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Report No.: SHEM120700096701  
Page: 1 of 37

## **TEST REPORT**

**Application No. :** SHEM1207000967RF  
**Applicant:** Checkpoint System Inc.  
**Manufacturer:** Sidep Electronics (Shanghai) Co.,Ltd.  
**FCC ID:** DO4FX2012  
**IC:** 3356B-FX2012  
**Fundamental Frequency :**  
**Equipment Under Test (EUT):**  
**Product Name:** Electronic Article Surveillance Detection System  
**Brand Name:**   
**Model No.:** FX 2012, CHASSIS ELECTRONICS  
**Standards:** FCC PART 15 SUBPART C, Section 15.223  
RSS-210 (Issue 8): 2012  
RSS-Gen (Issue 3): 2010  
**Date of Receipt:** July 11, 2012  
**Date of Test:** July 11, 2012 to Aug. 20, 2012  
**Date of Issue:** Sep. 14, 2012  
**Test Result :** **PASS \***

\* In the configuration tested, the EUT complied with the standards specified above.

Jim Xu  
E&E Section Head  
SGS-CSTC(Shanghai) Co., Ltd.

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## 2 Test Summary

TEST ITEM	FCC REFERANCE	IC REFERANCE	RESULT
Radiated emission	15.223 &15.209	RSS-210 Issue 8 Annex A2.3	Pass
Assigned bandwidth (6dB bandwidth)	15.223(a)	RSS-Gen Issue 3 Clause 4.6.1	Complete
Power line conducted emission	15.207	RSS-Gen Issue 3 Clause 7.2.4	Pass

Noted 1: “-”means not require in the rules.

Noted 2: NA =Not Applicable



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<b>4 General Information</b>							
<b>4.1 Client Information</b>							
Applicant :	Checkpoint System Inc.						
Applicant Address:	101 Wolf Drive, Thorofare, New Jersey, USA 08086						
Manufacturer:	Sidep Electronics (Shanghai) Co.,Ltd.						
Manufacturer Address:	No. 1676 Xin TanWa RD PuDong district 201321 Shanghai China						
<b>4.2 Details of E.U.T.</b>							
Product Name	Electronic Article Surveillance Detection System						
Brand Name							
Model No.	FX 2012, CHASSIS ELECTRONICS						
Antenna Type	Near Field Antenna						
Rated Input:	24VDC/2.1A Max						
Frequency	7.2MHz~10MHz						
Equipment classification:	<input checked="" type="checkbox"/> equipment for fixed use <input type="checkbox"/> equipment for portable use <input type="checkbox"/> equipment for vehicular use						
Antenna Type:	Loop Antenna						
Antenna Gain:	-45 dBi						
Antenna Information:	The EUT have 8 foot unshielded antenna and 6 foot shielded antenna configuration						
Production Function and Intended Use:	The FX 2012,CHASSIS ELECTRONICS (TR4215) is an Electronic Article Surveillance System (EAS). The system detects target tags attached to merchandise. The targets resonate in the HF region of 8.2MHz,7.2MHz,9.2MHz,9.5MHz,etc... When an article of merchandise is purchased, the targets is deactivated which causes it no longer resonate, The FX 2012,CHASSIS ELECTRONICS system monitors an area of 3-feet on either side of antenna in the 7.2 to 10MHz range, and triggers an alarm when a non-deactivated target is detected.						
Channel List:							
<b>Frequency Table For Pharma/Razor Keeper 7.2/8.2</b>							
8.325 E+06	8.325 E+06	8.325 E+06	8.325 E+06	8.075 E+06	8.075 E+06	8.075 E+06	8.075 E+06
7.600 E+06	7.600 E+06	7.600 E+06	7.600 E+06	7.200 E+06	7.200 E+06	7.200 E+06	7.200 E+06
<b>Frequency Table For Library 9.5</b>							
9.800 E+06	9.800 E+06	9.800 E+06	9.800 E+06	9.600 E+06	9.600 E+06	9.600 E+06	9.600 E+06
9.400 E+06	9.400 E+06	9.400 E+06	9.400 E+06	9.200 E+06	9.200 E+06	9.200 E+06	9.200 E+06

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### 4.3 Test Configurations:

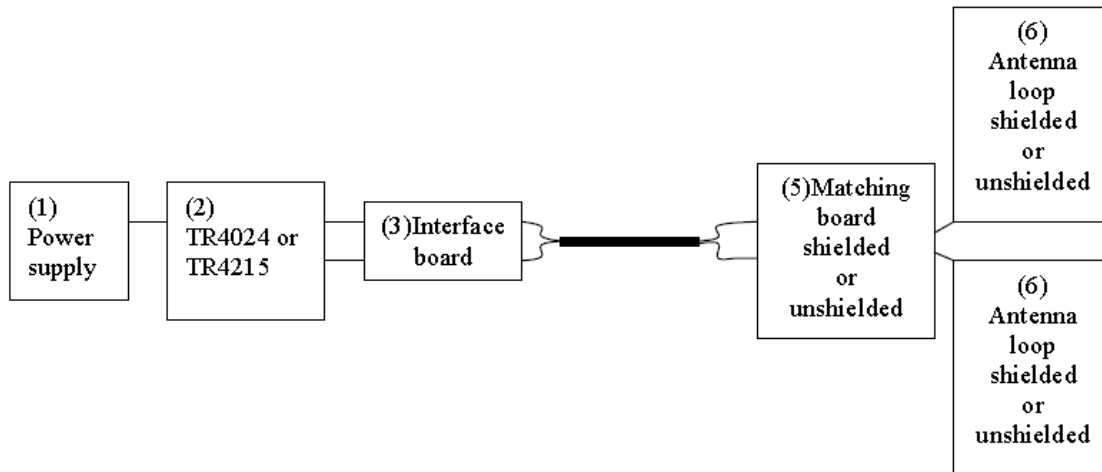


Figure 1: FX Block Diagram

6 foot shielded configuration: TX/RX=26/31

8 foot unshielded configuration: TX/RX=22/31

### 4.4 Description of Support Units

#### EUT Hardware:

Description	Manufacture	Model	Serie
FX 2012 CHASSIS ELECTRONICS	Checkpoint	TR4215	N/A
Antenna Match PCB(Shielded)	Checkpoint	A1040	N/A
Antenna Match PCB(Unshielded)	Checkpoint	A1067	N/A
TR4215 Interface PCB	Checkpoint	A1111	N/A
<b>Adapter: FX 2012 PSU</b>	<b>Globtek</b>	<b>GS-599ES</b>	<b>N/A</b>

#### Support equipments / Associated Equipments:

- The EUT has been tested independently. and or  
 The EUT has been tested with support equipments as below.

Description	Manufacturer	Model No.	Serial No.	Supplied by Client or SGS?
Remote voice Alarm	N/A	N/A	N/A	Client



**Cable List:**

START		END		Cable Spec.		
Description	I/O Port	Description	I/O Port	Length (m)	Shield (Y/N)	Ferrite (Y/N)
Adapter	AC IN	AC Source	AC OUT	1.5	N	N
Transmission Line	Interface PCB (A1111)	Transmission Line	Mating PCB (Shielded & Unshielded)	15	Y	Y
Sync Cable	Sync In +/-, Sync Out +/-	Sync Cable	Sync Out +/-, Sync In +/-	8	Y	Y
LED Cable	LED+/-	LED Cable	LED+/-	8	Y	N

#### 4.5 Test Location

Laboratory 1: SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

No.588 West Jindu Road, Songjiang District, Shanghai, China. 201612.

Tel: +86 21 6191 5666 Fax: +86 21 6191 5655

Subcontractor:

Laboratory 2: Shanghai Institute of Measurement and Testing Technology

No.716, Yi Shan Road, Shanghai 200233, P.R.China

#### 4.6 Other Information Requested by the Customer

None.



#### **4.7 Test Facility**

The test facility is recognized, certified, or accredited by the following organizations:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2014-07-26.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2015-02-22.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A. Expiry Date: 2014-09-20.

SIMT EMC Laboratory  
(Shanghai Institute of Measurement and Testing Technology)

- **FCC registration No.: 142171; IC site No.:6625A**



#### 4.8 Test Instruments

##### Lab 1 Test Equipment:

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	EMI test receiver	Rohde & Schwarz	ESU40	100109	2012-6-4	2013-6-3
2	Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-679	2012-6-4	2013-6-3
3	Horn Antenna	Rohde & Schwarz	HF906	100284	2012-3-12	2013-3-10
4	ANTENNA	SCHWARZBECK	VULB9168	9168-313	2012-6-4	2013-6-3
5	Ultra broadband antenna	Rohde & Schwarz	HL562	100227	2011-10-8	2012-10-7
6	Atmosphere pressure meter	Shanghai ZhongXuan Electronic Co;Ltd	BY-2009P	--	2011-10-14	2012-10-15
7	CLAMP METER	FLUKE	316	86080010	2012-4-22	2013-4-20
8	Thermo-Hygrometer	ZHICHEN	ZC1-2	01050033	2012-10-14	2013-10-15
9	High-low temperature cabinet	Shanghai YuanZhen	GW2050	--	2011-09-05	2012-09-03
11	Tunable Notch Filter	Wainwright instruments Gmbh	WRCT1800.0/2000.0-0.2/40-5SSK	11	2012-6-16	2013-6-15
12	Tunable Notch Filter	Wainwright instruments Gmbh	WRCT800.0/80.0-0.2/40-5SSK	9	2012-5-7	2013-5-6
13	High pass Filter	FSCW	HP 12/2800-5AA2	19A45-02	2012-5-5	2013-5-4
14	Low noise amplifier	TESEQ	LNA6900	70133	2012-6-4	2013-6-3
15	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2012-4-8	2013-4-7





**Lab 2 Test Equipment:**

No.	Equipment	Model	Serial No.	Cal. Due date
1	EMI test receiver	ESI 26	Rong-001-01	2012/12/21
2	Loop Field Strength Measuring System	FMZB 1516	Rong-001-07	2013/6/15

**4.9 E.U.T. Operation**

Input voltage: 120V/60Hz supply for the adapter  
Operating Environment:  
Temperature: 24.0 °C  
Humidity: 37 % RH  
Atmospheric Pressure: 1006 mbar  
EUT Operation: Test Mode A: 6 foot shielded product working at 7.2MHz;  
Test Mode B: 6 foot shielded product working at 9.5MHz;  
Test Mode C: 8 foot unshielded product working at 7.2MHz;  
Test Mode D: 8 foot unshielded product working at 9.5MHz.



## **4.10 Test Procedure & Measurement Data**

### **4.10.1 Field Strength of Fundamental and Radiated Spurious Emission**

<b>Test Requirement:</b>	FCC Part 15 Section 15.223 & RSS-210 A2.3
<b>Test date:</b>	July 11, 2012 to Aug. 8, 2012
<b>Standard Applicable</b>	ANSI C63.10:2009

#### **Test Procedures:**

1. Test Procedures for emission from 9 kHz to 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground and the antenna was placed on the ground plane above 10mm at a 10 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. Then antenna is fixed at one meter above the ground to determine the maximum value of the field strength. Both X,Y,Z polarization of the antenna are set to make the measurement.
- c. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 degrees to find the maximum reading.
- d. The test-receiver system was set to Peak and Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

2. Test Procedures for emission from 30 MHz to 1000 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. During performing radiated emission below 1 GHz, the EUT was set 3 meters away from the interference receiving antenna, which was mounted on the top of a variable-height antenna tower. During performing radiated emission above 1 GHz, the EUT was set 1 meter away from the interference-receiving antenna.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

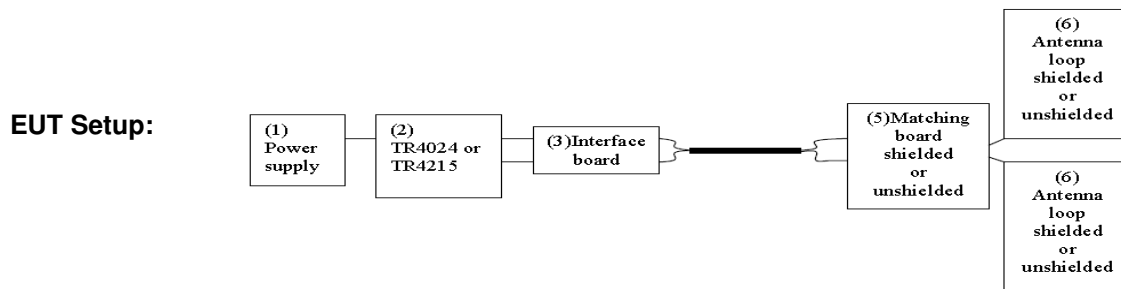


Figure 1: FX Block Diagram

### Deviations or Exclusions from the Requirements and Standards

15.223 (a) The field strength of any emission within the band 1.705-10.0 MHz shall not exceed 100 microvolts/meter at a distance of 30 meters. However, if the bandwidth of the emission is less than 10% of the center frequency, the field strength shall not exceed 15 microvolts/meter or (the bandwidth of the device in kHz) divided by (the center frequency of the device in MHz) microvolts/meter at a distance of 30 meters, whichever is the higher level. For the purposes of this Section, bandwidth is determined at the points 6 dB down from the modulated carrier. The emission limits in this paragraph are based on measurement instrumentation employing an average detector. The provisions in Section 15.35(b) for limiting peak emissions apply.

