



**DATE: 06 October 2014**

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

# **Test Report According to FCC Part 15 Subpart B**


**(Equipment Authorization Under FCC Verification Process)  
for**

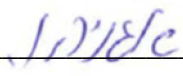
## **Starcom GPS Systems Ltd.**

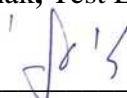
**Equipment under test:**

### **Container Tracker**

### **Triton R**

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# 1. General Information

## 1.1 Administrative Information

Manufacturer:	Starcom GPS Systems Ltd.
Manufacturer's Address:	33 Jabotinsky St., Ramat-Gan, 52511, Israel Tel: +972-3-619-9901 Fax: +972-3-619-9954
Manufacturer's Representative:	Vadim Leitman
Equipment Under Test (E.U.T):	Container Tracker
Equipment Model No.:	Triton R
Equipment Serial No.:	300980
Date of Receipt of E.U.T:	22.09.14
Start of Test:	22.09.14
End of Test:	23.09.14
Test Laboratory Location:	I.T.L (Product Testing) Ltd. 1 Batsheva St., Lod ISRAEL 7120101
Test Specifications:	See Section 2



## 1.2 Abbreviations and Symbols

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

AC	alternating current
ARA	Antenna Research Associates
Aux	auxiliary
Avg	average
CDN	coupling-decoupling network
cm	centimeter
dB	decibel
dBm	decibel referred to one milliwatt
db $\mu$ V	decibel referred to one microvolt
db $\mu$ V/m	decibel referred to one microvolt per meter
DC	direct current
EMC	electromagnetic compatibility
E.U.T.	equipment under test
GHz	gigahertz
HP	Hewlett Packard
Hz	Hertz
kHz	kilohertz
kV	kilovolt
LED	light emitting diode
LISN	line impedance stabilization network
m	meter
mHn	millihenry
MHz	megahertz
msec	millisecond
N/A	not applicable
QP	quasi-peak
PC	personal computer
RF	radio frequency
RE	radiated emission
sec	second
V	volt



### 1.3 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 Israel Ministry of the Environment (Israel), Registration No. 1104/01.
3. The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) (Japan), Registration Numbers: C-3006, R-2729, T-1877, G-245.
4. Industry Canada (Canada), IC File No.: 46405-4025; Site No. IC 4025A-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.



## 2. Applicable Documents

- 2.1 **Code of Federal Regulations Title 47,  
Federal Communications Commission  
Part 15, Subpart B.  
Rev. July 09, 2013  
GPO Access Web Site** *Unintentional Radiators.*
- 2.2 **ANSI C63.4-2003** *American National Standards for  
Methods of Measurement of Radio-  
Noise Emissions from Low-Voltage  
Electrical and Electronic Equipment  
in the Range of 9 kHz to 40 GHz.*



## 3. Test Site Description

### 3.1 Location:

The Electromagnetic Compatibility Test Facility of I.T.L. (Product testing) Ltd. Is located at  
Telrad Industrial Park, Lod, 7120101 Israel.

Telephone: +972-8-9153100

Fax: +972-8-9153101

### 3.2 Shielded Room

A Modular Shielded Room, Type 20 SpaceSaver, manufactured by ETS, consisting of a Main Room and a Control Room.

The dimensions of the Main Room are: length: 7.0 m, width: 3.0 m, height: 3.0 m.

The shielding performance is:

magnetic field: 60 dB at 10 kHz rising linearly to 100 dB at 100 kHz,

electric field: better than 110 dB between 50 MHz and 1 GHz,

plane wave: 110 dB between 50 MHz and 1 GHz.

All the power lines entering the shielded room are filtered.

### 3.3 Open Site:

The OATS is located on a one floor-building roof. The OATS consists of 3 meter and 10 meter ranges, using a 21.5m X 8.5m solid metal ground plane, a remote controlled turntable and an antenna mast.

### 3.4 Ground Plane:

The ground plane is made from steel plates, which are welded continuously together. The Ground plane is lies and welded on welded steel construction with vias to allow for water drainage. All the power, control, and signal lines to the turntable and the 3 m and 10m antenna mast outlets are routed in shielded conduits under the plane to the control building.

