Retlif Testing Laboratories

101 New Boston Road, Goffstown, NH 03045
603-497-4600 - Fax: 603-497-5281

CORPORATE OFFICE
795 Marconi Avenue
Ronkonkoma, NY 11779
631-737-1500 Fax 631-737-1497
(A NY Corporation)

WASHINGTON
REGULATORY OFFICE
703-533-1614 Fax 703-533-1612

FCC/IC Test Report
on

Wireless Activity Device
Model: Pebble

Customer Name:	FitLinxx
Customer P.O.:	30270-N
Date of Results:	May 8, 2012
Test Results No.:	R-5586N-2
Test Start Date:	April 20, 2012
Test Finish Date:	April 24, 2012
Test Technician:	M. Seamans
Branch Manager:	S. Wentworth
Laboratory Supervisor:	T. Hannemann
Results Prepared By:	J. Ramsey
Government Source Inspection:	N/A

Certification and Signatures

We certify that these Test Results are true results obtained from the tests of the equipment stated, and relates only to the equipment tested. We further certify that the measurements shown in this Test Results package were made in accordance with the procedures indicated and vouch for the qualifications of all Retlif Testing Laboratories personnel taking them.

Scott Wentworth
Branch Manager
NVLAP Approved Signatory

Todd Hannamann
Laboratory Supervisor
iNARTE Certified ATL-0255-T

Non-Warranty Provision
The testing services have been performed, findings obtained and reports prepared in accordance with generally accepted laboratory principles and practices. This warranty is in lieu of all others, either expressed or implied.

Non-Endorsement
This test report contains only findings and results arrived at after employing the specific test procedures and standards listed herein. It is not intended to constitute a recommendation, endorsement or certification of the product or material tested. This test report may not be used by the client to claim product endorsement by NVLAP, NIST or any agency of the U.S. Government.

Revision History

Revisions to this document are listed below; the latest revised document supersedes all previous issues of this document.

Revision	Date	Pages Affected
-	May 8, 2012	Original Release

Test Program Summary

Job Number:	R-5586N-2
Applicant:	FitLinxx
Address:	134 Flanders Road, Suite 200
	Westborough, MA 01581
Test Sample:	Wireless Activity Device
Brand Name:	FitLinxx
Model:	Pebble
Antenna Port/Type:	No Antenna Port Internal Antenna - PCB Trace
Power Requirements:	3 VDC
Frequency Band of Operation:	2.40 GHz to 2.4835 GHz
Frequency of Operation:	2.429 GHz
FCC ID:	O9DAP5
IC:	4068A-AP5

Test Specification:
FCC Rules and Regulations Part 15, Subpart C, 15.249

Radio Standards Specification, RSS-210, Issue 8, December 2010 and RSS-GEN, Issue 3, December 2010

Test Procedure:
ANSI C63.4: 2003, American National Standard for Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

Purpose:
The purpose of this test program was to demonstrate compliance of the Pebble Wireless Activity Device to the technical requirements of FCC Part 15.249 and RSS-210, Annex A2.9.

Test Methods:
The following table depicts the test methods that were performed on the EUT and the corresponding test results:

Testing Date(s)	FCC Part 15, Subpart C	Industry Canada RSS-210 Issue 8, December 2010	Industry Canada RSS-GEN Issue 3, December 2010	Test Method	Test Results
April 20, 2012	15.249 (a) (e)	A2.9 (a)	N/A	Field Strength of Fundamental & Harmonic Emissions	Complied
April 20, 2012	15.249 (d)	A2.9 (b)	N/A	Field Strength of Out of Band/ Bandedge Emissions	Complied
April 20, 2012	N/A	N/A	6.1	Field Strength of Receiver Spurious Emissions	Complied
April 24, 2012	N/A	N/A	4.6.1	99% Bandwidth	3.86 MHz

Test Sample Description:
The Pebble Wireless Activity Device is a low power, narrowband 2.429 GHz wireless activity device. It consists of a sensor, microcontroller, radio transmitter/receiver, and a battery that can be worn on various parts of the body. The RF transmitter/receiver operates on a single channel. It transmits once per second with a sequenced dither to avoid RF collisions with other devices. The receiver is able to lock onto transmission so it can turn its RF receiver for the shortest period of time. The EUT is operated by 3 VDC via a single Lithium CR2032 battery. The EUT has no ports or attached cables.

