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Electromagnetic Compatibility Test Report

On

Personal Massager

Model: F2

Nuelle, Inc.**2570 W. El Camino Real, Suite 310****Mountain View, CA 94040 USA**

Prepared by:

TUV Rheinland of North America, Inc.

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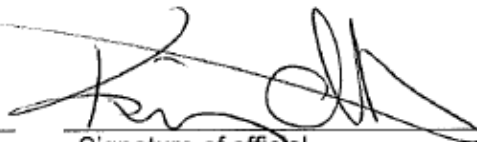
Manufacturer's statement - attestation

The manufacturer; Nuelle, Inc., as the responsible party for the equipment tested, hereby affirms:

- a) That she has reviewed and concurs that the test shown in this report are reflective of the operational characteristics of the device for which certification is sought;
- b) That the device in this test report will be representative of production units;
- c) That all changes (in hardware and software/firmware) to the subject device will be reviewed.
- d) That any changes impacting the attributes, functionality or operational characteristics documented in this report will be communicated to the body responsible for approving (certifying) the subject equipment.

Kimberly Otto

Printed name of official



Signature of official

Nuelle, Inc.
2570 W. El Camino Real, Suite 310
Mountain View, CA 94040 USA

Address

9 June 2015

Date

(650) 576-9090

Telephone number




kotto@exploramed.com

Email address of official

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Client:	nuelle, Inc. 2570 W. El Camino Real, Suite 310 Mountain View, CA 94040 USA		Kimberly Otto Ph: (650) 576-9090 Fax: Email: kotto@exploramed.com	
Identification:	Personal Massager	Serial No.:	PRODUCTION PROTOTYPE	
Test item:	Model: F2	Date tested:	9 April 2015	
Testing location:	TUV Rheinland of North America 762 Park Avenue Youngsville, NC 27596-9470 U.S.A.		Tel: (919) 554-3668 Fax: (919) 554-3542	
Test specification:	Emissions: FCC Part 15, Subpart C, RSS-210 Issue 8: FCC Parts 15.207(a) and RSS-GEN 7.2.4, FCC Part 15.31(e) FCC Parts 15.249(d), 15.209, 15.215(c) and RSS-210 A2.9, RSS-GEN 7.2.1 FCC Part 15.249 and RSS-210 Annex 2.9, FCC Parts 15.249(a), 15.249(c), RSS-210 A2.9(a),			
Test Result	The above product was found to be Compliant to the above test standard(s)			
tested by: Mark Ryan		reviewed by: Michael Moranha		
9 November 2015 Date		9 November 2015 Date		
Signature		 Signature		
Other Aspects:	None			
Abbreviations: OK, Pass, Compliant, Complies = passed Fail, Not Compliant, Does Not Comply = failed N/A = not applicable				
				Industry Canada
90552 and 100881		Testing Cert #3331.05		2932H-1 and 2932H-2

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1 General Information

1.1 Scope

This report is intended to document the status of conformance with the requirements of the required standards, based on the results of testing performed on 9 April 2015 on the Personal Massager, Model No. F2, manufactured by Nuelle, Inc. This report only applies to the specific samples tested under the stated test conditions. It is the responsibility of the manufacturer to assure that additional production units of this model are manufactured with identical or EMI equivalent electrical and mechanical components. This report is further intended to document changes and modifications to the EUT throughout its life cycle. All documentation will be included as a supplement.

1.2 Purpose

Testing was performed to evaluate the EMC performance of the EUT (Equipment Under Test) in accordance with the applicable requirements, procedures, and criteria defined in the application of regulations and application of standards listed in this report.

1.3 Revision History

Revision	Date	Description of Revision
- -	12 June 2015	Initial Release
A	5 Nov. 2015	Remove RF Exposure section from report and corrected ID numbers
B	9 Nov. 2015	Corrected Model Number to F2.

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1.4 Summary of Test Results

Applicant	Nuelle, Inc. 2570 W. El Camino Real, Suite 310 Mountain View, CA 94040 USA	Tel	(650) 576-9090	Contact	Kimberly Otto
		Fax		e-mail	kotto@exploramed.com
Description	PERSONAL MASSAGER	Model	F2		
Serial Number	Production Prototype	Test Voltage/Freq.	3.7 VDC Batteries		
Test Date Completed:	9 April 2015	Test Engineer	Mark Ryan		
Standards	Description	Severity Level or Limit		Worst-case Values	Test Result
FCC Part 15, Subpart C Standard	Radio Frequency Devices- Subpart C: Intentional Radiators	See called out parts below		See Below	Complies
RSS-210 Issue 8 Standard	Low-Power Licence-exempt Radiocommunication Devices Category I Equipment	See called out parts below		See Below	Complies
FCC Part 15.249 and RSS-210 Annex 2.9	Operation within the band 2400 to 2483.5 MHz	See called out parts below		See Below	Complies
FCC Parts 15.249(a), 15.249(c), RSS-210 A2.9(a)	Radiated Output Power for Fundamental and Harmonic Frequencies	Fund: Shall not exceed 50 mV/m at 3m Harmonics: Shall not exceed 500µV/m (0.5 mV/m) at 3m, (unrestricted bands)		25.6 mV/m	Complies
FCC Parts 15.249(d), 15.209, 15.215(c) and RSS-210 A2.9, RSS-GEN 7.2.1	Out-of-Band Spurious Emissions and Band Edges (EUT in Transmit Mode)	Below the applicable limits		19.13 dBµV	Complies
FCC Parts 15.207(a) and RSS-GEN 7.2.4	Conducted Emissions on AC Mains	15.207(a) and RSS-210, 150kHz - 30MHz		36.25 dBµV	Complies
FCC Part 15.31(e)	Frequency Stability	The EUT is battery operated only. A fresh charged battery was used for testing		NA	Complies
RSS-GEN 4.6.1	Occupied Bandwidth	99% BW ≤ 0.5% of center freq.		1.63 MHz	Complies
FCC Part 2.1093 and RSS-102, Issue 4	RF Exposure and Antenna Gain Calculation	SAR or MPE Requirements		0.865 mW	Complies

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2 Laboratory Information

2.1 Accreditations

2.1.1 US Federal Communications Commission

TUV Rheinland of North America located at 762 Park Avenue, Youngsville, NC 27596-9470 is accredited by the commission for performing testing services for the general public on a fee basis. This laboratory test facilities have been fully described in reports submitted to and accepted by the FCC (Registration No 90552 and 100881). The laboratory scope of accreditation includes: Title 47 CFR Part 15, and 18. The accreditation is updated every 3 years.

2.1.2 ILAC / A2LA

The laboratory has been assessed and accredited by A2LA in accordance with ISO Standard 17025:2005 (Certificate Number: 3331.05, Master Code: 134288). The scope of laboratory accreditation includes emission and immunity testing. The accreditation is updated annually.

2.1.3 Industry Canada

Registration No.: 2932H-1 The OATS has been accepted by Industry Canada to perform testing to 3 and to 10 meters, based on the test procedures described in ANSI C63.4-2009.

Registration No.: 2932H-2 The 5 meter chamber has been accepted by Industry Canada to perform testing to 3 meters, based on the test procedures described in ANSI C63.4-2009.

2.1.4 Japan – VCCI

The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) is a group that consists of Information Technology Equipment (ITE) manufacturers and EMC test laboratories. The purpose of the Council is to take voluntary control measures against electromagnetic interference from Information Technology Equipment, and thereby contribute to the development of a socially beneficial and responsible state of affairs in the realm of Information Technology Equipment in Japan. TUV Rheinland at the 762 Park Ave. Youngsville, N.C 27596 address has been assessed and approved in accordance with the Regulations for Voluntary Control Measures. (Laboratory Registration No: A-0034).

