

DATE: 24 September 2008

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

FCC Radio Test Report

for

Visonic Technologies (1993) Ltd.

Equipment under test:

Asset Tracking Tag

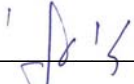
ETC

Written by: 

D. Shidlow, Documentation

Approved by: 

A. Sharabi, Test Engineer

Approved by: 

I. Raz, EMC Laboratory Manager

This report must not be reproduced, except in full, without the written permission of I.T.L. (Product Testing) Ltd.

This report relates only to items tested.

Measurement/Technical Report for Visonic Technologies (1993) Ltd.

Asset Tracking Tag

ETC

FCC ID: O4X5-ETC00433

24 September 2008

This report concerns:	Original Grant:	X
—	Class I change:	
	Class II change:	

Equipment type: Part 15 Security/Remote Control Transceiver
Limits used:
47CFR15 Section 15.231

Measurement procedure used is ANSI C63.4-2003.

Application for Certification
prepared by:
Ishaishou Raz
ITL (Product Testing) Ltd.
Kfar Bin Nun
D.N. Shimshon 99780
Israel
e-mail sraz@itl.co.il

Applicant for this device:
(different from "prepared by")
David Fensterheim
Visonic Technologies (1993) Ltd.
30 Habarzel Street
Tel-Aviv 69710
U.S.A.
Tel: +972-3-768-1410
Fax: +972-3-768-1415
e-mail: fensterheim@visonictech.com

TABLE OF CONTENTS

1.	GENERAL INFORMATION-----	4
1.1	Administrative Information.....	4
1.2	List of Accreditations	5
1.3	Product Description	6
1.4	Test Methodology	6
1.5	Test Facility	6
1.6	Measurement Uncertainty	6
2.	PRODUCT LABELING -----	7
3.	SYSTEM TEST CONFIGURATION-----	8
3.1	Justification.....	8
3.2	EUT Exercise Software	8
3.3	Special Accessories	8
3.4	Equipment Modifications	8
3.5	Configuration of Tested System.....	8
4.	PERIODIC OPERATION -----	9
4.1	Specification	9
4.2	Requirements	9
4.3	Results.....	9
5.	FIELD STRENGTH OF FUNDAMENTAL -----	13
5.1	Test Specification	13
5.2	Test Procedure	13
5.3	Measured Data.....	13
5.4	Test Instrumentation Used, Field Strength of Fundamental	18
6.	RADIATED MEASUREMENT TEST SET-UP PHOTO -----	19
7.	SPURIOUS RADIATED EMISSION -----	20
7.1	Test Specification	20
7.2	Test Procedure	20
7.3	Test Data	21
7.4	Test Instrumentation Used, Radiated Measurements	24
8.	BANDWIDTH-----	25
8.1	Test procedure	25
8.2	Results table.....	26
8.3	Test Equipment Used.....	27
9.	11. APPENDIX A - CORRECTION FACTORS -----	28
9.1	Correction factors for CABLE	28
9.2	Correction factors for CABLE	29
9.3	Correction factors for CABLE	30
9.4	Correction factors for Log Periodic Antenna	31
9.5	Correction factors for BICONICAL ANTENNA.....	32
9.6	Correction factors for LOG PERIODIC ANTENNA	33
9.7	Correction factors for ACTIVE LOOP ANTENNA	34

1. General Information

1.1 Administrative Information

Manufacturer: Visonic Technologies (1993) Ltd.

Manufacturer's Address: 30 Habarzel St.
Tel-aviv, 69710
Israel
Tel: +972-3—768-1400
Fax: +972-3-768-1415

Manufacturer's Representative: Gaby Shugol

Equipment Under Test (E.U.T): Asset Tracking Tag

Equipment Model No.: ETC

Equipment Serial No.: Not Designated

Date of Receipt of E.U.T:

Start of Test:

End of Test:

Test Laboratory Location: I.T.L (Product Testing) Ltd.
Kfar Bin Nun,
ISRAEL 99780

Test Specifications: FCC Part 15 Sub-part C

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.), Registration No. 90715.
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), File No. IC 4025.
6. TUV Product Services, England, ASLLAS No. 97201.
7. Nemko (Norway), Authorization No. ELA 207.

