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

June 25, 2018

Arris Group Inc
3871 Lakefield Drive Suite 300
Suwanee, GA 30024

Dear Tony Figueiredo,

Enclosed is the EMC Wireless test report for compliance testing of the Arris Group Inc, TG3492LG 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 3).

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: (\Arris Group Inc\ EMC95965B-FCC407 UNII 3)

ACCREDITED
TESTING CERT #0591.01

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Electromagnetic Compatibility Criteria
Test Report

for the

Arris Group Inc
Model TG3492LG

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

MET Report: EMC95965B-FCC407 UNII 3

June 25, 2018

Prepared For:

Arris Group Inc
3871 Lakefield Drive Suite 300
Suwanee, GA 30024

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

Electromagnetic Compatibility Criteria
Test Report

for the

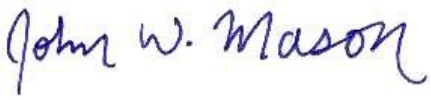
Arris Group Inc
Model TG3492LG

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

Arsalan Hasan, 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 Parts 15B, 15.407, of the FCC Rules under normal use and maintenance.



John Mason,
Director, Electromagnetic Compatibility Lab

Report Status Sheet

Revision	Report Date	Reason for Revision
∅	June 25, 2018	Initial Issue.

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List of Terms and Abbreviations

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

I. Executive Summary

A. Purpose of Test

An EMC evaluation was performed to determine compliance of the Arris Group Inc TG3492LG, 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 TG3492LG. Arris Group Inc should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the TG3492LG, 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 Arris Group Inc, purchase order number AR1115506. All tests were conducted using measurement procedure ANSI C63.4-2014.

FCC Reference	Description	Results
§15.203	Antenna Requirement	Compliant
§15.407 (a)(3)	Maximum Conducted Output Power	Compliant
§15.407 (a)(1)(i)	EIRP above 30 degrees elevation	Not Applicable - Since unit is intended for use indoors, EIRP is not applicable.
§15.407 (a)(3)	Maximum Power Spectral Density	Compliant
§15.407 (b)(4)& (6 - 7)	Undesirable Emissions	Compliant
§15.407(b)(6)	Conducted Emission Limits	Compliant
§15.407(e)	6 dB Bandwidth	Compliant
§15.407(f)	RF Exposure	Compliant
§15.407(g)	Frequency Stability	Data for frequency stability compliance with the requirements of this section is provided by the customer as a separate exhibit.

Table 1. Executive Summary of EMC Part 15.407 ComplianceTesting

II. Equipment Configuration

Overview

MET Laboratories, Inc. was contracted by Arris Group Inc to perform testing on the TG3492LG, under Arris Group Inc's purchase order number AR1115506.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the Arris Group Inc TG3492LG.

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

Model(s) Tested:	TG3492LG	
Model(s) Covered:	TG3492LG	
EUT Specifications:	Primary Power: 120 VAC 60 Hz	
	FCC ID: UIDTG3492LG	
	Type of Modulations:	OFDM
	Equipment Code:	NII
	Max. RF Output Power:	27.85 dBm
	EUT Frequency Ranges:	5725MHz – 5850MHz
Analysis:	The results obtained relate only to the item(s) tested.	
Environmental Test Conditions:	Temperature: 15-35º C	
	Relative Humidity: 30-60%	
	Barometric Pressure: 860-1060 mbar	
Evaluated by:	Arsalan Hasan	
Report Date(s):	June 25, 2018	

Table 2. EUT Summary

A. 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

Table 3. References

B. 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.

C. Description of Test Sample

The Arris Group Inc TG3492LG, Equipment Under Test (EUT), is TG3492LGx (where x is any alphanumeric characters denoting markets, or customers).

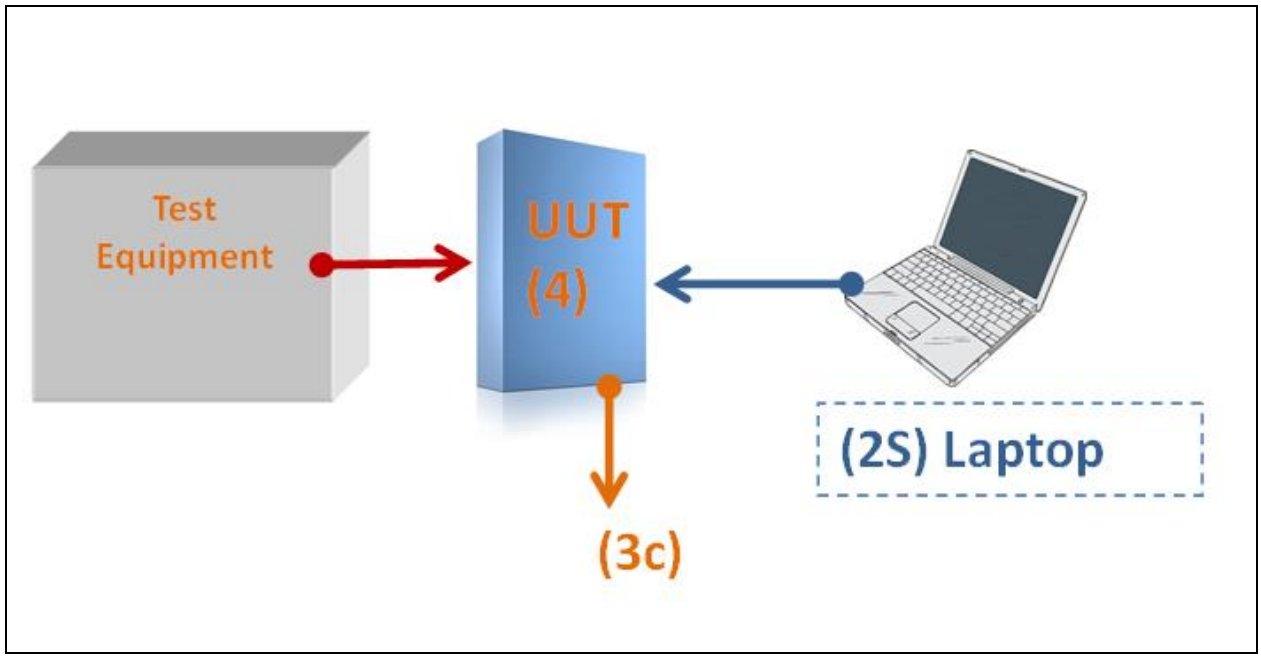


Figure 1. Block Diagram of Test Configuration

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	Slot #	Name / Description	Model Number	Part Number	Serial Number
4	n/a	UUT	TG3492	E4574000DD03	xxxxxx

Table 4. Equipment Configuration

D. 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
2s	Laptop	Assorted	N/A	N/A
The 'Customer Supplied Calibration Data' column will be marked as either not applicable, not available, or will contain the calibration date supplied by the customer.				

Table 5. Support Equipment

E. Ports and Cabling Information

Ref. ID	Port name on EUT	Cable Description or reason for no cable	Qty	Length as tested (m)	Max Length (m)	Shielded? (Y/N)	Termination Box ID & Port Name
2C	Ethernet	5e Modular 8 pin	1	1	1	No	

Table 6. Ports and Cabling Information

F. Mode of Operation

The provided instructions and software will configure the unit for operation at each required test mode. See Configuration.

G. Method of Monitoring EUT Operation

Indicator LED on, both Wi-Fi 2.4G and 5 G passing traffic.

H. 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.

I. Disposition of EUT

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

III. Electromagnetic Compatibility Criteria for Intentional Radiators

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.203 Antenna Requirement

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

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

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

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

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

Results: The EUT as tested is compliant the criteria of §15.203.

Test Engineer(s): Arsalan Hasan

Test Date(s): September 13, 2018

Electromagnetic Compatibility Criteria for Intentional Radiators

§15. 407(a)(3) Maximum Conducted Output Power

Test Requirements: **§15.407(a)(3):** For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.
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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.

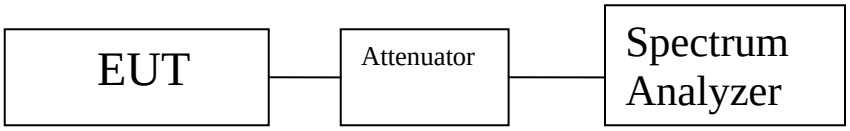
Test Procedure: The EUT was connected to a spectrum analyzer through a cable and attenuator. Measurements were taken with the EUT set to transmit continuously on its low, mid, and high channels. Its power was measured according to measurement method SA-1, as described in 789033 D02 General UNII Test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

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

No anomalies detected.

Test Engineer(s): Arsalan Hasan

Test Date(s): June 7, 2018



Frequency (MHz)	Channel (WLAN)	Power Chain 0 (dBm)	Power Chain 1 (dBm)	Power Chain 2 (dBm)	Power Chain 3 (dBm)	Total Power (dBm)	Antenna Gain (dBi)	Power Limit (dBm)	Power Margin (dB)
5745	149	21.59	21.65	21.59	21.18	27.53	4.10	30.00	-2.47
5765	153	22.05	21.84	21.37	20.88	27.58	4.10	30.00	-2.42
5785	157	22.29	21.68	21.33	20.97	27.62	4.10	30.00	-2.38
5805	161	21.54	21.44	20.74	20.23	27.04	4.10	30.00	-2.96
5825	165	21.85	21.41	20.76	20.01	27.08	4.10	30.00	-2.92

Table 7. Conducted Power, Mode a, 20 MHz

Frequency (MHz)	Channel (WLAN)	Power Chain 0 (dBm)	Power Chain 1 (dBm)	Power Chain 2 (dBm)	Power Chain 3 (dBm)	Total Power (dBm)	Antenna Gain (dBi)	Power Limit (dBm)	Power Margin (dB)
5745	149	21.37	21.24	20.85	20.2	26.96	4.10	30.00	-3.04
5765	153	21.86	22.65	21.28	21.38	27.85	4.10	30.00	-2.15
5785	157	21.61	21.53	20.68	21.2	27.29	4.10	30.00	-2.71
5805	161	20.92	21.26	20.41	20.45	26.79	4.10	30.00	-3.21
5825	165	21.3	21.53	20.34	20.2	26.90	4.10	30.00	-3.10

Table 8. Conducted Power, Mode n, 20 MHz

Frequency (MHz)	Channel (WLAN)	Power Chain 0 (dBm)	Power Chain 1 (dBm)	Power Chain 2 (dBm)	Power Chain 3 (dBm)	Total Power (dBm)	Antenna Gain (dBi)	Power Limit (dBm)	Power Margin (dB)
5745	149	21.64	21.23	20.62	20.63	27.07	4.10	30.00	-2.93
5765	153	21.05	21.26	21.13	20.82	27.09	4.10	30.00	-2.91
5785	157	21.12	21.1	21.14	20.13	26.91	4.10	30.00	-3.09
5805	161	21.13	21.04	20.28	20.09	26.68	4.10	30.00	-3.32
5825	165	20.39	21.49	20.1	19.47	26.45	4.10	30.00	-3.55

Table 9. Conducted Power, Mode ac, 20 MHz

Frequency (MHz)	Channel (WLAN)	Power Chain 0 (dBm)	Power Chain 1 (dBm)	Power Chain 2 (dBm)	Power Chain 3 (dBm)	Total Power (dBm)	Antenna Gain (dBi)	Power Limit (dBm)	Power Margin (dB)
5755	151	20.63	20.55	20.36	20.31	26.49	4.10	30.00	-3.51
5795	159	21.12	21.06	20.35	20.12	26.70	4.10	30.00	-3.30

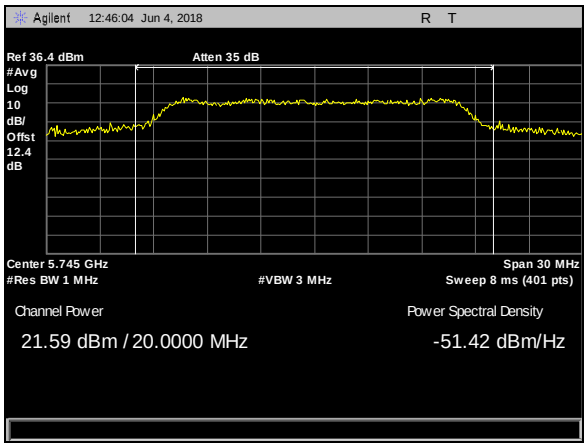
Table 10. Conducted Power, Mode n, 40 MHz

Frequency (MHz)	Channel (WLAN)	Power Chain 0 (dBm)	Power Chain 1 (dBm)	Power Chain 2 (dBm)	Power Chain 3 (dBm)	Total Power (dBm)	Antenna Gain (dBi)	Power Limit (dBm)	Power Margin (dB)
5755	151	20.07	20.26	19.07	18.29	25.51	4.10	30.00	-4.49
5795	159	20.23	20.05	19.61	18.58	25.68	4.10	30.00	-4.32

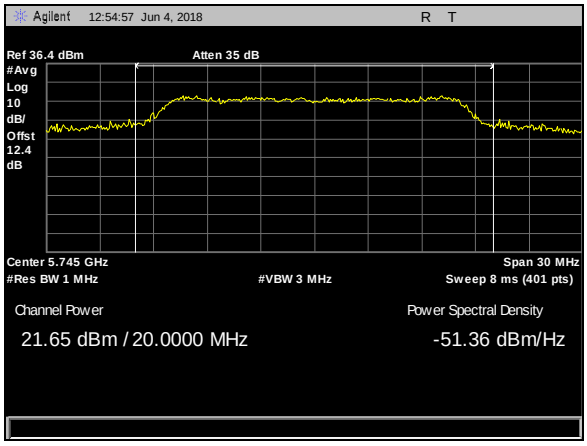
Table 11. Conducted Power, Mode ac, 40 MHz

Frequency (MHz)	Channel (WLAN)	Power Chain 0 (dBm)	Power Chain 1 (dBm)	Power Chain 2 (dBm)	Power Chain 3 (dBm)	Total Power (dBm)	Antenna Gain (dBi)	Power Limit (dBm)	Power Margin (dB)
5775	155	17.3	17.44	16.61	15.28	22.76	4.10	30.00	-7.24

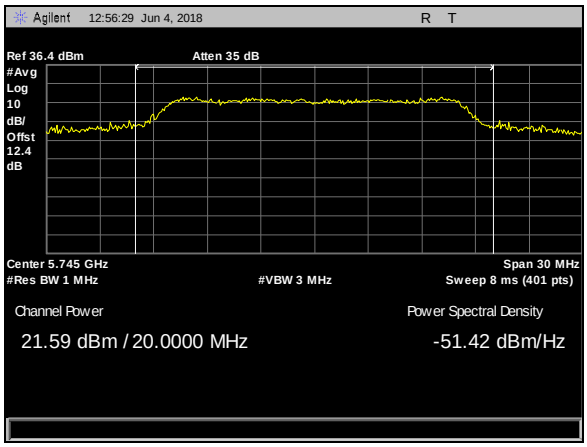
Table 12. Conducted Power, Mode ac, 80 MHz



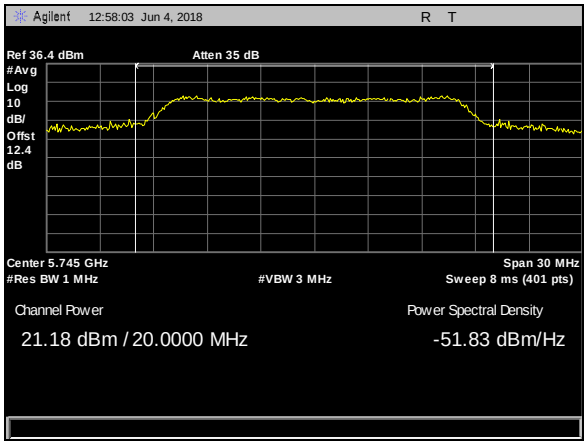
Plot 1. Conducted Output Power, MODE a BW20MHz CH 149 CHAIN 0



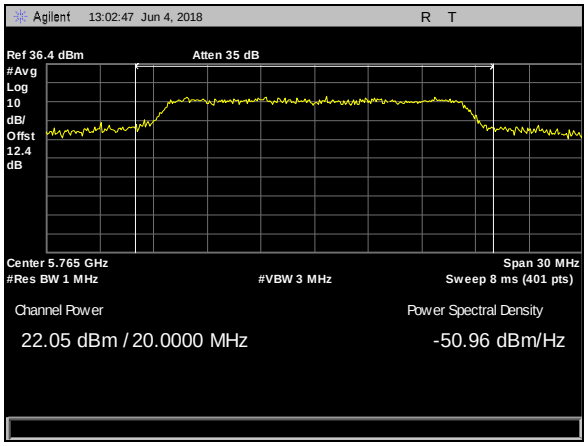
Plot 2. Conducted Output Power, MODE a BW20MHz CH 149 CHAIN 1



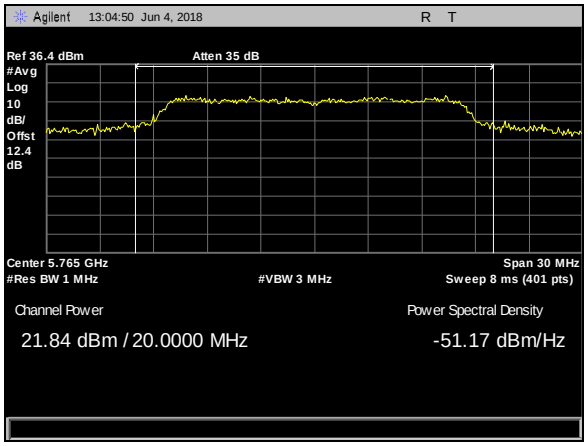
Plot 3. Conducted Output Power, MODE a BW20MHz CH 149 CHAIN 2



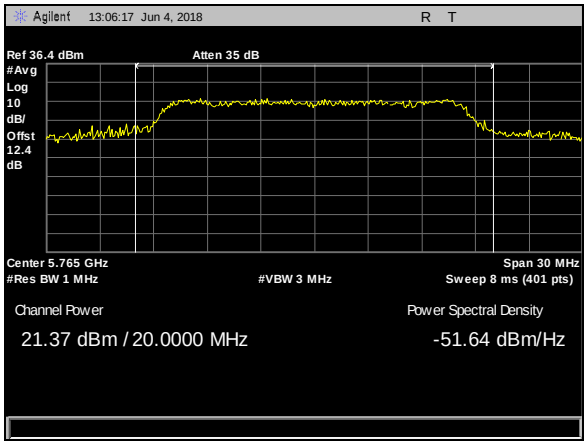
Plot 4. Conducted Output Power, MODE a BW20MHz CH 149 CHAIN 3



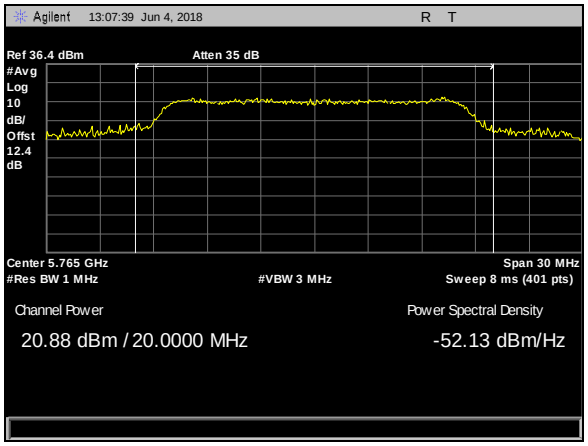
Plot 5. Conducted Output Power, MODE a BW20MHz CH 153 CHAIN 0



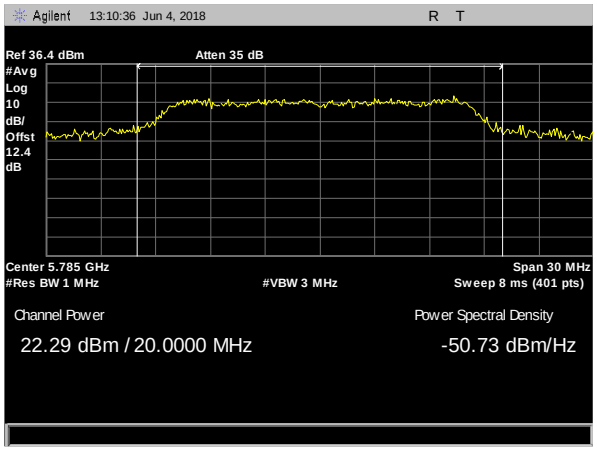
Plot 6. Conducted Output Power, MODE a BW20MHz CH 153 CHAIN 1



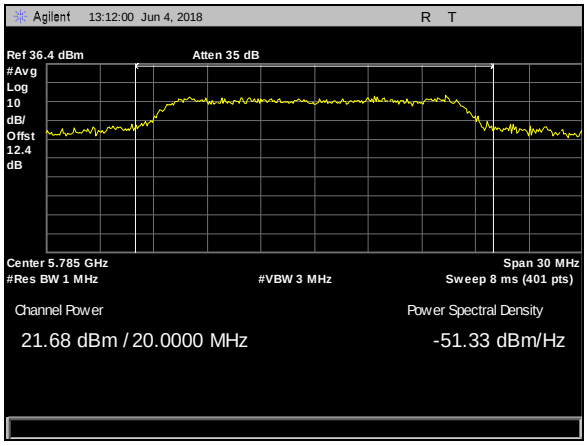
Plot 7. Conducted Output Power, MODE a BW20MHz CH 153 CHAIN 2



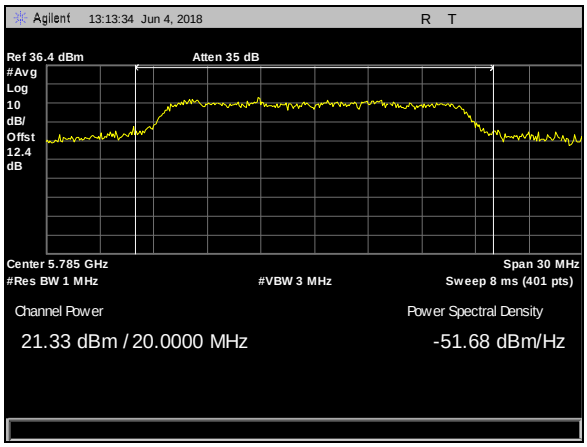
Plot 8. Conducted Output Power, MODE a BW20MHz CH 153 CHAIN 3



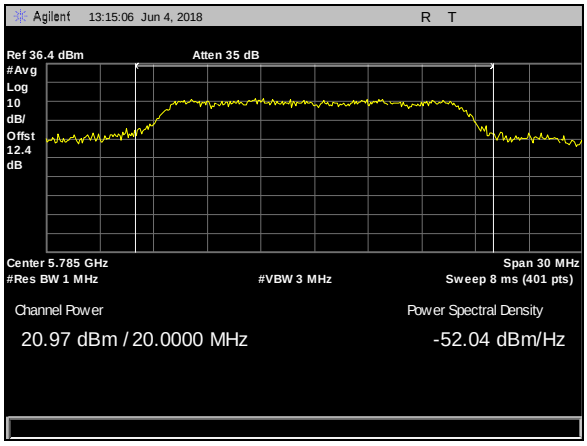
Plot 9. Conducted Output Power, MODE a BW20MHz CH 157 CHAIN 0



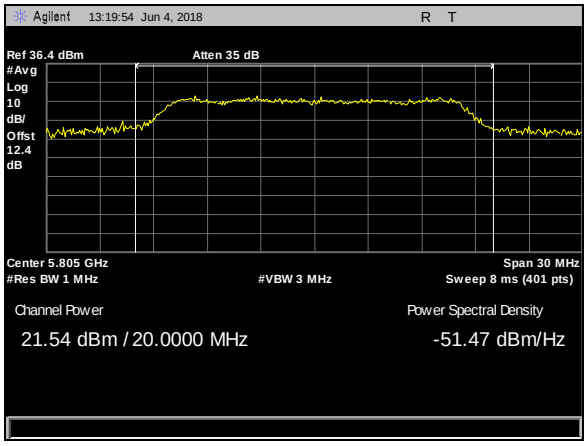
Plot 10. Conducted Output Power, MODE a BW20MHz CH 157 CHAIN 1



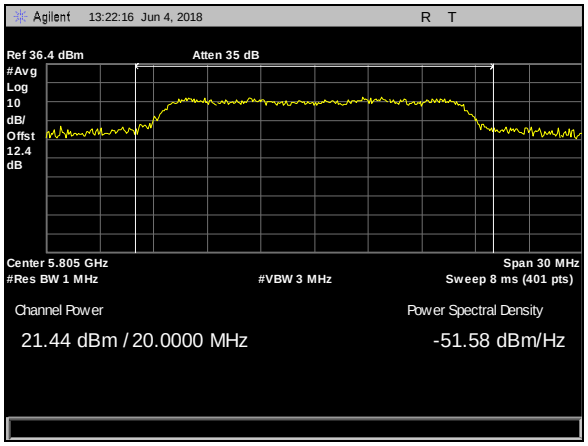
Plot 11. Conducted Output Power, MODE a BW20MHz CH 157 CHAIN 2



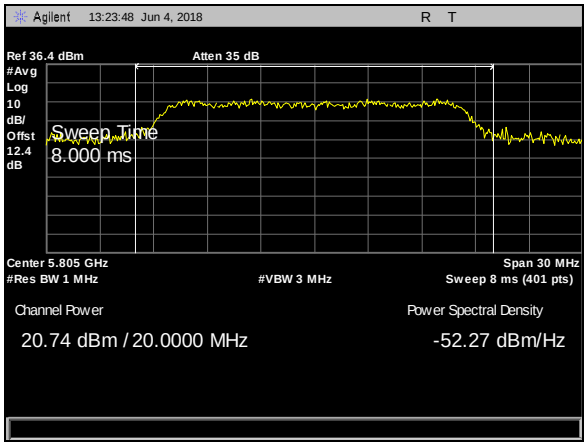
Plot 12. Conducted Output Power, MODE a BW20MHz CH 157 CHAIN 3



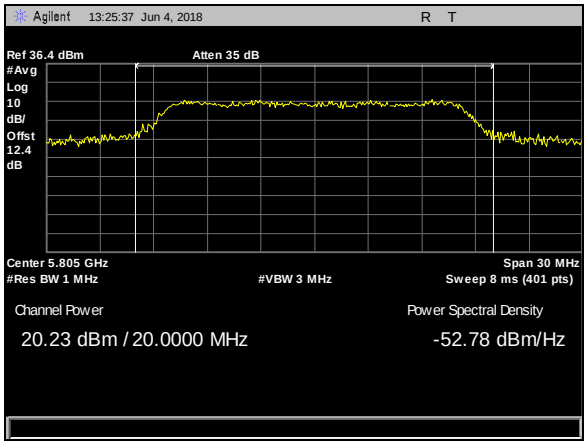
Plot 13. Conducted Output Power, MODE a BW20MHz CH 161 CHAIN 0



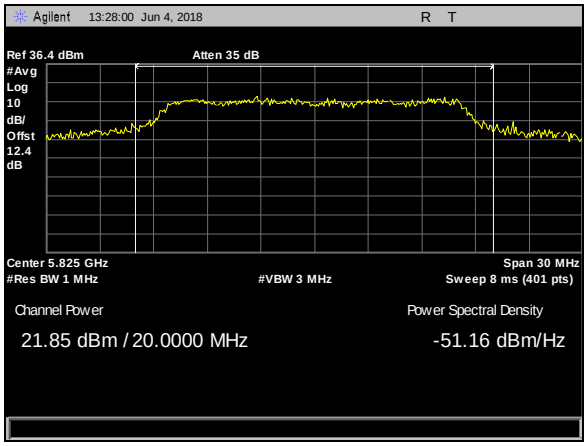
Plot 14. Conducted Output Power, MODE a BW20MHz CH 161 CHAIN 1



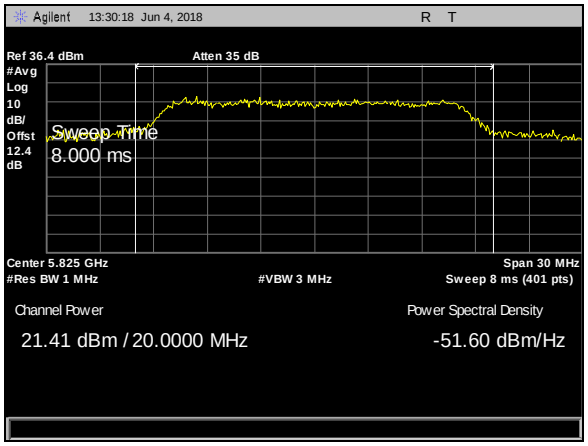
Plot 15. Conducted Output Power, MODE a BW20MHz CH 161 CHAIN 2



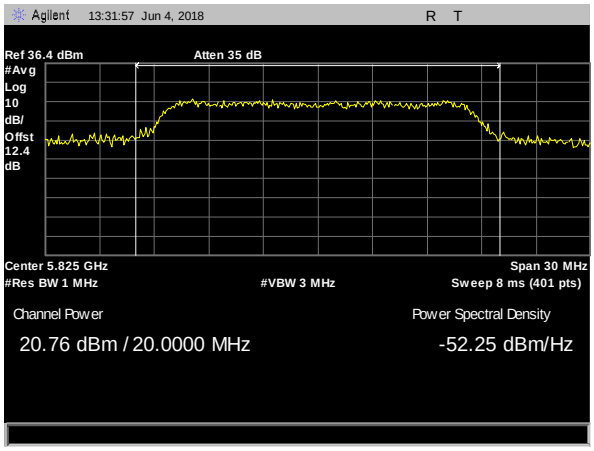
Plot 16. Conducted Output Power, MODE a BW20MHz CH 161 CHAIN 3



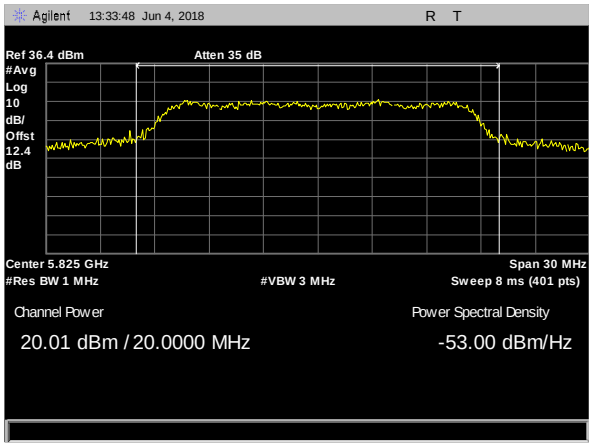
Plot 17. Conducted Output Power, MODE a BW20MHz CH 165 CHAIN 0



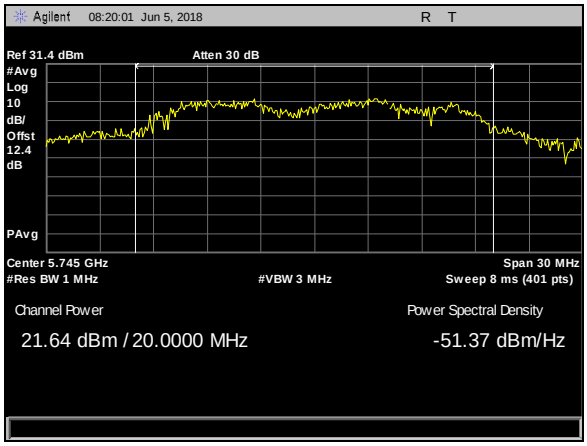
Plot 18. Conducted Output Power, MODE a BW20MHz CH 165 CHAIN 1



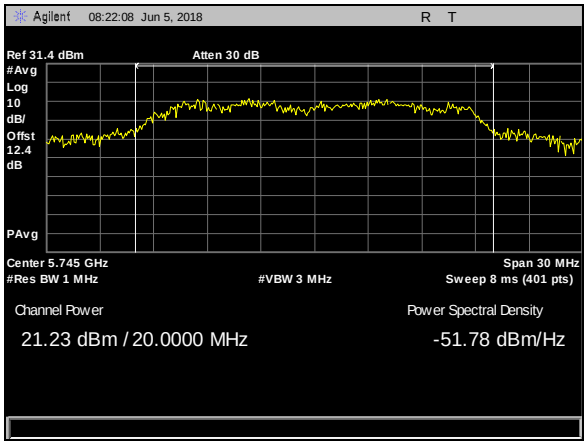
Plot 19. Conducted Output Power, MODE a BW20MHz CH 165 CHAIN 2



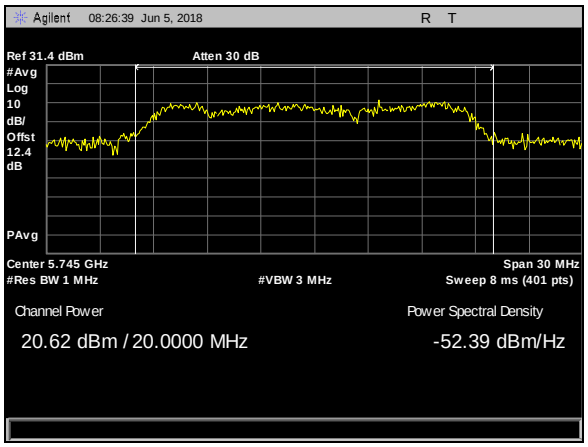
Plot 20. Conducted Output Power, MODE a BW20MHz CH 165 CHAIN 3



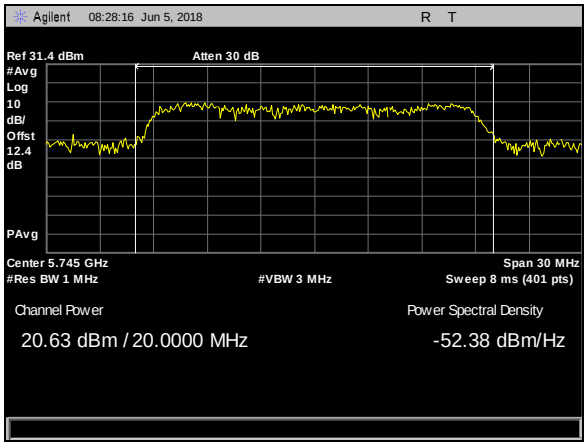
Plot 21. Conducted Output Power, MODE ac BW20MHz CH 149 CHAIN 0



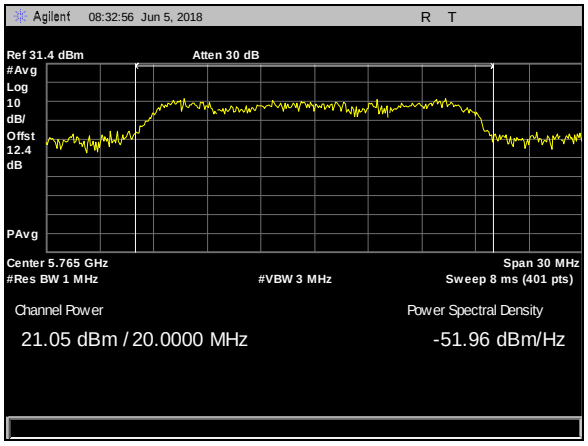
Plot 22. Conducted Output Power, MODE ac BW20MHz CH 149 CHAIN 1



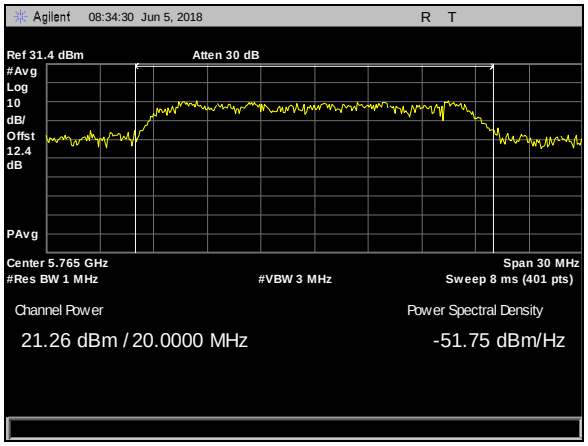
Plot 23. Conducted Output Power, MODE ac BW20MHz CH 149 CHAIN 2



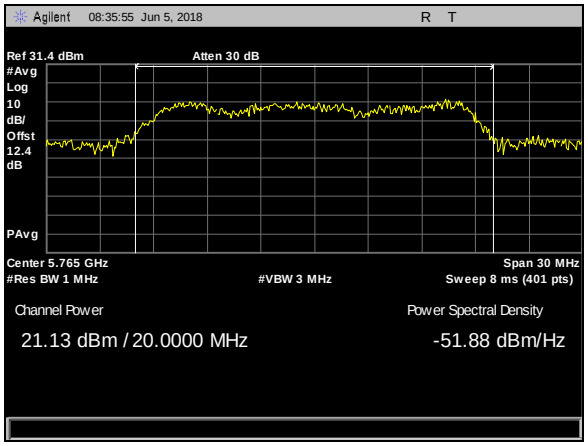
Plot 24. Conducted Output Power, MODE ac BW20MHz CH 149 CHAIN 3



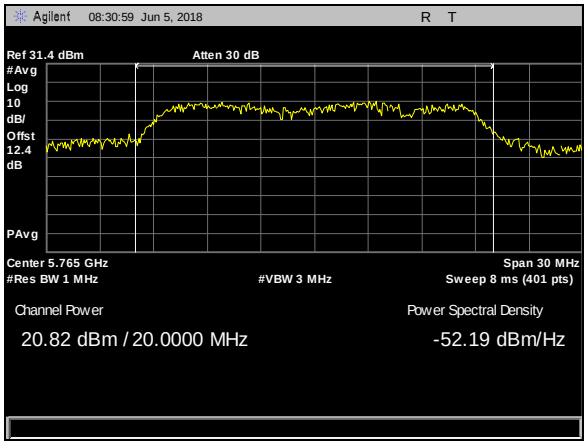
Plot 25. Conducted Output Power, MODE ac BW20MHz CH 153 CHAIN 0



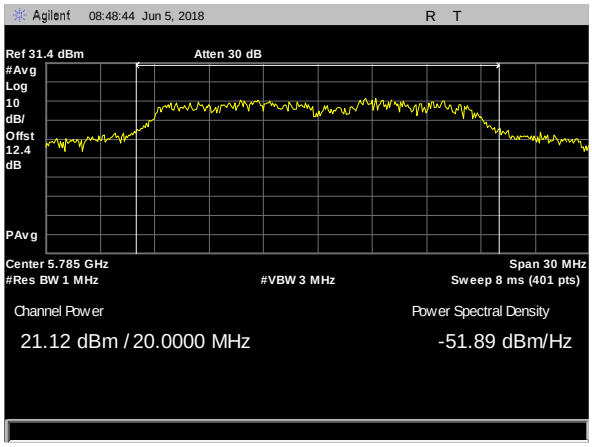
Plot 26. Conducted Output Power, MODE ac BW20MHz CH 153 CHAIN 1



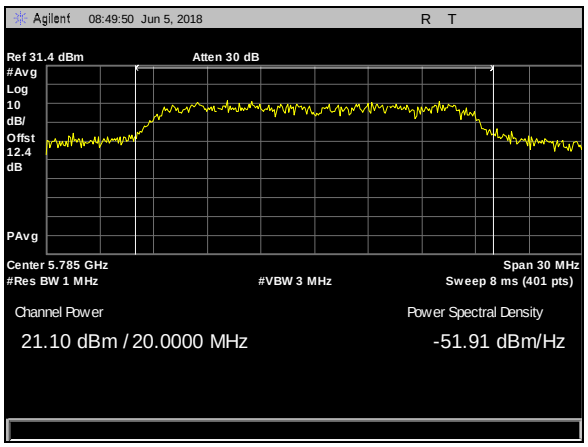
Plot 27. Conducted Output Power, MODE ac BW20MHz CH 153 CHAIN 2



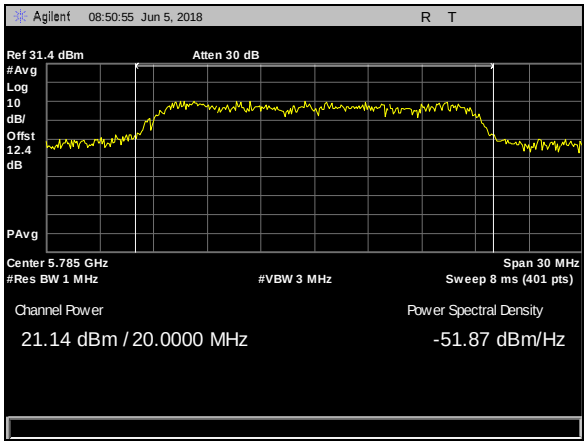
Plot 28. Conducted Output Power, MODE ac BW20MHz CH 153 CHAIN 3



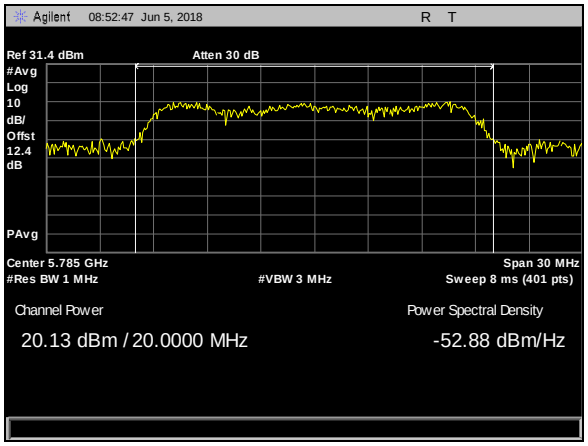
Plot 29. Conducted Output Power, MODE ac BW20MHz CH 157 CHAIN 0



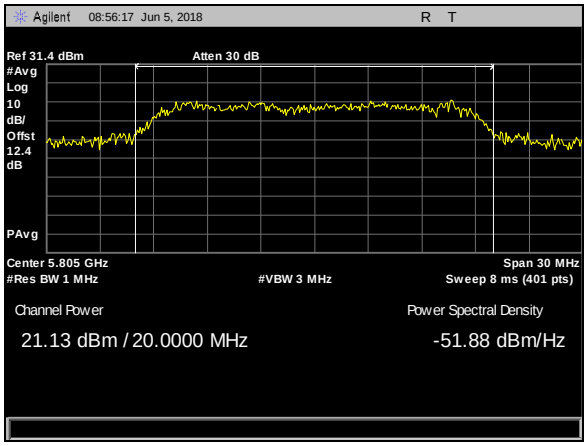
Plot 30. Conducted Output Power, MODE ac BW20MHz CH 157 CHAIN 1



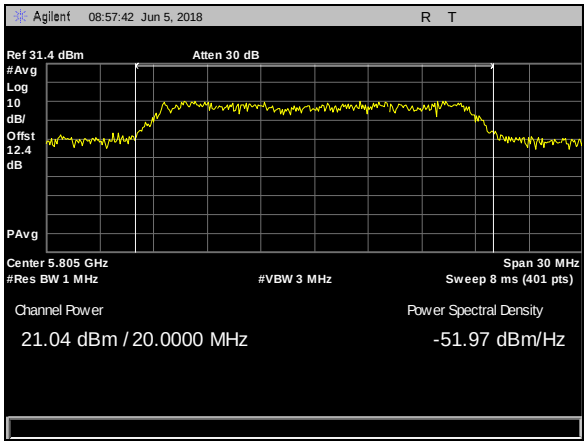
Plot 31. Conducted Output Power, MODE ac BW20MHz CH 157 CHAIN 2



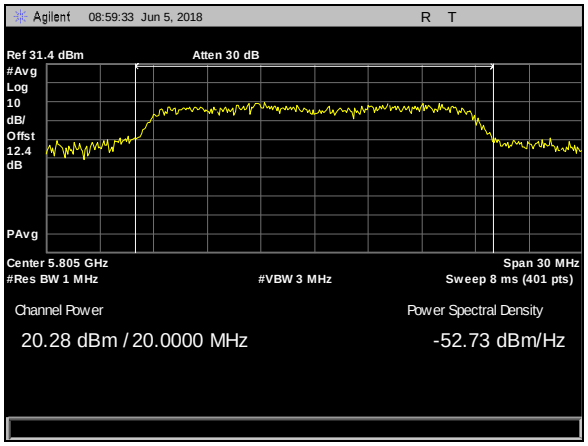
Plot 32. Conducted Output Power, MODE ac BW20MHz CH 157 CHAIN 3



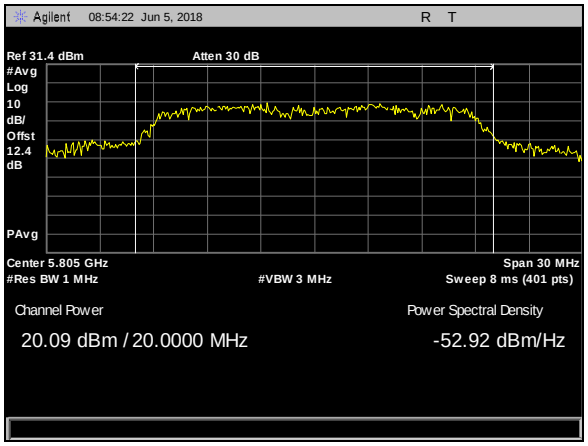
Plot 33. Conducted Output Power, MODE ac BW20MHz CH 161 CHAIN 0



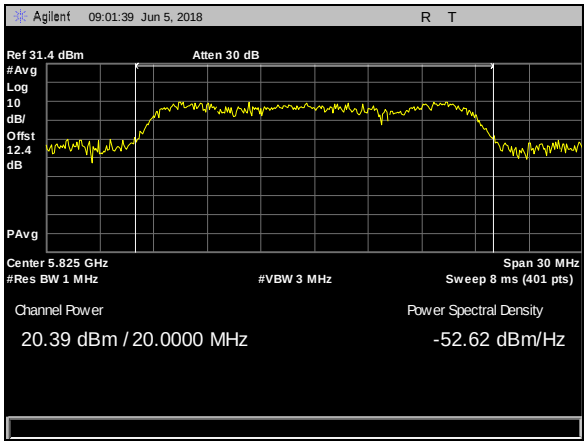
Plot 34. Conducted Output Power, MODE ac BW20MHz CH 161 CHAIN 1



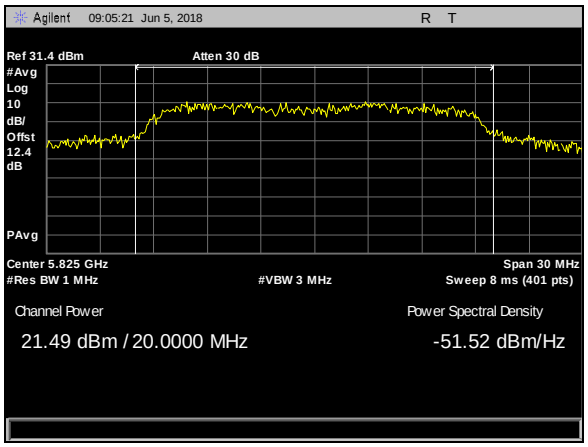
Plot 35. Conducted Output Power, MODE ac BW20MHz CH 161 CHAIN 2



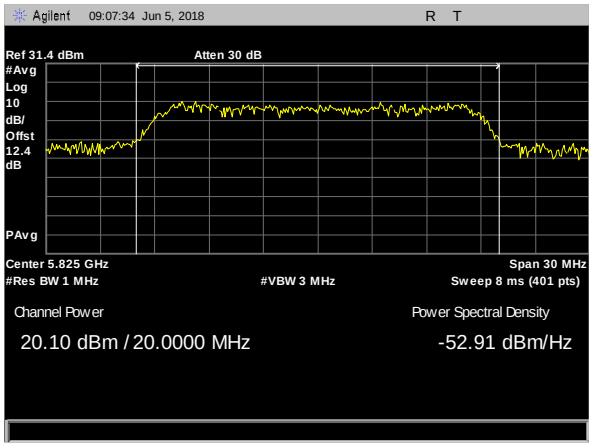
Plot 36. Conducted Output Power, MODE ac BW20MHz CH 161 CHAIN 3



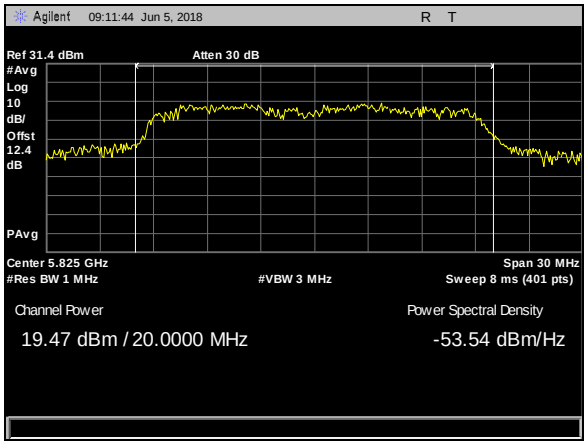
Plot 37. Conducted Output Power, MODE ac BW20MHz CH 165 CHAIN 0



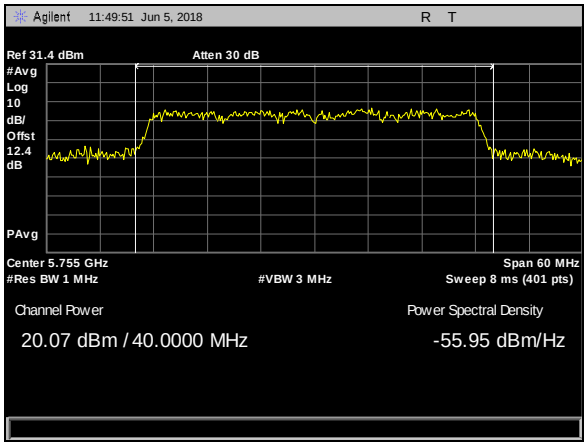
Plot 38. Conducted Output Power, MODE ac BW20MHz CH 165 CHAIN 1



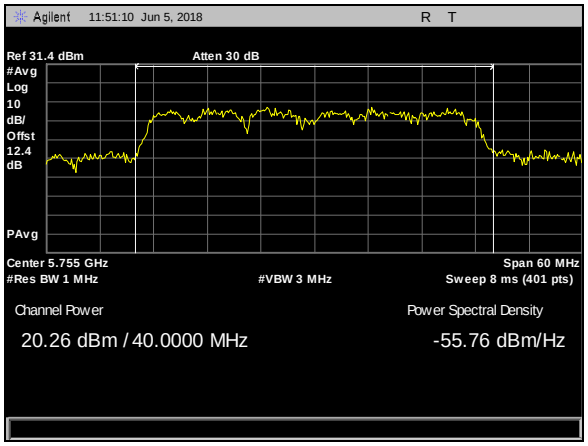
Plot 39. Conducted Output Power, MODE ac BW20MHz CH 165 CHAIN 2



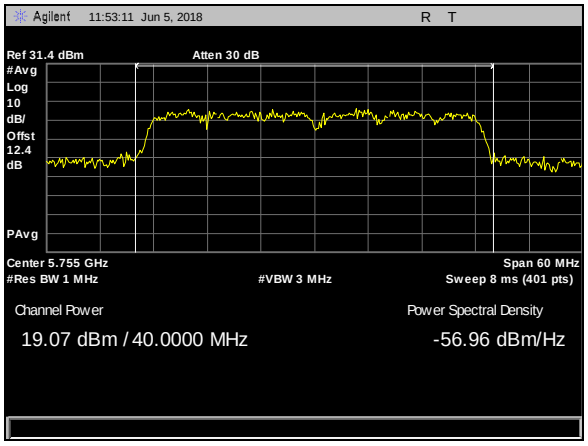
Plot 40. Conducted Output Power, MODE ac BW20MHz CH 165 CHAIN 3



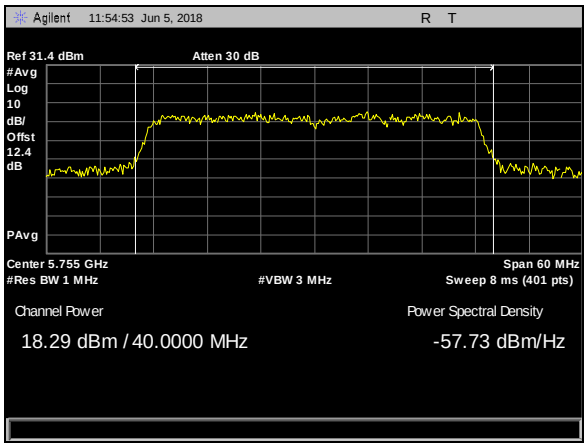
Plot 41. Conducted Output Power, MODE ac BW40MHz CH 151 CHAIN 0



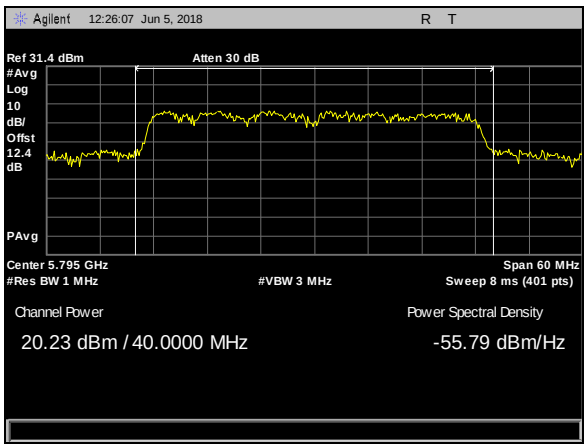
Plot 42. Conducted Output Power, MODE ac BW40MHz CH 151 CHAIN 1



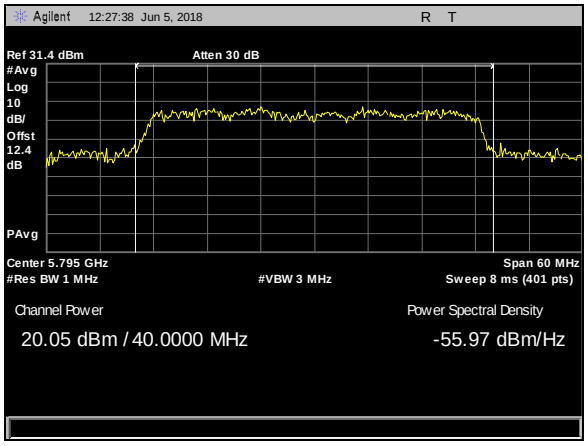
Plot 43. Conducted Output Power, MODE ac BW40MHz CH 151 CHAIN 2



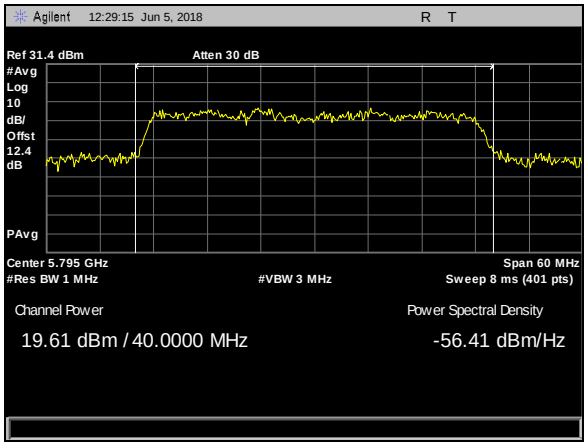
Plot 44. Conducted Output Power, MODE ac BW40MHz CH 151 CHAIN 3



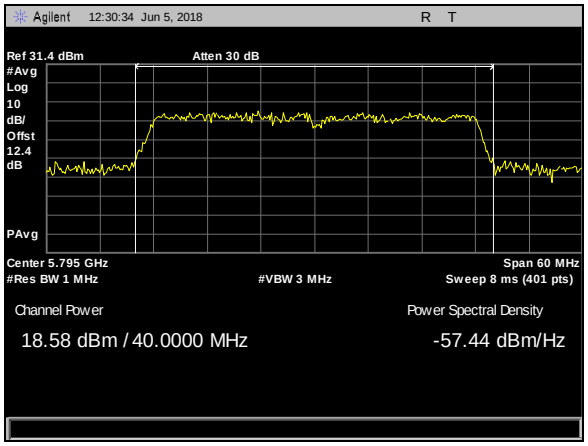
Plot 45. Conducted Output Power, MODE ac BW40MHz CH 159 CHAIN 0



