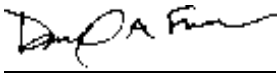
Certification Application Report
FCC Part 15.247 & ISED RSS-247

Test Lab:		Applicant:	
Rhein Tech Laboratories, Inc. Phone: 703-689 0368 360 Herndon Parkway www.rheintech.com Suite 1400 Herndon, VA 20170 E-Mail: atcbinfo@rheintech.com		Harris Corporation 221 Jefferson Ridge Parkway Lynchburg, VA 24501 USA	
FCC ID/ IC	OWDTR-0160-E/ 3636B-0160	**Test Report Date**	September 21, 2018
Platform	N/A	**RTL Work Order #**	2018025
Model / Model #/HVIN	XL-185M / XT-MPS1M	**RTL Quote Number**	QRTL18-025B

American National Standard Institute	ANSI C63.10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
FCC Classification	DSS – Part 15 Spread Spectrum Transmitter
FCC Rule Part(s)	FCC Rules Part 15.247: Operation within the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz (10-01-17)
ISED Standards	RSS-247 Issue 2: Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices RSS-Gen Issue 5: General Requirements for Compliance of Radio Apparatus
Digital Interface Information	Digital Interface was found to be compliant

Frequency Range (MHz)	Output Power (mW) Peak Conducted	Frequency Tolerance	Emission Designator
2402-2480	13.5	N/A	874KFXD

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this test report. No modifications were made to the equipment during testing in order to achieve compliance with these standards. Furthermore, there was no deviation from, additions to, or exclusions from, the applicable parts of FCC Part 2, FCC Part 15, ANSI C63.10, and ISED RSS-247 and RSS-Gen.

Signature:  Date: September 21, 2018

Typed/Printed Name: Desmond A. Fraser Position: President

These tests are accredited and meet the requirements of ISO/IEC 17025 as verified by ANAB. Refer to certificate and scope of accreditation AT-1445.

Table of Contents

Figure Index

Table Index

Plot Index

Appendix Index

Photograph Index

1 General Information

1.1 Scope

Applicable Standards

- FCC Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz
- ISED RSS-247: Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices
- ISED RSS-Gen Issue 5: General Requirements for Compliance of Radio Apparatus

1.2 Description of EUT

Equipment Under Test	Mobile Radio
Model / Model #	XL-185M / XT-MPS1M
Power Supply	13.6 VDC
Modulation Type	FHSS
Frequency Range	2402–2480 MHz

1.3 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report and approved by the Federal Communications Commission to perform AC line conducted and radiated emissions testing (ANSI C63.10-2013).

1.4 Related Submittal(s)/Grant(s)

This is an original certification application for Harris Corporation Model XL-185M, Model #/HVIN XT-MPS1M, FCC ID: OWDTR-0160-E, IC: 3636B-0160.

1.5 Modifications

No modifications were required for compliance.

2 Test Information

2.1 Description of Test Modes

In accordance with FCC 15.31(m), and because the EUT utilizes an operating band greater than 10 MHz, the following frequencies were tested:

Table 2-1: Test Frequencies

Channel (#)	FHSS Frequency (MHz)
0	2402
39	2440
78	2480

2.2 Exercising the EUT

The EUT was tested in all three orthogonal planes in order to determine worst-case emissions. The EUT was provided with software to continuously transmit during testing. The carrier was also checked to verify that information was being transmitted, and all modes were investigated and the worst-case mode was used for final testing. There were no deviations from the test standard(s) and/or methods. The test results reported relate only to the item tested.

2.3 Test Result Summary

Table 2-2: Test Result Summary – FCC Part 15, Subpart C (Section 15.247); RSS-247, RSS-Gen

FCC	ISED	Test	Result
FCC 15.207	RSS-Gen 8.8	AC Conducted Emissions	N/A
FCC 15.209	RSS-247 5.5; RSS-Gen 8.9, 8.10	Radiated Emissions	Pass
FCC 15.247(a)(1)	RSS-247 5.1(a)	20 dB Bandwidth	Pass
FCC 15.247(a)(1)	RSS-247 5.1(b)	Carrier Frequency Separation	Pass
FCC 15.247(a)(1)(iii)	RSS-247 5.1(d)	Hopping Characteristics	Pass
FCC 15.247(a)(1)(iii)	RSS-247 5.1(d)	Average Time of Occupancy	Pass
FCC 15.247(b)(1)	RSS-247 5.4(b); RSS-Gen 6.12	Maximum Peak Power Output	Pass
FCC 15.247(d)	RSS-247 5.5; RSS-Gen 6.13	Antenna Conducted Spurious Emissions	Pass
FCC 15.247(d)	RSS-247 5.5	Band Edge Measurement	Pass
N/A	RSS-Gen 6.7	99% Bandwidth	Pass

2.4 Tested System Details

The test samples were received on September 4, 2018. The FCC identifiers for all applicable equipment, plus descriptions of all cables used in the tested system, are identified in the following tables.

Table 2-3: Equipment Under Test (EUT)

Part	Manufacturer	Model/ HVIN	Serial Number	FCC ID	RTL Bar Code
Vehicular Communication Hub (VCH)	Harris Corporation	XL-185M/ XT-MPS1M	048	OWDTR-0160-E	23081
Control Head	Harris Corporation	XL-CH Mobile Control Head/ N/A	085	OWDTR-0160-E	23080

Table 2-4: Support Equipment

Part	Manufacturer	Model	PN/SN	FCC ID	RTL Bar Code
Laptop	ASUS	N550J	F2N0CY33003067G	N/A	N/A

Table 2-5: Auxiliary Equipment

Part	Manufacturer	Model	PN/SN	FCC ID	RTL Bar Code
USB Mobile Mic	N/A	USB Mobile Mic	14050-6010-01/V22e	N/A	22756
Remote Speaker	N/A	Remote Speaker	14050-6100-01	N/A	N/A
Analog Deskmic	N/A	Analog Deskmic	MC-014121-003	N/A	N/A
CH Mounting Kit	N/A	CH Mounting Kit	14050-6210-01	N/A	N/A
VCH Mounting Kit	N/A	VCH Mounting Kit	14050-6200-01	N/A	N/A
Antenna, Flex, Heavy-Duty, 136-870 MHz	N/A	XM-AN7G	12099-0300-01	N/A	N/A
Antenna, Element, Multiband, 136-870 MHz, 0 dB	N/A	XMAN6H	12099-0310-01	N/A	N/A
Antenna, Base, Standard Roof Mount Low Loss	N/A	AN-125001-002	AN-125001-002	N/A	N/A
Antenna, Base, Thick Roof Mount Low Loss	N/A	AN-125001-004	AN-125001-004	N/A	N/A

Antenna, Base, Standard Roof Mount Low Loss GPS	N/A	AN-125001-006	AN-125001-006	N/A	N/A
Antenna, Base, Magnetic Mount Low Loss	N/A	AN-125001-008	AN-125001-008	N/A	N/A
Mount, NMO Antenna, Magnetic, Heavy-Duty	N/A	XM-AN7H	12099-0370-01	N/A	N/A
Antenna, Element, 700/800 3db	N/A	AN-225001-001	AN-225001-001	N/A	N/A
Antenna, Element, 900, 3db	N/A	AN-225005-001	AN-225005-001	N/A	N/A
Antenna, GPS, Roof Mount	N/A	AN-025187-001	AN-025187-001	N/A	N/A
Antenna, GPS, Magnet Mount	N/A	AN-025187-003	AN-025187-003	N/A	N/A
Antenna Base, Stnd Roof Mount Low Loss GPS	N/A	AN-125001-006	AN-125001-006	N/A	N/A
Antenna 3dB 700/800/900	N/A	12099-0380-01	12099-0380-01	N/A	N/A
Squid Cable (HD44)	N/A	N/A	14002-0174-50	N/A	N/A
Ethernet Cable, overmold, 45cm	N/A	N/A	14050-6300-01	N/A	N/A
Ethernet Cable, overmold, 9m	N/A	N/A	14050-6300-02	N/A	N/A
DC power cables (CH)	N/A	N/A	CA-012616-001	N/A	N/A
DC power cables (VCH)	N/A	N/A	CA-012365-001	N/A	N/A