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 Asset Tracking Tag is an Active RFID device that may be attached to an asset for the purpose of supervising the asset's location.

The tag contains:

- RF transmitter for long range communication with Elpas receivers
- LF (124KHz) receiver for chokepoint detection
- Motion sensor for reducing transmission rate when the tag is stationary
- IR tamper sensor for signaling when tag is removed from the asset
- Battery
- Push button

1.4 *Test Methodology*

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

1.5 *Test Facility*

The radiated emissions tests were performed at I.T.L.'s testing facility at Kfar Bin-Nun, Israel. This site is a FCC listed test laboratory (FCC Registration No. 90715, date of listing August 22, 2006).

I.T.L.'s EMC Laboratory is also accredited by A2LA, certificate No. 1152.01.

1.6 *Measurement Uncertainty*

Radiated Emission

The Open Site complies with the ± 4 dB Normalized Site Attenuation requirements of ANSI C63.4-2003. In accordance with Paragraph 5.4.6.1 of this standard, this tolerance includes instrumentation calibration errors, measurement technique errors, and errors due to site anomalies.

2. Product Labeling

5-ETC00433C
 BARCODE A1
02D7B1 1345345
 FCCID O4X5-ETC00433

Figure 1. FCC Label

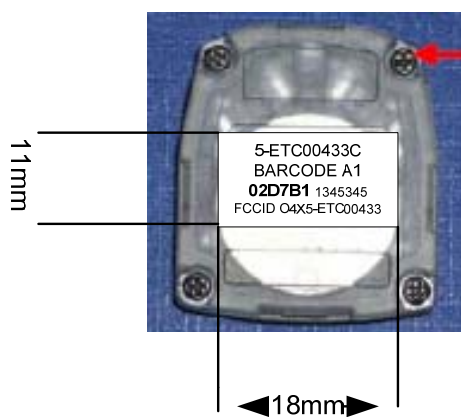


Figure 2. Location of Label on EUT

3. System Test Configuration

3.1 *Justification*

To determine the E.U.T. antenna orientation for the spurious radiated emissions tests, the product carrier field level was measured with the E.U.T. in 3 orthogonal positions. The E.U.T. was tested in 3 orthogonal positions.

The horizontal position of the E.U.T. was selected as the worst case final orientation position.

3.2 *EUT Exercise Software*

In normal operation mode the ETC transmits a single 2 msec transmission every 10 seconds when the badge is in motion.

In order to perform the test, the firmware was modified so that the ETC transmits a message 20 times per second.

3.3 *Special Accessories*

N/A

3.4 *Equipment Modifications*

No modifications were needed in order to achieve compliance

3.5 *Configuration of Tested System*



Figure 3. Configuration of Tested System

4. Periodic Operation

4.1 Specification

F.C.C., Part 15, Subpart C, Section 15.231(a)

4.2 Requirements

Requirement	Rationale	Verdict
Continuous transmissions are not permitted.	See information in User Manual.	Complies
A manually operated transmitter shall be deactivated within not more than 5 seconds after releasing the switch.	See plot in Figure 4.	Complies
An automatically operated transmitter shall cease operation within 5 seconds after activation.	See plot in Figure 4.	Complies
Periodic transmissions at regular predetermined intervals are not permitted.	See information in User Manual.	Complies
Polling or supervised transmissions to determine system integrity of transmitter used in security or safety applications shall not exceed more than 2 seconds per hour.	See plots in Figure 5 to Figure 6	Complies

4.3 Results

JUDGEMENT: Passed

The EUT met the FCC Part 15, Subpart C, Section 15.231(a) specification requirements.

