Electromagnetic Compatibility Test Report

Prepared in accordance with

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

On

WATCH

IRONMAN

Timex
555 Christian Road
Middlebury, CT 06762

Prepared by:

TUV Rheinland of North America, Inc.

TIMEX GROUP

Manufacturer's statement - attestation

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

a) That they have 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.

Samuel Everett	
Printed name of official	Signature of official
555 Christian Road Middlebury, CT 06762	
Address	9/18/2014 Date
203-346-5603	severett@timexgroup.com
Telephone number	Email address of official

Client:	Timex 555 Christian Road Middlebury, CT 06762	***Name:*** ***Tel:*** ***Fax:*** ***e-mail***	Stan Vreeland 203-346-5485 860-302-1275 svreeland@timex.com
Identification:	WATCH	***Serial No.:***	E952-48
Test item:	IRONMAN	***Date tested:***	9/3/2014
Testing location:	TUV Rheinland of North America 710 Resende Road, Building 199 Webster, NY 14580 U.S.A.		Tel: (585) 645-0125
Test specification:	**Emissions:** FCC Part 15, Subpart C, RSS-210 Issue 8: AS/NZS 4268:2012 FCC Parts 15.107(c), 15.207(c) and RSS-GEN 7.2.2 FCC Parts 15.247(d), 15.205, 15.209, 15.215(c) and RSS-210 A8.5 and RSS-GEN 7.2.1 FCC Part 15.247(a)(2) and RSS-210 A1.1.3, FCC Part 15.247 and RSS-210 Annex 8, FCC Part 15.247(b)(3) and RSS-210 A8.4(4), FCC Part 15.247(d) and RSS-210 2.2, FCC Parts 15.109(a) and RSS-210 2.2, 2.6,A8.5, RSS-GEN 7.2.3.2 FCC Parts 15.247(i) and RSS-102, Issue 4,		
Test Result	**The above product was found to be Compliant to the above test standard(s)**		

tested by: Randall Masline	***reviewed by:*** Cecil Gittens
Randall E Masline 6 October 2014 ***Signature***	Cecil Gittens 6 October 2014 ***Signature***
Other Aspects:	**None**

Abbreviations: OK, Pass, Compliant, Complies = passed
Fail, Not Compliant, Does Not Comply = failed
N/A = not applicable

		Industry Canada	**VCCI**	**BSMI**
US5253	**Testing Cert.# 3331.04**	**3466C-1**	**A-0037**	**SL2-IN-E-050R**

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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 9/3/2014 on the WATCH, IRONMAN No. IRONMAN, manufactured by Timex 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 IRONMAN 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 *Summary of Test Results*

Applicant	Timex 555 Christian Road Middlebury, CT 06762	**Tel**	203-346-5485	**Contact**	Stan Vreeland
		Fax	860-302-1275	**e-mail**	svreeland@timex.com

Description:	WATCH	**Model:**	IRONMAN
Serial Number	E952-48	**Test Voltage/Freq.**	3.7 VDC Battery
Test Date Completed:	9/3/2014	**Test Engineer**	Randall Masline

Standards	Watch	Severity Level or Limit	Criteria	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 15.247 and RSS-210 Annex 8	Operation within the band 2400 to 2483.5 MHz	See called out parts below	Below Limit	**Complies**
FCC Parts 15.247(d), 15.205, 15.209, 15.215(c) and RSS-210 A8.5 and RSS-GEN 7.2.1	Out-of-Band Spurious and Harmonic Emissions (EUT in Transmit Mode)	Below the applicable limits	Below Limit	**Complies**
FCC Parts 15.107(c), 15.207(c) and RSS-GEN 7.2.2	Conducted Emissions on AC Mains	NA, EUT is 3.7 VDC Battery operated	NA	NA
FCC Part 15.247(d) and RSS-210 2.2	Band Edge Radiated Emission	Per requirements of the standard	Below Limit	**Complies**
FCC Part 15.247(b)(3) and RSS-210 A8.4(4)	Conducted Output Power	Shall not exceed 1.0 Watts	Below Limit	**Complies**
FCC Part 15.247(a)(2) and RSS-210 A1.1.3	Occupied Bandwidth	6 dB ≥ 500 kHz 99% BW ≤ 0.5% of center freq.	Within Limit	**Complies**
FCC Part 15.247(a)(3)	Time of Occupancy	Shall not be greater tha 0.4 seconds within a period of 0.4 x number of channels	Below Limit	**Complies**
FCC Part 15.31(e)	Voltage Requirements	Tested with a fully Charged 3.7 VDC Battery	Below Limit	**Complies**
FCC Parts 15.109(a) and RSS-210 2.2, 2.6,A8.5, RSS-GEN 7.2.3.2	Radiated Emissions while EUT in Receive Mode	Below limit of section 15.109(a) Class B	Below Limit	**Complies**
FCC Parts 15.247(i) and RSS-102, Issue 4	RF Exposure	SAR or MPE Requirements	Below Limit	Complies (without testing)
FCC Part 15.203	Antenna Requirements	The antenna is permanently attached		Complies (without testing)
AS/NZS 4268:2012	Radio equipment and systems-Short range devices-Limits and methods of measurement	See called out basic standards below	See Below	**Complies**

2 Laboratory Information

2.1 Accreditations & Endorsements

2.1.1 US Federal Communications Commission

TUV Rheinland of North America located at, 710 Resende Road, Building 199, Webster, NY 14580 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 ILAC/A2LA

This is a program which is administered under the auspices of A2LA. The laboratory has been assessed and accredited in accordance with ISO Standard 17025:2005 (Certificate Number: 3331.04). 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 A-0037, R-3673, C-4113, C-4114, C-4115, T-1158, T-1159 G429.

2.1.4 Industry Canada

(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.

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:

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 #	Ref.	Serial #	Last Cal dd/mm/yy	Next Cal dd/mm/yy	Test
Radiated Emissions							
Horn	ETS/Lindgren	3117		00109306	06-Jan 14	06-Jan-16	RE
BiLog	Chase	CBL6111	C041	1170	12-Sept-12	12-Sept-14	RE
Receiver (20Hz-40GHz)	Rohde & Schwarz	ESI(B) 40	C320	839283/005	16-Jan-14	16-Jan-15	RE
Multimeter	Fluke	83	C437	48162892	06-Aug-14	06-Aug-15	RE
BiLog	Chase	CBL6111B	C448	2081	22-Aug-13	22-Aug-15	RE
Horn(18-26.5 GHz)	EMCO	3160-09	C447	C447	8-Mar-13	8-Mar-15	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

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 Bluetooth watch radio operates in the 2400 -2483.5 MHz band and uses 79 Channels, and under LE (low energy) will use 40 channels.

The antenna gain is -1.3 dBi

4 Radiated Emissions

4.1 Spurious Emissions Outside the band - FCC 15.247(d), RSS-210 A8.5

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of desired power, based on either RF conducted or radiated measurements. Conducted antenna port measurements are provided below to show that the EUT meets these requirements at the band edges.

4.1.1 Over View of Test

Results	**Complies** (as tested per this report)				**Date**	9/10/2014	
Standard	FCC Parts 15.205, 15.209, 15.215(c), 15.247(d), RSS-210 A8.5, and RSS-GEN 7.2.1						
Product Model:	IRONMAN			**Serial#**	E952-48		
Test Set-up	Tested in a 10m Anechoic chamber, placed on a 1.0m x 1.5m non-conductive table 80cm above the ground plane on a turn-table. See test plans for details						
EUT Powered By	3.7 VDC Battery	**Temp**	76 ºF	**Humidity**	36%	**Pressure**	1007 mbar
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.

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

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

4.1.4 Final Test

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

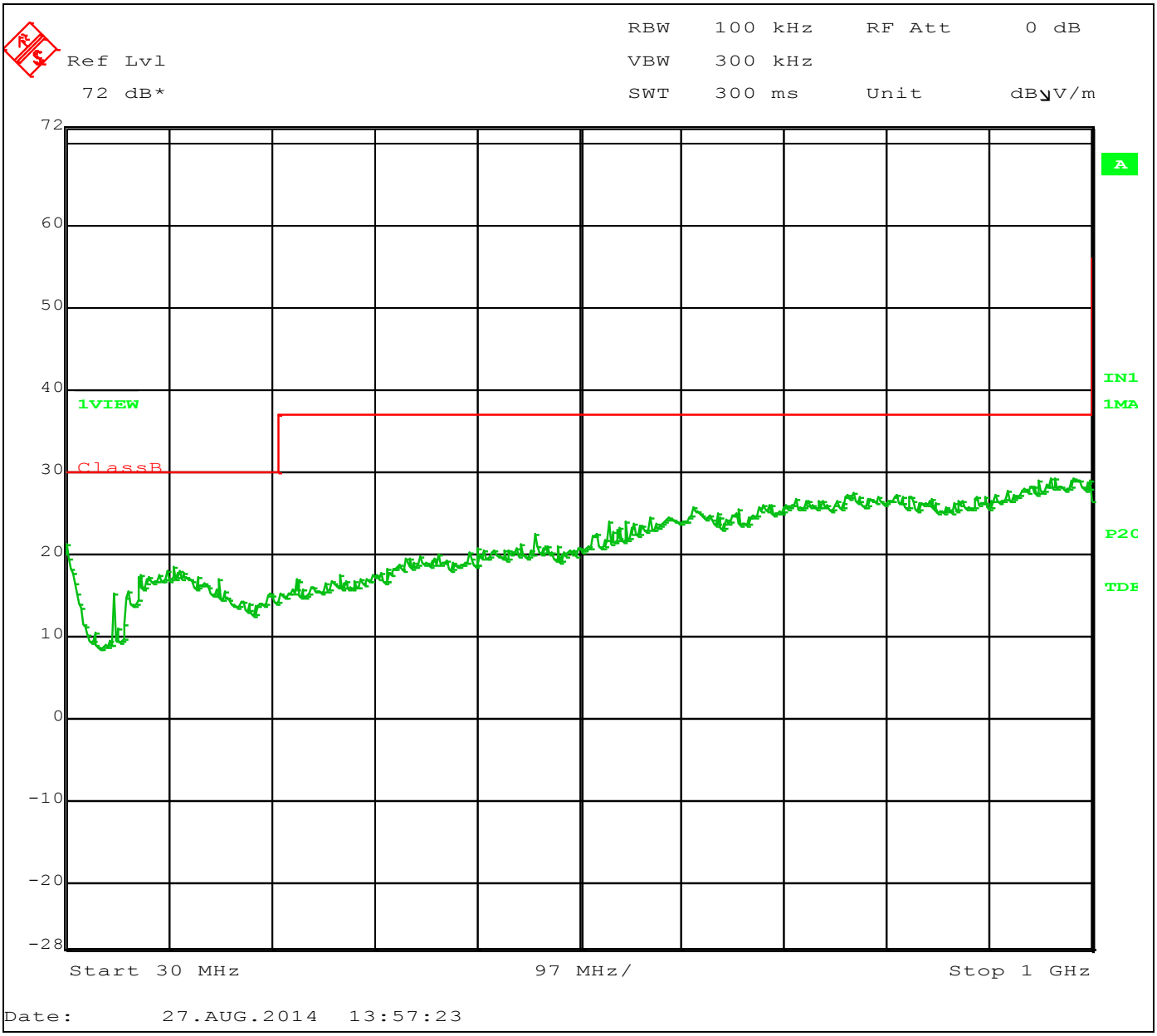
4.1.4.1 Emissions Outside the Frequency Band

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of desired power, based on either RF conducted or radiated measurements. Conducted antenna port measurements are provided below to show that the EUT meets these requirements at the band edges.

