RADIO TEST REPORT

For

MODEL NO.: 1843
FCC ID: C3K1843
IC ID: 3048A-1843

Test Report No. R-TR525-FCCISED-SRD-24G-2
Issue Date: May 3, 2019

FCC CFR47 Part 15 Subpart C
Innovation, Science and Economic Development
Canada RSS-310 Issue 4

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A2LA ACCREDITED
TESTING CERT #3472.01

1 Record of Revisions

Revision	Date	Section	Page(s)	Summary of Changes	Author/Revised By:
1.0	04/30/19	All	All	Version 1.0	Daniel Salinas
2.0	05/03/2019	4	6	Measurement Uncertainty Updated	Daniel Salinas
		7	11	Included note for site equivalency per KDB	

Table of Contents

Test Report Attestation

Microsoft Corporation
Model: 1843
FCC ID: C3K1843
IC ID: 3048A-1843

Applicable Standards

Specification	Test Result
FCC 47CFR Rule Parts 15.207, 15.209, 15.249	Pass
Innovation, Science and Economic Development Canada RSS-310 Issue 4, RSS-GEN Issue 5	Pass

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.

This report shall not be used to claim product certification, approval, or endorsement by A2LA or any agency of any Government. Reproduction, duplication or publication of extracts from this test report is prohibited and requires prior written approval of Microsoft EMC Laboratory.

This report contains data from 9 kHz – 40 GHz. Measurements above 40 GHz are reported in test report # 12805347-E1V1 issued by UL on 04/23/2019.

This report replaces report R-TR525-FCCISED-SRD-24G-2 issued April 30, 2019.

Reviewed By: Vishwas Narayan

RF Test Engineer

Written & Issued By: Daniel Salinas

RF Compliance Lab Technical 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-3, 3048A-4

3.3 Test Equipment

The site and related equipment are constructed in conformance with the requirements of ANSI C63.4:2014 and other equivalent applicable standards.
Test site requirements for measurements above 1 GHz are in accordance with ANSI C63.4:2014.
ANSI C63.10:2013 and the appropriate KDB test methods were followed.

4 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the product, as specified in ETSI TR 100 028. This represents an expanded uncertainty expressed at 95% confidence level using a coverage factor k=2. These levels are for reference only and not included to determine product compliance.
Expanded uncertainty calculations are available upon request.

Test item	Uncertainty	Unit
Radiated disturbance (9 kHz to 30 MHz)	5.32	dB
Radiated disturbance (30 MHz to 1 GHz)	5.99	dB
Radiated disturbance (1 GHz to 18 GHz)	5.12	dB
Radiated disturbance (18 GHz to 26.5 GHz)	4.86	dB
Radiated disturbance (26.5 GHz to 40 GHz)	5.13	dB
Conducted Disturbance at Mains Port	3.31	dB
Uncertainty for Conducted Power test	1.277	dB
Uncertainty for Conducted Spurious emission test	2.742	dB
Uncertainty for Bandwidth test	4.98	kHz
Uncertainty for DC power test	0.05	%
Uncertainty for test site temperature	0.5	ºC
Uncertainty for test site Humidity	3	%
Uncertainty for time	0.189	%

5 Product Description

Company Name:	Microsoft Corporation
Address:	One Microsoft Way
City, State, Zip:	Redmond, WA 98052-6399
Customer Contact:	Choon Ooi
Functional Description of the EUT:	Smart Display with 802.11a/b/g/n/ac 20/40/80/160 MHz, Bluetooth 5.0, and 24.2 GHz Sensor Radios
Model:	1843
FCC ID:	C3K1843
IC ID:	3048A-1843
Radio under test:	SRD (24.0 – 24.25 GHz)
Modulation(s):	Pulse Modulation
Antenna Information:	Integral Antenna. **Manufacturer declared max Antenna Gain in 2.4GHz band of operation:** 4.0 dBi
EUT Classification:	SRD
Equipment Design State:	Prototype/Production Equivalent (EV4)
Equipment Condition:	Good
Test Sample Details:	**RF Radiated Test Sample** S/N: 000059790462 FW: 5.9.139

5.1 Test Configurations

Test software “Calvin.exe” (V1.37.137) provided by the customer was used to program the EUT to transmit continuously.
The device can operate in only pulsed modulation on a single channel.

5.2 Environmental Conditions

Ambient air temperature of the test site was within the range of 10 ºC to 40 ºC (50 ºF to 104 ºF) 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.

5.4 Equipment Modifications

No modifications were made during testing.

5.5 Dates of Testing

Testing was performed from March 29th, 2019 to April 12th, 2019.

6 Test Results Summary

Test Description	FCC CFR 47/ ISED Rule Part	Limit	Test Result
Duty Cycle	Reporting & Measurements	Reporting & Measurement Purposes only	N/A
Occupied Bandwidth	Reporting & Measurements	Reporting & Measurement Purposes only	N/A
Field Strength of the Fundamental	15.249 (a) RSS-310 [3.10]	≤ 250 mV/m @ 3m	Pass
Frequency Stability	15.249 (b)(2)	≤ ±0.001%	N/A(1)
Radiated Spurious Emissions/ Restricted Band Emissions	15.205, 15.209 RSS-310 [3.10] RSS-Gen [8.9]	FCC CFR 47 15.209 limits RSS-Gen [8.9]	Pass
AC Power Line Conducted Emissions	15.207 RSS-Gen [8.8]	FCC CFR 47 15.207 limits RSS-Gen [8.8]	Pass

Note1: Only applicable to fixed point to point systems. The EUT is not intended for fixed point to point operation

7 Test Equipment List

Equipment used for Radiated and Conducted Measurements				
Manufacturer	**Description**	**Model #**	**Asset #**	**Calibration Due**
Rohde & Schwarz	EMI Test Receiver	ESU40	RF-192	4/8/2019*
Rohde & Schwarz	EMI Test Receiver	ESU40	RF-192	4/10/2020
Rohde & Schwarz	EMI Test Receiver	ESU40	RF-248	4/9/2019*
Rohde & Schwarz	EMI Test Receiver	ESU40	RF-248	4/9/2020
Rohde & Schwarz	EMI test Receiver	ESR26	RF-568	04/10/2019*
PCE	Climate Meter	PCE-THB 40	EMC-1206	9/28/2019
Sunol Sciences	Antenna - Broadband Hybrid	JB6	EMC-639	8/17/2019
ETS-Lindgren	Antenna - Horn	3117-PA	EMC-858	10/8/2019
ETS-Lindgren	Antenna - Standard Gain	3160-09	RF-179	N/A
ETS-Lindgren	Antenna - Standard Gain	3160-10	EMC-602	N/A
Rohde & Schwarz	Preamplifier	TS-PR40	RF-200	N/A
Rohde & Schwarz	Preamplifier	TS-PR26	RF-199	N/A
Rohde & Schwarz	Open Switch and Control Unit	OSP130	RF-018	N/A
Rohde & Schwarz	Open Switch and Control Unit	OSP150	RF-019	N/A
Rohde & Schwarz	Open Switch and Control Unit	OSP 130 B101/B102/B103	RF-569	N/A
Rohde & Schwarz	Custom Filter Bank	SFUNIT RX	RF-322	N/A
Pasternack	Attenuator	PE7004-6	EMC-950	N/A
UtiFlex	Micro-Coax cable	OSP120/DUT3	RF-872	N/A

Equipment used for Radiated Measurements				
Manufacturer	**Description**	**Model #**	**Asset #**	**Calibration Due**
Sucoflex	RF Cable	104PE	RF-430	N/A
MegaPhase	RF Cable	EMC3-N1N1-394	EMC-1037	N/A
Micro-Coax	RF Cable	UFB311A-1-0787-50U50U	EMC-351	N/A
Micro-Coax	RF Cable	UTI Flex	RF-359	N/A
Huber & Suhner	RF Cable	Sucoflex 102A	RF-269	N/A

Equipment used for AC Line Conducted Emissions Measurement				
Manufacturer	**Description**	**Model #**	**Asset #**	**Calibration Due**
Rohde & Schwarz	Analyzer/ Receiver	ESR	EMC-669	4/8/2019*
Teseq	EUT LISN	NNB 51	EMC-056	6/7/2019
Teseq	AE Lisn	NNB 51	EMC-057	8/9/2019
Micro-Coax	Cable	UFA210A-1-1800-50U50U	EMC-367	8/9/2019
ETS Lingren	TILE Software	v7.3.1.27	EMC-985	N/A
Fluke	Multimeter	87V	EMC-192	10/18/2019
MadgeTech	Environmental Monitor	PRHTemp2000	EMC-680	11/16/2019
Chroma	AC Power Source	61602	EMC-055	N/A

Note: Items with Calibration Due date marked as N/A are characterized before use, where applicable.
Note*: All equipment was within calibration dates during test.

