Electromagnetic Compatibility Test Report

Tested To: FCC Part 15C

On

Braava

Model: 240jet, 240

iRobot Corporation

8 Crosby Drive

Bedford MA 01730 USA

Prepared by:

TUV Rheinland of North America, Inc.

Manufacturer's statement - attestation

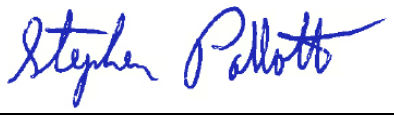
The manufacturer; iRobot Corporation, as the responsible party for the equipment tested, hereby affirms:

a) That he 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.

Stephen Pallotta	
Printed name of official	Signature of official
8 Crosby Drive Bedford MA 01730 USA	9 October 2015
Address	Date
781-430-3284	spallotta@irobot.com
Telephone number	Email address of official

Client:	iRobot Corporation 8 Crosby Drive Bedford MA 01730 USA	Stephen Pallotta Ph: 781-430-3284 Fax: 781-430-3999 Email: spallotta@irobot.com	
Identification:	Braava	***Serial No.:***	PRODUCTION PROTOTYPE
Test item:	Model: 240jet, 240	***Date tested:***	7 October 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;** FCC Parts 15.207(a), FCC Parts 15.249(d), 15.209 and 15.215(c) FCC Part 15.249, FCC Parts 15.249(a) and 15.249(c),		
Test Result	**The above product was found to be Compliant to the above test standard(s)**		

tested by: Mark Ryan	***reviewed by:*** Robert Richards
11 February 2016 **Date** **Signature**	11 February 2016 **Date** **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 7 October 2015 on the Braava, Model No. 240jet, 240, manufactured by iRobot Corporation. 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
- -	9 October 2015	Initial Release
A	26 January 2016	Changed and added Model numbers.
B	11 February 2016	Corrected typos and expanded band-edge measurements.

1.4 Summary of Test Results

Applicant	iRobot Corporation 8 Crosby Drive Bedford MA 01730 USA	**Tel**	781-430-3284	**Contact**	Stephen Pallotta
		Fax	781-430-3999	**e-mail**	spallotta@irobot.com

Description	BRAAVA	**Model**	240jet, 240
Serial Number	Production Prototype	**Test Voltage/Freq.**	3.6 VDC Battery
Test Date Completed:	7 October 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**
FCC Part 15.249	Operation within the band 2400 to 2483.5 MHz	See called out parts below	See Below	Complies
FCC Parts 15.249(a) and 15.249(c)	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, (unresticted bands)	88.42 dBµV/m	Complies
FCC Parts 15.249(d), 15.209 and 15.215(c)	Out-of-Band Spurious Emissions and Band Edges (EUT in Transmit Mode)	Below the applicable limits	42.77 dBµV	Complies
FCC Parts 15.207(a)	Conducted Emissions on AC Mains	150kHz - 30MHz	EUT is Battery Operated	NA

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).

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:

Field Strength (dBµV/m) = RAW - AMP + CBL + ACF

Where: RAW = Measured level before correction (dBµV)

AMP = Amplifier Gain (dB)

CBL = Cable Loss (dB)

ACF = Antenna Correction Factor (dB/m)

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

Sample radiated emissions calculation @ 30 MHz

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

25 dBuV/m + 17.5 dB – 20 dB + 1.0 dB = 23.5 dBuV/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.

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-15	19-Aug-16
Spectrum Analyzer	Agilent Tec.	E7405A	US39440161	18-Aug-15	18-Aug-16
Amplifier, preamp	Agilent Technologies	8449B	3008A01480	20-Aug-15	20-Aug-17
Ant. BiconiLog	EMCO	3142	1006	15-Jan-15	15-Jan-16
Antenna Horn 1-18GHz	EMCO	3115	5770	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	20-Aug-15	20-Aug-16
Cable, Coax	MicroCaox	MKR300C-0-1968-500310	005	20-Aug-15	20-Aug-16
Cable, Coax	MicroCaox	UFB29C-1-5905-50U-50U	009	20-Aug-15	20-Aug-16
General Laboratory Equipment					
Meter, Multi & Thermocouple	Fluke	179	90580752	17-Aug-15	17-Aug-16
Meter, Temp/Humid/Barom	ExTech	SD700	Q677933	06-May-14	06-May-16
Meter, Temp/Humid/Barom	ExTech	SD700	Q677942	06-May-14	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

4 Radiated Emissions in Transmit mode

4.1 Radiated emissions - FCC Parts 15.249

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 µV/m) at 3m.
Harmonic Frequencies: 500 µV/m (54 dB µV/m) at 3m.
Spurious Emissions: To the limits of FCC Part 15.209.

4.1.1 Over View of Test

Results	**Complies** (as tested per this report)					**Date**	7 October 2015
Standard	FCC Parts 15.205, 15.209, 15.215(c), 15.249(a), 15.249(c), 15.249(d)						
Product Model	240jet, 240			**Serial#**	Production Prototype		
Test Set-up	Tested in a 5m Semi Anechoic chamber, placed on a 1.0m x 1.5m non-conductive table 80cm above the ground plane on a turn-table.						
EUT Powered By	3.6 VDC Battery	**Temp**	75º F	**Humidity**	46%	**Pressure**	1003 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 and ANSI C63.10:2009. 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

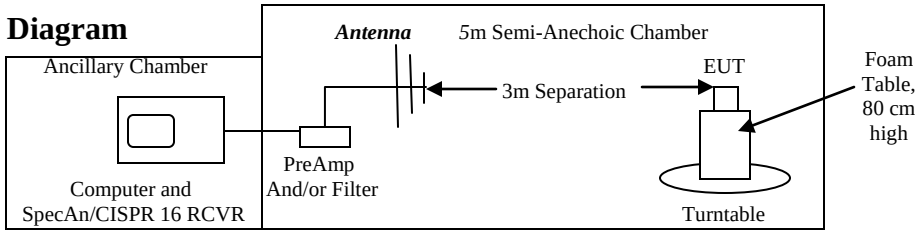
Since all emissions outside the band are within the limits of FCC Part 15.209. The emissions shown below are also compliant with FCC Parts 15.205, 15.209, 15.215(c), 15.249(d).

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.

4.1.5 Test Setup Block Diagram



4.1.5.1 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)
2450.00:										
Orientation A										
2450.00	H	1.8	259	55.48	0.00	5.96	28.56	90.00		
2450.00	H	1.8	259	48.37	0.00	5.96	26.56	82.90		
2450.00	V	1.6	66	46.37	0.00	5.96	28.56	80.89		
Orientation B										
2450.00	H	2	176	47.58	0.00	5.96	28.56	82.10		
2450.00	V	1.5	1	54.97	0.00	5.96	28.56	89.49		
Orientation C										
2450.00	H	2	355	54.42	0.00	5.96	28.56	88.94		
2450.00	V	1.4	309	52.72	0.00	5.96	28.56	87.24		
2402.00:										
Orientation A										
2402.00	H	1.8	258	54.42	0.00	5.89	28.54	88.85		
2402.00	H	1.8	258	51.81	0.00	5.89	28.54	86.24		
2402.00	V	1.8	275	47.20	0.00	5.89	28.54	81.63		
2480.00:										
Orientation A										
2480.00	H	1.6	251	55.66	0.00	5.98	28.68	90.32	114.00	-23.68
2480.00	H	1.6	251	53.76	0.00	5.98	28.68	88.42	94.00	-5.56
2480.00	V	1.8	144	48.94	0.00	5.98	28.68	83.60		

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

Notes: All Peak measurements are below the Average Limit.
Red = Peak Detector, **Blue = Average Detector**
The **Peak** and **Average** measurements were made **WITH MODULATION** using specified RBW.

