FCC requirements § 2.1033 (b)(6)

TEST MEASUREMENT REPORT

Contains 29 pages and follows this page.

ELECTROMAGNETIC EMISSIONS TEST REPORT

ACCORDING TO FCC PART 15, SUBPART C, §15.231

FOR

ElmoTech Ltd.

EQUIPMENT UNDER TEST

HAND MOUNTED TRANSMITTER

Model TX-500/EP

Prepared by: _____
Mrs. M. Cherniavsky, certif. engineer
Hermon Labs

Approved by: _____
Mr. A. Usoskin, QA manager
Hermon Labs

Approved by: _____
Dr. E. Usoskin, C.E.O.
Hermon Labs

Approved by: Gil Gemer
Mr. G. Gemer, VP R&D
ElmoTech Ltd.

Hermon Laboratories Ltd.
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ACCREDITED
839.01

Description of equipment under test

Test items	Transmitter FCC ID:LSQ-TX-500-EP
Manufacturer	ElmoTech Ltd.
Brand Mark	ElmoTech
Type (Model)	TX-500/EP

Applicant information

Applicant's representative	Mr. Natan Galperin, hardware R&D manager
Applicant's responsible person	Mr. Gil Gemer, Vice President R&D
Company	ElmoTech Ltd.
Address	2 Habarzel St.
P.O. Box	13236
Postal code	61132
City	Tel Aviv
Country	Israel
Telephone number	011 972 3647 8871
Telefax number	011-972 3647 8872

Test performance

Project Number	13187
Location of the test	Hermon Laboratories, Binyamina, Israel
Test started	November 25, 1998
Test completed	December 22, 1998
Purpose of test	The EUT certification in accordance with CFR 47, part 2, §2.1033
Test specification(s)	FCC part 15 subpart C §15.231, §15.209 subpart B, §15.109

Through this report a point is used as the decimal separator and the thousands are counted with a comma.
This report is in conformity with EN 45001 and ISO GUIDE 25.
The test results relate only to the items tested.

Table of Contents

1 General Information

1.1 Abbreviations and Acronyms

The following abbreviations and acronyms are applicable to this test report:

AVRG	average (detector)
BW	bandwidth
dB	decibel
dBm	decibel referred to one milliwatt
dB(μV)	decibel referred to one microvolt
dB(μV/m)	decibel referred to one microvolt per meter
DC	direct current
EMC	Electromagnetic Compatibility
EUT	Equipment Under Test
GHz	gigahertz
H	height
HL	Hermon Laboratories
HP	Hewlett Packard
Hz	hertz
IF	intermediate frequency
kHz	kilohertz
L	length
m	meter
mm	millimeter
MHz	megahertz
msec	millisecond
NA	Not Applicable
NARTE	National Association of Radio and Telecommunications Engineers, Inc.
QP	quasi-peak (detector)
PC	personal computer
RBW	resolution bandwidth
RF	Radio Frequency
RE	radiated emission
RMS	root-mean-square
V	volt
V/m	volt per meter
W	watt

1.2 Specification References

CFR 47 part 15: October 1997	Radio Frequency Devices.
ANSI C63.2:06/1987	American National Standard for Instrumantation-Electromagnetic Noise and Field Strength, 10 kHz to 40 GHz-Specifications.
ANSI C63.4:1992	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

1.3 EUT Description

The EUT, Hand Mounted Transmitter, model TX-500/EP, is used for offenders monitoring in home arrest environment. The transmitter is made of ABS plastic body and a two parts replaceable strap which is closed around the offender's wrist using a plastic clip.
The transmitter operates at 318 MHz frequency with FSK type of modulation, a rectangular loop antenna is mounted under its plastic upper surface. The EUT transmits during 5 milliseconds once every 18-23 seconds. The transmitter is powered by two 3 V internal batteries.
The EUT stops its automatic transmission within 5 msec from the transmission start.

1.4 Statement of Manufacturer

I, Gil Gemer, Vice President R&D of ElmoTech Ltd., declare that the TX-500/EP transmitter, FCC ID:LSQ-TX-500-EP was tested from November 25 to December 22, 1998 by Hermon Laboratories and which this test report applies to, is identical of the equipment that will be marketed.

The term identical means identical within the variations that can be expected to arise as a result of quantity production technique.

Gil Gemer, Vice President R&D
ElmoTech Ltd.

Signature: Gil Gemer

Date: Febr 2, 1999

2 Test Facility Description

2.1 General

Tests were performed at Hermon Laboratories, which is a fully independent, private EMC, Safety and Telecommunication testing facility. Hermon Laboratories is listed by the Federal Communications Commission (USA) for all parts of Code of Federal Regulations 47 (CFR 47), listed by Industry Canada for radiated measurements (file numbers IC 2186-1 for OATS and IC 2186-2 for anechoic chamber), recognized by VDE (Germany) for witness test, certified by VCCI (Japan), assessed by NMi Certin B.V. (Netherlands) for a number of EMC, Telecommunications and Safety standards, recognized by TUV Sudwest (Germany) for Safety testing, and Accredited by AMTAC (UK) for safety of Medical Devices. The laboratory is accredited by American Association for Laboratory Accreditation (USA) according to ISO GUIDE 25/EN 45001 for EMC, Telecommunications and Product Safety Information Technology Equipment (Certificate No. 839.01).

Address: PO Box 23, Binyamina 30550, Israel.
Telephone: +972-6-628-8001
Fax: +972-6-628-8277

Person for contact: Mr. Alex Usoskin, testing and QA manager.

