



RADIO TEST REPORT

For

MODEL NO. 1619

FCC ID: C3K1619

Test Report No. R-TR53-FCCBTLE-1

Issue Date: 09/23/2014

FCC CFR47 Part 15 Subpart C

Prepared by

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TESTING CERT #3472.01

1 Record of Revisions

[illegible]

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Test Report Attestation

Microsoft Corporation

Model: 1619

FCC ID: C3K1619

Applicable Standards

Specification	Test Result
FCC CFR47 Rule Parts 15.209, 15.247	Complies

Microsoft EMC Laboratory attests that the product model identified in this report has been tested to and meets the requirements identified in the above standards. The test results in this report solely pertains to the specific sample tested, under the conditions and operating modes as provided by the customer. All indications of Pass/Fail in this report are opinions expressed by the Microsoft EMC Laboratory based on interpretations and/or observations of test result on the tested sample only.

This report shall not be used to claim product certification, approval, or endorsement by A2LA or any agency of any Government.

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Written By: Jennifer Liu
Radio Compliance Test Engineer



Reviewed/Issued By: Sajay Jose
EMC/RF Compliance Lab Manager

2 Deviations from Standards

None.

3 Facilities and Accreditations

3.1 Test Facility

All test facilities used to collect the test data are located at
Microsoft EMC Laboratory,
17760 NE 67th Ct,
Redmond WA, 98052, USA

3.2 Accreditations

The lab is established and follows procedures as outlined in IEC/ISO 17025 and A2LA accreditation requirements.

A2LA Accredited Testing Certificate Number: 3472.01

FCC Registration Number: US1141

IC Site Registration Numbers: 3048A-1, 3048A-2, 3048A-3

3.3 Test Equipment

The site and related equipment are constructed in conformance with the requirements of ANSI C63.4, CISPR 16-1-1 and other equivalent applicable standards.

The calibrations of the measuring instruments, including any accessories that may affect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the user manual for the measuring equipment.

4 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the product, as specified in CISPR 16-4-2. This represents an expanded uncertainty expressed at 95% confidence level using a coverage factor $k=2$.

Expanded uncertainty calculations are available upon request.

Test item	Value (dB)
Conducted disturbance at mains port	3.30
Radiated disturbance (<1 GHz)	6.10
Radiated disturbance (>1 GHz)	4.80

5 Product Description

Company Name:	Microsoft Corporation
Address:	One Microsoft Way
City, State, Zip:	Redmond, WA 98052-6399
Customer Contact:	Brad Sybouts
Functional Description of the EUT:	Mobile Wireless Device
Model:	1619
FCC ID:	C3K1619
Radio Description:	BT LE (2402- 2480 MHz)
Modulation:	DSSS
EUT Classification:	DTS
FCC Rule Part:	Part 15.247
Test Procedure:	KDB 558074 v03r02
Equipment Design State:	EV5
Equipment Condition:	Good
Test Sample Serial Numbers:	1407095240006931149 (Large Size -Conducted); X894650000677143249 (Small Size- Radiated); 1407075140011221149 (Medium Size- Radiated); 1407095240009131149 (Large Size- Radiated)

5.1 Test Configurations

Test Software Details:

BT Compliance Tool, Version 1.0.17 for controlling and operating BT/BTLE radio functionality

The EUT comes in Small, Medium and Large sizes. Radiated testing was performed on all three sizes. The radio circuitry is the same on all three configurations and hence conducted testing was only performed on the Large size sample and deemed representative for all sizes.

When in Low energy mode operation, the Bluetooth transmitter hops pseudo-randomly between 40 channels, three of which are “advertising channels”. Operation on the advertising channels does not qualify the EUT as a FHSS, and so the EUT is certified as a DTS device. The data shown in this report reflects the device when it transmits on its advertising channels.

Modes of Operation and Channel Details:

BTLE: Channels 0-39 (2402 – 2480MHz)

Powered on a continuous Rx and Tx mode as required.

5.2 Environmental Conditions

Ambient air temperature of the test site was within the range of 10 °C to 40 °C (50 °F to 104 °F) unless the EUT specified testing over a different temperature range. Humidity levels were in the range of 10% to 90% relative humidity. Testing conditions were within tolerance and any deviations required from the EUT are reported.

5.3 Antenna Requirements

The antennas are permanently attached and there are no provisions for connection to an external antenna.

Antenna Gains at 2.4 GHz:

Small size EUT= -3.9dBi,
Medium size EUT= -3.5dBi, and
Large size EUT= -4.6dBi

5.4 Equipment Modifications

No modifications were made during testing.

6 Test Results Summary

Test Description	FCC CFR 47	Limit	Test Result
6dB Bandwidth	15.247 (a)(2)	> 500kHz	Pass
Output Power	15.247 (b)(3)	< 1 Watt	Pass
Power Spectral Density	15.247 (e)	< 8dBm/3kHz	Pass
Conducted Band Edge/Spurious Emissions	15.247 (d)	< 20dBc	Pass
Radiated Spurious Emissions/ Restricted Band Emissions	15.205, 15.209	FCC CFR 47 15.209 limits	Pass
AC Power Line Conducted Emissions	15.207	FCC CFR 47 15.207 limits	Pass

7 Test Equipment List

The site and related equipment are in conformance with the requirements of ANSI C63.4, CISPR 16-1-1, and other equivalent applicable standards.

Manufacturer	Description	Model #	Asset #	Calibration Due
Agilent	Spectrum Analyzer	N9030A	RF-011	6/6/2015
ETS-Lindgren	Antenna	3117	RF-137	7/10/2015
ETS-Lindgren	Antenna	3160-09	RF-037	N/A*
ETS-Lindgren	Antenna	6512	RF-202	12/13/2014
Micro-Tronix	Notch Filter	BRM50702-02	RF-055	N/A*
Rohde & Schwarz	Pre-Amp	TS-PR18	RF-041	N/A*
Rohde & Schwarz	Pre-Amp	TS-PR26	RF-042	N/A*
Rohde & Schwarz	EMI Test Receiver	ESU40	RF-012	5/2/2015
Rohde & Schwarz	Switch Control Unit	OSP130	RF-018	N/A*
Rohde & Schwarz	Switch Control Unit	OSP150	RF-019	N/A*
Rosenburger	RF Cable	L72-449-915	EMC-326	N/A*
Rohde & Schwarz	Software	EMC-32 V9.15.01	N/A	N/A

*Note: List of equipment that fall under the category of cables, pre-amplifiers or switching panels with Calibration due date of "n/a" have regular in house verification. The calibrations of the measuring instruments, including any accessories that may affect such calibration, are checked frequently to ensure their accuracy.

8 Test Site Description

8.1 Radiated Emissions Test Site

Radiated measurements are performed in a 3m semi-anechoic chamber manufactured by TDK which fully meets NSA requirements for the frequency range of 30MHz to 1000MHz and SVSWR for 1-18GHz.

A Sunol antenna mast and turntable are used for changing Antenna height and azimuth. For all measurements, the Antenna height is varied from 1 meter to 4 meters and the turn table rotated 360 degrees to determine the highest emissions. A non-conducting 1m x 1.5m x 80cm table is installed on the turntable to support the EUT.

The EUT and its support equipment were exercised and cabling manipulated to maximize each emission.

For radiated emissions above 1GHz, linearly polarized horn antennas are used. RF absorbers cover the ground plane such that the site validation criterion called out in CISPR 16-1-4 is met. For radiated measurements below 1GHz, Linearly polarized broadband antennas are used. The RF absorbers are removed to reveal the ground plane.

8.2 Conducted Emissions Test Site

Conducted Emissions are performed in a shielded room manufactured by TDK.

The EUT and its support equipment are set on a non-conducting 1m x 1.5m x 80cm table installed 0.4m from the Vertical Ground Plane with the LISN bonded to the ground plane.

8.3 Antenna port conducted measurements

All antenna port conducted measurements are performed on a bench-top setup consisting of a Spectrum Analyzer, Communication tester (where applicable), Power Meter (as necessary), Splitters/Combiners (as necessary), Attenuators and pre-characterized RF cables.

The correction factors between the EUT and the Spectrum Analyzer is added internally in the Analyzer settings. The plots displayed accounts for these correction factors.

8.4 Test Setup Diagrams

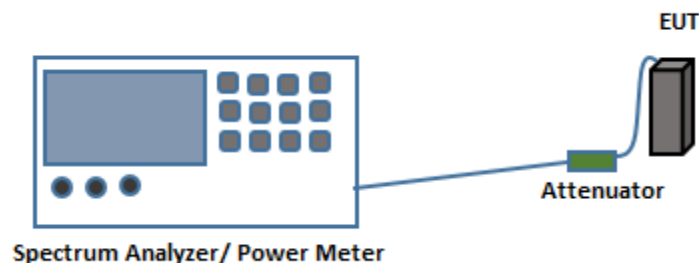


Fig.1. Test Setup for Antenna port conducted measurements

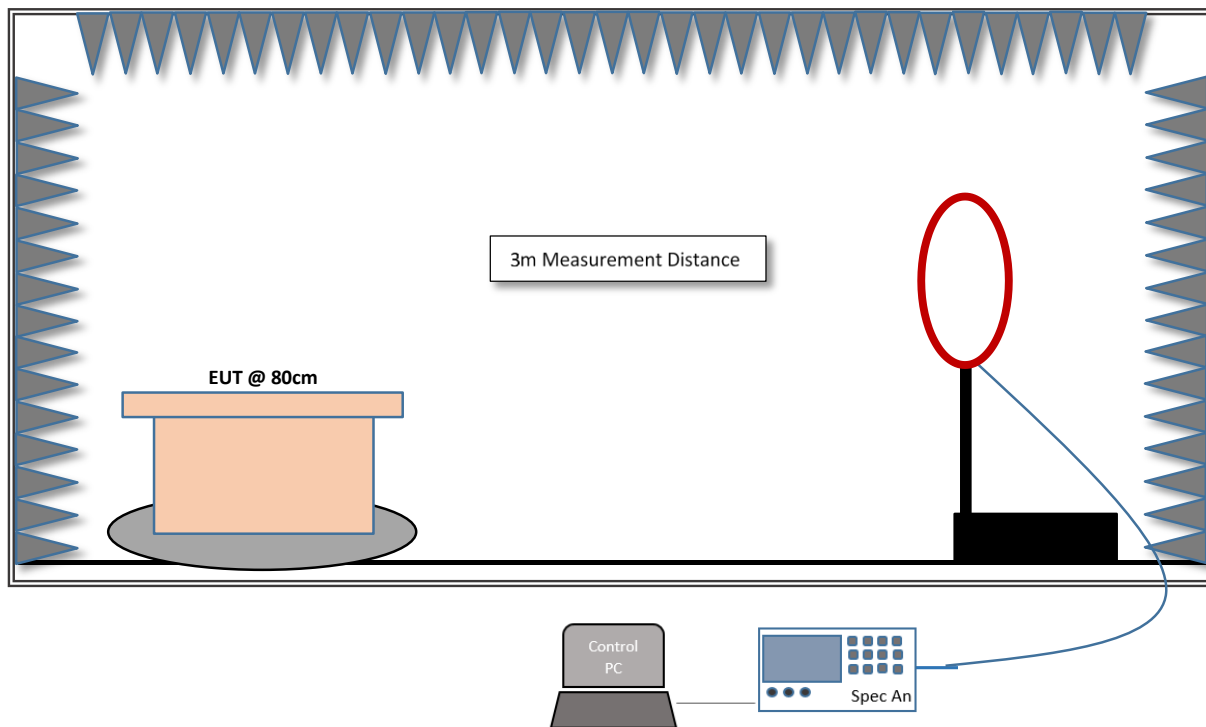


Fig.2. Test Setup for Radiated measurements <30 MHz

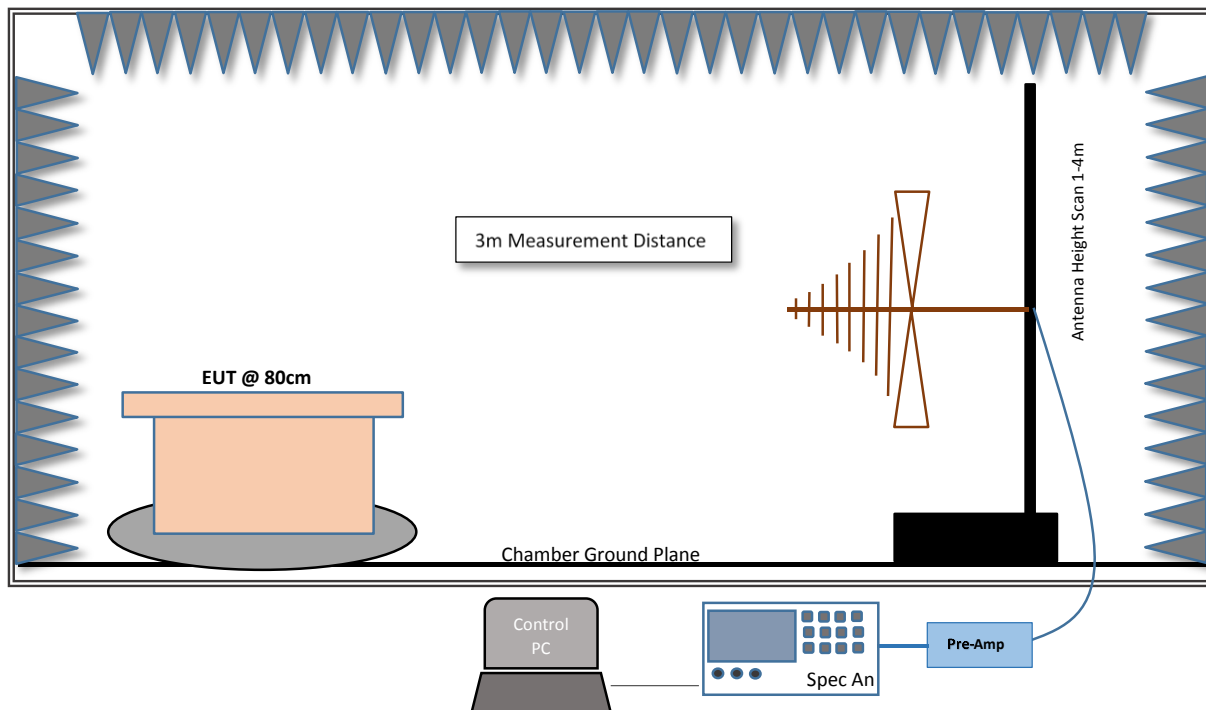


Fig.3. Test Setup for Radiated measurements in 30MHz- 1GHz Range

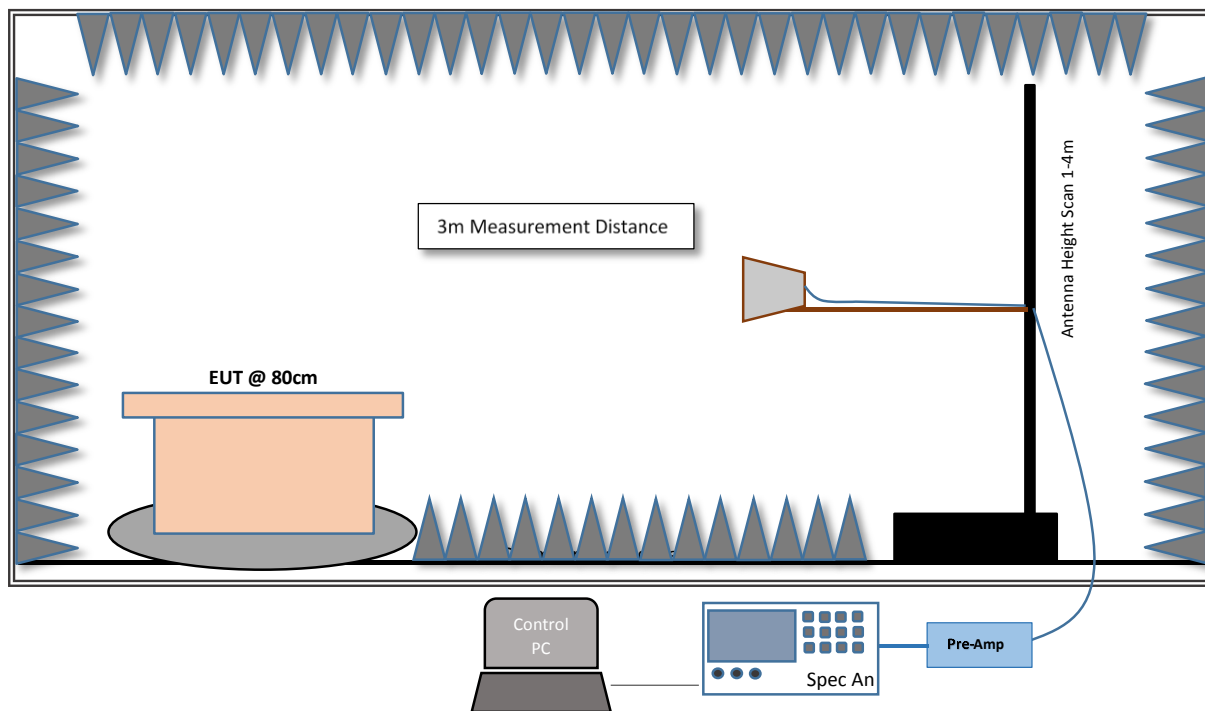


Fig.4. Test Setup for Radiated measurements in 1GHz- 18GHz Range

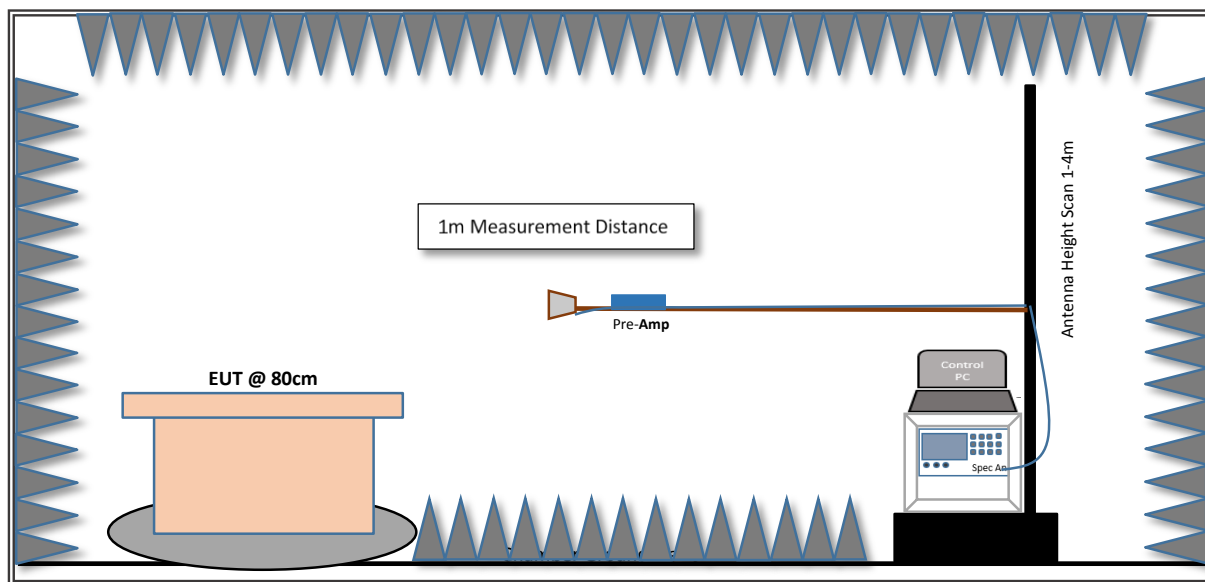


Fig.5. Test Setup for Radiated measurements >18GHz

9 Test Results- Conducted

9.1 6-dB Bandwidth

9.1.1 Test Requirement:

FCC CFR 47 Rule Part 15.247 (a)(2)

9.1.2 Test Method:

Measurements are performed according to the procedure defined in KDB 558074- Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 V03R02.

Spectrum Analyzer settings:

RBW= 100 kHz

VBW= 1 MHz

Trace Mode= Peak Detector (Max Hold)

Sweep time= Auto

The in-built functionality of the Spectrum Analyzer is used to measure the 6-dB bandwidth.

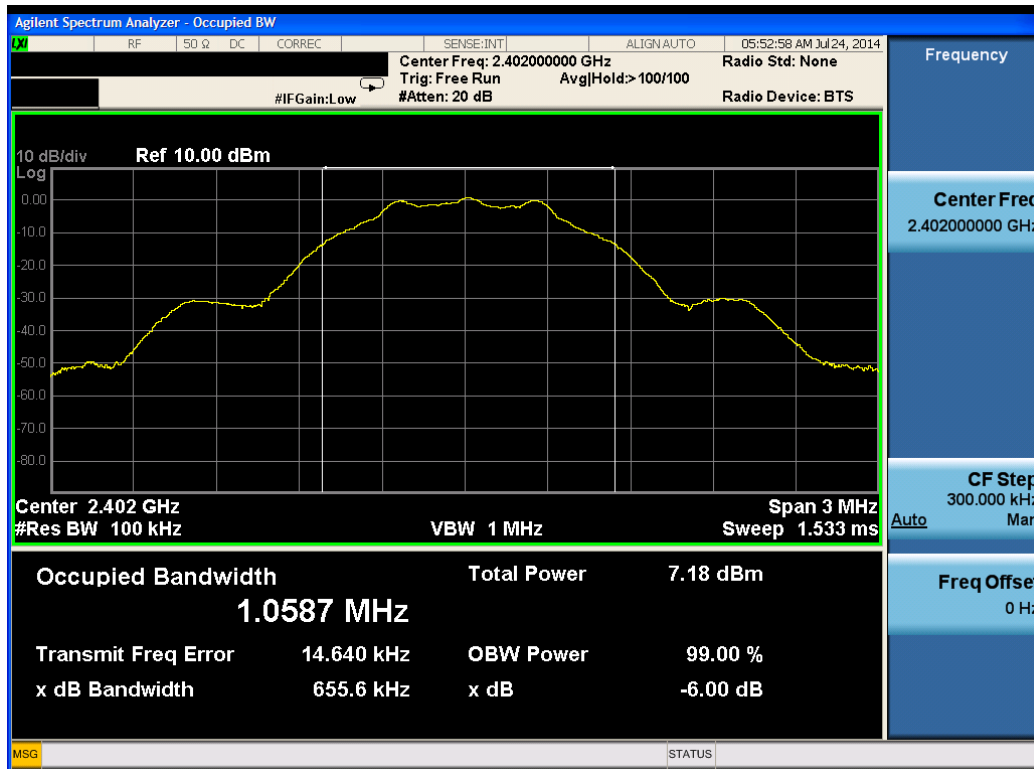
9.1.3 Limits:

The 6-dB bandwidth shall be at least 500 kHz

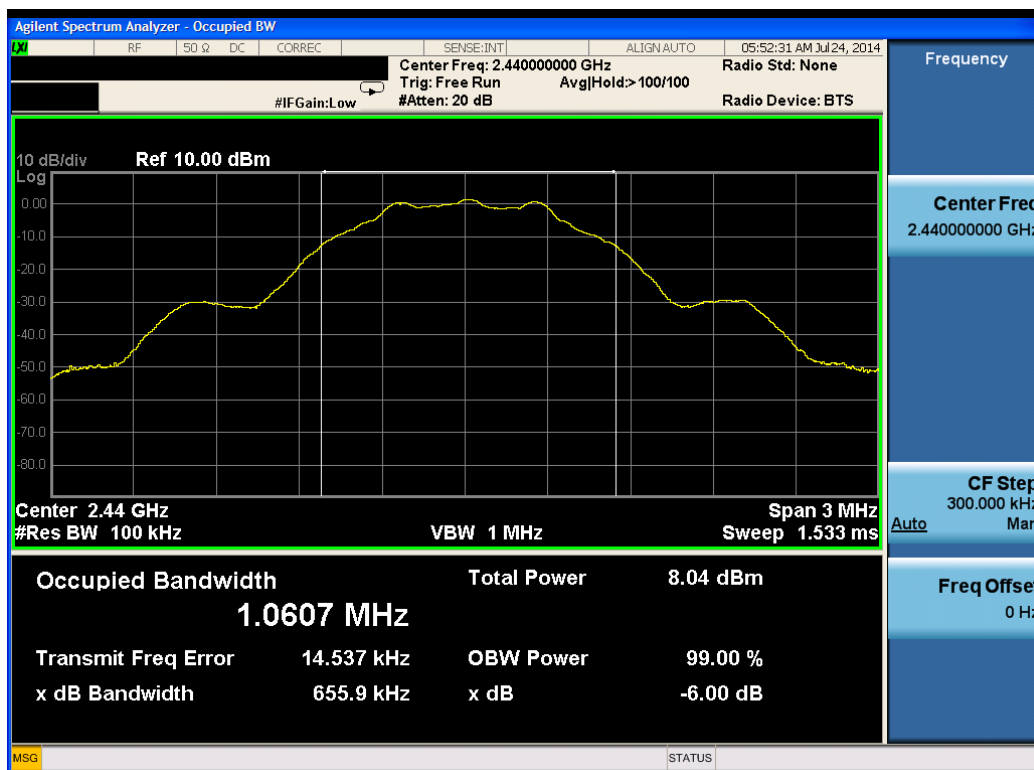
9.1.4 Test Results:

Frequency (MHz)	Channel No.	6dB Bandwidth (kHz)	Limit (kHz)	Pass/Fail
2402	0	655.6	500	PASS
2440	19	655.9	500	PASS
2480	39	656.7	500	PASS

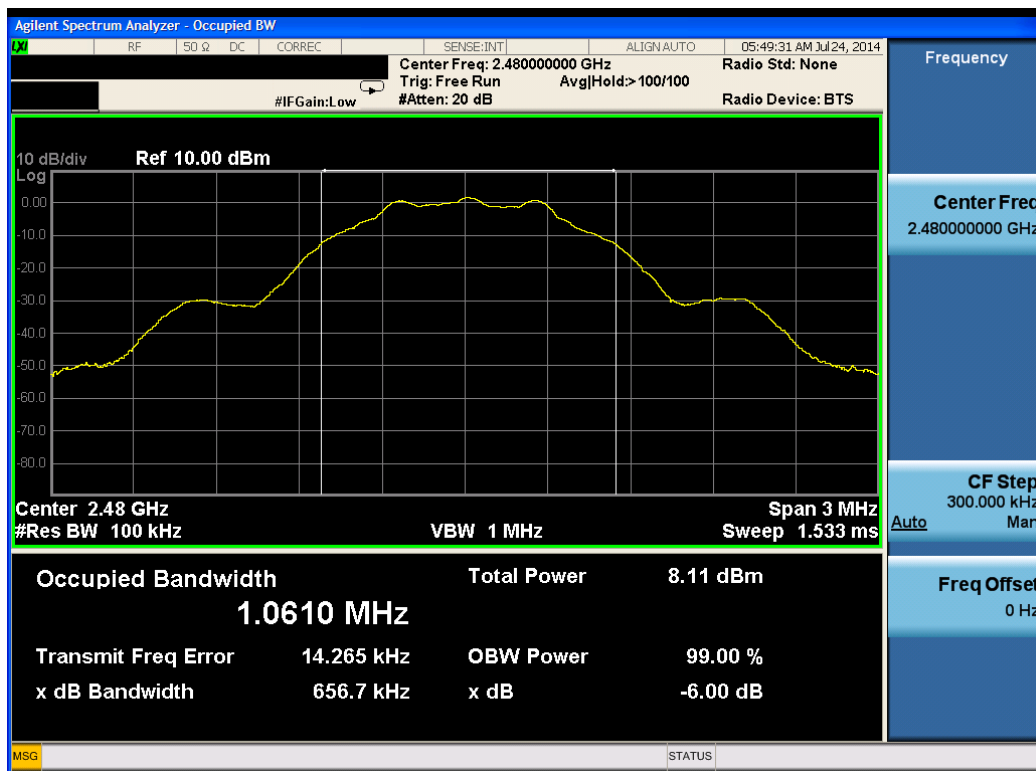
9.1.5 Test Data:



Plot 9-1. 6dB Bandwidth (Ch. 0)



Plot 9-2. 6dB Bandwidth (Ch. 19)



Plot 9-3. 6dB Bandwidth (Ch. 39)

9.2 Output Power

9.2.1 Test Requirement:

FCC CFR 47 Rule Part 15.247 (b)(3)

9.2.2 Test Method:

Measurements are performed according to the procedure defined in KDB 558074- Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 V03R02.

