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DATE: 11 January 2015

I.T.L. (PRODUCT TESTING) LTD.

FCC Radio Test Report

for

SuperCom Ltd.

Equipment under test:

Pure Tag V2.0

PRF-PURET20EM, PRF-PURET20AT*
2.4 GHz Bluetooth
(BLE)

*See customer's Declaration on page 6

Tested by: _____
I. Siboni

Approved by: _____
D. Shidlowsky

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Measurement/Technical Report for

SuperCom Ltd.

Pure Tag V2.0

PRF-PURET20EM, PRF-PURET20AT*

FCC ID: W5P-PRF-PURET20

11 January 2015

This report concerns:	Original Grant: X Class I Change: Class II Change:
Equipment type:	Digital Transmission System
Limits used:	47CFR15 Section 15.247

Measurement procedure used is KDB 558074 D01 v03r02 and ANSI C63.4-2003.

Application for Certification
prepared by:
R. Pinchuck
ITL (Product Testing) Ltd.
1 Bat Sheva St.
Lod 7116002
Israel
e-mail rpinchuck@itl.co.il

Applicant for this device:
(different from "prepared by")
Ze'ev Lavi
SuperCom Ltd.
1 Arie Shenkar St.
Herzliya 4672501
Israel
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1. General Information

1.1 *Administrative Information*

Manufacturer:	SuperCom Ltd.
Manufacturer's Address:	1 Arie Shenkar St. P.O.B. 12190 Herzeliya, 4672501 Israel Tel: 972-9-889-0800 Fax: 972-9-889-0820
Manufacturer's Representative:	Ehud Bachman
Equipment Under Test (E.U.T):	Pure Tag V2.0
Equipment Model No.:	PRF-PURET20EM, PRF-PURET20AT*
Equipment Serial No.:	Not designated
Date of Receipt of E.U.T:	28.12.2014
Start of Test:	28.12.2014
End of Test:	29.12.2014
Test Laboratory Location:	I.T.L (Product Testing) Ltd. 1 Batsheva St., Lod ISRAEL 7120101
Test Specifications:	FCC Part 15, Subpart C

*See customer's Declaration on following page.

Date: February 16, 2015

I, hereby declare the following concerning the Pure Tag V2.0

model PRF-PURET20EM and
model PRF-PURET20AT

1. **The two units contain the identical 2.4 GHz radio.**
2. **The two units are made from the same type of plastic.**

Please consider them the same unit from an EMC/Radio point of view.

Thank you.

Official Signature

Sincerely,

Ze'ev Lavi
Project Manager

1.2 *List of Accreditations*

The EMC laboratory of I.T.L. is accredited by the following bodies:

1. The American Association for Laboratory Accreditation (A2LA) (U.S.A.), Certificate No. 1152.01.
2. The Federal Communications Commission (FCC) (U.S.A.), FCC Designation Number US1004
3. The Israel Ministry of the Environment (Israel), Registration No. 1104/01.
4. The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) (Japan), Registration Numbers: C-1350, R-1285.
5. Industry Canada (Canada), IC File No.: 46405-4025; Site No. IC 4025A-1.

I.T.L. Product Testing Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this test report have been determined in accordance with I.T.L.'s terms of accreditation unless stated otherwise in the report.

1.3 *Product Description*

The PRF-PURET20 is part of SuperCom electronic monitoring solution.

PRF-PURET20EM is geared for the EM market (Electronic Monitoring) to be used for tracking and monitoring defendants or offenders who are under house arrest. The unit comes in a sophisticated ankle unit to prevent a defendant or offender from easily removing it.

PRF-PURET20AT is a device geared for asset management systems to track and monitor inventory or assets. The unit comes in a mini, round case to be as small and as least noticeable as possible.

1.4 Test Methodology

Radiated testing was performed according to the procedures in KDB 558074 D01 v03r02 and ANSI C63.4: 2003. Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.5 *Test Facility*

Radiated emissions tests were performed at I.T.L.'s testing facility in Lod, Israel. I.T.L.'s EMC Laboratory is accredited by A2LA, certificate No. 1152.01 and its FCC Designation Number is US1004.

1.6 *Measurement Uncertainty*

Radiated Emission

Radiated Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4) for open site 30-1000MHz:

Expanded Uncertainty (95% Confidence, K=2):

± 4.98 dB

Note: See ITL Procedure No. PM 198.

2. System Test Configuration

2.1 *Justification*

Radiated emission screening was performed in 3 orthogonal orientations to determine the worst case.

The fundamental results are shown in the below table:

Frequency (GHz)	X axis (dBuV/m)	Y axis (dBuV/m)	Z axis (dBuV/m)
2.441	49.6	41.6	54.8

In all axes the spurious levels were under the noise level.

According to above results the worst case was the z axis.

Unit was transmitting continuously at the low channel (2402MHz), the mid channel (2441MHz) and the high channel (2480MHz), modulated with one type of modulation: BlueTooth LOW ENERGY.

2.2 *EUT Exercise Software*

No special exercise software was used.

2.3 *Special Accessories*

No special accessories were needed to achieve compliance.

2.4 *Equipment Modifications*

No modifications were necessary in order to achieve compliance.

2.5 *Configuration of Tested System*

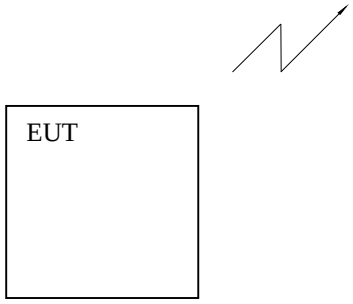

Figure 1. Configuration of Tested System

3. Radiated Measurement Test Set-up Photo

Figure 2. Radiated Emission Test

Figure 3. Radiated Emission Test

Figure 4. Radiated Emission Test

4. 6 dB Minimum Bandwidth

4.1 *Test procedure*

The E.U.T operation mode and test set-up are as described in Section 3.

See Section 3.1 Justification of the System Test Configuration concerning the E.U.T. orientation for this test.