TEST PERSONNEL:

Tester Signature:  Date: 18.11.08
Typed/Printed Name: A. Sharabi

Periodic Operation

E.U.T Description	Asset Tracking Tag
Type	ETC
Serial Number:	Not Designated

Specification: F.C.C., Part 15, Subpart C, 15.231(a)

 16:53:36 SEP 09, 2008

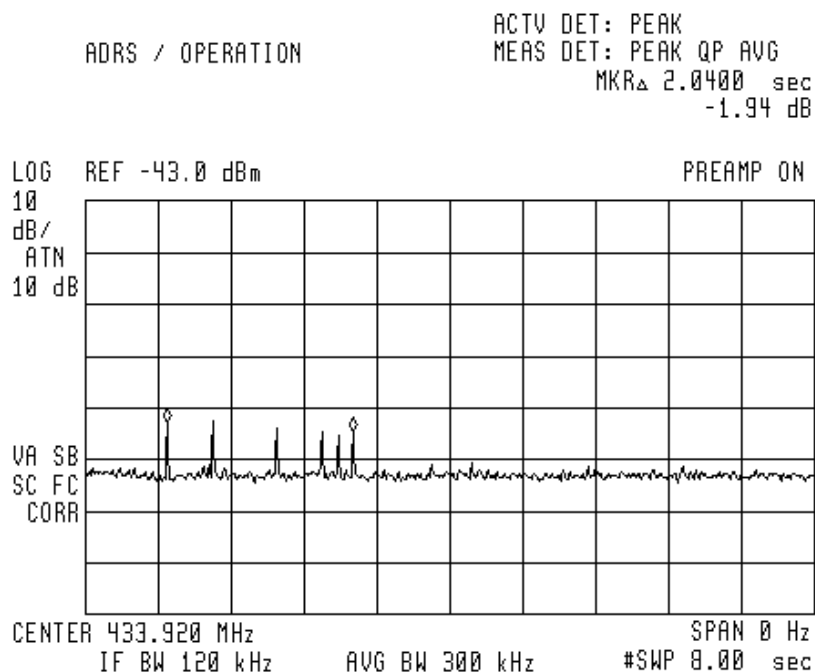


Figure 4. Manual and Automatic Transmission in 5 Seconds = 2.04 Seconds

Periodic Operation

E.U.T Description Asset Tracking Tag
 Type ETC
 Serial Number: Not Designated

Specification: F.C.C., Part 15, Subpart C, 15.231(a)

10:12:34 APR 03, 2008

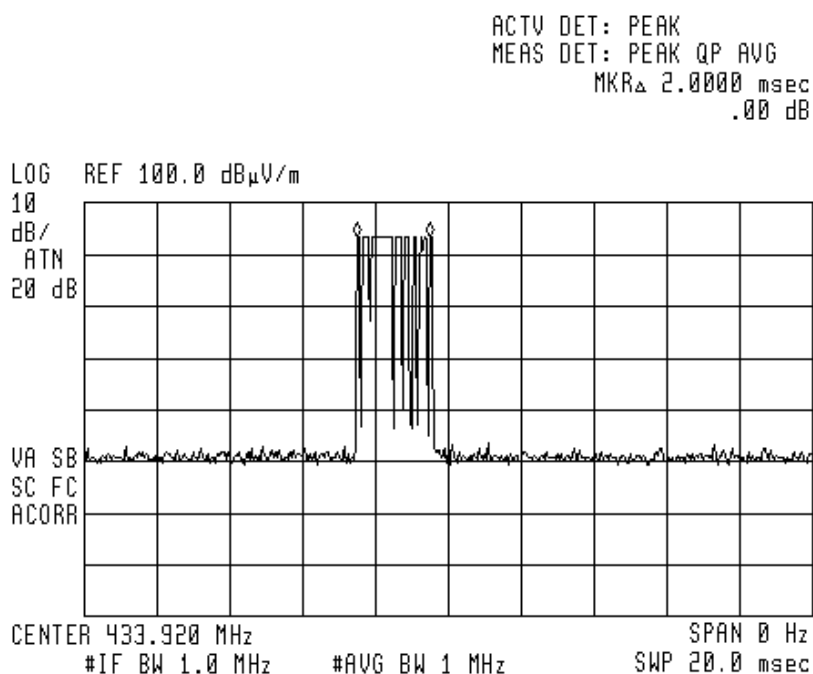


Figure 5. System Integrity Pulse Width

Periodic Operation

E.U.T Description Asset Tracking Tag
Type ETC
Serial Number: Not Designated

Specification: F.C.C., Part 15, Subpart C, 15.231(a)