### 3.5 Antenna Mast:

ETS model 2070-2. The antenna position and polarization are remote controlled via Fiber Optical Link using ETS/EMCO Dual Controller Type 2090. The antenna position is adjustable between 1-4 meters. Pressurized air is used to power changing the polarity of the antenna.



### **3.6 Turntable:**

ETS model 2087 series. The position of the turntable is remote-controlled via Fiber Optic Link, using ETS/EMCO Dual Controller Type 2090. The turntable is mounted in a pit and its surface is flush with the Open Site Ground Plane. Brushes near the periphery of the turntable ensure good conductive connection to the ground plane. The Turntable maximum load is 1250 kg.

### **3.7 EMI Receiver:**

Type ESIB7, manufactured by Rohde & Schwarz, being in full compliance with CISPR 16 requirements.

### **3.8 E.U.T. Support:**

Table mounted E.U.T.s are supported during testing on 80 cm high all plastic table.

### **3.9 Test Equipment:**

See details in Section 6.



## 4. System Test Configuration

### 4.1 Mode of Operation

The E.U.T. was operated in normal mode transmitting the GSM signal every 10 seconds.

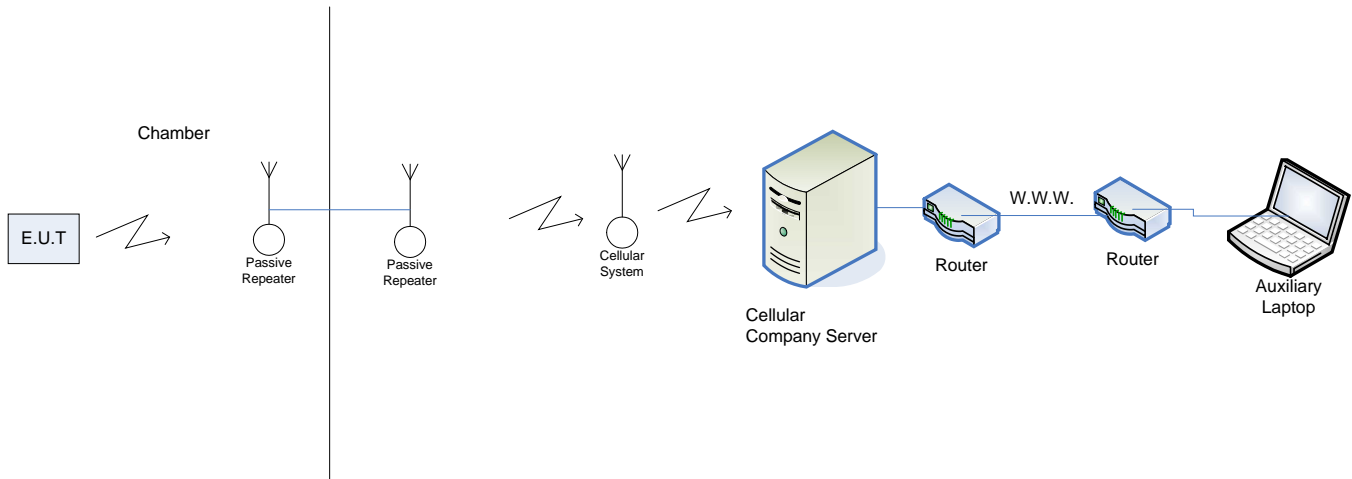


Figure 1. Configuration of Tested System

### 4.2 Equipment Modifications

No modifications were required in order to achieve compliance.



## 5. Summary of Test Results

Test	Results
<p><b>Conducted Emissions</b> FCC Part 15, Subpart B, Class B</p>	<p>The E.U.T met the performance requirements of the specification.</p> <p>The margin between the emission levels and the specification limit was, in the worst case, 12.94 dB for the phase line at 0.514 MHz and 13.75 dB for the neutral line at 0.310 MHz.</p>
<p><b>Radiated Emissions</b> FCC Part 15, Subpart B, Class B</p>	<p>The E.U.T met the performance requirements of the specification.</p> <p>The margin between the emission level and the specification limit was 9.2 dB in the worst case at the frequency of 375.24 MHz, horizontal polarization.</p>



## 6. Equipment Under Test (E.U.T.) Description

Triton R is a sophisticated real-time container tracking device designed for monitoring and management purposes. It allows full control of various events and situations by automatic remote tracking, provides system stability and continuity of operations.