For the section 4.10.2 the 6db bandwidth is big than 10% of the center frequency, so the field strength limit should be 100 microvolts/meter at 30 meters.

The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (dB per decade of distance)

$$\text{Peak Limit} = \text{Average Limit} + 20 \text{ dB} = 60 \text{ dBuV/m} + 20 \text{ dB} = 80 \text{ dBuV/m}$$

$$\text{Average Limit} = 100 \text{ uV/m} @ 30 \text{ m}$$

$$\text{Average Limit} = 20 * \log(100 \text{ uV}) = 40 \text{ dBuV/m} @ 30 \text{ m}$$

$$\text{For 10m measurement the average limit was adjusted} = 40 \log(10/30) = 20 \text{ dB}$$

$$\text{Average limit} = 60 \text{ dBuV/m} @ 10 \text{ m}$$

Measurement of the fundamental, 7.2 to 9.5 MHz, was performed by setting a spectrum analyzer to "max-hold", peak detector, a 300 kHz bandwidth, and a span from 7 to 10 MHz. Increasing the resolution on bandwidth above 300 kHz did not increase fundamental signal level.



**Measurement Result:**

**4.10.1.1 Fundamental Frequency Field Strength**

**Test Mode A: 6 foot shielded product working at 7.2MHz**

Freq. (MHz)	Peak level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	AV level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.
7.221	65.21	80.00	-14.79	36.01	60.00	-23.99	X
7.249	62.31	80.00	-17.69	33.11	60.00	-26.89	Y
7.251	58.43	80.00	-21.57	29.23	60.00	-30.77	Z

**Test Mode B: 6 foot shielded product working at 9.5MHz**

Freq. (MHz)	Peak level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	AV level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.
9.603	71.13	80.00	-8.87	41.51	60.00	-18.49	X
9.464	78.89	80.00	-1.11	49.27	60.00	-10.73	Y
9.436	61.17	80.00	-18.83	31.55	60.00	-28.45	Z

**Test Mode C: 8 foot unshielded product working at 7.2MHz**

Freq. (MHz)	Peak level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	AV level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.
7.209	63.41	80.00	-16.59	34.21	60.00	-25.79	X
7.197	60.15	80.00	-19.85	30.95	60.00	-29.05	Y
7.227	55.47	80.00	-24.53	26.27	60.00	-33.73	Z

**Test Mode D: 8 foot unshielded product working at 9.5MHz**

Freq. (MHz)	Peak level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	AV level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.
9.428	60.12	80.00	-19.88	30.5	60.00	-29.5	X
9.416	65.43	80.00	-14.57	35.81	60.00	-24.19	Y
9.370	60.82	80.00	-19.18	31.2	60.00	-28.8	Z

**Remark:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. Margin value = Emission level – Limit value.
4. Average level = Peak level + Duty Factor (7.2MHz is -29.20; 9.5MHz is -29.62dB)
5. Polarization of antenna to ground plane: X – along measurement axis, Y – vertical axis, Z – horizontal axis.



#### 4.10.1.2 9kHz~30MHz Spurious Emissions

##### Test Mode A: 6 foot shielded product working at 7.2MHz

Frequency (MHz)	Detect Mode	Pol.	Actual (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4.732	QP	X	32.13	48.62	-16.49
14.425	QP	X	31.53	48.62	-17.09
14.418	QP	Y	33.47	48.62	-15.15
14.398	QP	Z	31.65	48.62	-16.97

##### Test Mode B: 6 foot shielded product working at 9.5MHz

Frequency (MHz)	Detect Mode	Pol.	Actual (dBuV/m)	Limit (dBuV/m)	Margin (dB)
6.67	QP	X	33.28	48.62	-15.34
6.76	QP	Y	40.94	48.62	-7.68
6.81	QP	Z	32.12	48.62	-16.50

##### Test Mode C: 8 foot unshielded product working at 7.2MHz

Frequency (MHz)	Detect Mode	Pol.	Actual (dBuV/m)	Limit (dBuV/m)	Margin (dB)
14.38	QP	X	32.16	48.62	-16.46
14.42	QP	Y	31.43	48.62	-17.19
14.51	QP	Z	30.97	48.62	-17.65

##### Test Mode D: 8 foot unshielded product working at 9.5MHz

Frequency (MHz)	Detect Mode	Pol.	Actual (dBuV/m)	Limit (dBuV/m)	Margin (dB)
18.75	QP	X	31.76	48.62	-16.86
18.83	QP	Y	30.65	48.62	-17.97
18.67	QP	Z	31.77	48.62	-16.85

#### Remark:

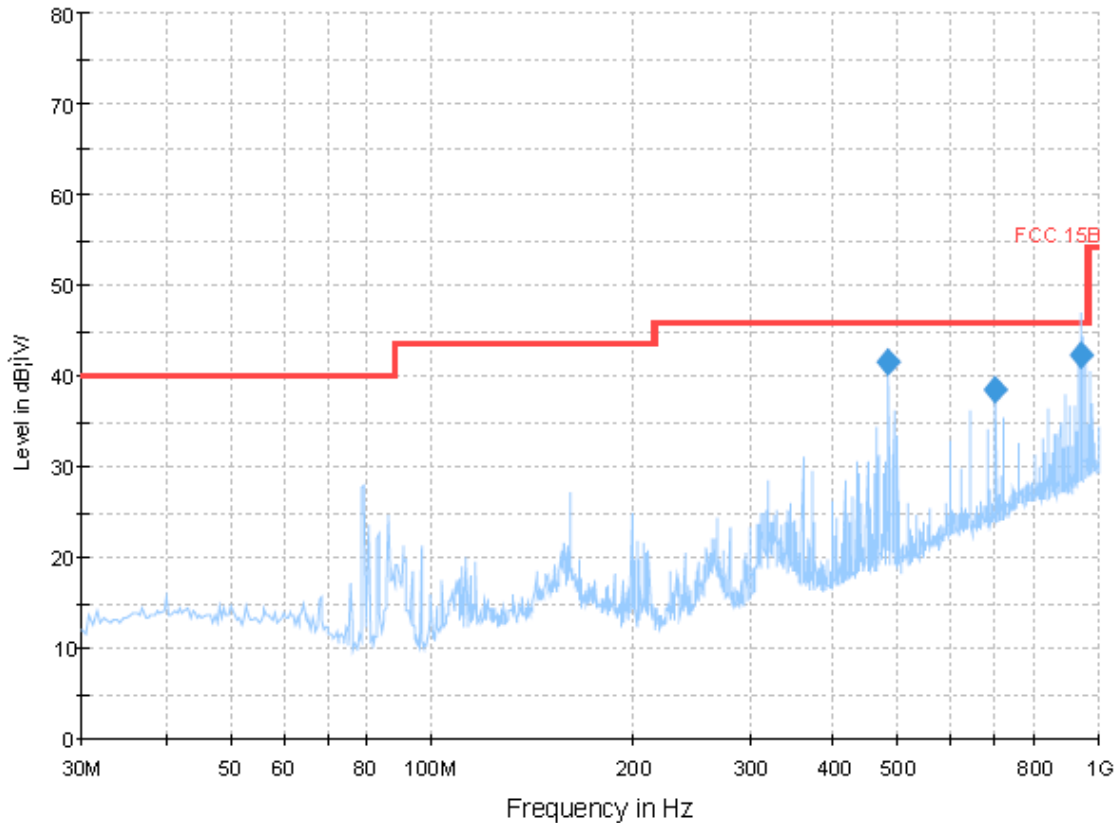
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. The other emission levels were very low against the limit.
3. Margin value = Emission level – Limit value.
4. Above limits have been translated by the formula
5. Polarization of antenna to ground plane: X – along measurement axis, Y – vertical axis, Z – horizontal axis.



**4.10.1.3 30MHz~1GHz Spurious Emission**

**Test Mode A: 6 foot shielded product working at 7.2**

**Antenna Horizontal**



Frequency (MHz)	QuasiPeak (dB <sub>i</sub> V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)
484.567840	41.5	1000.000	120.000	100.0	H	108.0	-5.4	4.5
700.019360	38.4	1000.000	120.000	100.0	H	303.0	-0.6	7.6
940.665920	42.3	1000.000	120.000	109.0	H	4.0	3.7	3.7

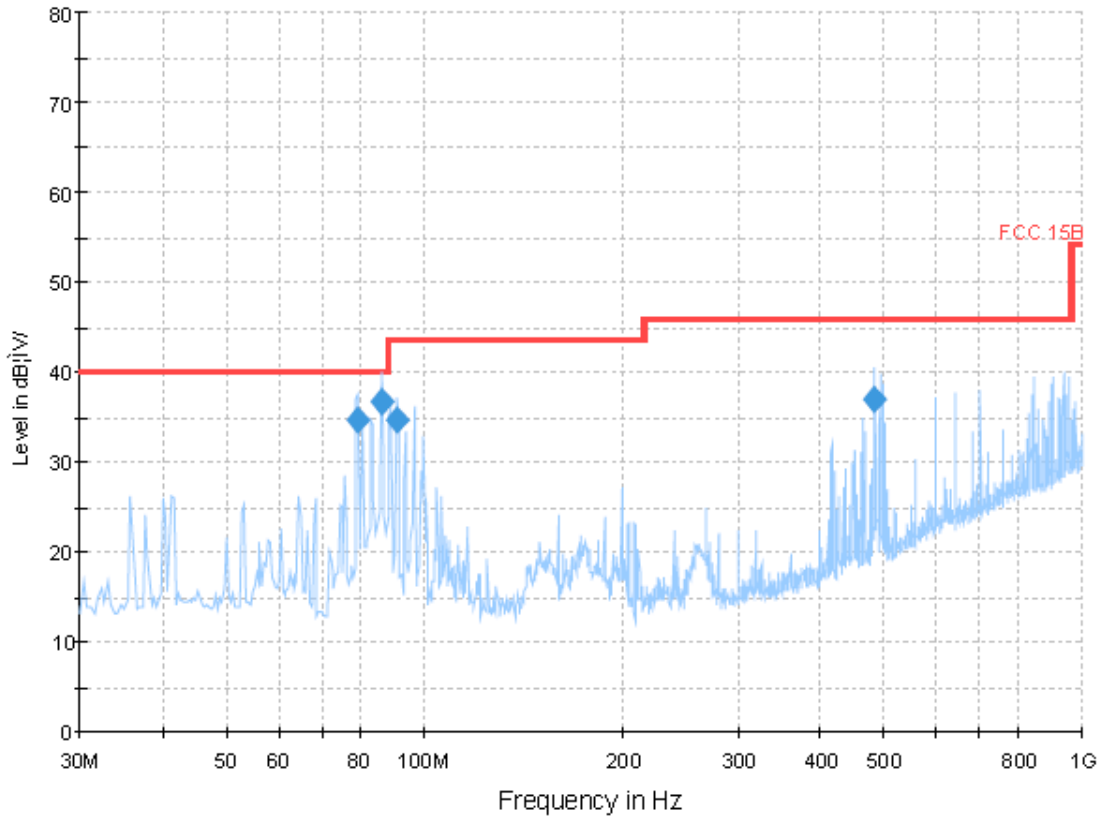
(continuation of the "Final Result 1" table from column 9 ...)