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2.1.5 Sample Calculation – radiated & conducted emissions

The field strength is calculated by subtracting the Amplifier Gain and adding the Cable Loss and Antenna Correction Factor to the measured reading. The basic equation is as follows:

$$\text{Field Strength (dB}\mu\text{V/m)} = \text{RAW} - \text{AMP} + \text{CBL} + \text{ACF}$$

Where: RAW = Measured level before correction (dB μ V)

AMP = Amplifier Gain (dB)

CBL = Cable Loss (dB)

ACF = Antenna Correction Factor (dB/m)

$$\mu\text{V/m} = 10^{\frac{\text{dB}\mu\text{V/m}}{20}}$$

Sample radiated emissions calculation @ 30 MHz

Measurement +Antenna Factor–Amplifier Gain+Cable loss=Radiated Emissions (dB μ V/m)

$$25 \text{ dB}\mu\text{V/m} + 17.5 \text{ dB} - 20 \text{ dB} + 1.0 \text{ dB} = 23.5 \text{ dB}\mu\text{V/m}$$

2.2 Measurement Uncertainty Emissions

	U_{lab}	U_{cispr}
Radiated Disturbance @ 10m		
30 MHz – 1,000 MHz	3.3 dB	5.2 dB
Conducted Disturbance @ Mains Terminals		
150 kHz – 30 MHz	1.18 dB	3.6 dB
Disturbance Power		
30 MHz – 300 MHz	3.88 dB	4.5 dB

2.3 Calibration Traceability

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Measurement method complies with ANSI/NCSL Z540-1-1994 and ISO Standard 17025:2005. Equipment calibration records are kept on file at the test facility.

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2.4 Measurement Equipment Used

Equipment	Manufacturer	Model #	Serial/Inst #	Last Cal dd/mm/yy	Next Cal dd/mm/yy
Radiated Emissions (5 Meter Chamber)					
Receiver, EMI	Rohde & Schwarz	ESIB40	100043	19-Aug-14	19-Aug-15
Receiver, EMI	Rohde & Schwarz	ESCI 7	100917	19-Aug-14	19-Aug-15
Spectrum Analyzer	Agilent Tec.	E7405A	US39440161	20-Aug-14	20-Aug-15
Amplifier, preamp	Agilent Technologies	8449B	3008A01480	14-Aug-13	14-Aug-15
Ant. BiconiLog	Chase	CBL6140A	1108	16-Sep-13	16-Sep-15
Antenna Horn 1-18 GHz	EMCO	3115	3115	30-Dec-14	30-Dec-15
Antenna Horn 18-26.5 GHz	ATM	42-442-6/cal	G181104-01	31-Dec-14	31-Dec-15
Cable, Coax	MicroCaox	MKR300C-0-0-1200-500500	002	22-Aug-14	22-Aug-15
Cable, Coax	MicroCaox	MKR300C-0-1968-500310	005	22-Aug-14	22-Aug-15
Cable, Coax	MicroCaox	UFB29C-1-5905-50U-50U	009	22-Aug-14	22-Aug-15
Cable, Coax	Andrew	FSJ1-50A	045	22-Aug-14	22-Aug-15
3.0 GHz High Pass Filter	Bonn Elektronik	BHF 3000	025155	14-Aug-13	14-Aug-15
Notch Filter	Micro-tronics	BRM50702	049	14-Aug-13	14-Aug-15
Conducted Emissions (AC/DC and Signal I/O)					
Receiver, EMI	Rohde & Schwarz	ESCI 7	100917	19-Aug-14	19-Aug-15
Cable, Coax	Pasternack	RG-223	051	22-Aug-14	22-Aug-15
LISN 15-18 (NSLK 8126)	Schwarzbeck Mess-Elektronik	NSLK 8126	003885	13-Aug-13	13-Aug-15
Transient Limiter	Schaffner	CFL-9206	1649	13-Aug-13	13-Aug-15
General Laboratory Equipment					
Meter, Multi & Thermocouple	Fluke	179	90580752	19-Aug-14	19-Aug-15
Meter, Temp/Humid/Barom	ExTech	SD700	Q677933	06-May-13	06-May-16
Meter, Temp/Humid/Barom	ExTech	SD700	Q677942	06-May-13	06-May-16

3 Product Information

3.1 Product Description

See Section Appendix A.

3.2 Equipment Modifications

No modifications were needed to bring product into compliance.

3.3 Test Plan

The EUT product information, test configuration, mode of operation, test types, test procedures, test levels, pass/failure criteria, in this report were carried out per the product test plan located in appendix A of this report

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4 Radiated Emissions in Transmit mode

4.1 Radiated emissions - FCC Parts 15.249, RSS-210 A2.9(a)

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following limits:

Fundamental Frequency: 2400 to 2483.5 MHz – 50 mV/m (94 dB μ V/m) at 3m.

Harmonic Frequencies: 500 μ V/m (54 dB μ V/m) at 3m.

Spurious Emissions: To the limits of FCC Part 15.209 and RSS-GEN 7.2.1.

4.1.1 Over View of Test

Results	Complies (as tested per this report)					Date	7 – 9 April 2015	
Standard	FCC Parts 15.205, 15.209, 15.215(c), 15.249(a), 15.249(c), 15.249(d) RSS-210 A2.9, and RSS-GEN							
Product Model	F2				Serial#	Production Prototype		
Test Set-up	Tested in a 5m Semi Anechoic chamber. For Emissions below 1 GHz, the EUT was placed on a 1.0m x 1.5m foam table 80cm above the ground plane on a turn-table. For Emissions above 1 GHz, the EUT was placed on a 1.0m x 1.5m foam table 1.5m above the ground plane							
EUT Powered By	3.7 VDC Batteries	Temp	74° F	Humidity	19%	Pressure	1008 mbar	
Perf. Criteria	(Below Limit)			Perf. Verification		Readings Under Limit		
Mod. to EUT	None			Test Performed By		Mark Ryan		

4.1.2 Test Procedure

Testing was performed in accordance with 47 CFR Part 15, ANSI C63.10:2009, RSS-GEN Issue 4. These test methods are listed under the laboratory's A2LA Scope of Accreditation. This test measures the levels emanating from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices.

4.1.3 Deviations

Since all emissions outside the band are within the limits of FCC Part 15.209 and RSS-GEN 7.2.1, the emissions shown below are also compliant with FCC Parts 15.205, 15.209, 15.215(c), 15.249(d), RSS-210 A8.5, and RSS-GEN 7.2.1.

4.1.4 Final Test

All final radiated spurious emissions measurements were below (in compliance) the limits.

The worst –case emissions are shown below. All other emissions are on file at TUV Rheinland.

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4.1.4.1 Final Graphs and Tabulated Data

Orientations:

Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBμV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBμV /m)	Spec Limit (dBμV /m)	Spec Margin (dB)
2402.00										
Orientation A										
2402.00	H	1.2	218	59.60	0.00	5.89	28.54	94.03		
2402.00	V	1.7	217	58.98	0.00	5.89	28.54	93.41		
Orientation B										
2402.00	H	1.9	166	58.14	0.00	5.89	28.54	92.57		
2402.00	V	1.3	268	67.57	0.00	5.89	28.54	102.00		
Orientation C										
2402.00	H	1.1	0	67.64	0.00	5.89	28.54	102.07	114.00	-11.93
2402.00	V	1.9	250	55.44	0.00	5.89	28.54	89.87		
2402.00	H	1.1	0	53.74	0.00	5.89	28.54	88.17	94.00	-5.83
2402.00	H	1.1	0	47.55	0.00	5.89	28.54	81.98		
2440.00										
Orientation C										
2440.00	H	1.7	285	61.66	0.00	5.95	28.56	96.17		
2440.00	V	2.2	175	54.10	0.00	5.95	28.56	88.61		
2480.00										
Orientation C										
2480.00	H	1.8	282	61.24	0.00	5.98	28.68	95.90		
2480.00	V	1.6	177	53.71	0.00	5.98	28.68	88.37		

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor

Notes: **Red = Peak Detector**, **Blue = Average Detector**, **Green = RMS Detector**

The firmware was set to **NO MODULATION** for the Peak Measurements.

The **Average** and **RMS** measurement was **WITH MODULATION**.

The Limit using the Peak Detector is 20dB higher than the Average Detector limit of 94 dBμV/m.
EUT in Orientation C is worst case as shown. All other data is on file at TUV Rheinland.

This **highlighted** frequency and orientation was worst case (2402 MHz, Orientation C).

The maximum average Field Value of 88.17dBμV/m (25.6mV/m) is below the limit value of FCC Part 15.249 and RSS-210 (A2.9) which is 94dBμV/m (50mV/m).

Therefore, this report is tested to the requirements of FCC Part 15.249 and RSS-210 (A2.9)

4.1.4.2 Maximum Time-weighted Emission:

The EUT was modified to transmit continuously.

