

## EMISSIONS TEST REPORT

Report Number: 3155340BOX-001b

Project Number: 3155340

Testing performed on the

USB Dongle

Model: M502

To

FCC Part 15 Subpart C Section 15.249

For


Timex Corporation

Test Performed by:  
Intertek – ETL SEMKO  
70 Codman Hill Road  
Boxborough, MA 01719

Test Authorized by:  
Timex Corporation  
555 Christian Road  
P.O. Box 310  
Middlebury, CT 06762

Prepared by:   
Kouma Sinn

Date: 08/18/08

Reviewed by:   
Jeff Goulet

Date: 08/19/08

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**1.0 Job Description**

**1.1 Client Information**

This EUT has been tested at the request of:

**Company:** Timex Corporation  
555 Christian Road  
P.O. Box 310  
Middlebury, CT 06762  
**Contact:** Mr. Ron DeRosa  
**Telephone:** 203-346-4333  
**Fax:** 203-346-7107  
**Email:** RDeRosa@timex.com

**1.2 Equipment Under Test**

**Equipment Type:** USB Dongle  
**Model Number(s):** M502  
**Serial number(s):** MAY20, 80-014  
**Manufacturer:** Timex Corporation  
**EUT receive date:** July 8, 2008  
**EUT received condition:** Production unit was received with no visible damage.  
**Test start date:** July 10, 2008  
**Test end date:** July 17, 2008

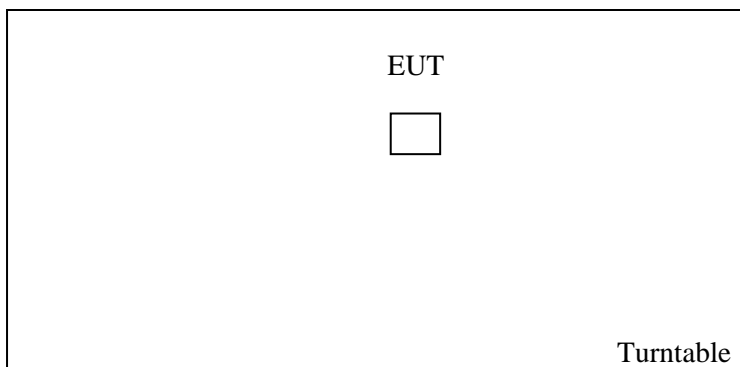
**1.3 Test Plan Reference:** FCC Part 15 Subpart C Section 15.249

**1.4 Test Configuration:**

**1.4.1 EUT Voltage Range:**

EUT powers from PC

**1.4.2 Block Diagram:**



**1.4.3 Cables:**

None

**1.4.4 Support Equipment:**

Name: HP Laptop Computer  
Model No.: Compaq nc4400  
Serial No.: CND7010ML9

Name: HP AC Adapter  
Model No.: 384019-002  
Serial No.: F3-06120116160B

Cable	Shielding	Connector	Length (m)	Qty.
AC Cord	None	Plastic	2	1
AC Adapter Cable	None	Plastic	2	1

**1.5 Mode(s) of Operation:**

The EUT was programmed to transmit continuously.

**1.5a EUT Cycle Time:**

Continuous

## 2.0 Test Summary

TEST STANDARD	RESULTS	
FCC Part 15 Subpart C Section 15.249		
SUB-TEST	TEST PARAMETER	COMMENT
15.249(a) – Fundamental Field Strength	2400–2483.5 MHz: The field strength of emission within this band shall not exceed 50 (millivolts/meter) or 94 (dBuV/m) at a distance of 3 meters	Pass
15.249(a) – Harmonics Field Strength	The field strength of harmonics shall not exceed 500 (microvolts/meter) or 54 (dBuV/m) at a distance of 3 meters	Pass
15.249 (d) – Spurious Field Strength	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in 15.209, whichever is the lesser attenuation.	Pass
15.207 – AC Line-Conducted Emissions	Quasi-Peak Detector 0.15-0.5MHz 66 to 56* dBuV 0.5-5MHz 56 dBuV 5-30MHz 60 dBuV  Average Detector 0.15-0.5MHz 56 to 46* dBuV 0.5-5MHz 46 dBuV 5-30MHz 50 dBuV  * Decreases with the logarithm of the frequency.	Pass
20 dB Bandwidth	No limit	