2.5 Configuration of Tested System

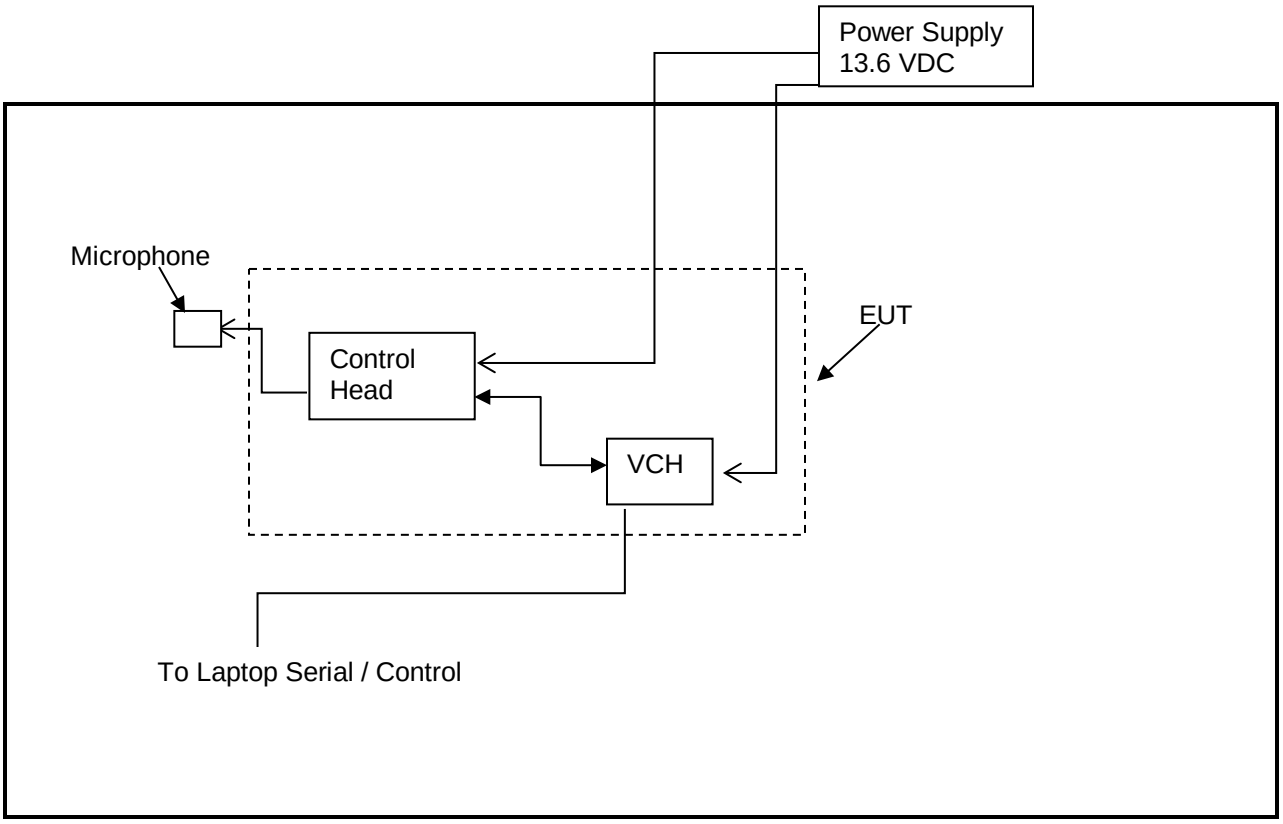


Figure 2-1: Configuration of System Under Test

3 Peak Output Power – FCC 15.247(b)(1); RSS-247 5.4(b), RSS-Gen 6.12

3.1 Power Output Test Procedure

A conducted power measurement of the EUT was taken using an Agilent Analyzer. The following settings were used:

1) Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel (5 MHz used)
2) RBW >20 dB bandwidth of the emission being measured (2 MHz used)
3) VBW ≥RBW (3 MHz used)
4) Sweep: Auto
5) Detector function: Peak
6) Trace: Max hold. The trace was allowed to stabilize, and the marker-to-peak function was used to set the marker to the peak of the emission.

Table 3-1: Power Output Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901583	Agilent Technologies	N9010A	EXA Signal Analyzer (10 Hz-26.5 GHz)	MY51250846	2/6/20

3.2 Power Output Test Results

Table 3-2: Power Output Test Data – GFSK

Channel (#)	Frequency (MHz)	Conducted Peak Power (dBm)	Limit (dBm)	Margin (dB)
1	2402	11.3	21.0	-9.7
6	2440	11.1	21.0	-9.9
11	2480	11.2	21.0	-9.8

Note: EUT was programmed to TX with GFSK modulation, PN15 test pattern and 7 dBm power level for all three test frequencies.

Highest conducted peak power measured: 11.3 dBm ≈ 13.5 mW

$P(Watts) = 10^{(dBm / 10)} / 1000$

Measurement uncertainty: ±0.5 dB. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor k=2.

Results: Pass

Test Personnel:

Khue Do		September 7, 2018
Test Engineer	Signature	Date of Test

4 Compliance with the Band Edge – FCC 15.247(d); RSS-247 5.5

4.1 Band Edge Test Procedure

The transmitter output was connected to the spectrum analyzer. Peak and average detector conducted plots were taken with a suitable span to encompass the peak of the fundamental, and traces to stop hopping and non-hopping modes. The measurement was performed from the highest peak in the restricted band (within 2 MHz), and the result was compared to the restricted band limit (54 dBµV/m). An offset was used to reference the fundamental power to a radiated field strength measurement.

Table 4-1: Band Edge Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901583	Agilent Technologies	N9010A	EXA Signal Analyzer (10 Hz-26.5 GHz)	MY51250846	2/6/20

4.2 Restricted Band Edge Test Results

Note: EUT was programmed to TX with GFSK modulation, PN15 test pattern and 7 dBm power level for all three test frequencies.

Conversion of dBm to dBµV/m at 3 m.

dBµV/m = dBm + 104.7 – (20 * LOG(3m)) = dBm + 95.2

4.3 Band Edge Plots

Plot 4-1: Lower Band Edge – Average – GFSK

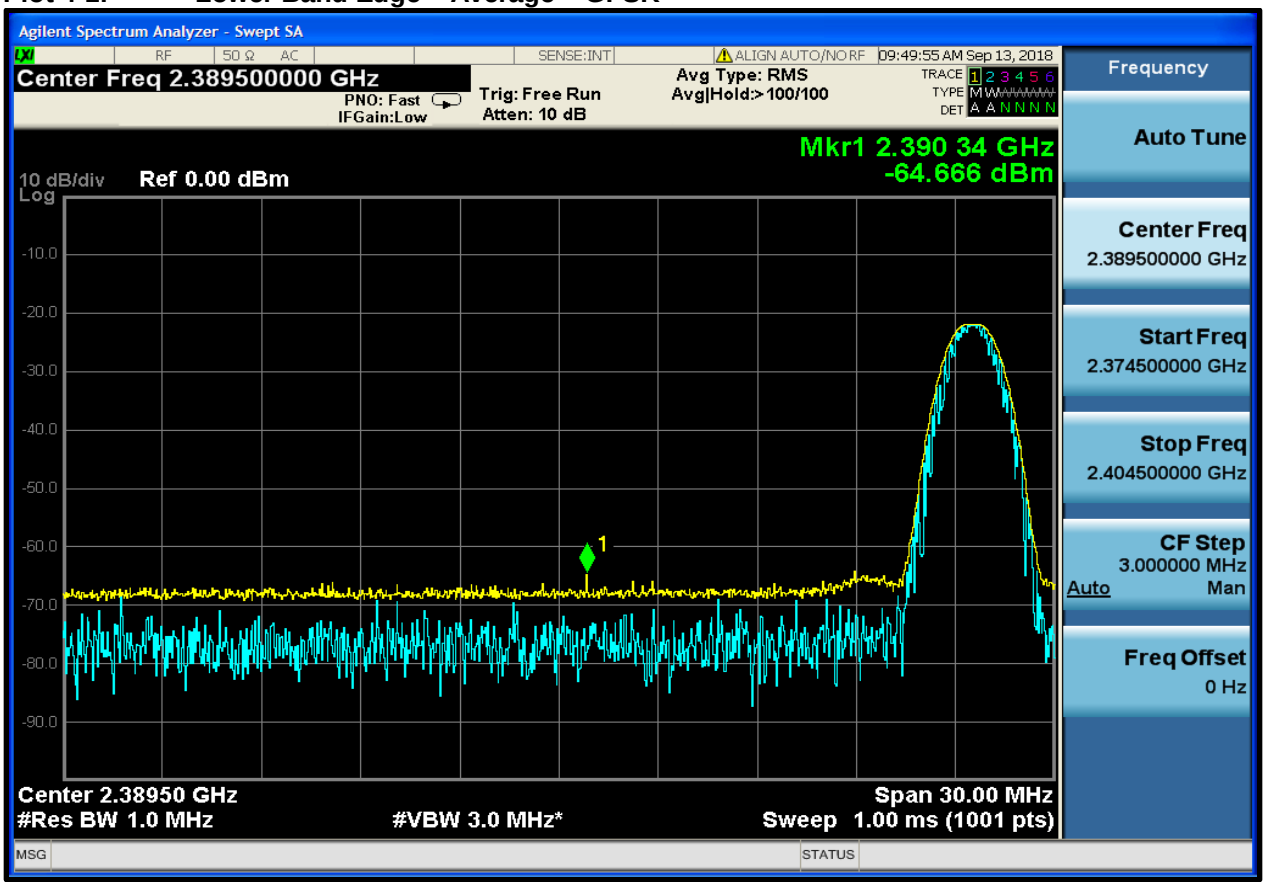


Table 4-2: Lower Band Edge Average – GFSK

Frequency (MHz)	Measured Average Level (dBm)	Field Strength Conversion (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)
2390.34	-64.7	30.5	54.0	-23.5