2.2 Equipment Calibration

The test equipment has been calibrated according to its recommended procedures and is within the manufacturer's published limit of error. The standards and instruments used in the calibration system conform to the present requirements of MIL-STD-45662A.
The laboratory standards are calibrated by the third party (traceable to NIST, USA) on a regular basis according to equipment manufacturer requirements.

2.2.1 Uncertainty in Hermon Labs Measurements

Radiated Emissions (95% Confidence)	Biconical Antenna: 3m measuring distance : + 2.032 dB Combined standard uncertainty + 4.06 dB Expanded uncertainty - 1.99 dB Combined standard uncertainty - 3.98 dB Expanded uncertainty 10m measuring distance : + 1.99 dB Combined standard uncertainty + 3.98 dB Expanded uncertainty - 2.04 dB Combined standard uncertainty - 4.08 dB Expanded uncertainty Log periodic Antenna: 3m measuring distance : + 2.37 dB Combined standard uncertainty + 4.74 dB Expanded uncertainty - 1.63 dB Combined standard uncertainty - 3.26 dB Expanded uncertainty 10 m measuring distance : + 3.06 dB Expanded uncertainty + 1.53 dB Combined standard uncertainty - 3.00 dB Expanded uncertainty - 1.50 dB Combined standard uncertainty

2.3 Laboratory Personnel

The four people of Hermon Laboratories that have participated in measurements and documentation preparation are: Dr. Edward Usoskin - C.E.O., Mr. Alex Usoskin - testing manager, Mr. Michael Feldman - test technician, and Mrs. Marina Cherniavsky - certification engineer.
Dr. E. Usoskin is an EMC specialist and M. Cherniavsky is a telecommunication engineer certified by the National Association of Radio and Telecommunications Engineers (NARTE, USA.).
The Hermon Laboratories' personnel that participated in this project have more than 100 years combined experience time in EMC measurements and electronic products design.

2.4 Statement of Qualification

The test measurement data supplied in this test measurement report having been received by me, is hereby duly certified. The following is a statement of my qualifications:
I am a technician, have obtained 30 years experience in electronics and measurements.
I have been with Hermon Laboratories since 1995.

Name: Mr. Michael Feldman
Position: test technician
Signature: _____
Date: January 31, 1999

The test measurement data supplied in this test measurement report having been received by me, is hereby duly certified. The following is a statement of my qualifications.
I am an engineer, graduated from university in 1987 with an BscEE degree, have obtained 11 years experience in EMC measurements and product development and have been with Hermon Laboratories since 1987.

Name: Mr. Alex Usoskin
Position: testing manager
Signature: _____
Date: January 31, 1999

I hereby certify that this test measurement report was prepared by me and is hereby duly certified. The following is a statement of my qualifications.
I am an engineer, graduated from University in 1971, with an MScEE degree, have obtained 26 years experience in electronic products design and development and have been with Hermon Laboratories since 1991. Also, I am a Telecommunication Class II engineer certified by the National Association of Radio and Telecommunications Engineers, Inc. (USA.), the certificate no. is E2-03410.

Name: Mrs. Marina Cherniavsky
Position: certif. engineer
Signature: _____
Date: January 31, 1999

I hereby certify that this test measurement report was prepared under my direction and that to the best of my knowledge and belief, the facts set in the report and accompanying technical data are true and correct.
The following is a statement of my qualifications.
I have a Ph.D. degree in electronics, have obtained more than 42 years of experience in EMC measurements and electronic product design and have been with Hermon Laboratories since 1986.
Also, I am an EMC engineer certified by the National Association of Radio and Telecommunications Engineers, Inc. (USA). The certificate no. is EMC-000623-NE, Senior Member.

Name: Dr. Edward Usoskin
Position: General Manager
Signature: _____
Date: January 31, 1999

3 Emission Measurements

3.1 Field Strength of Emissions according to § 15.231 (b)

3.1.1 Specified limits at 3 m distance

Fundamental Frequency MHz	Field Strength of Fundamental dB (μV/m)	Field Strength of Spurious Emissions dB (μV/m)
260 - 470	71.5 to 82*	51.5 to 62*
above 470	82	62

* - Linear interpolations

3.1.2 Test Procedure and Results

The test was performed in the Hermon Labs anechoic chamber and open field test site (OFTS) at 3 meter test distance, i.e. the distance between measuring antenna and EUT boundary.
The EUT with artificial hand was placed on the wooden turntable, as shown in Figure 3.1 and Photographs 3.1.1, 3.1.2. The EUT was operated in continuous transmitting mode and measured in three orthogonal axes during the testing. The frequency range from 30 MHz up to 10th harmonic was investigated.
Biconilog and double ridged guide antennas were used in anechoic chamber, log periodic and double ridged guide antennas were used in OFTS. To find maximum radiation the turntable was rotated 360°, measuring antenna height was changed from 1 to 4 m, and the antennas polarization was changed from vertical to horizontal.
The peak detector (resolution bandwidth 120 kHz) was used at frequencies below 1 GHz. Above 1 GHz the peak detector with resolution bandwidth (IF BW) = 1 MHz and video bandwidth (AVR BW) = 1 MHz was used.
The test results were recorded into Tables 3.1.1, 3.1.2 and are shown in Plots 3.1.1 to 3.1.3.

Reference numbers of test equipment used

HL 0032	HL 0034	HL 0038	HL 0041	HL 0275	HL 0287	HL 0465
HL 0507	HL 0521	HL 0593	HL 0594	HL 0604	HL 0812	HL 0813
HL 0815	HL 0816	HL 1019				

Full description is given in Appendix A.