NOTE: Scans were taken with Res band of 100 kHz and Vid band of 300 kHz, the actual measurements were taken with a Res band of 1 MHz and Vid Band of 3 MHz

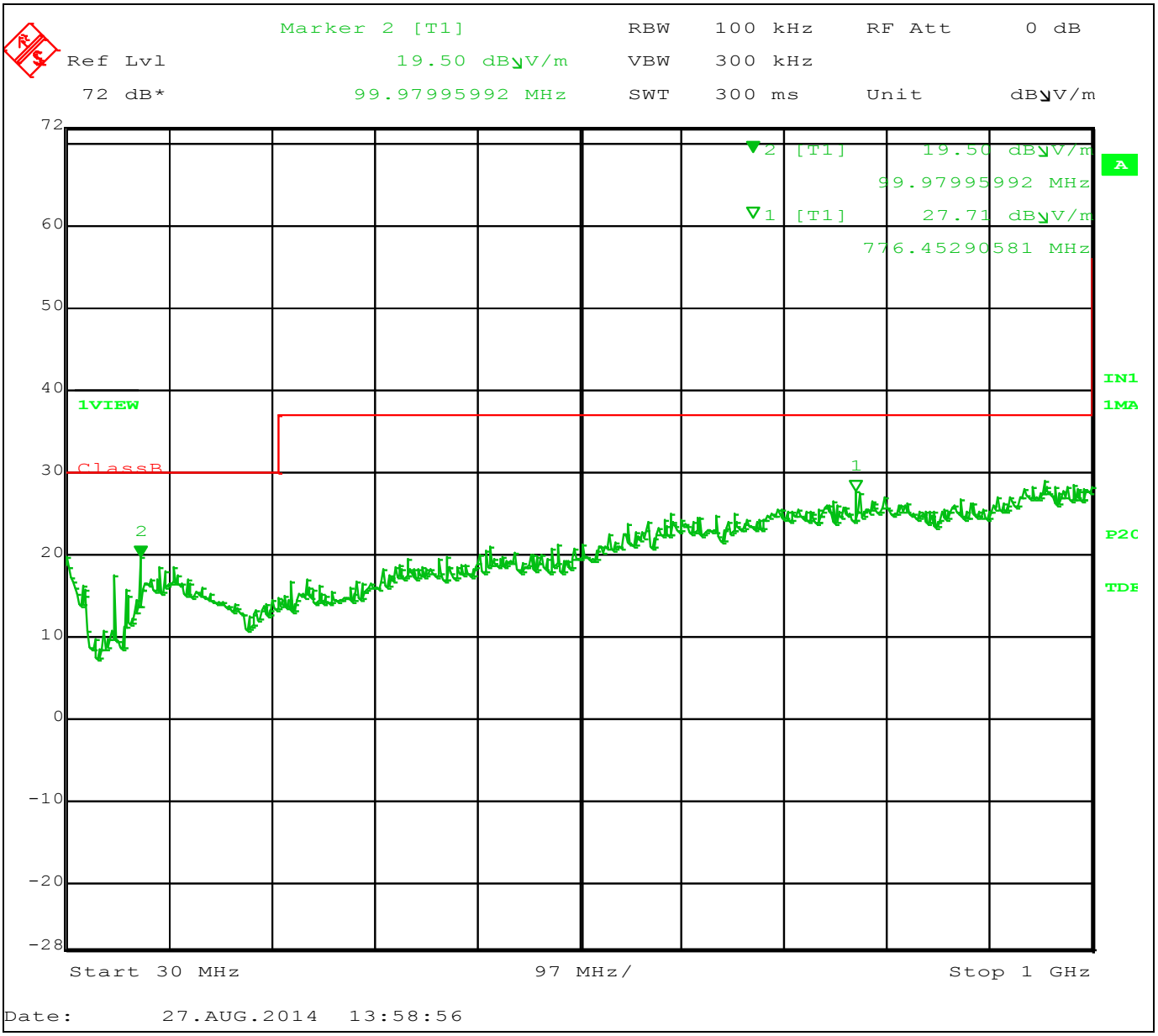
Worst-Case Radiated Emissions 30MHz to 1000MHz

