



DATE: 22 September 2013

**I.T.L. (PRODUCT TESTING) LTD.
FCC Radio Test Report**

for


AeroScout Ltd.


Equipment under test:

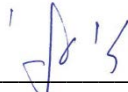
LF Exciter with Internal Wi-Fi Receiver

125 kHz Transmitter

EX-5500

Written by: 
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Approved by: 
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Approved by: 
I. Raz, EMC Laboratory Manager

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This report relates only to items tested.



Measurement/Technical Report for AeroScout Ltd.

LF Exciter with Internal Wi-Fi Receiver

EX-5500

FCC ID: Q3HEX5500

IC: 5115A-EX5500

03 September 2013

This report concerns:	Original Grant:	X
	Class I Change:	
	Class II Change:	

Equipment type: Part 15 Low Power Transmitter Below 1705 kHz

LF Exciter with Internal Wi-Fi Receiver

Limits used: 47CFR15 Section 15.209

Measurement procedure used is KDB 558074 D01 April 9, 2013 and ANSI C63.4: 2003.

Application for Certification
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1. General Information

1.1 Administrative Information

Manufacturer:	AeroScout Ltd.
Manufacturer's Address:	3 Pekeris St. Einstein Entrance 4 th Floor Rehovot 76702 Tel: +972-8-9369393 Fax: +972-8-9365977
Manufacturer's Representative:	Dadi Matza
Equipment Under Test (E.U.T):	LF Exciter with Internal Wi-Fi Receiver
Equipment Model No.:	EX-5500
Equipment Serial No.:	Not Designated
Date of Receipt of E.U.T:	16.05.13
Start of Test:	16.05.13
End of Test:	16.05.13
Test Laboratory Location:	I.T.L (Product Testing) Ltd. Kfar Bin Nun, ISRAEL 99780
Test Specifications:	FCC Part 15, Subpart C RSS-210 Issue 8, 2010



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), IC File No.: 46405-4025; Site No. IC 4025B-1.
6. TUV Product Services, England, ASLLAS No. 97201.

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 AeroScout EX5500 Exciter is a component of the AeroScout suite of enterprise visibility solutions that enables location-based applications. The EX5500 extends the AeroScout suite to provide robust and sophisticated RFID detection capabilities, using the same AeroScout tags that can also be accurately located in real time by the AeroScout system.

The EX5500 triggers AeroScout's tags as they pass through a choke point or when they are located near the Exciter and the tags in turn transmit Wi-Fi message to Internal Receivers or compatible Access Points in range. The Exciter can activate/deactivate the tags, program the tags or even cause tag reaction such as blinking. This provides instant acknowledgment that a tagged asset passed through a gate, doorway or some other well-defined area.

The EX5500 Exciter has built in Wi-Fi receiver which enables it to receive AeroScout tag messages. The Exciter also has an embedded Wi-Fi transmitter which is utilized by the Exciter for self-health monitoring. These capabilities make the Exciter ideal for security applications.

The detection capabilities of the EX5500, combined with the location features of the AeroScout Visibility System, make the AeroScout suite the most sophisticated enterprise visibility solution for a wide variety of industries.

1.4 Test Methodology

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

Radiated testing was performed according to the procedures in KDB 558074 D01 April 9, 2013 and ANSI 63-4: 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 November 21, 2012).

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

1.6 Measurement Uncertainty

Conducted Emission

Conducted Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4) 0.15 – 30 MHz:

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

± 3.6 dB

Note: See ITL Procedure No. PM 198.



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):

± 5.2 dB

Note: See ITL Procedure No. PM 198.



2. System Test Configuration

2.1 *Justification*

Radiated emission screening was performed in 3 orthogonal orientations. The worst case orientation was the Horizontal position as ceiling mounted.

2.2 *EUT Exercise Software*

Exercise Software version 400.16.

