PK, radiated spurious, 22dBi ant, 1-7GHz

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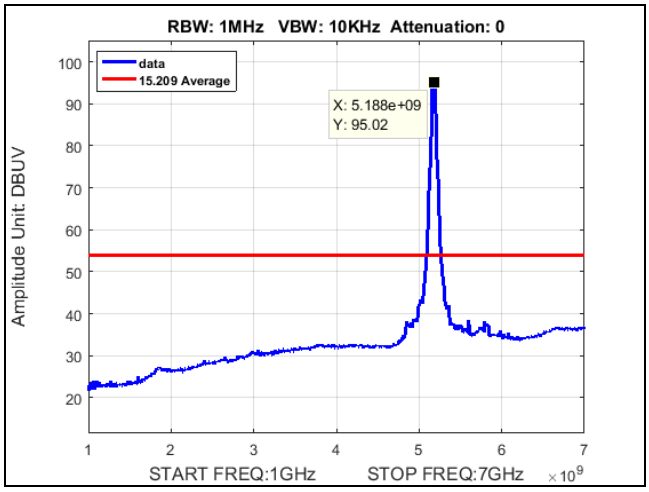
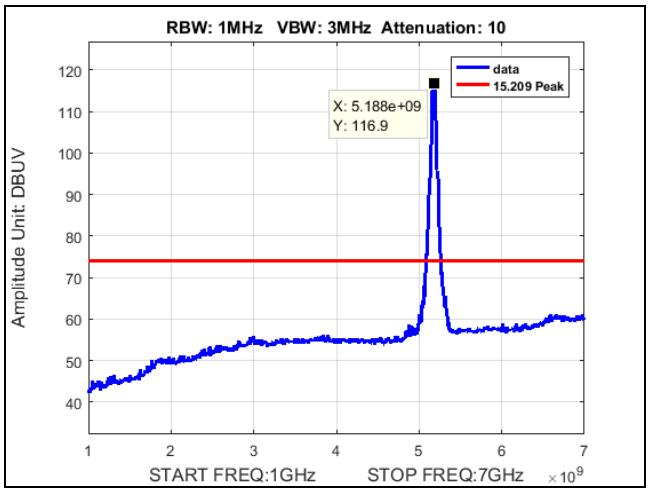
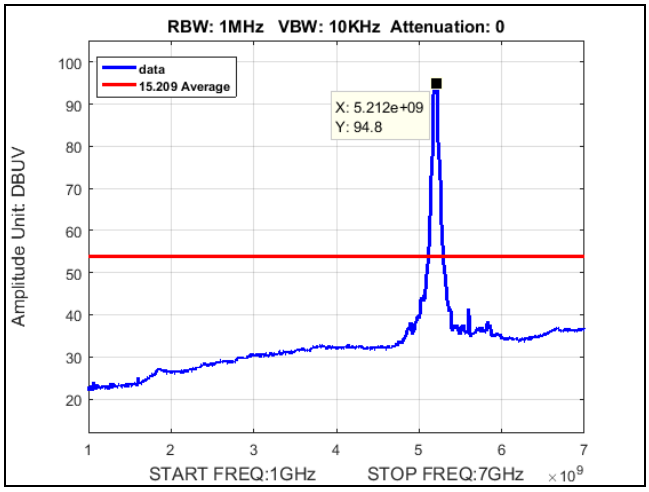


Plot 410. Undesirable Emissions, Test, BW 50M, Ch 5175M, AVG, radiated spurious, 22dBi ant, 1-7GHz



Plot 411. Undesirable Emissions, Test, BW 50M, Ch 5175M, PK, radiated spurious, 22dBi ant, 1-7GHz



Plot 412. Undesirable Emissions, Test, BW 50M, Ch 5200M, AVG, radiated spurious, 22dBi ant, 1-7GHz

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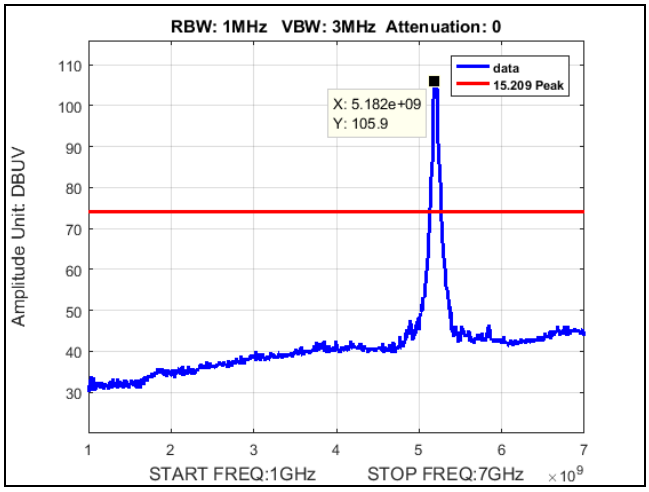
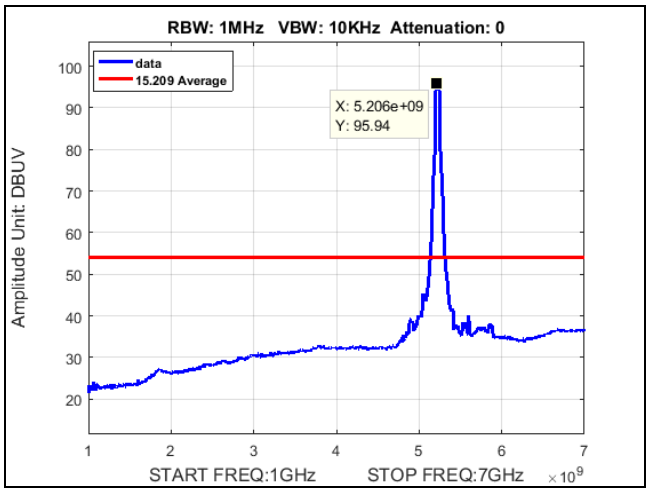
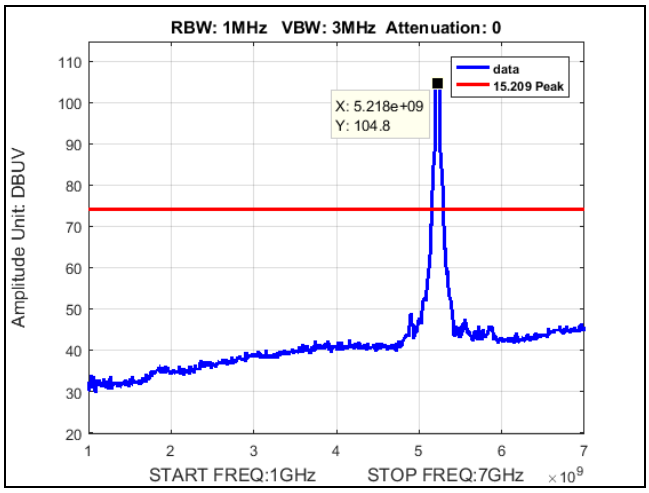


Plot 413. Undesirable Emissions, Test, BW 50M, Ch 5200M, PK, radiated spurious, 22dBi ant, 1-7GHz



Plot 414. Undesirable Emissions, Test, BW 50M, Ch 5225M, AVG, radiated spurious, 22dBi ant, 1-7GHz



Plot 415. Undesirable Emissions, Test, BW 50M, Ch 5225M, PK, radiated spurious, 22dBi ant, 1-7GHz

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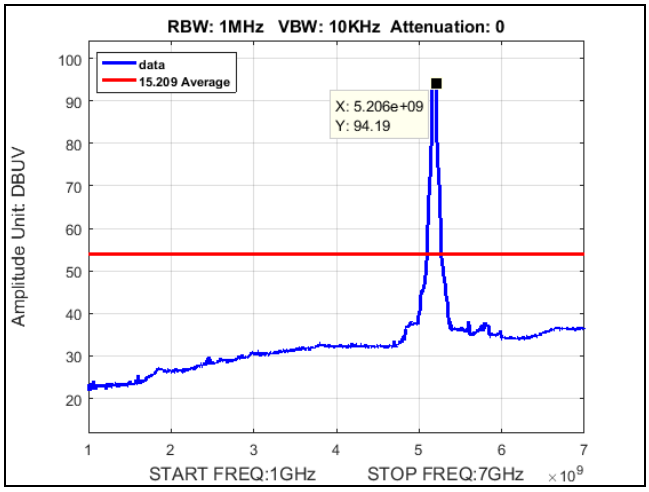
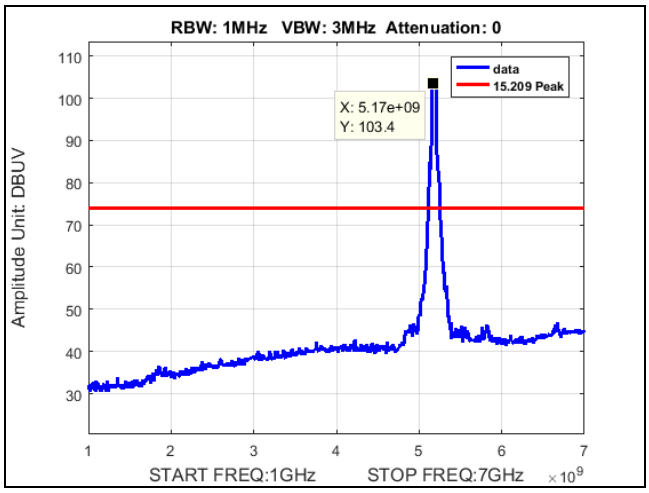
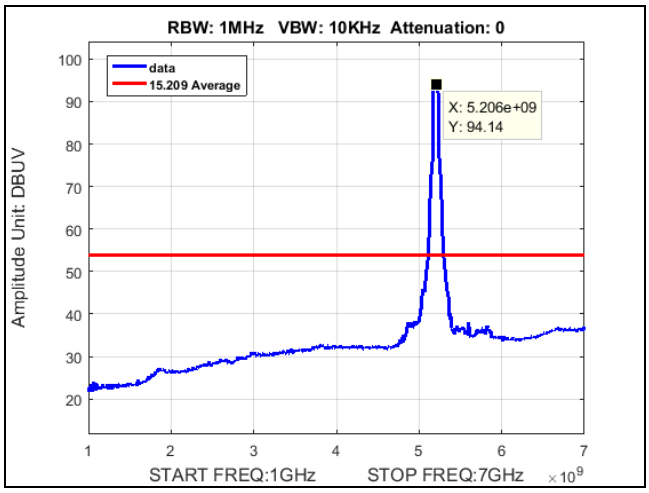


Plot 416. Undesirable Emissions, Test, BW 60M, Ch 5180M, AVG, radiated spurious, 22dBi ant, 1-7GHz



Plot 417. Undesirable Emissions, Test, BW 60M, Ch 5180M, PK, radiated spurious, 22dBi ant, 1-7GHz



Plot 418. Undesirable Emissions, Test, BW 60M, Ch 5200M, AVG, radiated spurious, 22dBi ant, 1-7GHz