The maximum measured Duty Cycle of the signal is 22.58%

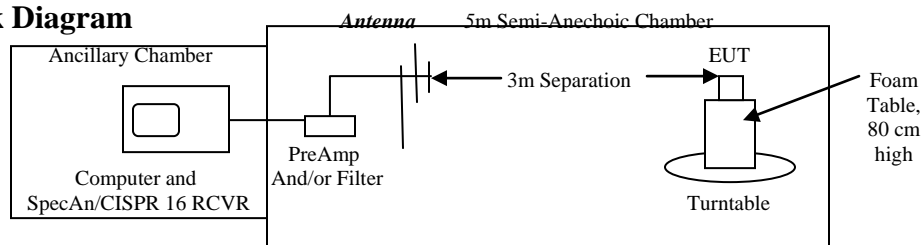
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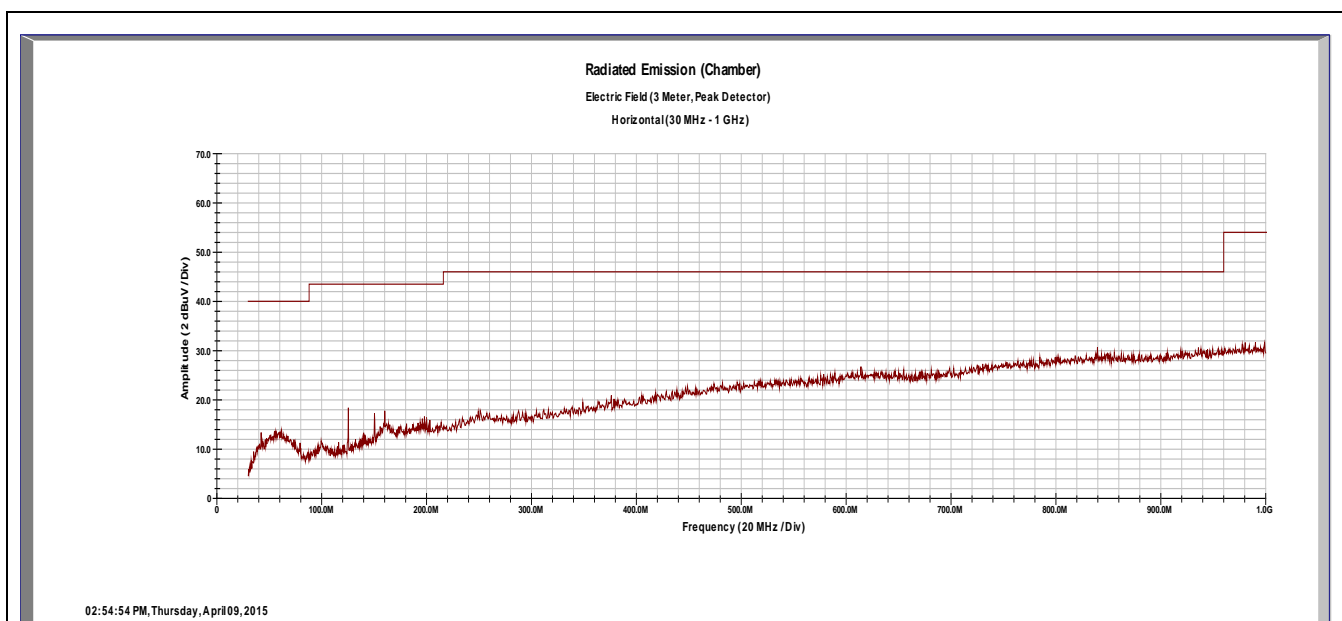
4.1.1 Test Setup Block Diagram



4.1.1.1 Emissions Outside the Frequency Band:

Radiated Emissions – 30 MHz to 1 GHz

Horizontal



Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)
55.72	H	1.00	187	3.56	0.00	0.86	10.19	14.61	40.00	-25.39
125.28	H	1.56	313	8.94	0.00	1.28	7.40	17.62	43.50	-25.88
159.96	H	1.00	232	1.80	0.00	1.45	8.30	11.55	43.50	-31.95

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor

Notes: Transmitting Mode-Low Channel

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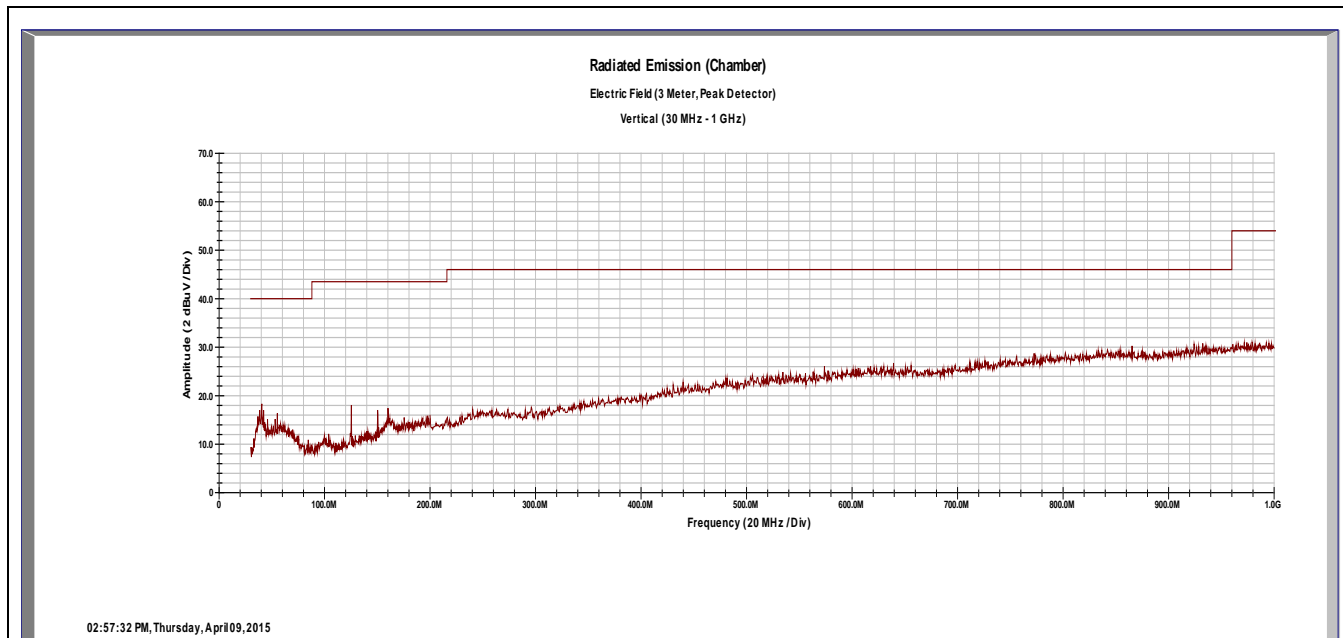
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Radiated Emissions – 30 MHz to 1 GHz

Vertical



Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)
40.56	V	1.00	180	5.46	0.00	0.75	9.19	15.39	40.00	-24.61
125.39	V	1.53	219	8.53	0.00	1.28	7.40	17.21	43.50	-26.29
160.04	V	1.00	134	1.41	0.00	1.45	8.30	11.16	43.50	-32.34

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor

Notes: Transmitting Mode-Low Channel

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Radiated Emissions – 1 GHz to 25 GHz

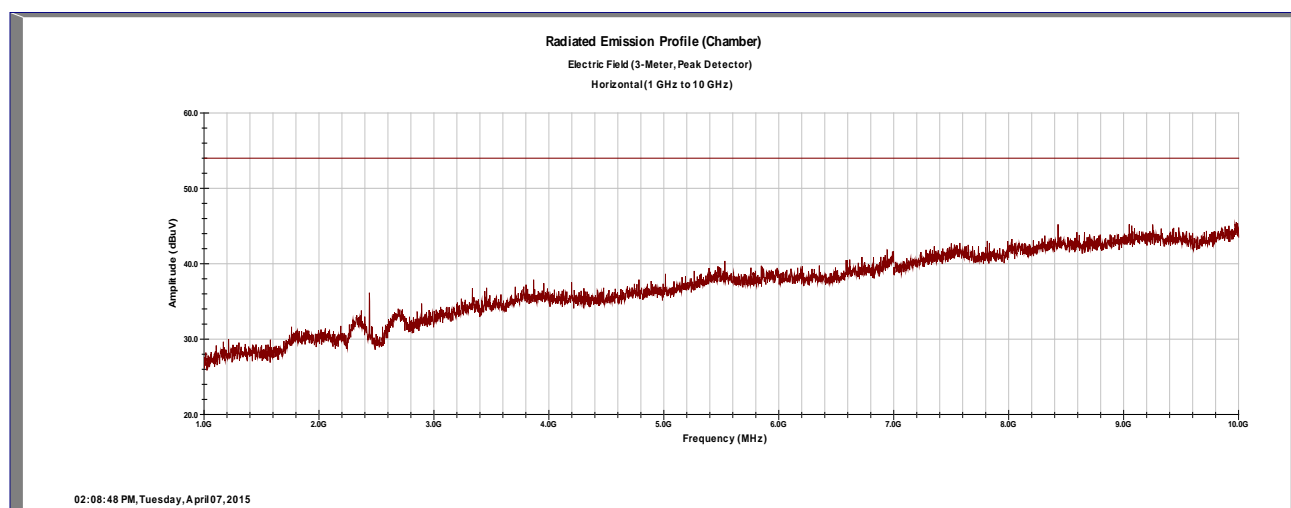
Notes: A Band-Notch filter was used at the input of the preamp for the 1 GHz to 18 GHz range.