The Limit is 50 mv/m which is equivalent to 94 dBuV/m.

The Limit using the Peak Detector is 20dB higher than the Average Detector limit.
EUT in Orientation B is worst case as shown.

This highlighted frequency and orientation was worst case (2480 MHz, Orientation A).
The highlighted emissions are the low and mid-band frequencies in Orientation A.

The maximum average Field Value of 88.42 dBµV/m (26.4 mV/m) is below the limit value of RSS-210 (A2.9) which is 94 dBµv/m (50 mV/m).

Therefore, this report is testing to the requirements of RSS-210 (A2.9)

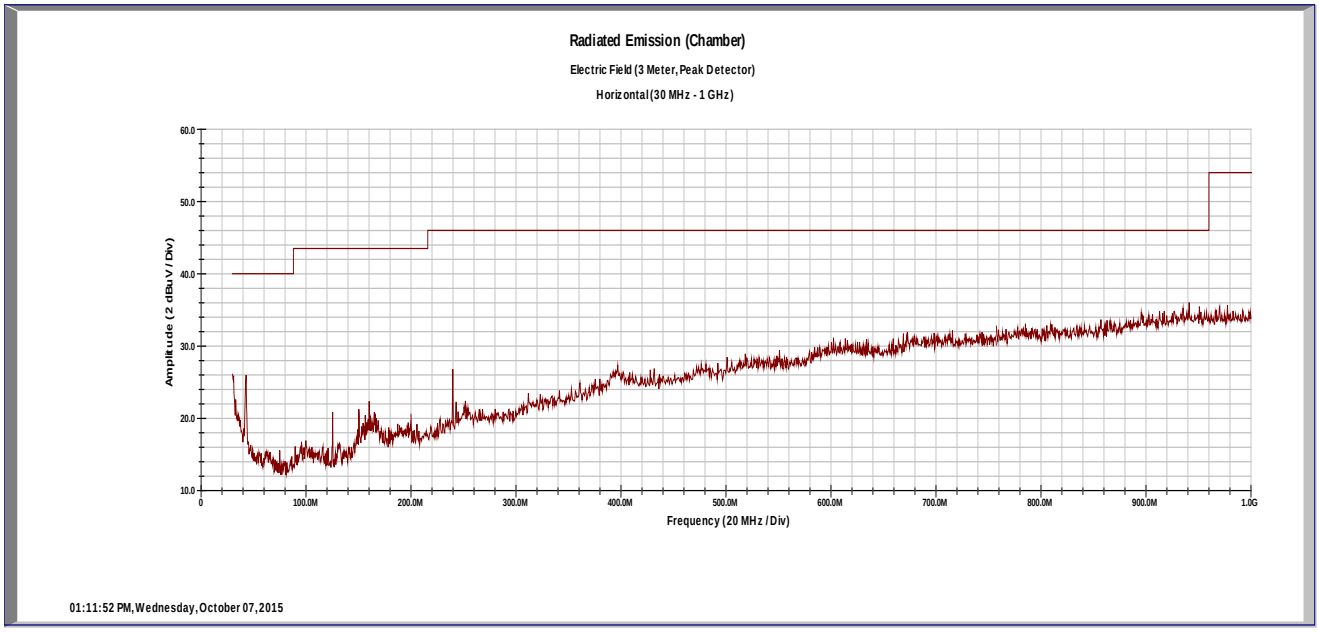
4.1.5.1 Maximum Time-weighted Emission:

The EUT was modified to transmit continuously.

The maximum measured Duty Cycle of the signal is 100%

4.1.5.2 Emissions Outside the Frequency Band:

Radiated Emissions – 30 MHz to 1 GHz
Horizontal



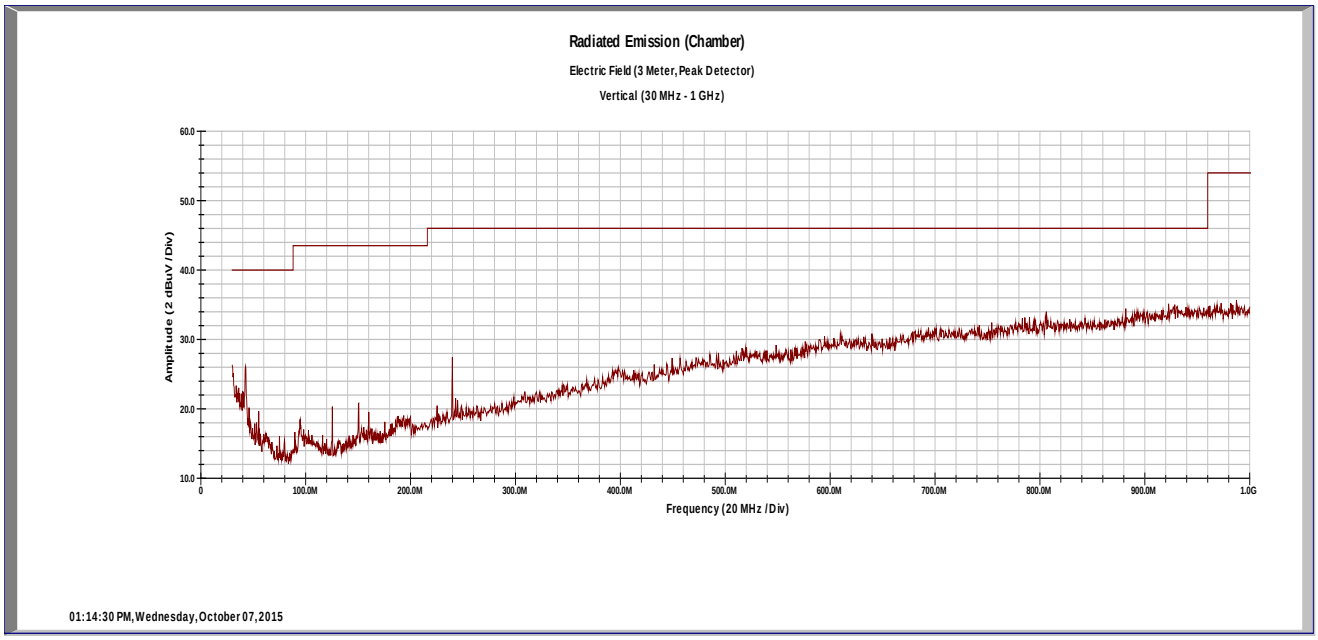
Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)
43.00	H	1.1	0	6.86	0.00	0.77	11.62	19.25	40.00	-20.75
160.00	H	1.6	130	4.86	0.00	1.45	9.00	15.31	43.50	-28.19
240.00	H	1.3	347	8.55	0.00	1.78	12.90	23.23	46.00	-22.77

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

Notes: Transmitting Low Channel. The Mid and High channels produced very similar results.
All Emissions are more than 20 dB below the limit.
Plots for Mid and High channel frequencies are on file at TUV Rheinland.