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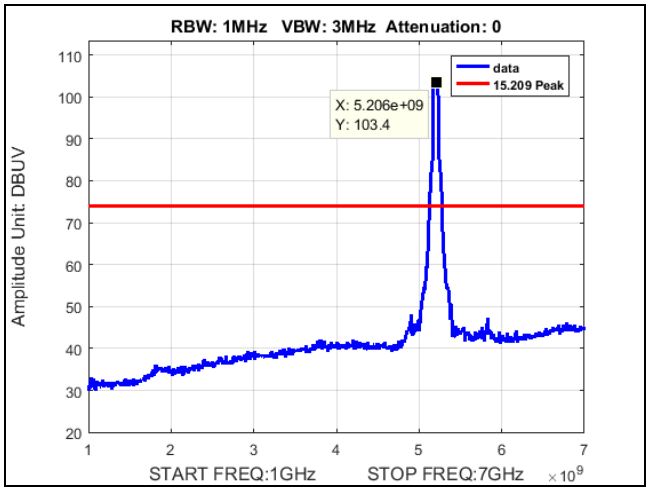
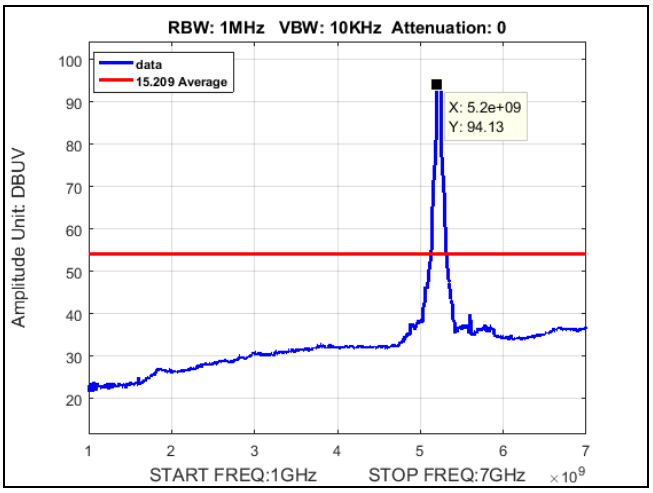
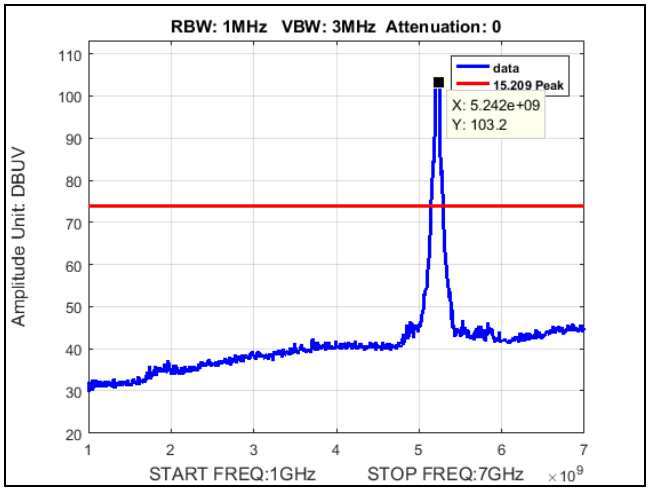


Plot 419. Undesirable Emissions, Test, BW 60M, Ch 5200M, PK, radiated spurious, 22dBi ant, 1-7GHz



Plot 420. Undesirable Emissions, Test, BW 60M, Ch 5220M, AVG, radiated spurious, 22dBi ant, 1-7GHz



Plot 421. Undesirable Emissions, Test, BW 60M, Ch 5220M, PK, radiated spurious, 22dBi ant, 1-7GHz

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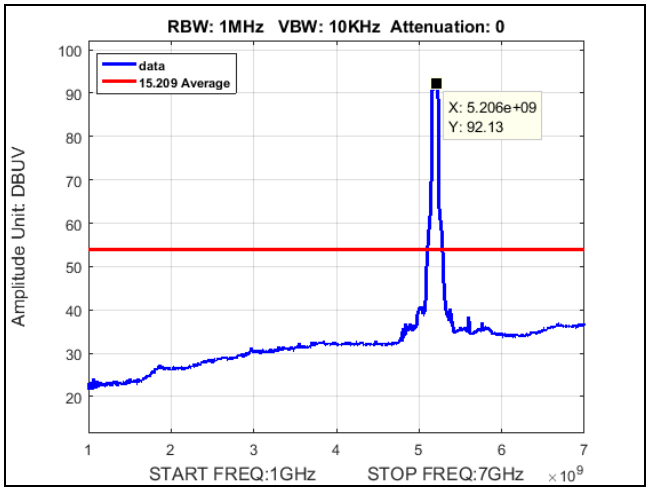
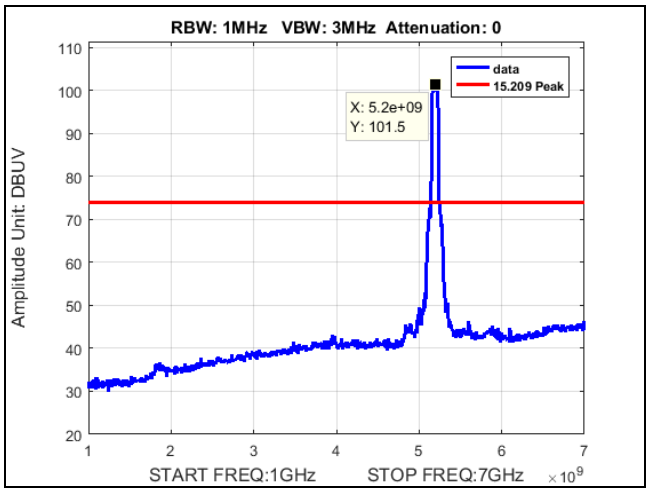
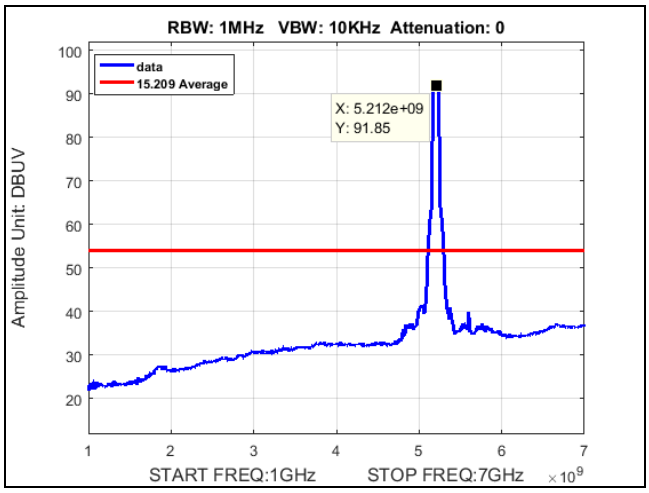


Plot 422. Undesirable Emissions, Test, BW 80M, Ch 5190M, AVG, radiated spurious, 22dBi ant, 1-7GHz



Plot 423. Undesirable Emissions, Test, BW 80M, Ch 5190M, PK, radiated spurious, 22dBi ant, 1-7GHz



Plot 424. Undesirable Emissions, Test, BW 80M, Ch 5200M, AVG, radiated spurious, 22dBi ant, 1-7GHz

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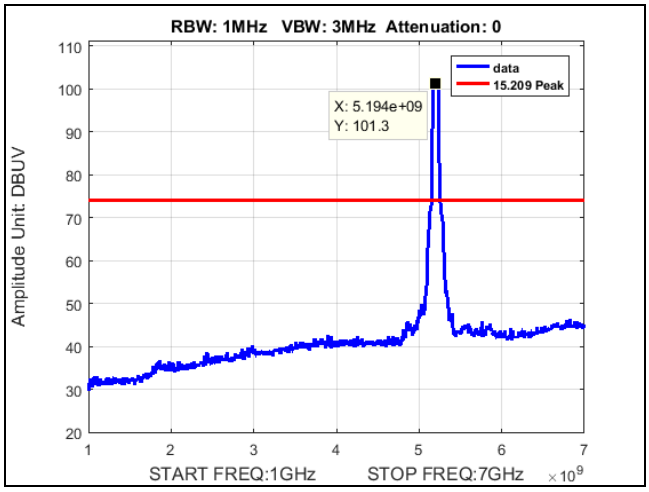
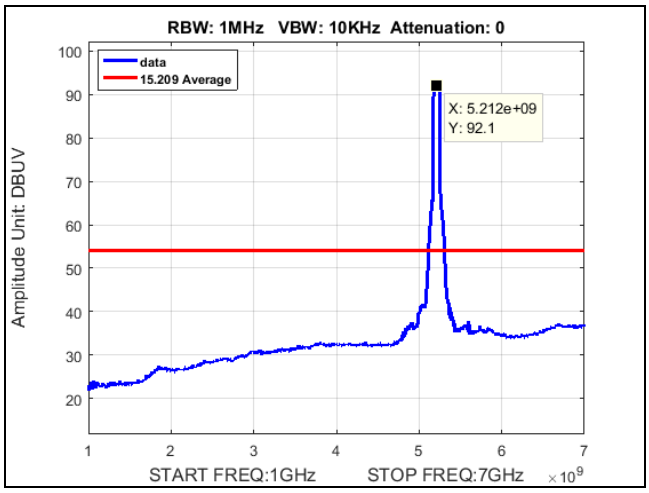
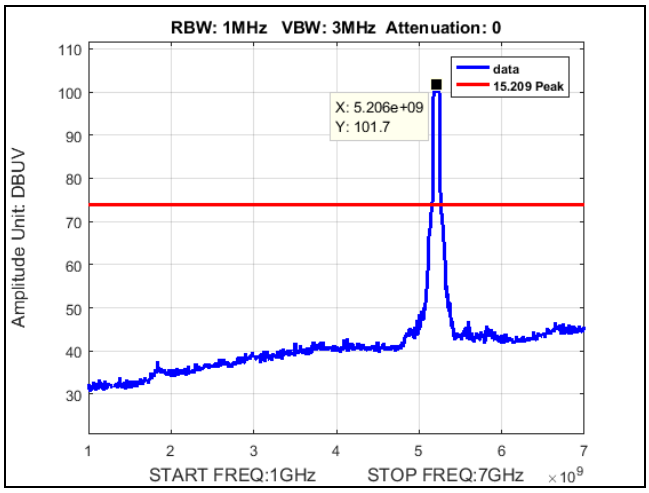


Plot 425. Undesirable Emissions, Test, BW 80M, Ch 5200M, PK, radiated spurious, 22dBi ant, 1-7GHz



Plot 426. Undesirable Emissions, Test, BW 80M, Ch 5210M, AVG, radiated spurious, 22dBi ant, 1-7GHz



Plot 427. Undesirable Emissions, Test, BW 80M, Ch 5210M, PK, radiated spurious, 22dBi ant, 1-7GHz

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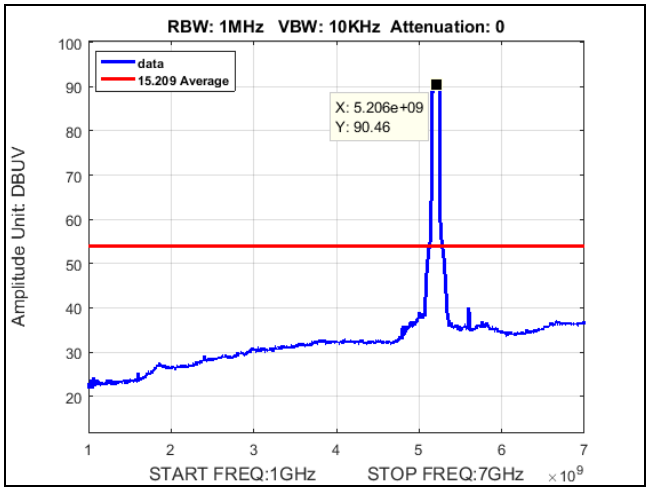
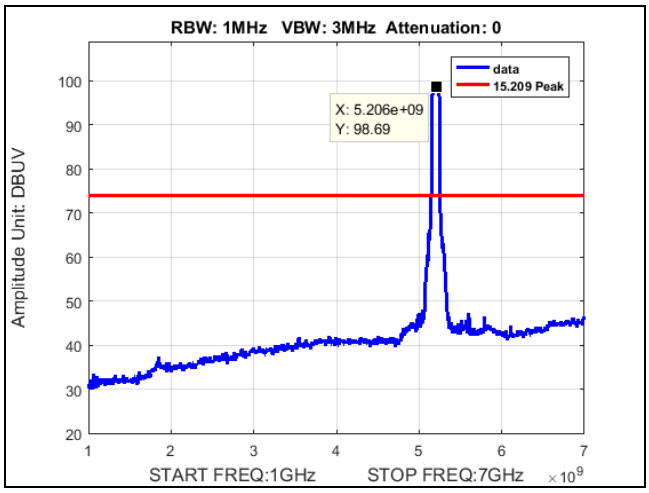
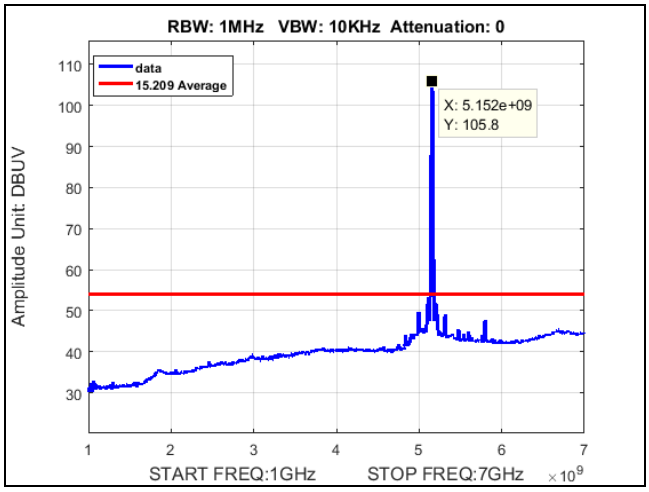


