

Certification Test Report

**FCC ID: PR6XRT
IC: 12755A-XRT**

**FCC Rule Part: CFR 47 Part 74 Subpart H
IC Radio Standards Specification: RSS-210 Amendment 1**

ACS Report Number: 15-2004.W06.1A

**Applicant: Zaxcom, Inc.
Model: XRT**

**Test Begin Date: February 2, 2015
Test End Date: April 14, 2015**

Report Issue Date: May 11, 2015



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 ANAB, ANSI, or any agency of the Federal Government.

Project Manager:

A handwritten signature in blue ink, appearing to read "Thierry Jean-Charles".

**Thierry Jean-Charles
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Reviewed by:

A handwritten signature in blue ink, appearing to read "Kirby Munroe".

**Kirby Munroe
Director, Wireless Certifications
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This report contains 37 pages

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1.0 GENERAL

1.1 Purpose

The purpose of this report is to demonstrate compliance with Part 2 Subpart J, Part 74 Subpart H of the FCC's Code of Federal Regulations, and Industry Canada Radio Standards Specifications RSS-210 Amendment 1 for modular approval.

1.2 Product Description

The EUT is a plug in UHF digital audio transmitter module for use in professional wireless audio applications. The product is configured to operate RF frequency ranges of 512 MHz - 608 MHz and 596 MHz - 698 MHz, exclusive of the frequency ranges of 608 MHz - 614 MHz. The band of operation is dictated by the inductor values in the synthesizer and filter on the RF path.

Technical Details

Frequency Range: 512 MHz - 608 MHz and 614 MHz - 698 MHz
Number of Channels: 959 (range A), 1020 (range B)
Channel Separation: 100 kHz
Modulations: QPSK
Antenna Type/Gain: 1/4 wave whip antenna, 2.2 dBi
Input Power: 3 VDC (AA battery)

Manufacturer Information:
Zaxcom Inc.
230 West Parkway Unit 9
Pompton Plains, NJ 07444

Test Sample Serial Numbers: XRT (512 - 614 MHz) SN: 04000, XRT (596 - 698 MHz) SN: 02000

Test Sample Condition: The EUT was in good functional condition with no physical damages.

1.3 Test Methodology

1.3.1 Configurations and Justification

The EUT was evaluated for radiated and RF conducted measurements. The EUT was evaluated with a display for configuration purposes. Two samples configured for the ranges of 512 MHz - 614 MHz and 596 MHz - 698 MHz, respectively, were provided for the evaluation. The frequencies used during the assessment are provided below:

EUT	Frequency (MHz)
XRT (512 MHz - 614 MHz)	512
	563
	614
XRT (596 MHz - 698 MHz)	600
	649
	698

The radiated emissions measurements were performed up to the 10th harmonic. Preliminary evaluation was performed for the unit set in three orthogonal orientations. The final measurements were collected

using the EUT orientations leading to the highest emissions. The worst case orientation was found to be for the EUT lying on one side.

The module is battery operated only with no provision for connection to the AC Mains. The EUT is exempted from the power line conducted emissions requirements.

1.4 Emission Designators

The XRT transmitter produces one modulation format. The emission designator for the modulation type used by the XRT transmitter is 135KD1W

2.0 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 #: 475089
Industry Canada Lab Code: 4175C

2.2 Laboratory Accreditations/Recognitions/Certifications

ACS, Boca Raton, Florida, is accredited to ISO/IEC 17025 by ANSI-ASQ National Accreditation Board under their ANAB program and has been issued certificate number AT-1533 in recognition of this 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 metallic loaded springs. An EMC Model 1051 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 EMC 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:

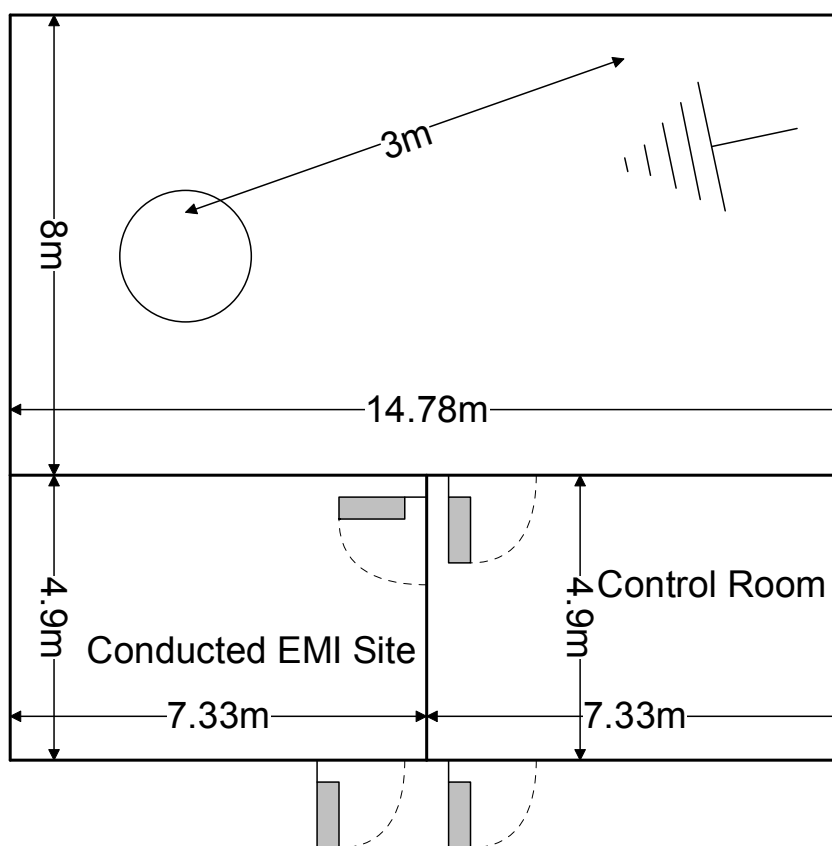


Figure 2.3.1-1: Semi-Anechoic Chamber Test Site

2.3.2 Conducted Emissions Test Site Description

The dimensions of the shielded conducted room are 7.3 x 4.9 x 3 m³. As per ANSI C63.4 2003 requirements, the data were taken using two LISNs; a Solar Model 8028-50 50 Ω /50 μ H and an EMCO Model 3825, which are installed as shown in Photograph 3. For evaluations requiring 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:

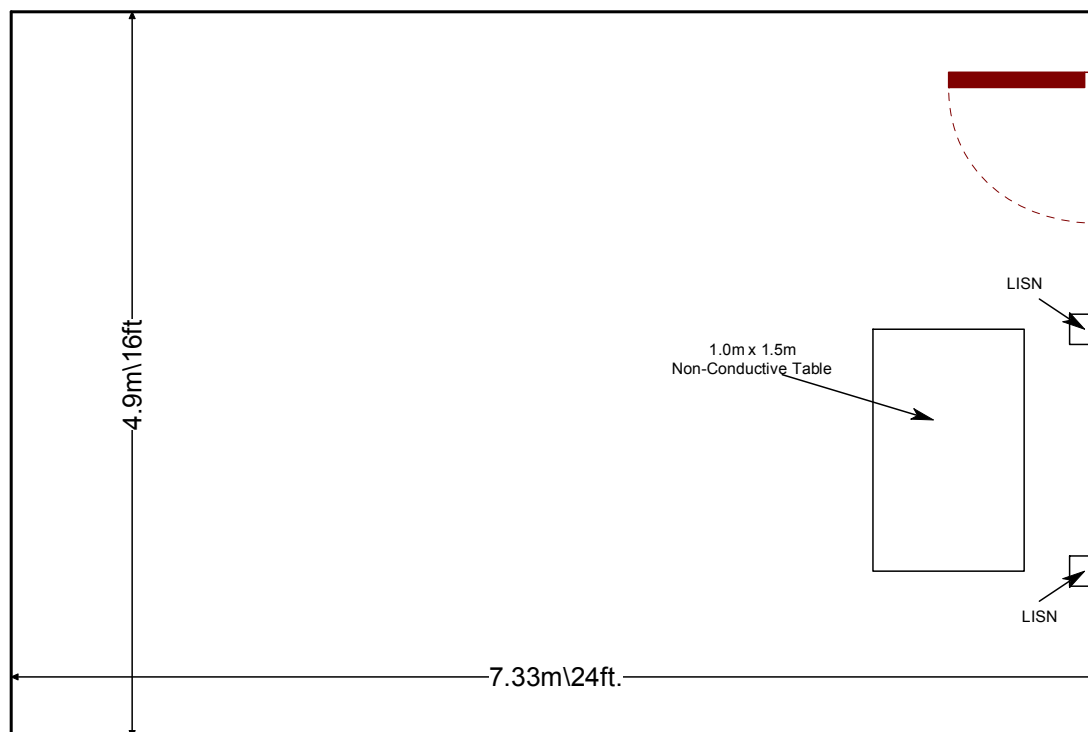


Figure 2.3.2-1: AC Mains Conducted EMI Site

3.0 APPLICABLE STANDARD REFERENCES

The following standards were used:

- 1 - ANSI C63.4-2003: Method of Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the 9 kHz to 40GHz - 2003
- 2 - US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures - 2015
- 3 - US Code of Federal Regulations (CFR): Title 47, Part 74, Subpart H: Experimental Radio, Auxiliary, Special Broadcast and Other Program Distributional Services – 2015
- 4 – TIA-603-C: Land Mobile FM or PM - Communications Equipment - Measurement and Performance Standards – 2004
- 5 – Industry Canada Radio Standards Specification: RSS-210, Amendment 1 — Licence-Exempt, Low-Power Radio Apparatus Operating in the Television Bands, Issue 8, February 2015
- 6 – Industry Canada Radio Standards Specification: RSS-GEN – General Requirements for Compliance of Radio Apparatus, Issue 4, November 2014.