REVISION SUMMARY – The following changes have been made to this Report:

<u>Date</u>	<u>Project No.</u>	<u>Project Handler</u>	<u>Page(s)</u>	<u>Item</u>	<u>Description of Change</u>
08/18/08	3155340	Kouma Sinn	10	Average Factor	Added average factor in the report

### 3.0 Sample Calculations

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB $\mu$ V/m
- RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB $\mu$ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

RA = 52.0 dB $\mu$ V  
 AF = 7.4 dB/m  
 CF = 1.6 dB  
 AG = 29.0 dB  
 FS = 32 dB $\mu$ V/m

$$\text{Level in } \mu\text{V/m} = [10(32 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}$$

The following is how net line-conducted readings were determined:

$$NF = RF + LF + CF + AF$$

Where NF = Net Reading in dB $\mu$ V

- RF = Reading from receiver in dB $\mu$ V
- LF = LISN Correction Factor in dB
- CF = Cable Correction Factor in dB
- AF = Attenuator Loss Factor in dB

To convert from dB $\mu$ V to  $\mu$ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where UF = Net Reading in } \mu\text{V}$$

**Example:**

$$NF = RF + LF + CF + AF = 28.5 + 0.2 + 0.4 + 20.0 = 49.1 \text{ dB}\mu\text{V}$$

$$UF = 10^{(49.1 \text{ dB}\mu\text{V} / 20)} = 254 \mu\text{V/m}$$

### 3.1 Measurement Uncertainty

Compliance of the product is based on the measured value. However, the measurement uncertainty is included for informational purposes.

The expanded uncertainty ( $k = 2$ ) for radiated emissions from 30 to 1000 MHz has been determined to be:

$\pm 3.5$  dB at 10m,  $\pm 3.8$  dB at 3m

The expanded uncertainty ( $k = 2$ ) for mains conducted emissions from 150 kHz to 30 MHz has been determined to be:

$\pm 2.6$  dB

The expanded uncertainty ( $k = 2$ ) for telecom port conducted emissions from 150 kHz to 30 MHz has been determined to be:

$\pm 3.2$  for ISN and voltage probe measurements

$\pm 3.1$  for current probe measurements

### 3.2 Site Description

#### Test Site(s): 2

Our OATS are 3m and 10m sheltered emissions measurement ranges located in a light commercial environment in Boxborough, Massachusetts. They meet the technical requirements of ANSI C63.4-2003 and CISPR 22:1993/EN 55022:1994 for radiated and conducted emission measurements. The shelter structure is entirely fiberglass and plastic, with outside dimensions of 33 ft x 57 ft. The structure resembles a quonset hut with a center ceiling height of 16.5 ft.

The testing floor is covered by a galvanized sheet metal groundplane that is earth-grounded via copper rods around the perimeter of the site. The joints between individual metal sheets are bridged with a 2 inch wide metal strips to provide low RF impedance contact throughout. The sheets are screwed in place with stainless steel, round-head screws every three inches. Site illumination and HVAC are provided from beneath the ground reference plane through flush entry ports, the port covers are electrically bonded to the ground plane.

A flush metal turntable with 12 ft. diameter and 5000 lb. load capacity (12,000 lb. in Site 3) is provided for floor-standing equipment. A wooden table 80 cm high is used for table-top equipment. The turntable is electrically connected to the ground plane with three copper straps. The straps are connected to the turntable at the center of it with ground braid. The copper strap is directly connected to the groundplane at the edges of the turntable. The turntable is located on the south end of the structure and the antennas are mounted 3 and 10 meters away to the north. The antenna mast is a non-conductive with remote control of antenna height and polarization. The antenna height is adjustable from 1 to 4 meters.