8 Test Site Description

8.1 Radiated Emissions Test Site

Radiated measurements are performed in a 3m semi-anechoic chamber, which meets NSA requirements for the frequency range of 30MHz to 1000MHz. For measurements above 1 GHz, absorbers are placed on the ground plane between the receiving antenna and the EUT to meet Site VSWR requirements in accordance with ANSI C63.4:2014. Measurements below 30 MHz were performed on a site demonstrating equivalence to an open field site per KDB 414788 D01.

8.1.1 Radiated Measurements in 9kHz- 30 MHz

The EUT is positioned on a turntable at a height of 80cm using a non-conducting table. A loop antenna is positioned at 3m from the EUT periphery at 1m height from the ground. The turntable is rotated 360 degrees to determine the highest emissions. This is repeated for two measurement antenna orientations – parallel and perpendicular. All possible orientations of the EUT were investigated for emissions and the flat orientation was identified as the worst-case configuration.

8.1.2 Radiated Measurements in 30 MHz - 1000 MHz

The EUT was positioned floor standing on a turntable in its accessory stand. A linearly polarized broadband antenna is positioned at 3m from the EUT periphery. The turntable is rotated 360 degrees, and the antenna height varied from 1m to 4m to determine the highest emissions. This is repeated for both horizontal and vertical polarizations of the measurement antenna. All possible orientations of the EUT were investigated for emissions and the vertical standing orientation was identified as the worst-case configuration.

8.1.3 Radiated Measurements above 1GHz

The EUT was positioned floor standing on a turntable. A linearly polarized antenna is positioned 3m from the EUT periphery. Guidelines in ANSI C63.10:2013 were followed with respect to maximizing the emissions. The measurement antenna was height scanned from 1m to 4m while the turntable was rotated 360 degrees. Two orientations of the EUT, landscape and portrait, were evaluated. This is repeated for both horizontal and vertical polarizations of the measurement antenna. Measurements above 18GHz were performed at a 3m distance. Near field scanning is performed to identify suspect frequencies above 1GHz.

8.2 Antenna port conducted measurements

All antenna port conducted measurements were performed on a bench-top setup consisting of a spectrum analyzer, power meter (as necessary), splitters/combiners (as necessary), attenuators, and pre-characterized RF cables.

The correction factors between the EUT and the spectrum analyzer were added internally in the analyzer settings, where applicable. The plots displayed take these correction factors into account.