Horizontal

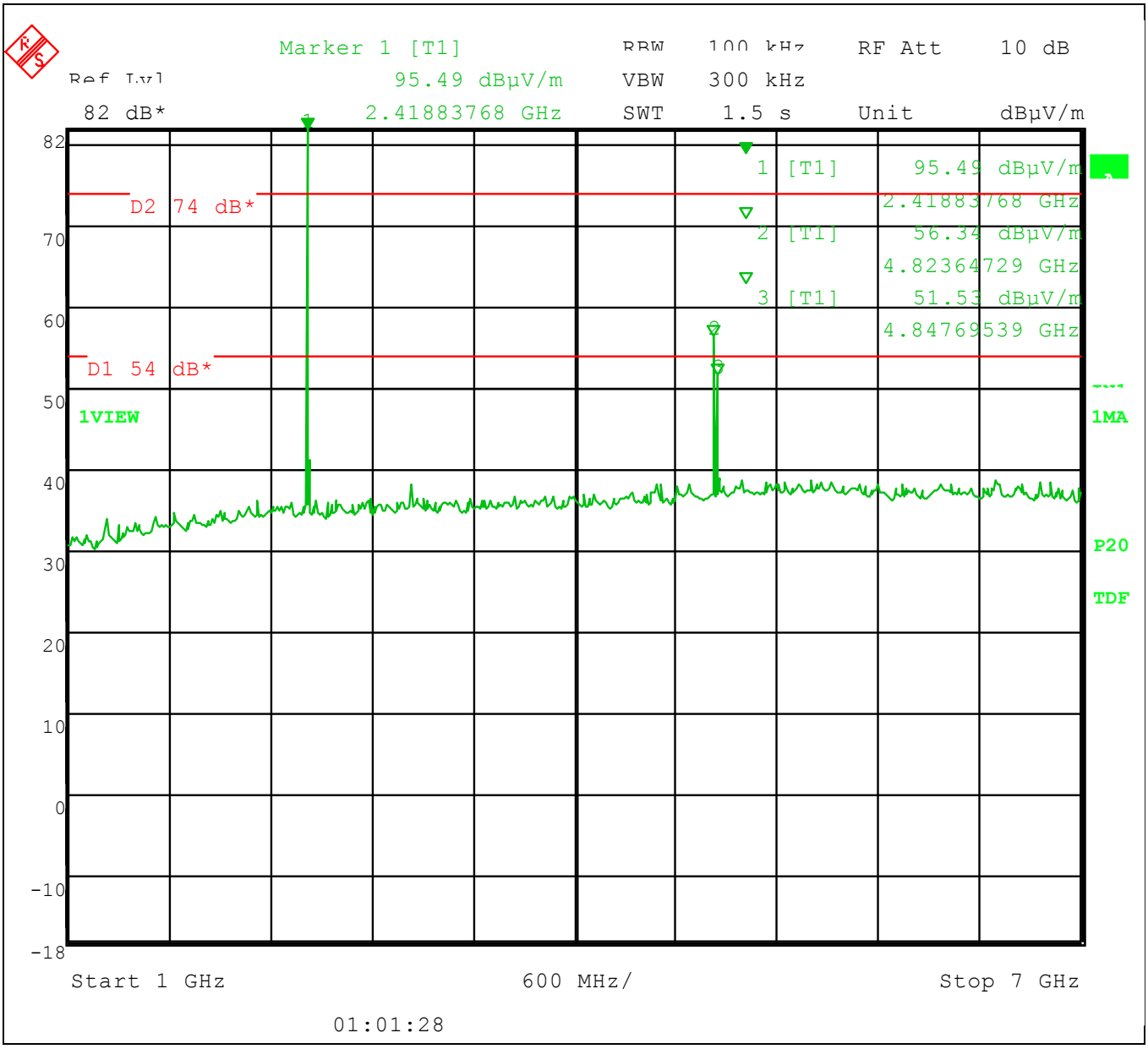


Worst-Case Radiated Emissions 30MHz to 1000MHz

Vertical

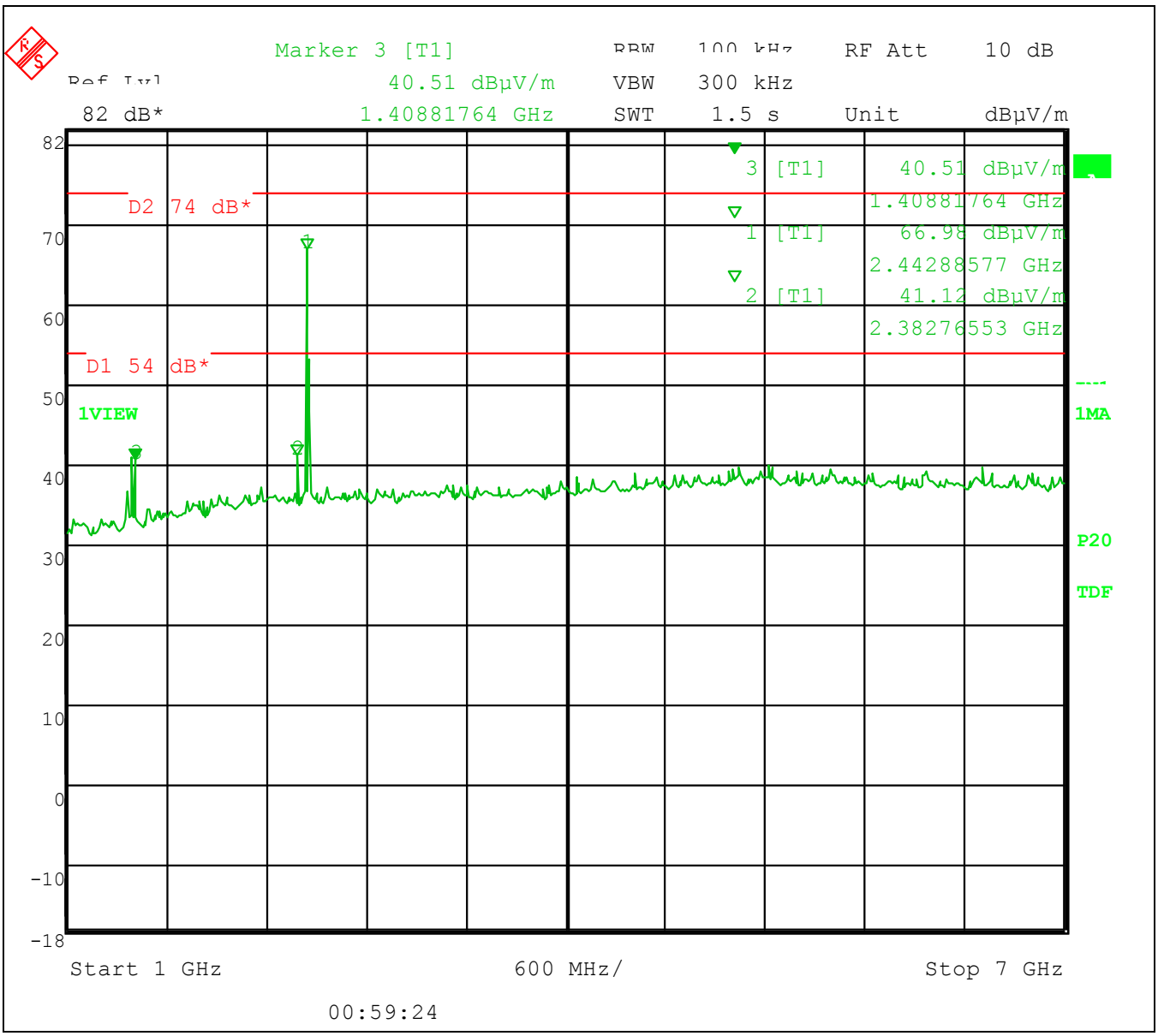


Worst-Case Radiated Emissions 1GHz to 7GHz
Horizontal



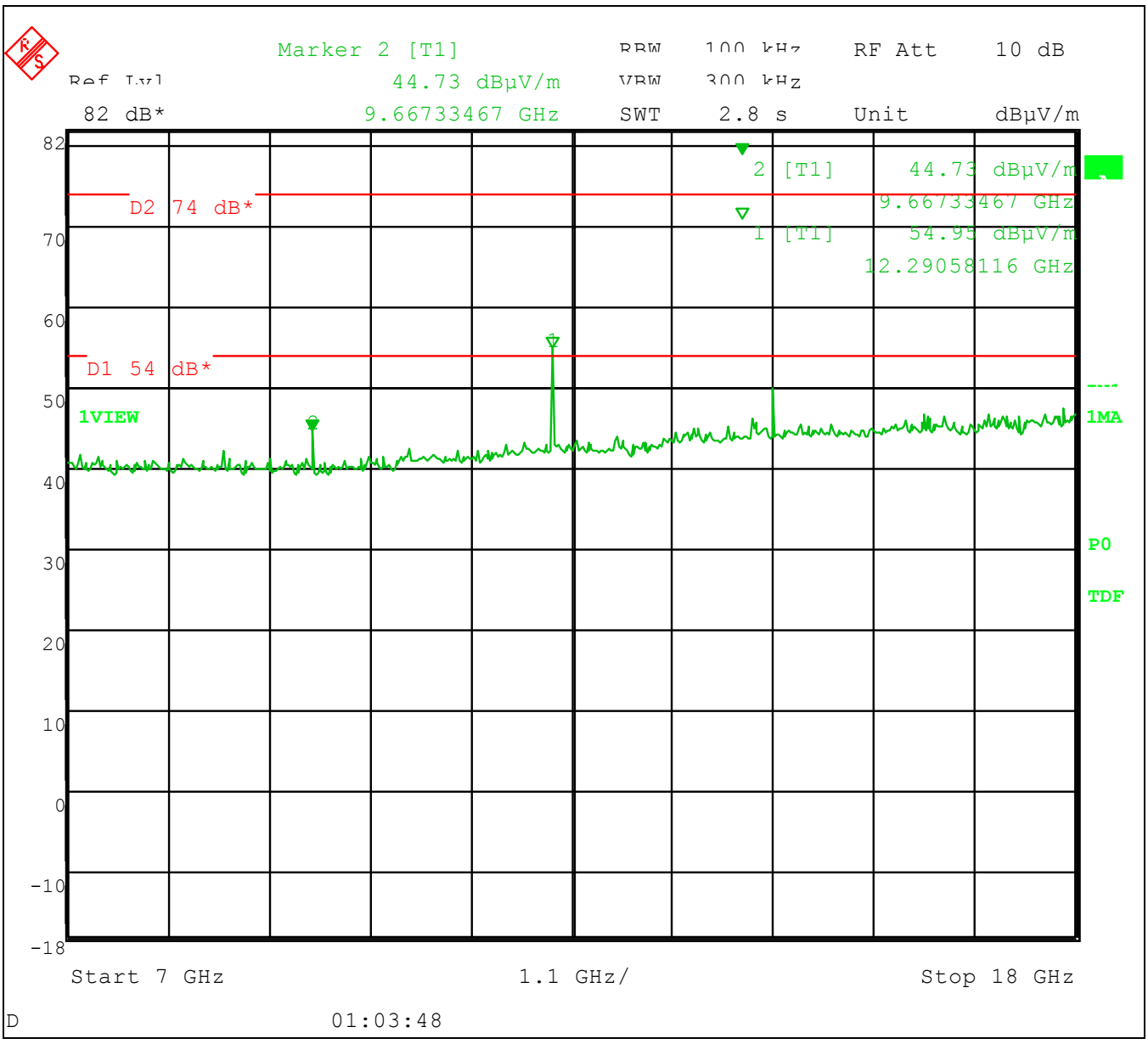
NOTE: Scans were taken August 28, 2014

Worst-Case Radiated Emissions 1GHz to 7GHz
Vertical



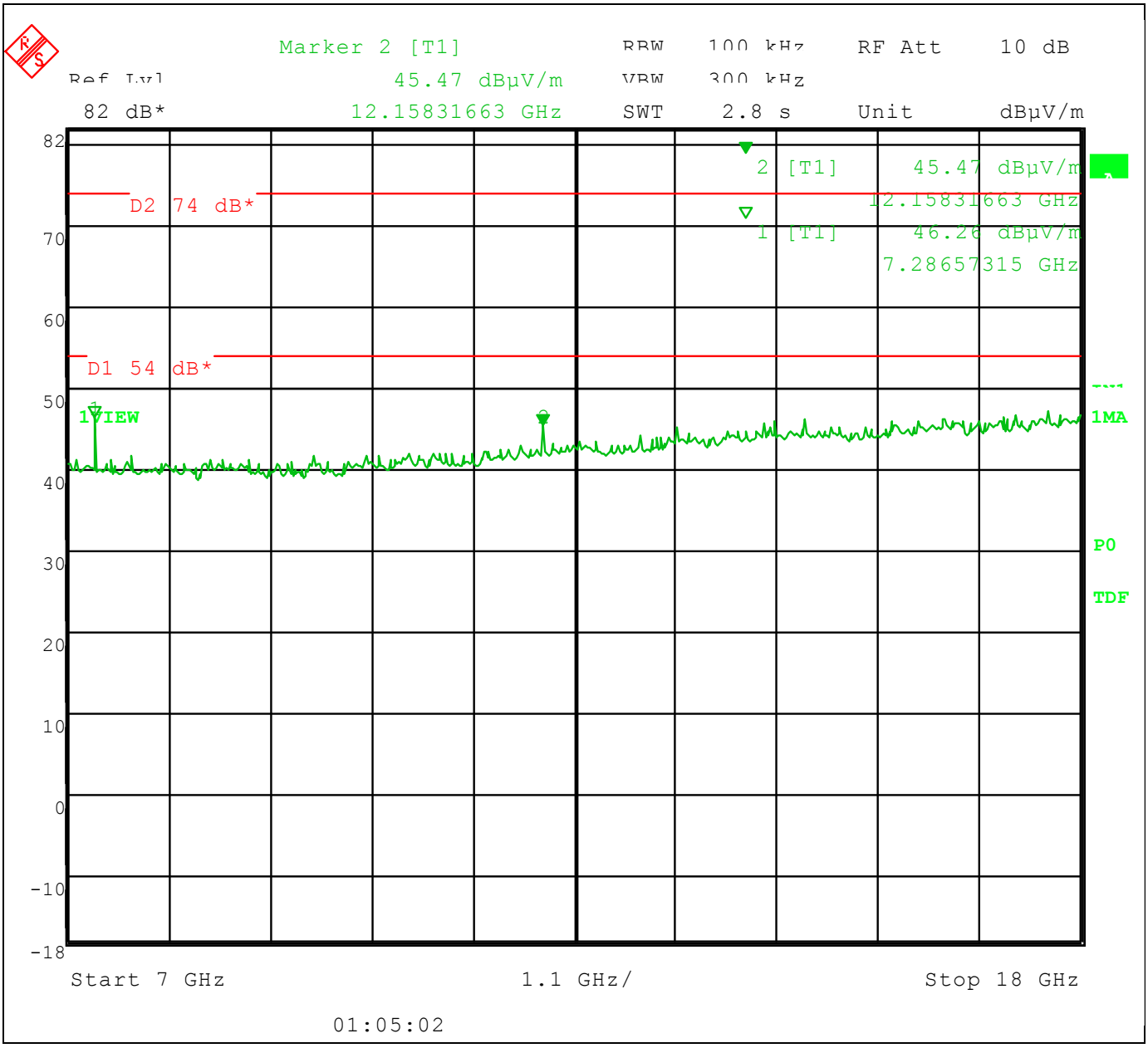
NOTE: Scans were taken August 28, 2014

Worst-Case Radiated Emissions 7GHz to 18GHz
Horizontal



NOTE: Scans were taken August 28, 2014

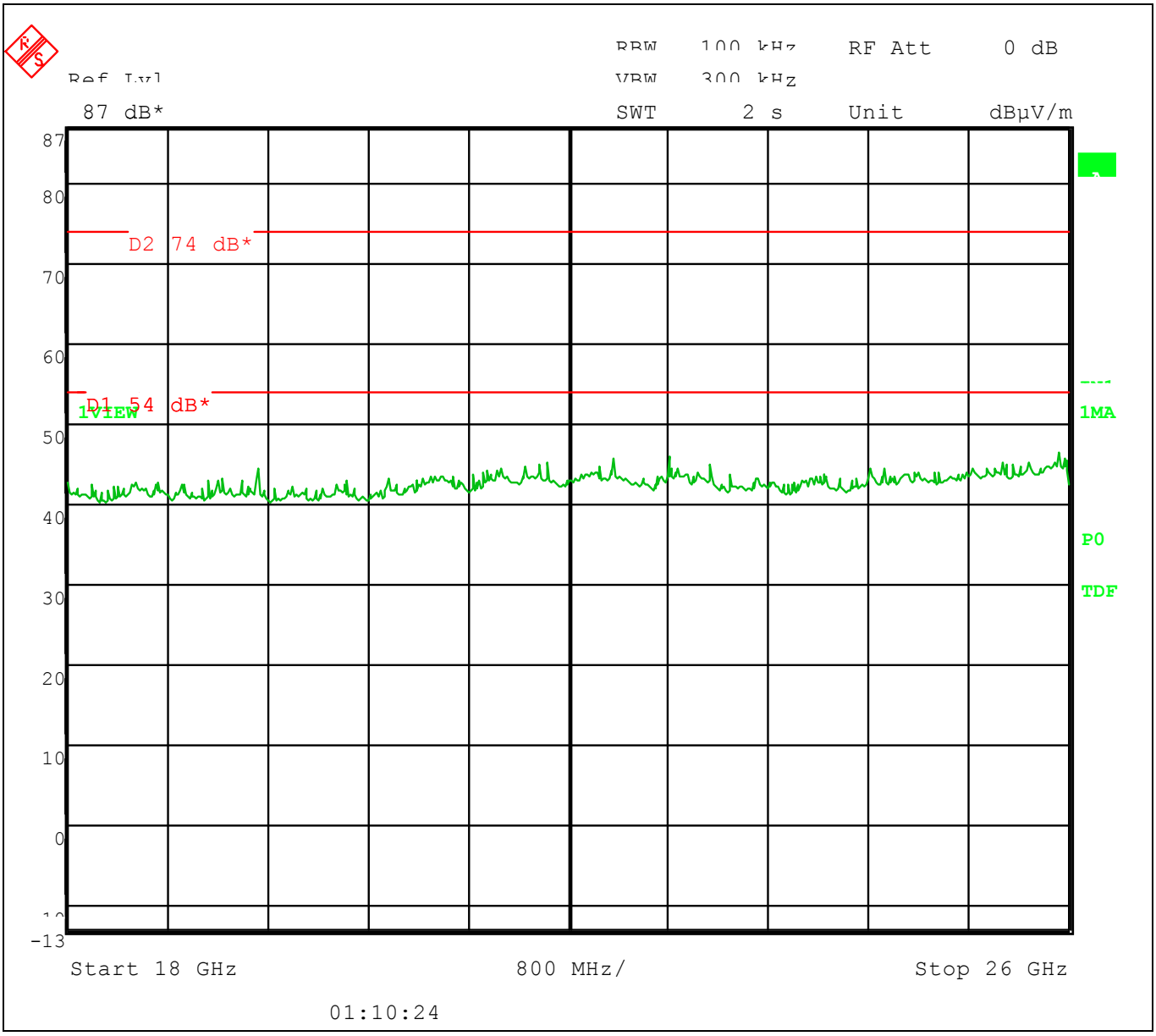
Worst-Case Radiated Emissions 7GHz to 18GHz
Vertical



NOTE: Scans were taken August 28, 2014

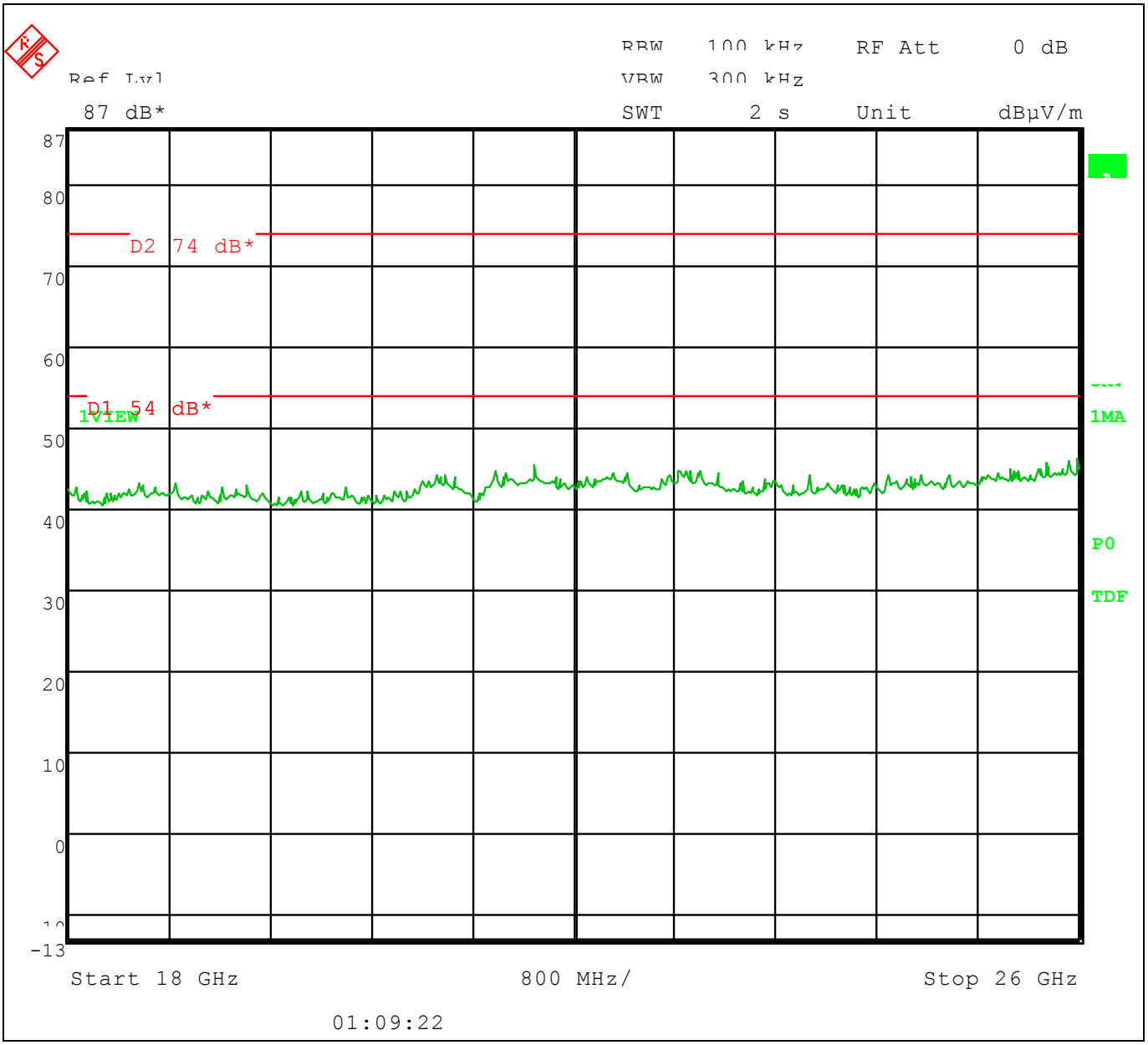
Worst-Case Radiated Emissions 18GHz to 26GHz

Horizontal



NOTE: Scans were taken August 28, 2014