All final radiated emission measurements are performed with the testing personnel and measurement equipment located below the ground reference plane. The site has a full basement underneath the turntable where support equipment may be remotely located. Operation of the antenna, turntable and equipment under test is controlled by remote controls that manipulate the antenna height and polarization and with a turntable control. Test personnel are located below the ellipse when measurements are performed, however the site maintains the ability of having personnel manipulate cables while monitoring test equipment. Ambient radiated emissions are 6 dB or more below the relevant FCC emission limits.

AC mains power is brought to the equipment under test through a power line filter, to remove ambient conducted noise. 50 Hz (240 VAC single phase), 60 Hz power (120 VAC single phase, 208 VAC three phase), and 60 Hz (480 VAC three phase) are available. Conducted emission measurements are performed with a Line Impedance Stabilization Network (LISN) or Artificial Mains Network (AMN) bonded to the ground reference plane. A removable vertical groundplane (2 meter X 2 meter area) is used for line-conducted measurements for table top equipment. The vertical groundplane is electrically connected to the reference groundplane.

**Test Results:** Pass

**Test Standard:** FCC Part 15 Subpart C Section 15.249

**Test:** Fundamental Field Strength

**Performance Criterion:** Not Applicable

**Test Environment:**

Environmental Conditions During Testing:	Ambient (°C):	22	Humidity (%):	63	Pressure (hPa):	1004
Pretest Verification Performed	Yes		Equipment under Test:	M502		
Test Engineer(s):	Vathana Ven		EUT Serial Number:	MAY20, 80-014		

**Maximum Test Disturbance Parameters:** Emissions below 15.249(a)

**Test Equipment Used:**

TEST EQUIPMENT LIST					
Item	Equipment Type	Make	Model No.	Serial No.	Next Cal. Due
1	HORN ANTENNA	EMCO	3115	9610-4980	03/03/2009
2	Cable, SMA - SMA, < 18GHz	Sucoflex (Huber Suhm)	104PE	CBLSHF103	Verified
3	4 Line Digital Barometer *	Mannix	0ABA116	SAF291	01/30/2009
4	9kHz to 3GHz EMI Test Receiver	Rohde & Schwartz	ESCI 1166.5950K03	100067	01/25/2009

**Software Utilized:**

Name	Manufacturer	Version
EXCEL 2000	Microsoft Corporation	9.0.6926 SP-3
EMI BOXBOROUGH	Intertek	3/07/07 Revision

**Test Details:**

Test Point	Standard Limit (as published)	Compliance Level	Pass/Fail	Comment
Around the EUT	Specified limits	Below specified limits	Pass	None



**Test Results:**

**Fundamental Field Strength**

Company: Timex Corp  
Model #: M502  
Serial #: MAY20, 80-014  
Engineers: Vathana Ven  
Project #: 3155340  
Standard: FCC Part 15 Subpart C 15.249  
Receiver: R&S ESCI (ROS002)  
PreAmp: PRE9 03-27-09.txt  
Date(s): 07/10/08  
Location: Site 2  
Antenna & Cables: HF Bands: N, LF, HF, SHF  
Antenna: HORN3 V1m 6-18-08.txt HORN3 H1m 6-18-08.txt  
Cable(s): CBLSHF103 07-10-09.txt MEG004.txt  
Barometer: SAF291  
Temp/Humidity/Pressure: 22 deg C 63% 1004 mB  
Limit Distance (m): 3  
Test Distance (m): 3  
PreAmp Used? (Y or N): N Voltage/Frequency: Powered from PC Frequency Range: 2474MHz  
Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)

Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	AVERAGE Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth
PK	V	2474.030	64.5	29.2	4.4	0.0	0.0	98.1	114.0	-15.9	1/3 MHz
AVG	V	2474.030	44.5	29.2	4.4	0.0	0.0	78.1	94.0	-15.9	1/3 MHz

FCC IC

Notes: A maximum average factor of 20 dB was applied to Maxh PK readings to get AVG readings.