Radiated Emissions – 30 MHz to 1 GHz

Vertical



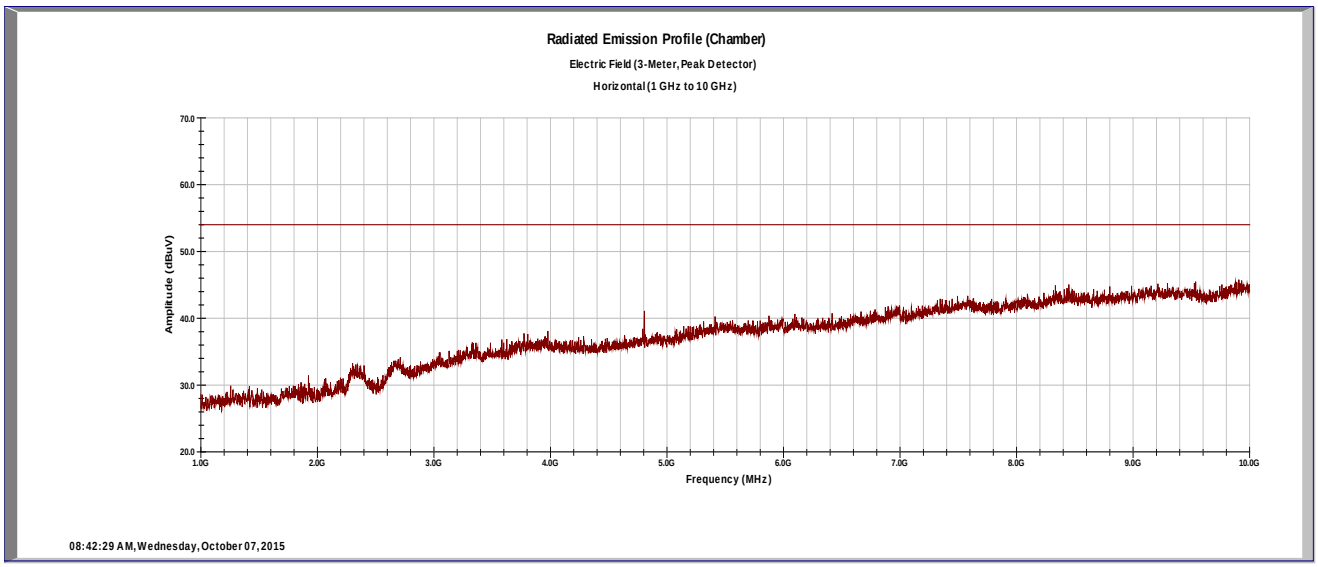
Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)
42.64	V	1.1	119	4.89	0.00	0.76	11.75	17.40	40.00	-22.60
94.48	V	1	323	1.48	0.00	1.12	8.42	11.01	43.50	-32.49
240.00	V	1.9	62	8.45	0.00	1.78	12.90	23.13	46.00	-22.87

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

Notes: Transmitting Low Channel. The Mid and High channels produced very similar results.
All Emissions are more than 20 dB below the limit.
Plots for Mid and High channel frequencies are on file at TUV Rheinland.

Radiated Emissions – 1 to 10 GHz

Horizontal



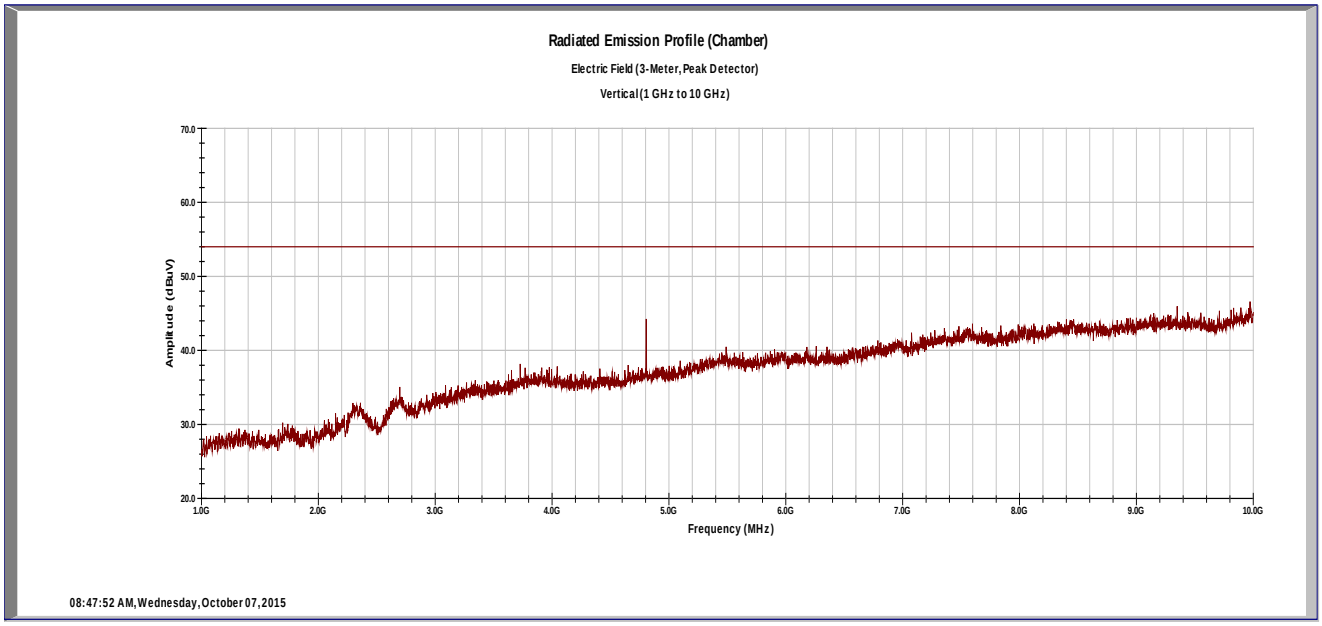
Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)

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

Notes: Transmitting Low Channel.
This is the worst-case spur/harmonic emission.
Plots of Mid and High band channels are on file at TUV Rheinland.
A 2.4GHz band-notch filter was used at the input of the preamp for the 1 GHz to 10 GHz range.
The emissions shown in **GREEN** are using the average detector and average limits
The emissions shown in **BLUE** are using the peak detector and peak limits.

Radiated Emissions – 1 to 10 GHz

Vertical



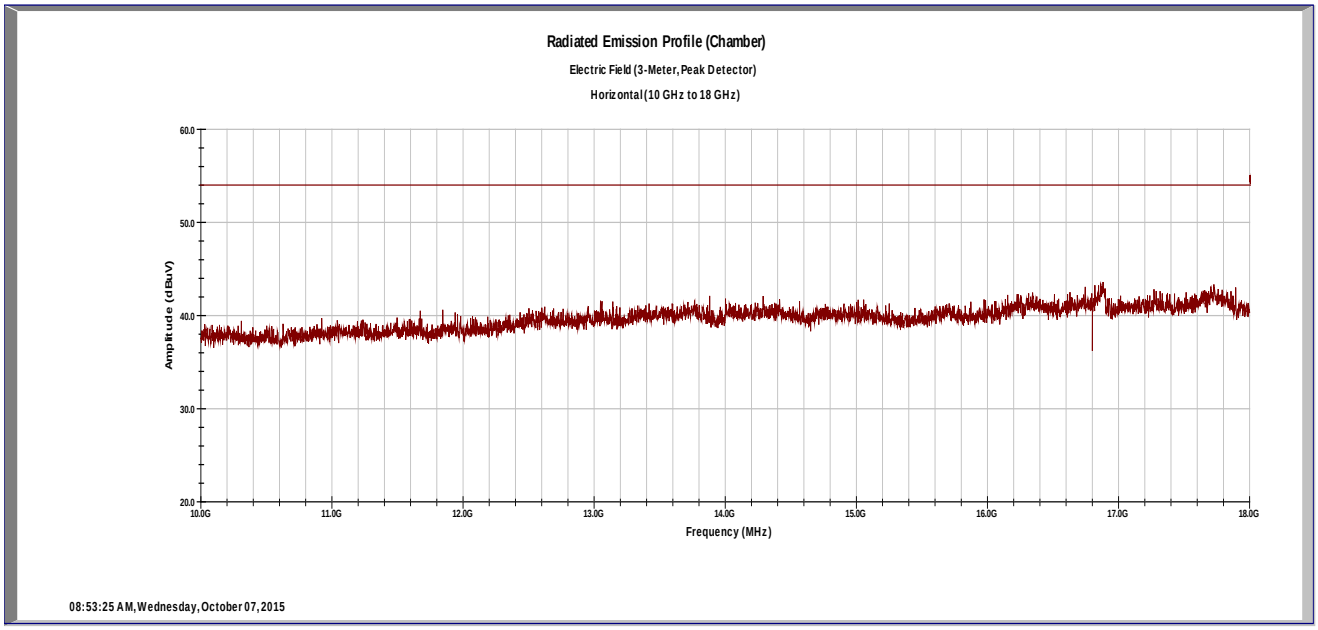
Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)
4803.60	H	2.3	191	32.13	33.85	11.60	32.88	42.77	54.00	-11.23
4803.60	V	2.3	191	43.33	33.85	11.60	32.88	53.97	74.00	-20.03

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

Notes: Transmitting Low Channel.
This is the worst-case spur/harmonic emission.
Plots of Mid and High band channels are on file at TUV Rheinland.
A 2.4GHz band-notch filter was used at the input of the preamp for the 1 GHz to 10 GHz range.
The emissions shown in **GREEN** are using the average detector and average limits
The emissions shown in **BLUE** are using the peak detector and peak limits.
The measured frequency falls within a Restricted band (Restricted band limits apply).