Frequency (MHz)	Limit (dB <sub>i</sub> V/m)	Comment
484.567840	46.0	
700.019360	46.0	
940.665920	46.0	

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**Antenna Vertical**



Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)
79.261600	34.5	1000.000	120.000	177.0	V	262.0	-14.9	5.5
86.438560	36.7	1000.000	120.000	150.0	V	324.0	-15.2	3.3
91.216480	34.7	1000.000	120.000	144.0	V	286.0	-15.2	8.8
484.553600	36.8	1000.000	120.000	212.0	V	103.0	-5.4	9.2

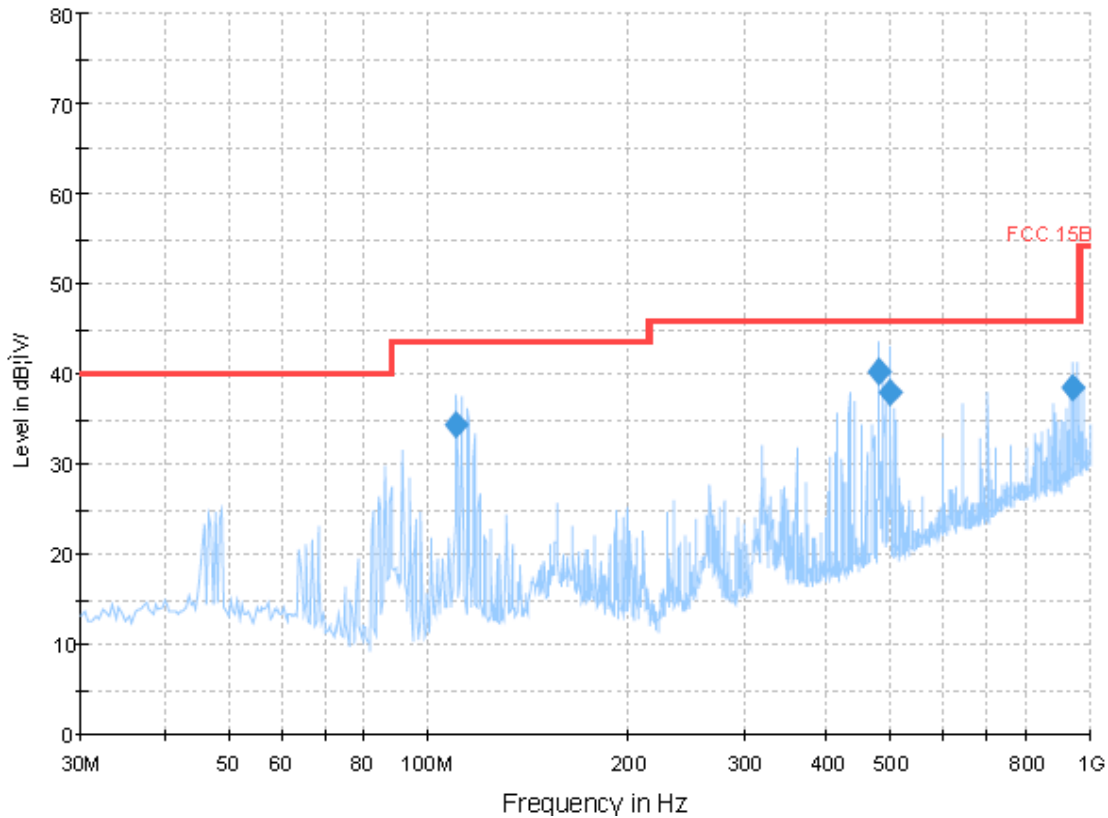
(continuation of the "Final Result 1" table from column 9 ...)

Frequency (MHz)	Limit (dBµV/m)	Comment
79.261600	40.0	
86.438560	40.0	
91.216480	43.5	
484.553600	46.0	



**Test Mode B: 6 foot shielded product working at 9.5MHz**

**Antenna Horizontal**



Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)
110.436000	34.4	1000.000	120.000	250.0	H	110.0	-13.5	9.1
480.217280	40.4	1000.000	120.000	100.0	H	103.0	-5.5	5.6
496.867680	37.9	1000.000	120.000	100.0	H	48.0	-5.2	8.1
940.936800	38.4	1000.000	120.000	115.0	H	6.0	3.7	7.6

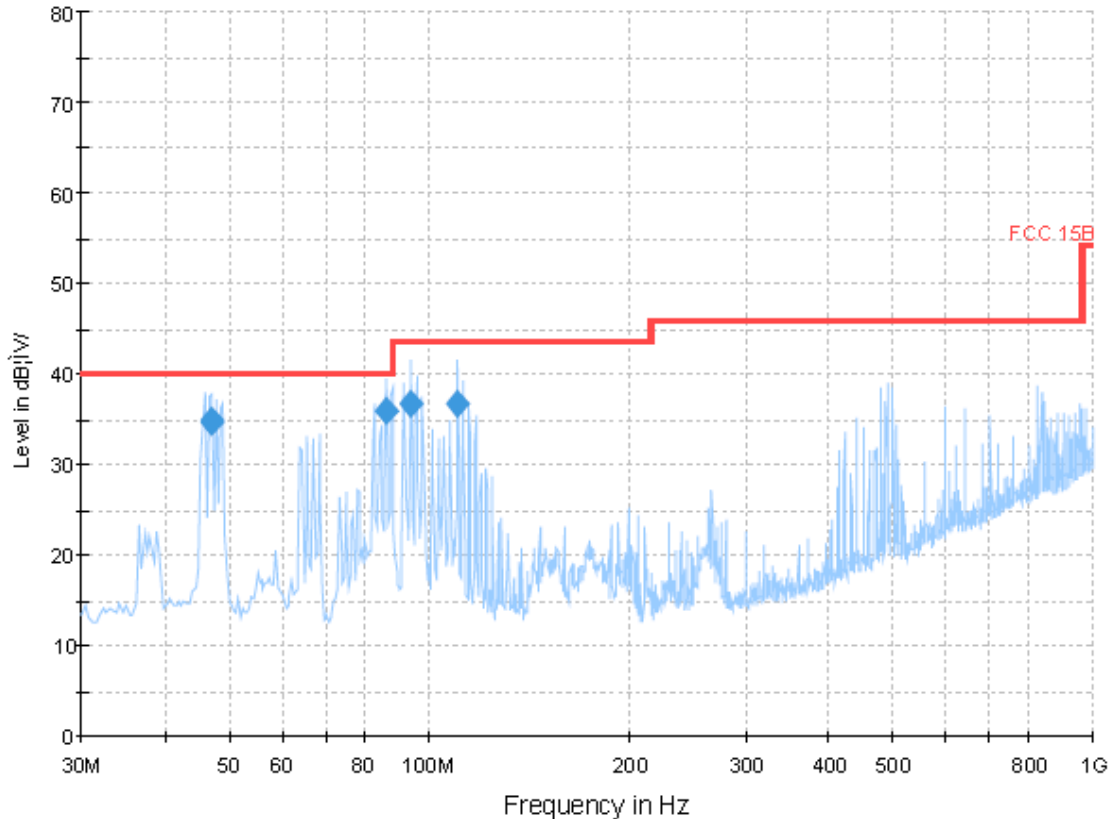
(continuation of the "Final Result 1" table from column 9 ...)

Frequency (MHz)	Limit (dBµV/m)	Comment
110.436000	43.5	
480.217280	46.0	
496.867680	46.0	
940.936800	46.0	





**Antenna Vertical**



Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)
46.972640	34.7	1000.000	120.000	100.0	V	8.0	-11.1	5.3
47.001280	35.0	1000.000	120.000	100.0	V	8.0	-11.1	5.0
86.424160	36.0	1000.000	120.000	100.0	V	325.0	-15.2	4.0
94.027680	36.7	1000.000	120.000	138.0	V	-10.0	-14.9	6.8
110.405280	36.8	1000.000	120.000	114.0	V	306.0	-13.5	6.7

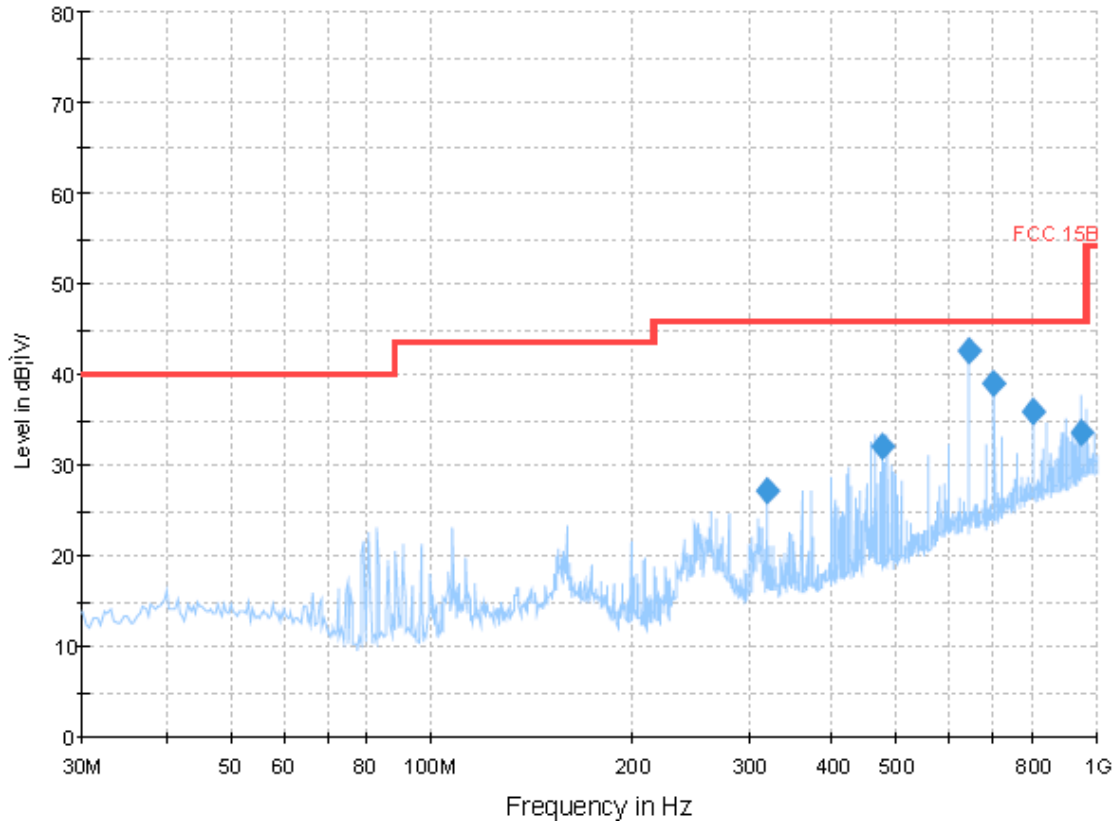
(continuation of the "Final Result 1" table from column 9 ...)

