

# **Electromagnetic Compatibility Test Report**

*Prepared in accordance with*

**FCC Part 15C, RSS-210 Issue 8 and ANSI C63.10**

On

**Alere Airlink for INRatio2**

**55119**

Fitlinxx  
3 Enterprise Dr  
Shelton, CT 06848

Prepared by:

**TUV Rheinland of North America, Inc.**

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## Manufacturer's statement - attestation

The manufacturer, Fitlinxx, 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.

John E MacLean

Printed name of official



Signature of official

3 Enterprise Dr.  
Suite 401  
Shelton, CT 06848  
Address

11/20/2011  
Date

978-357-8086  
Telephone number





jmaclean@fitlinxx.com  
Email address of official

<b>Client:</b>	Fitlinxx 3 Enterprise Dr Shelton, CT 06848	Contact: John E MacLean Tel: 978-357-8086 Fax: 508-357-7990 e-mail jmaclean@fitlinxx.com
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<b>Identification:</b>	Alere Airlink for INRatio2		<b>Serial No.:</b>	NFFJ-00256-00166	
<b>Test item:</b>	55119		<b>Date Test Completed:</b>	10/18/2011	
<b>Testing location:</b>	TUV Rheinland of North America 336 Initiative Drive Rochester, NY 14624-6217 U.S.A.			Tel: (585) 426-5555 Fax: 585-568-8338	
<b>Test specification:</b>	Emissions: RSS-210 Issue 8 Radiated Emissions Std FCC Parts 15.249(d), 15.209, 15.215(c) and RSS-210 A2.9, RSS-GEN 7.2.1, Conducted Emissions Std FCC Part 15.249 and RSS-210 Annex 2.9, Immunity: FCC Part 15, Subpart C, FCC Parts 15.249(a), 15.249(c), RSS-210 A2.9(a), FCC Part 15.109(a) and RSS-210 2.2 and 2.3,				
<b>Test Result:</b>	<b>The above product was found to be Compliant to the above test standard(s)</b>				
<b>tested by:</b> Randall Masline			<b>reviewed by:</b> Cecil Gittens		
2 November 2011 _____ Date Name Signature			2 November 2011 _____ Date Name Signature		
<b>Other Aspects:</b>	<b>None</b>				
Abbreviations: OK, Pass, Compliant, Complies = passed Fail, Not Compliant, Does Not Comply = failed N/A = not applicable					
					
					
<b>US5253</b>		NVLAP CODE 200313-0		<b>3466C-1</b>	
				<b>SL2-IN-E-050R</b>	

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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 FCC Part 15C, RSS-210 Issue 8 and ANSI C63.10 based on the results of testing performed on 10/18/2011 on the Alere Airlink for INRatio2, Model Number. 55119, manufactured by Fitlinxx. 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.

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### 1.3 Summary of Test Results

<b>Applicant</b>	Fitlinxx 3 Enterprise Dr Shelton, CT 06848	<b>Tel</b>	978-357-8086	<b>Contact</b>	John E MacLean
		<b>Fax</b>	508-357-7990	<b>e-mail</b>	jmaclean@fitlinxx.com
<b>Description</b>	Alere Airlink for INRatio2	<b>Model Number</b>	55119		
<b>Serial Number</b>	NFFJ-00256-00166	<b>Test Voltage/Freq.</b>	Battery Operated		
<b>Test Date Completed:</b>	10/18/2011	<b>Test Engineer</b>	Randall Masline		
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	<b>Complies</b>
RSS-210 Issue 8 Standard	Low-Power Licence-exempt Radiocommunication Devices Category I Equipment	See called out parts below		See Below	<b>Complies</b>
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	<b>Complies</b>
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 50mV/m at 3m Harmonics: Shall not exceed 500µV/m (0.5 mV/m) at 3m, (unrestricted bands)		19.58 mV/m	<b>Complies</b>
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 (EUT in Transmit Mode)	Below the applicable limits			<b>Complies</b>
FCC Parts 15.207(a) and RSS-GEN 7.2.4	Conducted Emissions on AC Mains	150kHz - 30MHz		Not Tested	<b>Complies</b>
FCC Part 15.249(b)(2)	Frequency Stability	Frequency tolerance of carrier maintained within +/-0.001% over temperature variation of -20°C to +50°C		TBD	<b>Complies</b>
RSS-210 A1.1.3	Occupied Bandwidth	99% BW ≤ 0.5% of center freq.		921 kHz	<b>Complies</b>
FCC Part 15.109(a) and RSS-210 2.2 and 2.3	Receive Mode - Radiated Emissions	Below limit of the restricted bands listed in RSS-GEN section 6			<b>Complies</b>
FCC Part 15.107(a) and RSS-210 2.2 and 2.3	Receive Mode - Conducted Emissions on AC Mains	Below limit of the restricted bands listed in RSS-GEN section 6		Not Tested	<b>Complies</b>
FCC Part 2.1093 and RSS-102, Issue 4	RF Exposure	SAR or MPE Requirements		0.001 mW	<b>Complies</b>

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## **2 Laboratory Information**

### **2.1 Accreditations & Endorsements**

#### **2.1.1 US Federal Communications Commission (Expires 12/7/2013)**

TUV Rheinland of North America located at, 336 Initiative Drive, Rochester, NY 14624-6217 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 90575). The laboratory scope of accreditation includes: Title 47 CFR Part 15, and 18. The accreditation is updated every 3 years.

#### **2.1.2 NIST / NVLAP (Expires 6/30/2013)**

This is a program which is administered under the auspices of the National Institute of Standards and Technology. The laboratory has been assessed and accredited in accordance with ISO Standard 17025:2005 (Lab code: 200313-0). The scope of laboratory accreditation includes emission and immunity testing. The accreditation is updated annually.

#### **2.1.3 VCCI**

VCCI Accredited test lab. Registration numbers R-1065, C-1120, & C-1121.

#### **2.1.4 Industry Canada (Expires 1/22/2012)**

(Registration No.: 3466C-1) The OATS has been accepted by Industry Canada to perform testing to 3 and to 10m, based on the test procedures described in ANSI C63.4-2009.

#### **2.1.5 BSMI**

Registration No.: SL2-IN-E-050R. The BSMI accreditation was obtained by NIST MRA with the BSMI.

#### **2.1.6 Korea**

Recognized by Radio Research Agency as an accredited Conformity Assessment Body (CAB) under the terms of Phase I of the APEC TEL.

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### 2.1.7 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 (dBμV)

AMP = Amplifier Gain (dB)

CBL = Cable Loss (dB)

ACF = Antenna Correction Factor (dB/m)

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

#### Sample radiated emissions calculation @ 30 MHz

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

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

### 2.2 Measurement Uncertainty Emissions

	<b>U<sub>I</sub></b> <b>ab</b>	<b>U<sub>cispr</sub></b>
<b>Radiated Disturbance @ 10m</b>		
30 MHz – 1,000 MHz	3.3 dB	5.2 dB
<b>Conducted Disturbance @ Mains Terminals</b>		
150 kHz – 30 MHz	1.18 dB	3.6 dB
<b>Disturbance Power</b>		
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 #	Ref.	Serial #	Last Cal dd/mm/yy	Next Cal dd/mm/yy	Test
Horn	EMCO	3115	C025	9512-4630	20-Jul-11	20-Jul-13	RE
BiLog	Chase	CBL6111	C041	1170	31-Mar-11	31-Mar-12	RE
EMI Receiver	Rohde & Schwarz	ESVS 30	C310	826006/015	12-Dec-10	12-Dec-11	RE
Analyzer w RF Filter Section 85460A	HP	8546A	C311	3325A00127	9-Aug- 11	9-Aug- 12	RE, CE
Receiver (20Hz-40GHz)	Rohde & Schwarz	ESI 40	C320	839283/005	11-Dec-10	11-Dec-11	RE
Multimeter	Fluke	87	C405	49050672	9-Aug- 11	9-Aug- 12	All tests
Amplifier (1-26.5 GHz.)	Agilent	8449B	C438	3008A01842	18-Dec-09	18-Dec-11	RE
Amplifier 1 - 18GHz	Rohde & Schwarz	TS-PR18	C439	122002/001	18-Dec-09	18-Dec-11	RE
Amplifier (18-26.5GHz)	Rohde & Schwarz	TS-PR26	C443	100005	10-Aug- 11	10-Aug- 12	RE
Digital Pressure/Temp/RH	Davis	Perception II	C444	40917	23-Mar 11	22-Mar 12	All tests
Multimeter	Fluke	87	C445	59890224	12-Dec-10	12-Dec-11	All tests
Horn	EMCO	3160-09	C447	03-0338-018	17-Nov-10	17-Nov-12	RE
BiLog	Chase	CBL6111B	C448	2081	16-Nov-10	16-Nov-11	RE
Multimeter	Fluke	8062A	C452	4715199	12-Dec-10	12-Dec-11	All tests
Digital Pressure/Temp/RH	Davis	Perception II	C470	PB00218A16	29-Jun-11	28-Jun-12	RE
Temp Chamber	Tenney	T-14 Special		9928	20-Nov-10	20-Nov-12	RE

Note: CE = Conducted Emissions, CI= Conducted Immunity, DP=Disturbance Power, EFT=Electrical Fast Transients, ESD = Electrostatic Discharge, FLI=Flicker, HAR=Harmonics, MF=Magnetic Field Immunity, RE=Radiated Emissions, RI=Radiated Immunity, SI=Surge Immunity, VDSI=Voltage Dips and Short Interruptions

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### **3 Product Information**

#### **3.1 Equipment Modifications**

No modifications were needed to bring product into compliance.