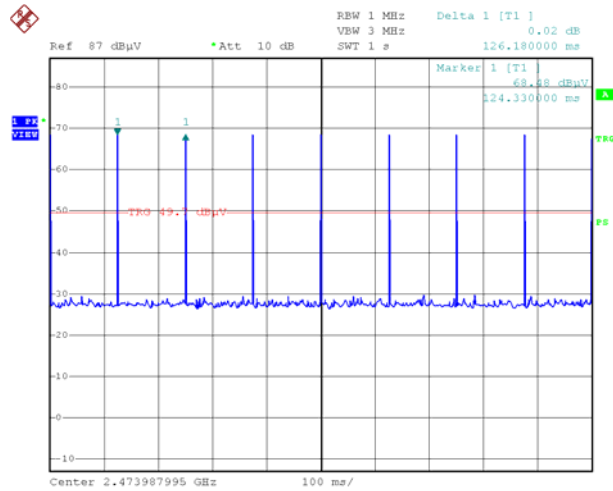
## Average Factor Calculation:

$$\text{Average Factor} = 20 * \text{Log}(200\mu\text{S}/100\text{ms})$$

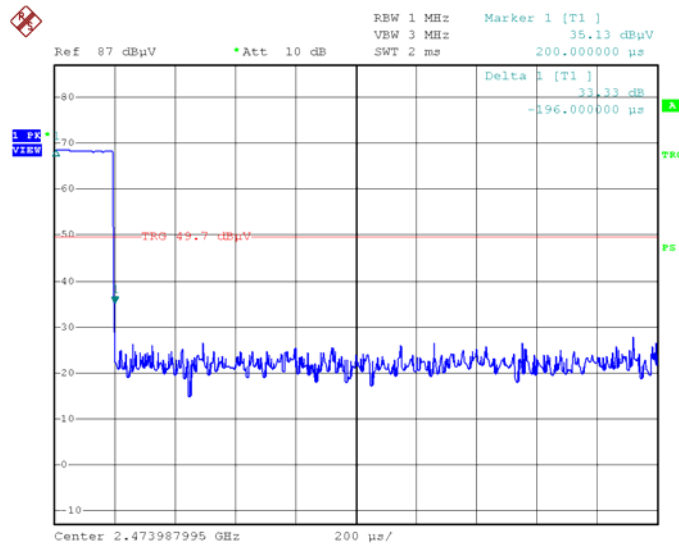
$$\text{Average Factor} = 20 * \text{Log}(0.200/100)$$

$$\text{Average Factor} = -54\text{dB}$$

$$\text{Maximum average factor used} = -20\text{dB}$$



Date: 11.AUG.2008 18:18:05



Date: 11.AUG.2008 18:25:18

**Test Results:** Pass

**Test Standard:** FCC Part 15 Subpart C Section 15.249

**Test:** Harmonics/Spurious Field Strength

**Performance Criterion:** Not Applicable

**Test Environment:**

Environmental Conditions During Testing:		Ambient (°C):	22	Humidity (%):	63	Pressure (hPa):	1004
			23		65		
Pretest Verification Performed		Yes		Equipment under Test:		M502	
Test Engineer(s):	Vathana Ven			EUT Serial Number:		MAY20, 80-014	
	Kouma Sinn						

**Maximum Test Disturbance Parameters:** Emissions below 15.249(a) and 15.249(d)

**Test Equipment Used:**

TEST EQUIPMENT LIST					
Item	Equipment Type	Make	Model No.	Serial No.	Next Cal. Due
1	ANTENNA	EMCO	3142	9711-1223	02/22/2009
2	3 Meter In floor cable for site 2	ITS	RG214B/U	S2 3M FLR	09/17/2008
3	Spectrum Analyzer	Agilent	E7405A	US40240205	08/09/2008
4	HORN ANTENNA	EMCO	3115	9610-4980	03/03/2009
5	Cable, SMA - SMA, < 18GHz	Sucoflex (Huber Suhb)	104PE	CBLSHF103	Verified
6	40 GHz Cable	Megaphase	TM40-K1K1-80	7030802 002	06/05/2009
7	3GHz High Pass Filter	Reactel, Inc	7HSX-3G/18G-S11	06-1	09/18/2008
8	4 Line Digital Barometer *	Mannix	0ABA116	SAF291	01/30/2009
9	9kHz to 3GHz EMI Test Receiver	Rohde & Schwartz	ESCI 1166.5950K03	100067	01/25/2009
10	100MHz-40GHz Preamp	MITEQ	NSP4000-NFG	1260417	03/25/2008
11	ANTENNA, RIDGED GUIDE, 18-40 GHZ	EMCO	3116	2090	12/26/2008
12	PREAMPLIFIER 1- 40 GHz	MITEQ	NSP4000-NF	507145	11/09/2008
13	High Frequency Cable 40GHz	Megaphase	TM40 K1K1 80	CBL029	12/06/2008