The E.U.T was tested at the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The configuration tested is shown in

Figure 1.

The spectrum bandwidth of the E.U.T. at the point of 6 dB below maximum peak power was measured and recorded.

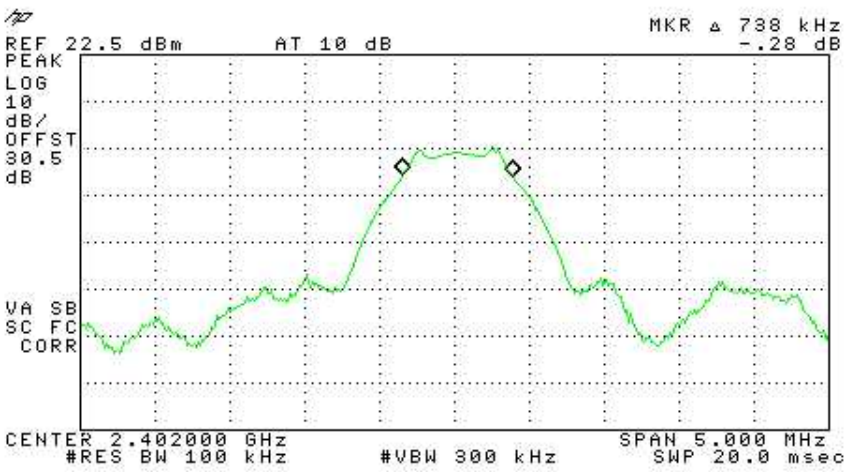

Figure 5. Low Channel, BLE Modulation

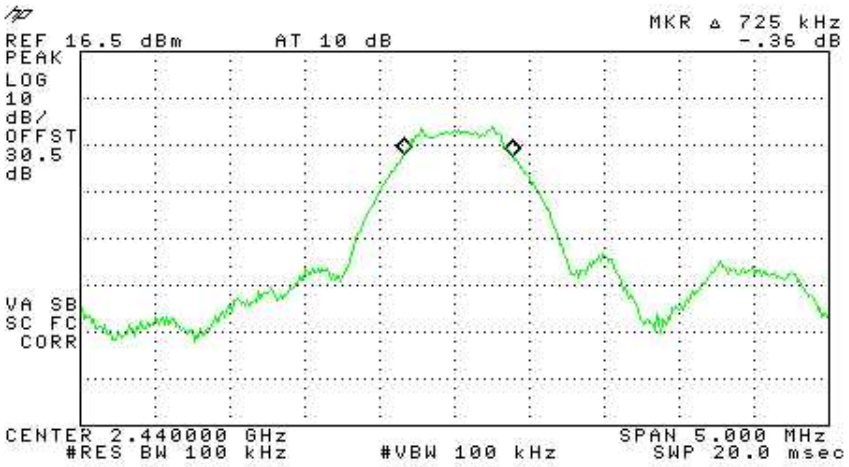

Figure 6. Mid Channel, BLE Modulation

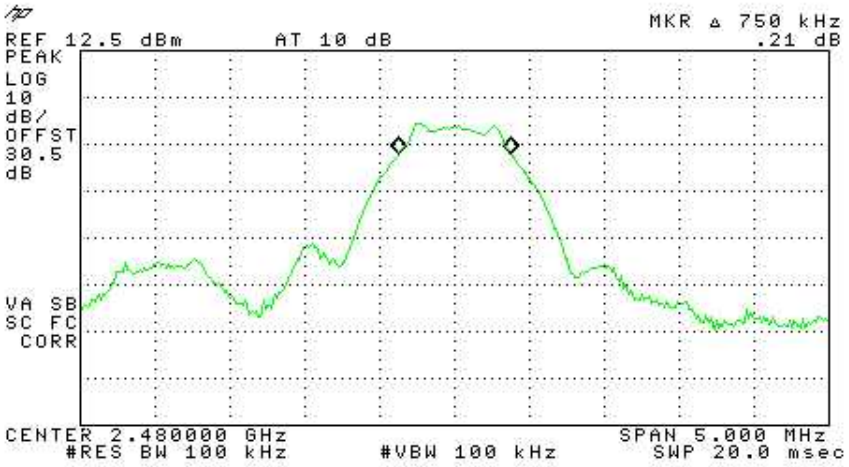

Figure 7. High Channel, BLE Modulation

4.2 *Results table*

E.U.T Description: Pure Tag V2.0
Model No.: PRF-PURET20EM
Serial Number: Not designated
Specification: F.C.C. Part 15, Subpart C: (15.247-a2)

Operation Frequency (MHz)	Modulation	Reading (MHz)	Specification (MHz)
LOW	BLE	0.783	>0.5
MIDDLE	BLE	0.725	>0.5
HIGH	BLE	0.750	>0.5

Figure 8 6 dB Minimum Bandwidth

JUDGEMENT: Passed

TEST PERSONNEL:

Tester Signature: _____ Date: 11.02.15

Typed/Printed Name: I. Siboni

4.3 *Test Equipment Used; 6db Minimum Bandwidth*

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
Spectrum Analyzer-	HP	8592L	3826A01204	February 28, 2014	1 year
30 db Attenuator	Weinschel Engineering	49-30-34	PD426	January 14, 2014	1 year

Figure 9 Test Equipment Used

5. 26 dB Minimum Bandwidth

5.1 *Test procedure*

The E.U.T operation mode and test set-up are as described in Section 3.

See Section 3.1 Justification of the System Test Configuration concerning the E.U.T. orientation for this test.

The E.U.T was tested at the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The configuration tested is shown in

Figure 1.

The spectrum bandwidth of the E.U.T. at the point of 26 dB below maximum peak power was measured and recorded.