Spectrum Analyzer settings:

Peak Power:

RBW= 1 MHz

VBW= 3 MHz

Trace Mode= Peak Detector (Max Hold)

Sweep time= Auto

Span= 5 MHz

Average Power:

Average power measurements are made using the analyzer's "burst power" function with RBW = 3MHz. The burst power function measures the maximum average power over the on-time of a single burst.

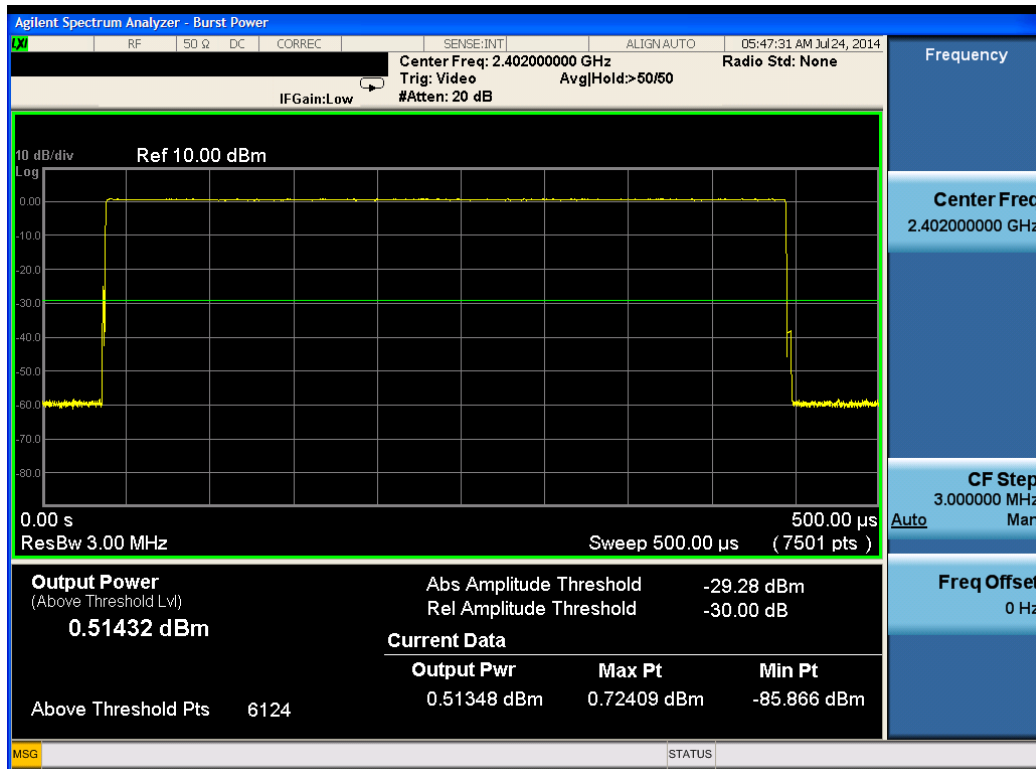
9.2.3 Limits:

The maximum permissible peak output power is 30 dBm (1 W)

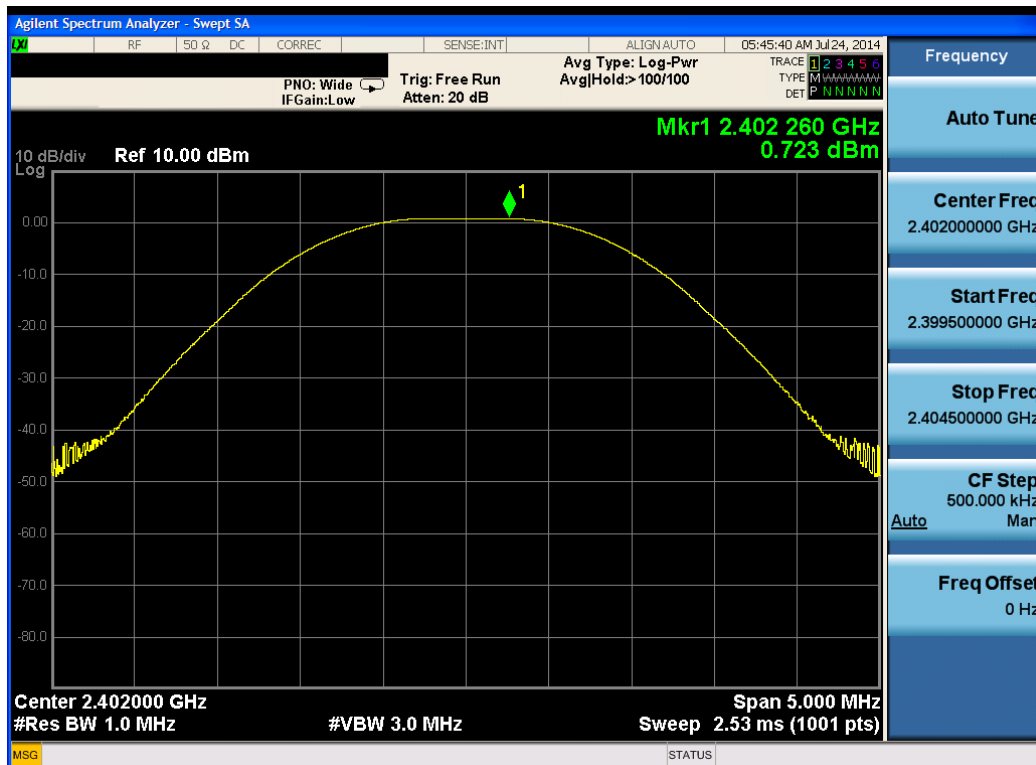
9.2.4 Test Results:

Frequency (MHz)	Mode	Channel No.	Peak Power (dBm)	Peak Power (W)	Average Power (dBm)	Average Power (W)
2402	LE	0	0.723	0.0012	0.51432	0.0011
2440	LE	19	1.555	0.0014	1.361	0.0014
2480	LE	39	1.658	0.0015	1.4374	0.0014

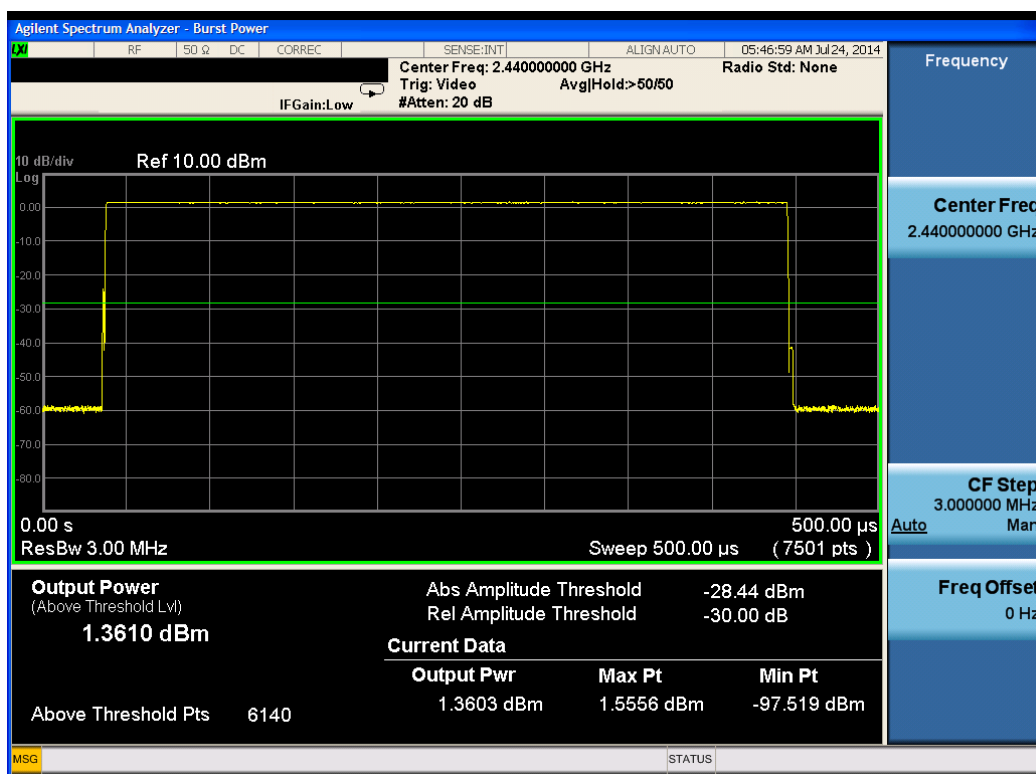
9.2.5 Test Data:



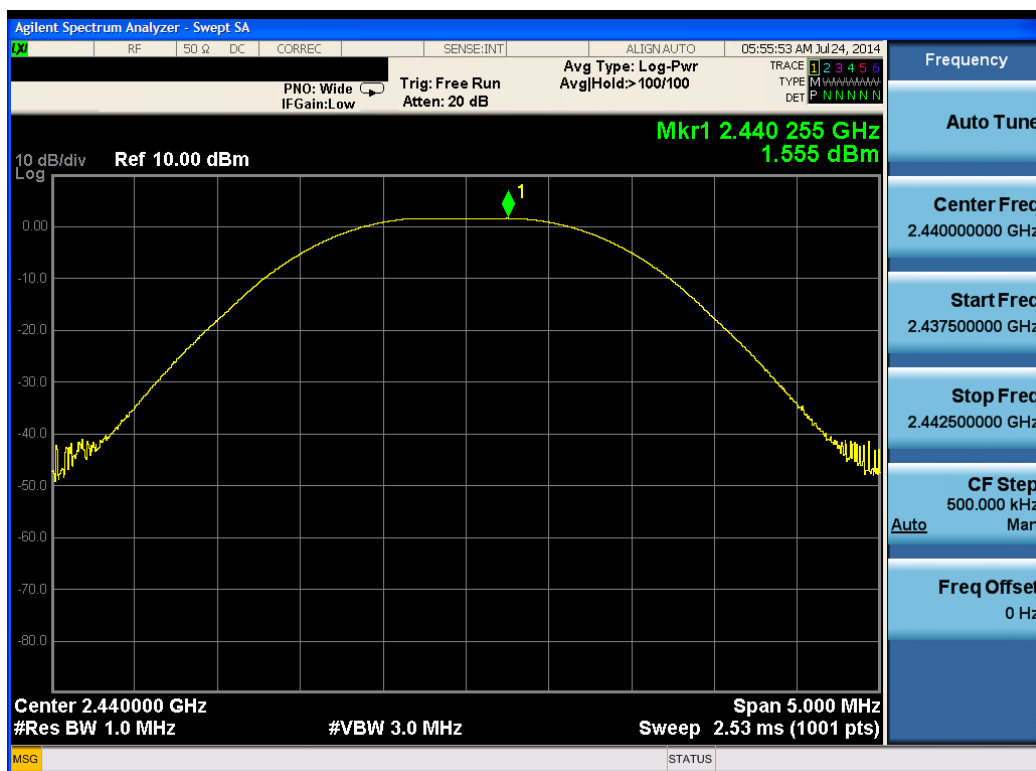
Plot 9-4. Average Power (Ch. 0)



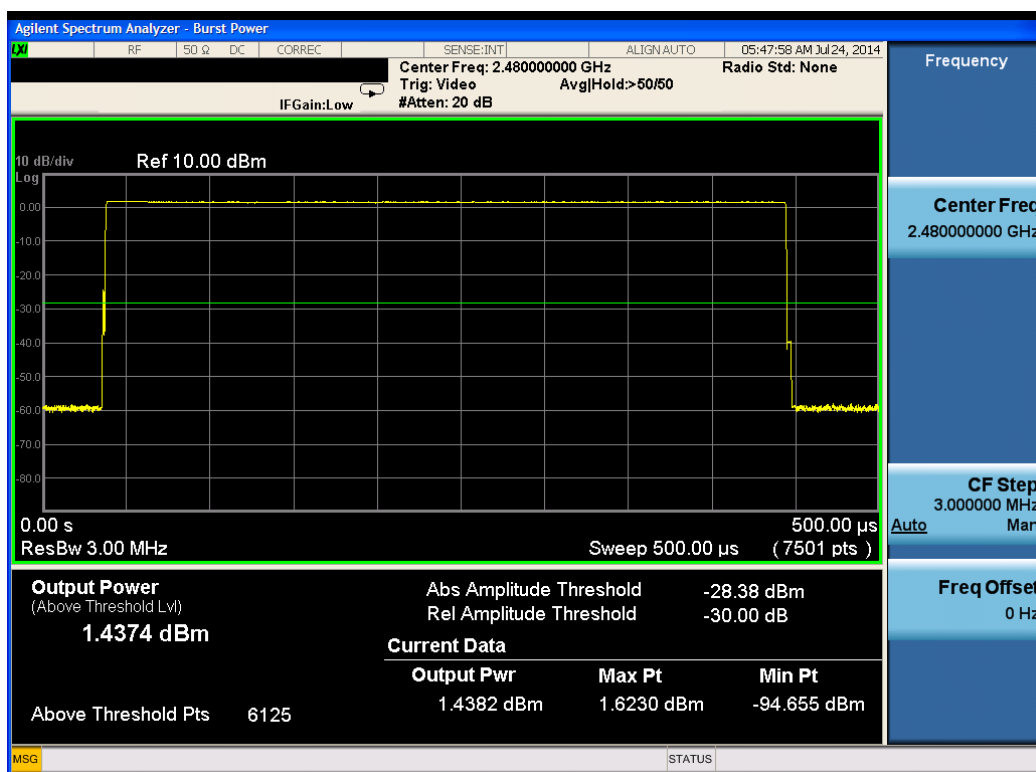
Plot 9-5. Peak Power (Ch. 0)



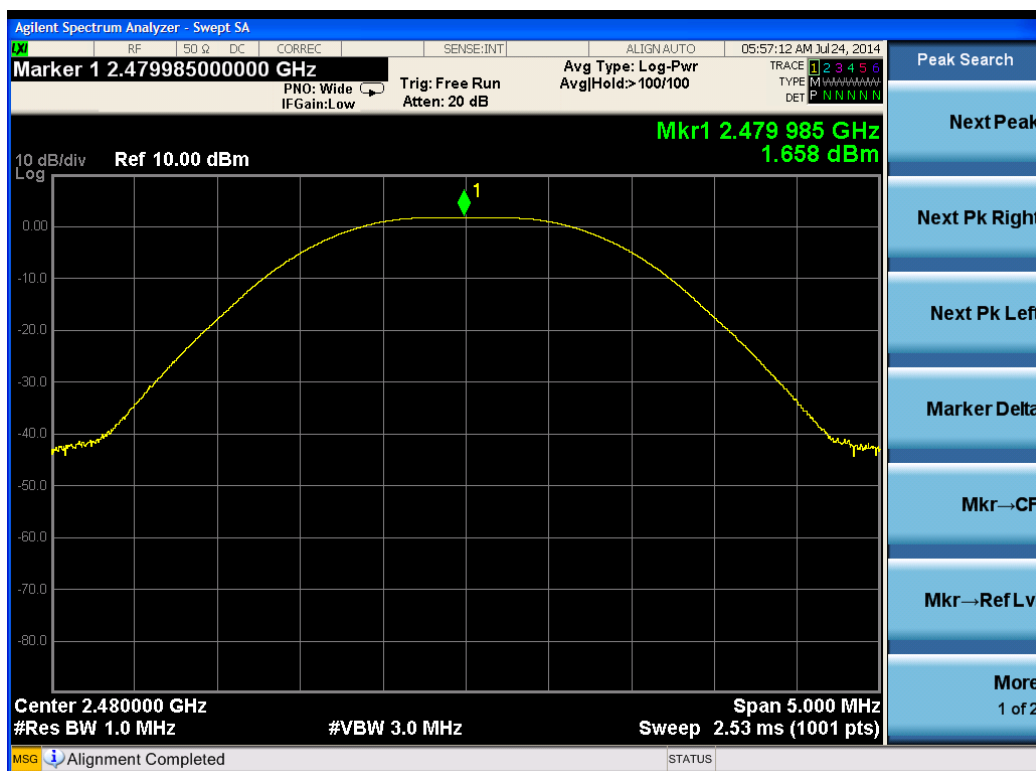
Plot 9-6. Average Power (Ch. 19)



Plot 9-7. Peak Power (Ch. 19)



Plot 9-8. Average Power (Ch. 39)



Plot 9-9. Peak Power (Ch. 39)

9.3 Peak Power Density

9.3.1 Test Requirement:

FCC CFR 47 Rule Part 15.247 (e)

9.3.2 Test Method:

Measurements are performed according to the procedure defined in KDB 558074- Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 V03R02.

Spectrum Analyzer settings:

RBW= 3 kHz

VBW= 1 MHz

Trace Mode= Peak Detector (Max Hold)

Sweep time= Auto

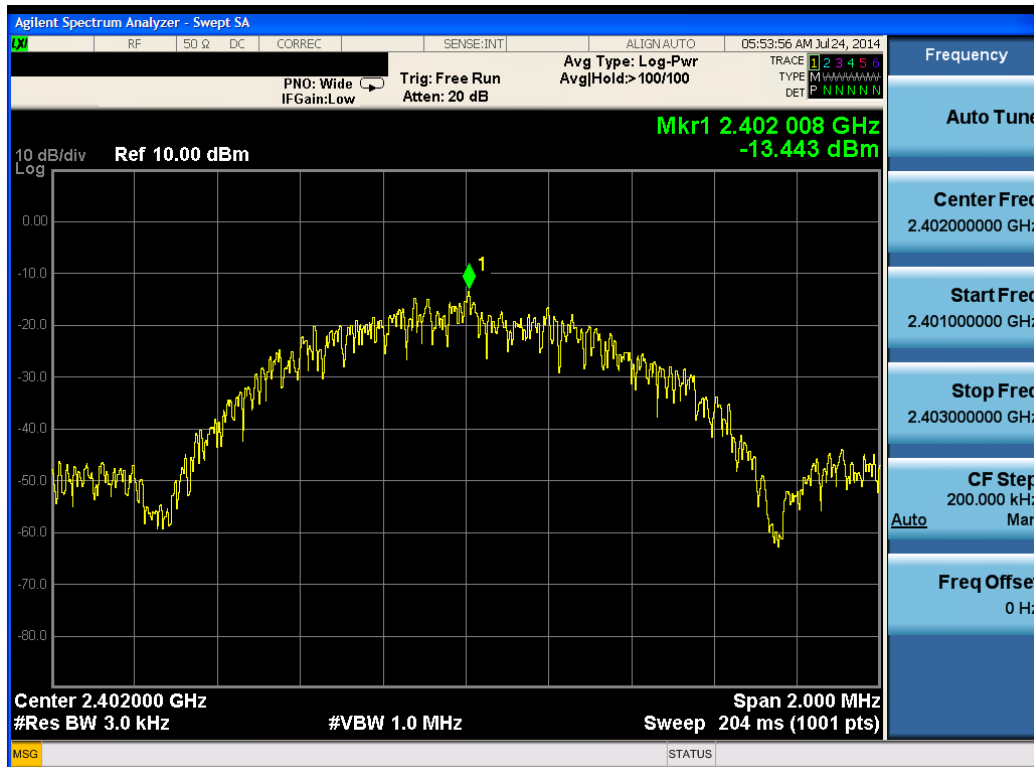
9.3.3 Limits:

The maximum permissible power density is 8 dBm/3kHz.

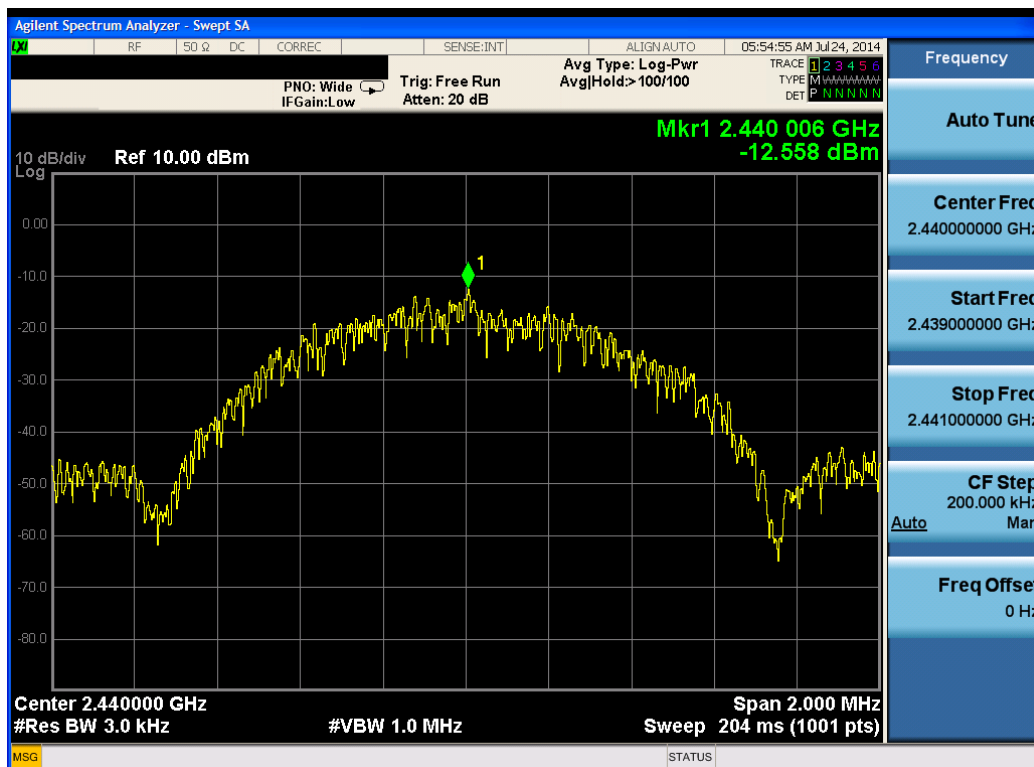
9.3.4 Test Results:

Frequency (MHz)	Channel No.	Power Spectral Density	Limit (dBm/3kHz)	Pass/Fail
2402	0	-13.443	8	PASS
2440	19	-12.558	8	PASS
2480	39	-12.633	8	PASS

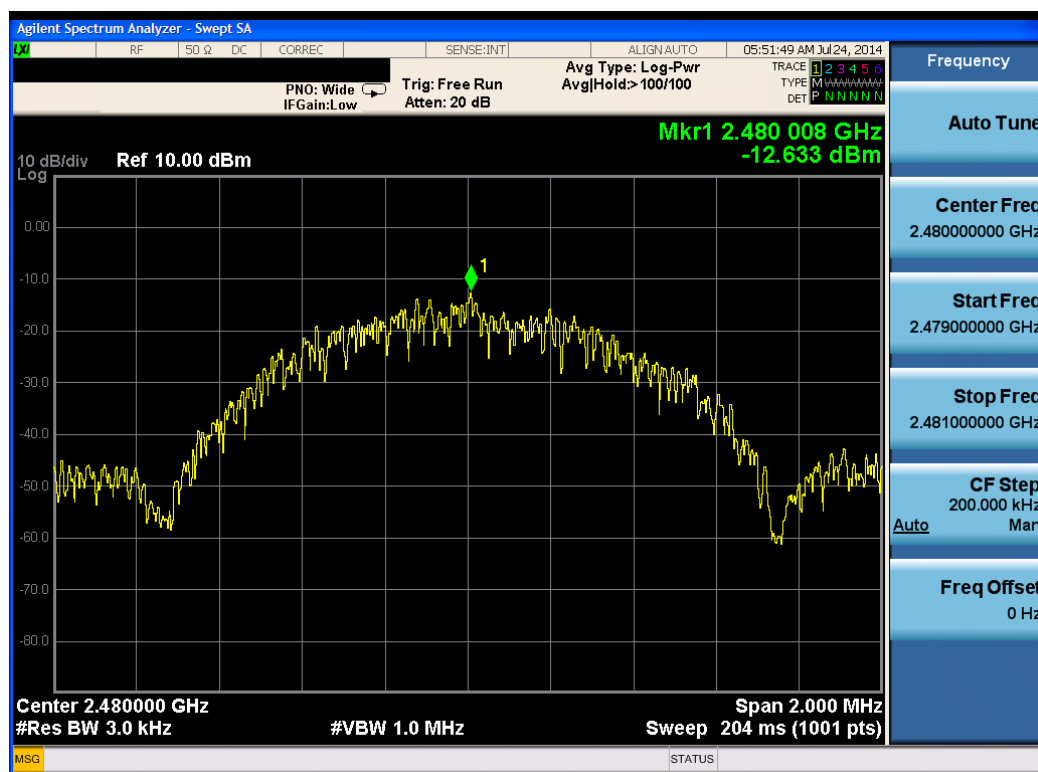
9.3.5 Test Data:



Plot 9-10. Power Spectral Density (Ch. 0)



Plot 9-11. Power Spectral Density (Ch. 19)



Plot 9-12. Power Spectral Density (Ch. 39)

9.4 Conducted Spurious and Band Edge Emissions

9.4.1 Test Requirement:

FCC CFR 47 Rule Part 15.247 (d)

9.4.2 Test Method:

Measurements are performed according to the procedure defined in KDB 558074- Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 V03R02.