Support Equipment:
The EUT did not require any support equipment.

Test Sample/Test Results Summary:
- The maximized fundamental field strength at 2429 MHz did not exceed 50 m V/M (94dBµV) at a test distance of 3 meters. The measured maximized average field strength was 79.7 dBµV.
- The field strength of observed harmonic emissions did not exceed 500 µ V/M. No harmonic emissions were observed within 10dB of the specified limit at 3 meter or 1 meter test distances.
- The field strength of non-harmonic out of band/bandedge emissions were attenuated more than 50dB below the level of the fundamental or to the limits of 15.209 as applicable. No out of band spurious emissions were observed within 10dB of the specified limit at 3 meter or 1 meter test distances.
- The maximized peak field strength of the emissions did not exceed the maximum permitted average field strength by more than 20 dB. The measured maximized peak field strength was 82.68 dBµV.

General Test Requirements

1. The measurement procedures of ANSI C63.4:2003 were utilized as specified in FCC Part 15, Subpart C, Section 15.31(a)(3) and RSS-Gen, Section 4.1.
2. All radiated emissions measurements were performed on an Open Area Test Site (OATS), listed with the FCC and IC, in accordance with FCC Section 15.31(d) and RSS Gen, Section 4.2.
3. All testing was performed with a new battery installed in the EUT, in accordance with FCC Section 15.31(e) and RSS Gen Section 4.3(g).
4. All measurements were performed at the specified 3 meter test distance. The EUT was rotated throughout 360 degrees for all radiated emissions measurements as specified in FCC Section 15.31(f)(5) and IC Section 4.3(h).
5. All readily accessible EUT controls were adjusted in such a manner as to maximize the level of emissions in accordance with FCC Section 15.31(g) and RSS-Gen, Section 4.3.
6. Appropriate accessories were attached to all EUT ports during the performance of radiated emissions measurements as required by FCC Section 15.31(i) and RSS-Gen, Section 4.3(f).
7. The EUT operated at the frequency of 2429.0 MHz. Testing was performed with the device operating at this frequency.
8. The frequency spectrum was investigated from the lowest frequency generated in the device up to the 10^{th} harmonic of the highest fundamental frequency in accordance with FCC Section 15.33(a)(1) and RSS-Gen Section 4.9.
9. Measurements below 1000 MHz were taken utilizing a Quasi-Peak Detector. Measurements above 1 GHz were taken utilizing an Average Detector in accordance with FCC Section 15.35(a) and RSS-Gen Section 4.9. The peak values of emissions above 1 GHz were verified to meet the 20 dB requirement of FCC Section 15.35(b).

Requirements and Test Results:

Requirement:
FCC Section 15.249(a) and (d) - Operation within the bands 902 - 928 MHz, 2400 – 2483.5 MHz, 5725 - 5875 MHz and 24.0 - 24.25 GHz

IC RSS-210, A2.9(a) and (b):
This section provides standards for low-power devices that can be used for any application provided the following condition is met:

FCC Section 15.249(a): Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with Table 1.

RSS-210 A2.9(a): The field strengths measured at 3 meters shall not exceed the limits specified in Table 1.

Table 1 - Field Strength of Emissions

Fundamental Frequency	Field Strength - Fundamental (millivolts/meter)	Field Strength - Harmonics (microvolts/meter)
902 to 928 MHz	50	500
2400 to 2483.5 MHz	50	500
5725 to 5875	50	500
24.0 to 24.25 GHz	250	2500

- Results:
  The EUT was operated at 2429.0 MHz. The field strength of the fundamental did not exceed 50 mV/M. No harmonic emissions were observed within 10dB of the specified limit (500 µV/M).