**Software Utilized:**

<b>Name</b>	<b>Manufacturer</b>	<b>Version</b>
EXCEL 2000	Microsoft Corporation	9.0.6926 SP-3
EMI BOXBOROUGH	Intertek	3/07/07 Revision

**Test Details:**

<b>Test Point</b>	<b>Standard Limit (as published)</b>	<b>Compliance Level</b>	<b>Pass/Fail</b>	<b>Comment</b>
Around the EUT	Specified limits	Below specified limits	Pass	None

**Test Results:**

**Radiated Emissions From 30-1000MHz**

Company: Timex Corp Model #: M502 Serial #: MAY20, 80-014 Engineers: Vathana Ven Project #: 3155340 Standard: FCC Part 15 Subpart C 15.249 Receiver: Agilent E7405A (AGL001) PreAmp: PRE8 11-09-08.txt	Antenna & Cables: N Bands: N, LF, HF, SHF Antenna: LOG2 2-22-09 V3m.txt LOG2 2-22-09 H3m.txt Cable(s): S2 3M FLR 9-17-08.txt NONE. Barometer: SAF291  Location: Site 2  Date(s): 07/10/08  Temp/Humidity/Pressure: 22 deg C 63% 1004 mB Limit Distance (m): 3 Test Distance (m): 3 Voltage/Frequency: Powered from PC Frequency Range: 30-1000 MHz
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PreAmp Used? (Y or N): N  
 Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)  
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth
QP	V	205.300	25.0	12.3	1.9	0.0	0.0	39.2	43.5	-4.3	120/300 kHz
QP	V	231.570	15.0	13.5	1.9	0.0	0.0	30.5	46.0	-15.5	120/300 kHz
QP	V	320.452	12.0	15.9	2.3	0.0	0.0	30.2	46.0	-15.8	120/300 kHz
QP	V	331.300	10.0	16.2	2.4	0.0	0.0	28.6	46.0	-17.4	120/300 kHz
QP	V	460.000	13.0	19.1	2.9	0.0	0.0	34.9	46.0	-11.1	120/300 kHz
QP	V	530.000	12.0	20.6	3.2	0.0	0.0	35.7	46.0	-10.3	120/300 kHz

