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DATE: 12 August 2014

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

FCC Radio Test Report

for

SuperCom Ltd.

Equipment under test:

Alarm Base Unit

PRF-MFT10F, PRF-MFT10A*

*See Customer's Declaration on page 5

Written by: _____
R. Pinchuck, Documentation

Approved by: _____
M. Zohar, Test Engineer

Approved by: _____
I. Raz, EMC Laboratory Manager

ISRAEL TESTING LABORATORIES
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Measurement/Technical Report for SuperCom Ltd.

Alarm Base Unit

PRF-MFT10F, PRF-MFT10A

FCC ID: W5P-PRF-MFT10

This report concerns:	Original Grant: X Class I change: Class II change:
Equipment Type:	Part 15 Low Power Transmitter Below 1705 kHz
Limits used:	47CFR15 Section 15.209

Measurement procedure used is 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
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e-mail: Zeev@SuperCom.com

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1. General Information

1.1 Administrative Information

Manufacturer:	SuperCom Ltd.
Manufacturer's Address:	1 Arie Shenkar St. Herzeliya, 4672501 Israel Tel: 972-9-889-0800 Fax: 972-9-889-0814
Manufacturer's Representative:	Ehud Bachman
Equipment Under Test (E.U.T):	Alarm Base Unit
Equipment Model No.:	PRF-MFT10F, PRF-MFT10A*
Equipment Serial No.:	Not Designated
Date of Receipt of E.U.T:	16.07.2014
Start of Test:	16.07.2014
End of Test:	08.09.2014
Test Laboratory Location:	I.T.L (Product Testing) Ltd. Kfar Bin Nun, ISRAEL 99780
Test Specifications:	FCC Part 15, Subpart C

*See customer's declaration on following page.

SuperCom

Date: September 23, 2014

DECLARATION

I HEREBY DECLARE THAT

PRF-MFT10F

IS A FULL CONFIGURATION MODEL.

A DIFFERENT MODEL, THE:

PRF-MFT10A

DIFFERS FROM THE PRFMFT10F ONLY BY A DEACTIVATED RF READER.

Please relate to them all (from an EMC point of view) as the same product.

Thank you,
Signature: _____
Printed Name: Ze'ev Lavi
(Project Manager, RFID division)

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.

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 MFT reader unit is SuperCom's next generation of transceiver, with a mission to be integrated in many applications like healthcare systems, security systems, asset management, inventory management, parking management and smart alarm systems. The PRF-MFT10F is a full configuration model. In model PRF-MFT10A the RF reader has been deactivated.

1.4 Test Methodology

Both conducted and 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 November 21, 2012).
I.T.L.'s EMC Laboratory is also accredited by A2LA, certificate No. 1152.01.

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):
± 4.96 dB

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):
± 3.44 dB

2. System Test Configuration

2.1 Justification

To select the worst case host to be tested for certification, an exploratory radiated emission test of the MFT10F and MFT10A was performed in the chamber. The frequency range of measurement was 9 kHz - 1MHz.

The transmitter unit operated with CW mode at 125 kHz. The EMI receiver was set to 9 KHz resolution BW.

The results of the exploratory fundamental and spurious radiated emission tests are shown in the table below.

Host	Fundamental Frequency Level (dBµV/m)	Second Harmonic Peak Reading (dBµV/m)	Third Harmonic Peak Reading (dBµV/m)
MFT10F-internal ant	71.6	54.1	52.0
MFT10F-external ant	73.2	53.2	49.7
MFT10A-internal ant	69.9	50.1	48.6
MFT10A-external ant	70.0	51.1	48.8

Based on the above results, the MFT10F was selected to be tested as worst case.

The E.U.T incorporates 2 identical transmitters which can be connected to the same antenna but with different installation positions, internal and external. Testing was performed in 2 modes: LF internal ANT and LF external ANT.

2.2 Special Accessories

No special accessories were needed to achieve compliance.

2.3 Equipment Modifications

No equipment modifications were required to achieve compliance.