FCC Section 15.249(d): 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 Section 15.209, whichever is the lesser attenuation.

RSS-210 A2.9(b): Emissions radiated outside of the frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general field strength limits of RSS-Gen, Table 5 , whichever is the less stringent.

- Results:
  Emissions radiated at the band edges and outside the specified frequency band were attenuated in accordance with the general radiated emissions limits of 15.209 and RSS-Gen, Table 5.

Requirements and Test Results (con't)

Requirement:

RSS-GEN, 6.1 - Receiver Spurious Emission Limits
All spurious emissions shall comply with the limits specified in Table 2.

Table 2 - Radiated Emission Limits

Frequency of Emission (MHz)	Field Strength (microvolts/meter)
30 to 88	100
88 to 216	150
216 to 960	200
Above 960	500

- Results:
  No receiver spurious emissions were observed within 10dB of the limits specified in Table 2.

IC RSS-GEN, 4.6.1 – Occupied Bandwidth
When an occupied bandwidth value is not specified in the applicable RSS, the 99% bandwidth of the transmitted signal shall be reported.

- Results:
  The 99% emission bandwidth was measured and recorded.

Requirements and Test Results (con't)

Field Strength Measurement & Calculation:

The following spectrum analyzer settings were used:

RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f ≤ 1 GHz

VBW ≥ RBW

Detector Function = Peak or Average as applicable

Trace = Max Hold

Sweep = Auto

The maximized field strength of the emission was calculated as follows.

$$F_C = M_R + C_F$$

Where:
F_C = Corrected Field Strength Reading in dBµV/m
M_R = Uncorrected Meter Reading in dBµV
C_F = Correction Factor in dB (Pre-Amp + Antenna Factor + Cable Loss)

Measurement Procedures:
15.249 (a/d) Field Strength of Fundamental, Harmonic and Out of Band/Band Edge Emissions (Radiated Emissions)

The field strength of the fundamental, harmonic and out of band/bandedge emissions were measured. The EUT was plugged into the USB port of the host PC which was placed on a 80cm high wooden test stand located 3 meters from the test antenna on a FCC listed open area test site. Emissions from the EUT were maximized field strength of each observed emissions was measured, recorded and compared to the specified limits of 15.249 (a), (d)/15.209 as appropriate. Peak field strength of emissions were measured, recorded and verified to meet the specified limit (limit corresponds to 20dB above the maximum permitted average limit). When necessary, the marker/delta method was used to verify bandedge compliance.

Test Setup Photographs

Test Setup Photograph(s)
Radiated Emissions

Test Setup

Test Setup Photograph(s)
Radiated Emissions

30 to 1000 MHz, Horizontal Antenna Polarization

30 to 1000 MHz, Vertical Antenna Polarization

Test Setup Photograph(s)
Radiated Emissions

1 to 18 GHz, Horizontal Antenna Polarization

1 to 18 GHz, Vertical Antenna Polarization

Test Setup Photograph(s)
Radiated Emissions

18 to 26 GHz, Horizontal Antenna Polarization

18 to 26 GHz, Vertical Antenna Polarization

Test Setup Photograph(s)
99% Bandwidth

Test Setup

Equipment Lists
Radiated Emissions

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
1232	AGILENT / HP	PRE-AMPLIFIER	1 - 26.5GHz	8449B	5/10/2011	5/10/2012
3258	EMCO	DOUBLE RIDGED GUIDE ANTENNA	1 GHZ - 18GHZ	3115	2/24/2012	2/28/2013
4029	RETLIF	OPEN AREA TEST SITE	3 / 10 Meters	RNH	8/21/2009	8/21/2012
R444	AGILENT / HP	SPECTRUM ANALYZER	100 Hz - 26.5 GHz	E7405A;A	6/4/2010	6/4/2012
3430	MCS	HORN ANTENNA	18 GHz - 26.5 GHz	K-5039	1/19/2012	1/31/2013
5053	EMCO	BICONILOG ANTENNA	26 MHz - 3 GHz	3142C	11/14/2011	11/14/2012