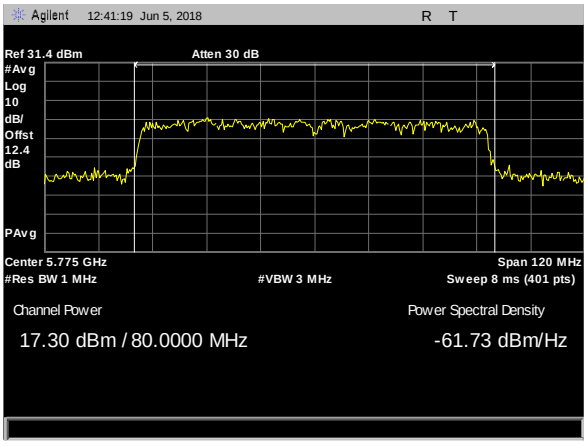
Plot 46. Conducted Output Power, MODE ac BW40MHz CH 159 CHAIN 1



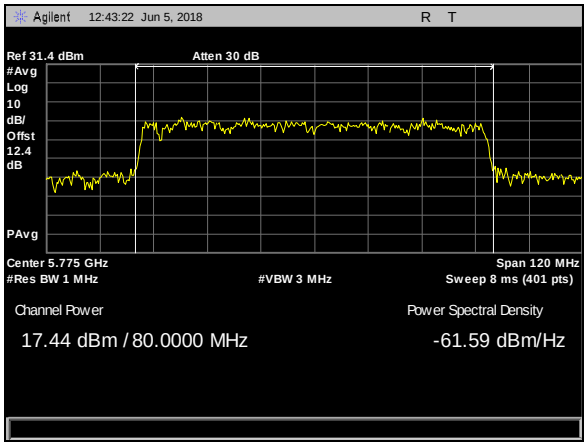
Plot 47. Conducted Output Power, MODE ac BW40MHz CH 159 CHAIN 2



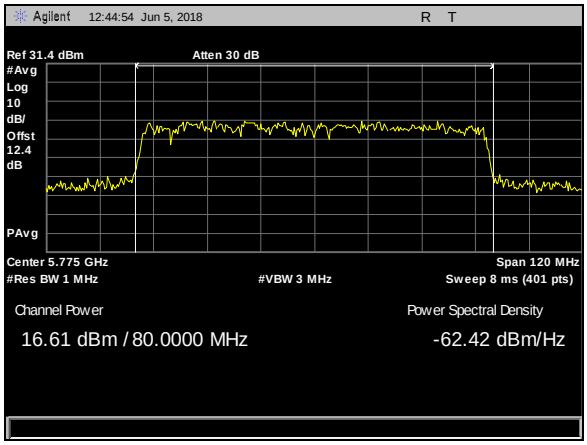
Plot 48. Conducted Output Power, MODE ac BW40MHz CH 159 CHAIN 3



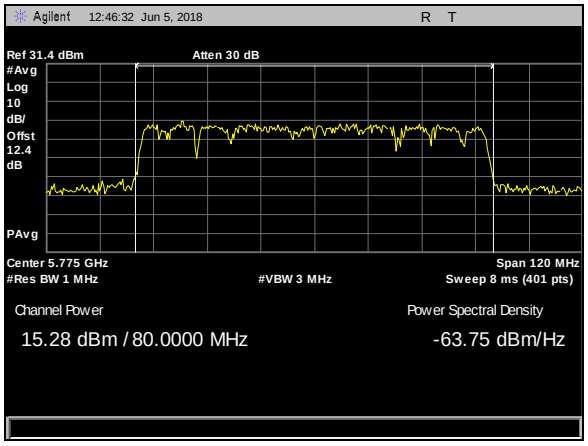
Plot 49. Conducted Output Power, MODE ac BW80MHz CH 155 CHAIN 0



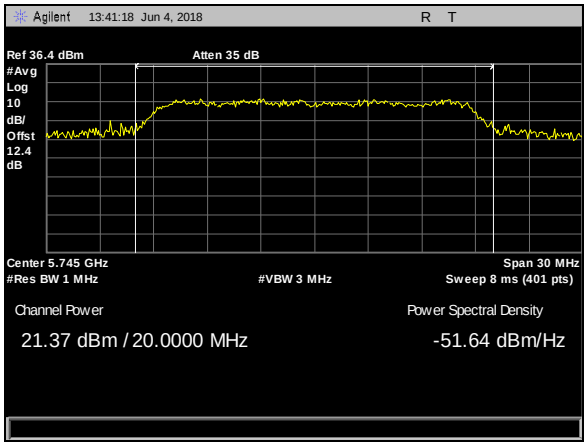
Plot 50. Conducted Output Power, MODE ac BW80MHz CH 155 CHAIN 1



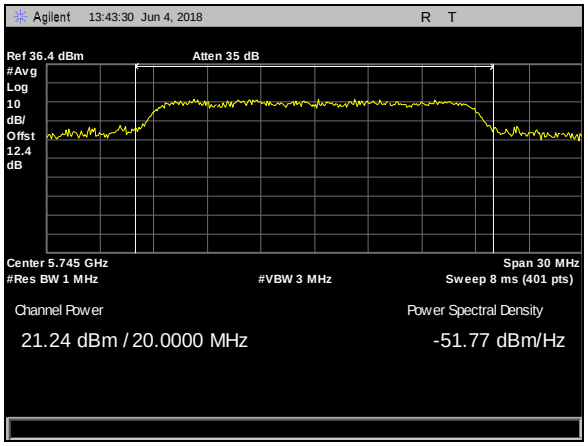
Plot 51. Conducted Output Power, MODE ac BW80MHz CH 155 CHAIN 2



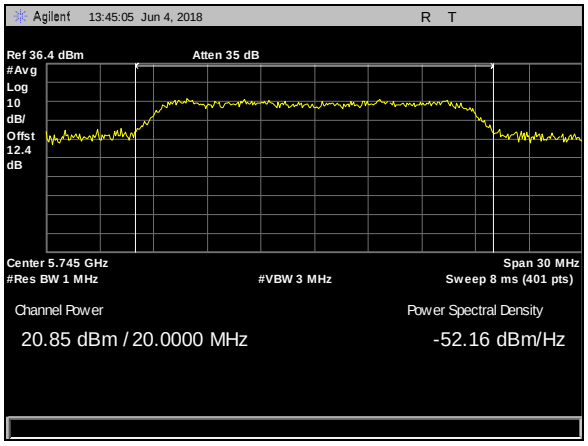
Plot 52. Conducted Output Power, MODE ac BW80MHz CH 155 CHAIN 3



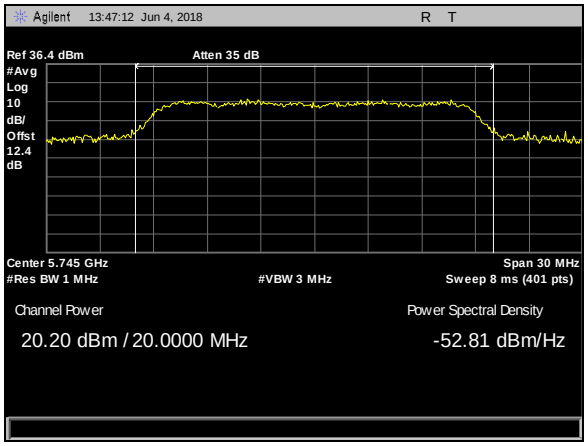
Plot 53. Conducted Output Power, MODE n BW20MHz CH 149 CHAIN 0



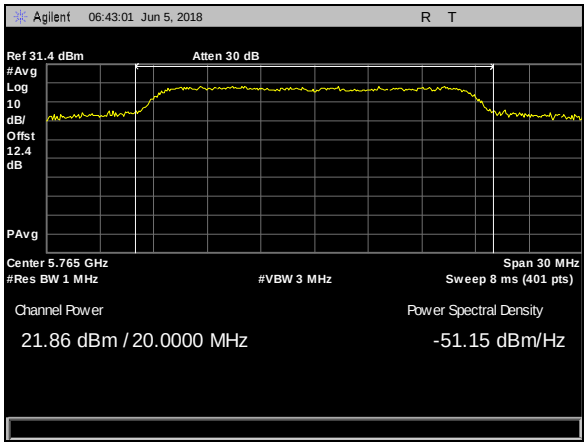
Plot 54. Conducted Output Power, MODE n BW20MHz CH 149 CHAIN 1



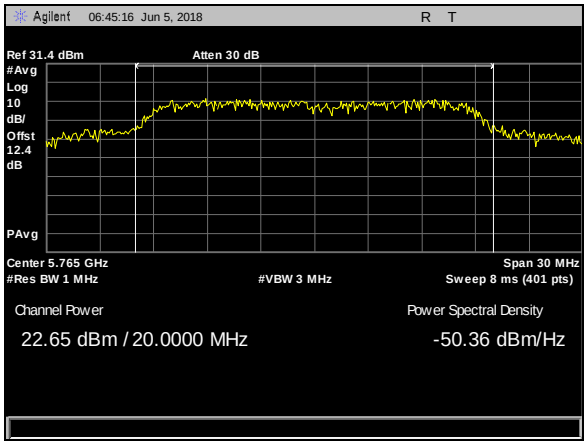
Plot 55. Conducted Output Power, MODE n BW20MHz CH 149 CHAIN 2



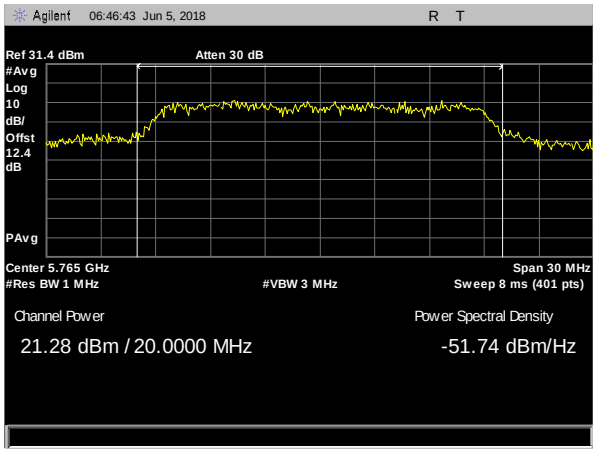
Plot 56. Conducted Output Power, MODE n BW20MHz CH 149 CHAIN 3



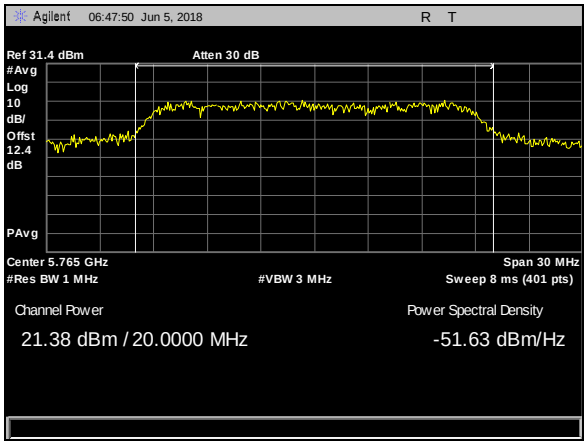
Plot 57. Conducted Output Power, MODE n BW20MHz CH 153 CHAIN 0



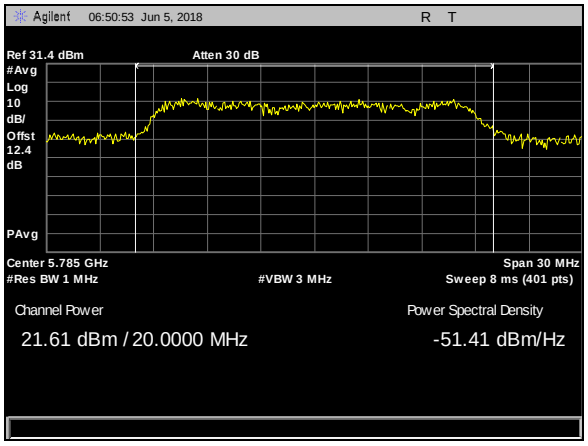
Plot 58. Conducted Output Power, MODE n BW20MHz CH 153 CHAIN 1



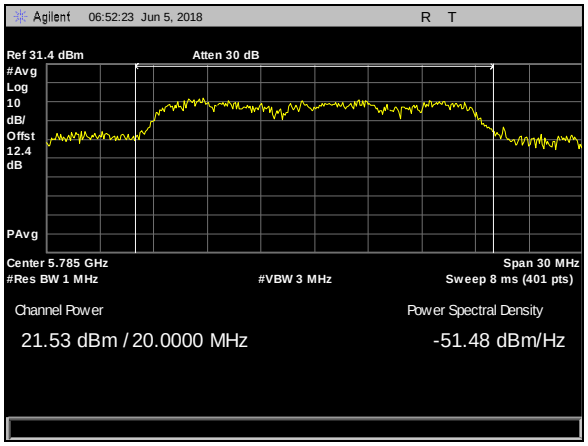
Plot 59. Conducted Output Power, MODE n BW20MHz CH 153 CHAIN 2



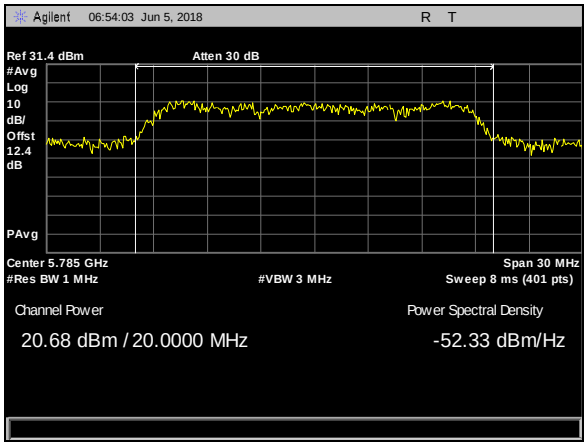
Plot 60. Conducted Output Power, MODE n BW20MHz CH 153 CHAIN 3



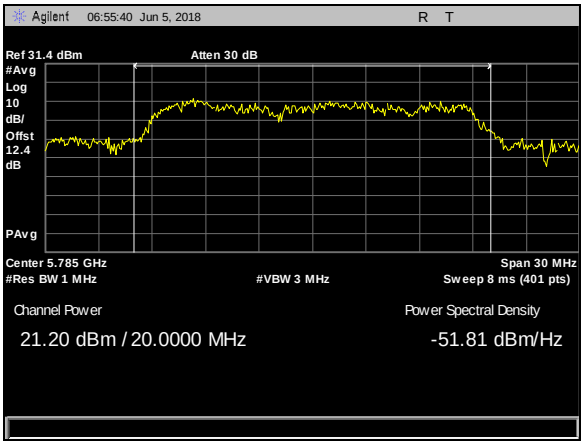
Plot 61. Conducted Output Power, MODE n BW20MHz CH 157 CHAIN 0



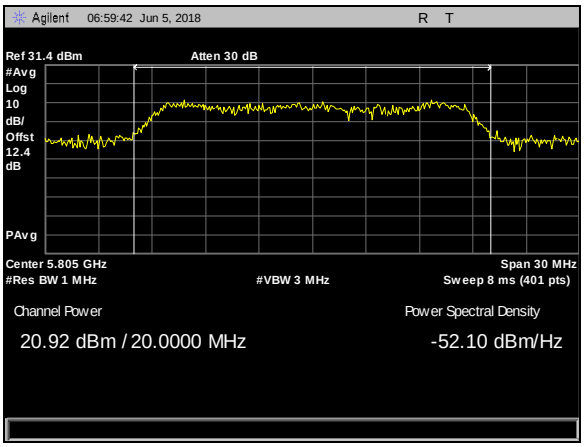
Plot 62. Conducted Output Power, MODE n BW20MHz CH 157 CHAIN 1



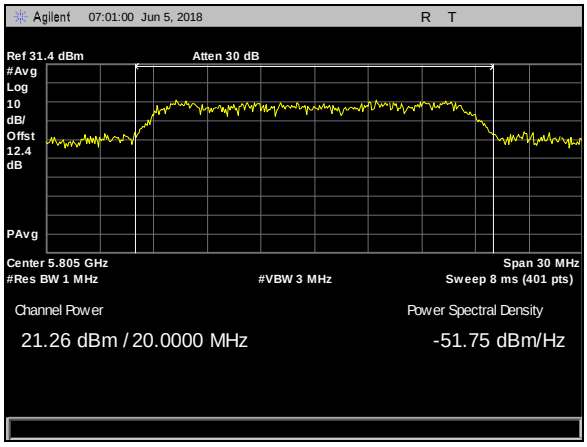
Plot 63. Conducted Output Power, MODE n BW20MHz CH 157 CHAIN 2



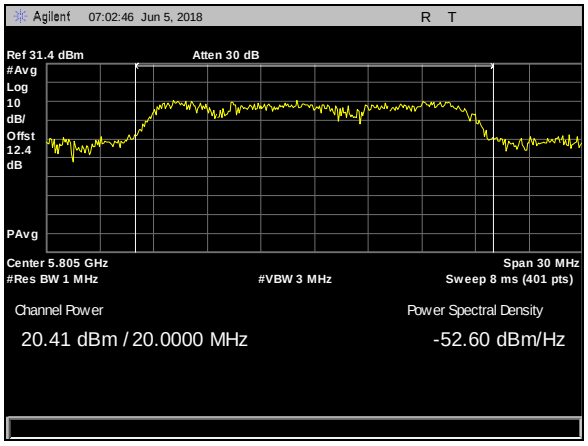
Plot 64. Conducted Output Power, MODE n BW20MHz CH 157 CHAIN 3



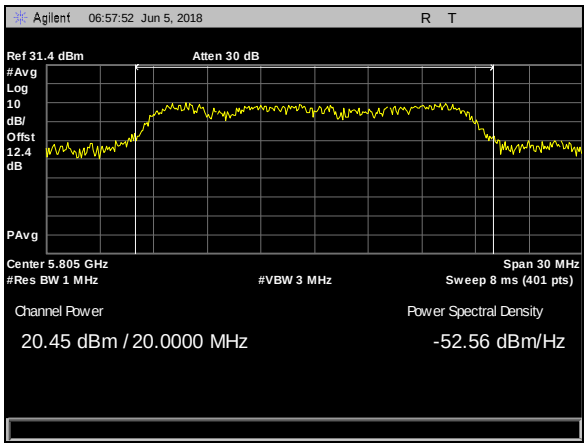
Plot 65. Conducted Output Power, MODE n BW20MHz CH 161 CHAIN 0



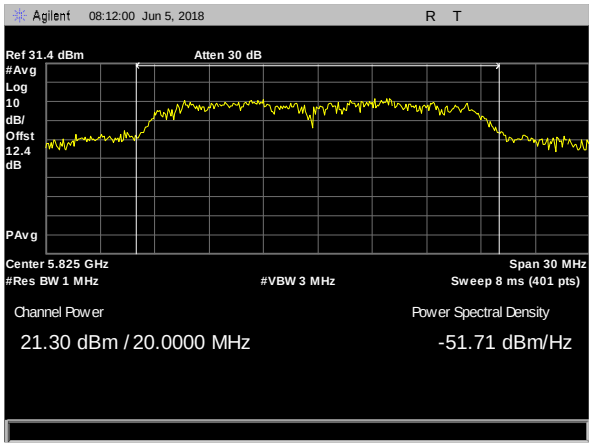
Plot 66. Conducted Output Power, MODE n BW20MHz CH 161 CHAIN 1



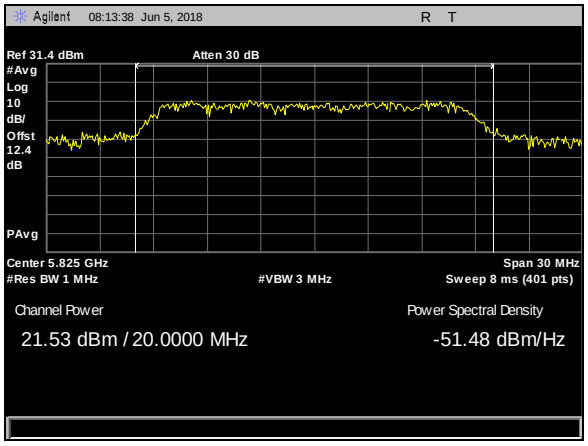
Plot 67. Conducted Output Power, MODE n BW20MHz CH 161 CHAIN 2



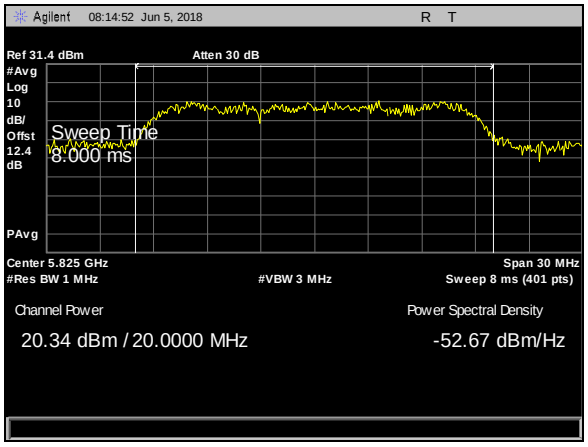
Plot 68. Conducted Output Power, MODE n BW20MHz CH 161 CHAIN 3



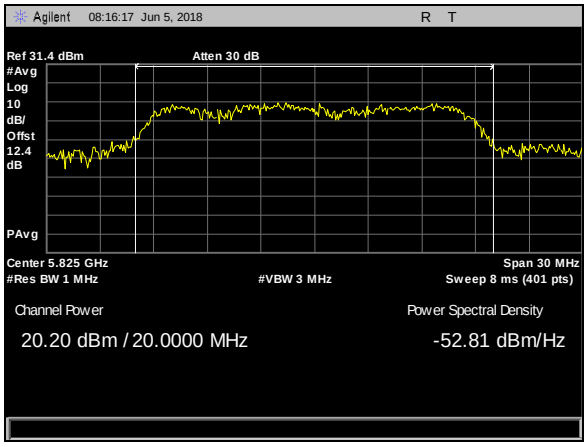
Plot 69. Conducted Output Power, MODE n BW20MHz CH 165 CHAIN 0



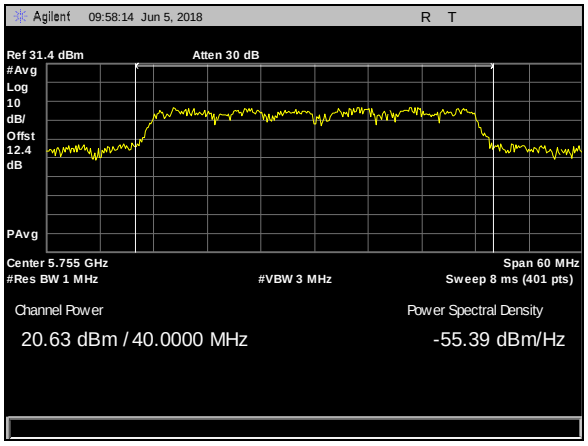
Plot 70. Conducted Output Power, MODE n BW20MHz CH 165 CHAIN 1



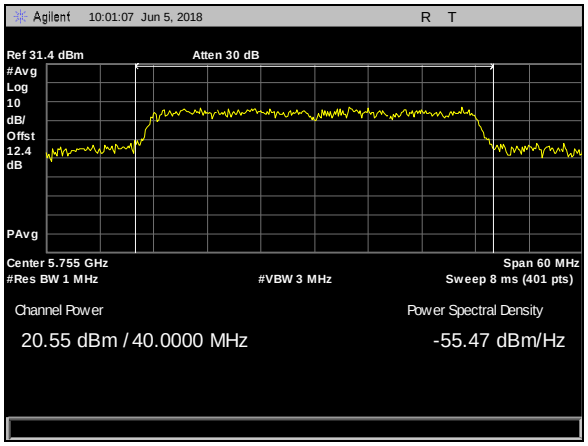
Plot 71. Conducted Output Power, MODE n BW20MHz CH 165 CHAIN 2



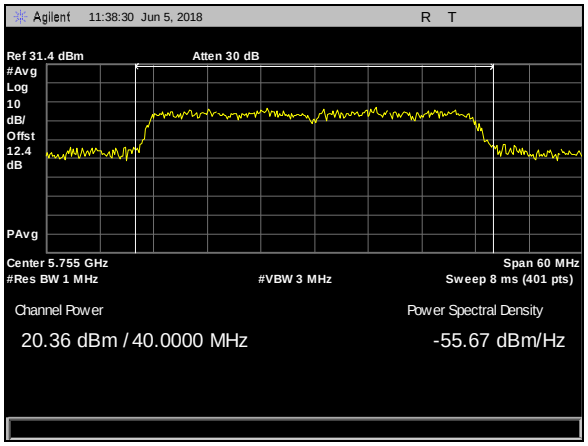
Plot 72. Conducted Output Power, MODE n BW20MHz CH 165 CHAIN 3



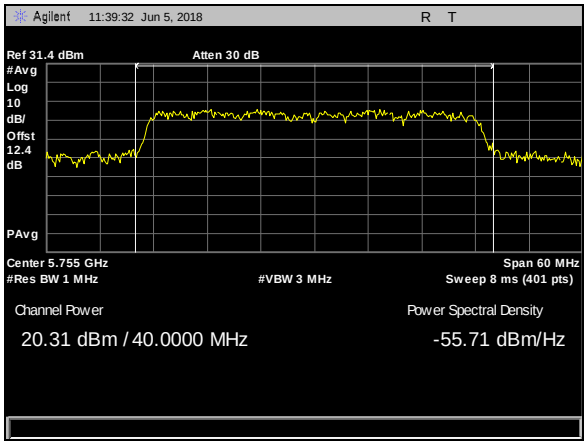
Plot 73. Conducted Output Power, MODE n BW40MHz CH 151 CHAIN 0



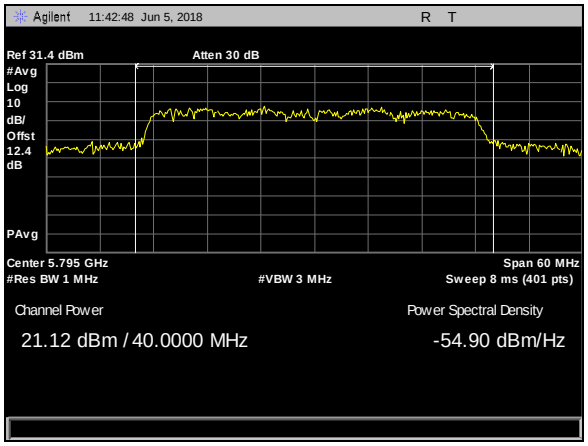
Plot 74. Conducted Output Power, MODE n BW40MHz CH 151 CHAIN 1



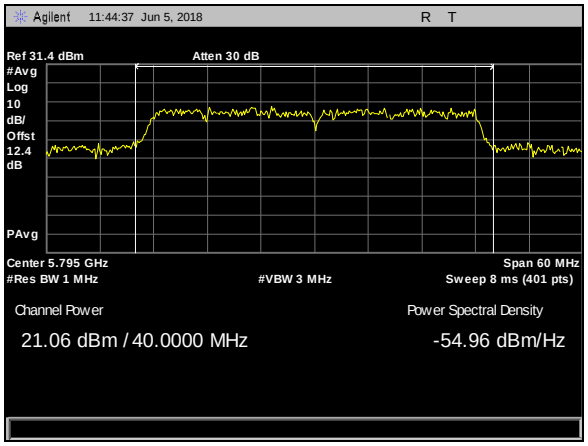
Plot 75. Conducted Output Power, MODE n BW40MHz CH 151 CHAIN 2



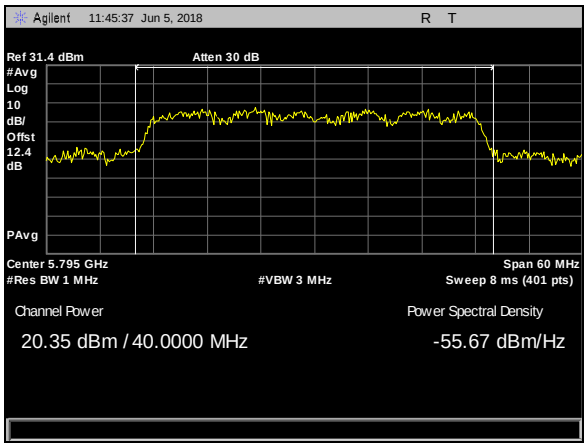
Plot 76. Conducted Output Power, MODE n BW40MHz CH 151 CHAIN 3



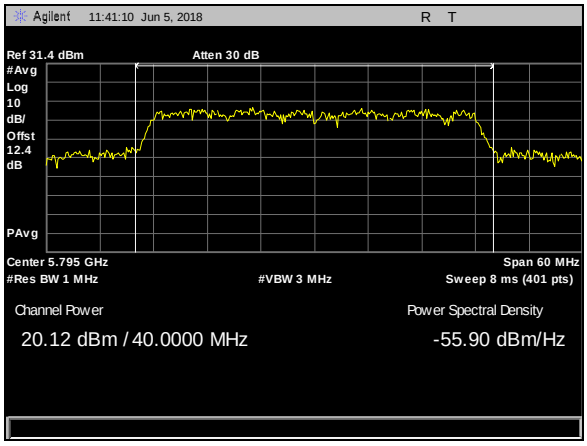
Plot 77. Conducted Output Power, MODE n BW40MHz CH 159 CHAIN 0



Plot 78. Conducted Output Power, MODE n BW40MHz CH 159 CHAIN 1



Plot 79. Conducted Output Power, MODE n BW40MHz CH 159 CHAIN 2



Plot 80. Conducted Output Power, MODE n BW40MHz CH 159 CHAIN 3

Electromagnetic Compatibility Criteria for Intentional Radiators

§15.407(a)(3) Maximum Power Spectral Density

Test Requirements: **§15.407(a)(3):** In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.

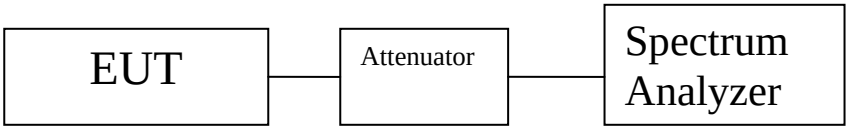
Test Procedure: The EUT was connected to a spectrum analyzer through a cable and attenuator. Measurements were taken with the EUT set to transmit continuously on its low, mid, and high channels. Its power was measured according KDB 789033 D02 General UNII Test Procedures v01. A 1 MHz RBW was used during testing, as this provides a worst-case scenario.

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

No anomalies detected.

Test Engineer(s): Arsalan Hasan

Test Date(s): June 7, 2018



Frequency (MHz)	Channel (WLAN)	PSD Chain 0 (dBm)	PSD Chain 1 (dBm)	PSD Chain 2 (dBm)	PSD Chain 3 (dBm)	Total PSD (dBm)	Antenna Gain (dBi)	PSD Limit (dBm)	PSD Margin (dB)
5745	149	10.77	10.4	9.76	9.48	16.15	4.10	30.00	-13.85
5765	153	10.77	10.73	9.74	10.74	16.54	4.10	30.00	-13.46
5785	157	10.65	10.44	10.48	9.7	16.35	4.10	30.00	-13.65
5805	161	10.29	10.19	9.173	9.375	15.81	4.10	30.00	-14.19
5825	165	10.14	10.65	9.083	9.23	15.84	4.10	30.00	-14.16

Table 13. Power Spectral Density, Mode a, 20 MHz

Frequency (MHz)	Channel (WLAN)	PSD Chain 0 (dBm)	PSD Chain 1 (dBm)	PSD Chain 2 (dBm)	PSD Chain 3 (dBm)	Total PSD (dBm)	Antenna Gain (dBi)	PSD Limit (dBm)	PSD Margin (dB)
5745	149	10.34	10.49	9.43	9.14	15.91	4.10	30.00	-14.09
5765	153	9.72	10.32	9.94	9.3	15.86	4.10	30.00	-14.14
5785	157	10.51	9.74	10.23	9.62	16.06	4.10	30.00	-13.94
5805	161	9.94	9.48	9.56	9.58	15.66	4.10	30.00	-14.34
5825	165	10.4	10.19	10.37	10.15	16.30	4.10	30.00	-13.70

Table 14. Power Spectral Density, Mode n, 20 MHz

Frequency (MHz)	Channel (WLAN)	PSD Chain 0 (dBm)	PSD Chain 1 (dBm)	PSD Chain 2 (dBm)	PSD Chain 3 (dBm)	Total PSD (dBm)	Antenna Gain (dBi)	PSD Limit (dBm)	PSD Margin (dB)
5745	149	9.86	10.6	9.69	10.29	16.15	4.10	30.00	-13.85
5765	153	9.85	9.16	10.11	9.33	15.65	4.10	30.00	-14.35
5785	157	10.44	10.06	10.27	10.5	16.34	4.10	30.00	-13.66
5805	161	9.68	9.19	9.44	9.15	15.39	4.10	30.00	-14.61
5825	165	8.83	10	9.76	9.91	15.67	4.10	30.00	-14.33

Table 15. Power Spectral Density, Mode ac, 20 MHz

Frequency (MHz)	Channel (WLAN)	PSD Chain 0 (dBm)	PSD Chain 1 (dBm)	PSD Chain 2 (dBm)	PSD Chain 3 (dBm)	Total PSD (dBm)	Antenna Gain (dBi)	PSD Limit (dBm)	PSD Margin (dB)
5755	151	5.85	5.78	5.9	6.33	11.99	4.10	30.00	-18.01
5795	159	6.98	6.02	6.39	6.51	12.51	4.10	30.00	-17.49

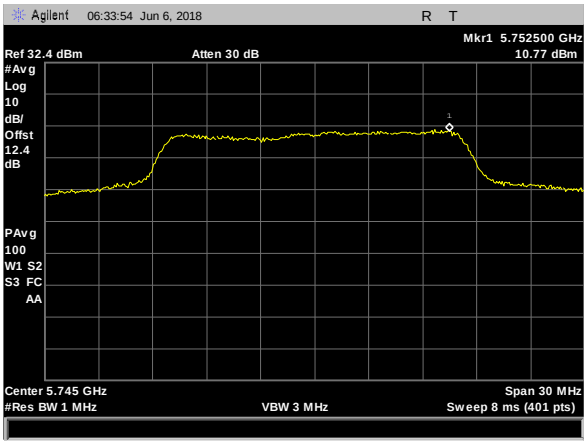
Table 16. Power Spectral Density, Mode n, 40 MHz

Frequency (MHz)	Channel (WLAN)	PSD Chain 0 (dBm)	PSD Chain 1 (dBm)	PSD Chain 2 (dBm)	PSD Chain 3 (dBm)	Total PSD (dBm)	Antenna Gain (dBi)	PSD Limit (dBm)	PSD Margin (dB)
5755	151	5.84	5.49	5.52	5.59	11.63	4.10	30.00	-18.37
5795	159	5.97	6.14	5.98	6.06	12.06	4.10	30.00	-17.94

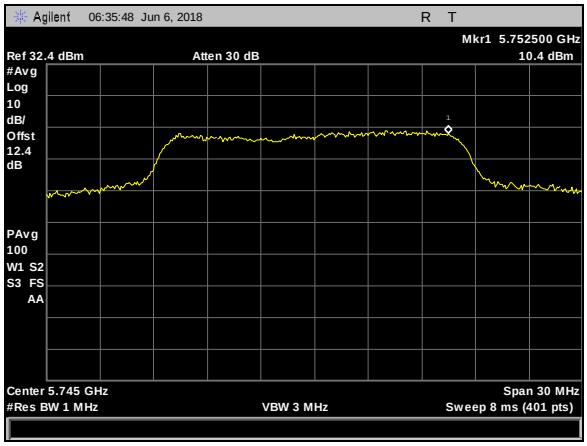
Table 17. Power Spectral Density, Mode ac, 40 MHz

Frequency (MHz)	Channel (WLAN)	PSD Chain 0 (dBm)	PSD Chain 1 (dBm)	PSD Chain 2 (dBm)	PSD Chain 3 (dBm)	Total PSD (dBm)	Antenna Gain (dBi)	PSD Limit (dBm)	PSD Margin (dB)
5775	155	0.14	0.03	0.7	0.11	6.27	4.10	30.00	-23.73

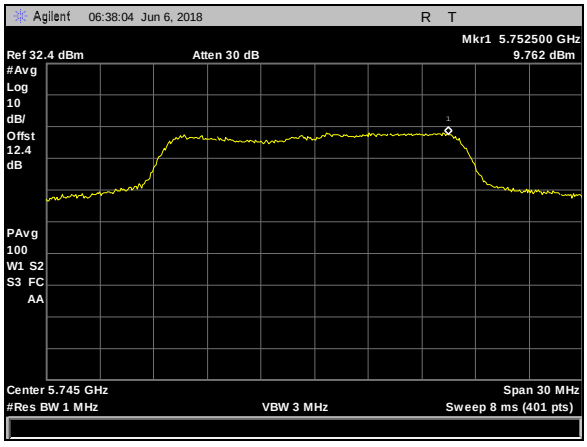
Table 18. Power Spectral Density, Mode ac, 80 MHz



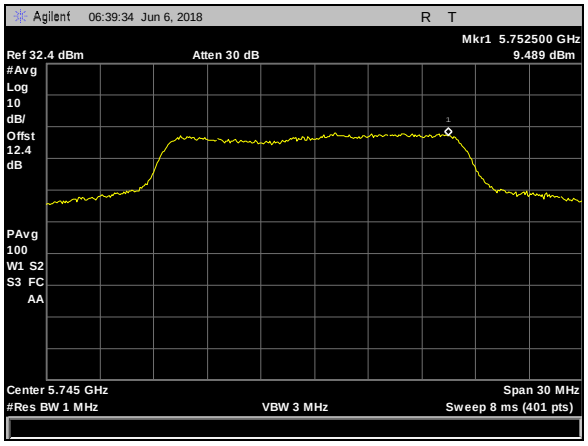
Plot 81. Power Spectral Density, MODE a BW20MHz CH 149 CHAIN 0



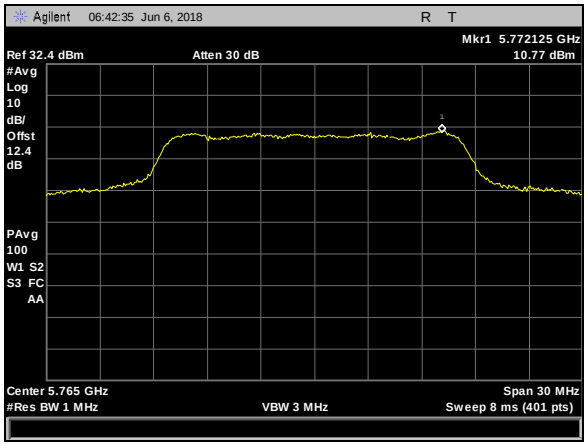
Plot 82. Power Spectral Density, MODE a BW20MHz CH 149 CHAIN 1



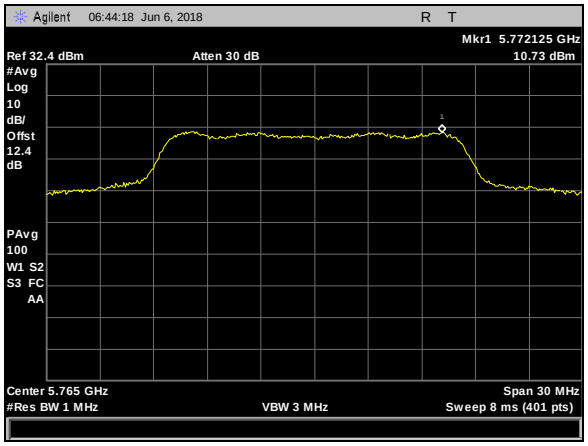
Plot 83. Power Spectral Density, MODE a BW20MHz CH 149 CHAIN 2



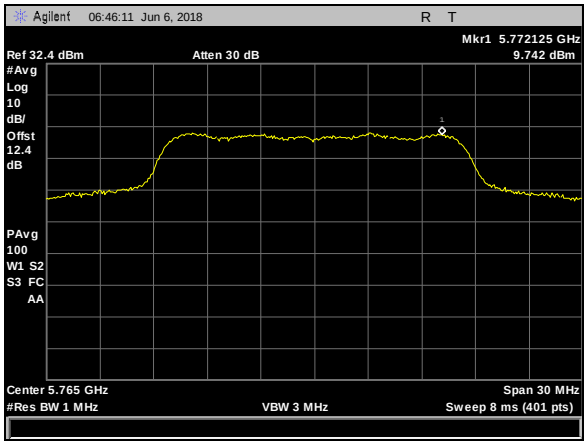
Plot 84. Power Spectral Density, MODE a BW20MHz CH 149 CHAIN 3



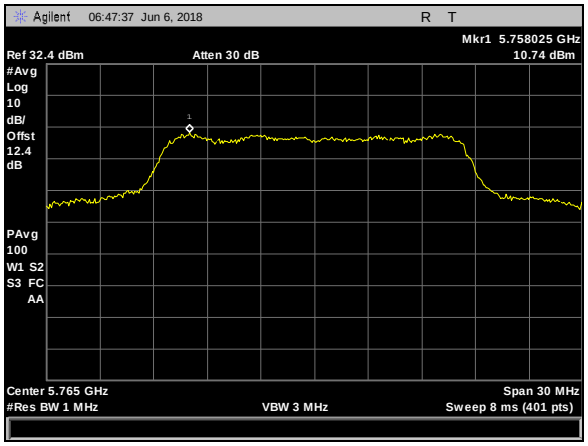
Plot 85. Power Spectral Density, MODE a BW20MHz CH 153 CHAIN 0



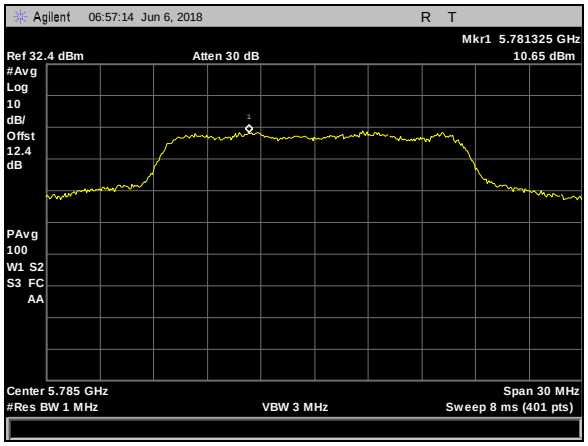
Plot 86. Power Spectral Density, MODE a BW20MHz CH 153 CHAIN 1



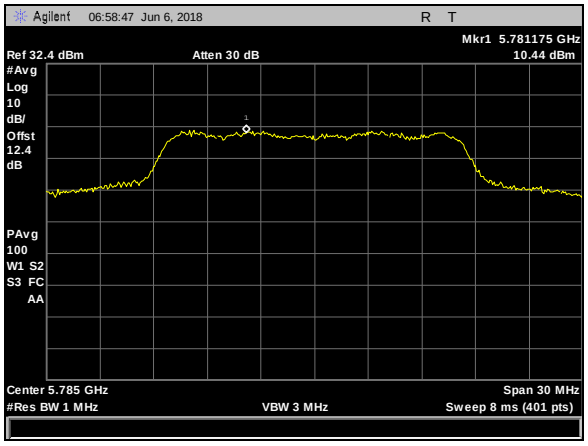
Plot 87. Power Spectral Density, MODE a BW20MHz CH 153 CHAIN 2



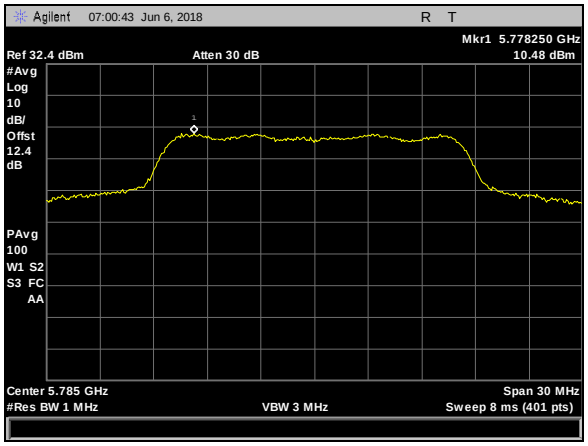
Plot 88. Power Spectral Density, MODE a BW20MHz CH 153 CHAIN 3



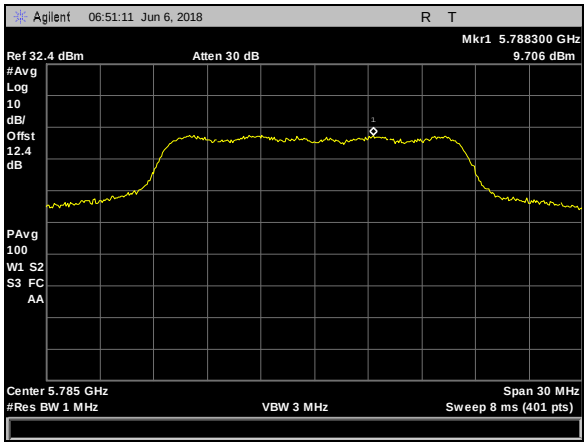
Plot 89. Power Spectral Density, MODE a BW20MHz CH 157 CHAIN 0



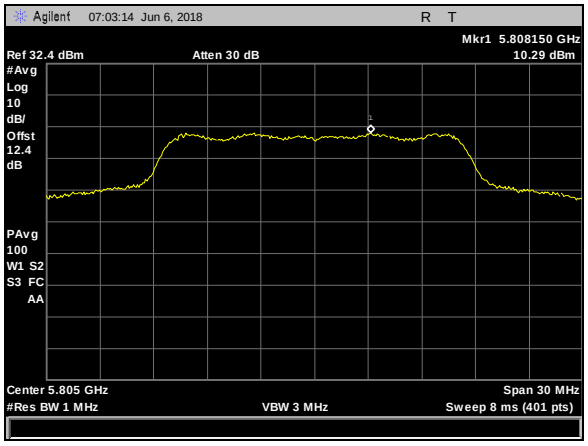
Plot 90. Power Spectral Density, MODE a BW20MHz CH 157 CHAIN 1



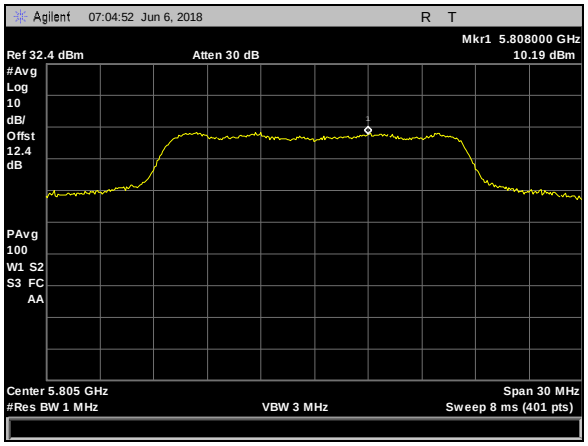
Plot 91. Power Spectral Density, MODE a BW20MHz CH 157 CHAIN 2



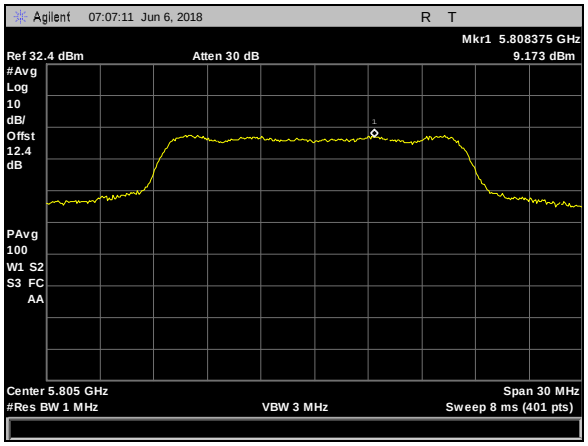
Plot 92. Power Spectral Density, MODE a BW20MHz CH 157 CHAIN 3



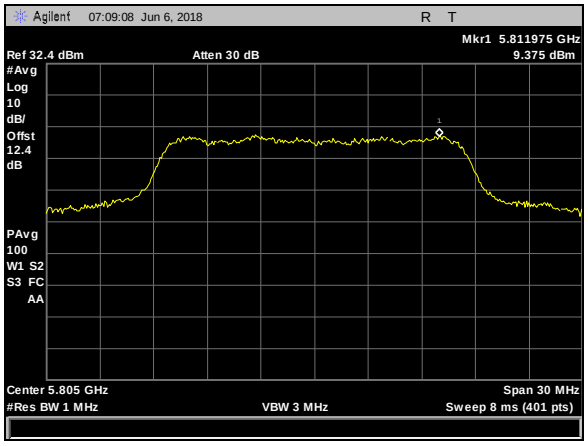
Plot 93. Power Spectral Density, MODE a BW20MHz CH 161 CHAIN 0



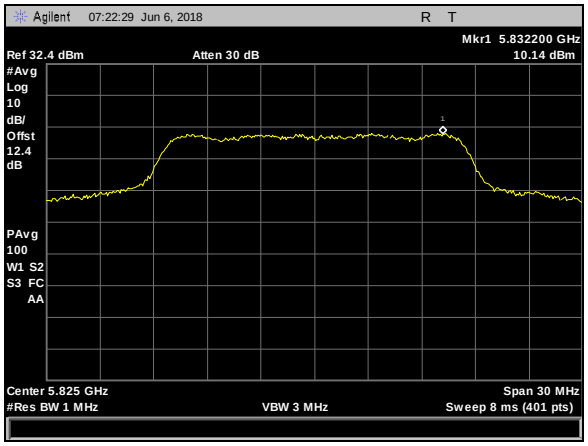
Plot 94. Power Spectral Density, MODE a BW20MHz CH 161 CHAIN 1



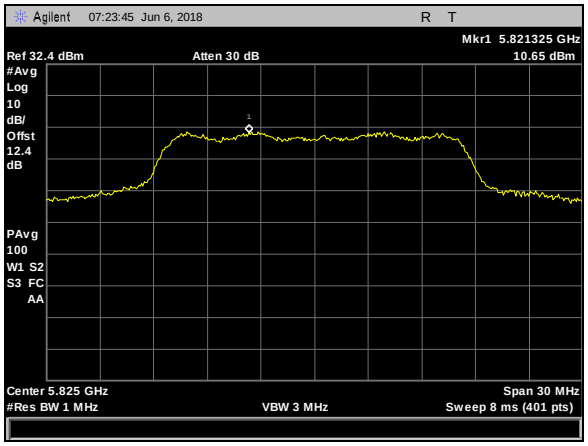
Plot 95. Power Spectral Density, MODE a BW20MHz CH 161 CHAIN 2



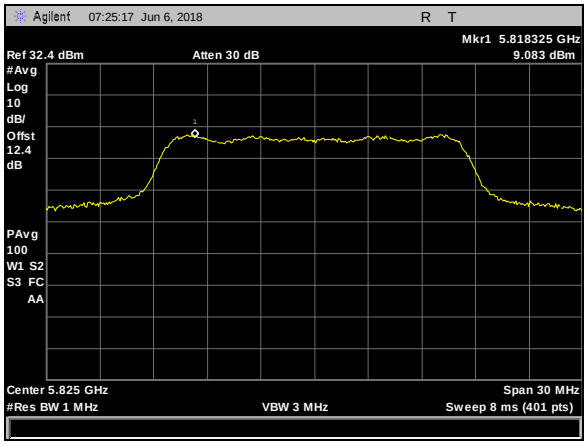
Plot 96. Power Spectral Density, MODE a BW20MHz CH 161 CHAIN 3



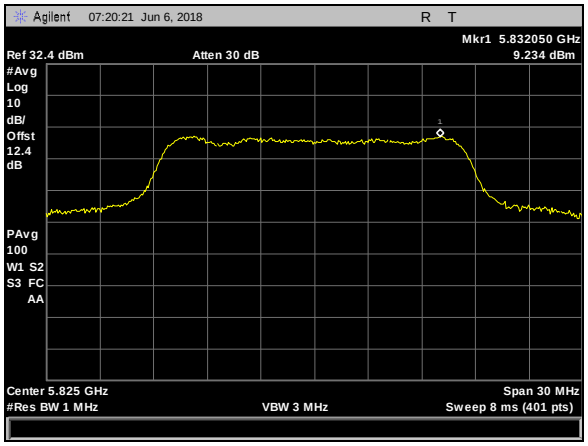
Plot 97. Power Spectral Density, MODE a BW20MHz CH 165 CHAIN 0



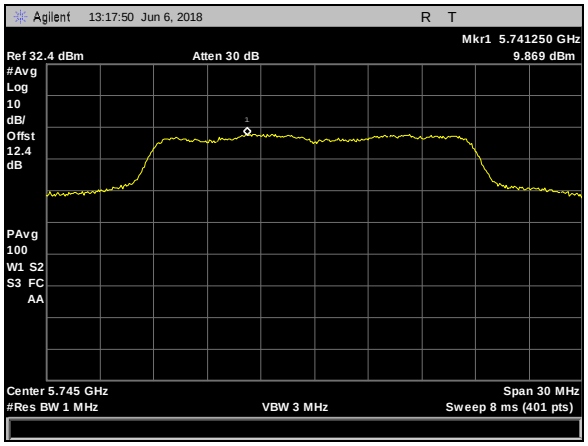
Plot 98. Power Spectral Density, MODE a BW20MHz CH 165 CHAIN 1



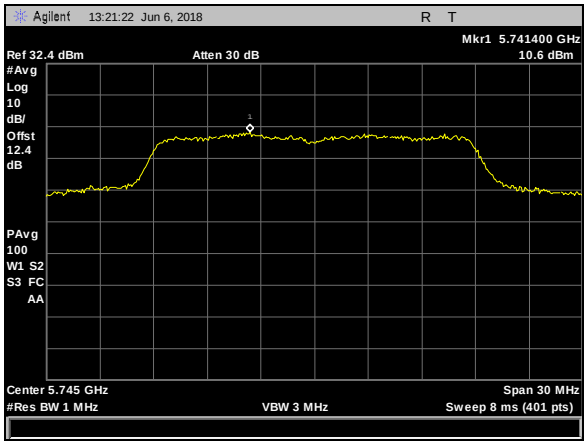
Plot 99. Power Spectral Density, MODE a BW20MHz CH 165 CHAIN 2



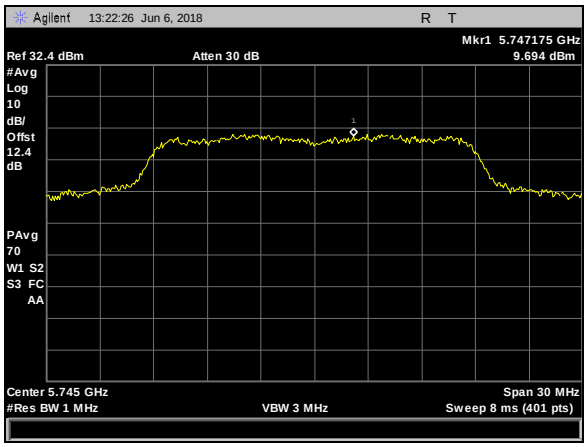
Plot 100. Power Spectral Density, MODE a BW20MHz CH 165 CHAIN 3