Table 3.1.1

Radiated Emission Measurements - Test Results
(Field strength of fundamental frequency)

TEST SPECIFICATION: FCC part 15 subpart C § 15.231
COMPANY: ElmoTech Ltd.
EUT: 500/EP transmitter
DATE: November 25, December 22, 1998
RELATIVE HUMIDITY: 50%
AMBIENT TEMPERATURE: 20°C

MEASUREMENTS PERFORMED AT 3 METRES DISTANCE IN ANECHOIC CHAMBER

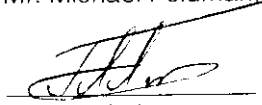
Frequency (MHz)	Resolution Bandwidth	Ant. Type.	Measured Result dB (μV)	Average Factor dB	Radiated Emissions dB (μV/m)	Spec. Limit dB (μV/m)	Spec. Margin dB	Pass/ Fail
318	120 kHz	BL	90.2	-26.7	63.5	75.8	12.3	Pass

Notes to table:

Peak detector was used.
Antenna polarization = horizontal.
Radiated Emission dB(μV/m) = measured results {dB(μV)} + average factor (dB).
Average factor = 20 log (4.6/100) = -26.7, where 4.6 msec is transmitting time of each 100 msec (refer to Plot 3.1.2)
Specified limit in accordance with § 15.231(b)

Table abbreviations:
Ant. Type - = Antenna type (BL –biconilog).
Spec. Margin = Specification Margins = dB below (negative if above) specification limit.

Test Performed by:
Mr. Michael Feldman, test technician



Hermon Labs

Table 3.1.2

Radiated Emission Measurements - Test Results
(Field strength of the spurious emissions)

TEST SPECIFICATION: FCC part 15 subpart C § 15.231
COMPANY: ElmoTech Ltd.
EUT: 500/EP transmitter
DATE: November 25, December 22, 1998
RELATIVE HUMIDITY: 50%
AMBIENT TEMPERATURE: 20°C

MEASUREMENTS PERFORMED AT 3 METRES DISTANCE IN OFTS

Frequency (MHz)	Resolution Bandwidth	Ant. Type.	TT Pos.	Measured Result dB (μV)	Correction Factor dB (1/m)	Average Factor dB	Radiated Emissions dB (μV/m)	Spec. Limit dB (μV/m)	Spec. Margin dB	Pass/ Fail
636	100 kHz	LP	80	52	26	-26.7	51.3	62.0	10.7	Pass

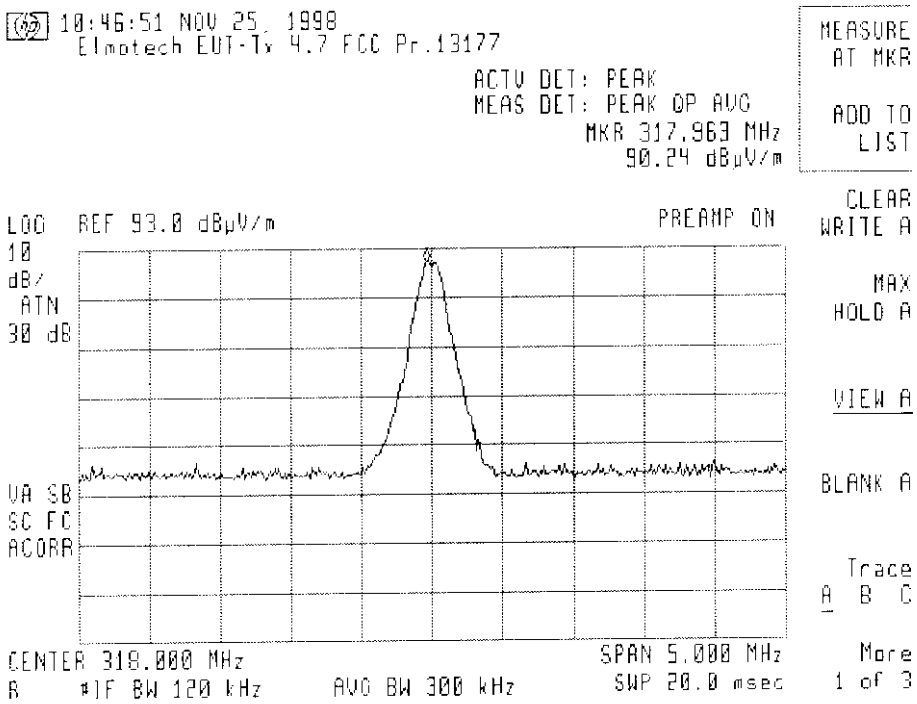
Notes to table:
if fun 75.8
harm 55.8
Peak detector was used.
Antenna polarization = horizontal.
Radiated emission dB(μV/m) = measured results {dB(μV)} + correction factor {dB(1/m)}+ average factor (dB).
Correction factor = antenna factor + cable loss (for antenna factor and cable loss refer to Appendix B).
Average factor = 20 log (4.6/100) = -26.7, where 4.6 msec is transmitting time of each 100 msec (refer to Plot 3.1.2)
Specified limit in accordance with § 15.231(b)

Table abbreviations:
Ant. Type - = Antenna type (LP – log periodic).
Spec. Margin = Specification Margins = dB below (negative if above) specification limit.