99% Bandwidth

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5070	ROHDE & SCHWARZ	EMI TEST RECEIVER	20 Hz - 40 GHz	ESIB40	10/26/2011	10/26/2012

Test Data

RETLIF TESTING LABORATORIES

TABULAR DATA SHEET

Test Method:	Fundamental Field Strength & Harmonics		
Customer:	Fitlinxx, Inc.	**Job No:**	R-5586N-2
Test Sample:	Pebble wireless activity device		
Model No:	Pebble	**Serial No:**	N/A
Test Specification:	FCC Part 15 Paragraph: 15.249 (a)		
Operating Mode:	Continuously Transmitting		
Technician:	M.Seamans	**Date:**	April 20, 2012
Notes:	Average Readings to Average Limits		

Transmit Frequency	Test Frequency	Antenna/EUT Position	Meter Reading	Correction Factor		Corrected Reading			Converted Reading	Limit at 3 Meters
MHz	MHz	Polarization/Axis	dBuV	dB		dBuV/m			uV/m	uV/m
2429.00	2429.00	V/X	81.10	-1.40		79.70			9660.51	50000.00
	4858.00	-	-	-		-			-	500.00
	7287.00	-	-	-		-			-	500.00
	9716.00	-	-	-		-			-	500.00
	12145.00	-	-	-		-			-	500.00
	14574.00	-	-	-		-			-	500.00
	17003.00	-	-	-		-			-	500.00
	19432.00	-	-	-		-			-	500.00
	21861.00	-	-	-		-			-	500.00
	24290.00	-	-	-		-			-	500.00

At the harmonic frequencies where no meter reading is recorded, there was no harmonic observed above the baseline noise of the spectrum analyzer which was a minimum of 10 dB below the limit.

RETLIF TESTING LABORATORIES

TABULAR DATA SHEET

Test Method:	Peak Field Strength		
Customer:	Fitlinxx, Inc.	**Job No:**	R-5586N-2
Test Sample:	Pebble wireless activity device		
Model No:	Pebble	**Serial No:**	N/A
Test Specification:	FCC Part 15 Paragraph: 15.249 (e)		
Operating Mode:	Continuously Transmitting		
Technician:	M.Seamans	**Date:**	April 20, 2012
Notes:	Peak Readings to Peak Limits(20dB above average limits)		

Transmit Frequency	Test Frequency	Antenna/EUT Position	Meter Reading	Correction Factor		Corrected Reading			Converted Reading	Limit at 3 Meters
MHz	MHz	Polarization/Axis	dBuV	dB		dBuV/m			uV/m	uVm
2429.00	2429.00	V/X	84.08	-1.40		82.68			13614.45	500000.00
	4858.00	-	-	-		-			-	5000.00
	7287.00	-	-	-		-			-	5000.00
	9716.00	-	-	-		-			-	5000.00
	12145.00	-	-	-		-			-	5000.00
	14574.00	-	-	-		-			-	5000.00
	17003.00	-	-	-		-			-	5000.00
	19432.00	-	-	-		-			-	5000.00
	21861.00	-	-	-		-			-	5000.00
	24290.00	-	-	-		-			-	5000.00

At the harmonic frequencies where no meter reading is recorded, there was no harmonic observed above the baseline noise of the spectrum analyzer which was a minimum of 10 dB below the limit.