No measureable emissions found outside the band.

Plots utilizing a Peak detector shown below.

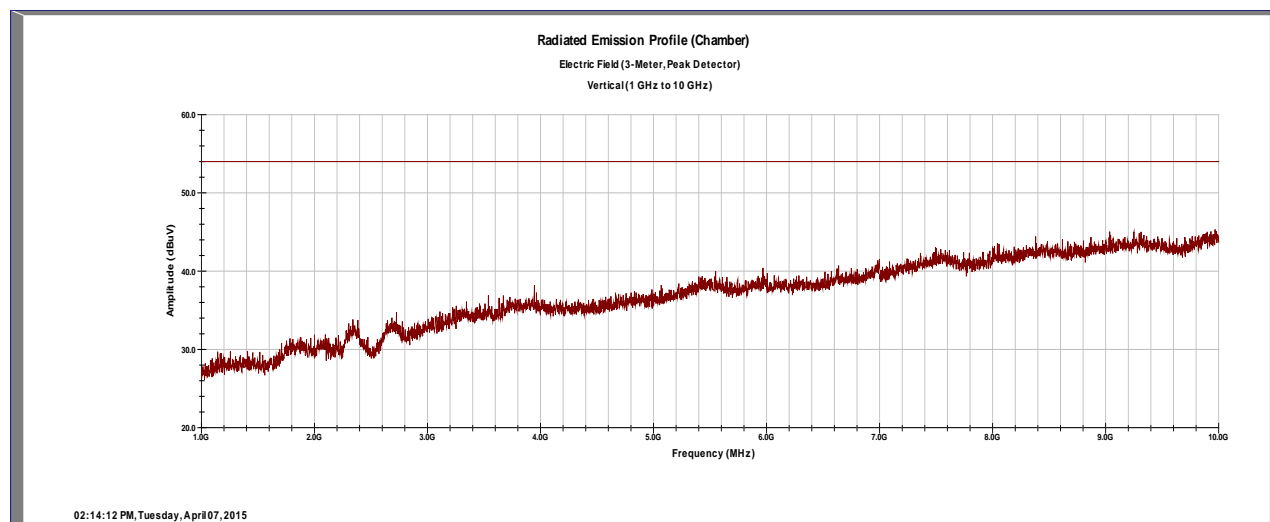
Remaining plots for the other frequencies are on file at TUV Rheinland.

Radiated Emissions – 1 GHz to 10 GHz - Horizontal



Note: the emission at 2440 is the intentional radiator.

Radiated Emissions – 1 GHz to 10 GHz – Vertical:



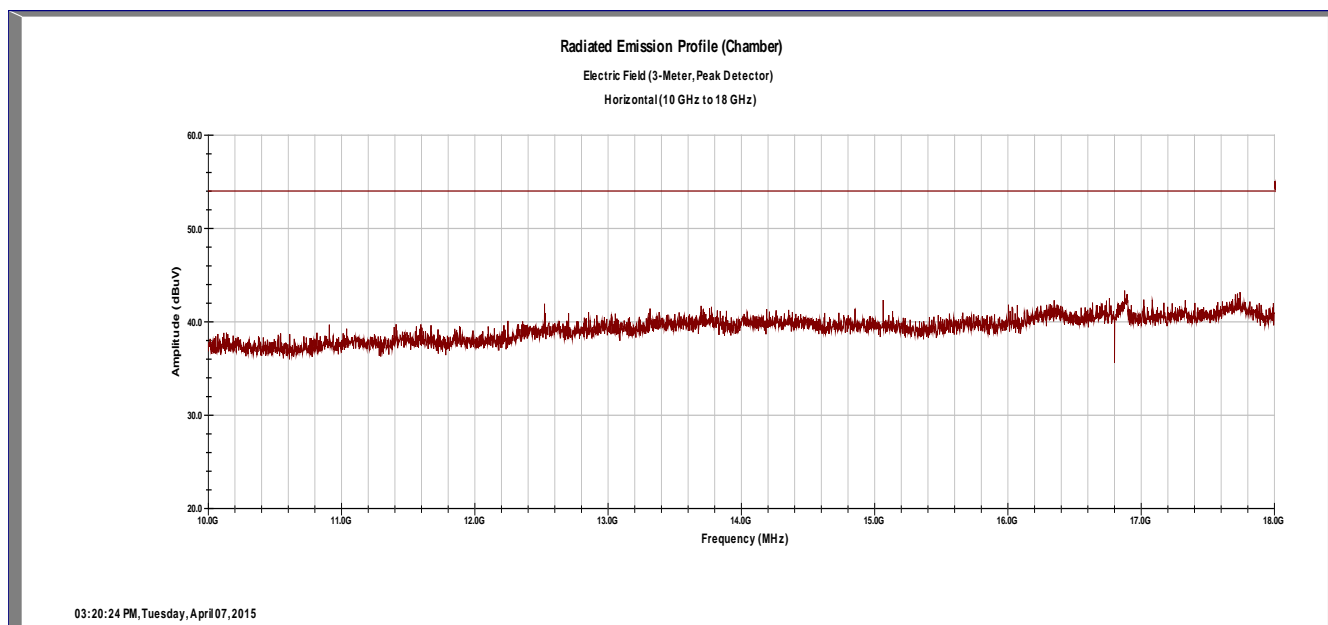
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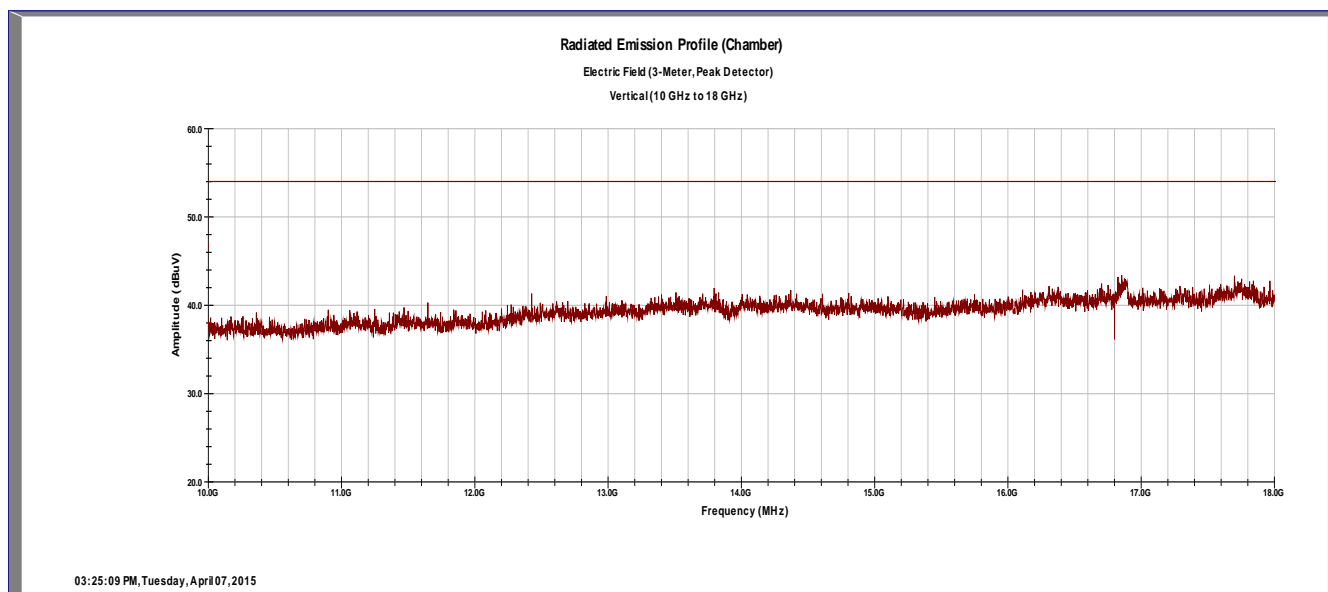
31560782.001