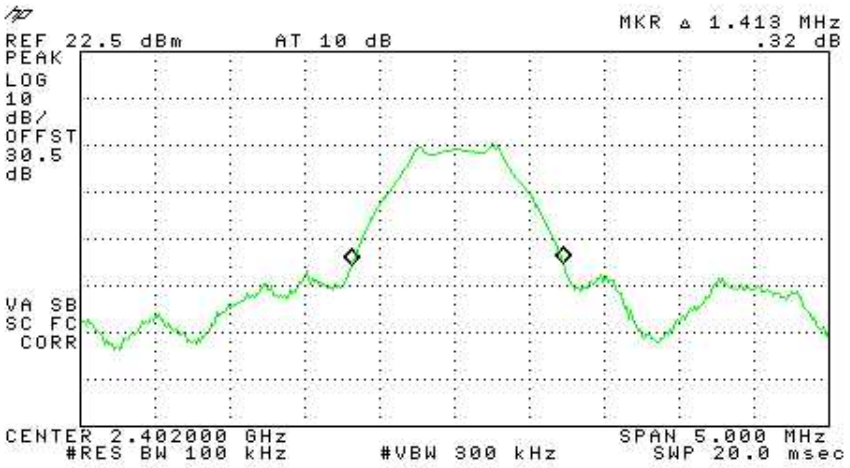

Figure 10. Low Channel, BLE Modulation

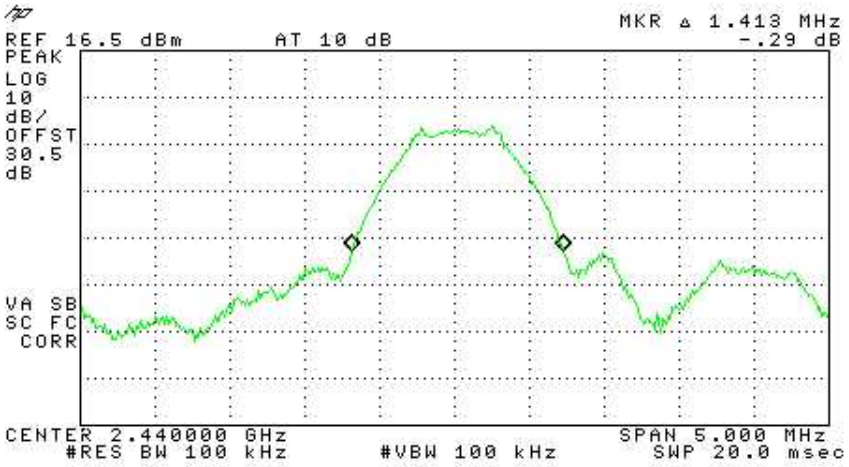

Figure 11. Mid Channel, BLE Modulation

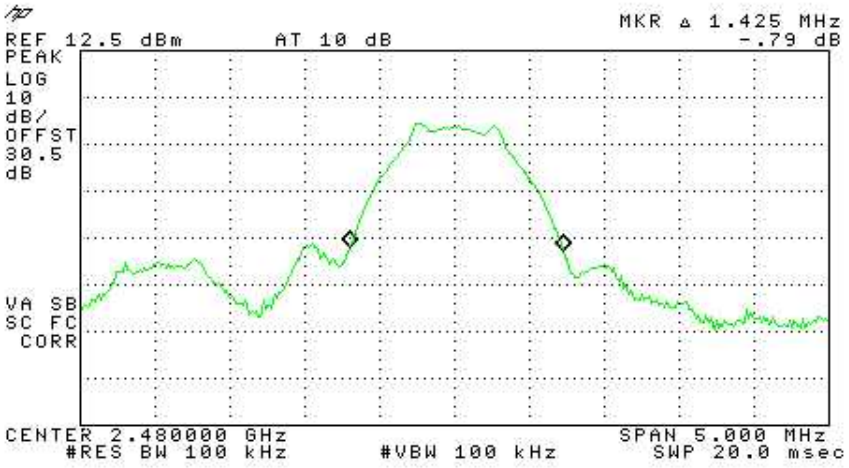

Figure 12. High Channel, BLE Modulation

5.2 *Results table*

E.U.T Description: Pure Tag V2.0
Model No.: PRF-PURET20EM
Serial Number: Not designated
Specification: F.C.C. Part 15, Subpart C: (15.247-a2)

Operation Frequency (MHz)	Modulation	Reading (MHz)
Low	BLE	1.413
Mid	BLE	1.413
High	BLE	1.425

Figure 13 26 dB Minimum Bandwidth

JUDGEMENT: Passed

TEST PERSONNEL:

Tester Signature: _____ Date: 11.02.15

Typed/Printed Name: I. Siboni

5.3 *Test Equipment Used; 26 dB Bandwidth*

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
Spectrum Analyzer-	HP	8592L	3826A01204	February 28, 2014	1 year
30 db Attenuator	Weinschel Engineering	49-30-34	PD426	January 14, 2014	1 year

Figure 14 Test Equipment Used

6. Maximum Transmitted Peak Power Output

6.1 *Test procedure*

The E.U.T operation mode and test set-up are as described in Section 3.

See Section 3.1 Justification of the System Test Configuration concerning the E.U.T. orientation for this test.

The E.U.T was tested at the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The configuration tested is shown in

Figure 1.

The E.U.T was evaluated in 3 channels: Low, Mid and High.

Radiated output power levels were measured at selected operation frequencies and the results were converted to power level according to the formula as shown below:

$$P = \frac{(E_{V/m} \times d)^2}{(30 \times G)} \text{ [W]}$$

E - Field Strength (V/m)

d – Distance from transmitter (m)

G – Antenna gain

P – Peak power (W)