Radiated Emissions – 10 to 18 GHz

Horizontal



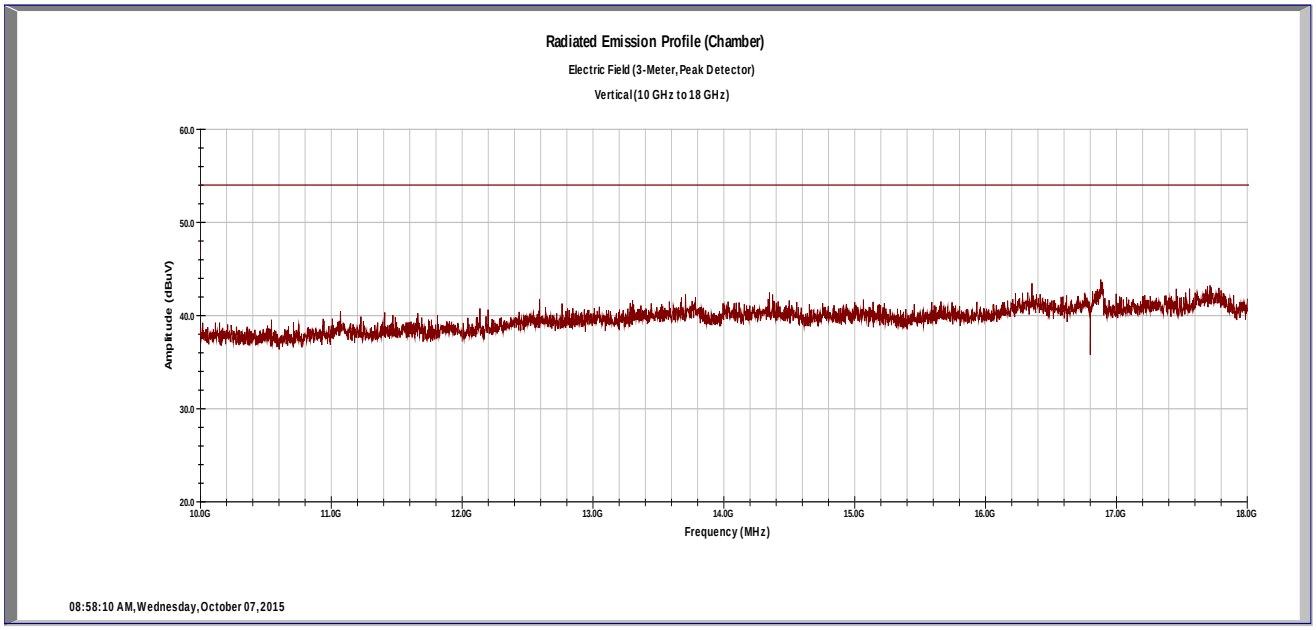
Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)

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

Notes: Transmitting Low Channel. Not measureable emissions noted.
Mid and High band channels showed similar reading. These plots are on file at TUV Rheinland.
A 3 GHz high-pass filter was used at the input of the preamp for the 10 GHz to 18 GHz range.

Radiated Emissions – 10 to 18 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)

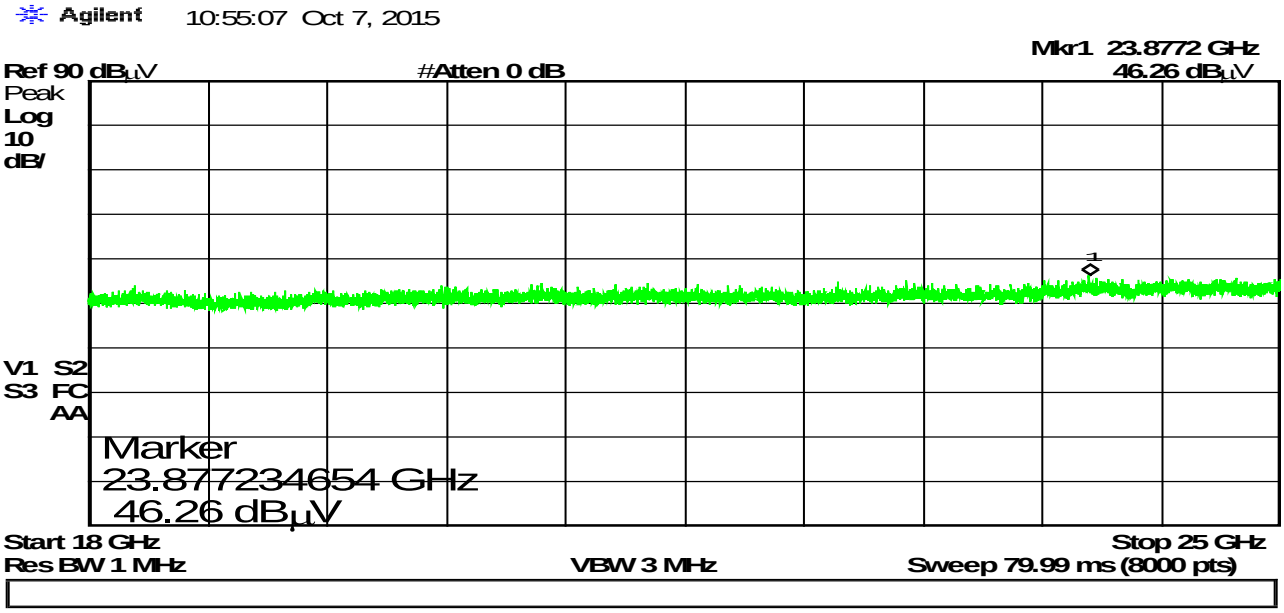
Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor

Notes: Transmitting Low Channel. Not measureable emissions noted.
Mid and High band channels showed similar reading. These plots are on file at TUV Rheinland.
A 3 GHz high-pass filter was used at the input of the preamp for the 10 GHz to 18 GHz range.