4.0 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
430	RF Cables	SMS-290AW-480-SMS	Cables	N/A	3/20/2014	3/20/2015
430	RF Cables	SMS-290AW-480-SMS	Cables	N/A	3/18/2015	3/18/2016
523	Agilent	E7405	Spectrum Analyzers	MY45103293	12/26/2014	12/26/2016
2002	EMCO	3108	Antennas	2147	11/22/2013	11/22/2015
2003	EMCO	3108	Antennas	2148	2/18/2014	2/18/2016
2004	EMCO	3146	Antennas	1385	11/22/2013	11/22/2015
2005	FAU EMI R&D Lab	Lazarus	Antennas	EM001	1/27/2014	1/27/2016
2006	EMCO	3115	Antennas	2573	4/24/2013	4/24/2015
2007	EMCO	3115	Antennas	2419	1/27/2014	1/27/2016
2011	Hewlett-Packard	HP 8447D	Amplifiers	2443A03952	12/31/2014	12/31/2015
2037	ACS Boca	Chamber EMI Cable Set	Cable Set	2037	2/27/2014	2/27/2015
2037	ACS Boca	Chamber EMI Cable Set	Cable Set	2037	2/17/2015	2/17/2016
2075	Hewlett Packard	8495B	Attenuators	2626A11012	1/1/2015	1/1/2016
2078	ACS Boca	Substitution Cable Set	Cable Set	2078	1/15/2015	1/15/2016
2089	Agilent Technologies, Inc.	83017A	Amplifiers	3123A00214	12/12/2014	12/12/2015
RE563	Hewlett Packard	8673D	Signal Generators	3034A01078	3/21/2013	3/21/2015
RE563	Hewlett Packard	8673D	Signal Generators	3034A01078	4/2/2015	4/2/2016
2094	Mini Circuits	SHP-1000+	Filter	R UU27401137	4/7/2014	4/7/2015
2094	Mini Circuits	SHP-1000+	Filter	R UU27401137	4/7/2014	4/7/2015
2102	Test Equity	115	Environmental Chamber	150892	3/28/2014	3/28/2015
2102	Test Equity	115	Environmental Chamber	150892	3/13/2015	3/13/2016
2108	Fluke	115	Digital MultiMeter	99211160	3/31/2014	3/31/2015
2108	Fluke	115	Digital MultiMeter	99211160	3/31/2014	3/31/2015
RE578	MPJA	HY5003	Power Supplies	3700278	NCR	NCR
RE619	Rhode & Schwarz	ESU	Spectrum Analyzers	1302.6005K26 Ser. 100190	11/5/2014	11/5/2016

Notes:

- **NCR=No Calibration Required**
- **The assets calibration cycle information is provided to cover the entire test period.**
- **Asset RE563 was used only during the active period of the calibration cycle.**

5.0 SUPPORT EQUIPMENT

Table 5-1: EUT and Support Equipment

Item #	Type Device	Manufacturer	Model/Part #	Serial #
1	EUT	Zaxcom	XRT	02000, 04000
2	AA Battery Holder	N/A	ORUM-3x2	N/A
3	50 ohm Load	MECA	417-1	N/A
4	Microphone	PSA	PSA CO-8WL	1342

Table 5-2: Cable Description

Cable #	Cable Type	Length	Shield	Termination
A	2-lead power cable	0.1 m	No	EUT to Battery Holder
B	RF coaxial cable	1 m	Yes	EUT to 50 ohms load
C	PSA XSK	0.14 m	No	EUT to Extension
D	PSA CO-8WL	1.3 m	No	Extension to Microphone

6.0 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAM

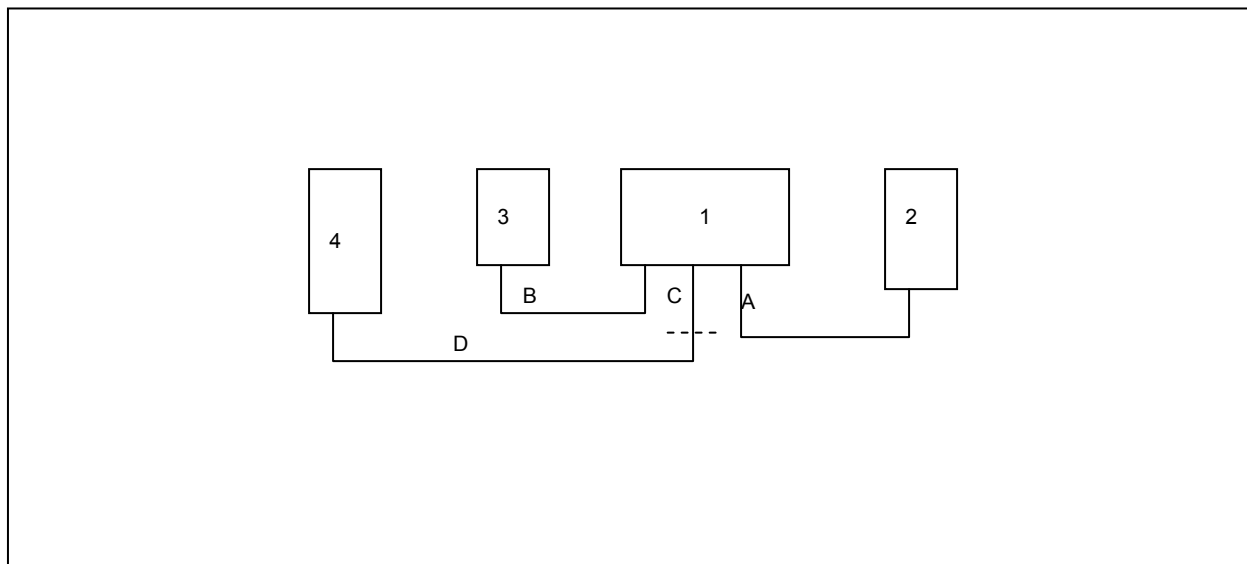


Figure 6-1: EUT Test Setup

7.0 SUMMARY OF TESTS

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

Table 7-1: Test Results Summary

Test Parameter	Test Summary
RF Power Output	Pass
Occupied Bandwidth (Emissions Limits)	Pass
Spurious Emissions at Antenna Terminals	Pass
Field Strength of Spurious Emissions	Pass
Frequency Stability	Pass

7.1 RF Power Output

7.1.1 Measurement Procedure

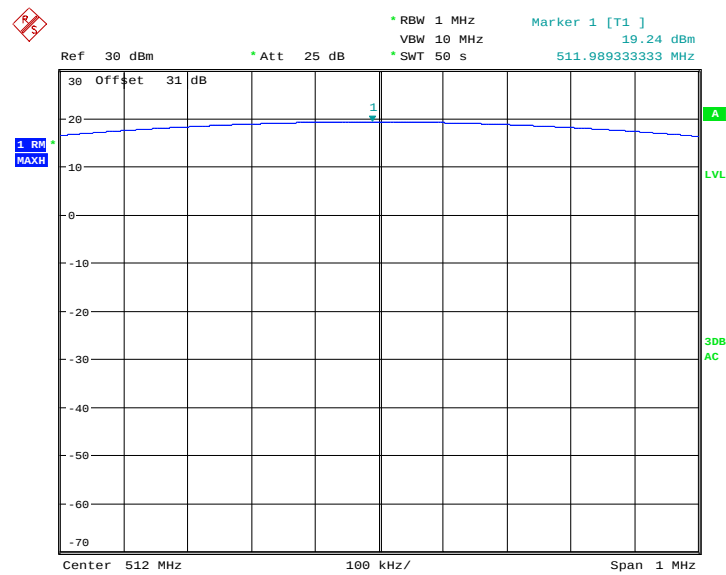
The RF output of the equipment under test was directly connected to the input of the Spectrum Analyzer through a 30 dB passive attenuator. The resolution and video bandwidths of the spectrum analyzer were set at sufficient levels, >> signal bandwidth, to produce accurate results. The internal correction factors of the spectrum analyzer were employed to correct for any cable or attenuator losses. Results are shown below.

7.1.2 Measurement Results

FCC Part 74.861 (e)(1)(ii); IC: RSS-210 Amendment 1, 6.1

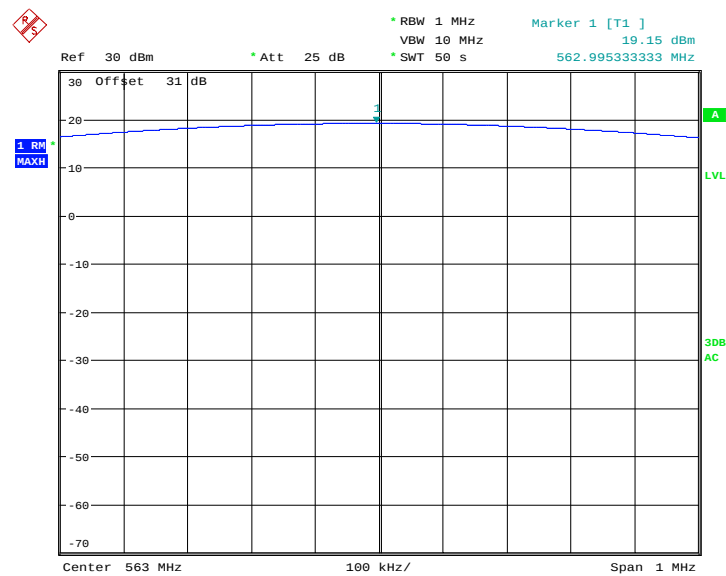
Table 7.1.2-1: Peak Output Power

Frequency (MHz)	Output Power (dBm)
512.0000	19.2400
563.0000	19.1500
614.0000	18.9300
600.0000	19.4500
648.0000	19.1200
698.0000	19.0000