Spectrum Analyzer settings:

Band Edge Emissions:

RBW= 100 kHz

VBW $\geq 3 \times$ RBW

Trace Mode= Peak Detector (Max Hold)

Sweep time= Auto

Span= 20 MHz

Conducted Spurious Emissions:

RBW= 1 MHz

VBW $\geq 3 \times$ RBW

Trace Mode= Peak Detector (Max Hold)

Sweep time= Auto

Span= 30 MHz- 26 GHz

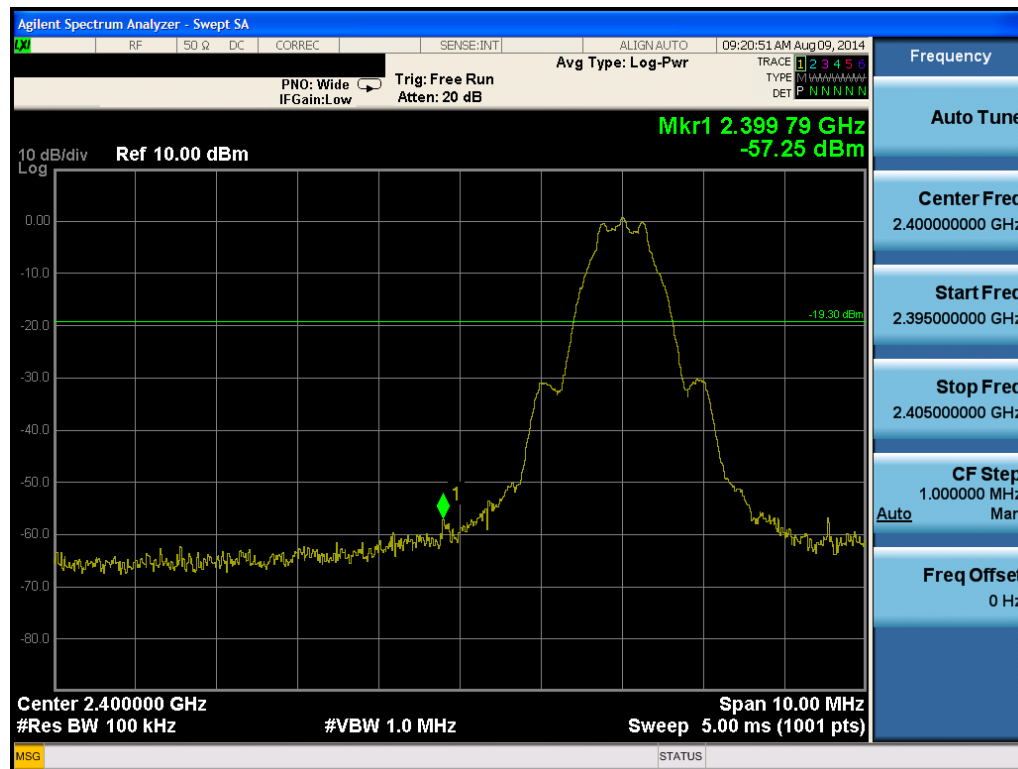
9.4.3 Limits:

All spurious emissions >20 dBc.

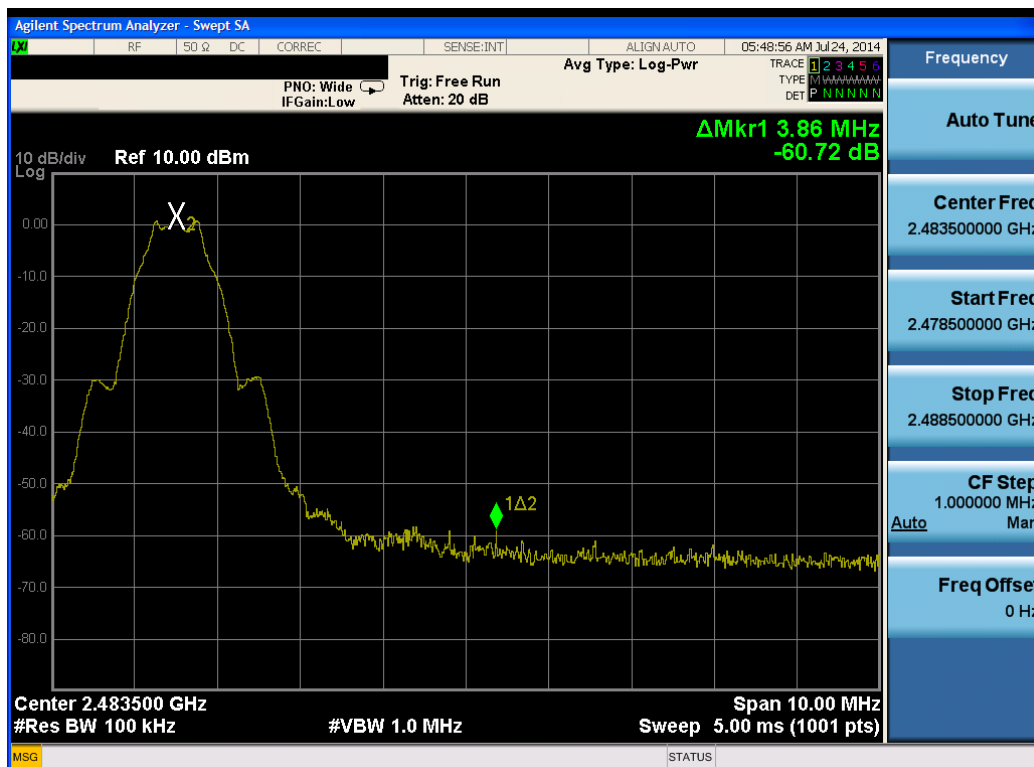
9.4.4 Test Result:

Pass.

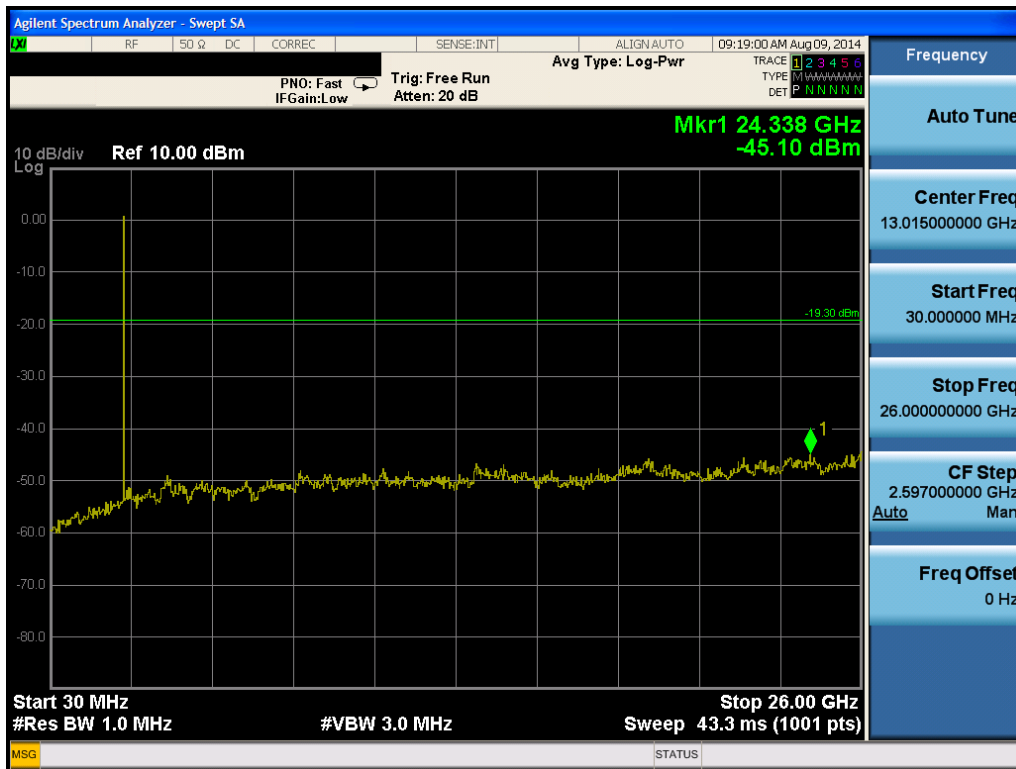
9.4.5 Test Data:



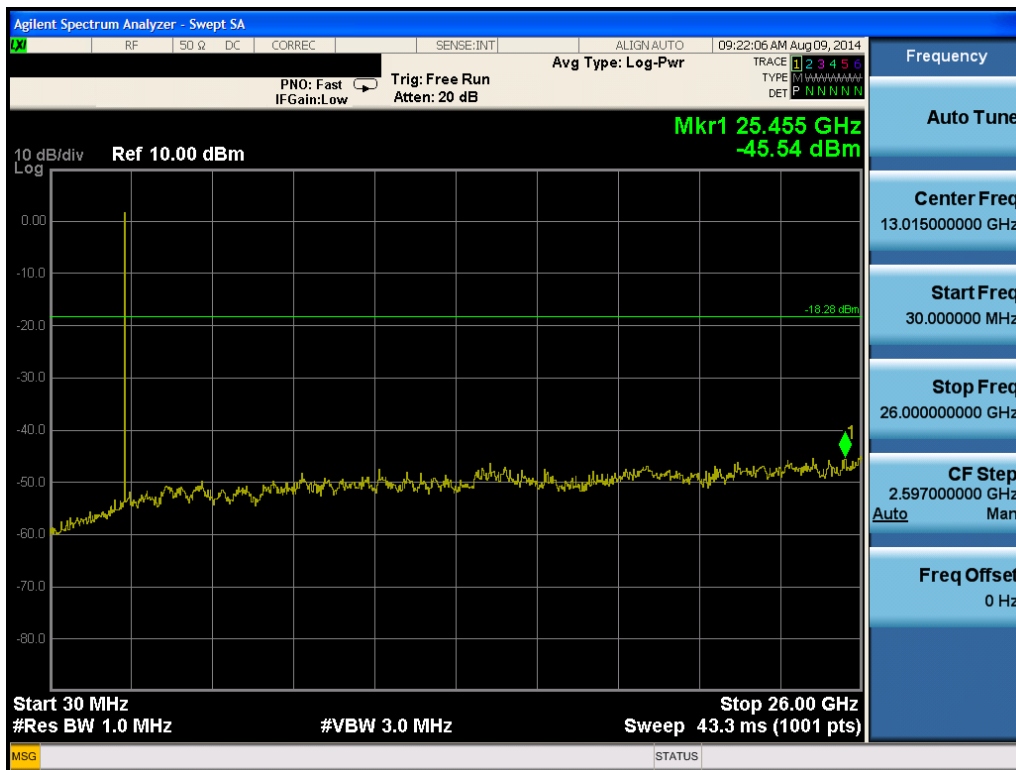
Plot 9-13. Conducted-Low Band Edge (Ch. 0)



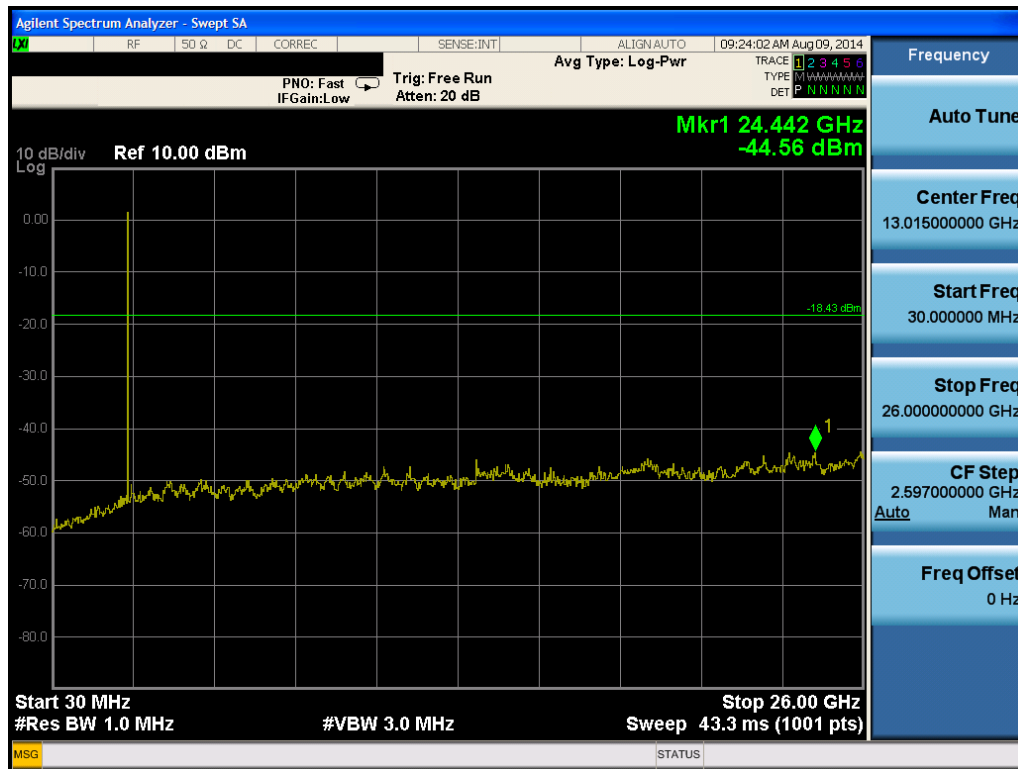
Plot 9-14. Conducted- High Band Edge (Ch. 39)



Plot 9-15. Conducted Spurious Emissions (Ch. 0)



Plot 9-16. Conducted Spurious Emissions (Ch. 19)



Plot 9-17. Conducted Spurious Emissions (Ch. 39)

9.5 Radiated Spurious and Band Edge Emissions

9.5.1 Test Requirement:

FCC CFR 47 Rule Part 15.247 (d)

9.5.2 Test Method:

Measurements are performed according to the procedure defined in KDB 558074- Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 V03R02.

Radiated spurious emissions are checked from 10 kHz to the 10th harmonic of the highest fundamental frequency of the transmitter.

The EUT is tested in the low, middle and high channels and in three orthogonal axes. EUT samples in Small, Medium and Large sizes were tested and reported below. Antenna height and polarities are adjusted to record the maximum emissions and the worst case data is shown below.

Spectrum Analyzer Settings:

Below 30 MHz:

Span= 10 kHz- 30 MHz

RBW= 200 Hz (9 kHz- 150 kHz); 9 kHz (150 kHz- 30 MHz)

VBW $\geq$ 3 X RBW

Trace Mode: Peak Detector (Max Hold)

Sweep time= Auto

30 MHz- 1 GHz:

RBW= 120 kHz

VBW $\geq$ 3 X RBW

Trace Mode: Peak Detector (Max Hold). Final measurements performed using QP Detector.

Span= 30 MHz- 1 GHz

Sweep time= Auto

Above 1 GHz:

RBW= 1 MHz

VBW= 3 MHz

Trace Mode: Peak Detector (Max Hold) and RMS Average Detector (Max Hold)

Span= 1- 18 GHz and 18- 26.5 GHz.

Sweep time= Auto

Sample Calculation:

Electric Field Strength Level = Amplitude (Analyzer level) + AFCL (Antenna Factor and Cable losses) – Amplifier Gain

Eg: Electric Field Strength = 96 dB μ V+ 12 dB- 10 dBi= 98 dB μ V/m

9.5.3 Limits:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (meters)	Corrected Field Strength for 3m measurement distance (dB $\mu\text{V/m}$)
0.009-0.490	2400/F (kHz)	300	48.5- 13.8
0.490-1.705	24000/F (kHz)	30	33.8- 23.0
1.705-30	30	30	29.5
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
960-1000	500	3	54
Above 1000	500	3	54 (Average) 74 (Peak)

9.5.4 Test Result:

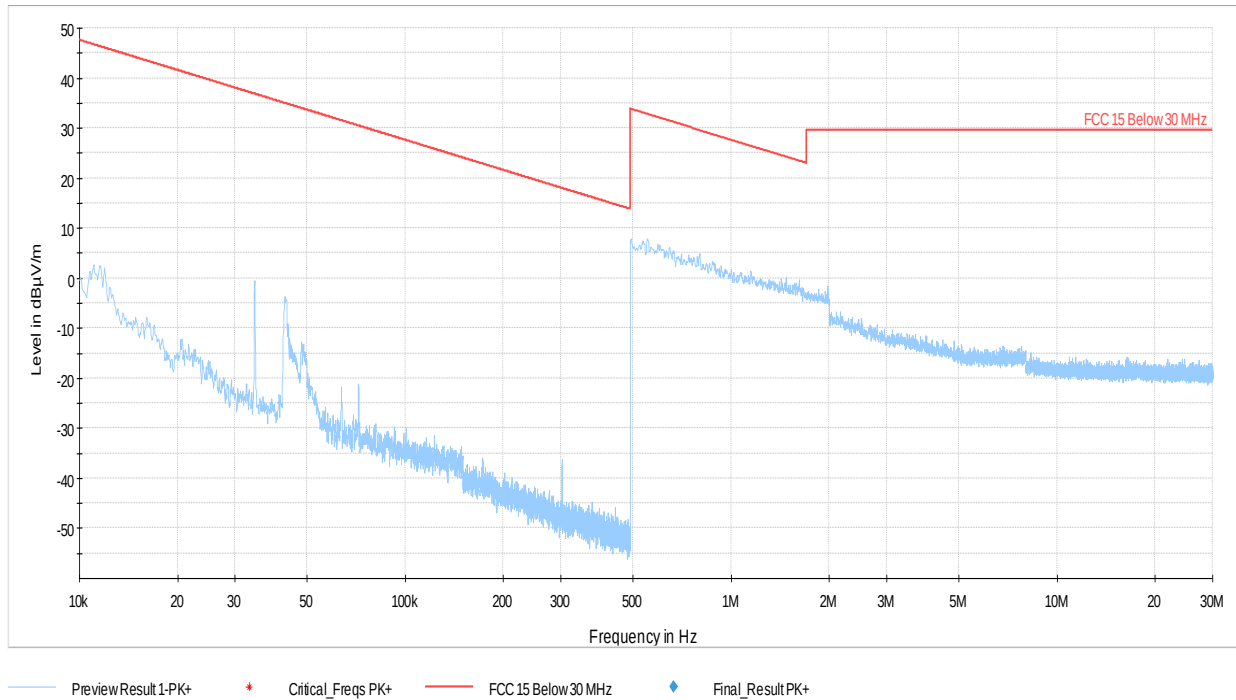
Pass.

9.5.5 Test Data:

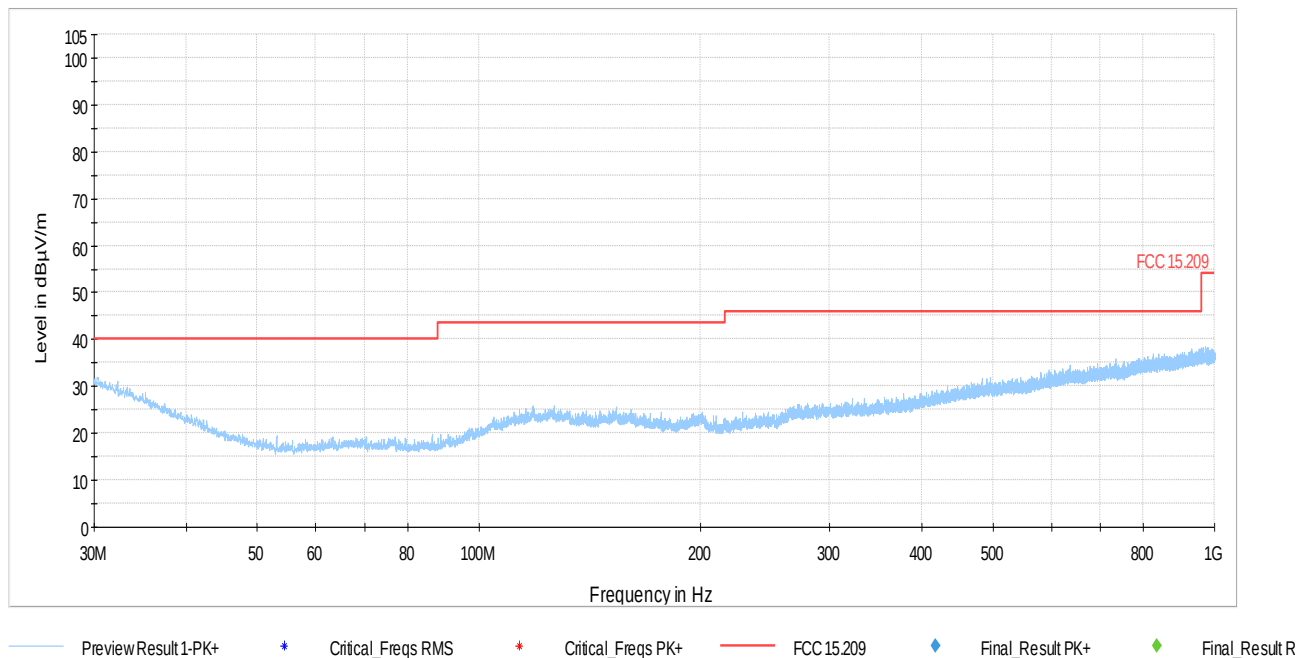
9.5.5.1 Small size sample

Worst case configuration and results shown below.