8.3 Test Setup Diagrams

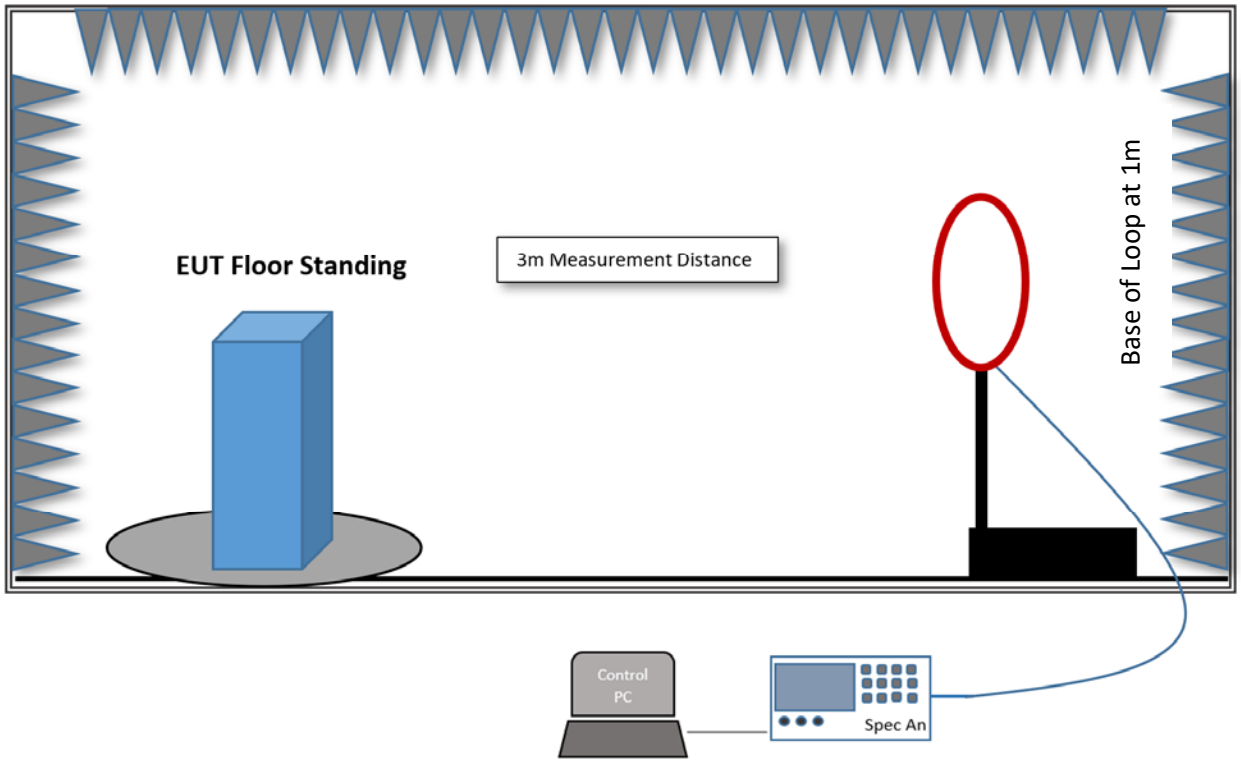

Fig.2. Test Setup for Radiated measurements in 9kHz - 30MHz Range

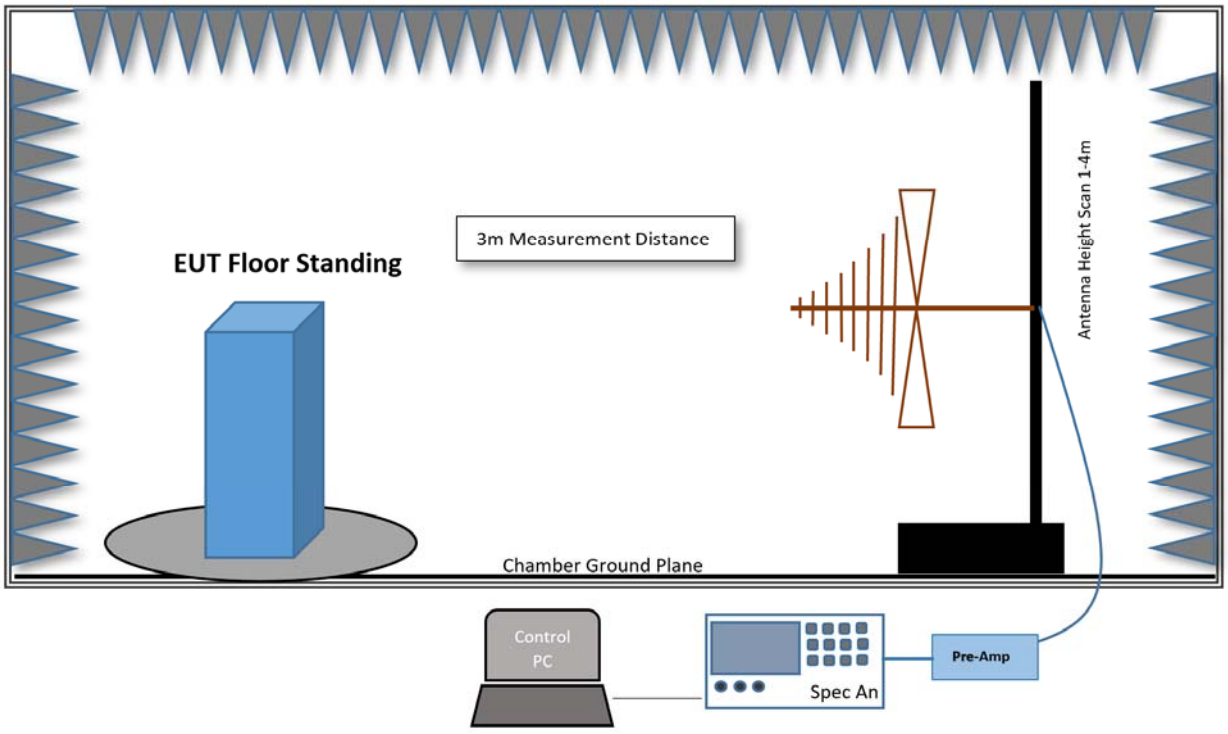

Fig.3. Test Setup for Radiated measurements in 30MHz- 1GHz Range

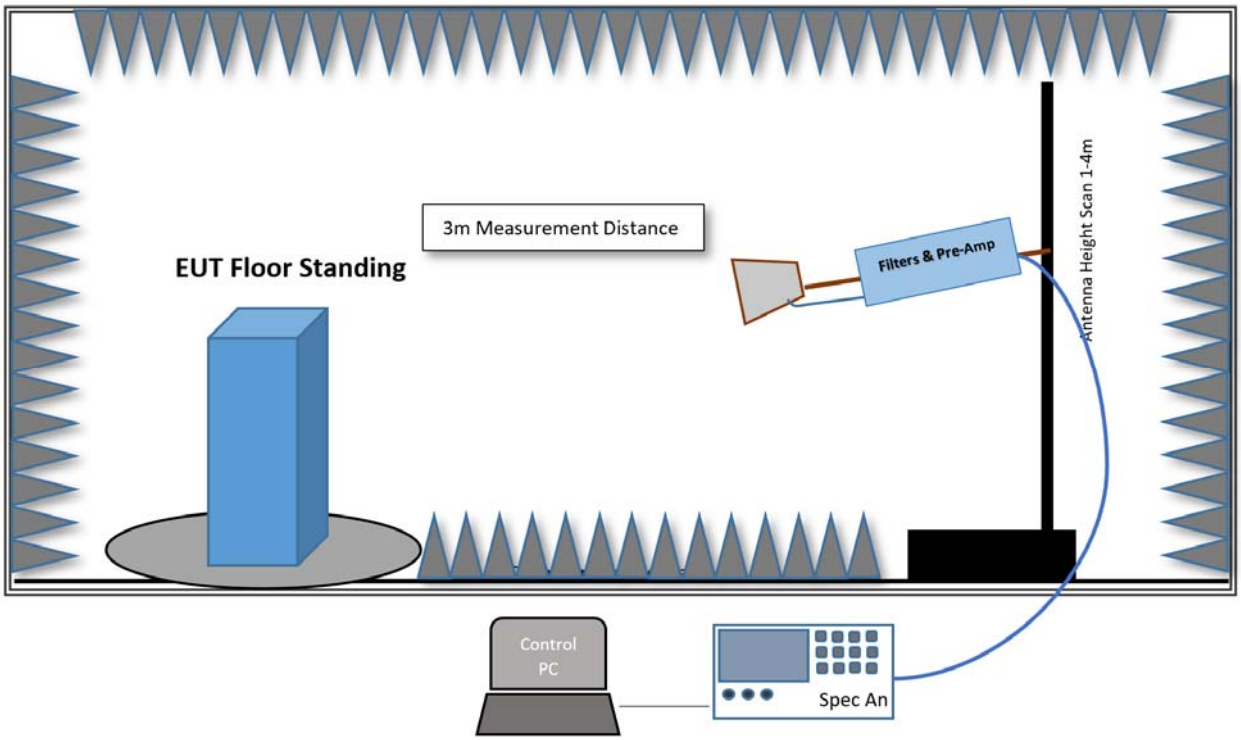

Fig.4. Test Setup for Radiated measurements in 1GHz- 18GHz Range

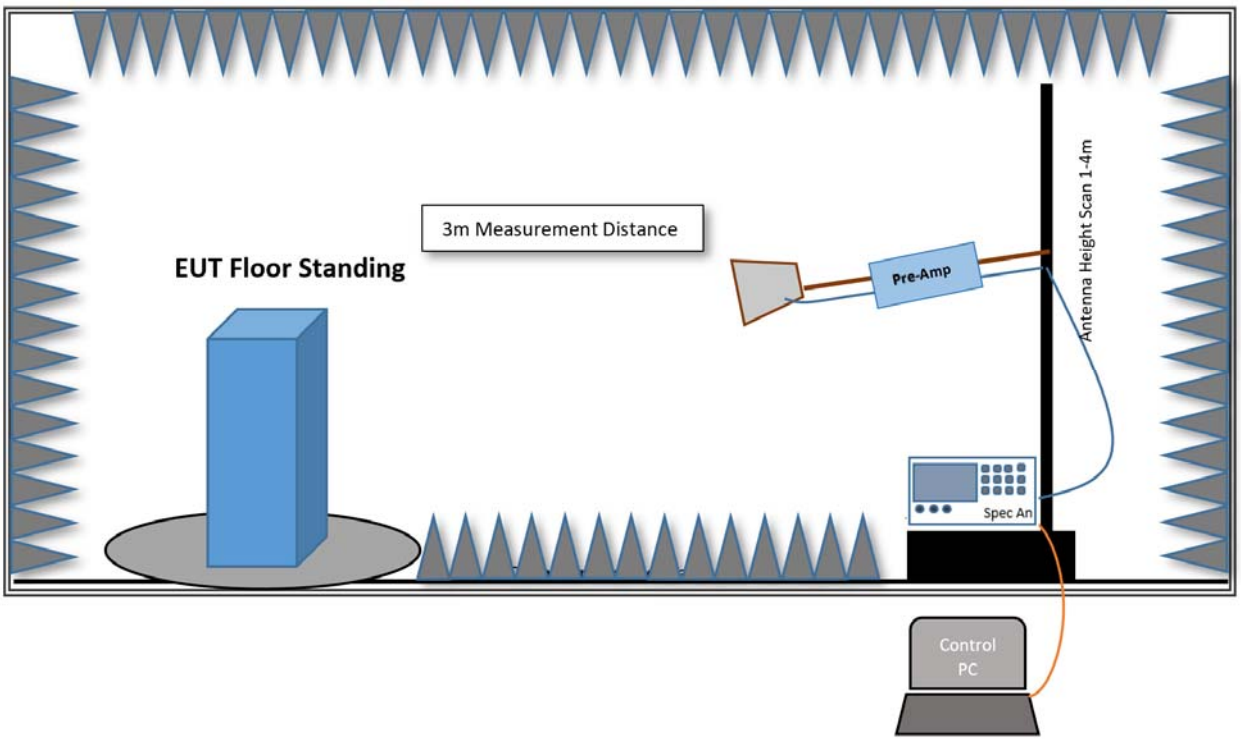

Fig.5. Test Setup for Radiated measurements 18 GHz- 40 GHz Range

9 Test Results- Conducted

9.1 Duty Cycle

9.1.1 Test Requirement:

Reporting and measurement purposes only.

9.1.2 Test Method:

Measurements were performed according to the procedure defined in ANSI C63.10: 2013.

Spectrum Analyzer Settings:
RBW ≥ Occupied Bandwidth if possible; otherwise, set RBW to the largest available value
VBW ≥ RBW ≥ Signal Period
Detector = Peak
Span = 0 Hz
Sweep points > 100
Sweep Time: Long enough to capture 1 period, or 100ms if pulse train exceeds 100ms

9.1.3 Limits:

Reporting and measurement purposes only.

9.1.4 Test Results:

Example Calculation:
Duty Cycle Correction Factor = 20xlog_{10}(On Time/Period) = 20xlog_{10}(80/100) = -1.93dB

Note: The duty cycle correction is calculated using a period of 100ms per 15.35 (c)

Frequency (GHz)	On Time (ms)	Period (ms)	Duty Cycle (%)
24.2	75.16	375.80	0.2

Frequency (GHz)	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
24.2	75.16	100	75.16	-2.48