Plot 428. Undesirable Emissions, Test, BW 100M, Ch 5200M, AVG, radiated spurious, 22dBi ant, 1-7GHz



Plot 429. Undesirable Emissions, Test, BW 100M, Ch 5200M, PK, radiated spurious, 22dBi ant, 1-7GHz



Plot 430. Undesirable Emissions, Test, BW 10M, Ch 5155M, AVG, radiated spurious, 34dBi ant, 1-7GHz

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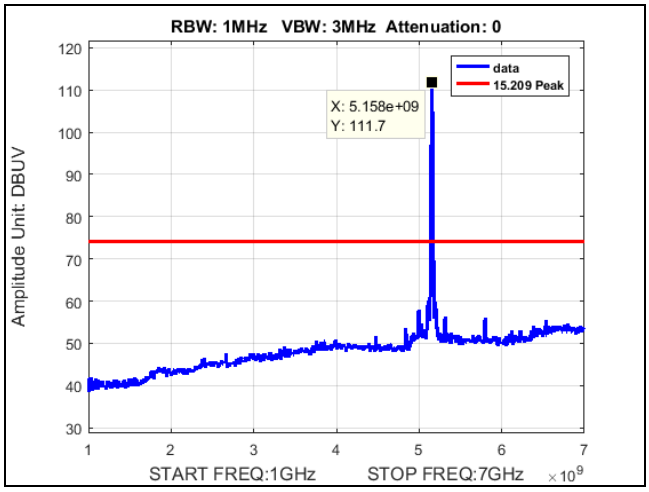
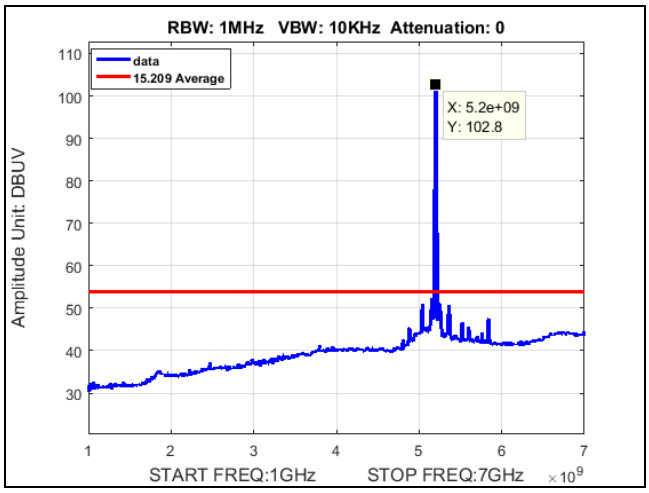
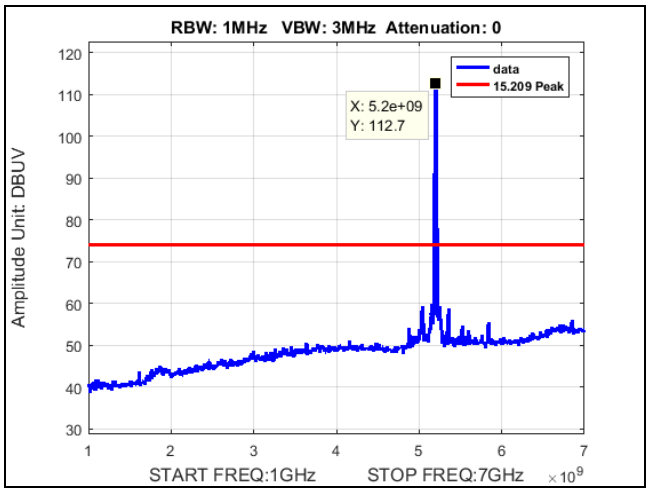


Plot 431. Undesirable Emissions, Test, BW 10M, Ch 5155M, PK, radiated spurious, 34dBi ant, 1-7GHz



Plot 432. Undesirable Emissions, Test, BW 10M, Ch 5200M, AVG, radiated spurious, 34dBi ant, 1-7GHz



Plot 433. Undesirable Emissions, Test, BW 10M, Ch 5200M, PK, radiated spurious, 34dBi ant, 1-7GHz

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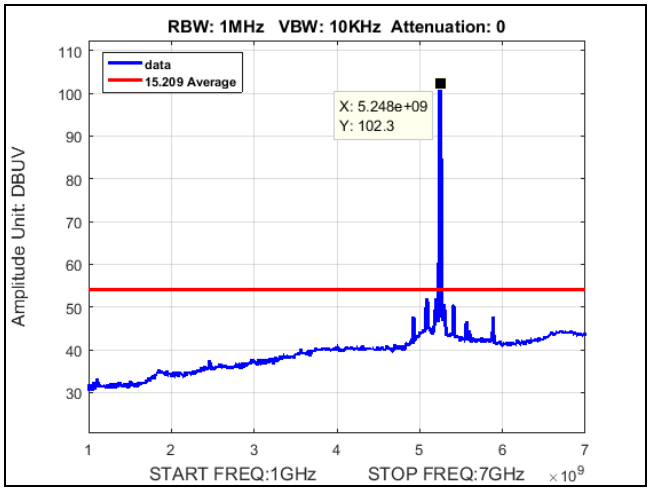
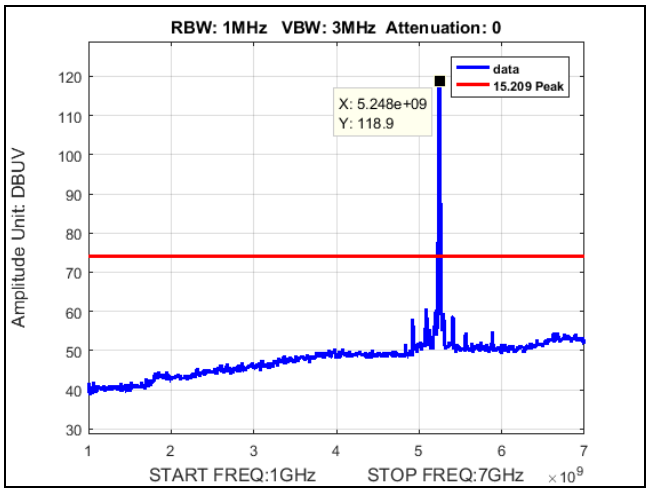
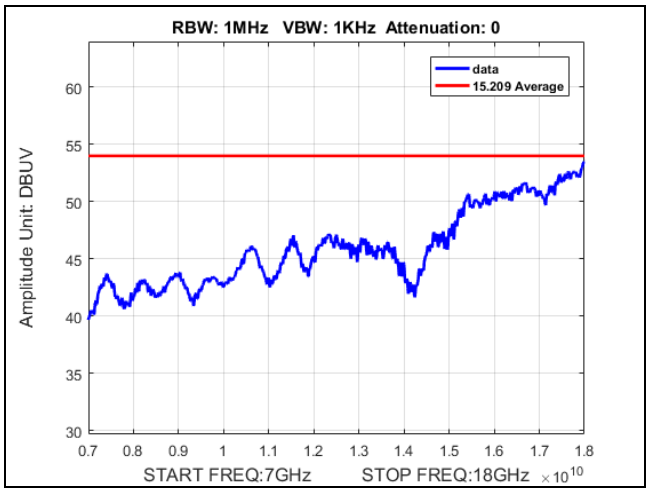


Plot 434. Undesirable Emissions, Test, BW 10M, Ch 5245M, AVG, radiated spurious, 34dBi ant, 1-7GHz



Plot 435. Undesirable Emissions, Test, BW 10M, Ch 5245M, PK, radiated spurious, 34dBi ant, 1-7GHz



Plot 436. Undesirable Emissions, Test, Worst Case, AVG, radiated spurious, 34dBi ant, 7-18GHz

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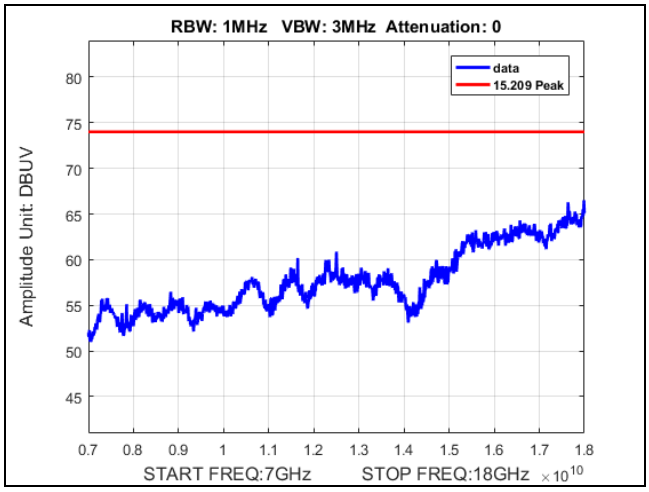
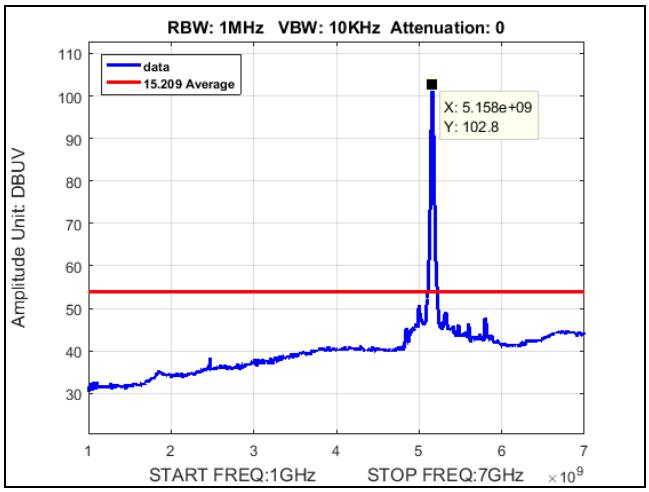
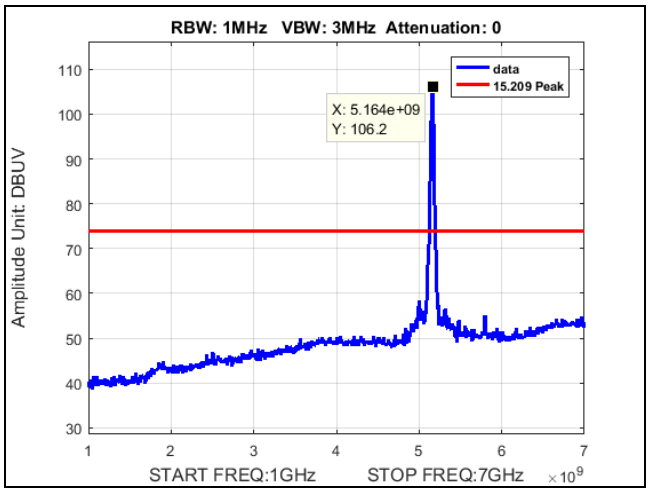


Plot 437. Undesirable Emissions, Test, Worst Case, PK, radiated spurious, 34dBi ant, 7-18GHz



Plot 438. Undesirable Emissions, Test, BW 20M, Ch 5160M, AVG, radiated spurious, 34dBi ant, 1-7GHz



Plot 439. Undesirable Emissions, Test, BW 20M, Ch 5160M, PK, radiated spurious, 34dBi ant, 1-7GHz