Utilizing its built in sensors, GPS location tracking and GPRS facilities for message communication the system can detect when the container has reached the customer and inform the recipient of every movement of the container. Any damage, blow or breaking into the container can be reported by email and SMS.

The device is easily installed on the container door frame and performs the monitoring of the container state and location. The system provides alerts on various events, such as door opening, breaking in through the side wall, door forcing, container tilt, fall, impact, etc.



## 7. List of Test Equipment

### 7.1 Emission Tests

The equipment indicated below by an "X" was used for testing Conducted Emission (CE) and Radiated Emission (RE)

Test equipment calibration is in accordance with ITL Q.A. Procedure PM 110 "Calibration Control Procedure", which complies with ISO 9002 and ISO/IEC Guide 17025.

Instrument	Manufacturer	Model	Serial No.	Used in Test	
				CE	RE
LISN	Fischer	FCC-LISN-2A	127	X	
Transient Limiter	HP	11947A	3107A03041	X	
EMI Receiver	Rohde & Schwarz	ESCI7	100724	X	
EMI Receiver	Rohde & Schwarz	ESIB7	100120		X
EMC Analyzer	HP	HP8593	3536A00120		X
Biconilog Antenna	EMCO	3142B	1250		X
Horn Antenna	ETS	3115	6142		X
Antenna Mast	ETS	2070-2	9608-1497		X
Turntable	ETS	2087	-		X
Mast & Table Controller	ETS/EMCO	2090	9608-1456		X

## 8. Conducted Emission From AC Mains

### 8.1 Test Specification

0.15 - 30 MHz, FCC Part 15, Subpart B, CLASS B

### 8.2 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 a 0.8 meter high wooden table. 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  $\mu$ 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.'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 7. Conducted Emission Test*.

The emission voltages at the LISN's outputs were measured using a computerized receiver, complying with CISPR 16 requirements. The specification limits are pre-loaded to the receiver 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.

### 8.3 Test Results

The E.U.T met the requirements of the FCC Part 15, Subpart B, Class B specification.

The margin between the emission levels and the specification limit is, in the worst case, 12.94 dB for the phase line at 0.514 MHz and 13.75 dB at 0.310 MHz for the neutral line.

The details of the highest emissions are given in *Figure 2 to Figure 5*.



## Conducted Emission

E.U.T Description      Container Tracker  
Type                      Triton R  
Serial Number:         300980

Specification:    FCC Part 15, Subpart B, Class B  
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	206 kHz	45.81	-17.55
2 Average	206 kHz	32.23	-21.13
2 Average	306 kHz	37.86	-12.21
1 Quasi Peak	310 kHz	43.11	-16.85
2 Average	514 kHz	33.05	-12.94
1 Quasi Peak	518 kHz	38.07	-17.92
2 Average	926 kHz	26.14	-19.85
1 Quasi Peak	1.134 MHz	32.75	-23.24
1 Quasi Peak	1.326 MHz	31.23	-24.77
2 Average	1.326 MHz	21.94	-24.05
1 Quasi Peak	2.162 MHz	29.80	-26.19
2 Average	2.162 MHz	17.53	-28.46
2 Average	4.006 MHz	12.04	-33.95
1 Quasi Peak	6.078 MHz	29.39	-30.60
1 Quasi Peak	7.654 MHz	30.67	-29.32
2 Average	9.818 MHz	12.12	-37.88
2 Average	14.314 MHz	20.85	-29.14
1 Quasi Peak	14.49 MHz	35.41	-24.58
2 Average	19.734 MHz	18.81	-31.18
1 Quasi Peak	20.65 MHz	30.48	-29.51