Worst-Case Radiated Emissions 18GHz to 26GHz
Vertical



NOTE: Scans were taken August 28, 2014

4.2 Band Edge

4.2.1 Test Over View

Results	**Complies** (as tested per this report)				**Date**	9/9/2014	
Standard	FCC Part 15.247(d), RSS 210 2.2						
Product Model	IRONMAN			**Serial#**	E952-48		
Test Set-up	Radiated at 3m						
EUT Powered By	3.7 VDC Battery	**Temp**	76º F	**Humidity**	46%	**Pressure**	1002 mbar
Perf. Criteria	(Below Limit)		**Perf. Verification**		Readings Under Limit		
Mod. to EUT	None		**Test Performed By**		Randall Masline		

4.2.2 Test Procedure

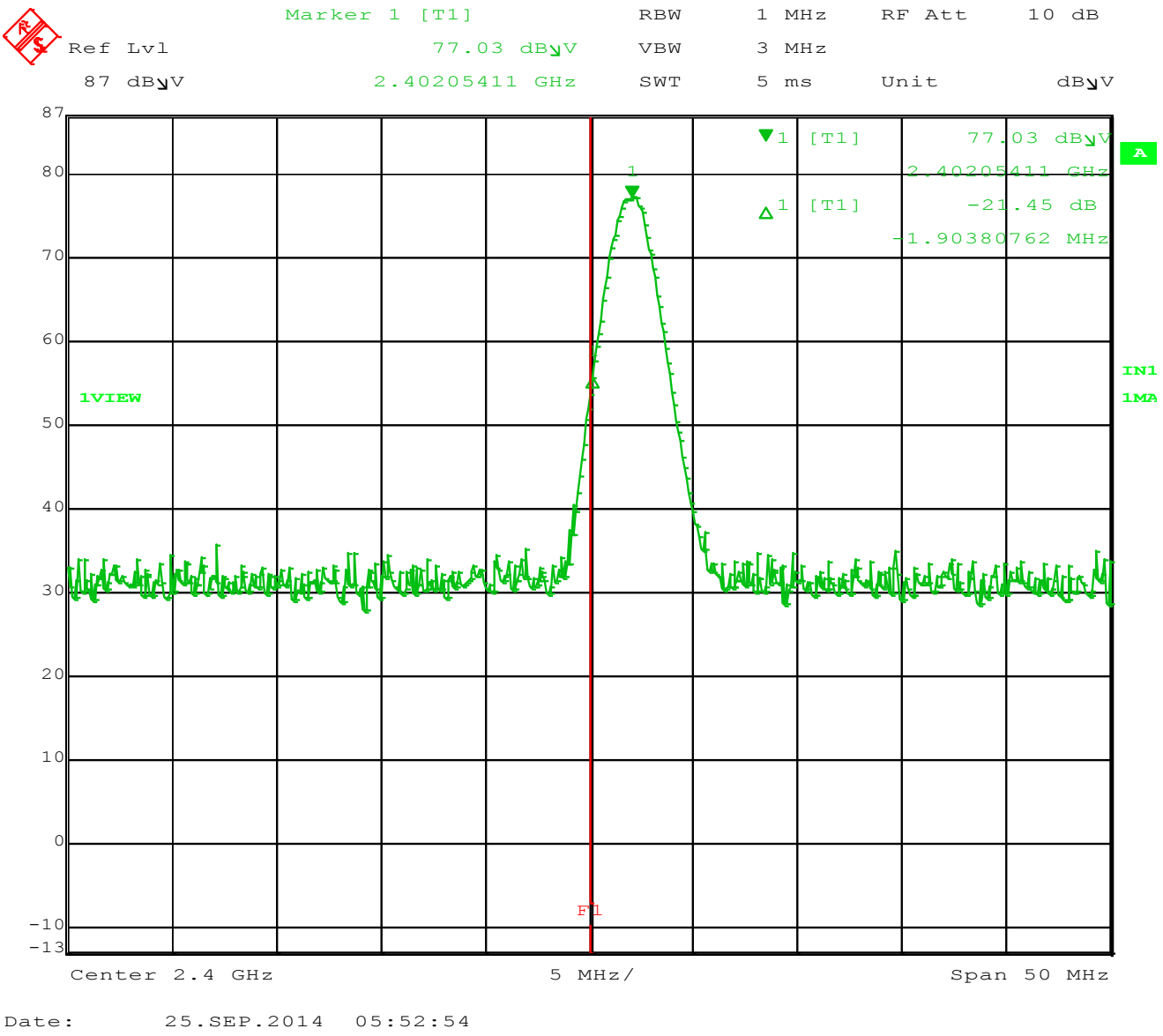
Intentional radiators operating under the alternative provisions to the general emission limits must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