#### **3.2 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

The transceiver is a 2.4 GHz Nordic device. It operates in conjunction with the microcontroller and a very few external passive components to produce an RF radio system. The center frequency is 2.429 GHz and it uses a GFSK modulation.

The antenna is a quarter wave etch trace incorporated into the PCB. The antenna has an approximate gain of 1 dB. There are no additional adjustable parts or tuning needed after the board assembly is completed.

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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  $\mu$ V/m) at 3m.

Harmonic Frequencies – 500  $\mu$ V/m (54 dB  $\mu$ V/m) at 3m.

#### 4.1.1 Over View of Test

Results	Complies (as tested per this report)					Date	10/17/2011	
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 7.2.1							
Product Model	55119				Serial#	NFFJ-00256-00166		
Test Set-up	Tested on 10m O.A.T.S. at 3 m placed on turn-table, see test plans for details							
EUT Powered By	Battery Operated	Temp	23°C	Humidity	43%	Pressure	1003mbar	
Perf. Criteria	(Below Limit)		Perf. Verification			Readings Under Limit		
Mod. to EUT	None		Test Performed By			Randall Masline		

#### 4.1.2 Test Procedure

Testing was performed in accordance with 47 CFR Part 15, ANSI C63.10:2009, RSS-GEN Issue 2. These test methods are listed under the laboratory's NVLAP 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.

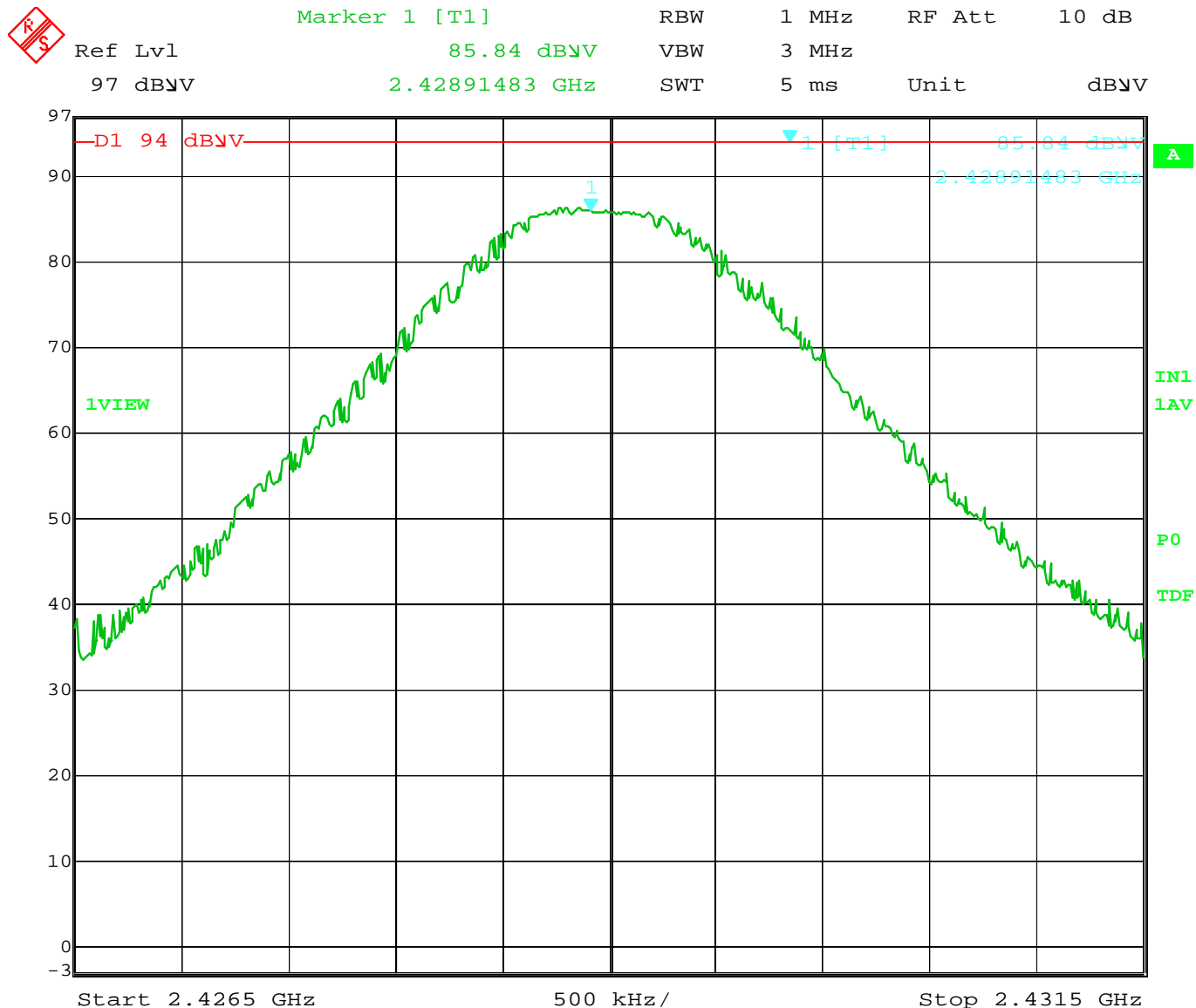
#### 4.1.4 Final Test

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 Emissions Inside the Frequency Band

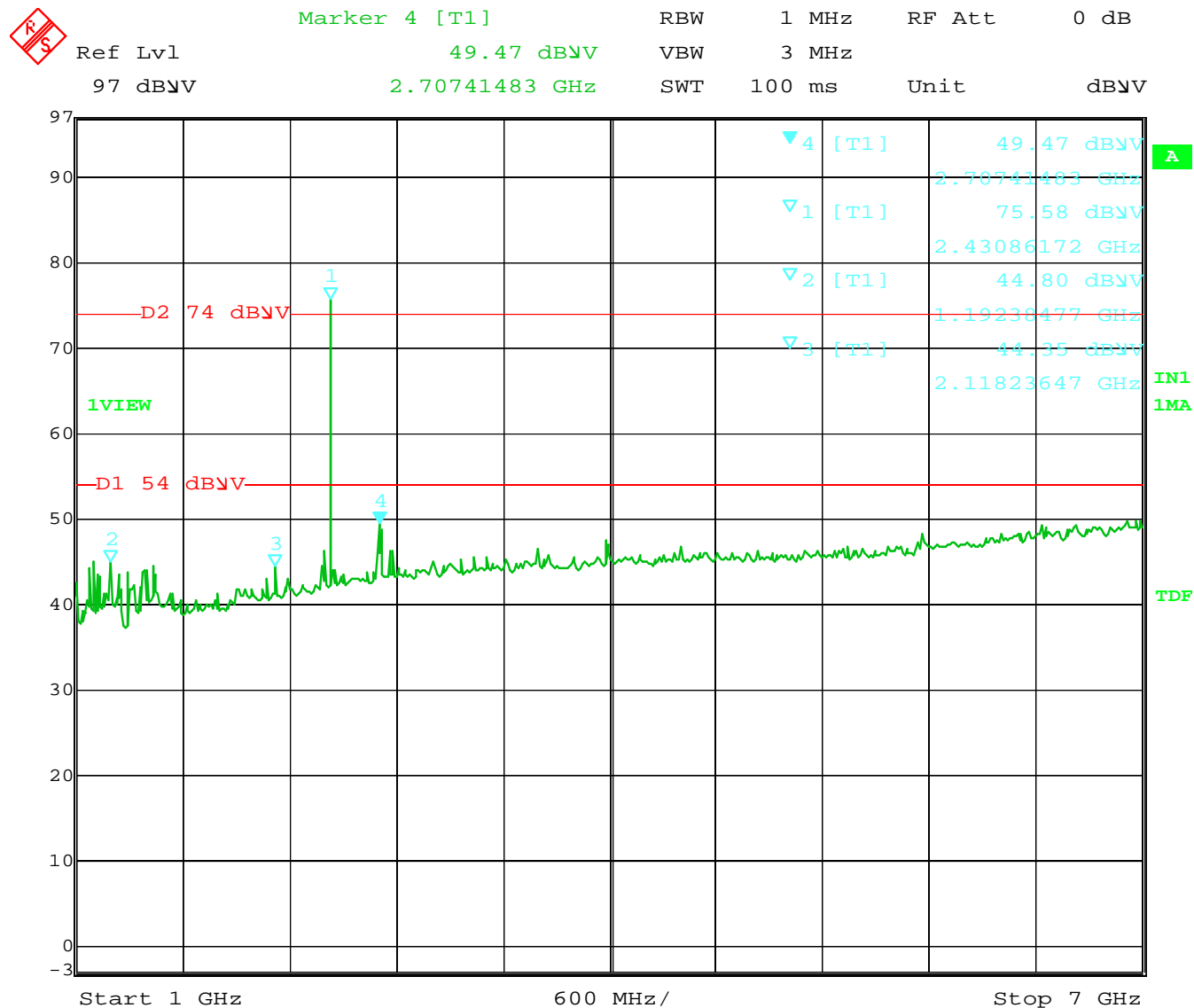


Date: 17.OCT.2011 14:02:11

Figure 1 – Fundamental Field Strength 85.84 dBμV = 19.58mV/m at 2429 MHz

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#### 4.1.4.2 Emissions outside the Frequency Band:



