Excellence in Compliance Testing

Certification Test Report

FCC ID: ONTJETIR5US
IC: 10491A-JETIR5US

FCC Rule Part: 15.247
IC Radio Standards Specification: RSS-210

ACS Report Number: 13.2001.W06.1B

Manufacturer: Esprit Model
Model: JETIR5LUS

Test Begin Date: **January 3, 2013**
Test End Date: **February 9, 2013**

Report Issue Date: May 2, 2013

ACCREDITED TESTING

FOR THE SCOPE OF ACCREDITATION UNDER CERTIFICATE NUMBER AT-1533

This report must not be used by the client to claim product certification, approval, or endorsement by ACLASS, ANSI, or any agency of the Federal Government.

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This report contains 43 pages

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1 GENERAL

1.1 Purpose

The purpose of this report is to demonstrate compliance with Part 15 Subpart C of the FCC's Code of Federal Regulations and Industry Canada's Radio Standards Specification RSS-210.

1.2 Manufacturer Information

Esprit Model, Inc.
1240 Clearmont St. NW
Palm Bay, FL 32905, USA

1.3 Product description

The JETIR5LUS is a 2.4 GHz wireless transceiver for remote controlled toys. The unit provides 5 channels for servo connection. The JETIR5LUS comports two coaxial antennas which alternate based on the received signal strength on each antenna.

Band of Operation: 2405 MHz - 2480 MHz
Number of Channels: 16
Mode of Operation: FH/DSSS
Modulation Format: O-QPSK
Antenna Type/Gain: Coaxial Wire Antenna, 2.1 dBi
Operating Voltage: 5 VDC

Model Numbers: JETIR5LUS

Model Variants: The JETIR5LUS is one of multiple Esprit Model transceivers with identical printed circuit board designs. The additional model variants differ by the amount of servo channels available. The model variants are listed below.

Table 1.3-1: Model Variants

Model Variants	Description	Complete Test
JETIR5LUS	Jeti Duplex EX R5L 2.4GHz Receiver w/Telemetry (US)	Yes
JETIR5iUS	Jeti Duplex EX R5i 2.4GHz Receiver w/Telemetry (US) - Shortened length of antenna coax	-------
JETIR4LUS	Jeti Duplex EX R4L 2.4GHz Receiver w/Telemetry (US) Depopulation of servo output connectors to support 4 servo output channels - Software restriction to support 4 servo output channels	-------
JETIR4iUS	Jeti Duplex EX R4i 2.4GHz Receiver w/Telemetry (US) Depopulation of servo output connectors to support 4 servo output channels- Software restriction to support 4 servo output channels - Shortened length of antenna coax	-------

Test Sample Serial Number(s): ACS# 6 (radiated), ACS #3 (RF conducted)

Test Sample Condition: The samples were in good conditions with no observable physical damages.

1.4 Test Methodology and Considerations

The unit was powered using a DC bench power supply set to 5V. The EUT was evaluated for RF conducted and radiated emissions for both antenna paths. When applicable, the data is provided for the worst case configuration.

For the radiated emissions, preliminary measurements were performed for the long and short antenna cable model variants. Model JETIR5LUS was determined to be the worst case. Additional measurements were collected for the EUT set in three orthogonal orientations on the table top. The results are reported for the orientation leading to the highest emissions.

The RF conducted measurements were performed with a temporary connector at the antenna ports. The power settings used for the evaluation were configured as listed below:

Channel 11 (2405 MHz): 9
Channel 18 (2440 MHz): 9
Channel 26 (2480 MHz): 14

The EUT was also evaluated for unintentional emissions. The results are documented separately in a Verification test report.

2 TEST FACILITIES

2.1 Location

The radiated and conducted emissions test sites are located at the following address:

Advanced Compliance Solutions, Inc.
3998 FAU Blvd, Suite 310
Boca Raton, Florida 33431
Phone: (561) 961-5585
Fax: (561) 961-5587
www.acstestlab.com

FCC Test Firm Registration #: 587595
Industry Canada Lab Code: 4175C

2.2 Laboratory Accreditations/Recognitions/Certifications

ACS is accredited to ISO/IEC 17025 by ANSI-ASQ National Accreditation Board under their ACLASS program and has been issued certificate number AT-1533 in recognition of this accreditation. Unless otherwise specified, all test methods described within this report are covered under the ISO/IEC 17025 scope of accreditation.

2.3 Radiated & Conducted Emissions Test Site Description

2.3.1 Semi-Anechoic Chamber Test Site

The EMC radiated test facility consists of an RF-shielded enclosure. The interior dimensions of the indoor semi-anechoic chamber are approximately 48 feet (14.6 m) long by 36 feet (10.8 m) wide by 24 feet (7.3 m) high and consist of rigid, 1/8 inch (0.32 cm) steel-clad, wood core modular panels with steel framing. In the shielded enclosure, the faces of the panels are galvanized and the chamber is self-supporting. 8-foot RF absorbing cones are installed on 4 walls and the ceiling. The steel-clad ground plane is covered with vinyl floor.

The turntable is driven by pneumatic motor, which is capable of supporting a 2000 lb. load. The turntable is flushed with the chamber floor which it is connected to, around its circumference, with a continuous metallic loaded spring. An EMCO Model 1050 Multi-device Controller controls the turntable position.

A pneumatic motor is used to control antenna polarizations and height relative to the ground. The height information is displayed on the control unit EMCO Model 1050.

The control room is an RF shielded enclosure attached to the semi-anechoic chamber with two bulkhead panels for connecting RF, and control cables. The dimension of the room is 7.3 m x 4.9 m x 3 m high and the entrance doors of both control and conducted rooms are 3 feet (0.91 m) by 7 feet (2.13 m).

A diagram of the Semi-Anechoic Chamber Test Site is shown in Figure 2.3.1-1 below:

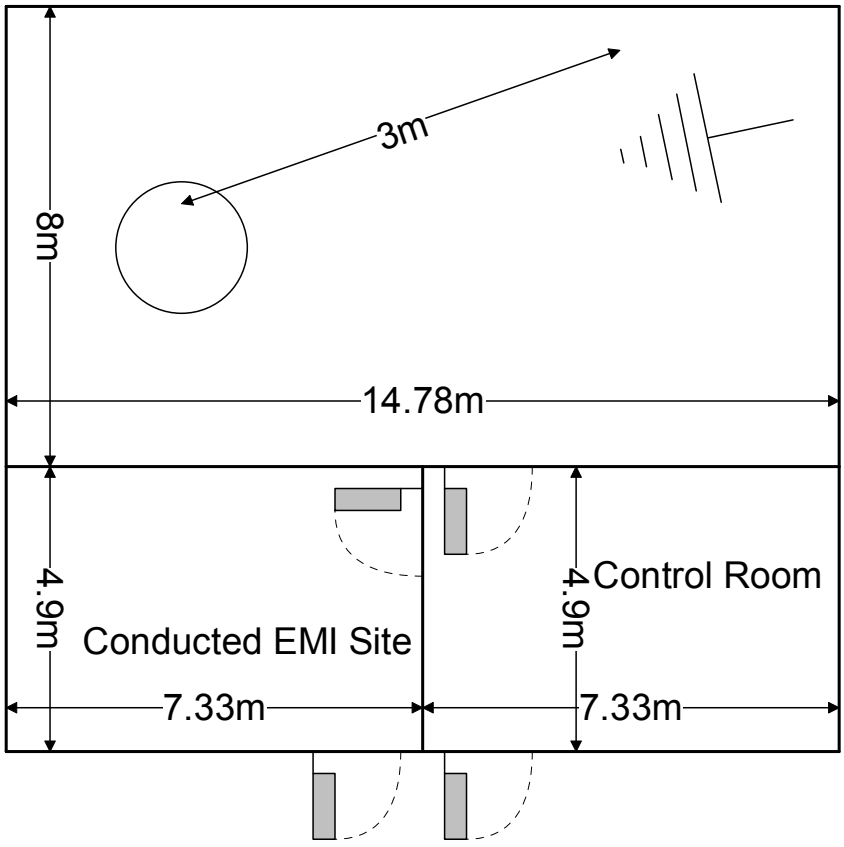

Figure 2.3.1-1: Semi-Anechoic Chamber Test Site

2.3.2 Conducted Emissions Test Site Description

The dimensions of the shielded conducted room are 7.3 x 4.9 x 3 m^3. As per ANSI C63.4 2003 requirements, the data were taken using two LISNs; a Solar Model 8028-50 50 Ω/50 µH and an EMCO Model 3825, which are installed as shown in Photograph 3. For 220 V, 50 Hz, a Polarad LISN (S/N 879341/048) is used in conjunction with a 1 kVA, 50 Hz/220 V EDGAR variable frequency generator, Model 1001B, to filter conducted noise from the generator.

A diagram of the room is shown below in figure 2.3.2-1:

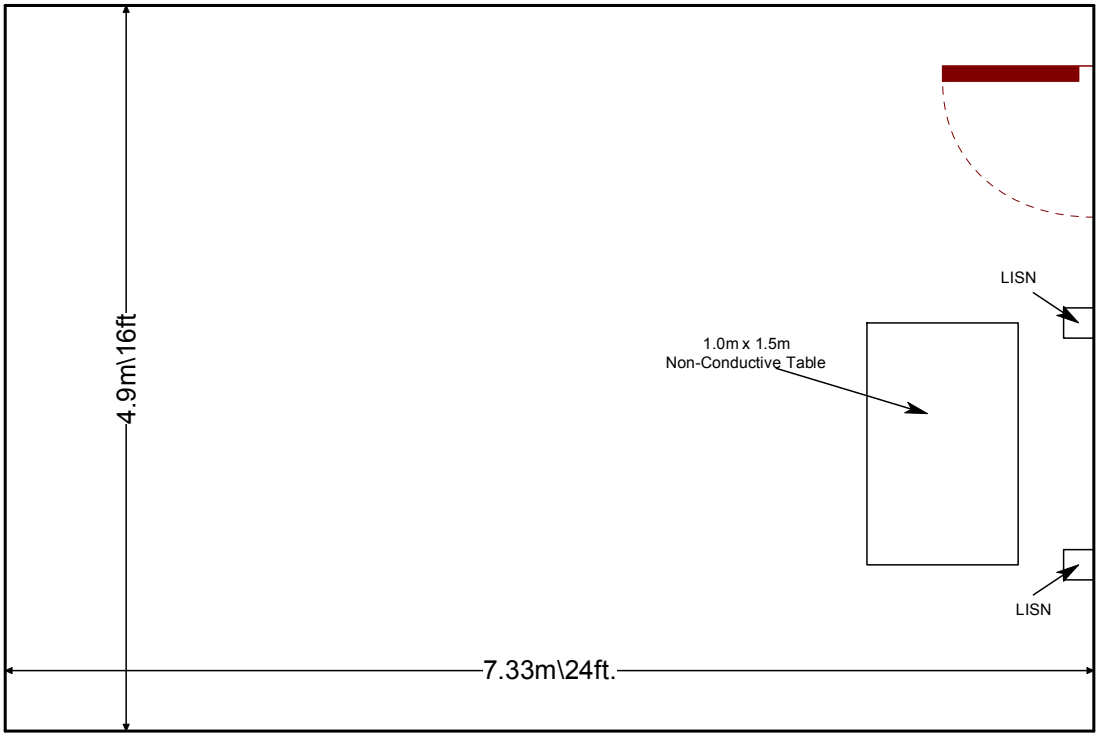

Figure 2.3.2-1: AC Mains Conducted EMI Site

3 APPLICABLE STANDARD REFERENCES

The following standards were used:

- ANSI C63.4-2003: Method of Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the 9KHz to 40GHz
- ANSI C63.10-2009: Standard for Testing Unlicensed Wireless Devices
- US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2013
- US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2013
- FCC Public Notice DA 00-705 - Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems, March 30, 2000
- Industry Canada Radio Standards Specification: RSS-210 - Low-power License-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment, Issue 8 December 2010.
- Industry Canada Radio Standards Specification: RSS-GEN – General Requirements and Information for the Certification of Radiocommunication Equipment, Issue 3, December 2010.

4 LIST OF TEST EQUIPMENT

The calibration interval of test equipment is annually or the manufacturer's recommendations. Where the calibration interval deviates from the annual cycle based on the instrument manufacturer's recommendations, it shall be stated below.