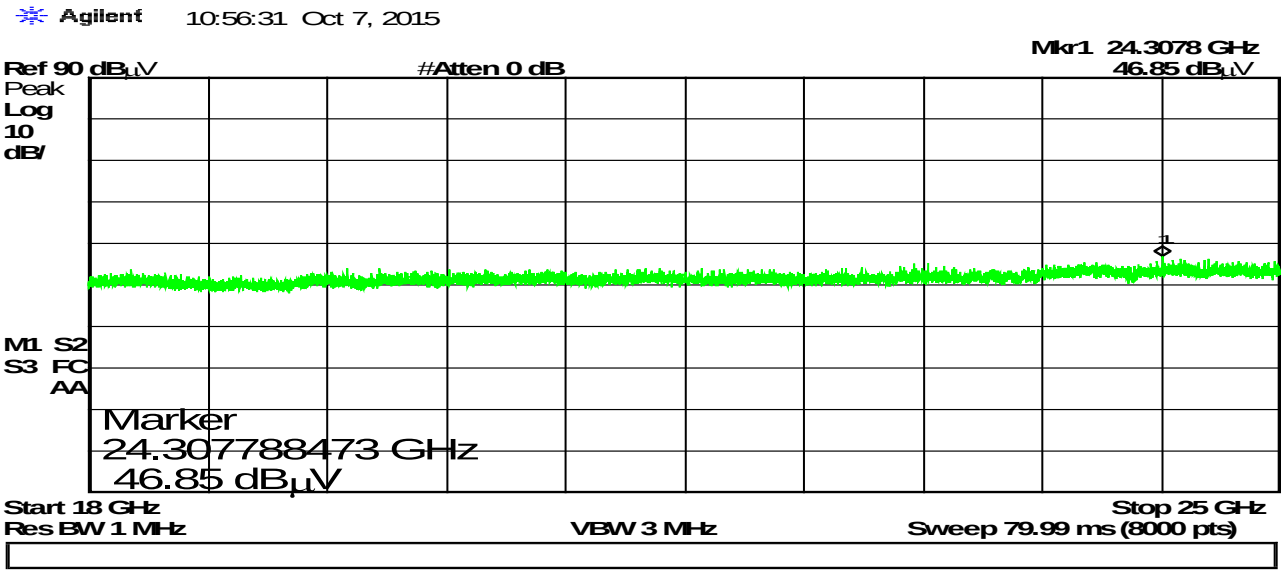
Radiated Emissions – 18 GHz to 25 GHz

Notes:
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 – 18 GHz to 25 GHz – Horizontal:



Radiated Emissions – 18 GHz to 25 GHz – Vertical:



Note: Base-line scan, no correction factors were applied. Low channel emissions shown. Mid and High band emissions were similar and are on file at TUV Rheinland.

4.2 Conducted Emissions on AC Mains – FCC 207(a)

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	**NA** (EUT is battery operated)					**Date**	
Standard	FCC Parts 15.207(a)						
Product Model	240jet, 240			**Serial#**	Production Prototype		
Test Set-up	Tested in shielded room. EUT placed on table, see test plans for details						
EUT Powered By	-	**Temp**	-	**Humidity**	-	**Pressure**	-
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**					

4.2.2 Test Procedure

Conducted and FCC emissions tests were performed using the procedures of ANSI C63.10:2009 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.

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

4.2.3 Deviations

The EUT is battery operated. The System utilizes and external battery charger. The EUT has no provisions for charging the battery or otherwise connection to the AC Mains.

4.2.4 Final Test

This test is not applicable for the transmitter section of this device.

4.3 Band Edge requirements - FCC Part 15.249(d)

4.3.1 Test Over View

Results	**Complies** (as tested per this report)					**Date**	6 October 2015
Standard	FCC Part 15.249(d)						
Product Model	240jet, 240			**Serial#**	Production Prototype		
Test Set-up	Radiated Measurement						
EUT Powered By	3.6 VDC Battery	**Temp**	72º F	**Humidity**	45%	**Pressure**	1000 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

The Marker-delta method for band-edge measurements (section 6.9.3 of ANSI C63.10:2009) was used, as emissions up to 2 MHz removed from the band edge will also be measured.

The total span of band-edge measurements were approximately 4.8 MHz.

RBW of 100 kHz was chosen as it is within 1% to 5% of the total span. (4.8%)

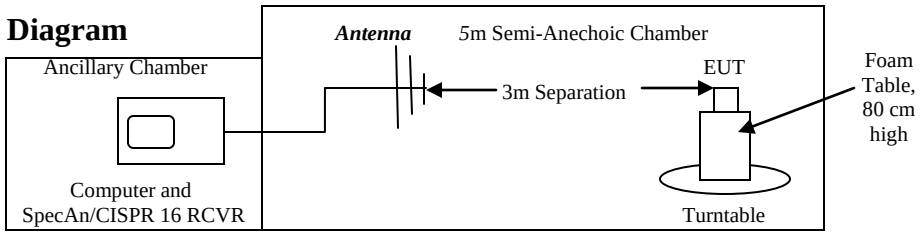
The VBW of 300 kHz was chosen as it is 3 times the 100 kHz RBW.

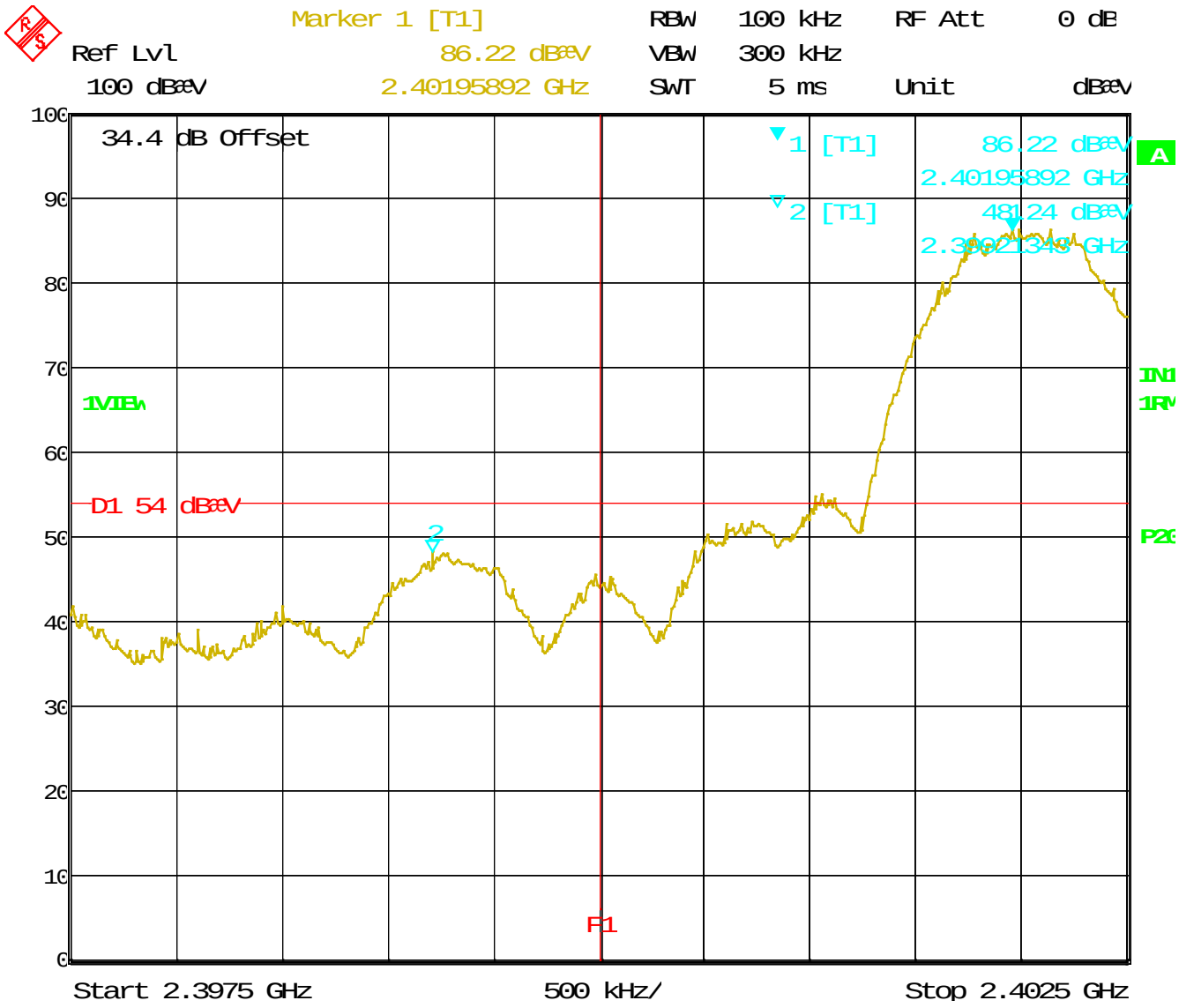
The Sweep time was set to Auto.