9.1.5 Test Data:

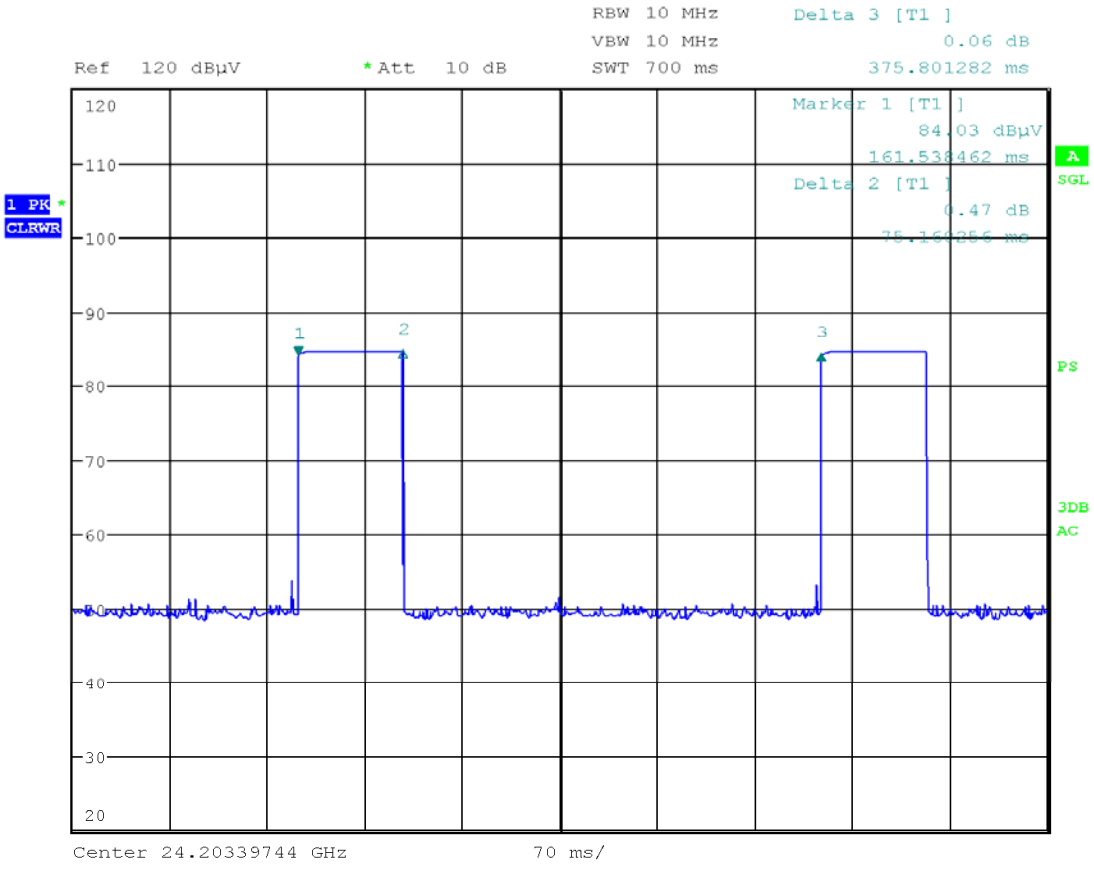

Figure 9-1 Duty Cycle 24.2 GHz

9.2 99% Occupied Bandwidth

9.2.1 Test Requirement:

The 99% Occupied Channel Bandwidth is the bandwidth that contains 99 % of the power of the signal. This test is performed for reporting and measurement purposes only.

9.2.2 Test Method:

Measurements are performed according to ANSI C63.10: 2013.

Spectrum Analyzer settings:
Set analyzer center frequency to the nominal EUT channel frequency
Span is set to between 1.5 and 5.0 times the Occupied bandwidth
RBW to: 1% to 5% of the OBW= 200 kHz
VBW ≥ 3 RBW= 1 MHz
Detector = Peak
Sweep time = Auto Couple
Trace mode = Max Hold
Use the 99% power bandwidth function of the instrument.

9.2.3 Limits:

For reporting purpose only.

9.2.4 Test Results:

Frequency (GHz)	Test Mode	99% Bandwidth (MHz)
24.2	Pulsed Modulation	4.44

9.2.5 Test Data:

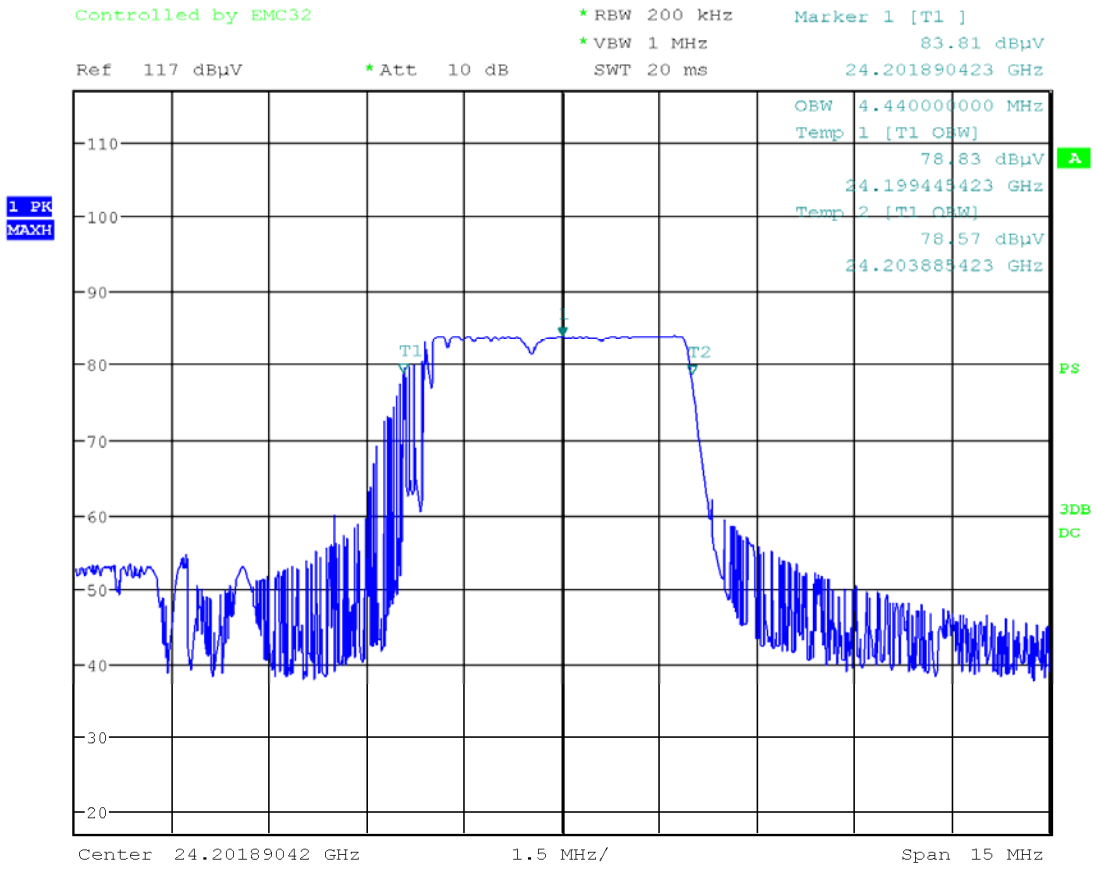

Figure 9-2 99% Bandwidth 24.2 GHz

9.3 Field Strength of the Fundamental

9.3.1 Test Requirement:

FCC CFR 47 Rule Part 15.249 (a)(e)

ISED RSS-310 [3.10]

9.3.2 Test Method:

Measurements were performed according to ANSI C63.10: 2013.

Spectrum Analyzer settings:
Peak Fundamental Field Strength:
RBW= 1 MHz
VBW= 3 MHz
Trace Mode= Peak Detector (Max Hold)
Sweep time= Auto Couple
Span= 250 MHz

9.3.3 Limits:

15.249: The maximum permissible fundamental field strength is 108 dBµV/m (250mV/m)

RSS-310: The maximum fundamental field strength shall not exceed 108 dBµV/m (250mV/m).

Peak Limits are 20 dB higher than Average limits.

9.3.4 Test Results:

Example Calculations:

Peak Field Strength Level = Amplitude (Analyzer level) + AFCL (Antenna Factor and Cable losses) – Amplifier Gain = 50 dBµV + 33 dB – 25 dB = 58 dBµV/m

Average Field Strength Level:
Peak Field Strength Level + $20 \times \log_{10}$(duty cycle) = 100 dBµV/m – 6 dB = 94 dBµV/m

Frequency (GHz)	Mode	Peak Fundamental Field Strength (dBµV/m)	Peak Limit (dBµV/m)	Margin (dB)	Result
24.2	Pulsed	96.89	128	-31.11	Pass

Frequency (GHz)	Mode	Duty Cycle Correction Factor (dB)	Average Fundamental Field Strength (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
24.2	Pulsed	-2.48	94.41	108	-13.59	Pass

9.3.5 Test Data:

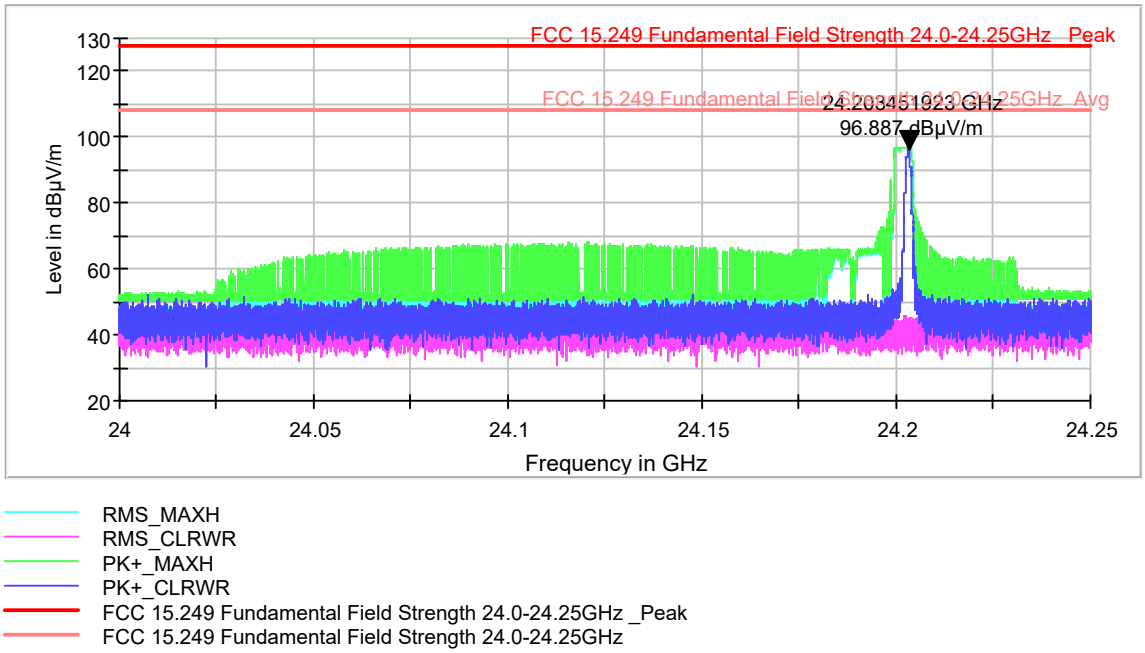

Figure 9-3 Peak Fundamental Field Strength 24.2 GHz

9.4 Radiated Spurious and Band Edge Emissions

9.4.1 Test Requirement:

FCC CFR 47 Rule Part 15.249 (d) and 15.209 (a)