Table 4-1: Test Equipment

AssetID	Manufacturer	Model #	Equipment Type	Serial #	Last Calibration Date	Calibration Due Date
523	Agilent	E7405	Spectrum Analyzers	MY45103293	1/5/2011	1/5/2013
523	Agilent	E7405	Spectrum Analyzers	MY45103293	1/8/2013	1/8/2015
524	Chase	CBL6111	Antennas	1138	1/7/2011	1/7/2013
524	Chase	CBL6111	Antennas	1138	1/7/2013	1/7/2015
2006	EMCO	3115	Antennas	2573	3/2/2011	3/2/2013
2008	COM-Power	AH-826	Antennas	81009	NCR	NCR
2011	Hewlett-Packard	HP 8447D	Amplifiers	2443A03952	12/31/2012	12/31/2013
2037	ACS Boca	Chamber EMI Cable Set	Cable Set	2037	1/1/2013	1/1/2014
2044	QMI	N/A	Cables	2044	12/31/2012	12/31/2013
2070	Mini Circuits	VHF-8400+	Filter	2070	12/31/2012	12/31/2013
2072	Mini Circuits	VHF-3100+	Filter	30737	12/31/2012	12/31/2013
2076	Hewlett Packard	HP5061-5458	Cables	2076	12/29/2012	12/29/2013
2086	Merrimac	FAN-6-10K	Attenuators	23148-83-1	12/29/2012	12/29/2013
2089	Agilent Technologies, Inc.	83017A	Amplifiers	3123A00214	12/20/2012	12/20/2013
2091	Agilent Technologies, Inc.	8573A	Spectrum Analyzers	2407A03233	12/12/2011	12/12/2013
2095	ETS Lindgren	TILE4! - Version 4.2.A	Software	85242	NCR	NCR

NCR=No Calibration Required

5 SUPPORT EQUIPMENT

Table 5-1: Ancillary and Supporting Equipment

Item	Equipment Type	Manufacturer	Model Number	Serial Number
1	Servo Motor	Hitec	HS-225BB	N/A
2	4 x Servo Motors	Hitec	HS-225BB	N/A
3	DC Power Supply	MPJA	HY5003	003700278

Table 5-2: EUT Test Setup Cable Configuration

Item #	Description	Length (m)	From - To	Shielded/ Unshielded
A	Twisted Power Cable	0.12	EUT – RC Power Cable	Unshielded
B	RC Servo Cable	0.32	Servo Motor - EUT	Unshielded
C	3 x RC Servo Cables	0.32	3 x Servo Motors - EUT	Unshielded
D	RC Extension Cable	2.25	Twisted Pair – RC Extension Cable	Unshielded
E	Banana Power Cable	0.15	RC Extension Cable - Power Supply	Unshielded
F	Power Cable	2.5	Power Supply – AC Mains	Unshielded

6 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAM

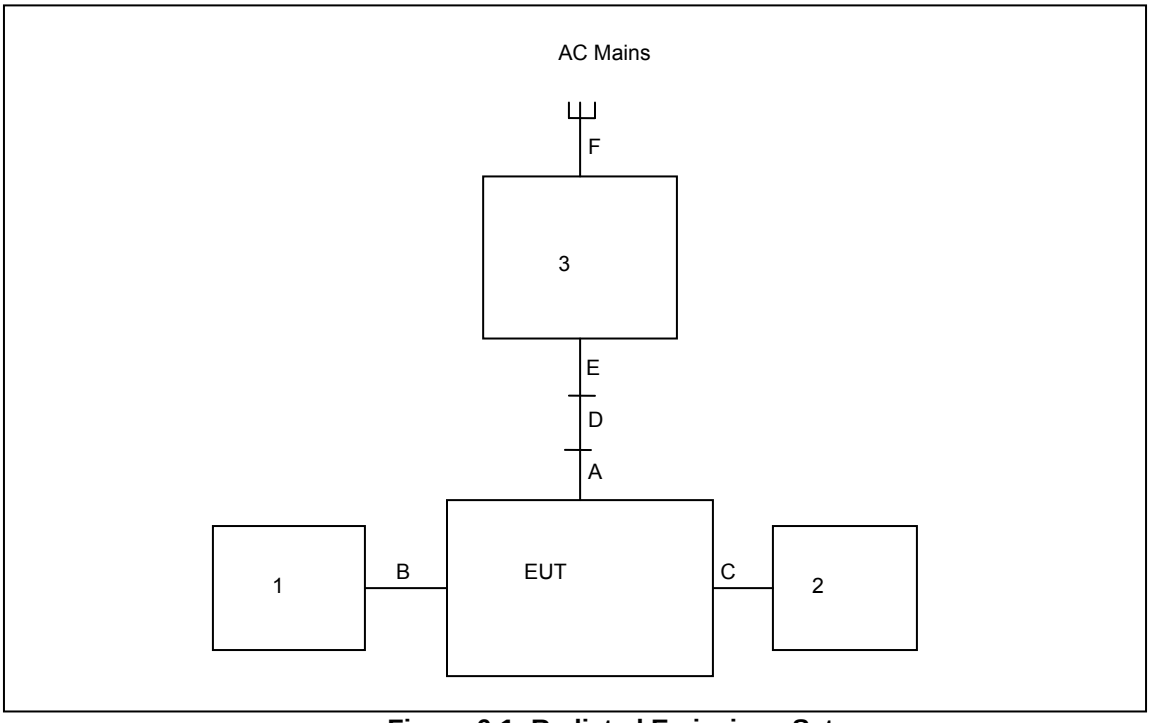

Figure 6-1: Radiated Emissions Setup

7 SUMMARY OF TESTS

Along with the tabular data shown below, plots were taken of all signals deemed important enough to document.

7.1 Antenna Requirement – FCC: Section 15.203

The JETIR5LUS uses 2.1 dBi coaxial wire antennas which are directly soldered to the PCB, hence meeting the requirements of Section 15.203.

7.2 Peak Output Power - FCC Section 15.247(b)(1) IC: RSS-210 A8.4(2)

7.2.1 Measurement Procedure (Conducted Method)

The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The display values were corrected for cable and external attenuation.

7.2.2 Measurement Results

Results are shown below.

Antenna Path 1

Table 7.2.2-1: RF Output Power

Frequency (MHz)	Power (dBm)
2405	16.30
2440	15.79
2480	8.124

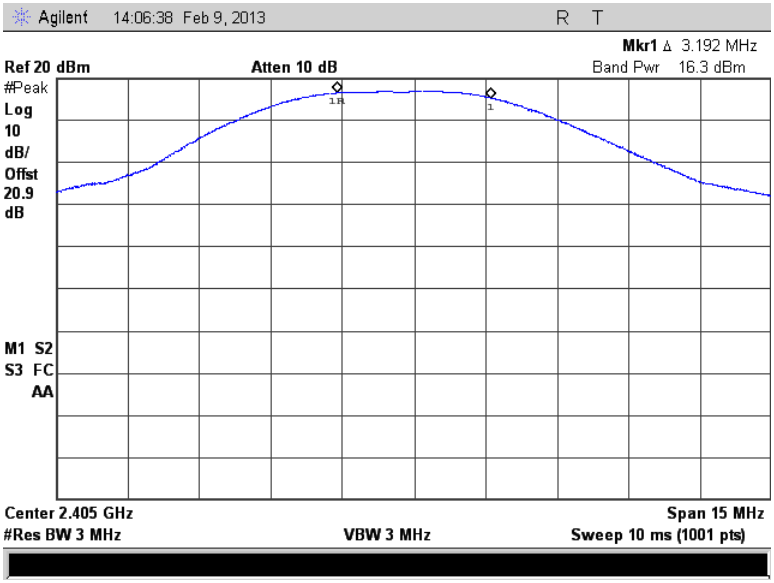

Figure 7.2.2-1: RF Output Power - Low Channel

Note: The spectrum analyzer's maximum RBW is smaller than the 20 dB bandwidth of the Radio, the band power function over the 20dB bandwidth was used for the power measurements.

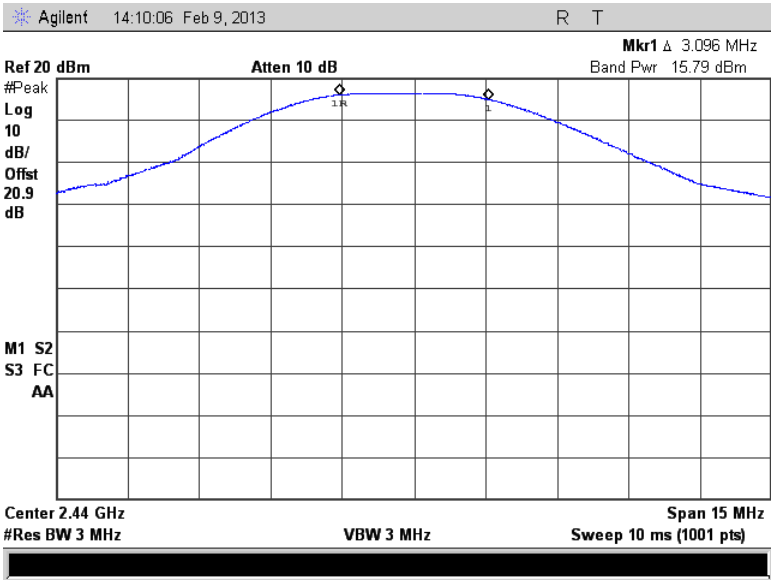

Figure 7.2.2-2: RF Output Power - Middle Channel

Note: The spectrum analyzer's maximum RBW is smaller than the 20 dB bandwidth of the Radio, the band power function over the 20dB bandwidth was used for the power measurements.

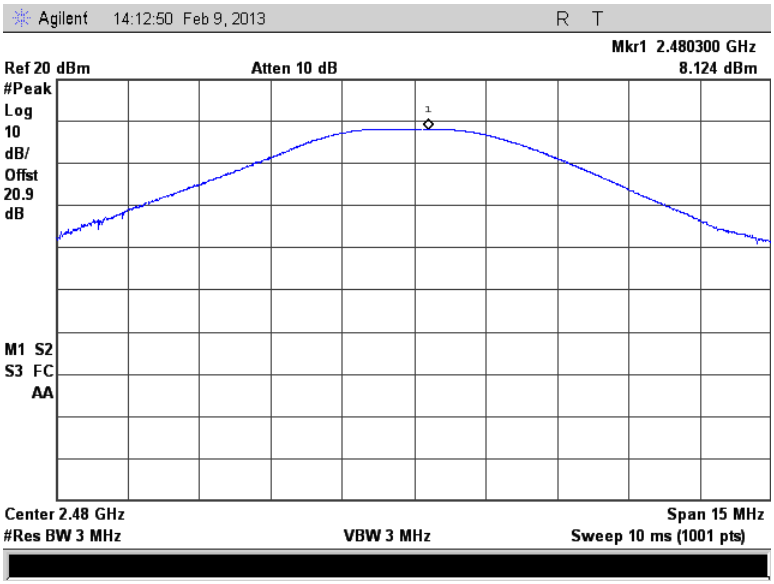

Figure 7.2.2-3: RF Output Power - High Channel

Antenna Path 2

Table 7.2.2-2: RF Output Power

Frequency (MHz)	Power (dBm)
2405	16.42
2440	15.68
2480	8.043

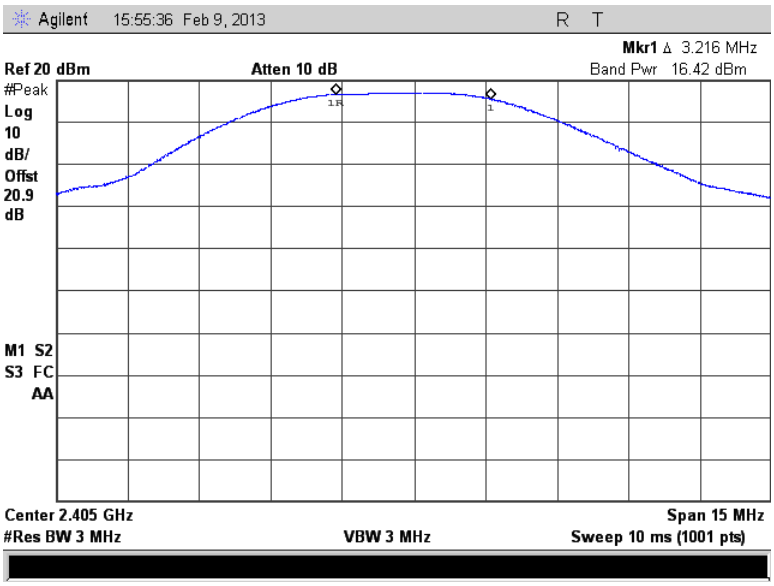

Figure 7.2.2-4: RF Output Power - Low Channel

Note: The spectrum analyzer's maximum RBW is smaller than the 20 dB bandwidth of the Radio, the band power function over the 20dB bandwidth was used for the power measurements.