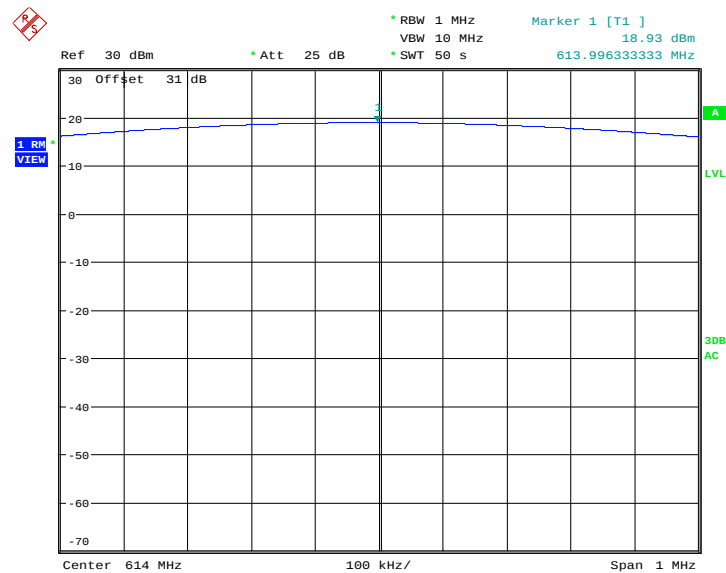
Date: 28.MAR.2015 17:42:45

Figure 7.1.2-1: Peak Output Power 512.00 MHz



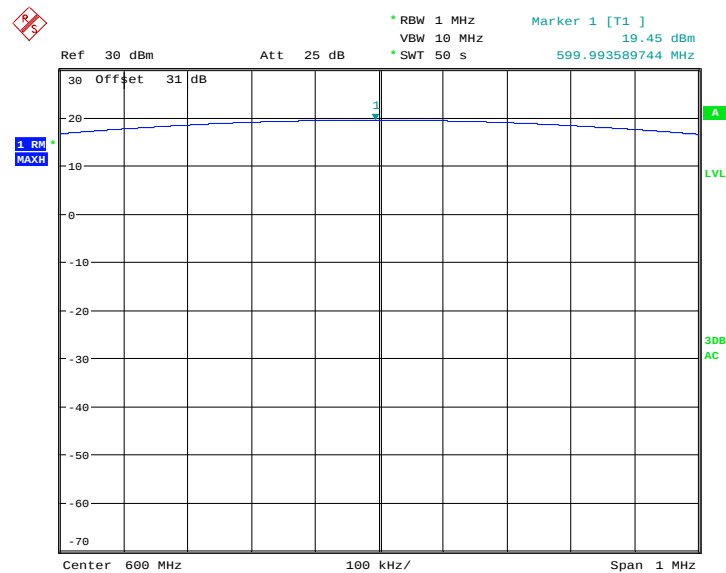
Date: 28.MAR.2015 16:56:54

Figure 7.1.2-2: Peak Output Power 563.00 MHz



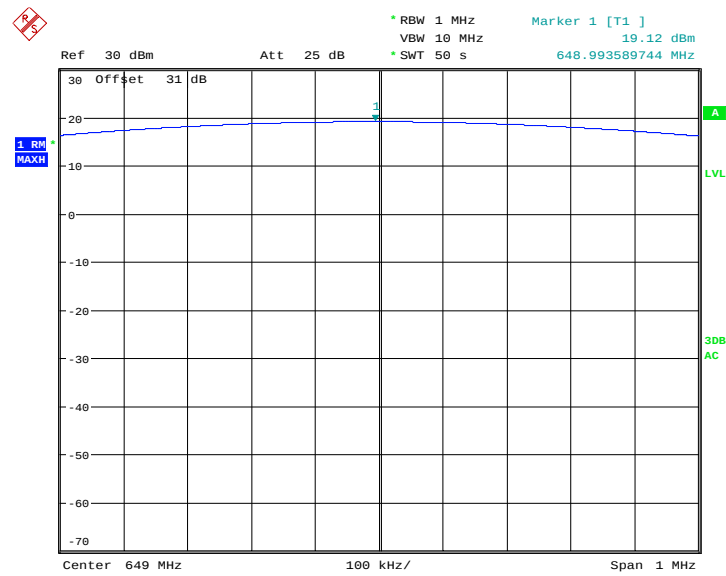
Date: 28.MAR.2015 17:19:47

Figure 7.1.2-3: Peak Output Power 614.00 MHz



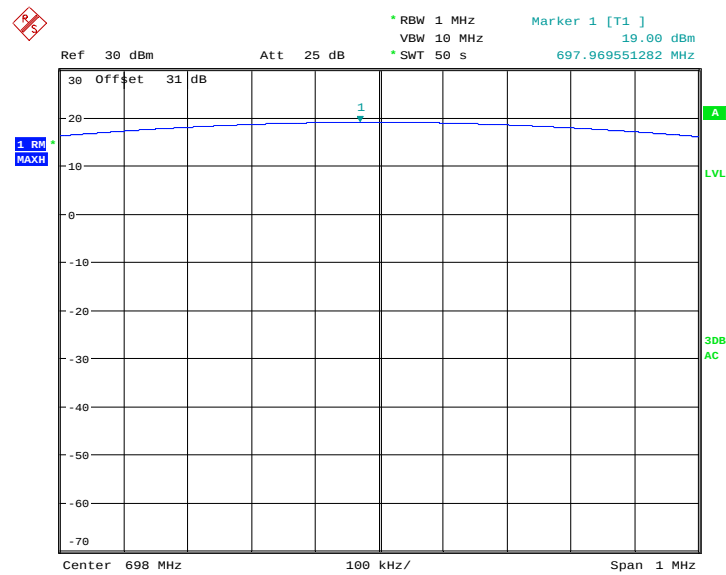
Date: 31.MAR.2015 18:21:05

Figure 7.1.2-4: Peak Output Power 600.00 MHz



Date: 31.MAR.2015 18:16:15

Figure 7.1.2-5: Peak Output Power 649.00 MHz



Date: 31.MAR.2015 18:36:42

Figure 7.1.2-6: Peak Output Power 698.00 MHz

7.2 Occupied Bandwidth

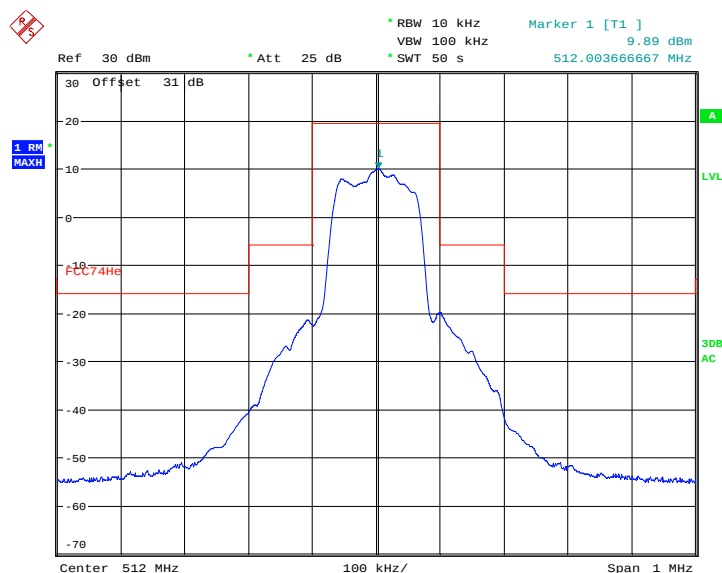
7.2.1 Measurement Procedure

The RF output of the equipment under test was directly connected to the input of the Spectrum Analyzer through a 30 dB passive attenuator. The spectrum analyzer resolution and video bandwidths were set to 10 kHz and 100 kHz respectively. The internal correction factors of the spectrum analyzer were employed to correct for any cable or attenuator losses. Results of the test are shown below for all modes of operation.

The 99% occupied bandwidth was measured with the spectrum analyzer span set to fully display the emission. The RBW was set to 1% to 5% of the approximated bandwidth. The occupied 99% bandwidth was measured by using the automated OBW measurement function of the SA.

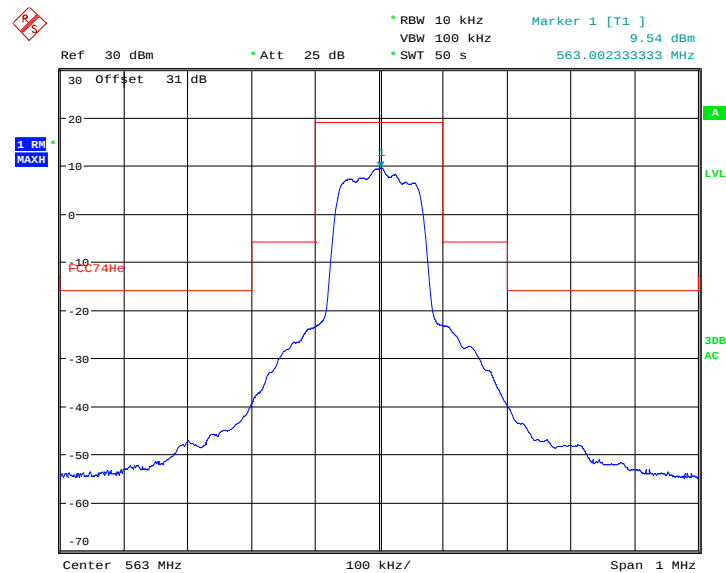
7.2.2 Measurement Results – Emission Masks