Date: 17.OCT.2011 17:14:42

Figure 2 – 1000 – 3000 MHz

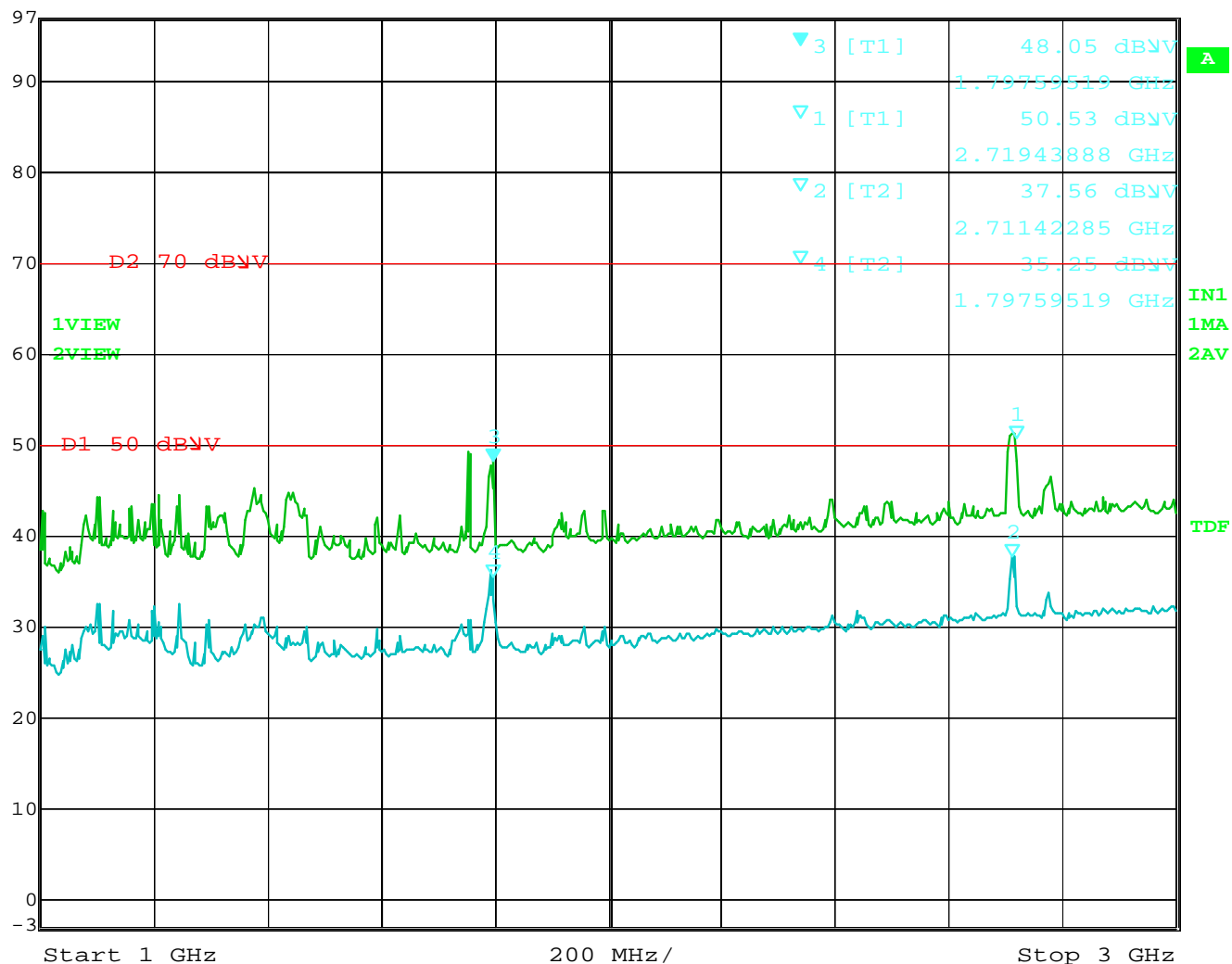
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Marker 3 [T1] RBW 1 MHz RF Att 0 dB  
Ref Lvl 48.05 dBμV VBW 1 MHz  
97 dBμV 1.79759519 GHz SWT 100 ms Unit dBμV



Date: 18.OCT.2011 12:21:12

Figure 3 –1000 – 3000 MHz AVG and Peak

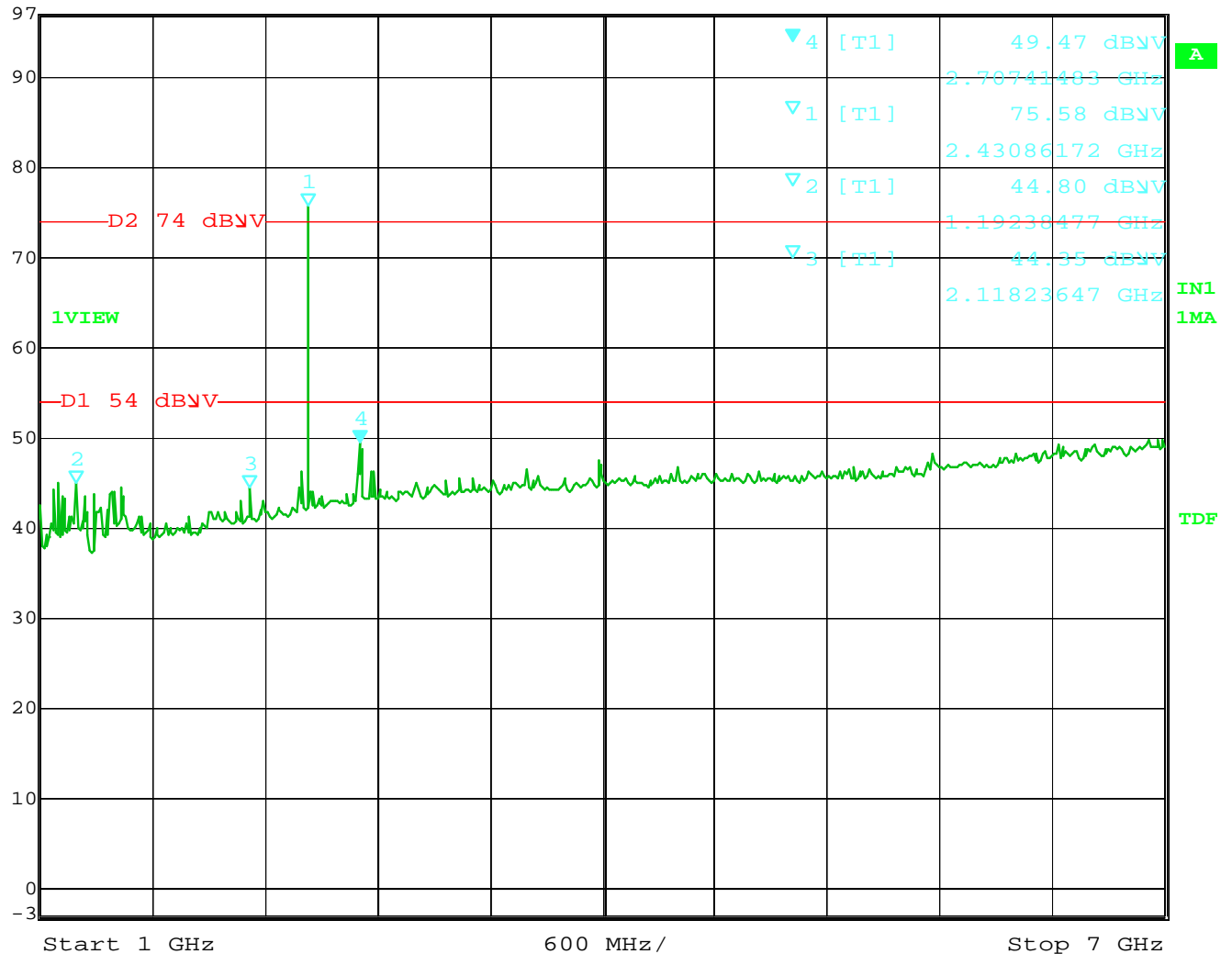
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Marker 4 [T1] RBW 1 MHz RF Att 0 dB  
Ref Lvl 49.47 dBμV VBW 3 MHz  
97 dBμV 2.70741483 GHz SWT 100 ms Unit dBμV