Date: 23.SEP.2014 12:57:00

**Figure 2. Detectors: Quasi-peak, Average**

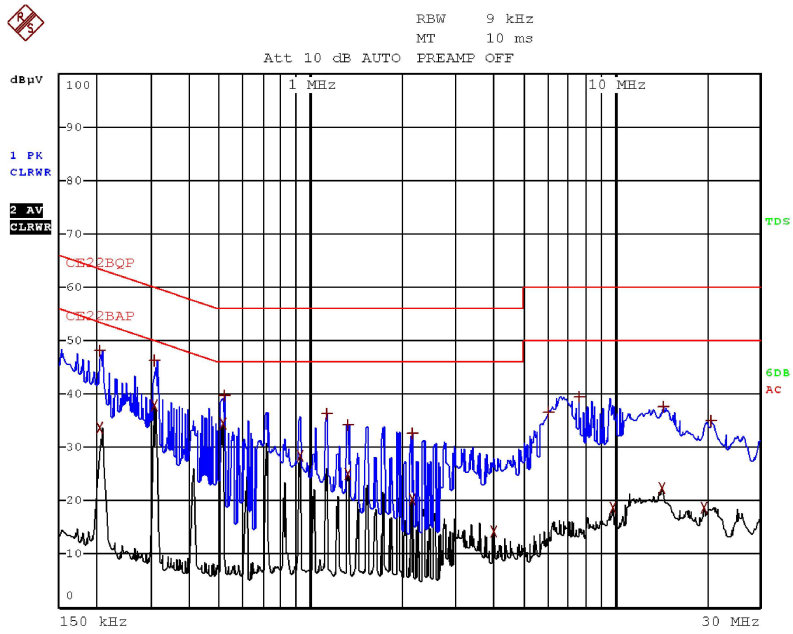
*Note: DELTA LIMIT refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.*



# Conducted Emission

E.U.T Description      Container Tracker  
Type                      Triton R  
Serial Number:         300980

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



Date: 23.SEP.2014 12:53:10

Figure 3 Detectors: Quasi-peak, Average



## Conducted Emission

E.U.T Description    Container Tracker  
Type                    Triton R  
Serial Number:        300980

Specification:    FCC Part 15, Subpart B, Class B  
Lead:                Neutral  
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	154 kHz	38.33	-27.45
2	Average	206 kHz	32.62	-20.73
1	Quasi Peak	310 kHz	38.99	-20.97
2	Average	310 kHz	36.21	-13.75
2	Average	514 kHz	30.31	-15.68
1	Quasi Peak	722 kHz	30.29	-25.70
2	Average	822 kHz	22.89	-23.10
1	Quasi Peak	930 kHz	29.05	-26.94
2	Average	1.534 MHz	17.64	-28.35
1	Quasi Peak	1.55 MHz	27.50	-28.49
2	Average	2.162 MHz	14.45	-31.54
1	Quasi Peak	3.206 MHz	25.78	-30.21
2	Average	4.762 MHz	11.45	-34.54
1	Quasi Peak	6.074 MHz	25.66	-34.33
1	Quasi Peak	9.434 MHz	29.99	-30.00
2	Average	9.838 MHz	11.61	-38.39
1	Quasi Peak	10.446 MHz	28.20	-31.79
2	Average	14.478 MHz	17.32	-32.67
1	Quasi Peak	19.494 MHz	28.70	-31.29
2	Average	19.518 MHz	14.81	-35.19

Date: 23.SEP.2014 13:04:48

**Figure 4. Detectors: Quasi-peak, Average**

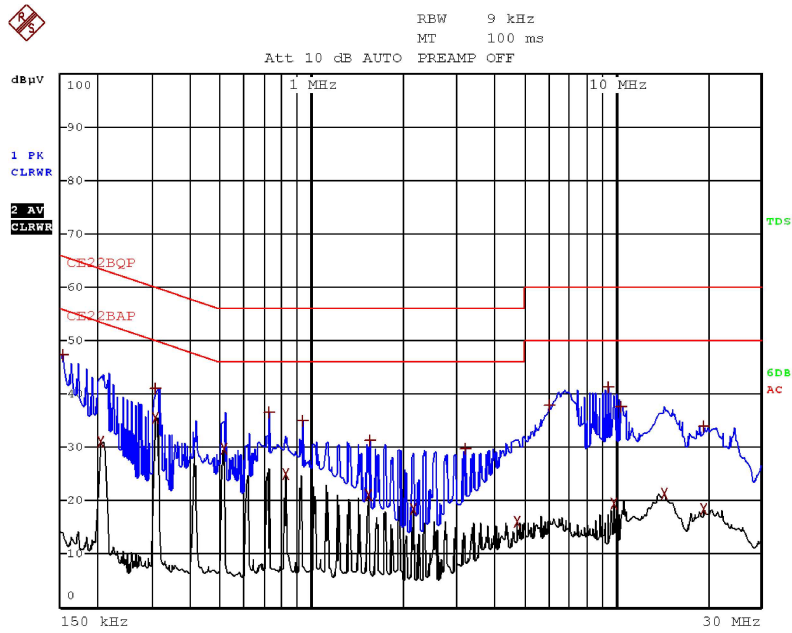
*Note: DELTA LIMIT refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.*