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

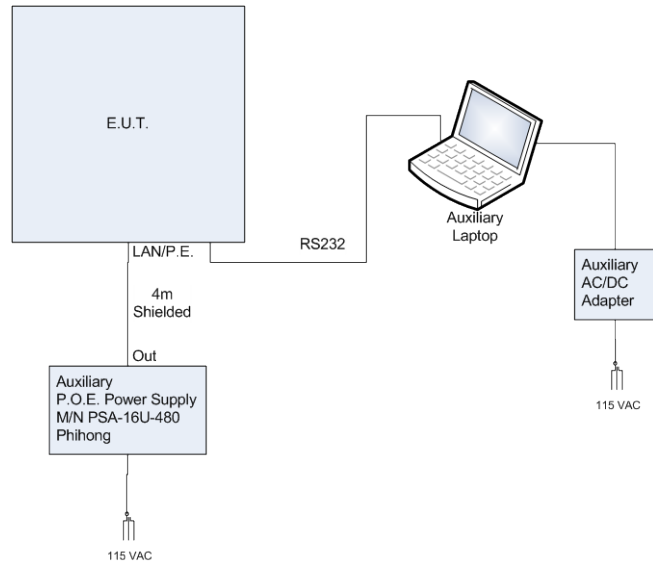


Figure 1. Configuration of Tested System

3. Conducted and Radiated Measurement Test Set-up Photo



Figure 2. Conducted Emission On AC Ports Test

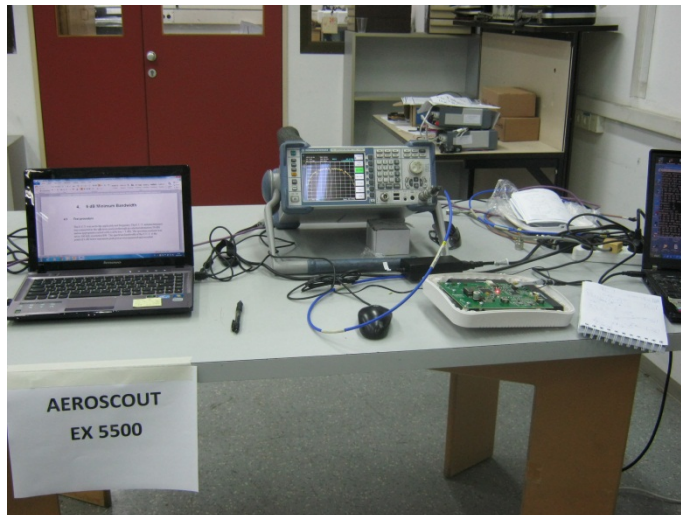


Figure 3. Conducted Emission from Antenna Ports Test

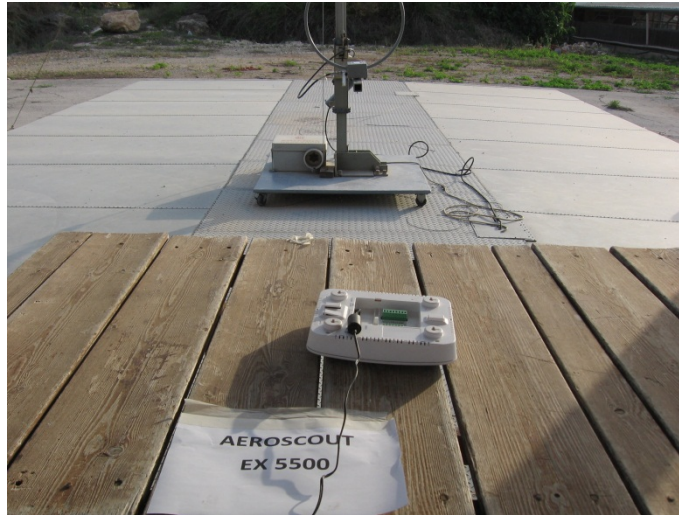


Figure 4. Radiated Emission Test

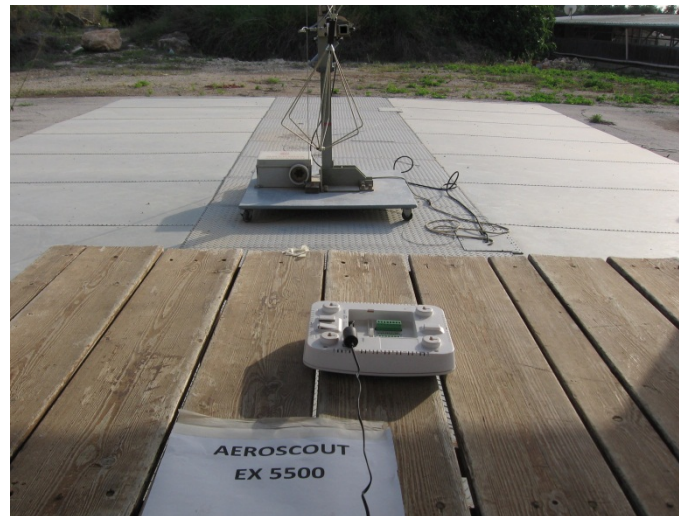


Figure 5. Radiated Emission Test

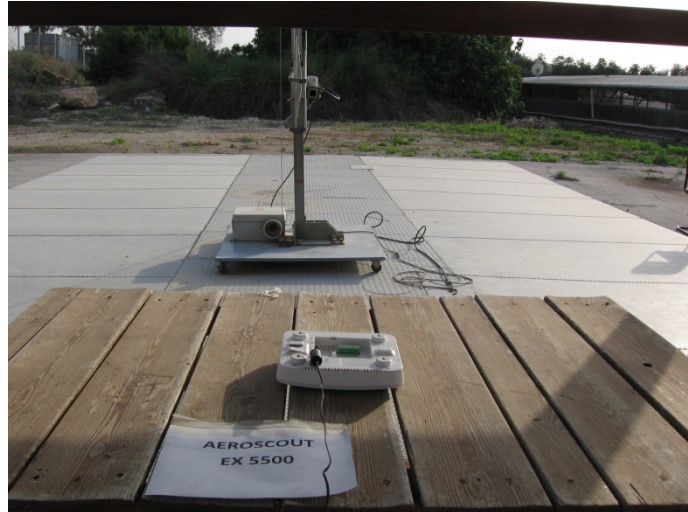


Figure 6. Radiated Emission Test



4. Conducted Emission from AC Ports

4.1 Test Specification

F.C.C., Part 15, Subpart C

4.2 Test Procedure

The E.U.T operation mode and test set-up are as described in Section 3.1. In order to minimize background noise interference, the conducted emission testing was performed inside a shielded room, with the E.U.T placed on a 0.8 meter high wooden table, 0.4 meter from the room's vertical wall.

The E.U.T was powered from 115 V AC / 60 Hz via a 50 Ohm / 50 μ Hn Line Impedance Stabilization Network (LISN) on the phase and neutral lines. The LISN's were grounded to the shielded room ground plane (floor), and were kept at least 0.8 meters from the nearest boundary of the E.U.T

The center of the E.U.T AC cable was folded back and forth, in order to form a bundle less than 0.40 meters and a total cable length of 1 meter.

The emission voltages at the LISN's outputs were measured using a computerized receiver, complying with CISPR 16 requirements. The specification limits are loaded to the receiver via a 3.5" floppy disk and are displayed on the receiver's spectrum display.

A frequency scan between 0.15 and 30 MHz was performed at 9 kHz I.F. band width, and using peak detection.

The spectral components having the highest level on each line were measured using a quasi-peak and average detector.

4.3 Measured Data

JUDGEMENT: Passed by 0.08 dB

The margin between the emission levels and the specification limit is, in the worst case, 0.60 dB for the phase line at 3.936 MHz and 0.08 dB at 3.934 MHz for the neutral line.