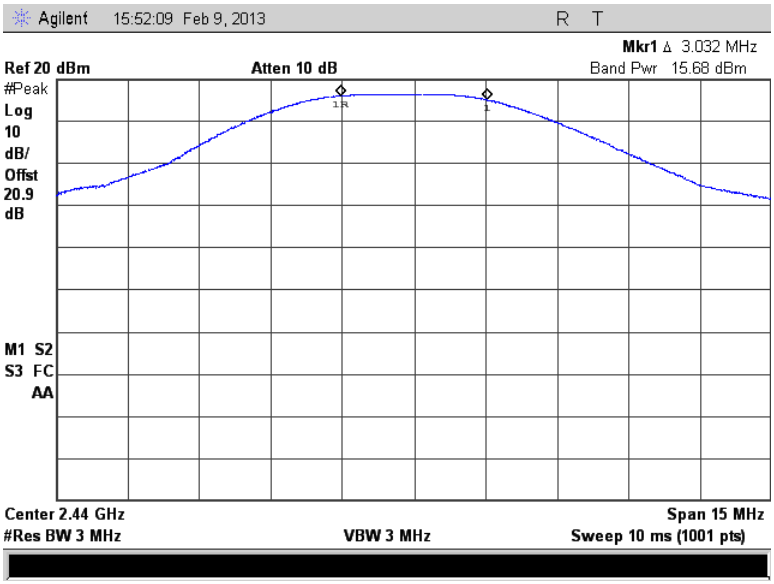

Figure 7.2.2-5: RF Output Power - Middle Channel

Note: The spectrum analyzer's maximum RBW is smaller than the 20 dB bandwidth of the Radio, the band power function over the 20dB bandwidth was used for the power measurements.

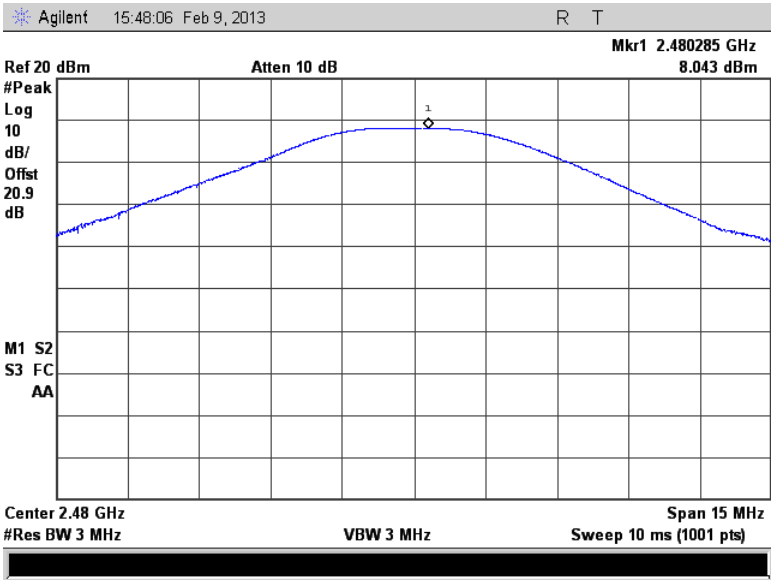

Figure 7.2.2-6: RF Output Power - High Channel

7.3 Channel Usage Requirements

7.3.1 Carrier Frequency Separation – FCC: Section 15.247(a)(1) IC: RSS-210 A8.1(b)

7.3.1.1 Measurement Procedure

The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The span of the spectrum analyzer was set wide enough to capture two adjacent peaks and the RBW and VBW were set to ≥ 1% of the span.

7.3.1.2 Measurement Results

Results are shown below.

Antenna Path 1

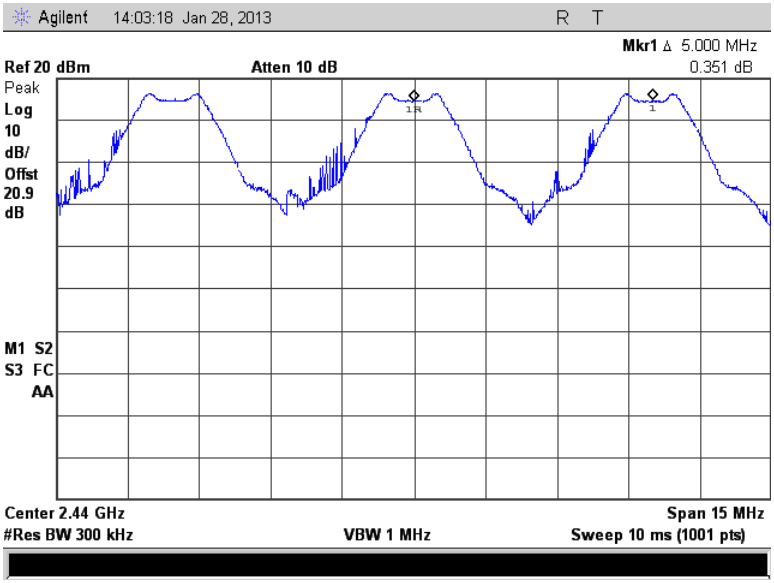

Figure 7.3.1.2-1: Carrier Frequency Separation

Antenna Path 2

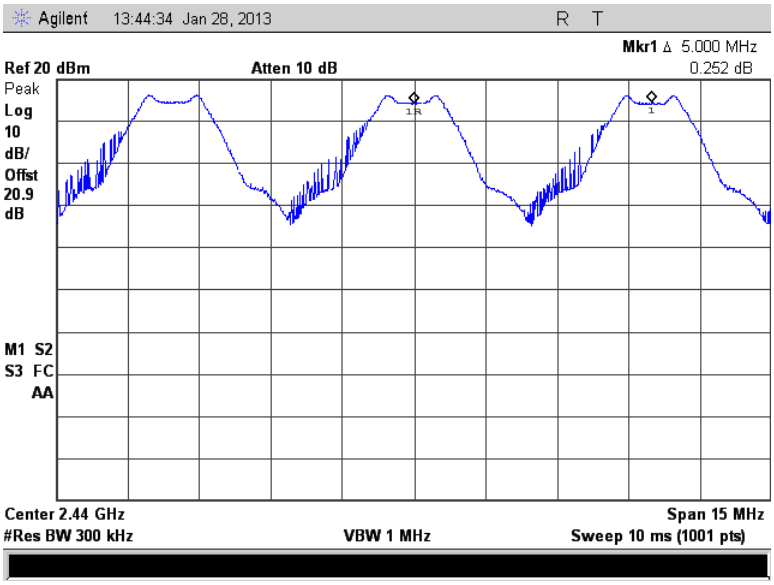

Figure 7.3.1.2-2: Carrier Frequency Separation

7.3.2 Number of Hopping Channels – FCC: Section 15.247(a)(1)(iii) IC: RSS-210 A8.1(d)

7.3.2.1 Measurement Procedure

The RF output port of the EUT was directly connected to the input of the spectrum analyzer through suitable attenuation. The span of the spectrum analyzer was set wide enough to capture the number of hopping channels. The peak detector max hold function was enabled for the measurements.

7.3.2.2 Measurement Results

Results are shown below.

Antenna Path 1

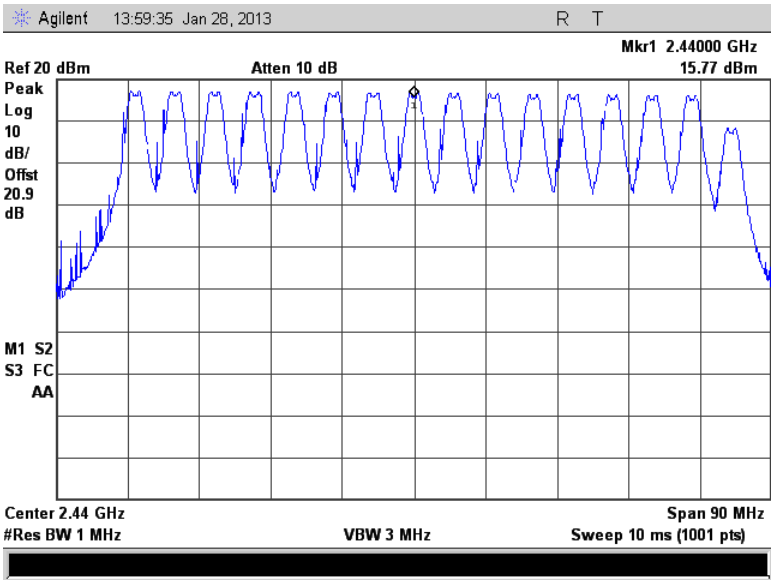

Figure 7.3.2.2-1: Number of Hopping Channels

Antenna Path 2

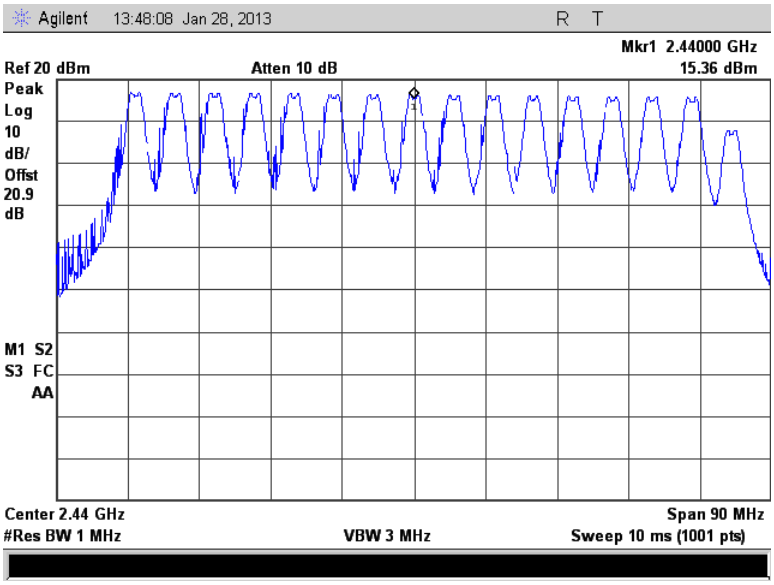

Figure 7.3.2.2-2: Number of Hopping Channels

7.3.3 Channel Dwell Time – FCC: Section 15.247(a)(1)(iii) IC: RSS-210 A8.1(d)

7.3.3.1 Measurement Procedure

The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The span of the spectrum analyzer was set 0 Hz centered on a hopping channel. The RBW was set to 1 MHz and the sweep time adjusted to capture the entire dwell time per channel with peak detector max hold function.

7.3.3.2 Measurement Results

Results are shown below.