FCC IC  
 RB RB

**Test Results Continued:**

## Radiated Emissions From 1-18GHz

Company: Timex Corp      Antenna & Cables: HF      Bands: N, LF, HF, SHF  
 Model #: M502      Antenna: HORN3 V1m 6-18-08.txt HORN3 H1m 6-18-08.txt  
 Serial #: MAY20, 80-014      Cable(s): CBLSHF103 07-10-09.txt MEG004.txt      REA003      REA004  
 Engineers: Vathana Ven      Location: Site 2      Barometer: SAF291  
 Project #: 3155340      Date(s): 07/10/08      Temp/Humidity/Pressure: 22 deg C      63%      1004 mB  
 Standard: FCC Part 15 Subpart C 15.249  
 Receiver: R&S ESCI (ROS002)      Limit Distance (m): 3  
 PreAmp: PRE9 03-27-09.txt      Test Distance (m): 3  
 PreAmp Used? (Y or N): Y      Voltage/Frequency: Fresh 3V battery      Frequency Range: 1-18GHz  
 Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)  
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	AVERAGE Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth	FCC	IC	
PK	V	4936.240	44.5	34.8	7.1	29.3	0.0	57.1	74.0	-16.9	1/3 MHz	RB	RB	
AVG	V	4936.240	24.5	34.8	7.1	29.3	0.0	37.1	54.0	-16.9	1/3 MHz	RB	RB	
PK	V	7422.000	38.8	37.7	8.6	28.3	0.0	56.8	74.0	-17.2	1/3 MHz	RB	RB	
AVG	V	7422.000	18.8	37.7	8.6	28.3	0.0	36.8	54.0	-17.2	1/3 MHz	RB	RB	
PK	H	9896.000	38.4	40.4	10.2	27.3	0.0	61.6	74.0	-12.4	1/3 MHz			
AVG	H	9896.000	18.4	40.4	10.2	27.3	0.0	41.6	54.0	-12.4	1/3 MHz			
PK	H	12370.000	35.8	39.4	11.2	27.4	0.0	59.0	74.0	-15.0	1/3 MHz	RB	RB	Noise Floor
EMI AVG	H	12370.000	25.0	39.4	11.2	27.4	0.0	48.2	54.0	-5.8	1/3 MHz	RB	RB	Noise Floor
PK	H	14844.000	33.7	42.1	12.7	27.6	0.0	60.9	74.0	-13.1	1/3 MHz			Noise Floor
EMI AVG	H	14844.000	23.7	42.1	12.7	27.6	0.0	50.9	54.0	-3.1	1/3 MHz			Noise Floor

Notes: A maximum average factor of 20 dB was applied to Maxh PK readings to get AVG readings.

**Test Results Continued:**

**Radiated Emissions From 18-24.740GHz**

Company: Timex Corp  
 Model #: M502  
 Serial #: MAY20, 80-014  
 Engineers: Kouma Sinn  
 Project #: 3155340  
 Standard: FCC Part 15 Subpart C 15.249  
 Receiver: ROS001  
 PreAmp: PRE8 11-09-08.txt  
 Antenna & Cables: SHF Bands: N, LF, HF, SHF  
 Antenna: EMC04 V 1m 12-26-2008.txt EMC04 H 1m 12-26-2008.txt  
 Cable(s): CBL030 12-06-08.txt CBL029 12-06-08.txt  
 Barometer: SAF291  
 Location: Site 2  
 Date(s): 07/16/08  
 Limit Distance (m): 3  
 Test Distance (m): 0.5  
 Temp/Humidity/Pressure: 23C 65% 1012mbar  
 Voltage/Frequency: Powered from PC Frequency Range: 18-24.740GHz  
 Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)  
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/BW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth	FCC	IC	NF
Maxh PK	V	19792.000	30.5	45.4	9.7	24.7	15.6	45.3	74.0	-28.7	1/3MHz	RB	RB	NF
EMI AVG	V	19792.000	22.7	45.4	9.7	24.7	15.6	37.5	54.0	-16.5	1/3MHz	RB	RB	NF
Maxh PK	V	22266.000	31.4	45.4	9.8	21.4	15.6	49.7	74.0	-24.3	1/3MHz	RB	RB	NF
EMI AVG	V	22266.000	22.7	45.4	9.8	21.4	15.6	41.0	54.0	-13.0	1/3MHz	RB	RB	NF
Maxh PK	V	24740.000	30.8	46.3	10.5	21.6	15.6	50.5	74.0	-23.5	1/3MHz			NF
EMI AVG	V	24740.000	23.5	46.3	10.5	21.6	15.6	43.2	54.0	-10.8	1/3MHz			NF

**Radiated Emissions Setup Photo 1**





**Radiated Emissions Setup Photo 2**



**Test Results:** Pass

**Test Standard:** FCC Part 15 Subpart C Section 15.249

**Test:** Line-Conducted Emissions

**Performance Criterion:** Not Applicable

**Test Environment:**

Environmental Conditions During Testing:	Ambient (°C):	21	Humidity (%):	54	Pressure (hPa):	1011
Pretest Verification Performed	Yes		Equipment under Test:	M502		
Test Engineer(s):	Kouma Sinn		EUT Serial Number:	MAY20, 80-014		