ISED RSS-310 [3.10] and RSS GEN [8.9]

9.4.2 Test Method:

Measurements were performed according to the procedure defined in ANSI C63.10: 2013.

Radiated spurious measurements are made from 9kHz to the 5th harmonic of the fundamental frequency of the transmitter or 100 GHz, whichever is lesser. Measurements below 30MHz were performed since the radio circuitry of the EUT generates frequencies below 30MHz. The limit for radiated spurious emissions is per 15.209 and RSS-Gen [8.9]. Additionally, emissions found in the restricted bands listed in 15.205 and RSS-Gen were tested for compliance per limits in 15.209 and RSS-Gen.

The EUT was tested on the channel of operation. Guidelines in ANSI C63.10:2013 were followed with respect to maximizing the emissions.

A pre-amp was required for this test, to provide the measuring system with sufficient sensitivity. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength.

Both horizontal and vertical antenna polarizations were investigated. Worst-case maximized data for both polarizations is shown in this test report.

Radiated Spurious Emissions

Spectrum Analyzer Settings:

30 MHz- 1 GHz:

RBW = 120 kHz
VBW ≥ 3 X RBW
Trace Mode: Peak Detector (Max Hold). Final measurements performed using QP Detector.
Span= 30 MHz - 1 GHz
Sweep time= Auto
Sweep points ≥ 2 x Span/RBW

Above 1 GHz:

RBW= 1 MHz
VBW= 3 MHz
Trace Mode: Peak Detector (Max Hold)
Span= 1 - 18 GHz and 18 - 26.5 GHz.
Sweep time= Auto
Sweep points ≥ 2 x Span/RBW

Final Measurements above 1 GHz

Peak Measurements

Spectrum Analyzer Settings:

RBW= 1 MHz
VBW= 3 MHz
Trace Mode: Peak Detector (Max Hold)
Span= wide enough to encompass the emission
Sweep Points ≥ 2 × Span/RBW
Sweep Time = Auto

9.4.3 Limits:

Frequency (MHz)	Field Strength (µV/m)	Measurement Distance (meters)	Corrected Field Strength for 3m measurement distance (dBµV/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 (Restricted Frequency Bands)	500	3	54 (Average) 74 (Peak)

9.4.4 Test Result:

Pass.

9.4.5 Test Data:

Sample Calculations:

Peak Field Strength Level: Amplitude (Analyzer level) + AFCL (Antenna Factor and Cable losses) – Amplifier Gain = 50 dBµV + 33 dB – 25 dB = 58 dBµV/m

Average Field Strength Level:
Peak Field Strength Level + 20x$\log_{10}$(duty cycle) = 100 dBµV/m – 6 dB = 94 dBµV/m

9.4.5.1 Band Edge Emissions

Band Edge Average Data						
Carrier Frequency (MHz)	**Frequency (MHz)**	**Raw Peak. Amplitude (dBµV)**	**Correction Factor (dB)**	**Corrected Peak Field Strength (dBµV/m)**	**Average Limit (dBµV/m)**	**Margin (dB)**
24200	23966.32	36.71	12.8	49.51	54	-4.49

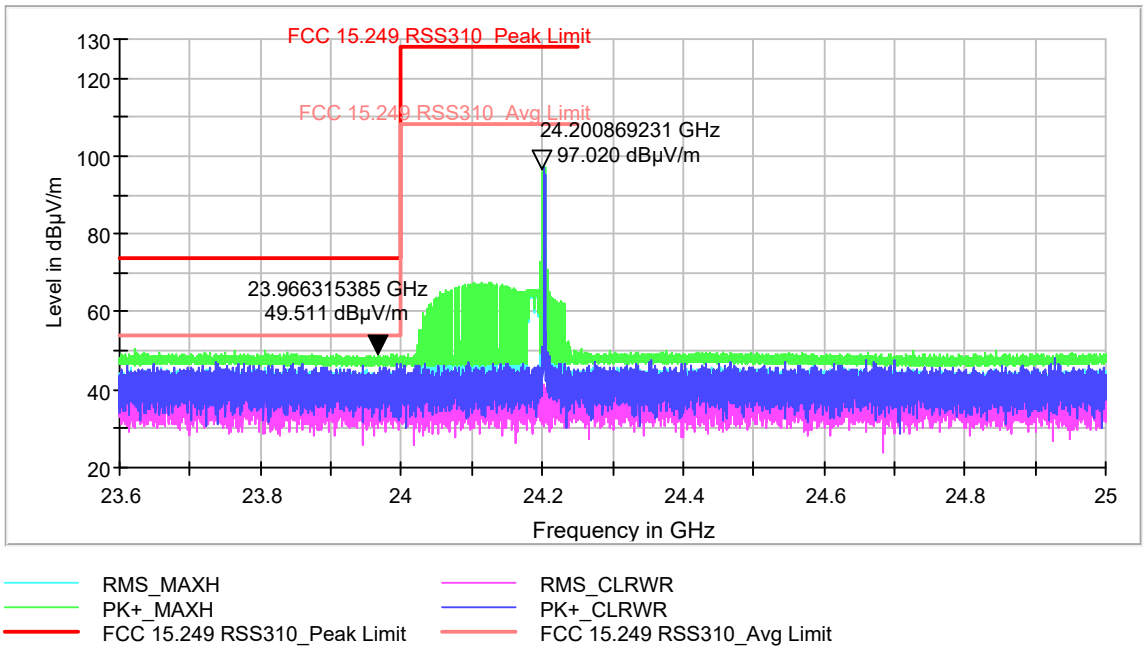

Figure 9-4 Radiated Restricted Band Emissions at the Band Edge 24.2 GHz SRD

9.4.5.2 Emissions in 9 kHz – 30 MHz range

Worst case results are shown.

RSE 9 kHz -30 MHz						
Carrier Frequency (MHz)	**Emission Frequency (MHz)**	**Raw Quasi-Peak Amplitude (dBµV/m)**	**Correction Factor (dB)**	**Corrected Quasi-Peak Field Strength (dBµV/m)**	**Quasi-Peak Limit (dBµV/m)**	**Quasi-Peak Margin (dB)**
24200	0.494000	-3.33	12.3	8.97	33.73	-24.76
24200	1.463748	-3.49	4.2	0.71	24.32	-23.61
24200	2.269437	-4.71	0.5	-4.21	29.50	-33.71
24200	3.560203	-2.27	-2.6	-4.87	29.50	-34.37
24200	16.227667	13.7	-5.1	8.60	29.50	-20.90
24200	21.666425	13.22	-5.4	7.82	29.50	-21.68