2.4 Configuration of Tested System

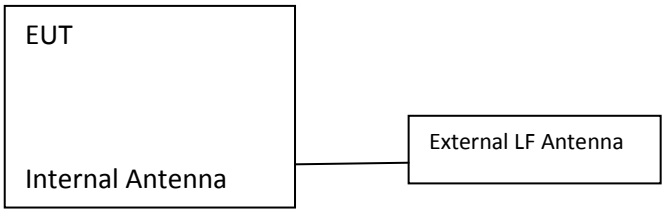


Figure 1. Configuration of Tested System

3. Test Set-up Photos

Figure 2. Conducted Emission Test

Figure 3. Radiated Emission Test – Internal Antenna

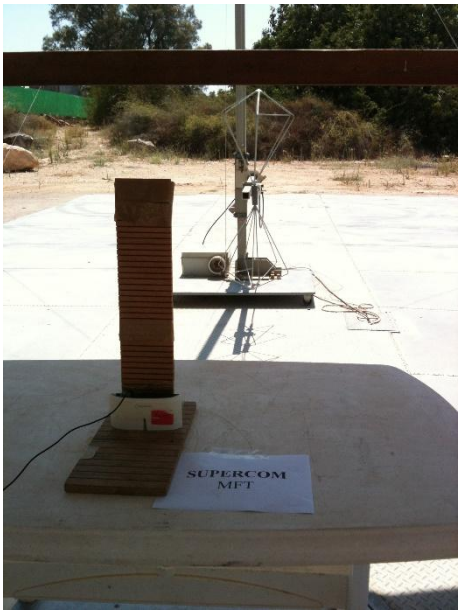


Figure 4. Radiated Emission Test – Internal Antenna

Figure 5. Radiated Emission Test – Internal Antenna

Figure 6. Radiated Emission Test – External Antenna

Figure 7. Radiated Emission Test – External Antenna

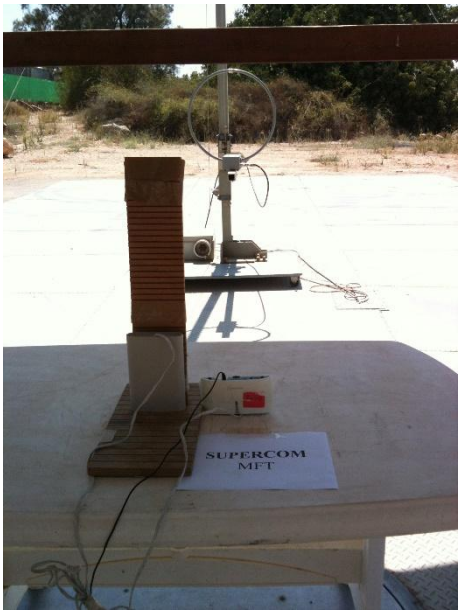


Figure 8. Radiated Emission Test – External Antenna

4. Conducted Emission From AC Mains

4.1 Test Specification

FCC Part 15, Subpart C

4.2 Test Procedure

The E.U.T operation mode and test setup are as described in Section 4.1. In order to minimize background noise interference, the conducted emission testing was performed inside a shielded room (see Section 3), with the E.U.T placed on an 0.8 meter high wooden table, 0.4 meter from the room's vertical wall. In the case of a floor-standing E.U.T., it was placed on the horizontal ground plane.

The E.U.T was powered from 115 V AC / 60 Hz via 50 Ohm / 50 µHn 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.'s 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 effect of varying the position of the cables was investigated to find the configuration that produces maximum emission. The configuration tested is shown in the photograph, Figure 2.

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, using peak detection.

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

4.3 Measure Data

JUDGEMENT: Passed by 26.94 dB

The margin between the emission levels and the specification limit is, in the worst case, 26.94 dB for the phase line at 0.218 MHz and 26.96 dB at 0.174 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 9* to *Figure 12*.

TEST PERSONNEL:

Tester Signature: _____ Date: 01.10.14

Typed/Printed Name: M. Zohar

Conducted Emission

E.U.T Description	Alarm Base Unit
Type	PRF-MFT10F
Serial Number:	Not Designated

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

EDIT PEAK LIST (Final Measurement Results)

Trace1: CE22BQP
Trace2: CE22BAP
Trace3: ---

TRACE		FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
2	Average	150 kHz	19.22	-36.77
1	Quasi Peak	166 kHz	38.21	-26.94
1	Quasi Peak	218 kHz	34.45	-28.44
2	Average	218 kHz	19.80	-33.09
1	Quasi Peak	326 kHz	24.91	-34.64
2	Average	326 kHz	10.01	-39.54
1	Quasi Peak	470 kHz	20.16	-36.35
2	Average	522 kHz	8.41	-37.58
2	Average	714 kHz	7.43	-38.56
1	Quasi Peak	750 kHz	17.18	-38.81
2	Average	906 kHz	6.49	-39.50
1	Quasi Peak	910 kHz	12.00	-43.99
1	Quasi Peak	1.686 MHz	12.26	-43.73
2	Average	1.686 MHz	7.43	-38.56
1	Quasi Peak	2.43 MHz	11.23	-44.76
2	Average	2.43 MHz	5.34	-40.65
1	Quasi Peak	3.198 MHz	16.62	-39.37
2	Average	3.39 MHz	8.30	-37.70
1	Quasi Peak	4.862 MHz	20.42	-35.57
2	Average	4.866 MHz	10.25	-35.74