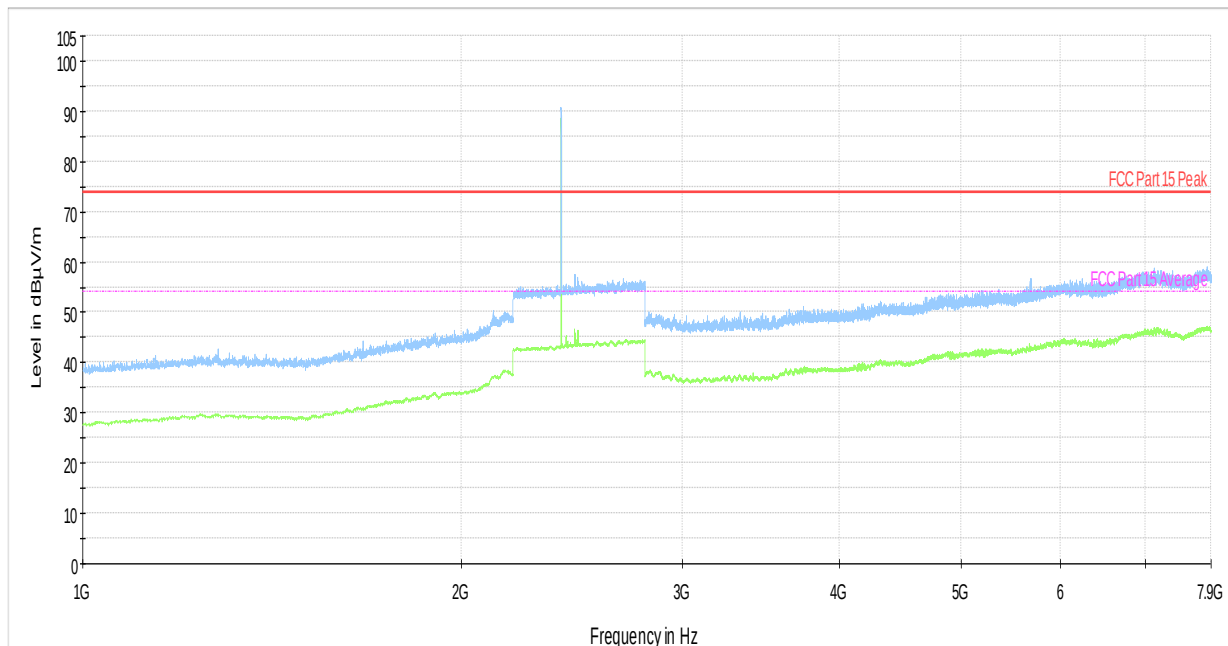
No significant emissions to report above noise floor and <6dB from limit.



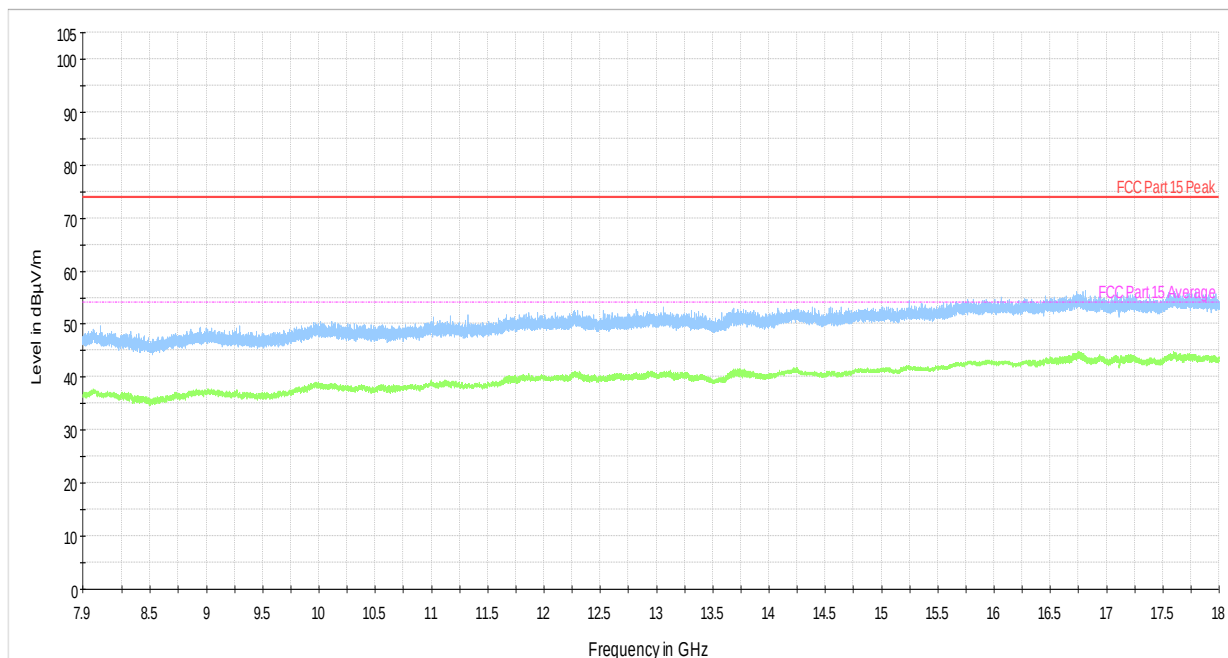
Plot 9-18. Radiated Spurious Emissions (Ch. 19) (Y axis) (10 kHz – 30 MHz)



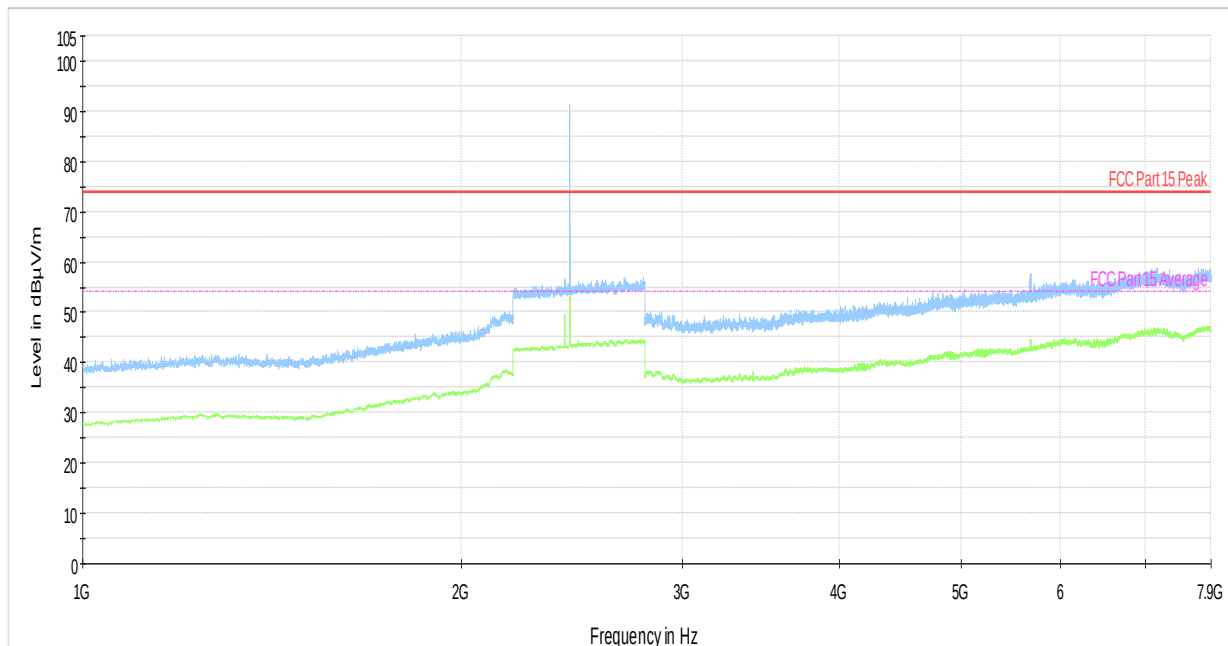
Plot 9-19. Radiated Spurious Emissions (Ch. 19) (30MHz - 1GHz)



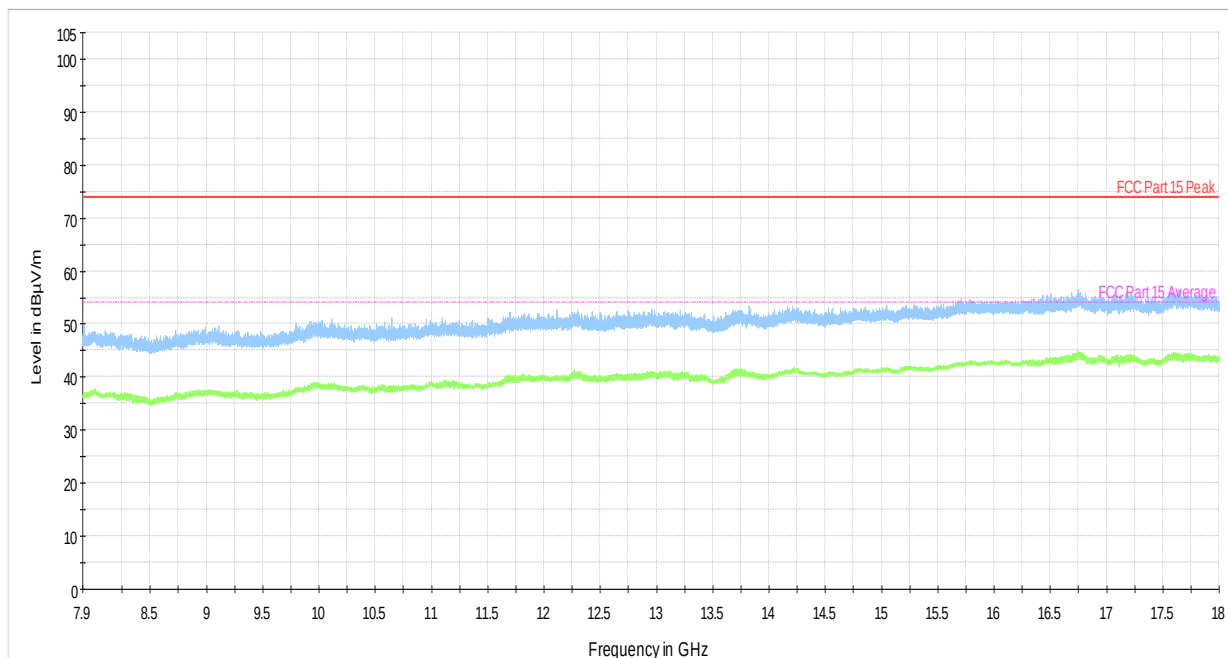
Plot 9-20. Radiated Spurious Emissions (Ch. 0) (1-7.9GHz)



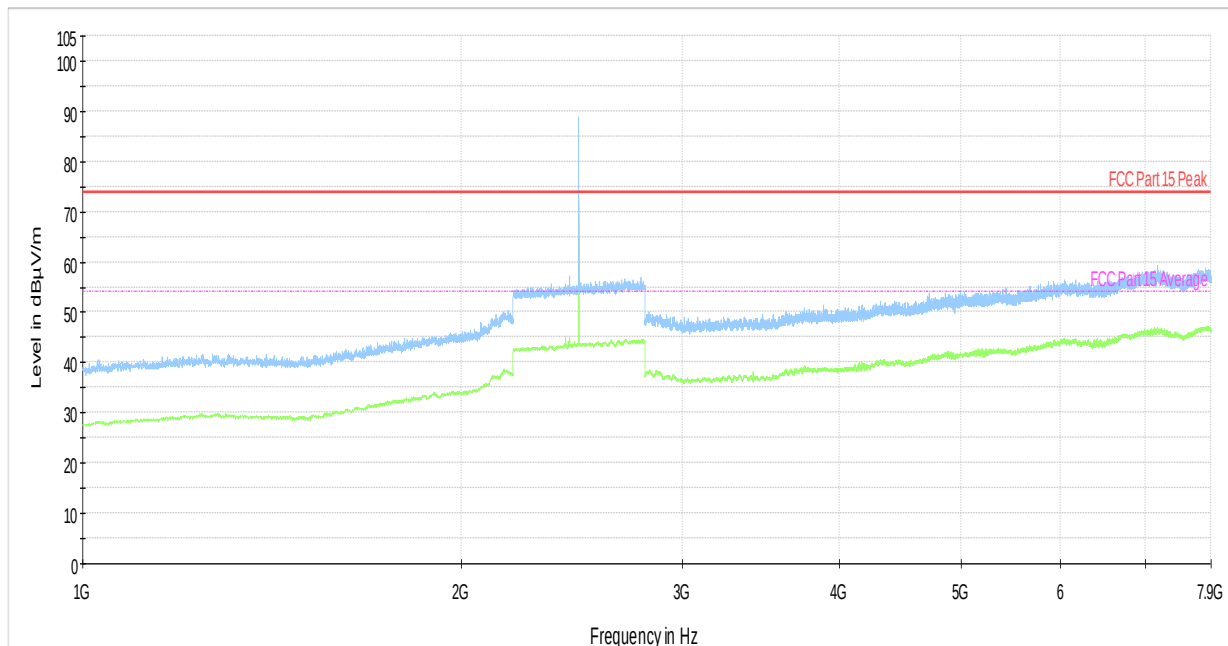
Plot 9-21. Radiated Spurious Emissions (Ch. 0) (7.9 - 18GHz)



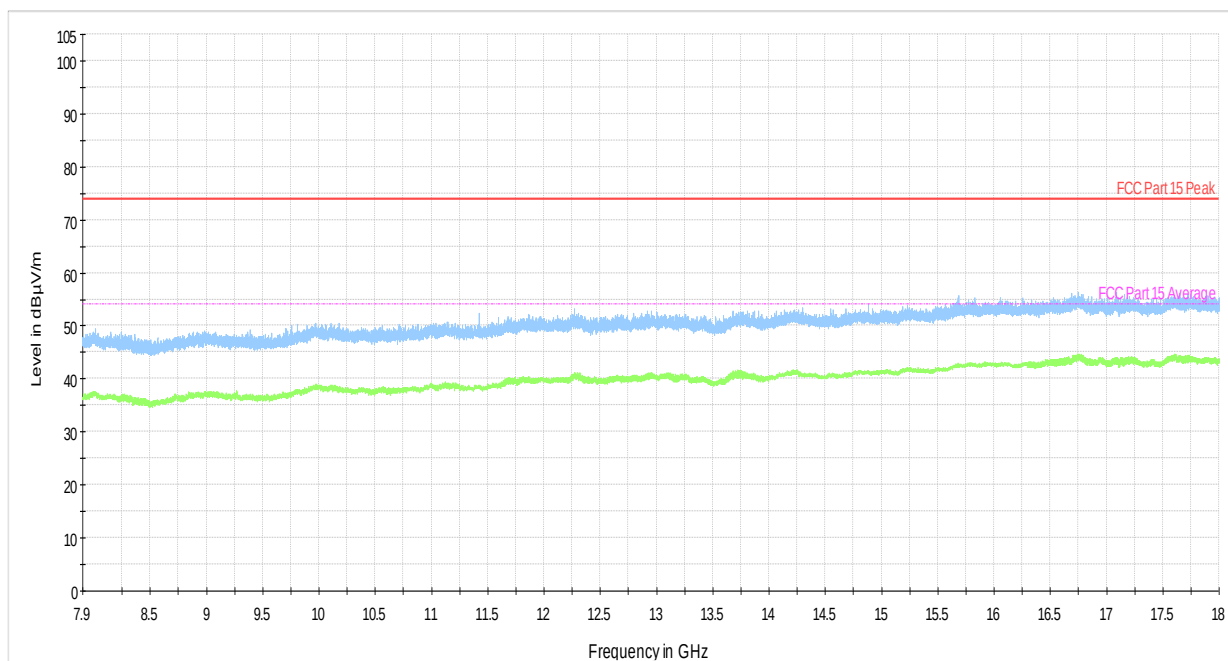
Plot 9-22. Radiated Spurious Emissions (Ch. 19) (1-7.9GHz)



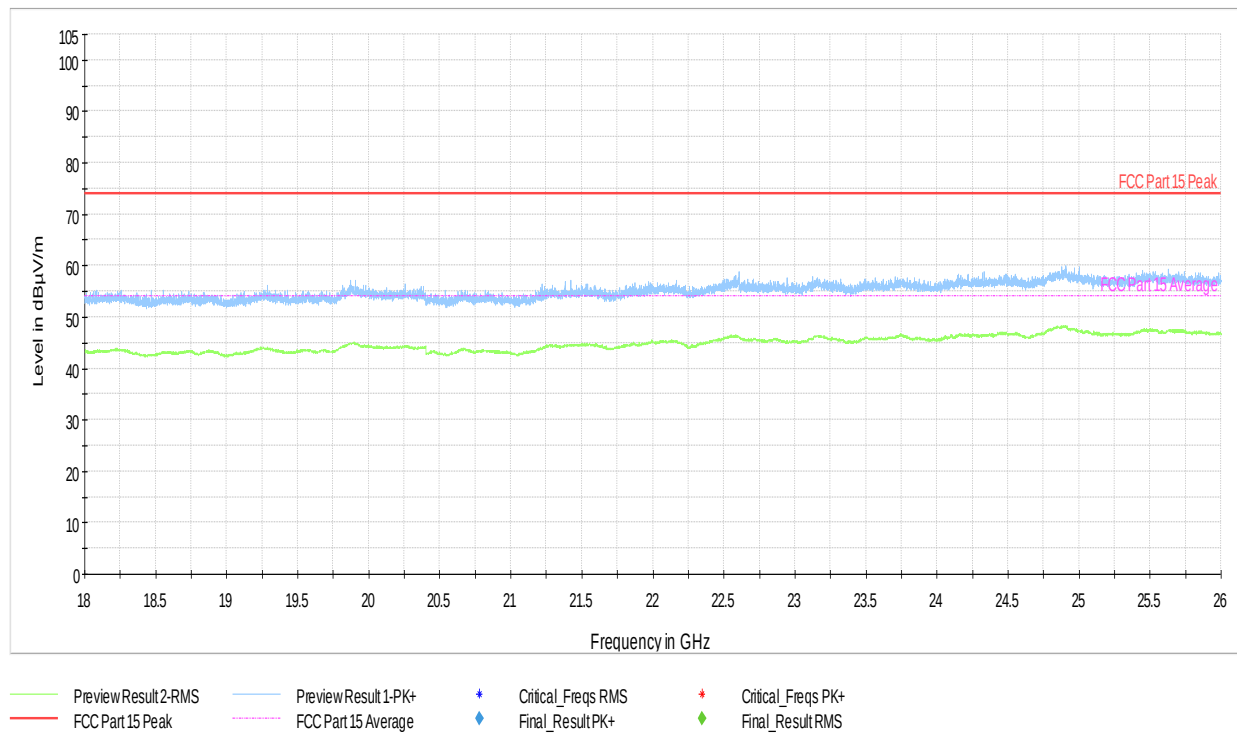
Plot 9-23. Radiated Spurious Emissions (Ch. 19) (7.9 - 18GHz)



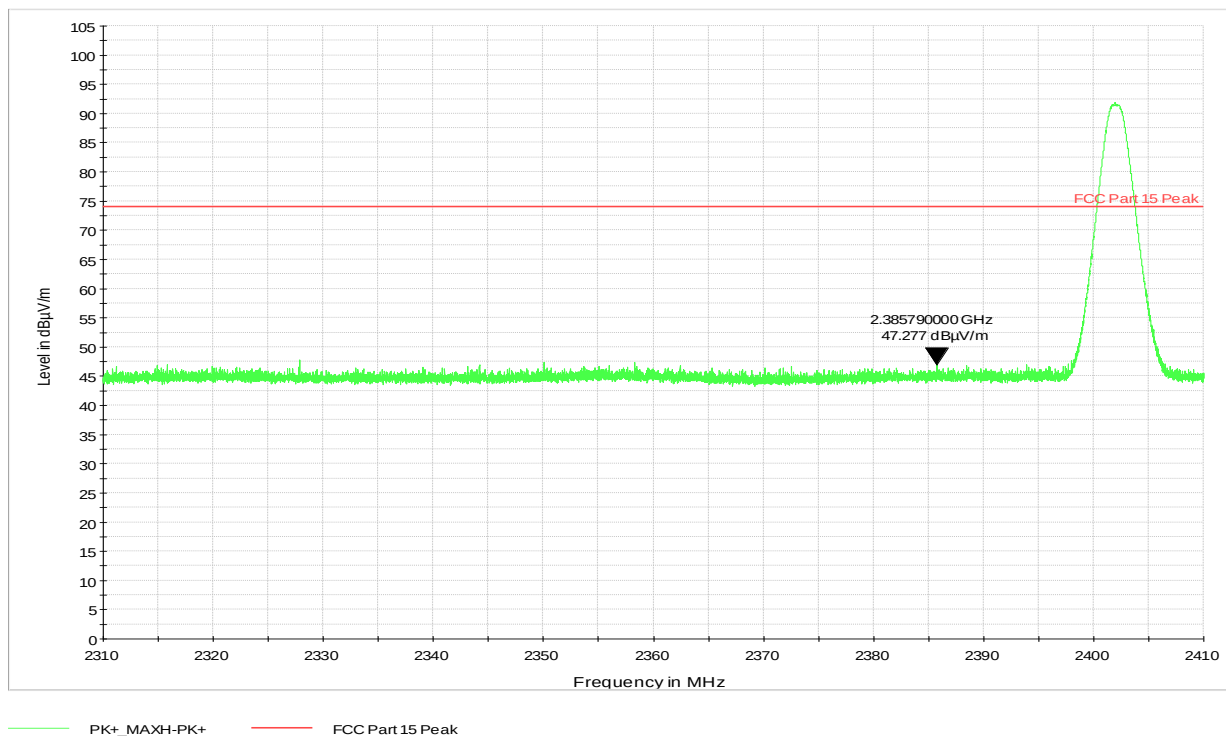
Plot 9-24. Radiated Spurious Emissions (Ch. 39) (1-7.9GHz)



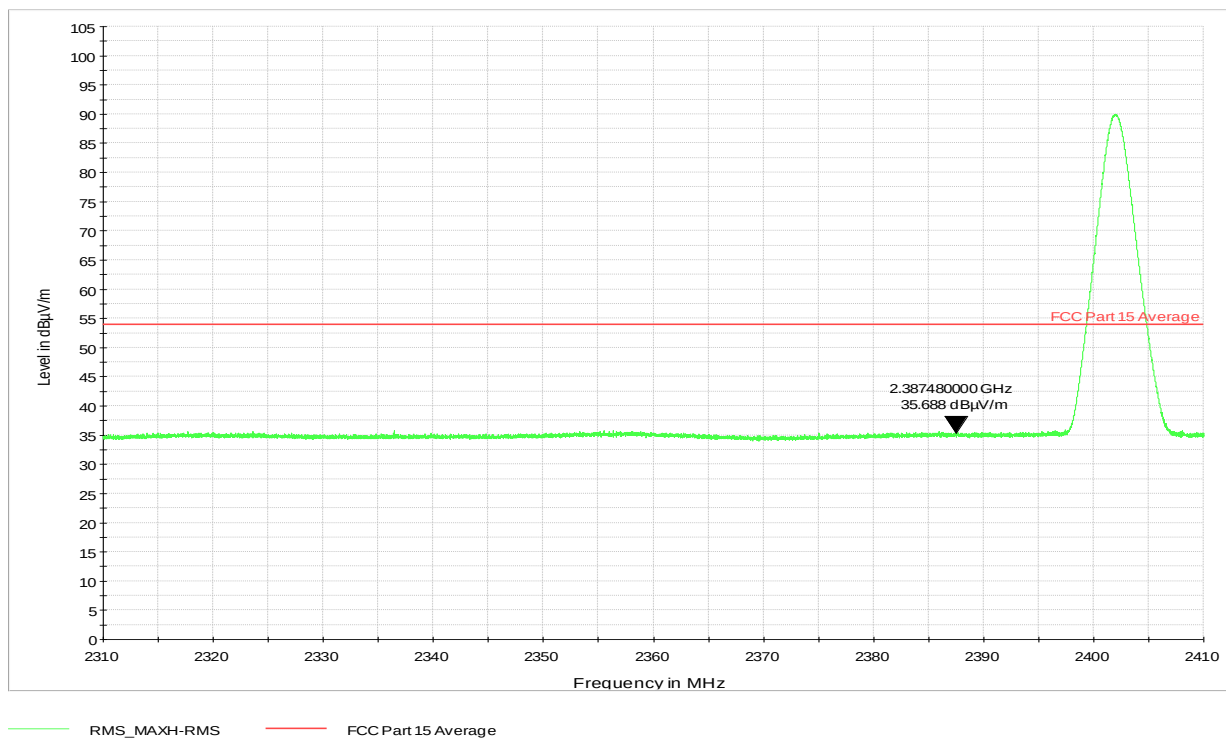
Plot 9-25. Radiated Spurious Emissions (Ch. 39) (7.9 - 18GHz)



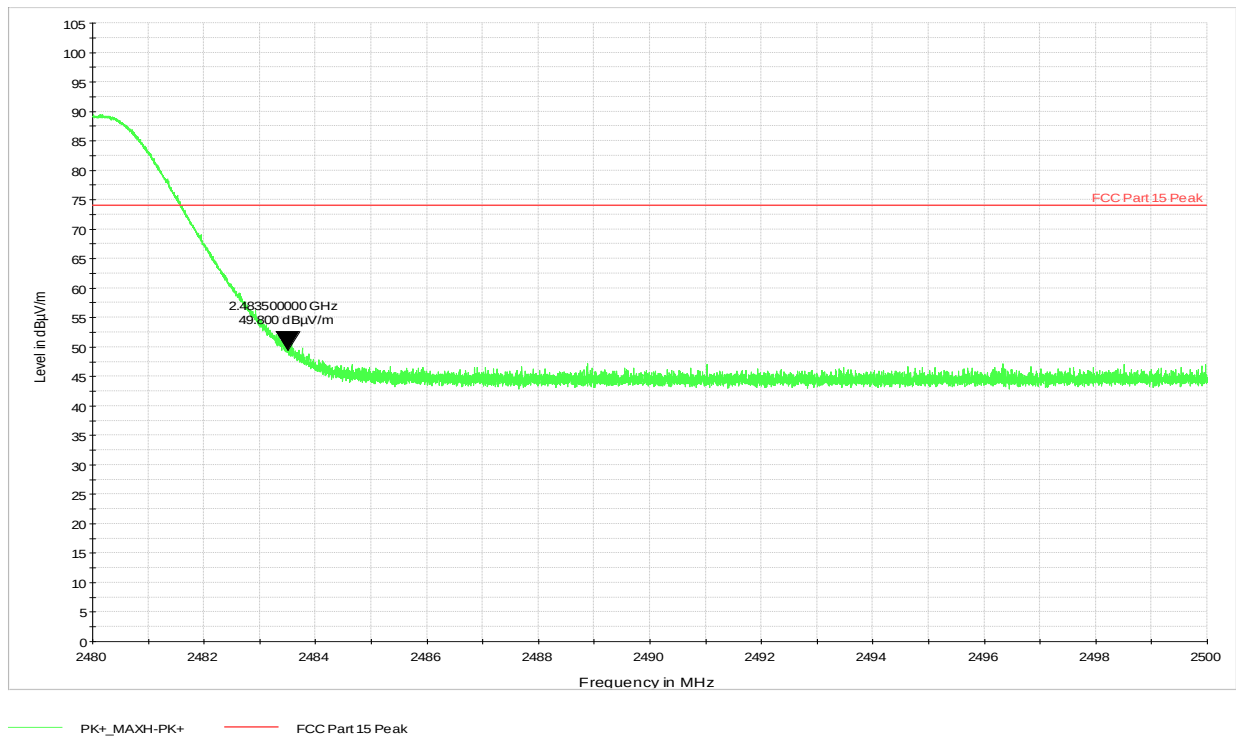
Plot 9-26. Radiated Spurious Emissions (Ch. 19) (18 – 26 GHz)