FCC Part 74.861 (e)(6); IC: RSS-210 Amendment 1, 6.4.1



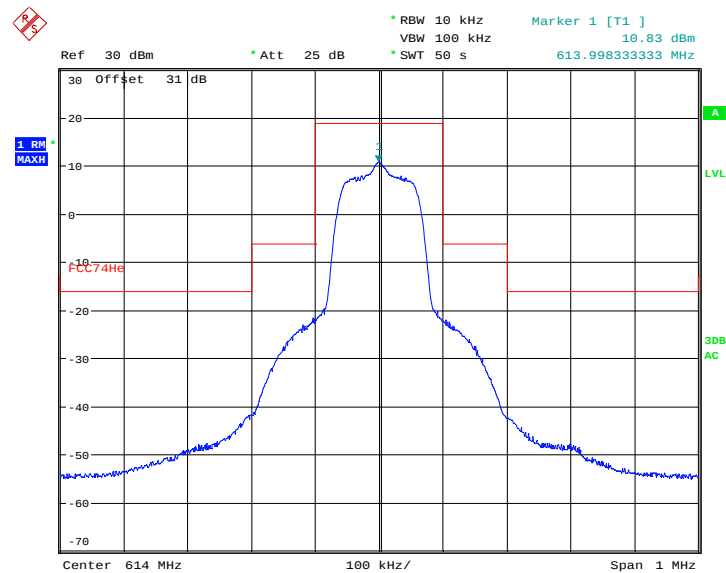
Date: 28.MAR.2015 17:49:39

Figure 7.2.2-1: 512.00 MHz – Emission Limits



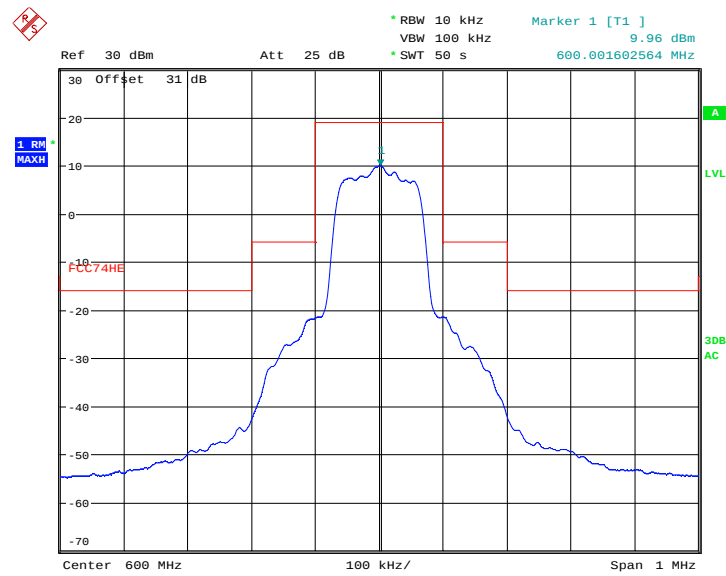
Date: 28.MAR.2015 17:06:07

Figure 7.2.2-2: 563.00 MHz – Emission Limits



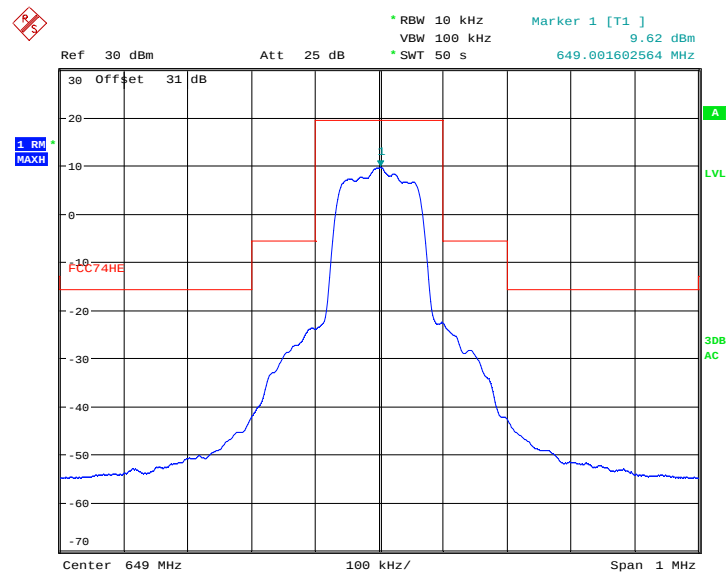
Date: 28.MAR.2015 17:30:36

Figure 7.2.2-3: 614.00 MHz – Emission Limits



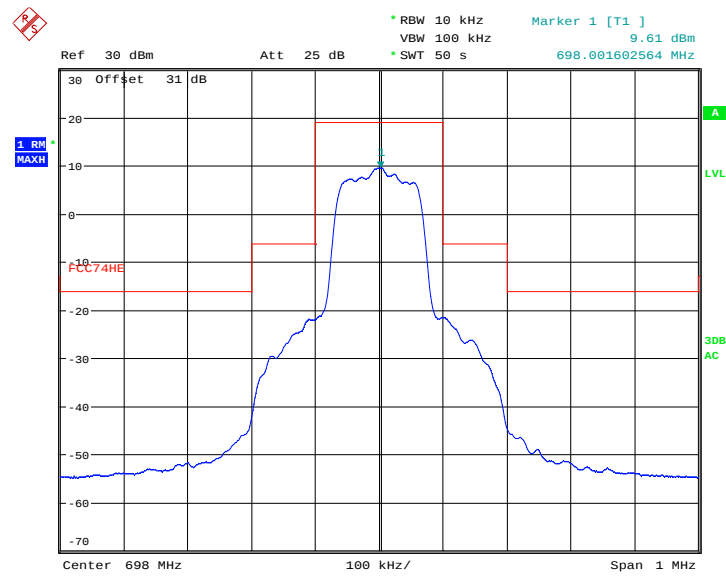
Date: 31.MAR.2015 19:14:37

Figure 7.2.2-4: 600.00 MHz – Emission Limits



Date: 31.MAR.2015 19:06:05

Figure 7.2.2-5: 649.00 MHz – Emission Limits



Date: 31.MAR.2015 18:58:02

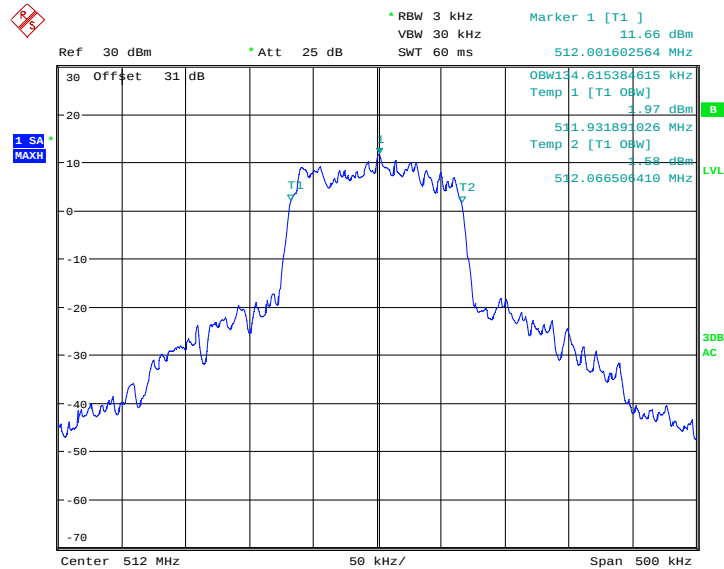
Figure 7.2.2-6: 698.00 MHz – Emission Limits

7.2.3 Measurement Results – 99% Bandwidth

IC: RSS-210 Amendment 1, 6.2

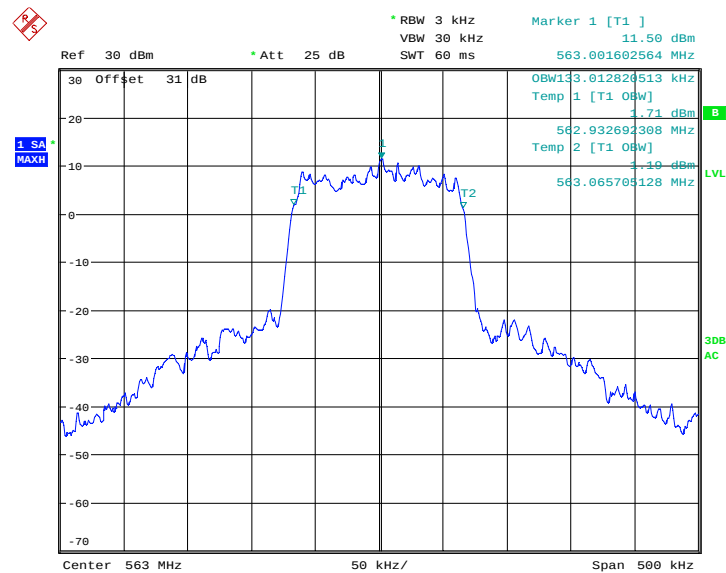
Table 7.2.3-1: 99% Bandwidth

Frequency (MHz)	99% Bandwidth (kHz)
512.00	134.6154
563.00	133.0128
614.00	133.8141
600.00	130.0000
649.00	130.0000
698.00	130.0000