Date: 16.JUL.2014 12:23:59

Figure 9. Detectors: Peak, Quasi-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	Alarm Base Unit
Type	PRF-MFT10F
Serial Number:	Not Designated

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

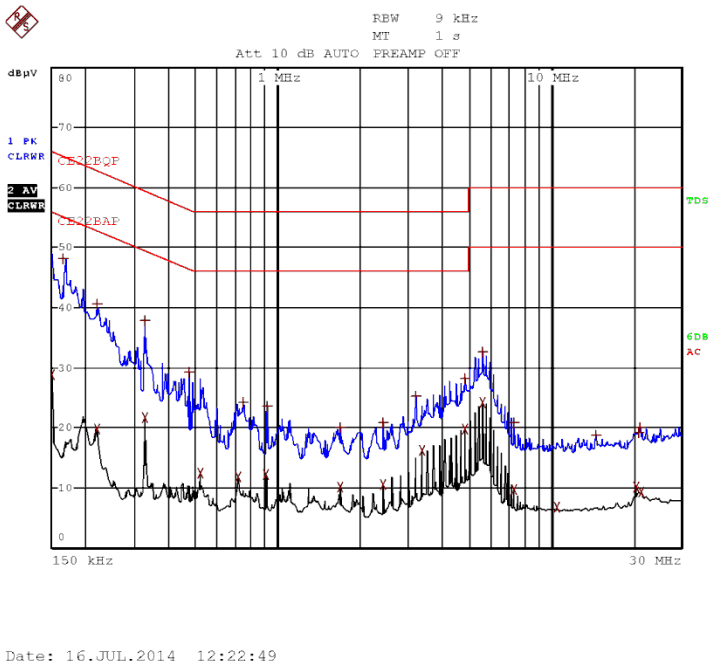


Figure 10. Detectors: Peak, Quasi-peak, Average

Notes:

1. *Horizontal axis shows logarithmic frequency scale.*
2. *The vertical axis shows amplitude (in dB µV).*
3. *Peak detection is designated by the top of each vertical line.*
4. *Quasi-peak detection is designated by the first dash mark (from the top) of each vertical line.*
5. *Average detection is designated by the second dash mark (from the top) of each vertical line.*

Conducted Emission

E.U.T Description	Alarm Base Unit
Type	PRF-MFT10F
Serial Number:	Not Designated

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

EDIT PEAK LIST (Final Measurement Results)

Trace1: CE22BQP
Trace2: CE22BAP
Trace3: ---

	TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1	Quasi Peak	174 kHz	37.79	-26.96
2	Average	194 kHz	20.80	-33.05
2	Average	262 kHz	9.93	-41.43
1	Quasi Peak	266 kHz	26.29	-34.95
1	Quasi Peak	310 kHz	24.57	-35.39
2	Average	386 kHz	9.29	-38.85
1	Quasi Peak	458 kHz	15.63	-41.09
2	Average	462 kHz	7.29	-39.35
2	Average	650 kHz	6.70	-39.29
1	Quasi Peak	654 kHz	11.88	-44.11
1	Quasi Peak	1.038 MHz	11.95	-44.04
2	Average	1.042 MHz	8.81	-37.18
1	Quasi Peak	1.426 MHz	10.52	-45.47
2	Average	1.43 MHz	6.32	-39.68
2	Average	2.178 MHz	5.35	-40.64
1	Quasi Peak	2.182 MHz	10.80	-45.19
1	Quasi Peak	2.942 MHz	9.94	-46.05
2	Average	3.522 MHz	5.11	-40.88
1	Quasi Peak	4.858 MHz	18.25	-37.74
2	Average	4.862 MHz	8.37	-37.62

Date: 16.JUL.2014 11:57:18

Figure 11. Detectors: Peak, Quasi-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	Alarm Base Unit
Type	PRF-MFT10F
Serial Number:	Not Designated