Table 7.3.3.2-1 Dwell Time on a 6.4 Second Cycle

Number of Hops Per Sec. (NHPS)	Number of Hops per Channel Per Sec. (NHPCPS)	Number of hops on a 6.4 s Cycle (NHPC)	Measured Dwell Times (ms)	Dwell Times on a 6.4 s Cycle (ms)	Limit (ms)	Status
100	6.25	40	2.057	82.28	400	PASS

Antenna Path 1

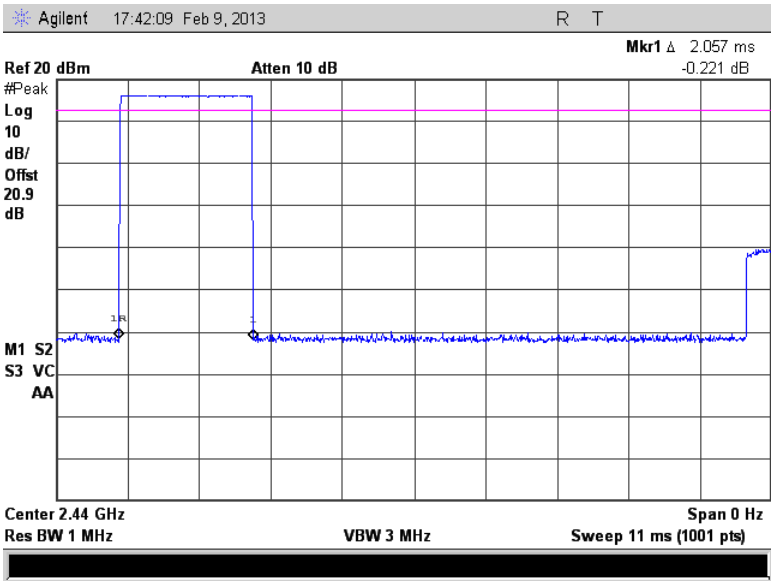

Figure 7.3.3.2-1: Channel Dwell Time

Antenna Path 2

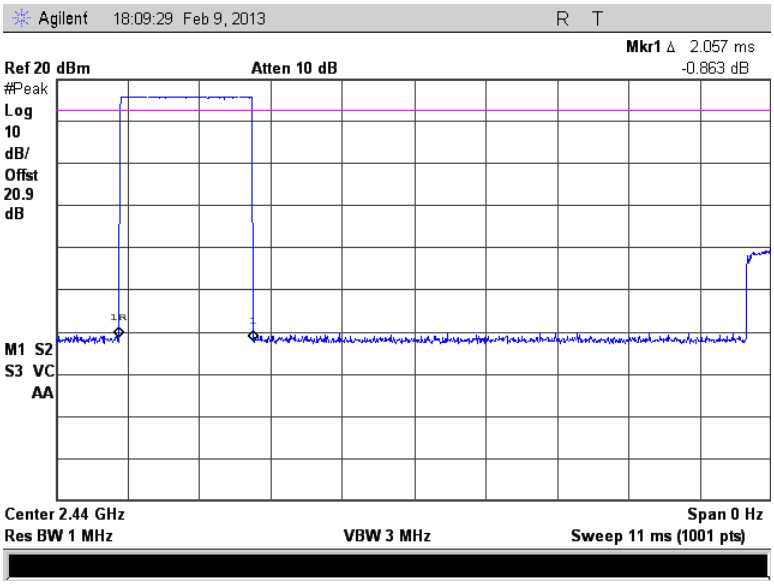

Figure 7.3.3.2-2: Channel Dwell Time

7.3.4 20dB / 99% Bandwidth - FCC: Section 15.247(a)(1)(i) IC: RSS-210 A8.1(a)

7.3.4.1 Measurement Procedure

The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The spectrum analyzer span was set to 2 to 3 times the estimated bandwidth of the emission. The RBW was to ≥ 1% of the estimated emission bandwidth. The trace was set to max hold with a peak detector active. The Delta function of the analyzer was utilized to determine the 20 dB bandwidth of the emission.

The 99% occupied bandwidth was measured with the spectrum analyzer span set to fully display the emission, including the emissions skirts. The RBW was to 1% of the span. . The occupied 99% bandwidth was measured by using a delta marker at the lower and upper frequencies leading to 0.5% of the total power.

7.3.4.2 Measurement Results

Results are shown below.

Antenna Path 1

Table 7.3.4.2-1: 20dB / 99% Bandwidth

Frequency [MHz]	20dB Bandwidth [kHz]	99% Bandwidth [kHz]
2405	3192	2780
2440	3096	2650
2480	2824	2550

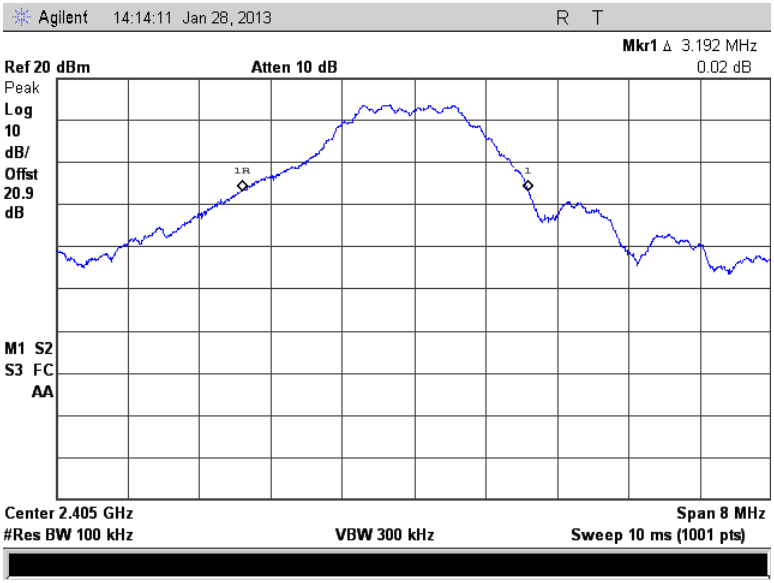

Figure 7.3.4.2-1: 20dB BW Low Channel

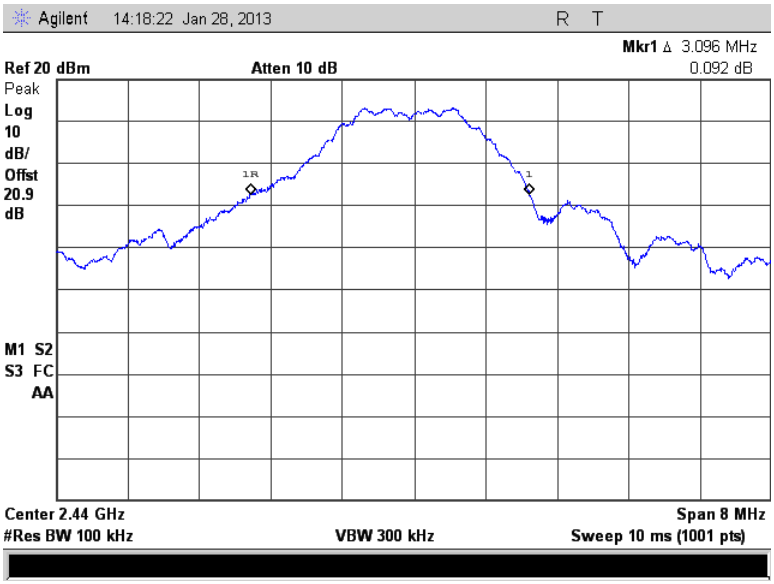

Figure 7.3.4.2-2: 20dB BW Middle Channel

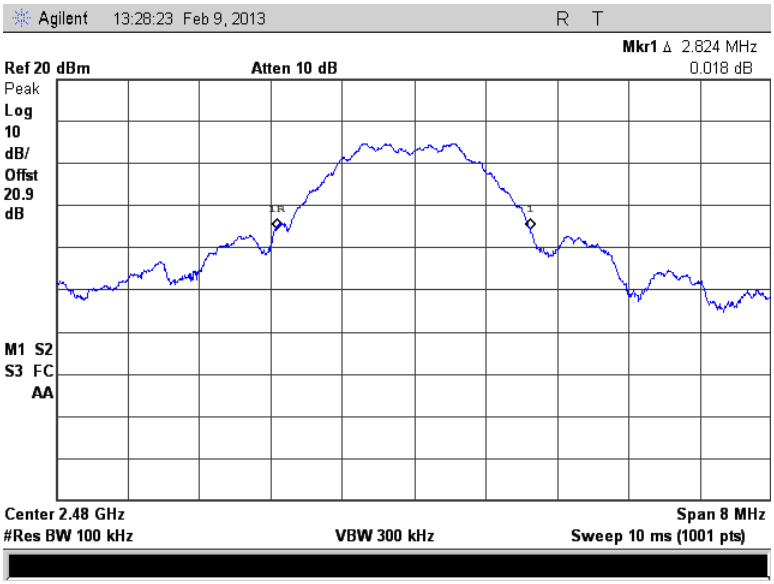

Figure 7.3.4.2-3: 20dB BW High Channel

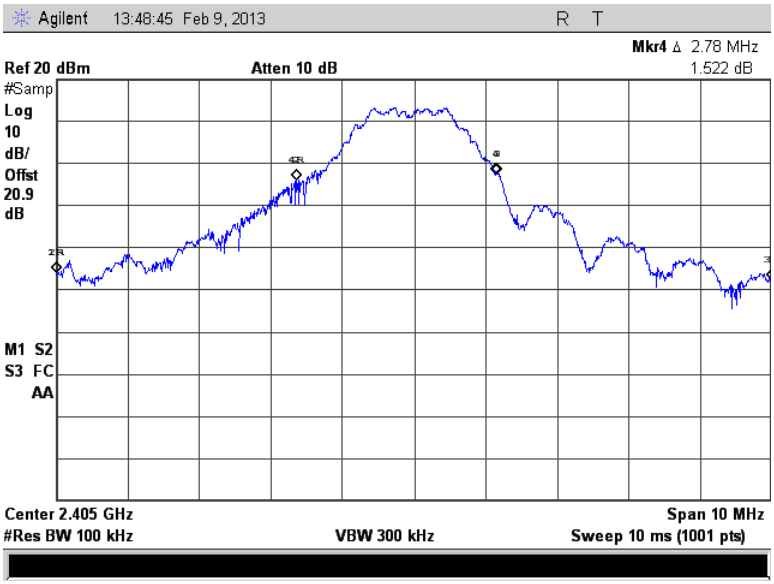

Figure 7.3.4.2-4: 99% OBW Low Channel

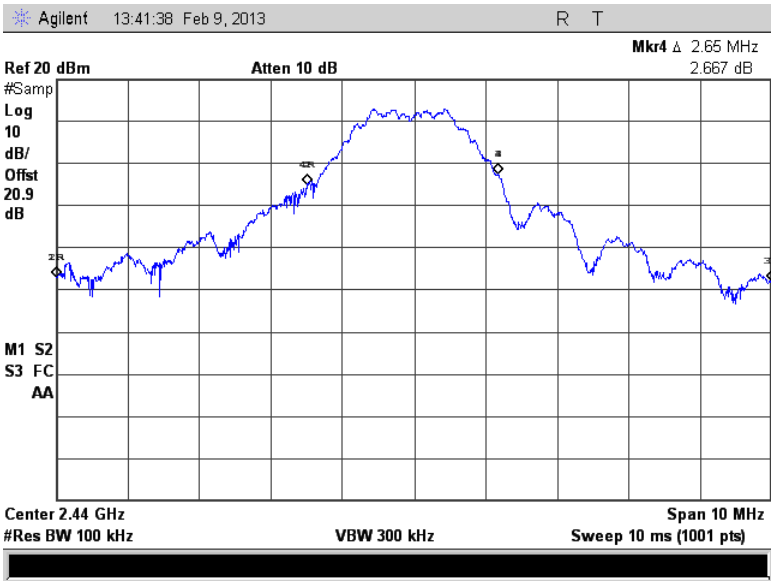

Figure 7.3.4.2-5: 99% OBW Middle Channel

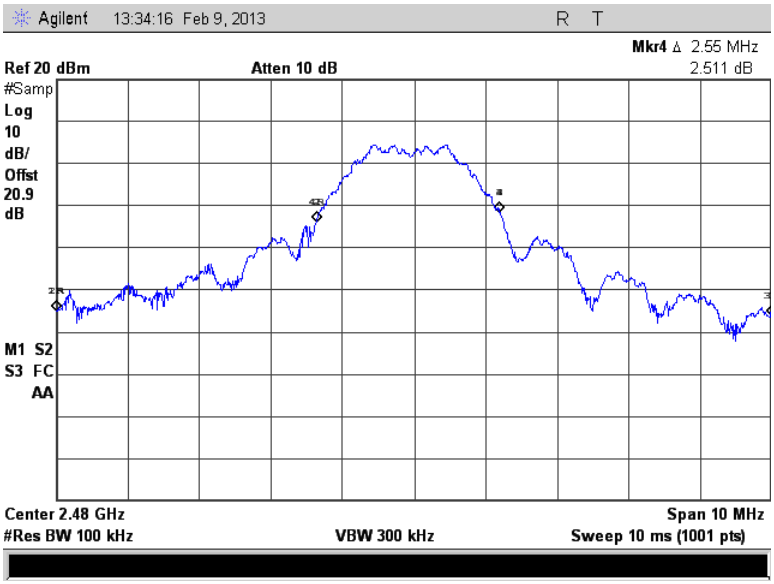

Figure 7.3.4.2-6: 99% OBW High Channel

Antenna Path 2

Table 7.3.4.2-2: 20dB / 99% Bandwidth

Frequency [MHz]	20dB Bandwidth [kHz]	99% Bandwidth [kHz]
2405	3216	2860
2440	3032	2680
2480	2808	2530