Date: 17.OCT.2011 17:14:42

Figure 4 – 1000 – 7000 MHz Horizontal

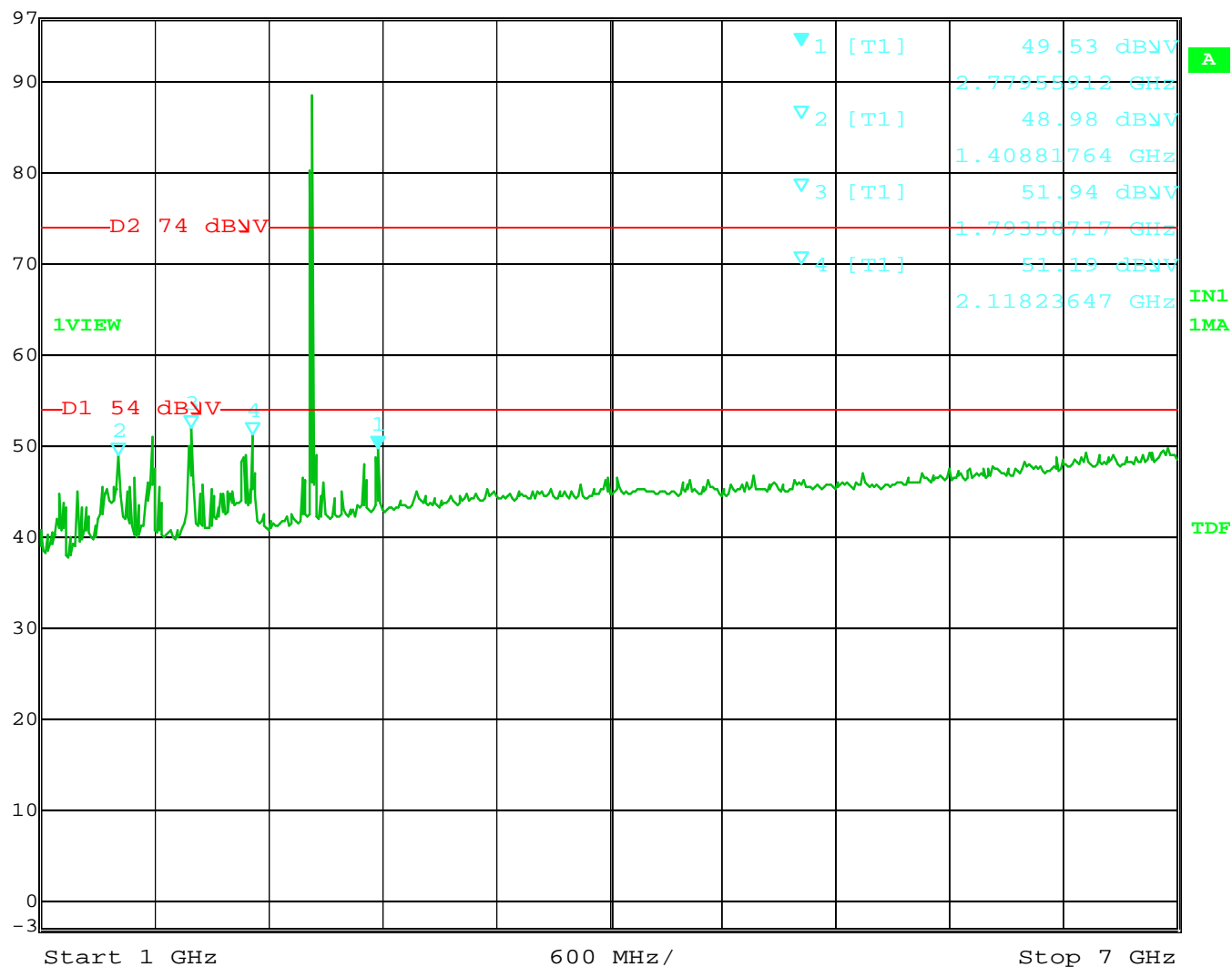
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Marker 1 [T1] RBW 1 MHz RF Att 0 dB  
Ref Lvl 49.53 dBμV VBW 3 MHz  
97 dBμV 2.77955912 GHz SWT 100 ms Unit dBμV



Date: 17.OCT.2011 17:02:28

Figure 5 -1000 - 7000 MHz Vertical

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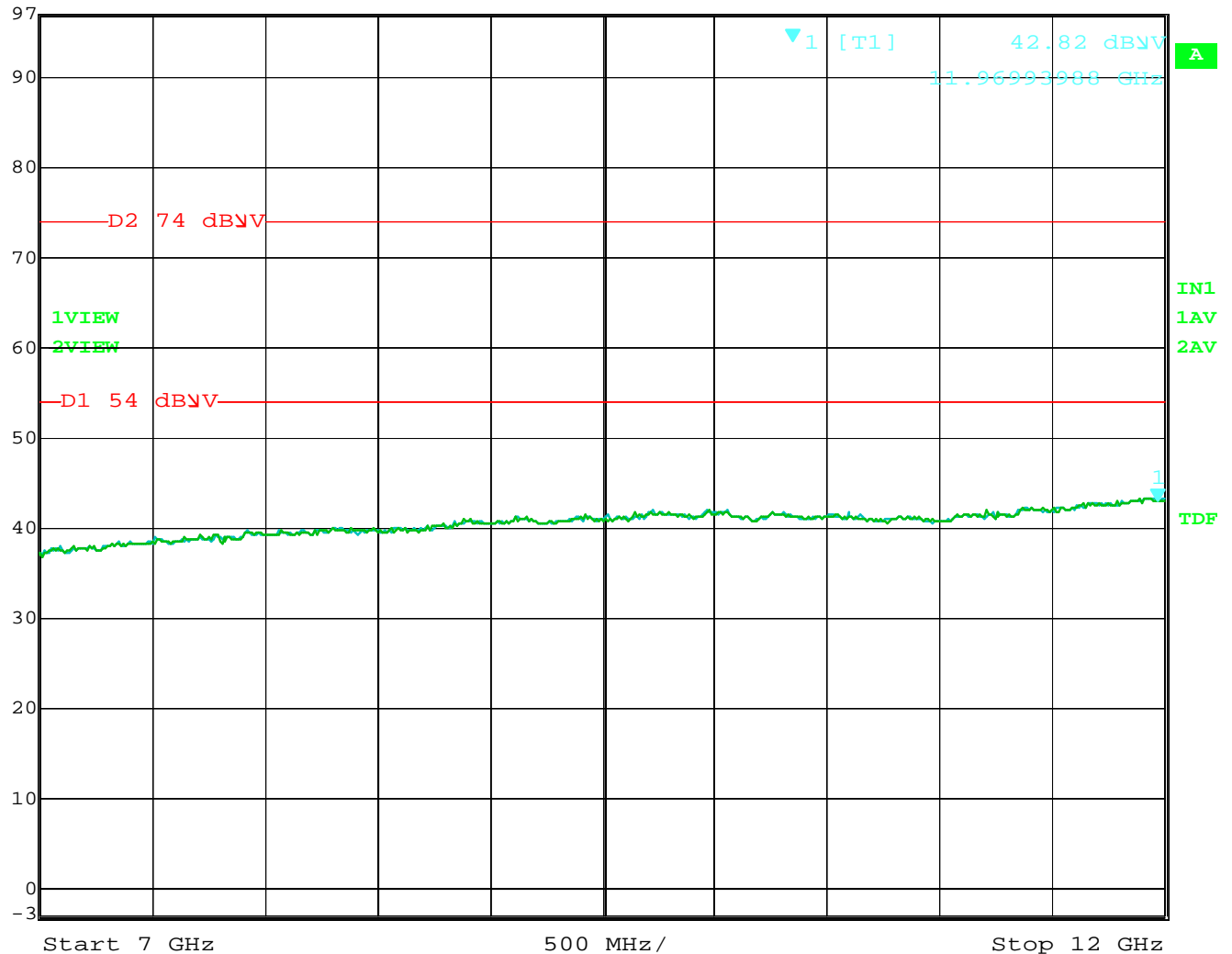


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Marker 1 [T1] RBW 1 MHz RF Att 0 dB  
Ref Lvl 42.82 dBμV VBW 3 MHz  
97 dBμV 11.96993988 GHz SWT 100 ms Unit dBμV