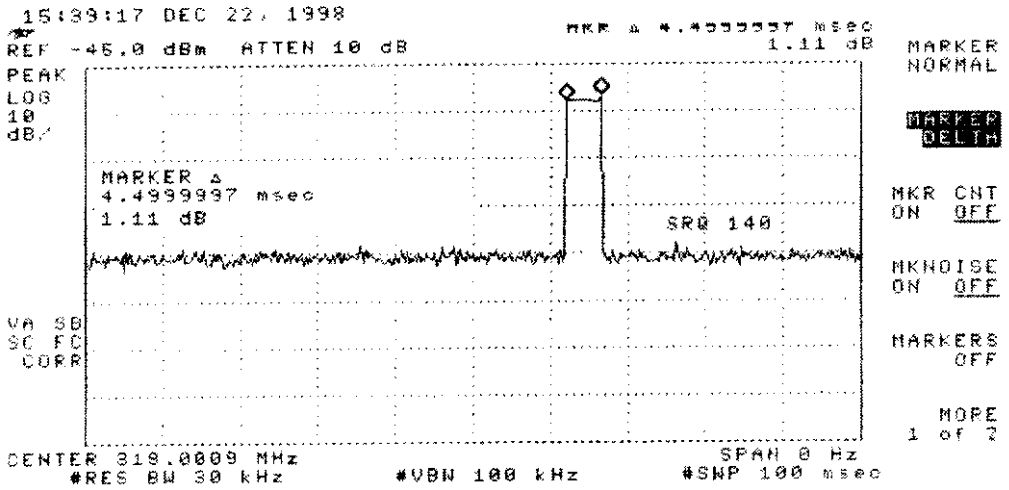
Test performed by:
Mr. Alex Usoskin, testing manager

Hermon Labs

Plot 3.1.1
Radiated Emission Measurement Results



Plot 3.1.2
Average Factor Measurement



Plot 3.1.3
Average Factor Measurement

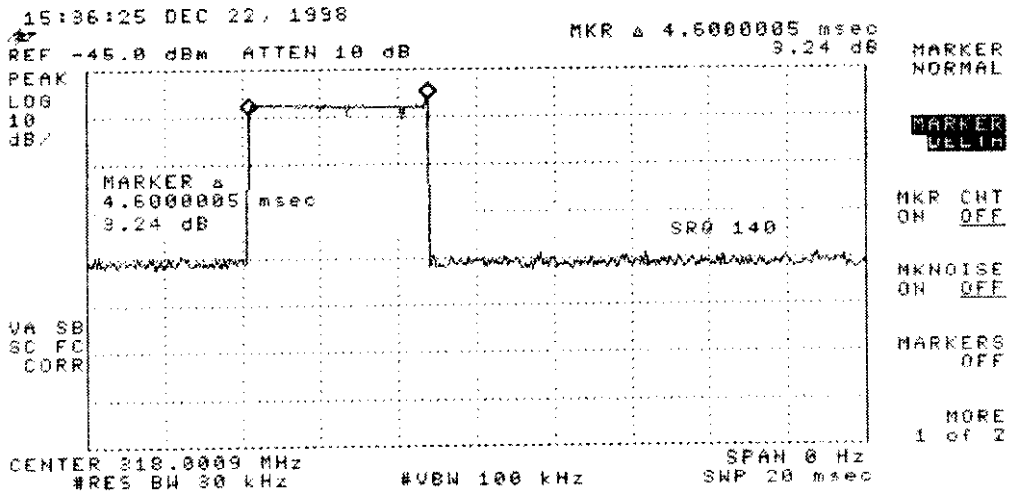
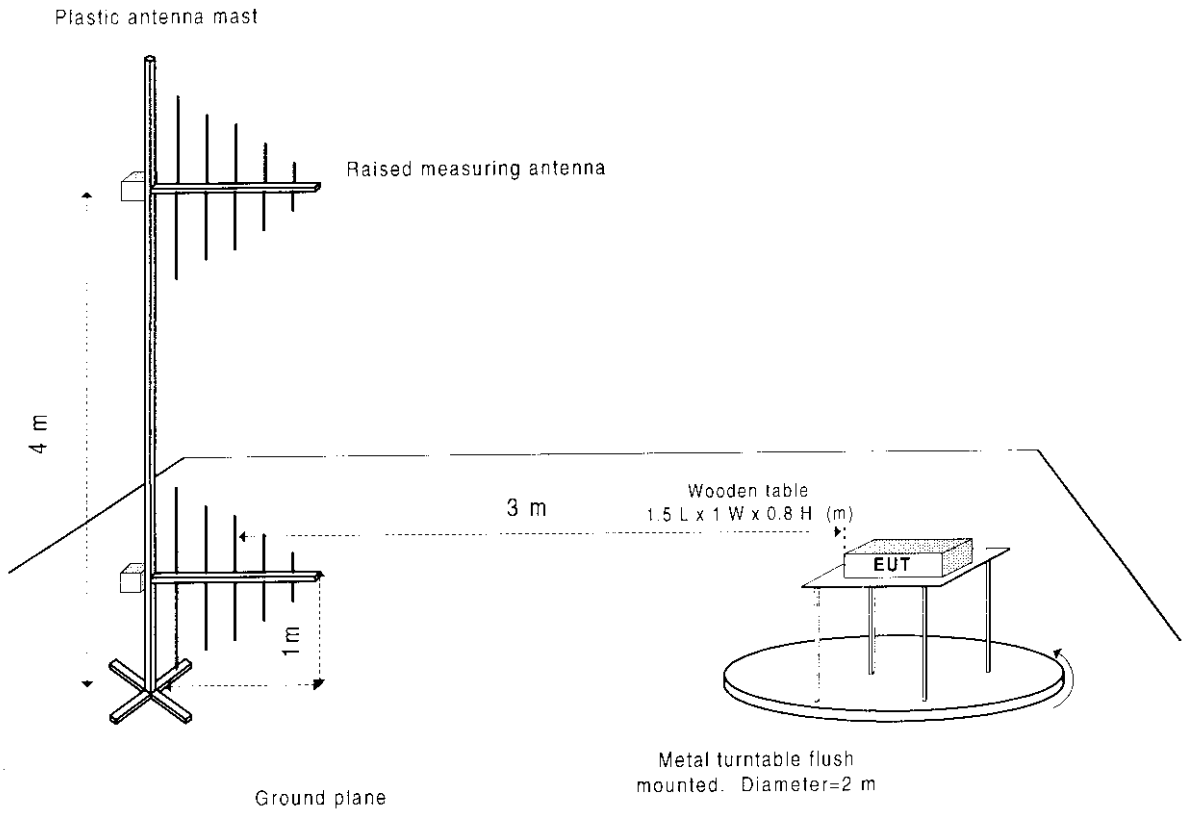
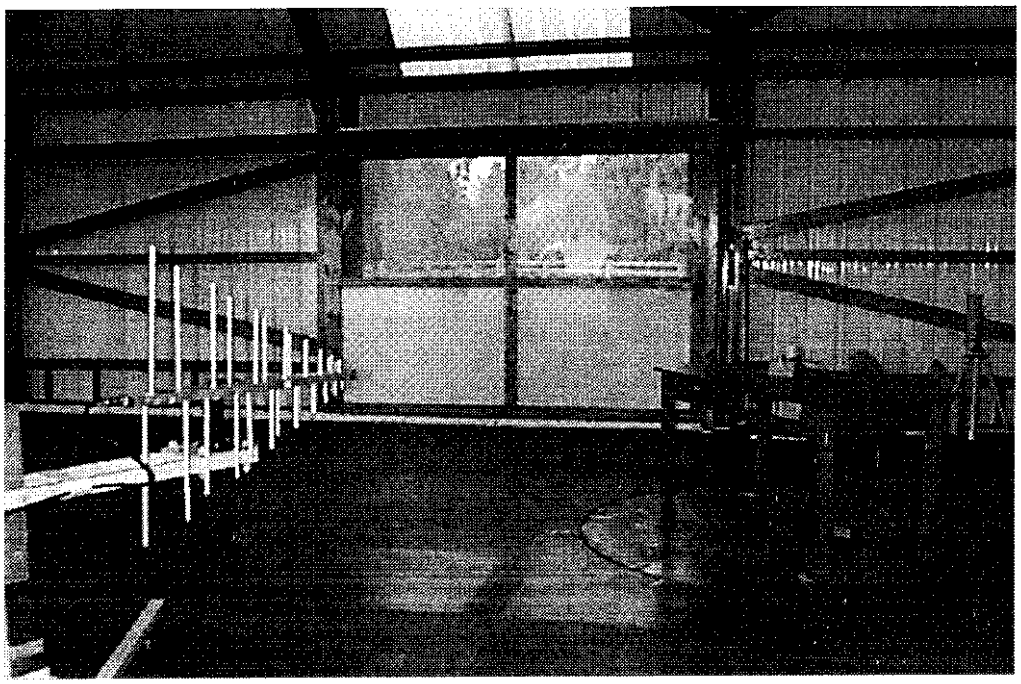