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Radiated Emissions – 10 GHz to 18 GHz – Horizontal:



Radiated Emissions – 10 GHz to 18 GHz – Vertical:



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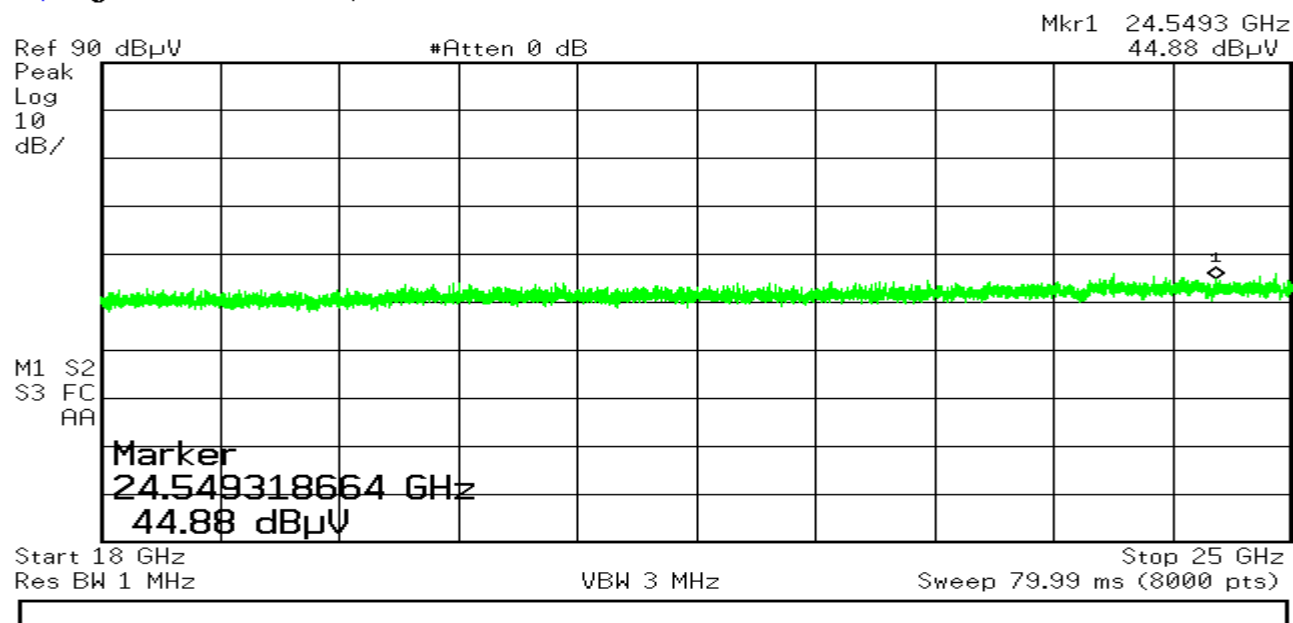
Report No.:

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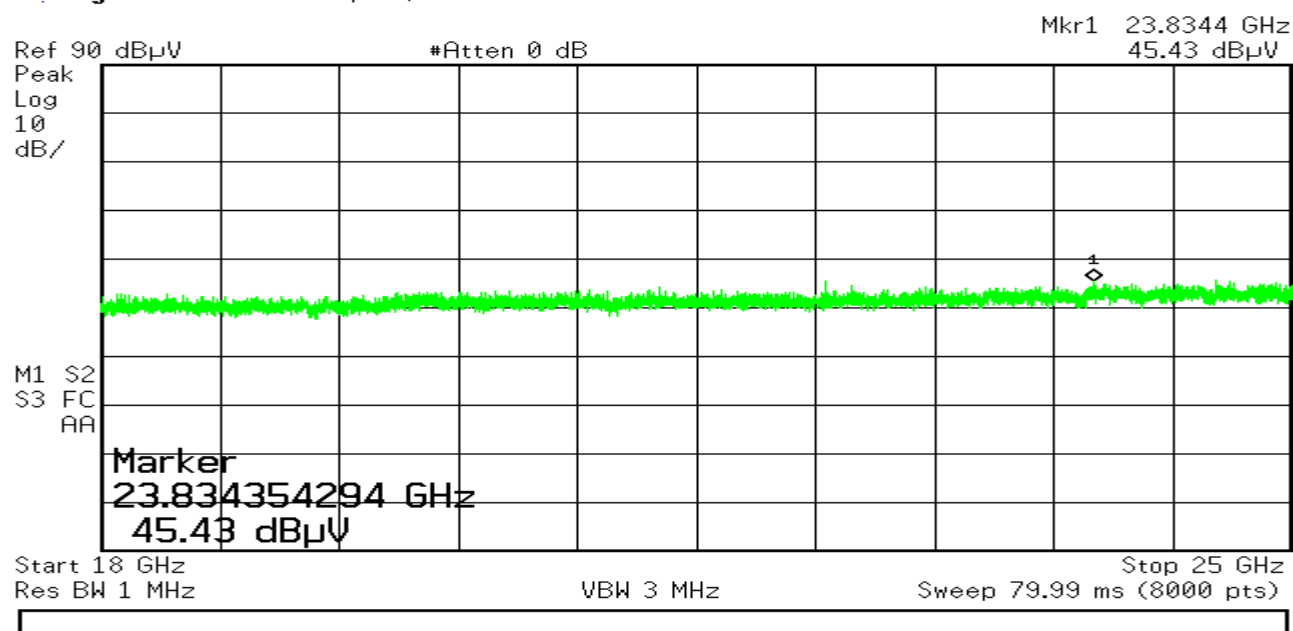
Radiated Emissions – 18 GHz to 25 GHz – Horizontal:

Agilent 11:12:26 Apr 9, 2015



Radiated Emissions – 18 GHz to 25 GHz – Vertical:

Agilent 11:10:40 Apr 9, 2015



Note: Base-line scan, no correction factors applied.

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4.2 Conducted Emissions on AC Mains – FCC 207(a) and RSS-GEN 7.2.4

This test measures the electromagnet levels of spurious signals generated by the EUT on the AC power line that may affect the performance of other nearby electronic equipment.

4.2.1 Over View of Test

Results	Complies (as tested per this report)					Date	9 April 2015	
Standard	FCC Parts 15.207(a) and RSS-GEN 7.2.4							
Product Model	F2				Serial#	NA		
Test Set-up	Tested in shielded room. EUT placed on table, see test plans for details							
EUT Powered By	3.7 VDC	Temp	73° F	Humidity	58%	Pressure	1006mbar	
Frequency Range	150 kHz – 30 MHz							
Perf. Criteria	(Below Limit)	Perf. Verification			Readings Under Limit for L1 & Neutral			
Mod. to EUT	None	Test Performed By			Mark Ryan			

4.2.1 Test Procedure

Conducted and FCC emissions tests were performed using the procedures of ANSI C63.10 including methods for signal maximizations and EUT configuration. The photos included with the report show the EUT in its maximized configuration.

The frequency range from 150kHz – 30MHz was investigated for conducted emissions.

Conducted Emissions measurements were performed in either the shielded room or ground plane location (with attached vertical ground plane) using procedures specified in the test plan and standard.

The EUT was powered by a 5 VDC Power Module. The emissions were made on the AC Mains side of the Module.

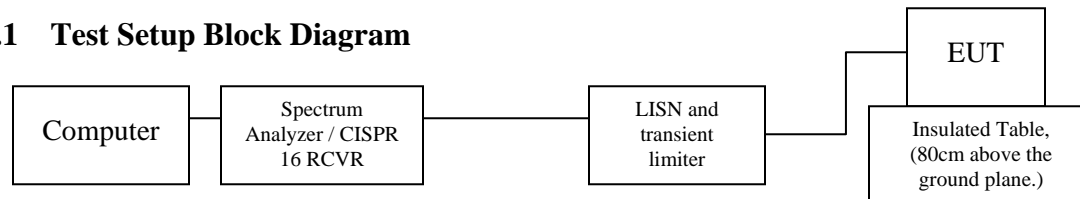
4.2.2 Deviations

There were no deviations from the test methodology listed in the test plan for the conducted emission test.