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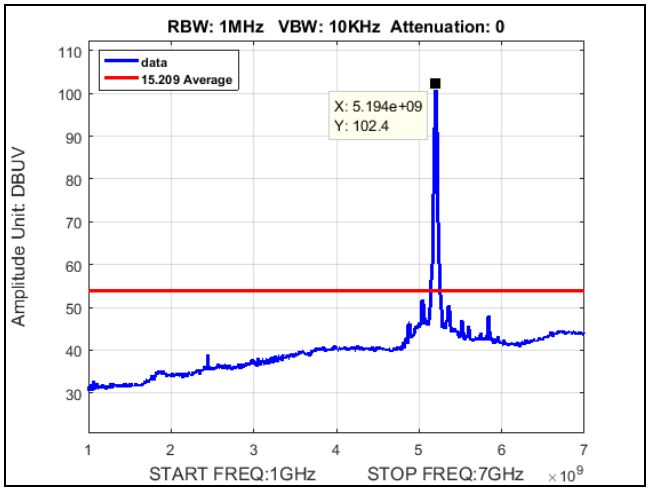
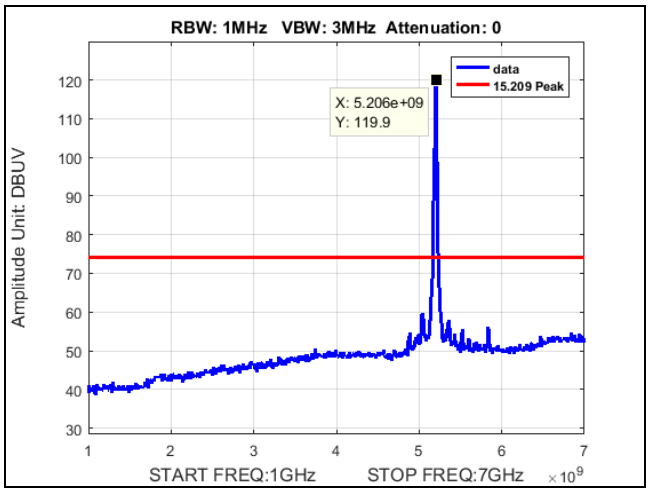
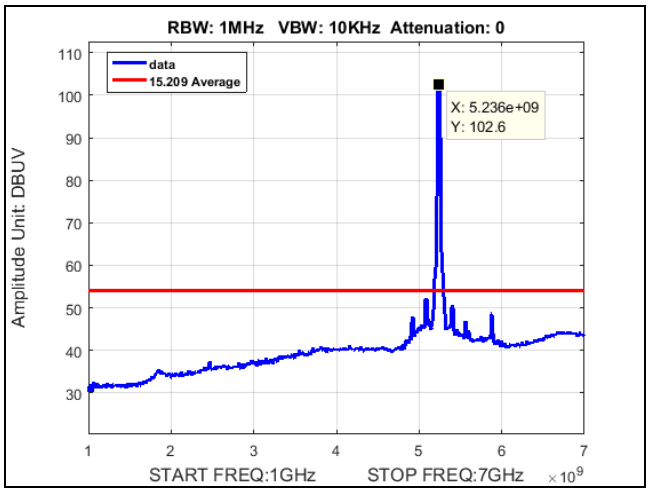


Plot 440. Undesirable Emissions, Test, BW 20M, Ch 5200M, AVG, radiated spurious, 34dBi ant, 1-7GHz



Plot 441. Undesirable Emissions, Test, BW 20M, Ch 5200M, PK, radiated spurious, 34dBi ant, 1-7GHz



Plot 442. Undesirable Emissions, Test, BW 20M, Ch 5240M, AVG, radiated spurious, 34dBi ant, 1-7GHz

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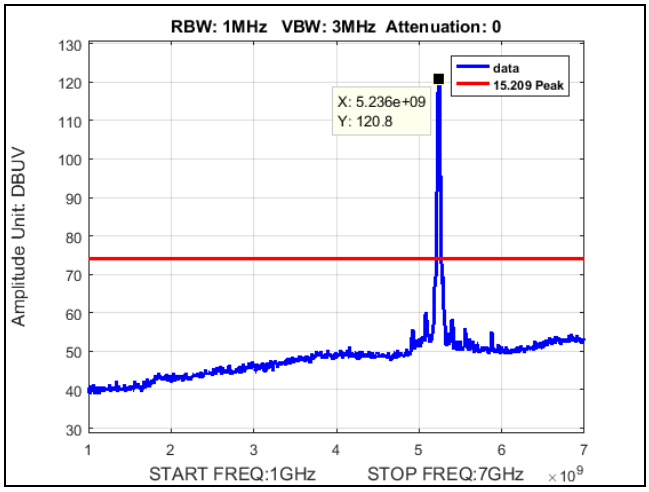
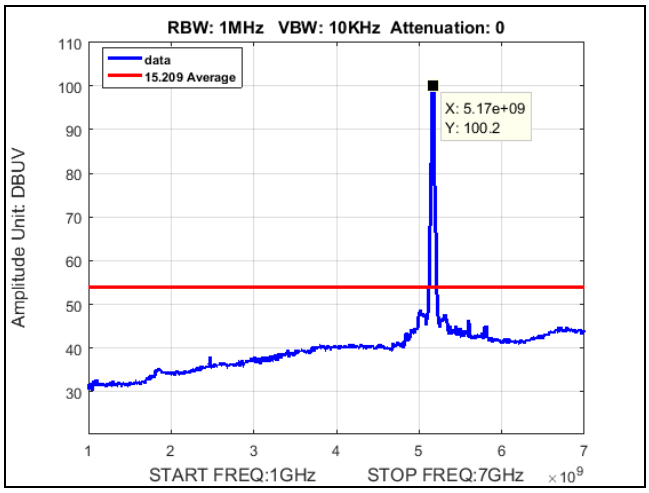
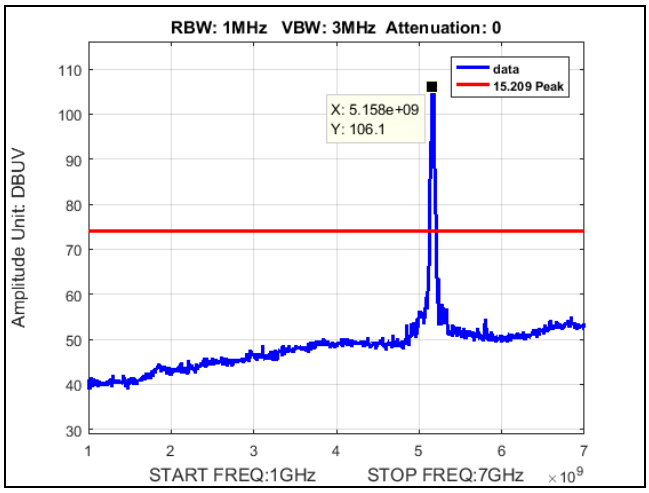


Plot 443. Undesirable Emissions, Test, BW 20M, Ch 5240M, PK, radiated spurious, 34dBi ant, 1-7GHz



Plot 444. Undesirable Emissions, Test, BW 30M, Ch 5165M, AVG, radiated spurious, 34dBi ant, 1-7GHz



Plot 445. Undesirable Emissions, Test, BW 30M, Ch 5165M, PK, radiated spurious, 34dBi ant, 1-7GHz

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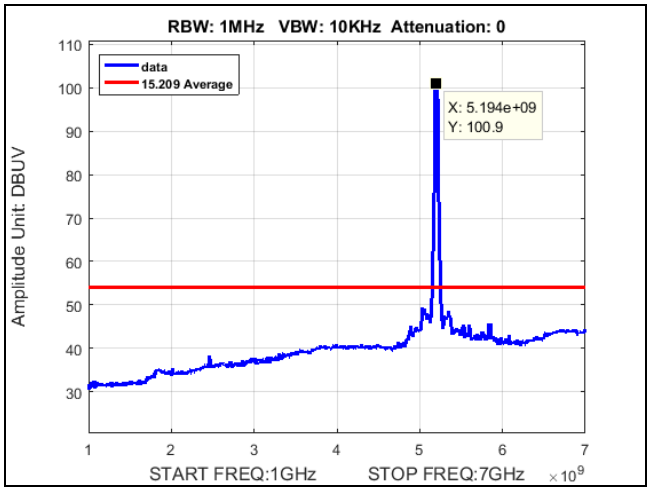
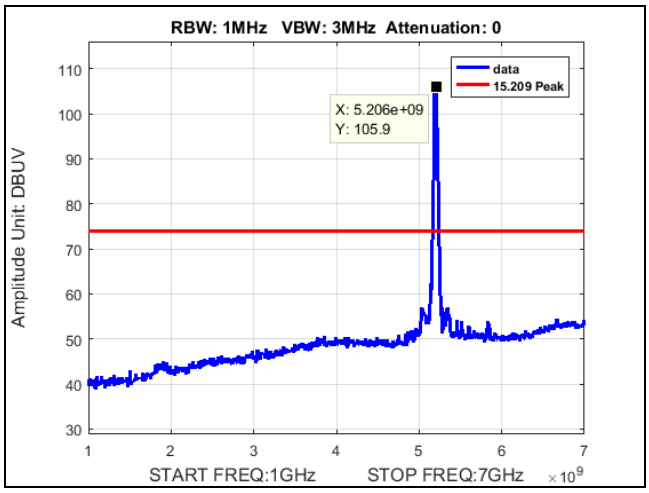
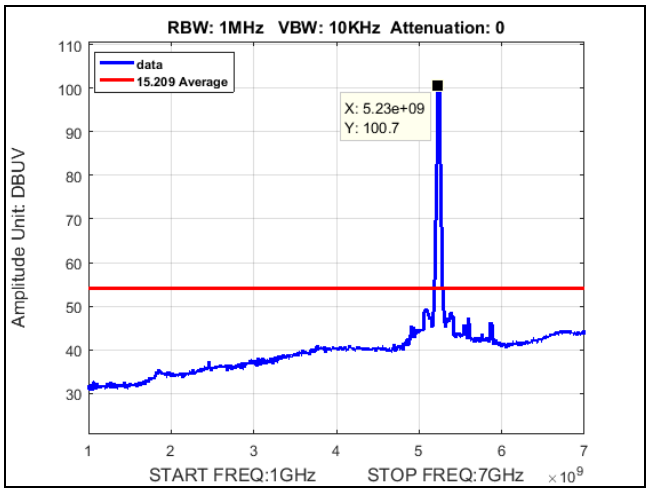


Plot 446. Undesirable Emissions, Test, BW 30M, Ch 5200M, AVG, radiated spurious, 34dBi ant, 1-7GHz



Plot 447. Undesirable Emissions, Test, BW 30M, Ch 5200M, PK, radiated spurious, 34dBi ant, 1-7GHz



Plot 448. Undesirable Emissions, Test, BW 30M, Ch 5235M, AVG, radiated spurious, 34dBi ant, 1-7GHz

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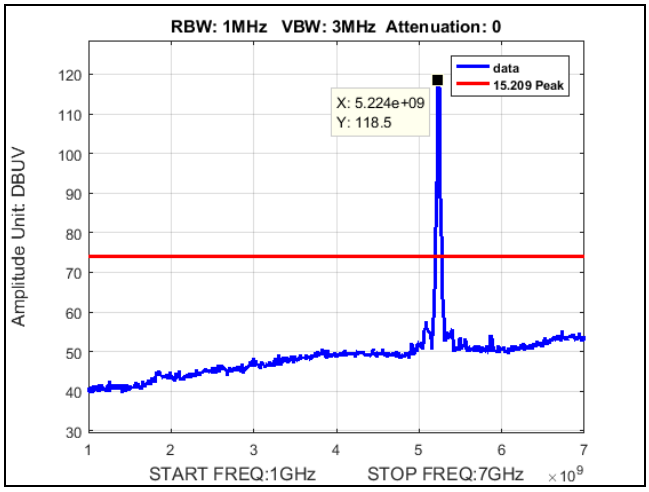
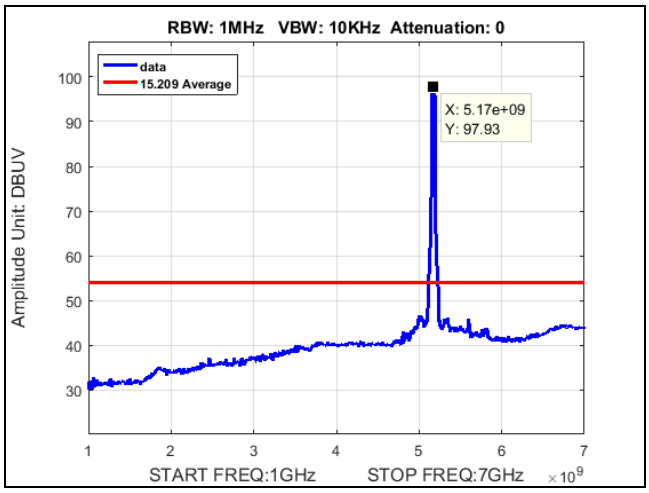
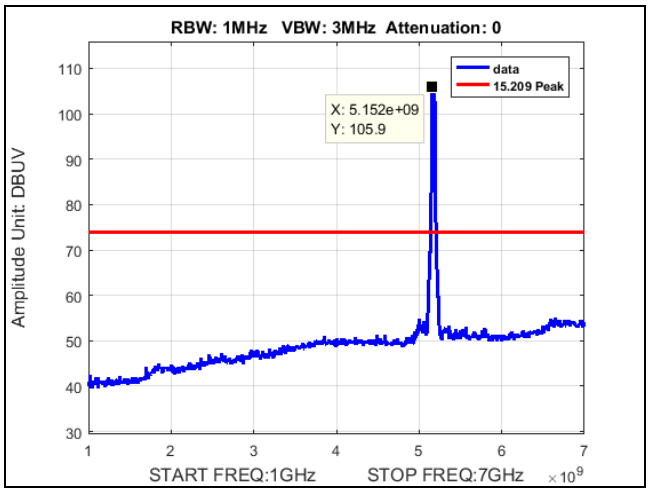