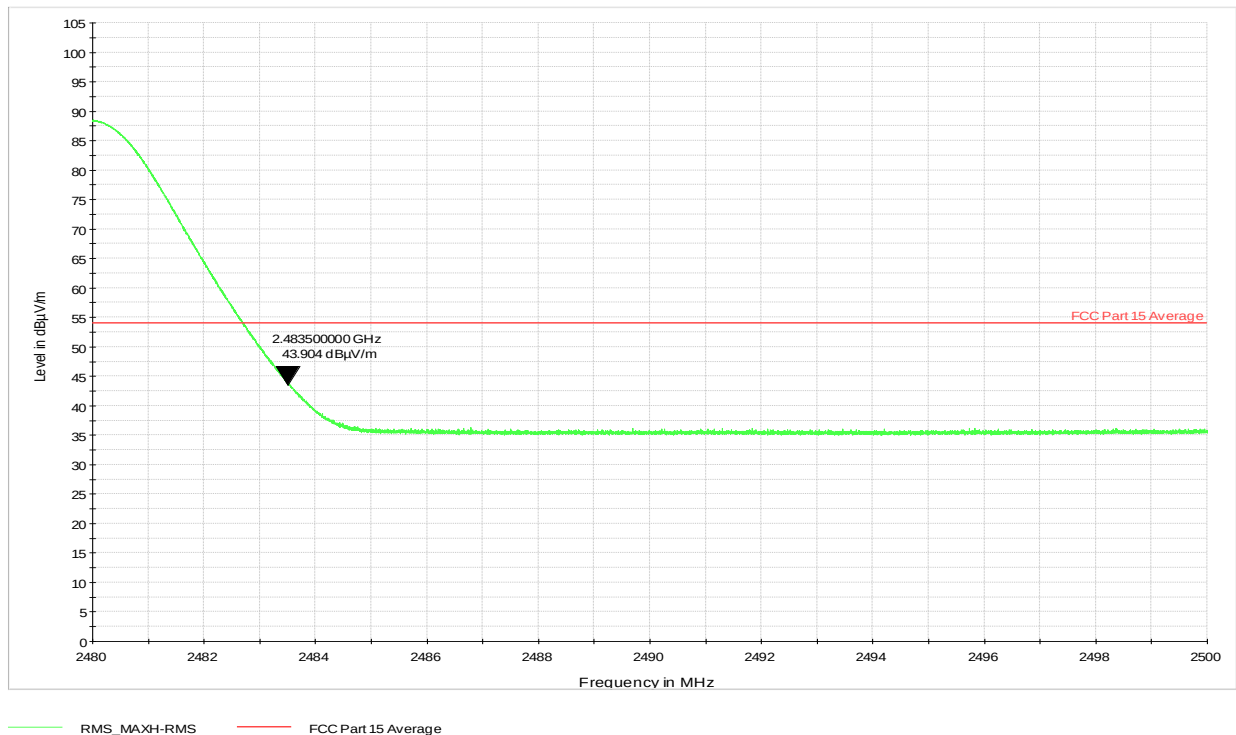
Plot 9-27. Radiated Restricted Band Edge (Ch. 0) Peak



Plot 9-28. Radiated Restricted Band Edge (Ch. 0) Average



Plot 9-29. Radiated Restricted Band Edge (Ch. 39) Peak

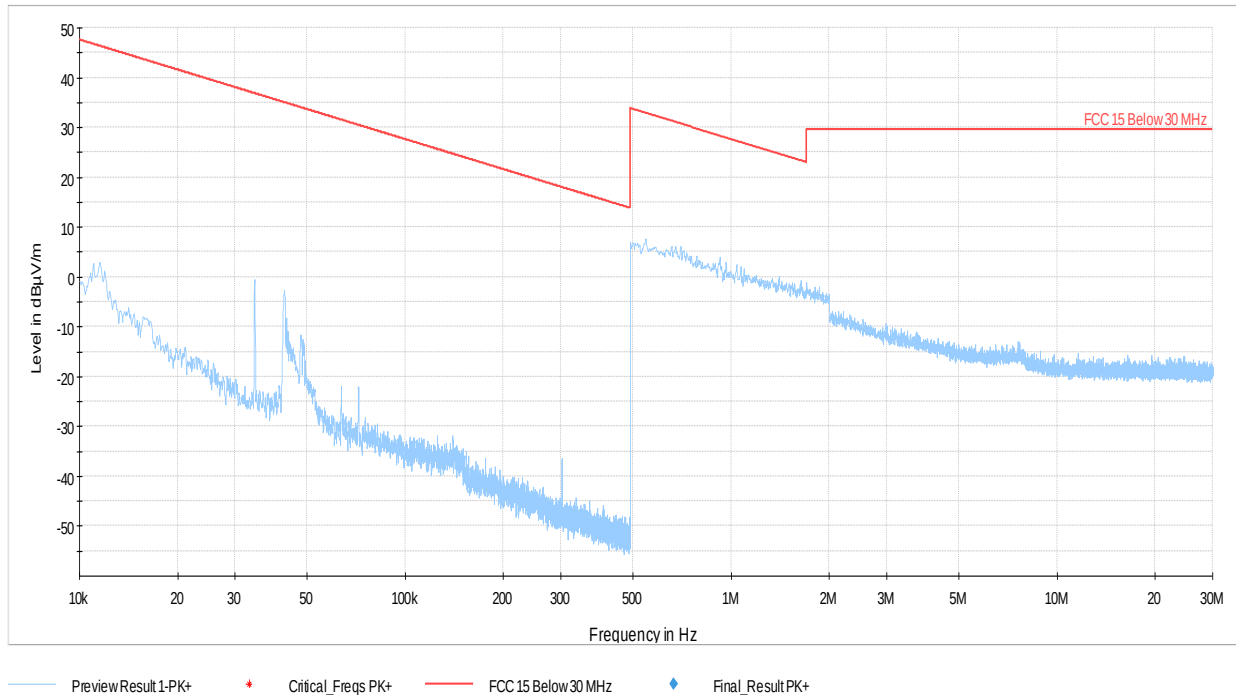


Plot 9-30. Radiated Restricted Band Edge (Ch. 39) Average

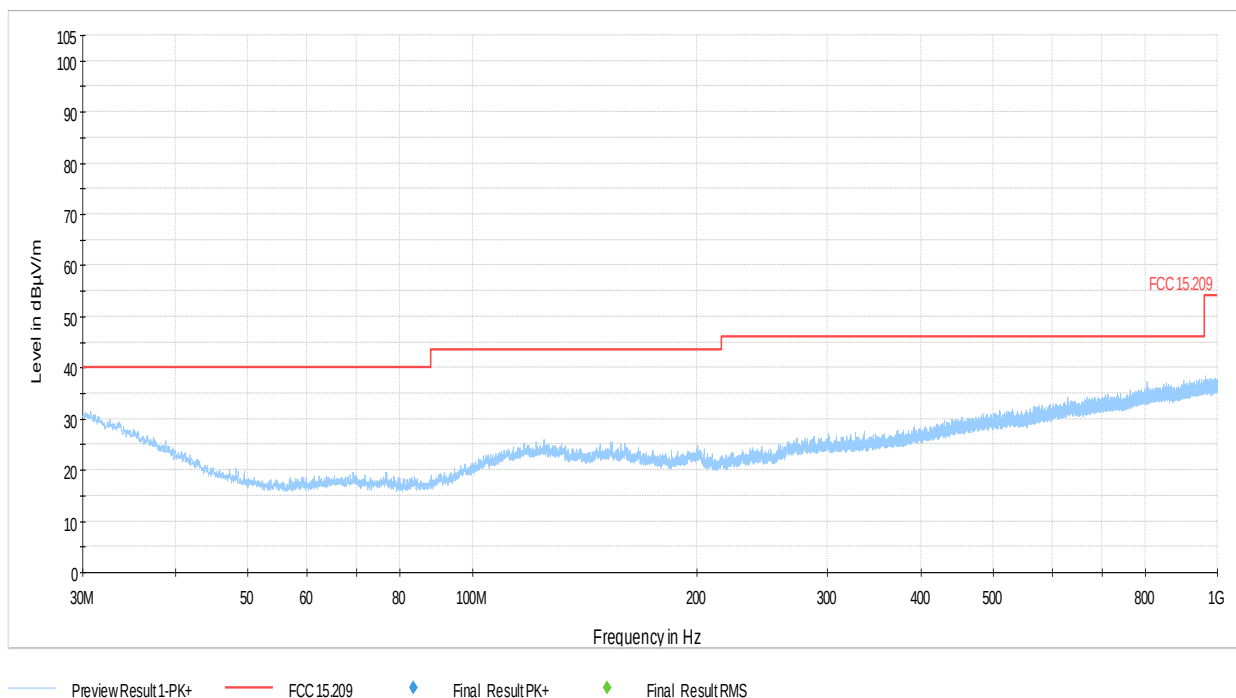
9.5.5.2 Medium size sample

Worst case results shown below.

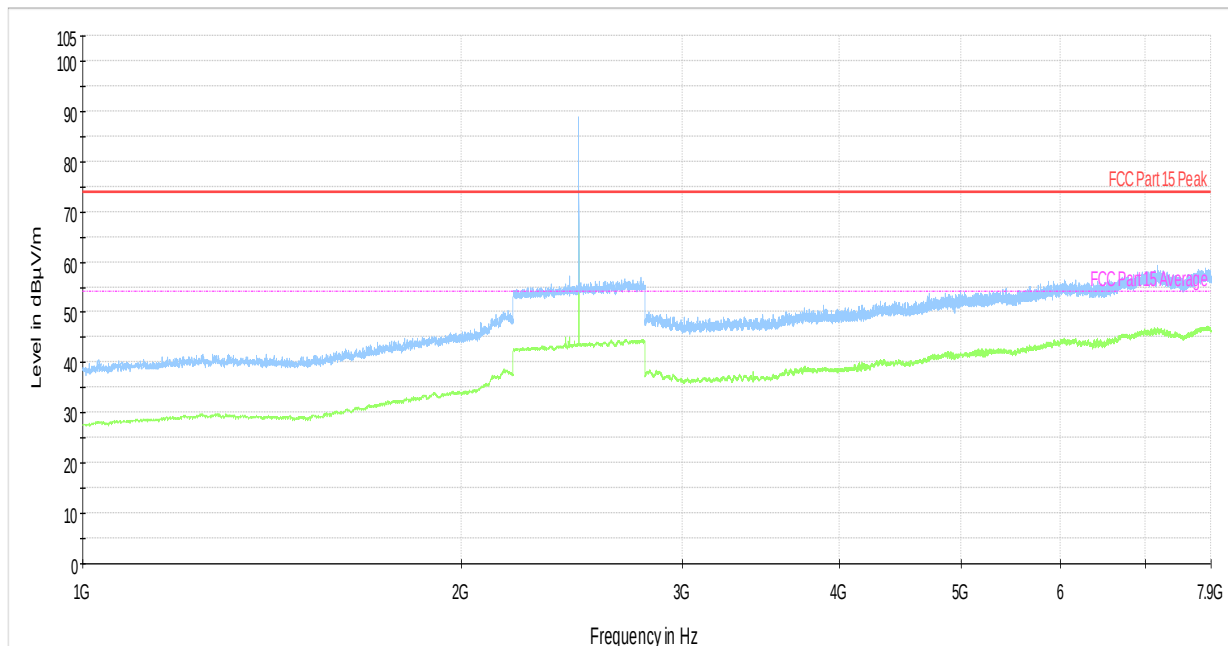
No significant emissions to report above noise floor and <6dB from limit.



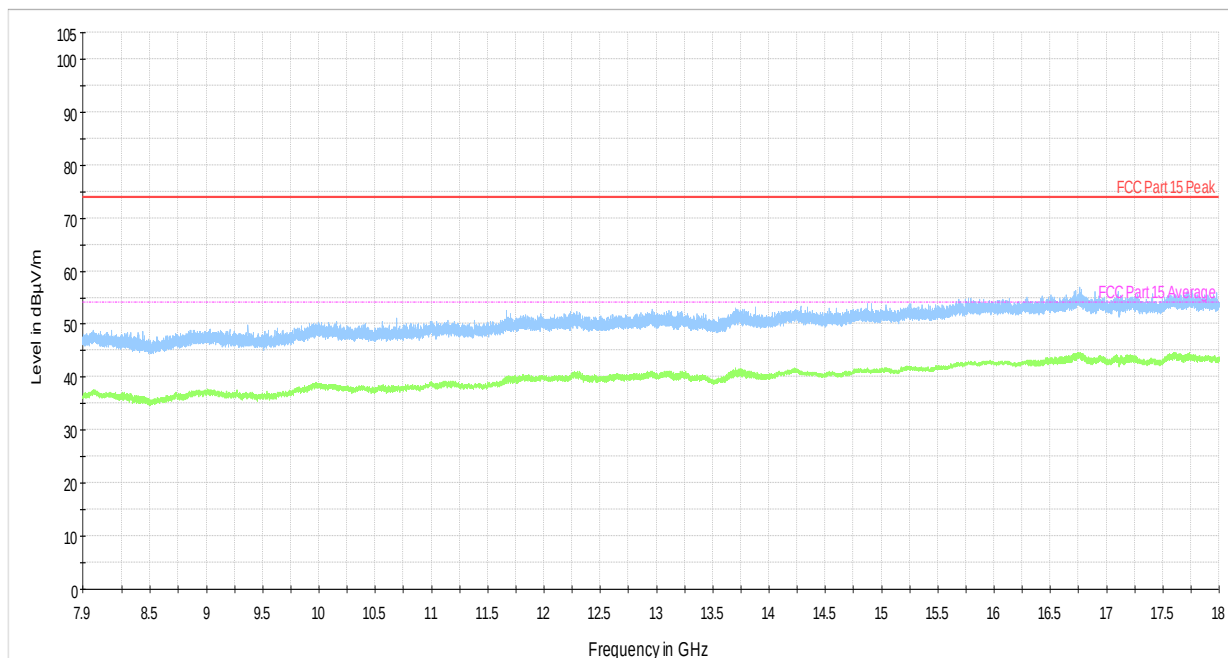
Plot 9-31. Radiated Spurious Emissions (Ch. 19) (Y axis) (10 kHz – 30 MHz)



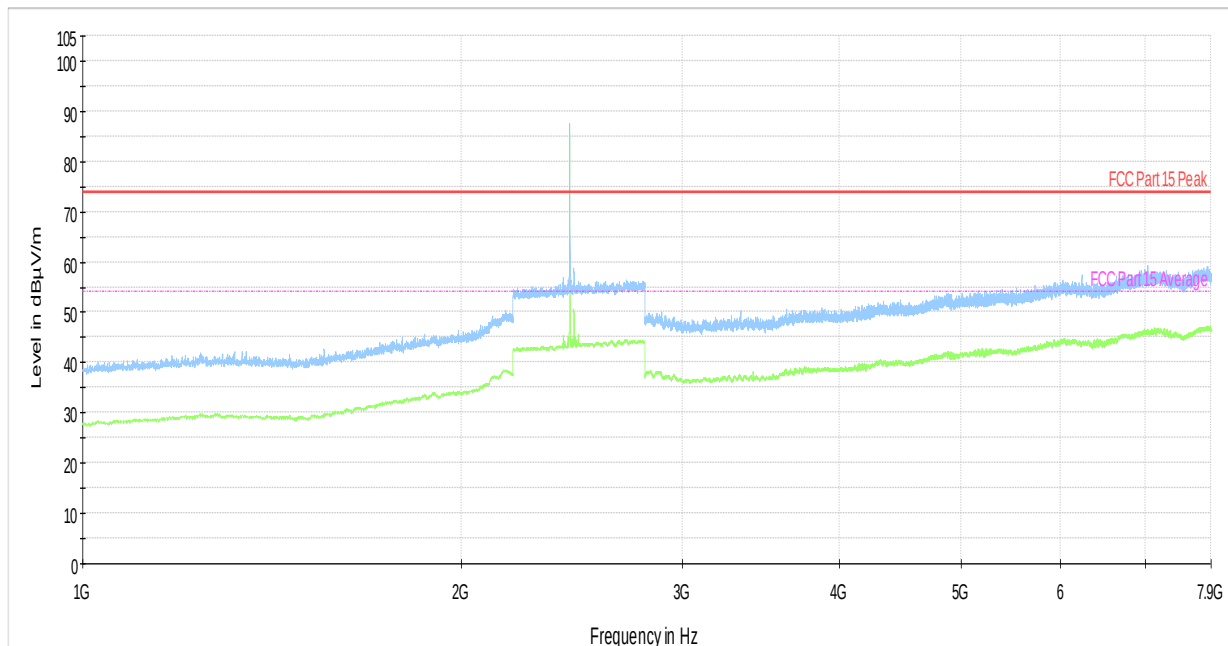
Plot 9-32. Radiated Spurious Emissions (Ch. 19) (30MHz - 1GHz)



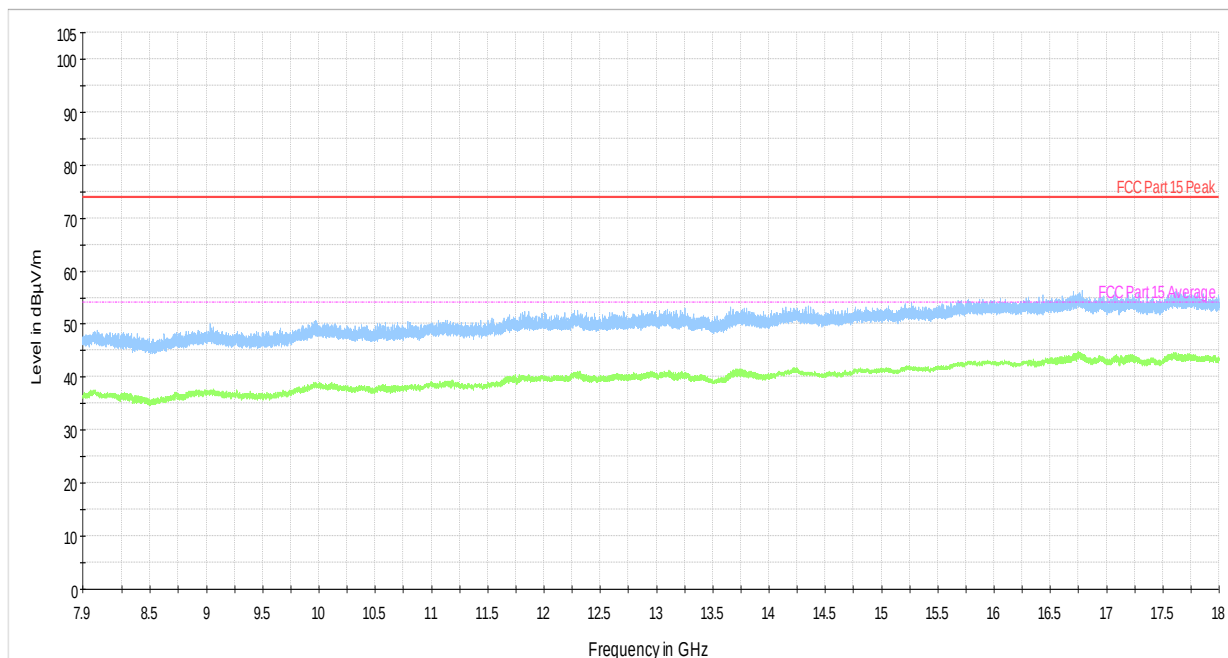
Plot 9-33. Radiated Spurious Emissions (Ch. 0) (1-7.9GHz)



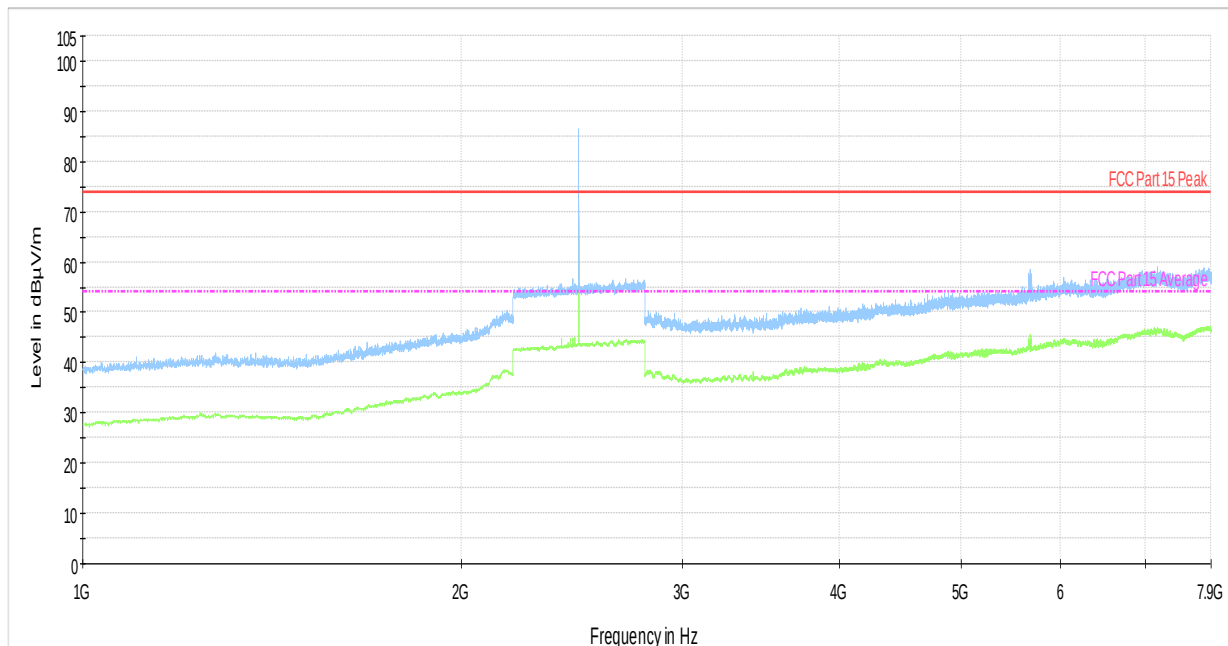
Plot 9-34. Radiated Spurious Emissions (Ch. 0) (7.9 - 18GHz)



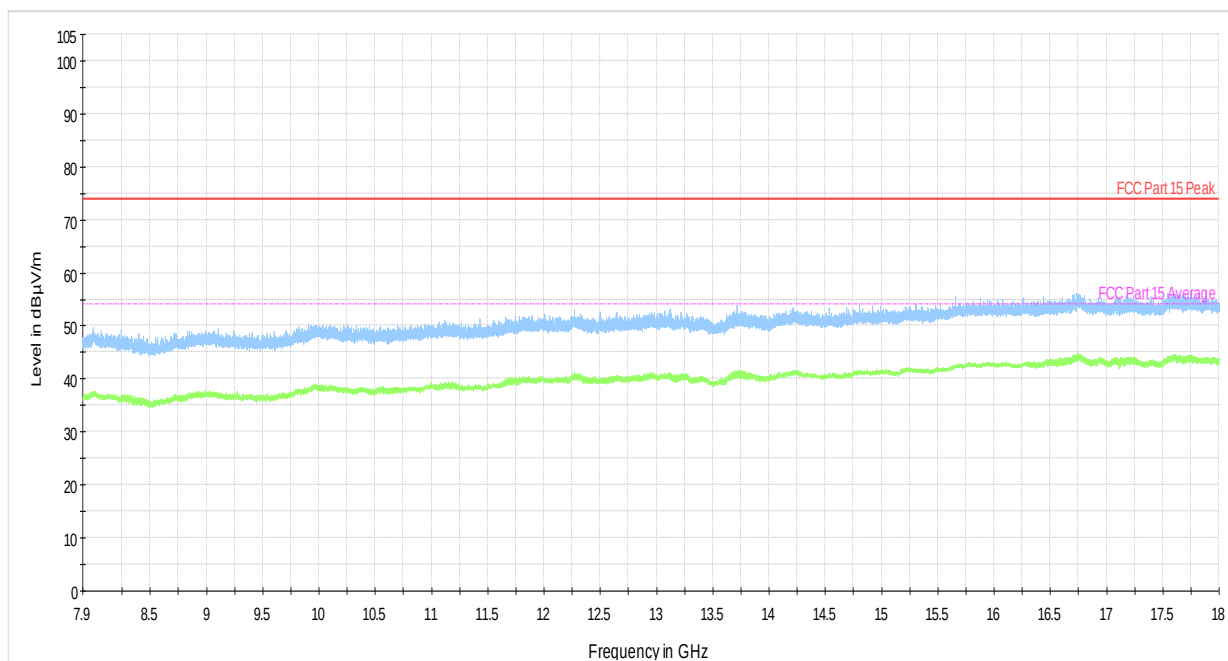
Plot 9-35. Radiated Spurious Emissions (Ch. 19) (1-7.9GHz)