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

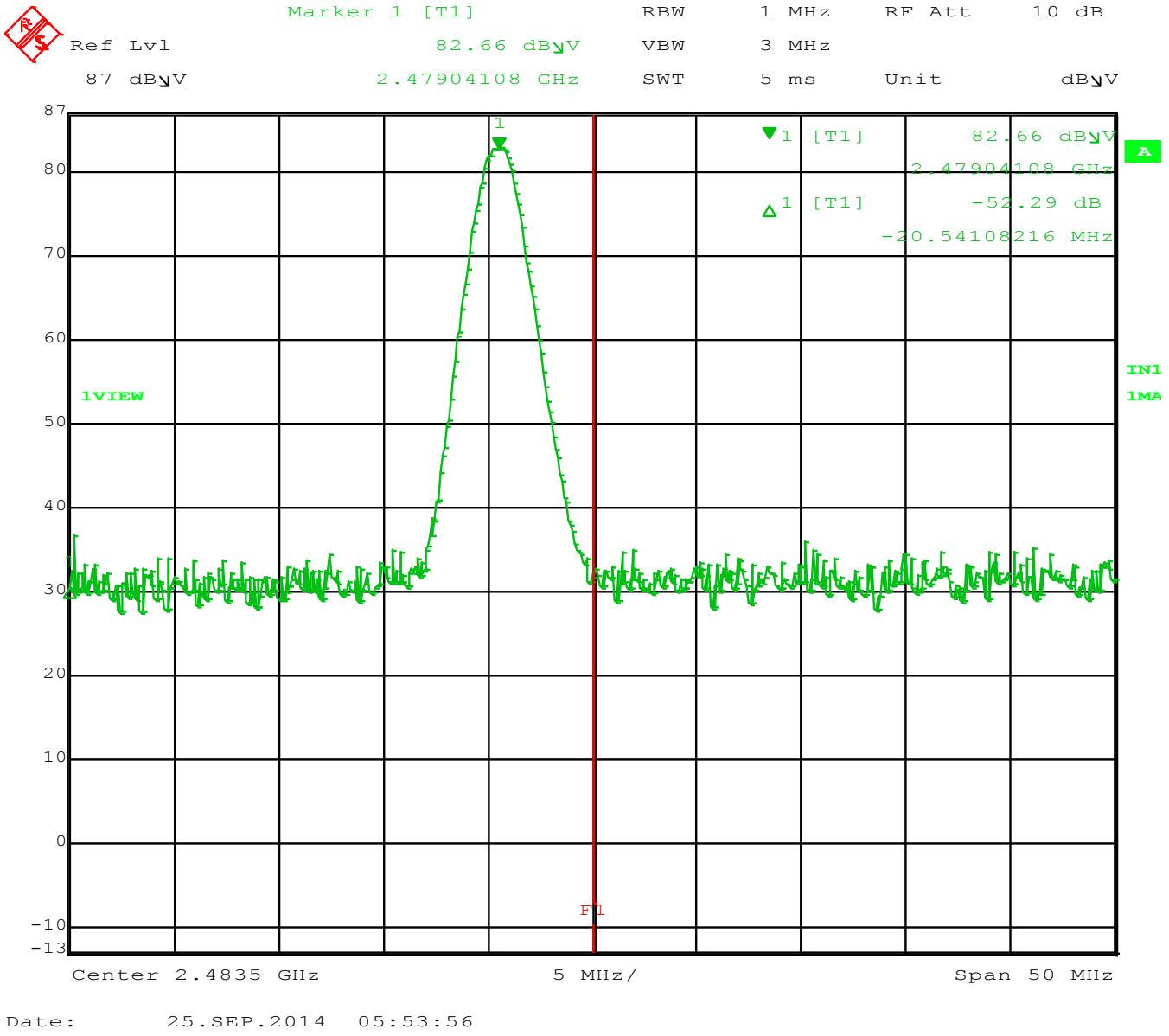
The EUT met the performance criteria requirement as specified in the standards.



Notes: Measured using the Peak detector. Band Edge is at 2.4 GHz (F1).

Figure 1: Lower Band Edge Measurement (Radiated Emission)

The EUT is compliant with the rules.



Note: Measured using the Peak and Average detectors.

Band edge (Center) at 2483.5 MHz is also the start of a restricted band, so the rules of 15.205 apply.

Figure 2: Upper Band Edge Measurement (Radiated Emission)

The EUT is compliant with the rules.

4.1 Conducted Emissions on AC Mains

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	**Complies** (as tested per this report)				**Date**		
Standard	FCC Parts 15.107(c), 15.207(c) and RSS-GEN 7.2.2						
Product Model	IRONMAN			**Serial#**	NA		
Test Set-up	Tested in shielded room. EUT placed on table, see test plans for details						
EUT Powered By	4.5VDC 3.7 VDC Battery	**Temp**	73º F	**Humidity**	25%	**Pressure**	1011 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

This device is 3.7 VDC Battery powered; therefore per FCC Part 15.207(c) this test is not required.

4.1.3 Final Test

Since the EUT is Battery powered at 3.7 VDC, and charged via USB cable, this test is not applicable.

5 Antenna Port Conducted Emissions

For conducted tests, the emissions were measured at the antenna port.

Testing was performed in accordance with 47 CFR Part 15, ANSI C63.10:2009, RSP-100 Issue 9. These test methods are listed under the laboratory's 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.

5.1 Conducted Output Power, FCC 15.247(b)(3) and RSS-210 A8.4(4)

5.1.1 For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the *maximum conducted output power* is the highest total transmit power occurring in any mode.

5.1.2 Test Over View

Results	**Complies** (as tested per this report)					**Date**	
Standard	FCC Part 15.247(b)(3) and RSS-210 A8.4(4)						
Product Model	IRONMAN			**Serial#**		E952-48	
Test Set-up	Measured at 3m distance from antenna, in 10m Anechoic chamber						
EUT Powered By	3.7 VDC Battery	**Temp**	74º F	**Humidity**	32%	**Pressure**	1010mbar
Perf. Criteria	(Below Limit)		**Perf. Verification**		Readings Under Limit		
Mod. to EUT	None		**Test Performed By**		Randall Masline		

5.1.3 Test Procedure

The peak output power was measured at the low, mid and high band frequencies. The measurement was made as a field strength measurement at 3m. The cable loss and the attenuator was measured and added in the reference level offset in the spectrum analyzer. The spectrum analyzer's resolution bandwidth was greater than the 20dB bandwidth of the modulated carrier and the video bandwidth was equal to the resolution bandwidth.

5.1.4 Deviations

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

5.1.5 Final Test

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

5.1.6 Final Tabulated Data at 3 meters

Frequency (MHz)	Antenna Polarity (H–V)	Antenna Height (M)	Measurement (dBm)	Limit	Result
2402	V	1.0	-5.45	1W/30dBm	**Complies**
2440	V	1.0	-5.12	1W/30dBm	**Complies**
2478	V	1.0	-3.95	1W/30dBm	**Complies**

Antenna is a ceramic chip, the gain is -1.3 dBi

Duty Cycle for this test is 100%

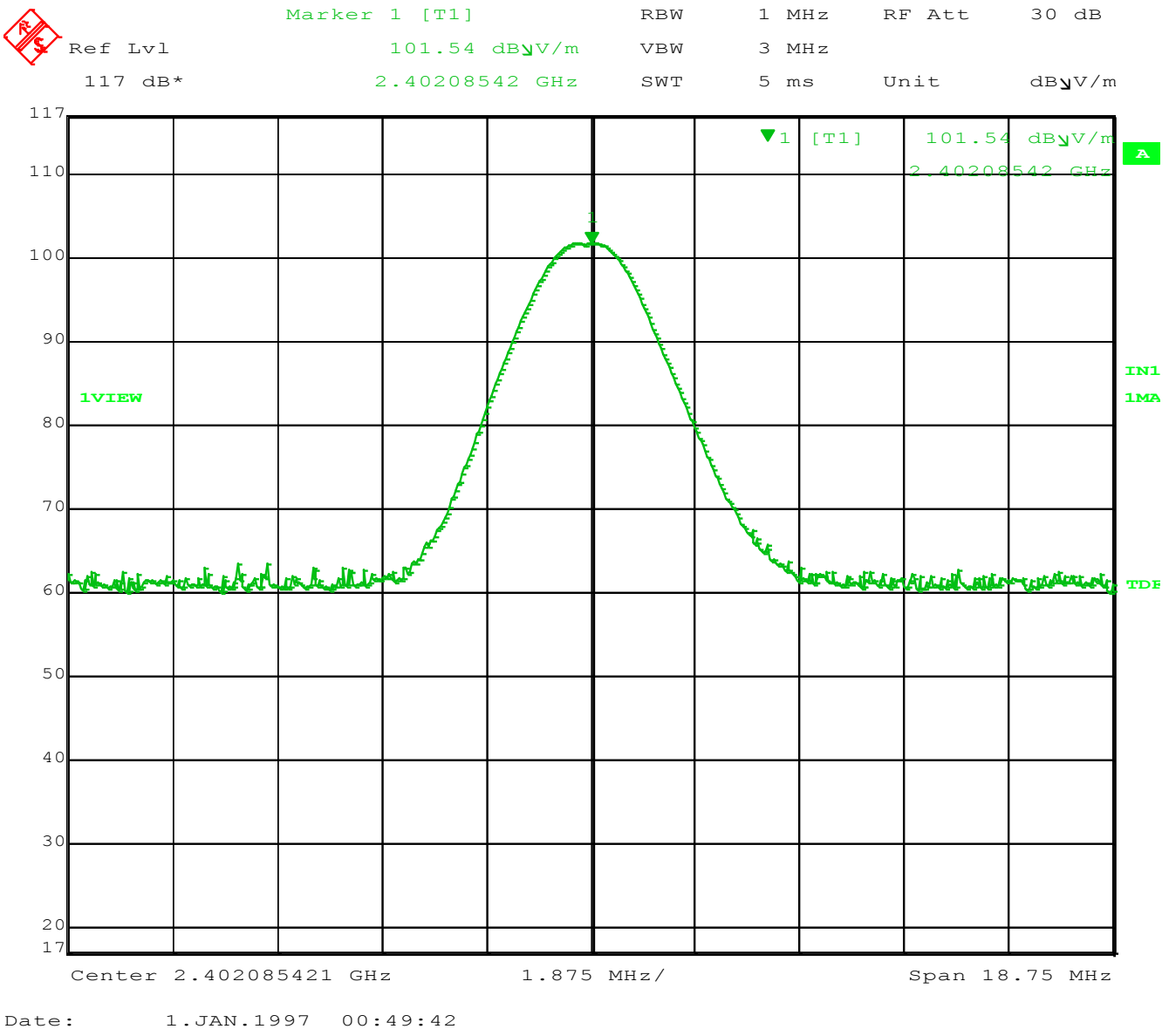
Antenna Gain

The Antenna used is below 6dBi gain.