Frequency (MHz)	Limit (dBµV/m)	Comment
46.972640	40.0	
47.001280	40.0	
86.424160	40.0	
94.027680	43.5	
110.405280	43.5	



**Test Mode C: 8 foot shielded product working at 7.2MHz**

**Antenna Horizontal**



Frequency (MHz)	QuasiPeak (dB  V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)
320.019360	27.1	1000.000	120.000	108.0	H	349.0	-9.5	18.9
474.525120	32.0	1000.000	120.000	100.0	H	351.0	-5.6	14.0
640.027200	42.6	1000.000	120.000	177.0	H	4.0	-1.3	3.4
700.017440	38.9	1000.000	120.000	177.0	H	294.0	-0.6	7.1
800.017760	36.0	1000.000	120.000	164.0	H	10.0	1.7	10.0
944.974240	33.6	1000.000	120.000	170.0	H	315.0	3.8	12.4

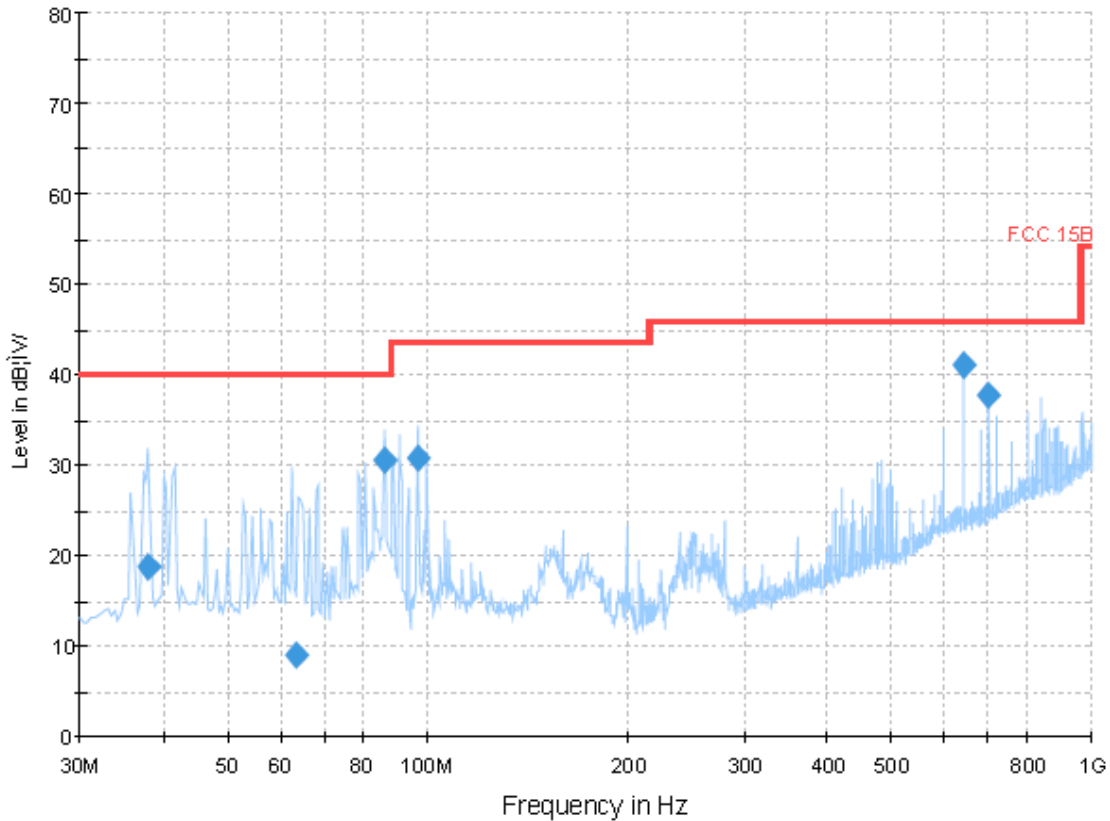
(continuation of the "Final Result 1" table from column 9 ...)

Frequency (MHz)	Limit (dB  V/m)	Comment
320.019360	46.0	
474.525120	46.0	
640.027200	46.0	
700.017440	46.0	
800.017760	46.0	
944.974240	46.0	

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**Antenna Vertical**



Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)
37.942560	18.8	1000.000	120.000	158.0	V	22.0	-11.2	21.2
63.432000	9.0	1000.000	120.000	150.0	V	22.0	-12.2	31.0
86.375200	30.6	1000.000	120.000	100.0	V	20.0	-15.2	9.4
96.971200	30.7	1000.000	120.000	132.0	V	328.0	-14.7	12.8
640.006080	41.1	1000.000	120.000	108.0	V	309.0	-1.3	4.9
700.011680	37.8	1000.000	120.000	200.0	V	0.0	-0.6	8.2

(continuation of the "Final Result 1" table from column 9 ...)

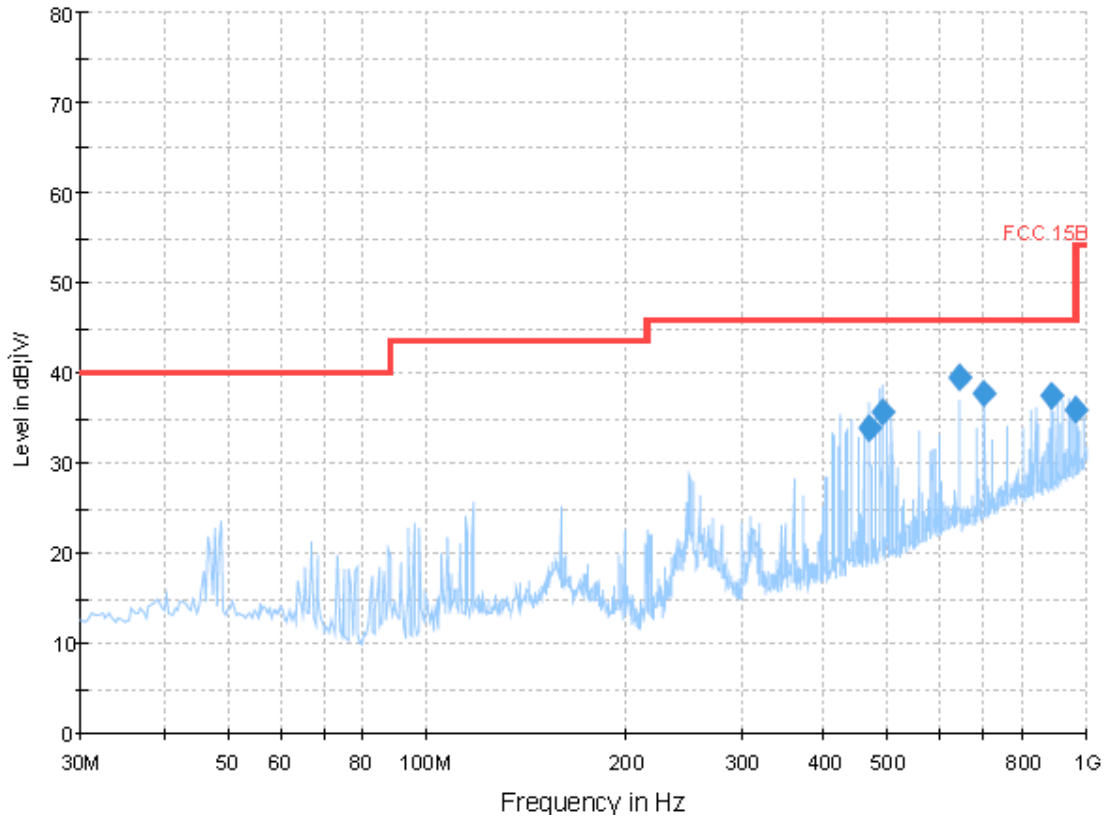
Frequency (MHz)	Limit (dBµV/m)	Comment
37.942560	40.0	
63.432000	40.0	
86.375200	40.0	
96.971200	43.5	
640.006080	46.0	
700.011680	46.0	

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**Test Mode D: 8 foot shielded product working at 9.5MHz**

**Antenna Horizontal**



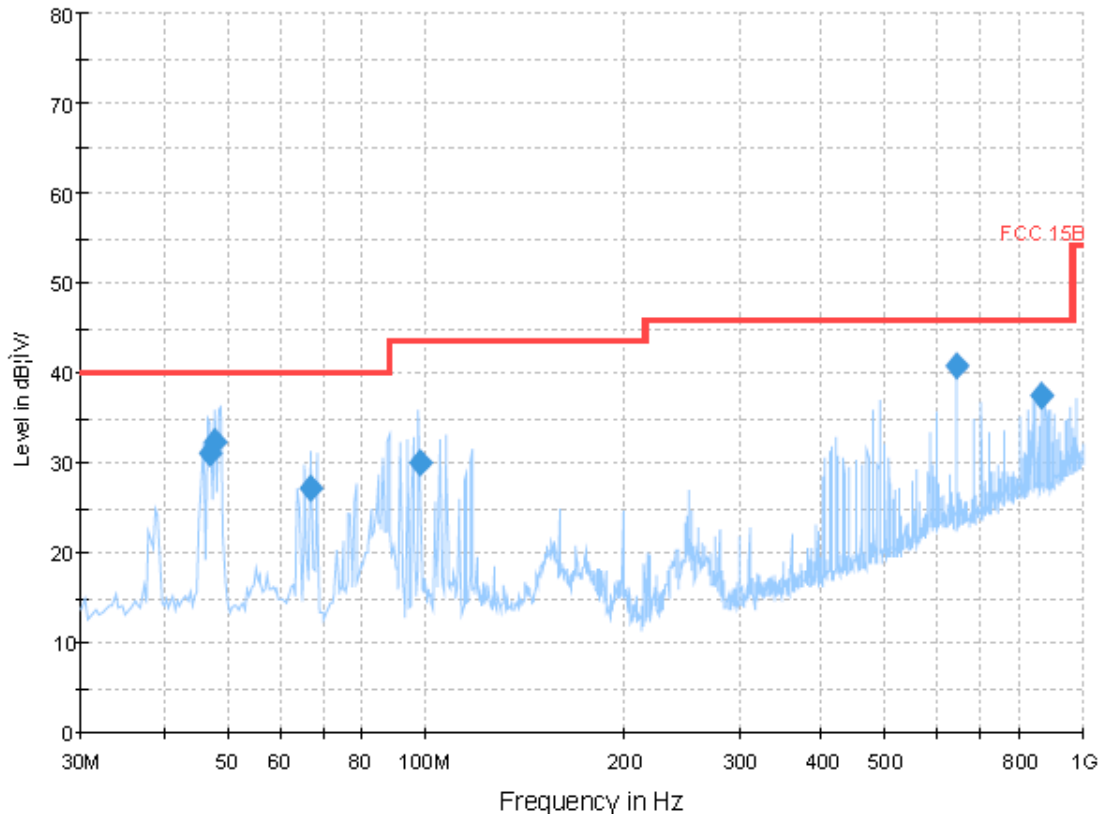
Frequency (MHz)	QuasiPeak (dB   V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)
470.125440	33.9	1000.000	120.000	100.0	H	336.0	-5.6	12.1
489.540000	35.7	1000.000	120.000	100.0	H	31.0	-5.3	10.3
640.028160	39.6	1000.000	120.000	176.0	H	22.0	-1.3	6.4
700.025120	37.8	1000.000	120.000	100.0	H	180.0	-0.6	8.2
883.307040	37.5	1000.000	120.000	126.0	H	13.0	2.5	8.5
958.879200	36.0	1000.000	120.000	171.0	H	307.0	4.0	10.0

(continuation of the "Final Result 1" table from column 9 ...)

Frequency (MHz)	Limit (dB   V/m)	Comment
470.125440	46.0	
489.540000	46.0	
640.028160	46.0	
700.025120	46.0	
883.307040	46.0	
958.879200	46.0	



**Antenna Vertical**



Frequency (MHz)	QuasiPeak (dB  V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)
46.997920	31.1	1000.000	120.000	100.0	V	358.0	-11.1	8.9
47.980000	32.2	1000.000	120.000	100.0	V	22.0	-11.1	7.8
67.258560	27.3	1000.000	120.000	100.0	V	12.0	-12.7	12.7
98.010400	30.1	1000.000	120.000	127.0	V	337.0	-14.6	13.4
640.008960	40.9	1000.000	120.000	100.0	V	18.0	-1.3	5.1
864.852160	37.4	1000.000	120.000	138.0	V	0.0	2.3	8.6

(continuation of the "Final Result 1" table from column 9 ...)