4.3.4 Final Test

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

4.3.1 Test Setup Block Diagram





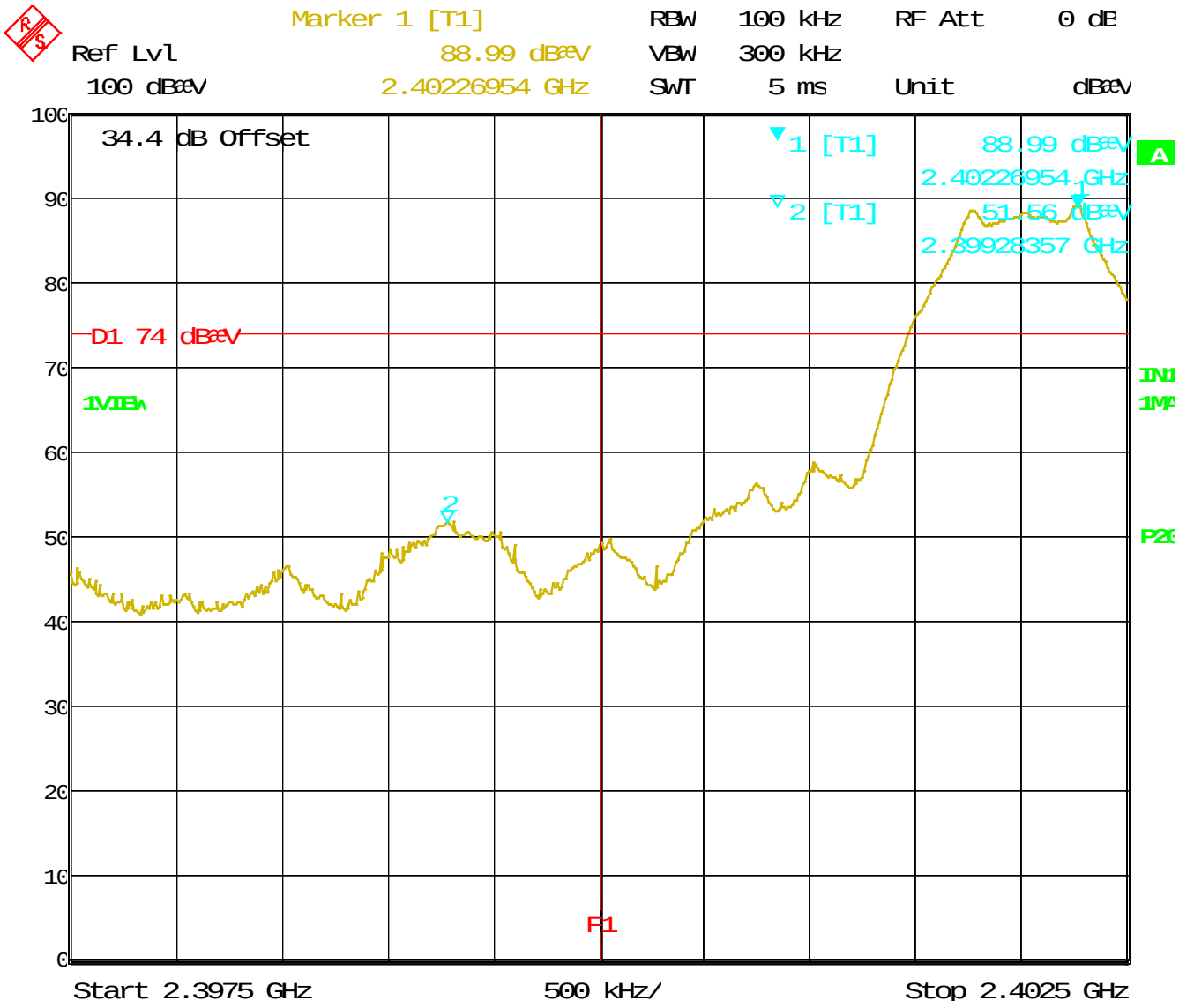
Date: 6.OCT.2015 16:03:17

Notes: Plot includes Correction Factors. Measured using the Average 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 48.24 dBµV (using the Average Detector) which is 5.76 dB below the average Limit for a restricted band.

Figure 1: Lower Band Edge Measurement (Radiated Emission-Average)



Date: 6.OCT.2015 16:04:55

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 51.56 dBµV (using the Peak Detector) which is 22.4 dB below the peak Limit for a restricted band.

The -20dBc value was not shown, as it can be clearly seen that that point is well within the band and would be very close the 15.209 limit line.

Figure 2: Lower Band Edge Measurement (Radiated Emission-Peak)