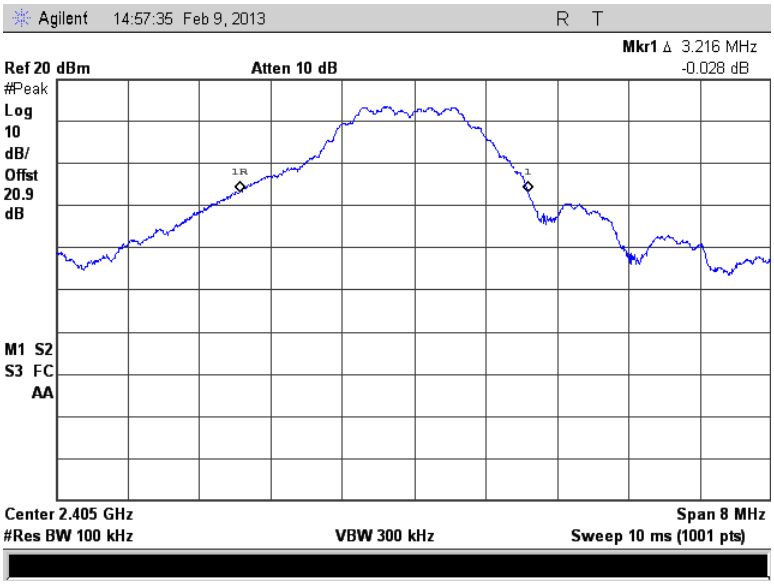

Figure 7.3.4.2-7: 20dB BW Low Channel

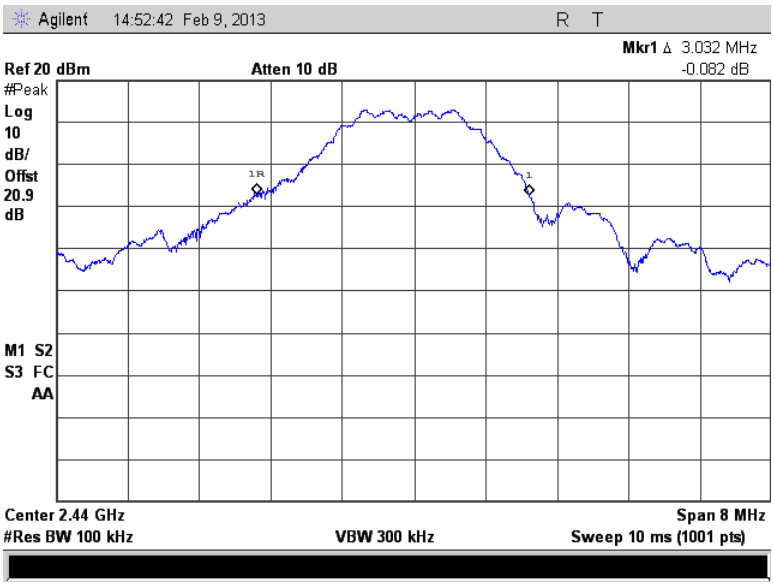

Figure 7.3.4.2-8: 20dB BW Middle Channel

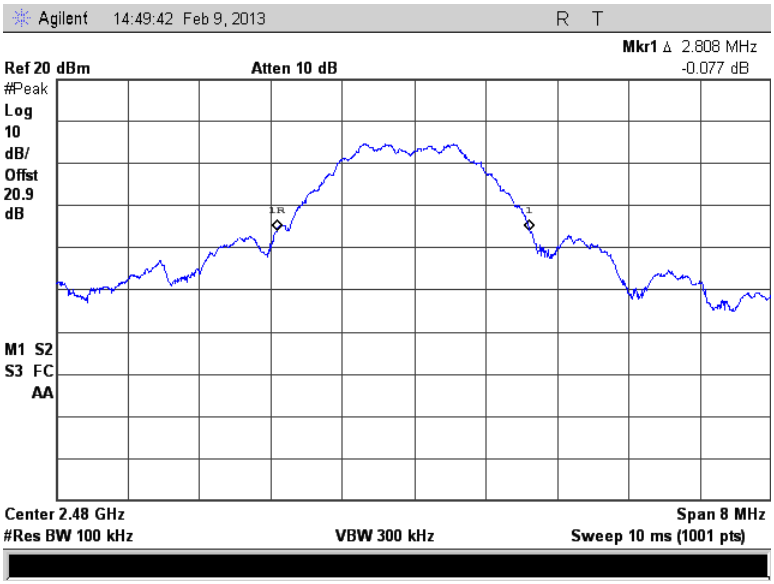

Figure 7.3.4.2-9: 20dB BW High Channel

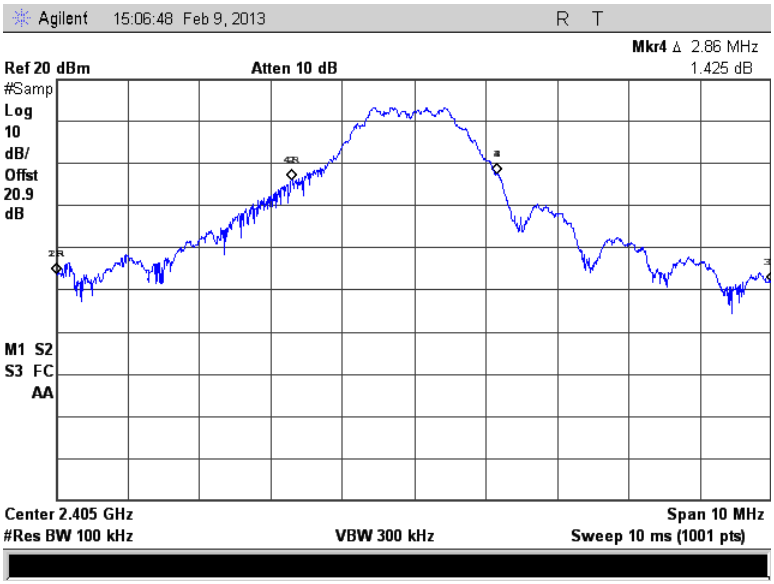

Figure 7.3.4.2-10: 99% OBW Low Channel

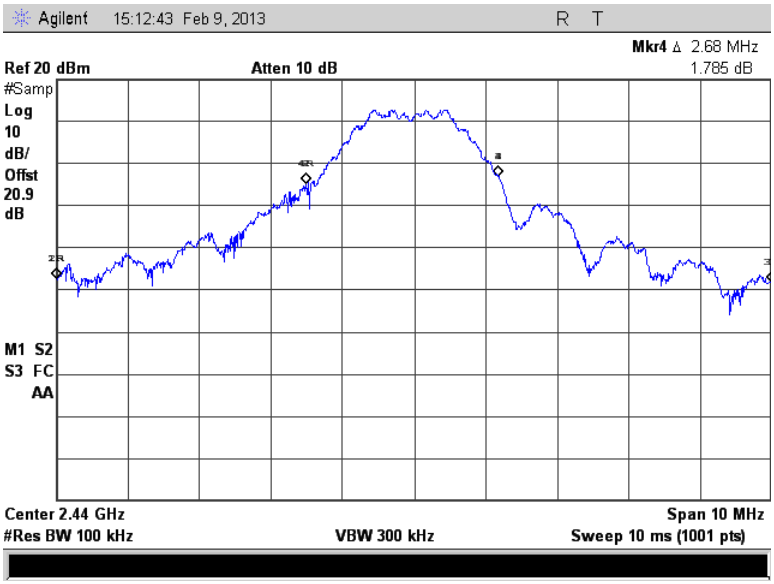

Figure 7.3.4.2-11: 99% OBW Middle Channel

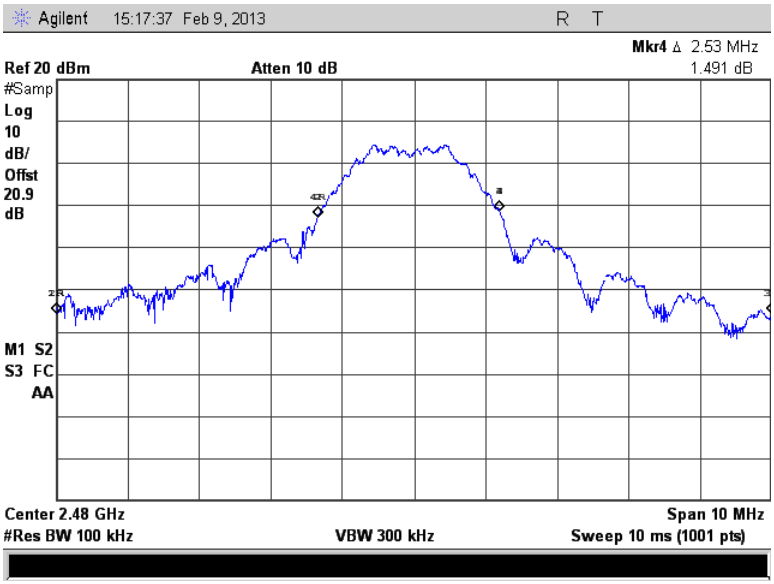

Figure 7.3.4.2-12: 99% OBW High Channel

7.4 Band-Edge Compliance and Spurious Emissions-FCC 15.247(d) IC:RSS-210 A8.5

7.4.1 Band-Edge Compliance of RF Conducted Emissions

7.4.1.1 Measurement Procedure

The RF output port of the EUT was connected to the input of the spectrum analyzer through suitable attenuation. The EUT was investigated at the lowest and highest channel available to determine band-edge compliance. For each measurement the spectrum analyzer's RBW was set to 100 kHz, which is ≥ 1% of the span, and the VBW was set to >= 300 kHz.

7.4.1.2 Measurement Results

Results are shown below.