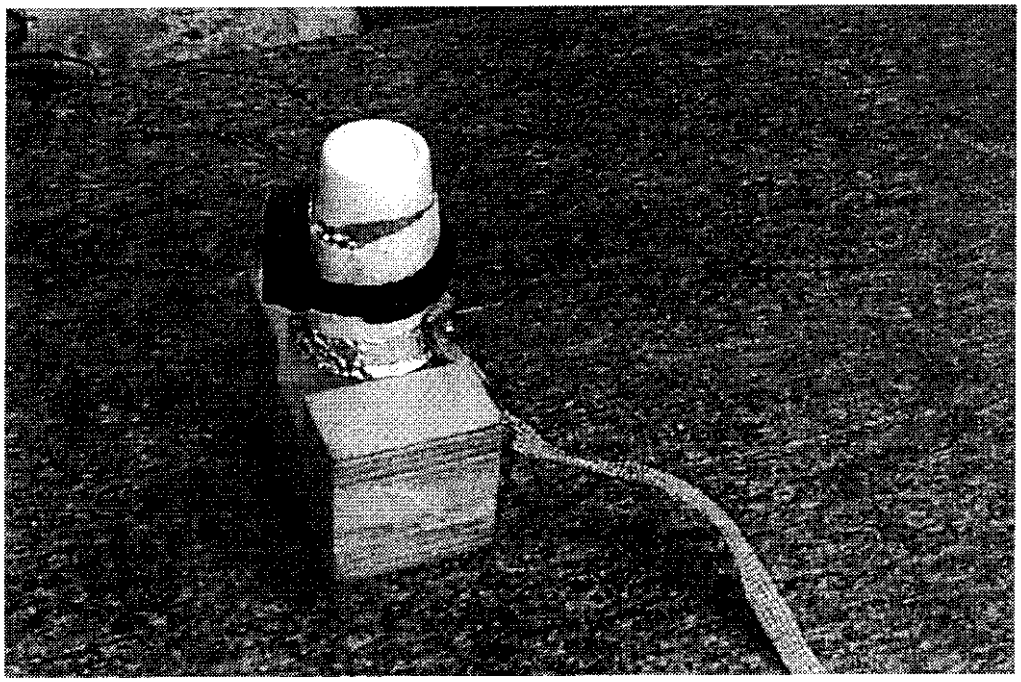
Figure 3.1
Radiated Emission Test Setup



Photograph 3.1.1
Radiated Emission Measurements Setup



Photograph 3.1.2
Radiated Emission Measurements Setup



3.2 Bandwidth of Emission according to § 15.231 (c)

3.2.1 Specified Limits

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz.