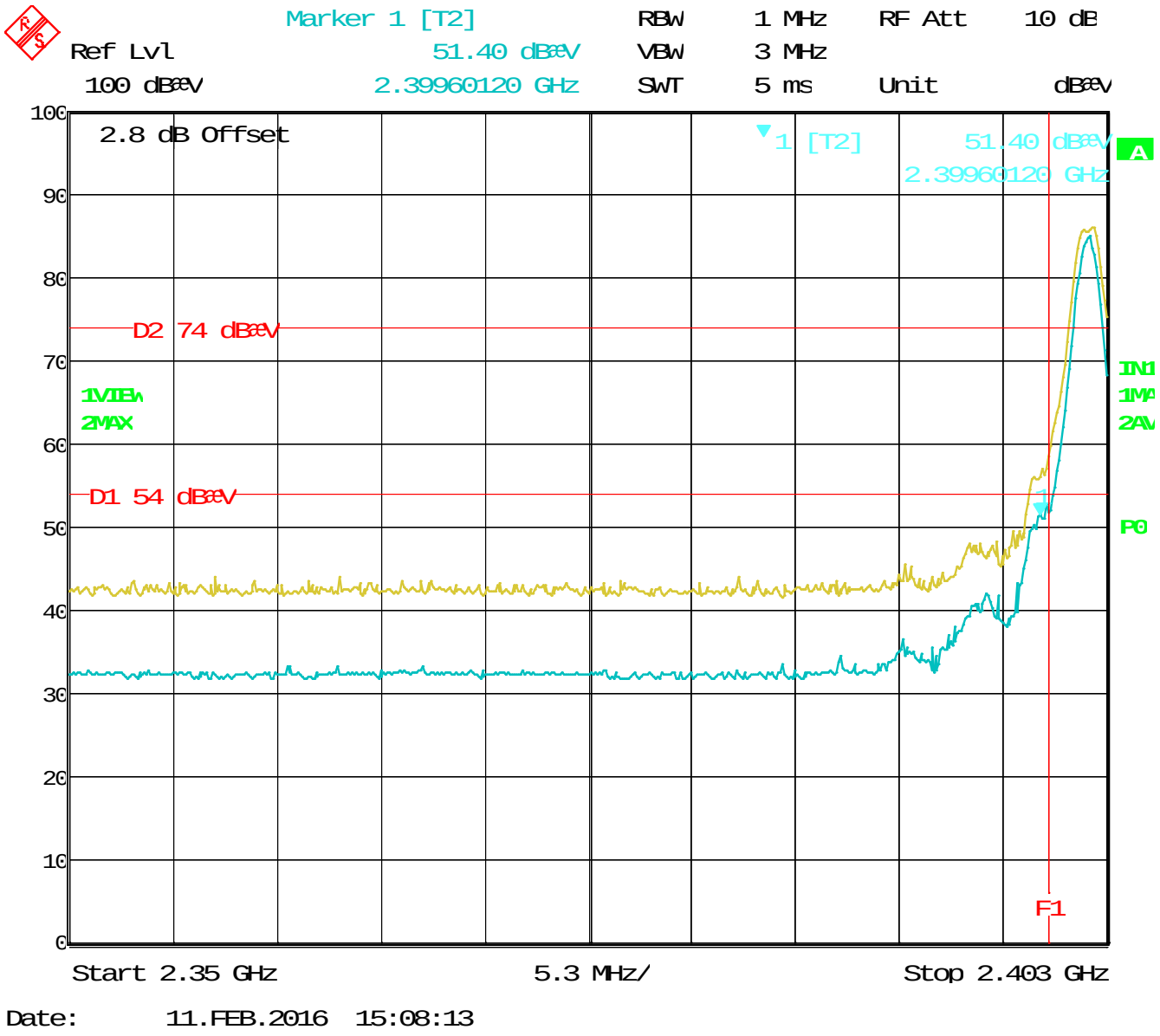
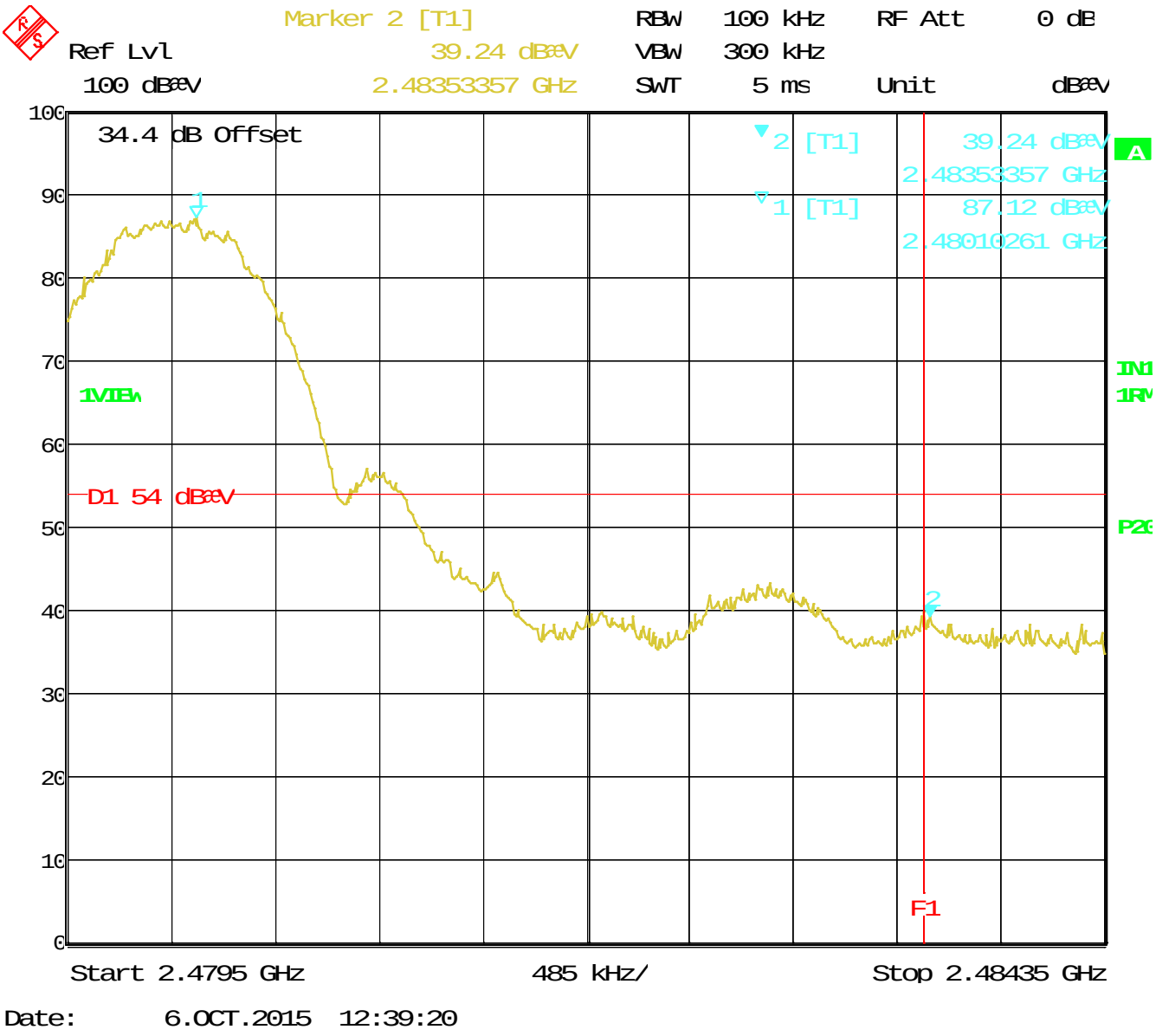


Figure 3: Lower Band Edge Measurement (Radiated Emission-Peak is top trace, Average is Bottom Trace)

Note: This plot shows a frequency of 50MHz below the band edge without the notch filter attached and with a 1MHz RBW. This was done to negate the effects of the notch filter near the band edge.