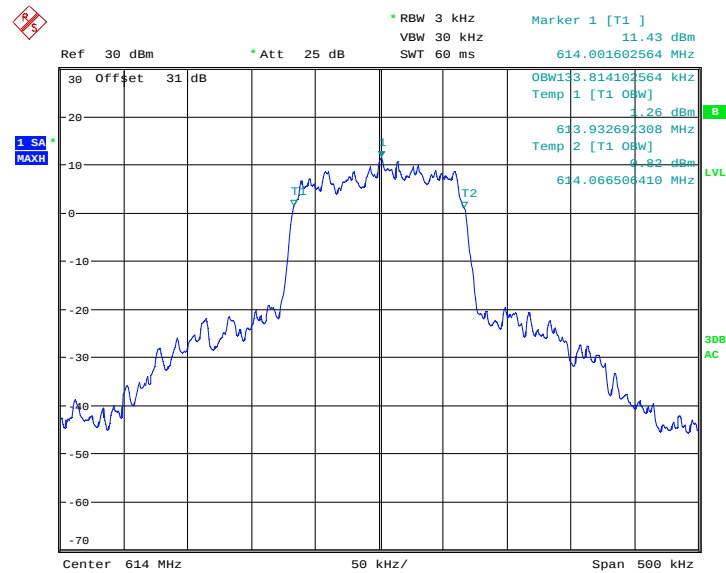
Date: 28.MAR.2015 17:39:18

Figure 7.2.3-1: 512.00 MHz – 99% Bandwidth



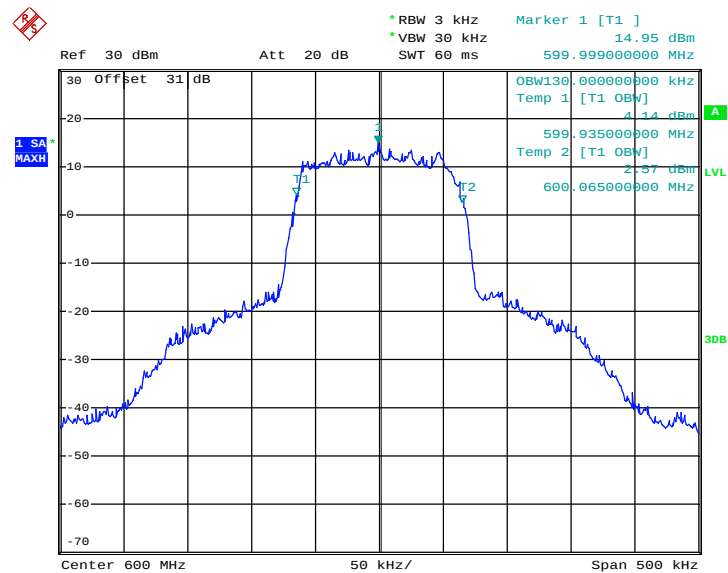
Date: 28.MAR.2015 18:30:28

Figure 7.2.3-2: 563.00 MHz – 99% Bandwidth



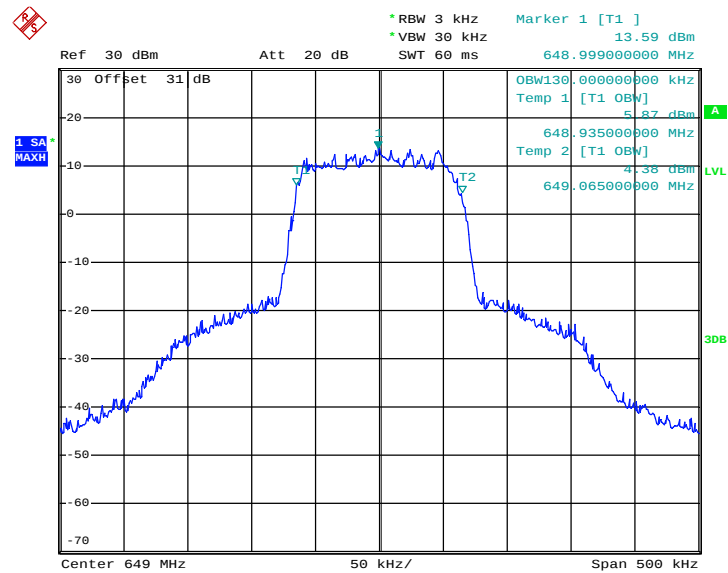
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Figure 7.2.3-3: 614.00 MHz – 99% Bandwidth



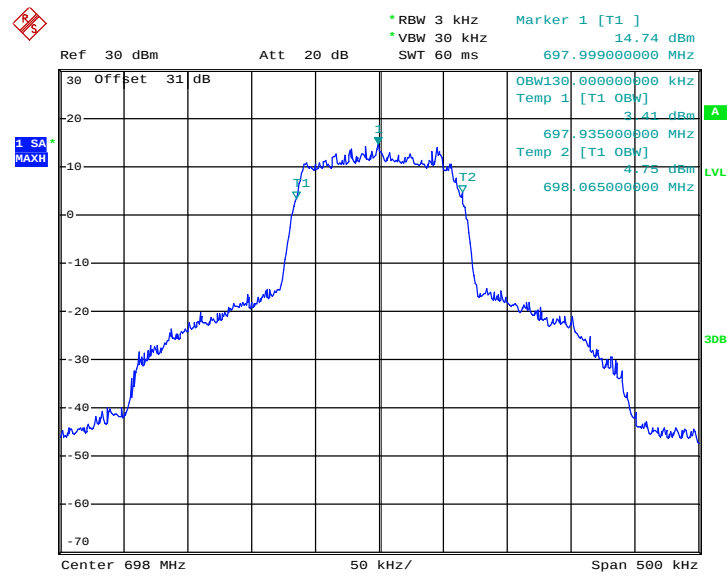
Date: 3.FEB.2015 21:17:11

Figure 7.2.3-4: 600.00 MHz – 99% Bandwidth



Date: 3.FEB.2015 21:15:24

Figure 7.2.3-5: 649.00 MHz – 99% Bandwidth



Date: 3.FEB.2015 21:14:01

Figure 7.2.3-6: 698.00 MHz – 99% Bandwidth

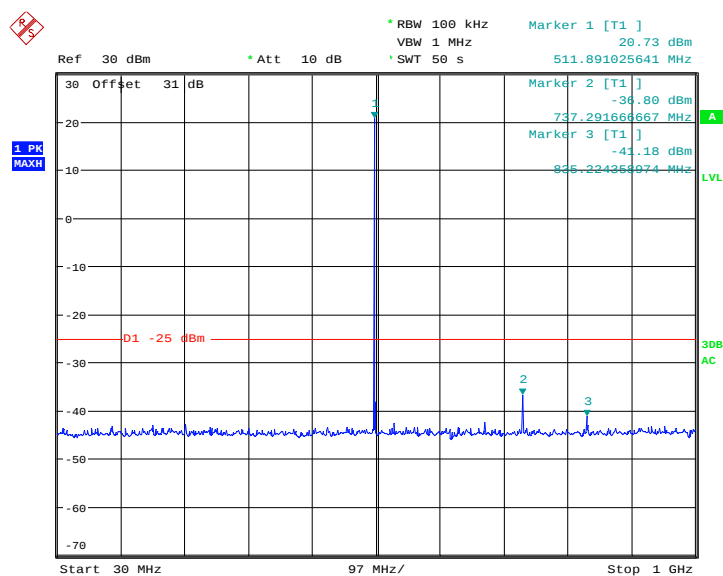
7.3 Spurious Emissions at Antenna Terminals

7.3.1 Measurement Procedure

The RF output of the equipment under test was directly connected to the input of the Spectrum Analyzer through a 30 dB passive attenuator. The spectrum analyzer resolution bandwidth was set to 100 kHz below 1000 MHz and 1 MHz above 1000 MHz. The internal correction factors of the spectrum analyzer were employed to correct for any cable, attenuator or filter losses. The spectrum was investigated in accordance to CFR 47 Part 2.1057. Results are shown below.