3.2.2 Test Procedure and Results

The maximum allowed occupied bandwidth was calculated as 0.0025 of the center frequency:

0.0025 x 318 MHz = 795 kHz

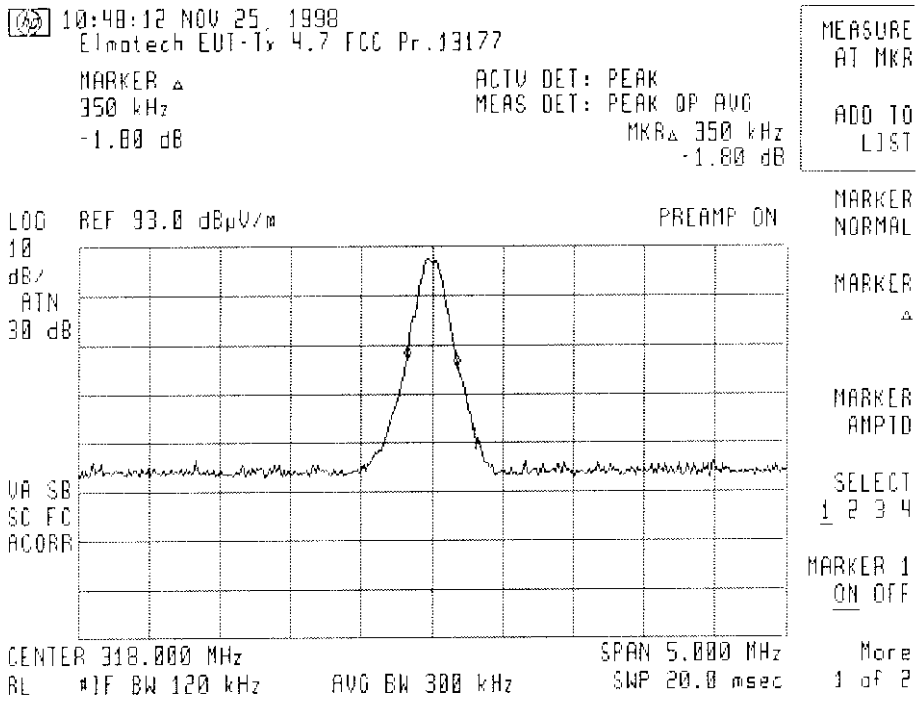
The spectrum trace data around transmitter fundamental frequency was obtained with the Spectrum Analyzer in "Max Hold" mode. The bandwidth value was determined between two points 20 dB down from the center frequency. The occupied bandwidth of 350 kHz was measured which is narrower than required 795 kHz.
The test results are shown in Plot 3.2.1.

Reference numbers of test equipment used

HL 0275	HL 0507	HL 0593	HL 0594	HL 0604		

Full description is given in Appendix A.

Plot 3.2.1
Emission Bandwidth Measurement Results
Occupied bandwidth = 350 kHz



3.3 Periodic Operation Requirement §15.231(a)(2),(3)

The transmission duration is 5 milliseconds once every 18 – 23 seconds (typically 20 seconds). This meets the requirement of the FCC that the transmission ceases within five seconds after activation. Total transmission time per hour is:

5 msec x 3 times per minute x 60 minutes = 900 msec = 0.9 sec

The periodic rate of transmission does not exceed 1 second duration per hour.

3.4 Unintentional Radiated emissions test according to §15.109, §15.209

3.4.1 Definition of the test

This test was performed to measure radiated emissions from the incorporated digital device of the EUT and also to verify the EUT full compliance with §15.109, §15.209.

3.4.2 The test set-up configuration

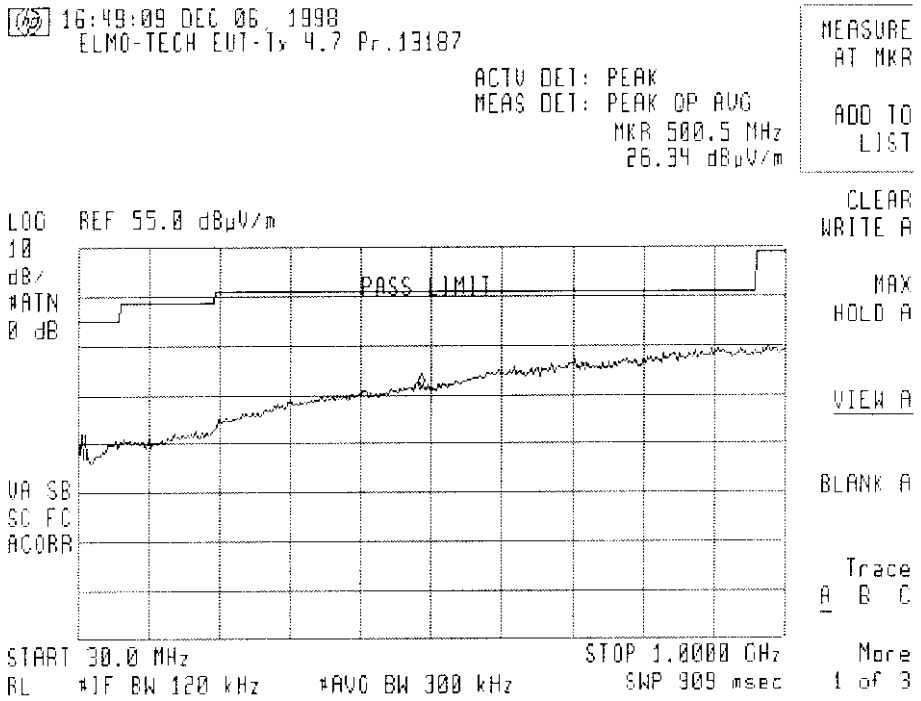
The radiated emissions measurements of the EUT incorporated digital device were performed in the anechoic chamber at 3 meters measuring distance in the frequency range from 30 MHz to 1 GHz. The EUT was placed on the wooden table as shown in Figure 3.1. The biconilog antenna was used. To find maximum radiation the turntable was rotated 360°, the measuring antenna height changed from 1 to 4 m, and the antenna polarization was changed from vertical to horizontal.
The measurements were performed with the EMI receiver settings: RBW=120 kHz, quasi-peak detector.
The test results are shown in Plot 3.4.1. All the found emissions were at least 20 dB below limit.