Plot 449. Undesirable Emissions, Test, BW 30M, Ch 5235M, PK, radiated spurious, 34dBi ant, 1-7GHz



Plot 450. Undesirable Emissions, Test, BW 40M, Ch 5170M, AVG, radiated spurious, 34dBi ant, 1-7GHz



Plot 451. Undesirable Emissions, Test, BW 40M, Ch 5170M, PK, radiated spurious, 34dBi ant, 1-7GHz

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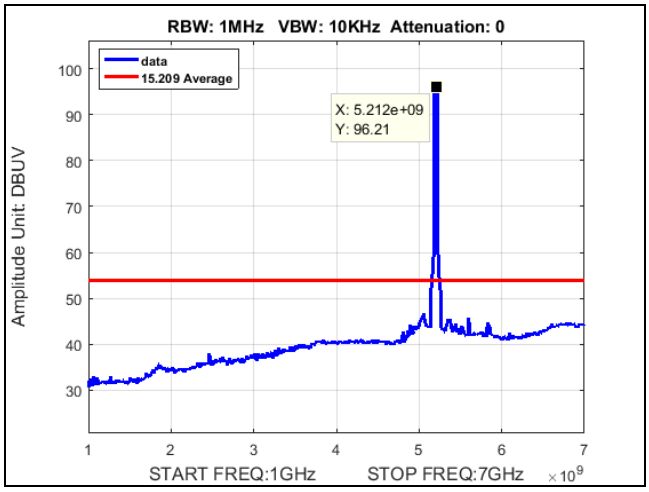
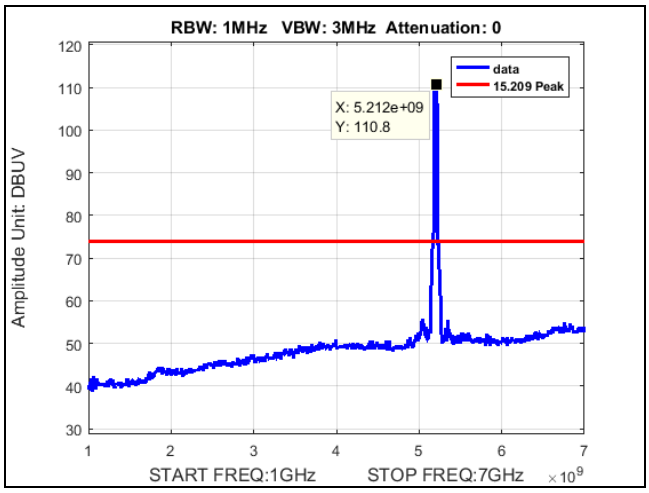
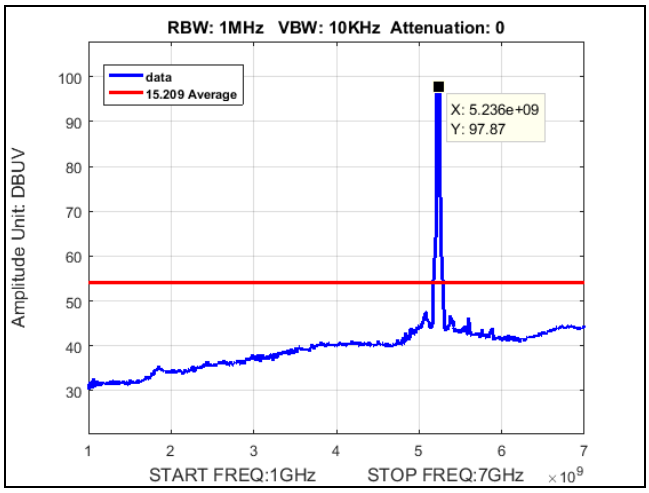


Plot 452. Undesirable Emissions, Test, BW 40M, Ch 5200M, AVG, radiated spurious, 34dBi ant, 1-7GHz



Plot 453. Undesirable Emissions, Test, BW 40M, Ch 5200M, PK, radiated spurious, 34dBi ant, 1-7GHz



Plot 454. Undesirable Emissions, Test, BW 40M, Ch 5230M, AVG, radiated spurious, 34dBi ant, 1-7GHz

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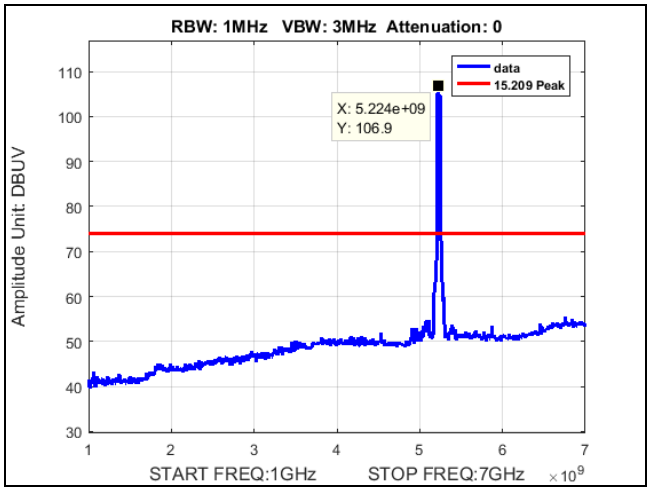
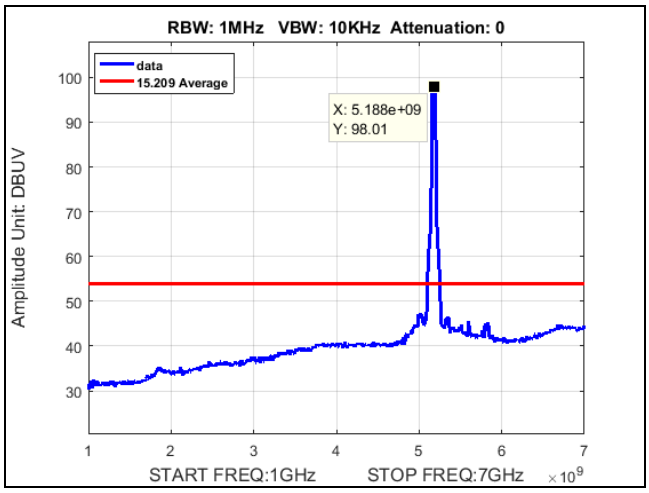
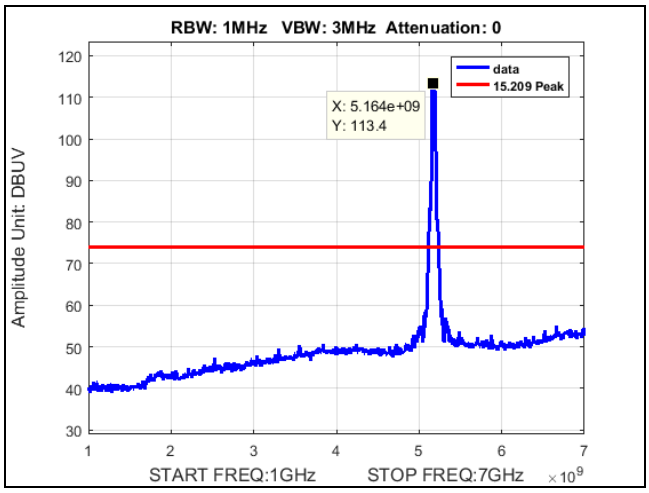


Plot 455. Undesirable Emissions, Test, BW 40M, Ch 5230M, PK, radiated spurious, 34dBi ant, 1-7GHz



Plot 456. Undesirable Emissions, Test, BW 50M, Ch 5175M, AVG, radiated spurious, 34dBi ant, 1-7GHz



Plot 457. Undesirable Emissions, Test, BW 50M, Ch 5175M, PK, radiated spurious, 34dBi ant, 1-7GHz

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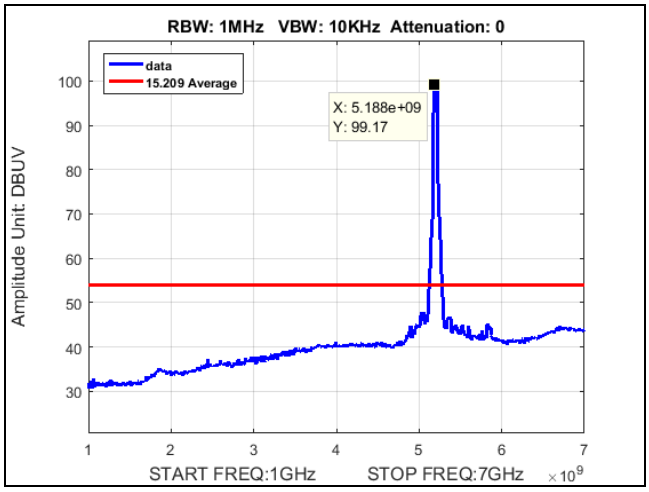
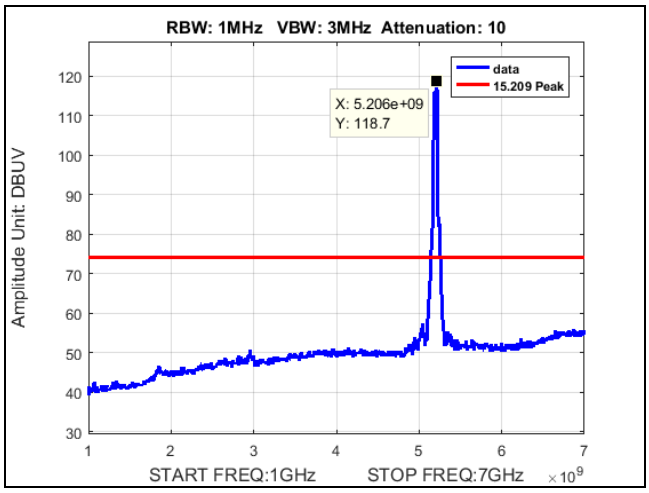
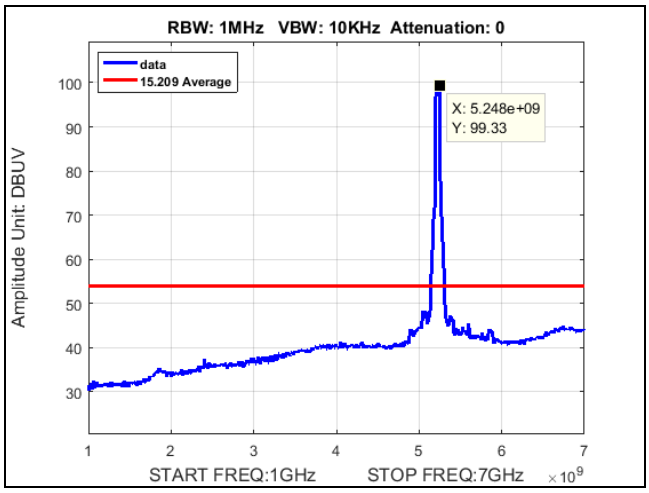


Plot 458. Undesirable Emissions, Test, BW 50M, Ch 5200M, AVG, radiated spurious, 34dBi ant, 1-7GHz



Plot 459. Undesirable Emissions, Test, BW 50M, Ch 5200M, PK, radiated spurious, 34dBi ant, 1-7GHz



Plot 460. Undesirable Emissions, Test, BW 50M, Ch 5225M, AVG, radiated spurious, 34dBi ant, 1-7GHz