Date: 18.OCT.2011 10:34:17

Figure 6 – 7 GHz – 12 GHz Horizontal and Vertical

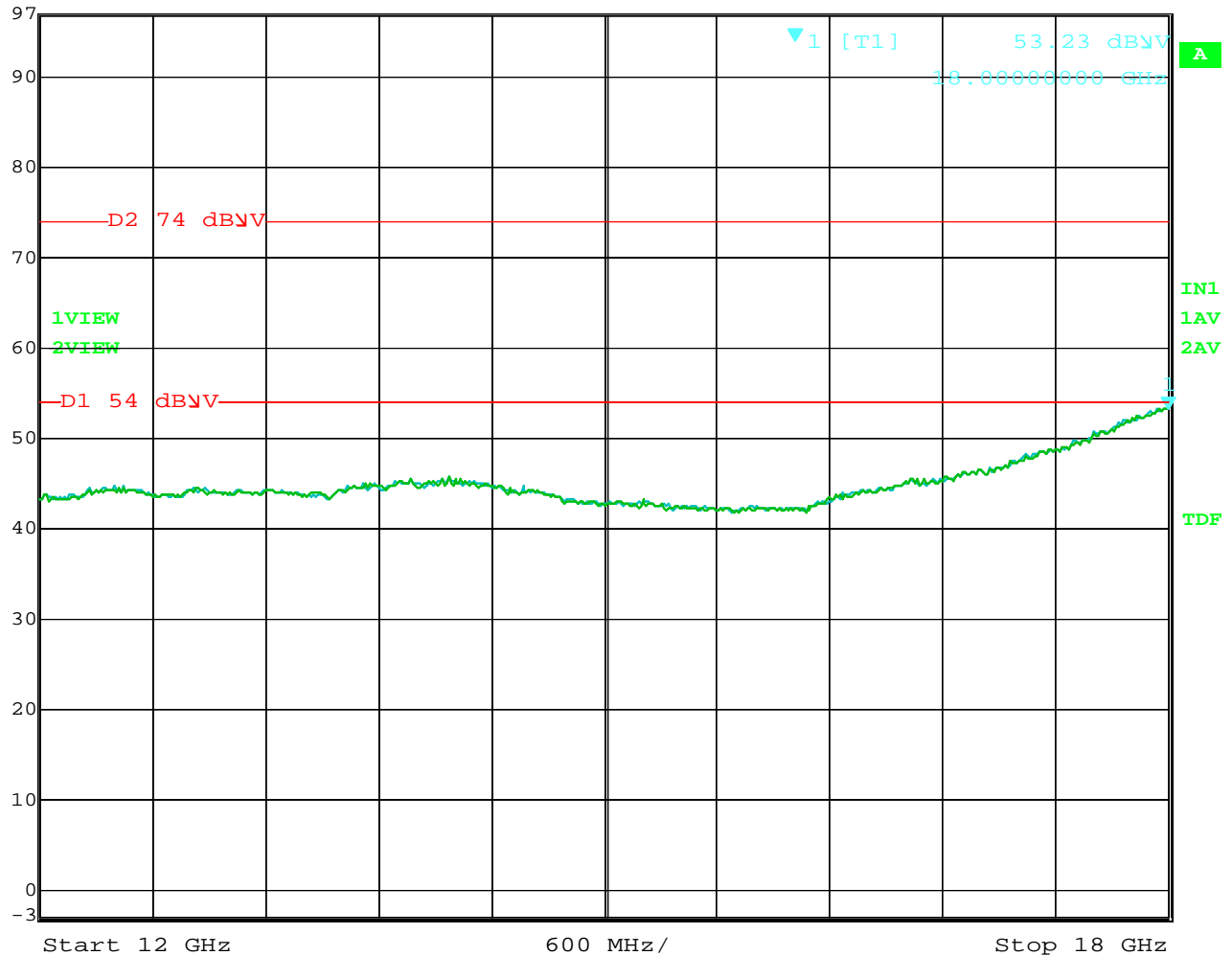
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Marker 1 [T1] RBW 1 MHz RF Att 0 dB  
Ref Lvl 53.23 dBμV VBW 3 MHz  
97 dBμV 18.00000000 GHz SWT 100 ms Unit dBμV



Date: 18.OCT.2011 10:35:13

Figure 7 – 12 GHz – 18 GHz Horizontal and Vertical

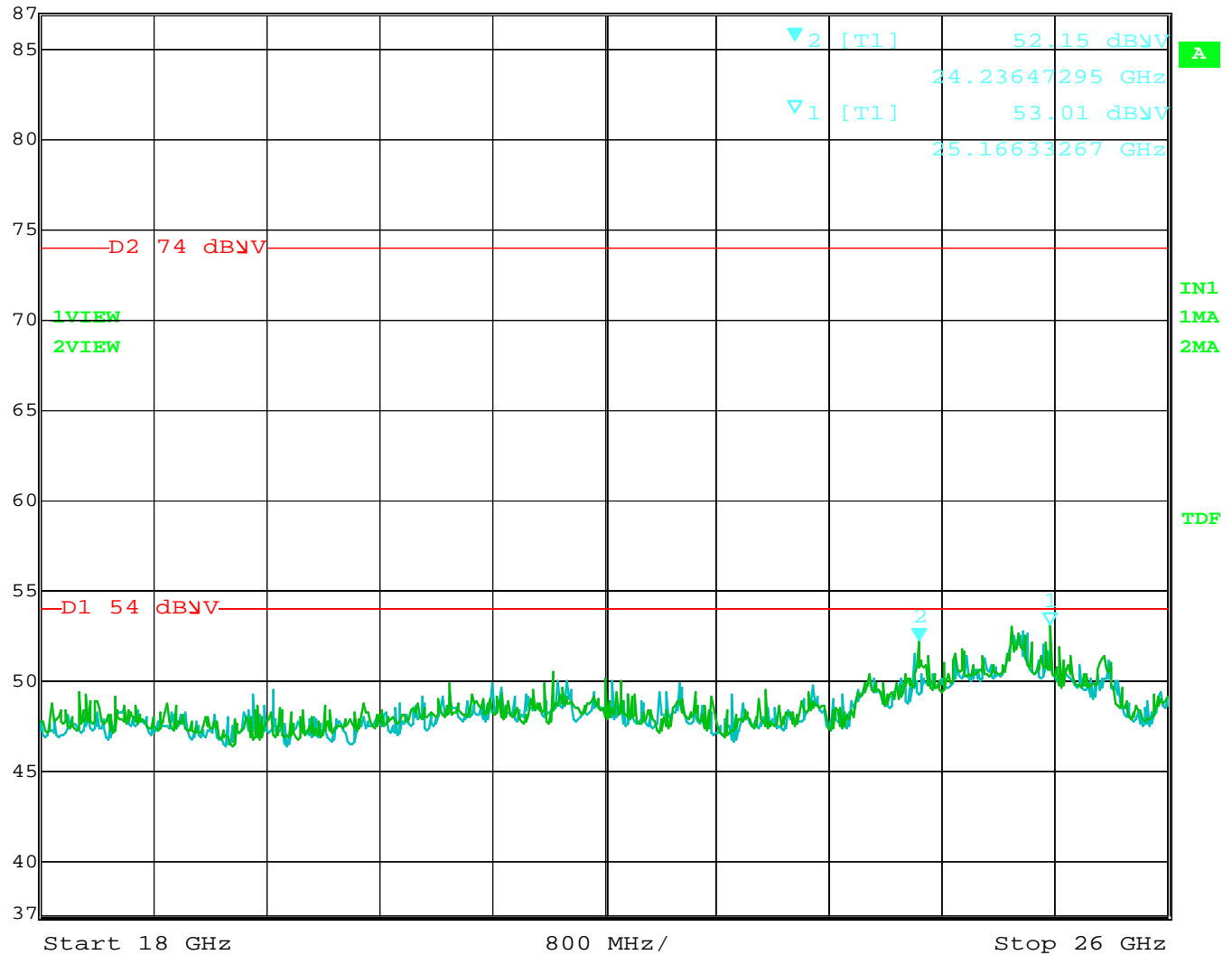
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Marker 2 [T1] RBW 1 MHz RF Att 0 dB  
Ref Lvl 52.15 dBμV VBW 1 MHz  
87 dBμV 24.23647295 GHz SWT 100 ms Unit dBμV



Date: 18.OCT.2011 15:05:19

Figure 8 – 18 GHz – 26.5 GHz Horizontal and Vertical

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

### 4.2.1 Test Over View

Results	Complies (as tested per this report)					Date	10/17/2011	
Standard	FCC Part 15.249(d), RSS 210 2.2							
Product Model	55119				Serial#	NFFJ-00256-00166		
Test Set-up	Tested on 10m O.A.T.S. at 3 m placed on turn-table, see test plans for details							
EUT Powered By	Battery Operated	Temp	23°C	Humidity	43%	Pressure	1003mbar	
Perf. Criteria	(Below Limit)			Perf. Verification		Readings Under Limit		
Mod. to EUT	None			Test Performed By		Randall Masline		