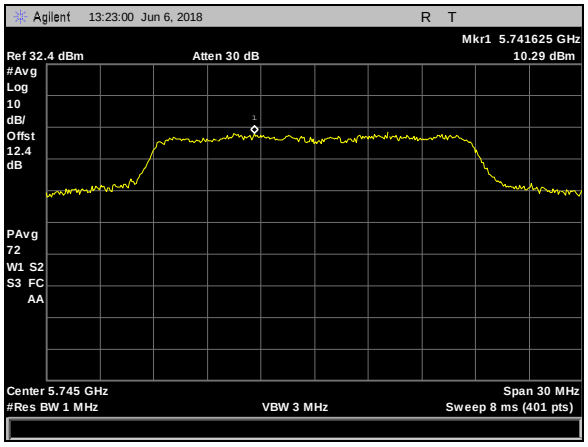
Plot 101. Power Spectral Density, MODE ac BW20MHz CH 149 CHAIN 0



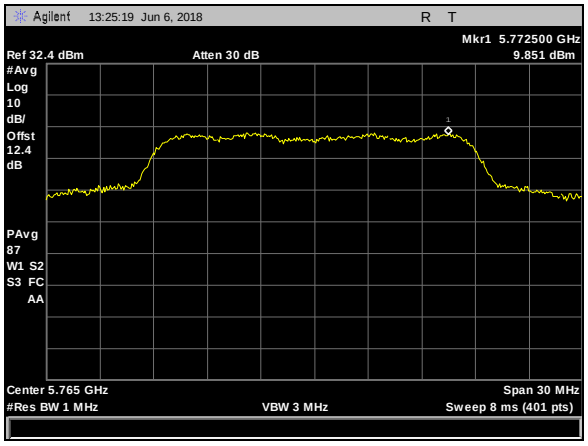
Plot 102. Power Spectral Density, MODE ac BW20MHz CH 149 CHAIN 1



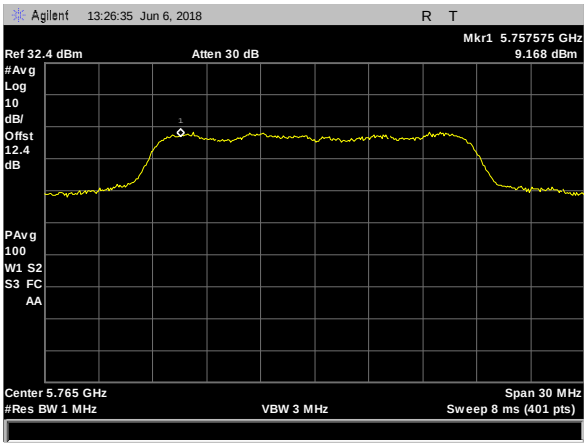
Plot 103. Power Spectral Density, MODE ac BW20MHz CH 149 CHAIN 2



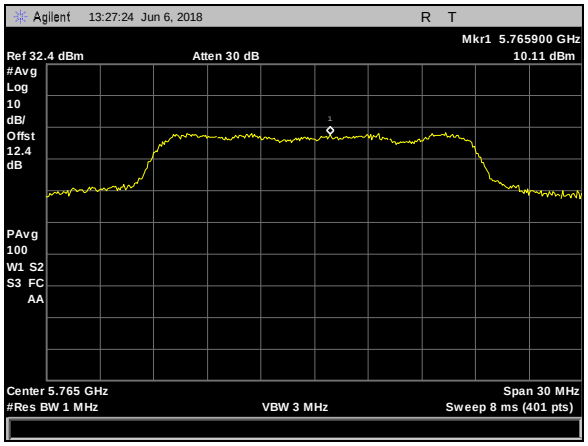
Plot 104. Power Spectral Density, MODE ac BW20MHz CH 149 CHAIN 3



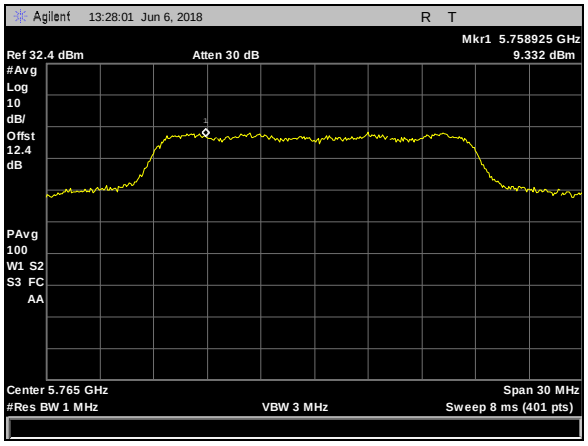
Plot 105. Power Spectral Density, MODE ac BW20MHz CH 153 CHAIN 0



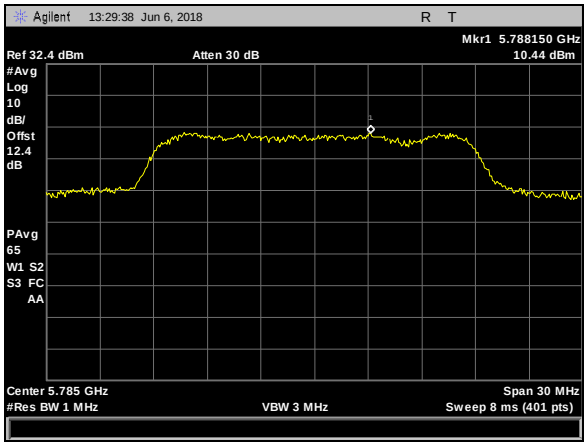
Plot 106. Power Spectral Density, MODE ac BW20MHz CH 153 CHAIN 1



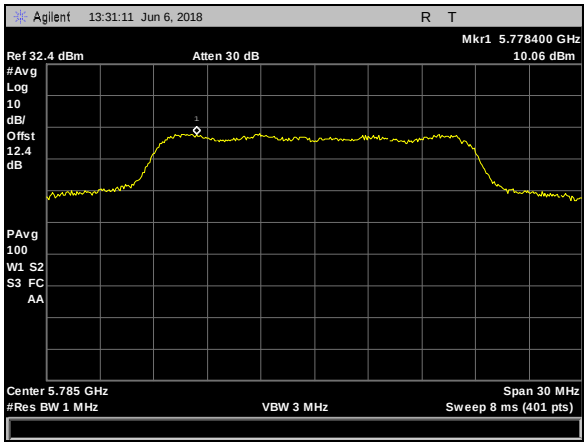
Plot 107. Power Spectral Density, MODE ac BW20MHz CH 153 CHAIN 2



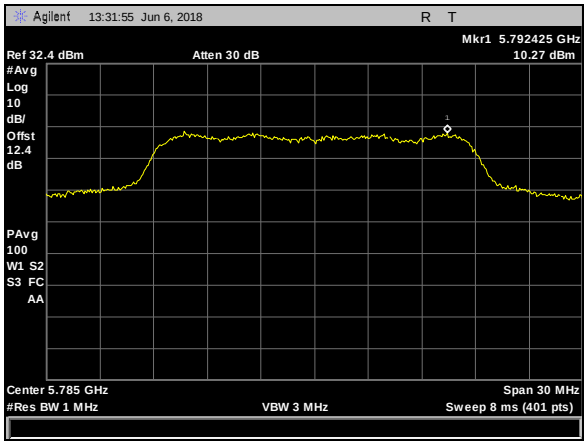
Plot 108. Power Spectral Density, MODE ac BW20MHz CH 153 CHAIN 3



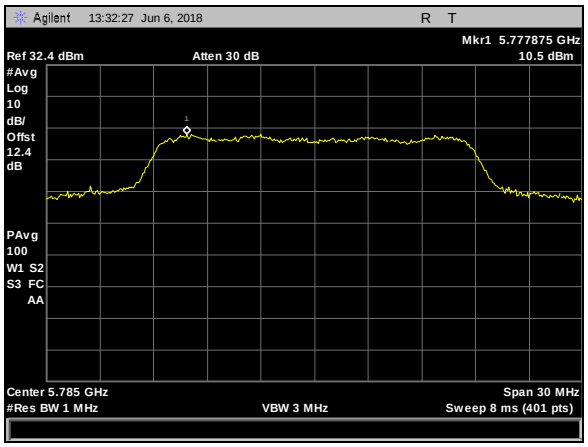
Plot 109. Power Spectral Density, MODE ac BW20MHz CH 157 CHAIN 0



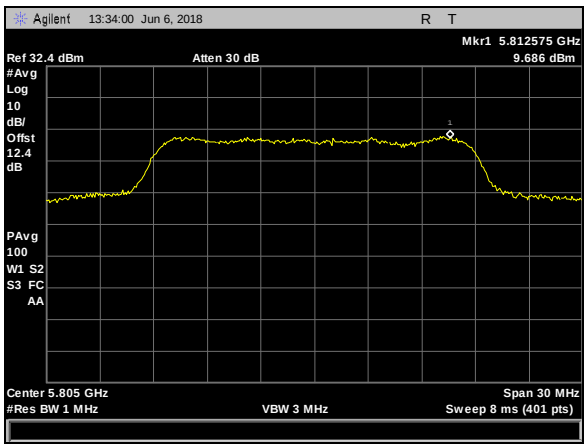
Plot 110. Power Spectral Density, MODE ac BW20MHz CH 157 CHAIN 1



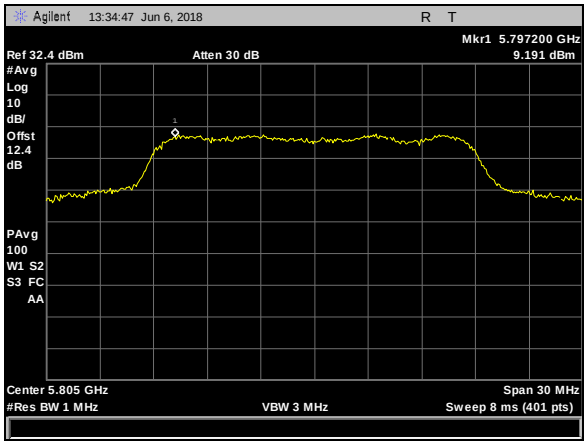
Plot 111. Power Spectral Density, MODE ac BW20MHz CH 157 CHAIN 2



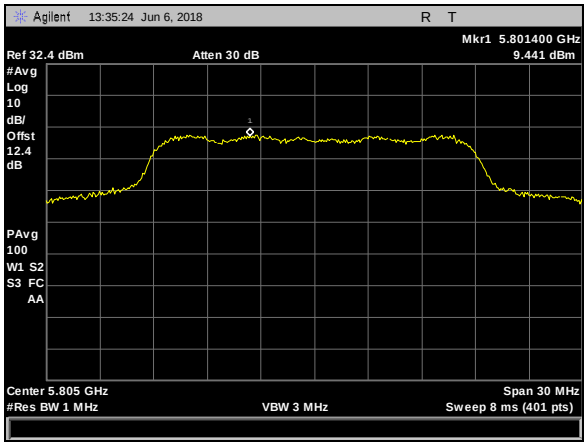
Plot 112. Power Spectral Density, MODE ac BW20MHz CH 157 CHAIN 3



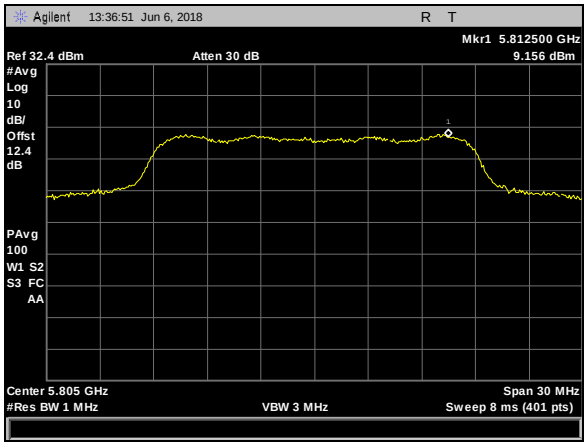
Plot 113. Power Spectral Density, MODE ac BW20MHz CH 161 CHAIN 0



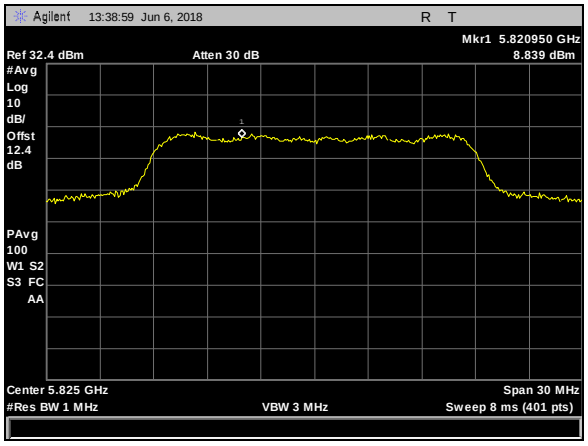
Plot 114. Power Spectral Density, MODE ac BW20MHz CH 161 CHAIN 1



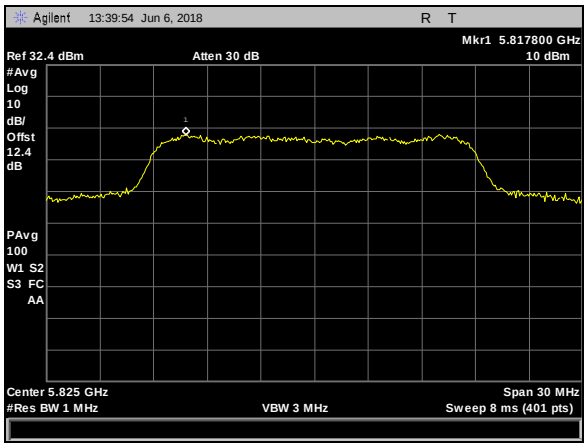
Plot 115. Power Spectral Density, MODE ac BW20MHz CH 161 CHAIN 2



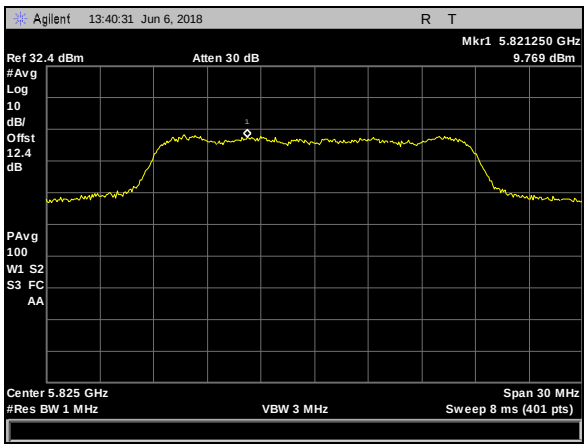
Plot 116. Power Spectral Density, MODE ac BW20MHz CH 161 CHAIN 3



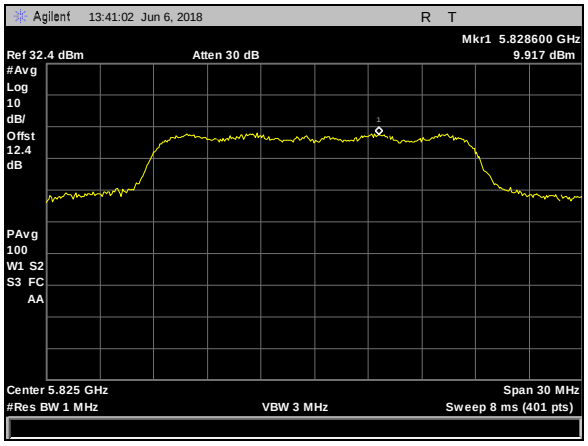
Plot 117. Power Spectral Density, MODE ac BW20MHz CH 165 CHAIN 0



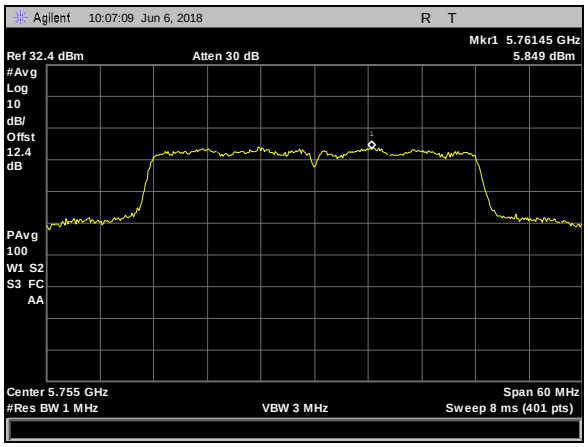
Plot 118. Power Spectral Density, MODE ac BW20MHz CH 165 CHAIN 1



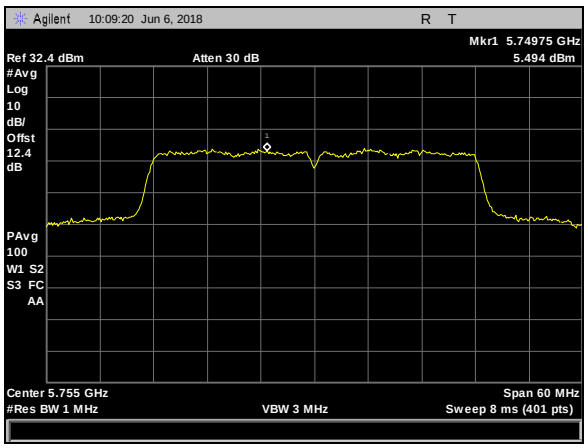
Plot 119. Power Spectral Density, MODE ac BW20MHz CH 165 CHAIN 2



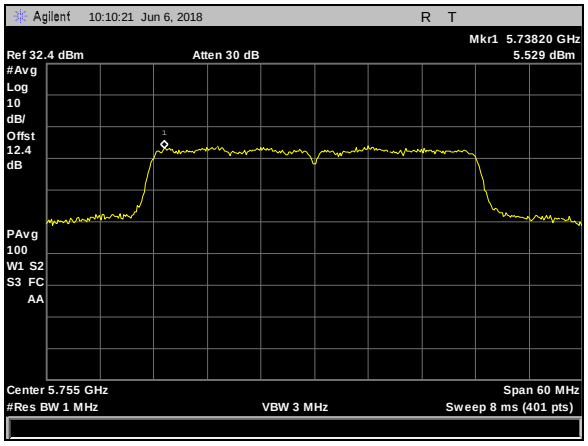
Plot 120. Power Spectral Density, MODE ac BW20MHz CH 165 CHAIN 3



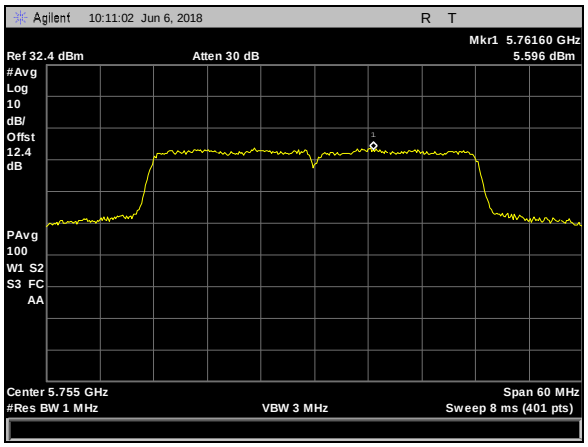
Plot 121. Power Spectral Density, MODE ac BW40MHz CH 151 CHAIN 0



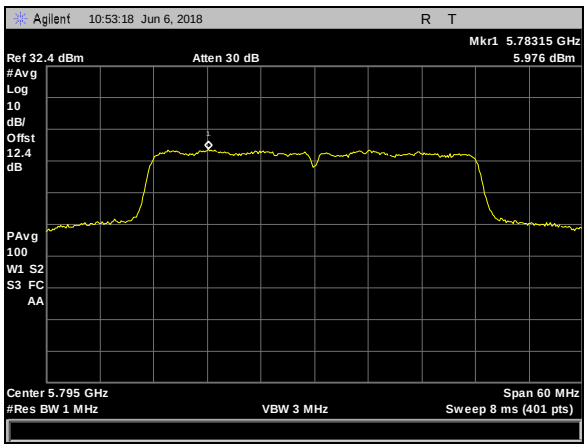
Plot 122. Power Spectral Density, MODE ac BW40MHz CH 151 CHAIN 1



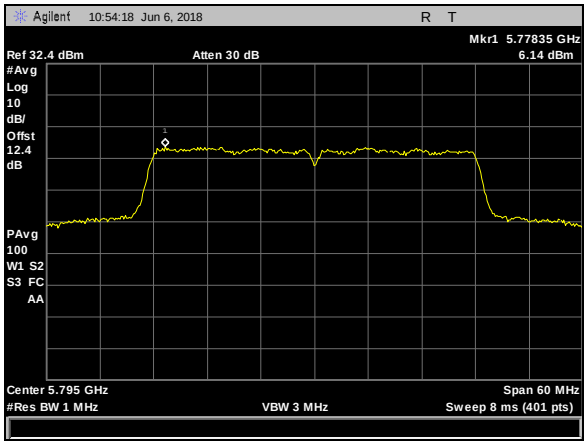
Plot 123. Power Spectral Density, MODE ac BW40MHz CH 151 CHAIN 2



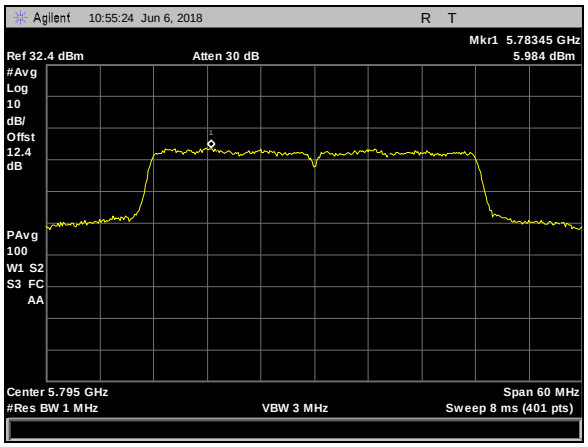
Plot 124. Power Spectral Density, MODE ac BW40MHz CH 151 CHAIN 3



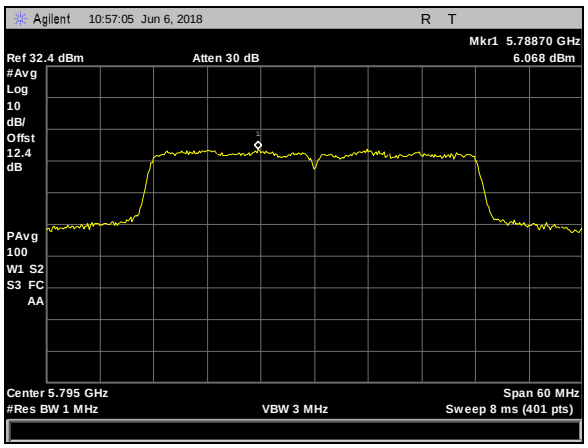
Plot 125. Power Spectral Density, MODE ac BW40MHz CH 159 CHAIN 0



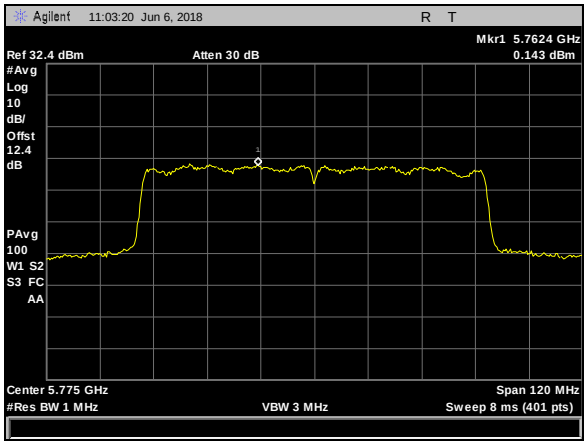
Plot 126. Power Spectral Density, MODE ac BW40MHz CH 159 CHAIN 1



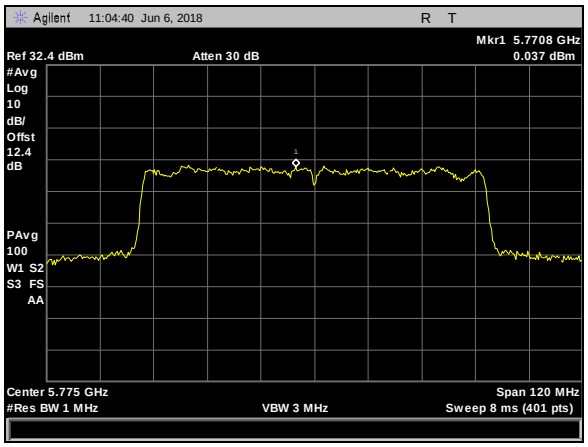
Plot 127. Power Spectral Density, MODE ac BW40MHz CH 159 CHAIN 2



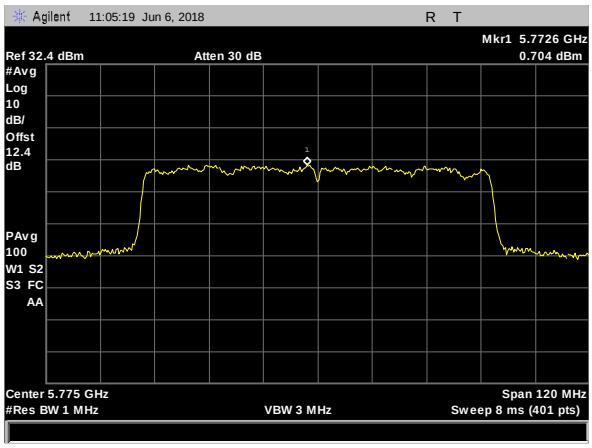
Plot 128. Power Spectral Density, MODE ac BW40MHz CH 159 CHAIN 3



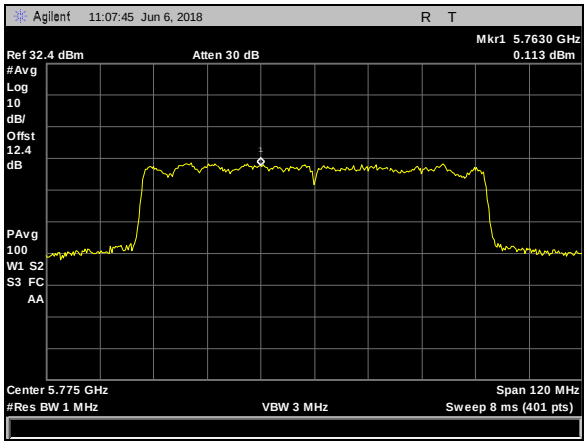
Plot 129. Power Spectral Density, MODE ac BW80MHz CH 155 CHAIN 0



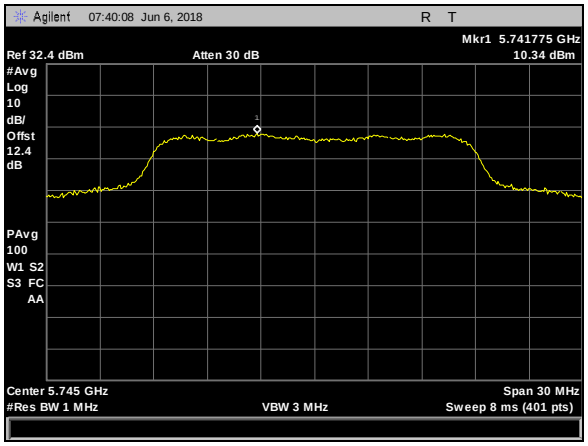
Plot 130. Power Spectral Density, MODE ac BW80MHz CH 155 CHAIN 1



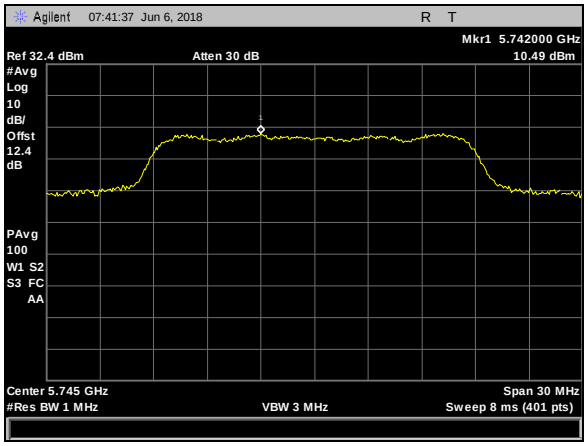
Plot 131. Power Spectral Density, MODE ac BW80MHz CH 155 CHAIN 2



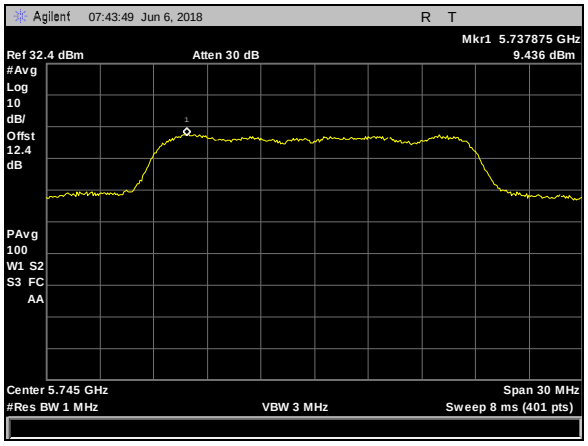
Plot 132. Power Spectral Density, MODE ac BW80MHz CH 155 CHAIN 3



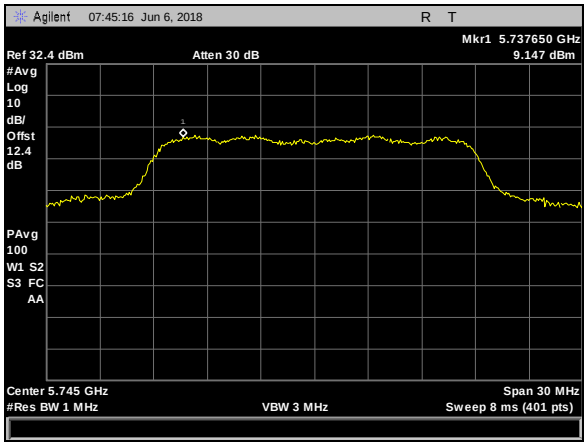
Plot 133. Power Spectral Density, MODE n BW20MHz CH 149 CHAIN 0



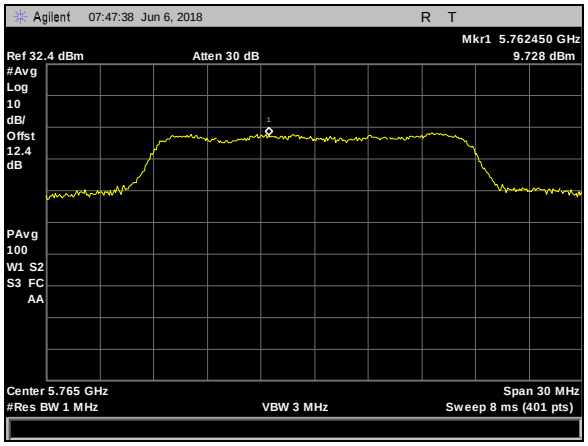
Plot 134. Power Spectral Density, MODE n BW20MHz CH 149 CHAIN 1



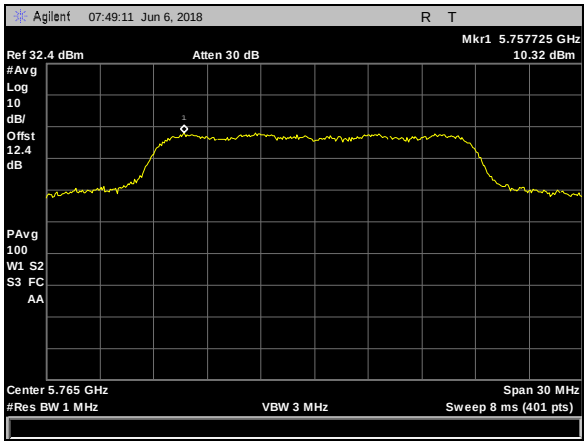
Plot 135. Power Spectral Density, MODE n BW20MHz CH 149 CHAIN 2



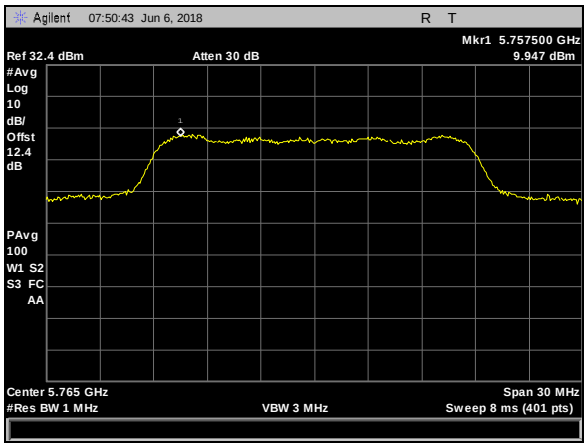
Plot 136. Power Spectral Density, MODE n BW20MHz CH 149 CHAIN 3



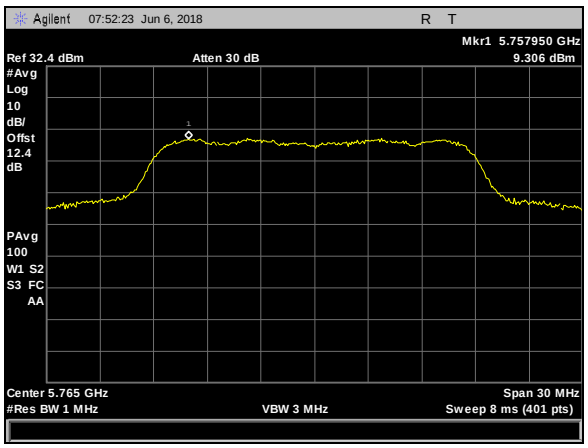
Plot 137. Power Spectral Density, MODE n BW20MHz CH 153 CHAIN 0



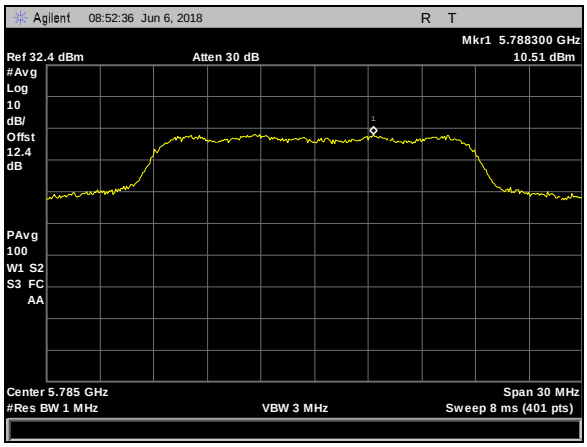
Plot 138. Power Spectral Density, MODE n BW20MHz CH 153 CHAIN 1



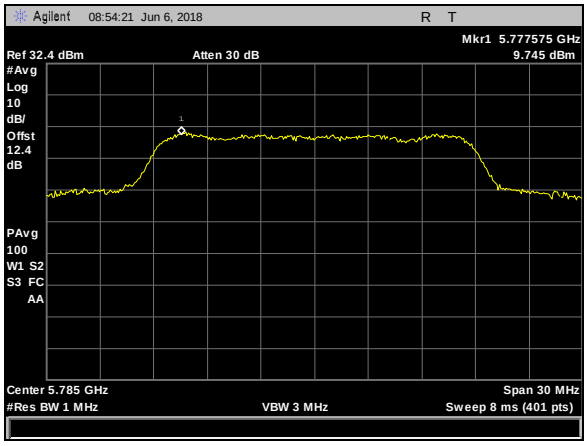
Plot 139. Power Spectral Density, MODE n BW20MHz CH 153 CHAIN 2



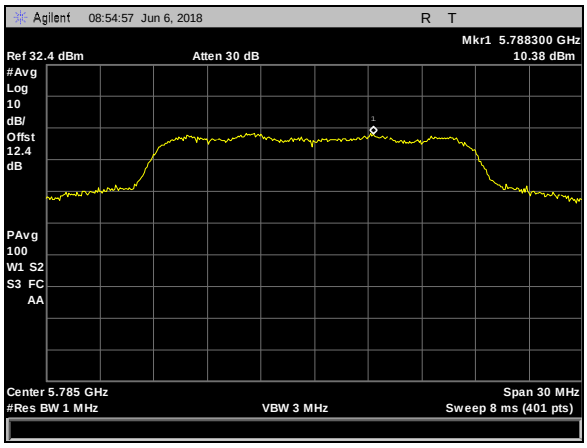
Plot 140. Power Spectral Density, MODE n BW20MHz CH 153 CHAIN 3



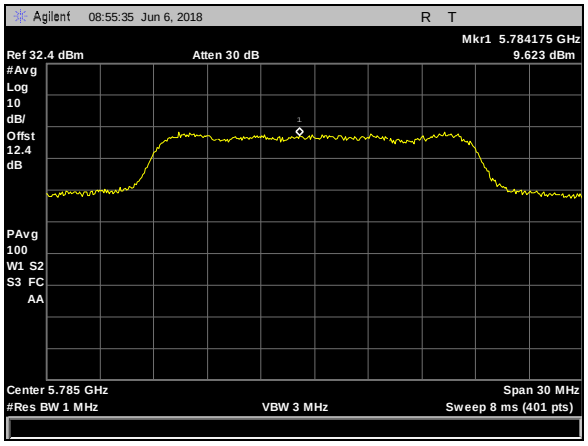
Plot 141. Power Spectral Density, MODE n BW20MHz CH 157 CHAIN 0



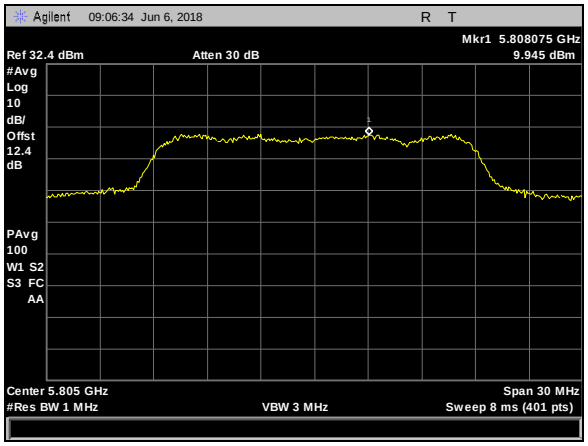
Plot 142. Power Spectral Density, MODE n BW20MHz CH 157 CHAIN 1



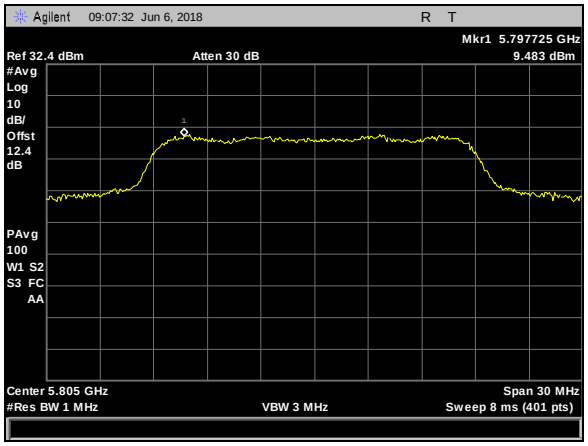
Plot 143. Power Spectral Density, MODE n BW20MHz CH 157 CHAIN 2



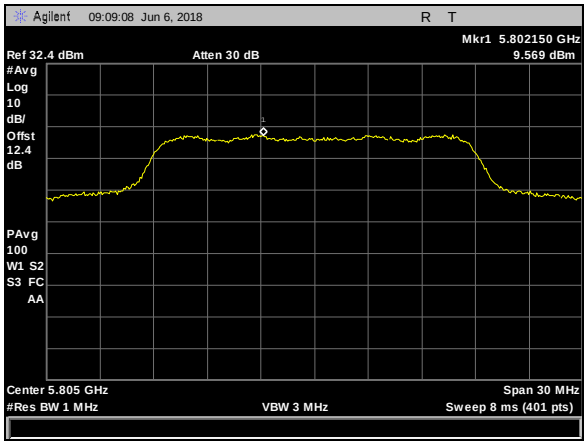
Plot 144. Power Spectral Density, MODE n BW20MHz CH 157 CHAIN 3



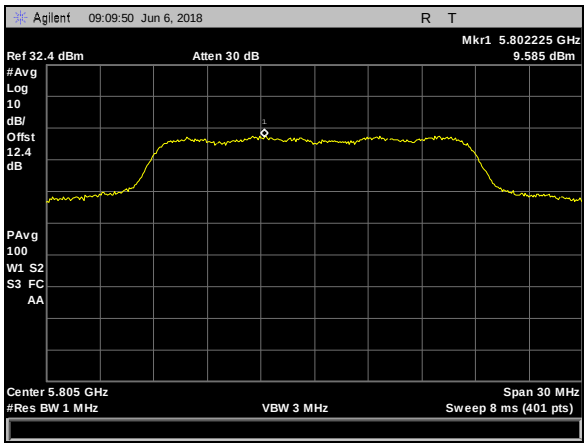
Plot 145. Power Spectral Density, MODE n BW20MHz CH 161 CHAIN 0



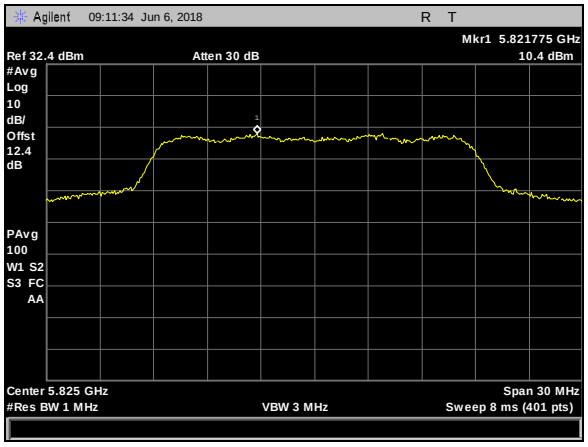
Plot 146. Power Spectral Density, MODE n BW20MHz CH 161 CHAIN 1



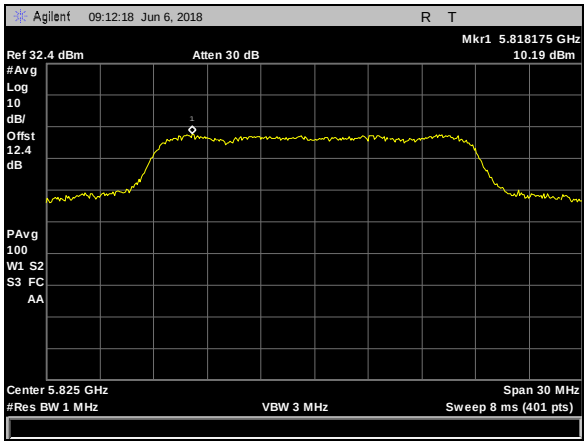
Plot 147. Power Spectral Density, MODE n BW20MHz CH 161 CHAIN 2



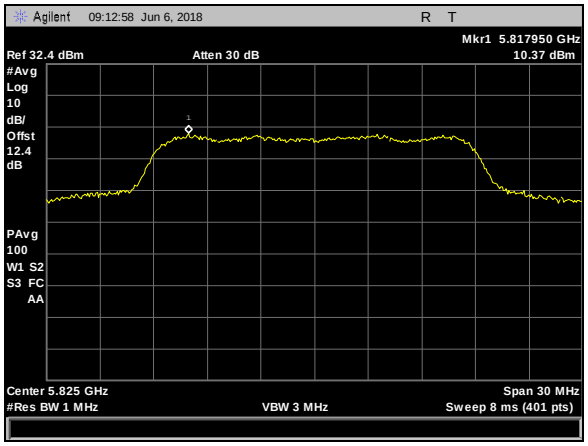
Plot 148. Power Spectral Density, MODE n BW20MHz CH 161 CHAIN 3



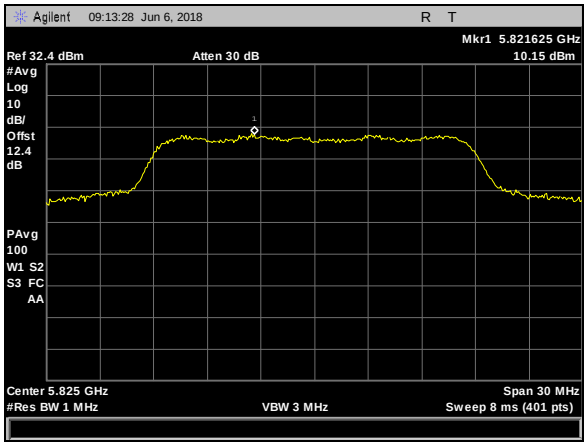
Plot 149. Power Spectral Density, MODE n BW20MHz CH 165 CHAIN 0



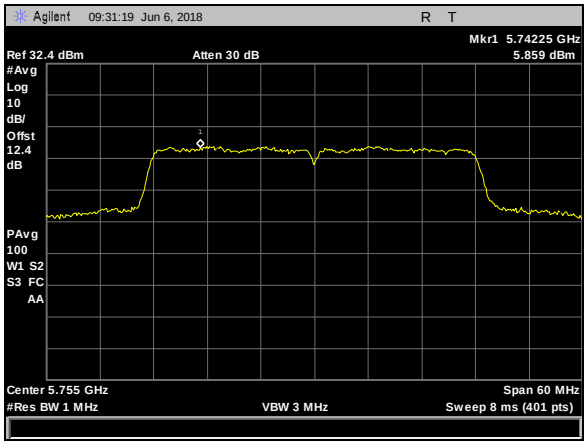
Plot 150. Power Spectral Density, MODE n BW20MHz CH 165 CHAIN 1



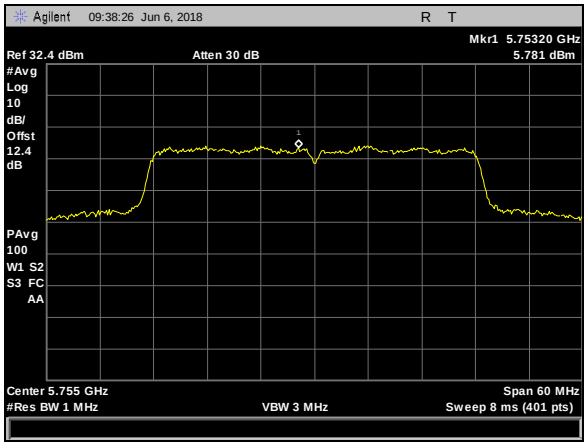
Plot 151. Power Spectral Density, MODE n BW20MHz CH 165 CHAIN 2



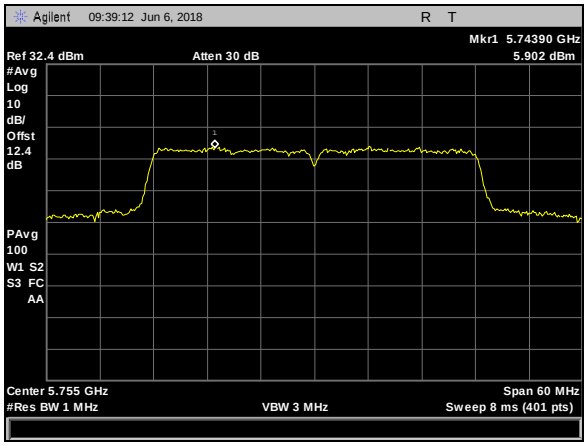
Plot 152. Power Spectral Density, MODE n BW20MHz CH 165 CHAIN 3



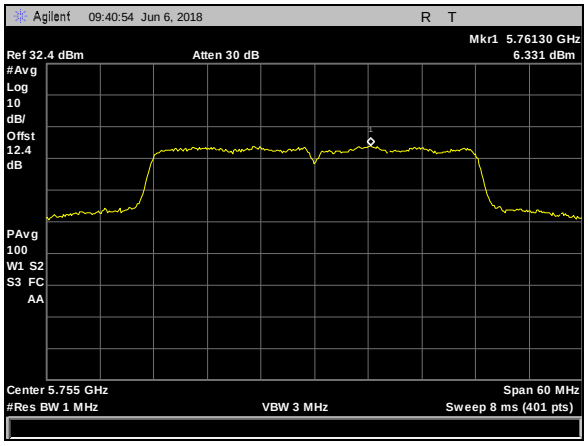
Plot 153. Power Spectral Density, MODE n BW40MHz CH 151 CHAIN 0



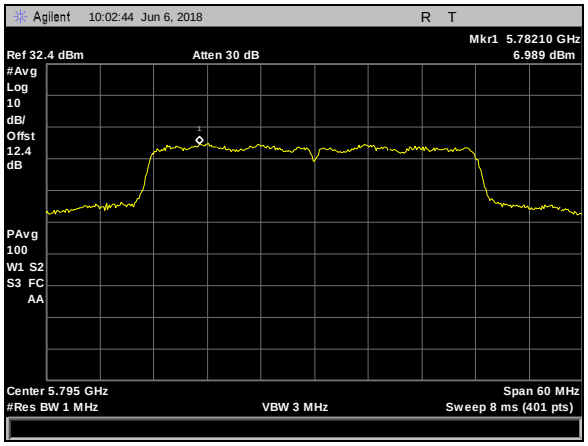
Plot 154. Power Spectral Density, MODE n BW40MHz CH 151 CHAIN 1



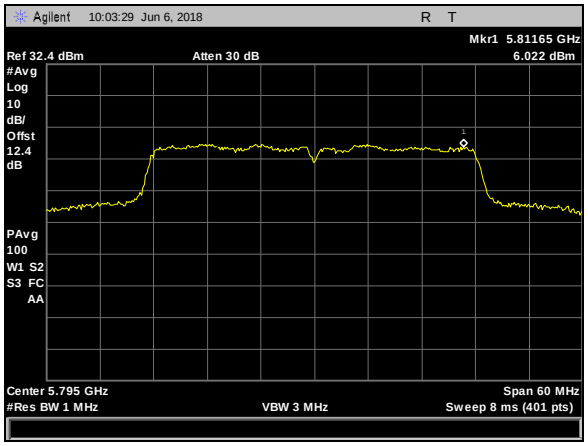
Plot 155. Power Spectral Density, MODE n BW40MHz CH 151 CHAIN 2



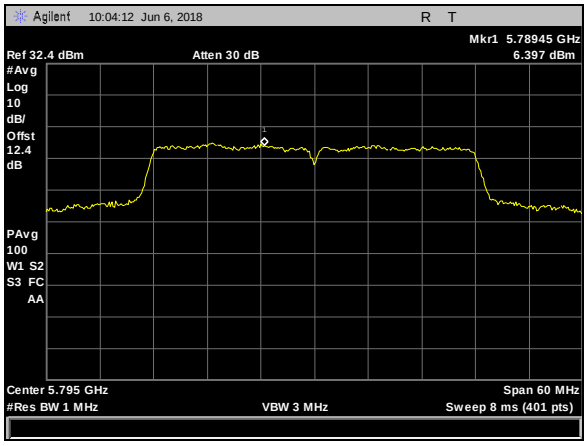
Plot 156. Power Spectral Density, MODE n BW40MHz CH 151 CHAIN 3



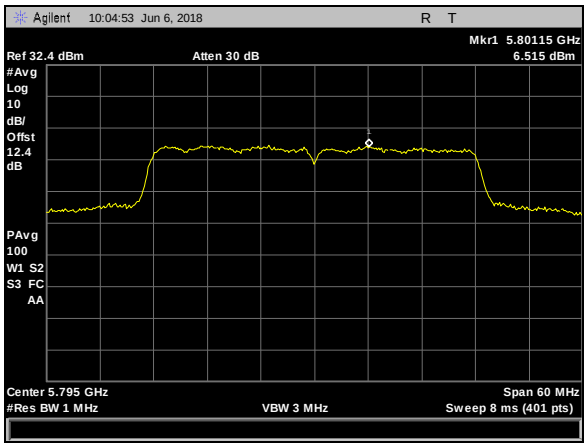
Plot 157. Power Spectral Density, MODE n BW40MHz CH 159 CHAIN 0



Plot 158. Power Spectral Density, MODE n BW40MHz CH 159 CHAIN 1



Plot 159. Power Spectral Density, MODE n BW40MHz CH 159 CHAIN 2



Plot 160. Power Spectral Density, MODE n BW40MHz CH 159 CHAIN 3

Electromagnetic Compatibility Criteria for Intentional Radiators

§15.407(b)(4) & (6 – 7) Undesirable Emissions

Test Requirements:

§ 15.407(b)(4): For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. 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.

For above 1 GHz, the EUT was compliant with the requirements of this section.

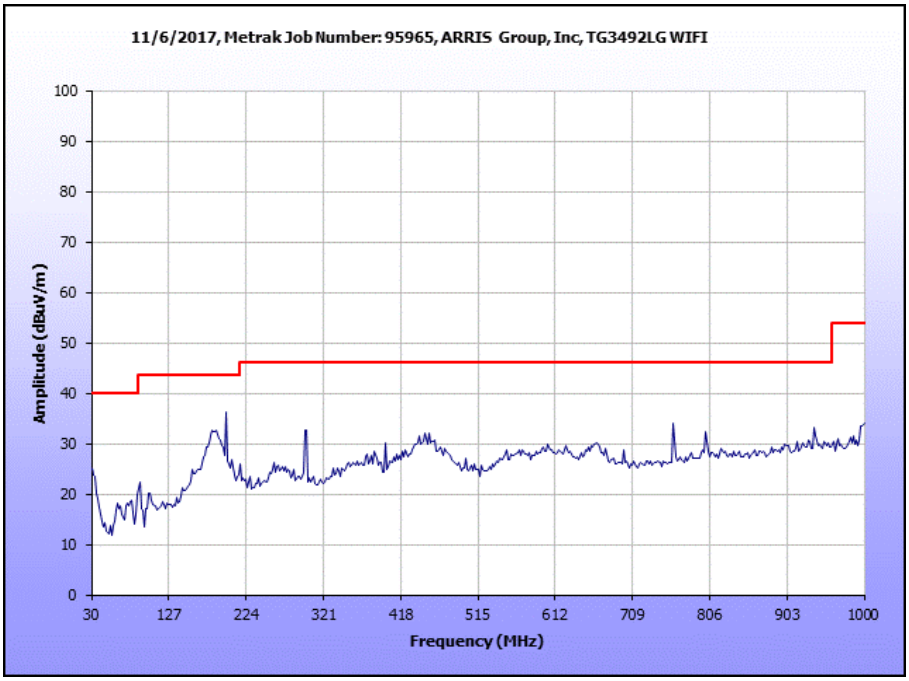
Measured emissions were within applicable limits.