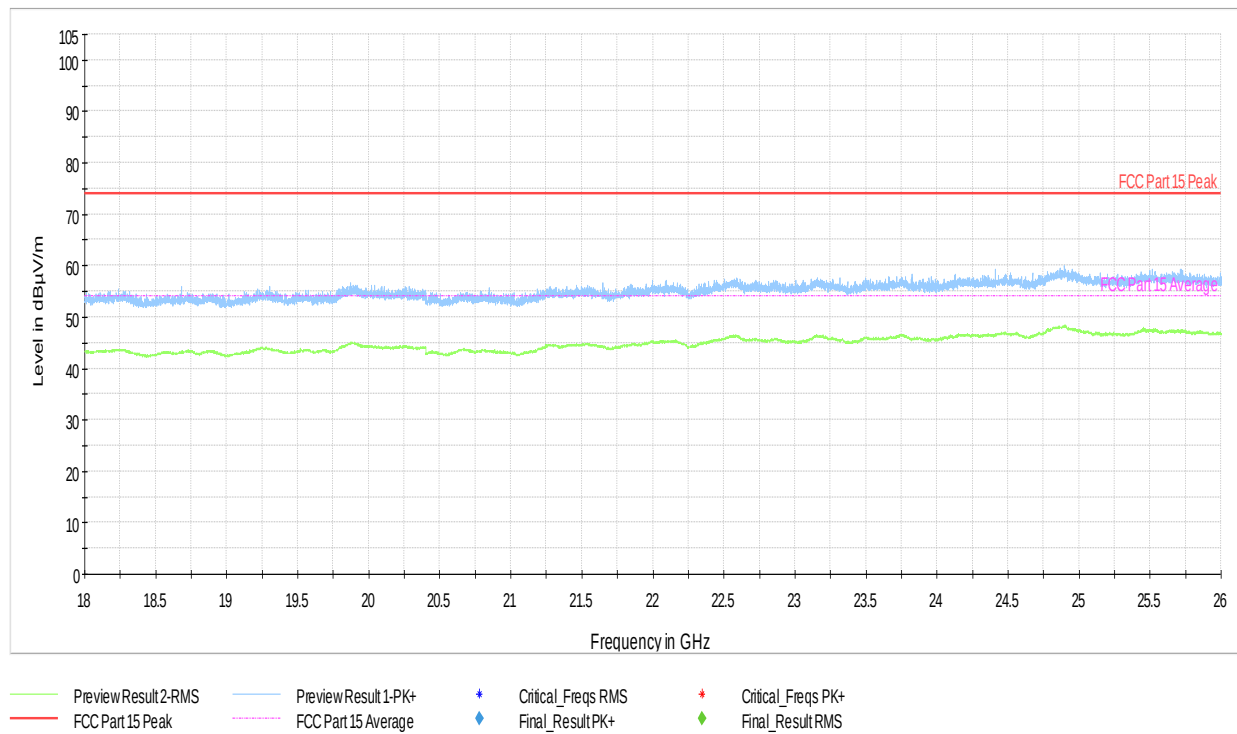
Plot 9-36. Radiated Spurious Emissions (Ch. 19) (7.9 - 18GHz)



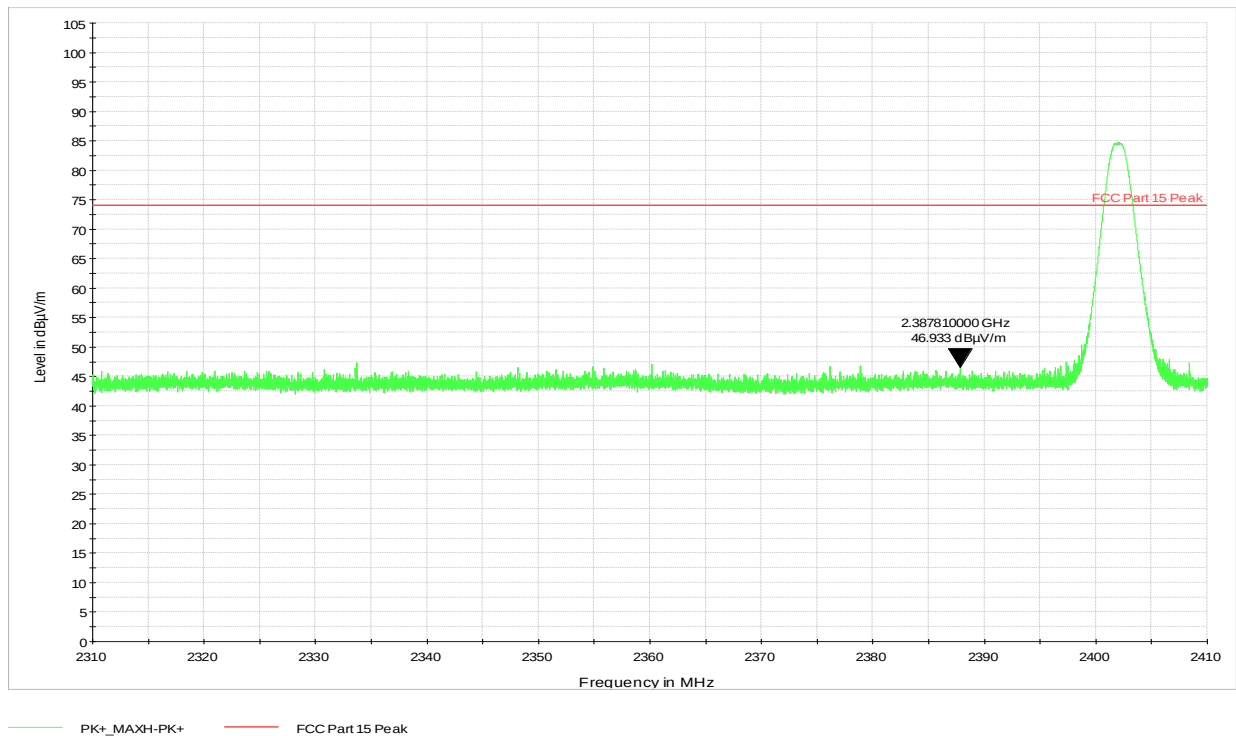
Plot 9-37. Radiated Spurious Emissions (Ch. 39) (1-7.9GHz)



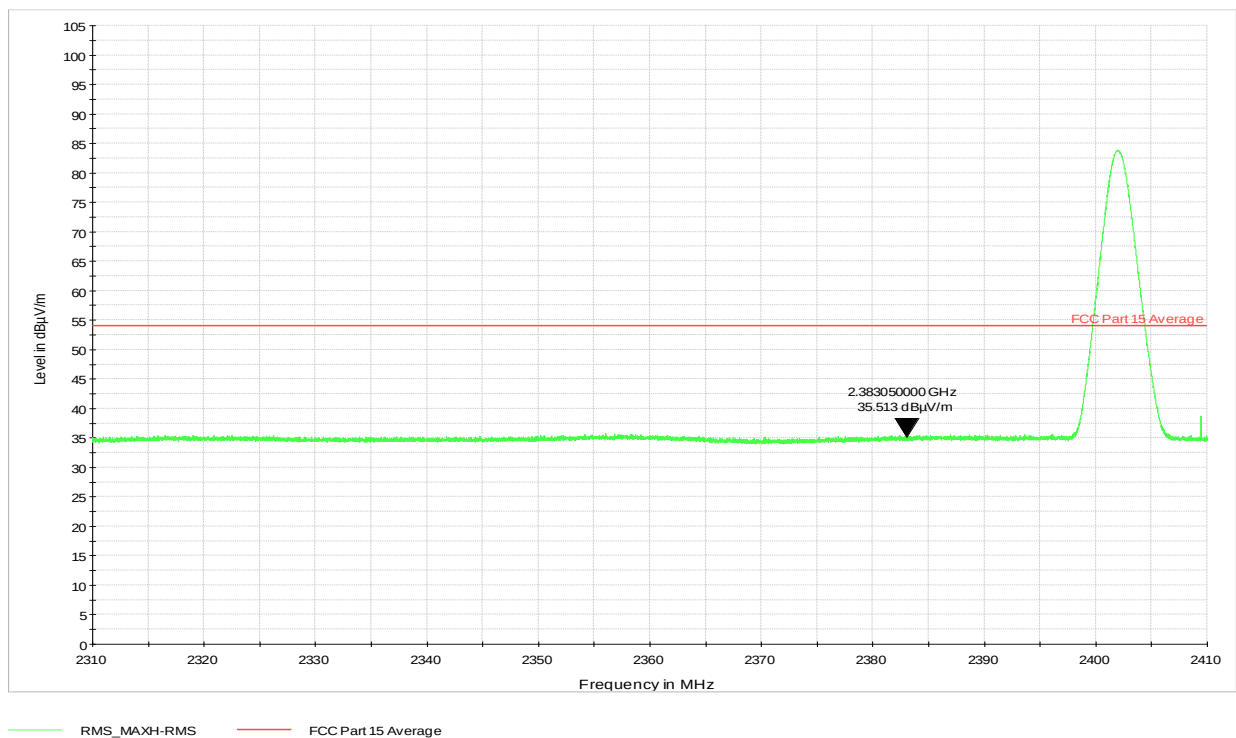
Plot 9-38. Radiated Spurious Emissions (Ch. 39) (7.9 - 18GHz)



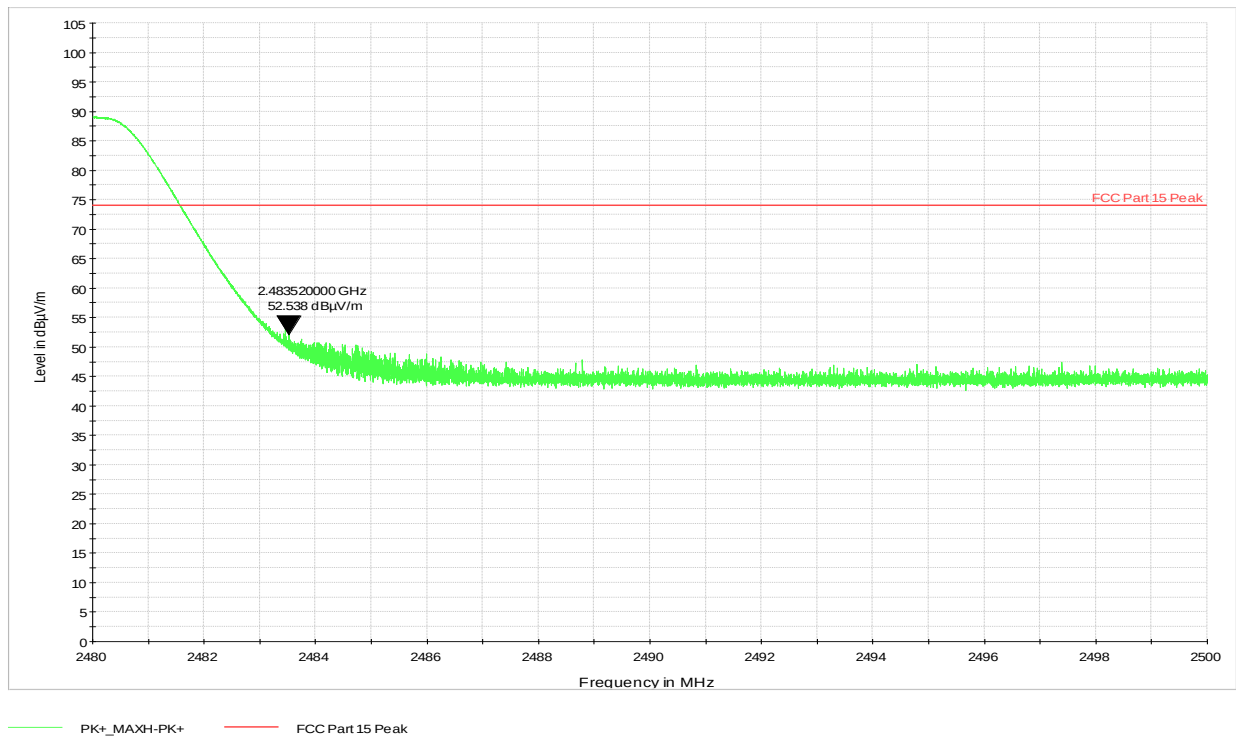
Plot 9-39. Radiated Spurious Emissions (Ch. 19) (18 – 26 GHz)



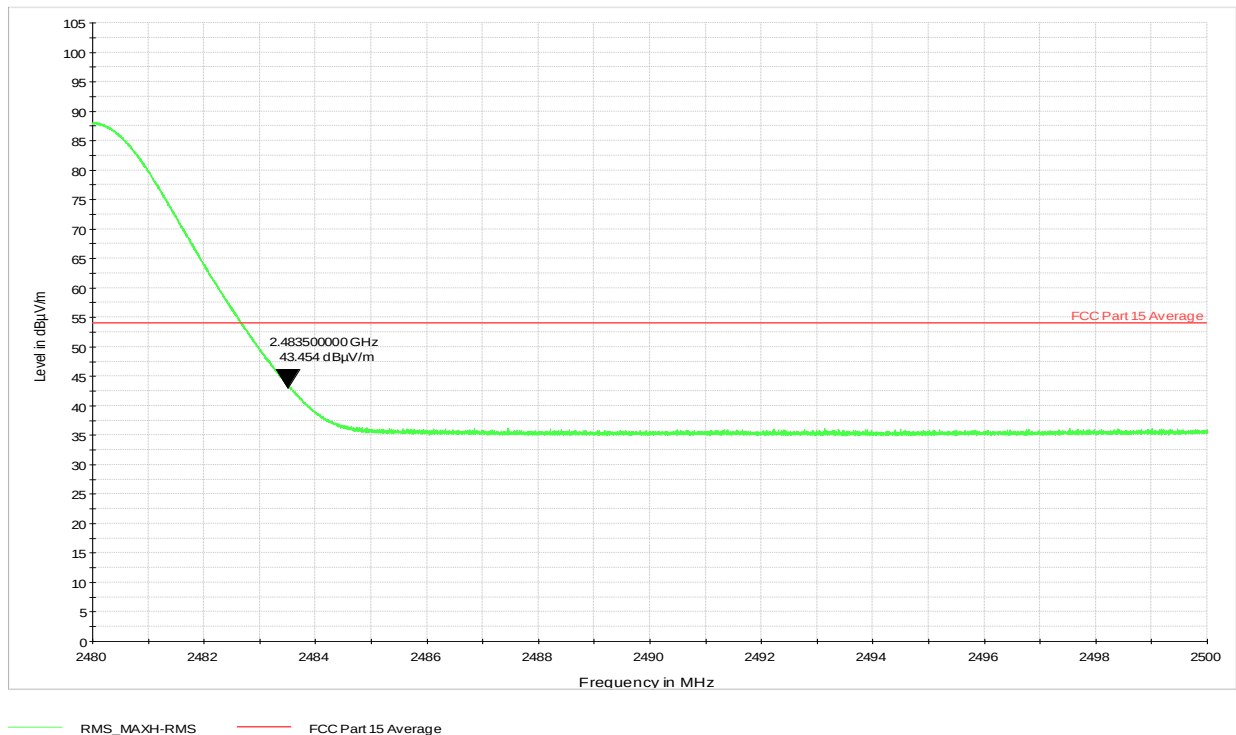
Plot 9-40. Radiated Restricted Band Edge (Ch. 0) Peak



Plot 9-41. Radiated Restricted Band Edge (Ch. 0) Average



Plot 9-42. Radiated Restricted Band Edge (Ch. 39) Peak

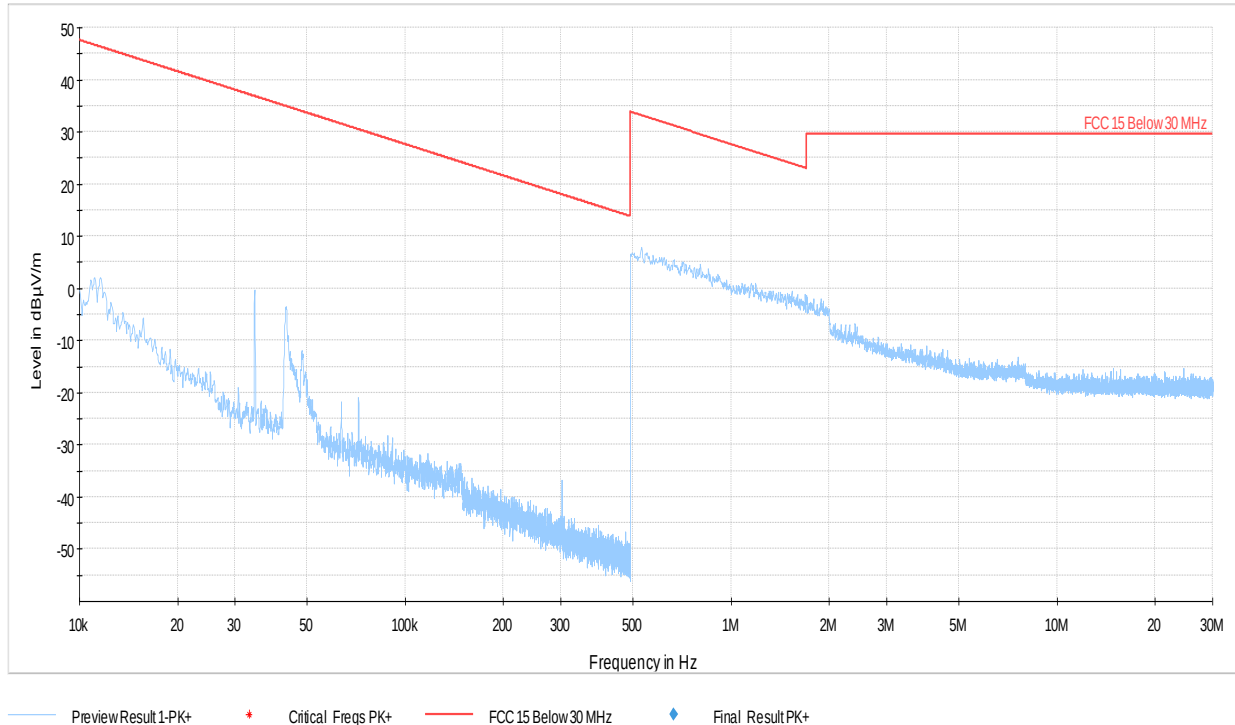


Plot 9-43. Radiated Restricted Band Edge (Ch. 39) Average

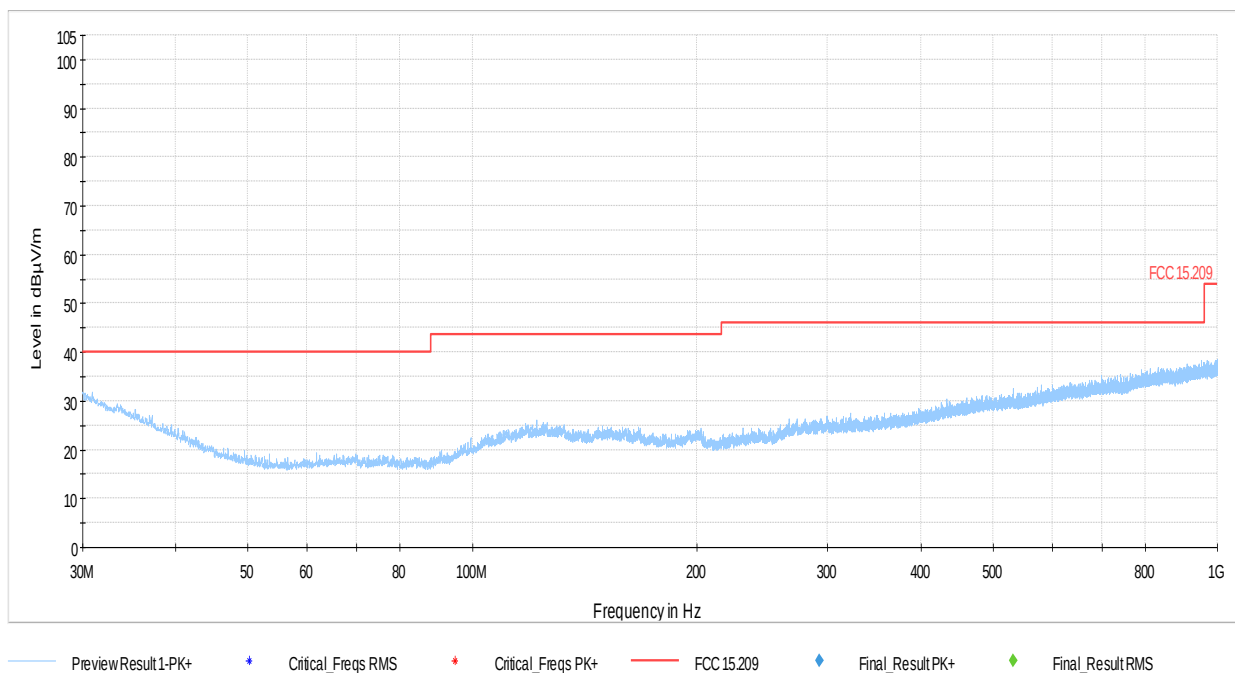
9.5.5.3 Large size sample

Worst case results shown below.

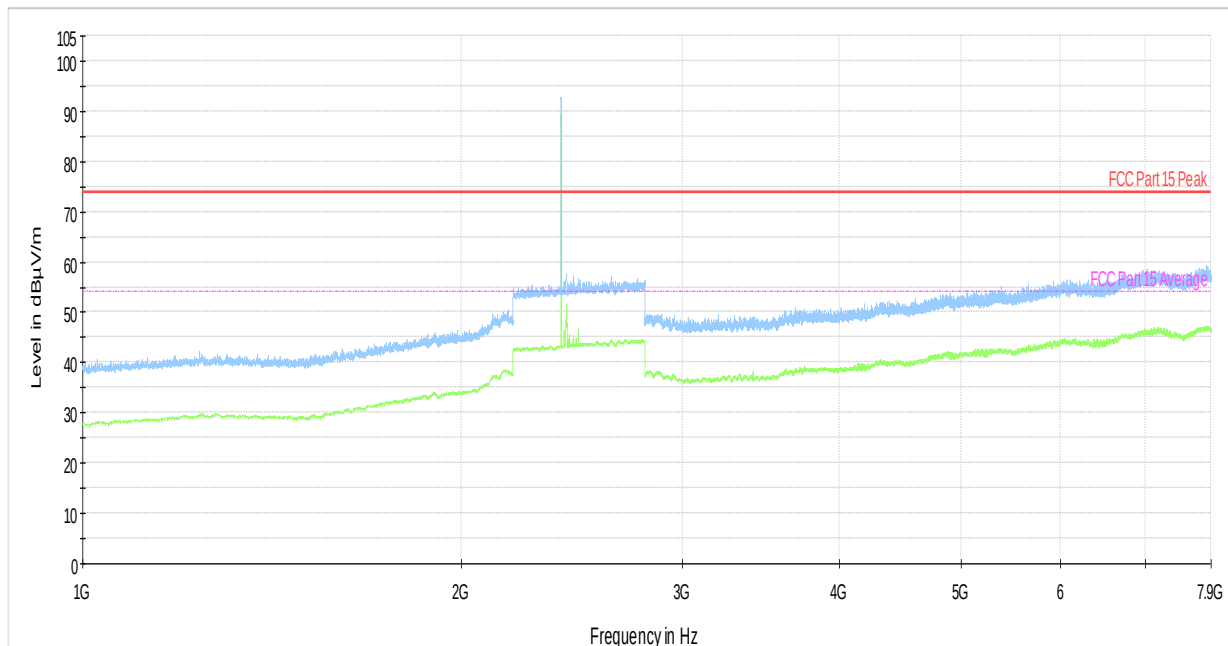
No significant emissions to report above noise floor and <6dB from limit.