The EUT is also compliant to FCC Part 15.247(b)(4)

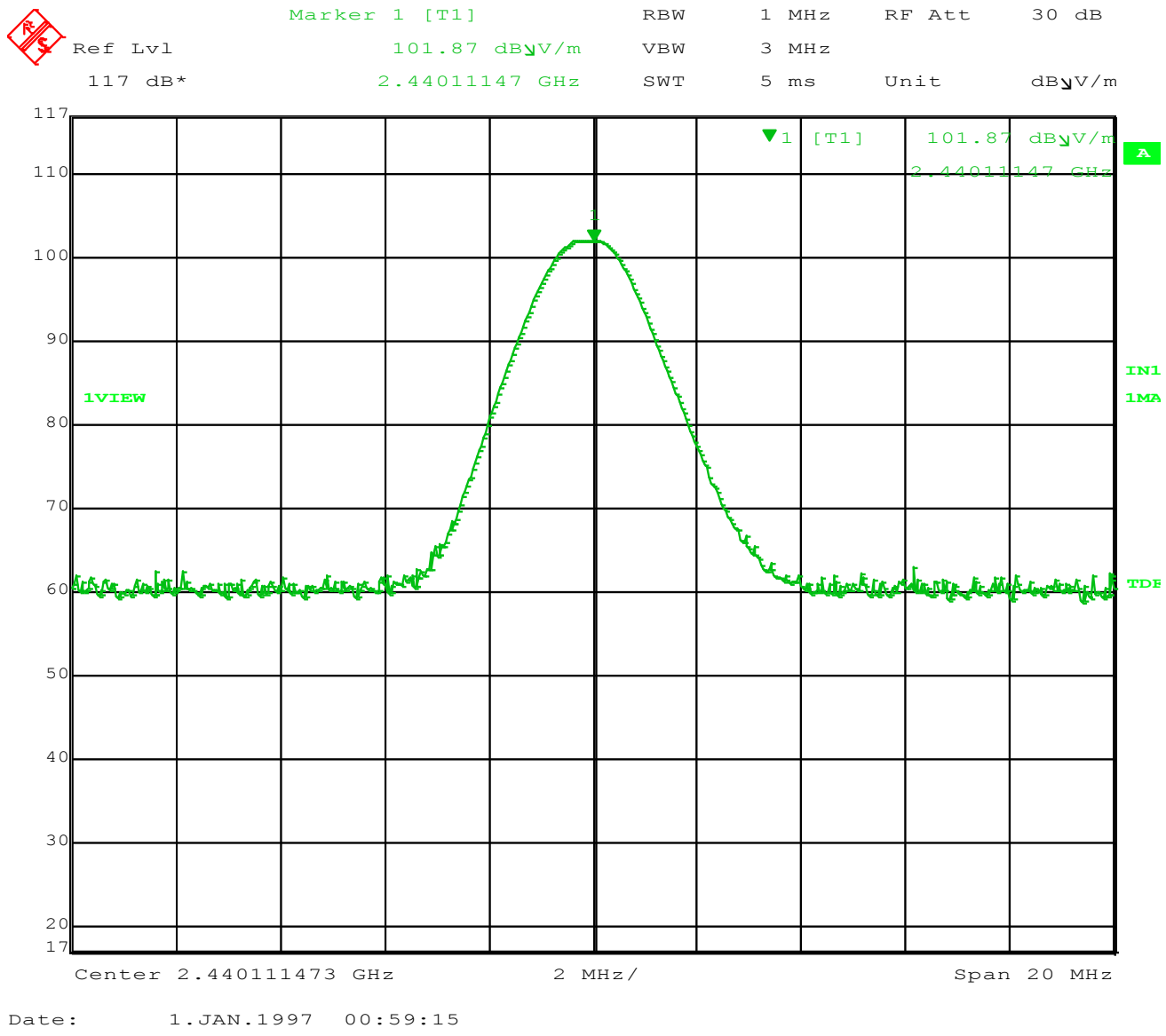
Results

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



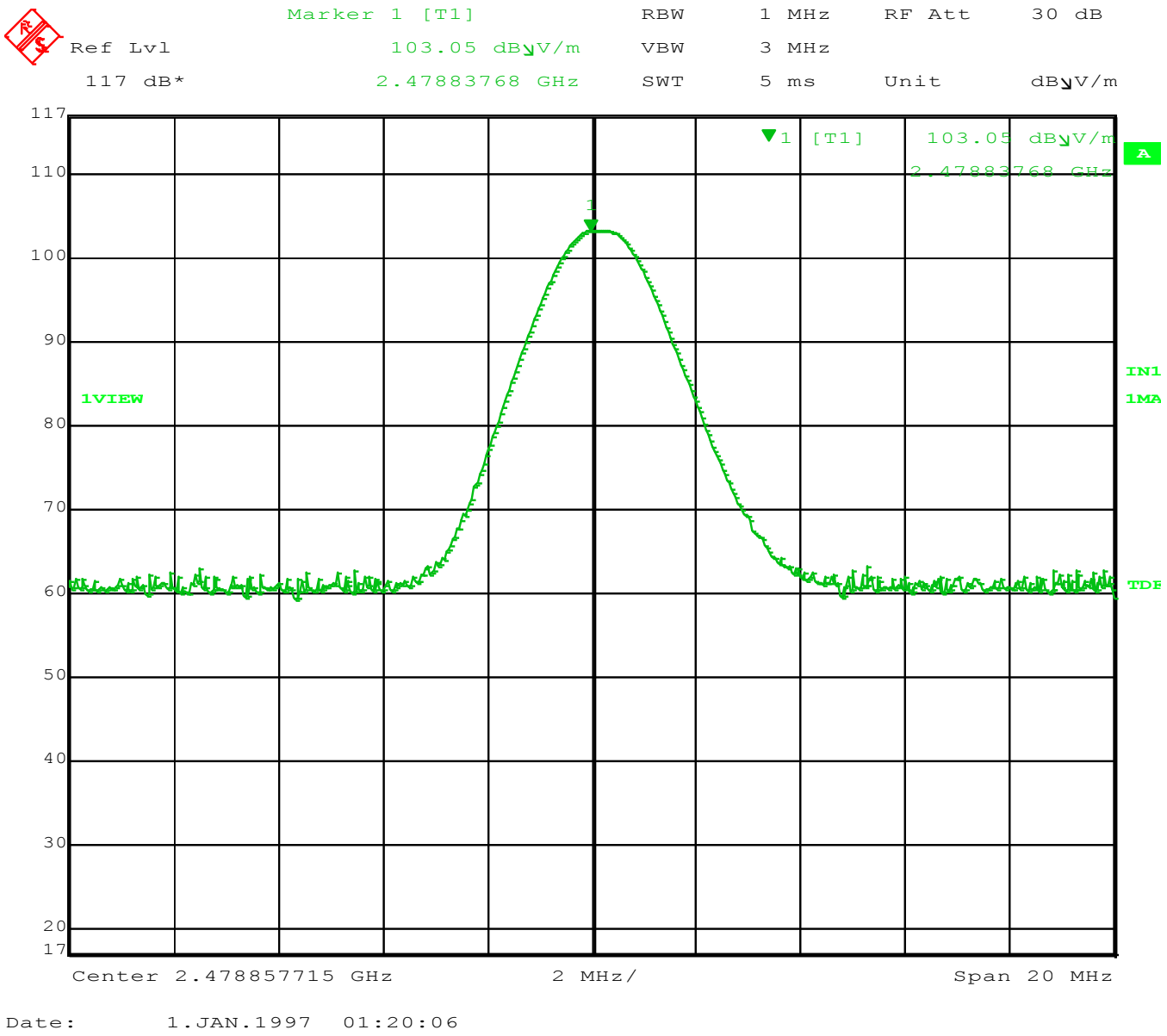
NOTE: Scans were taken August 28, 2014

Figure 3 – Effective Radiated Power Low Channel 2402 MHz, Vertical



NOTE: Scans were taken August 28, 2014

Figure 4 – Effective Radiated Power Mid channel 2440 MHz, Vertical



NOTE: Scans were taken August 28, 2014

Figure 5 – Effective Radiated Power High Channel 2478 MHz, Vertical

5.2 Occupied Bandwidth

Systems using digital modulation techniques may operate in the 2400–2483.5 MHz band. The minimum 6 dB bandwidth shall be at least 500 kHz.

5.2.1 Test Over View

Results	**Complies** (as tested per this report)					**Date**	9/3/2014
Standard	FCC Part 15.247(a)(2)						
Product Model	IRONMAN			**Serial#**	E952-48		
Test Set-up	Direct Measurement from antenna port						
EUT Powered By	3.7 VDC Battery	**Temp**	74º F	**Humidity**	32%	**Pressure**	1010 mbar
Perf. Criteria	(Below Limit)		**Perf. Verification**		Readings Under Limit		
Mod. to EUT	None		**Test Performed By**		Randall Masline		

5.2.2 Test Procedure

Minimum allowed 6dB Bandwidth = 500 kHz

5.2.3 Deviations

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

5.2.4 Final Test

6dB Band width is 513 kHz which is > 500 kHz

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

5.2.5 Final Data

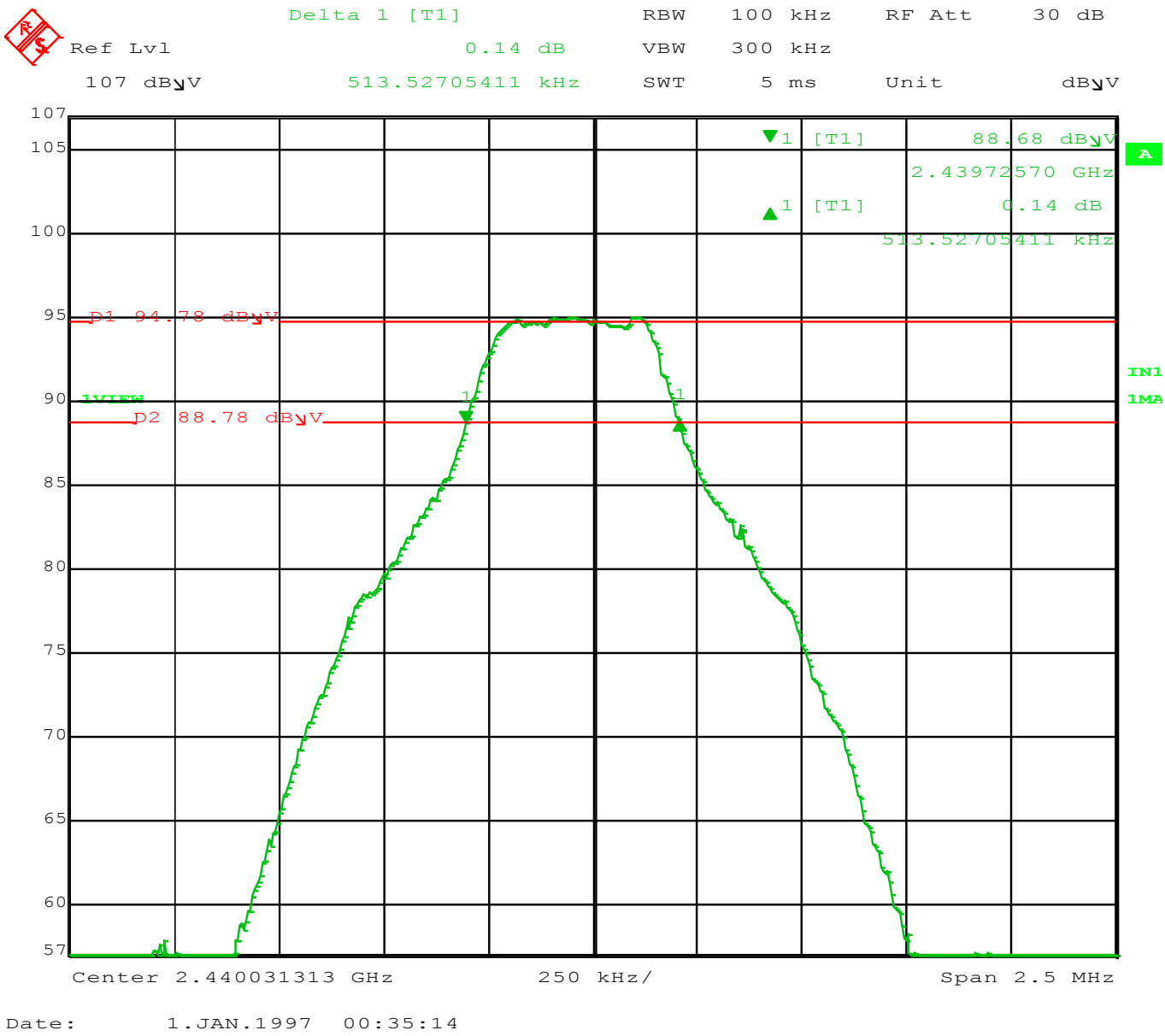


Figure 6: 6dB Occupied Bandwidth

Note: The above plot is the worst case.