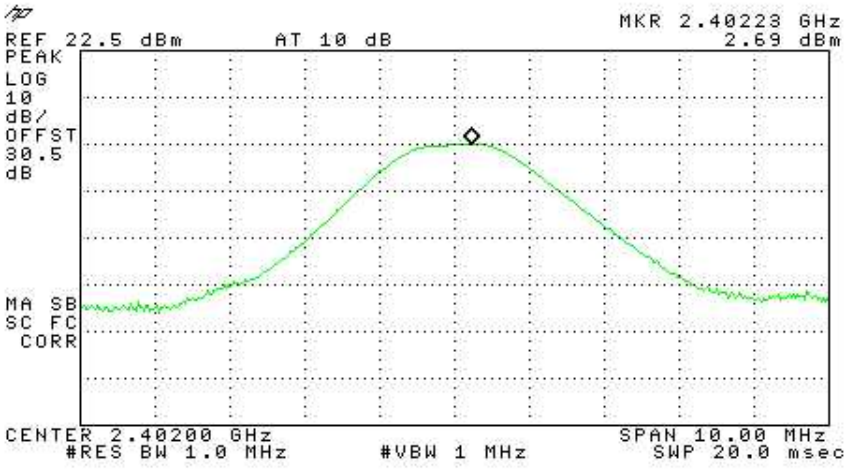

Figure 15 2402.00 MHz – BLE Modulation

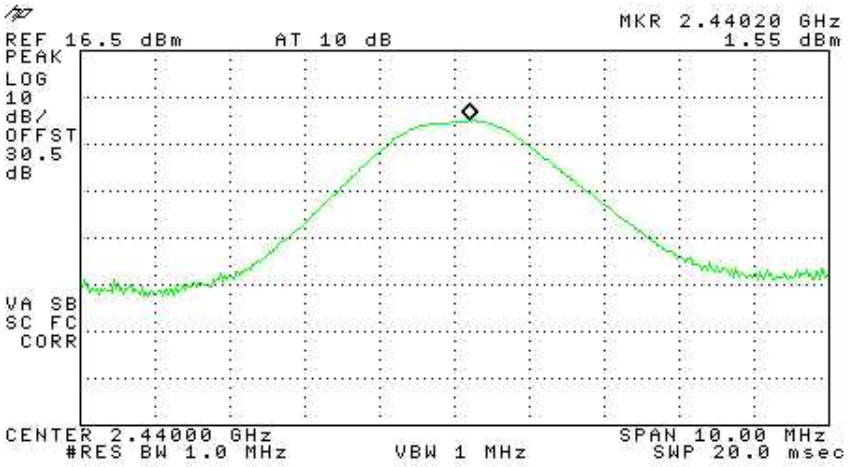

Figure 16 2442.00 MHz – BLE Modulation

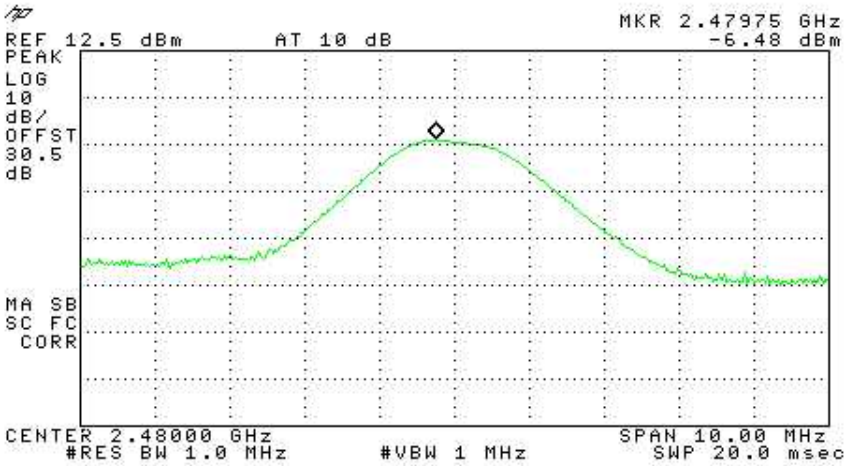

Figure 17 2480.00 MHz – BLE Modulation

6.2 *Results table*

E.U.T. Description: Pure Tag V2.0
Model No.: PRF-PURET20EM
Serial Number: Not designated
Specification: F.C.C. Part 15, Subpart C Section 15.247(b)

Operation Frequency (MHz)	Modulation	Power (dBm)	Power (mW)	Specification (dBm)	Specification (mW)	Margin (mW)
Low	BLE	2.69	2	30	1000	-998.0
Mid		1.55	1	30	1000	-999.0
High		-6.48	0.225	30	1000	-999.775

Figure 18 Maximum Peak Power Output

JUDGEMENT: Passed by 998.00 mW

TEST PERSONNEL:

Tester Signature: _____ Date: 11.02.15

Typed/Printed Name: I. Siboni

6.3 *Test Equipment Used; Maximum Transmitted Peak Power Output*

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
Spectrum Analyzer-	HP	8592L	3826A01204	February 28, 2014	1 year
30 db Attenuator	Weinschel Engineering	49-30-34	PD426	January 14, 2014	1 year

Figure 19 Test Equipment Used

7. Band Edge Spectrum

[In Accordance with section 15.247(c)]

7.1 *Test procedure*

The E.U.T operation mode and test set-up are as described in Section 3.

See Section 3.1 Justification of the System Test Configuration concerning the E.U.T. orientation for this test.

The E.U.T was tested at the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The configuration tested is shown in

Figure 1.

The E.U.T was evaluated in 2 channels: Low and High

The RBW=VBW was set to 100 kHz.