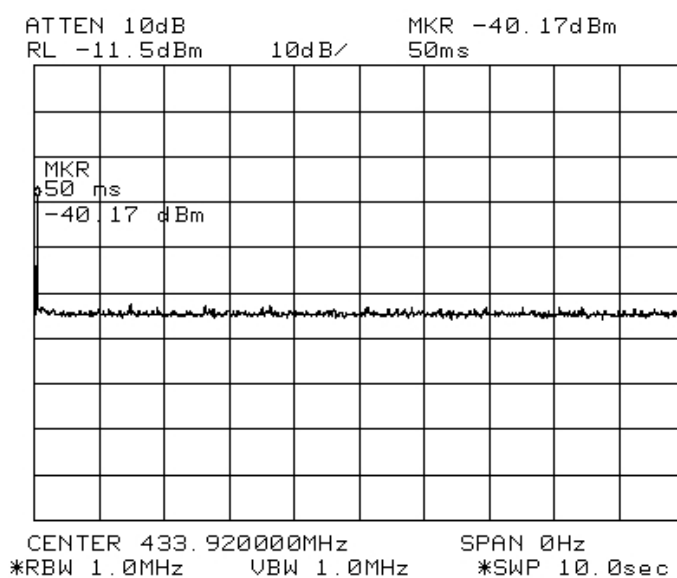


Figure 6. System Integrity Within 1 Hour

(2 milliseconds X 360 = 720 milliseconds)

5. Field Strength of Fundamental

5.1 Test Specification

F.C.C., Part 15, Subpart C, Section 15.231(b)

5.2 Test Procedure

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

The E.U.T. was placed on a non-conductive table, 0.8 meters above the O.A.T.S. ground plane.

The EMI receiver was set to the E.U.T. Fundamental Frequency (433.92MHz) and Peak Detection.

The turntable and antenna mast were adjusted for maximum level reading on the EMI receiver.

The measurement was performed for vertical and horizontal polarizations of the test antenna.

The average result is:

Peak Level(dB μ V/m) + E.U.T. Duty Cycle Factor, in 100msec time window (dB)

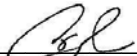
5.3 Measured Data

JUDGEMENT: Passed by 32.7 dB

The EUT met the FCC Part 15, Subpart C, Section 15.231(b) specification requirements.

The details of the highest emissions are given in Figure 7 to Figure 10.

TEST PERSONNEL:

Tester Signature:  Date: 18.11.08

Typed/Printed Name: A. Sharabi

Field Strength of Fundamental

E.U.T Description Asset Tracking Tag
Type ETC
Serial Number: Not Designated

Specification: F.C.C., Part 15, Subpart C, 15.231(b)

Antenna Polarization: Horizontal/Vertical

Test Distance: 3 meters

Detector: Peak

Freq.	Pol.	Peak Reading	Average Factor	AVG Result	AVG Specification	Margin
(MHz)	V/H	(dBμV/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
433.915	H	75.36	-30.45	44.91	80.8	-35.89
433.925	V	78.51	-30.45	48.06	80.8	-32.74

Figure 7. Field Strength of Fundamental. Antenna Polarization: HORIZONTAL/VERTICAL. Detector: Peak

Notes:

1. 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.
2. "Peak Reading" (dBμV/m) included the "Correction Factors".
3. "Correction Factors" (dB) = Test Antenna Correction Factor(dB) + Cable Loss.
4. "Average Factor" = $20 \log [(burst\ duration/100msec)*Num\ of\ burst\ within\ 100msec]$ = $20 \log [(3/100)*1]$ = -30.45
5. "Average Result" (dBμV/m) = Peak Amp. (dBμV/m) + D.C.F. (dB)

Field Strength of Fundamental

E.U.T Description Asset Tracking Tag
Type ETC
Serial Number: Not Designated

Specification: F.C.C., Part 15, Subpart C, 15.231(b)