6dB Band width is 513 kHz which is > 500 kHz

5.2.6 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.

5.2.7 Test Over View

Results	**Complies** (as tested per this report)					**Date**	9/3/2014
Standard	RSS-210 Section A1.1.3						
Product Model	IRONMAN			**Serial#**	E952-48		
Test Set-up	Direct Measurement from antenna port						
EUT Powered By	3.7 VDC Battery	**Temp**	74º F	**Humidity**	32%	**Pressure**	1010mbar
Perf. Criteria	(Below Limit)		**Perf. Verification**		Readings Under Limit		
Mod. to EUT	None		**Test Performed By**		Randall Masline		

5.2.8 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.

5.2.9 Deviations

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

5.2.10 Final Results

The measured 99% bandwidth is 971 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.

5.2.11 Final Data

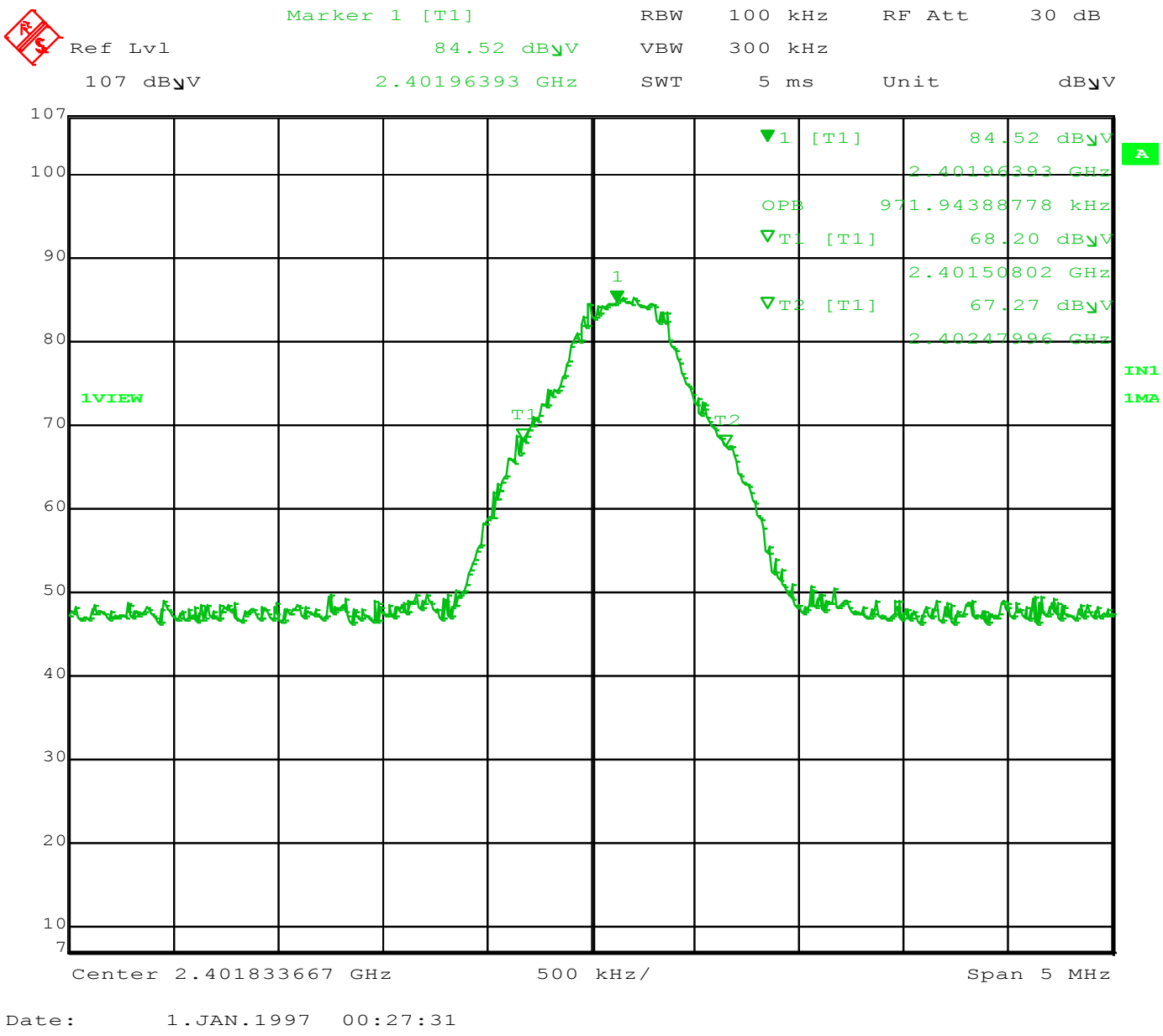


Figure 7 – 99% Power Bandwidth = 971 kHz

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

5.3 *Average time of Occupancy* FCC Part 15.247(A)(3)

FCC Part 15.247(A)(3) states that the average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

5.3.1 Over View of Test

Results	**Complies** (as tested per this report)	**Date**	9/9/2014
Standard	FCC Part 15.247(a)(3)		
Product Model	MODEL	**Serial#**	S/N
Test Set-up	Tested in shielded room. EUT placed on table, see test plans for details		
Mod. to EUT	None	**Test Performed By**	Randall Masline

5.3.2 Test Procedure

Measurement was taken of on-time during one transmission, then using a 0 Hz span, the number of on-time incidences was recorded over a 100ms sweep and then the average on-time was calculated.

5.3.1 Deviations

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

5.3.2 Final Results

The measured 99% bandwidth is 971 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.