Reference numbers of test equipment used

HL 0275	HL 0465	HL 0521	HL 0593	HL 0594	HL 0604	HL 0815
HL 0816						

Full description is given in Appendix A.

Plot 3.4.1
Radiated Emission Measurement Results



4 Summary and Signatures

The TX-500/EP transmitter, FCC ID:LSQ-TX-500-EP, was found to be in compliance with the requirements of FCC part 15 subpart C §§ 15.231, 15.209 and subpart B §15.109.

Test performed by:

Mr. Michael Feldman, test technician

Mr. Alex Usoskin, testing manager

Approved by:

Dr. Edward Usoskin, C.E.O.

Responsible Person from ElmoTech Ltd.

Mr. Gil Gemer, VP R&D

APPENDIX A – Test equipment and ancillaries used for tests

HL Serial No.	Serial No.	Description	Manufacturer	Model No.	Due Calibr.
0032	3577	Biconical Antenna, 20-200 MHz	Electro-Metrics	BIA-25/30	4/99
0034	1988	Log Periodic Antenna, 200 - 1000 MHz	Electro-Metrics	LPA 25/30	4/99
0038	028	Antenna Mast, 1-4 m	Hermon Labs	AM-1	2/99
0041	2811	Double Ridged Guide Antenna, 1-18 GHz	Electro-Metrics	RGA 50/60	8/99
0181	3950	Oscilloscope, Digitizing, 100 MHz	Hewlett Packard	54501A	11/99
0275	040	Table non-metallic, 1.5 x 1.0 x 0.8 m	Hermon Labs	WT-1	3/99 Check
0287	042	Turntable, Motorized Diameter, 2m	Hermon Labs	TMD-2	4/99
0465	023	Anechoic Chamber 9 (L) x 6.5 (W) x 5.5 (H) m	Hermon Labs	AC-1	10/99
0466	024	Shielded Room 3 (L) x 3 (W) x 2.4 (H) m	Hermon Labs	SR-1	5/99 Check
0507	0162	Spectrum Analyzer, 9 kHz - 1.8 GHz	Hewlett Packard	8591A	4/99
0521	0319	Spectrum Analyzer with RF filter section (EMI Receiver 9 kHz – 6.5 GHz)	Hewlett Packard	8546A	7/99
0593	101	Antenna Mast, 1-4 m/ 1-6 m, pneumatic	Hermon Labs	AM-F1	4/99 Check
0594	102	Turntable for Anechoic Chamber, flush mounted, d=1.2 m, pneumatic	Hermon Labs	WDC1	11/99
0604	1011	Antenna Log-Periodic/T Bow-Tie, 26 – 2000 MHz	EMCO	3141	12/99
0812	148	Cable, coax, RG-214, 11.5 m, N-type connectors	Hermon Labs	C214-11	8/99
0813	149	Cable, coax, RG-214, 12 m, N-type connectors	Hermon Labs	C214-12	8/99
0815	151	Cable, coax, RG-214, 7.3 m, N-type connectors, inside anechoic chamber	Hermon Labs	C214-7	8/99
0816	152	Cable, coax, RG-214, 8 m, N-type connectors, outside anechoic chamber	Hermon Labs	C214-8	8/99
1019	173	Artificial hand	Hermon Labs	AH-1	2/00 Check

APPENDIX B-Test Equipment Correction Factors

Antenna Factor at 3m calibration
Log Periodic Antenna Electro-Metrics Model LPA-25/30
Ser.No.1988

Frequency MHz	Antenna Factor dB(1/m)	Frequency MHz	Antenna Factor dB(1/m)
200	12.6	625	20.4
225	12.2	650	20.9
250	13.4	675	22.0
275	14.3	700	22.2
300	15.2	725	22.7
325	15.7	750	22.5
350	15.9	775	22.7
375	16.4	800	22.8
400	17.0	825	23.2
425	17.4	850	23.5
450	17.9	875	23.9
475	18.6	900	24.0
500	19.1	925	24.0
525	19.3	950	24.2
550	19.6	975	24.7
575	19.8	1000	25.1
600	20.0		

Antenna factor is to be added to receiver meter reading in dB(μV) to convert to field intensity in dB(μV/meter)