Antenna Polarization: Horizontal

Test Distance: 3 meters

Detectors: Peak, Quasi-peak, Average

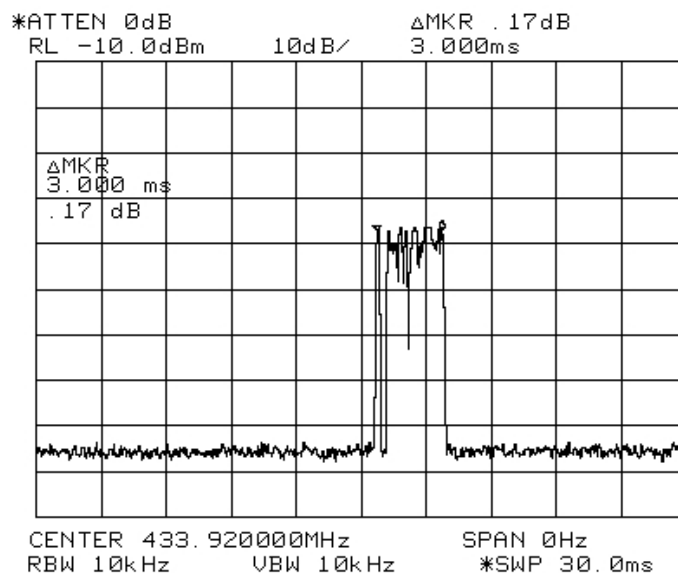


Figure 8. Average Factor Calculation

“Average Factor = $20 \log [(burst\ duration/100msec) * Num\ of\ burst\ within\ 100msec]$ = $20 \log [(3/100) * 1]$ = -30.45

Field Strength of Fundamental

E.U.T Description Asset Tracking Tag
 Type ETC
 Serial Number: Not Designated

Specification: F.C.C., Part 15, Subpart C, 15.231(b)

Antenna Polarization: Horizontal

Test Distance: 3 meters

Detectors: Peak, Quasi-peak, Average

14:47:13 SEP 09, 2008

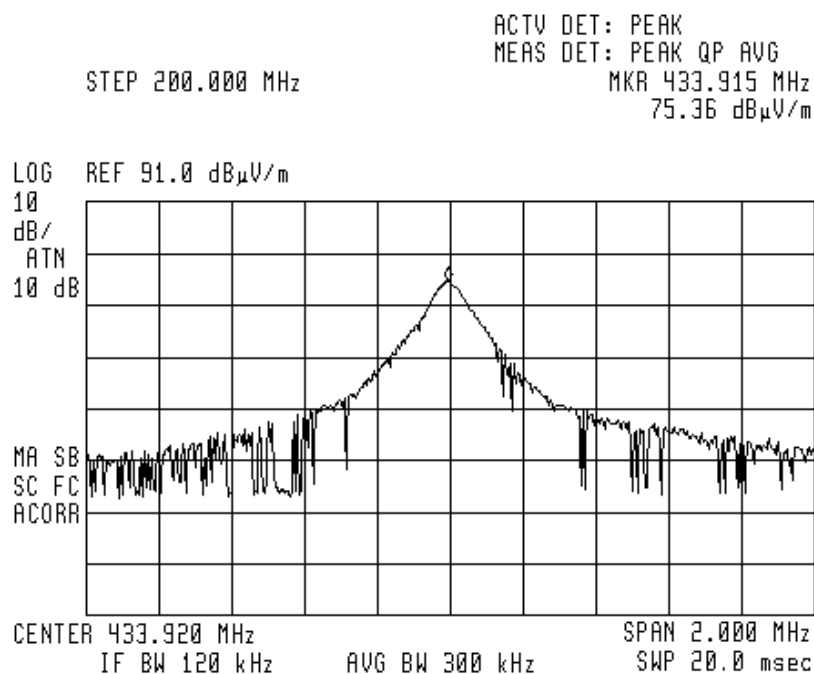


Figure 9. Field Strength of Fundamental. Antenna Polarization: HORIZONTAL.
Detectors: Peak, Quasi-peak, Average

Field Strength of Fundamental

E.U.T Description Asset Tracking Tag
 Type ETC
 Serial Number: Not Designated

Specification: F.C.C., Part 15, Subpart C, 15.231(b)