# Conducted Emission

E.U.T Description    Container Tracker  
 Type                    Triton R  
 Serial Number:        300980

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



Date: 23.SEP.2014 13:02:33

Figure 5 Detectors: Quasi-peak, Average

## 9. Radiated Emission

### 9.1 Test Specification

30-1000 MHz, FCC Part 15, Subpart B, CLASS B

### 9.2 Test Procedure

The E.U.T operation mode and test set-up are as described in section 4.1.

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 effect of varying the position of the cables was investigated to find the configuration that produces maximum emission. The configuration tested is shown in *Figure 8. Radiated Emission Test*.

The frequency range 30-2000 MHz was scanned, and the list of the highest emissions was verified and updated accordingly.

The emissions were measured using a computerized EMI receiver complying with CISPR 16 requirements. The specification limits and applicable correction factors are pre-loaded to the receiver.

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.

The field strength is calculated directly by the EMI Receiver software, and a "Correction Factors" data disk, using the following equation:

$$FS = RA + AF + CF$$

Where:

FS: Field strength [dBμV/m]

RA: Receiver Amplitude [dBμV]

AF: Receiving Antenna Correction Factor [dB/m]

CF: Cable attenuation Factor [dB]

Example:  $FS = 30.7 \text{ dB}\mu\text{V (RA)} + 14.0 \text{ dB (AF)} + 0.9 \text{ dB (CF)} = 45.6 \text{ dB}\mu\text{V}$



### 9.3 Test Results

The E.U.T met the requirements of the FCC Part 15, Subpart B, Class B specification.

The margin between the emission level and the specification limit is 9.2 dB in the worst case at the frequency of 375.24 MHz, horizontal polarization.

The details of the highest emissions are given in *Figure 6*.



## Radiated Emission

E.U.T Description    Container Tracker  
Type                    Triton R  
Serial Number:        300980

Specification: FCC Part 15, Subpart B, Class B

Antenna Polarization: Horizontal/Vertical      Frequency range: 30 MHz to 1000 MHz  
Antenna: 3 meters distance                        Detectors: Peak, Quasi-peak

Frequency (MHz)	Peak Amp dB $\mu$ V/m	QP Amp dB $\mu$ V/m	Antenna Polarization:		Limit dB $\mu$ V/m	Margin (dB)
			Hor.	Ver.		
306.29	39.8	33.9	X		46.0	-12.1
375.24	41.0	36.8	X		46.0	-9.2
578.10	40.5	35.8	X		46.0	-10.2
585.32	35.9	30.3	X		46.0	-15.7
268.94	38.0	33.6		X	46.0	-12.4
345.72	41.0	35.6		X	46.0	-10.4
345.82	41.8	35.7		X	46.0	-10.3

**Figure 6. Radiated Emission. Antenna Polarization: HORIZONTAL/VERTICAL.  
Detectors: Peak, Quasi-peak**

*Note: 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.*

## 10. Set Up Photographs





**Figure 7. Conducted Emission Test**



**Figure 8. Radiated Emission Test**



## 11. Signatures of the E.U.T's Test Engineers

Test	Test Engineer Name	Signature	Date
Conducted Emission from AC Port	A. Yizhak		19.11.14
Radiated Emissions	A. Yizhak		19.11.14

## 12. APPENDIX A - CORRECTION FACTORS

### 12.1 Correction factors for CABLE

from EMI receiver  
to test antenna  
at 3 meter range.