4.2.3 Final Test

All final conducted emissions measurements were below (in compliance) the limits.

4.2.1 Test Setup Block Diagram



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Report No.:

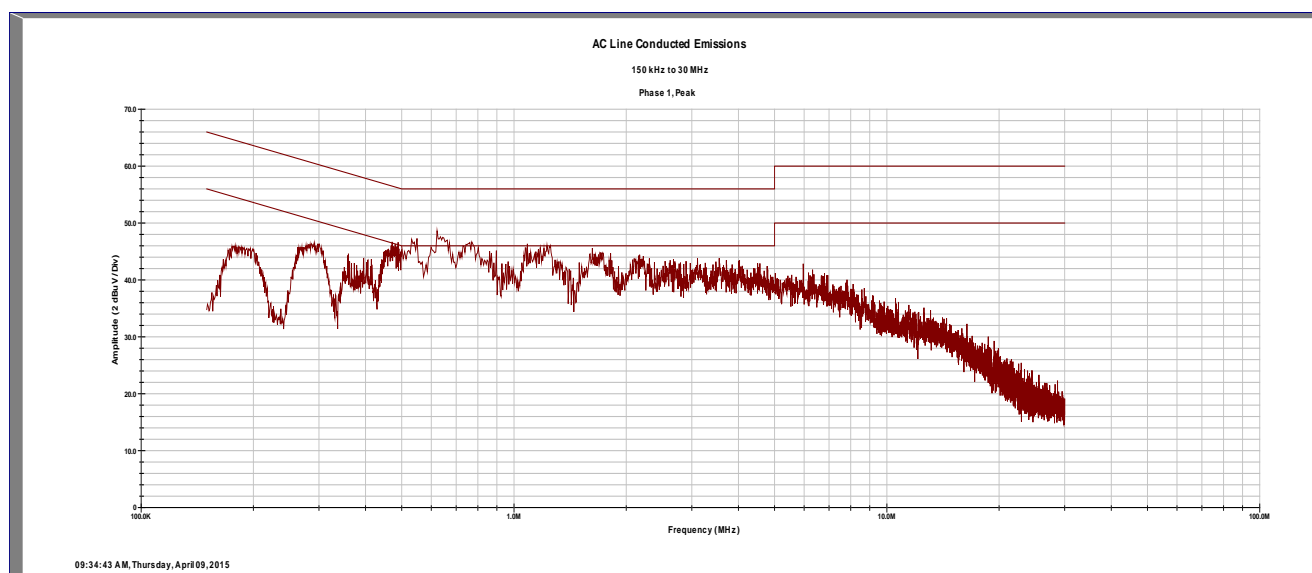
31560782.001

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4.2.2 Final Graphs and Tabulated Data

Conducted Emissions @ 120V/60Hz

Line 1



Freq (MHz)	ID (1,2,3,N)	Quasi FIM (dBμV)	Ave FIM (dBμV)	Cable Loss (dB)	TL/LISN (dB)	Limit QP (dBμV)	Limit AVE (dBμV)	Margin QP (dB)	Margin AVE (dB)
0.29	1	30.86	21.81	0.03	9.96	60.52	50.52	-19.67	-18.72
0.54	1	32.60	26.23	0.04	9.98	56.00	46.00	-13.38	-9.75
0.63	1	31.81	20.35	0.05	9.98	56.00	46.00	-14.16	-15.62
0.77	1	30.65	20.63	0.05	9.98	56.00	46.00	-15.32	-15.34
1.09	1	27.87	18.22	0.06	10.00	56.00	46.00	-18.07	-17.72
1.70	1	27.94	19.11	0.07	10.01	56.00	46.00	-17.98	-16.81

Quasi Spec Margin = Quasi FIM + Cable Loss + TL/LISN - QP Limit

Ave Spec Margin = Ave FIM + Cable Loss + TL/LISN CF - Ave Limit

Notes:

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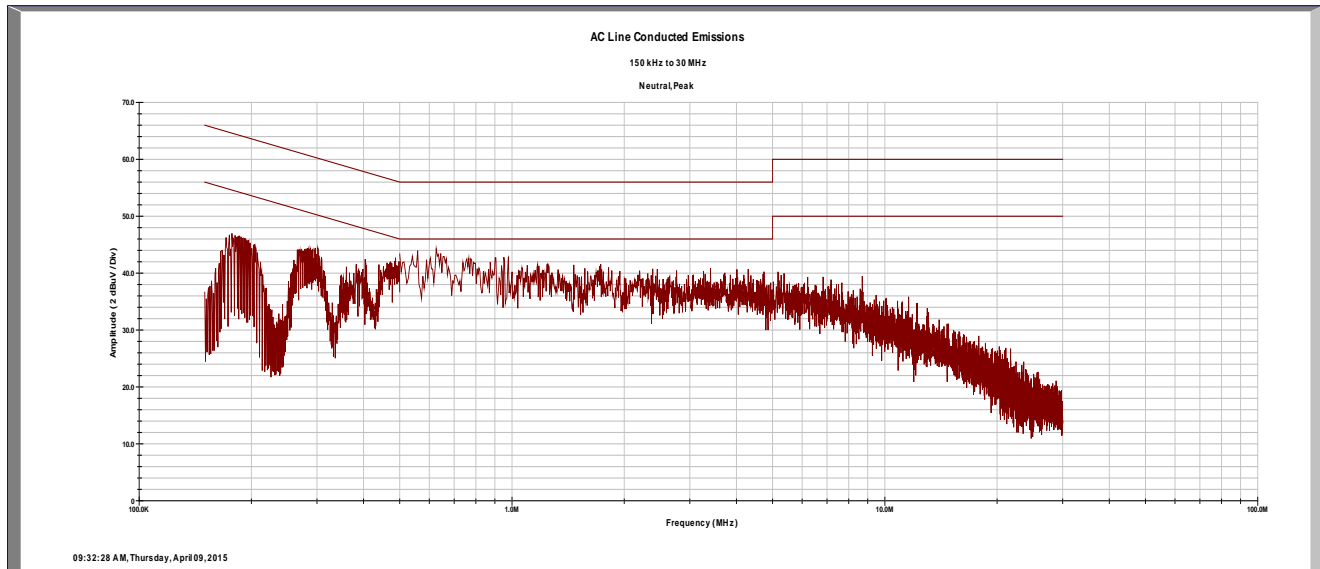
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Conducted Emissions @ 120V/60Hz

Neutral



Freq (MHz)	ID (1,2,3,N)	Quasi FIM (dBμV)	Ave FIM (dBμV)	Cable Loss (dB)	TL/LISN (dB)	Limit QP (dBμV)	Limit AVE (dBμV)	Margin QP (dB)	Margin AVE (dB)
0.17	1	28.54	9.43	0.03	9.97	64.96	54.96	-26.42	-35.53
0.29	1	26.22	10.00	0.03	9.96	60.52	50.52	-24.31	-30.53
0.55	1	27.32	14.41	0.04	9.98	56.00	46.00	-18.65	-21.56
0.62	1	26.17	9.13	0.05	9.98	56.00	46.00	-19.80	-26.84
0.77	1	25.22	10.15	0.05	9.98	56.00	46.00	-20.75	-25.82
0.95	1	21.56	5.72	0.06	9.98	56.00	46.00	-24.40	-30.24

Quasi Spec Margin = Quasi FIM + Cable Loss + TL/LISN - QP Limit

Ave Spec Margin = Ave FIM + Cable Loss + TL/LISN CF - Ave Limit

Notes:

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4.3 Band Edge requirements - FCC Part 15.249(d), RSS-210 2.2

4.3.1 Test Over View

Results	Complies (as tested per this report)					Date	8 April 2015	
Standard	FCC Part 15.249(d), RSS 210 2.2							
Product Model	F2			Serial#	Production Prototype			
Test Set-up	Radiated Measurement							
EUT Powered By	3.7 VDC Batteries	Temp	75° F	Humidity	54%	Pressure	1005 mbar	
Perf. Criteria	(Below Limit)		Perf. Verification		Readings Under Limit			
Mod. to EUT	None		Test Performed By		Mark Ryan			

4.3.2 Test Procedure

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Sec. 15.209, whichever is the lesser attenuation.