Antenna Polarization: Vertical

Test Distance: 3 meters

Detectors: Peak, Quasi-peak, Average

 14:42:27 SEP 09, 2008

ACTV DET: PEAK
 MEAS DET: PEAK QP AVG
 MKR 433.925 MHz
 78.51 dB μ V/m

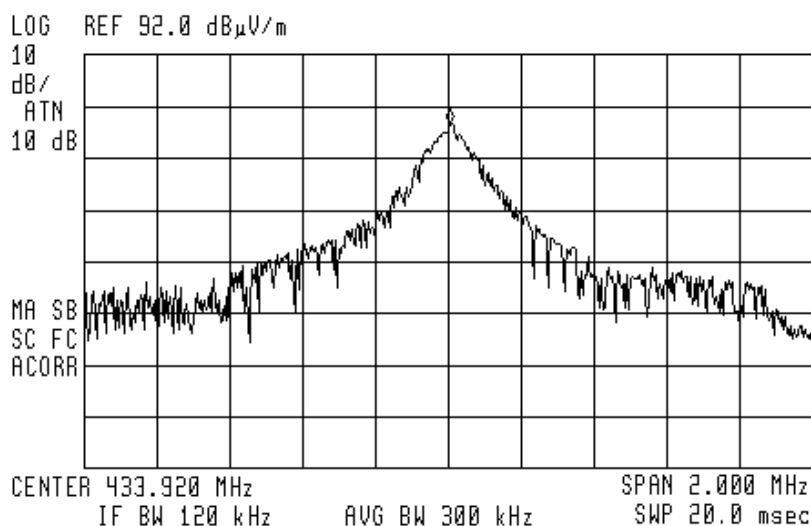


Figure 10. Field Strength of Fundamental. Antenna Polarization: VERTICAL.
Detectors: Peak, Quasi-peak, Average

5.4 Test Instrumentation Used, Field Strength of Fundamental

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	November 12, 2007	1 year
RF Section	HP	85420E	3705A00248	November 12, 2007	1 year
Antenna Log Periodic	ARA	LPD-2010/A	1038	November 22, 2007	1 year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A
Printer	HP	LaserJet 2200	JPKGC19982	N/A	N/A

6. Radiated Measurement Test Set-up Photo



Figure 11. Radiated Emission Test

7. Spurious Radiated Emission

7.1 Test Specification

9 kHz - 4500 MHz, F.C.C., Part 15, Subpart C

7.2 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.

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. The signals from the list of the highest emissions were verified and the list was updated accordingly.

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.

The frequency range 9 kHz-4500 MHz was scanned.

The emissions were measured using a computerized EMI receiver complying to 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.

In the frequency range 2.9-4.5 GHz, a spectrum analyzer including a low noise amplifier was used. During peak measurements, the I.F. bandwidth was 1 MHz, and video bandwidth 3 MHz. During average measurements, the I.F. bandwidth was 1 MHz and video bandwidth was 100 Hz.

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 emissions were measured at a distance of 3 meters.

7.3 Test Data

JUDGEMENT: Passed by 18.7 dB

The EUT met the requirements of the F.C.C. Part 15, Subpart C, specification.
The margin between the emission level and the specification limit is 18.7 dB in the worst case at the frequency of 1301.18 MHz, vertical polarization.

No signals other than harmonics were found.

TEST PERSONNEL:

Tester Signature: 

Date: 18.11.08

Typed/Printed Name: A. Sharabi

Radiated Emission

E.U.T Description Asset Tracking Tag
Type ETC
Serial Number: Not Designated

Specification: FCC Part 15, Subpart C

Antenna Polarization: Horizontal/Vertical
Antenna: 3 meters distance

Frequency range: 30 MHz to 1000 MHz
Detectors: Peak

Frequency (MHz)	Antenna Polarity V/H	Peak Reading (dB μ V/m)	Specification (dB μ V/m)	Margin (dB)
867.85	H	43.5	80.8	-37.3
1301.18	H	49.9	74.0	-24.1
867.85	V	48.2	80.8	-32.6
1301.18	V	55.3	74.0	-18.7

**Figure 12. Radiated Emission. Antenna Polarization: HORIZONTAL/VERTICAL.
Detectors: Peak**

Notes:

1. 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.
2. "Peak Reading" (dB μ V/m) included the "Correction Factors".
3. "Correction Factors" (dB) = Test Antenna Correction Factor(dB) + Cable Loss.