Frequency (MHz)	Cable Loss (dB)	Frequency (MHz)	Cable Loss (dB)
0.010	0.4	50.00	1.2
0.015	0.2	100.00	0.7
0.020	0.2	150.00	20.1
0.030	0.3	200.00	2.3
0.050	0.3	300.00	2.9
0.075	0.3	500.00	3.8
0.100	0.2	750.00	4.8
0.150	0.2	1000.00	5.4
0.200	0.3	1500.00	6.7
0.500	0.4	2000.00	9.0
1.00	0.4	2500.00	9.4
1.50	0.5	3000.00	9.9
2.00	0.5	3500.00	10.2
5.00	0.6	4000.00	11.2
10.00	0.8	4500.00	12.1
15.00	0.9	5000.00	13.1
20.00	0.8	5500.00	13.5
		6000.00	14.5

**NOTES:**

1. The cable type is SPUMA400 RF-11N(X2) and 39m long
2. The cable is manufactured by Huber + Suhner



## 12.2 Correction factors for

## Bilog ANTENNA

Model: 3142

Antenna serial number: 1250

3 meter range

<b>FREQUENCY</b>	<b>AFE</b>	<b>FREQUENCY</b>	<b>AFE</b>
<b>(MHz)</b>	<b>(dB/m)</b>	<b>(MHz)</b>	<b>(dB/m)</b>
<b>30</b>	<b>18.4</b>	<b>1100</b>	<b>25</b>
<b>40</b>	<b>13.7</b>	<b>1200</b>	<b>24.9</b>
<b>50</b>	<b>9.9</b>	<b>1300</b>	<b>26</b>
<b>60</b>	<b>8.1</b>	<b>1400</b>	<b>26.1</b>
<b>70</b>	<b>7.4</b>	<b>1500</b>	<b>27.1</b>
<b>80</b>	<b>7.2</b>	<b>1600</b>	<b>27.2</b>
<b>90</b>	<b>7.5</b>	<b>1700</b>	<b>28.3</b>
<b>100</b>	<b>8.5</b>	<b>1800</b>	<b>28.1</b>
<b>120</b>	<b>7.8</b>	<b>1900</b>	<b>28.5</b>
<b>140</b>	<b>8.5</b>	<b>2000</b>	<b>28.9</b>
<b>160</b>	<b>10.8</b>		
<b>180</b>	<b>10.4</b>		
<b>200</b>	<b>10.5</b>		
<b>250</b>	<b>12.7</b>		
<b>300</b>	<b>14.3</b>		
<b>400</b>	<b>17</b>		
<b>500</b>	<b>18.6</b>		
<b>600</b>	<b>19.6</b>		
<b>700</b>	<b>21.1</b>		
<b>800</b>	<b>21.4</b>		
<b>900</b>	<b>23.5</b>		
<b>1000</b>	<b>24.3</b>		





### 12.3 Correction factors for

### Horn ANTENNA

Model: 3115

Antenna serial number: 6142

3 meter range

<b>FREQUENCY</b>	<b>Antenna Factor</b>	<b>FREQUENCY</b>	<b>Antenna Factor</b>
(MHz)	(dB/m)	(MHz)	(dB/m)
1000	23.9	10500	38.4
1500	25.4	11000	38.5
2000	27.3	11500	39.4
2500	28.5	12000	39.2
3000	30.4	12500	39.4
3500	31.6	13000	40.7
4000	33	14000	42.1
4500	32.7	15000	40.1
5000	34.1	16000	38.2
5500	34.5	17000	41.7
6000	34.9	17500	45.7
6500	35.1	18000	47.7
7000	35.9		
7500	37.5		
8000	37.6		
8500	38.3		
9000	38.5		
9500	38.1		
10000	38.6		



## **13. APPENDIX B - MEASUREMENT UNCERTAINTY**

### **13.1 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):

$\pm 3.44$  dB

### **13.2 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):

$\pm 4.98$  dB



## 14. Appendix C - FCC Verification Process Instructions

Ñ Label

### Prepare Label

- Design a FCC compliance label that will be affixed to all units marketed.
- The label must include the compliance statement below.

Example of Label:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Note - The label may also contain other information, such as the model number, the country of origin, etc. (The country of origin information is required by Customs and the Federal Trade Commission for imports to the U.S.)