Antenna Path 1

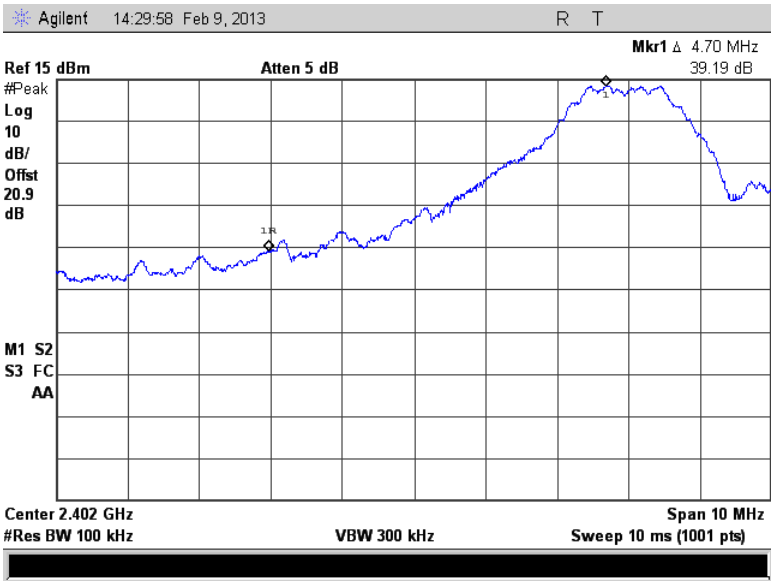

Figure 7.4.1.2-1: Lower Band-edge – 2405 MHz

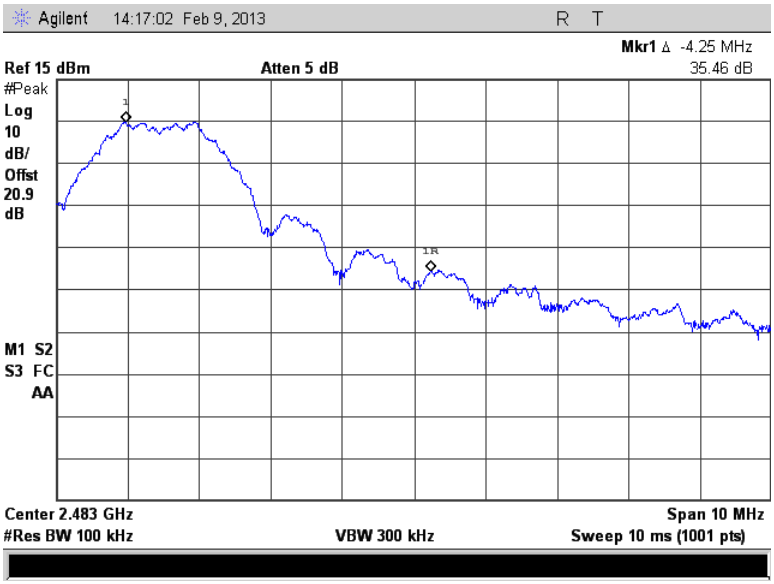

Figure 7.4.1.2-2: Upper Band-edge – 2480 MHz

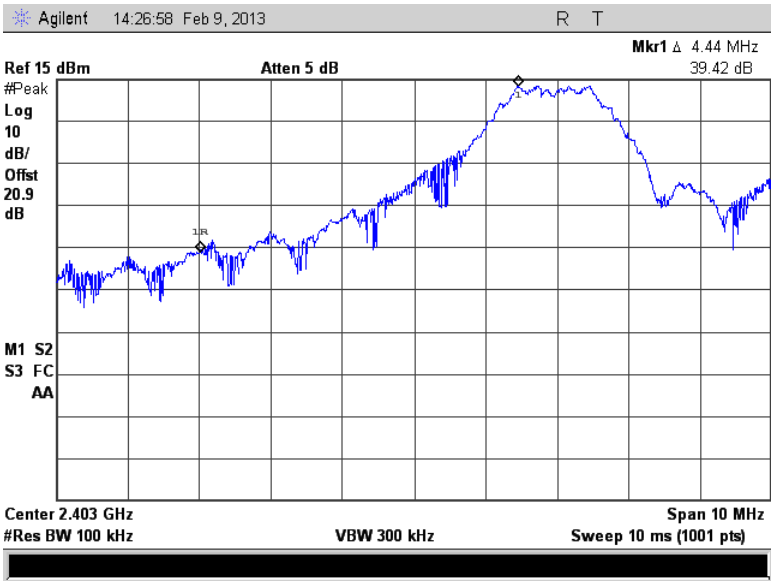

Figure 7.4.1.2-3: Lower Band-edge – Hopping Mode

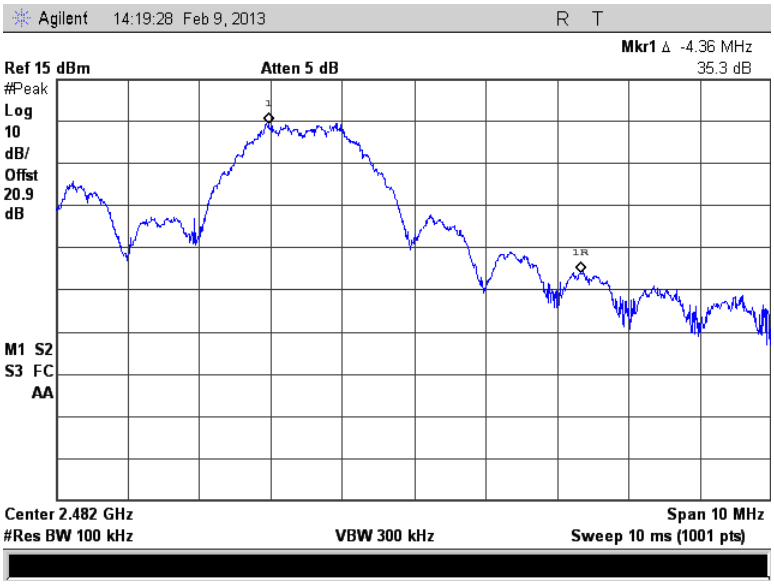

Figure 7.4.1.2-4: Upper Band-edge – Hopping Mode

Antenna Path 2

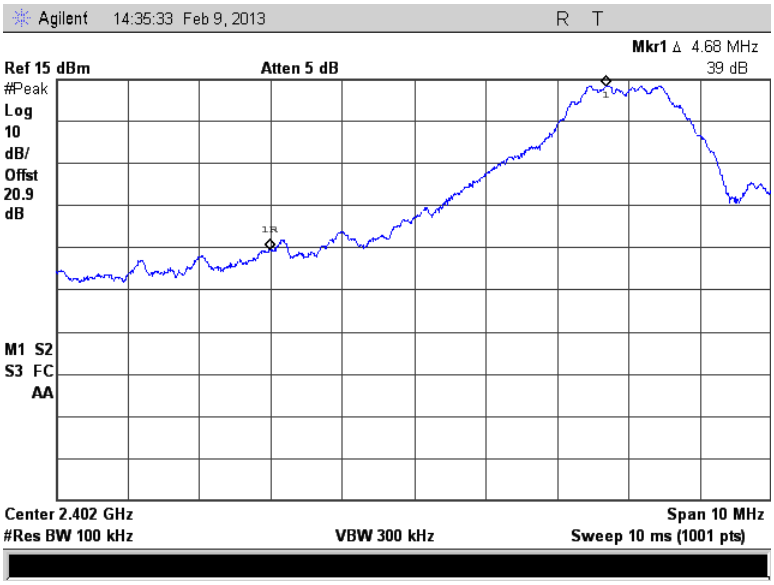

Figure 7.4.1.2-5: Lower Band-edge – 2405 MHz

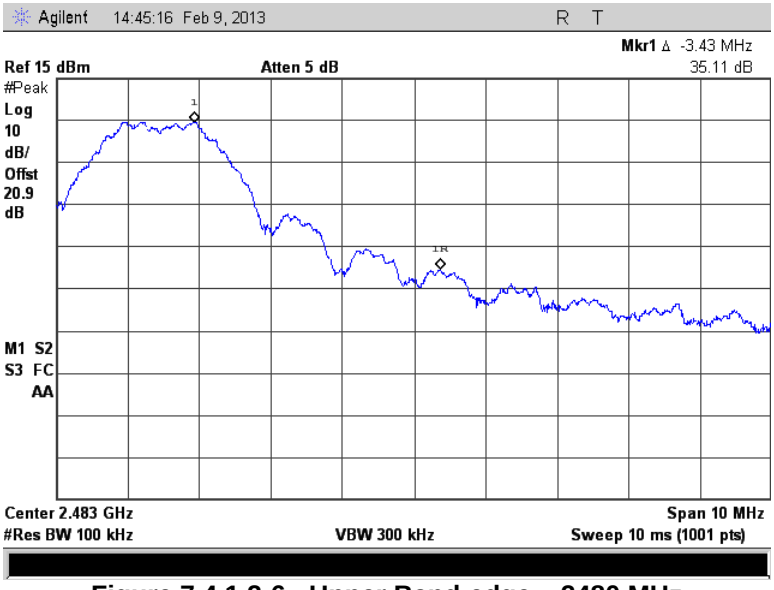

Figure 7.4.1.2-6: Upper Band-edge – 2480 MHz

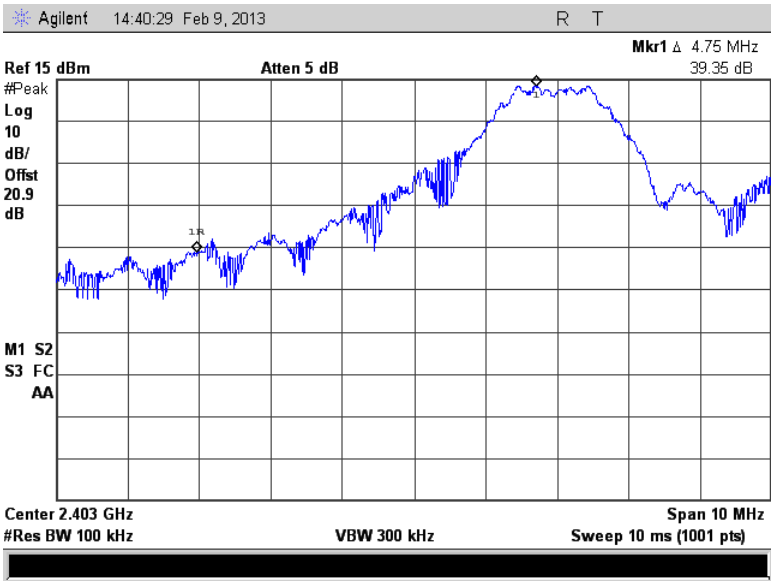

Figure 7.4.1.2-7: Lower Band-edge – Hopping Mode

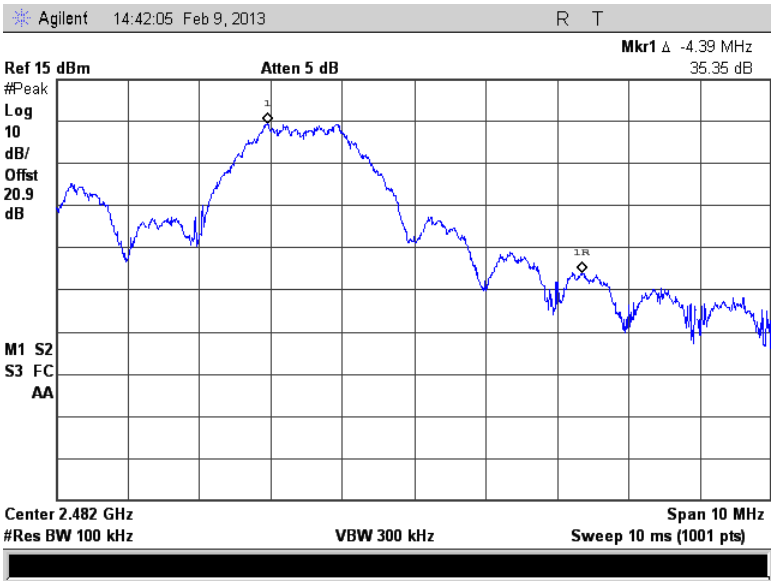

Figure 7.4.1.2-8: Upper Band-edge – Hopping Mode

7.4.2 RF Conducted Spurious Emissions

7.4.2.1 Measurement Procedure

The RF output port of the EUT was connected to the spectrum analyzer input using a 20 dB attenuator. The EUT was investigated for conducted spurious emissions from 30MHz to 26 GHz, 10 times the highest fundamental frequency. Measurements were made at the low, center and high channels of the EUT. For each measurement, the spectrum analyzer's RBW was set to 100 kHz. A peak detector function was used with the trace set to max hold. The levels were corrected for cable and attenuator losses.

7.4.2.2 Measurement Results

Results are shown below.