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

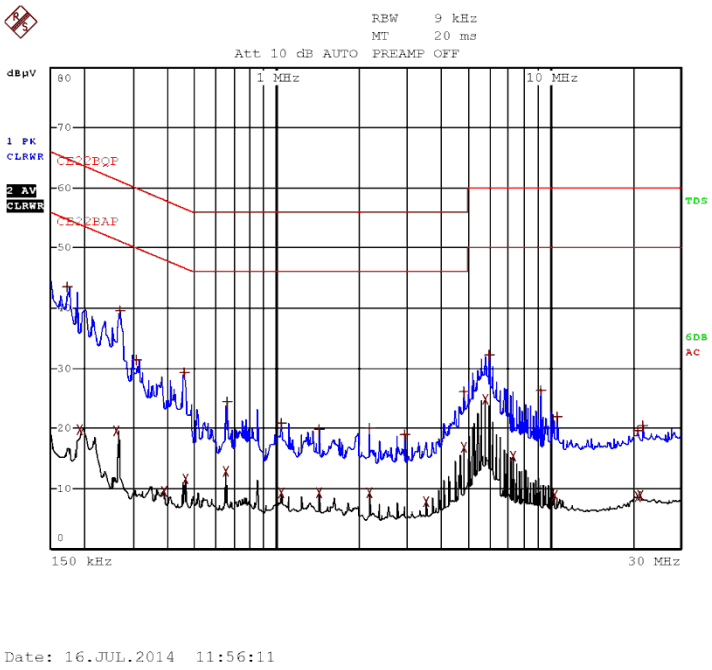


Figure 12 Conducted Emission: NEUTRAL
Detectors: Peak, Quasi-peak, Average

Notes:

1. *Horizontal axis shows logarithmic frequency scale.*
2. *The vertical axis shows amplitude (in dB µV).*
3. *Peak detection is designated by the top of each vertical line.*
4. *Quasi-peak detection is designated by the first dash mark (from the top) of each vertical line.*
5. *Average detection is designated by the second dash mark (from the top) of each vertical line.*

4.4 Test Instrumentation Used, Conducted Measurement

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Period
LISN	Fischer	FCC-LISN-2A	127	January 1, 2014	1 Year
Transient Limiter	HP	11947A	3107A03041	May 13, 2014	1Year
EMI Receiver	Rohde & Schwarz	ESCI7	100724	December 17, 2013	1Year

5. 26dB Minimum Bandwidth

5.1 Test Specification

F.C.C. Part 15, Subpart C, Part 2.1049

5.2 Test procedure

The E.U.T was placed on a non-metallic table, 0.8 meters above the ground plane, on a remote-controlled turntable in the OATS. The test distance was 3 meters. The transmitter unit operated with normal modulation. The EMI receiver was set to 1 kHz resolution BW. The spectrum bandwidth of the transmitter unit was measured and recorded. The test was performed to measure the transmitter occupied bandwidth. 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 modulation envelope. The E.U.T. was tested at 125 KHz with 2 antenna type: external LF ANT, internal LF ANT.

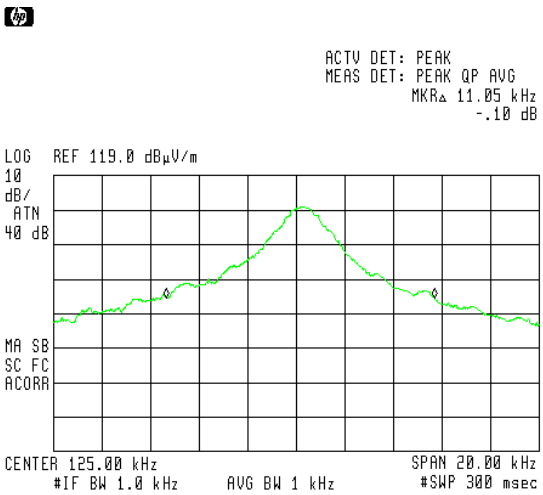


Figure 13. 26dB Bandwidth - External Antenna

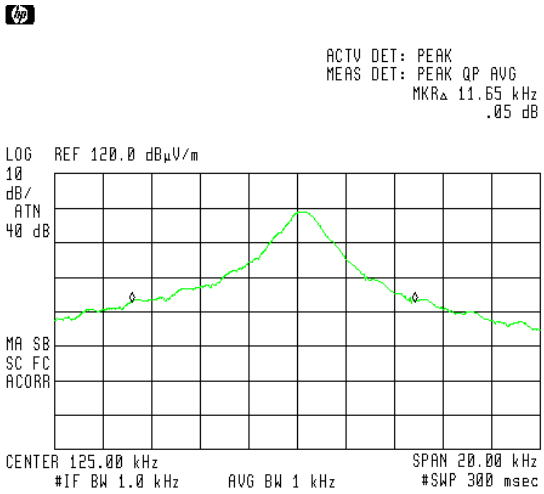


Figure 14. 26dB Bandwidth – Internal Antenna

5.3 Test Results

E.U.T Description: Alarm Base Unit
Model: PRF-MFT10F
Serial Number: Not Designated