Plot 4-2: Lower Band Edge – Peak – GFSK

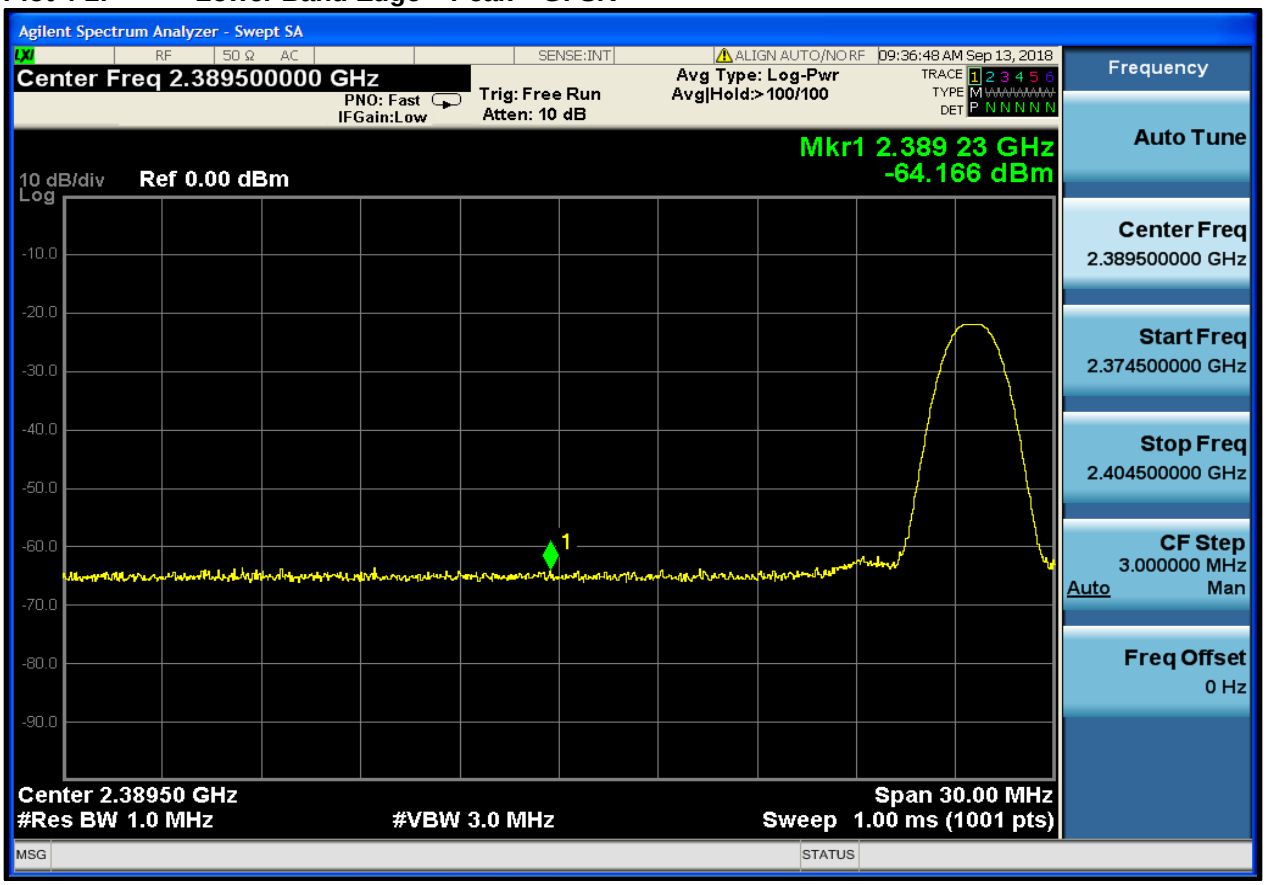


Table 4-3: Lower Band Edge Peak – GFSK

Frequency (MHz)	Measured Peak Level (dBm)	Field Strength Conversion (dBµV/m)	Peak Limit (dBµV/m)	Margin (dB)
2389.23	-64.2	31.0	74.0	-43.0

Plot 4-3: Upper Band Edge – Average – GFSK

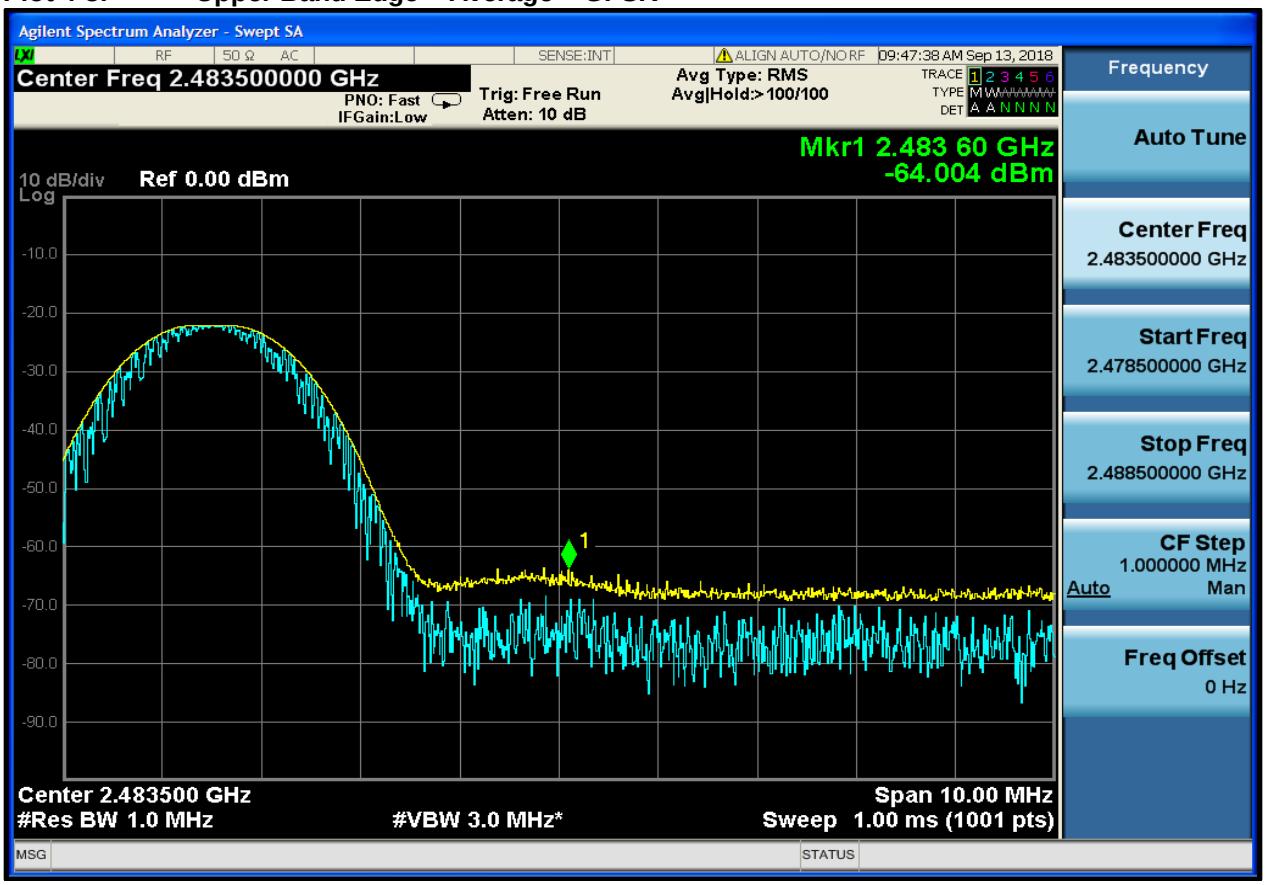


Table 4-4: Upper Band Edge Average – GFSK

Frequency (MHz)	Measured Average Level (dBm)	Field Strength Conversion (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)
2483.60	-64.0	31.2	54.0	-22.8