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

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

TEST PERSONNEL:

Tester Signature: 

Date: 15.08.13

Typed/Printed Name: A. Sharabi



Conducted Emission

E.U.T Description LF Exciter with Internal Wi-Fi Receiver
Type EX-5500
Serial Number: Not Designated

Specification: FCC Part 15, Subpart C
Lead: Phase
Detectors: Quasi-peak, Average

EDIT PEAK LIST (Final Measurement Results)			
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
Trace1:	CE22BQP		
Trace2:	CE22BAP		
Trace3:	---		
1 Quasi Peak	3.688 MHz	45.45	-10.54
2 Average	3.688 MHz	43.49	-2.50
1 Quasi Peak	3.936 MHz	47.16	-8.83
2 Average	3.936 MHz	45.39	-0.60
1 Quasi Peak	4.668 MHz	42.54	-13.45
2 Average	4.672 MHz	43.16	-2.83

EDIT PEAK LIST (Final Measurement Results)			
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
Trace1:	CE22BQP		
Trace2:	CE22BAP		
Trace3:	---		
2 Average	10.572 MHz	46.51	-3.48
1 Quasi Peak	10.816 MHz	50.03	-9.96
2 Average	10.816 MHz	46.53	-3.46
2 Average	11.064 MHz	48.35	-1.64
1 Quasi Peak	11.068 MHz	49.58	-10.41
1 Quasi Peak	11.312 MHz	49.24	-10.75
2 Average	11.312 MHz	46.34	-3.65
1 Quasi Peak	12.044 MHz	49.29	-10.70
2 Average	12.292 MHz	48.26	-1.73
1 Quasi Peak	12.296 MHz	51.71	-8.28
1 Quasi Peak	12.54 MHz	50.88	-9.11
2 Average	12.54 MHz	48.94	-1.05
1 Quasi Peak	12.784 MHz	49.03	-10.96
2 Average	13.524 MHz	47.47	-2.52
1 Quasi Peak	13.528 MHz	48.67	-11.32
1 Quasi Peak	13.772 MHz	50.18	-9.81
2 Average	14.016 MHz	46.27	-3.72
1 Quasi Peak	14.996 MHz	48.54	-11.45
2 Average	14.996 MHz	46.00	-3.99
2 Average	15.244 MHz	45.11	-4.88

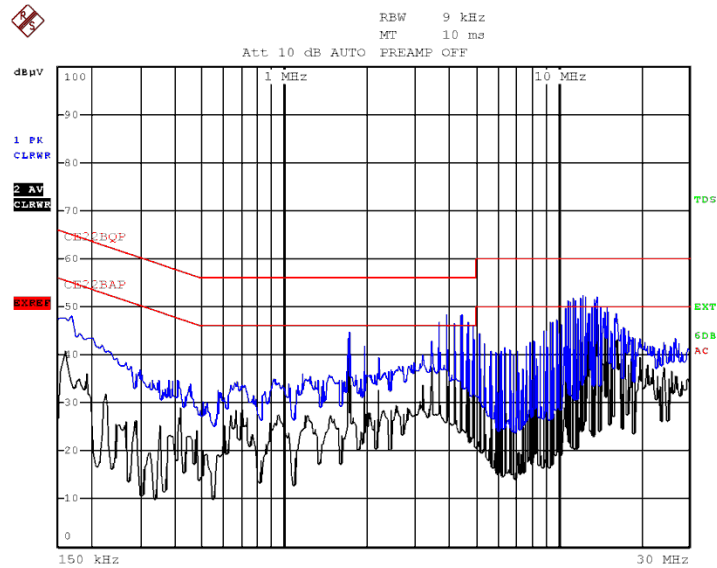
Figure 7. Detectors: Quasi-Peak, AVERAGE

Note: QP Delta/Av Delta refer 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.

Conducted Emission

E.U.T Description LF Exciter with Internal Wi-Fi Receiver
 Type EX-5500
 Serial Number: Not Designated

Specification: FCC Part 15, Subpart C
 Lead: Phase
 Detectors: Quasi-peak, Average



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Figure 8. Detectors: Quasi-peak, Average

Note: Fail indication on the spectral plot results from peak detector level reading above the limit. This indication is for information only and it should not be interpreted as a test failure.