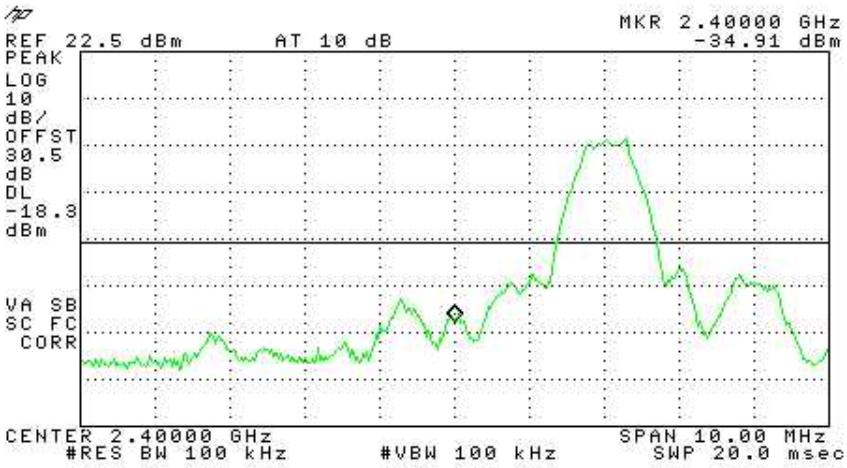

Figure 20 —Lower Band Edge, BLE Modulation

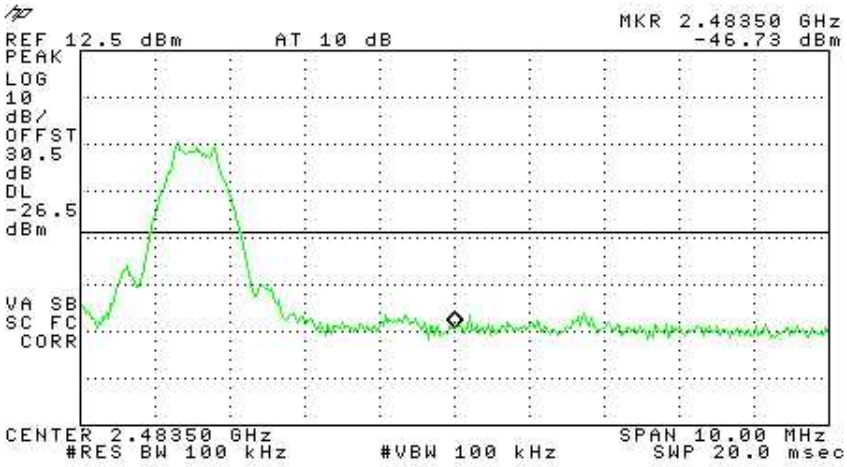

Figure 21 —Upper Band Edge, BLE Modulation

7.2 *Results table*

E.U.T. Description: Pure Tag V2.0
Model No.: PRF-PURET20EM
Serial Number: Not designated
Specification: F.C.C. Part 15, Subpart C (15.247)

Operation Frequency (MHz)	Modulation	Band Edge Frequency (MHz)	Spectrum Level (dBc)	Specification (dBc)	Margin (dB)
Low	BLE	2400.0	-34.91	-18.3	-16.61
High	BLE	2483.5	-46.73	-26.5	-20.23

Figure 22 Band Edge Spectrum

JUDGEMENT: Passed by 16.61 dB

TEST PERSONNEL:
Tester Signature: _____ Date: 11.01.15
Typed/Printed Name: I. Siboni

7.3 *Test Equipment Used; Band Edge Spectrum*

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
Spectrum Analyzer-	HP	8592L	3826A01204	February 28, 2014	1 year
30 db Attenuator	Weinschel Engineering	49-30-34	PD426	January 14, 2014	1 year

Figure 23 Test Equipment Used

8. Radiated Emission, 9 kHz – 30 MHz

8.1 *Test Specification*

9 kHz-30 MHz, FCC, Part 15, Subpart C, Section 209

8.2 *Test Procedure*

The E.U.T. operation mode and test set-up are as described in Section 3.

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The configuration tested is shown in Figure 3.1.

The frequency range 9 kHz-30 MHz was scanned.

The emissions were measured using a computerized EMI receiver complying with CISPR 16 requirements. The specification limits and applicable correction factors are loaded to the receiver via a 3.5" floppy disk.

In the frequency range 9 kHz-30MHz, the loop antenna was rotated on its vertical axis. The antenna height (center of loop) was 1 meter at a distance of 3 meters.

The E.U.T. was operated at the low, mid and high channels using a peak detector.

8.3 *Test Results*

JUDGEMENT: Passed

No signals were detected in the frequency range of 9 kHz – 30 Mhz.

The EUT met the requirements of the F.C.C. Part 15, Subpart C, Section 209 specification.

TEST PERSONNEL:

Tester Signature: _____ Date: 11.02.15

Typed/Printed Name: I. Siboni

8.4 *Test Instrumentation Used, Radiated Measurements*

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	R&S	ESIB7	100120	December 15, 2014	1 Year
Active Loop Antenna	EMCO	6502	9506-2950	November 4, 2014	1 year
Antenna Mast	ETS	2070-2	9608-1497	N/A	N/A
Turntable	ETS	2087	-	N/A	N/A
Mast & Table Controller	ETS/EMCO	2090	9608-1456	N/A	N/A

Figure 24 Test Equipment Used

8.5 *Field Strength Calculation*

The field strength is calculated directly by the EMI Receiver software, and a "Correction Factors" data disk, using the following equation:

$$FS = RA + AF + CF$$

FS:	Field Strength [dBμv/m]
RA:	Receiver Amplitude [dBμv]
AF:	Receiving Antenna Correction Factor [dB/m]
CF:	Cable Attenuation Factor [dB]

Example: FS = 30.7 dBμV (RA) + 14.0 dB (AF) + 0.9 dB (CF) = 45.6 dBμV

No external pre-amplifiers are used.

9. Spurious Radiated Emission, 30 MHz – 25000 MHz

9.1 *Radiated Emission 30 MHz-25000 MHz*

The E.U.T operation mode and test set-up are as described in Section 3.

See Section 3.1 Justification of the System Test Configuration concerning the E.U.T. orientation for this test.

A preliminary measurement to characterize the E.U.T was performed inside the shielded room, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The configuration tested is shown in

Figure 1.

The levels of the emissions within the frequency ranges of the restricted bands (Section 15.205 of FCC Part 15) were compared to the limits of the table in Section 15.209 (a), General Requirements.
In the frequency range 1-6.0 GHz, a computerized EMI receiver complying with CISPR 16 requirements was used.
In the frequency range 6.0-25.0 GHz, a spectrum analyzer including a low noise amplifier was used. During average measurements, the IF bandwidth was 1 MHz and the video bandwidth was 100Hz. During peak measurements, the IF bandwidth was 1 MHz and the video bandwidth was 3 MHz.
The test distance was 3 meters.
The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization.
Verification of the E.U.T emissions was based on the following methods: turning the E.U.T on and off; using a frequency span less than 10 MHz; observation of the signal level during turntable rotation. (Background noise is not affected by the rotation of the E.U.T.)