Frequency (MHz)	Limit (dB  V/m)	Comment
46.997920	40.0	
47.980000	40.0	
67.258560	40.0	
98.010400	43.5	
640.008960	46.0	
864.852160	46.0	

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**4.10.2 Duty Cycle**

The duty cycle factor, expressed in dB, is arrived by taking the following formula:

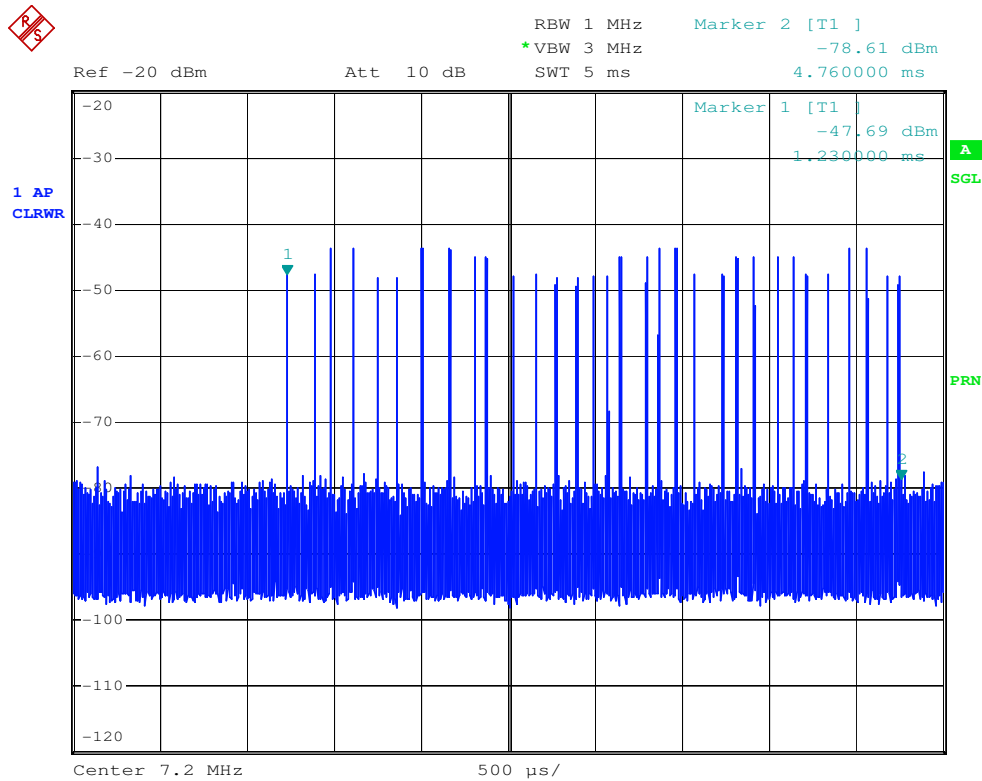
$$KE = 20 \log [(tiB \cdot p) / Tw]$$

- KE: pulse operation correction factor (dB);
- tiw: pulse duration for one complete pulse track (msec);
- tiB: pulse duration for one pulse (µsec);
- Tw: a period of the pulse track (msec);
- p: number of pulses in one train.

**7.2MHz Duty cycle measurement result**

tiw (msec)	Tw (msec)	tiB (µsec)	p	KE (dB / %)
3.53	5.06	4.56	32	-29.20/2.88

The following figures were those measured by spectrum analyzer.



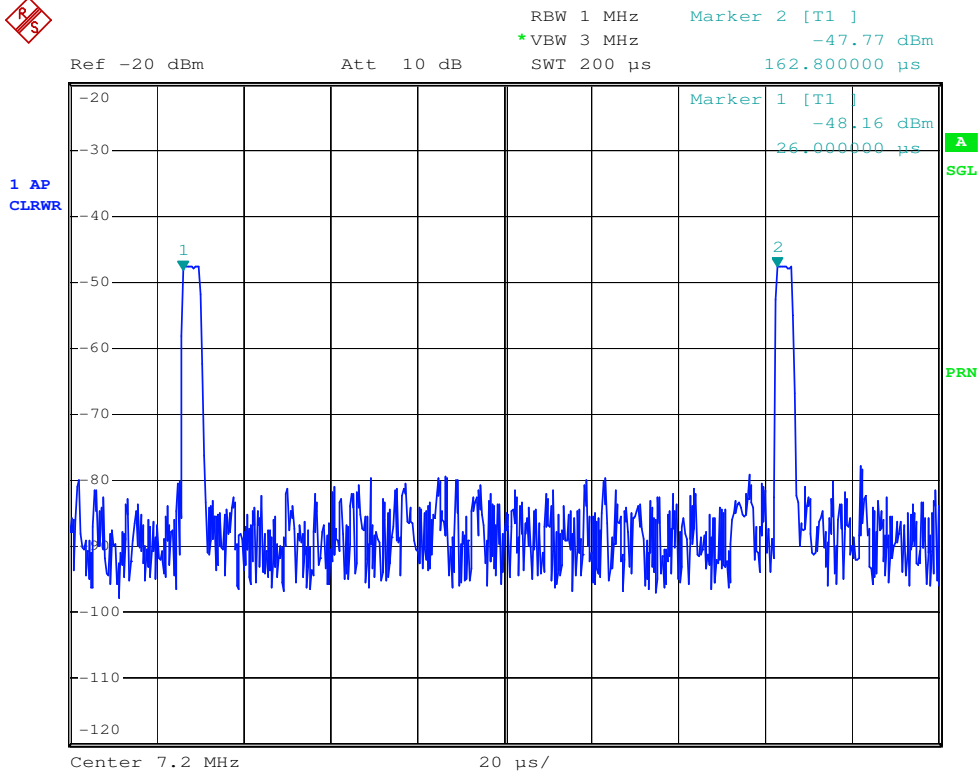
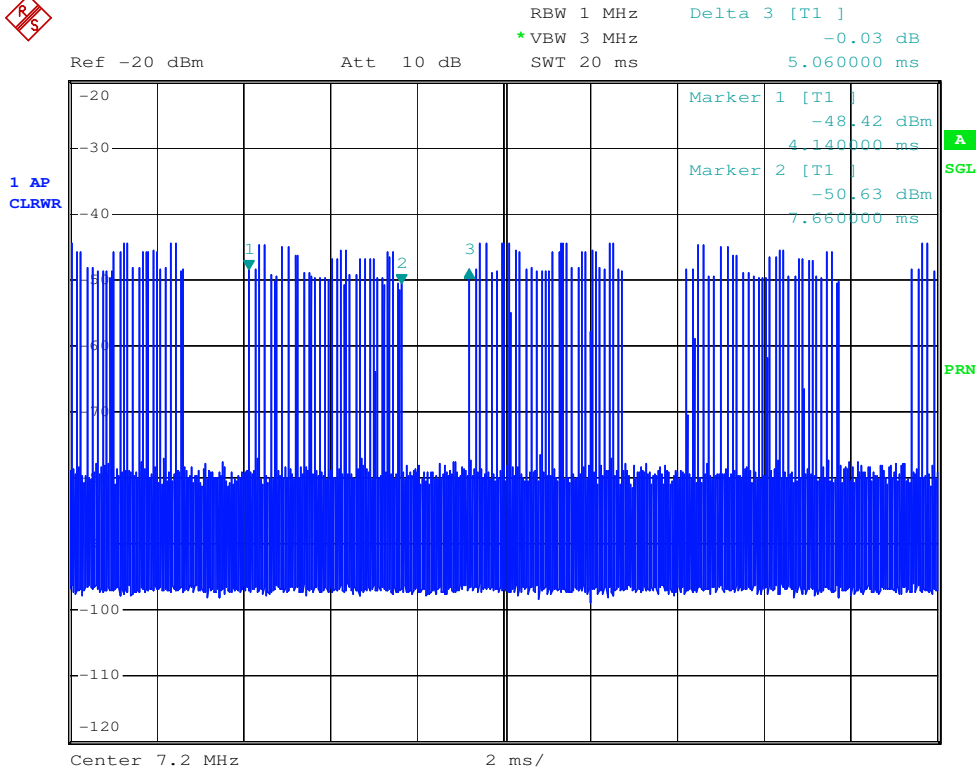
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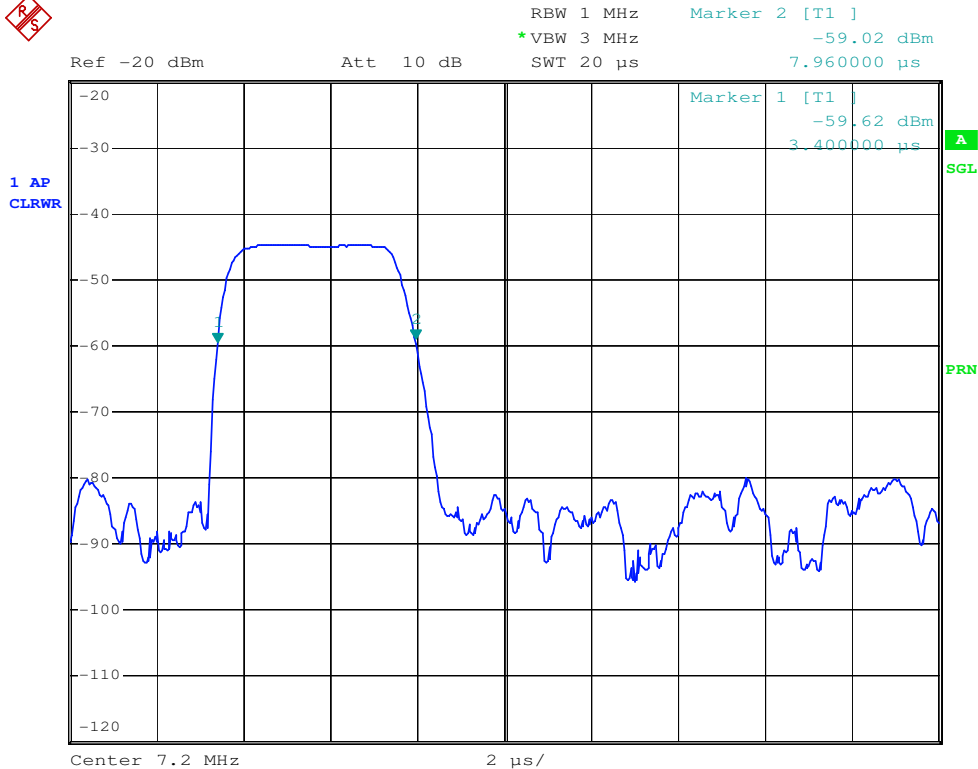
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**9.5MHz Duty cycle measurement result**

tiw (msec)	Tw (msec)	tiB (μsec)	p	KE (dB / %)
3.52	5.16	4.88	32	-29.62/3.03

The following figures were those measured by spectrum analyzer.