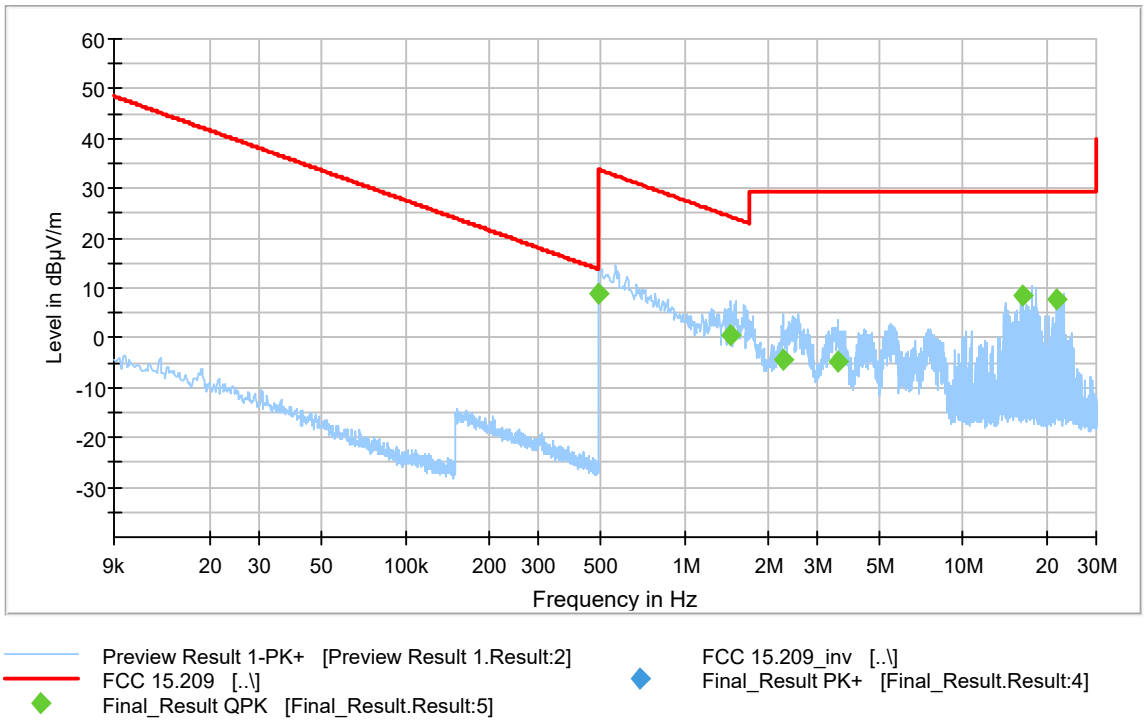

Figure 9-5 Radiated Spurious Emissions 24.2 GHz SRD (9 kHz – 30 MHz)

9.4.5.3 Emissions in 30 MH z- 1 GHz range

Worst case results are shown here.

RSE 30-1000 MHz						
Carrier Frequency (MHz)	**Emission Frequency (MHz)**	**Raw Quasi-Peak Amplitude (dBµV/m)**	**Correction Factor (dB)**	**Corrected Quasi-Peak Field Strength (dBµV/m)**	**Quasi-Peak Limit (dBµV/m)**	**Quasi-Peak Margin (dB)**
-- (Ambient)	39.6115	9.16	20.9	30.06	40	-9.94
-- (Ambient)	63.5185	21.63	14.7	36.33	40	-3.67
-- (Ambient)	76.2255	25.06	14.8	39.86	40	-0.14
-- (Ambient)	380.946	7.94	23.9	31.84	46.02	-14.18
-- (Ambient)	482.123	-9.64	26.8	17.16	46.02	-28.86
-- (Ambient)	720.018	5.23	30.5	35.73	46.02	-10.29
24200	986.94	-9.4	33.6	24.20	54	-29.80

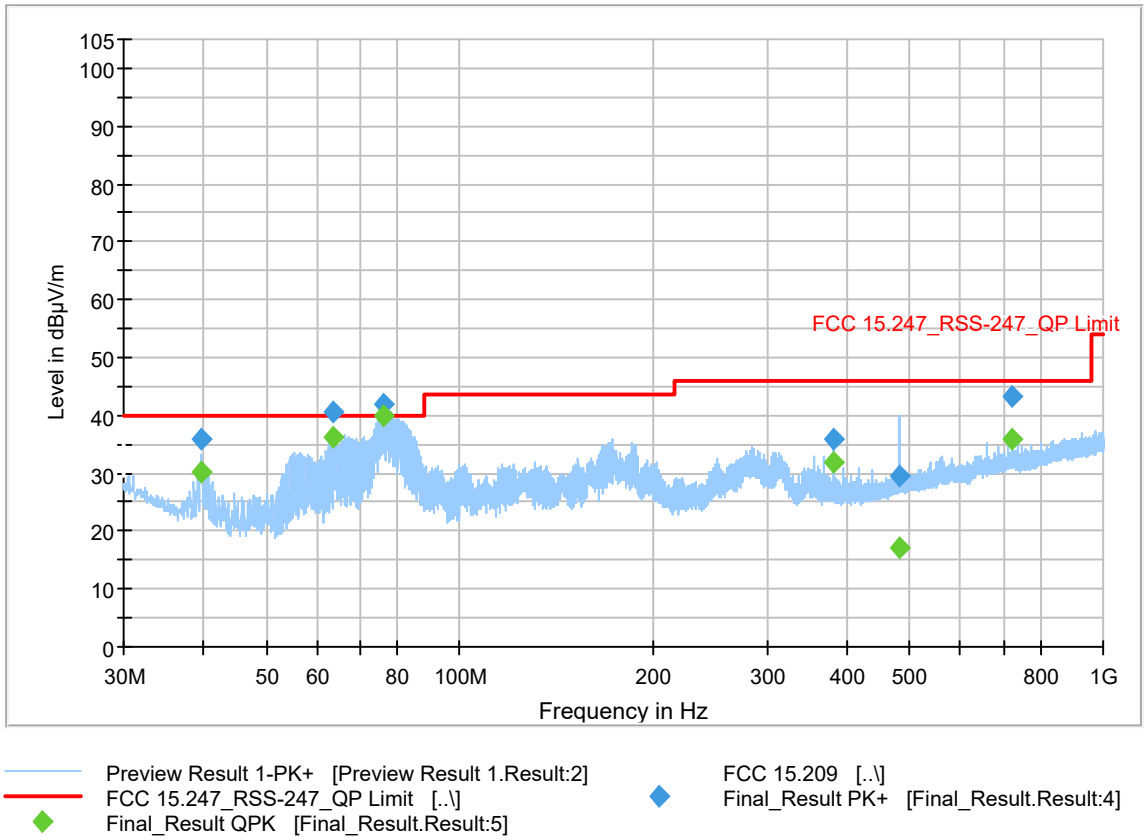

Figure 9-6 Radiated Spurious Emissions - Ambient - Radio Off – Digital Transmissions Only (30MHz - 1GHz)

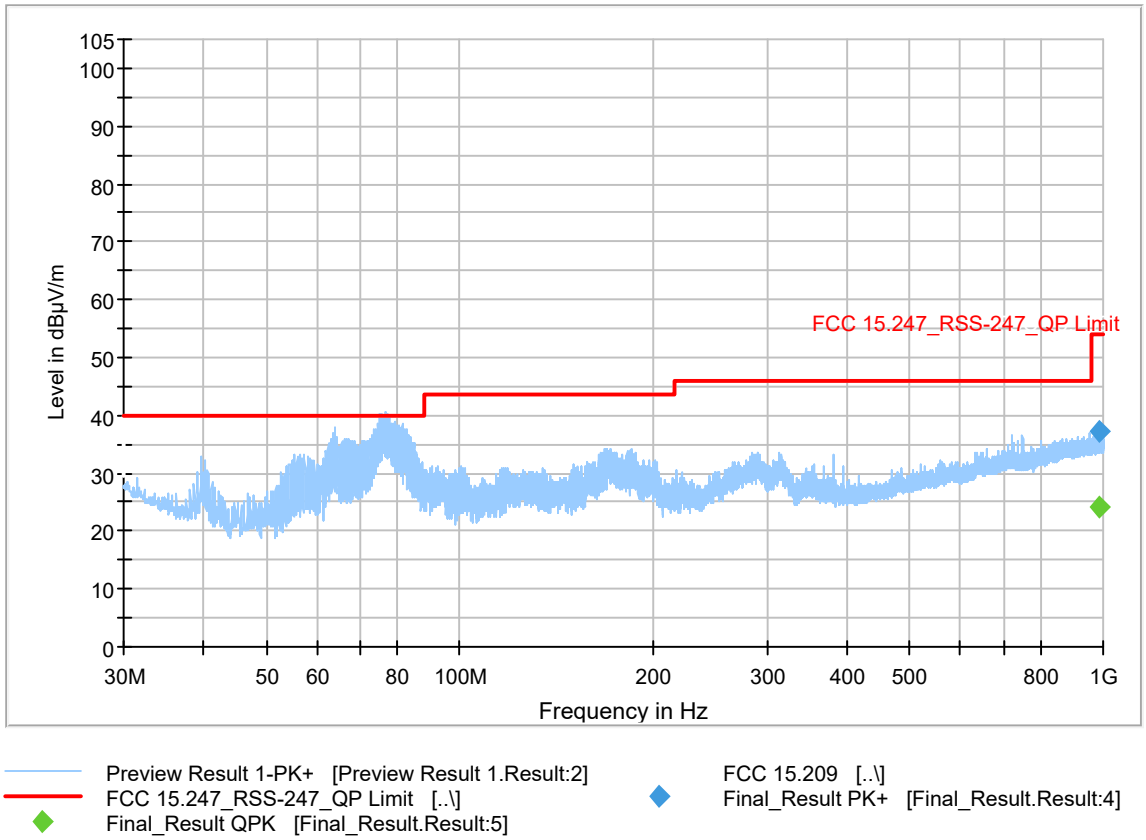

Figure 9-7 Radiated Spurious Emissions 24.2 GHz SRD (30MHz - 1GHz)

9.4.5.4 Emissions in 1-18 GHz range

Worst case results shown here.