**Maximum Test Disturbance Parameters:** Emissions below 15.207

**Test Equipment Used:**

TEST EQUIPMENT LIST					
Item	Equipment Type	Make	Model No.	Serial No.	Next Cal. Due
1	4 Line Digital Barometer *	Mannix	0ABA116	SAF291	01/30/2009
2	LISN, 50uH, .01 - 50MHz, 24A	Solar Electronics	9252-50-R-24-BNC	941714	10/11/2008
3	RG223 50ohm Coaxial Cable	Intertek	BNC-30	CBLBNC6	12/28/2008
4	Spectrum Analyzer	Hewlett Packard	8591E	3308A01445	02/15/2009

**Software Utilized:**

Name	Manufacturer	Version
EXCEL 2000	Microsoft Corporation	9.0.6926 SP-3
EMI BOXBOROUGH	Intertek	3/07/07 Revision

**Test Details:**

Test Point	Standard Limit (as published)	Compliance Level	Pass/Fail	Comment
AC Mains	Specified limits	Below specified limits	Pass	None

**Test Results:**

**Conducted Emissions**

Company: Timex Corp Receiver: SA0001  
 Model #: M502 Cable: CBLBNC6 12-28-08.txt  
 Serial #: MAY20, 80-014 LISN 1: LISN12 [1] 10-11-07.txt  
 Engineer(s): Kouma Sinn Location: 2 LISN 2: LISN12 [2] 10-11-07.txt  
 Project #: 3155340 Date: 07/17/08 LISN 3: NONE.  
 Standard: FCC Part 15 Subpart C Section 15.207 LISN 4: NONE.  
 Barometer: SAF291 Temp/Humidity/Pressure: 21C 54% 1011mbar Attenuator: DS23A 03-04-09.txt  
 Voltage/Frequency: 115V/60Hz Frequency Range: 150kHz-30MHz

Net is the sum of worst-case lisn, cable, & attenuator losses, and initial reading, factors are not shown

Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor; Bandwidth denoted as RBW/BW

Detector Type	Frequency MHz	Reading Line 1 dB(uV)	Reading Line 2 dB(uV)	Reading Line 3 dB(uV)	Reading Line 4 dB(uV)	Net dB(uV)	QP Limit dB(uV)	Margin dB	Bandwidth
QP	0.207	20.1	15.2	--	--	40.6	63.3	-22.7	9/30 kHz
QP	0.274	15.2	12.0	--	--	35.6	61.0	-25.4	9/30 kHz
QP	0.481	18.2	17.7	--	--	38.5	56.3	-17.8	9/30 kHz
QP	0.620	16.5	15.3	--	--	36.8	56.0	-19.2	9/30 kHz
QP	10.035	18.1	17.5	--	--	38.8	60.0	-21.2	9/30 kHz
QP	16.950	20.7	20.4	--	--	41.7	60.0	-18.3	9/30 kHz

Detector Type	Frequency MHz	Reading Line 1 dB(uV)	Reading Line 2 dB(uV)	Reading Line 3 dB(uV)	Reading Line 4 dB(uV)	Net dB(uV)	Average Limit dB(uV)	Margin dB	Bandwidth
AVG	0.207	14.0	10.2	--	--	34.5	53.3	-18.8	9/30 kHz
AVG	0.274	11.8	9.1	--	--	32.2	51.0	-18.8	9/30 kHz
AVG	0.481	16.5	15.6	--	--	36.8	46.3	-9.5	9/30 kHz
AVG	0.620	15.1	13.0	--	--	35.4	46.0	-10.6	9/30 kHz
AVG	10.035	12.0	12.6	--	--	33.3	50.0	-16.7	9/30 kHz
AVG	16.950	15.0	12.8	--	--	36.0	50.0	-14.0	9/30 kHz

**Line-Conducted Emissions Photo 1**



**Line-Conducted Emissions Photo 2**



**Test Results:** No limit

**Test Standard:** FCC Part 15 Subpart C Section 15.249

**Test:** 20 dB Bandwidth

**Performance Criterion:** Not Applicable

**Test Environment:**

Environmental Conditions During Testing:	Ambient (°C):	22	Humidity (%):	59	Pressure (hPa):	1001
Pretest Verification Performed	Yes		Equipment under Test:	M502		
Test Engineer(s):	Vathana Ven		EUT Serial Number:	MAY20, 80-014		