Test Engineer(s): Bradley Jones

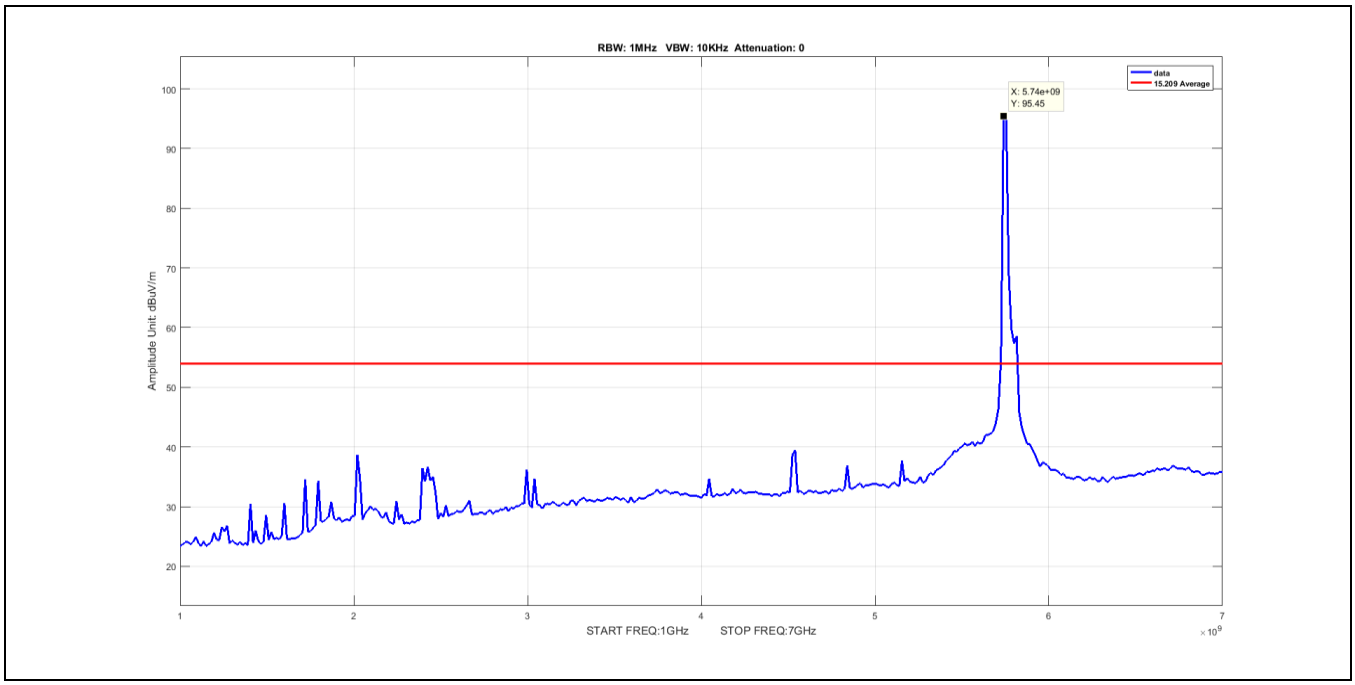
Test Date(s): June 7, 2018

Frequency (MHz)	EUT Azimuth (Degrees)	Antenna Polarity (H/V)	Antenna HEIGHT (m)	Uncorrected EMI Meter Reading (dBuV)	Antenna Correction Factor (dB/m) (+)	Cable Loss/Pre-amp (dB) (+)	Distance Correction Factor (dB) (-)	Corrected Amplitude (dBuV/m)	Limit (dBuV/m)	Margin (dB)
199.18869	289.5	H	1.6821	17.76	13.62	1.51	0	32.89	43.5	-10.61
199.18869	161.5	V	1	19.4	13.62	1.51	0	34.53	43.5	-8.97
298.76941	60.7	H	1	14.03	14.35	1.76	0	30.14	46	-15.86
298.76941	153.5	V	2.146	13.74	14.35	1.76	0	29.85	46	-16.15

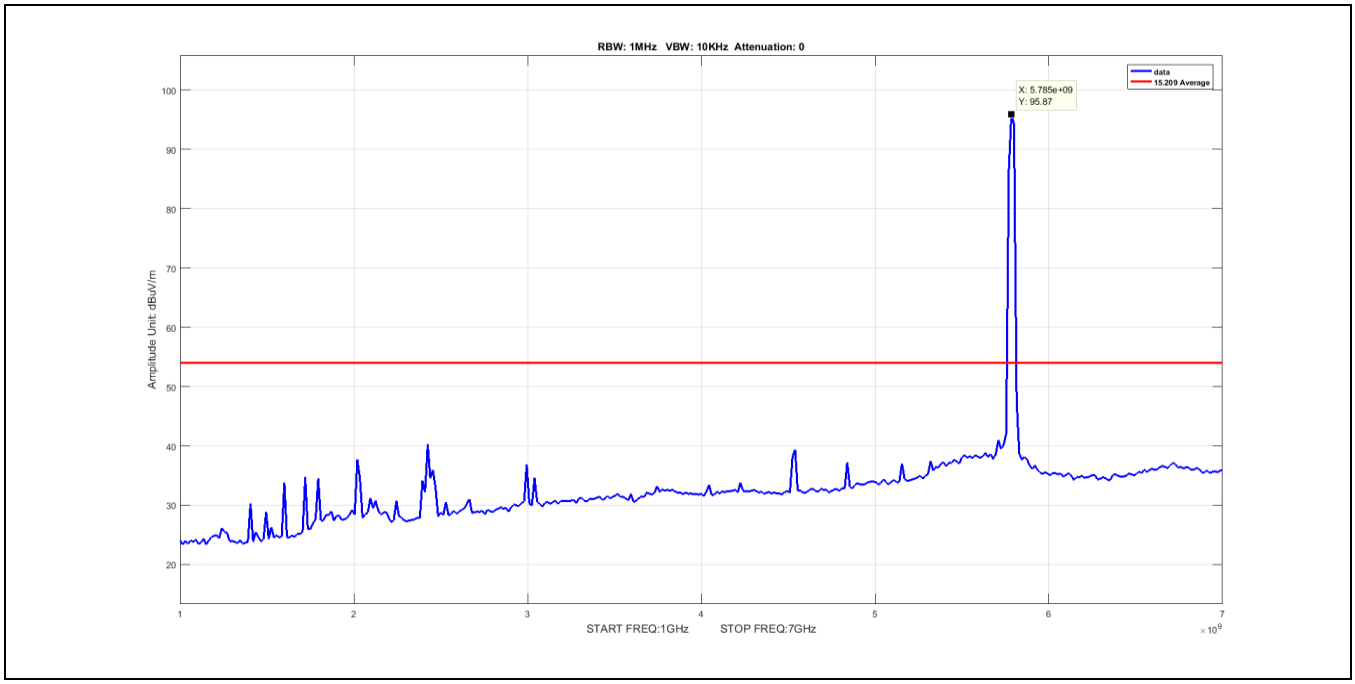
Table 19. Undesirable Emissions, 30 MHz - 1 GHz, Test Results



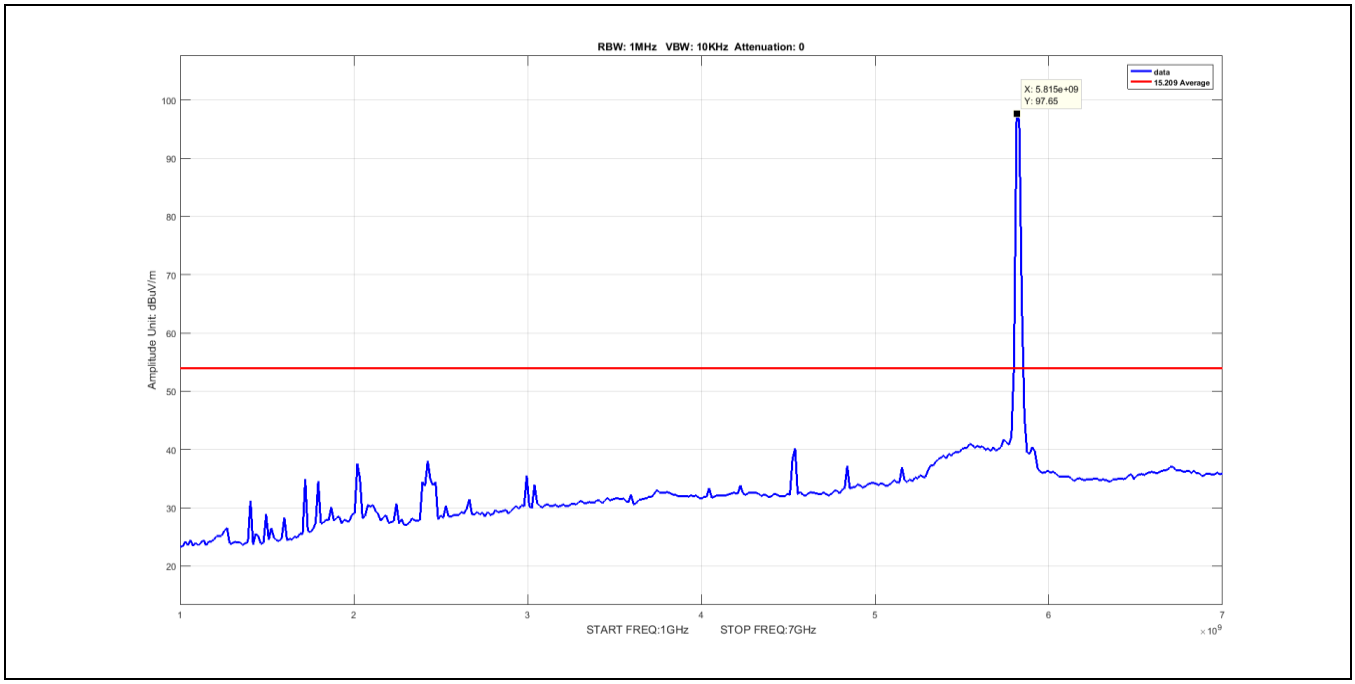
Plot 161. Undesirable Emissions, 80 MHz, Channel 155, 30 MHz - 1 GHz



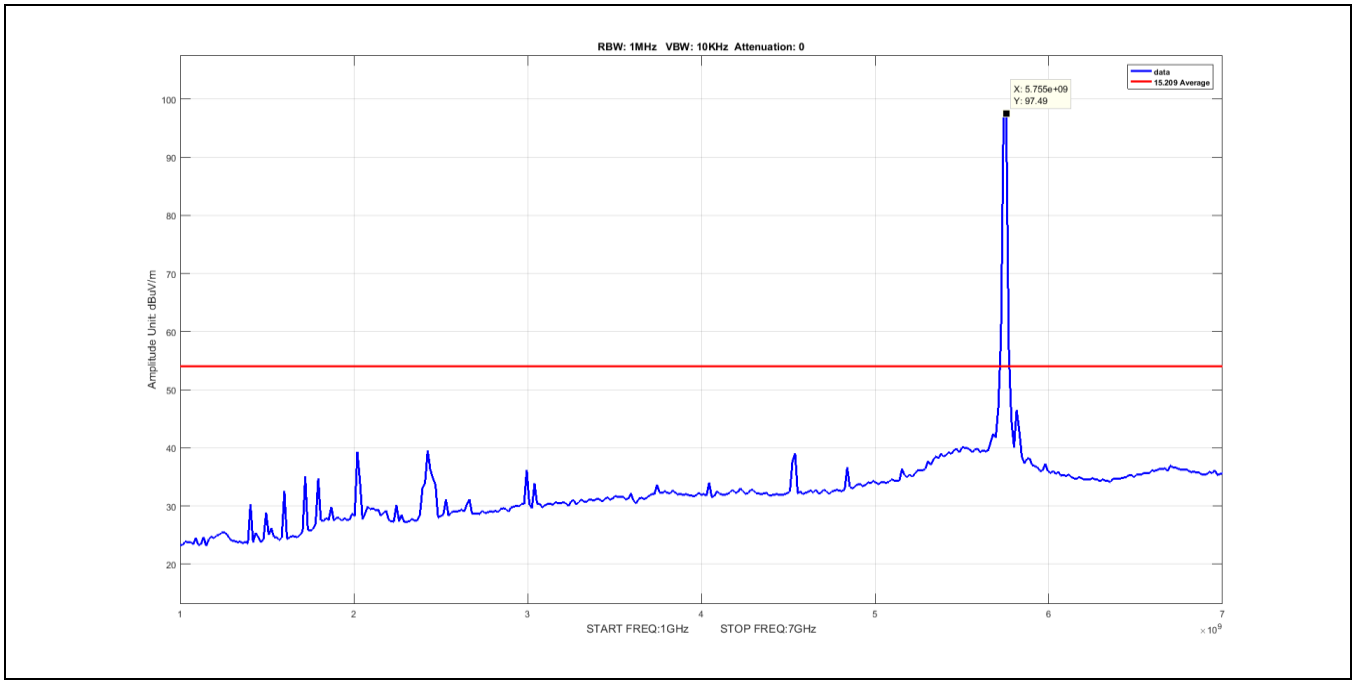
Plot 162. Undesirable Emissions, Average, 1-7G, 20M, a, low, channel 149



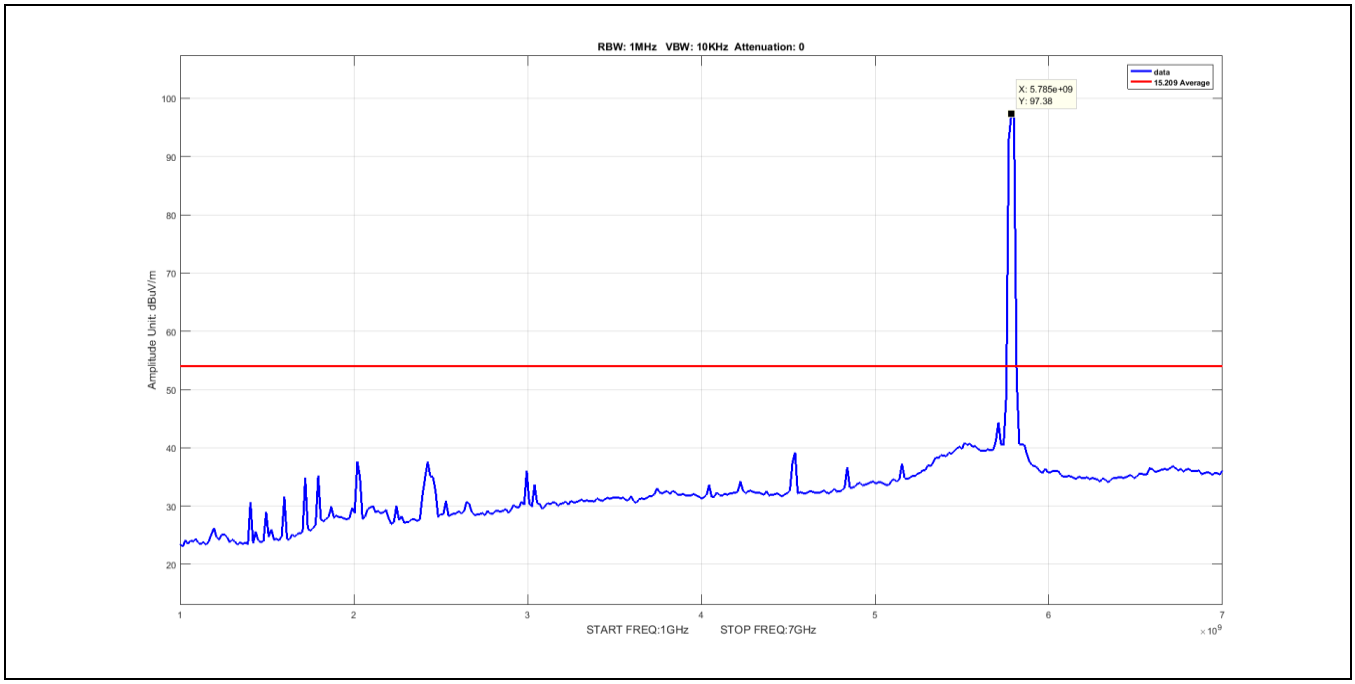
Plot 163. Undesirable Emissions, Average, 1-7G, 20M, a, mid, channel 157



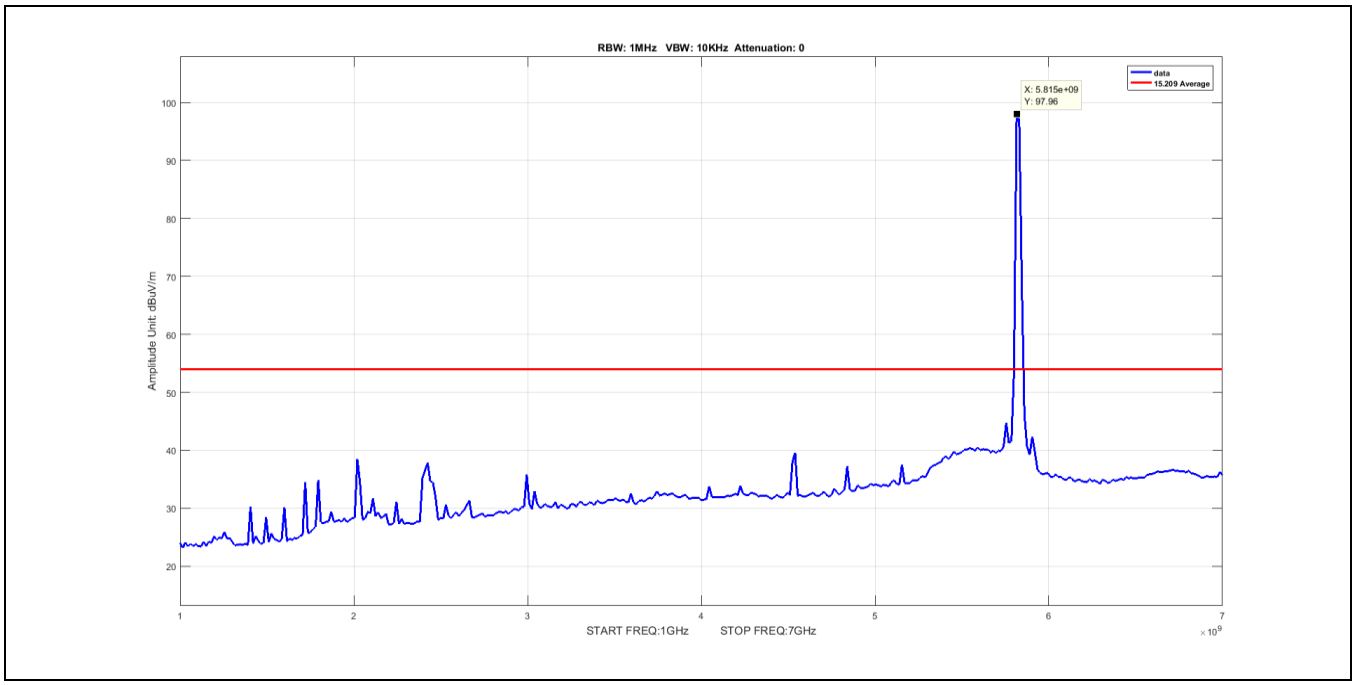
Plot 164. Undesirable Emissions, Average, 1-7G, 20M, a, high, channel 165



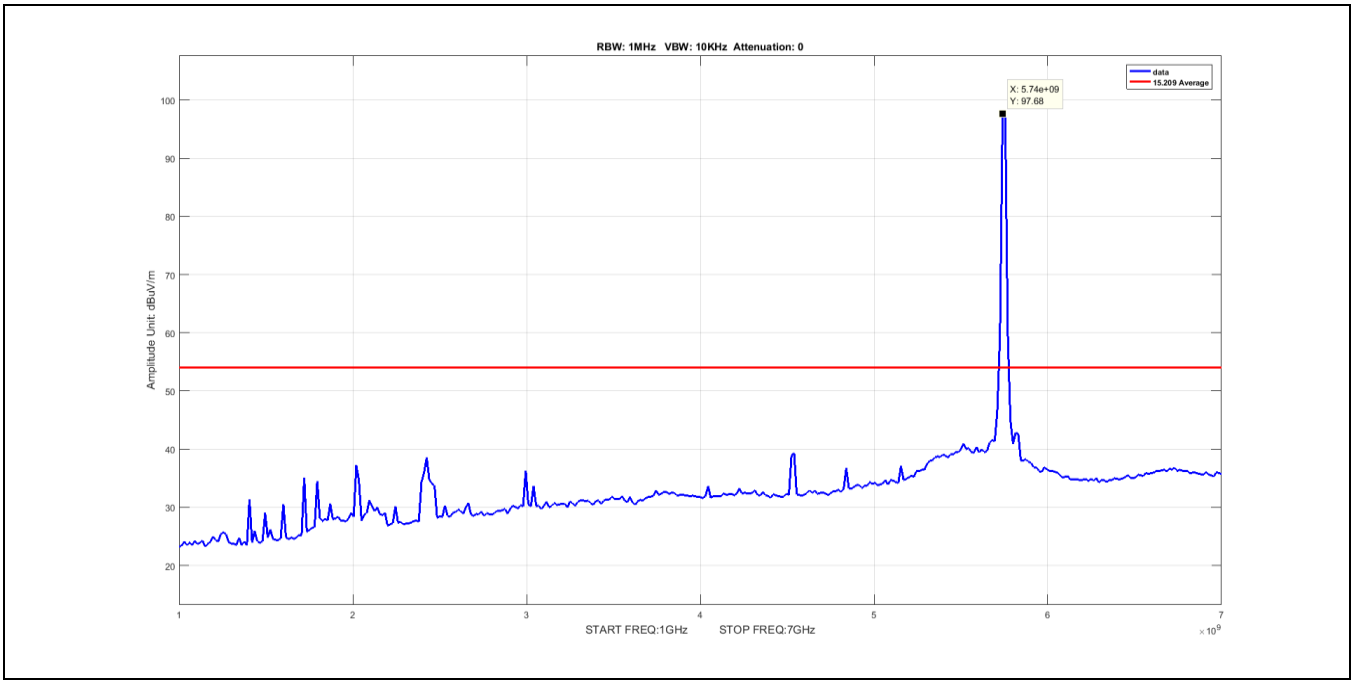
Plot 165. Undesirable Emissions, Average, 1-7G, 20M, ac, low, channel 149



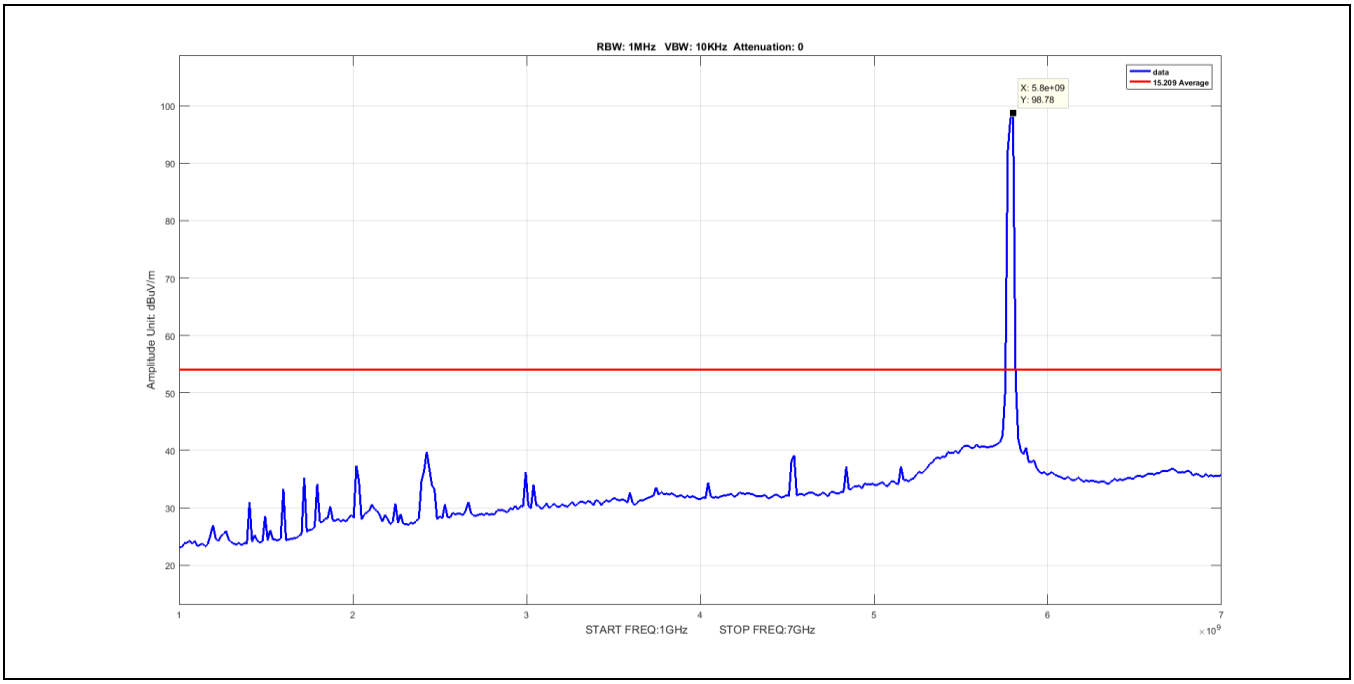
Plot 166. Undesirable Emissions, Average, 1-7G, 20M, ac, mid, channel 157



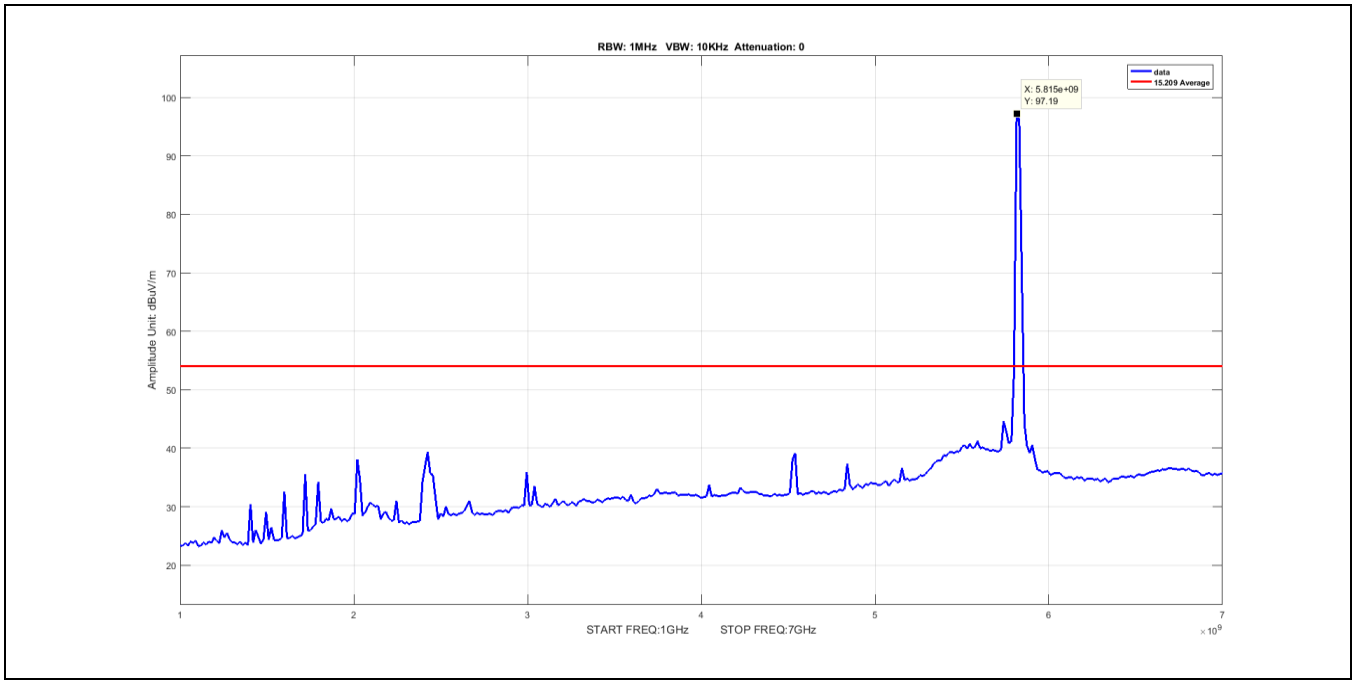
Plot 167. Undesirable Emissions, Average, 1-7G, 20M, ac, high, channel 165



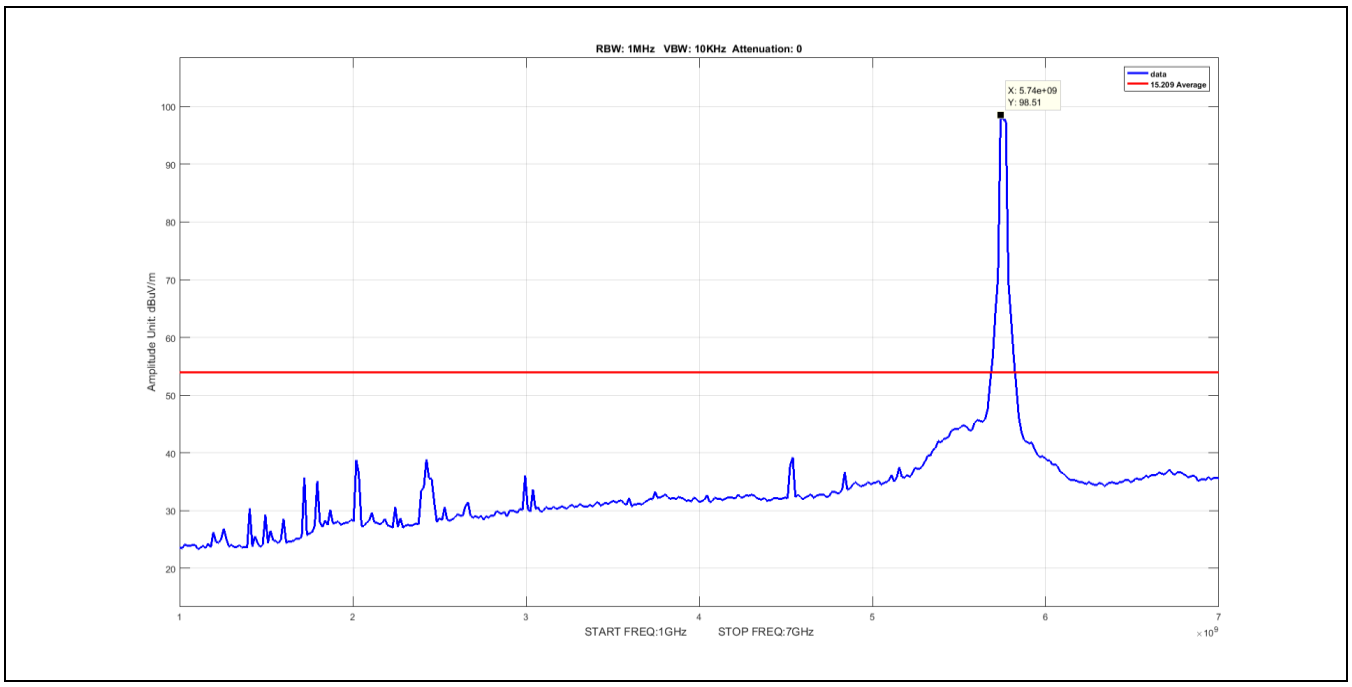
Plot 168. Undesirable Emissions, Average, 1-7G, 20M, n, low, channel 149



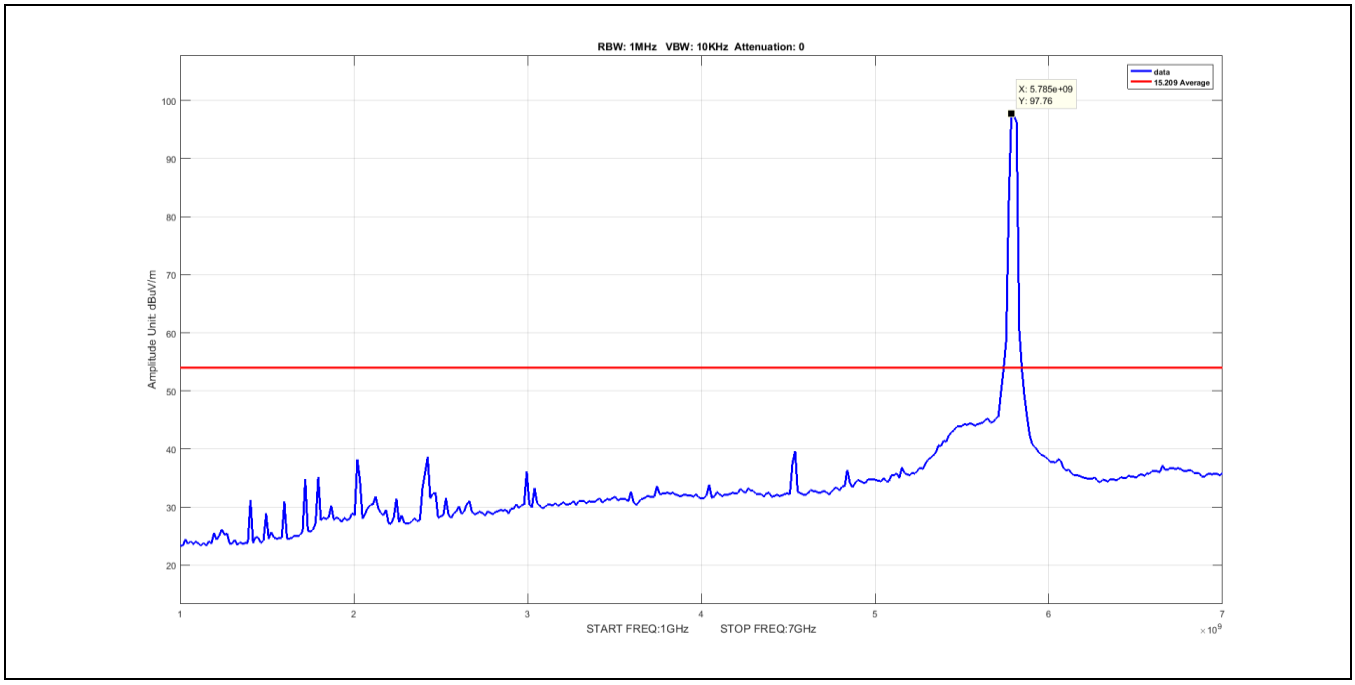
Plot 169. Undesirable Emissions, Average, 1-7G, 20M, n, mid, channel 157



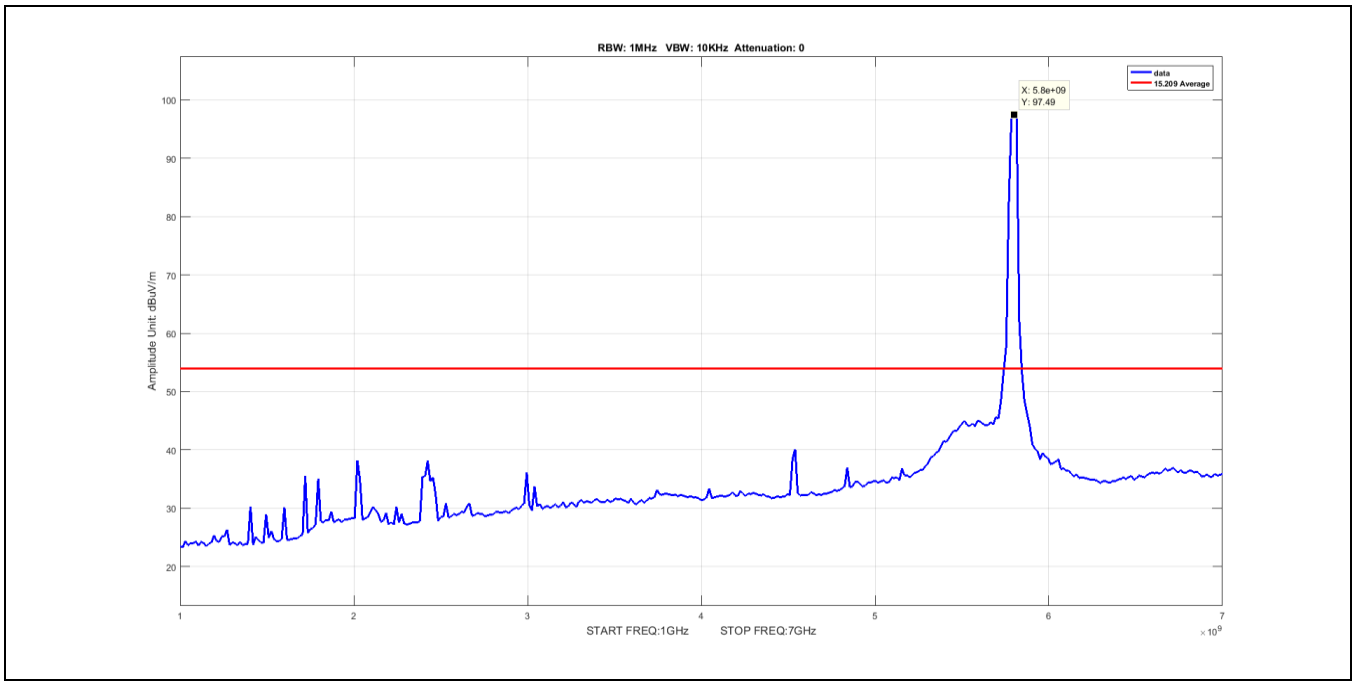
Plot 170. Undesirable Emissions, Average, 1-7G, 20M, n, high, channel 165



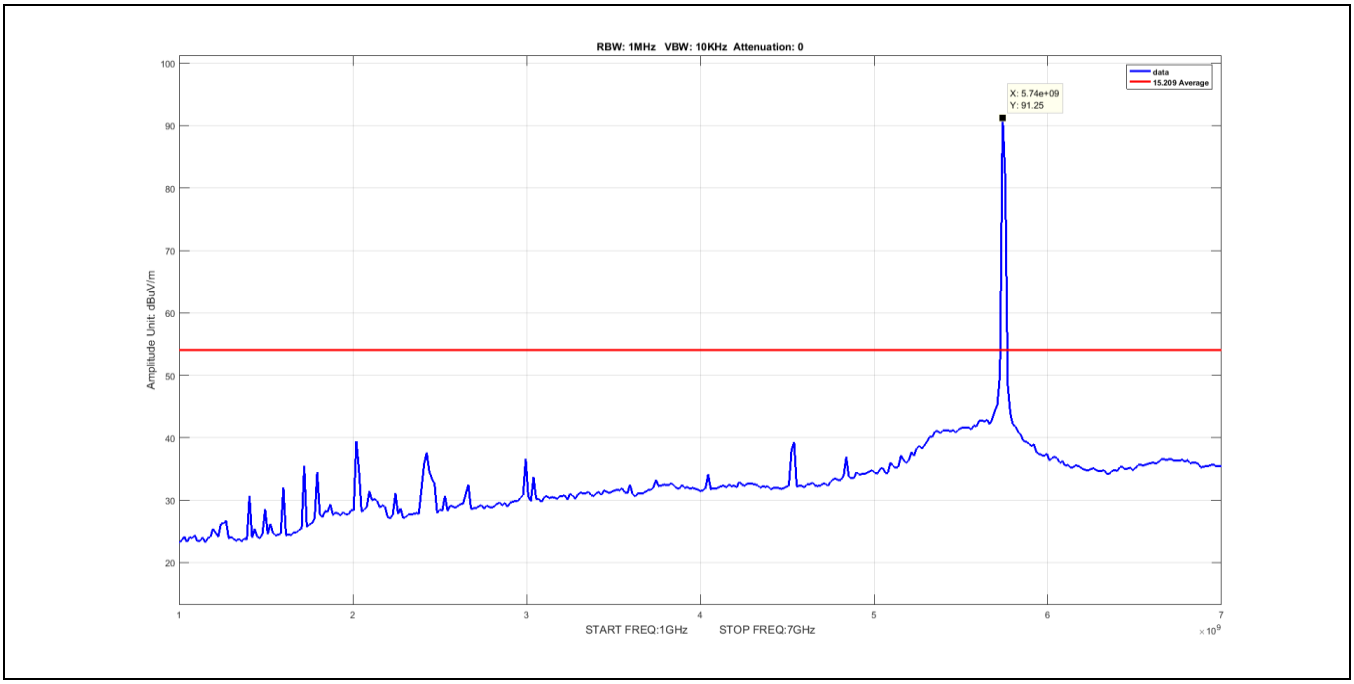
Plot 171. Undesirable Emissions, Average, 1-7G, 40M, ac, low, channel 151



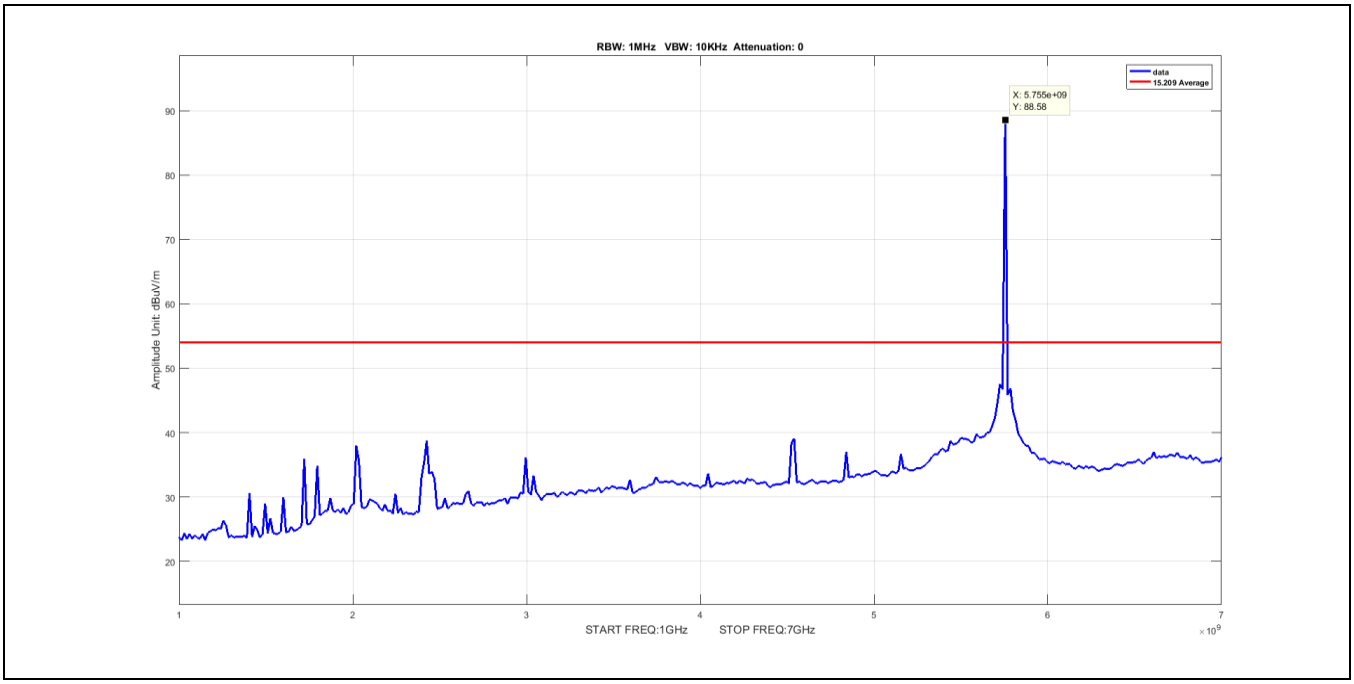
Plot 172. Undesirable Emissions, Average, 1-7G, 40M, ac, high, channel 159



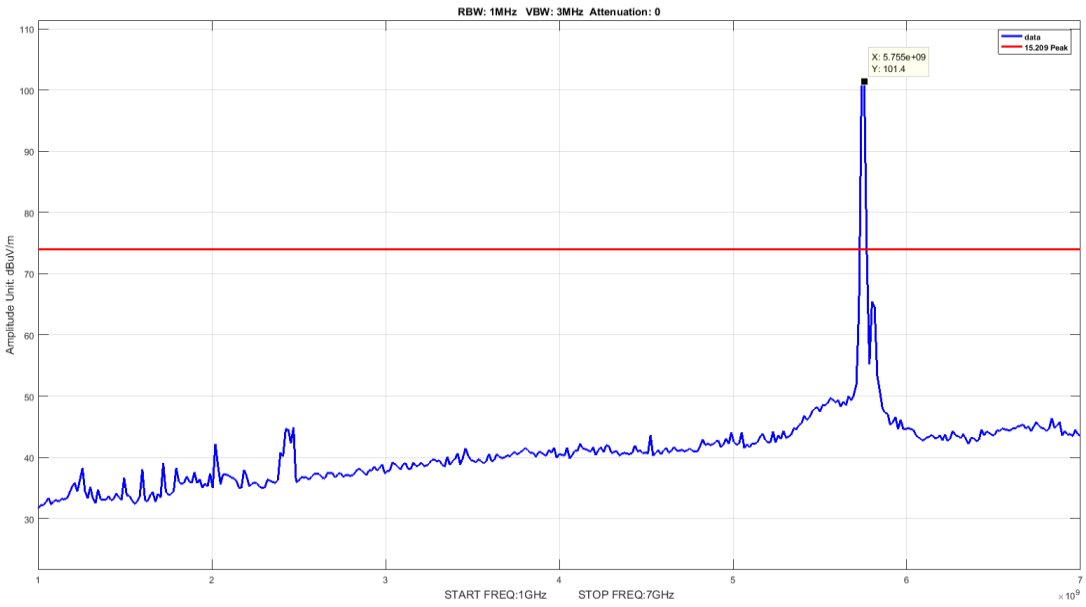
Plot 173. Undesirable Emissions, Average, 1-7G, 40M, n, high, channel 159



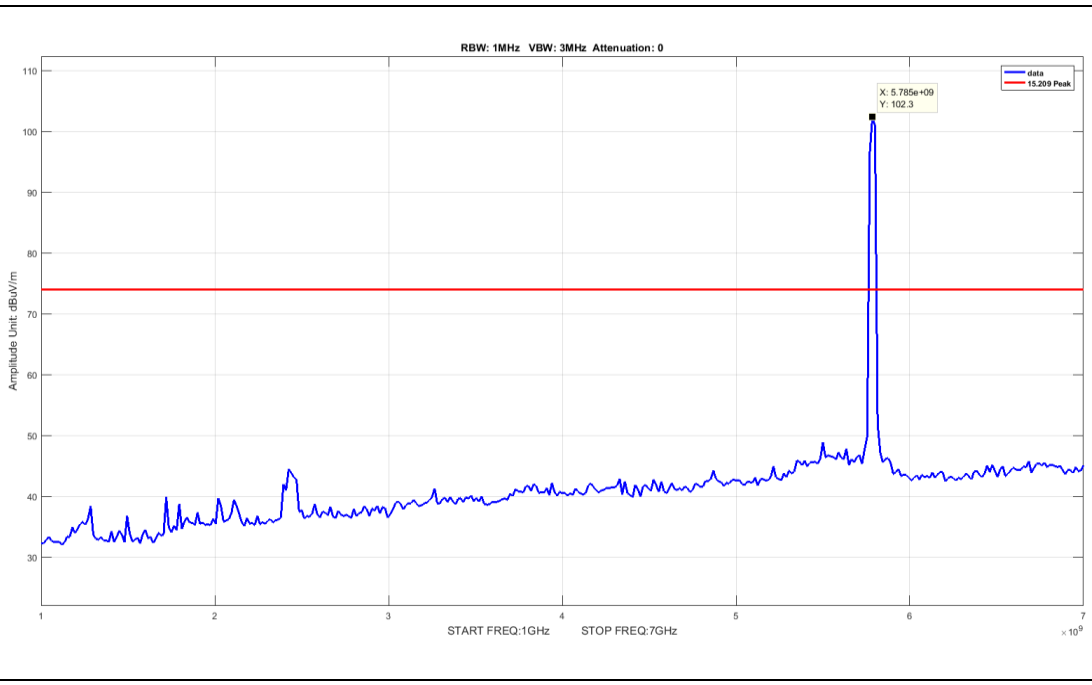
Plot 174. Undesirable Emissions, Average, 1-7G, 40M, n, low, channel 151



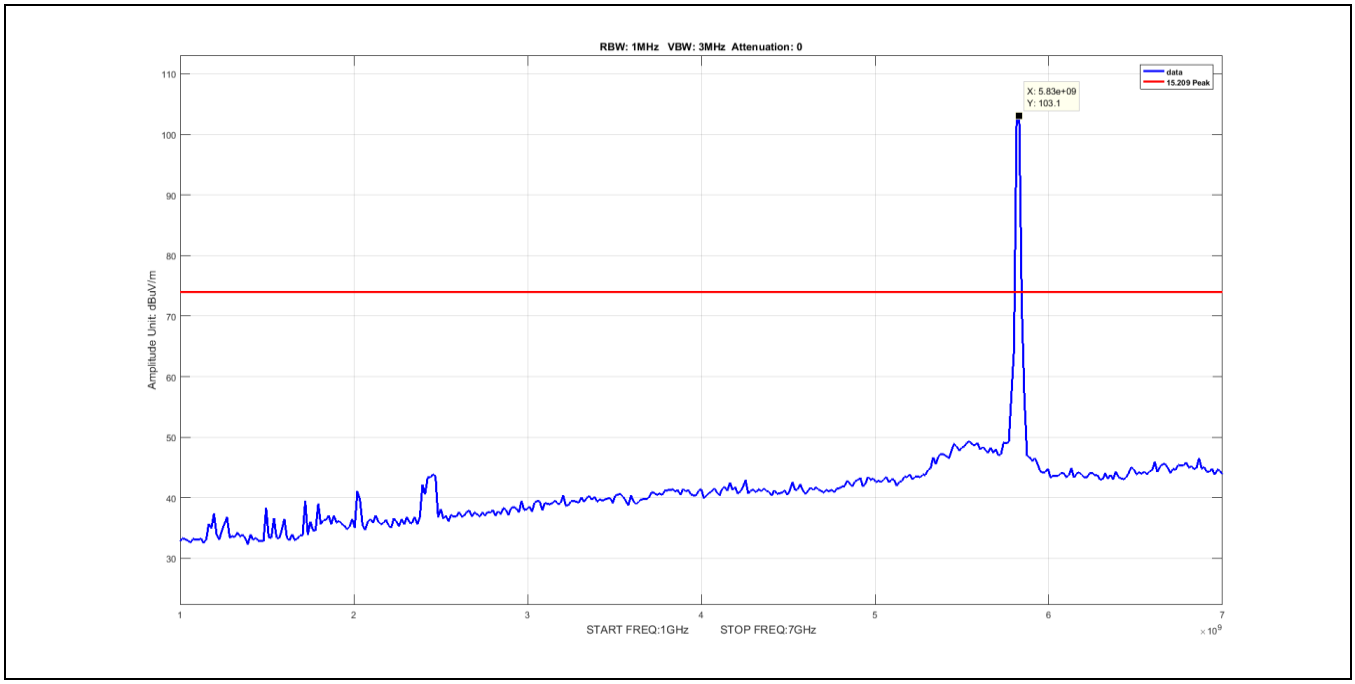
Plot 175. Undesirable Emissions, Average, 1-7G, 80M, ac, mid, channel 155



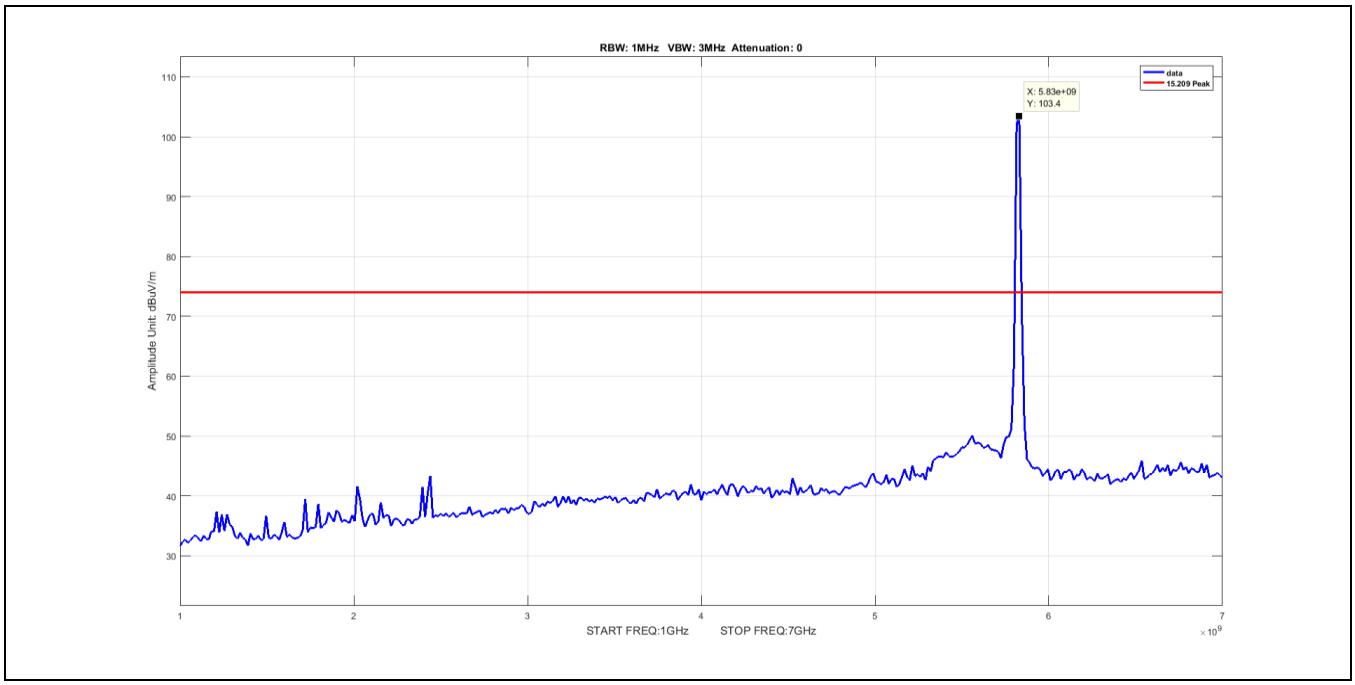
Plot 176. Undesirable Emissions, peak, 1-7G, 20M, a, low, channel 149



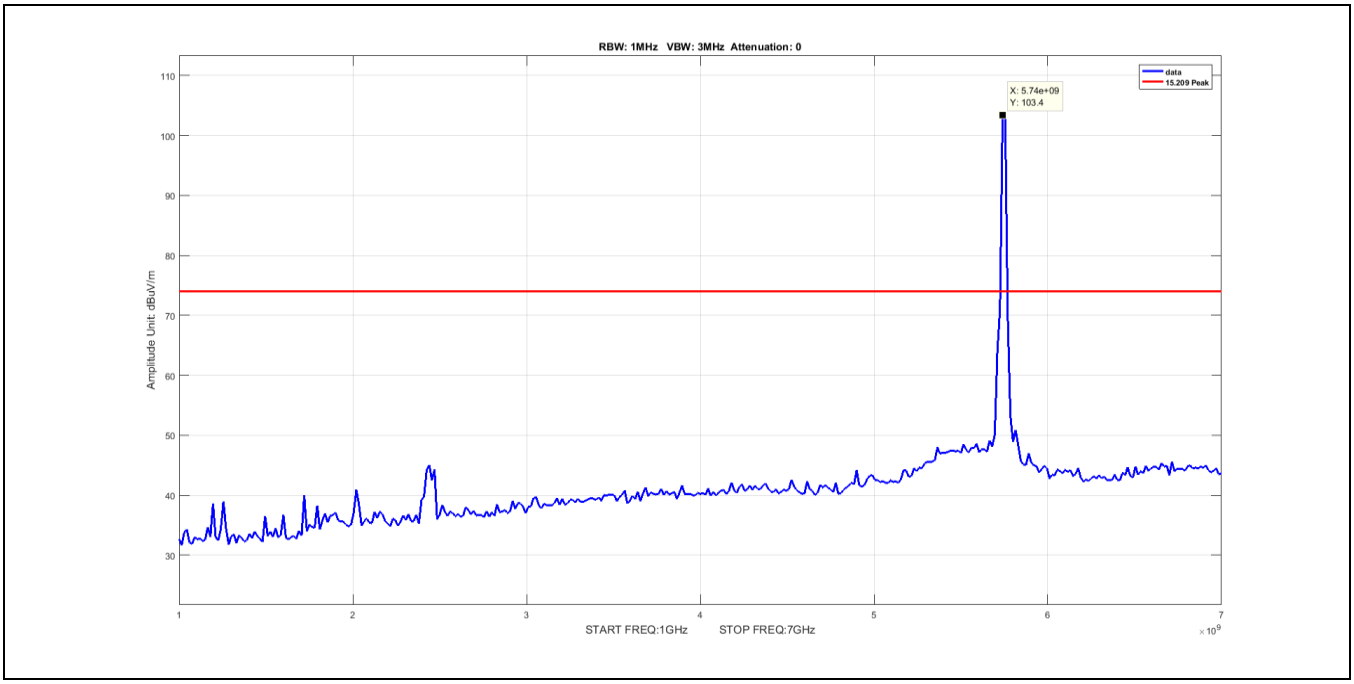
Plot 177. Undesirable Emissions, peak, 1-7G, 20M, a, mid, channel 157