RSE 1 - 18GHz Average Data							
Carrier Frequency (MHz)	**Frequency (MHz)**	**Raw Avg. Amplitude (dBµV)**	**Correction Factor (dB)**	**DC Correction Factor (dB)**	**Corrected Avg. Field Strength (dBµV/m)**	**Average Limit (dBµV/m)**	**Margin (dB)**
24200	3262.80(1)	47.2	5.3	0	52.50	54	-1.5
24200	17809.35	19.8	22.9	0	42.70	54	-11.3

RSE 1 - 18GHz Peak Data						
Carrier Frequency (MHz)	**Frequency (MHz)**	**Raw Peak Amplitude (dBµV)**	**Correction Factor (dB)**	**Corrected Peak Field Strength (dBµV/m)**	**Peak Limit (dBµV/m)**	**Margin (dB)**
24200	3262.80(1)	50.18	5.3	55.48	74	-18.52
24200	17782.45	31.09	22.9	53.99	74	-20.01

Note1: Emission does not fall in a restricted band

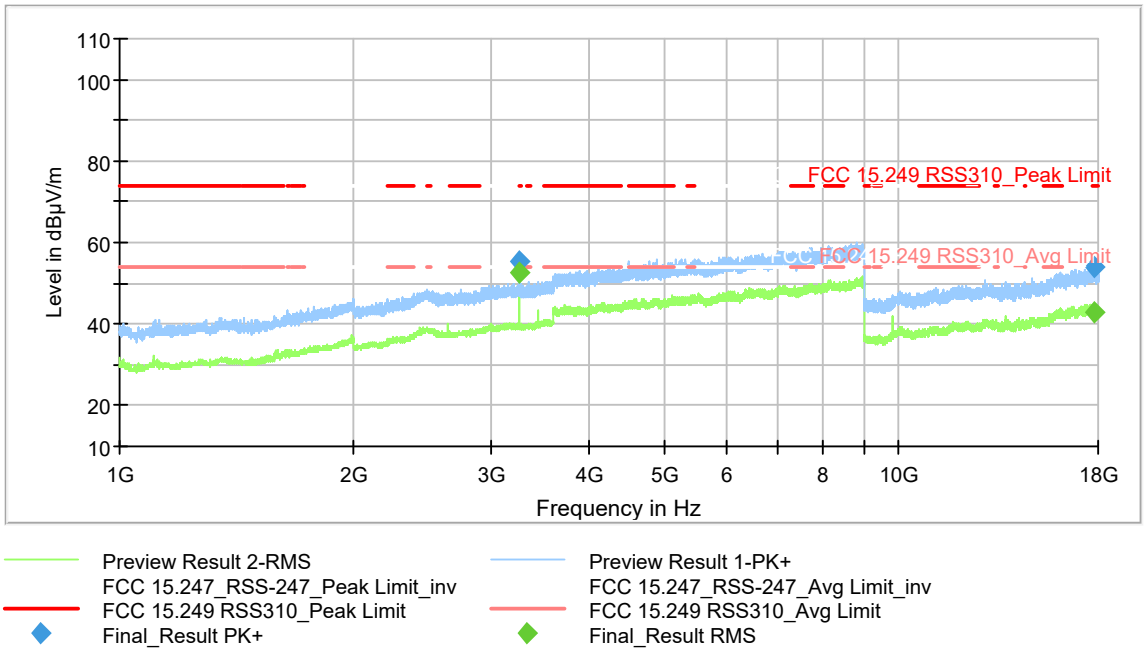

Figure 9-31 Radiated Spurious Emissions 24.2 GHz SRD (1-18 GHz)

9.4.5.5 Emissions in 18-26.5 GHz range

Worst case results are shown here.

RSE 18 – 26.5GHz Average Data							
Carrier Frequency (MHz)	**Frequency (MHz)**	**Raw Avg. Amplitude (dBµV)**	**Correction Factor (dB)**	**DC Correction Factor (dB)**	**Corrected Avg. Field Strength (dBµV/m)**	**Average Limit (dBµV/m)**	**Margin (dB)**
24200	24969.52	23.1	12.8	0	35.90	54	-18.1

RSE 18 – 26.5GHz Peak Data						
Carrier Frequency (MHz)	**Frequency (MHz)**	**Raw Peak Amplitude (dBµV)**	**Correction Factor (dB)**	**Corrected Peak Field Strength (dBµV/m)**	**Peak Limit (dBµV/m)**	**Margin (dB)**
24200	24920.46	36.17	12.8	48.97	74	-25.03

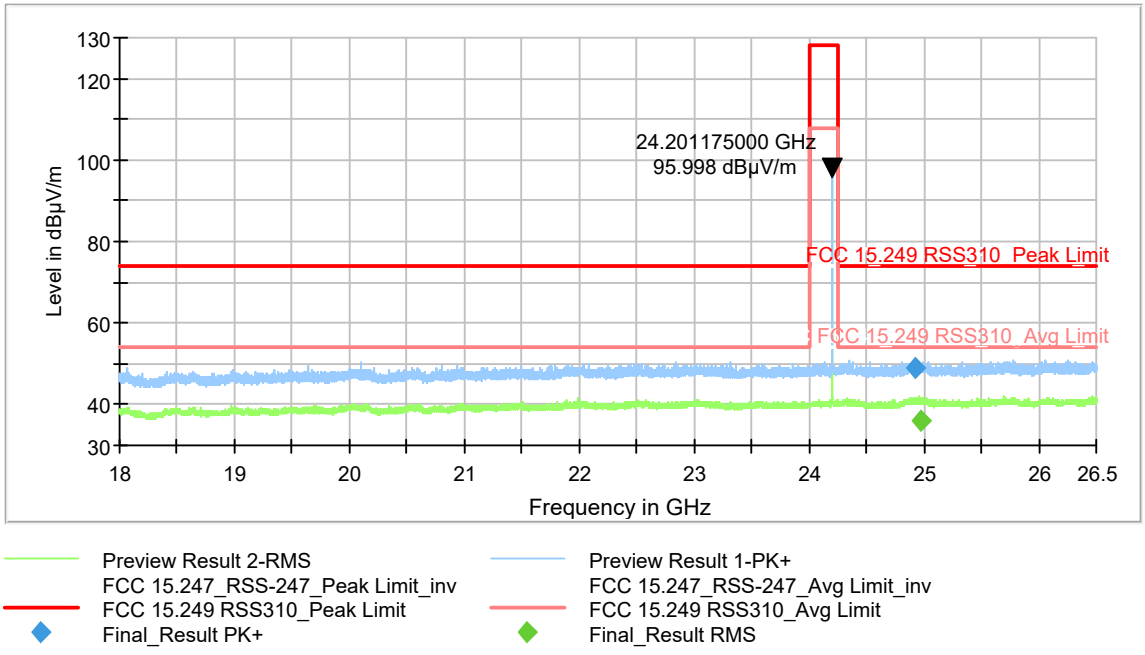

Figure 9-8 Radiated Spurious Emissions 24.2 GHz SRD (18 – 26.5 GHz)

9.4.5.6 Emissions in 26.5-40 GHz range

RSE 26.5 – 40 GHz Average Data							
Carrier Frequency (MHz)	**Frequency (MHz)**	**Raw Avg. Amplitude (dBµV)**	**Correction Factor (dB)**	**DC Correction Factor (dB)**	**Corrected Avg. Field Strength (dBµV/m)**	**Average Limit (dBµV/m)**	**Margin (dB)**
24200	26767.76	38.19	1.6	0	39.79	54	-14.21

RSE 26.5 – 40 GHz Peak Data						
Carrier Frequency (MHz)	**Frequency (MHz)**	**Raw Peak Amplitude (dBµV)**	**Correction Factor (dB)**	**Corrected Peak Field Strength (dBµV/m)**	**Peak Limit (dBµV/m)**	**Margin (dB)**
24200	26943.38	50.41	1.7	52.11	74	-21.89