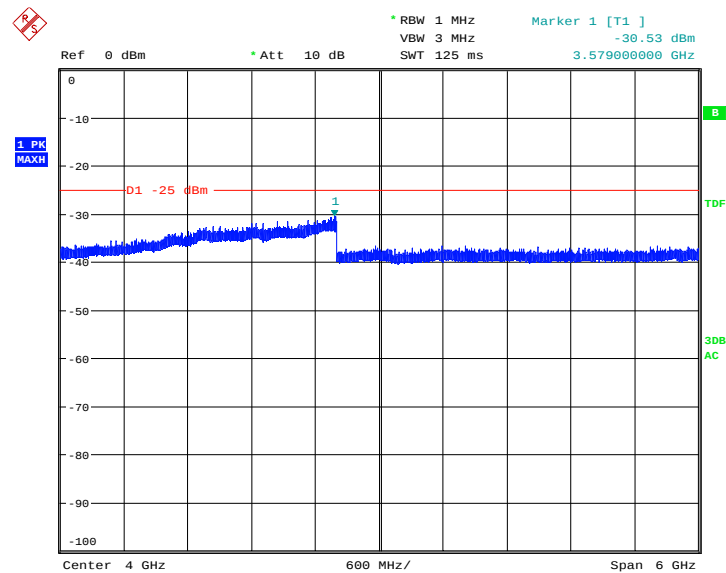
7.3.2 Measurement Results

FCC Part 74.861 (e)(6); IC: RSS-210 Amendment 1, 6.4.1



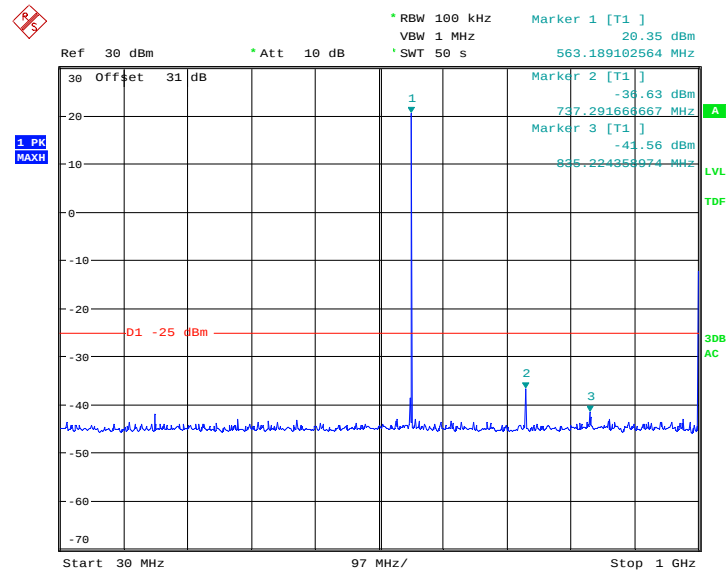
Date: 14.APR.2015 18:54:20

Figure 7.3.2-1: 512.00 MHz – 30MHz to 1GHz



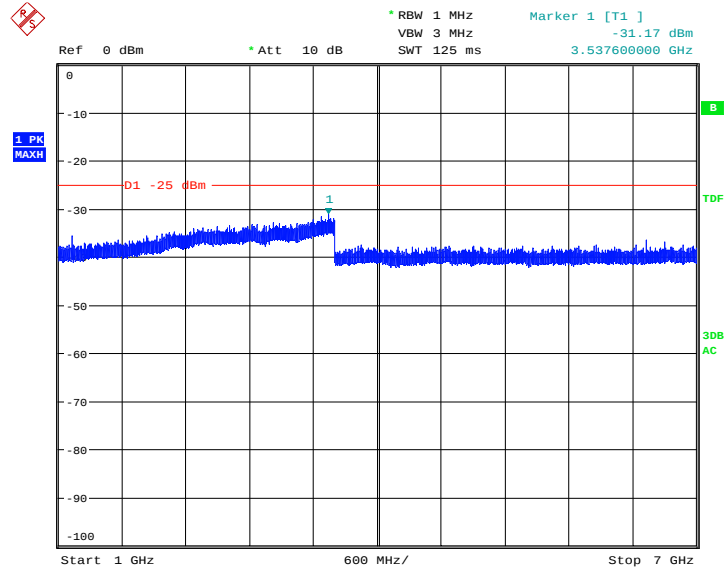
Date: 14.APR.2015 20:08:47

Figure 7.3.2-2: 512.00 MHz – 1GHz to 7GHz



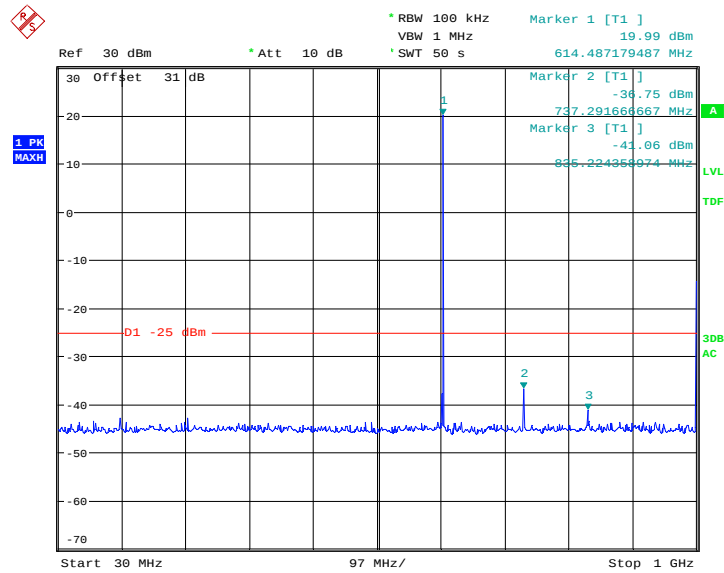
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Figure 7.3.2-3: 563.00 MHz – 30MHz to 1GHz



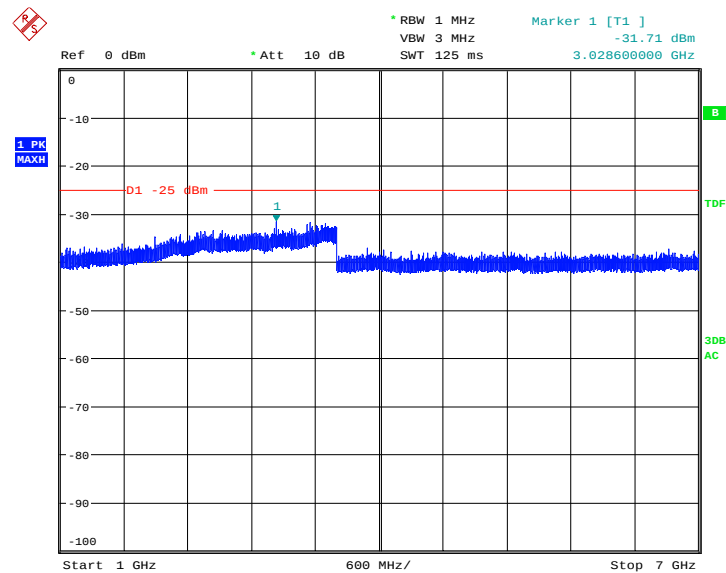
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Figure 7.3.2-4: 563.00 MHz – 1GHz to 7GHz



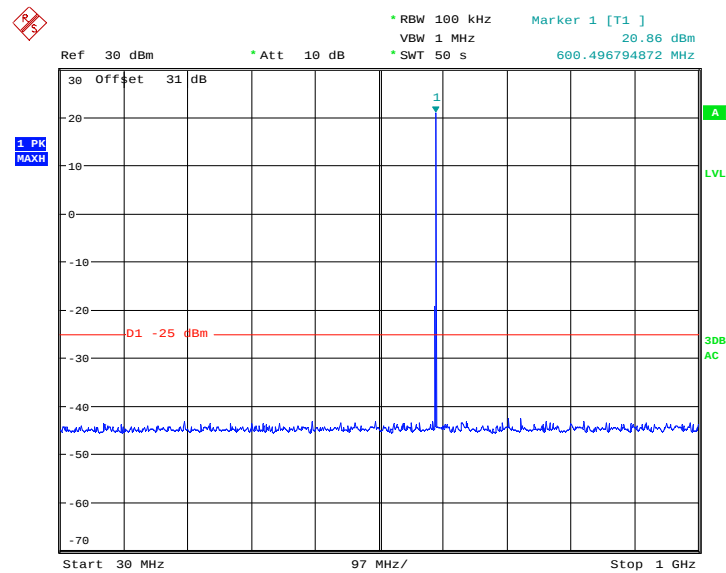
Date: 14.APR.2015 20:19:39

Figure 7.3.2-5: 614.00 MHz – 30MHz to 1GHz



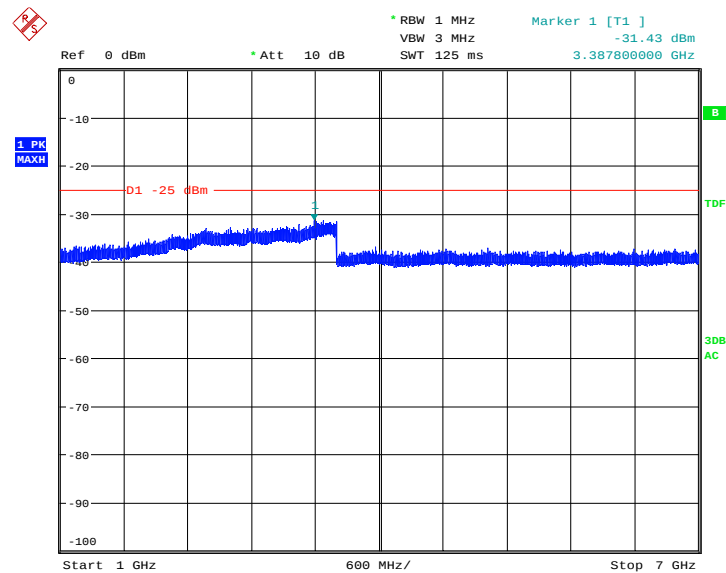
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Figure 7.3.2-6: 614.00 MHz – 1GHz to 7 GHz



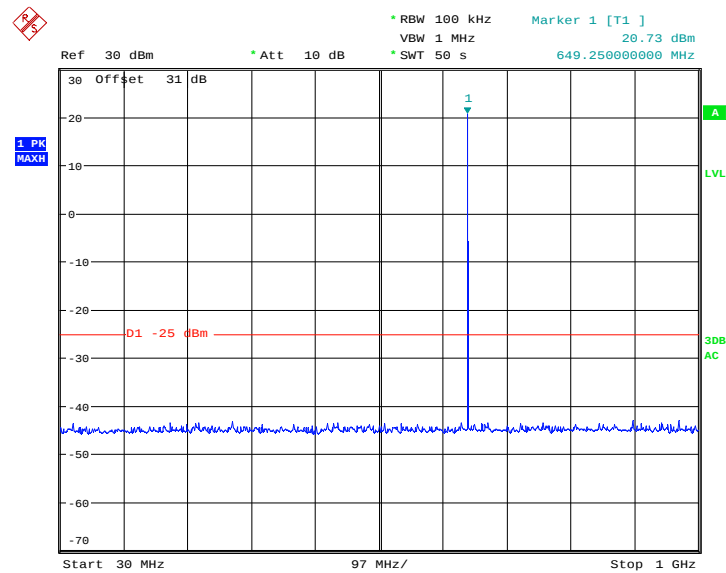
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Figure 7.3.2-7: 600.00 MHz – 30MHz to 1GHz