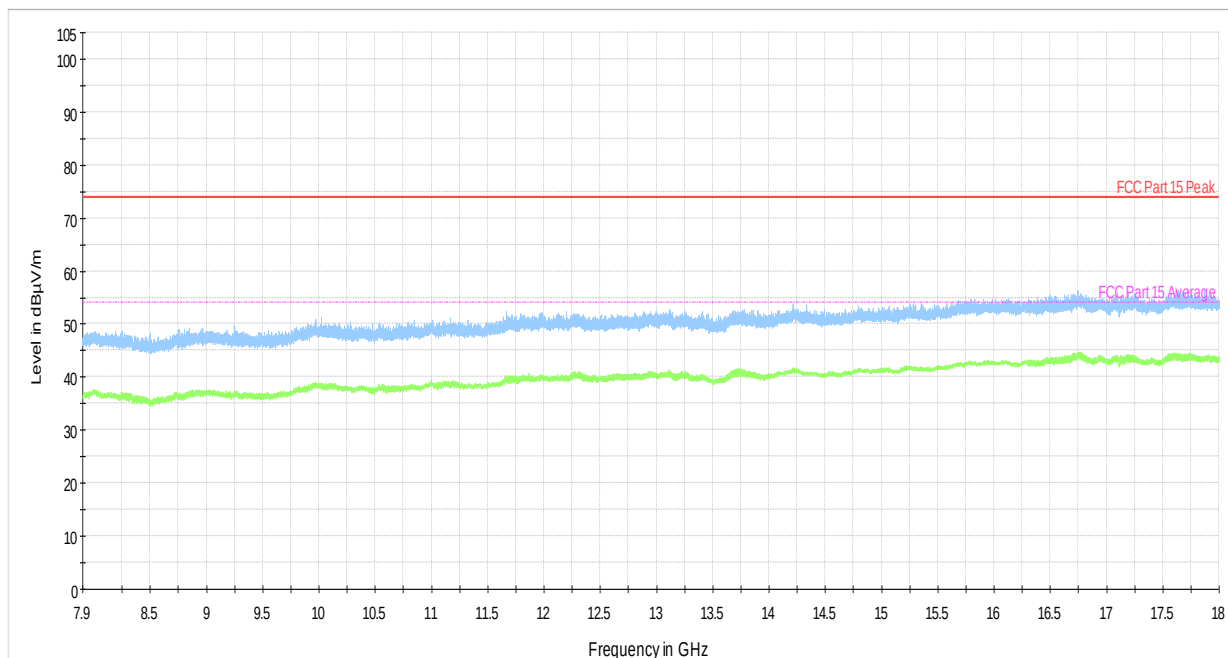
Plot 9-44. Radiated Spurious Emissions (Ch. 19) (Y axis) (10 kHz – 30 MHz)



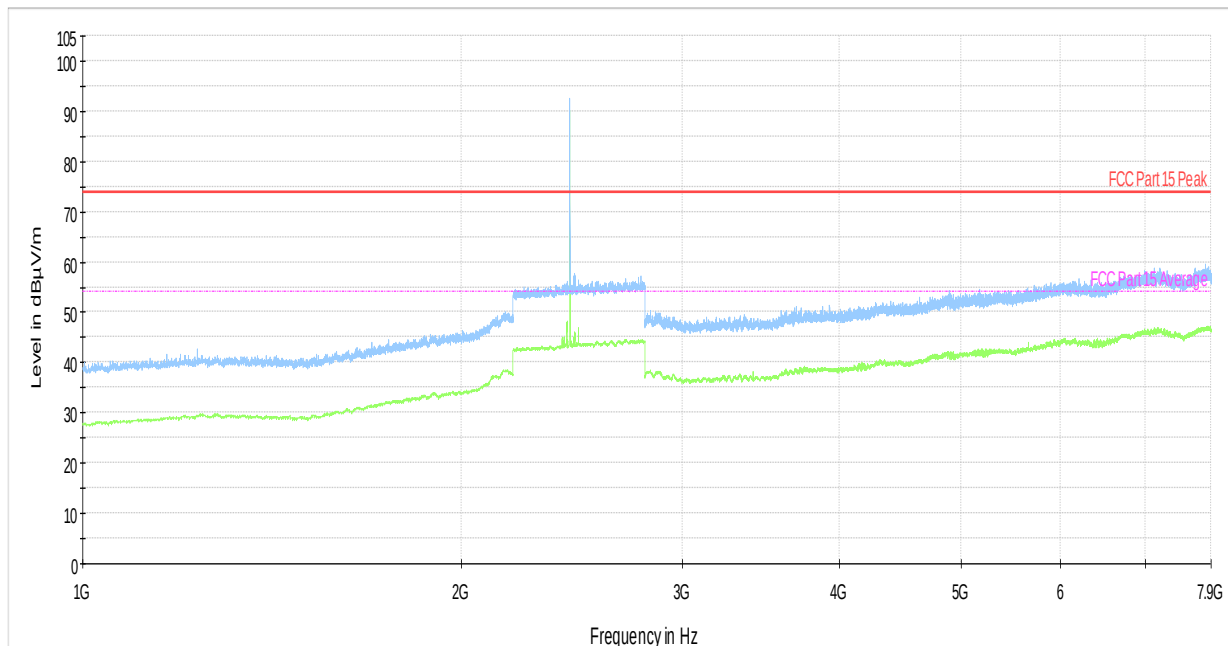
Plot 9-45. Radiated Spurious Emissions (Ch. 19) (30MHz - 1GHz)



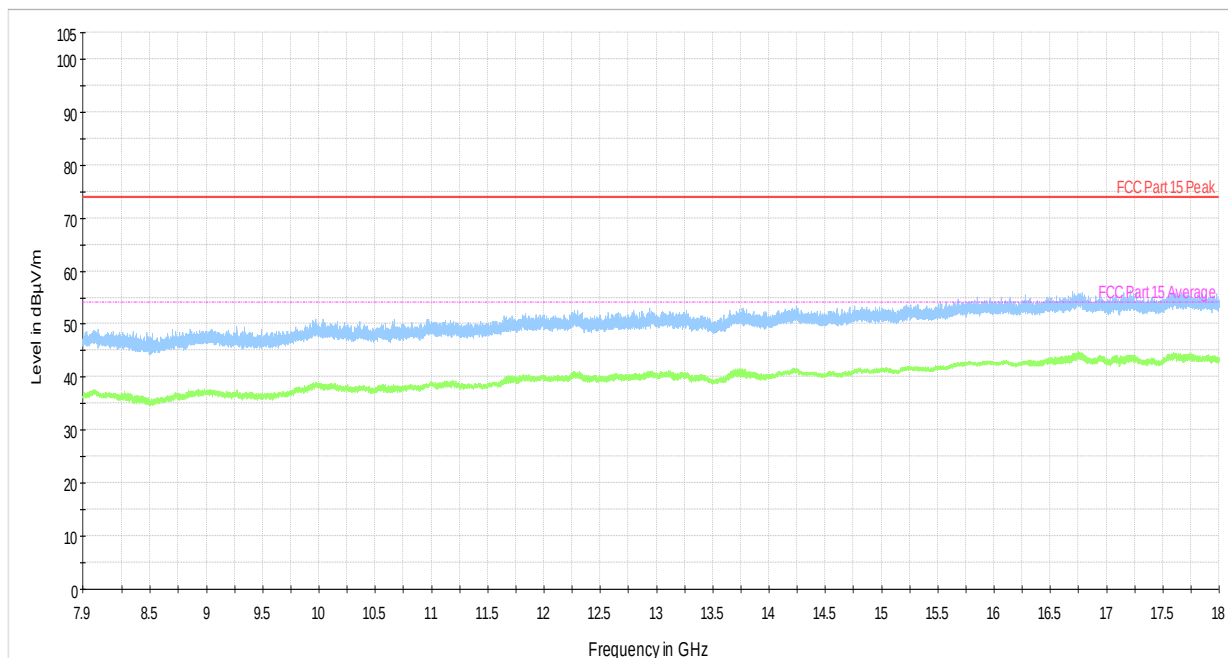
Plot 9-46. Radiated Spurious Emissions (Ch. 0) (1-7.9GHz)



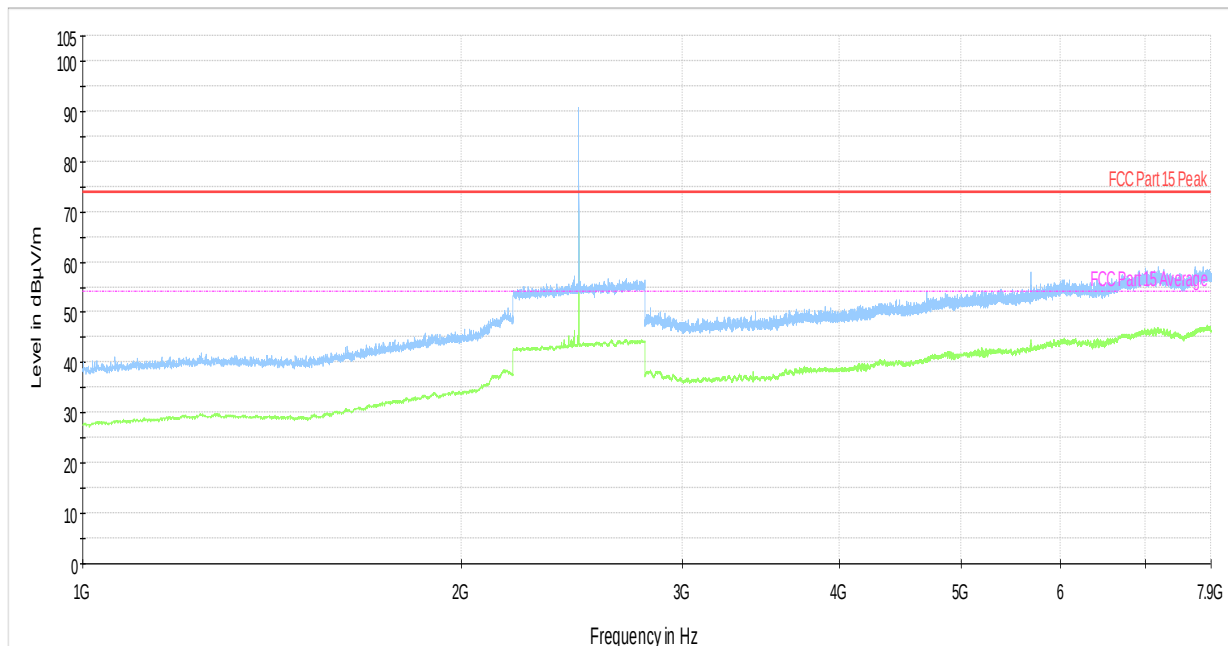
Plot 9-47. Radiated Spurious Emissions (Ch. 0) (7.9 - 18GHz)



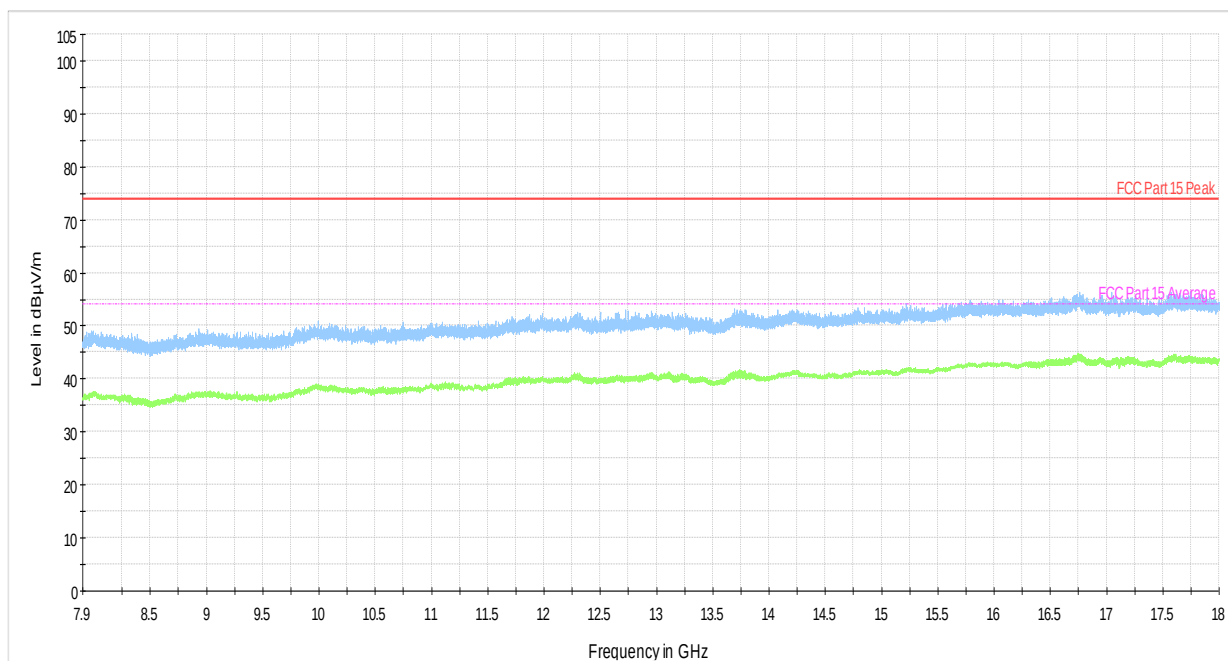
Plot 9-48. Radiated Spurious Emissions (Ch. 19) (1-7.9GHz)



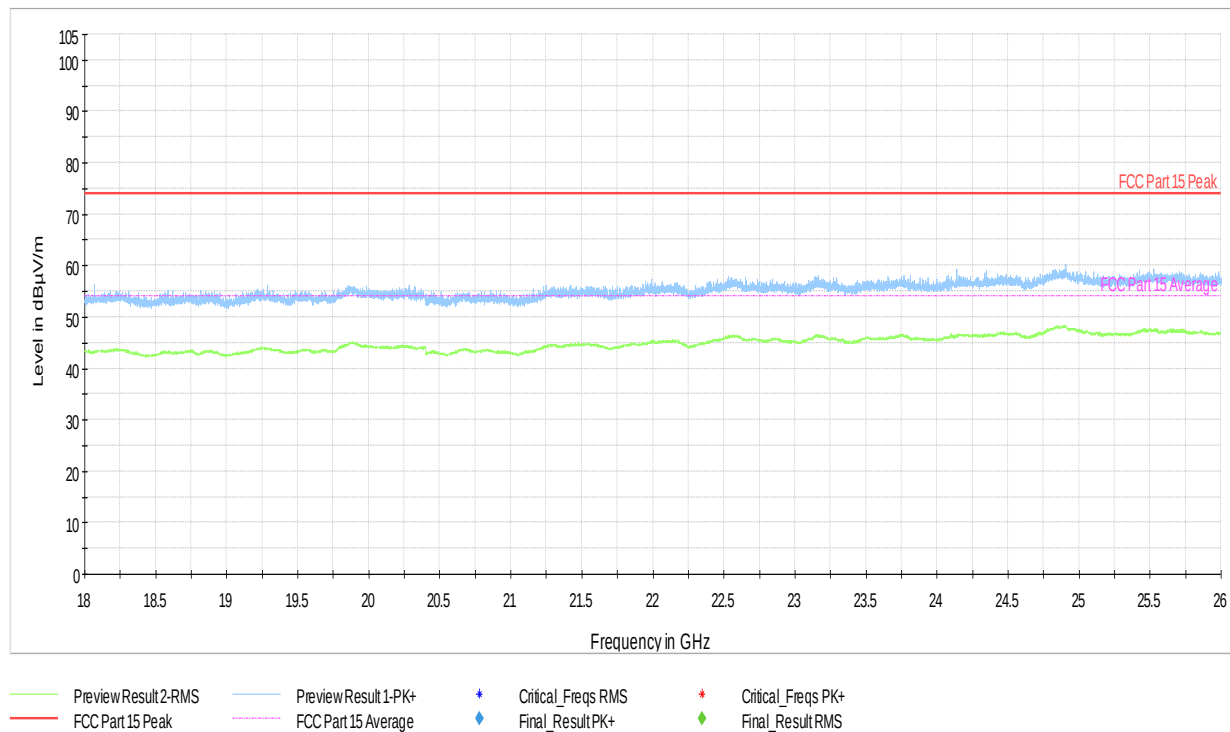
Plot 9-49. Radiated Spurious Emissions (Ch. 19) (7.9 - 18GHz)



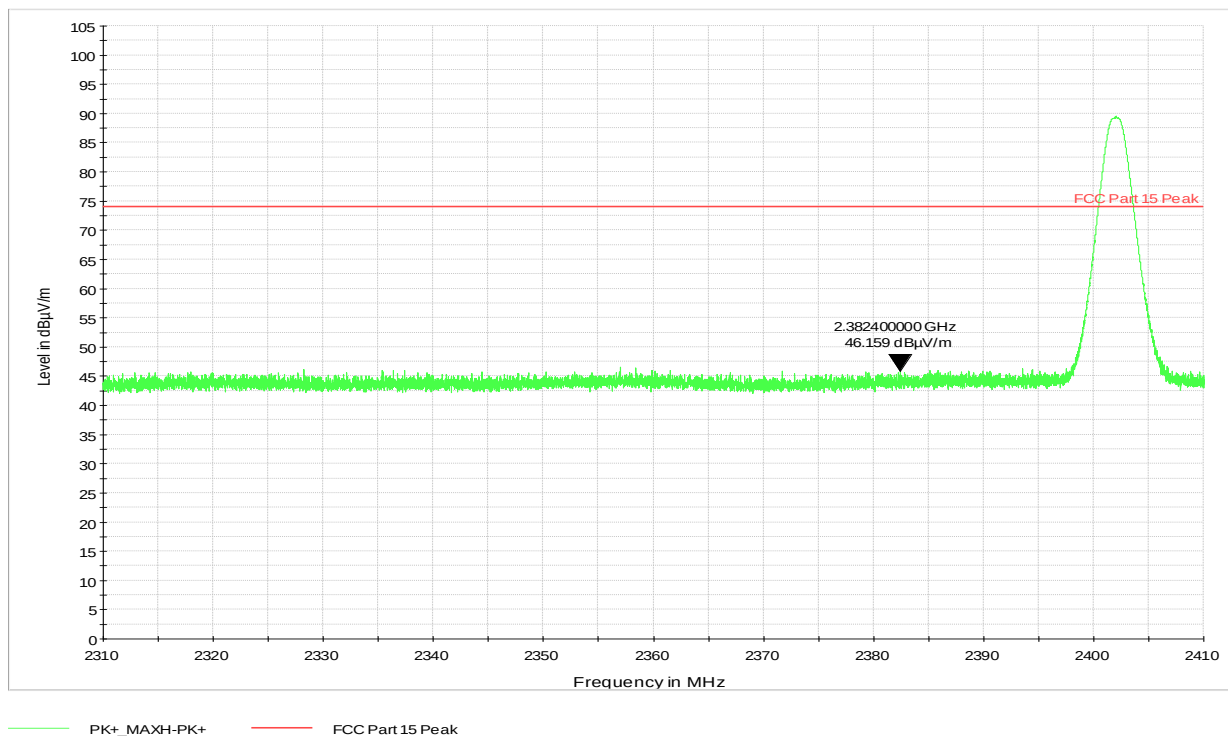
Plot 9-50. Radiated Spurious Emissions (Ch. 39) (1-7.9GHz)



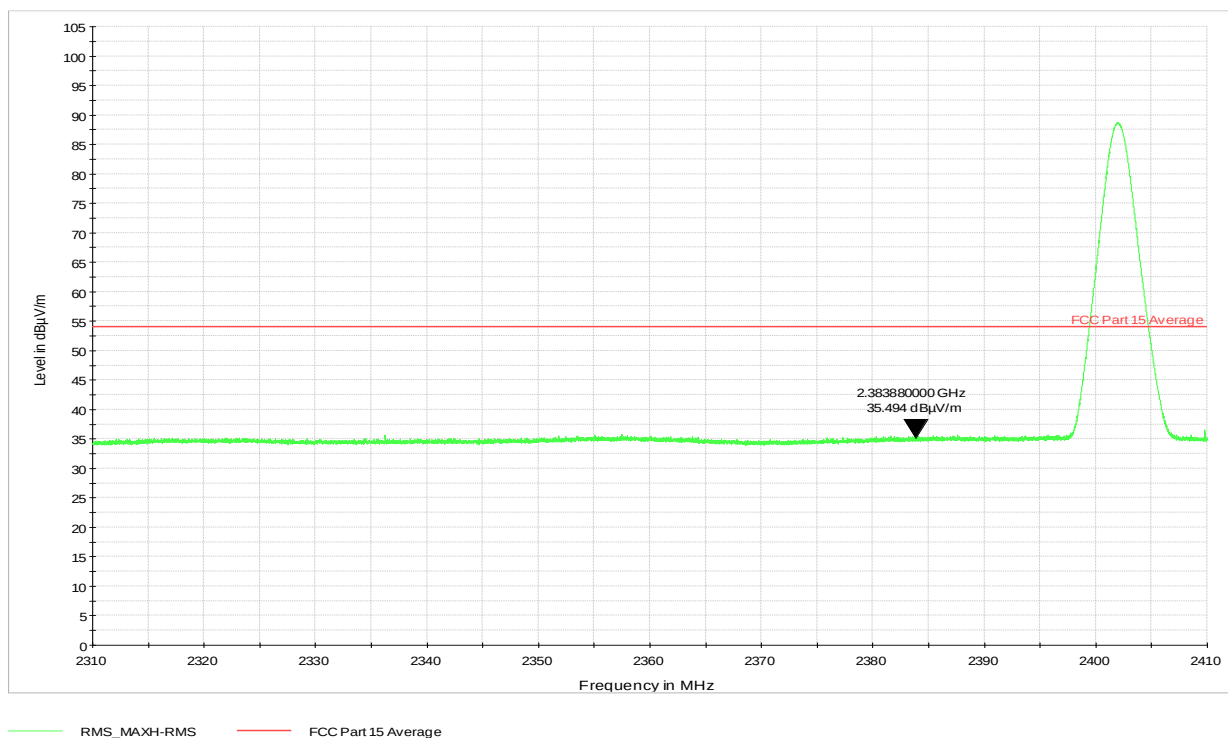
Plot 9-51. Radiated Spurious Emissions (Ch. 39) (7.9 - 18GHz)



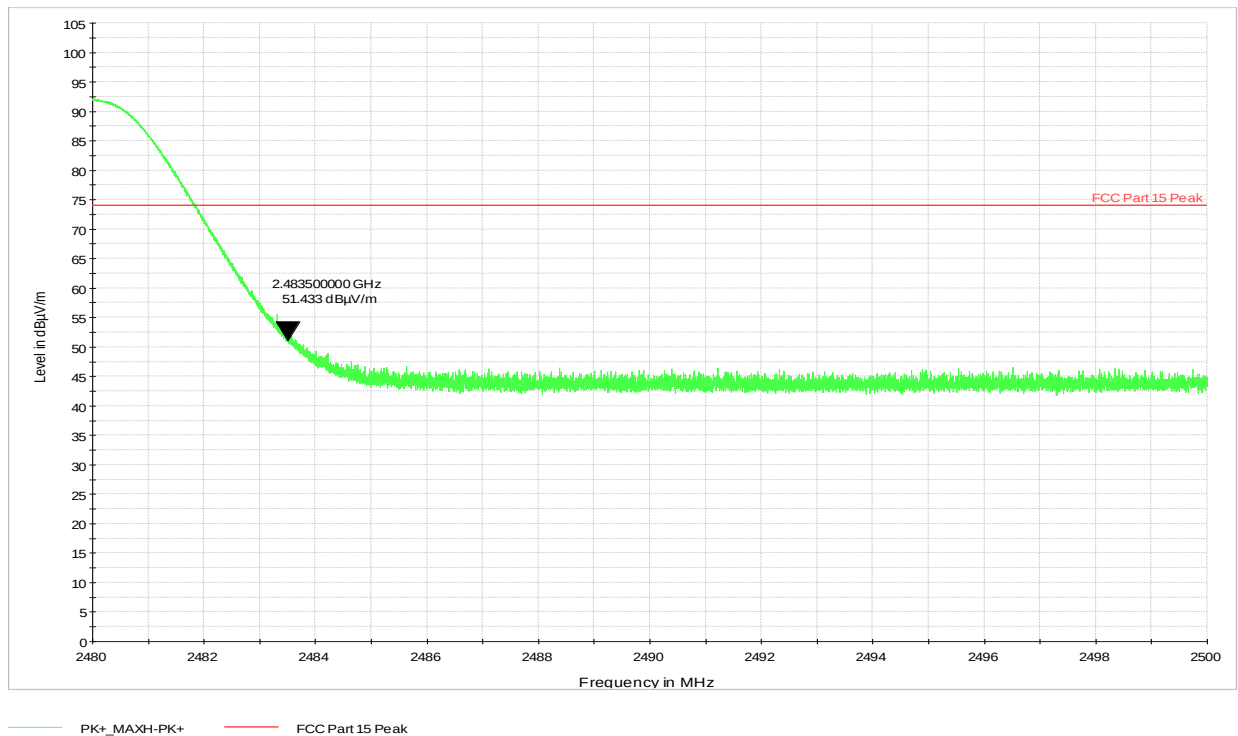
Plot 9-52. Radiated Spurious Emissions (Ch. 19) (18 – 26 GHz)



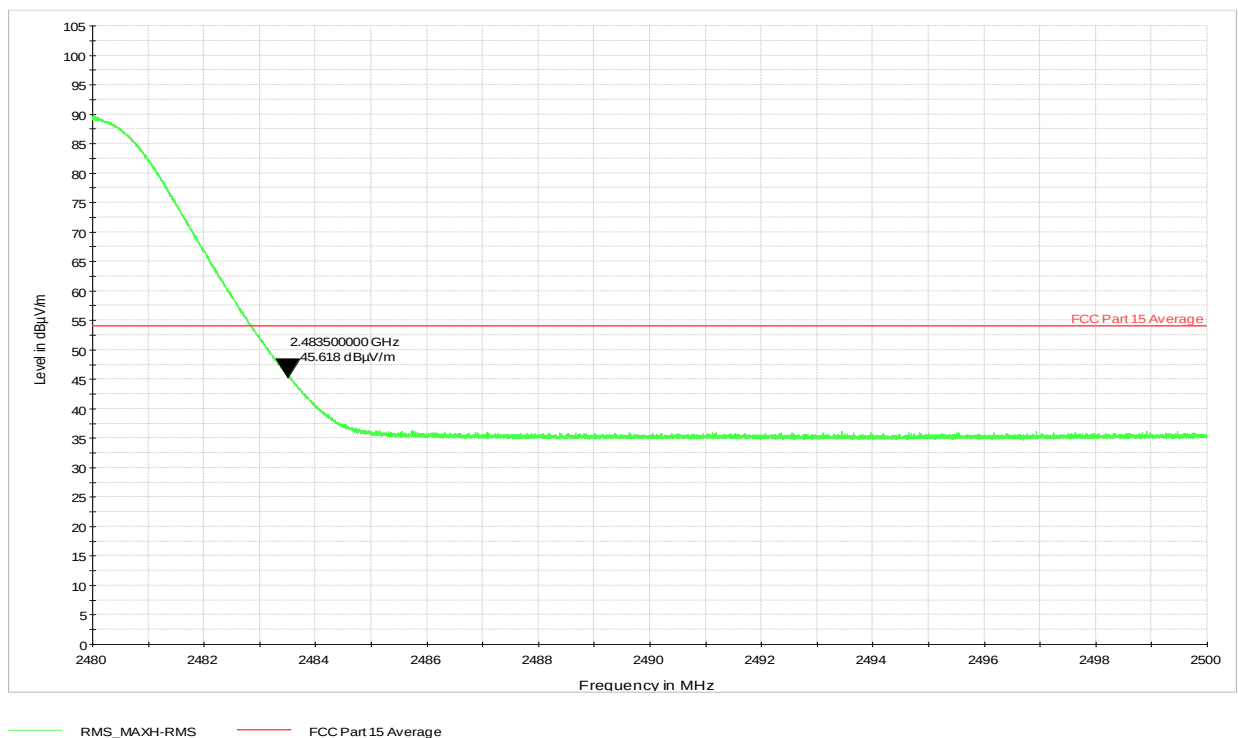
Plot 9-53. Radiated Restricted Band Edge (Ch. 0) Peak



Plot 9-53. Radiated Restricted Band Edge (Ch. 0) Average



Plot 9-54. Radiated Restricted Band Edge (Ch. 39) Peak



Plot 9-55. Radiated Restricted Band Edge (Ch. 39) Average

9.6 AC LINE CONDUCTED EMISSIONS

9.6.1 Test Requirement:

FCC CFR 47 Rule Part 15.207

9.6.2 Test Method:

Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with the power cords that are used under normal operating conditions. These measurements are made using a LISN (Line Impedance Stabilization Network). AC powered peripherals are attached to a second LISN with the 50 ohm measuring port terminated by a 50 ohm resistive load.