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	**Out of Band Radiated Emissions 30 MHz to 26.5 GHz**		
Customer	Fitlinxx, Inc.	**Job No.**	R-5586N-2
Test Sample	Pebble wireless activity device		
Model No.	Pebble	**Serial No.**	N/A
Test Specification:	FCC Part 15 Subpart C Paragraph: 15.249 (d)		
Operating Mode:	Continuously Transmitting		
Technician:	M.Seamans	**Date:**	April 20, 2012
Notes:	Test Distance: 3 Meters		

Test Frequency	Antenna Position	Turntable Position	Uncorrected Reading	Correction Factor	Corrected Reading					Limit at 3 Meters
MHz	(H/V) - Height	Degrees	dBuV	dB	dBuV/m					dBuV/m
30.00	-	-	-	-	-					40.0
|	-	-	-	-	-					|
88.00	-	-	-	-	-					40.0
88.00	-	-	-	-	-					43.5
|	-	-	-	-	-					|
216.00	-	-	-	-	-					43.5
216.00	-	-	-	-	-					46.0
|	-	-	-	-	-					|
960.00	-	-	-	-	-					46.0
960.00	-	-	-	-	-					54.0
|	-	-	-	-	-					|
26500.00	-	-	-	-	-					54.0

No EUT emissions within 10 dB of the specified test limit were observed at the specified test distance throughout the given frequency spectrum.

Data Sheet 1 of 1 R-5586N-2

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	**Receiver Spurious Emissions 30 MHz to 26.5 GHz**		
Customer	Fitlinxx, Inc.	**Job No.**	R-5586N-2
Test Sample	Pebble wireless activity device		
Model No.	Pebble	**Serial No.**	N/A
Test Specification:	RSS Gen Paragraph: 6		
Operating Mode:	Idle, receiving signal		
Technician:	M.Seamans	**Date:**	April 20, 2012
Notes:	Test Distance: 3 Meters Peak Readings		

Test Frequency	Antenna Position	Turntable Position	Uncorrected Reading	Correction Factor	Corrected Reading				Converted Reading	Limit at 3 Meters
MHz	(H/V) - Height	Degrees	dBuV	dB	dBuV/m				uV/m	uV/m
30.00	-	-	-	-	-				-	100.0
|	-	-	-	-	-				-	|
88.00	-	-	-	-	-				-	100.0
88.00	-	-	-	-	-				-	150.0
|	-	-	-	-	-				-	|
216.00	-	-	-	-	-				-	150.0
216.00	-	-	-	-	-				-	200.0
|	-	-	-	-	-				-	|
960.00	-	-	-	-	-				-	200.0
960.00	-	-	-	-	-				-	500.0
|	-	-	-	-	-				-	|
|	-	-	-	-	-				-	|
|	-	-	-	-	-					|
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|										|
|	-	-	-	-	-				-	|
26500.00	-	-	-	-	-				-	500.0
	No EUT emissions within 10 dB of the specified test limit were observed at the specified test distance throughout the given frequency spectrum.									