Operational Antenna	Bandwidth Reading (kHz)
External	11.05
Internal	11.65

Figure 15 Test Results

JUDGEMENT: Passed

TEST PERSONNEL:

Tester Signature: _____ Date: 01.10 14

Typed/Printed Name: M. Zohar

5.4 Test Equipment Used; 26 dB Minimum Bandwidth

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	January 15, 2014	1 year
RF Section	HP	85420E	3705A00248	January 15, 2014	1 year
Antenna Log Periodic	ARA	LPD-2010/A	1038	April 2, 2013	2 years
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

Figure 16 Test Equipment Used

6. Field Strength of Fundamental

6.1 Test Specification

F.C.C., Part 15, Subpart C, 15.209

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 E.U.T was tested with 2 antenna types: internal LF ANT and external LF ANT.

6.3 Test Results

JUDGEMENT: Passed

The EUT met the FCC Part 15, Subpart C, Section 15.209 specification requirements.

The details of the highest emissions are given in *Figure 17* to *Figure 19.*

TEST PERSONNEL:

Tester Signature: _____ Date: 01.10.14

Typed/Printed Name: M. Zohar

Antenna Type	Reading	AVERAGE FACTOR	AVG RESULT	Limit	Margin
	(dBµV/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
Internal LF ANT	110.9	-13.0	97.9	105.7	-7.8
External LF ANT	114.5	-13.0	101.5	105.7	-4.2

Figure 17 Test Results

Field Strength of Fundamental

E.U.T Description	Alarm Base Unit
Type	PRF-MFT10F
Serial Number:	Not Designated

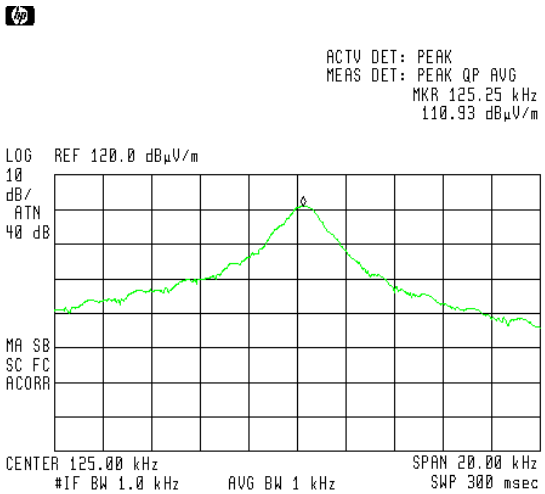


Figure 18. Field Strength of Fundamental
Detector: Peak, Internal Antenna

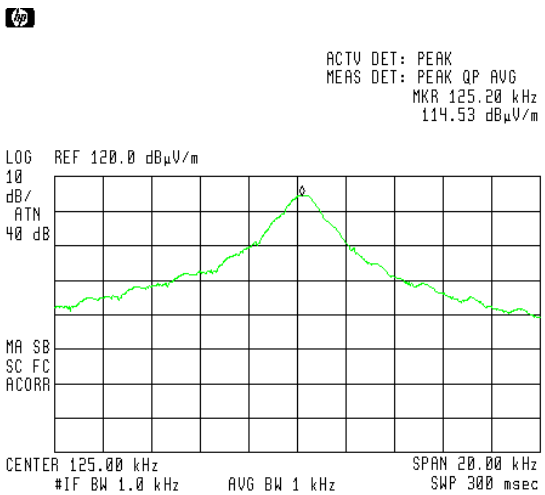


Figure 19. Field Strength of Fundamental
Detector: Peak, External Antenna

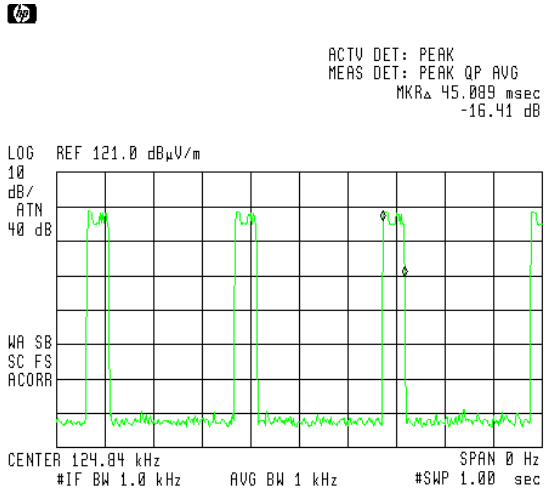
6.4 Test Equipment Used, Field Strength of Fundamental