Antenna Factor at 3m calibration
Biconilog Antenna EMCO Model 3141
Ser.No.1011

Frequency, MHz	Antenna Factor, dB(1/m)
26	7.8
28	7.8
30	7.8
40	7.2
60	7.1
70	8.5
80	9.4
90	9.8
100	9.7
110	9.3
120	8.8
130	8.7
140	9.2
150	9.8
160	10.2
170	10.4
180	10.4
190	10.3
200	10.6
220	11.6
240	12.4
260	12.8
280	13.7
300	14.7
320	15.2
340	15.4
360	16.1
380	16.4
400	16.6
420	16.7
440	17.0
460	17.7
480	18.1
500	18.5
520	19.1
540	19.5
560	19.8
580	20.6
600	21.3
620	21.5
640	21.2
660	21.4
680	21.9
700	22.2
720	22.2
740	22.1
760	22.3
780	22.6
800	22.7
820	22.9
840	23.1
860	23.4
880	23.8
900	24.1
920	24.1

Frequency, MHz	Antenna Factor, dB(1/m)
940	24.0
960	24.1
980	24.5
1000	24.9
1020	25.0
1040	25.2
1060	25.4
1080	25.6
1100	25.7
1120	26.0
1140	26.4
1160	27.0
1180	27.0
1200	26.7
1220	26.5
1240	26.5
1260	26.5
1280	26.6
1300	27.0
1320	27.8
1340	28.3
1360	28.2
1380	27.9
1400	27.9
1420	27.9
1440	27.8
1460	27.8
1480	28.0
1500	28.5
1520	28.9
1540	29.6
1560	29.8
1580	29.6
1600	29.5
1620	29.3
1640	29.2
1660	29.4
1680	29.6
1700	29.8
1720	30.3
1740	30.8
1760	31.1
1780	31.0
1800	30.9
1820	30.7
1840	30.6
1860	30.6
1880	30.6
1900	30.6
1920	30.7
1940	30.9
1960	31.2
1980	31.6
2000	32.0

Antenna factor is to be added to receiver meter reading in dB(μV) to convert to field intensity in dB(μV/meter).

Antenna Factor
Double Ridged Guide Antenna
Electro-Metrics, Model RGA-50/60
Ser.No.2811

Frequency, MHz	Antenna Factor, dB(1/m)
1000	24.3
1500	25.4
2000	28.4
2500	29.2
3000	30.5
3500	31.6
4000	33.7
4500	32.2
5000	34.5
5500	34.5
6000	34.6
6500	35.3
7000	35.5
7500	35.9
8000	36.6
8500	37.3
9000	37.7
9500	37.7
10,000	38.2
10,500	38.5
11,000	39.0
11,500	40.1
12,000	40.2
12,500	39.3
13,000	39.9
13,500	40.6
14,000	41.1
14,500	40.5
15,000	39.9
15,500	37.8
16,000	39.1
16,500	41.1
17,000	41.7
17,500	45.1
18,000	44.3

Antenna factor dB(1/m) is to be added to receiver meter reading in dB(μV) to convert it into field intensity in dB(μV/meter)

APPENDIX C- A2LA Accreditation

THE AMERICAN
ASSOCIATION
FOR LABORATORY
ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

HERMON LABORATORIES
Binyamina, ISRAEL

for technical competence in the field of

Electrical (EMC) Testing

The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC Guide 25-1990 "General Requirements for the Competence of Calibration and Testing Laboratories" (equivalent to relevant requirements of the ISO 9000 series of standards and EN 45001) and any additional program requirements in the identified field of testing.

Presented this 27th day of February, 1997.

SEAL

President
For the Accreditation Council
Certificate Number 839.01
Valid to March 31, 1999

For tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical (EMC) Scope of Accreditation

American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 25-1990 (EN 45001)

HERMON LABORATORIES
P.O. Box 23
Binyamina 30550, Israel
Edward Usoskin Phone: 972 6 6288 001

ELECTRICAL (EMC)

Valid to: March 31, 1999 Certificate Number: 0839.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests:

Electromagnetic Compatibility
- Radiated Emissions Tests
- Conducted Emissions Tests

Product Safety Testing
- Heat Resistance
- Impulse
- Clearance & Creepage Distance
- Temperature Rise
- High Current Arching Ignition
- Bonding Resistance
- Flammability
- Overload
- Leakage Current
- Hot Wire Ignition
- Dielectric Withstanding

Telecommunications Testing
- Longitudinal Balance
- Environmental Stresses, Surges
- DTMF & Pulse Dialing
- On Hook, Off Hook DC/AC Impedances
- In-Band, Out of Band Signals
- Return Losses
- Hazardous Voltages
- Hearing Aids
- Billing Protection

On the following equipment:
Information Technology Equipment (ITE); Industrial, Scientific and Medical Equipment (ISM); Telecommunications Equipment; Electrical Appliances; Portable Tools; Motors; Transformers; and Similar Electrical Apparatus

Using the following test methods/specifications/standards:
FCC Part 15 using ANSI C63.4 - 1992
ANSI/UL 1950 - 1994
AS 3260
AS/NZS 1044, AS/NZS 2064, AS/NZS 3548
CISPR 11 - 1990, CISPR 14, CISPR 22 - 1993
EN 55011 - 1991, EN 55014 - 1987, EN 55022 - 1994, EN 60950 - 1993
IEC 950 - 1996
Israeli Ministry of Communications Specification No. 023/96
TS 001, TS 002, TS 004
US Code of Federal Regulation (CFR) 47 Parts 15, 18, and 68

Revised 06/25/97

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