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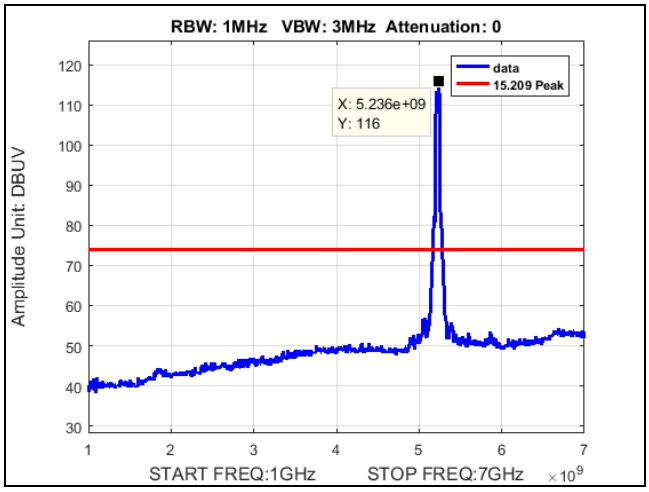
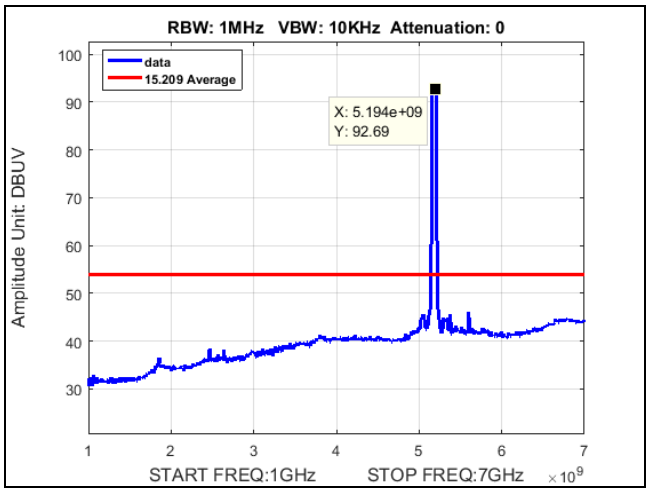
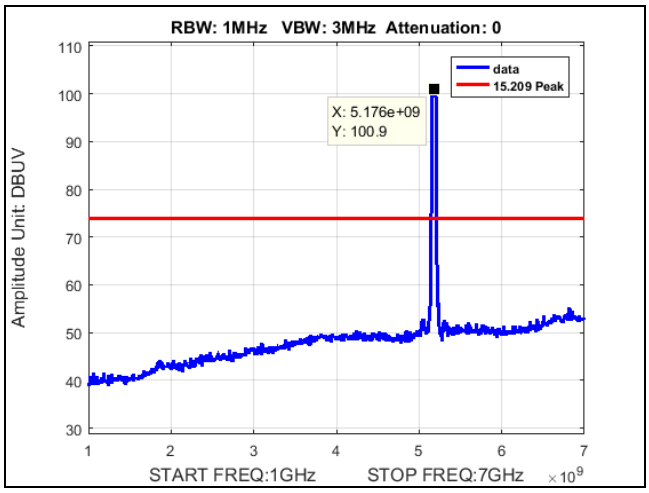


Plot 461. Undesirable Emissions, Test, BW 50M, Ch 5225M, PK, radiated spurious, 34dBi ant, 1-7GHz



Plot 462. Undesirable Emissions, Test, BW 60M, Ch 5180M, AVG, radiated spurious, 34dBi ant, 1-7GHz



Plot 463. Undesirable Emissions, Test, BW 60M, Ch 5180M, PK, radiated spurious, 34dBi ant, 1-7GHz

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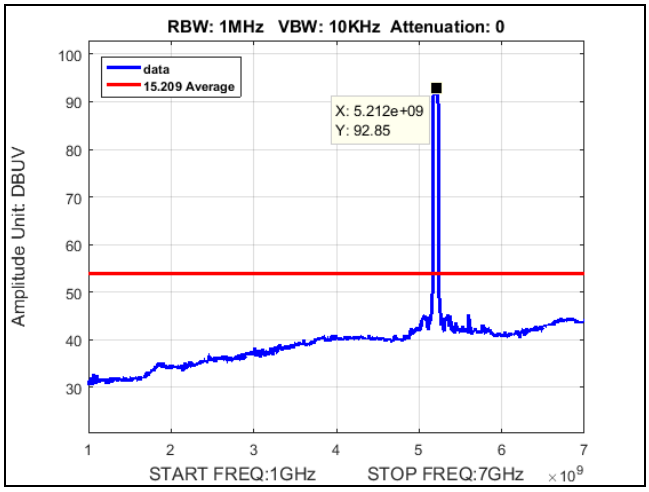
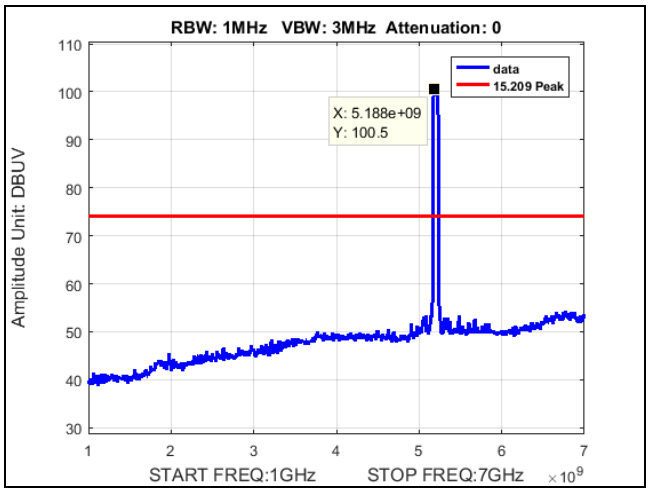
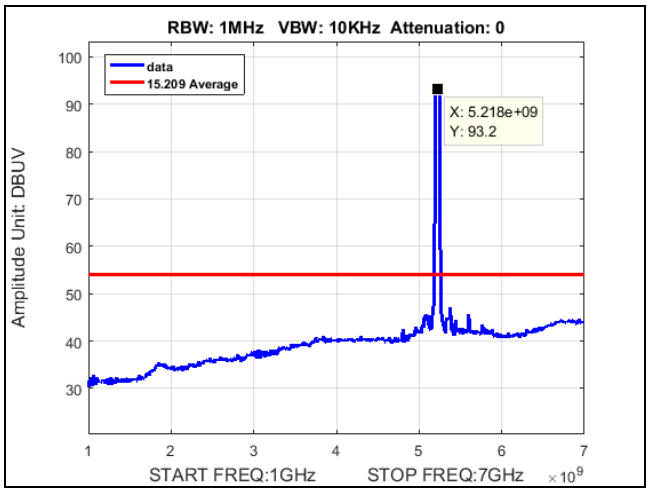


Plot 464. Undesirable Emissions, Test, BW 60M, Ch 5200M, AVG, radiated spurious, 34dBi ant, 1-7GHz



Plot 465. Undesirable Emissions, Test, BW 60M, Ch 5200M, PK, radiated spurious, 34dBi ant, 1-7GHz



Plot 466. Undesirable Emissions, Test, BW 60M, Ch 5220M, AVG, radiated spurious, 34dBi ant, 1-7GHz

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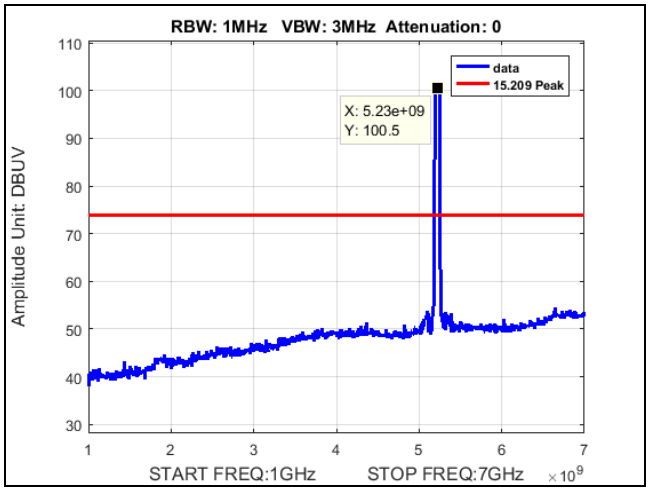
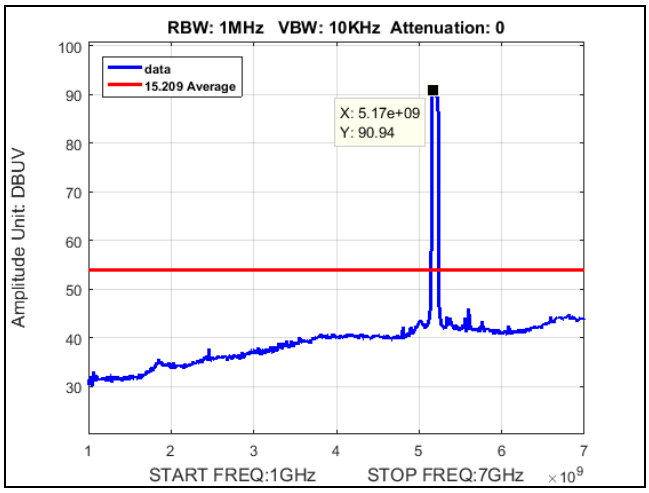
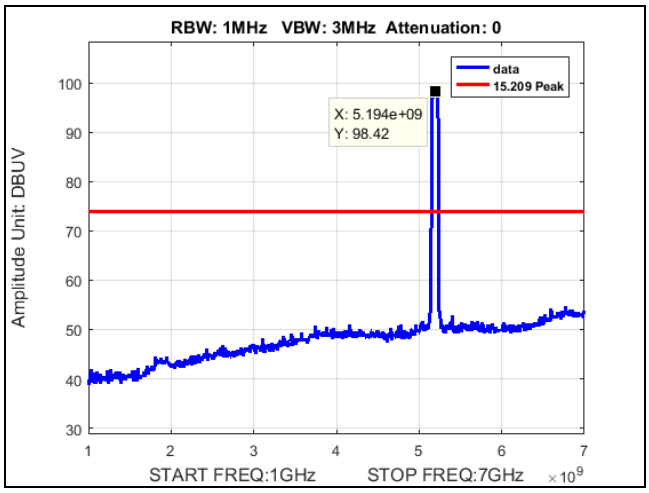


Plot 467. Undesirable Emissions, Test, BW 60M, Ch 5220M, PK, radiated spurious, 34dBi ant, 1-7GHz



Plot 468. Undesirable Emissions, Test, BW 80M, Ch 5190M, AVG, radiated spurious, 34dBi ant, 1-7GHz



Plot 469. Undesirable Emissions, Test, BW 80M, Ch 5190M, PK, radiated spurious, 34dBi ant, 1-7GHz

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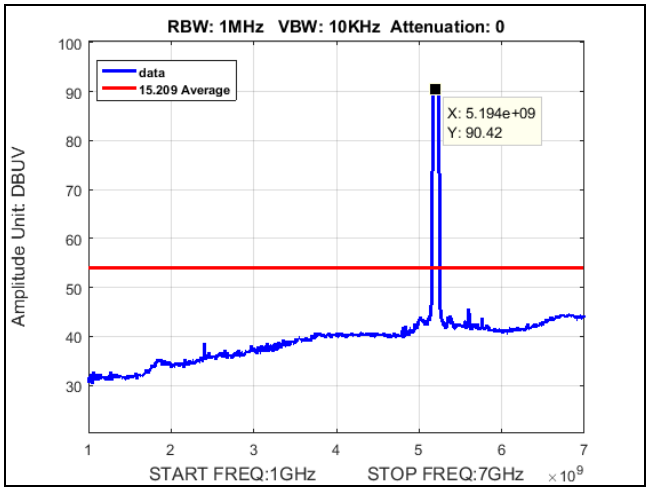
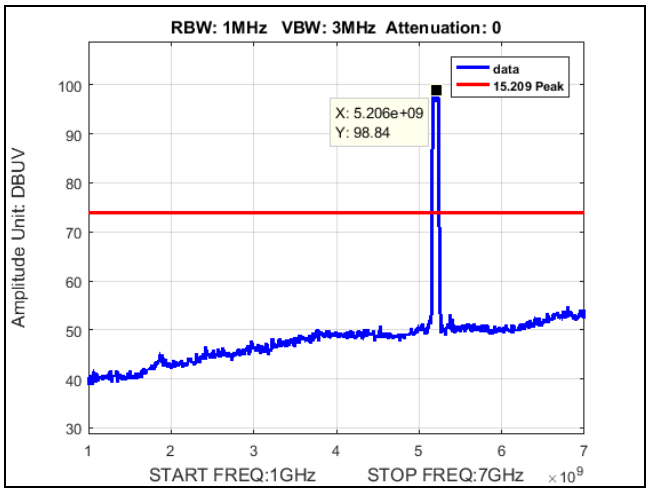
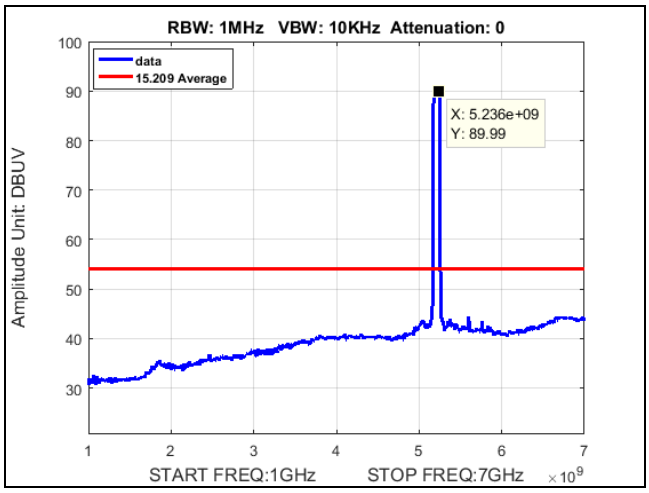