The E.U.T. was operated at the low, mid and high channels using a peak detector.

9.2 *Test Data*

JUDGEMENT: Passed by 4.1 dB

No signals were detected in the frequency range of 30 – 1000 MHz.

For the operation frequency of 2402 MHz, the margin between the emission level and the specification limit is in the worst case 4.1 dB at the frequency of 2390.0 MHz, vertical polarization.

For the operation frequency of 2442 MHz, the margin between the emission level and the specification limit is in the worst case 6.0 dB at the frequency of 4884.0 MHz, vertical and horizontal polarization.

For the operation frequency of 2480 MHz, the margin between the emission level and the specification limit is in the worst case 4.1 dB at the frequency of 2483.5 MHz, horizontal and vertical polarization.

The EUT met the requirements of the F.C.C. Part 15, Subpart C specification.

The details of the highest emissions are given in Figure 25 to Figure 26.

TEST PERSONNEL:

Tester Signature: _____ Date: 11.02.15

Typed/Printed Name: A. Sharabi

Radiated Emission

E.U.T Description Pure Tag V2.0
Type PRF-PURET20EM
Serial Number: Not designated

Specification: FCC, Part 15, Subpart C

Antenna Polarization: Horizontal/Vertical Frequency range: 30 MHz to 25.0 GHz
Test Distance: 3 meters Detector: Peak

Operation Frequency (MHz)	Modulation	Freq. (MHz)	Polarity (H/V)	Peak Reading (dBµV/m)	Peak. Specification (dB µV/m)	Peak. Margin (dB)
2402.0	BLE	2390.0	H	62.8	74.0	11.2
2402.0	BLE	2390.0	V	63.7	74.0	10.3
2402.0	BLE	4804.0	H	60.6	74.0	13.4
2402.0	BLE	4804.0	V	61.3	74.0	12.7
2442.0	BLE	4884.0	H	61.3	74.0	12.7
2442.0	BLE	4884.0	V	62.4	74.0	11.6
2480.0	BLE	4960.0	H	62.6	74.0	11.4
2480.0	BLE	4960.0	V	61.0	74.0	13.0
2480.0	BLE	2483.5	H	63.8	74.0	10.2
2480.0	BLE	2483.5	V	62.6	74.0	11.4

Figure 25. Radiated Emission. Antenna Polarization: HORIZONTAL / VERTICAL. Detector: Peak

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

"Peak Amp" includes correction factor.

* "Correction Factor" = Antenna Factor + Cable Loss- Low Noise Amplifier Gain

Radiated Emission

E.U.T Description Pure Tag V2.0
Type PRF-PURET20EM
Serial Number: Not designated

Specification: FCC, Part 15, Subpart C

Antenna Polarization: Horizontal/Vertical Frequency range: 30 MHz to 25.0 GHz
Test Distance: 3 meters Detector: Average

Operation Frequency (MHz)	Modulation	Freq. (MHz)	Polarity (H/V)	Average Reading (dBµV/m)	Average Specification (dB µV/m)	Average Margin (dB)
2402.0	BLE	2390.0	H	48.6	54.0	5.4
2402.0	BLE	2390.0	V	49.9	54.0	4.1
2402.0	BLE	4804.0	H	47.6	54.0	6.4
2402.0	BLE	4804.0	V	47.6	54.0	6.4
2442.0	BLE	4884.0	H	48.0	54.0	6.0
2442.0	BLE	4884.0	V	48.0	54.0	6.0
2480.0	BLE	4960.0	H	49.1	54.0	4.9
2480.0	BLE	4960.0	V	49.1	54.0	4.9
2480.0	BLE	2483.5	H	49.9	54.0	4.1
2480.0	BLE	2483.5	V	49.9	54.0	4.1

Figure 26. Radiated Emission. Antenna Polarization: HORIZONTAL / VERTICAL. Detector: Average

Notes:

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

"Average Amp" includes correction factor.

* Correction Factor = Antenna Factor + Cable Loss- Low Noise Amplifier Gain

9.3 *Test Instrumentation Used, Radiated Measurements Above 1 GHz*

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Period
EMI Receiver	Rohde & Schwarz	ESIB7	100120	December 15, 2014	1 year
EMC Analyzer	HP	HP8593	3536A00120	March 6, 2014	1 year
Biconilog Antenna	EMCO	3142B	1250	May 22, 2014	2 years
Horn Antenna	ETS	3115	6142	March 14, 2012	3 years
Horn Antenna	ARA	SWH-28	1007	March 30, 2014	3 years
Low Noise Amplifier	DBS MICROWAVE	LNA-DBS-0411N313	013	August 22, 2014	1 year
Low Noise Amplifier	Sophia Wireless	LNA 28-B	232	August 29, 2014	1 year
Spectrum Analyzer	HP	8592L	3826A01204	February 28, 2014	1 year
Spectrum Analyzer	HP	8564E	3442A00275	March 2, 2014	1 year
Antenna Mast	ETS	2070-2	9608-1497	N/A	N/A
Turntable	ETS	2087	-	N/A	N/A
Mast & Table Controller	ETS/EMCO	2090	9608-1456	N/A	N/A

Figure 27 Test Equipment Used

10. Transmitted Power Density

[In accordance with section 15.247(d)]

10.1 *Test procedure*

The E.U.T operation mode and test set-up are as described in Section 3.

See Section 3.1 Justification of the System Test Configuration concerning the E.U.T. orientation for this test.

The E.U.T was tested at the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The configuration tested is shown in

Figure 1.

The E.U.T was tested in horizontal antenna polarity for worst case.

The spectrum analyzer was set to 3 kHz resolution BW and sweep time of 1 second for each 3 kHz “window”. The spectrum peaks were located at each of the 3 operating frequencies.