Plot 4-4: Upper Band Edge – Peak – GFSK

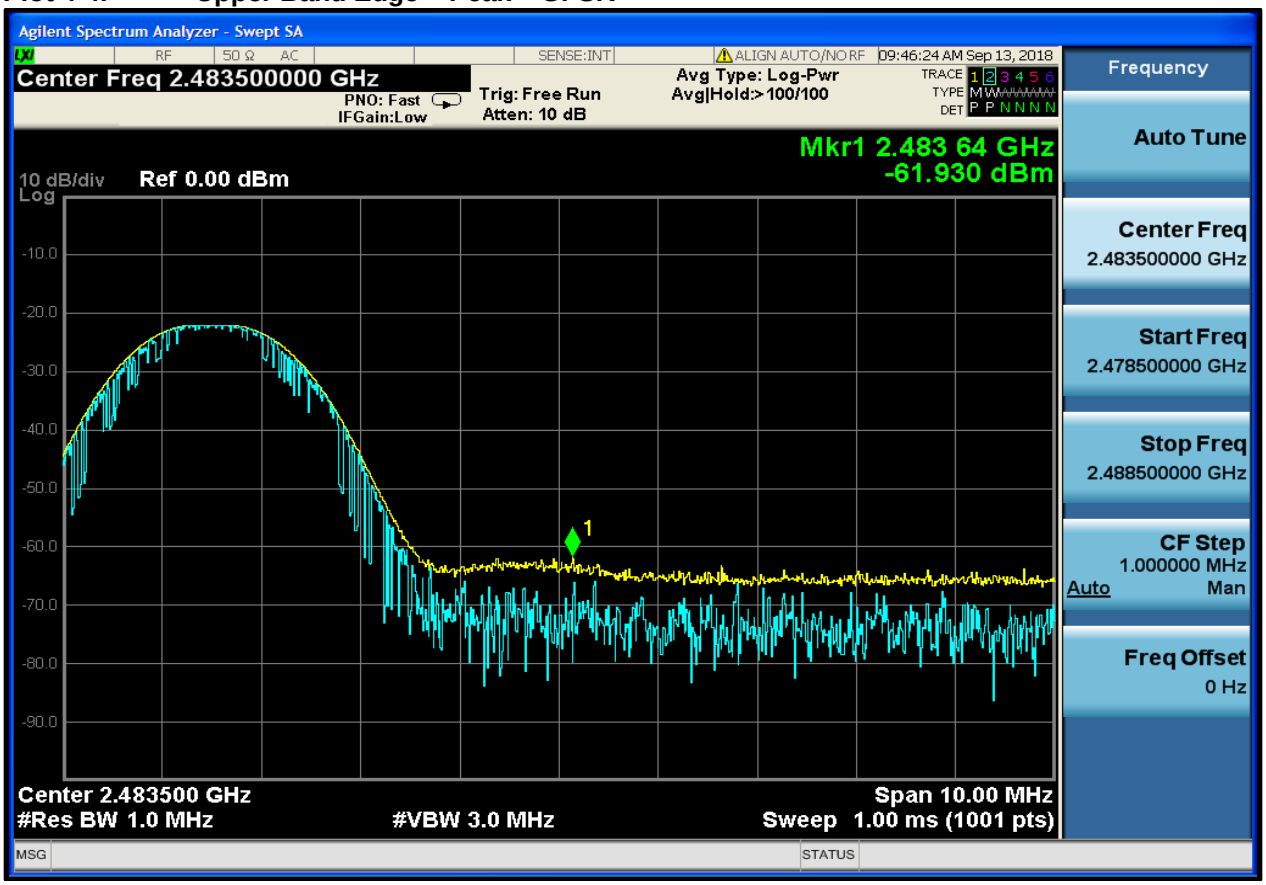


Table 4-5: Upper Band Edge Peak – GFSK

Frequency (MHz)	Measured Peak Level (dBm)	Field Strength Conversion (dBµV/m)	Peak Limit (dBµV/m)	Margin (dB)
2483.64	-61.9	33.3	74.0	-40.7

Measurement uncertainty: ±0.5 dB. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor k=2.

Results: Pass

Test Personnel:

Khue Do		September 13, 2018
Test Engineer	Signature	Date of Test

5 Antenna Conducted Spurious Emissions – FCC 15.247(d); RSS-247 5.5, RSS-Gen 6.13

5.1 Antenna Conducted Spurious Emissions Test Procedures

Antenna spurious emissions per FCC 15.247(d) were measured from the EUT antenna port using a 50-ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 100 kHz. The modulated carrier was identified at the following frequencies: 2402 MHz, 2440 MHz and 2480 MHz.

5.2 Antenna Conducted Spurious Emissions Test Results

No harmonics or spurs were found within 20 dB (note that we are reporting power as peak) of the carrier level from the carrier to the 10th harmonic of the carrier frequency.

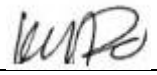
Table 5-1: Antenna Conducted Spurious Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901583	Agilent Technologies	N9010A	EXA Signal Analyzer (10 Hz-26.5 GHz)	MY51250846	2/6/20

Measurement uncertainty: ±0.5 dB. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor k=2.

Results: Pass

Test Personnel:

Khue Do		September 12, 2018
Test Engineer	Signature	Date of Test

6 Bandwidths – FCC 15.247(a)(1); RSS-247 5.1(a); RSS-Gen 6.7

6.1 Bandwidth Test Procedure

The 20 dB and 99% bandwidths per FCC 15.247(a)(1), RSS-247 5.1 and RSS-Gen 6.7 were measured using a 50-ohm spectrum analyzer.

The following conditions shall be observed for measuring the occupied bandwidth and x dB bandwidth:

• The transmitter shall be operated at its maximum carrier power measured under normal test conditions.

• The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.

• The detector of the spectrum analyzer shall be set to "Sample". However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or "Max Hold") may be necessary to determine the occupied/x dB bandwidth if the device is not transmitting continuously.

• The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied/x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Table 6-1: Bandwidth Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901583	Agilent Technologies	N9010A	EXA Signal Analyzer (10 Hz-26.5 GHz)	MY51250846	2/6/20

6.2 Modulated Bandwidth Test Results

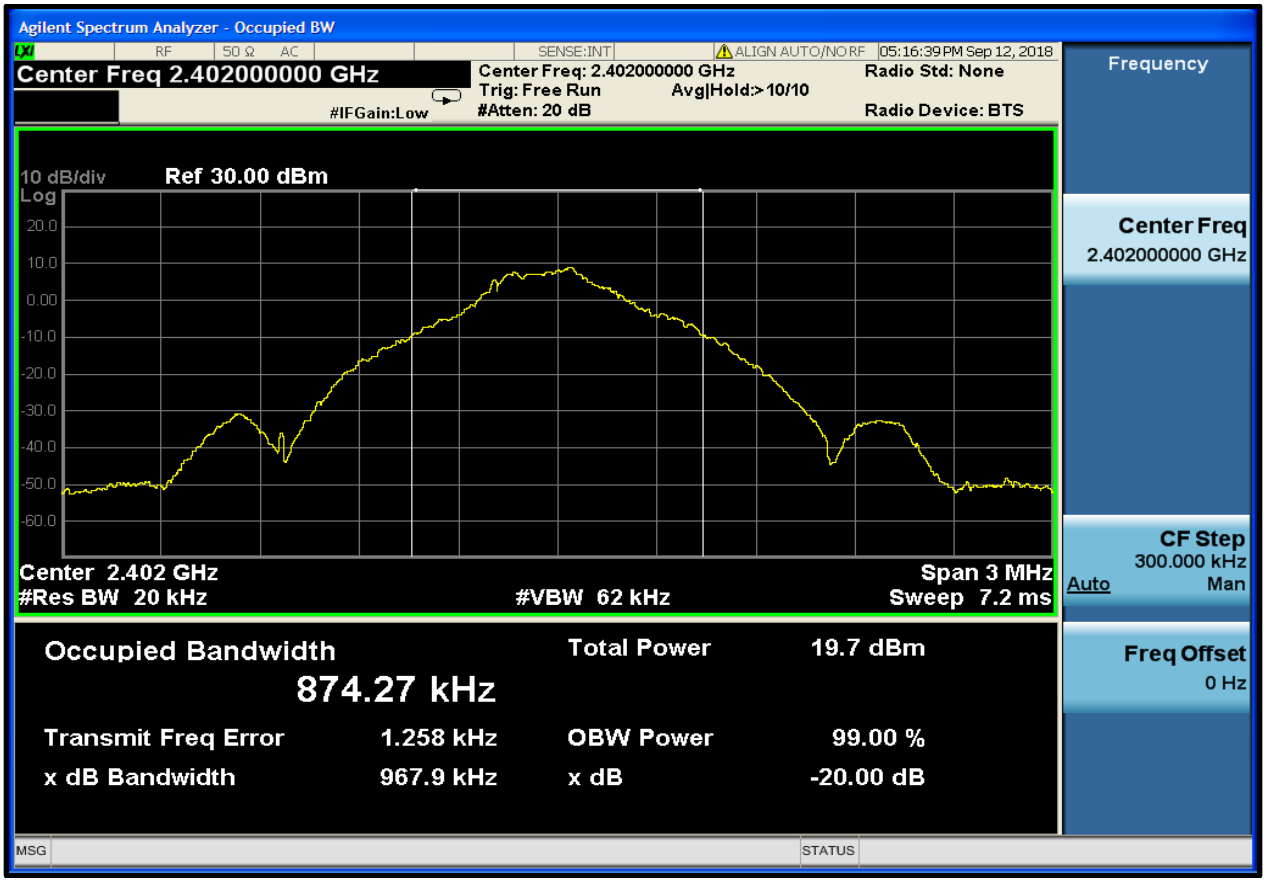
Note: EUT was programmed to TX with GFSK modulation, PN15 test pattern for all three test frequencies.

Table 6-2: Modulated Bandwidth Test Data – GFSK

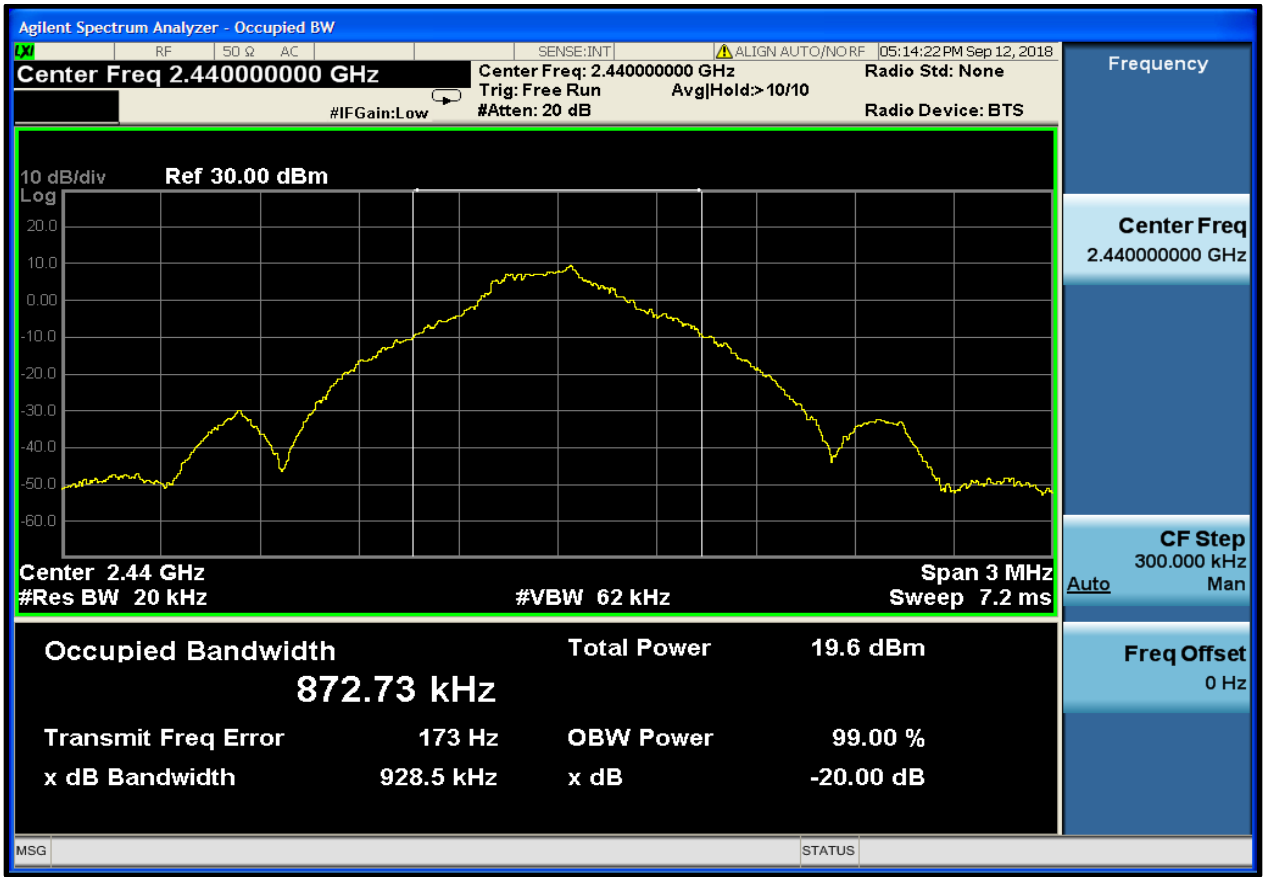
Frequency (MHz)	20 dB Bandwidth (MHz)	99 % Bandwidth (MHz)
2402	0.968	0.874
2440	0.929	0.873
2480	0.920	0.866