### 4.2.2 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.

### 4.2.3 Deviations

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

### 4.2.4 Final Test

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

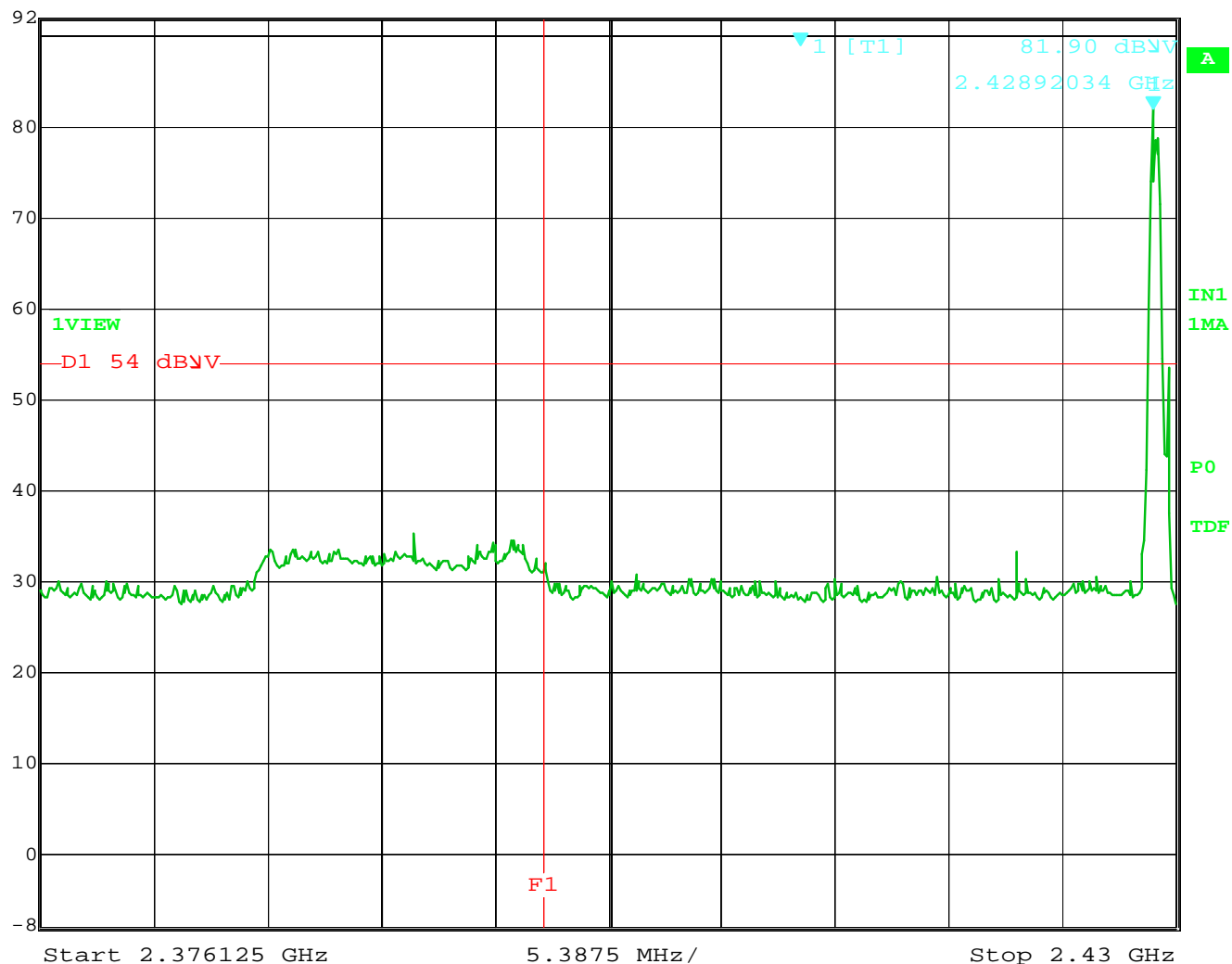
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Marker 1 [T1] RBW 100 kHz RF Att 0 dB  
Ref Lvl 81.90 dBμV VBW 300 kHz  
92 dBμV 2.42892034 GHz SWT 13.5 ms Unit dBμV



Date: 17.OCT.2011 14:52:45

Notes: Measured using the Peak detector. Band Edge is at 2.4 GHz

Figure 9: Lower Band Edge Measurement (Radiated Emission)

The EUT is compliant with the rules.

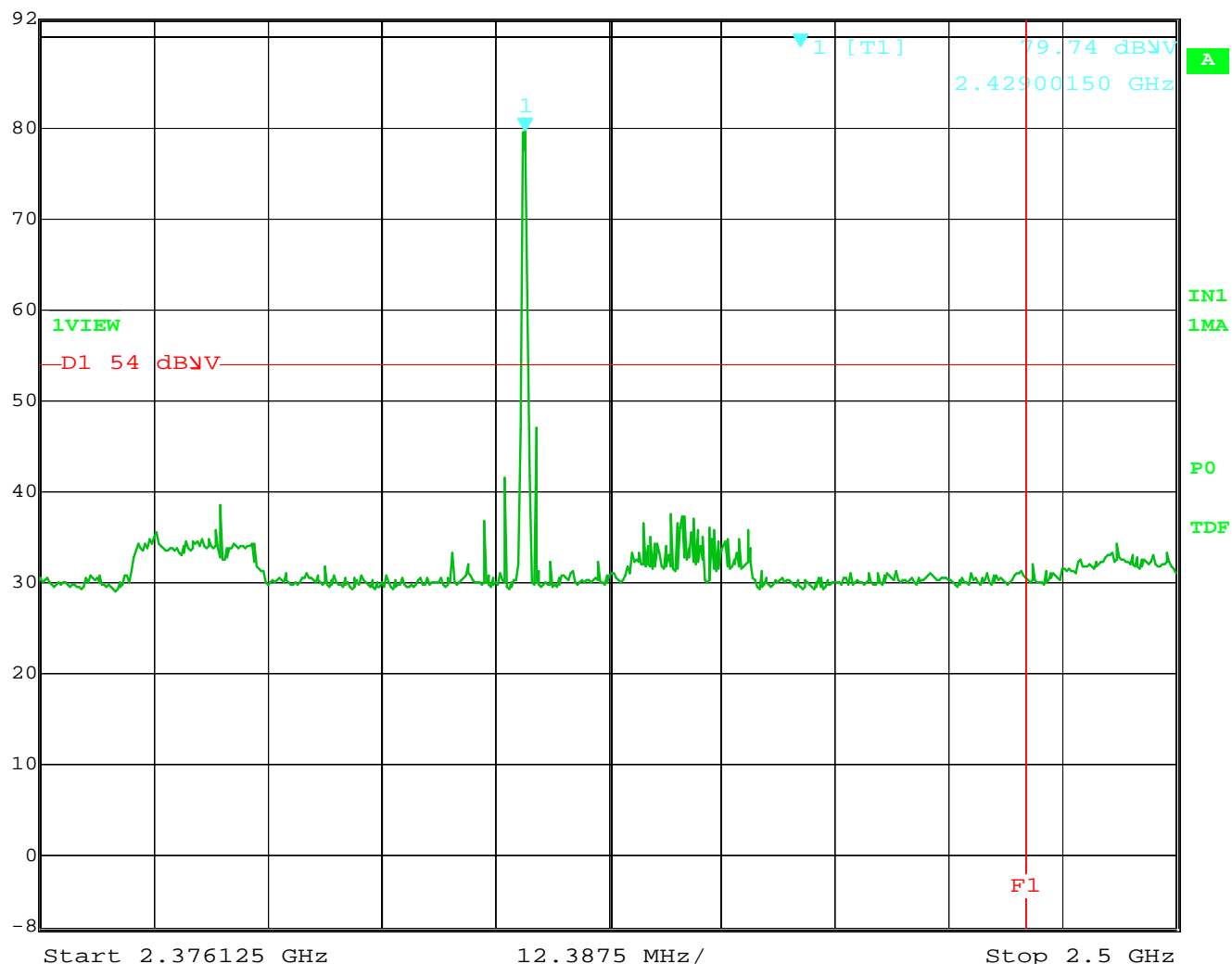
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Marker 1 [T1] RBW 100 kHz RF Att 0 dB  
Ref Lvl 79.74 dBμV VBW 300 kHz  
92 dBμV 2.42900150 GHz SWT 31 ms Unit dBμV



Date: 17.OCT.2011 15:02:06

Note: Measured using the Peak detectors.

Figure 10: Upper Band Edge Measurement (Radiated Emission)

The EUT is compliant with the rules.

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#### 4.1 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 near by electronic equipment.

##### 4.1.1 Over View of Test

Results	NA (as tested per this report)				Date		
Standard	FCC Parts 15.207(a) and RSS-GEN 7.2.4						
Product Model	55119			Serial#	NFFJ-00256-00166		
Test Set-up	Tested in shielded room. EUT placed on table, see test plans for details						
EUT Powered By	Battery Operated	Temp	°C	Humidity	%	Pressure	mbar
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		Randall Masline			

##### 4.1.2 Test Procedure

Conducted emissions tests were performed using the procedures of ANSI C64.10: 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 the shielded room using procedures specified in the test plan and standard.

##### 4.1.3 Deviations

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

The EUT is Battery operated and Conducted Emissions are not applicable, therefore no testing was performed.

## 4.2 99% Power Bandwidth – RSS-210 A1.1.3

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.

### 4.2.1 Test Overview

Results	Complies (as tested per this report)					Date	10/17/2011	
Standard	RSS-210 Section A1.1.3							
Product Model	55119				Serial#	NFFJ-00256-00166		
Test Set-up	Tested on 10m O.A.T.S. at 3 m placed on turn-table, see test plans for details							
EUT Powered By	Battery Operated	Temp	23°C	Humidity	43%	Pressure	1003mbar	
Perf. Criteria	(Below Limit)			Perf. Verification		Readings Under Limit		
Mod. to EUT	None			Test Performed By		Randall Masline		

### 4.2.2 Test Procedure

Using the procedures of RSS-GEN section 4.6.1, the 1 kHz resolution bandwidth is 1% of the 1 MHz span. The Video bandwidth is 3 times that of the resolution bandwidth.

The limit of the bandwidth would be 0.5% of 2.4 GHz or 12 MHz.

### 4.2.3 Deviations

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

### 4.2.4 Final Results

The measured 99% bandwidth is 921 kHz, which is well below the 12 MHz limit.