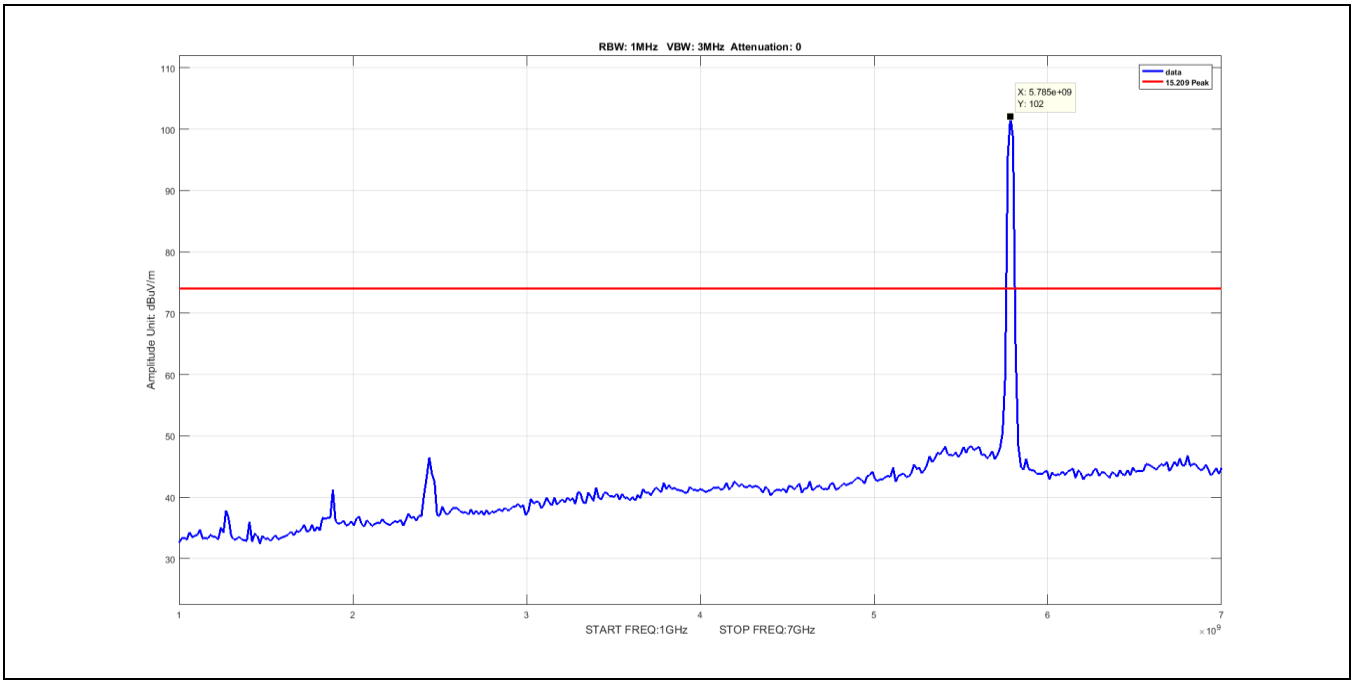
Plot 178. Undesirable Emissions, peak, 1-7G, 20M, a, high, channel 165



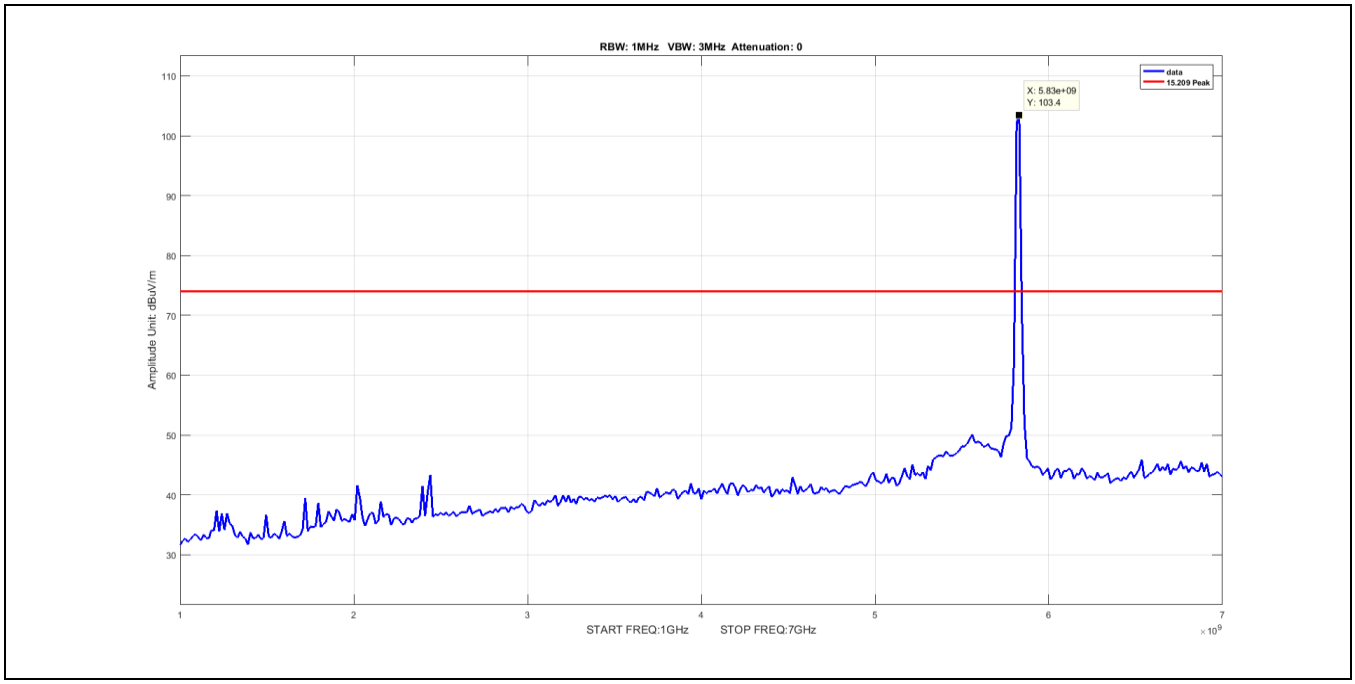
Plot 179. Undesirable Emissions, peak, 1-7G, 20M, ac, high, channel 165



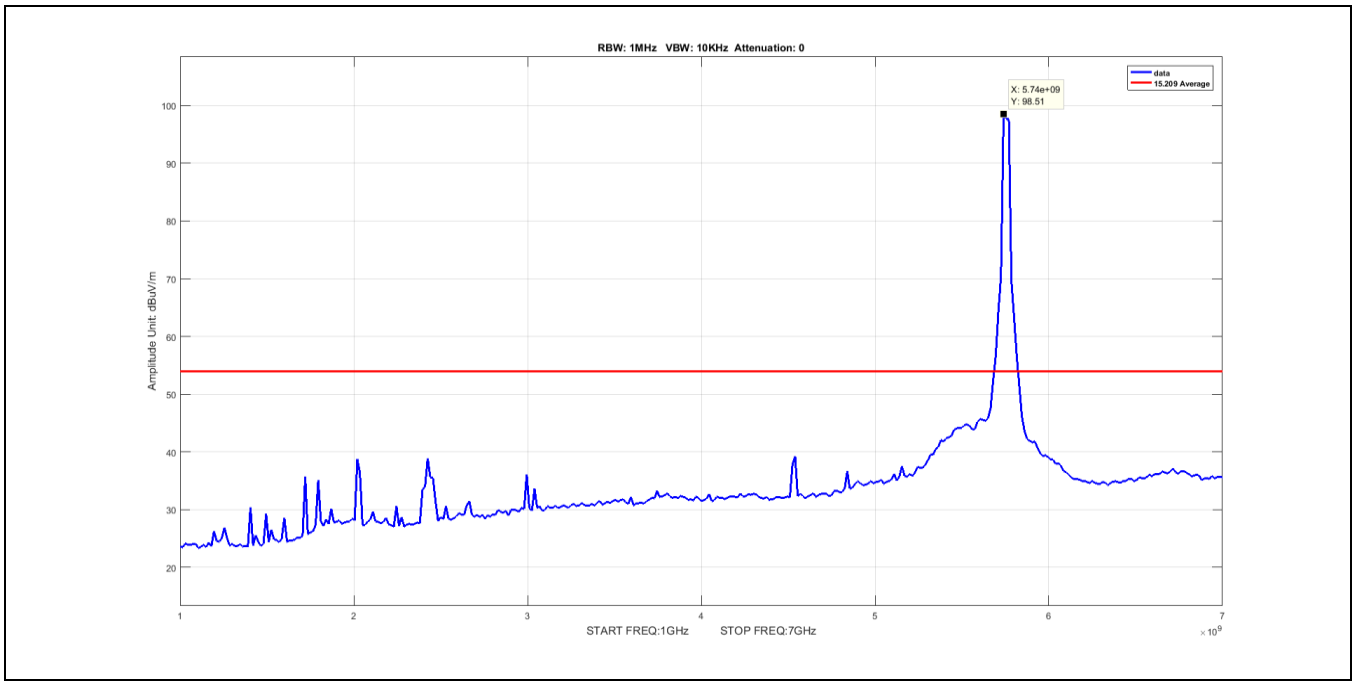
Plot 180. Undesirable Emissions, peak, 1-7G, 20M, ac, low, channel 149



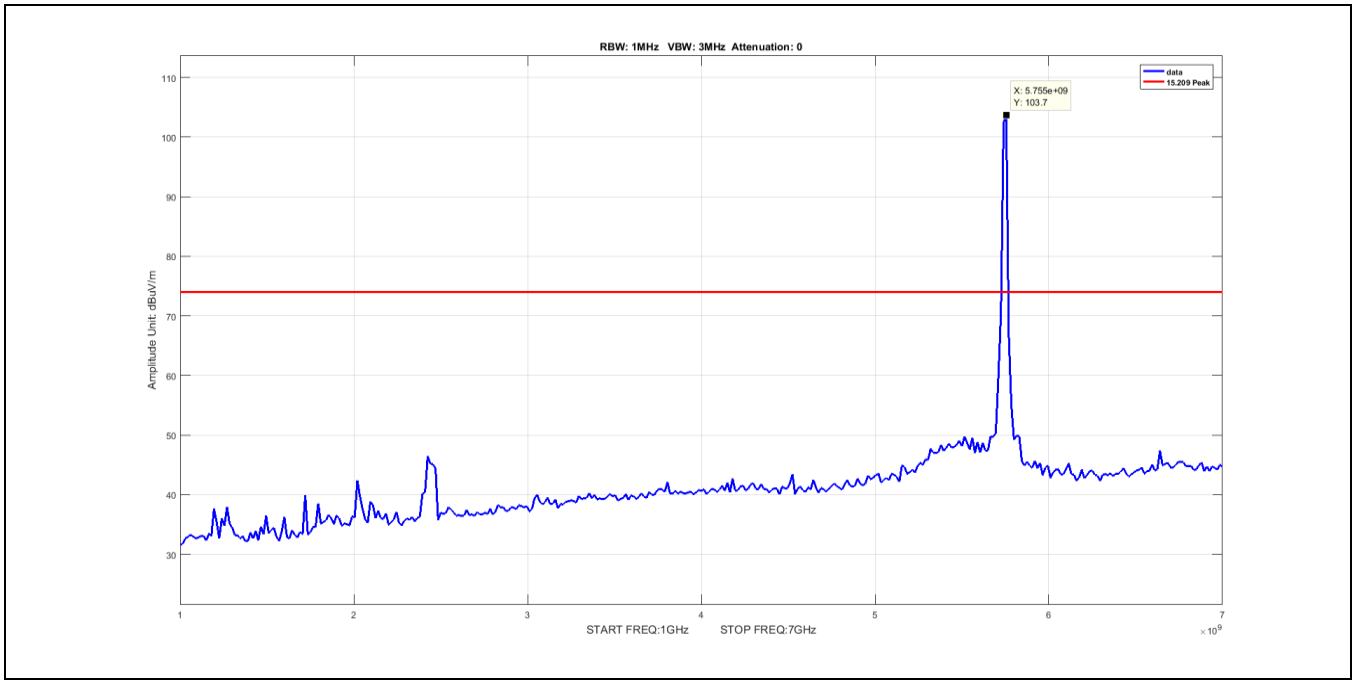
Plot 181. Undesirable Emissions, peak, 1-7G, 20M, ac, mid, channel 157



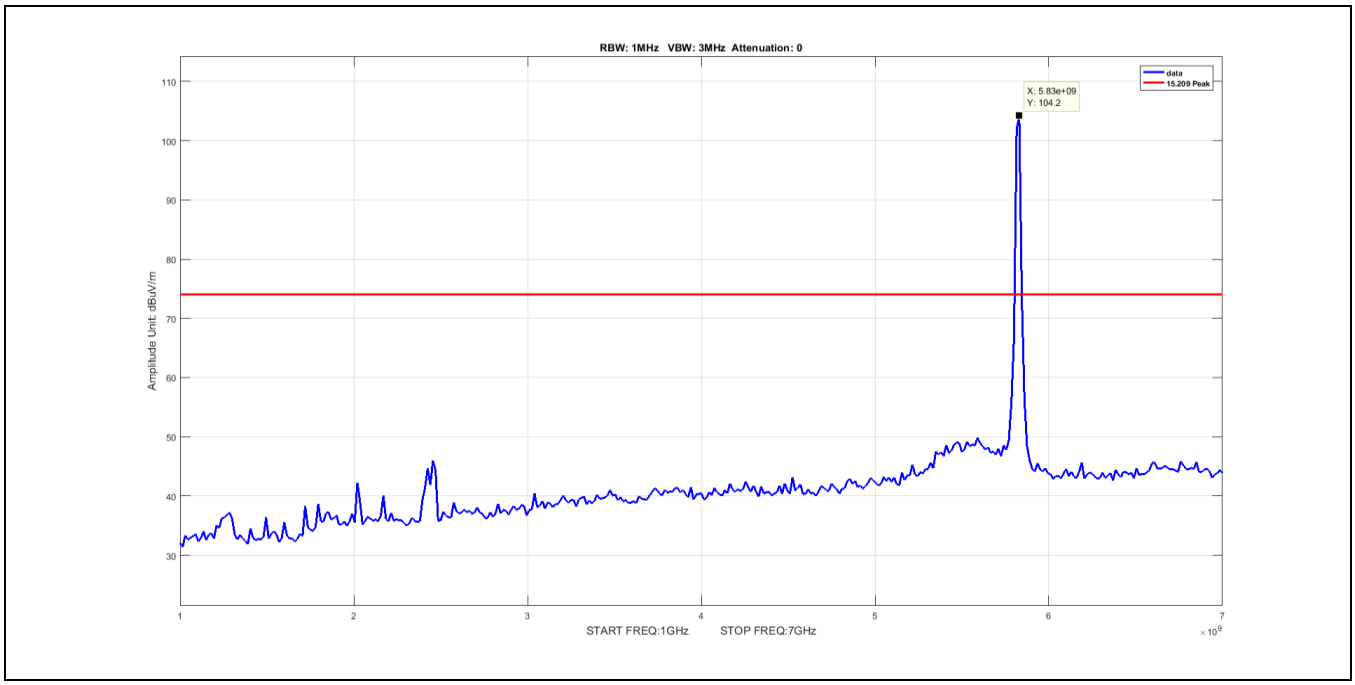
Plot 182. Undesirable Emissions, peak, 1-7G, 20M, ac, high, channel 165



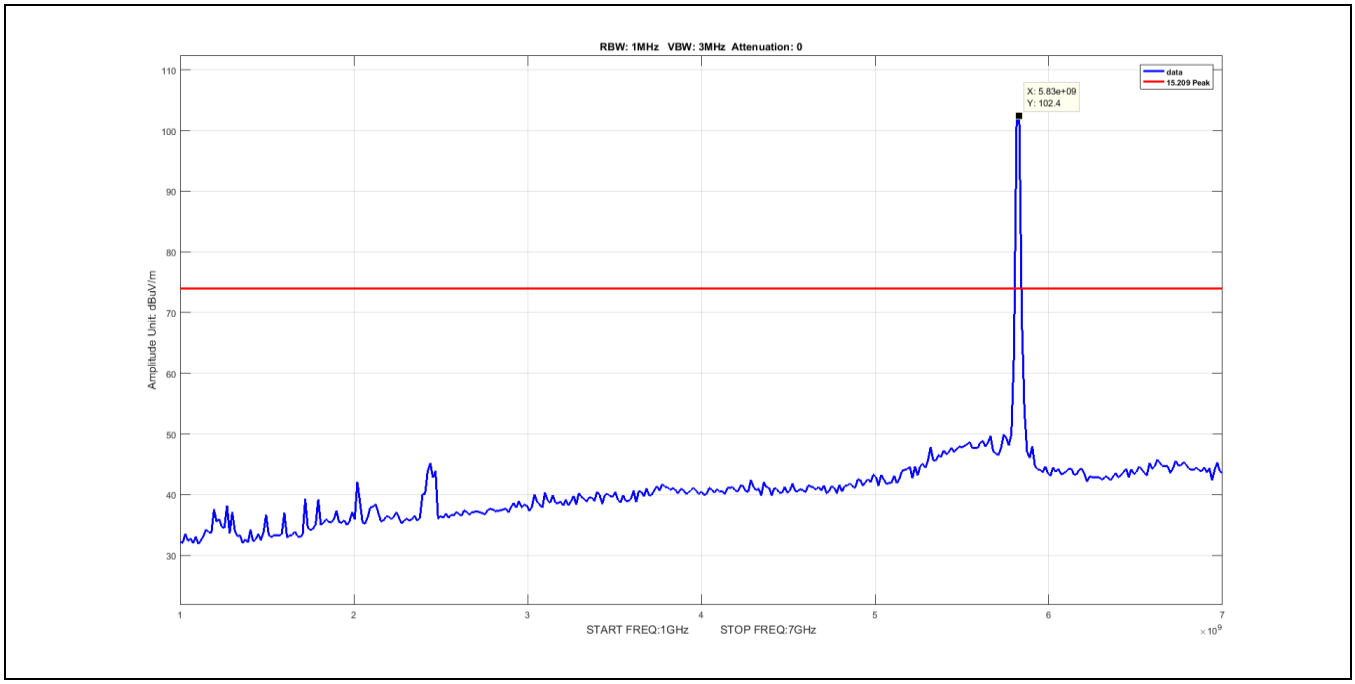
Plot 183. Undesirable Emissions, Average, 1-7G, 40M, ac, low, channel 151



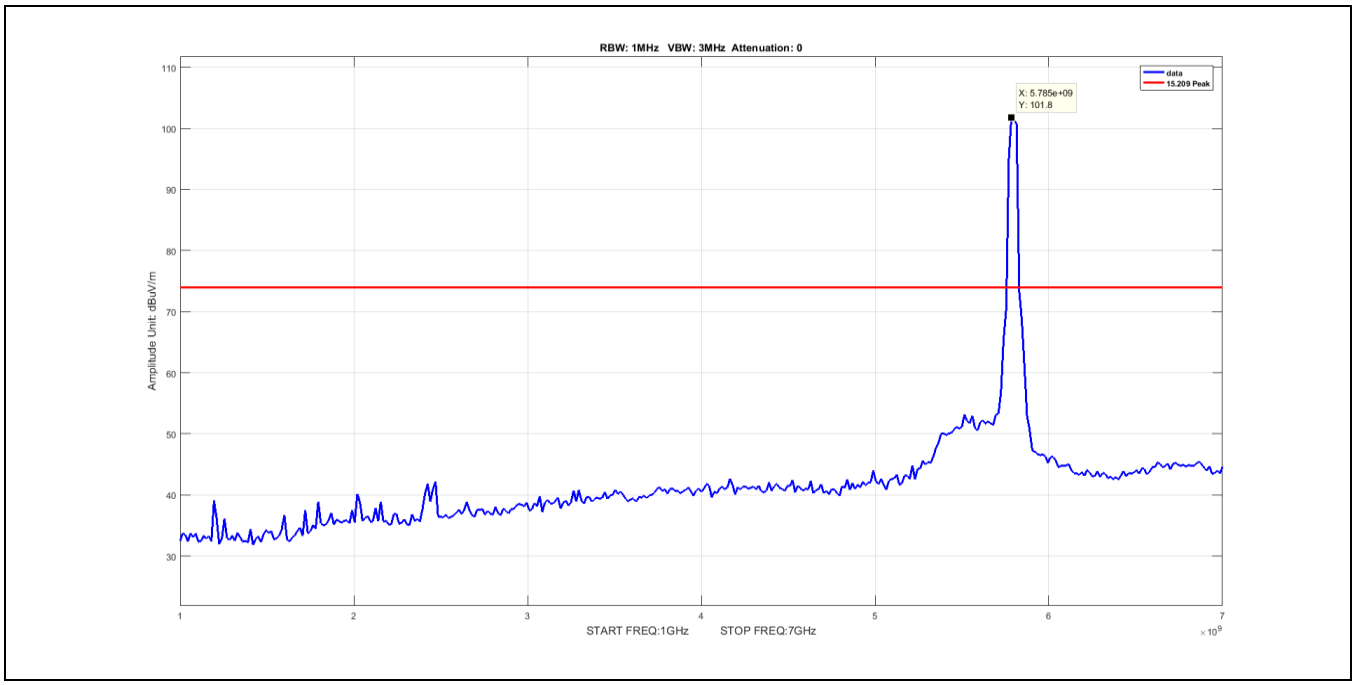
Plot 184. Undesirable Emissions, peak, 1-7G, 20M, n, low, channel 149



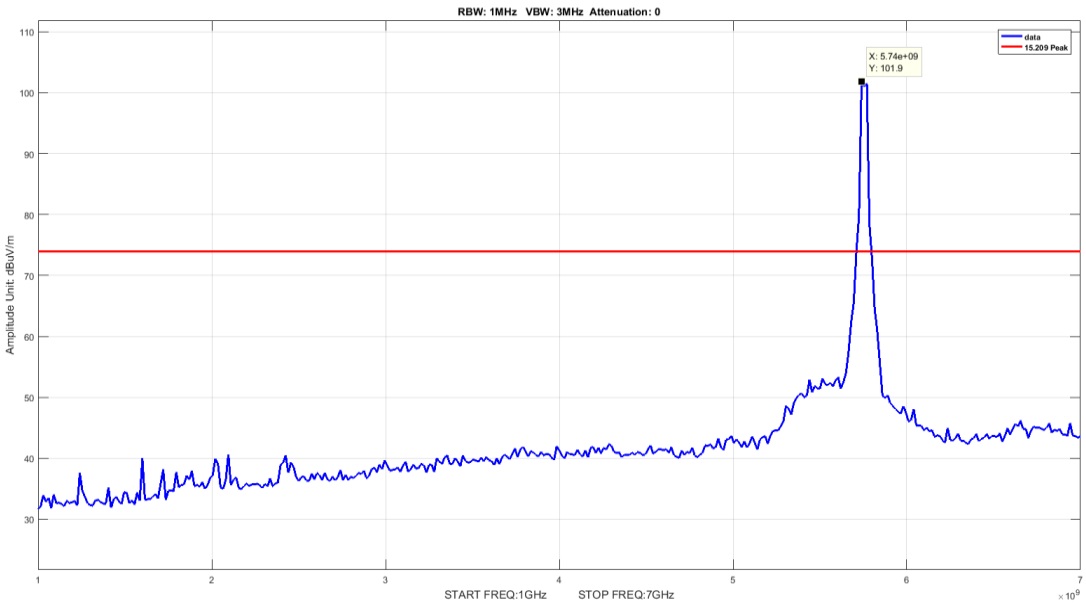
Plot 185. Undesirable Emissions, peak, 1-7G, 20M, n, mid, channel 157



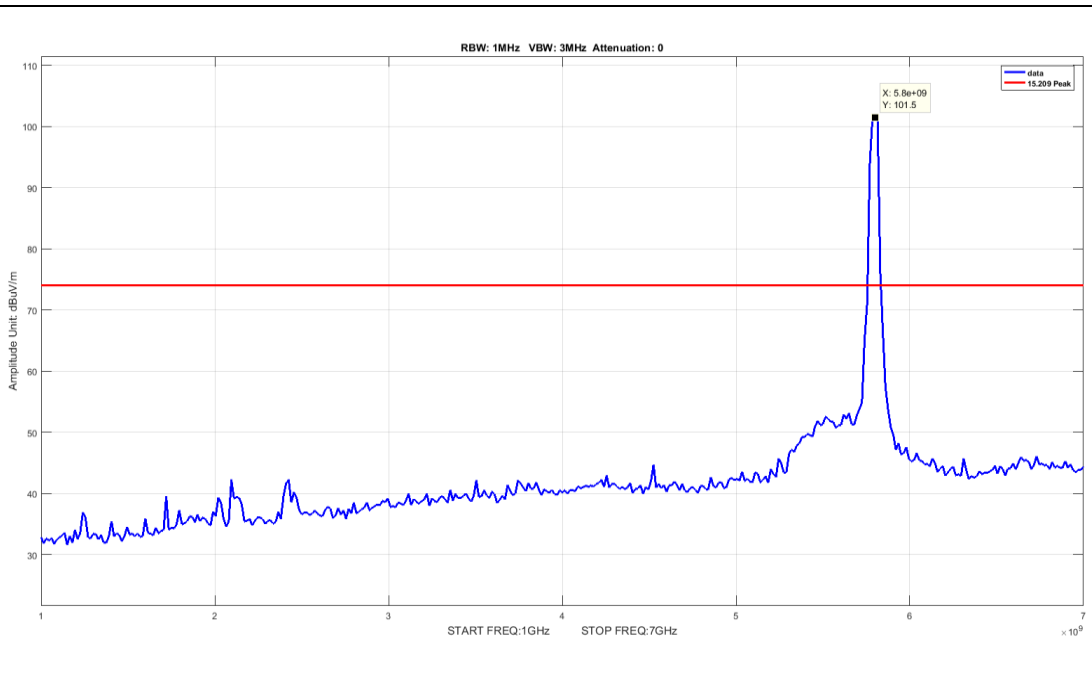
Plot 186. Undesirable Emissions, peak, 1-7G, 20M, n, high, channel 165



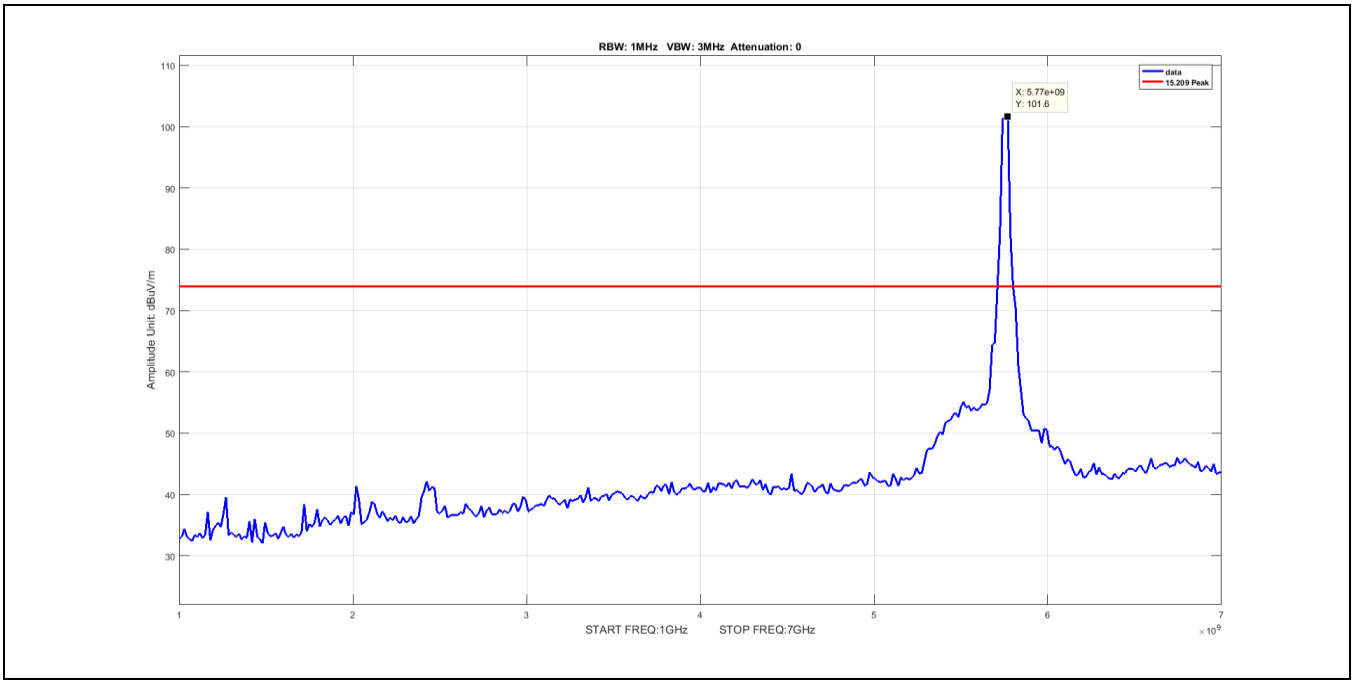
Plot 187. Undesirable Emissions, peak, 1-7G, 40M, ac, high, channel 159



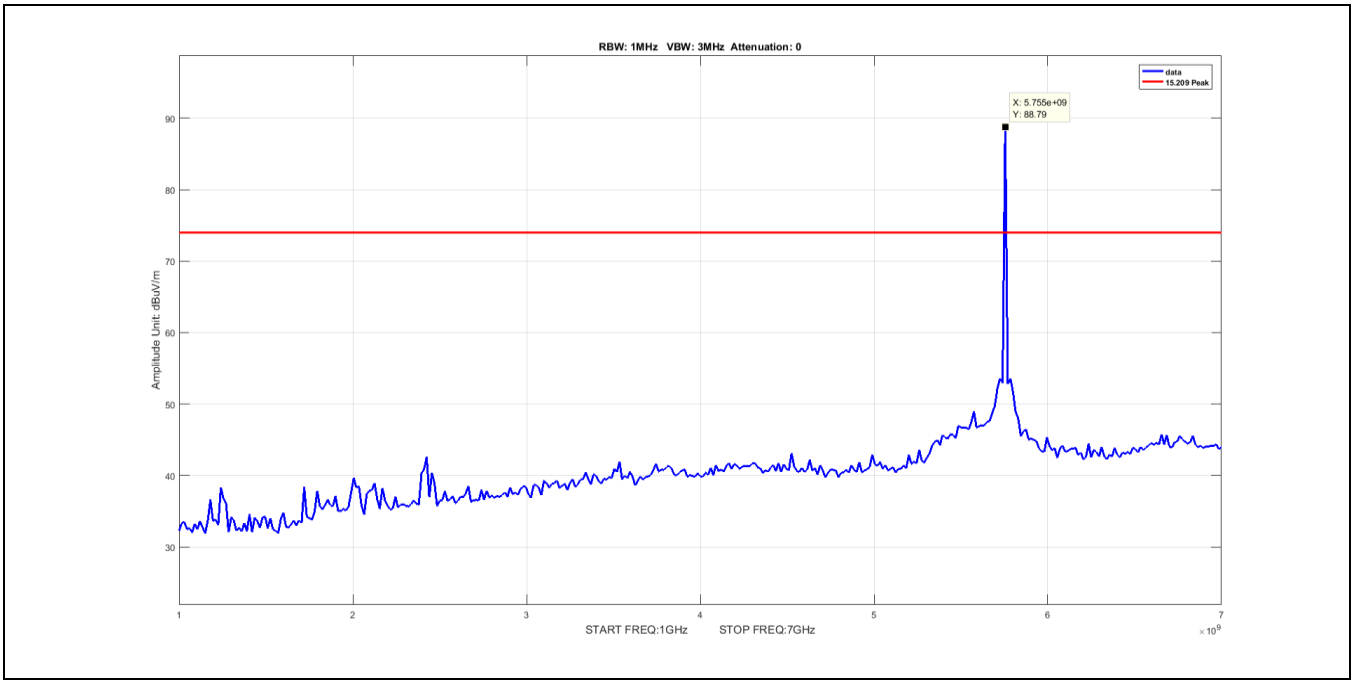
Plot 188. Undesirable Emissions, peak, 1-7G, 40M, ac, low, channel 151



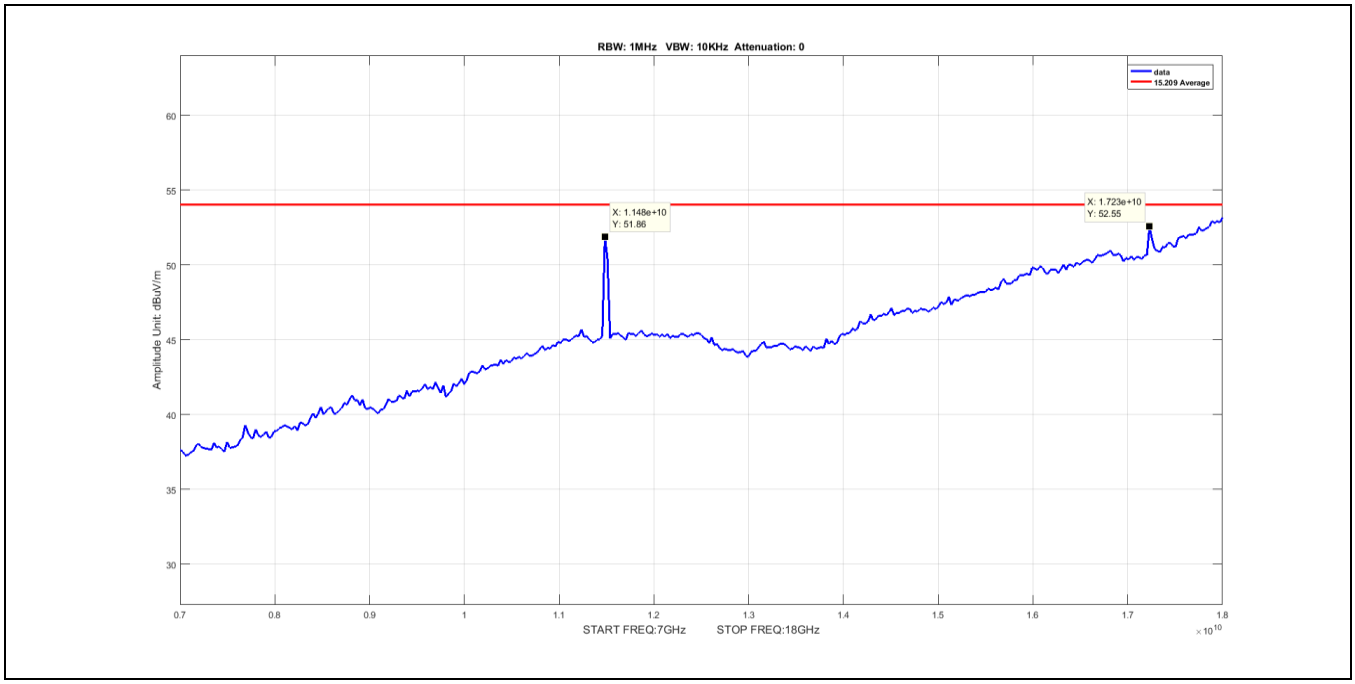
Plot 189. Undesirable Emissions, peak, 1-7G, 40M, n, high, channel 159



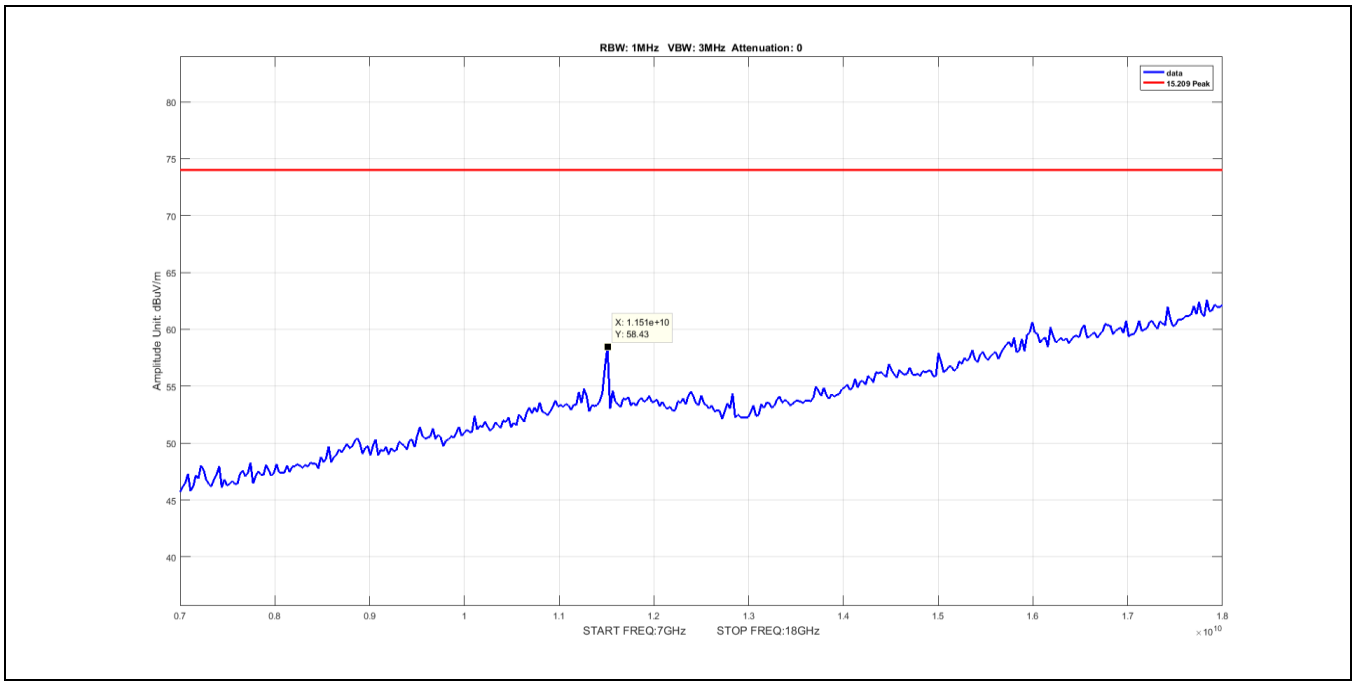
Plot 190. Undesirable Emissions, peak, 1-7G, 40M, n, low, channel 151



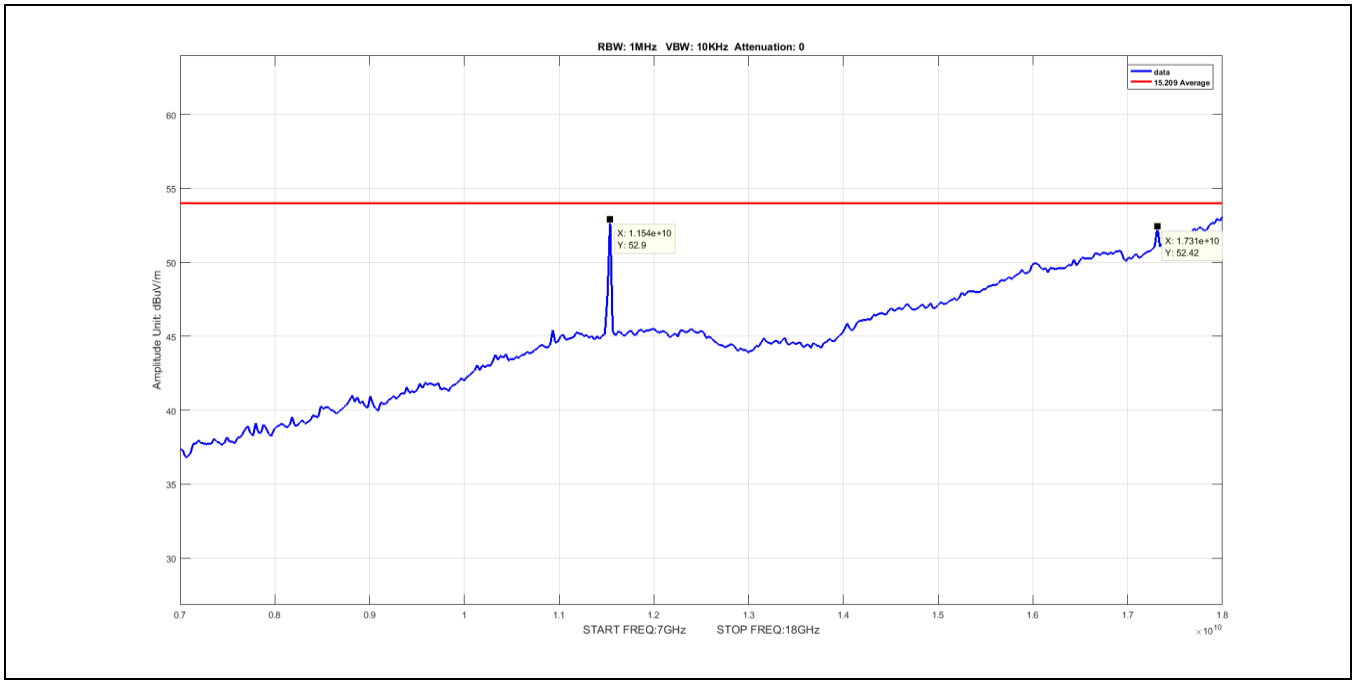
Plot 191. Undesirable Emissions, peak, 1-7G, 80M, ac, low, channel 155



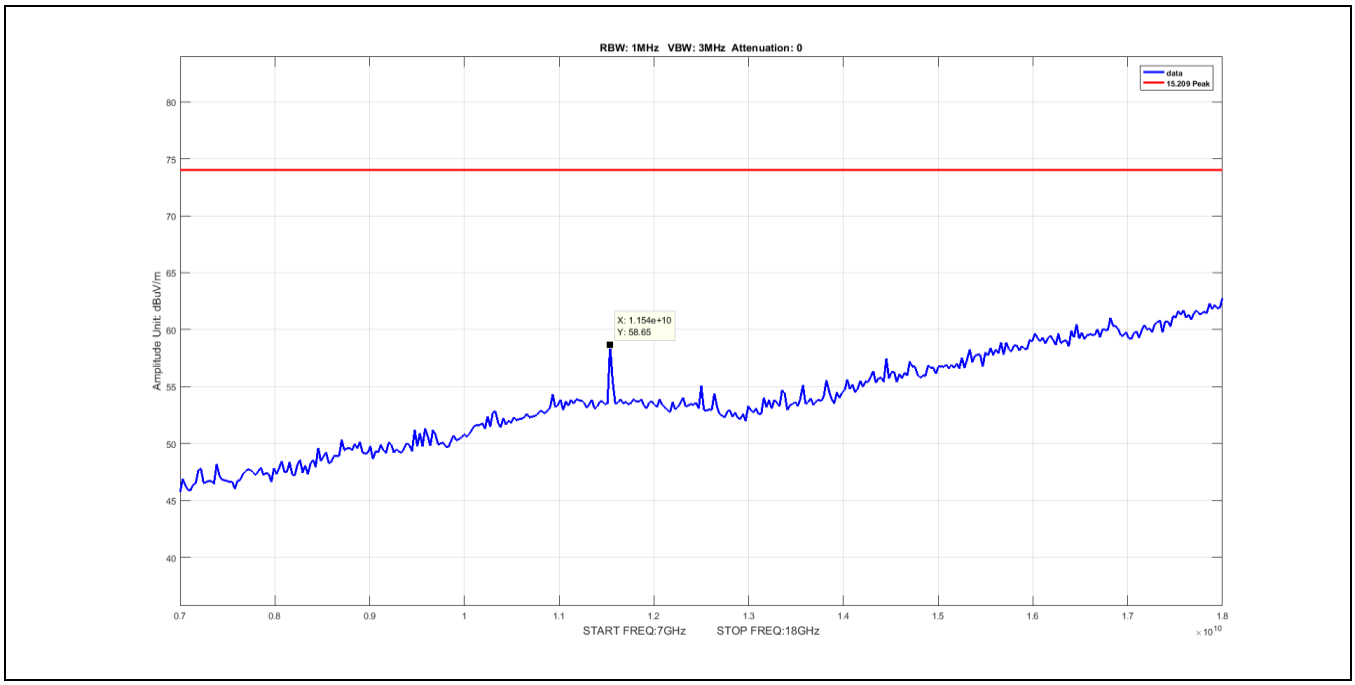
Plot 192. Undesirable Emissions, 7-18GHz, 20M, a, channel 149, , Average



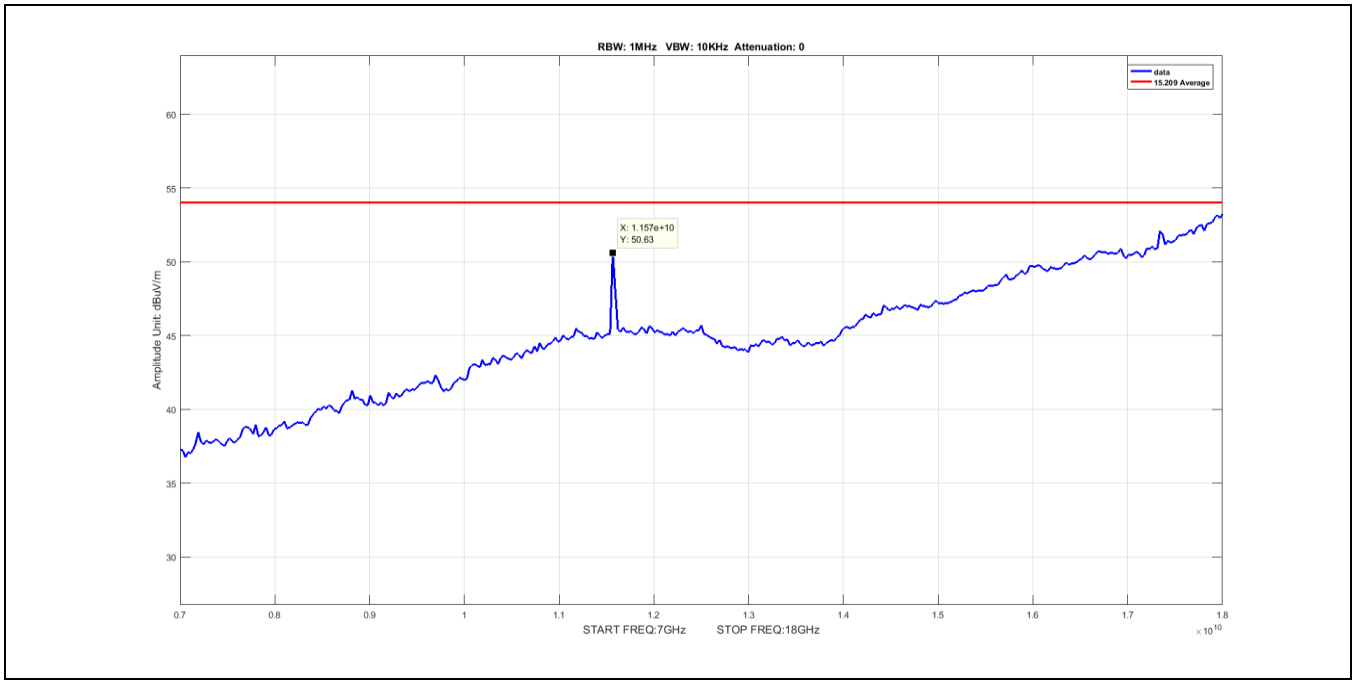
Plot 193. Undesirable Emissions, 7-18GHz, 20M, a, channel 149, Peak



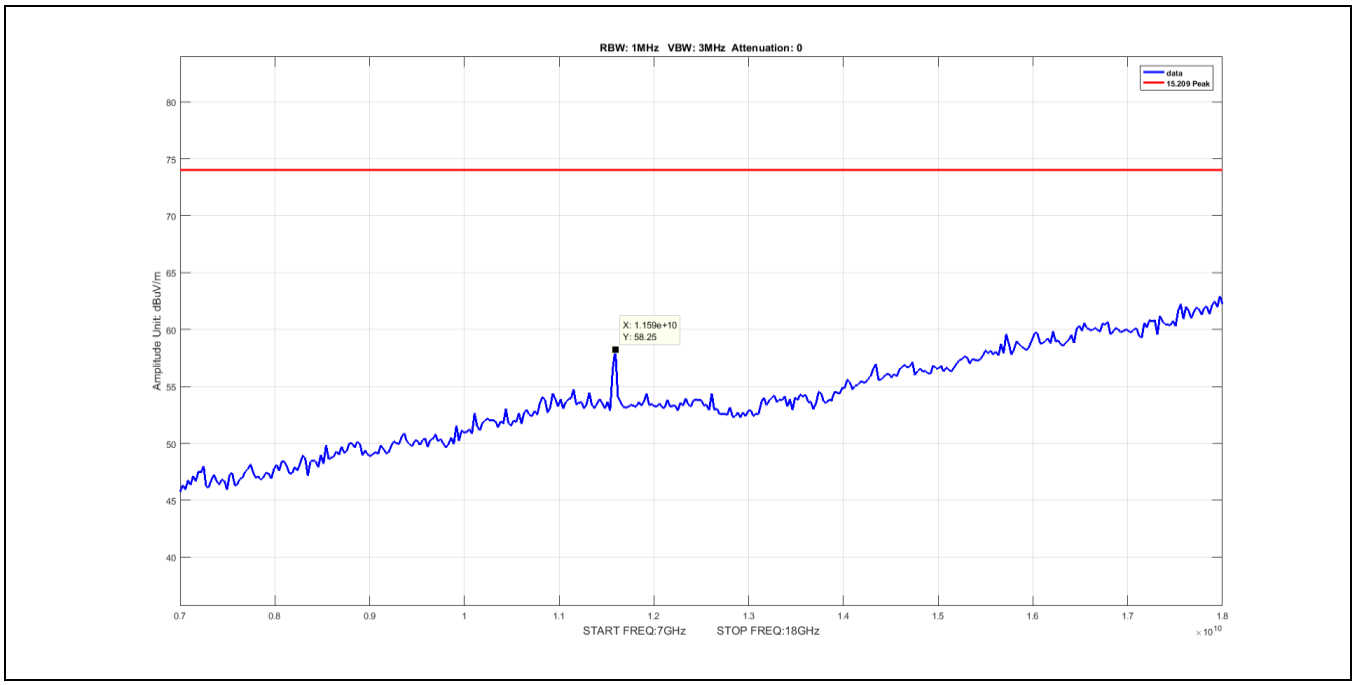
Plot 194. Undesirable Emissions, 7-18GHz, 20M, a, channel 153, Average



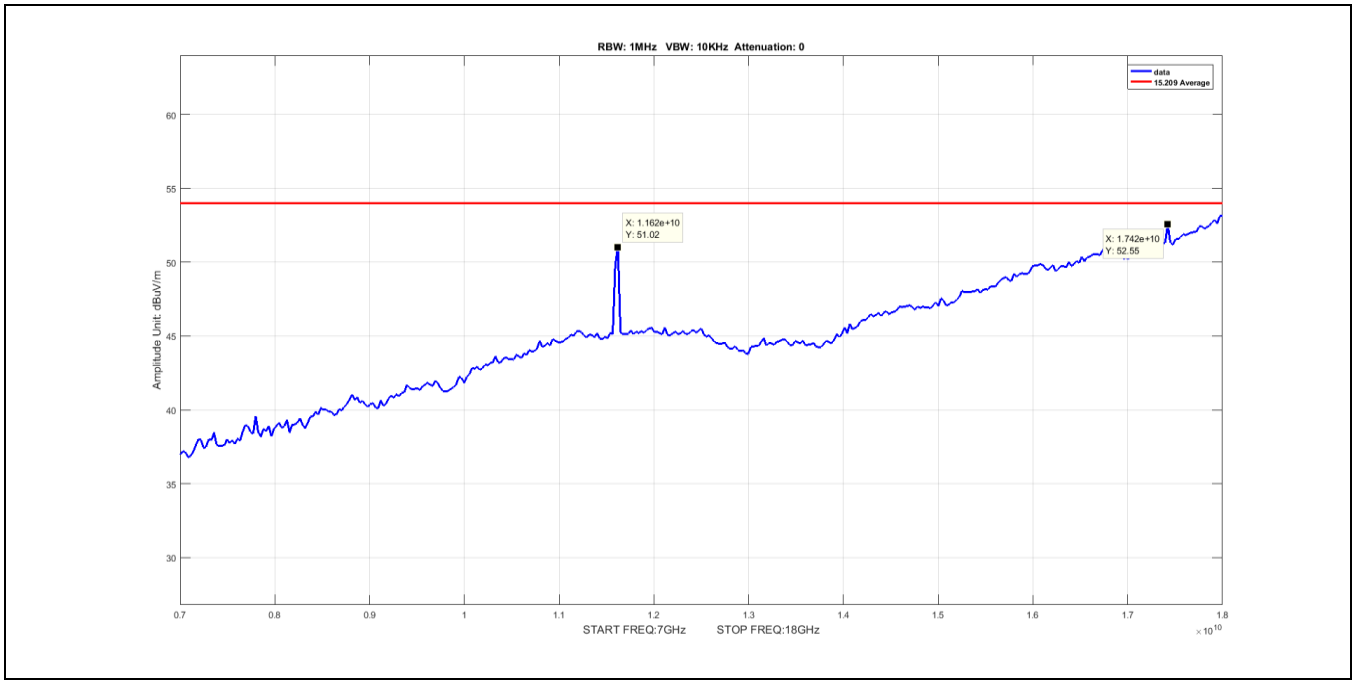
Plot 195. Undesirable Emissions, 7-18GHz, 20M, a, channel 153, Peak



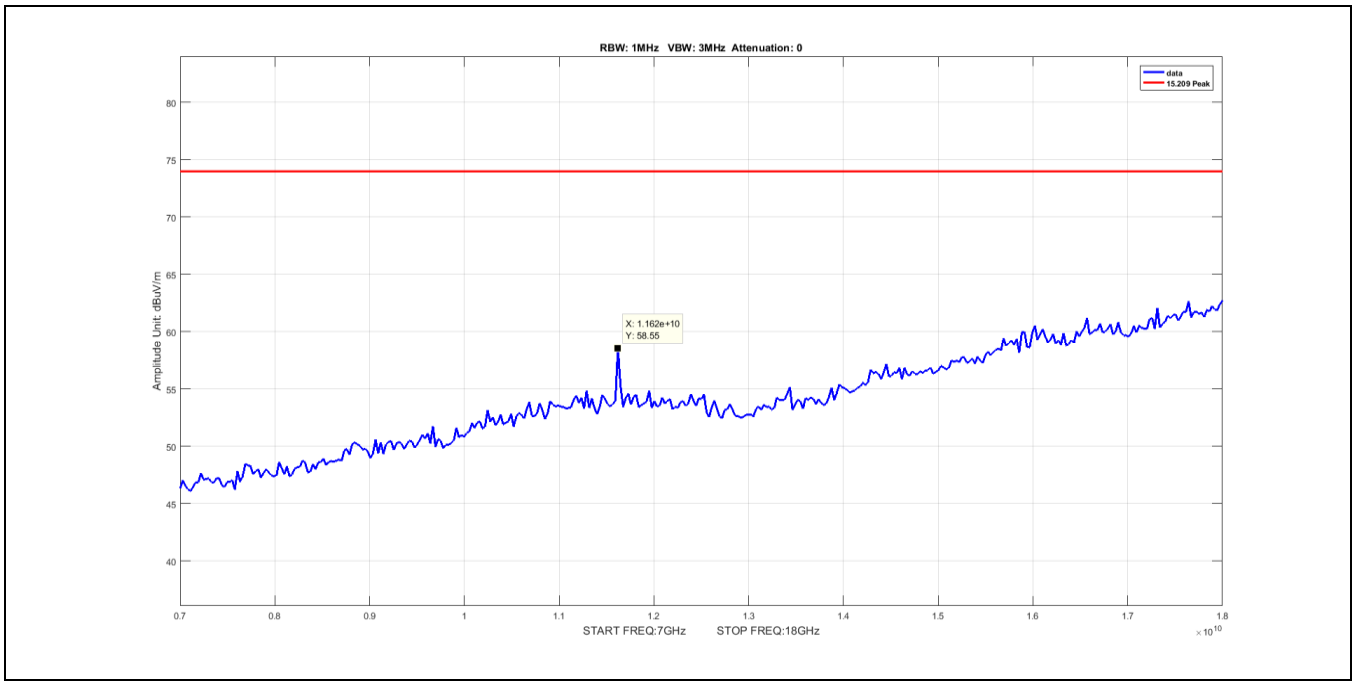
Plot 196. Undesirable Emissions, 7-18GHz, 20M, a, channel 157, Average