6.3 Bandwidth Plots

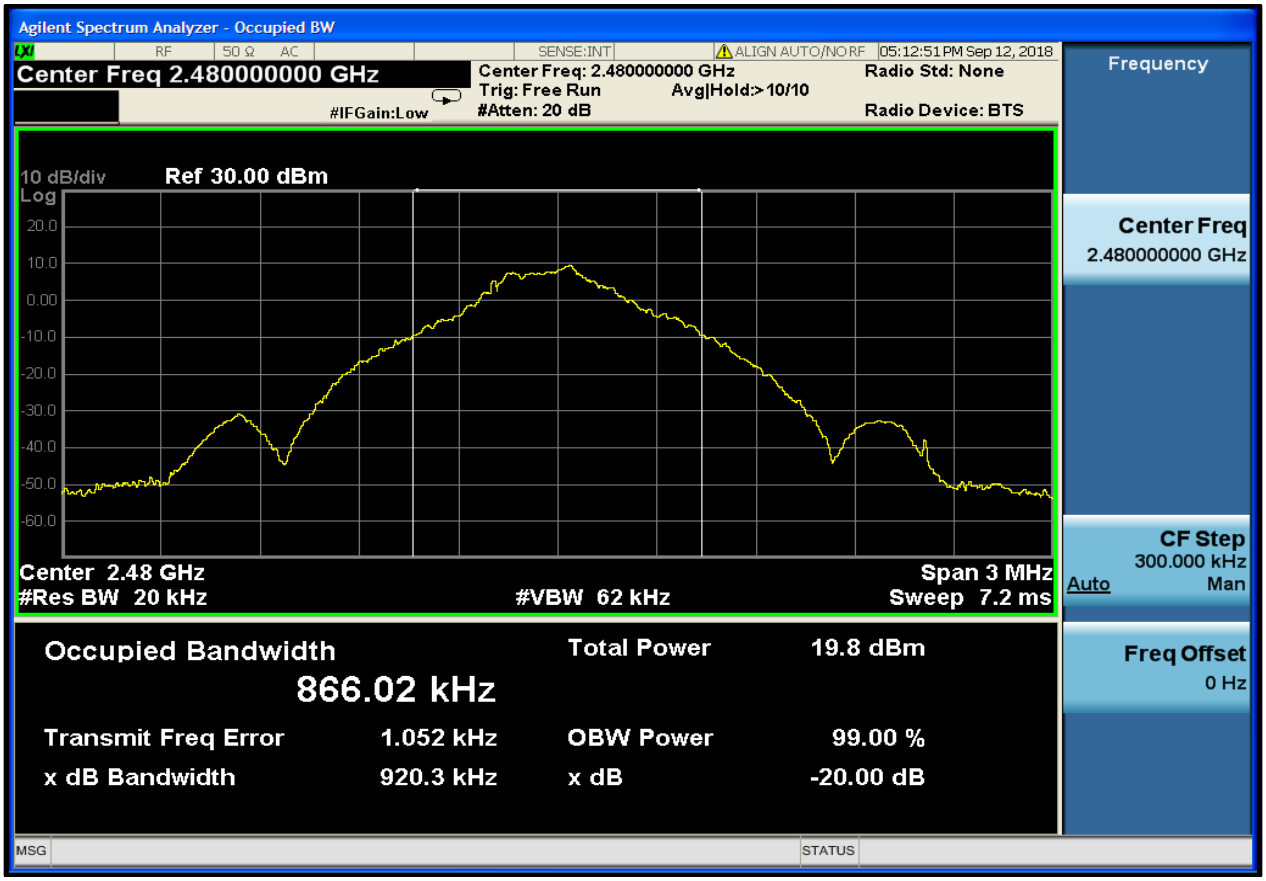
Plot 6-1: 20 dB Bandwidth – 2402 MHz – GFSK



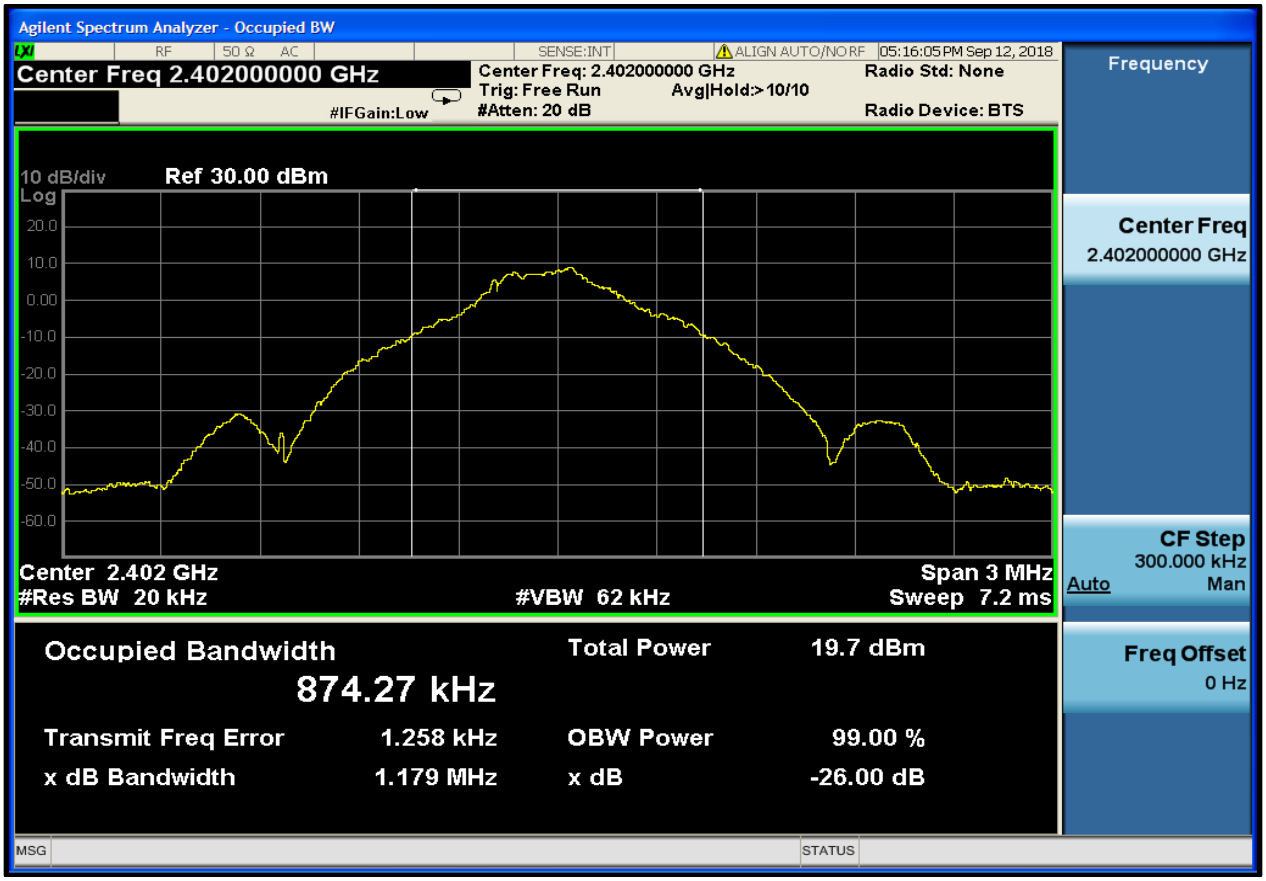
Plot 6-2: 20 dB Bandwidth – 2440 MHz – GFSK