The EUT met the performance criteria requirement as specified in the test plan of this report and in the standards.

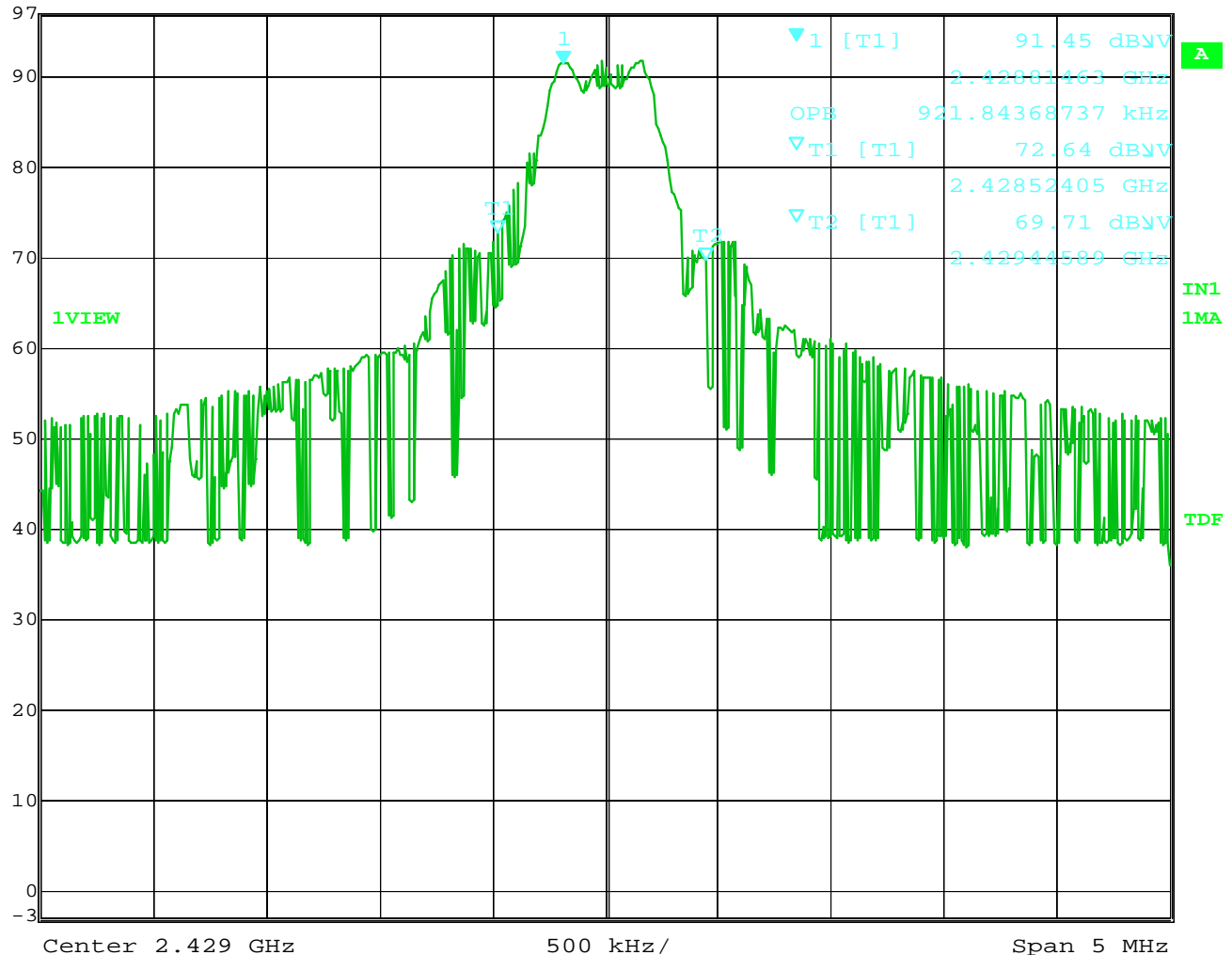
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#### 4.2.5 Final Data



Marker 1 [T1] RBW 100 kHz RF Att 20 dB  
Ref Lvl 91.45 dBμV VBW 300 kHz  
97 dBμV 2.42881463 GHz SWT 100 ms Unit dBμV



Date: 17.OCT.2011 16:35:00

Figure 11 – 99% Power Bandwidth = 921 kHz

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

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### 4.3 Extreme Voltage Requirements - FCC Part 15.249(b)(2)

FCC Part 15.249(b)(2) states that for intentional radiators, the frequency tolerance of the carrier signal shall be maintained within +/-0.001% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage and for a variation of the primary supply voltage between 85% and 115% of the nominal rated supply voltage, at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

#### 4.3.1 Over View of Test

Results	Complies (as tested per this report)					Date	10/18/2011		
Standard	FCC Part 15.249(b)(2)								
Product Model	55119				Serial#	NFFJ-00256-00166			
Test Set-up	Tested in shielded room. EUT placed on table, see test plans for details								
EUT Powered By	Battery Operated	Temp	23°C	Humidity	43%	Pressure	1009mbar		
Mod. to EUT	None	Test Performed By			Randall Masline				

#### 4.3.2 Test Procedure

Since this module could be used only in battery operation, only temperature testing was performed.

#### 4.3.3 Final Test

Temp	Frequency (MHz)	Permitted Band (MHz)	Results
+20° C	2428.91483	2428.89054 – 2429.15772	<b>Ambient</b>
-20° C	2429.02473	2428.89054 – 2429.15772	<b>Complies</b>
0° C	2429.00150	2428.89054 – 2429.15772	<b>Complies</b>
+50° C	2428.92034	2428.89054 – 2429.15772	<b>Complies</b>

As tested, the EUT was found to be compliant to the requirements of the test standard.

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## 5 Emissions in Receive Mode.

### 5.1 Radiated Emissions in Receive mode – FCC 15.109(a) and RSS-210

This test measures the electromagnetic levels of spurious signals generated by the EUT that radiated from the EUT and may affect the performance of other nearby electronic equipment.

#### 5.1.1 Over View of Test

Results	Complies (as tested per this report)					Date	10/18/2011	
Standard	FCC Part 15.109(a) and RSS-210 2.2 and 2.3							
Product Model	55119				Serial#	NFFJ-00256-00166		
Configuration	See test plan for details							
Test Set-up	Tested on 10m O.A.T.S. at 3 m placed on turn-table, see test plans for details							
EUT Powered By	Battery Operated	Temp	23°C	Humidity	43%	Pressure	1009mbar	
Frequency Range	30 MHz to 1000 MHz @ 3m							
Perf. Criteria	(Below Limit)			Perf. Verification		Readings Under Limit		
Mod. to EUT	None			Test Performed By		Randall Masline		

#### 5.1.2 Test Procedure

Radiated 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 30 MHz to 1000 MHz was investigated for radiated emissions.

Radiated emission testing was performed at a distance of 3 meters.

#### 5.1.3 Deviations

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

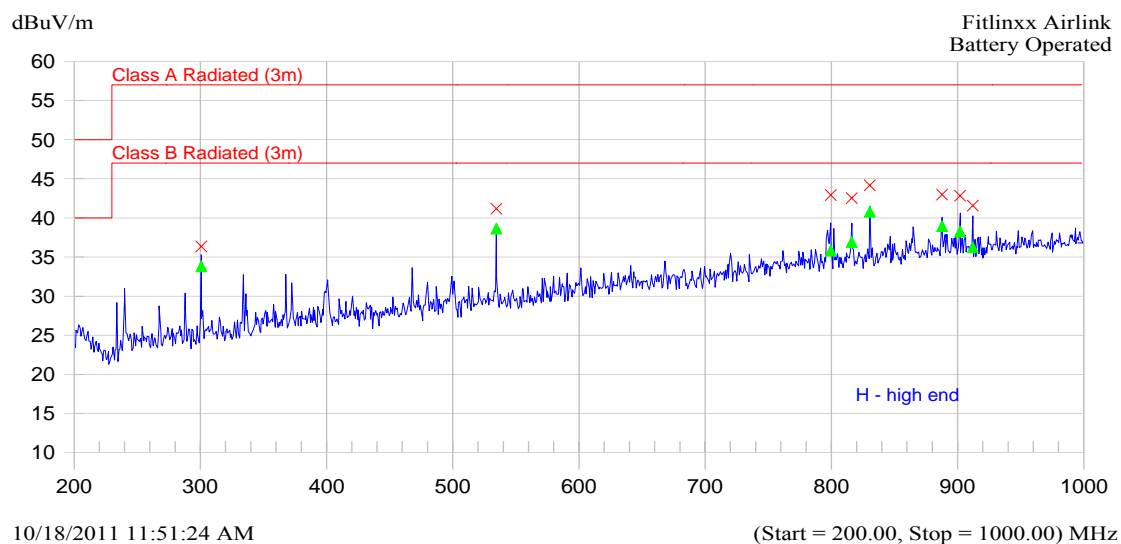
#### 5.1.4 Final Test

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

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### 5.1.5 Prescan Graphs and Tabulated Data