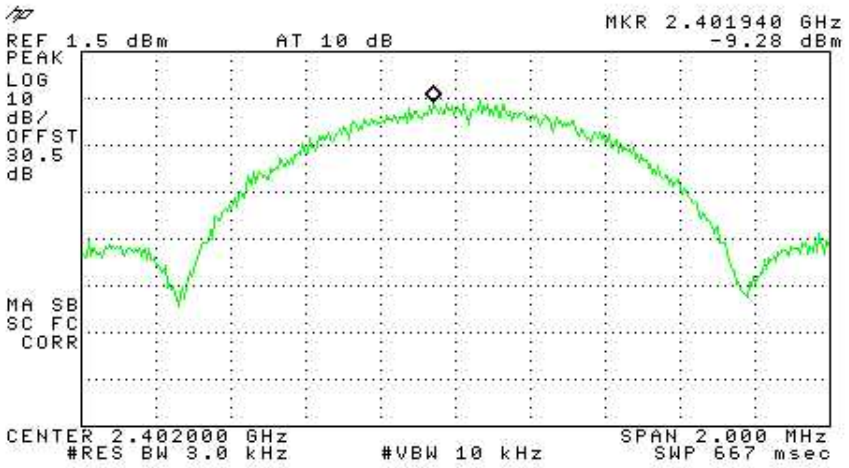

Figure 28 — Low Channel, Horizontal

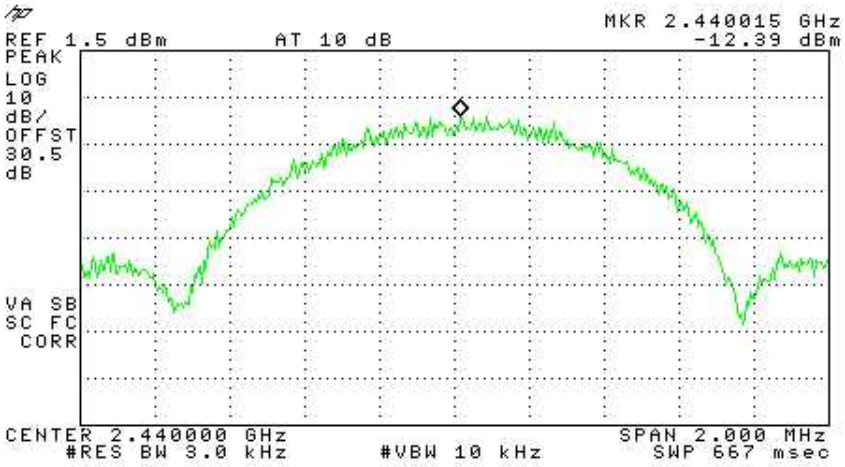

Figure 29 — Mid Channel, Horizontal

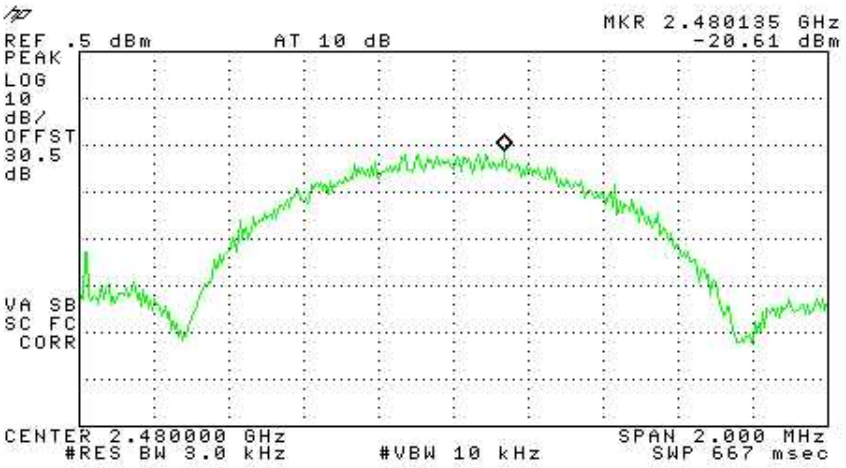

Figure 30 — High Channel, Horizonal

10.2 *Results table*

E.U.T. Description: Pure Tag V2.0
Model No.: PRF-PURET20EM
Serial Number: Not designated
Specification: F.C.C. Part 15, Subpart C (15.247)

Operation Frequency (MHz)	Modulation	Reading Spectrum Analyzer (dBm)	Specification (dBm)	Margin (dB)
Low	BLE	-9.28	8.0	-1.28
Mid	BLE	-12.39	8.0	-4.39
High	BLE	-20.61	8.0	-12.61

Figure 31 Test Results

JUDGEMENT: Passed by 1.28 dB

TEST PERSONNEL:

Tester Signature: _____ Date: 11.02.15

Typed/Printed Name: I. Siboni

10.3 *Test Equipment Used; Transmitted Power Density*

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
Spectrum Analyzer-	HP	8592L	3826A01204	February 28, 2014	1 year
30 db Attenuator	Weinschel Engineering	49-30-34	PD426	January 14, 2014	1 year

Figure 32 Test Equipment Used

11. Antenna Gain/Information

The antenna gain is 0 dBi, integral.

12. R.F Exposure/Safety

Typical use of the E.U.T. is as a personal tag.

The typical distance between the E.U.T. and the user in the worst case application, is 0.5 cm.

Calculation of Maximum Permissible Exposure (MPE)

Based on Section 1.1310 Requirements

(a) FCC limits at 2402 MHz is: $1\frac{mW}{cm^2}$

Using table 1 of Section 1.1310 limit for general population/uncontrolled exposures, the above level is an average over 30 minutes.

(b) The power density produced by the E.U.T. is

$$S = \frac{P_t G_t}{4\pi R^2}$$

P_t- Transmitted Power 2.69 dBm (Peak) = 2.0 mW

G_T- Antenna Gain, 0 dBi = 1 numeric

R- Distance from Transmitter using 0.5 cm worst case

(c) The peak power density is:

$$S_P = \frac{(2 \times 1)}{4\pi (0.5)^2} = 0.64\frac{mW}{cm^2}$$

(d) This is below the FCC limit.