Plot 470. Undesirable Emissions, Test, BW 80M, Ch 5200M, AVG, radiated spurious, 34dBi ant, 1-7GHz



Plot 471. Undesirable Emissions, Test, BW 80M, Ch 5200M, PK, radiated spurious, 34dBi ant, 1-7GHz



Plot 472. Undesirable Emissions, Test, BW 80M, Ch 5210M, AVG, radiated spurious, 34dBi ant, 1-7GHz

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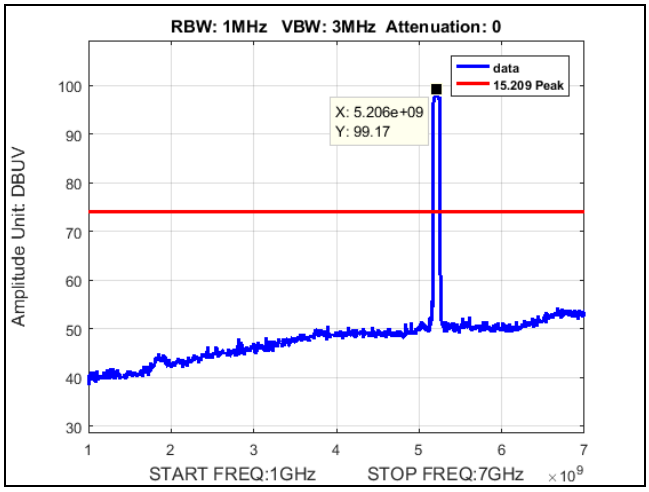
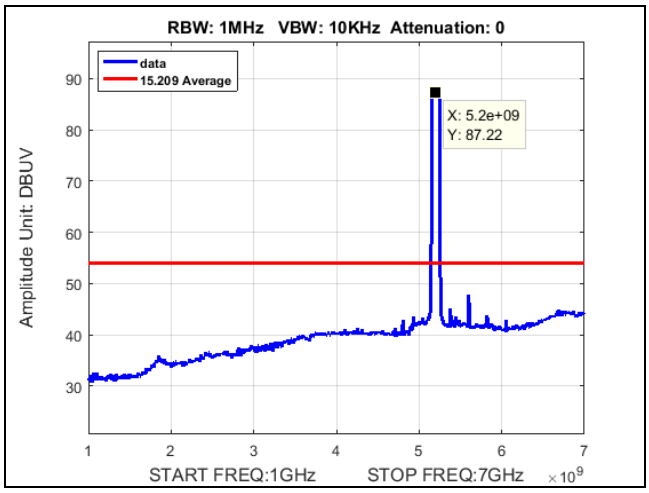
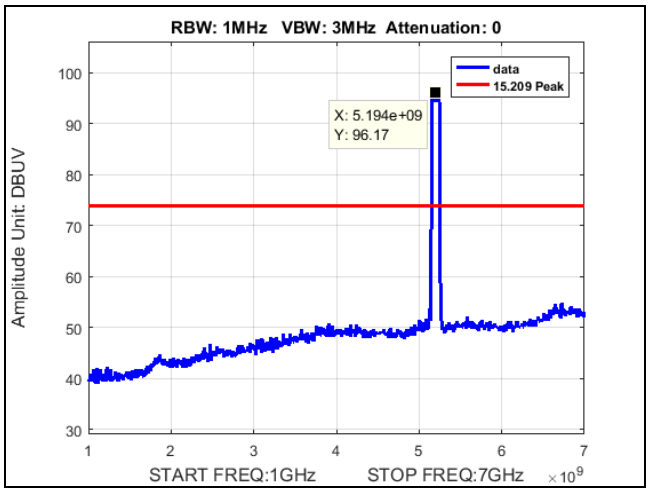


Plot 473. Undesirable Emissions, Test, BW 80M, Ch 5210M, PK, radiated spurious, 34dBi ant, 1-7GHz



Plot 474. Undesirable Emissions, Test, BW 100M, Ch 5200M, AVG, radiated spurious, 34dBi ant, 1-7GHz



Plot 475. Undesirable Emissions, Test, BW 100M, Ch 5200M, PK, radiated spurious, 34dBi ant, 1-7GHz

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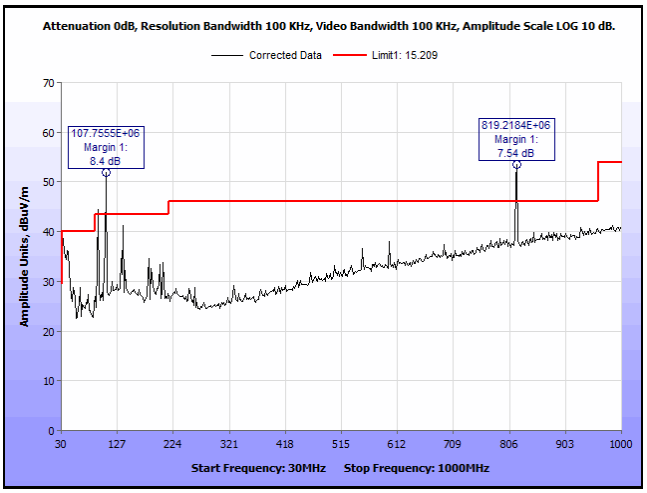
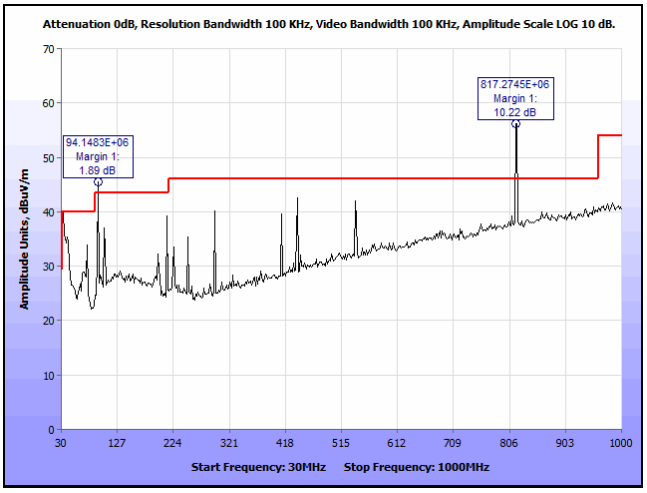


Plot 476. Undesirable Emissions, Radiated Emissions below 1GHz, 22dBi, worst case

Frequency (MHz)	EUT Azimuth (Degrees)	Antenna Polarity (H/V)	Antenna HEIGHT (m)	Uncorrected Amplitude (dBuv)	Antenna Correction Factor (dB) (+)	Cable Loss (dB) (+)	Distance Correction Factor (dB) (-)	Corrected Amplitude (dBuV/m)	Limit (dBuV/m)	Margin (dB)
107.7555	332	H	2.0226	7.3	12.75	1.56	0	21.61	43.5	-21.89
107.7555	24	V	1.3786	7.69	12.75	1.56	0	22	43.5	-21.5
819.2184	285	H	2.2791	6.03	22.38	4.29	0	32.7	46	-13.3
819.2184	53	V	2.5634	6.03	22.38	4.29	0	32.7	46	-13.3

Table 14. Radiated Emissions bellows 1GHz, 22dBi, worst case, Quasi-Peak measurements, points of interest.



Plot 477. Undesirable Emissions, Radiated Emissions below 1GHz, 34dBi, worst case

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Frequency (MHz)	EUT Azimuth (Degrees)	Antenna Polarity (H/V)	Antenna HEIGHT (m)	Uncorrected Amplitude (dBuv)	Antenna Correction Factor (dB) (+)	Cable Loss (dB) (+)	Distance Correction Factor (dB) (-)	Corrected Amplitude (dBuV/m)	Limit (dBuV/m)	Margin (dB)
817.2745	346	H	2.0847	6.03	22.35	4.28	0	32.66	46	-13.34
817.2745	8	V	1.5991	6.03	22.35	4.28	0	32.66	46	-13.34
94.1483	111	H	3.0195	8.41	9.14	1.52	0	19.07	43.5	-24.43
94.1483	302	V	2.8386	7.69	9.14	1.52	0	18.35	43.5	-25.15

Table 15. Radiated Emissions bellows 1GHz, 34dBi, worst case, Quasi-Peak measurements, points of interest.

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Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.407(b)(6) Conducted Emissions

Test Requirement(s): **§ 15.407 (b)(6):** Any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

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

Test Procedure: The EUT was placed on a non-metallic table inside a screen room. 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 C63.4-2014 "Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40 GHz"*. Scans were performed with the transmitter on.

Test Results: The EUT was compliant with requirements of this section.

Test Engineer(s): Donald Salguero

Test Date(s): September 1, 2017

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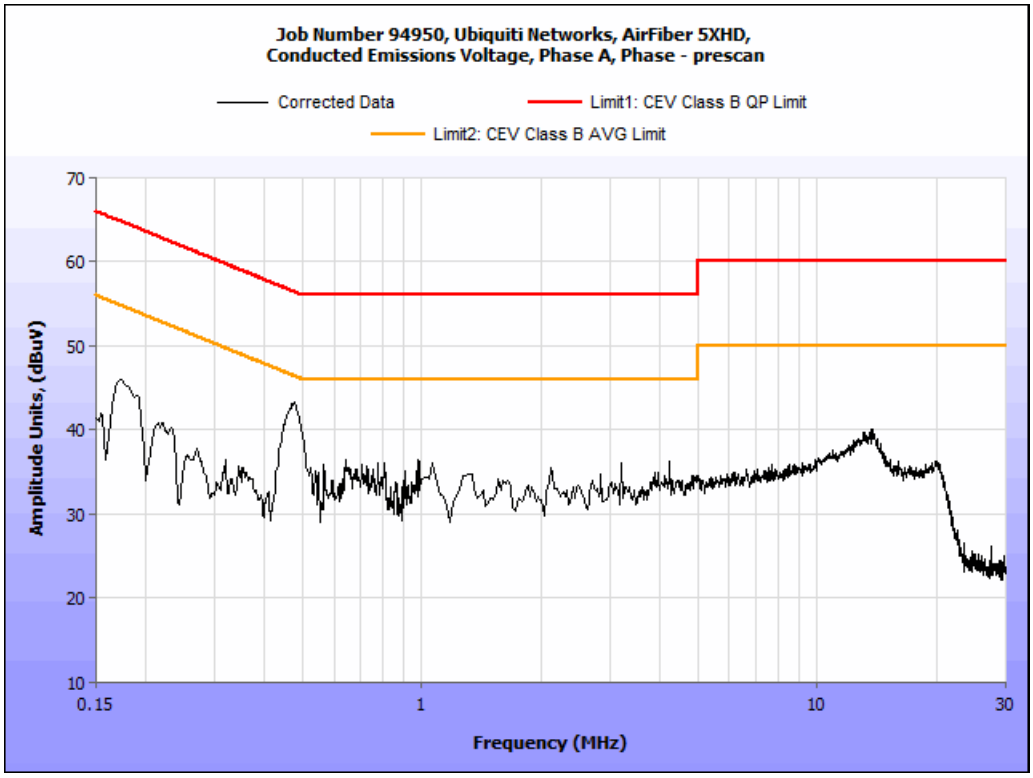
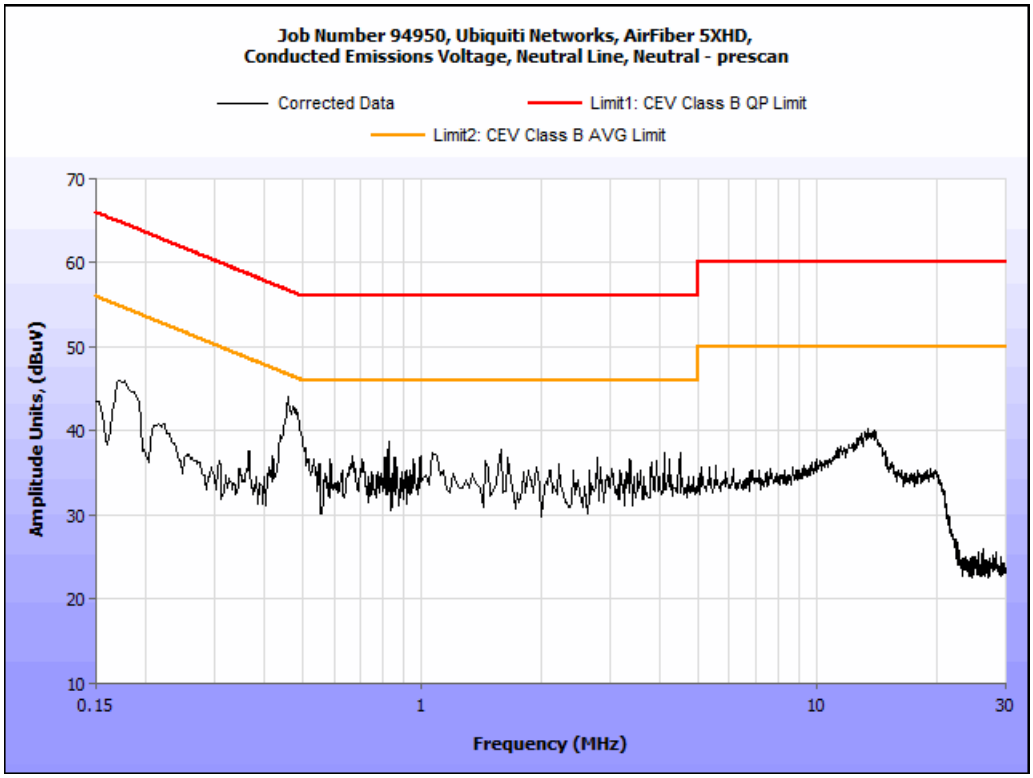