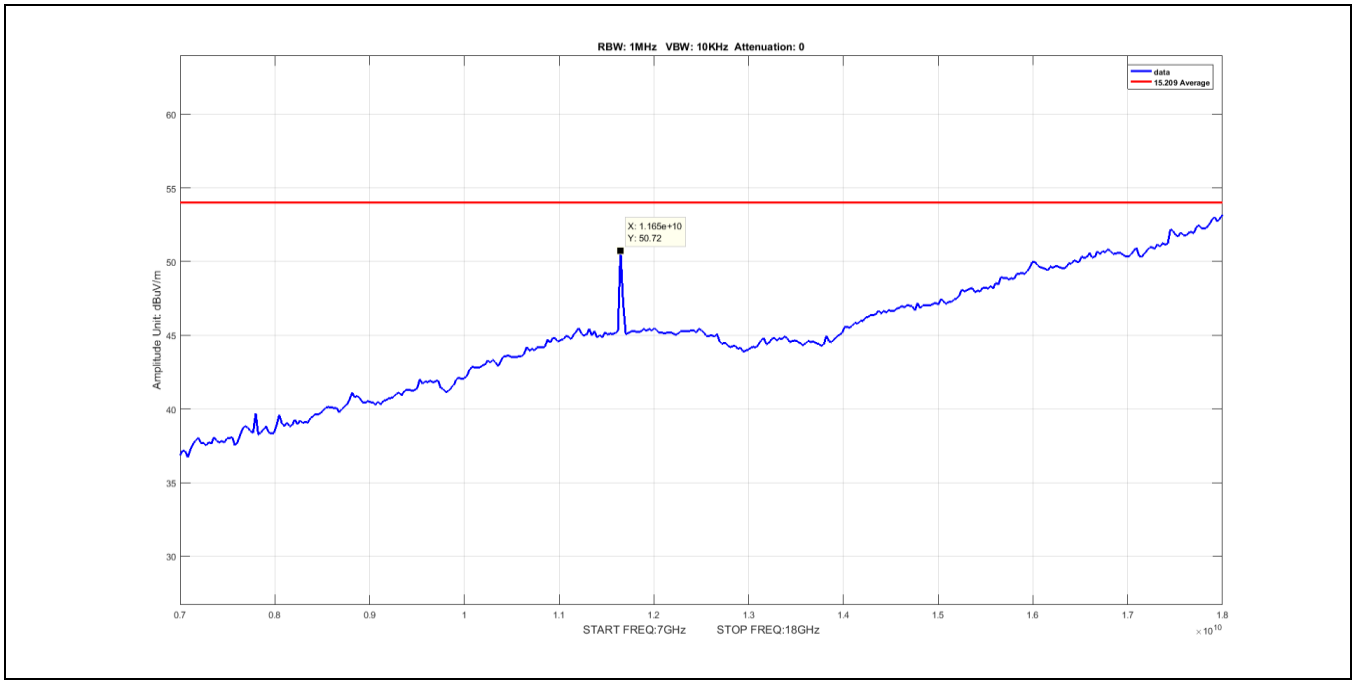
Plot 197. Undesirable Emissions, 7-18GHz, 20M, a, channel 157, Peak



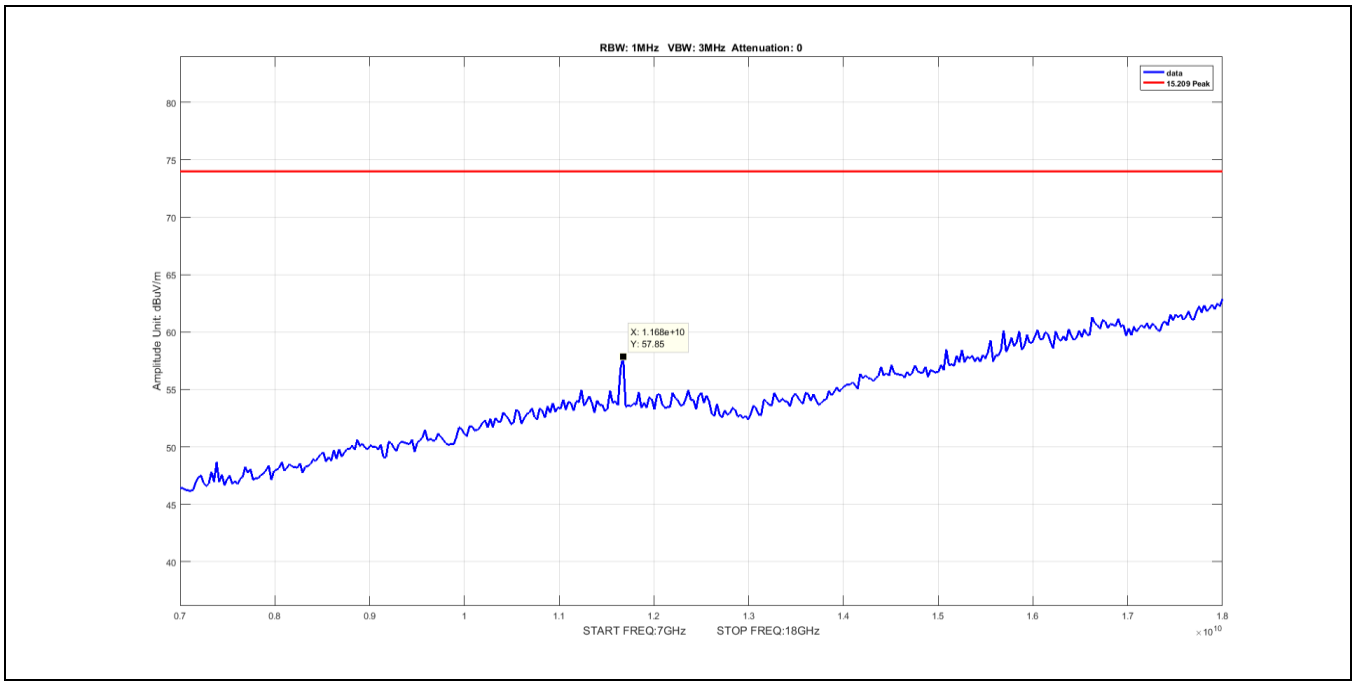
Plot 198. Undesirable Emissions, 7-18GHz, 20M, a, channel 161, Average



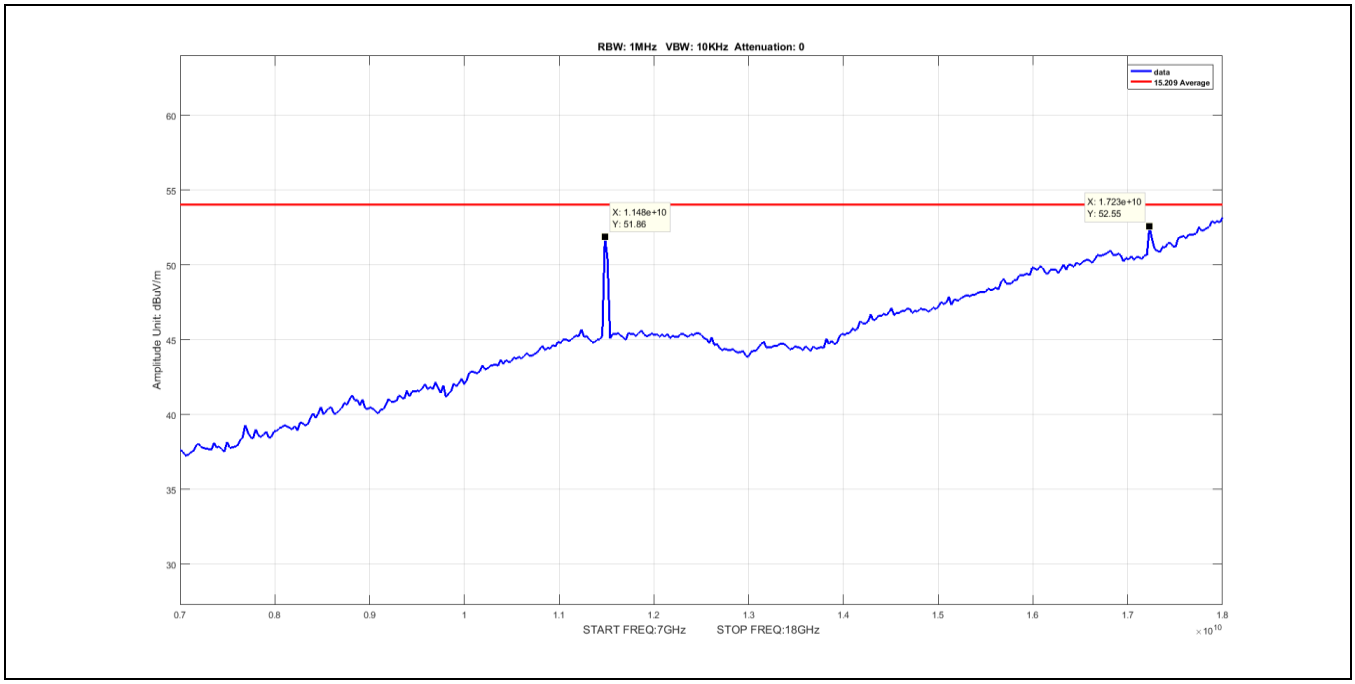
Plot 199. Undesirable Emissions, 7-18GHz, 20M, a, channel 161, Peak



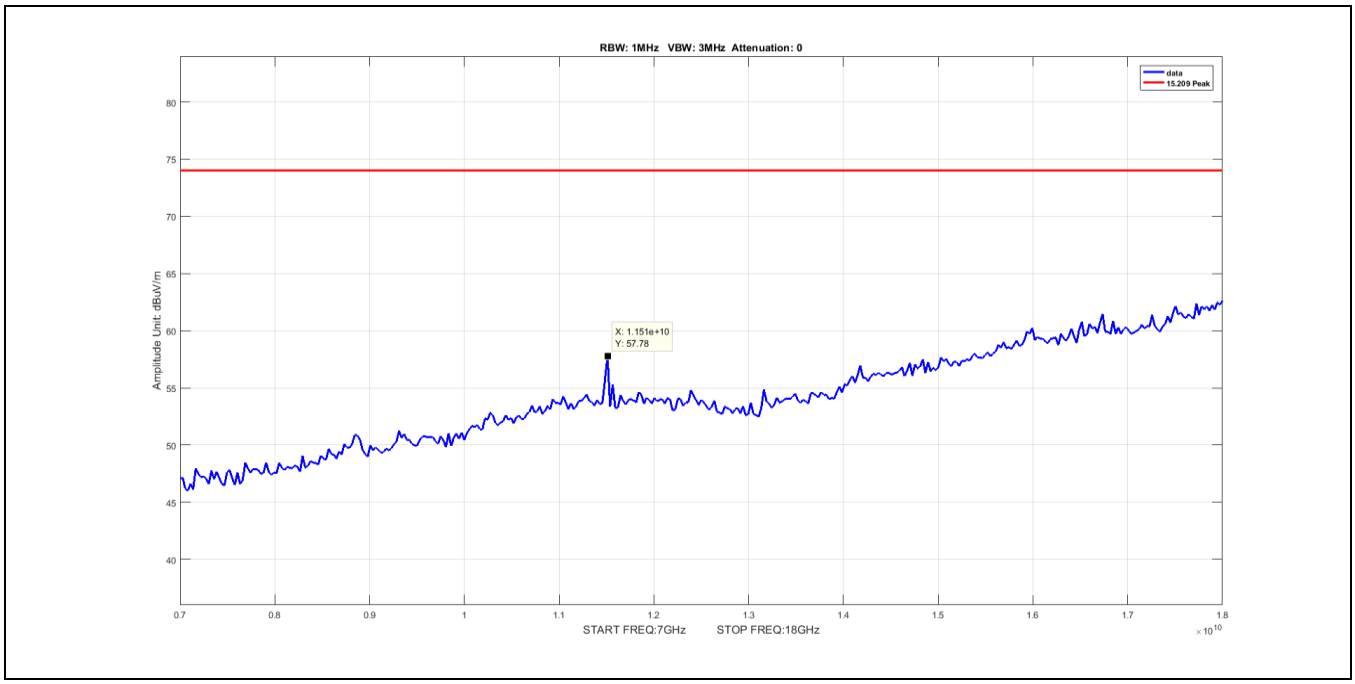
Plot 200. Undesirable Emissions, 7-18GHz, 20M, a, channel 165, Average



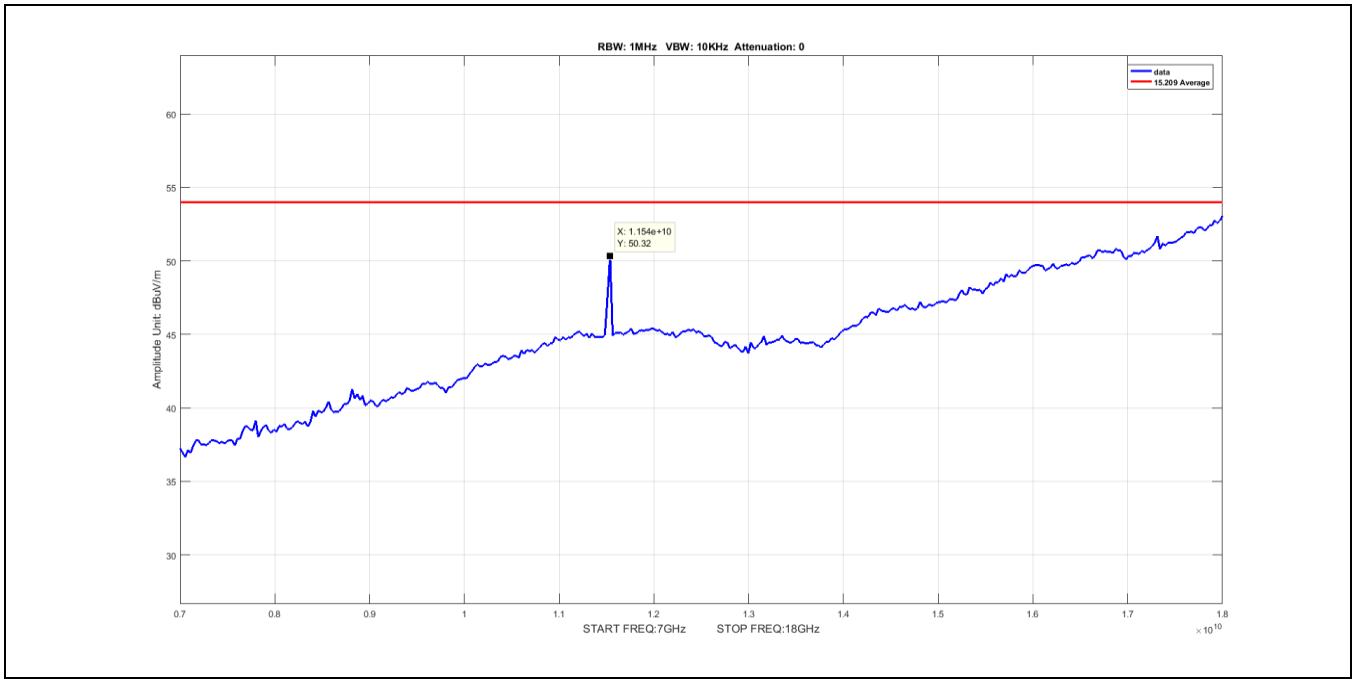
Plot 201. Undesirable Emissions, 7-18GHz, 20M, a, channel 165, Peak



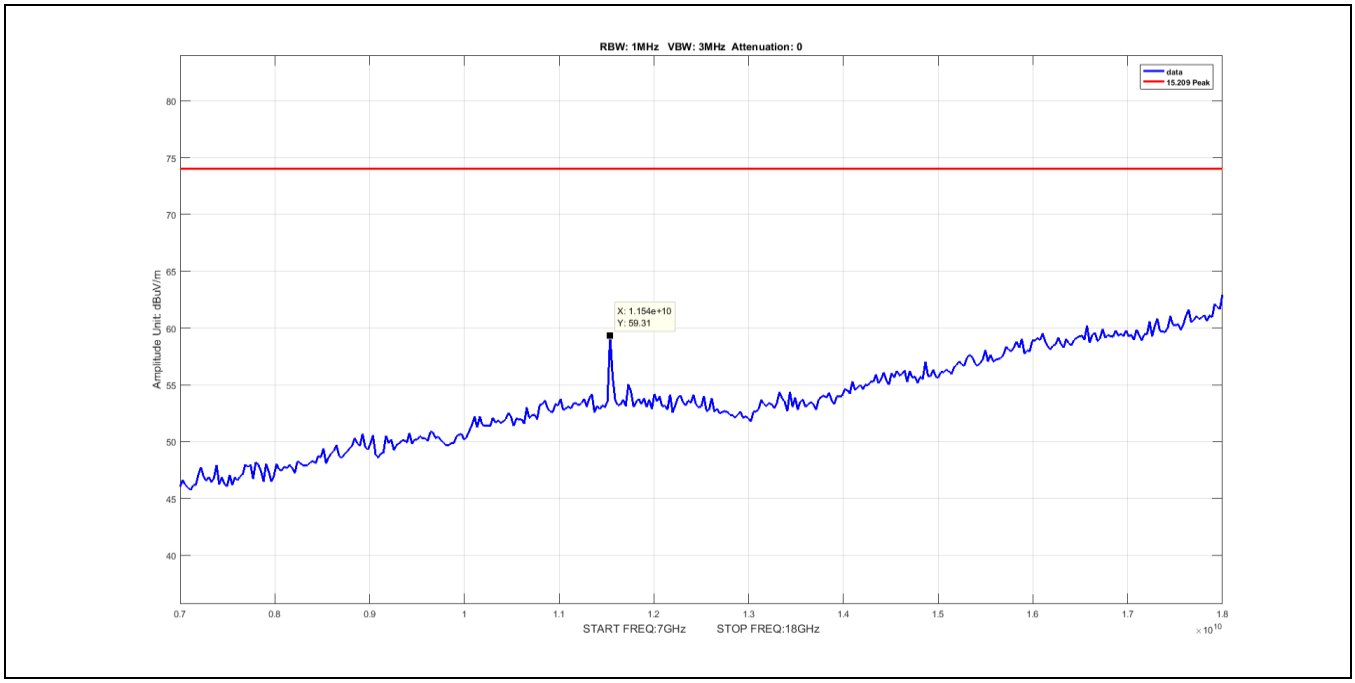
Plot 202. Undesirable Emissions, 7-18GHz, 20M, a, channel 149, Average



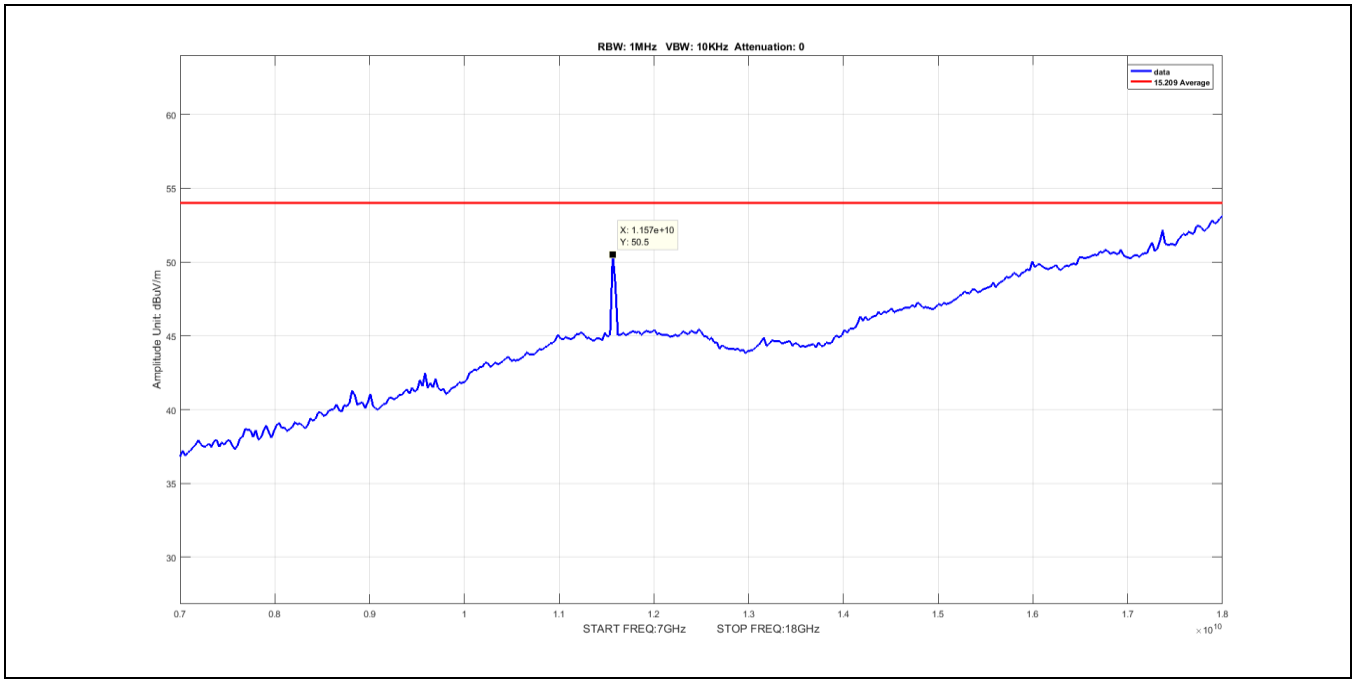
Plot 203. Undesirable Emissions, 7-18GHz, 20M, ac, channel 149, Peak



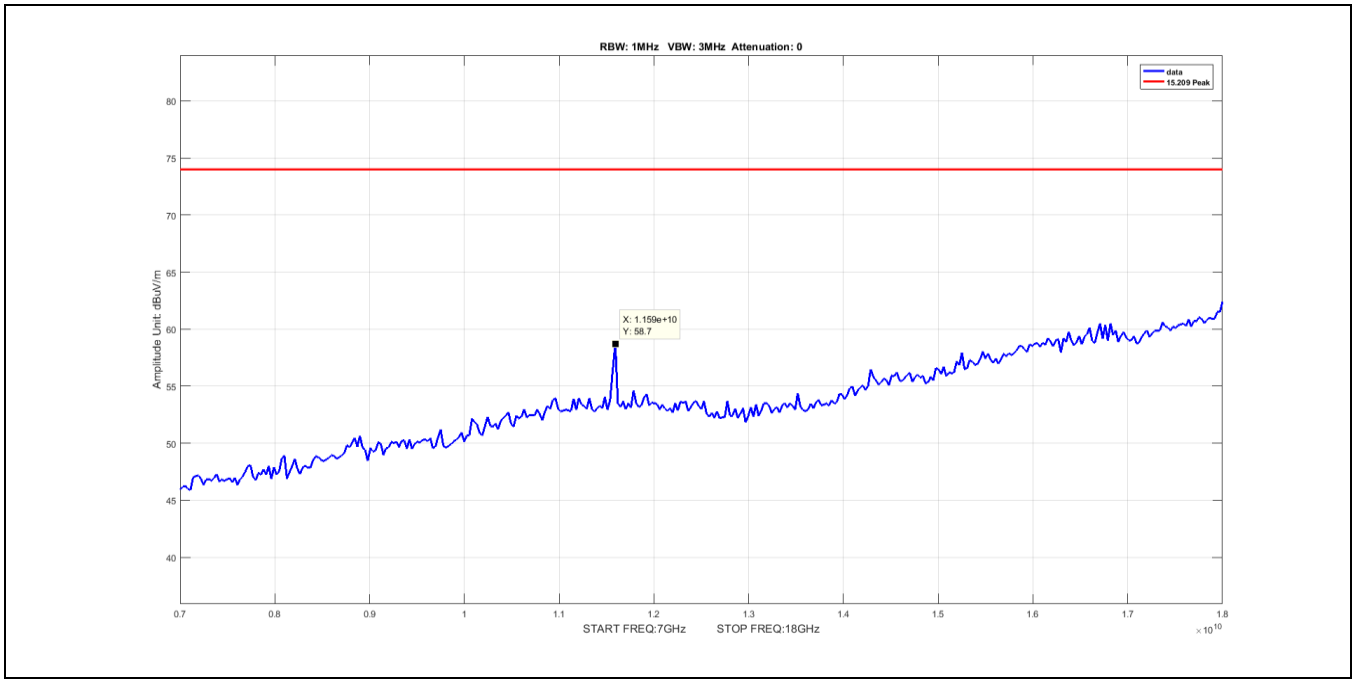
Plot 204. Undesirable Emissions, 7-18GHz, 20M, ac, channel 153, Average



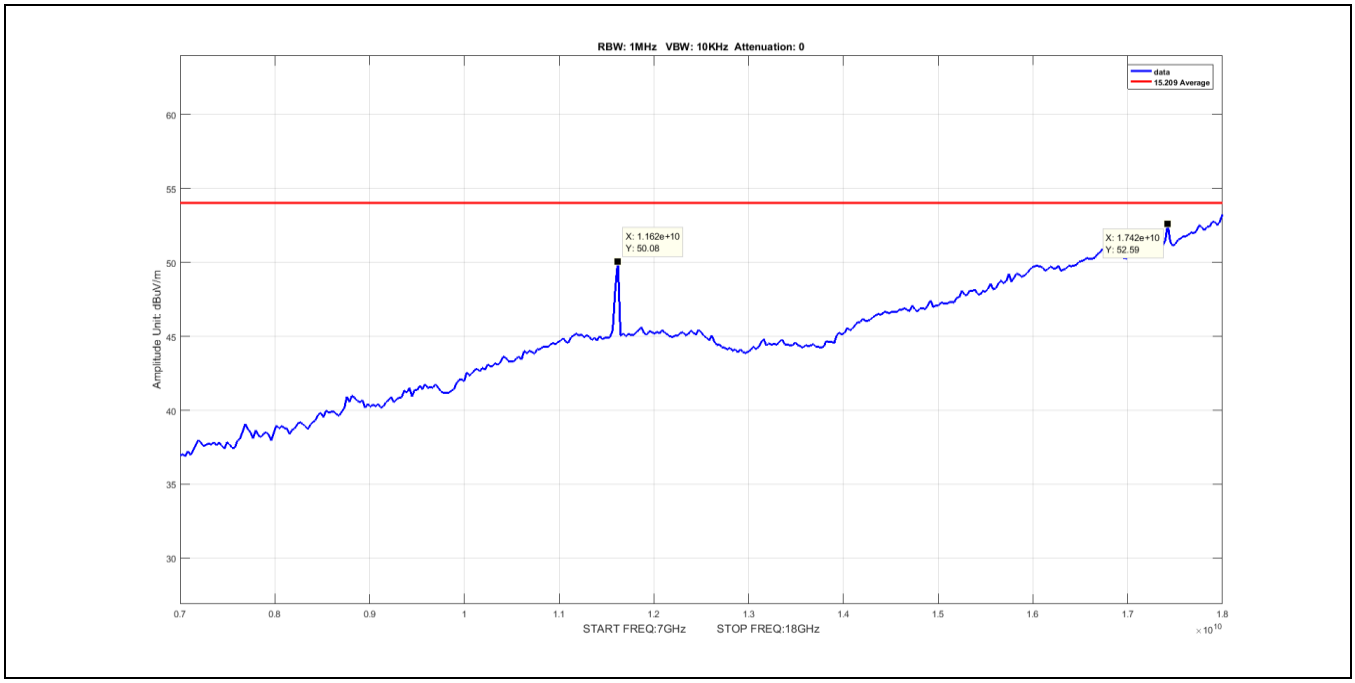
Plot 205. Undesirable Emissions, 7-18GHz, 20M, ac, channel 153, Peak



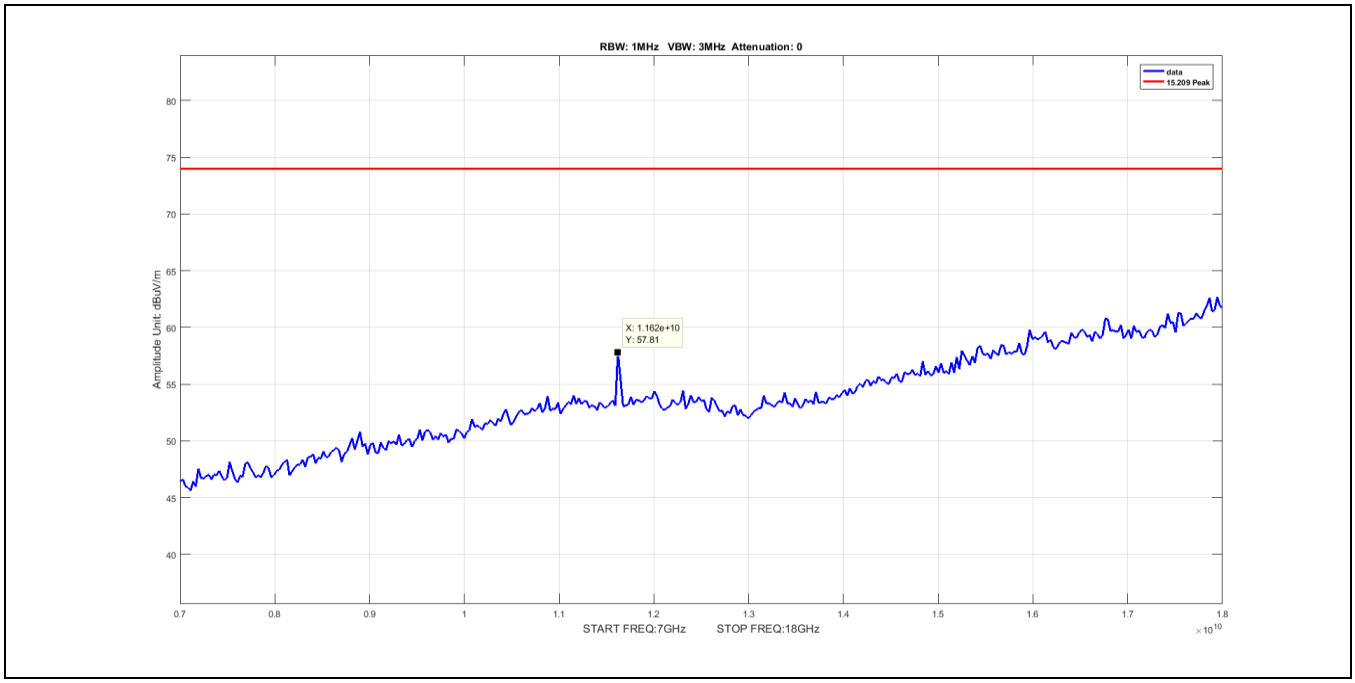
Plot 206. Undesirable Emissions, 7-18GHz, 20M, ac, channel 157, Average



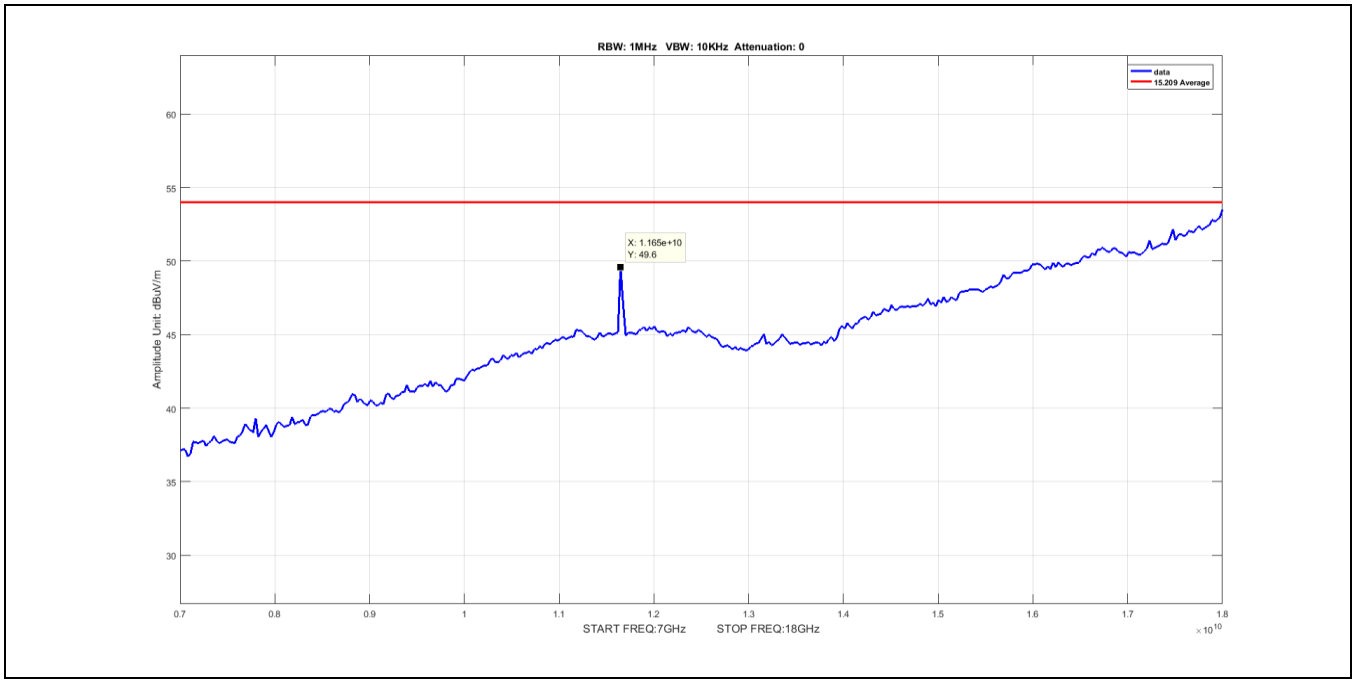
Plot 207. Undesirable Emissions, 7-18GHz, 20M, ac, channel 157, Peak



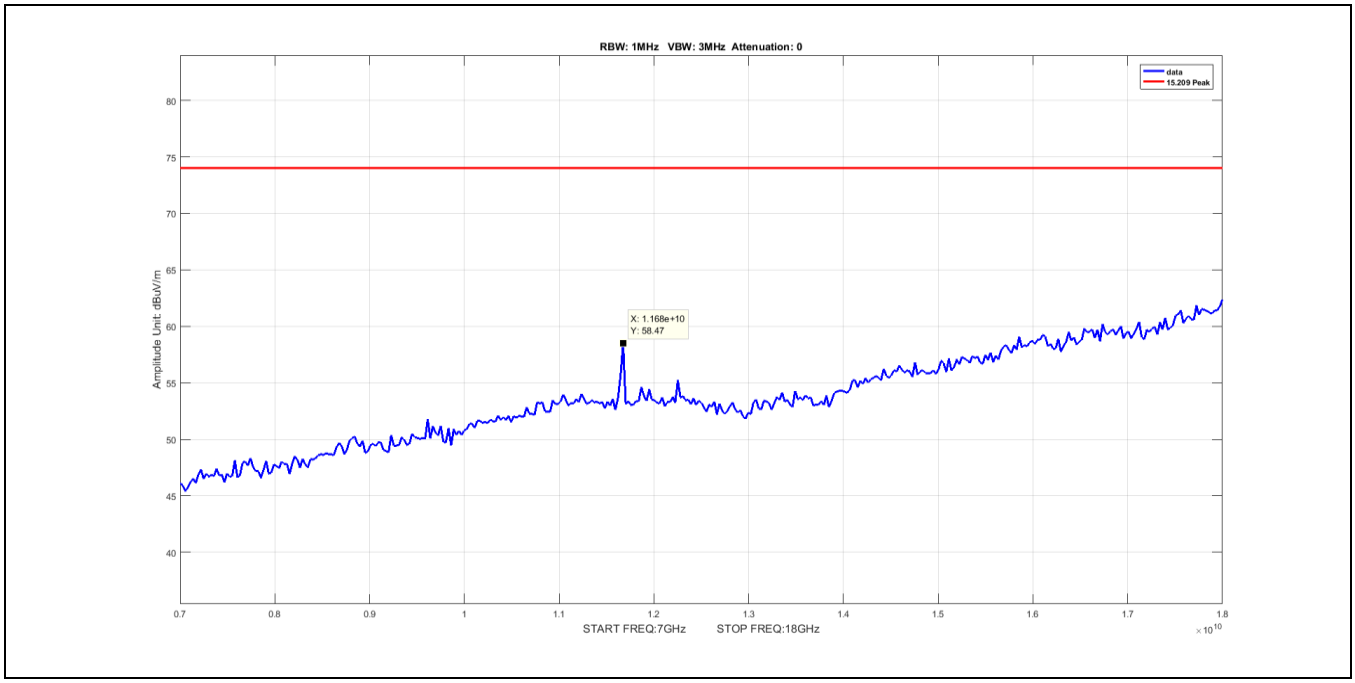
Plot 208. Undesirable Emissions, 7-18GHz, 20M, ac, channel 161, Average



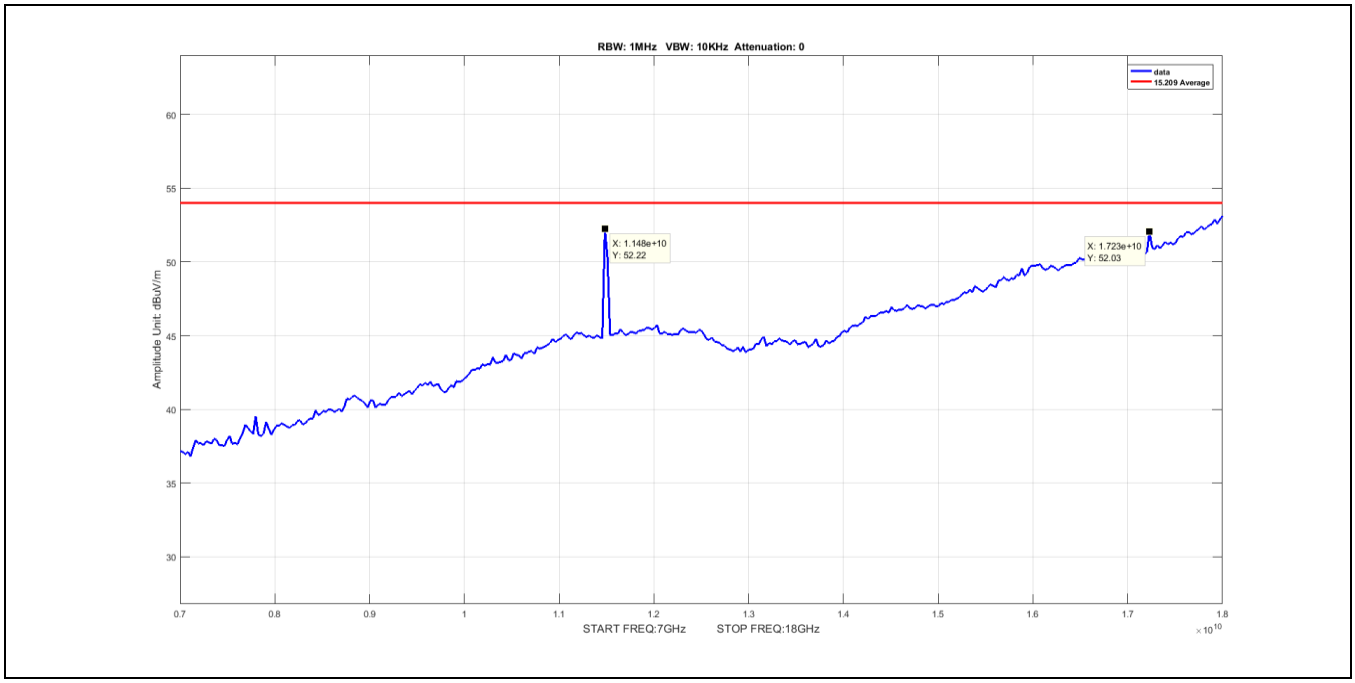
Plot 209. Undesirable Emissions, 7-18GHz, 20M, ac, channel 161, Peak



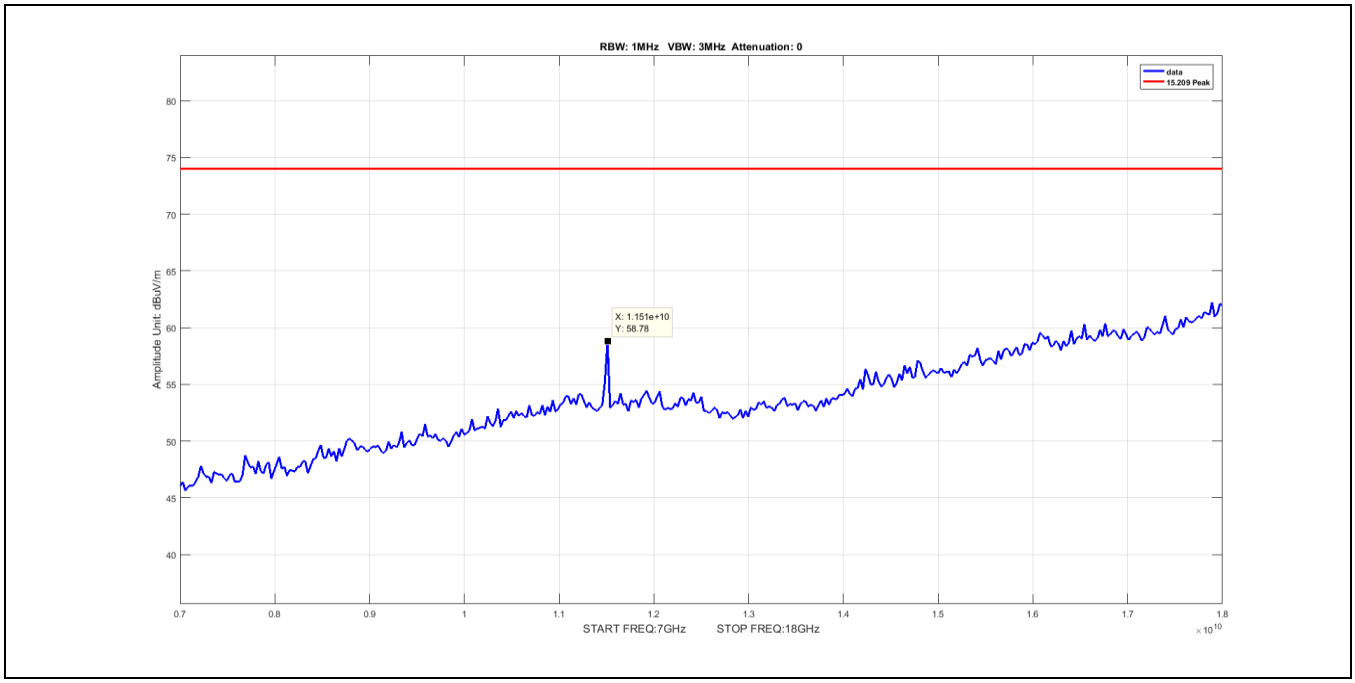
Plot 210. Undesirable Emissions, 7-18GHz, 20M, ac, channel 165, Average



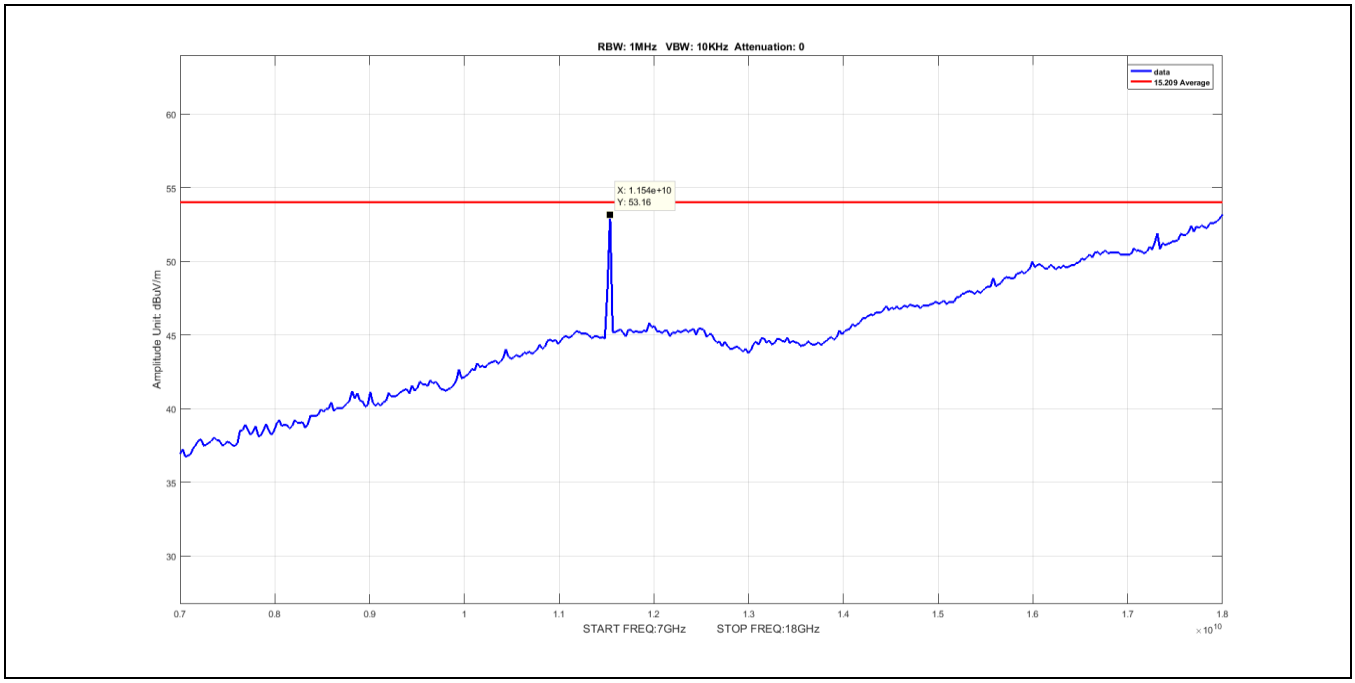
Plot 211. Undesirable Emissions, 7-18GHz, 20M, ac, channel 165, Peak



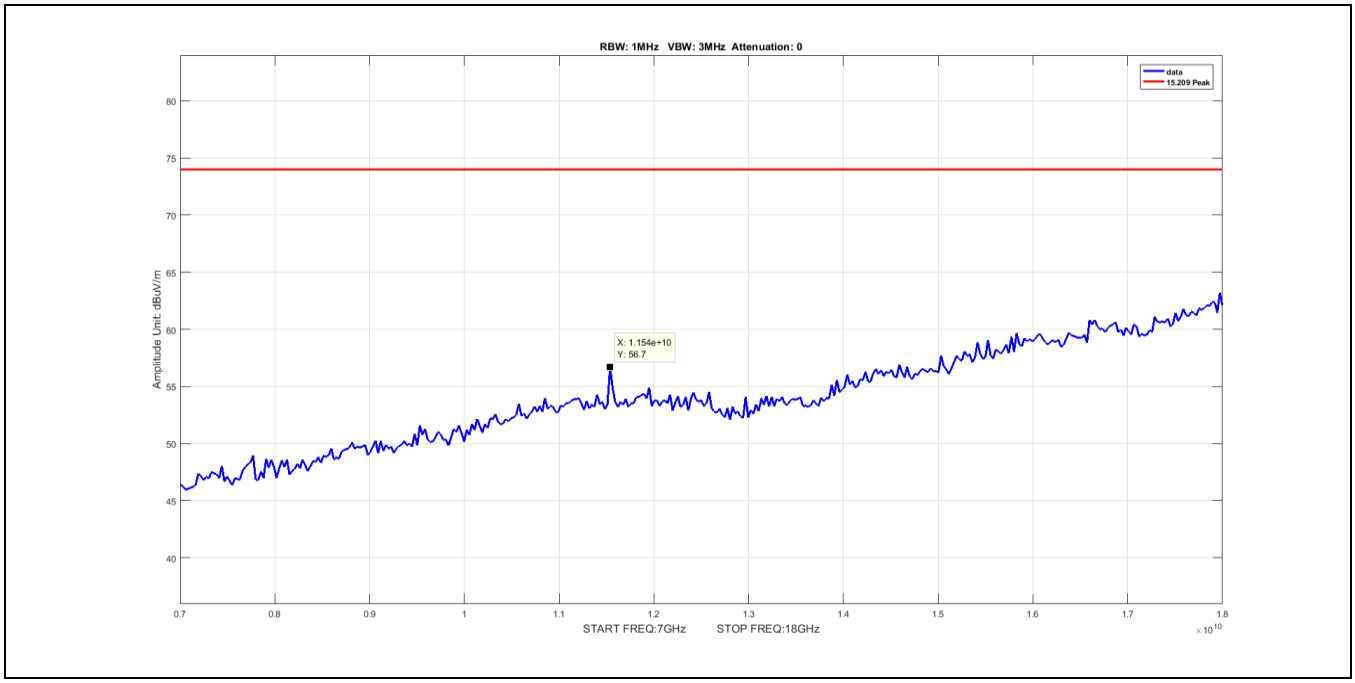
Plot 212. Undesirable Emissions, 7-18GHz, 20M, n, channel 149, Average



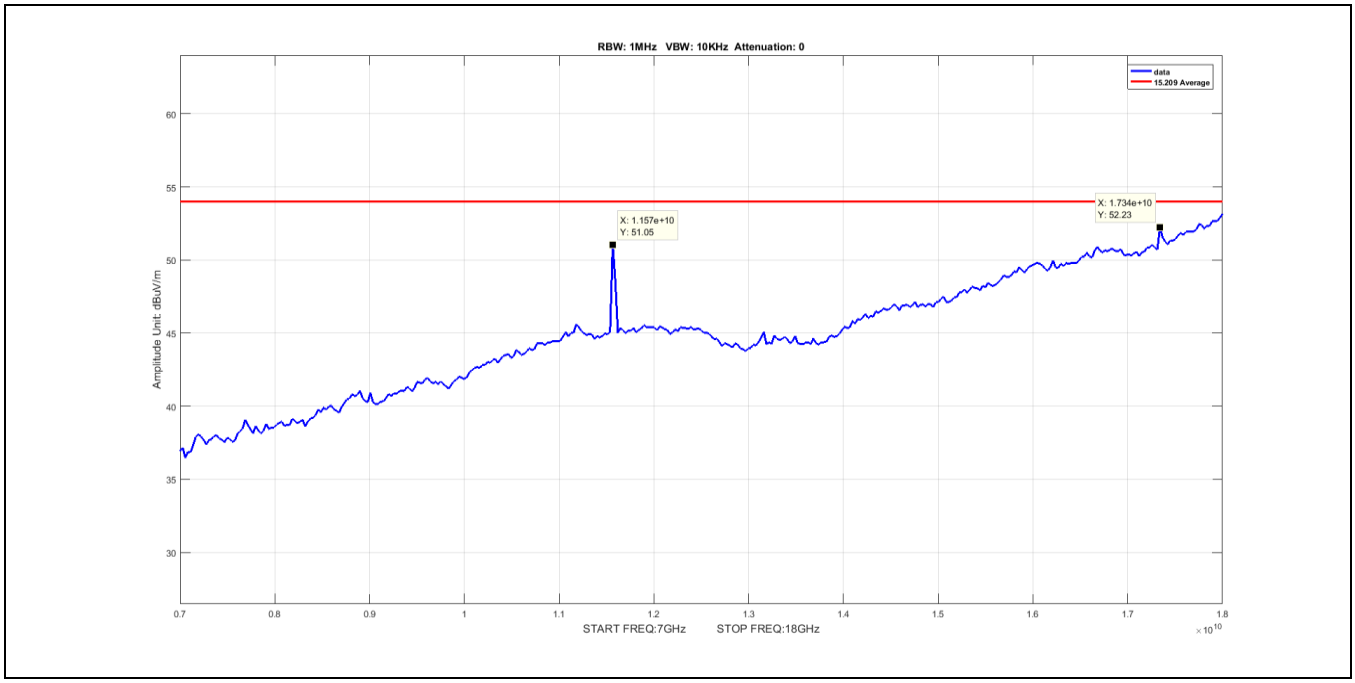
Plot 213. Undesirable Emissions, 7-18GHz, 20M, n, channel 149, Peak



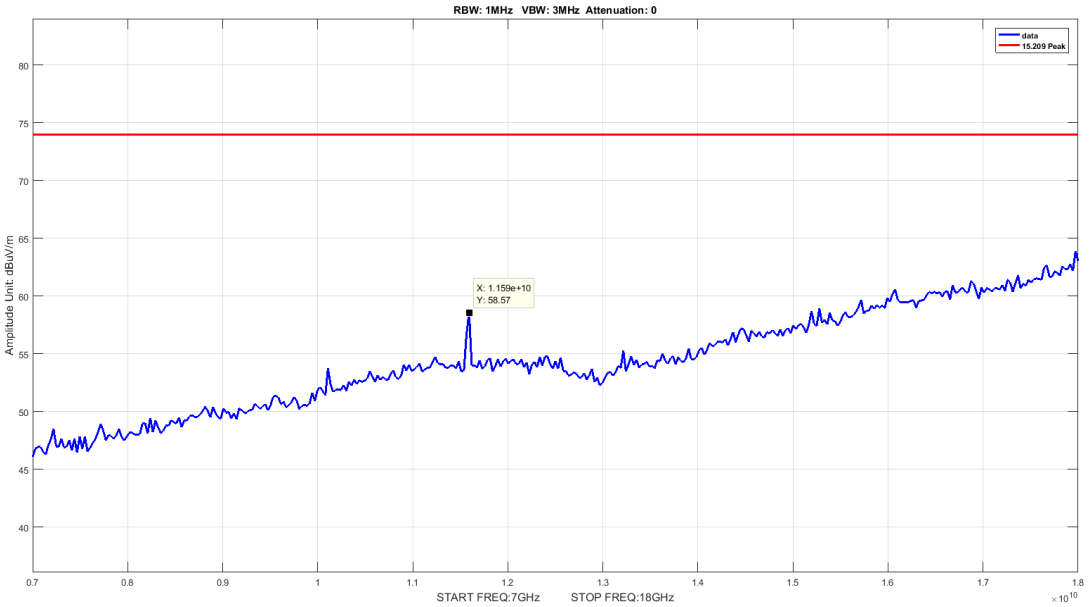
Plot 214. Undesirable Emissions, 7-18GHz, 20M, n, channel 153, Average