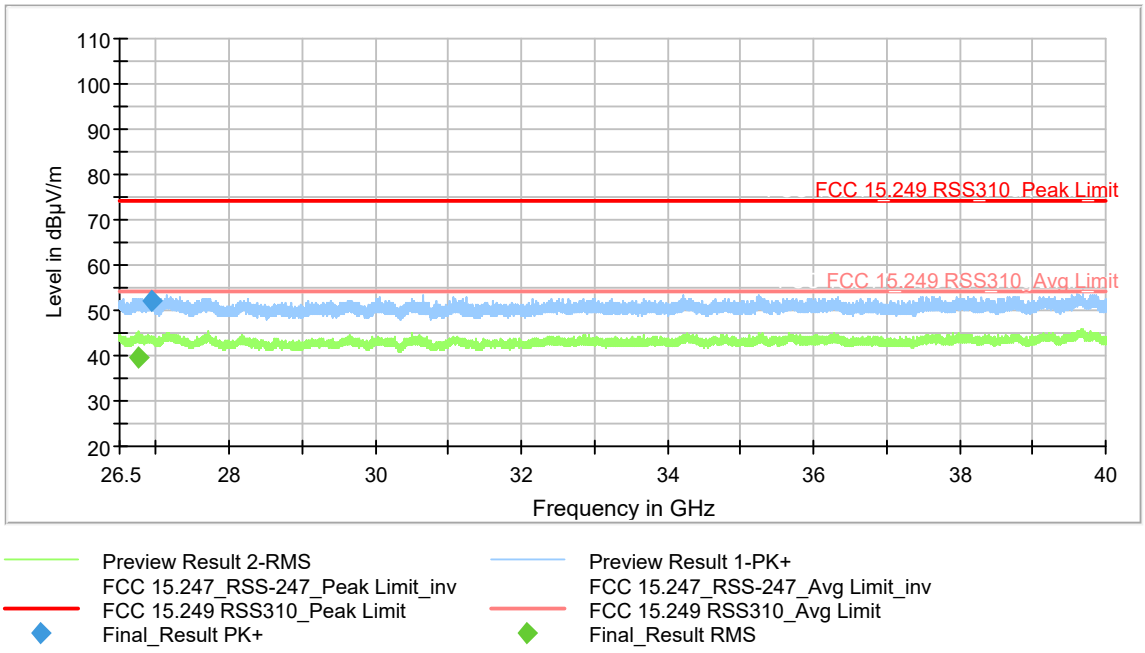

Figure 9-9 Radiated Spurious Emissions 24.2 GHz SRD (26.5 - 40 GHz)

9.5 AC Line Conducted Emissions

9.5.1 Test Requirements

FCC CFR 47 Rule Part 15.207 (a)

ISED RSS Gen [8.8]

9.5.2 Test Method

Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the unsymmetric 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.

The EUT is set to continuously transmit at 24.2 GHz with maximum output power.

EMI Receiver Settings:
150 kHz – 30 MHz:
RBW= 9 kHz
VBW ≥ 3 X RBW
Trace Mode: Peak Detector (Max Hold).
Final measurements were performed using Quasi-Peak and Average Detectors.
Span= 150 kHz – 30 MHz
Sweep time= Auto

9.5.3 Limit

Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

9.5.4 Test Result:

Pass

9.5.5 Test Data:

Sample Calculations:

Emission Level:

Amplitude (Analyzer level) + LCF (LISN Factor and Cable loss) = 20dBµV + 12dB = 32dBµV

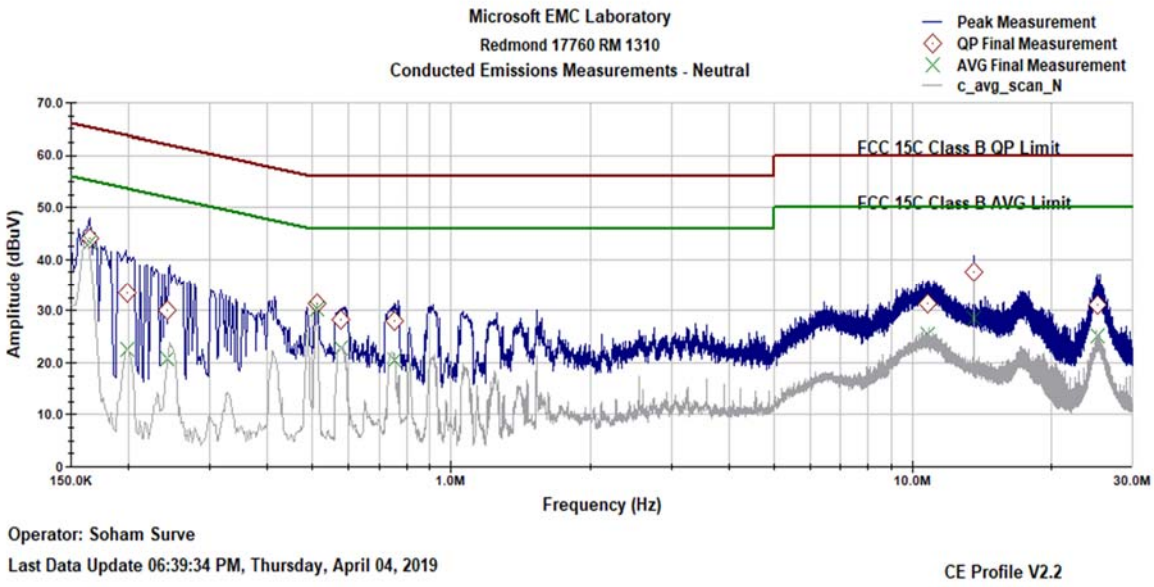

Figure 9-10 AC Line Conducted Emissions- Neutral (150 kHz- 30 MHz)

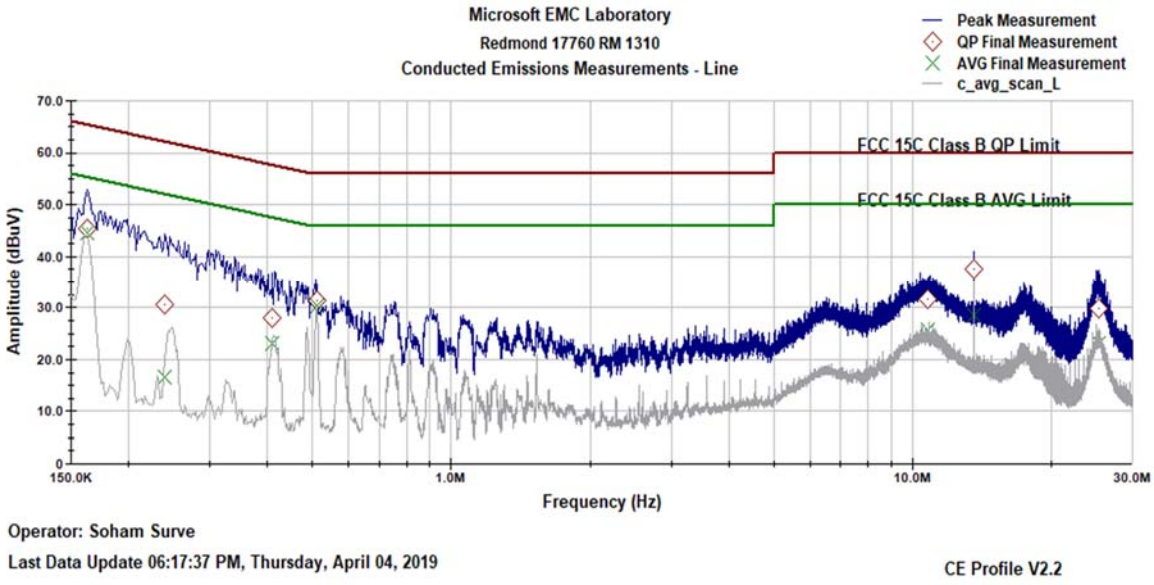

Figure 9-11 AC Line Conducted Emissions- Line (150 kHz- 30 MHz)

Frequency (MHz)	QP Net Reading (dBµV)	AVG Net Reading (dBµV)	Quasi-Peak Limit (dBµV)	Average Limit (dBµV)	Line Tested (L or N)	Quasi-Peak Margin (dB)	Average Margin (dB)
0.165	44.10	43.24	65.23	55.23	N	-21.13	-11.99
0.512	31.43	30.22	56.00	46.00	N	-24.57	-15.79
13.561	37.62	28.39	60.00	50.00	N	-22.38	-21.61
0.577	28.19	22.84	56.00	46.00	N	-27.81	-23.16
10.778	31.30	25.50	60.00	50.00	N	-28.70	-24.50
25.253	31.22	25.08	60.00	50.00	N	-28.78	-24.92
0.163	45.25	44.47	65.33	55.33	L	-20.08	-10.86
0.512	31.45	30.31	56.00	46.00	L	-24.55	-15.69
13.561	37.64	28.41	60.00	50.00	L	-22.36	-21.59
10.777	31.73	25.67	60.00	50.00	L	-28.27	-24.33
0.409	28.08	23.19	57.66	47.66	L	-29.58	-24.47
25.402	29.75	23.19	60.00	50.00	L	-30.25	-26.81

End of Report