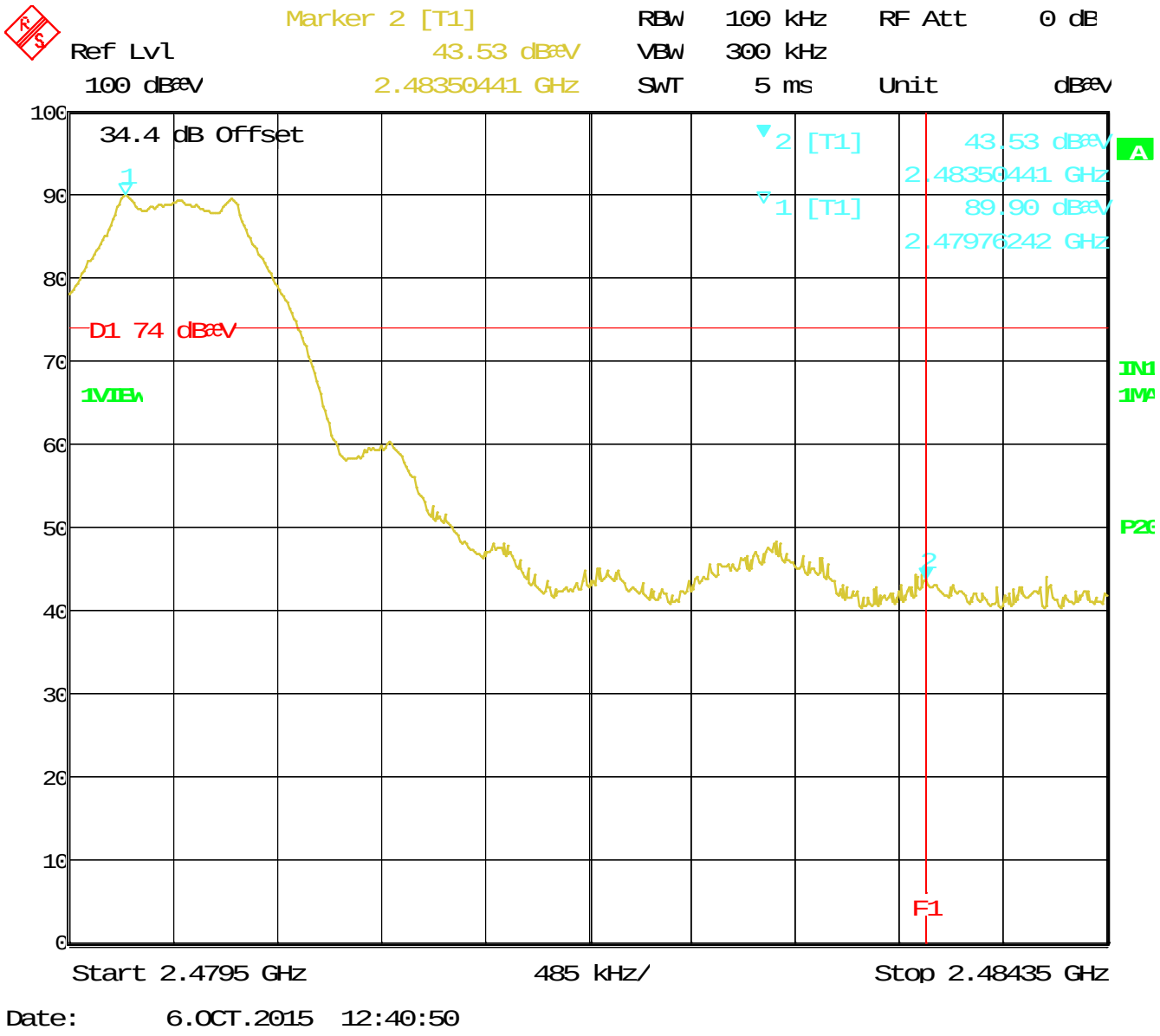


Note: Measured using the Average detector. Band Edge is at 2.483.5 MHz (Line F1), line D1 is the average restricted band limit.

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 39.24 dBµV (using the Average Detector) which is 14.76 dB below the Average restricted-band limits)

Figure 4: Upper Band Edge Measurement (Radiated Emission-Average)



Note: Measured using the Peak detector. Band Edge is at 2.483.5 MHz (Line F1), line D1 is the peak 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 43.53 dBµV (using the Peak Detector) which is 30.47 dB below the Peak restricted-band limits)

Figure 5: Upper Band Edge Measurement (Radiated Emission-Peak)

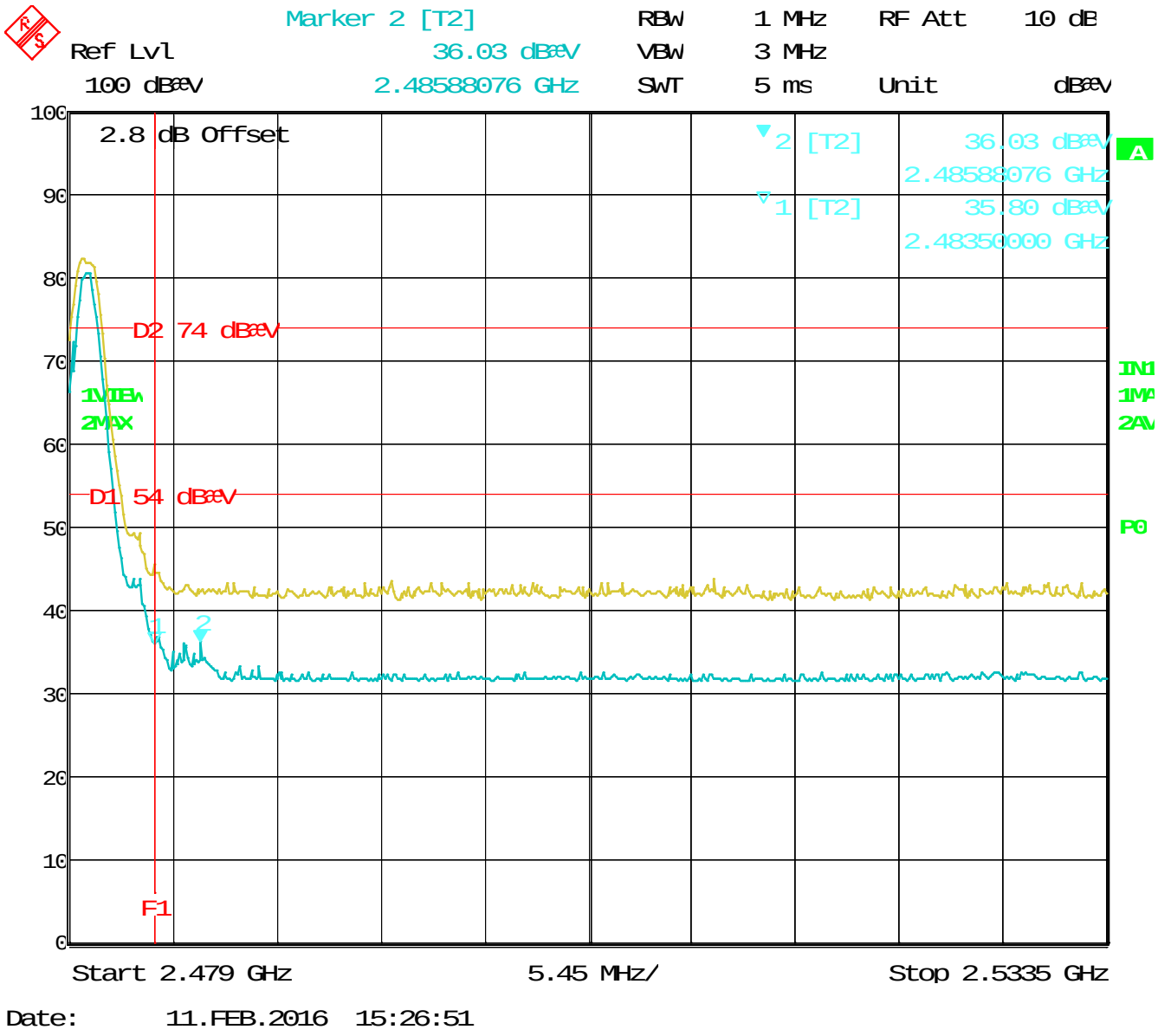


Figure 6: Upper Band Edge Measurement (Radiated Emission-Peak is top trace, Average is Bottom Trace)

Note: This plot shows a frequency of 50MHz above the band edge without the notch filter attached and with a 1MHz RBW. This was done to negate the effects of the notch filter near the band edge.

The EUT is compliant with the rules.

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	iROBOT CORPORATION
Address 1	8 Crosby Drive
Address 2	Bedford MA 01730 USA
Contact Person	Stephen Pallotta
Telephone	781-430-3284
e-mail	spallotta@irobot.com

Note, There will be two model numbers associated with the above listed radio ID numbers. This letter will describe that they are actually the same identical devices other than the marketing name.

The two models are:

- Model name and number: Braava 240jet
- Model name and number: Braava jet 240

These are actually the same identical devices. Marketing decided to change the model name from "Braava" to "Braava jet" for branding reasons. In turn, the model number also changed from "240jet" to "240".

5.1.1 Product Name

240jet, 240

5.1.2 Type of Product

Braava (Bluetooth-Low Energy Intentional Radiator)

5.1.1 Block Diagram

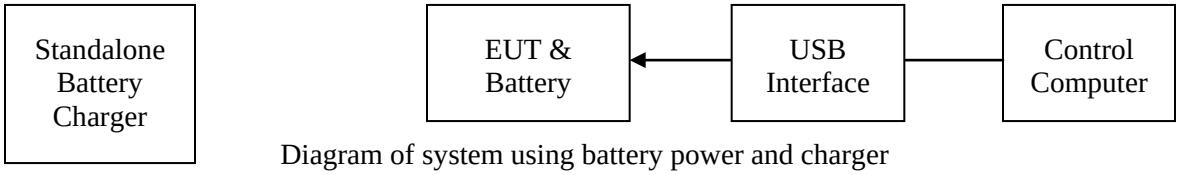


Diagram of system using battery power and charger