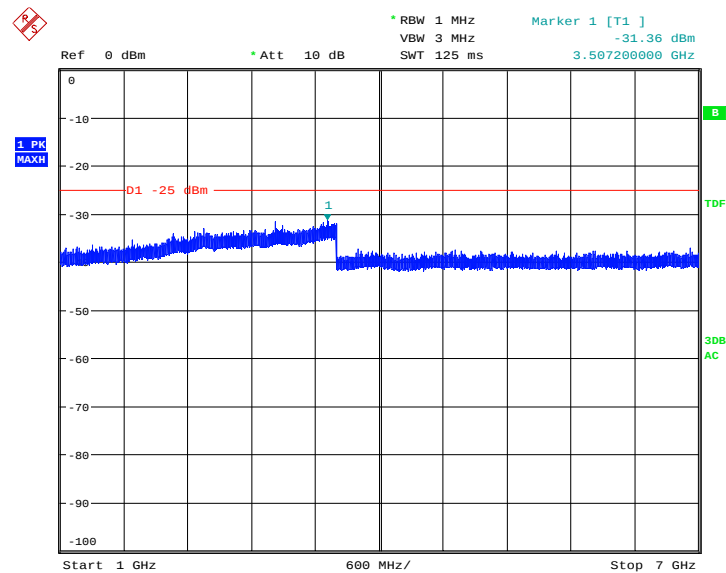
Date: 14.APR.2015 18:09:44

Figure 7.3.2-8: 600.00 MHz – 1GHz to 7GHz



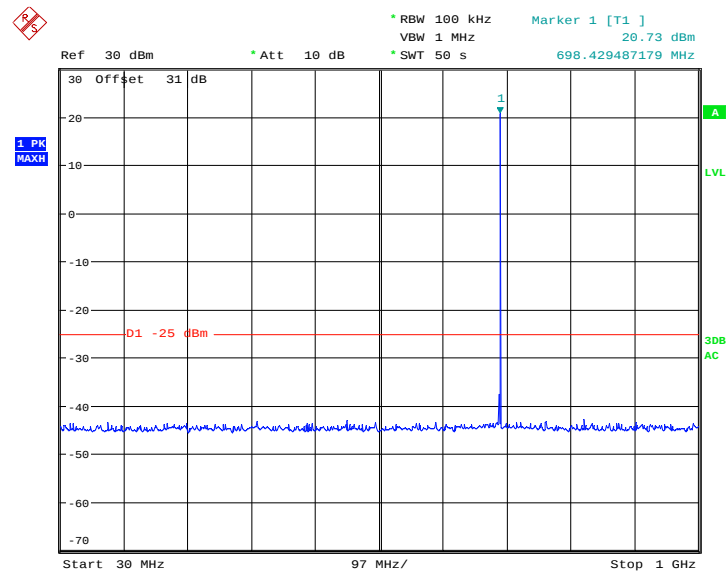
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Figure 7.3.2-9: 649.00 MHz – 30MHz to 1GHz



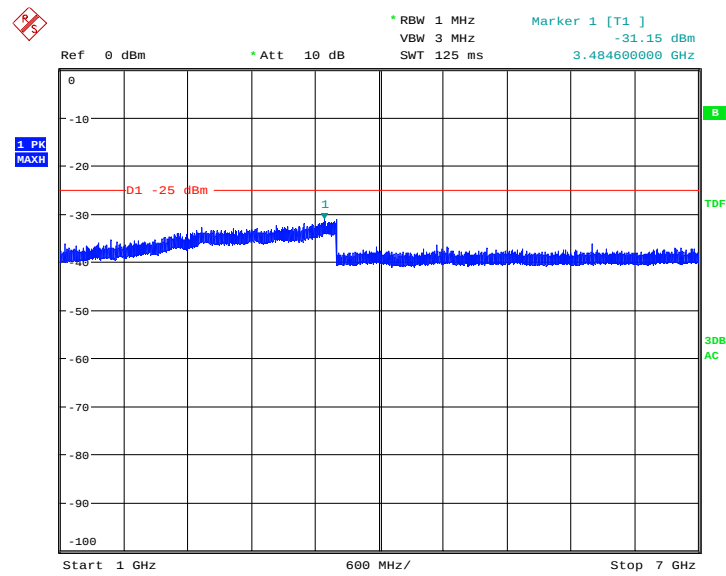
Date: 14.APR.2015 18:14:08

Figure 7.3.2-10: 649.00 MHz – 1GHz to 7GHz



Date: 14.APR.2015 17:46:29

Figure 7.3.2-11: 698.00 MHz – 30MHz to 1GHz



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Figure 7.3.2-12: 698.00 MHz – 1GHz to 7GHz

7.4 Field Strength of Spurious Emissions

7.4.1 Measurement Procedure

The equipment under test is placed in the Semi-Anechoic Chamber (described in section 2.3.1) on a wooden table at the turntable center. For each spurious emission, the antenna mast is raised and lowered from one (1) to four (4) meters and the turntable is rotated 360° and the maximum reading on the spectrum analyzer is recorded. This was repeated for both horizontal and vertical polarizations of the receive antenna.

The equipment under test is then replaced with a substitution antenna fed by a signal generator. The signal generator's frequency is set to that of the spurious emission recorded from the equipment under test. The antenna mast is raised and lowered from one (1) to four (4) meters to obtain a maximum reading on the spectrum analyzer. The output of the signal generator is then adjusted until the reading on the spectrum analyzer matches that obtained from the equipment under test. The signal generator level is recorded. The power in dBm of each spurious emission is calculated by correcting the signal generator level for the cable loss and gain of the substitution antenna referenced to a dipole. The spectrum was investigated in accordance to CFR 47 Part 2.1057.

The magnitude of all spurious emissions not reported were attenuated below the noise floor of the measurement system and therefore not specified in this report. Results are shown below.

7.4.2 Measurement Results

FCC Part 74.861 (e)(6); IC: RSS-210 Amendment 1, 6.4.1

Table 7.4.2-1: Field Strength of Spurious Emissions – 512.00 MHz

Frequency (MHz)	Spectrum Analyzer Level (dBm)	Antenna Polarity (H/V)	Spurious ERP (dBm)	Limit (dBm)	Margin (dB)
1024	-40.89	H	-44.07	-25.00	19.07
1536	-48.52	H	-47.89	-25.00	22.89
2048	-58.70	H	-57.91	-25.00	32.91
2560	-60.20	H	-58.82	-25.00	33.82
3072	-58.33	H	-50.19	-25.00	25.19
3584	-64.15	H	-60.30	-25.00	35.30
4096	-63.74	H	-54.15	-25.00	29.15
4608	-60.16	H	-43.77	-25.00	18.77
5120	-66.91	H	-57.90	-25.00	32.90
1024	-45.10	V	-49.08	-25.00	24.08
1536	-51.39	V	-51.78	-25.00	26.78
2048	-57.96	V	-55.48	-25.00	30.48
2560	-62.33	V	-63.99	-25.00	38.99
3072	-62.65	V	-57.02	-25.00	32.02
3584	-64.75	V	-61.59	-25.00	36.59
4096	-65.78	V	-59.94	-25.00	34.94
4608	-63.15	V	-50.14	-25.00	25.14

NOTE: All frequencies not listed were below the noise floor of the spectrum analyzer.

Table 7.4.2-2: Field Strength of Spurious Emissions – 563.00 MHz

Frequency (MHz)	Spectrum Analyzer Level (dBm)	Antenn a Polarity (H/V)	Spurious ERP (dBm)	Limit (dBm)	Margin (dB)
1126	-41.54	H	-41.87	-25.00	16.87
1689	-49.57	H	-47.40	-25.00	22.40
2252	-59.68	H	-60.33	-25.00	35.33
2815	-59.04	H	-52.79	-25.00	27.79
3378	-60.77	H	-50.24	-25.00	25.24
3941	-63.23	H	-53.67	-25.00	28.67
4504	-62.54	H	-49.32	-25.00	24.32
5067	-66.07	H	-54.49	-25.00	29.49
1126	-46.40	V	-48.61	-25.00	23.61
1689	-49.67	V	-47.37	-25.00	22.37
2252	-60.35	V	-59.43	-25.00	34.43
2815	-61.51	V	-55.76	-25.00	30.76
3378	-62.93	V	-53.65	-25.00	28.65
3941	-63.56	V	-54.20	-25.00	29.20
4504	-66.73	V	-60.41	-25.00	35.41
5067	-66.85	V	-55.54	-25.00	30.54

NOTE: All frequencies not listed were below the noise floor of the spectrum analyzer.

Table 7.4.2-3: Field Strength of Spurious Emissions – 614.00 MHz

Frequency (MHz)	Spectrum Analyzer Level (dBm)	Antenn a Polarity (H/V)	Spurious ERP (dBm)	Limit (dBm)	Margin (dB)
1228	-50.33	H	-51.23	-25.00	26.23
1842	-49.45	H	-45.33	-25.00	20.33
2456	-59.10	H	-56.92	-25.00	31.92
3070	-60.63	H	-53.39	-25.00	28.39
3684	-57.59	H	-45.69	-25.00	20.69
4298	-59.41	H	-42.85	-25.00	17.85
4912	-61.88	H	-42.94	-25.00	17.94
1228	-52.54	V	-56.93	-25.00	31.93
1842	-50.82	V	-47.33	-25.00	22.33
2456	-61.97	V	-63.78	-25.00	38.78
3070	-62.71	V	-59.08	-25.00	34.08
3684	-61.05	V	-49.51	-25.00	24.51
4298	-62.82	V	-48.29	-25.00	23.29
4912	-60.85	V	-42.81	-25.00	17.81

NOTE: All frequencies not listed were below the noise floor of the spectrum analyzer.

Table 7.4.2-4: Field Strength of Spurious Emissions – 600.00 MHz

Frequency (MHz)	Spectrum Analyzer Level (dBm)	Antenna Polarity (H/V)	Spurious ERP (dBm)	Limit (dBm)	Margin (dB)
1200	-56.30	H	-62.10	-25.00	37.10
1800	-55.97	H	-54.34	-25.00	29.34
2400	-57.06	H	-53.75	-25.00	28.75
3000	-61.98	H	-56.34	-25.00	31.34
3600	-59.58	H	-49.66	-25.00	24.66
4200	-66.26	H	-59.42	-25.00	34.42
4800	-66.13	H	-54.43	-25.00	29.43
5400	-68.71	H	-60.48	-25.00	35.48
1200	-55.78	V	-62.17	-25.00	37.17
1800	-53.70	V	-51.15	-25.00	26.15
2400	-58.20	V	-53.21	-25.00	28.21
3000	-63.65	V	-61.05	-25.00	36.05
3600	-62.90	V	-53.97	-25.00	28.97
4200	-67.11	V	-60.14	-25.00	35.14
4800	-67.17	V	-61.12	-25.00	36.12

NOTE: All frequencies not listed were below the noise floor of the spectrum analyzer.