Radiated Emission

E.U.T Description Asset Tracking Tag
Type ETC
Serial Number: Not Designated

Specification: FCC Part 15, Subpart C

Antenna Polarization: Horizontal/Vertical
Antenna: 3 meters distance

Frequency range: 30 MHz to 1000 MHz
Detectors: Average

Freq.	Pol.	Peak Amp	Average Factor	AVG Result	AVG Specification	Margin
(MHz)	V/H	(dB μ V/m)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)
867.85	H	43.5	-30.45	13.05	60.8	-47.75
1301.18	H	49.9	-30.45	19.45	60.8	-41.35
867.85	V	48.2	-30.45	17.75	54.0	-36.25
1301.18	V	55.3	-30.45	24.85	54.0	-29.15

**Figure 13. Radiated Emission. Antenna Polarization: HORIZONTAL/VERTICAL.
Detectors: Average**

Notes:

1. 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.
2. "Peak Amp." (dB μ V/m) included the "Correction Factors".
3. "Correction Factors" (dB) = Test Antenna Correction Factor(dB) + Cable Loss.
4. "Average Factor = $20 \log [(burst\ duration/100msec)*Num\ of\ burst\ within\ 100msec]$ = $20 \log [(3/100)*1]$ = -30.45
5. "Average Result" (dB μ V/m)=Peak Amp. (dB μ V/m) + D.C.F. (dB)

7.4 Test Instrumentation Used, Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	November 12, 2007	1 year
RF Section	HP	85420E	3705A00248	November 12, 2007	1 year
Low Noise Amplifier	DBS MICROWAVE	LNA-DBS- 0411N313	013	November 2, 2007	1 Year
Spectrum Analyzer	HP	8592L	3826A01204	March 5, 2008	1 Year
Active Loop Antenna	EMCO	6502	9506-2950	October 15, 2007	1 year
Antenna Bioconical	ARA	BCD 235/B	1041	March 23, 2008	1 year
Antenna Log Periodic	ARA	LPD-2010/A	1038	November 22, 2007	1 year
Antenna-Log Periodic	A.H.System	SAS-200/511	253	February 4, 2007	2 year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A
Printer	HP	LaserJet 2200	JPKGC19982	N/A	N/A

8. Bandwidth

8.1 Test procedure

The transmitter unit operated with normal modulation. The spectrum analyzer was set to 120 kHz resolution BW and center frequency of the transmitter fundamental. The spectrum bandwidth of the transmitter unit was measured and recorded. The BW was measured at 20 dBc points.

The EUT was set up as shown in Figure 3, and its proper operation was checked. The transmitter occupied bandwidth was measured with the EMI receiver as frequency delta between reference points on the modulation envelope.