Plot 478. Conducted Emissions, Phase Line



Plot 479. Conducted Emissions, Neutral Line

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Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.407(f) Maximum Permissible Exposure

Test Requirement(s): **§15.407(f):** U-NII devices are subject to the radio frequency radiation exposure requirements specified in §1.1307(b), §2.1091 and §2.1093 of this chapter, as appropriate. All equipment shall be considered to operate in a "general population/uncontrolled" environment.

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.

MPE Limit: EUT's operating frequencies @ 5150-5250 MHz; **Limit for Uncontrolled exposure: 1 mW/cm^2 or 10 W/m^2**

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{(PG / 4\pi S)}$$

where, S = Power Density (mW/cm^2)
P = Power Input to antenna (mW)
G = Antenna Gain (numeric value)
R = Distance (cm)

Test Results:

FCC									
Frequency (MHz)	**Con. Pwr. (dBm)**	**Con. Pwr. (mW)**	**Ant. Gain (dBi)**	**Ant. Gain numeric**	**Pwr. Density (mW/cm^2)**	**Limit (mW/cm^2)**	**Margin**	**Distance (cm)**	**Result**
5240	17.11	51.404	34	2511.886	1	1	0	101.367	Pass

The safe distance where Power Density is less than the MPE Limit listed above was found to be 101.367 cm.

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Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.407(g) Frequency Stability

Test Requirements: 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 Results: Data for frequency stability compliance is provided by the customer as a separate exhibit.

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IV. Test Equipment

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Test Equipment

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ISO/IEC 17025:2005.

Asset	Equipment	Manufacturer	Model	Calibration Date	Calibration Due Date
1T4771	PSA Spectrum Analyzer	Agilent Technologies	E4446A	8/10/2016	2/10/2018
1T4409	EMI Receiver	Rohde & Schwarz	ESIB7	12/7/2016	12/7/2018
1T4483	Antenna; Horn	ETS-Lindgren	3117	4/19/2017	10/19/2018
1T4753	Antenna - Bilog	Sunol Sciences	JB6	10/24/2016	4/24/2018
1T4442	Pre-amplifier, Microwave	Miteq	AFS42-01001800-30-10P	See Note	
1T4612	Spectrum Analyzer	Agilent Technologies	E4407B	3/30/2017	9/30/2018
1T4565	LISN (24 AMP)	Solar Electronics Company	9252-50-R-24-BNC	8/15/2017	8/15/2018
1T4149	High-Frequency Anechoic Chamber	Ray Proof	81	Not Required	
1T4300	SEMI-ANECHOIC CHAMBER # 1 (NSA)	EMC TEST SYSTEMS	NONE	2/6/2015	2/6/2018

Table 17. Test Equipment List

Note: Functionally tested equipment is verified using calibrated instrumentation at the time of testing.

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V. Certification & User's Manual Information

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Certification & User's Manual Information

L. Certification Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 2, Subpart I — Marketing of Radio frequency devices:

§ 2.801 Radio-frequency device defined.

As used in this part, a radio-frequency device is any device which in its operation is capable of Emitting radio-frequency energy by radiation, conduction, or other means. Radio- frequency devices include, but are not limited to:

(a) The various types of radio communication transmitting devices described throughout this chapter.

(b) The incidental, unintentional and intentional radiators defined in Part 15 of this chapter.

(c) The industrial, scientific, and medical equipment described in Part 18 of this chapter.

(d) Any part or component thereof which in use emits radio-frequency energy by radiation, conduction, or other means.

§ 2.803 Marketing of radio frequency devices prior to equipment authorization.

(a) Except as provided elsewhere in this chapter, no person shall sell or lease, or offer for sale or lease (including advertising for sale or lease), or import, ship or distribute for the purpose of selling or leasing or offering for sale or lease, any radio frequency device unless:

(1) In the case of a device subject to certification, such device has been authorized by the Commission in accordance with the rules in this chapter and is properly identified and labeled as required by §2.925 and other relevant sections in this chapter; or

(2) In the case of a device that is not required to have a grant of equipment authorization issued by the Commission, but which must comply with the specified technical standards prior to use, such device also complies with all applicable administrative (including verification of the equipment or authorization under a Declaration of Conformity, where required), technical, labeling and identification requirements specified in this chapter.

(d) Notwithstanding the provisions of paragraph (a) of this section, the offer for sale solely to business, commercial, industrial, scientific or medical users (but not an offer for sale to other parties or to end users located in a residential environment) of a radio frequency device that is in the conceptual, developmental, design or pre-production stage is permitted prior to equipment authorization or, for devices not subject to the equipment authorization requirements, prior to a determination of compliance with the applicable technical requirements *provided* that the prospective buyer is advised in writing at the time of the offer for sale that the equipment is subject to the FCC rules and that the equipment will comply with the appropriate rules before delivery to the buyer or to centers of distribution.

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(e)(1) Notwithstanding the provisions of paragraph (a) of this section, prior to equipment authorization or determination of compliance with the applicable technical requirements any radio frequency device may be operated, but not marketed, for the following purposes and under the following conditions:

(i) Compliance testing;

(ii) Demonstrations at a trade show provided the notice contained in paragraph (c) of this section is displayed in a conspicuous location on, or immediately adjacent to, the device;

(iii) Demonstrations at an exhibition conducted at a business, commercial, industrial, scientific or medical location, but excluding locations in a residential environment, provided the notice contained in paragraphs (c) or (d) of this section, as appropriate, is displayed in a conspicuous location on, or immediately adjacent to, the device;

(iv) Evaluation of product performance and determination of customer acceptability, provided such operation takes place at the manufacturer's facilities during developmental, design or pre-production states; or

(v) Evaluation of product performance and determination of customer acceptability where customer acceptability of a radio frequency device cannot be determined at the manufacturer's facilities because of size or unique capability of the device, provided the device is operated at a business, commercial, industrial, scientific or medical user's site, but not at a residential site, during the development, design or pre-production stages.

(e)(2) For the purpose of paragraphs (e)(1)(iv) and (e)(1)(v) of this section, the term *manufacturer's facilities* includes the facilities of the party responsible for compliance with the regulations and the manufacturer's premises, as well as the facilities of other entities working under the authorization of the responsible party in connection with the development and manufacture, but not the marketing, of the equipment.

(f) For radio frequency devices subject to verification and sold solely to business, commercial, industrial, scientific and medical users (excluding products sold to other parties or for operation in a residential environment), parties responsible for verification of the devices shall have the option of ensuring compliance with the applicable technical specifications of this chapter at each end user's location after installation, provided that the purchase or lease agreement includes a proviso that such a determination of compliance be made and is the responsibility of the party responsible for verification of the equipment.

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Certification & User's Manual Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 2, Subpart J — Equipment Authorization Procedures:

§ 2.901 Basis and Purpose

(a) In order to carry out its responsibilities under the Communications Act and the various treaties and international regulations, and in order to promote efficient use of the radio spectrum, the Commission has developed technical standards for radio frequency equipment and parts or components thereof. The technical standards applicable to individual types of equipment are found in that part of the rules governing the service wherein the equipment is to be operated.[1] *In addition to the technical standards provided, the rules governing the service may require that such equipment be verified by the manufacturer or importer*, be authorized under a Declaration of Conformity, or receive an equipment authorization from the Commission by one of the following procedures: certification or registration.

(b) The following sections describe the verification procedure, the procedure for a Declaration of Conformity, and the procedures to be followed in obtaining certification from the Commission and the conditions attendant to such a grant.

§ 2.907 Certification.

(a) Certification is an equipment authorization issued by the Commission, based on representation and test data submitted by the applicant.

(b) Certification attaches to all units subsequently marketed by the grantee which are identical (see Section 2.908) to the sample tested except for permissive changes or other variations authorized by the Commission pursuant to Section 2.1043.

[1] In this case, the equipment is subject to the rules of Part 15. More specifically, the equipment falls under Subpart B (of Part 15), which deals with unintentional radiators.

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Certification & User's Manual Information

§ 2.948 Description of measurement facilities.

(a) Each party making measurements of equipment that is subject to an equipment authorization under Part 15 or Part 18 of this chapter, regardless of whether the measurements are filed with the Commission or kept on file by the party responsible for compliance of equipment marketed within the U.S. or its possessions, shall compile a description of the measurement facilities employed.

(1) If the measured equipment is subject to the verification procedure, the description of the measurement facilities shall be retained by the party responsible for verification of the equipment.

(i) If the equipment is verified through measurements performed by an independent laboratory, it is acceptable for the party responsible for verification of the equipment to rely upon the description of the measurement facilities retained by or placed on file with the Commission by that laboratory. In this situation, the party responsible for the verification of the equipment is not required to retain a duplicate copy of the description of the measurement facilities.

(ii) If the equipment is verified based on measurements performed at the installation site of the equipment, no specific site calibration data is required. It is acceptable to retain the description of the measurement facilities at the site at which the measurements were performed.

(2) If the equipment is to be authorized by the Commission under the certification procedure, the description of the measurement facilities shall be filed with the Commission's Laboratory in Columbia, Maryland. The data describing the measurement facilities need only be filed once but must be updated as changes are made to the measurement facilities or as otherwise described in this section. At least every three years, the organization responsible for filing the data with the Commission shall certify that the data on file is current.

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Certification & User's Manual Information

Label and User's Manual Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 15, Subpart A — General:

§ 15.19 Labeling requirements.

(a) In addition to the requirements in Part 2 of this chapter, a device subject to certification or verification shall be labeled as follows:

(1) Receivers associated with the operation of a licensed radio service, e.g., FM broadcast under Part 73 of this chapter, land mobile operation under Part 90, etc., shall bear the following statement in a conspicuous location on the device:

This device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

(2) A stand-alone cable input selector switch, shall bear the following statement in a conspicuous location on the device:

This device is verified to comply with Part 15 of the FCC Rules for use with cable television service.

(3) All other devices shall bear the following statement in a conspicuous location on the device:

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

(4) Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified under paragraph (a) of this section is required to be affixed only to the main control unit.

(5) When the device is so small or for such use that it is not practicable to place the statement specified under paragraph (a) of this section on it, the information required by this paragraph shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed. However, the FCC identifier or the unique identifier, as appropriate, must be displayed on the device.

§ 15.21 Information to user.

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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Verification & User's Manual Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 15, Subpart B — Unintentional Radiators:

§ 15.105 Information to the user.

(a) For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at own expense.

(b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

– Reorient or relocate the receiving antenna.

– Increase the separation between the equipment and receiver.

– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

– Consult the dealer or an experienced radio/TV technician for help.

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