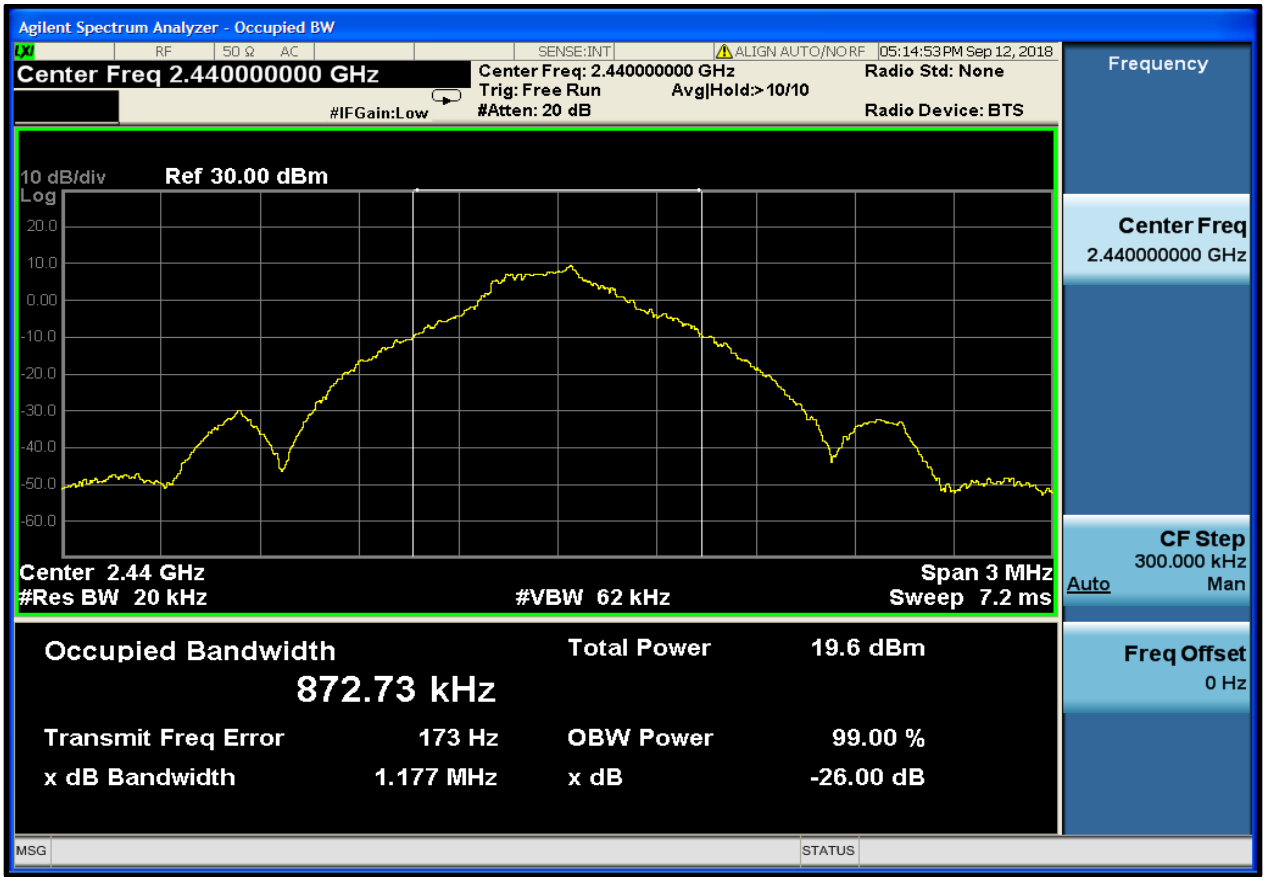
Plot 6-3: 20 dB Bandwidth – 2480 MHz – GFSK



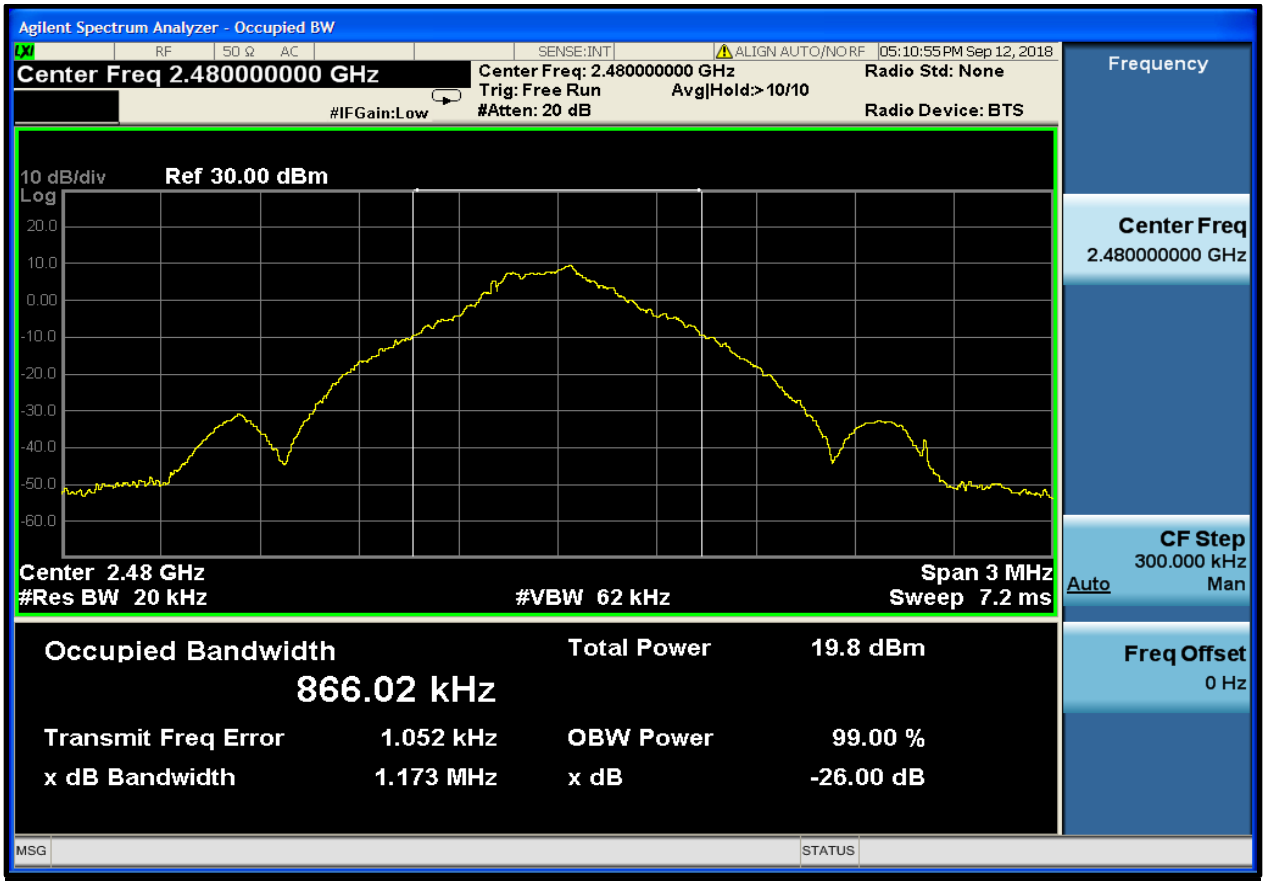
Plot 6-4: 99% Bandwidth – 2402 MHz – GFSK



Plot 6-5: 99% Bandwidth – 2440 MHz – GFSK

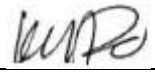


Plot 6-6: 99% Bandwidth – 2480 MHz – GFSK



Measurement uncertainty: ±1 x 10^{-6} Hz. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor k=2.

Test Personnel:

Khue Do		September 12, 2018
Test Engineer	Signature	Date of Test

7 Carrier Frequency Separation – FCC 15.247(a)(1); RSS-247 5.1(b)

7.1 Carrier Frequency Separation Test Procedure

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Measured frequency separation = 1.00 MHz

Table 7-1: Carrier Frequency Separation Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901583	Agilent Technologies	N9010A	EXA Signal Analyzer (10 Hz-26.5 GHz)	MY51250846	2/6/20

7.2 Carrier Frequency Separation Test Data

Plot 7-1: Carrier Frequency Separation

Frequency uncertainty: ±1 x 10^{-6} Hz. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor k=2.