Small Products:

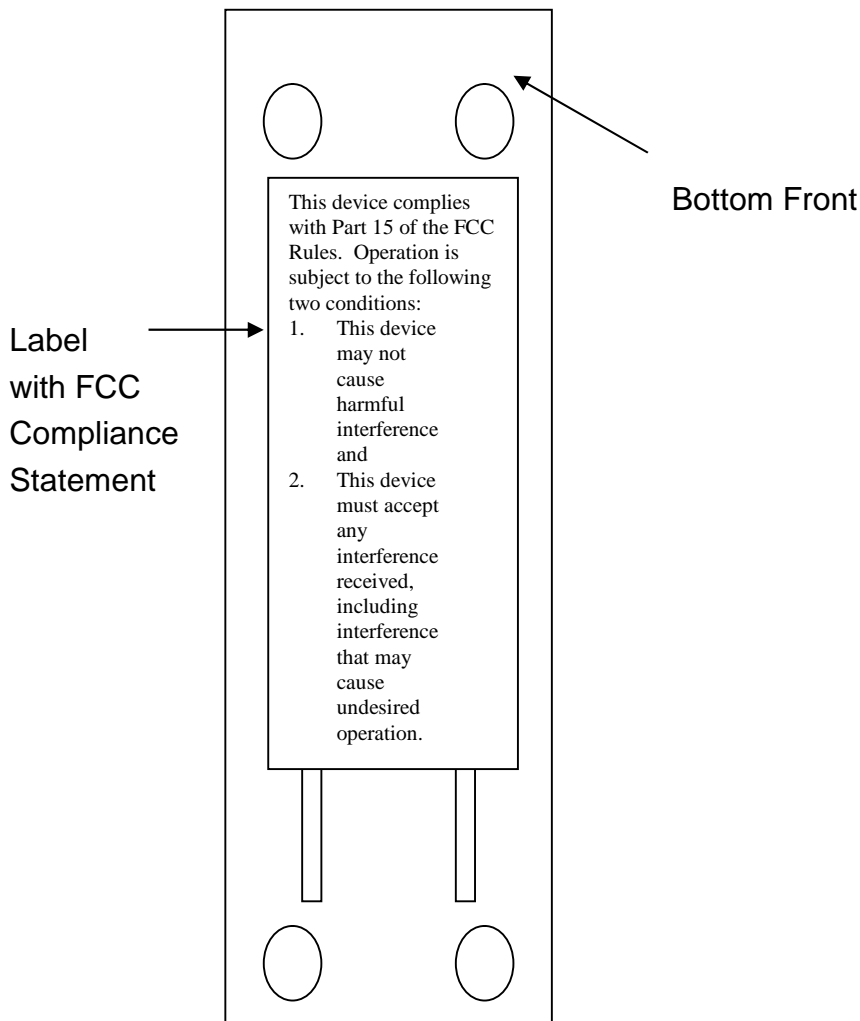
If the product is too small for a label containing the statement above, the information paragraph required must be placed in a prominent location in the instruction manual or, alternatively, the information can be placed on the container in which the product is marketed.

The FCC requires that the compliance statement above be placed in a “conspicuous location on the device.”

The following are the FCC Rules about how the label will be permanently attached.:

The label is expected to last the life of the product. It must be permanently marked (etched, engraved, indelibly printed, etc.) either directly on the device, or on a tag that is permanently affixed (riveted, welded, etc.) to the device.

Example of Product with Label:





## Ñ FCC Compliance Statement

### FCC Compliance Statement in User's Manual

For a Class A or Class B digital device or peripheral, the instructions given to the user shall include the following, or a similar, statement that should be placed in a prominent location in the text of the manual. (from FCC Rules 15.105)

The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. (from FCC Rules 15.21)

Information about any special accessories needed to ensure FCC compliance must also be included.

Sample User Information for a Class A digital device:

#### The FCC Wants You to Know

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

#### FCC Warning

Modifications not expressly approved by the manufacturer could void the user authority to operate the equipment under FCC Rules.



## Sample User Information for a Class B digital device:

### The FCC Wants You to Know

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- a) Reorient or relocate the receiving antenna.
- b) Increase the separation between the equipment and receiver.
- c) Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- d) Consult the dealer or an experienced radio/TV technician.

### FCC Warning

Modifications not expressly approved by the manufacturer could void the user authority to operate the equipment under FCC Rules.