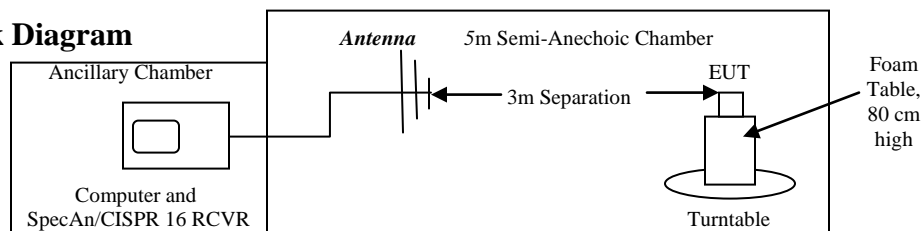
4.3.3 Deviations

There were no deviations from the test methodology listed in the test plan.

4.3.4 Final Test

The EUT met the performance criteria requirement as specified in the standards.

4.3.1 Test Setup Block Diagram

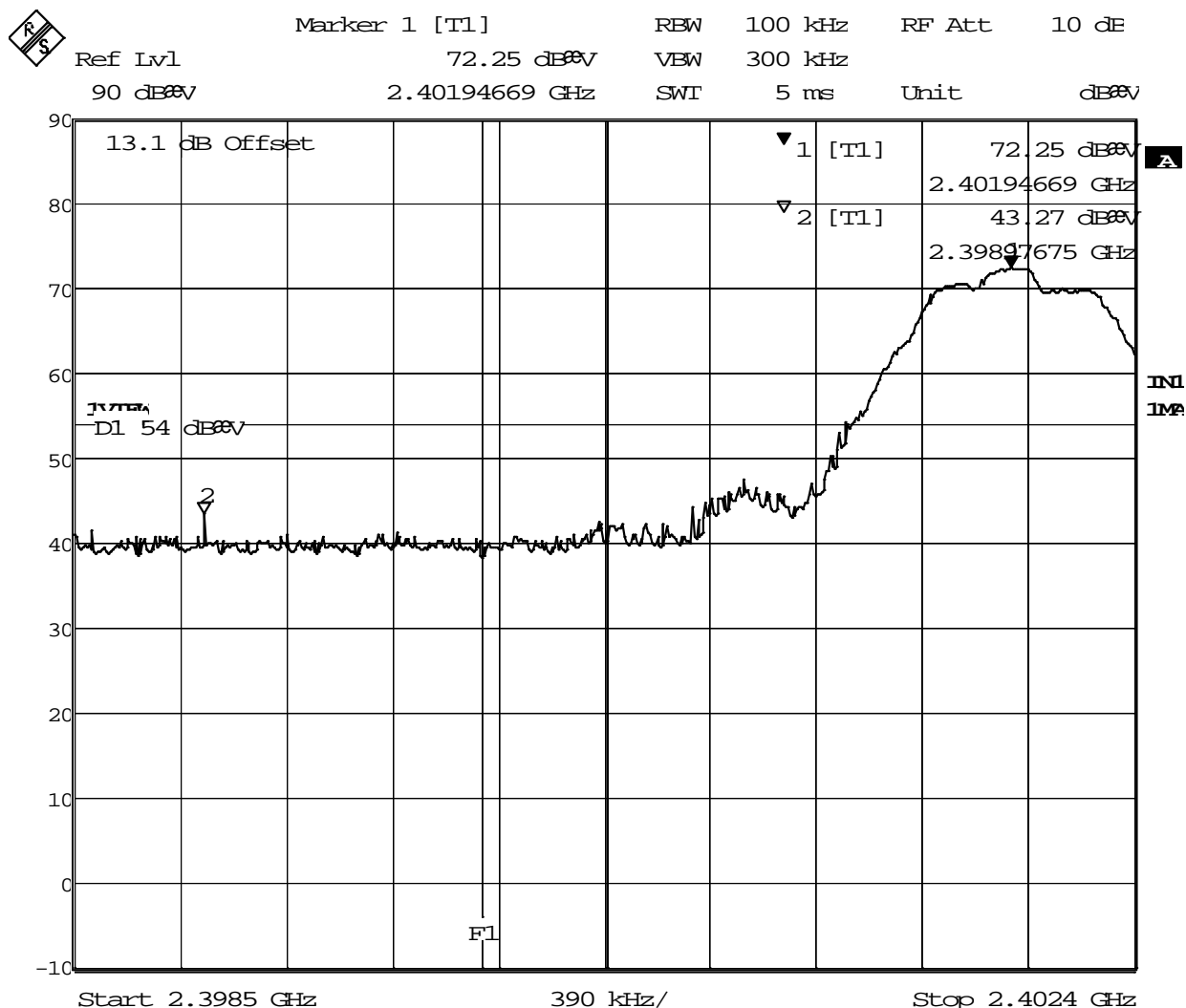


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Date: 8.APR.2015 11:46:55

Notes: Plot includes Correction Factors. Measured using the Peak Detector, Line F1 is the Band Edge is at 2.4 GHz. Line D1 is the Restricted Band Peak limit.

The nearest restricted band (2390MHz) is 10 MHz below the band edge

The Highest frequency outside the band is at 43.27 dBμV (using the Peak Detector) which well below the average Limit.

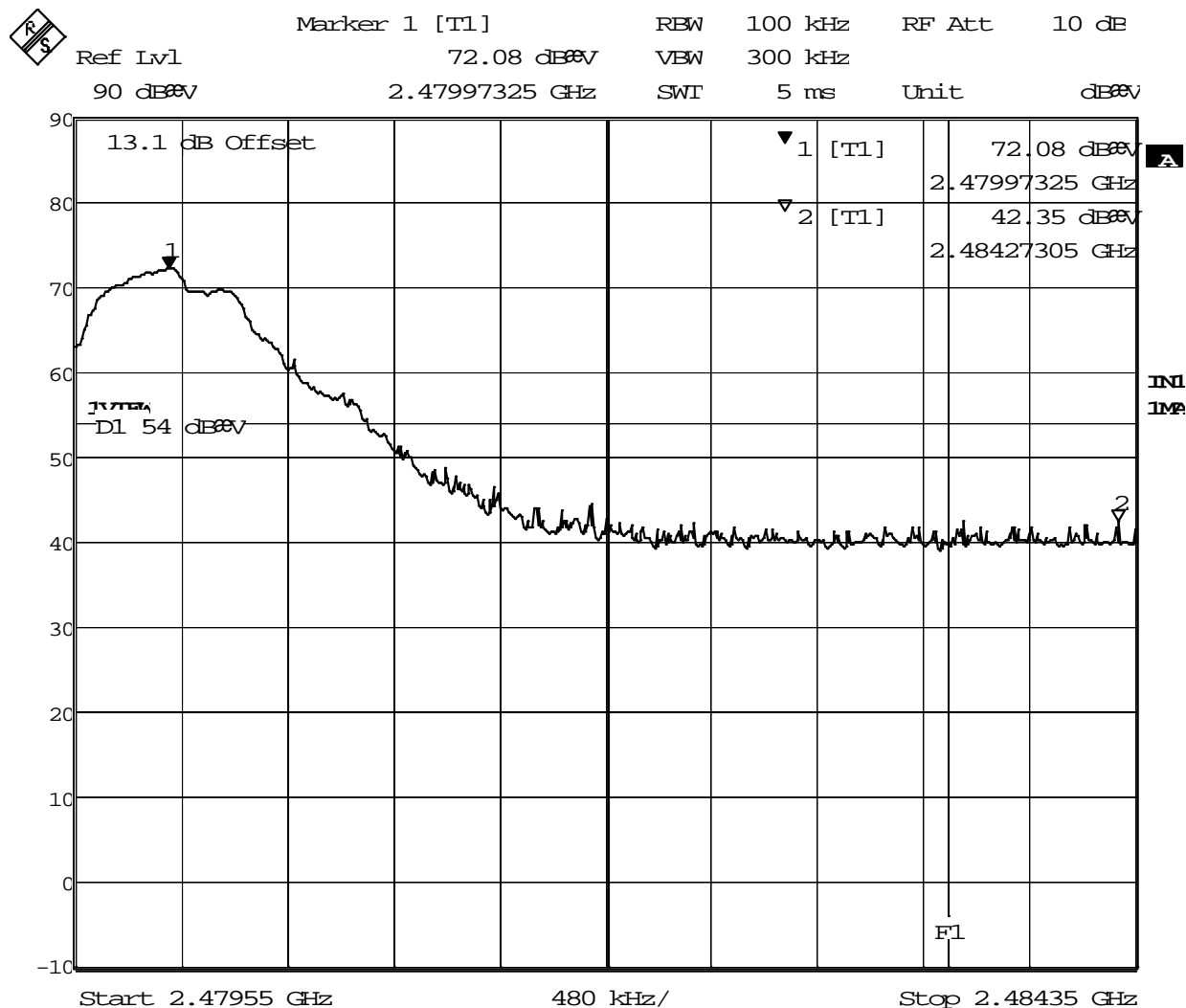
Figure 1: Lower Band Edge Measurement (Radiated Emission)

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Date: 8.APR.2015 11:42:44

Note: Measured using the Peak detector. Band Edge is at 2.483.5 MHz (Line F1), line D1 is the average restricted band limit.