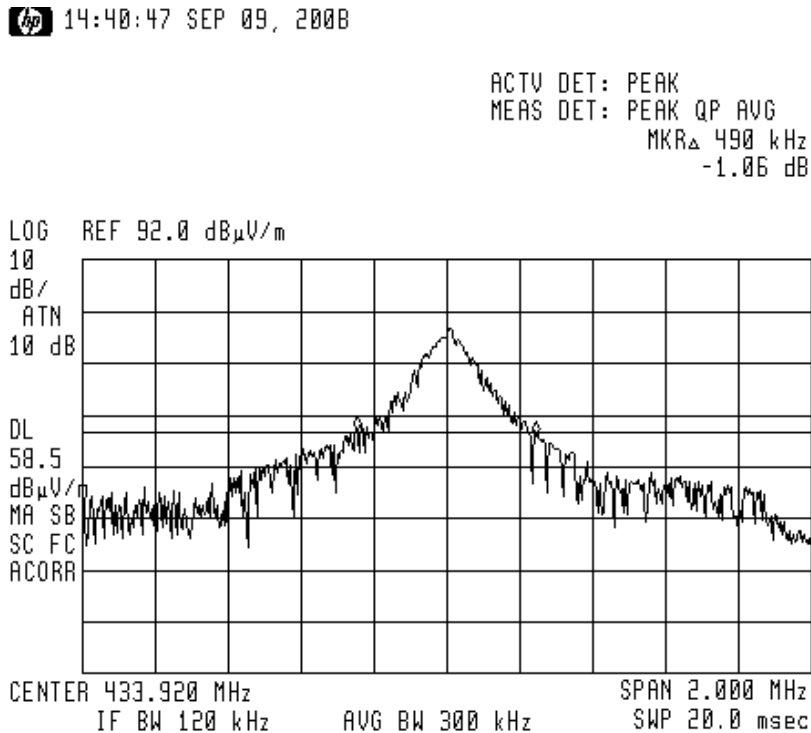


Figure 14

8.2 Results table

E.U.T Description: Asset Tracking Tag

Model: ETC

Serial Number: Not Designated

Specification: F.C.C. Part 15, Subpart C: (15.231(c))

Bandwidth Reading (kHz)	Specification (1) (kHz)	Margin (kHz)
490	1084.8	-594.8

Figure 15 Bandwidth

JUDGEMENT: Passed by 594.8 kHz

TEST PERSONNEL:

Tester Signature: 

Date: 18.11.08

Typed/Printed Name: A. Sharabi

(1) 0.25% of the E.U.T. fundamental frequency, Section 15.231(c).

8.3 Test Equipment Used.

Bandwidth

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	November 12, 2007	1 year
RF Section	HP	85420E	3705A00248	November 12, 2007	1 year
Antenna Log Periodic	ARA	LPD-2010/A	1038	November 22, 2007	1 year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A
Printer	HP	LaserJet 2200	JPKG19982	N/A	N/A

Figure 16 Test Equipment Used

9. 11. APPENDIX A - CORRECTION FACTORS

9.1 Correction factors for CABLE from EMI receiver to test antenna at 3 meter range.

FREQUENCY (MHz)	CORRECTION FACTOR (dB)	FREQUENCY (MHz)	CORRECTION FACTOR (dB)
10.0	0.3	1200.0	7.3
20.0	0.6	1400.0	7.8
30.0	0.8	1600.0	8.4
40.0	0.9	1800.0	9.1
50.0	1.1	2000.0	9.9
60.0	1.2	2300.0	11.2
70.0	1.3	2600.0	12.2
80.0	1.4	2900.0	13.0
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		

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".

9.2 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.

9.3 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.

9.4 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 38M30.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".

9.5 Correction factors for BICONICAL ANTENNA
Type BCD-235/B,
at 3 meter range

FREQUENCY (MHz)	AFE (dB/m)
20.0	19.4
30.0	14.8
40.0	11.9
50.0	10.2
60.0	9.1
70.0	8.5
80.0	8.9
90.0	9.6
100.0	10.3
110.0	11.0
120.0	11.5
130.0	11.7
140.0	12.1
150.0	12.6
160.0	12.8
170.0	13.0
180.0	13.5
190.0	14.0
200.0	14.8
210.0	15.3
220.0	15.8
230.0	16.2
240.0	16.6
250.0	17.6
260.0	18.2
270.0	18.4
280.0	18.7
290.0	19.2
300.0	19.9
310	20.7
320	21.9
330	23.4
340	25.1
350	27.0

NOTES:

1. Antenna serial number is 1041.
2. The above list is located in file 19BC10M1.ANT on the disk marked "Radiated Emissions Tests EMI Receiver".

9.6 Correction factors for LOG PERIODIC ANTENNA
Type SAS-200/511
at 3 meter range.

FREQUENCY (GHz)	ANTENNA FACTOR (dB)
1.0	24.9
1.5	27.8
2.0	29.9
2.5	31.2
3.0	32.8
3.5	33.6
4.0	34.3
4.5	35.2
5.0	36.2
5.5	36.7
6.0	37.2
6.5	38.1

FREQUENCY (GHz)	ANTENNA FACTOR (dB)
7.0	38.6
7.5	39.2
8.0	39.9
8.5	40.4
9.0	40.8
9.5	41.1
10.0	41.7
10.5	42.4
11.0	42.5
11.5	43.1
12.0	43.4
12.5	44.4
13.0	44.6

NOTES:

1. Antenna serial number is 253.
2. The above lists are located in file number SAS3M0.ANT for a 3 meter range.
3. The files mentioned above are located on the disk marked "Antenna Factors".

9.7 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