Conducted Emission

E.U.T Description LF Exciter with Internal Wi-Fi Receiver
Type EX-5500
Serial Number: Not Designated

Specification: FCC Part 15, Subpart C
Lead: Neutral
Detectors: Quasi-peak, Average

EDIT PEAK LIST (Final Measurement Results)				
Trace1:	CE22BQP			
Trace2:	CE22BAP			
Trace3:	---			
TRACE		FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
1	Quasi Peak	3.69 MHz	44.98	-11.01
2	Average	3.69 MHz	42.95	-3.04
1	Quasi Peak	3.934 MHz	47.25	-8.74
2	Average	3.934 MHz	45.91	-0.08
2	Average	4.182 MHz	42.16	-3.83
1	Quasi Peak	4.674 MHz	43.80	-12.19

EDIT PEAK LIST (Final Measurement Results)				
Trace1:	CE22BQP			
Trace2:	CE22BAP			
Trace3:	---			
TRACE		FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
2	Average	10.578 MHz	44.56	-5.43
1	Quasi Peak	10.818 MHz	50.12	-9.87
1	Quasi Peak	11.066 MHz	50.36	-9.63
2	Average	11.066 MHz	48.54	-1.45
1	Quasi Peak	11.558 MHz	47.39	-12.60
2	Average	11.558 MHz	43.51	-6.48
1	Quasi Peak	12.05 MHz	50.48	-9.51
2	Average	12.05 MHz	48.13	-1.86
1	Quasi Peak	12.294 MHz	51.69	-8.30
2	Average	12.294 MHz	49.22	-0.77
2	Average	12.542 MHz	48.82	-1.17
1	Quasi Peak	12.546 MHz	50.07	-9.92
1	Quasi Peak	12.79 MHz	48.50	-11.49
2	Average	12.79 MHz	44.57	-5.42
1	Quasi Peak	13.278 MHz	47.18	-12.81
1	Quasi Peak	13.526 MHz	50.26	-9.73
1	Quasi Peak	13.774 MHz	49.76	-10.23
2	Average	13.774 MHz	45.74	-4.25
2	Average	14.018 MHz	46.18	-3.81
2	Average	15.002 MHz	45.20	-4.79

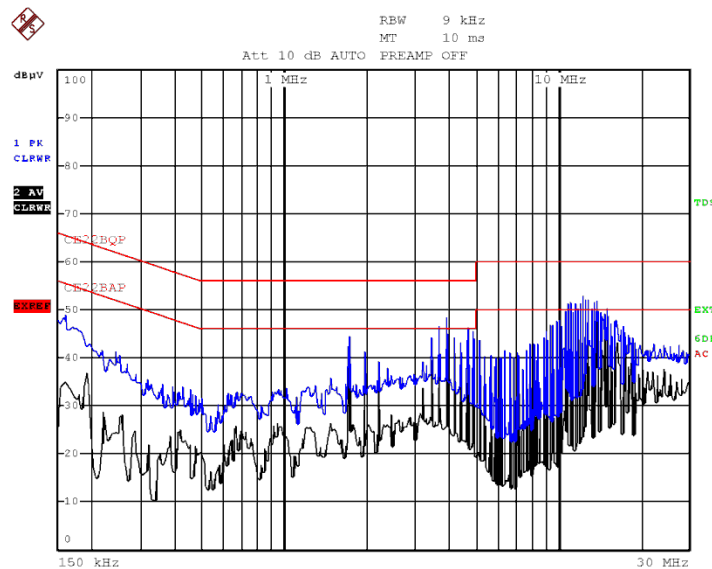
Figure 9. Detectors: Peak, AVERAGE

Note: QP Delta/Av Delta 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.

Conducted Emission

E.U.T Description LF Exciter with Internal Wi-Fi Receiver
 Type EX-5500
 Serial Number: Not Designated

Specification: FCC Part 15, Subpart C
 Lead: Neutral
 Detectors: Peak, Quasi-peak, Average



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Figure 10 Detectors: Quasi-peak, Average

Note: Fail indication on the spectral plot results from peak detector level reading above the limit. This indication is for information only and it should not be interpreted as a test failure.