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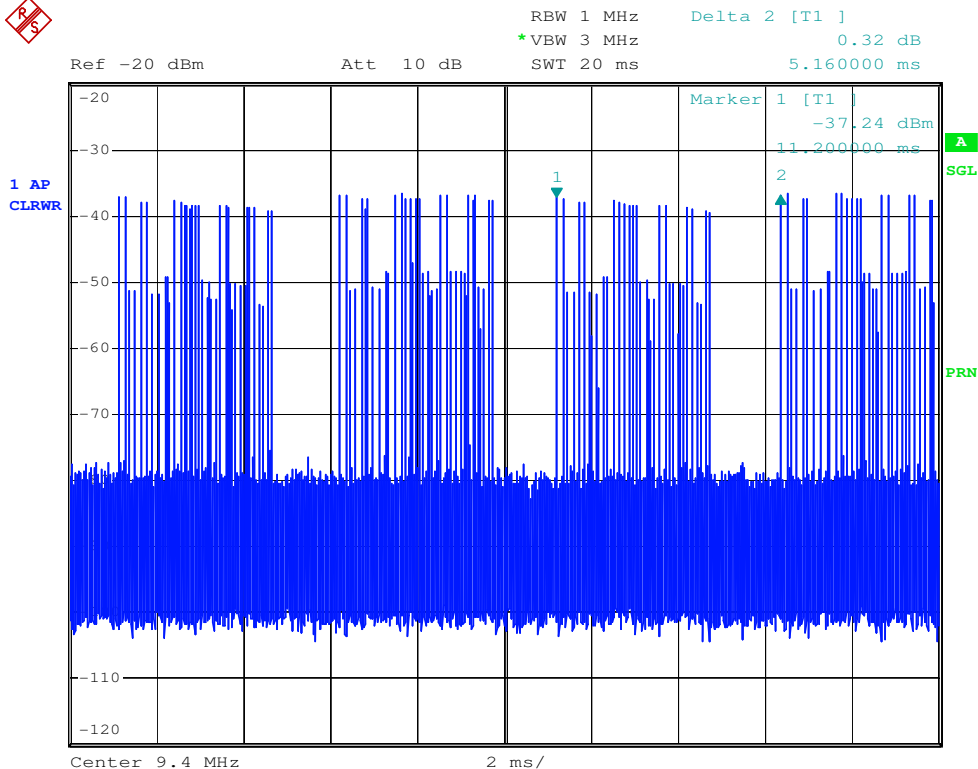
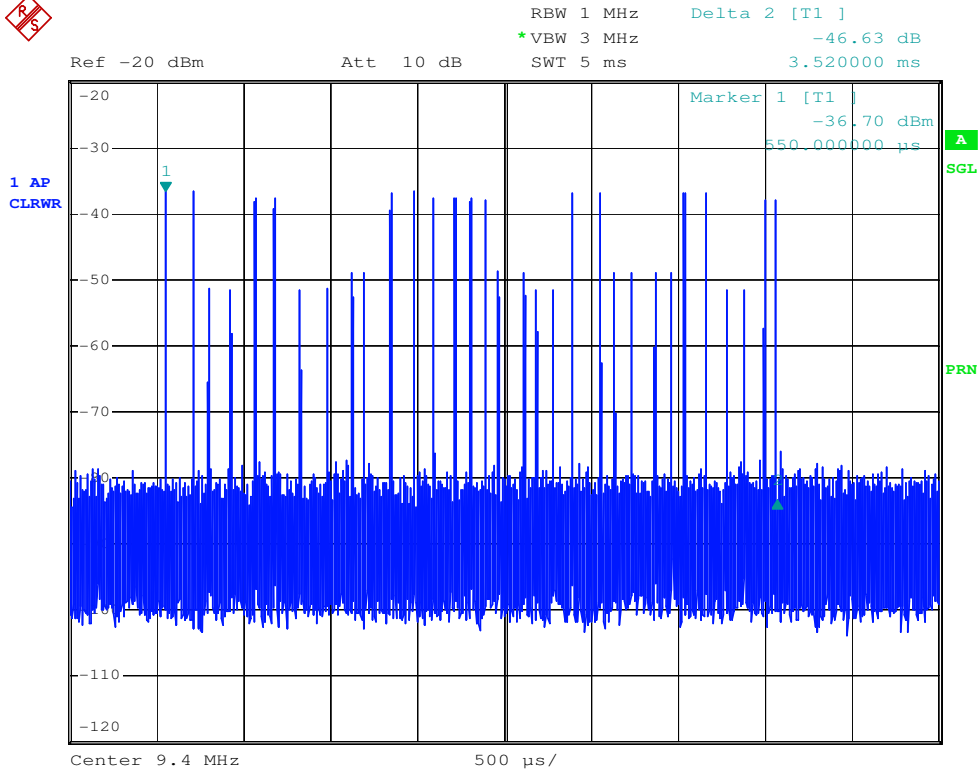




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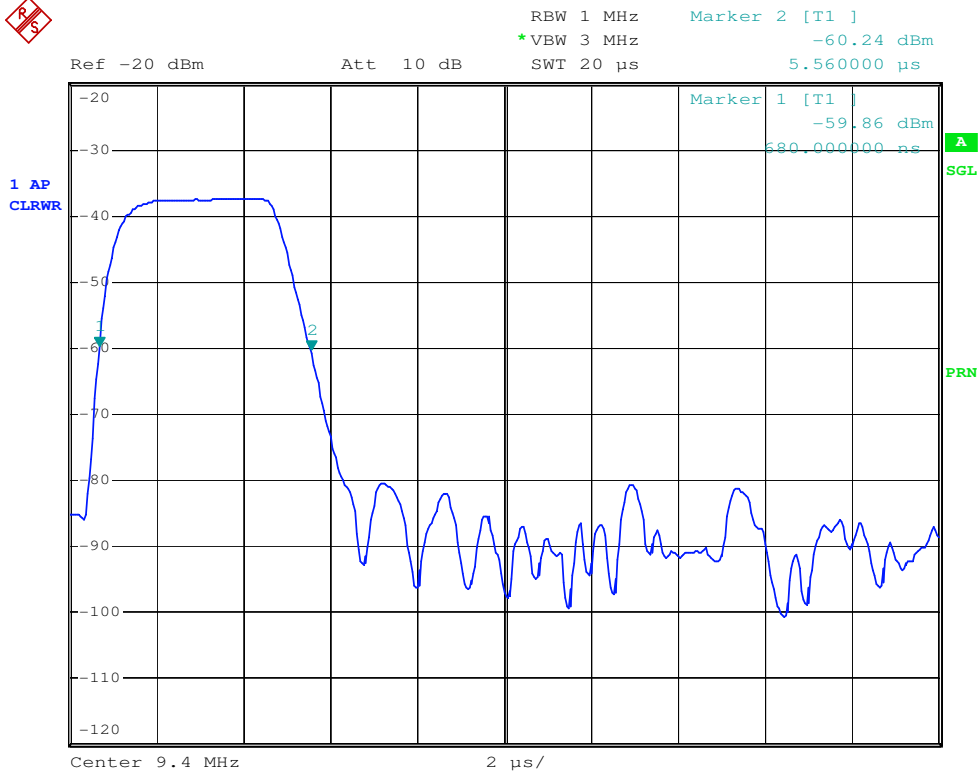
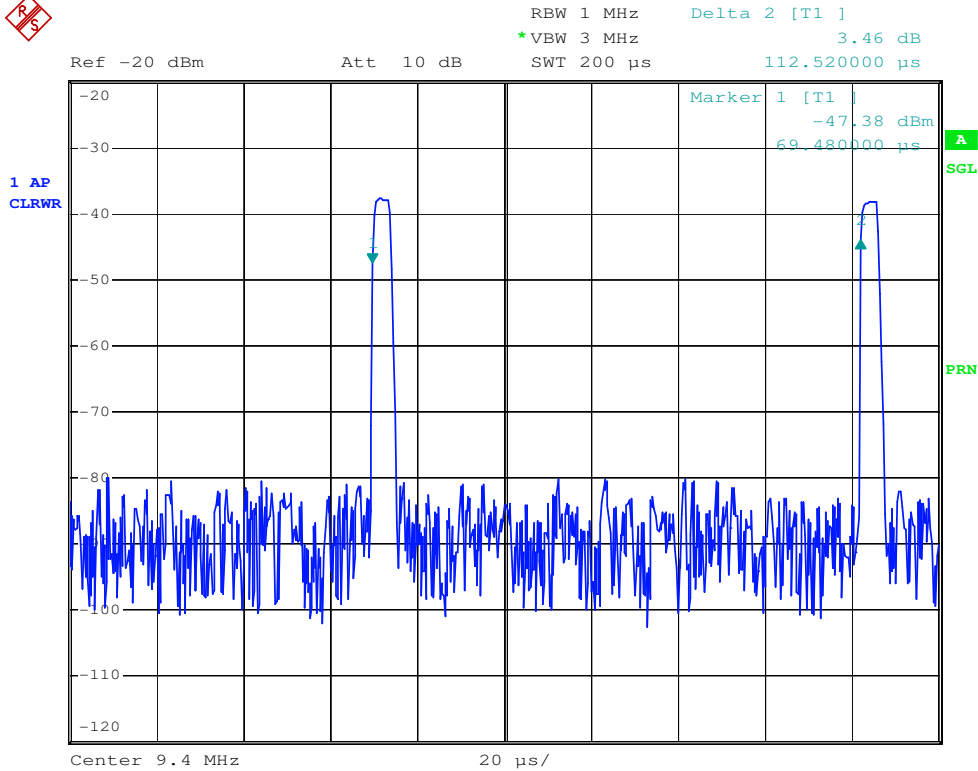
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**4.10.3 Assigned Bandwidth**

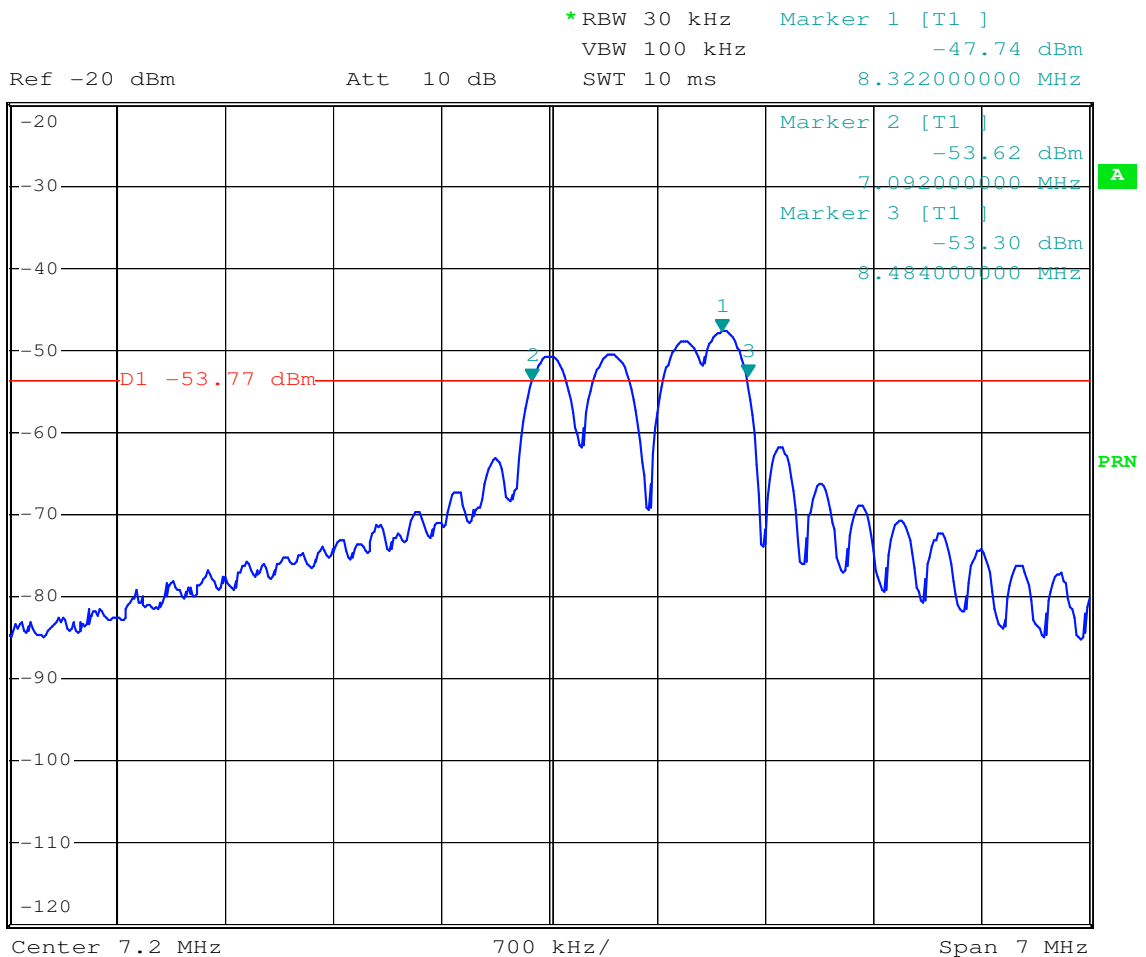
Test Requirement: FCC Part 15 Section 15.223(a) & RSS-210 A2.3

Test date: Aug. 20, 2012

**Emission bandwidth measurement result**

**Test Mode A: Working at 7.2MHz**

Max Peak (MHz)	6dB Bandwidth F1 (MHz)	6dB Bandwidth F2 (MHz)	Measured Bandwidth (MHz)
8.332	7.092	8.484	1.392



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#### 4.10.4 Conducted Emission Test

**Test Requirement:** FCC Part 15 Section 15.207 & RSS-GEN 7.2.2  
**Test date:** Aug. 13, 2012  
**Standard Applicable** According to section 15.207, frequency 150KHz to 30MHz shall not exceed the limit table as blew.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

#### EUT Setup

- 1.The conducted emission tests were performed in the test site,using the setup in accordance with the ANSI C63.10-2009.
- 2.EUT is connect with AC Power adaptor was plug-in LISN.The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
- 3.The LISN was connected with 120V AC/60Hz power source.