Test Personnel:

Khue Do		September 10, 2018
Test Engineer	Signature	Date of Test

8 Hopping Characteristics – FCC 15.247(a)(1)(iii); RSS-247 5.1(d)

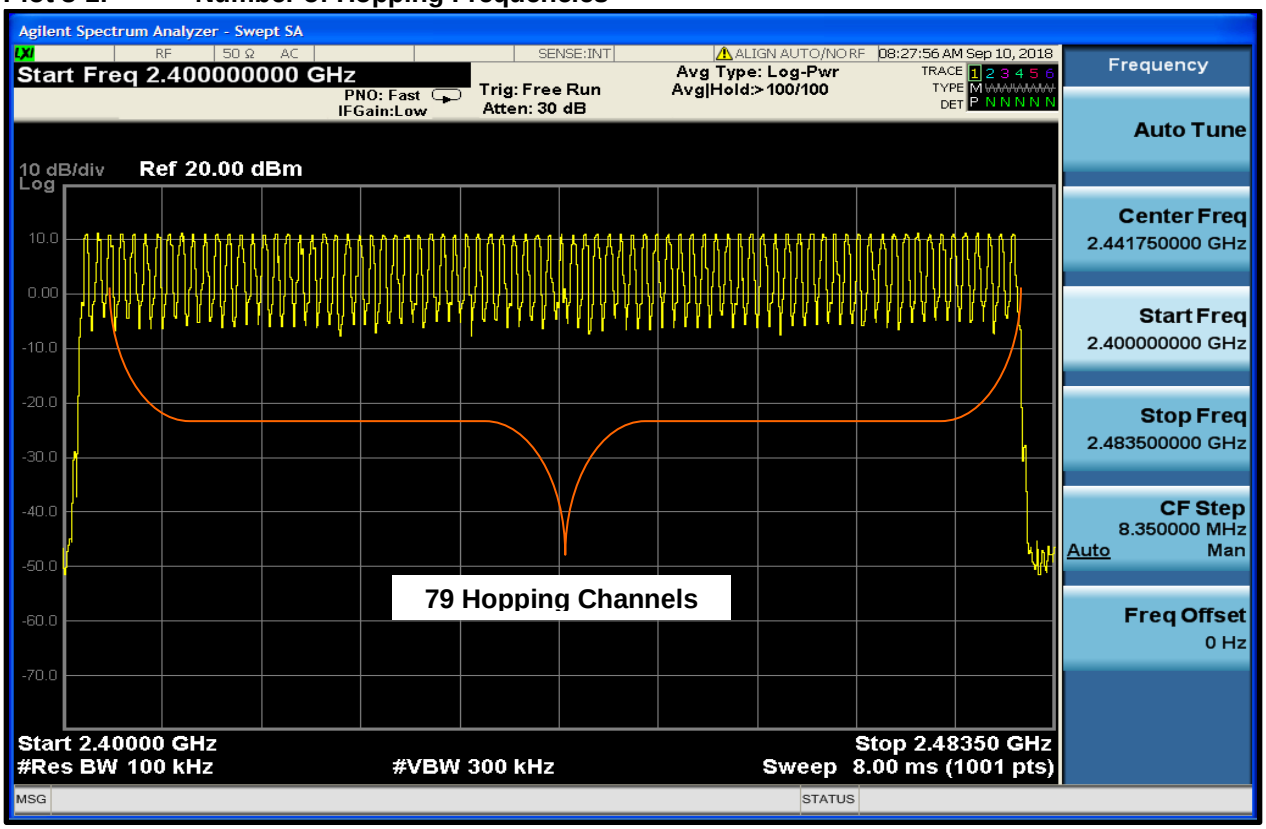
8.1 Hopping Characteristics Test Procedure

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels is used.

Table 8-1: Hopping Characteristics Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901583	Agilent Technologies	N9010A	EXA Signal Analyzer (10 Hz-26.5 GHz)	MY51250846	2/6/20

Plot 8-1: Number of Hopping Frequencies



Frequency uncertainty: ±1 x 10^{-6} Hz. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor k=2.

Test Personnel:

Khue Do		September 10, 2018
Test Engineer	Signature	Date of Test

8.2 Average Time of Occupancy – FCC 15.247(a)(1)(iii); RSS-247 5.1(d)

The spectrum analyzer gate function was used to determine the pulse width using the gate start and stop times, with a zero span to capture a pulse from the device under test. The delta response was used to measure the dwell time for this pulse. The sweep was then set to single sweep for 31.6 s.

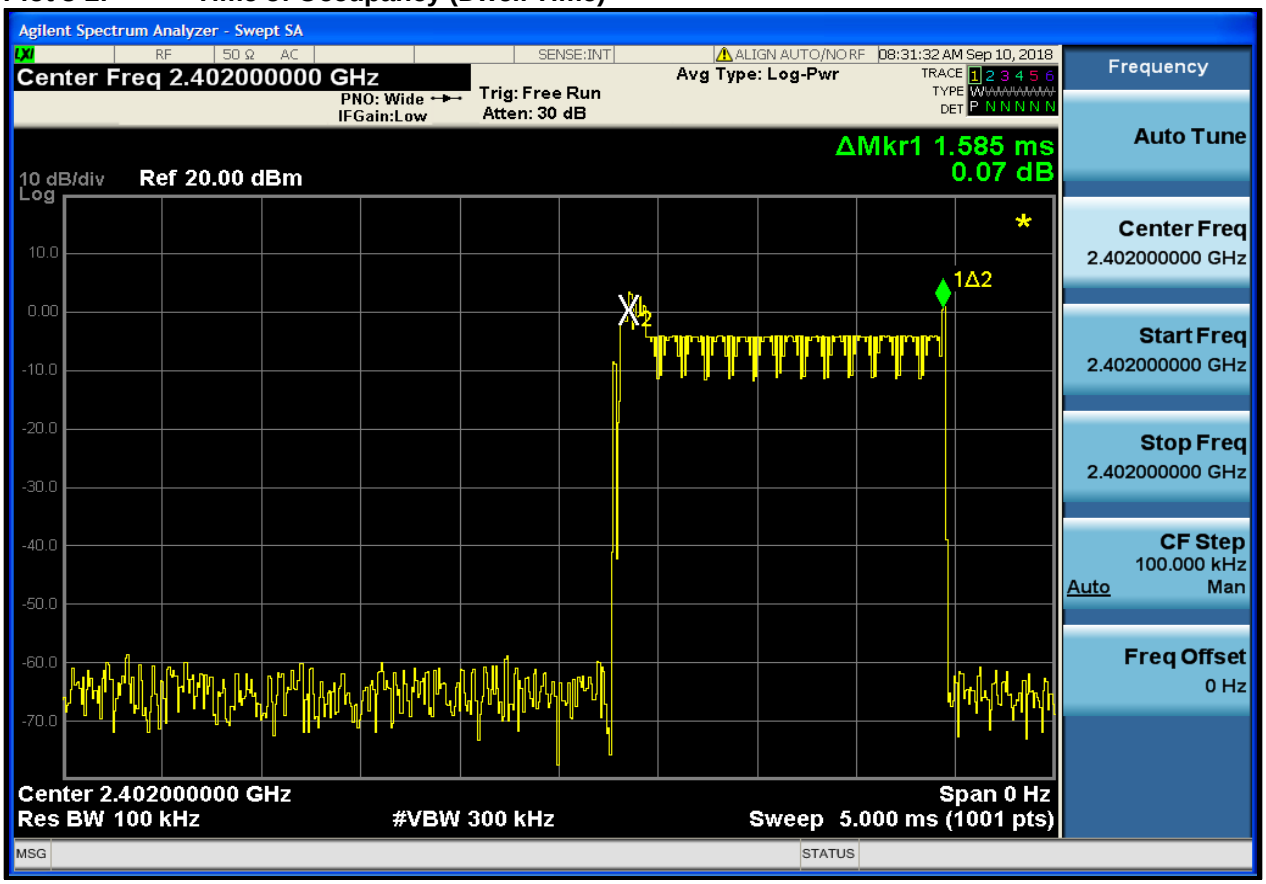
The number of pulses in 31.6 s was 226.

The average time of occupancy in the above period (31.6 s) is equal to 226 pulses x 1.585 ms = 358.21 ms, which meets the limit as defined by 15.247(a1iii) of 0.4 seconds.

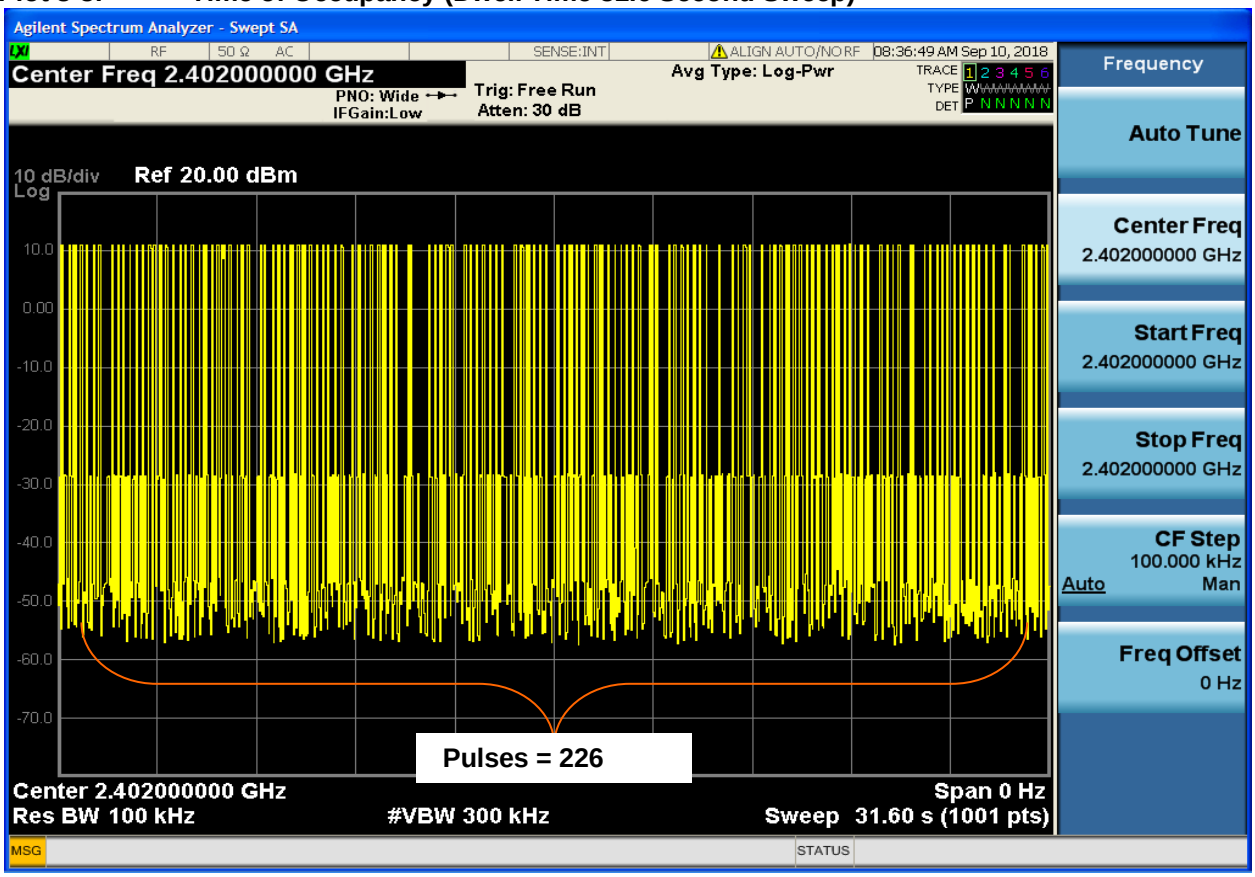
Table 8-2: Average Time of Occupancy Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901583	Agilent Technologies	N9010A	EXA Signal Analyzer (10 Hz-26.5 GHz)	MY51250846	2/6/20