Antenna Path 1

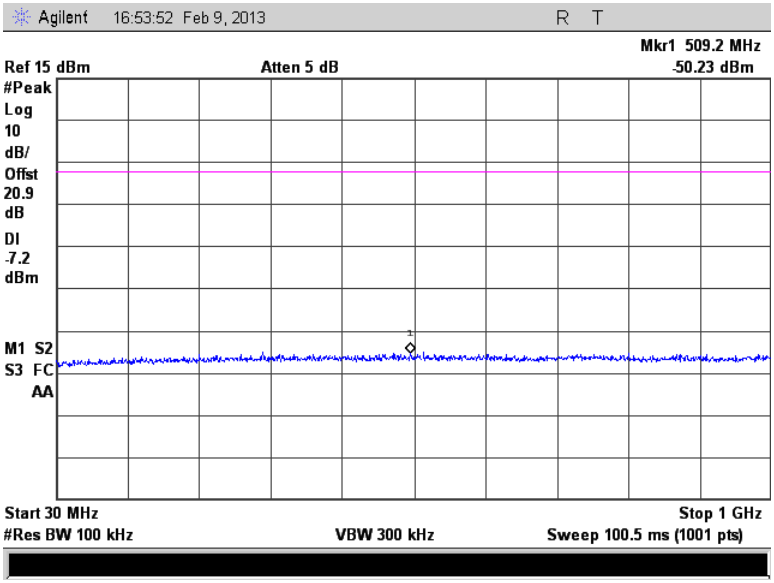

Figure 7.4.2.2-1: 30 MHz – 1 GHz – Low Channel

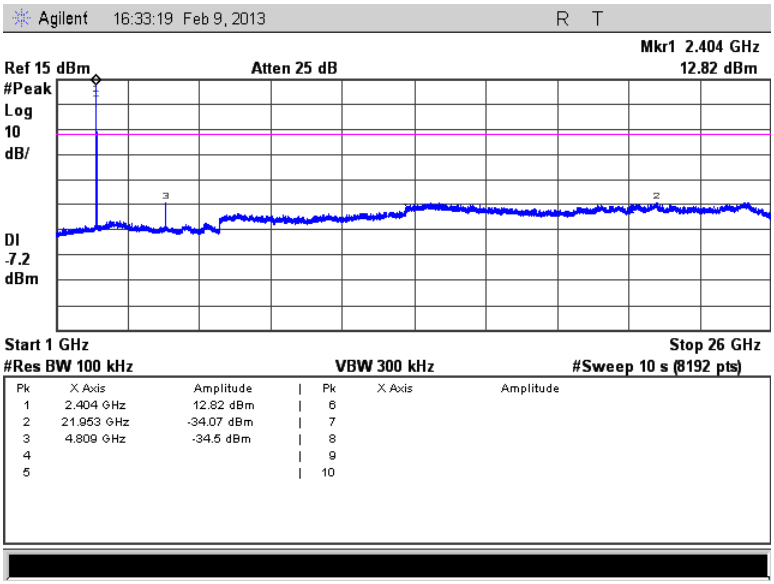

Figure 7.4.2.2-2: 1 GHz –26 GHz – Low Channel

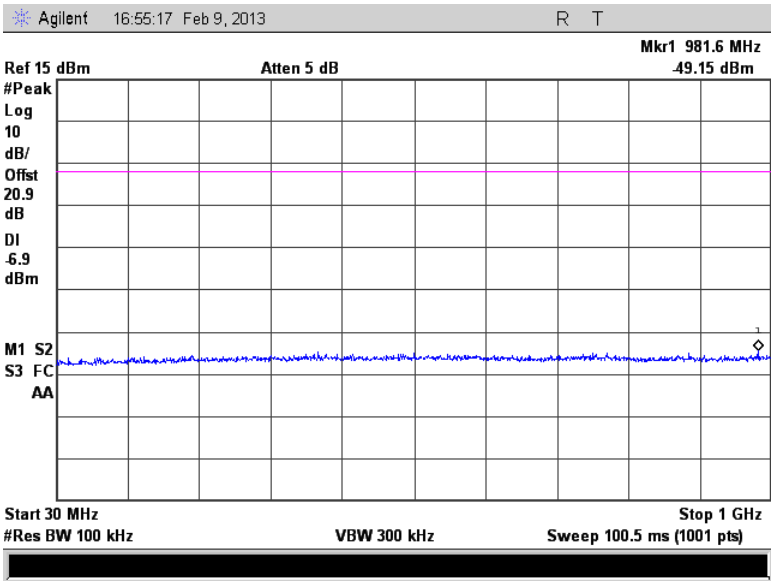

Figure 7.4.2.2-3: 30 MHz – 1 GHz – Middle Channel

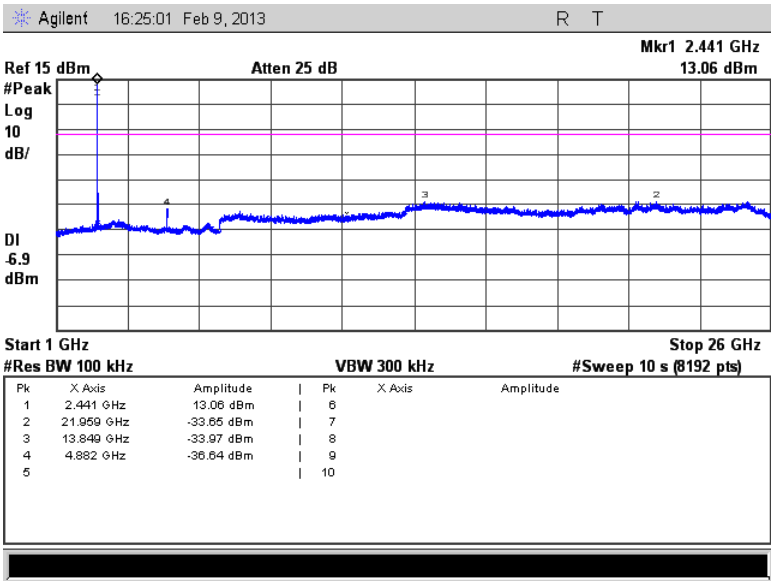

Figure 7.4.2.2-4: 1 GHz –26 GHz – Middle Channel

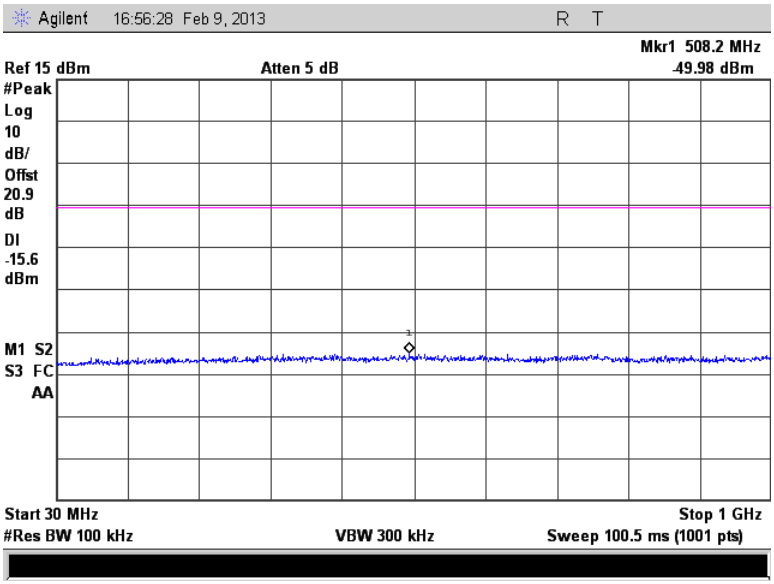

Figure 7.4.2.2-5: 30 MHz – 1 GHz – High Channel

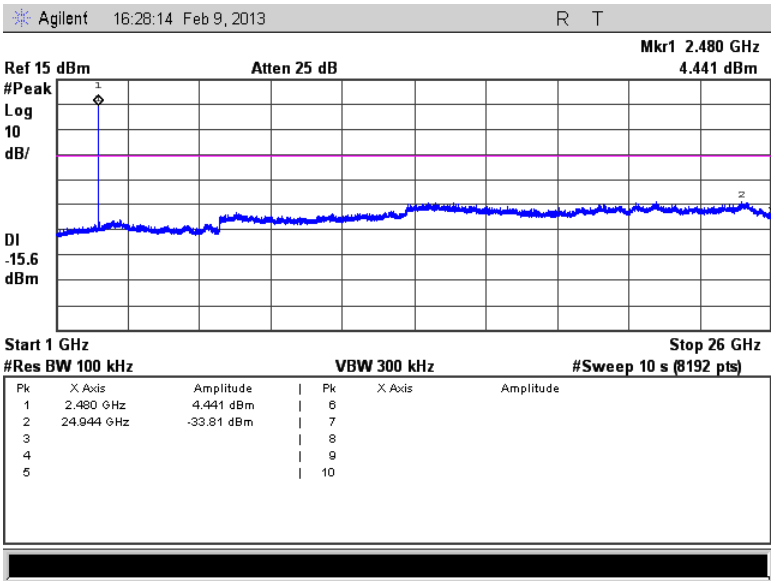

Figure 7.4.2.2-6: 1 GHz –26 GHz – High Channel

Antenna Path 2

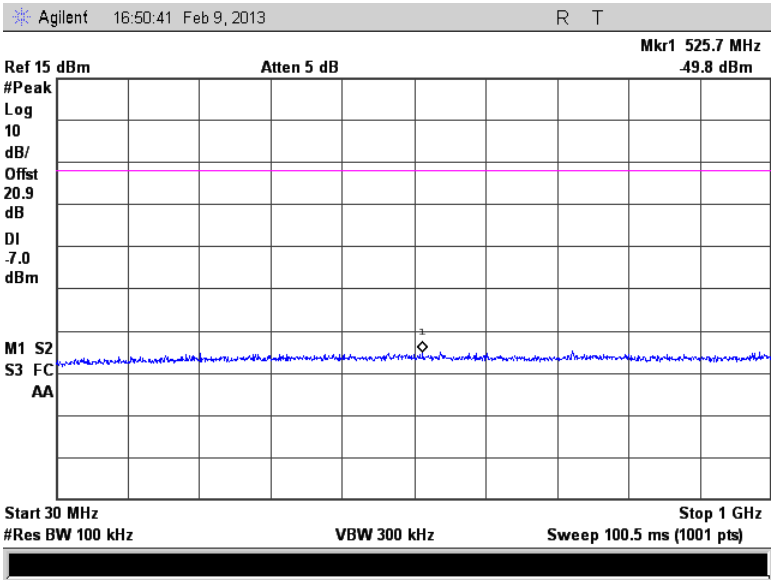

Figure 7.4.2.2-7: 30 MHz – 1 GHz – Low Channel

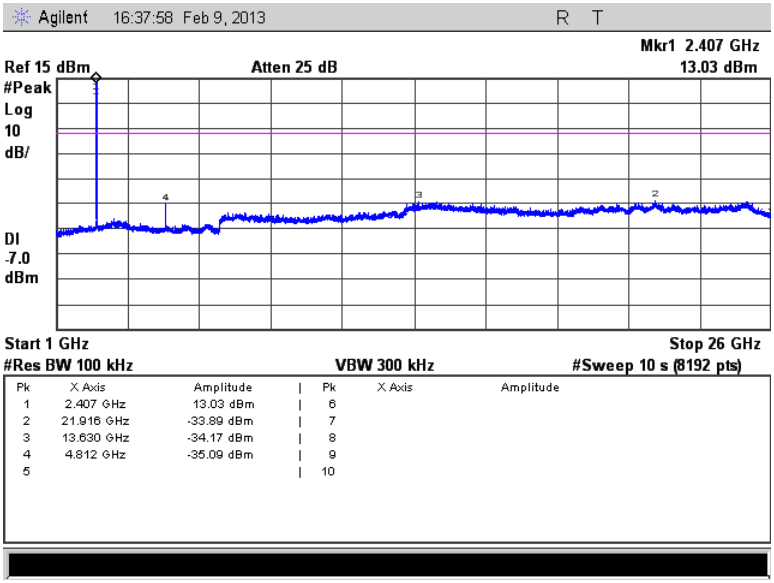

Figure 7.4.2.2-8: 1 GHz –26 GHz – Low Channel

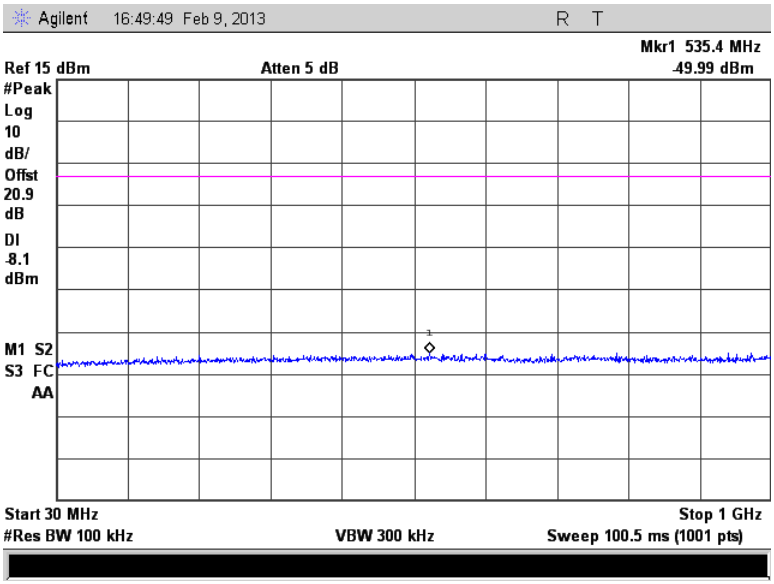

Figure 7.4.2.2-9: 30 MHz – 1 GHz – Middle Channel

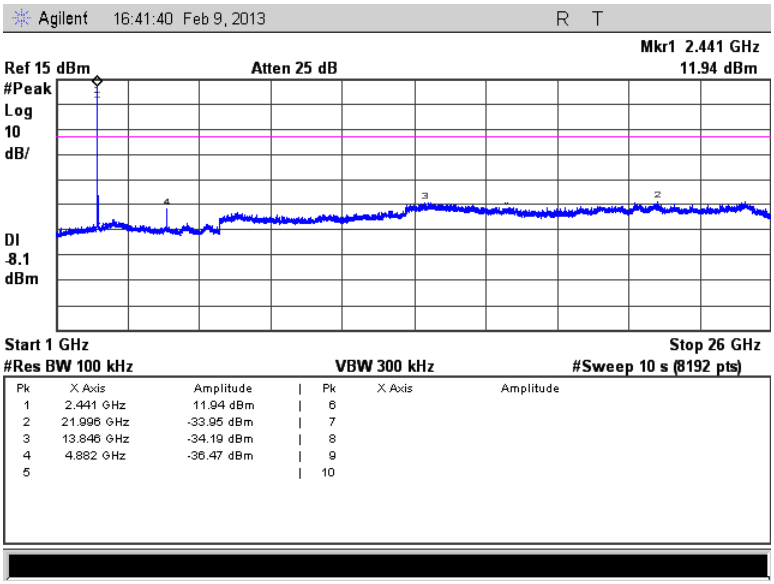

Figure 7.4.2.2-10: 1 GHz –26 GHz – Middle Channel

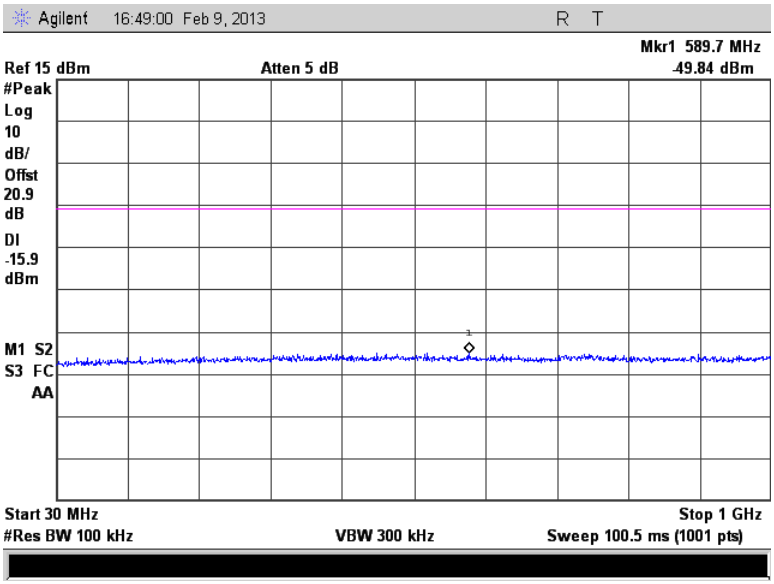

Figure 7.4.2.2-11: 30 MHz – 1 GHz – High Channel

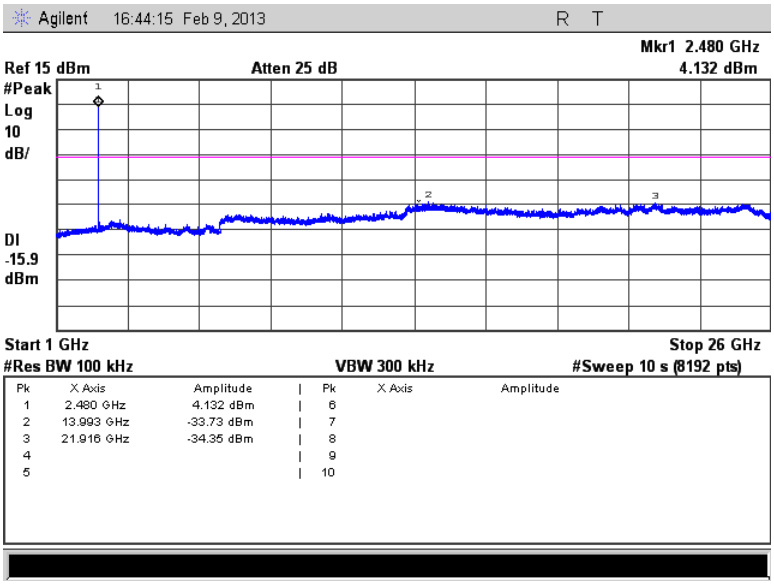

Figure 7.4.2.2-12: 1 GHz –26 GHz – High Channel

7.4.3 Radiated Spurious Emissions - FCC Section 15.205 IC: RSS-Gen 7.2.5

7.4.3.1 Measurement Procedure

Radiated emissions tests were made over the frequency range of 30 MHz to 26 GHz, 10 times the highest fundamental frequency.

The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. For frequencies below 1000MHz, quasi-peak measurements were made using a resolution bandwidth RBW of 120 kHz and a video bandwidth VBW of 300 kHz. For frequencies above 1000 MHz, peak and average measurements made with RBW and VBW of 1 MHz and 3 MHz respectively.

The EUT was caused to generate a continuous carrier signal on the hopping channel. The average measurements were corrected using the logarithm of the dwell time over 100 ms period.

7.4.3.2 Measurement Results

Radiated spurious emissions found in the band of 30MHz to 26 GHz are reported in the tables below.

Table 7.4.3.2-1: Radiated Spurious Emissions Tabulated Data – Antenna Path 1

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (2405 MHz)										
2390	77.22	54.36	H	-9.03	68.19	11.59	74.0	54.0	5.8	42.4
2390	80.34	58.00	V	-9.03	71.31	15.23	74.0	54.0	2.7	38.8
4810	62.34	55.37	H	-1.97	60.37	19.67	74.0	54.0	13.6	34.3
4810	60.57	53.21	V	-1.97	58.60	17.51	74.0	54.0	15.4	36.5
12025	56.87	48.44	H	10.01	66.88	24.71	83.5	63.5	16.6	38.8
12025	54.56	45.77	V	10.01	64.57	22.04	83.5	63.5	18.9	41.5
19240	42.92	30.62	H	9.25	52.17	6.13	83.5	63.5	31.3	57.4
19240	44.19	31.95	V	9.25	53.44	7.46	83.5	63.5	30.1	56.0
Middle Channel (2440 MHz)										
4880	64.19	57.34	H	-1.79	62.40	21.82	74.0	54.0	11.6	32.2
4880	66.29	59.58	V	-1.79	64.50	24.06	74.0	54.0	9.5	29.9
7320	69.81	62.65	H	2.64	72.45	31.56	74.0	54.0	1.5	22.4
7320	66.21	58.83	V	2.64	68.85	27.74	74.0	54.0	5.1	26.3
12200	52.60	43.30	H	9.69	62.29	19.26	83.5	63.5	21.2	44.2
12200	49.24	38.76	V	9.69	58.93	14.72	83.5	63.5	24.6	48.8
19520	43.14	30.20	V	9.51	52.65	5.98	83.5	63.5	30.8	57.5
High Channel (2480 MHz)										
2483.5	75.98	64.07	H	-8.66	67.32	21.68	74.0	54.0	6.7	32.3
2483.5	80.51	68.15	V	-8.66	71.85	25.76	74.0	54.0	2.1	28.2
4960	50.74	39.54	H	-1.59	49.15	4.22	74.0	54.0	24.8	49.8