4.4 Test Instrumentation Used, Conducted Measurement

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Period
LISN	EMCO	3810/2BR	1297	December 16, 2012	1 Year
Transient Limiter	HP	11947A	3107A03041	February 25, 2013	1Year
EMI Receiver	Rohde & Schwarz	ESCI7	100724	December 27, 2012	1Year

5. Average Factor Calculation 125 kHz Transmitter

1. Pulse period = 1 (worst scenario)*
2. Pulse duration = 1 (worst scenario)*
3. Burst duration = 130msec
4. Time between bursts = 207msec
5. Average Factor = $20 \log \left[\frac{\text{Pulse duration}}{\text{Pulse period}} \times \frac{\text{burst duration}}{100\text{msec}} \times \text{Num of burst within 100msec} \right]$

$$\text{Average Factor} = 20 \log \left[\frac{130}{207} \times 1 \right] = -4.04\text{dB}$$

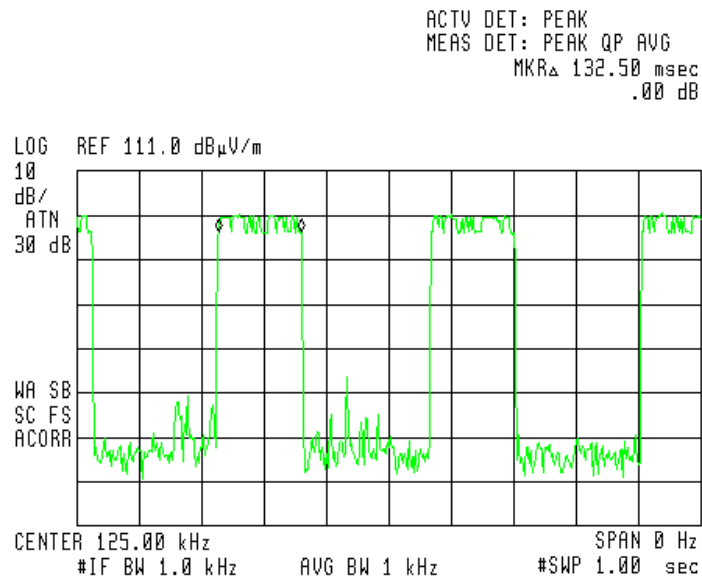


Figure 11. Transmission Burst Duration = 130 msec



ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKRΔ 207.50 msec
.06 dB

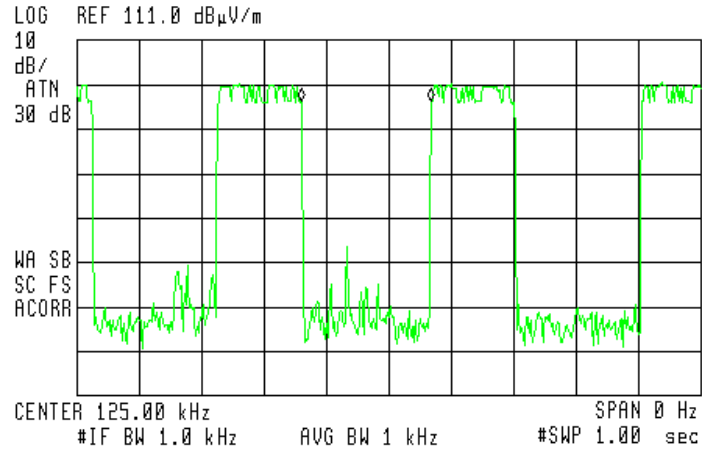


Figure 12. Time between Transmissions 207 msec



5.1 Test Instrumentation Used

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	February 26, 2013	1 year
RF Section	HP	85420E	3705A00248	February 26, 2013	1 year
Active Loop Antenna	EMCO	6502	9506-2950	October 21, 2012	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



6. Field Strength of Fundamental 125 kHz Transmitter

6.1 Test Specification

F.C.C., Part 15, Subpart C

6.2 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 (125 kHz) and Peak Detection.

The distance between the E.U.T. and test antenna was 3 meters.

The turntable and antenna were adjusted for maximum level reading on the EMI receiver. The loop antenna was rotated on its vertical axis. The antenna height (center of loop) was 1 meter.

The average result is:

$$\text{Peak Level(dB}\mu\text{V/m)} + \text{Average Factor (dB)}$$


6.3 Measured Data

JUDGEMENT: Passed by 3.95 dB

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

The details of the highest emissions are given in *Figure 13*.