Sample Calculation:

Conducted Emissions: Adjusted Level = Measured Level + LISN Factor + Cable Factor + External Attenuation

Eg. Emissions at 5 MHz= 27.9+10.03+0.12= 38.05 dBμV

9.6.3 Limits:

FCC CFR 47 Rule Part 15.207

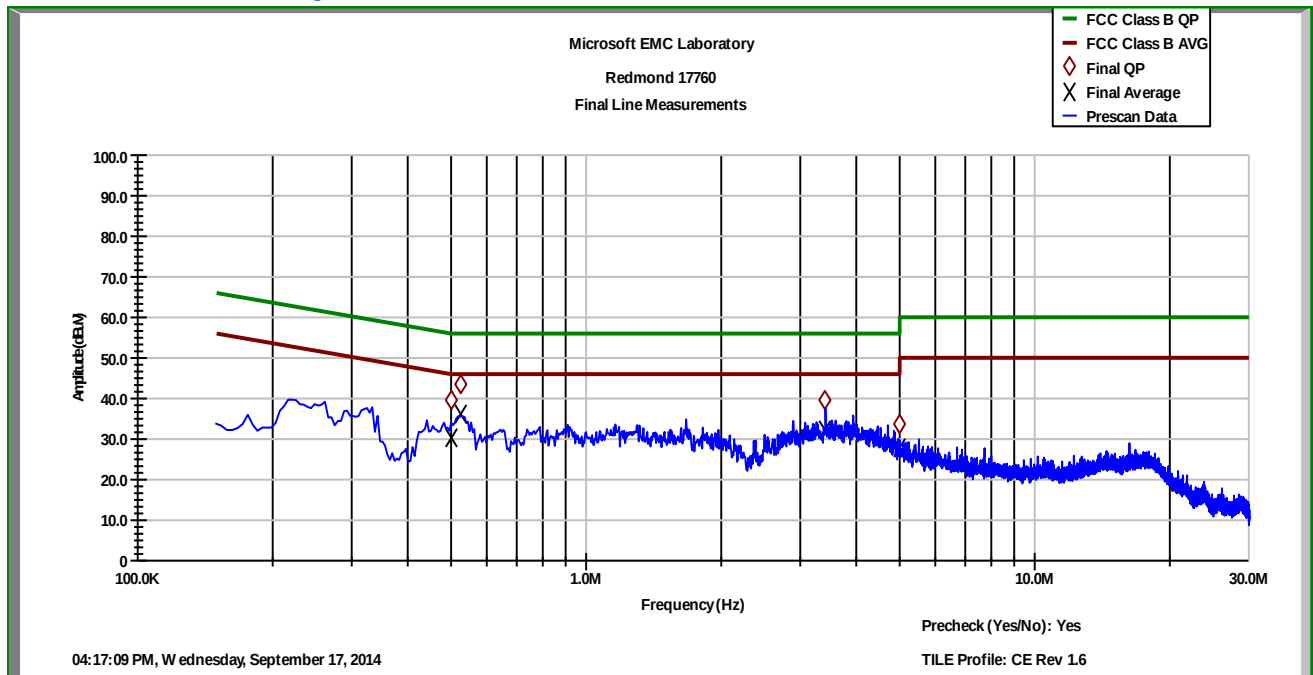
Frequency of emissions (MHz)	Quasi Peak (dBμV)	Average (dBμV)
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

9.6.4 Test Equipment

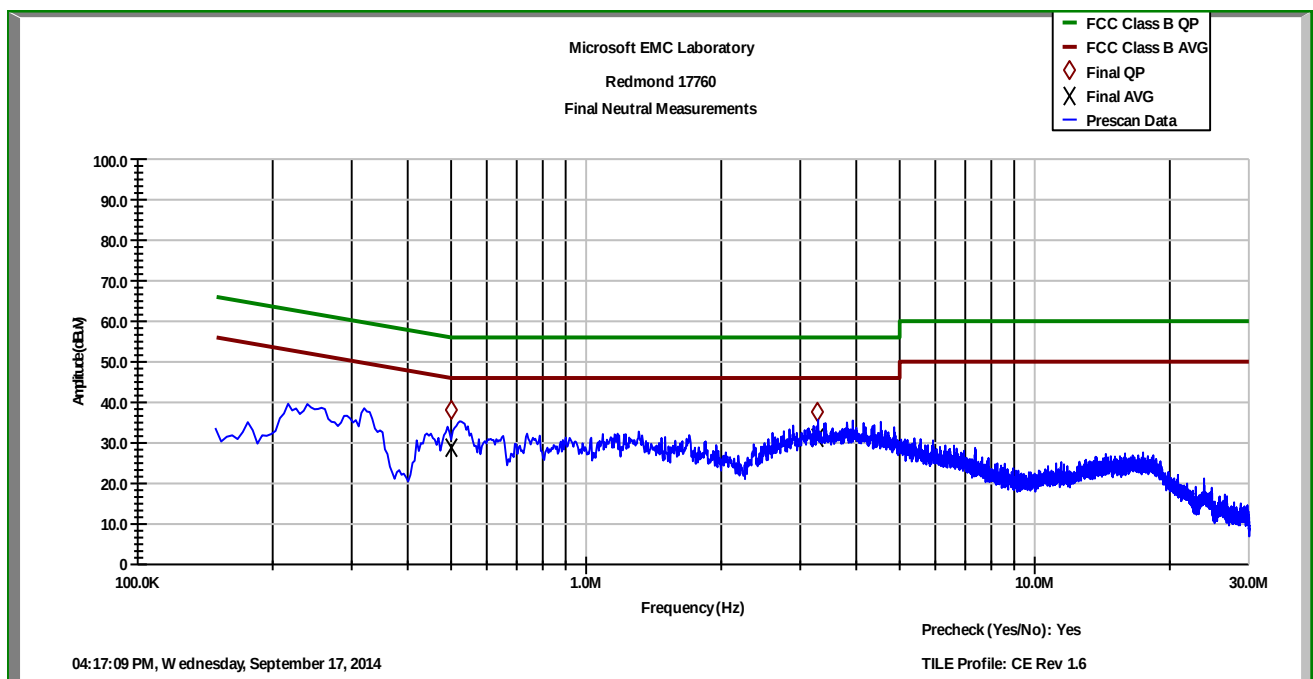
Description	Manufacturer	Model	ID	Last Cal	Cal Interval
EMI Receiver	Rohde-Schwarz	ESR3	EMC-669	10/14/13	12 mo.
LISN	TESEQ	NNB 51	EMC-676	10/28/13	12 mo.
Cable	Microcoax	N/A	EMC-367	No cal	0 mo.
TILE SW	ETS	N/A	N/A	N/A	N/A

9.6.5 Test Results:

9.6.5.1 Small size sample



Plot 9-56. Peak Line Measurements

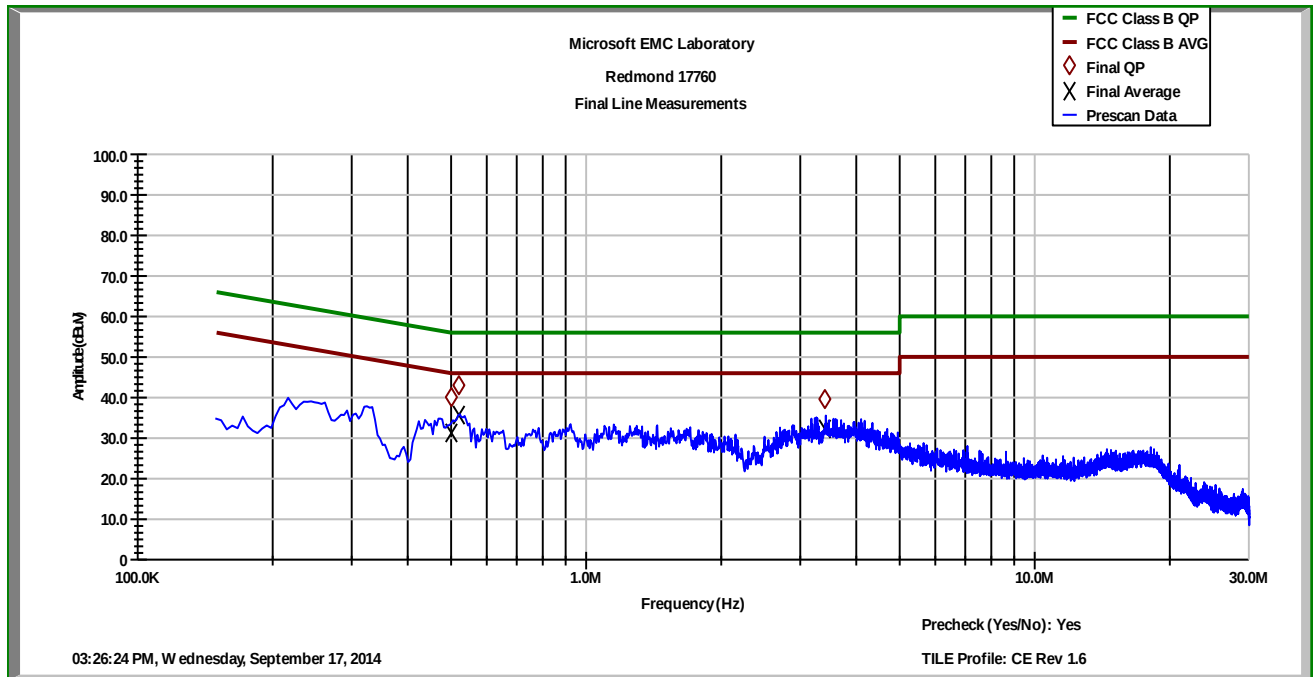


Plot 9-57. Peak Neutral Measurements

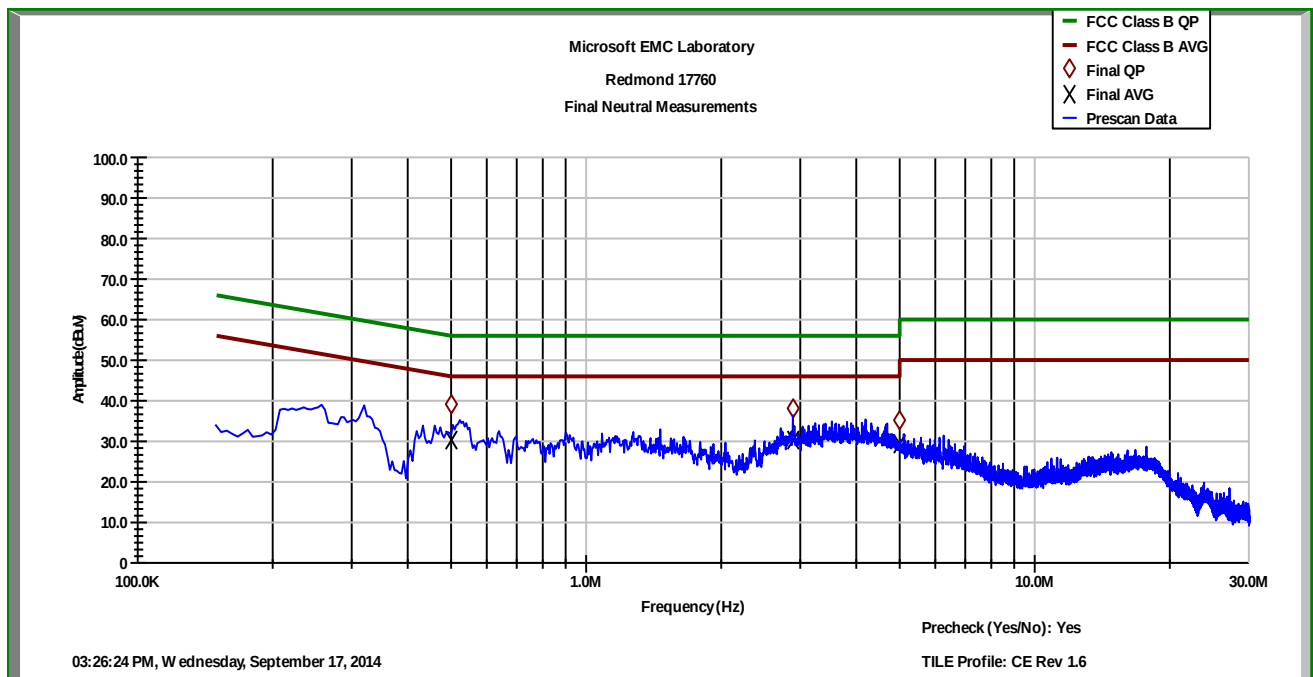
Freq (MHz)	PK Amplitude (dBμV)	QP Amplitude (dBμV)	AVG Amplitude (dBμV)	Cable Loss (dB)	LISN Factors	External Attenuation (dB)	PK Net Reading (dBμV)	QP Net Reading (dBμV)	AVG Net Reading (dBμV)	Class B QP Limit (dBμV)	Class B AVG Limit (dBμV)	Line Tested (L or N)	PK Margin compared to AVG Limit (dB)	QP Margin (dB)	AVG Margin (dB)
0.53	35.75	33.56	25.86	0.1	10.03	-	45.88	43.69	35.99	56	46	L	-0.12	-12.31	-10.01
3.42	37.45	29.59	22.01	0.08	10.01	-	47.54	39.68	32.1	56	46	L	1.54	-16.32	-13.9
0.5	33.93	29.43	20.03	0.1	10.03	-	44.07	39.56	30.16	56	46	L	0.22	-16.44	-15.84
0.5	30.81	28.16	18.9	0.1	10.02	-	40.94	38.28	29.02	56	46	N	-0.29	-17.72	-16.98
3.29	35.67	27.73	21.06	0.12	10.01	-	45.8	37.86	31.19	56	46	N	-0.2	-18.14	-14.81
5	27.9	23.53	17.45	0.12	10.03	-	38.05	33.68	27.6	56	46	L	0.53	-22.32	-18.4

Table: Final QP and Average Measurement Data

9.6.5.2 Medium size sample



Plot 9-57. Peak Line Measurements

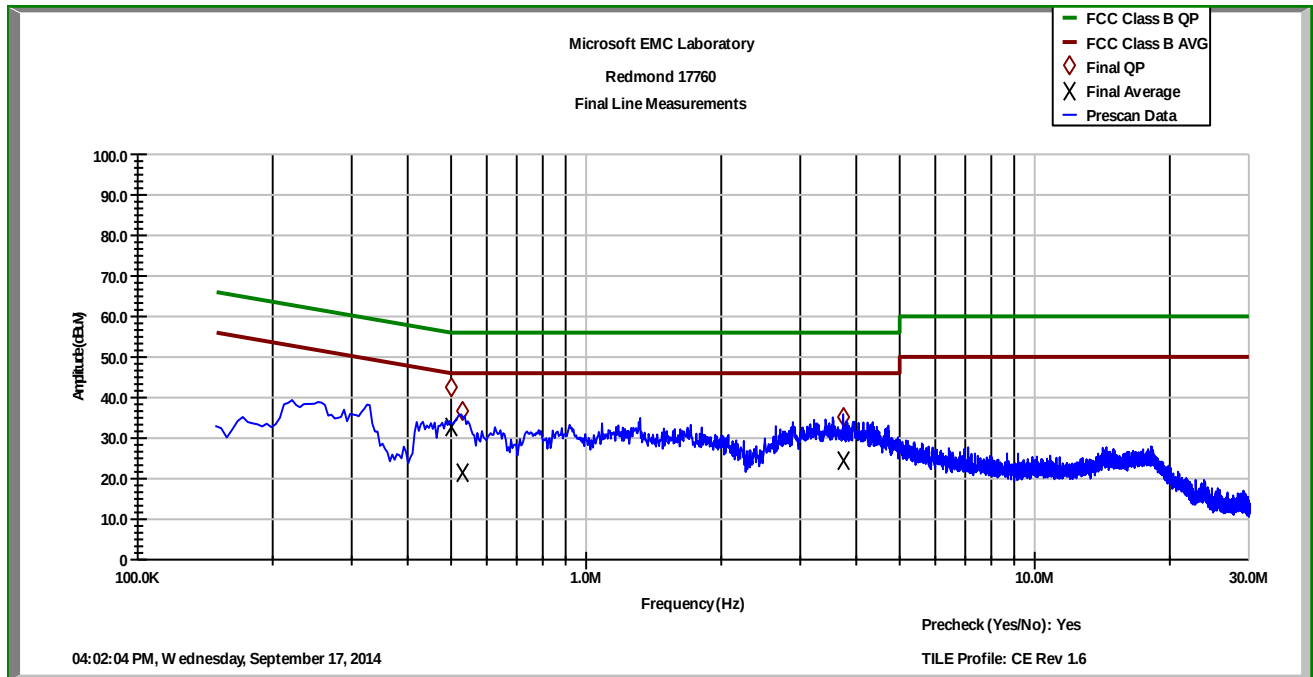


Plot 9-58. Peak Neutral Measurements

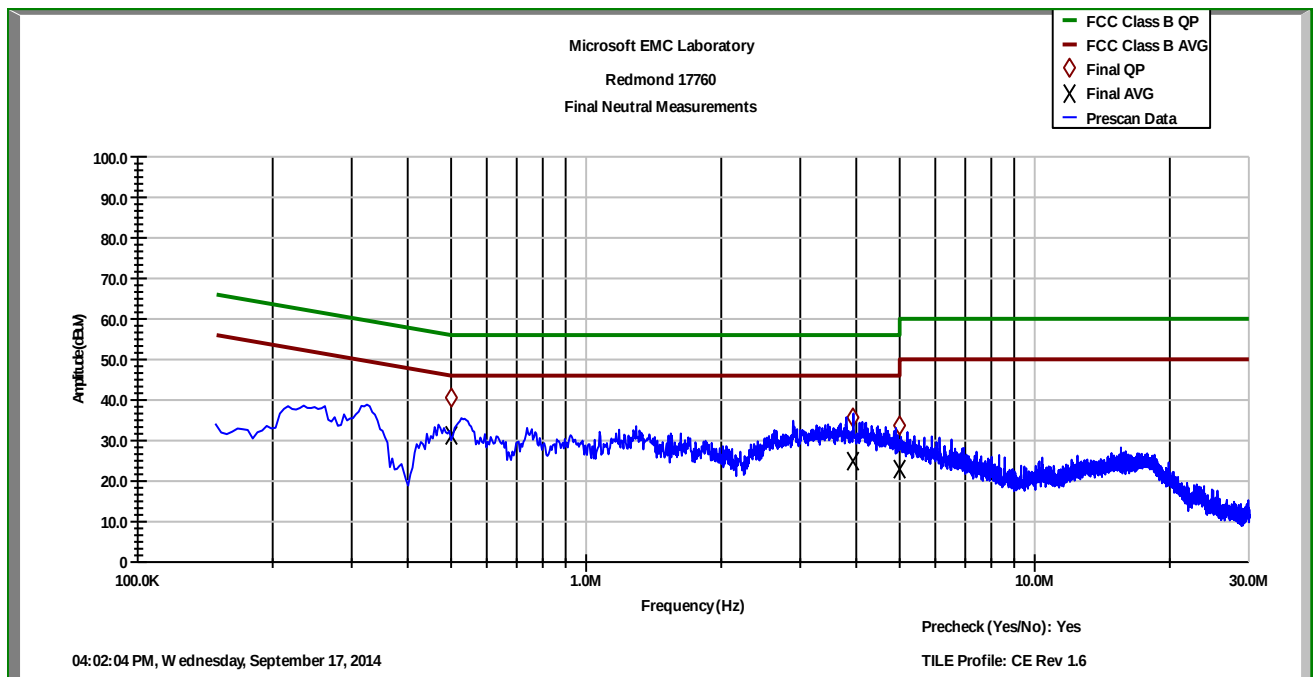
Freq (MHz)	PK Amplitude (dBμV)	QP Amplitude (dBμV)	AVG Amplitude (dBμV)	Cable Loss (dB)	LISN Factors	External Attenuation (dB)	PK Net Reading (dBμV)	QP Net Reading (dBμV)	AVG Net Reading (dBμV)	Class B QP Limit (dBμV)	Class B AVG Limit (dBμV)	Line Tested (L or N)	PK Margin compared to AVG Limit (dB)	QP Margin (dB)	AVG Margin (dB)
0.52	35.68	32.95	25.46	0.1	10.03	-	45.81	43.08	35.59	56	46	L	0.03	-12.92	-10.41
0.5	33.62	29.72	20.97	0.1	10.03	-	43.75	39.85	31.1	56	46	L	0.29	-16.15	-14.9
3.42	35.18	29.3	21.9	0.07	10.01	-	45.27	39.39	31.99	56	46	L	-0.36	-16.61	-14.01
0.5	31.55	28.73	19.93	0.1	10.02	-	41.67	38.85	30.05	56	46	N	-0.33	-17.15	-15.95
2.89	36.01	28.03	20.17	0.12	10.01	-	46.14	38.16	30.3	56	46	N	0.53	-17.84	-15.7
5	28.68	25.06	19.15	0.12	10.02	-	38.82	35.2	29.29	56	46	N	-0.54	-20.8	-16.71

Table: Final QP and Average Measurement Data

9.6.5.3 Large size sample



Plot 9-59. Peak Line Measurements



Plot 9-60. Peak Neutral Measurements

Freq (MHz)	PK Amplitude (dBμV)	QP Amplitude (dBμV)	AVG Amplitude (dBμV)	Cable Loss (dB)	LISN Factors	External Attenuation (dB)	PK Net Reading (dBμV)	QP Net Reading (dBμV)	AVG Net Reading (dBμV)	Class B QP Limit (dBμV)	Class B AVG Limit (dBμV)	Line Tested (L or N)	PK Margin compared to AVG Limit (dB)	QP Margin (dB)	AVG Margin (dB)
0.5	33.64	32.21	22.51	0.1	10.03	-	43.77	42.34	32.64	56	46	L	0.22	-13.66	-13.36
0.5	30.05	30.55	21.2	0.1	10.02	-	40.17	40.67	31.32	56	46	N	0.06	-15.33	-14.68
0.53	35.16	26.65	11.12	0.1	10.03	-	45.29	36.78	21.25	56	46	L	-0.09	-19.22	-24.75
3.94	35.58	25.48	14.92	0.13	10.01	-	45.72	35.62	25.06	56	46	N	0.8	-20.38	-20.94
3.74	35.87	24.88	14.29	0.15	10.02	-	46.03	35.04	24.45	56	46	L	0.03	-20.96	-21.55
5	29.41	23.38	13.01	0.12	10.02	-	39.55	33.52	23.15	56	46	N	0.05	-22.48	-22.85

Table: Final QP and Average Measurement Data

End of Test Report