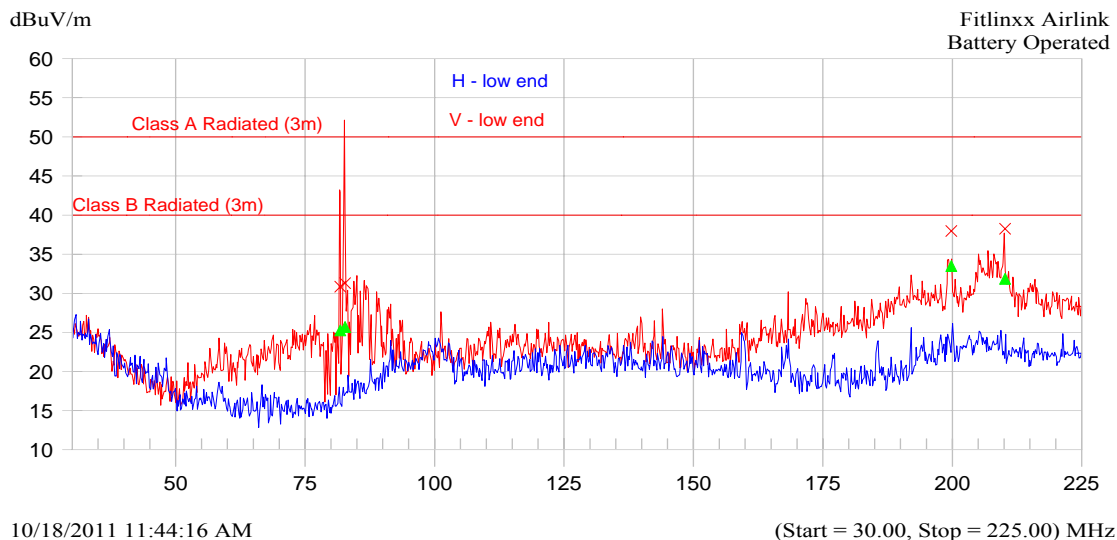
H - high end



Frequency MHz	Peak dBuV/m	QP dBuV/m	Class B-QP dB	Class A-QP dB	Trace Name
300.692	36.3	33.8	-13.2	-23.2	H - high end
534.572	41.2	38.6	-8.4	-18.4	H - high end
799.604	42.9	35.8	-11.2	-21.2	H - high end
816.160	42.5	36.9	-10.1	-20.1	H - high end
830.467	44.2	40.8	-6.2	-16.2	H - high end
887.723	43.0	38.9	-8.1	-18.1	H - high end
902.064	42.8	38.3	-8.7	-18.7	H - high end
911.986	41.6	36.2	-10.8	-20.8	H - high end

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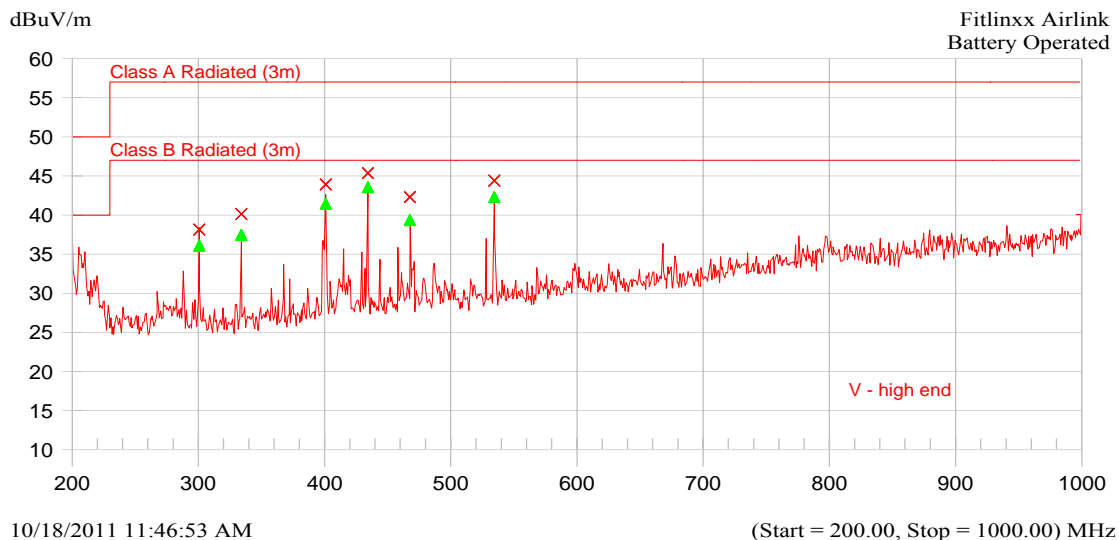
**low end**



Frequency MHz	Peak dBuV/m	QP dBuV/m	Class B-QP dB	Class A-QP dB	Trace Name
81.793	30.8	25.3	-14.7	-24.7	V - low end
82.706	31.3	25.7	-14.3	-24.3	V - low end
199.790	38.0	33.5	-6.5	-16.5	V - low end
210.194	38.2	31.8	-8.2	-18.2	V - low end

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## V - high end



Frequency MHz	Peak dBuV/m	QP dBuV/m	Class B-QP dB	Class A-QP dB	Trace Name
300.683	38.1	36.1	-10.9	-20.9	V - high end
334.099	40.1	37.5	-9.5	-19.5	V - high end
400.908	43.9	41.4	-5.6	-15.6	V - high end
434.324	45.4	43.6	-3.4	-13.4	V - high end
467.722	42.3	39.4	-7.6	-17.6	V - high end
534.561	44.4	42.3	-4.7	-14.7	V - high end

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**Final Data**

Radiated Emissions Measurements									
Standard:	EN 55022:2006 + A1:2007 Class B/FCC Part 15.109(g)/ICES-003 Issue 4					PRESCAN or FINAL:	final	Date: 10/18/2011	
Device Tested:	Fitlinxx Airlink					Distance:	3m		
	Measured Level								
Meas #	Freq (MHz)	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Δ	Result	Antenna Polarization	Angle (degrees)	Antenna Height (meters)	Comment
1	81.7930	26.50	40.00	-13.50	Complied	Vertical	0	1.00	
2	82.7060	26.70	40.00	-13.30	Complied	Vertical	0	1.00	
3	199.7900	31.00	40.00	-9.00	Complied	Vertical	0	1.00	
4	210.1940	34.40	40.00	-5.60	Complied	Vertical	0	1.00	
5	400.9080	36.60	47.00	-10.40	Complied	Vertical	0	1.00	
6	434.3240	41.00	47.00	-6.00	Complied	Vertical	0	1.00	
7	534.5610	36.60	47.00	-10.40	Complied	Vertical	0	1.00	
7	300.6920	33.60	47.00	-13.40	Complied	Horizontal	0	3.00	
8	534.5720	35.00	47.00	-12.00	Complied	Horizontal	0	3.00	
9	830.4670	41.00	47.00	-6.00	Complied	Horizontal	0	1.00	
10	902.0640	39.20	47.00	-7.80	Complied	Horizontal	0	1.00	

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## 6 RF Exposure

### 6.1 Exposure Requirements – FCC KDB # 44798 DO1 and RSS-102 Issue 8

FCC KDB # 44798 DO1 - Mobile and Portable Device RF Exposure and Procedures and Equipment Authorization Policies section 1) c) states that unless excluded by *specific FCC test procedures*, portable devices with output power  $> 60/f_{\text{GHz}}$  mW shall include SAR data for equipment approval.

RSS-102 section 2.5.1 states that a device is exempt from SAR evaluation if the frequency is “above 2.2 GHz and up to 3 GHz inclusively, and with output power (i.e. the higher of the conducted or radiated (e.i.r.p.) source-based, time-averaged output power) that is less than or equal to 20 mW for general public use...”.

#### 6.1.1 Test Procedure

If the antenna is located  $> 20\text{cm}$  from the user, then an MPE calculation is acceptable.

If the antenna is located  $< 20\text{cm}$  (portable / mobile / hand-held device) from the user, then SAR evaluation is required.

#### 6.1.2 Evaluation

The EUT is a hand-held portable device where the antenna can be located less than 20cm from the user, therefore SAR evaluation is required.

##### 6.1.2.1 Evaluation for FCC

FCC 447498 D01 Mobile Portable RF Exposure v04, Paragraph 2) section a) i) states:

“A device may be used in portable exposure conditions with no restrictions on host platforms when either the source-based time-averaged output power is  $\leq 60/f_{\text{GHz}}$  mW or all measured 1-g SAR are  $< 0.4 \text{ W/kg}$ .”

The minimum power that requires SAR is  $60 / 2.4 \text{ GHz}$  or 25 mW.

The maximum power output plus maximum antenna gain of the EUT is:

$-21\text{dBm} + 1\text{dBi}$  (antenna) =  $-20 \text{ dBm}$  which is equivalent to 0.01 mW.

The EUT is well below the 25mW power.

##### 6.1.2.2 Evaluation for Industry Canada

The maximum power output plus maximum antenna gain of the EUT is:

$-21\text{dBm} + 1\text{dBi}$  (antenna) =  $-20 \text{ dBm}$  which is equivalent to 0.01 mW.

The EUT is well below the 20mW power.

#### 6.1.3 Conclusion

SAR data is not required for either FCC or Industry Canada.

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