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	January 15, 2014	1 year
RF Section	HP	85420E	3705A00248	January 15, 2014	1 year
Active Loop Antenna	EMCO	6502	9506-2950	November 4, 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	JPKGC19982	N/A	N/A

Figure 20. Test Equipment Used

7. Average Factor Calculation

1. Burst duration =45 msec
2. Time between bursts = 270ms >100ms
3. The ratio between pulse duration to pulse period is 0.5 consider usage "MANCHESTER" code.
4. $$\text{Average Factor} = 20\log\left[\frac{\text{Pulse duration}}{\text{Pulse period}} \times \frac{\text{burst duration}}{100\text{msec}} \times \text{Num of burst within } 100\text{msec}\right]$$



$$\text{Average Factor} = 20\log[0.5 \times (45/100) \times 1] = -13.0dB$$

Figure 21 Burst Duration

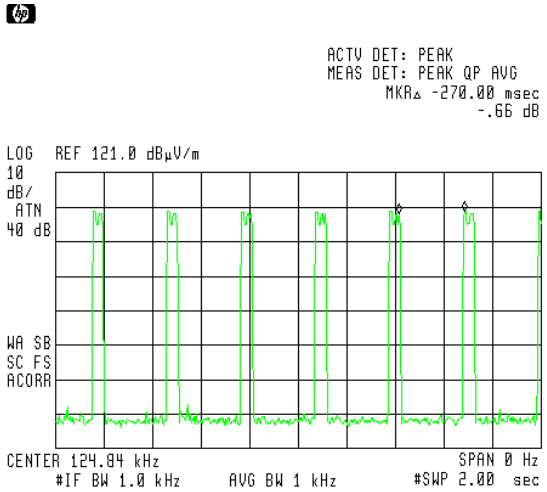


Figure 22 Time Between Bursts

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 using 2 antenna types: external ANT and internal ANT.
The E.U.T. was operated at the frequency of 125 kHz. This frequency was measured using a peak detector.

8.3 Test Results

Antenna Type	Frequency (kHz)	Peak (dBuV/m)	AVG. FAC (dBuV/m)	AVG RESULT (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Internal LF ANT	250	58.1	-13.0	45.1	99.6	-54.5
	375	70.5	-13.0	57.5	96.1	-38.6
External LF ANT	250	58.8	-13.0	45.8	99.6	-53.8
	375	69.7	-13.0	56.7	96.1	-39.4

JUDGEMENT: Passed

The EUT was tested and it met the requirements of the FCC Part 15, Subpart C, Section 209 specification.

TEST PERSONNEL:

Tester Signature: _____ Date: 01.10.14

Typed/Printed Name: M. Zohar

8.4 Test Instrumentation Used, Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	January 15, 2014	1 year
RF Section	HP	85420E	3705A00248	January 15, 2014	1 year
Active Loop Antenna	EMCO	6502	9506-2950	November 4, 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 23. 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

9.1 Test Specification

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

9.2 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 Error! Reference source not found..

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 frequency range 30 MHz-1GHz was scanned.

The E.U.T was operated with 2 antenna types: external ANT and internal.ANT.

The emissions were measured at a distance of 3 meters.

9.3 Test Results

JUDGEMENT: Passed

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

No unwanted spurious signals were detected in frequency range 30 MHz-1GHz.

TEST PERSONNEL:

Tester Signature: _____ Date: 01.10.14

Typed/Printed Name: M. Zohar

9.4 Test Equipment Used, Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	January 15, 2014	1 year
RF Section	HP	85420E	3705A00248	January 15, 2014	1 year
Antenna Biconical	EMCO	3104	2606	August 30, 2014	2 years
Antenna Log Periodic	ARA	LPD-2010/A	1038	April 2, 2013	2 years
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

Figure 24. 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)
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".

10.2 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.

10.3 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".*

10.4 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".

10.5 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