4960	51.83	42.82	V	-1.59	50.24	7.50	74.0	54.0	23.8	46.5
7440	46.65	34.38	H	2.99	49.64	3.63	74.0	54.0	24.4	50.4
7440	47.06	34.28	V	2.99	50.05	3.53	74.0	54.0	24.0	50.5

Notes:

- All emissions above 19520 MHz were attenuated below the limits and the noise floor of the measurement equipment.
- The measurements above 10 GHz were performed at a distance of 1m. The limits were corrected accordingly using a distance factor of 20*log(3/1) ≈ 9.5 dB.
- The average measurements were further corrected using a duty cycle correction factor corresponding to the logarithm of the dwell time over 100 ms = 20*log(2.057/100) ≈ -33.74 dB.

Table 7.4.3.2-2: Radiated Spurious Emissions Tabulated Data – Antenna Path 2

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (2405 MHz)										
2390	74.29	51.97	H	-9.03	65.26	9.20	74.0	54.0	8.7	44.8
2390	79.25	57.15	V	-9.03	70.22	14.38	74.0	54.0	3.8	39.6
4810	62.27	54.67	H	-1.97	60.30	18.97	74.0	54.0	13.7	35.0
4810	62.86	55.43	V	-1.97	60.89	19.73	74.0	54.0	13.1	34.3
12025	57.26	48.27	H	10.01	67.27	24.54	83.5	63.5	16.2	39.0
12025	53.35	43.68	V	10.01	63.36	19.95	83.5	63.5	20.1	43.6
19240	42.71	29.89	H	9.25	51.96	5.40	83.5	63.5	31.5	58.1
19240	44.19	31.65	V	9.25	53.44	7.16	83.5	63.5	30.1	56.3
Middle Channel (2440 MHz)										
4880	64.16	57.04	H	-1.79	62.37	21.52	74.0	54.0	11.6	32.5
4880	68.37	61.47	V	-1.79	66.58	25.95	74.0	54.0	7.4	28.1
7320	69.17	61.96	H	2.64	71.81	30.87	74.0	54.0	2.2	23.1
7320	67.40	60.07	V	2.64	70.04	28.98	74.0	54.0	4.0	25.0
12200	51.51	42.27	H	9.69	61.20	18.23	83.5	63.5	22.3	45.3
12200	48.80	38.92	V	9.69	58.49	14.88	83.5	63.5	25.0	48.6
19520	43.09	29.77	V	9.51	52.60	5.55	83.5	63.5	30.9	58.0
High Channel (2480 MHz)										
2483.5	74.35	62.40	H	-8.66	65.69	20.01	74.0	54.0	8.3	34.0
2483.5	79.31	67.34	V	-8.66	70.65	24.95	74.0	54.0	3.3	29.1
4960	50.07	39.73	H	-1.59	48.48	4.41	74.0	54.0	25.5	49.6
4960	53.29	44.24	V	-1.59	51.70	8.92	74.0	54.0	22.3	45.1
7440	47.07	34.14	H	2.99	50.06	3.39	74.0	54.0	23.9	50.6
7440	46.11	34.12	V	2.99	49.10	3.37	74.0	54.0	24.9	50.6

Notes:

- All emissions above 19520 MHz were attenuated below the limits and the noise floor of the measurement equipment.
- The measurements above 10 GHz were performed at a distance of 1m. The limits were corrected accordingly using a distance factor of 20*log(3/1) ≈ 9.5 dB.
- The average measurements were further corrected using a duty cycle correction factor corresponding to the logarithm of the dwell time over 100 ms = 20*log(2.057/100) ≈ -33.74 dB.

7.4.3.3 Sample Calculation:

$R_C = R_U + CF_T$

Where:

CF_T	=	Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)
R_U	=	Uncorrected Reading
R_C	=	Corrected Level
AF	=	Antenna Factor
CA	=	Cable Attenuation
AG	=	Amplifier Gain
DC	=	Duty Cycle Correction Factor

Duty Cycle Correction Factor
DC = 20*log(2.057/100) = -33.74 dB

Example Calculation: Peak
Corrected Level: 77.22+ (-9.03) = 68.19 dBµV/m
Margin: 74 dBuV/m – 68.19 dBµV/m = 5.8 dB

Example Calculation: Average
Corrected Level: 54.36 + (- 9.03) – 33.74= 11.59dBµV/m
Margin: 54 dBuV/m – 11.59 dBµV/m = 42.4 dB

8 CONCLUSION

In the opinion of ACS, Inc., the JETIR5LUS manufactured by Esprit Model meets the requirements of FCC Part 15 subpart C and Industry Canada's Radio Standards Specification RSS-210.

END REPORT