TEST PERSONNEL:

Tester Signature: 

Date: 15.08.13

Typed/Printed Name: A. Sharabi

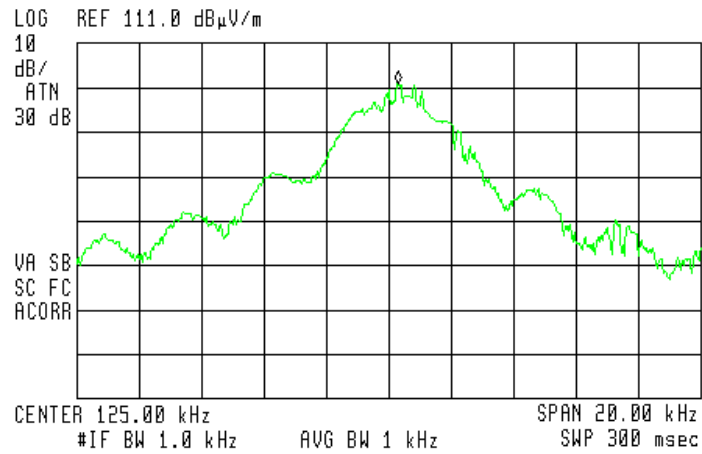


Field Strength of Fundamental

E.U.T Description LF Exciter with Internal Wi-Fi Receiver
 Type EX-5500
 Serial Number: Not Designated



ACTV DET: PEAK
 MEAS DET: PEAK QP AVG
 MKR 125.30 kHz
 101.72 dBμV/m



**Figure 13. Field Strength of Fundamental.
 Detector: Peak**

Average Limit = 105.67dBμV/m



6.4 Test Instrumentation Used, Field Strength of Fundamental

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	February 26, 2013	1 year
RF Section	HP	85420E	3705A00248	February 26, 2013	1 year
Active Loop Antenna	EMCO	6502	9506-2950	October 21, 2012	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



7. Spurious Radiated Emission, 9 kHz – 30 MHz, 125 kHz Transmitter

7.1 Test Specification

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

7.2 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 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 10 meters.

The E.U.T. was operated at the frequency of 125 kHz. This frequency was measured using a peak detector.

7.3 Test Results

JUDGEMENT: PASSED

The EUT was tested and it met the requirements of the FCC Part 15, Subpart C, specification.

No signals were detected in the frequency range of 9 kHz-30 MHz.

All signals that appear in *Figure 14* are background noise.

TEST PERSONNEL:

Tester Signature: 

Date: 22.09.13

Typed/Printed Name: A. Sharabi



Spurious Radiated Emission 9 kHz – 30 MHz

E.U.T Description LF Exciter with Internal Wi-Fi Receiver
Type EX-5500
Serial Number: Not Designated

Specification: FCC, Part 15, Subpart C

Test Distance: 3 meters

Frequency range: 9 kHz – 30 MHz

Detector: Peak

Frequency (kHz)	Peak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
50	44.5	113.6	-69.1
450	28.5	94.5	-66.0
800	25.9	69.5	-43.6
2000	14.6	69.5	-54.9
5000	5.3	69.5	-64.2
15000	12.9	69.5	-56.6

**Figure 14. Radiated Emission 9 kHz – 30 MHz
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.



7.4 Test Instrumentation Used, Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	February 26, 2013	1 year
RF Section	HP	85420E	3705A00248	February 26, 2013	1 year
Active Loop Antenna	EMCO	6502	9506-2950	October 21, 2012	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

7.5 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 [dB μ v/m]
- RA: Receiver Amplitude [dB μ v]
- AF: Receiving Antenna Correction Factor [dB/m]
- CF: Cable Attenuation Factor [dB]

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

No external pre-amplifiers are used.



8. Spurious Radiated Emission 30-1000 MHz, 125 kHz transmitter

8.1 Test Specification

30 - 1000 MHz, F.C.C., Part 15, Subpart C

8.2 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 4*. 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 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.

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.


8.3 Test Data

JUDGEMENT: PASSED

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

No signals were detected in the frequency range of 30 -1000 MHz.
All signals appearing in Figure 15 are background noise.