Plot 8-2: Time of Occupancy (Dwell Time)



Plot 8-3: Time of Occupancy (Dwell Time 31.6 Second Sweep)



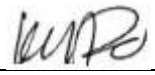
Number of pulses in 31.6 seconds: 226

The pulse width of 1.585 ms x 226 = 358.21 ms; less than the limit of 400 ms.

Results: Pass

Frequency uncertainty: ±1 x 10^{-6} Hz. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor k=2.

Test Personnel:

Khue Do		September 10, 2018
Test Engineer	Signature	Date of Test

9 AC Conducted Emissions – FCC 15.207; RSS-Gen 8.8

Device is a mobile 13.6 VDC equipment; AC line conducted emissions measurements are not required.

10 Radiated Emissions – FCC 15.209; RSS-247 5.5; RSS-Gen 8.9, 8.10

10.1 Limits of Radiated Emissions Measurement

Frequency (MHz)	Field Strength (µV/m)	Measurement Distance (m)
0.009-0.490	2400/f (kHz)	300
0.490-1.705	2400/f (kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

As shown in 15.35(b), for frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any circumstances of modulation.

10.2 Radiated Emissions Measurement Test Procedure

Before final measurements of radiated emissions were made on the open-field three/ten meter range, the EUT was scanned indoors at one and three meter distances. This was done in order to determine its emissions spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements on the open-field range, at each frequency, in order to ensure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made on the three/ten-meter, open-field test site. The EUT was placed on a nonconductive turntable 0.8 meters above the ground plane. The spectrum was examined from 9 kHz to the 10th harmonic of the highest fundamental transmitter frequency (24.8 GHz).

At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations. For frequencies between 30 and 1000 MHz, the spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. For emissions above 1000 MHz, emissions are measured using the average detector function with a minimum resolution bandwidth of 1 MHz. No video filter less than 10 times the resolution bandwidth was used. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

Table 10-1: Radiated Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900772	EMCO	3161-02	Horn Antenna (2.0–4.0 GHz)	9804-1044	4/9/19
900321	EMCO	3161-03	Horn Antennas (4.0–8.2 GHz)	9508-1020	4/9/19
900323	EMCO	3160-7	Horn Antennas (8.2–12.4 GHz)	9605-1054	4/9/19
900356	EMCO	3160-08	Horn Antenna (12.4–18.0 GHz)	9607-1044	4/9/19
901218	EMCO	3160-09	Horn Antenna (18.0–26.5 GHz)	960281-003	4/14/19
900791	Chase	CBL6111B	Bilog Antenna (30–2000 MHz)	N/A	10/4/20
900905	Rhein Tech Laboratories, Inc.	PR-1040	Preamplifier (10–2000 MHz)	1006	8/20/19
901723	Hewlett Packard	8449B	Preamplifier (1–26.5 GHz)	3008A00762	5/22/19
901583	Agilent Technologies	N9010A	EXA Signal Analyzer (10 Hz–26.5 GHz)	MY51250846	2/6/20
900913	Hewlett Packard	85462A	EMI Receiver RF Section (9 kHz–6.5 GHz)	3325A00159	4/4/19
900914	Hewlett Packard	8546OA	RF Filter Section (100 kHz-6.5 GHz)	3330A00107	4/4/19

10.3 Radiated Emissions Test Results

Note: EUT was programmed to TX with GFSK modulation, PN15 test pattern and 7 dBm power level for all three test frequencies.

Frequencies above the 3rd harmonics were measured at 1 m instead of 3 m.

Correction = 20 * LOG(1 m / 3 m) = -9.5 dB

Table 10-2: Radiated Emissions Harmonics/Spurious – 2402 MHz, Peak Detector

Frequency (MHz)	Peak Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Peak Corrected (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)
4804	51.7	0.6	52.3	74.0	-21.7
12010	46.4	-1.2	45.2	74.0	-28.8
19216	19.8	7.2	27.0	74.0	-47.0

Table 10-3: Radiated Emissions Harmonics/Spurious – 2402 MHz, Average Detector

Frequency (MHz)	Average Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Average Corrected (dBµV/m)	Average Limit (dBµV/m)	Average Margin (dB)
4804	50.9	0.6	51.5	54.0	-2.5
12010	45.7	-1.2	44.5	54.0	-9.5
19216	18.1	7.2	25.3	54.0	-28.7

Table 10-4: Radiated Emissions Harmonics/Spurious – 2440 MHz, Peak Detector

Frequency (MHz)	Peak Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Peak Corrected (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)
4882	49.4	0.3	49.7	74.0	-24.3
7323	48.0	1.7	49.7	74.0	-24.3
12205	45.0	0.0	45.0	74.0	-29.0
19528	19.6	7.2	26.8	74.0	-47.2

Table 10-5: Radiated Emissions Harmonics/Spurious – 2440 MHz, Average Detector

Frequency (MHz)	Average Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Average Corrected (dBµV/m)	Average Limit (dBµV/m)	Average Margin (dB)
4882	48.0	0.3	48.3	54.0	-5.7
7323	46.2	1.7	47.9	54.0	-6.1
12205	44.6	0.0	44.6	54.0	-9.4
19528	17.5	7.2	24.7	54.0	-29.3

Table 10-6: Radiated Emissions Harmonics/Spurious – 2480 MHz, Peak Detector

Frequency (MHz)	Peak Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Peak Corrected (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)
4960	49.3	0.5	49.8	74.0	-24.2
7440	47.4	2.1	49.5	74.0	-24.5
12400	44.3	-0.3	44.0	74.0	-30.0
19840	20.5	6.9	27.4	74.0	-46.6
22320	21.6	7.8	29.4	74.0	-44.6

Table 10-7: Radiated Emissions Harmonics/Spurious – 2480 MHz, Average Detector

Frequency (MHz)	Average Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Average Corrected (dBµV/m)	Average Limit (dBµV/m)	Average Margin (dB)
4960	48.2	0.5	48.7	54.0	-5.3
7440	45.6	2.1	47.7	54.0	-6.3
12400	43.4	-0.3	43.1	54.0	-10.9
19840	19.0	6.9	25.9	54.0	-28.1
22320	20.3	7.8	18.6	54.0	-35.4

Table 10-8: Unintentional Emissions Test Data

Temperature: 67.0°F Humidity: 94%										
Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (°)	Antenna Height (m)	Analyzer Reading (dBµV)	Site Correction Factor (dB/m)	Emission Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pass/ Fail
72.145	QP	H	0.0	3.0	51.9	-22.6	29.3	40.0	-10.7	PASS
120.000	QP	V	315.0	4.0	51.8	-16.8	35.0	43.5	-8.5	PASS
150.000	QP	H	315.0	2.0	51.6	-17.7	33.9	43.5	-9.6	PASS
175.000	QP	V	350.0	3.0	49.5	-18.5	31.1	43.5	-12.4	PASS
200.000	QP	V	180.0	4.0	48.9	-18.3	30.7	43.5	-12.8	PASS
225.000	QP	V	180.0	1.0	42.5	-18.0	24.6	46.0	-21.4	PASS
233.213	QP	V	180.0	1.0	41.4	-16.9	24.5	46.0	-21.5	PASS
250.000	QP	H	270.0	1.0	49.1	-15.0	34.1	46.0	-11.9	PASS
350.000	QP	H	315.0	1.0	37.1	-11.8	25.4	46.0	-20.6	PASS
375.000	QP	H	0.0	1.0	38.5	-11.0	27.5	46.0	-18.5	PASS
400.000	QP	H	315.0	1.0	41.5	-9.9	31.7	46.0	-14.3	PASS
425.000	QP	H	315.0	1.0	37.8	-9.5	28.3	46.0	-17.7	PASS

Measurement uncertainty: ±4.7 dB. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor k=2.

Results: Pass

Test Personnel:

Khue N. Do		September 10-12, 2018
Test Engineer	Signature	Dates of Test

11 Conclusion

The data in this DSS measurement report shows that the EUT as tested, Harris Corporation XL-185M, Model #/HVIN XT-MPS1M, FCC ID: OWDTR-0160-E, IC: 3636B-0160, complies with the applicable requirements of FCC Parts 2 and 15 and ISED RSS-247 and RSS-Gen.