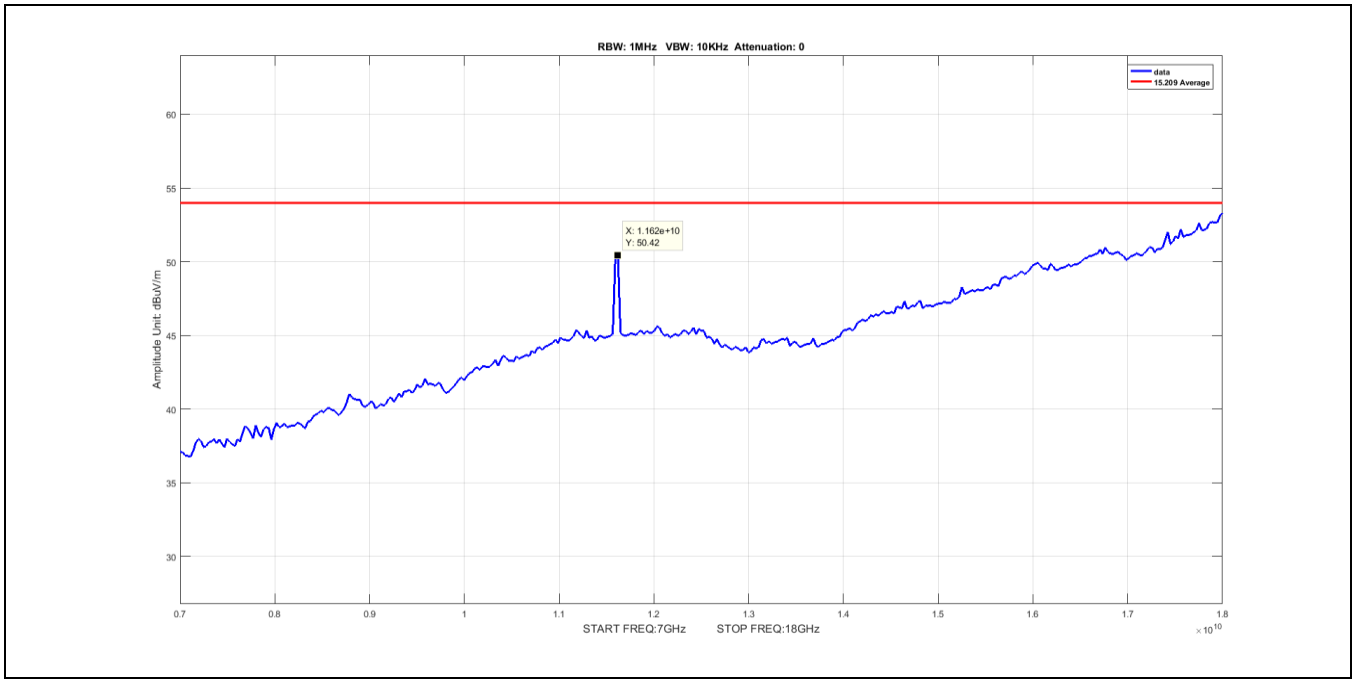
Plot 215. Undesirable Emissions, 7-18GHz, 20M, n, channel 153, Peak



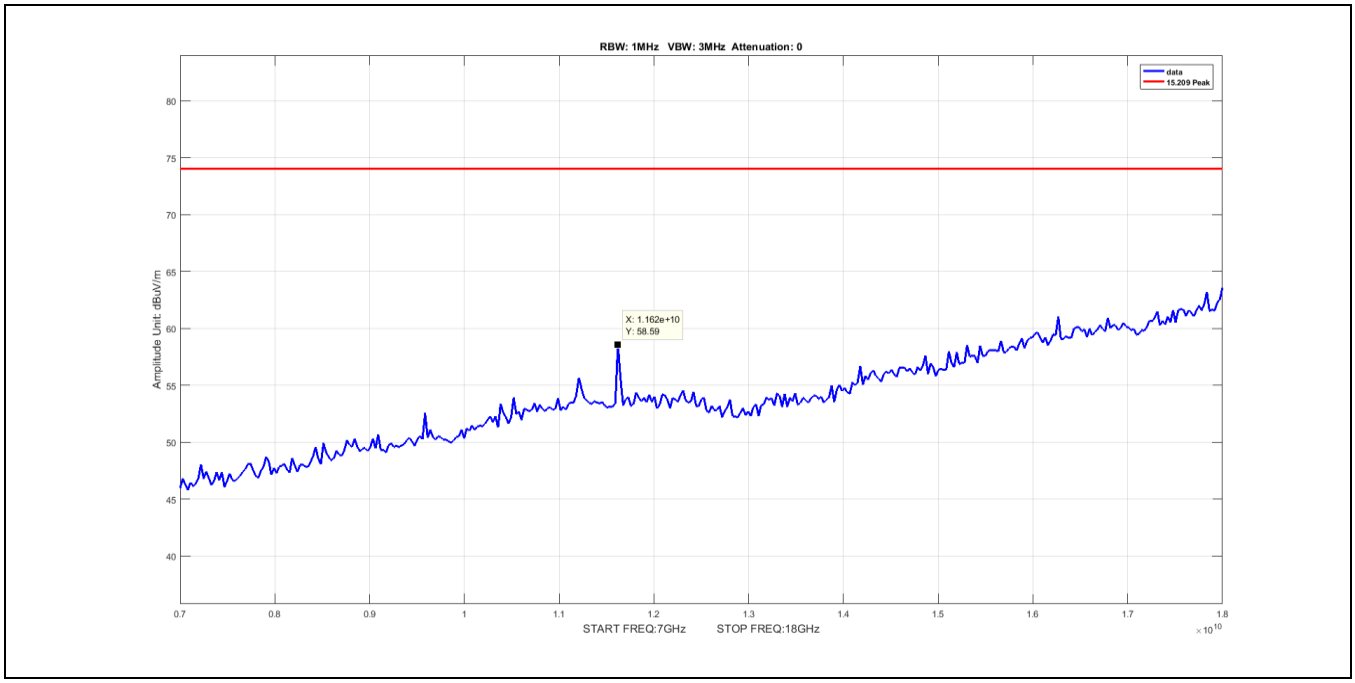
Plot 216. Undesirable Emissions, 7-18GHz, 20M, n, channel 157, Average



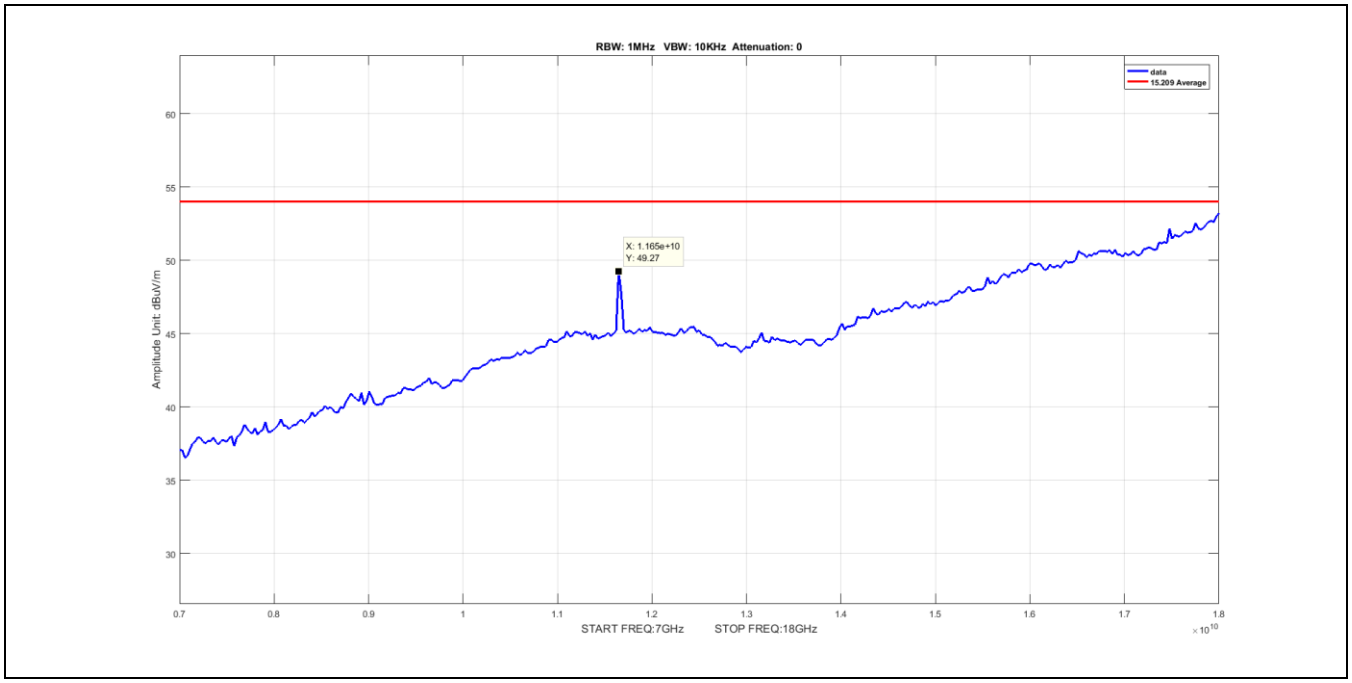
Plot 217. Undesirable Emissions, 7-18GHz, 20M, n, channel 157, Peak



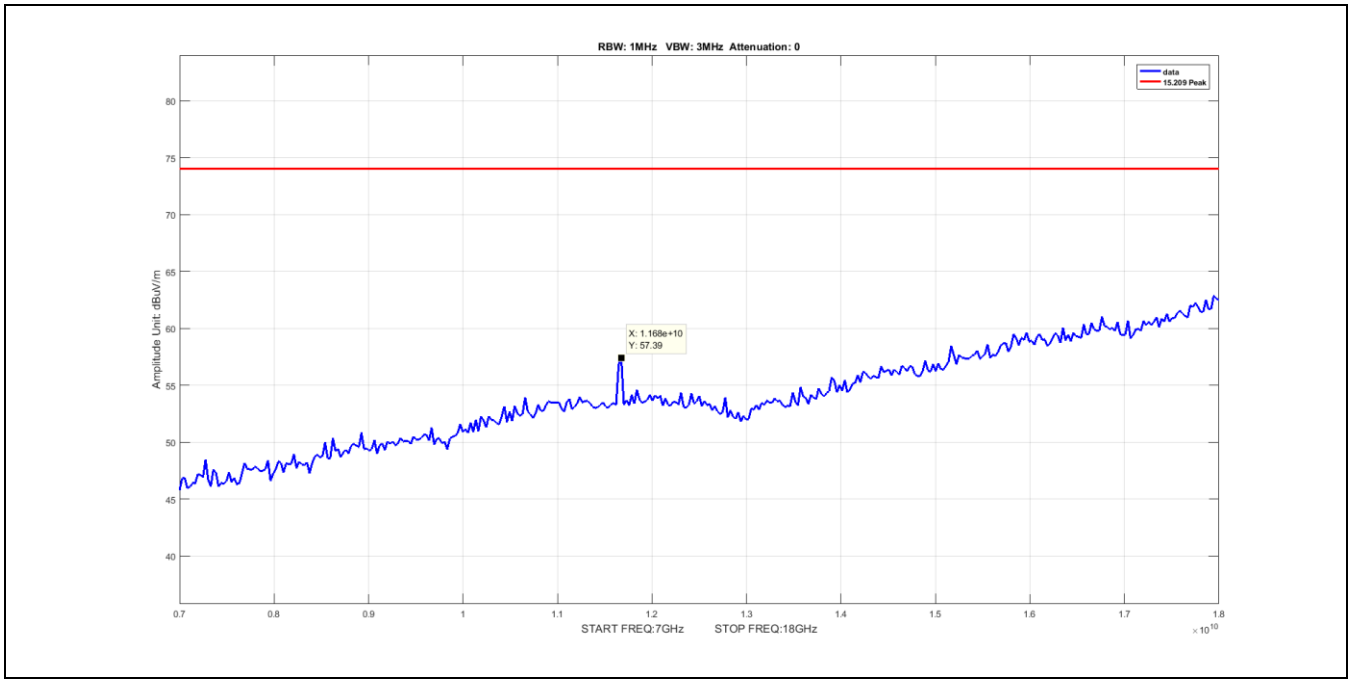
Plot 218. Undesirable Emissions, 7-18GHz, 20M, n, channel 161, Average



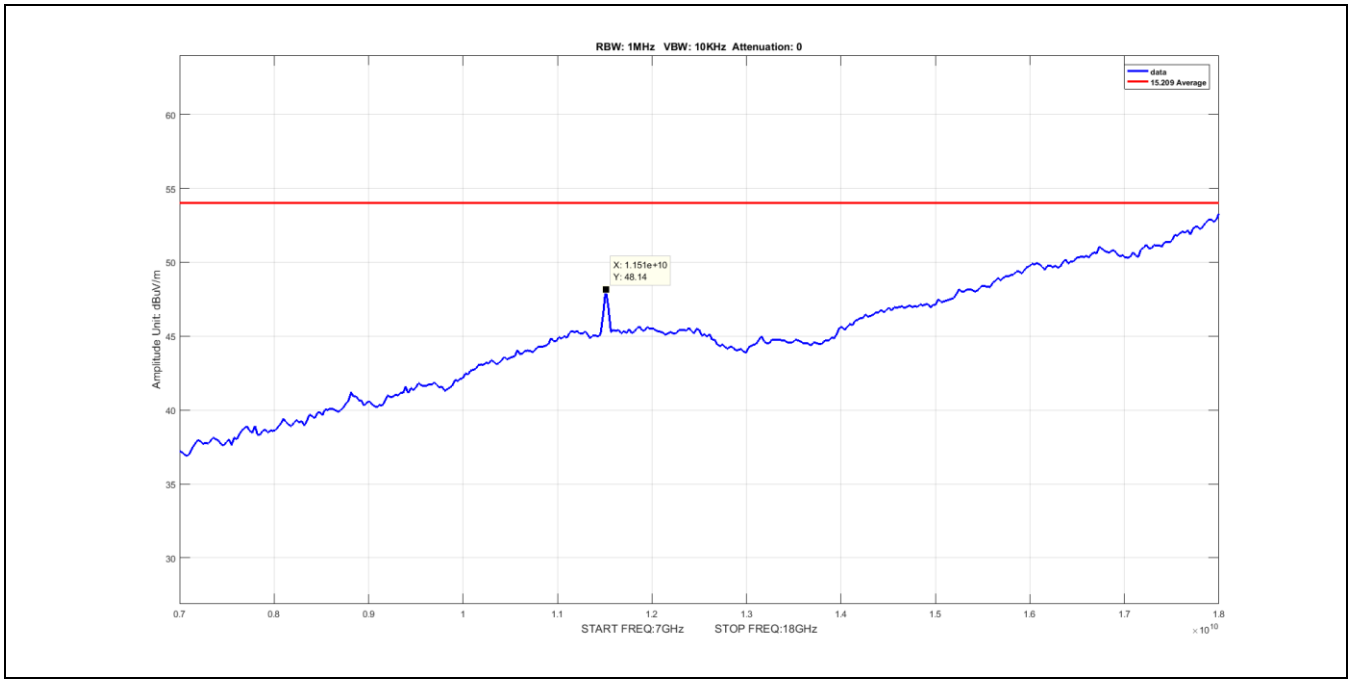
Plot 219. Undesirable Emissions, 7-18GHz, 20M, n, channel 161, Peak



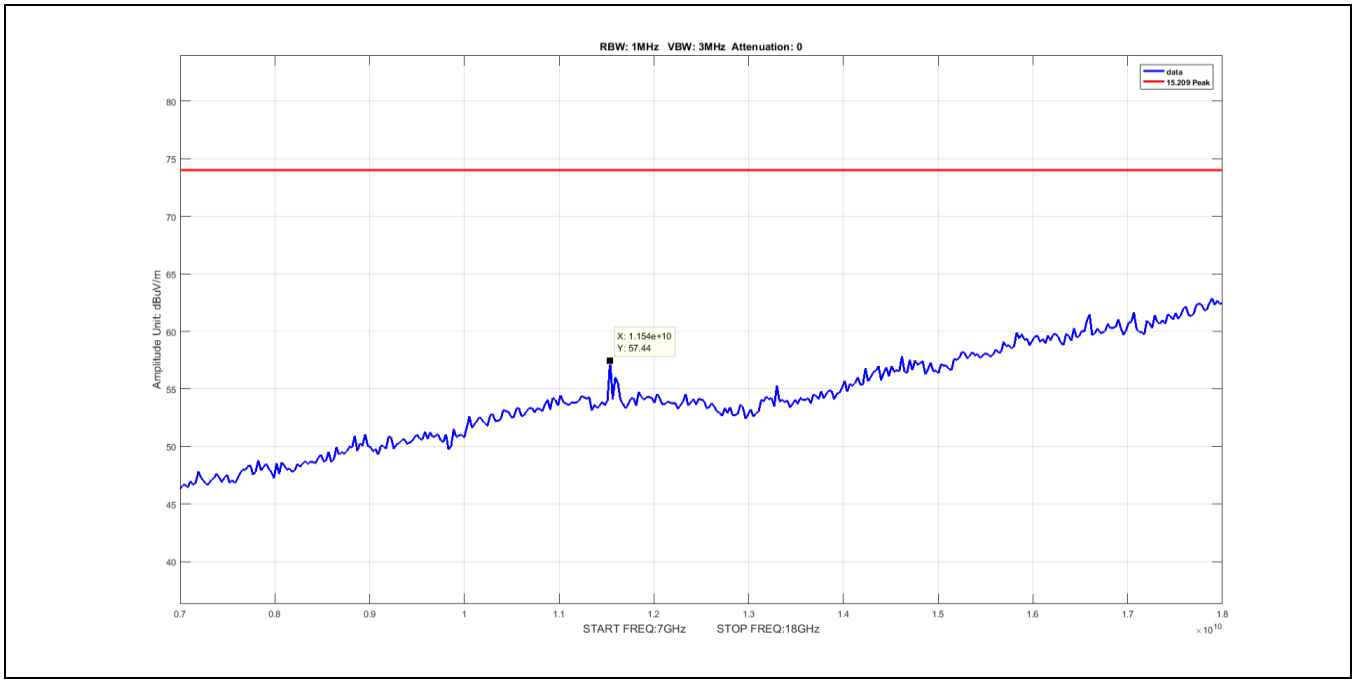
Plot 220. Undesirable Emissions, 7-18GHz, 20M, n, channel 165, Average



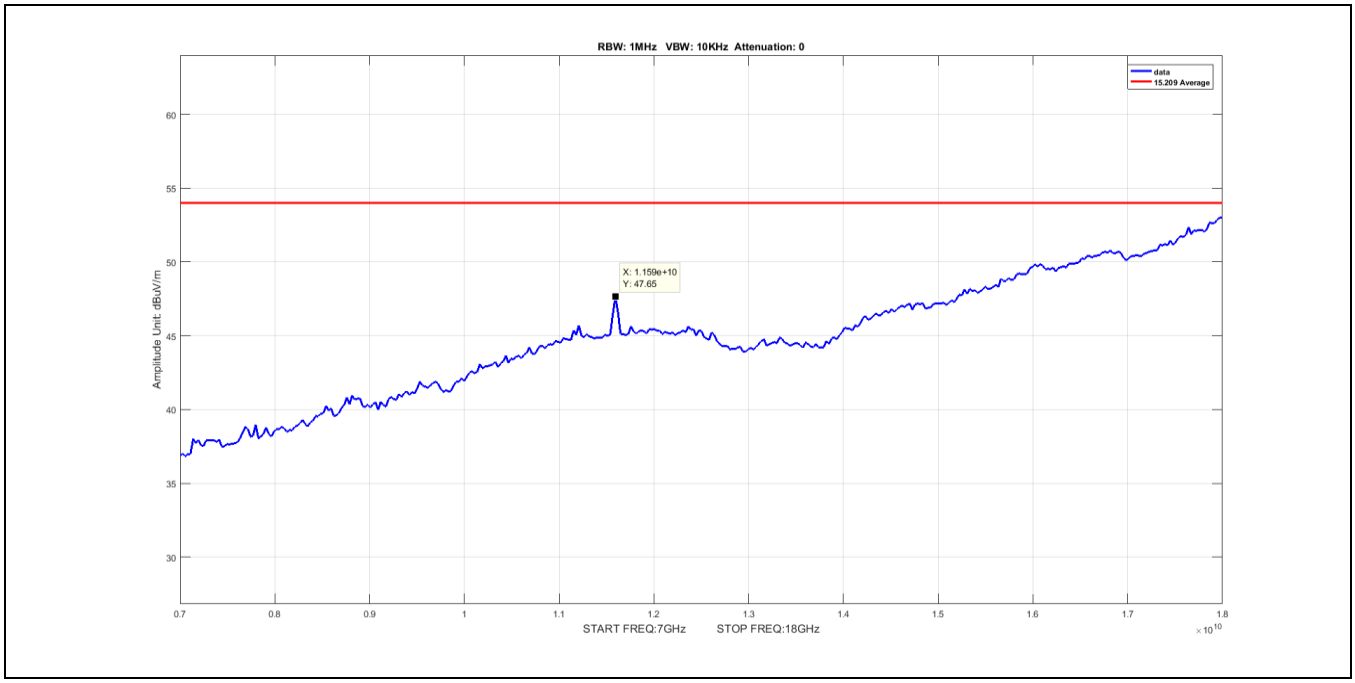
Plot 221. Undesirable Emissions, 7-18GHz, 20M, n, channel 165, Peak



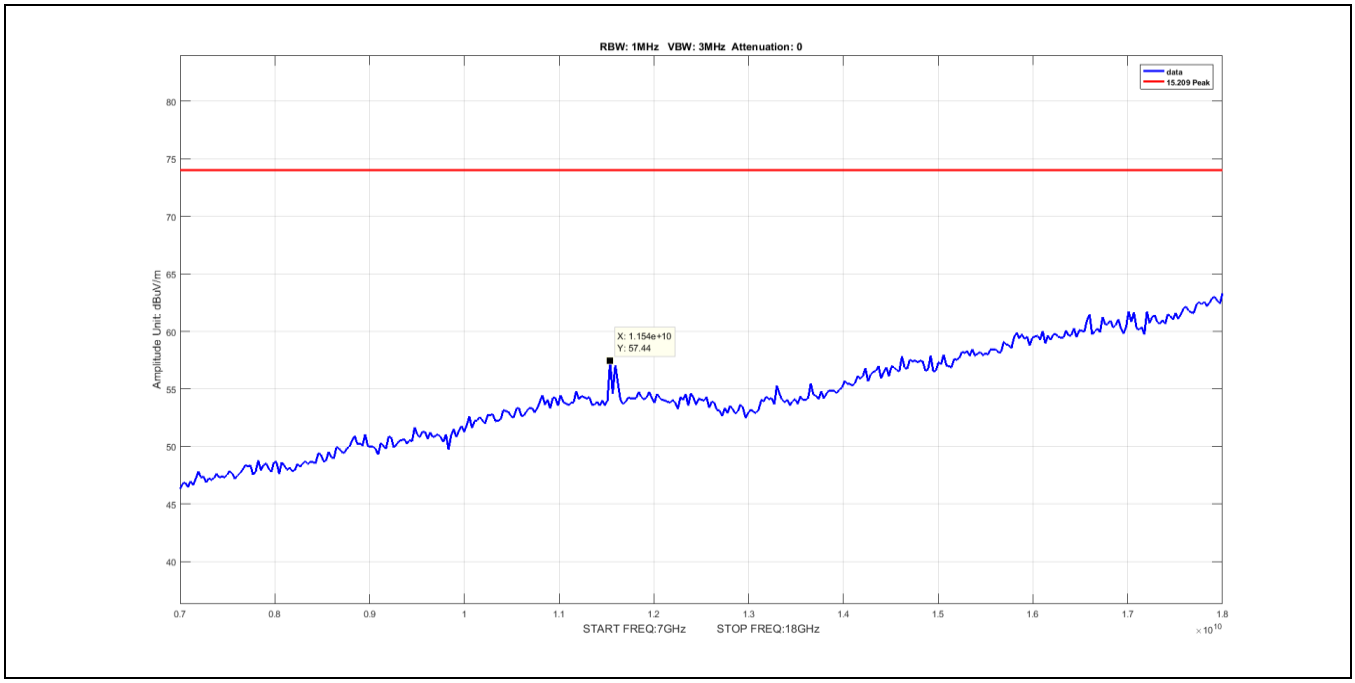
Plot 222. Undesirable Emissions, 7-18GHz, 40M, ac, channel 151, Average



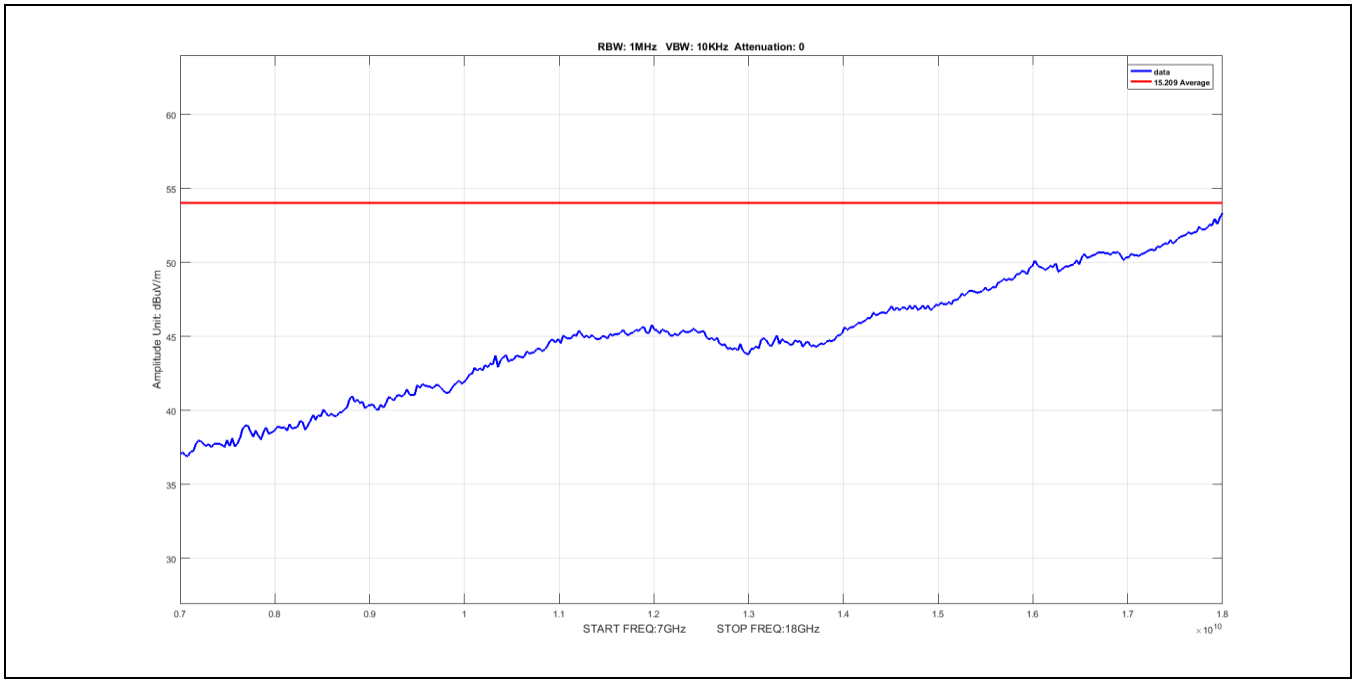
Plot 223. Undesirable Emissions, 7-18GHz, 40M, ac, channel 151, Peak



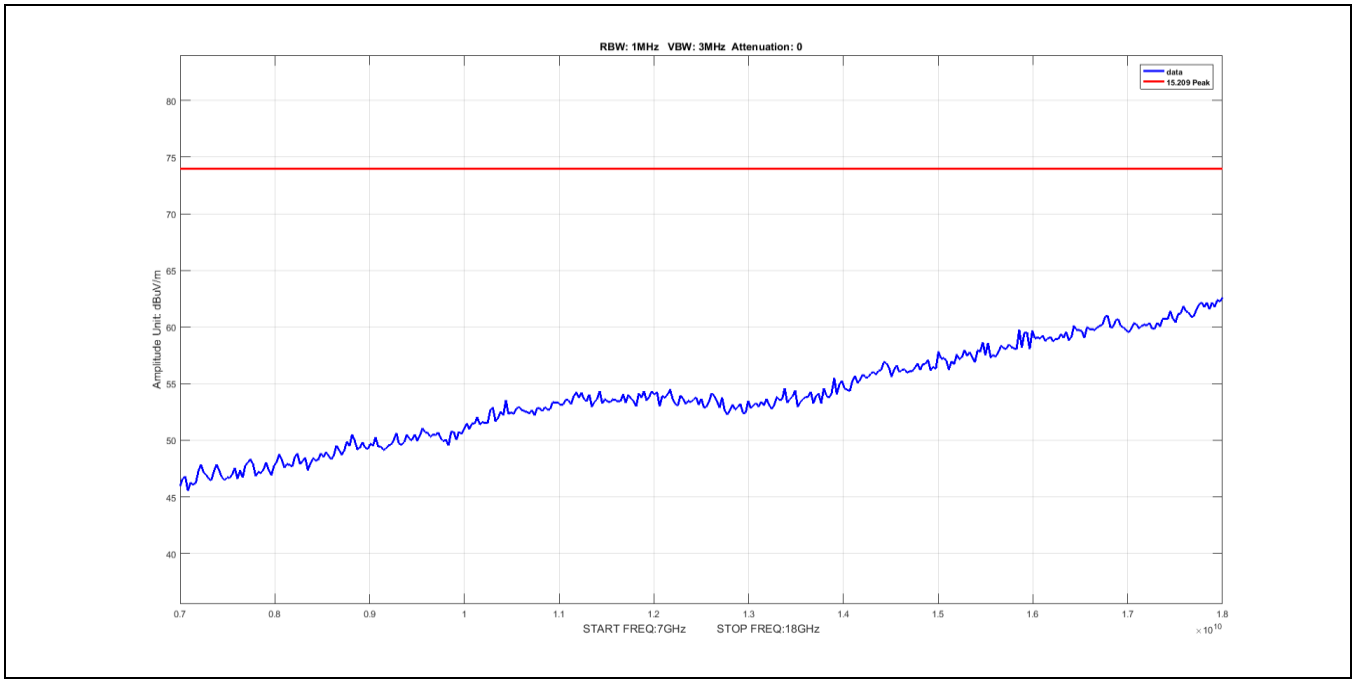
Plot 224. Undesirable Emissions, 7-18GHz, 40M, ac, channel 159, Average



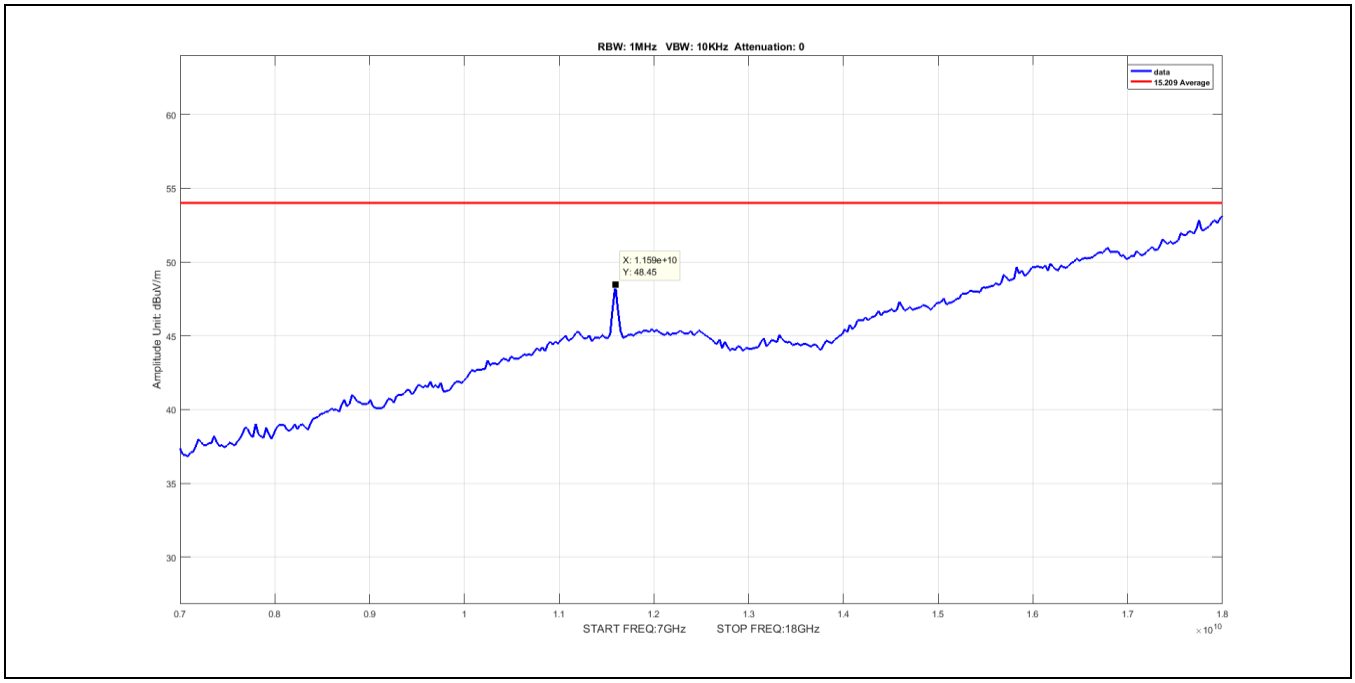
Plot 225. Undesirable Emissions, 7-18GHz, 40M, ac, channel 159, Peak



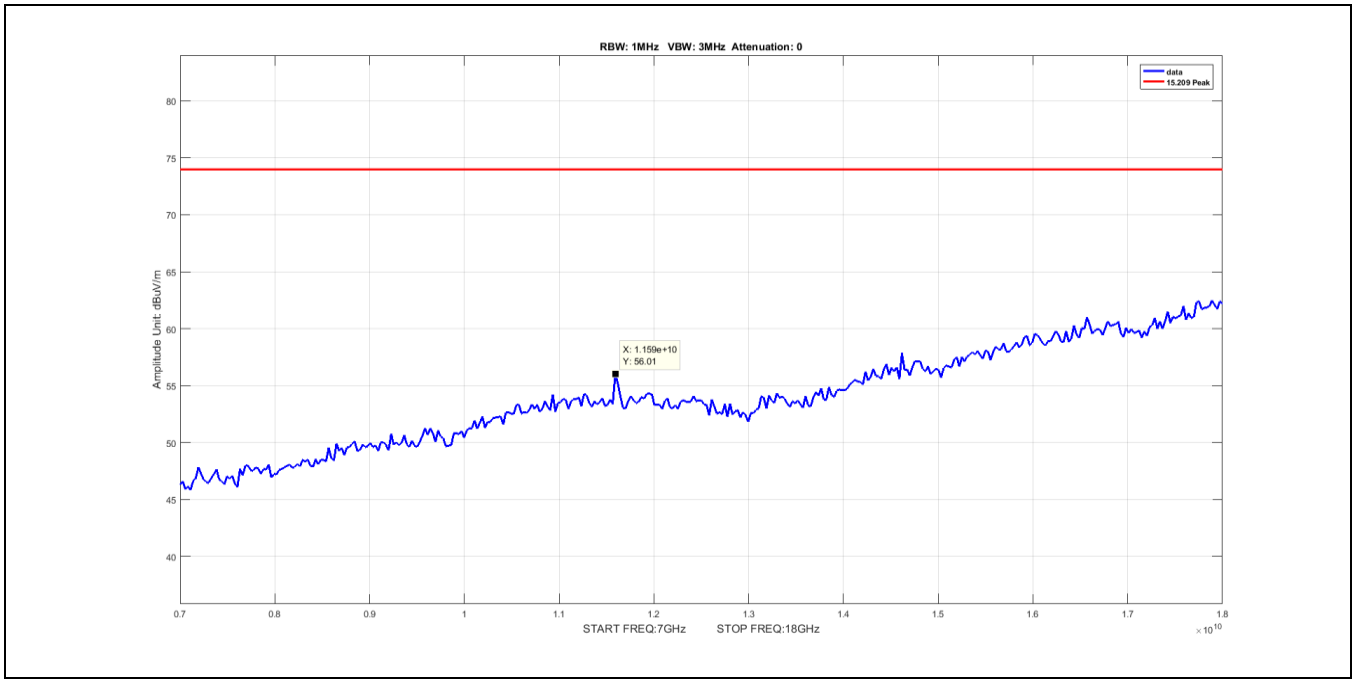
Plot 226. Undesirable Emissions, 7-18GHz, 40M, n, channel 151, Average



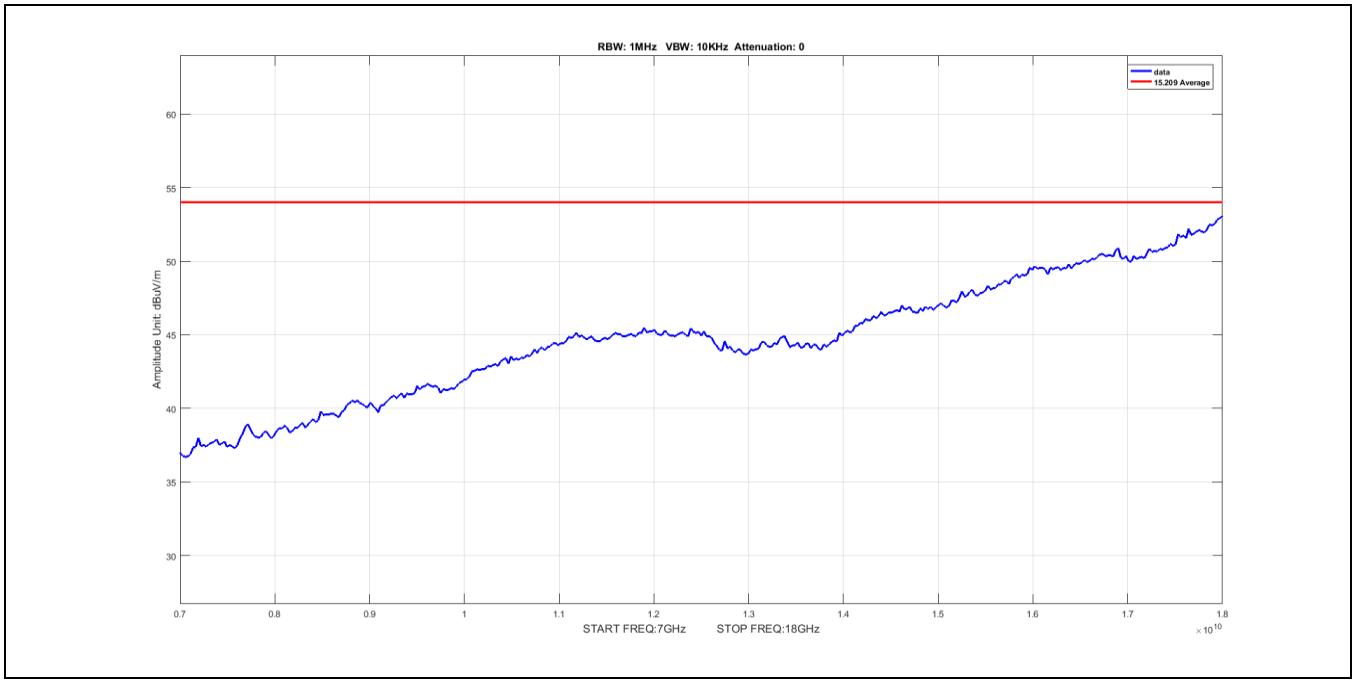
Plot 227. Undesirable Emissions, 7-18GHz, 40M, n, channel 151, Peak



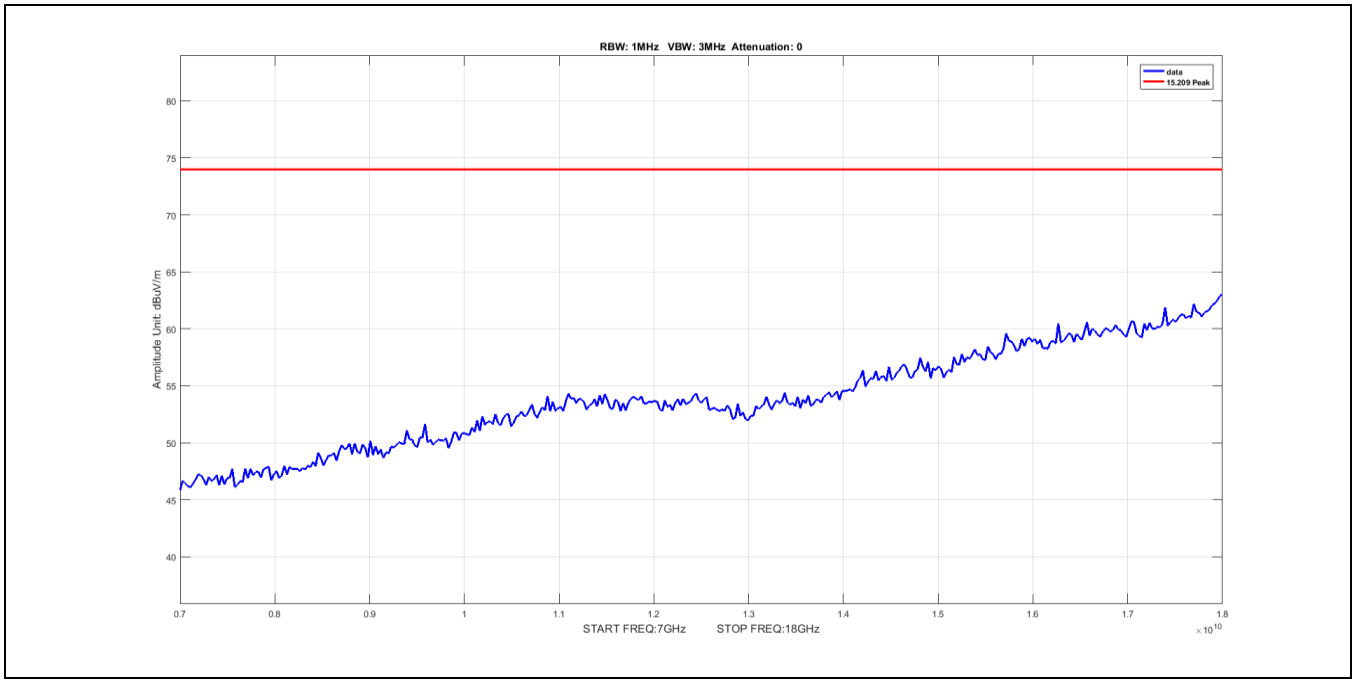
Plot 228. Undesirable Emissions, 7-18GHz, 40M, n, channel 159, Average



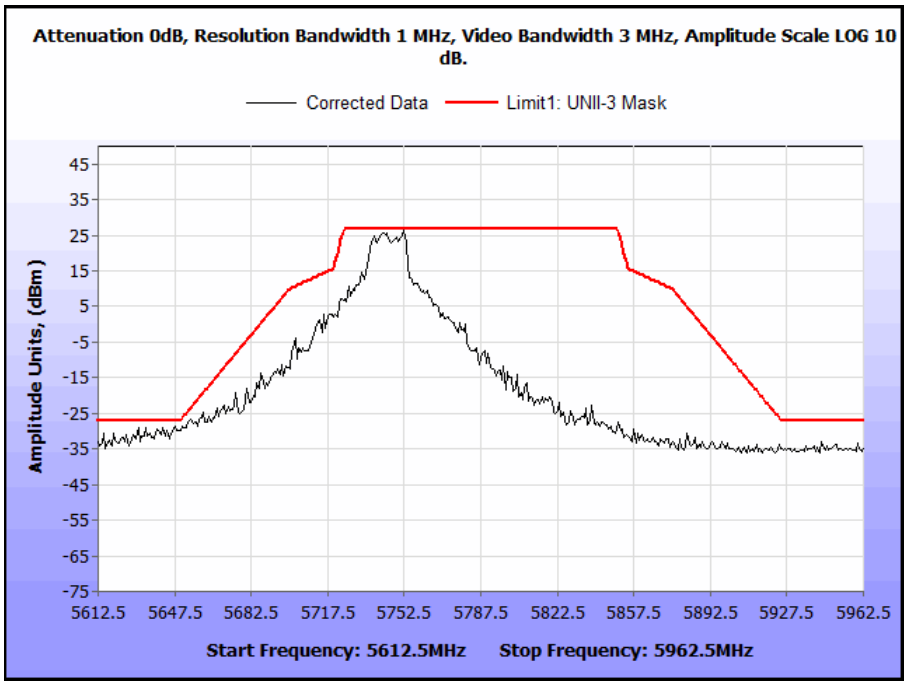
Plot 229. Undesirable Emissions, 7-18GHz, 40M, n, channel 159, Peak



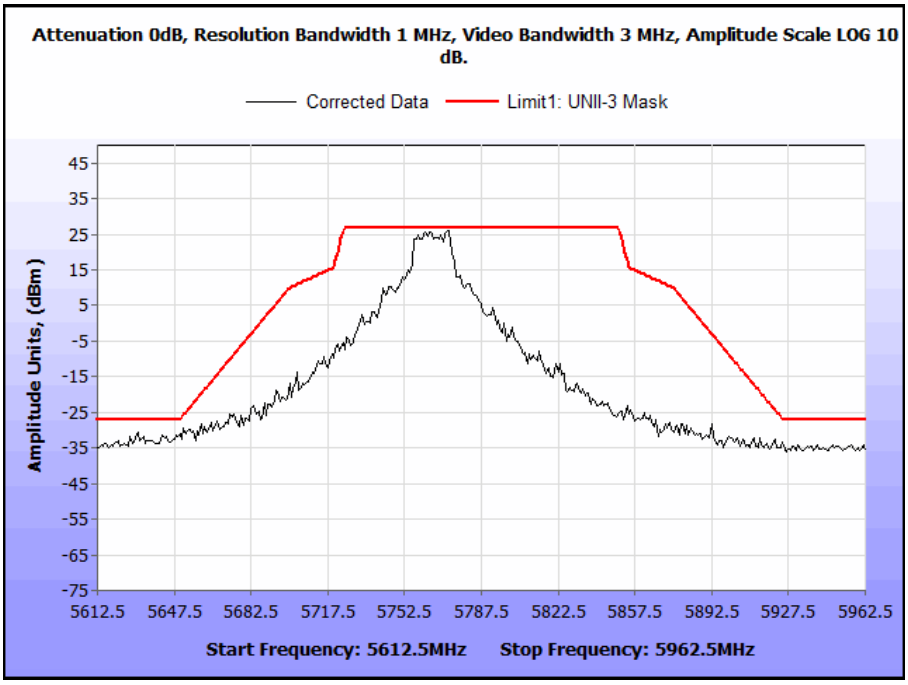
Plot 230. Undesirable Emissions, 7-18GHz, 80M, ac, channel 155, Average



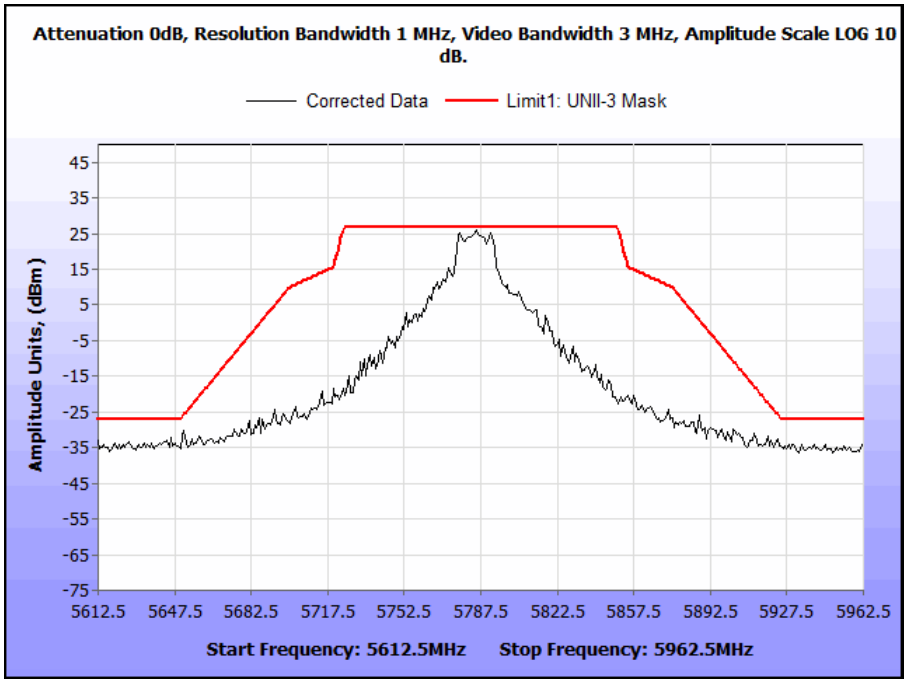
Plot 231. Undesirable Emissions, 7-18GHz, 80M, ac, channel 155, Peak



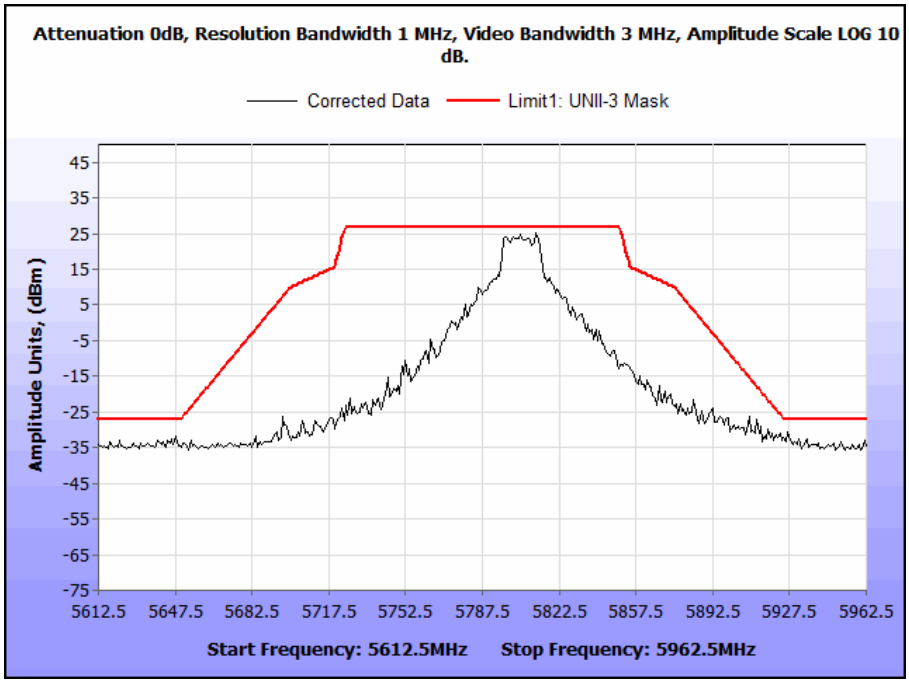
Plot 232. Undesirable Emissions Mask, 20M, a, channel 149



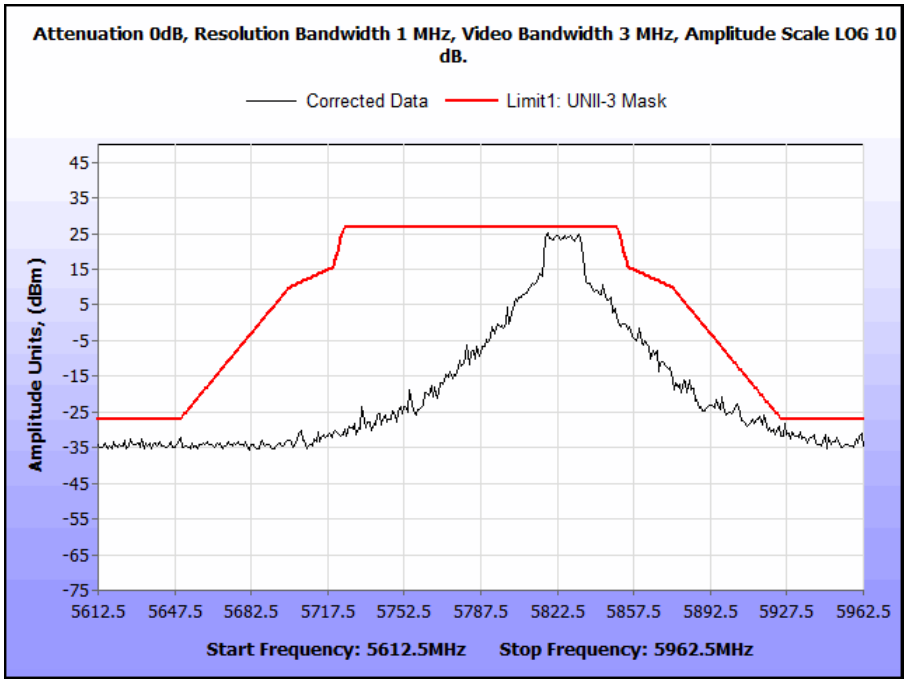
Plot 233. Undesirable Emissions Mask, 20M, a, channel 153



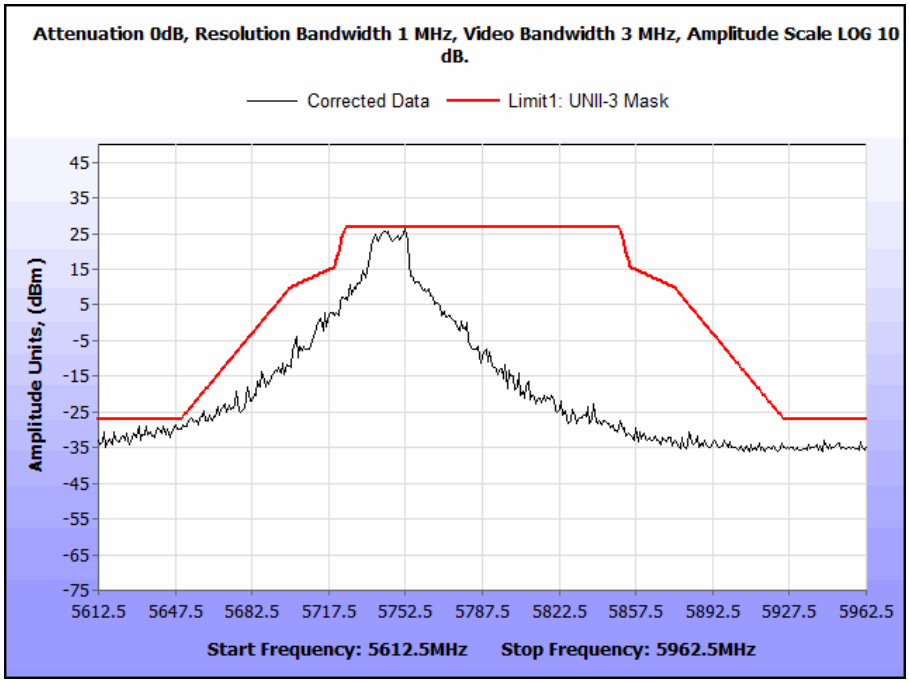
Plot 234. Undesirable Emissions Mask, 20M, a, channel 157