RETLIF TESTING LABORATORIES

TABULAR DATA SHEET

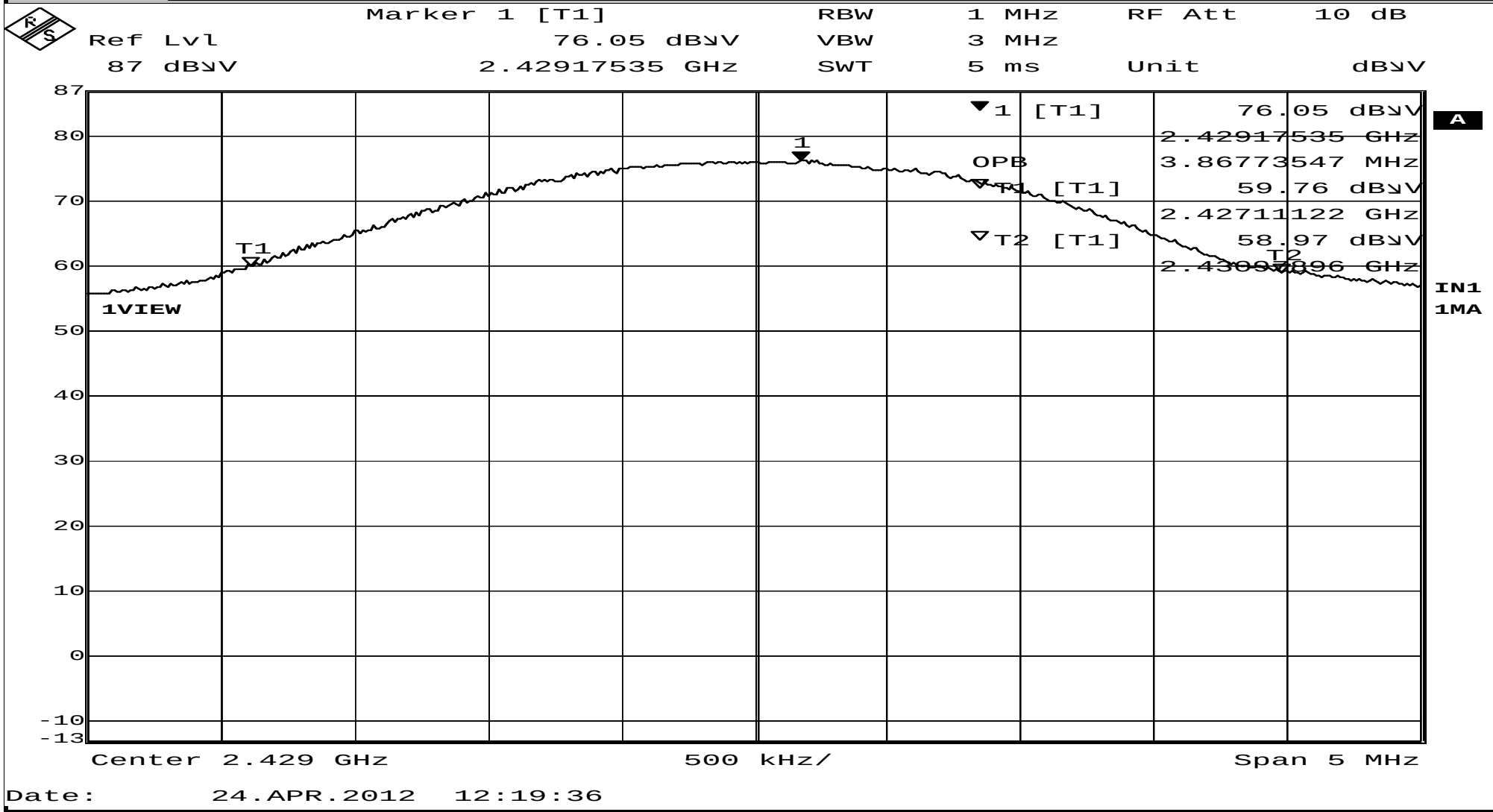
Test Method:	Band Edge		
Customer:	Fitlinxx, Inc.	**Job No:**	R-5586N-2
Test Sample:	Pebble wireless activity device		
Model No:	Pebble	**Serial No:**	N/A
Test Specification:	FCC Part 15 Paragraph: 15.249 (d)		
Operating Mode:	Continuously Transmitting		
Technician:	M.Seamans	**Date:**	4/20/2012
Notes:	Peak Readings Test Distance 3 Meters		

Test Frequency		Meter Reading	Correction Factor			Corrected Reading		Limit		
MHz		dBuV	dB			dBuV/m		dBuV/m		
2400.00		42.77	-1.40			41.37		54.0		
2483.50		42.27	-1.40			40.87		54.0		

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	**99% Bandwidth**				
Customer:	Fitlinxx	**Test Sample:**	Pebble wireless activity device	**Job No:**	R-5586N-2
Model No:	Pebble	**Serial No:**	N/A	**Technician:**	M. Seamans
Test Specification:	RSS Gen			**Date:**	4/24/2012
Operating Mode:	Continuously Transmitting				
Notes:	99 % Bandwidth 3.86MHz				



Data Sheet 1 of 1 **R-5586N-2**