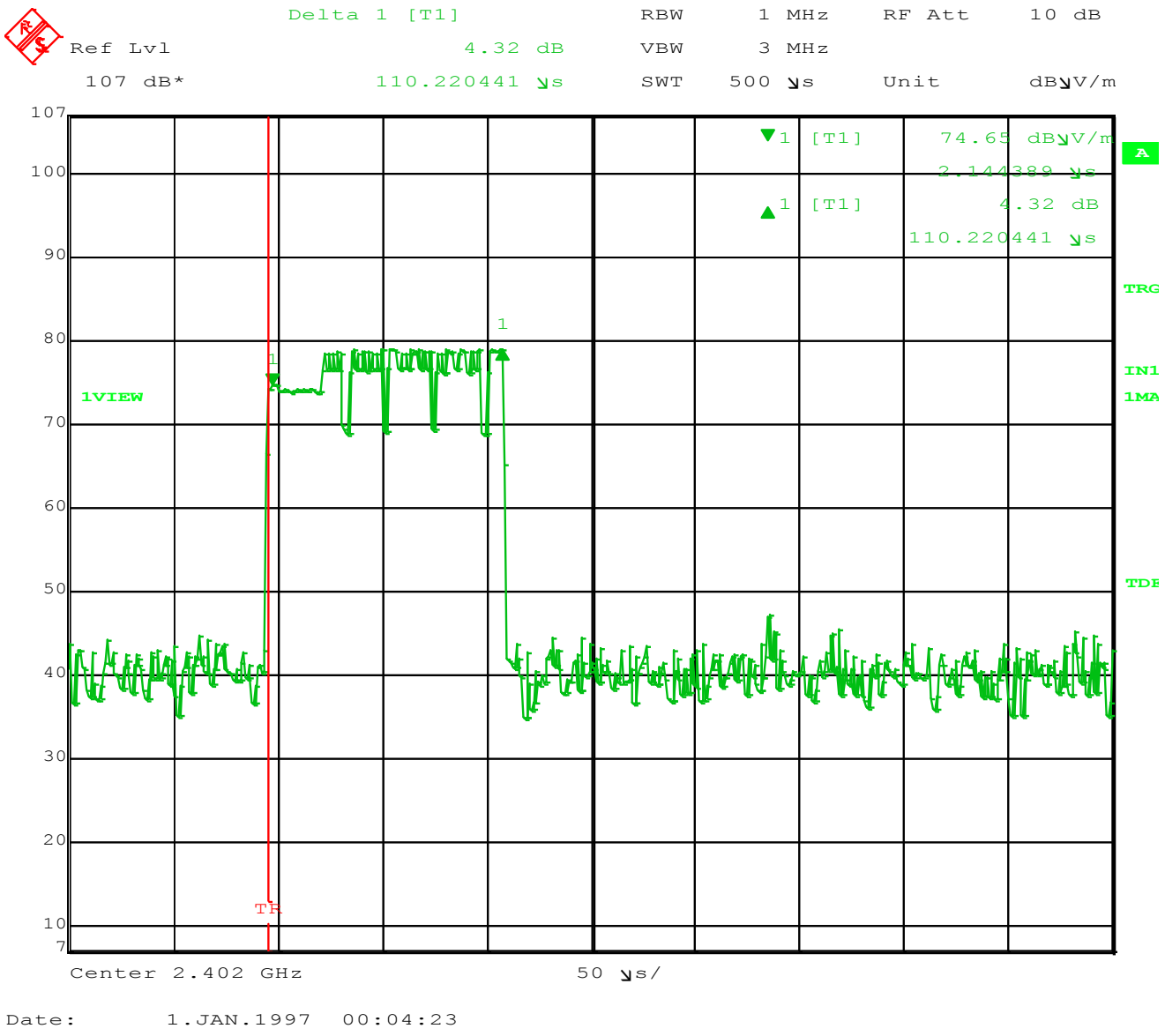


Figure 8 – On-time of one transmission pulse = 110us

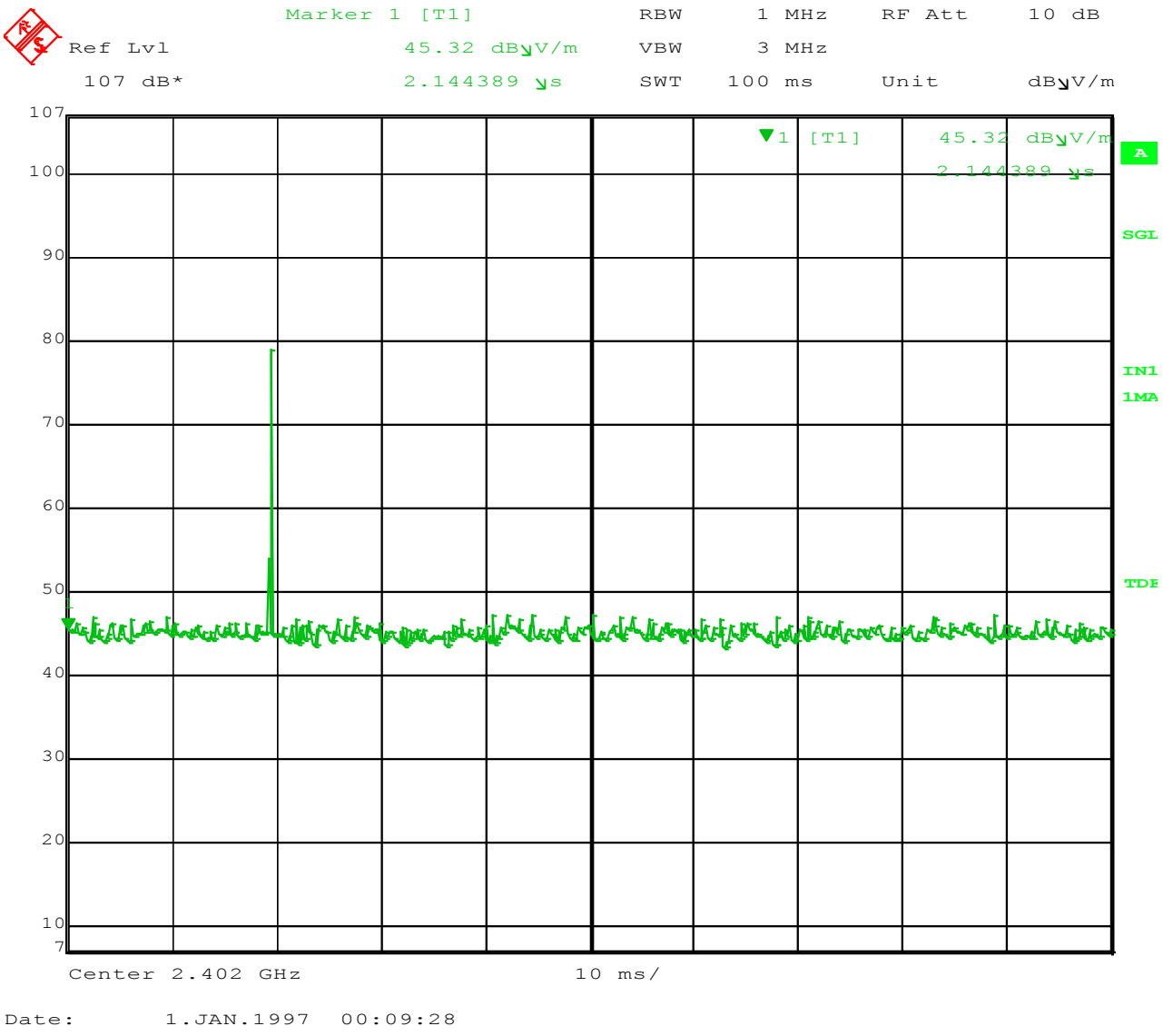


Figure 9 – 0 Hz span, single sweep of 100 ms

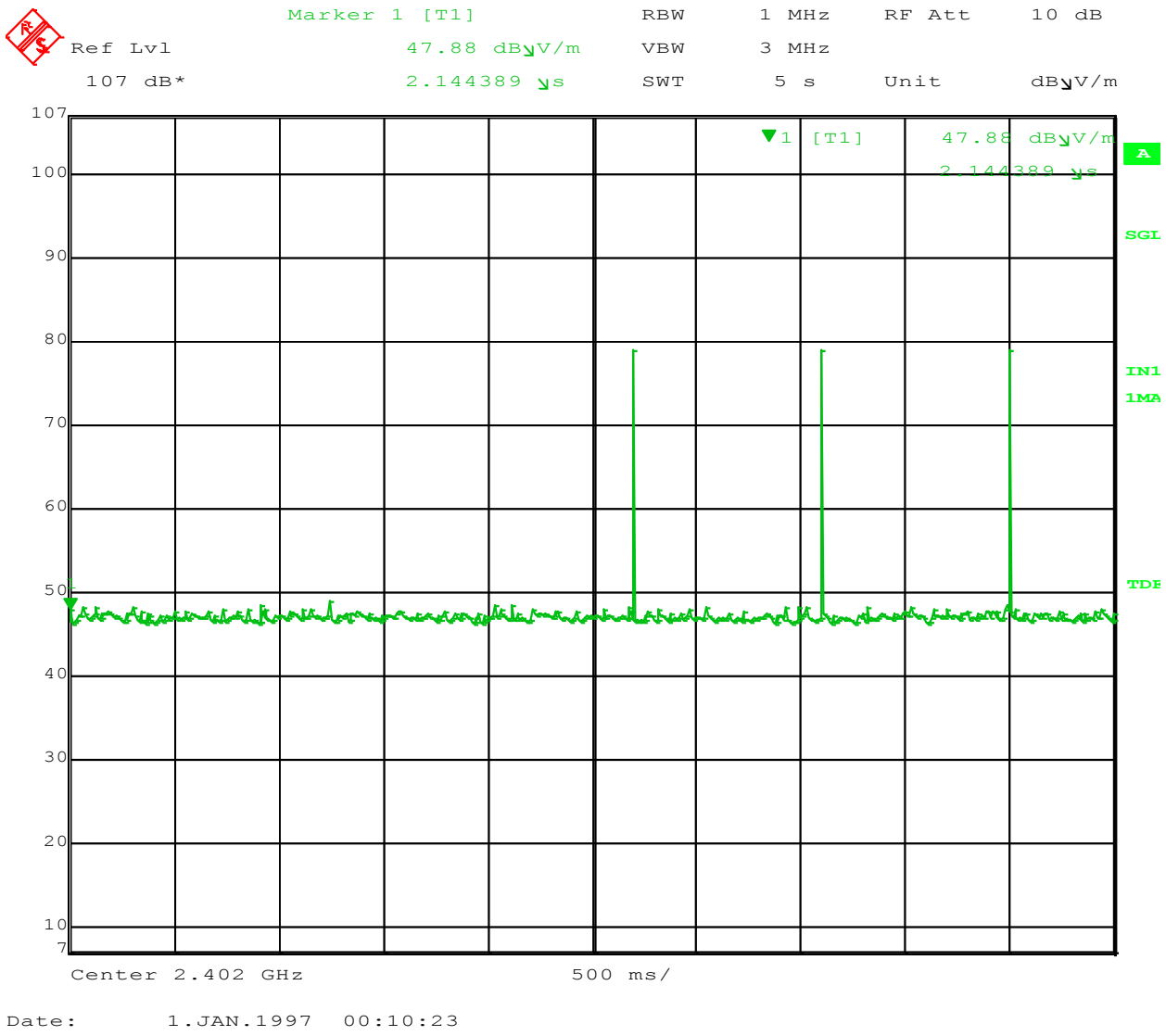


Figure 10 – 0 Hz span, single sweep of 5 seconds

6 RF Exposure for Portable Device

6.1 RF Exposure Evaluation - FCC Part 15.247(i)

Systems operating under these provisions shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

6.1.1 SAR Test Exclusion Threshold

FCC KDB # 447498 DO1 v05r02 - Mobile and Portable Device RF Exposure and Procedures and Equipment Authorization Policies, Appendix A shows that a device is exempt from SAR testing if the output power is less than **10mW** with a 5mm separation at 2450 MHz.

The maximum output power is 7.05 dBm

The maximum measured Gain of the antenna is -1.3 dBi or 0.74 (Linear scale).

The Maximum EIRP output power is 7.05 dBm + -1.3 dBi = 5.75 dBm or 3.75 **mW**.

The EUT is exempt from SAR Testing.

6.2 RF Exposure Evaluation - RSS-102, Issue 4

6.2.1 RF Exposure Limit

RSS-102, Issue 4 section 2.5.1 states that a device is exempt from routine SAR Evaluation if: above 2.2 GHz and up to 3 GHz inclusively, and with output power is less than 20 mW for general public use.

The maximum output power is 7.05 dBm

The maximum measured Gain of the antenna is -1.3 dBi or 0.74 (Linear scale).

The Maximum EIRP output power is 7.05 dBm + -1.3 dBi = 5.75 dBm or 3.75 **mW**.

The EUT is exempt from SAR Testing.

6.3 EUT Operating condition

The software provided by Manufacturer enabled the EUT to transmit data at lowest, middle and highest channel individually.

Appendix A

7 Test Plan

This test report is intended to follow this test plan outlined here in unless other wise 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.

7.1 General Information

Client	Timex
Address 1	555 Christian Road
Address 2	Middlebury, CT 06762
Contact Person	Stan Vreeland
Telephone	203-346-5485
Fax	860-302-1275
e-mail	svreeland@timex.com

7.2 Model(s) Name

IRONMAN

7.3 Type of Product

Watch

7.4 Equipment Under Test (EUT) Description

Bluetooth enabled watch.

7.5 Modifications

No modifications were necessary.

7.6 Product Environment

☒	**Residential**	☐	**Hospital**
☐	**Light Industrial**	☐	**Small Clinic**
☐	**Industrial**	☐	**Doctor's office**
☐	**Other**		

*Check all that apply

7.7 Countries

☒	**USA**
☒	**Canada**

*Check all that apply

7.8 EUT Electrical Powered Information

7.8.1 Electrical Power Type

☐	**AC**	☐	**DC**	☒	**Batteries**	☐	**Host -**

7.9 EUT Modes of Operation

Transmitting Continuously.

7.10 EUT Clock/Oscillator Frequencies

☒	**Less than 108MHz**	**FCC – scan up to 1GHz**
☐	**Less than 500MHz**	**FCC – scan up to 2GHz**
☐	**Less than 1000MHz**	**FCC – scan up to 5GHz**
☐	**Greater then 1000MHz**	**FCC – scan up to 5th Harmonic or 40GHz**

7.11 Electrical Support Equipment

Type	Manufacture	Model	Connected To

7.12 Non - Electrical Support Equipment

Item	Notes
Gas	None
Water	None
Air	None

7.13 EUT Equipment/Cabling Information

EUT Port	Connected To	Location	Cable Type		
			Length	Shielded	Bead
USB	USB Power	Back of watch	1m	no	no

7.14 EUT Test Program

Running Bluetooth testing at high, middle and lowest frequency at highest power output, and normal hopping operation.

7.15 Condition Received

☒	**Operational**	☐	**Other**
Notes			