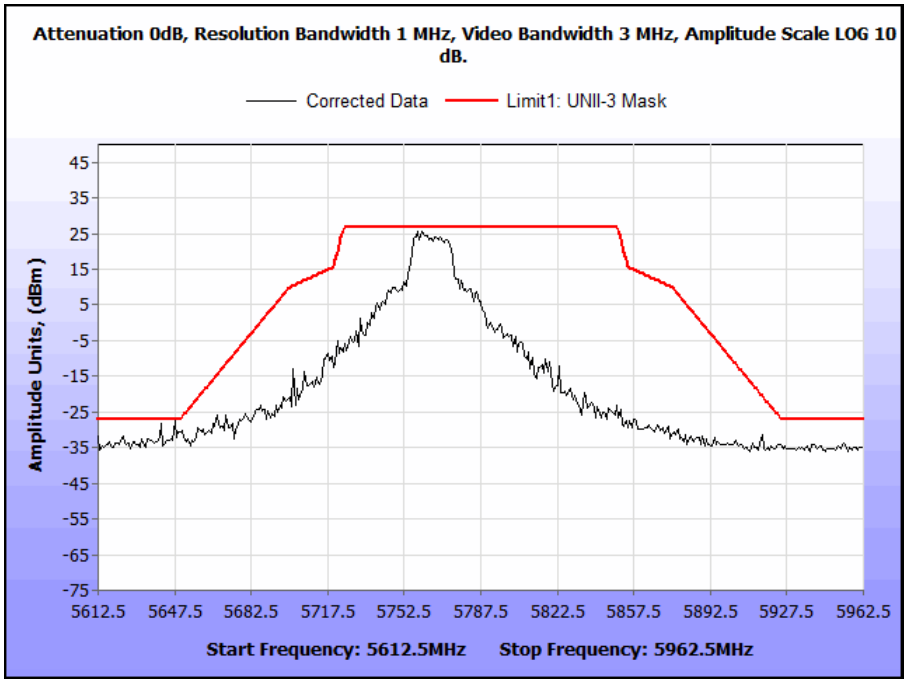
Plot 235. Undesirable Emissions Mask, 20M, a, channel 161



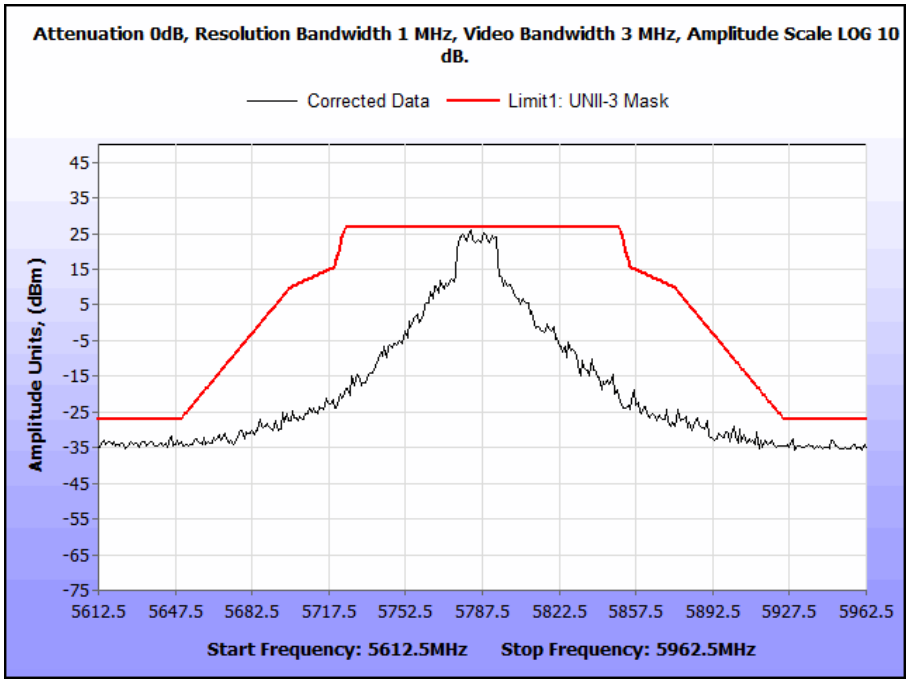
Plot 236. Undesirable Emissions Mask, 20M, a, channel 165



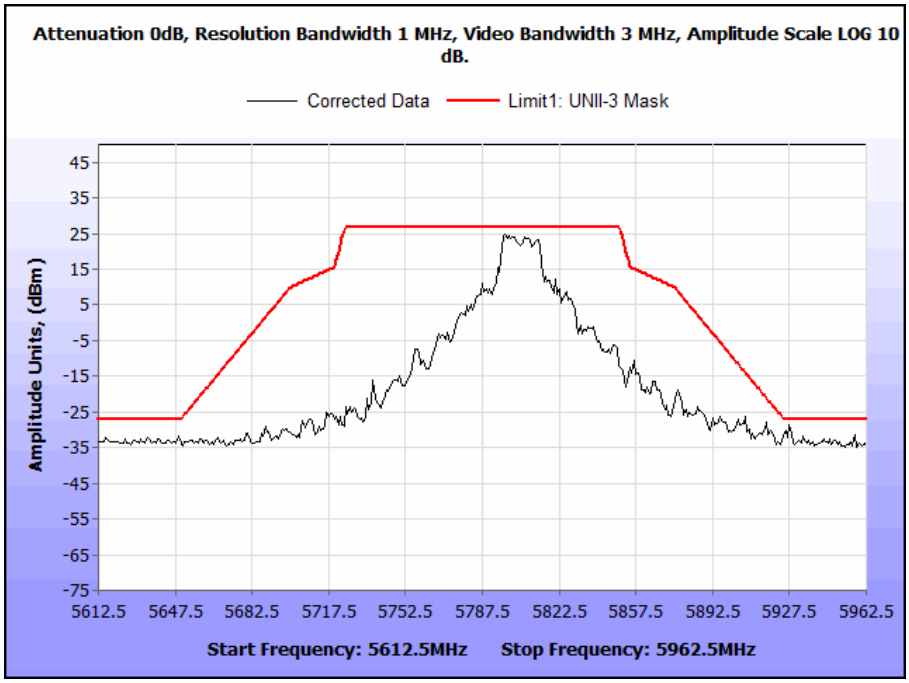
Plot 237. Undesirable Emissions Mask, 20M, ac, channel 149



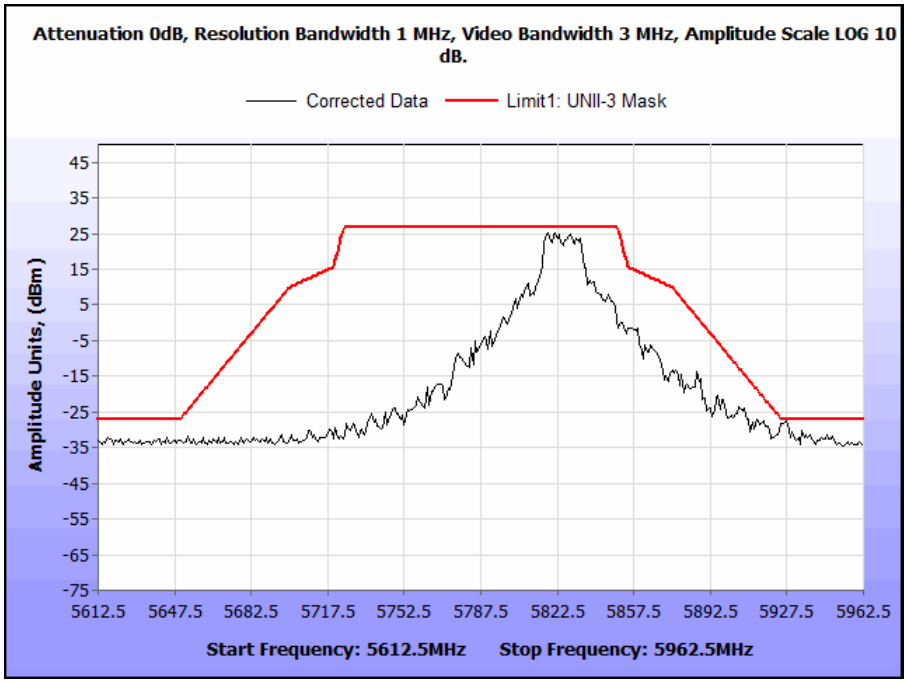
Plot 238. Undesirable Emissions Mask, 20M, ac, channel 153



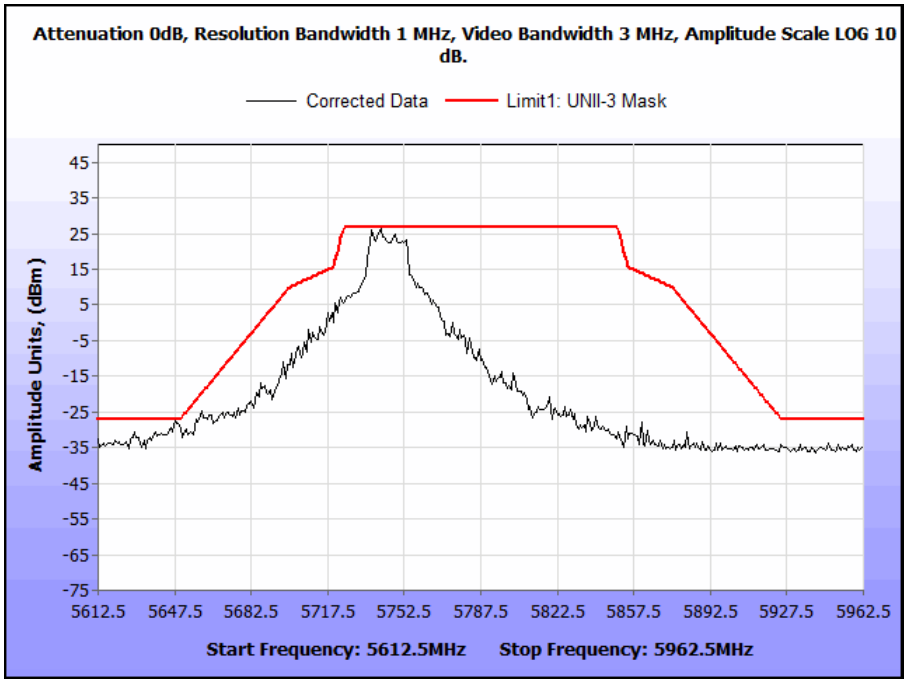
Plot 239. Undesirable Emissions Mask, 20M, ac, channel 157



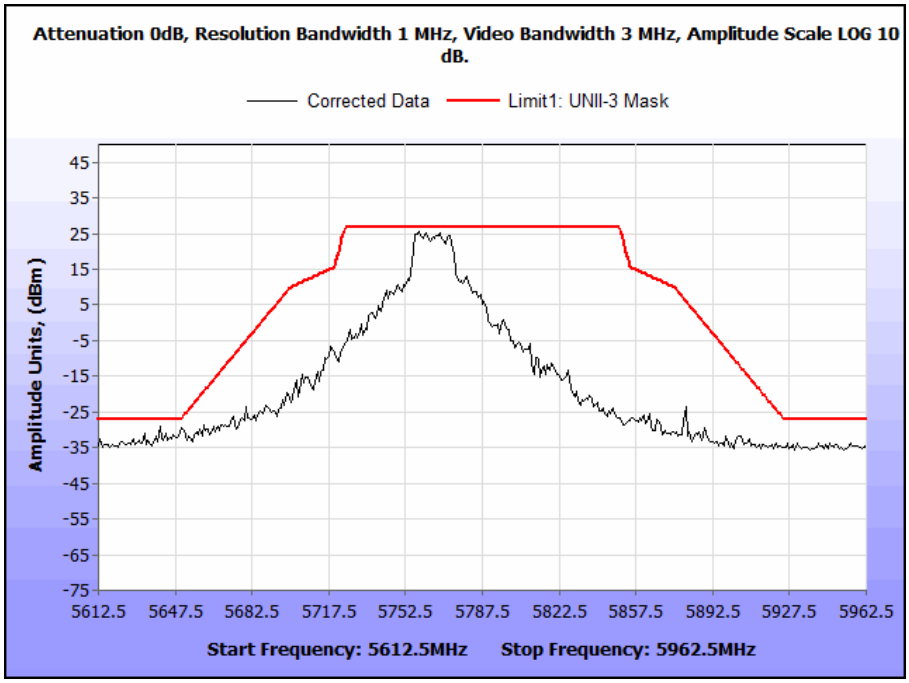
Plot 240. Undesirable Emissions Mask, 20M, ac, channel 161



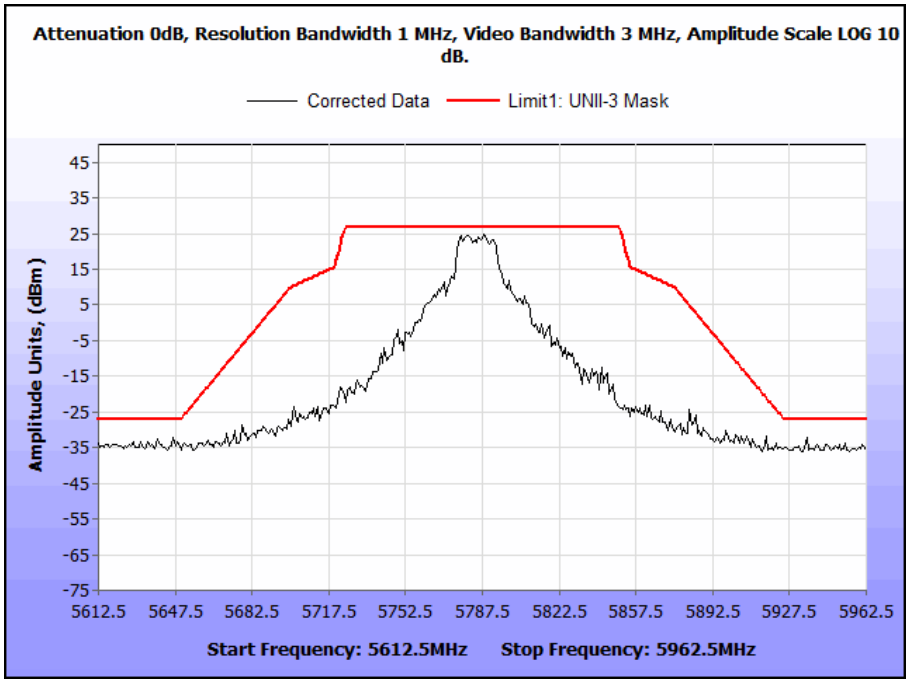
Plot 241. Undesirable Emissions Mask, 20M, ac, channel 165



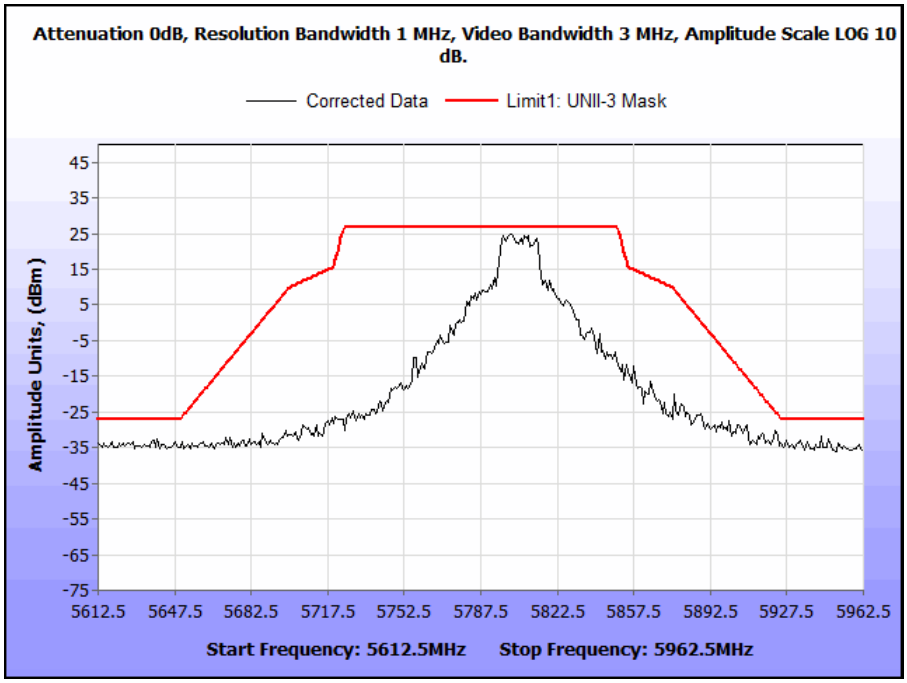
Plot 242. Undesirable Emissions Mask, 20M, n, channel 149



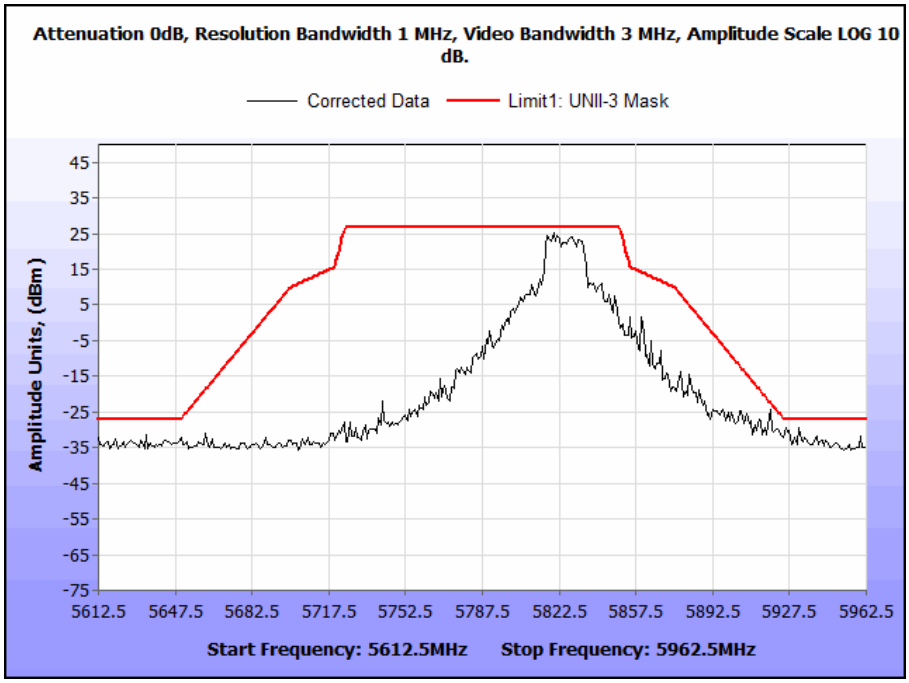
Plot 243. Undesirable Emissions Mask, 20M, n, channel 153



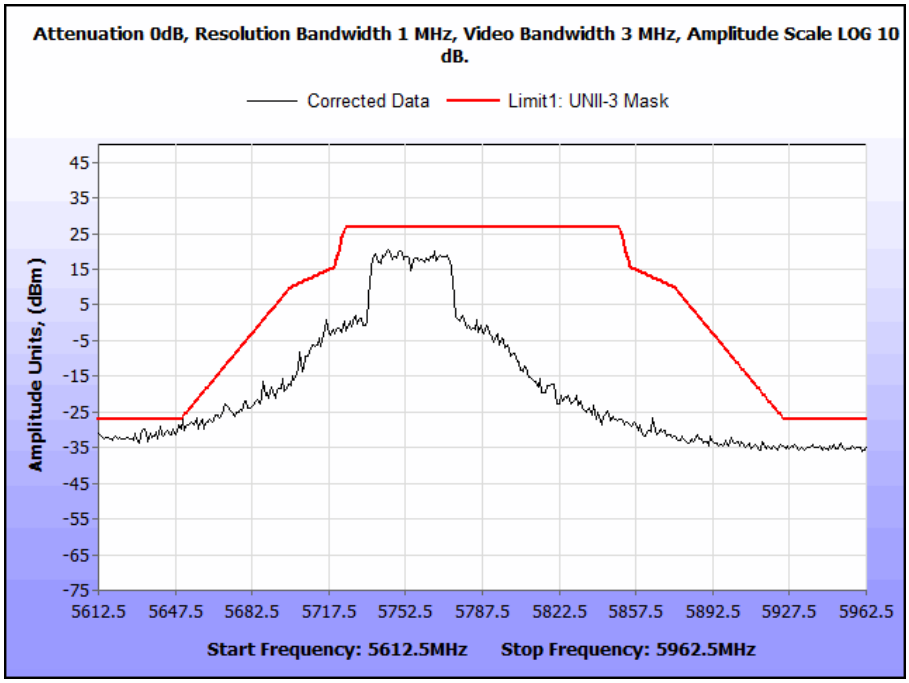
Plot 244. Undesirable Emissions Mask, 20M, n, channel 157



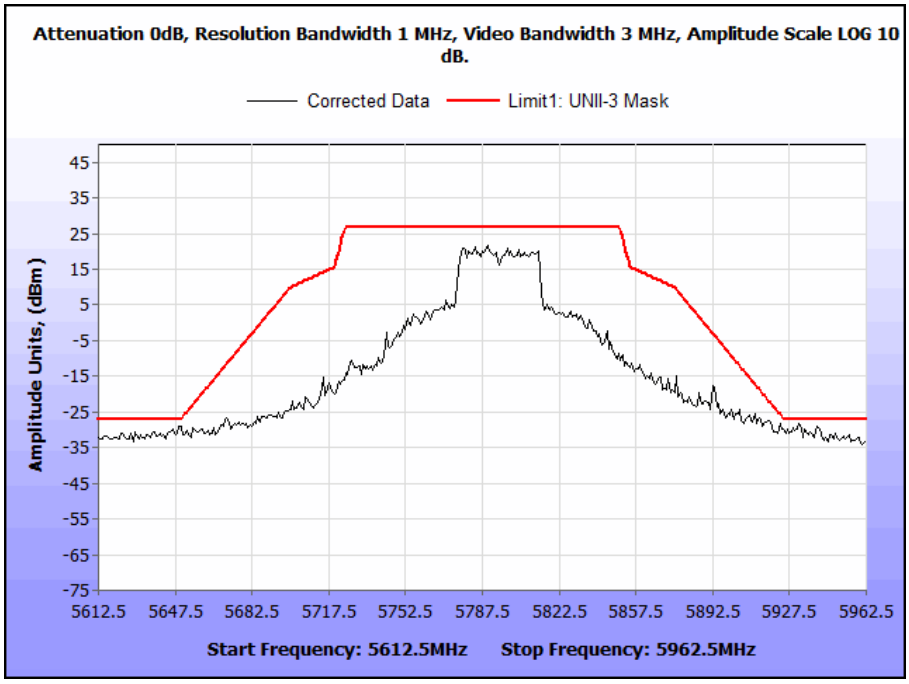
Plot 245. Undesirable Emissions Mask, 20M, n, channel 161



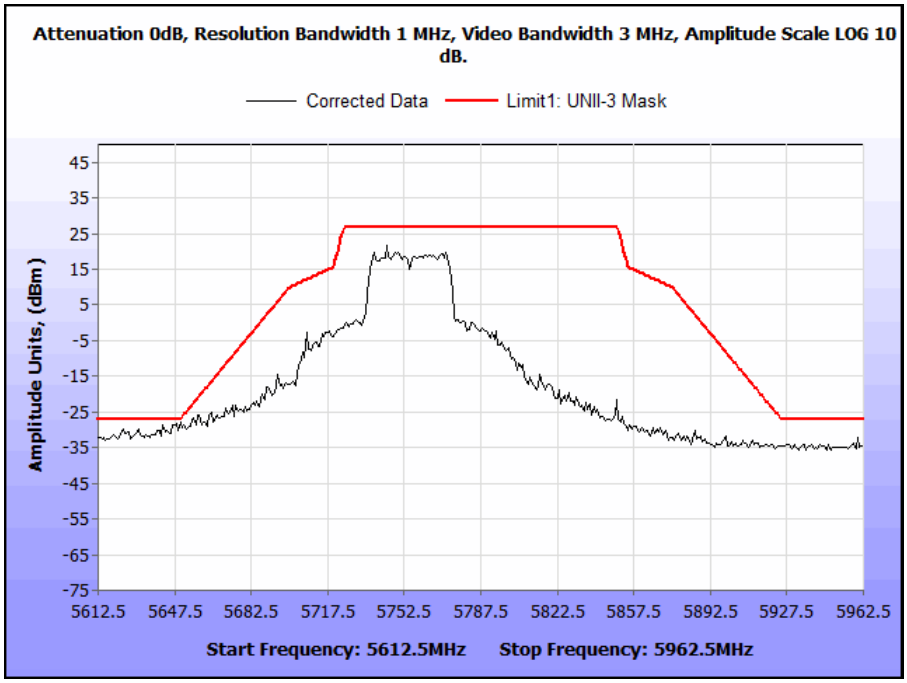
Plot 246. Undesirable Emissions Mask, 20M, n, channel 165



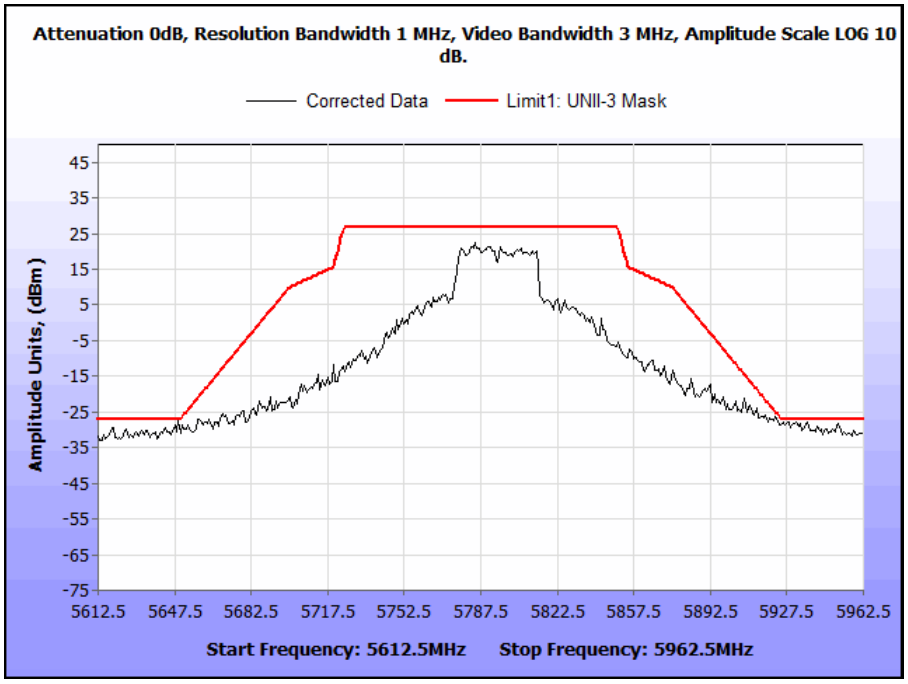
Plot 247. Undesirable Emissions Mask, 40M, ac, channel 151



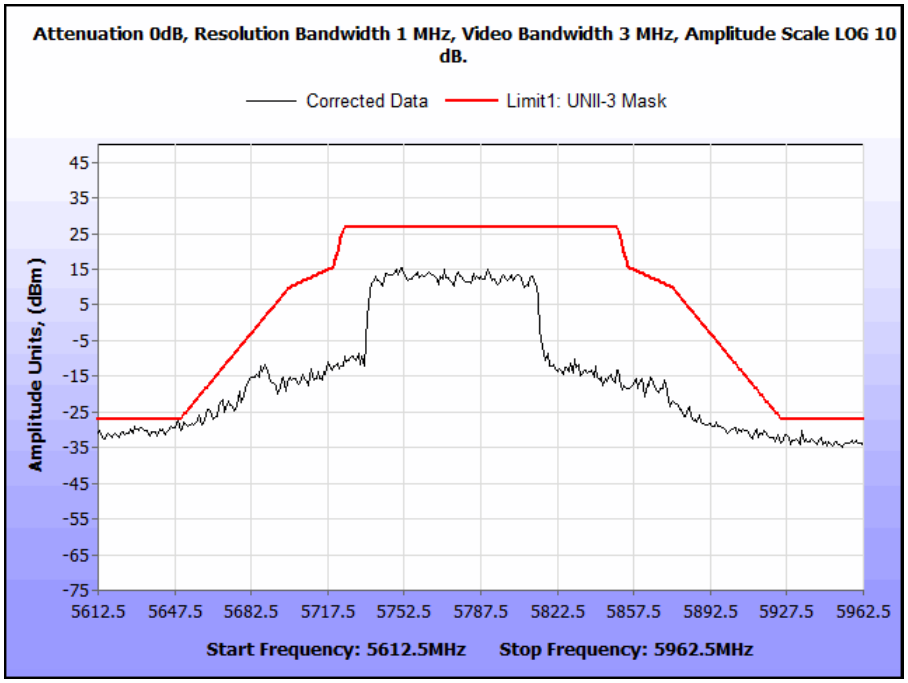
Plot 248. Undesirable Emissions Mask, 40M, ac, channel 159



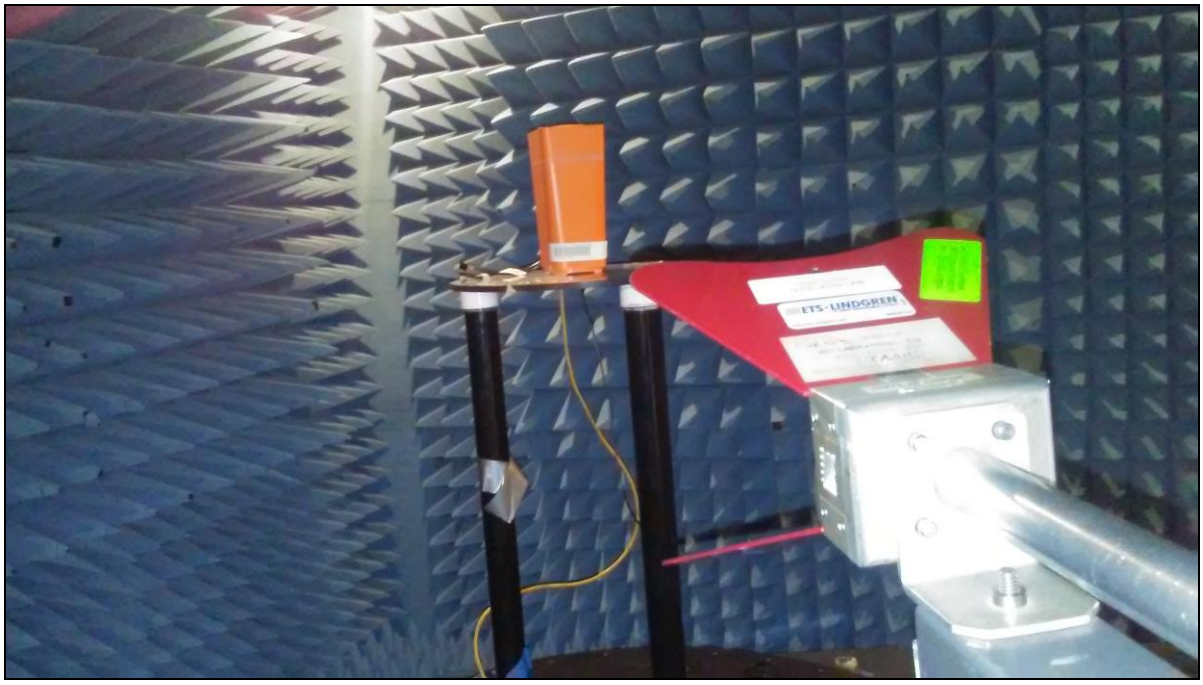
Plot 249. Undesirable Emissions Mask, 40M, n, channel 151



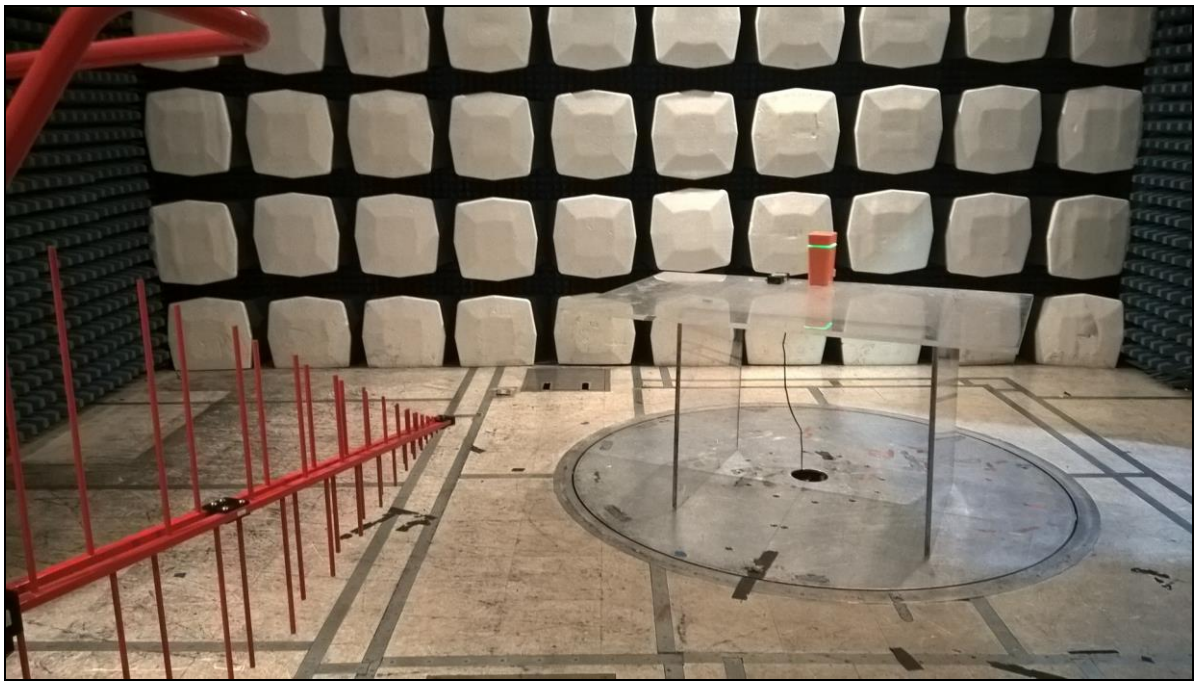
Plot 250. Undesirable Emissions Mask, 40M, n, channel 159



Plot 251. Undesirable Emissions Mask, 80M, ac, channel 155



Photograph 1. Radiated Emissions, Test Setup Above 1 GHz



Photograph 2. Radiated Emissions, Test Setup Below 1 GHz

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 20. 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.

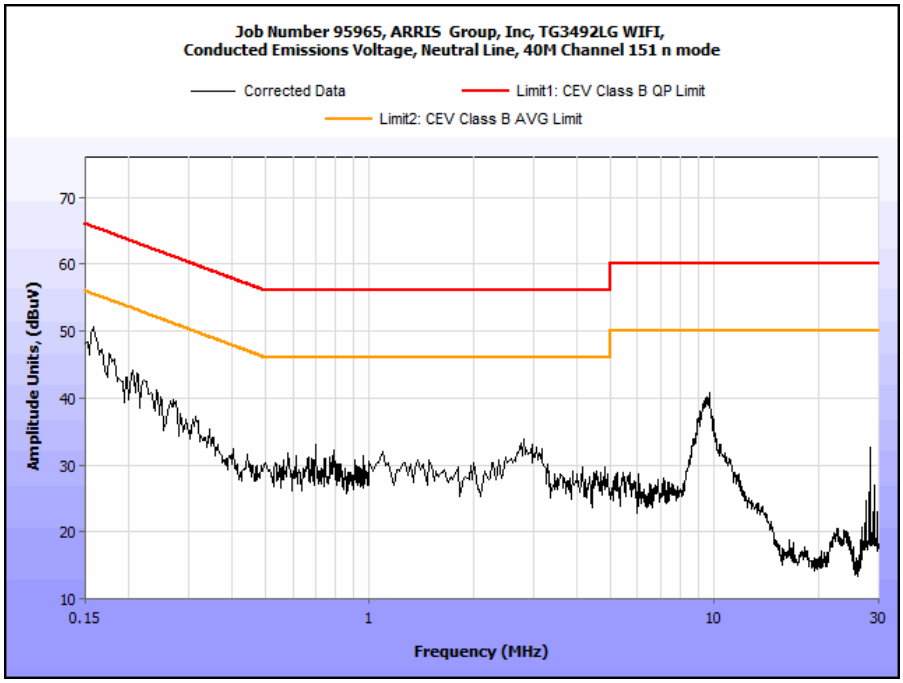
Measured emissions were within applicable limits.

Test Engineer(s): Bradley Jones

Test Date(s): October 9, 2017

Frequency (MHz)	Uncorrected Meter Reading (dBuV) QP	Cable Loss (dB)	Corrected Measurement (dBuV) QP	Limit (dBuV) QP	Margin (dB) QP	Uncorrected Meter Reading (dBuV) Avg.	Cable Loss (dB)	Corrected Measurement (dBuV) AVG	Limit (dBuV) AVG	Margin (dB) AVG
9.639	36.14	0	36.14	60	-23.86	28.46	0	28.46	50	-21.54
2.484	25.6	0	25.6	56	-30.4	14.36	0	14.36	46	-31.64

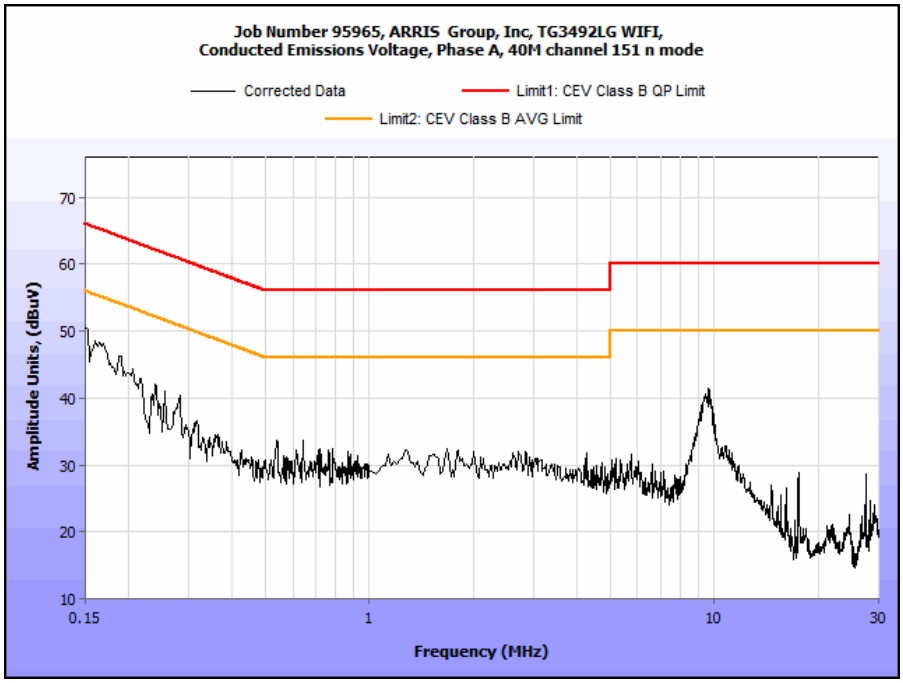
Table 21. Conducted Emissions, Phase, Test Results



Plot 252. Conducted Emissions, neutral, 40M, channel 151, n

Frequency (MHz)	Uncorrected Meter Reading (dBuV) QP	Cable Loss (dB)	Corrected Measurement (dBuV) QP	Limit (dBuV) QP	Margin (dB) QP	Uncorrected Meter Reading (dBuV) Avg.	Cable Loss (dB)	Corrected Measurement (dBuV) AVG	Limit (dBuV) AVG	Margin (dB) AVG
9.686	35.57	0	35.57	60	-24.43	28.2	0	28.2	50	-21.8
2.799	27.69	0	27.69	56	-28.31	20.24	0	20.24	46	-25.76
0.1572	41.78	0	41.78	65.61	-23.83	25.49	0	25.49	55.61	-30.12

Table 22. Conducted Emissions, Neutral, Test Results



Plot 253. Conducted Emissions, phase, 40M, channel 151, n

Photograph 3. Conducted Emissions, Test Setup

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15. 407(e) 6 dB Bandwidth

Test Requirements: **§ 15.407(e):** Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

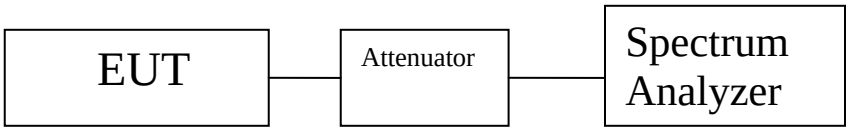
Test Procedure: The transmitter was set to low, mid, and high operating frequencies at the highest output power and connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using a RBW approximately equal to 1% of the total emission bandwidth, VBW > RBW. The 6 dB Bandwidth was measured and recorded.

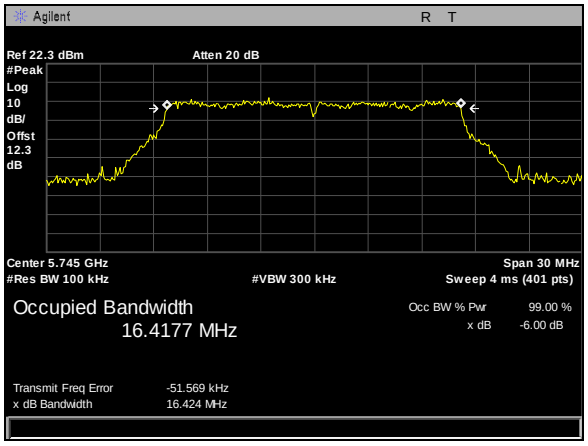
Test Results The 6 dB Bandwidth was compliant with the requirements of this section.

No anomalies detected.

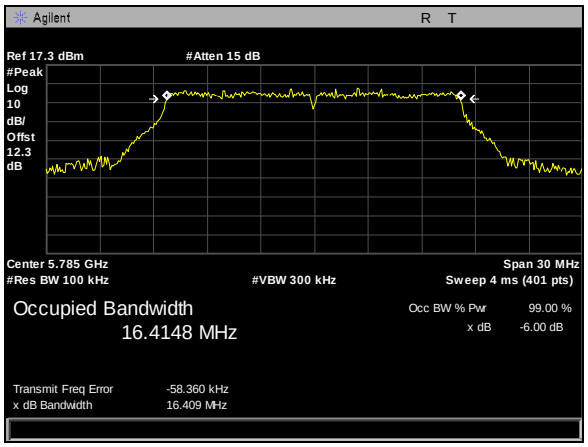
Test Engineer(s): Bradley Jones

Test Date(s): June 7, 2018

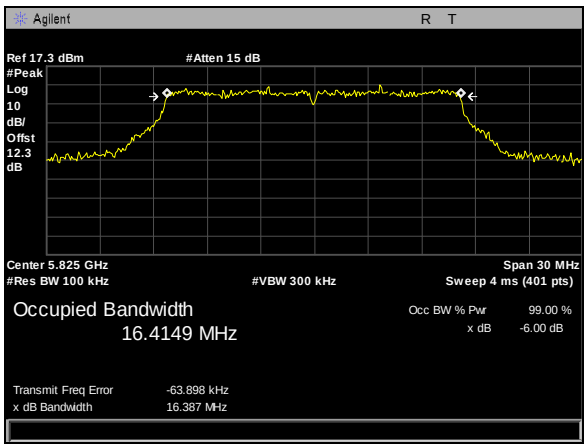




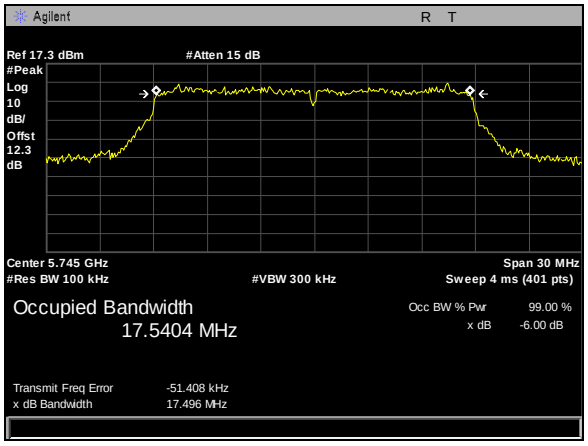
Plot 254. 6 dB Occupied Bandwidth, 20M, a, 5745, channel 149, chain 0



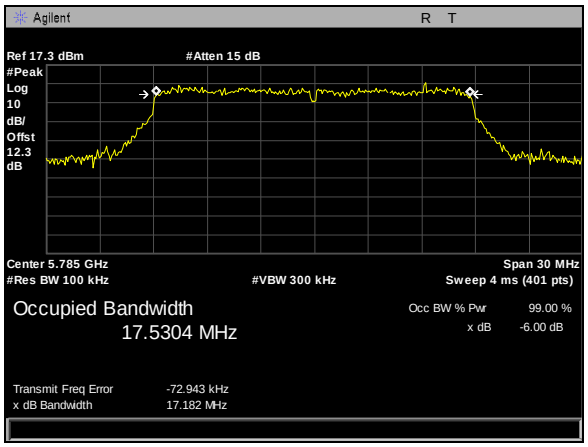
Plot 255. 6 dB Occupied Bandwidth, 20M, a, 5785, channel 157, chain 0



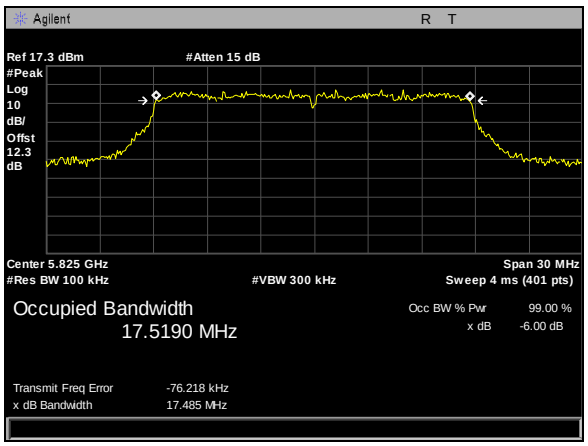
Plot 256. 6 dB Occupied Bandwidth, 20M, a, 5825, channel 165, chain 0



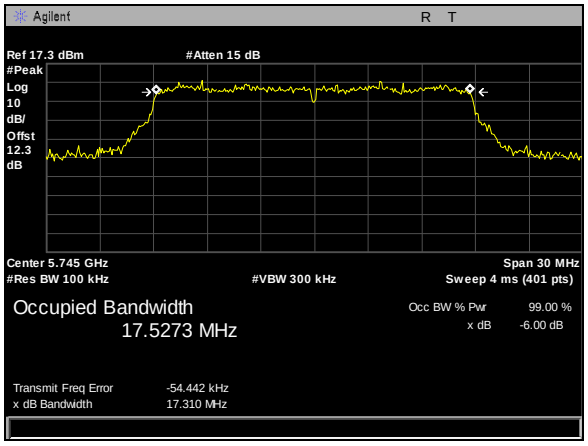
Plot 257. 6 dB Occupied Bandwidth, 20M, ac, 5745, channel 149, chain 0



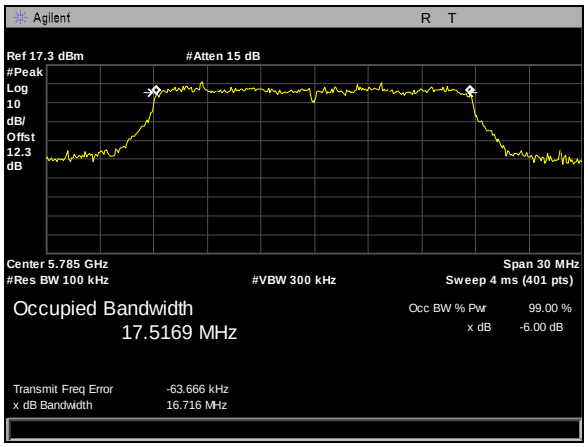
Plot 258. 6 dB Occupied Bandwidth, 20M, ac, 5785, channel 157, chain 0



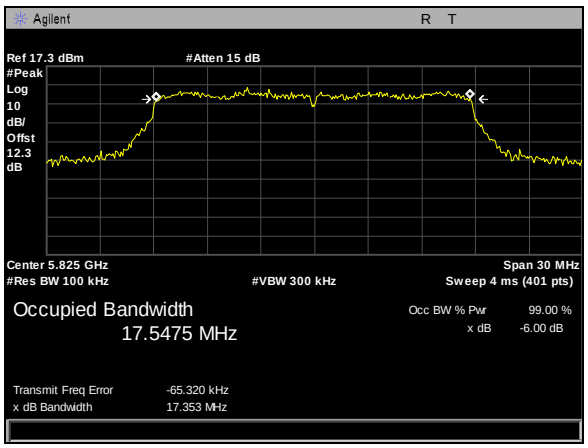
Plot 259. 6 dB Occupied Bandwidth, 20M ac 5825 channel 165 chain 0



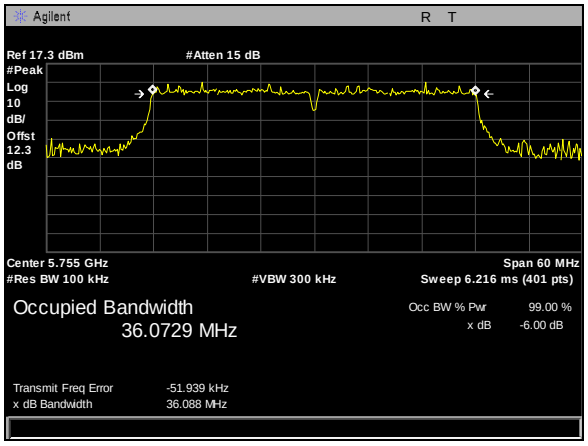
Plot 260. 6 dB Occupied Bandwidth, 20M, n, 5745, channel 149, chain 0



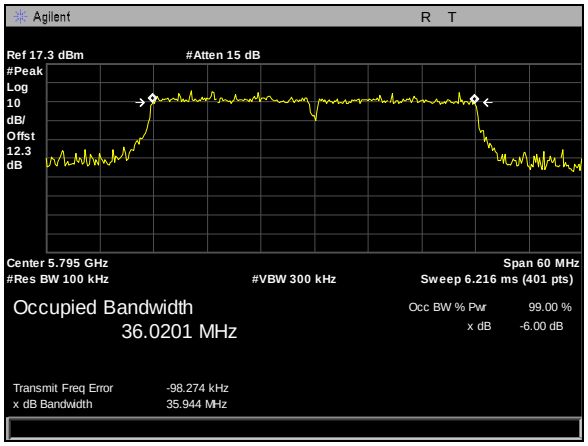
Plot 261. 6 dB Occupied Bandwidth, 20M, n, 5785, channel 157, chain 0



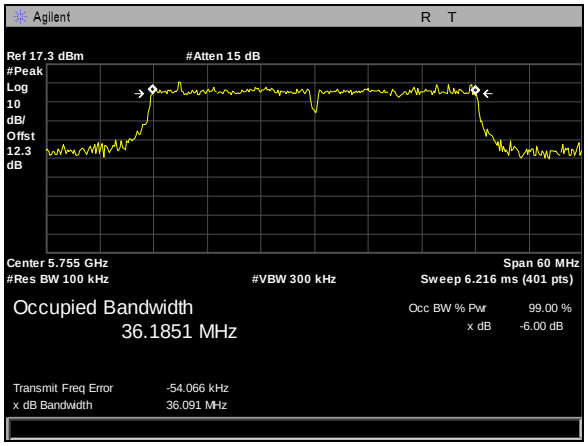
Plot 262. 6 dB Occupied Bandwidth, 20M, n, 5825, channel 165, chain 0



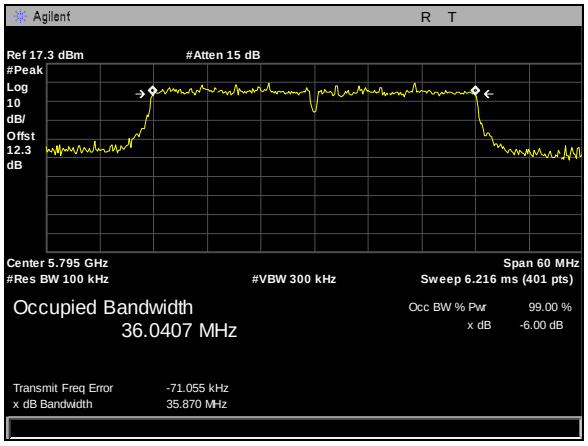
Plot 263. 6 dB Occupied Bandwidth, 40M, ac, 5755, channel 151, chain 0



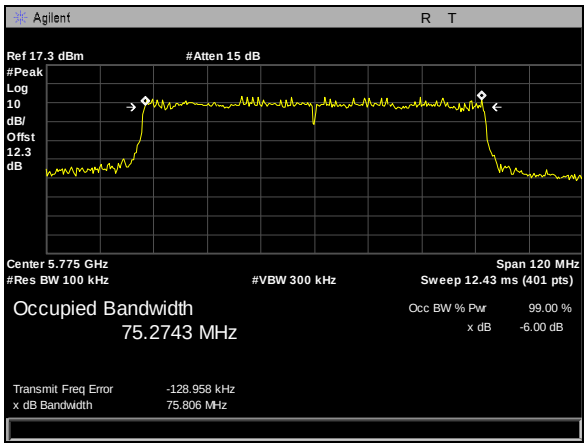
Plot 264. 6 dB Occupied Bandwidth, 40M, ac, 5795, channel 159, chain 0



Plot 265. 6 dB Occupied Bandwidth, 40M, n, 5755, channel 151, chain 0



Plot 266. 6 dB Occupied Bandwidth, 40M, n, 5795, channel 159, chain 0



Plot 267. 6 dB Occupied Bandwidth, 80M, ac, 5775, channel 155, chain 0

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 @ 5725 - 5850 MHz; **Limit for Uncontrolled exposure: 1 mW/cm^2 or 10 W/m^2**

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

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

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

Test Results:

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (mW)	Ant Gain (dBi)	Ant Gain (dBi)	Power Density (mW/cm^2)	Limit at 20 cm (mW/cm^2)	Percentage of Limit (%)
5765	27.85	609.53	4.1	2.57	0.311	1	31.18

The safe distance where Power Density is less than the MPE Limit listed above was found to be 20 cm.

IV. Test Equipment

Test Equipment

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

MET Asset #	Equipment	Manufacturer	Model	Last Cal Date	Cal Due Date
1T4909	Digital Barometer, Hygrometer, Thermometer	Control Company	06-662-4	01/11/2018	01/11/2020
1T4829	Spectrum Analyzer	Agilent Technologies	E4407B	2/20/2018	2/20/2019
1T4563	LISN (10 AMP)	Solar Electronics Company	9322-50-R-10-BNC	3/13/2017	9/13/2018
1T4442	Pre-amplifier, Microwave	Miteq	AFS42-01001800-30-10P	See Note	
1T4149	High-Frequency Anechoic Chamber	Ray Proof	3/21/1900	See Note	
1T8818	Spectrum Analyzer	Agilent Technologies	E4407B	2/24/2018	2/24/2019
1T2665	Antenna; Horn	EMCO	7/11/1908	6/22/2017	12/22/2018
1T4483	Antenna; Horn	ETS-Lindgren	7/13/1908	4/19/2017	10/19/2018
1T4612	Spectrum Analyzer	Agilent Technologies	E4407B	3/30/2017	9/30/2018
1T4753	Antenna - Bilog	Sunol Sciences	JB6	4/24/2018	10/24/2019
1T4300	SEMI-ANECHOIC CHAMBER # 1 (NSA)	EMC TEST SYSTEMS	NONE	2/6/2018	2/6/2019
1T4409	EMI Receiver	Rohde & Schwarz	ESIB7	12/7/2016	12/7/2018

Table 23. Test Equipment List

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

V. Certification & User's Manual Information

Certification & User's Manual Information

J. 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.

(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.

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.

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.

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.

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.

End of Report