Table 7.4.2-5: Field Strength of Spurious Emissions – 649.00 MHz

Frequency (MHz)	Spectrum Analyzer Level (dBm)	Antenna Polarity (H/V)	Spurious ERP (dBm)	Limit (dBm)	Margin (dB)
1298	-57.17	H	-63.29	-25.00	38.29
1947	-59.53	H	-59.67	-25.00	34.67
2596	-56.85	H	-50.83	-25.00	25.83
3245	-64.73	H	-54.86	-25.00	29.86
3894	-63.18	H	-54.86	-25.00	29.86
4543	-67.57	H	-62.50	-25.00	37.50
5192	-67.73	H	-58.71	-25.00	33.71
1298	-57.16	V	-64.03	-25.00	39.03
1947	-60.67	V	-62.37	-25.00	37.37
2596	-58.27	V	-52.45	-25.00	27.45
3245	-65.20	V	-65.39	-25.00	40.39
3894	-64.71	V	-57.13	-25.00	32.13
4543	-67.84	V	-69.73	-25.00	44.73
5192	-67.00	V	-53.18	-25.00	28.18

NOTE: All frequencies not listed were below the noise floor of the spectrum analyzer.

Table 7.4.2-6: Field Strength of Spurious Emissions – 698.00 MHz

Frequency (MHz)	Spectrum Analyzer Level (dBm)	Antenn a Polarity (H/V)	Spurious ERP (dBm)	Limit (dBm)	Margin (dB)
1396	-53.48	H	-51.51	-25.00	26.51
2094	-60.27	H	-57.89	-25.00	32.89
2792	-59.34	H	-53.44	-25.00	28.44
3490	-64.52	H	-59.36	-25.00	34.36
4188	-65.29	H	-53.45	-25.00	28.45
4886	-66.76	H	-56.46	-25.00	31.46
5584	-66.91	H	-58.41	-25.00	33.41
1396	-53.48	H	-51.51	-25.00	26.51
2094	-60.27	H	-57.89	-25.00	32.89
2792	-59.34	H	-53.44	-25.00	28.44
3490	-64.52	H	-59.36	-25.00	34.36
4188	-65.29	H	-53.45	-25.00	28.45
4886	-66.76	H	-56.46	-25.00	31.46
5584	-66.91	H	-58.41	-25.00	33.41
1396	-53.48	H	-51.51	-25.00	26.51

NOTE: All frequencies not listed were below the noise floor of the spectrum analyzer.

7.5 Frequency Stability

7.5.1 Measurement Procedure

The equipment under test is placed inside an environmental chamber. The RF output is directly coupled to the input of the measurement equipment and a power supply is attached to the primary supply voltage.

Frequency measurements were made at the extremes of the of temperature range -30° C to +50° C and at intervals of 10° C at normal supply voltage. A period of time sufficient to stabilize all components of the equipment was allowed at each frequency measurement. At a temperature 20° C the measurements were performed at the end point voltage. The maximum variation of frequency was recorded.

Results of the test are shown below.

7.5.2 Measurement Results

FCC Part 74.861 (e) (4); IC: RSS-210 Amendment 1, 6.3

Frequency Stability

Frequency (MHz): 563

Deviation Limit (PPM): 50

Temperature	Frequency	Frequency Error	Voltage	Voltage
C	MHz	(PPM)	(%)	(VDC)
-30 C	562.999343	-1.167	100%	3.00
-20 C	562.999407	-1.053	100%	3.00
-10 C	562.999399	-1.067	100%	3.00
0 C	562.999575	-0.754	100%	3.00
10 C	562.999760	-0.427	100%	3.00
20 C	562.999896	-0.185	100%	3.00
30 C	562.999960	-0.071	100%	3.00
40 C	563.000048	0.085	100%	3.00
50 C	563.000120	0.213	100%	3.00
20 C	562.999875	-0.222	Endpoint	2.30

Frequency Stability vs. Temperature

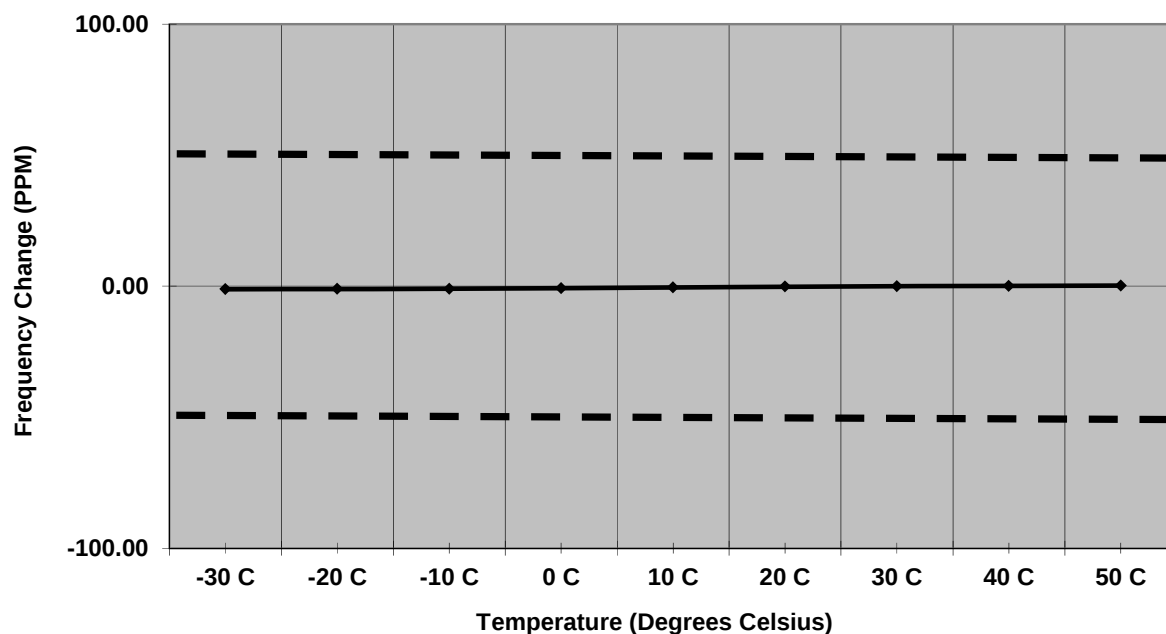


Figure 7.5.2-1: Frequency Stability – 563.00 MHz

Frequency Stability

Frequency (MHz): 649

Deviation Limit (PPM): 50

Temperature	Frequency	Frequency Error	Voltage	Voltage
C	MHz	(PPM)	(%)	(VDC)
-30 C	648.999496	-0.777	100%	3.00
-20 C	648.999520	-0.740	100%	3.00
-10 C	648.999616	-0.592	100%	3.00
0 C	648.999752	-0.382	100%	3.00
10 C	648.999900	-0.154	100%	3.00
20 C	648.999868	-0.203	100%	3.00
30 C	648.999676	-0.499	100%	3.00
40 C	648.999740	-0.401	100%	3.00
50 C	648.999896	-0.160	100%	3.00
20 C	648.999769	-0.356	Endpoint	2.30

Frequency Stability vs. Temperature

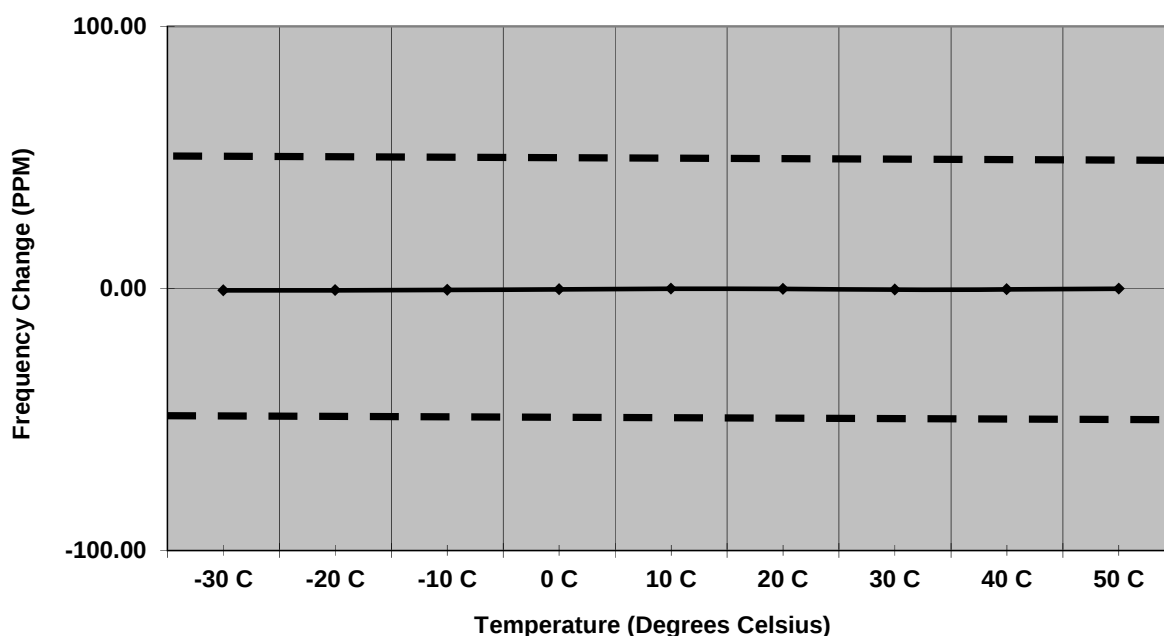


Figure 7.5.2-2: Frequency Stability – 649.00 MHz

8.0 CONCLUSION

In the opinion of ACS, Inc. the model XRT, manufactured by Zaxcom, Inc., meets all the requirements of FCC Part 74 Subpart H of the FCC's Code of Federal Regulations, and Industry Canada Radio Standards Specifications RSS-210 Amendment 1 where applicable.

End Report