13. APPENDIX A - CORRECTION FACTORS

13.1 *Correction factors for CABLE*

from EMI receiver to test antenna at 3 meter range.

FREQUENCY (MHz)	CORRECTION FACTOR (dB)
10.0	0.3
20.0	0.6
30.0	0.8
40.0	0.9
50.0	1.1
60.0	1.2
70.0	1.3
80.0	1.4
90.0	1.6
100.0	1.7
150.0	2.0
200.0	2.3
250.0	2.7
300.0	3.1
350.0	3.4
400.0	3.7
450.0	4.0
500.0	4.3
600.0	4.7
700.0	5.3
800.0	5.9
900.0	6.3
1000.0	6.7

FREQUENCY (MHz)	CORRECTION FACTOR (dB)
1200.0	7.3
1400.0	7.8
1600.0	8.4
1800.0	9.1
2000.0	9.9
2300.0	11.2
2600.0	12.2
2900.0	13.0

NOTES:

1. The cable type is RG-214.

2. The overall length of the cable is 27 meters.

3. The above data is located in file 27MO3MO.CBL on the disk marked "Radiated Emission Tests EMI Receiver".

13.2 *Correction factors for CABLE*

from EMI receiver to test antenna at 3 meter range.

FREQUENCY (GHz)	CORRECTION FACTOR (dB)
1.0	1.2
2.0	1.6
3.0	2.0
4.0	2.4
5.0	3.0
6.0	3.4
7.0	3.8
8.0	4.2
9.0	4.6
10.0	5.0
12.0	5.8

NOTES:

1. The cable type is RG-8.

2. The overall length of the cable is 10 meters.

13.3 *Correction factors for CABLE*

from spectrum analyzer to test antenna above 2.9 GHz

FREQUENCY (GHz)	CORRECTION FACTOR (dB)	FREQUENCY (GHz)	CORRECTION FACTOR (dB)
1.0	1.9	14.0	9.1
2.0	2.7	15.0	9.5
3.0	3.5	16.0	9.9
4.0	4.2	17.0	10.2
5.0	4.9	18.0	10.4
6.0	5.5	19.0	10.7
7.0	6.0	20.0	10.9
8.0	6.5	21.0	11.2
9.0	7.0	22.0	11.6
10.0	7.5	23.0	11.9
11.0	7.9	24.0	12.3
12.0	8.3	25.0	12.6
13.0	8.7	26.0	13.0

NOTES:

1. The cable type is SUCOFLEX 104 E manufactured by SUHNER.

2. The cable is used for measurements above 2.9 GHz.

3. The overall length of the cable is 10 meters.

13.4 *Correction factors for LOG PERIODIC ANTENNA*

Type LPD 2010/A
at 3 and 10 meter ranges.

Distance of 3 meters

FREQUENCY (MHz)	AFE (dB/m)
200.0	9.1
250.0	10.2
300.0	12.5
400.0	15.4
500.0	16.1
600.0	19.2
700.0	19.4
800.0	19.9
900.0	21.2
1000.0	23.5

Distance of 10 meters

FREQUENCY (MHz)	AFE (dB/m)
200.0	9.0
250.0	10.1
300.0	11.8
400.0	15.3
500.0	15.6
600.0	18.7
700.0	19.1
800.0	20.2
900.0	21.1
1000.0	23.2

NOTES:

1. *Antenna serial number is 1038.*
2. *The above lists are located in file number 38M3O.ANT for a 3 meter range, and file number 38M100.ANT for a 10 meter range.*
3. *The files mentioned above are located on the disk marked "Radiated Emission Test EMI Receiver".*

13.5 *Correction factors for Double-Ridged Waveguide Horn*

Model: 3115, S/N 29845
at 3 meter range.

FREQUENCY (GHz)	ANTENNA FACTOR (dB 1/m)	ANTENNA Gain (dBi)	FREQUENCY (GHz)	ANTENNA FACTOR (dB 1/m)	ANTENNA Gain (dBi)
1.0	24.8	5.4	10.0	38.8	11.4
1.5	26.1	7.6	10.5	38.9	11.8
2.0	28.6	7.7	11.0	39.0	12.1
2.5	29.8	8.4	11.5	39.6	11.8
3.0	31.4	8.4	12.0	39.8	12.0
3.5	32.4	8.7	12.5	39.6	12.5
4.0	33.7	8.6	13.0	40.0	12.5
4.5	33.4	9.9	13.5	39.8	13.0
5.0	34.5	9.7	14.0	40.2	13.0
5.5	35.1	9.9	14.5	40.6	12.9
6.0	35.4	10.4	15.0	41.3	12.4
6.5	35.6	10.8	15.5	39.5	14.6
7.0	36.2	10.9	16.0	38.8	15.5
7.5	37.3	10.4	16.5	40.0	14.6
8.0	37.7	10.6	17.0	41.4	13.4
8.5	38.3	10.5	17.5	44.8	10.3
9.0	38.5	10.8	18.0	47.2	8.1
9.5	38.7	11.1			

13.6 *Correction factors for ACTIVE LOOP ANTENNA*

Model 6502
S/N 9506-2950

FREQUENCY	Magnetic Antenna Factor	Electric Antenna Factor
(MHz)	(dB)	(dB)
.009	-35.1	16.4
.010	-35.7	15.8
.020	-38.5	13.0
.050	-39.6	11.9
.075	-39.8	11.8
.100	-40.0	11.6
.150	-40.0	11.5
.250	-40.0	11.6
.500	-40.0	11.5
.750	-40.1	11.5
1.000	-39.9	11.7
2.000	-39.5	12.0
3.000	-39.4	12.1
4.000	-39.7	11.9
5.000	-39.7	11.8
10.000	40.2	11.3
15.000	-40.7	10.8
20.000	-40.5	11.0
25.000	-41.3	10.2
30.000	42.3	9.2