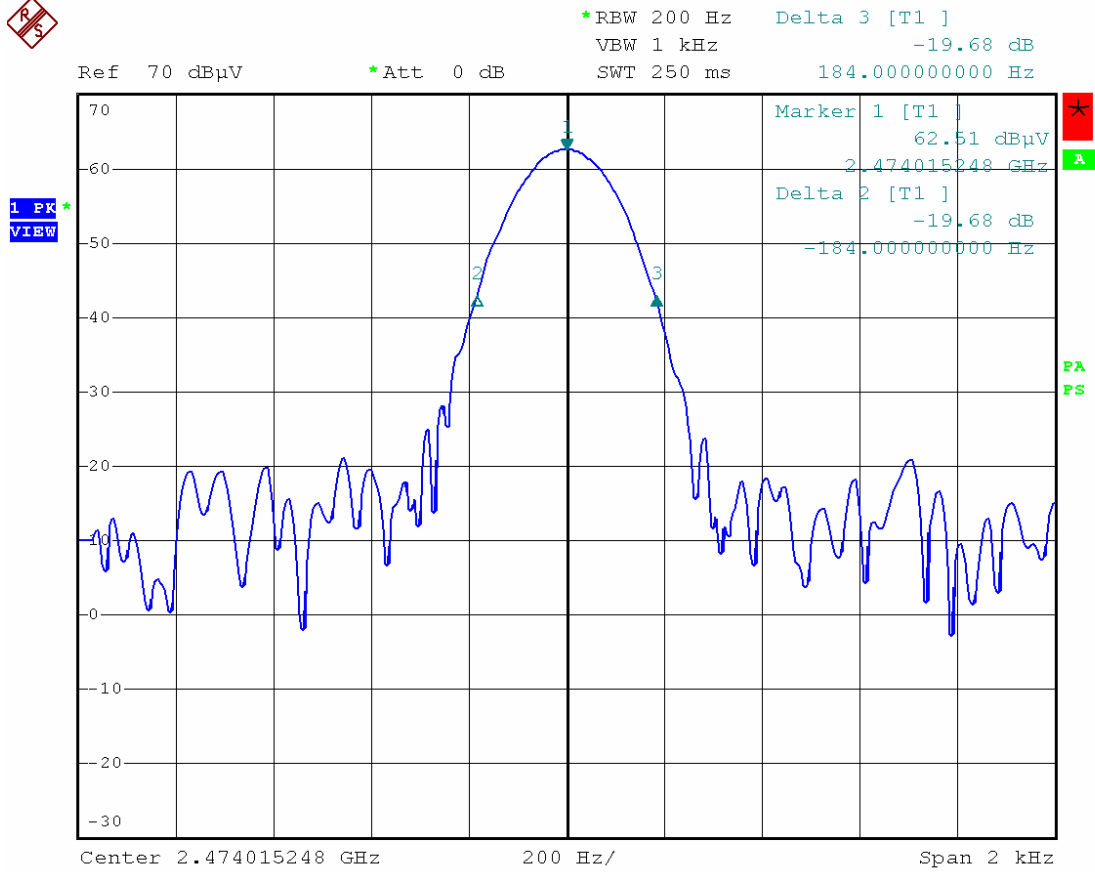
**Maximum Test Disturbance Parameters:** No limit

**Test Equipment Used:**

TEST EQUIPMENT LIST					
Item	Equipment Type	Make	Model No.	Serial No.	Next Cal. Due
1	HORN ANTENNA	EMCO	3115	9610-4980	03/03/2009
2	40 GHz Cable	Megaphase	TM40-K1K1-197	7030801 002	06/05/2009
3	4 Line Digital Barometer *	Mannix	0ABA116	SAF291	01/30/2009
4	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	11/26/2008

**Test Details:**

Test Point	Standard Limit (as published)	Compliance Level	Pass/Fail	Comment
Fundamental Frequency	No limit	No limit	No limit	None



Date: 8.JUL.2008 20:51:46