The Band edge (Line F1) at 2483.5 MHz is also the start of a restricted band, so the restricted band rules apply.

The Highest frequency outside the band is at 42.35 dBμV (using the Peak Detector) which is well below the Average restricted-band limits)

Figure 2: Upper Band Edge Measurement (Radiated Emission)

The EUT is compliant with the rules.

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4.4 99% Power Bandwidth

For the purpose of Section A1.1, the 99% bandwidth shall be no wider than .25% of the center frequency for devices operating between 70-900MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. This device operates above 900 MHz.

4.4.1 Test Over View

Results	Complies (as tested per this report)					Date	8 April 2015	
Standard	RSS-GEN 4.6.1							
Product Model	PERSONAL MASSAGER				Serial#	Production Prototype		
Test Set-up	Radiated Measurement							
EUT Powered By	3.7 VDC Batteries	Temp	75° F	Humidity	54%	Pressure	1005 mbar	
Perf. Criteria	(Below Limit)			Perf. Verification		Readings Under Limit		
Mod. to EUT	None			Test Performed By		Mark Ryan		

4.4.2 Test Procedure

Using the procedures of RSS-GEN section 4.6.1, the 3 kHz resolution bandwidth is 1% of the 300 kHz span. The 10 kHz video bandwidth is over 3 times that of the resolution bandwidth.

4.4.3 Deviations

There were no deviations from the test methodology listed in the test plan for the Electrical Fast transients (EFT) Immunity test.

4.4.4 Final Results

The maximum measured 99% bandwidth is 1.63 MHz.

Frequency (MHz)	99% BW (MHz)
2402	1.064
2440	1.377
2480	1.629

99% Power Band Width.

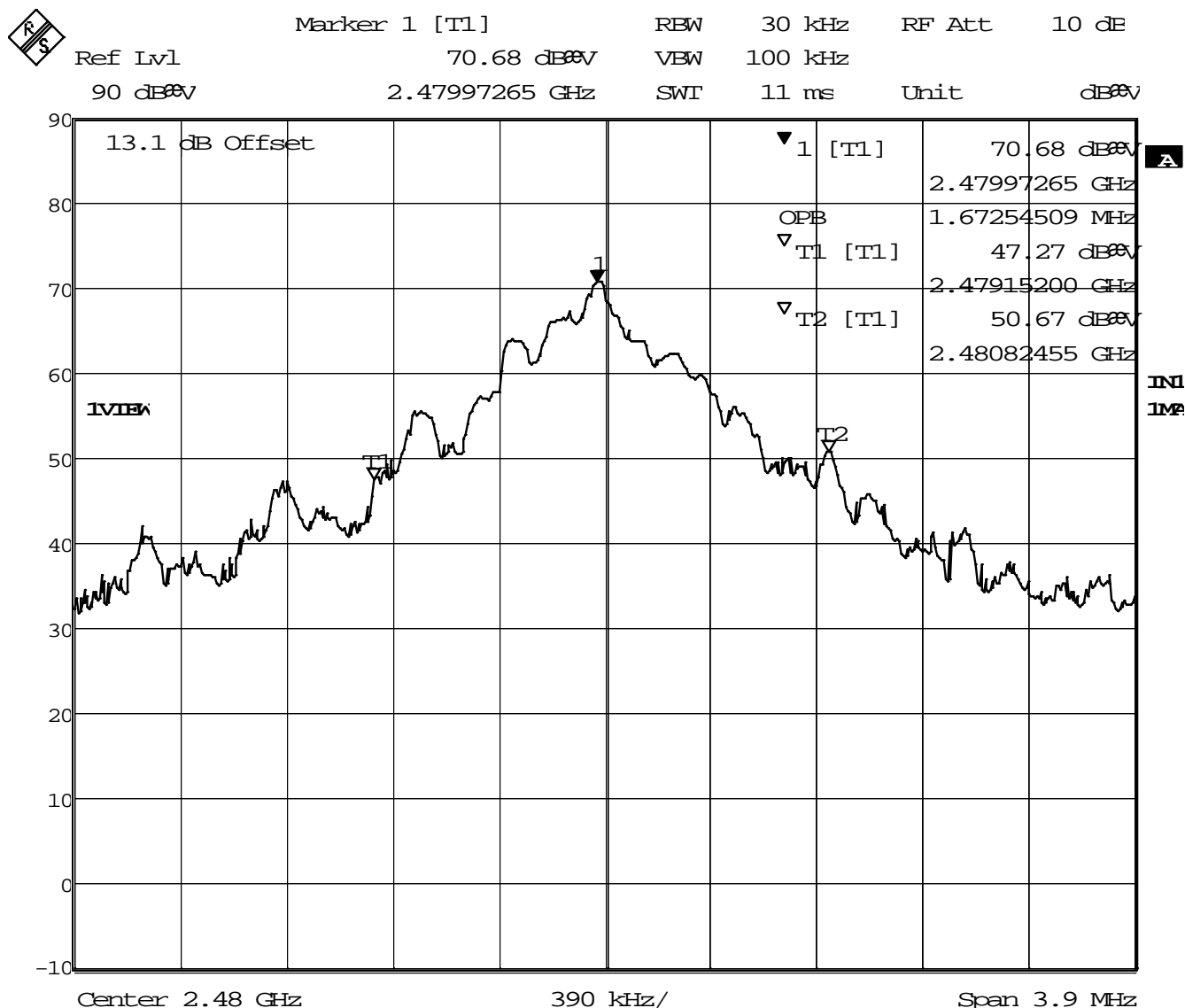
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4.4.5 Final Data



Date: 8.APR.2015 11:37:11

Figure 3 – 99% Power Bandwidth = 1.07 MHz. The Worst-Case shown.

Span = 3.9MHz, RBW = 30 kHz (1% of Span), VBW = 100 kHz ($\geq 3 \times$ RBW)

The EUT is compliant to the requirements of RSS-210 A1.1.3

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Appendix A

5 Test Plan

This test report is intended to follow this test plan outlined here in unless otherwise stated in this here report. The following test plan will give details on product information, standards to be used, test set ups and refer to TUV test procedures. The test procedures will give the steps to be taken when performing the stated test. The product information below came via client, product manual, product itself and or the internet.

5.1 General Information

Client	NUELLE, INC.
Address 1	2570 W. El Camino Real, Suite 310
Address 2	Mountain View, CA 94040 USA
Contact Person	Kimberly Otto
Telephone	(650) 576-9090
e-mail	kotto@exploramed.com

5.1.1 Product Name

F2

5.1.2 Type of Product

Personal Massager with Bluetooth-Low Energy (BLE)

5.1.3 Block Diagram

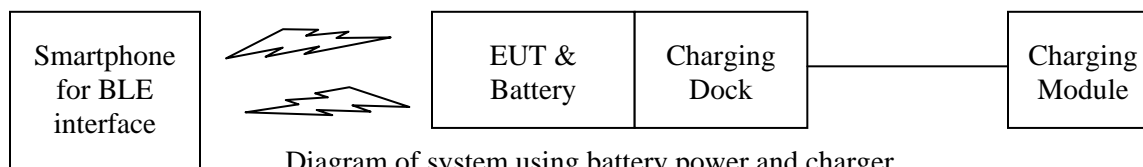


Diagram of system using battery power and charger

5.2 Configuration Tested:

EVT2 built week of March 16, 2015.

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