TEST PERSONNEL:

Tester Signature: 

Date: 22.09.13

Typed/Printed Name: A. Sharabi



Spurious Radiated Emission 30 -1000 MHz

E.U.T Description LF Exciter with Internal Wi-Fi Receiver
Type EX-5500
Serial Number: Not Designated

Specification: FCC, Part 15, Subpart C

Antenna Polarization: Horizontal/Vertical Frequency range: 30 -1000 MHz
Test Distance: 3 meters Detector: Peak
Operation Frequency: 125 KHz

Frequency (MHz)	Peak Reading (dB μ V/m)	QP Reading (dB μ V/m)	Polarity (H/V)	Specification (dB μ V/m)	Margin (dB)
59.60	23.8	18.5	V	40.0	-21.5
78.30	24.1	17.5	H	40.0	-22.5
134.50	30.0	23.4	V	43.5	-20.1
147.00	29.5	23.4	H	43.5	-20.1
178.30	30.2	23.5	H	43.5	-20.0

**Figure 15. Radiated Emission 30 – 1000 MHz
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.



8.4 Test Instrumentation Used, Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	February 26, 2013	1 year
RF Section	HP	85420E	3705A00248	February 26, 2013	1 year
Antenna Biconical	EMCO	3104	2606	August 30, 2012	1 year
Antenna Log Periodic	ARA	LPD-2010/A	1038	April 2, 2013	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

9. Bandwidth for 125 kHz Transmitter

9.1 Test Specification

RSS-Gen Issue 3, Section 4.6, December 2010

9.2 Test procedure

The transmitter unit operated with normal modulation. The spectrum analyzer was set to 30 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 26dBc points.

The EUT was set up as shown in *Figure 1* 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.

9.3 Test Results

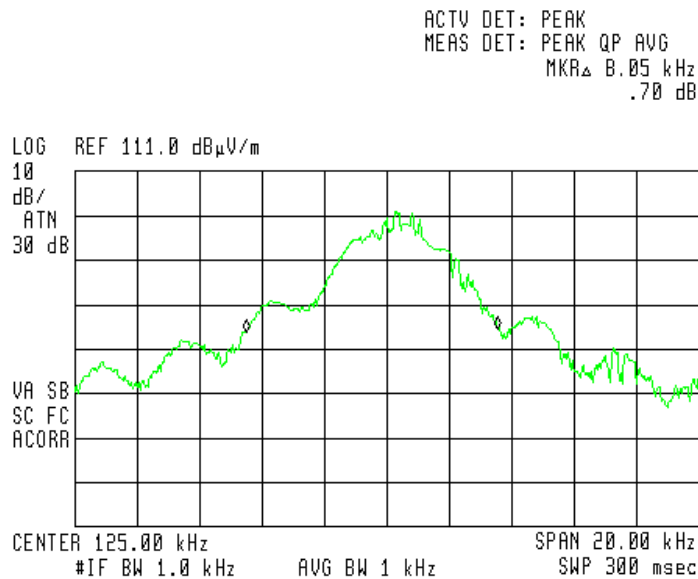


Figure 16 Bandwidth Test results Table

JUDGEMENT: Passed

TEST PERSONNEL:

Tester Signature: _____

Date: 15.08.13

Typed/Printed Name: A. Sharabi



9.4 Test Equipment Used.

Bandwidth for 125 kHz Transmitter

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	8546A	3650A00365	March 17, 2013	1 Year
Active Loop Antenna	EMCO	6507	1448	April 21, 2013	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

Figure 17 Test Equipment Used



10. APPENDIX A - CORRECTION FACTORS

10.1 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".



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

FREQUENCY (MHz)	APE (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".*



10.3 Correction factors for ACTIVE LOOP ANTENNA
Model 6502
S/N 9506-2950

FREQUENCY (MHz)	Magnetic Antenna Factor (dB)	Electric Antenna Factor (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



11. Comparison Industry Canada Requirements With FCC

Test	FCC	IC
Spurious Emission	47CFR15.209	RSS-210, Issue 8, Section 2.5