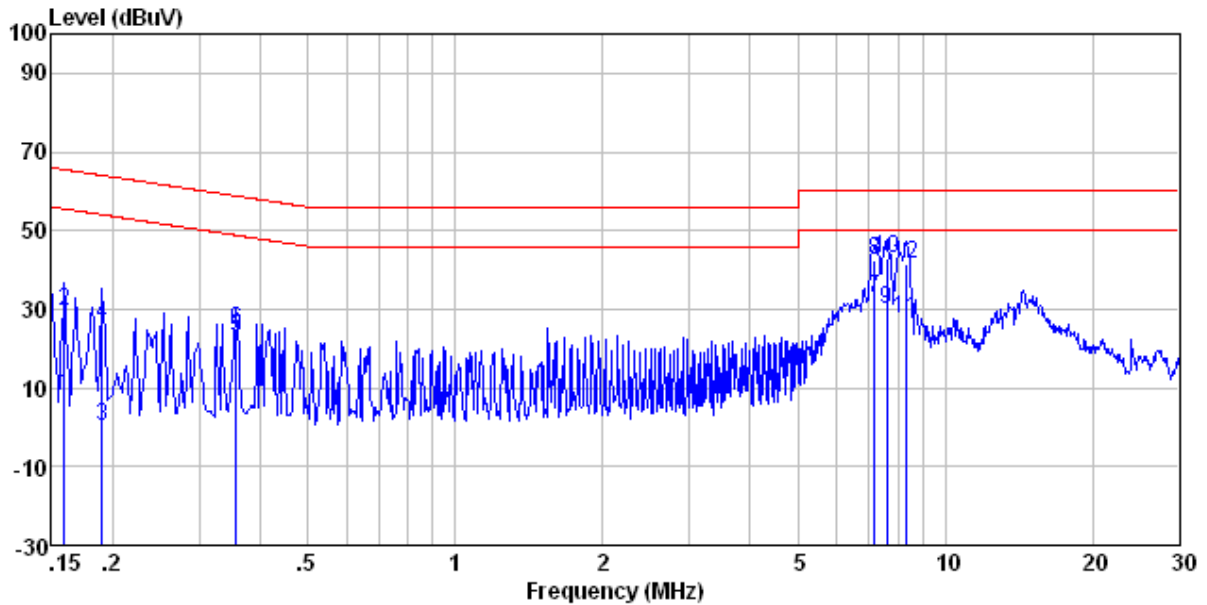
#### Measurement Result

Operation mode: working mode  
Note:All test modes have been tested.



**Test Mode A: 6 foot shielded product working at 7.2MHz**

L line:

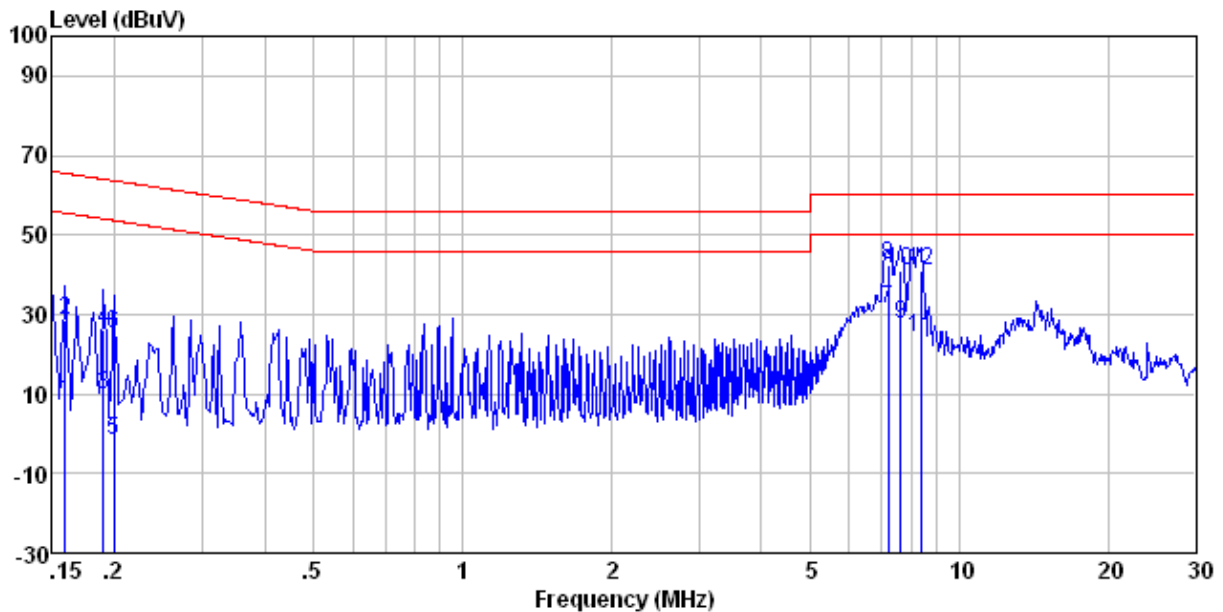


	Freq	Read Level	Cable Loss	LISII Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.16	7.76	0.10	0.18	8.04	55.52	-47.48	Average
2	0.16	29.05	0.10	0.18	29.33	65.52	-36.19	QP
3	0.19	0.00	0.10	0.12	0.22	54.02	-53.80	Average
4	0.19	25.98	0.10	0.12	26.20	64.02	-37.82	QP
5	0.36	22.65	0.10	0.15	22.90	48.78	-25.88	Average
6	0.36	24.50	0.10	0.15	24.75	58.78	-34.03	QP
7	7.18	32.24	0.19	0.32	32.75	50.00	-17.25	Average
8	7.18	42.00	0.19	0.32	42.51	60.00	-17.49	QP
9	7.61	29.49	0.18	0.36	30.03	50.00	-19.97	Average
10	7.61	42.21	0.18	0.36	42.75	60.00	-17.25	QP
11	8.32	26.93	0.16	0.43	27.52	50.00	-22.48	Average
12	8.32	40.94	0.16	0.43	41.53	60.00	-18.47	QP

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**N Line:**



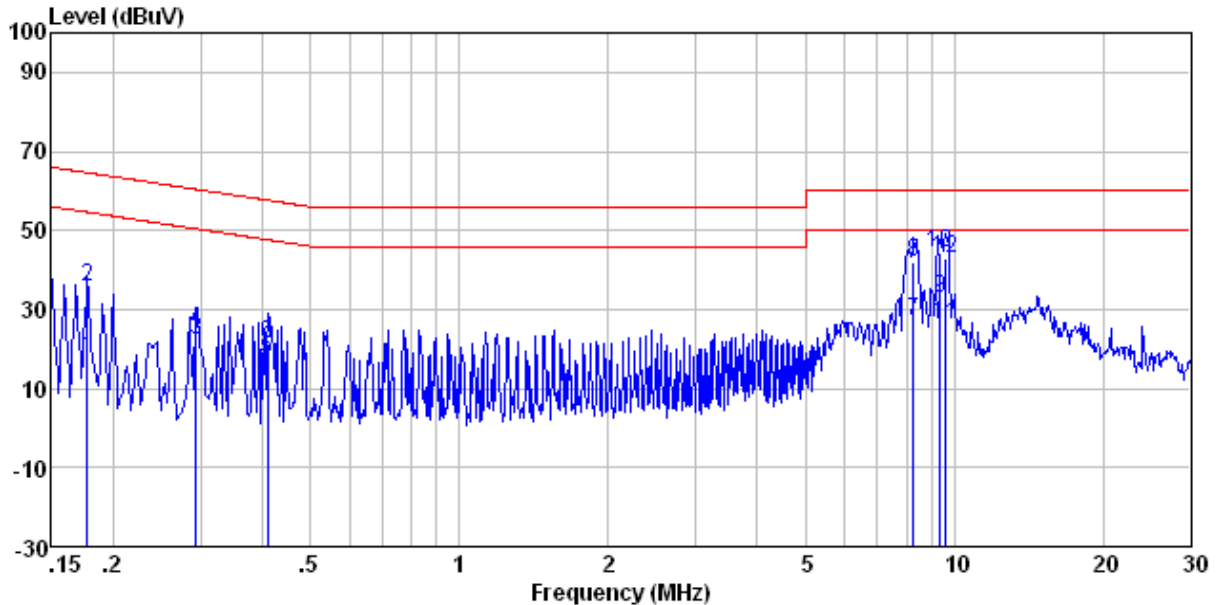
	Freq	Read	Cable	LISII	Limit	Over	Remark
	MHz	Level	Loss	Factor	Line	Limit	
		dBuV	dB	dB	dBuV	dB	
1	0.16	7.61	0.10	0.18	55.52	-47.63	Average
2	0.16	28.48	0.10	0.18	65.52	-36.76	QP
3	0.19	9.67	0.10	0.12	54.02	-44.13	Average
4	0.19	25.80	0.10	0.12	64.02	-38.00	QP
5	0.20	-1.77	0.10	0.10	53.62	-55.19	Average
6	0.20	25.09	0.10	0.10	63.62	-38.33	QP
7	7.21	30.96	0.19	0.32	50.00	-18.53	Average
8	7.21	41.97	0.19	0.32	60.00	-17.52	QP
9	7.65	26.83	0.18	0.36	50.00	-22.63	Average
10	7.65	40.66	0.18	0.36	60.00	-18.80	QP
11	8.37	23.47	0.15	0.44	50.00	-25.94	Average
12	8.37	40.54	0.15	0.44	60.00	-18.87	QP

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**Test Mode B: 6 foot shielded product working at 9.5MHz**

L line:



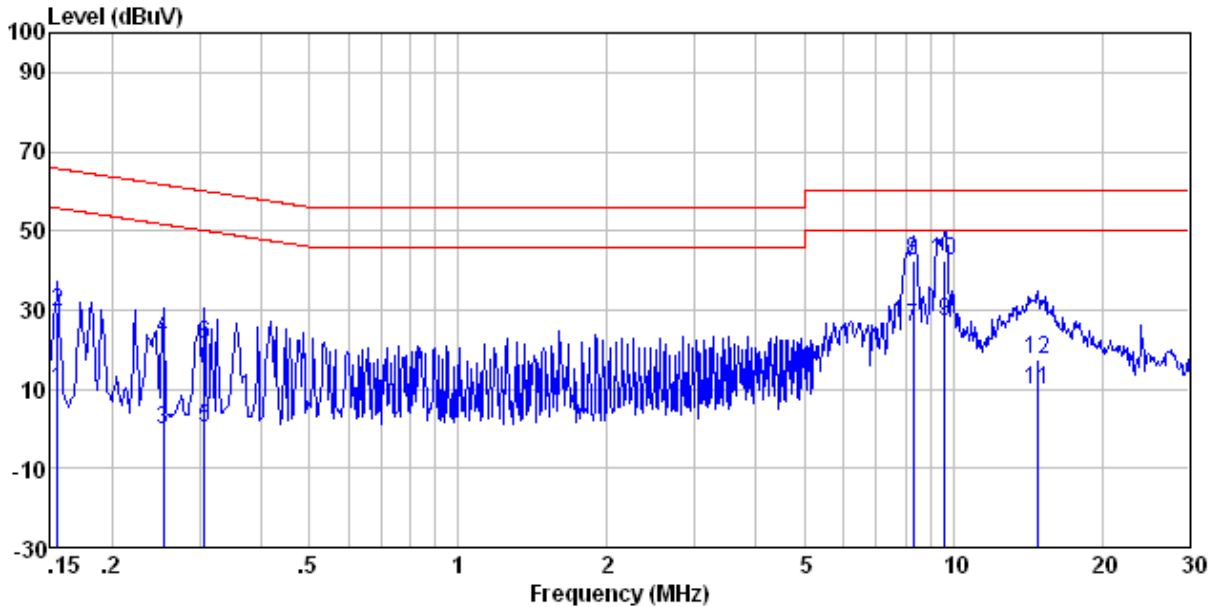
	Freq	Read	Cable	LISII	Level	Limit	Over	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.18	17.30	0.10	0.15	17.55	54.64	-37.09	Average
2	0.18	35.49	0.10	0.15	35.74	64.64	-28.90	QP
3	0.29	22.29	0.10	0.13	22.52	50.41	-27.89	Average
4	0.29	24.57	0.10	0.13	24.80	60.41	-35.61	QP
5	0.41	17.10	0.10	0.17	17.37	47.64	-30.27	Average
6	0.41	20.92	0.10	0.17	21.19	57.64	-36.45	QP
7	8.28	26.41	0.16	0.43	27.00	50.00	-23.00	Average
8	8.28	41.20	0.16	0.43	41.79	60.00	-18.21	QP
9	9.35	32.18	0.12	0.54	32.84	50.00	-17.16	Average
10	9.35	43.68	0.12	0.54	44.34	60.00	-15.66	QP
11	9.60	25.35	0.11	0.56	26.02	50.00	-23.98	Average
12	9.60	42.15	0.11	0.56	42.82	60.00	-17.18	QP

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**N Line:**



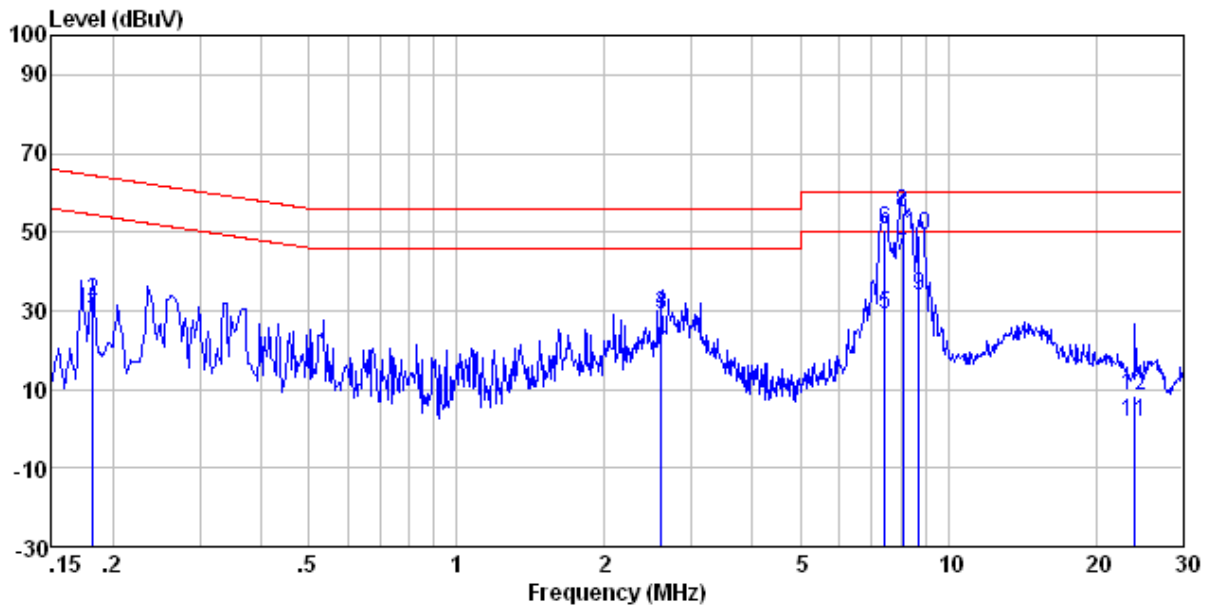
	Freq	Read Level	Cable Loss	LISII Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.15	9.48	0.10	0.19	9.77	55.74	-45.97	Average
2	0.15	29.31	0.10	0.19	29.60	65.74	-36.14	QP
3	0.25	-0.70	0.10	0.12	-0.48	51.64	-52.12	Average
4	0.25	22.47	0.10	0.12	22.69	61.64	-38.95	QP
5	0.31	-0.23	0.10	0.14	0.01	50.06	-50.05	Average
6	0.31	20.95	0.10	0.14	21.19	60.06	-38.87	QP
7	8.32	24.95	0.16	0.43	25.54	50.00	-24.46	Average
8	8.32	41.73	0.16	0.43	42.32	60.00	-17.68	QP
9	9.60	26.23	0.11	0.56	26.90	50.00	-23.10	Average
10	9.60	41.89	0.11	0.56	42.56	60.00	-17.44	QP
11	14.83	9.35	0.10	0.60	10.05	50.00	-39.95	Average
12	14.83	16.64	0.10	0.60	17.34	60.00	-42.66	QP

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**Test Mode C: 8 foot unshielded product working at 7.2MHz**

L line:

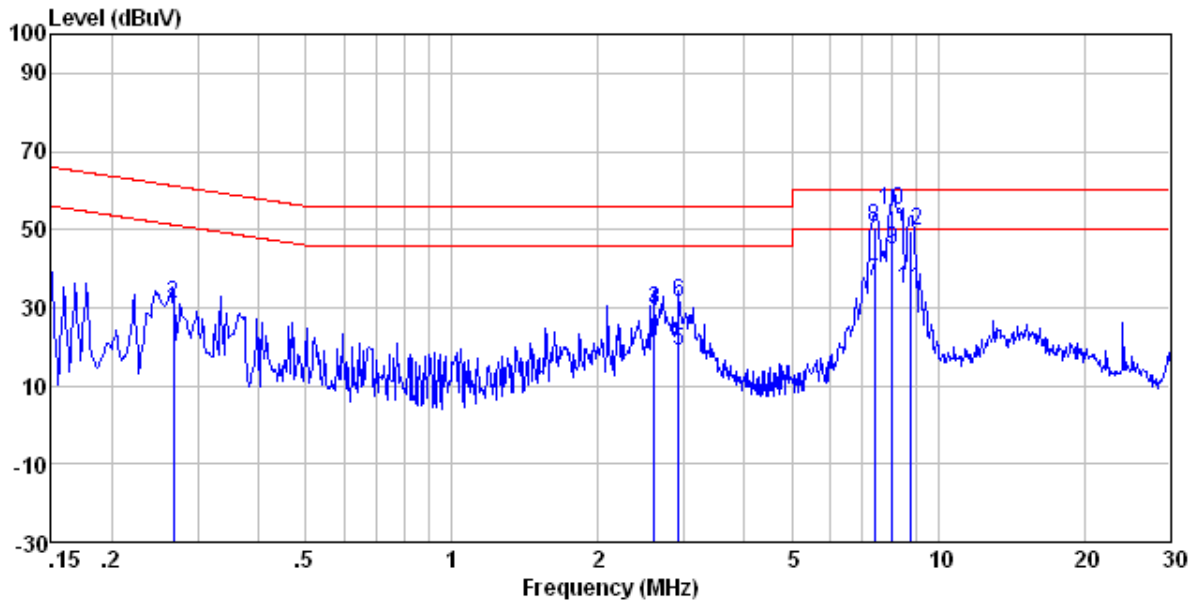


	Freq	Read Level	Cable Loss	LISII Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.18	27.22	0.10	0.14	27.46	54.42	-26.96	Average
2	0.18	32.29	0.10	0.14	32.53	64.42	-31.89	QP
3	2.61	28.40	0.12	0.30	28.82	46.00	-17.18	Average
4	2.61	29.30	0.12	0.30	29.72	56.00	-26.28	QP
5	7.45	28.47	0.19	0.34	29.00	50.00	-21.00	Average
6	7.45	50.19	0.19	0.34	50.72	60.00	-9.28	QP
7	8.11	43.17	0.16	0.41	43.74	50.00	-6.26	Average
8	8.11	54.19	0.16	0.41	54.76	60.00	-5.24	QP
9	8.73	33.41	0.14	0.47	34.02	50.00	-15.98	Average
10	8.73	48.40	0.14	0.47	49.01	60.00	-10.99	QP
11	24.01	0.66	0.20	0.76	1.62	50.00	-48.38	Average
12	24.01	7.41	0.20	0.76	8.37	60.00	-51.63	QP

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**N Line:**



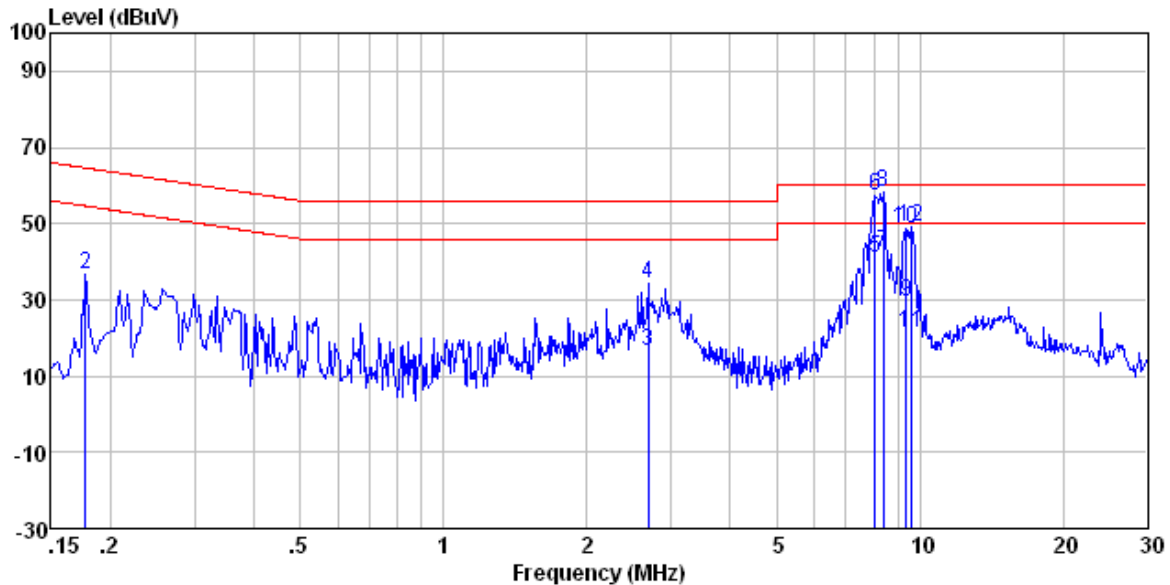
	Read Freq	Cable Loss	LISII Factor	Limit Level	Over Limit	Remark
	MHz	dB	dB	dBuV	dB	
1	0.27	29.10	0.10	0.12	29.32	51.20 -21.88 Average
2	0.27	30.80	0.10	0.12	31.02	61.20 -30.18 QP
3	2.61	29.11	0.12	0.30	29.53	46.00 -16.47 Average
4	2.61	28.62	0.12	0.30	29.04	56.00 -26.96 QP
5	2.93	18.33	0.13	0.30	18.76	46.00 -27.24 Average
6	2.93	31.05	0.13	0.30	31.48	56.00 -24.52 QP
7	7.41	36.30	0.19	0.34	36.83	50.00 -13.17 Average
8	7.41	50.06	0.19	0.34	50.59	60.00 -9.41 QP
9	8.06	44.15	0.16	0.41	44.72	50.00 -5.28 Average
10	8.06	54.25	0.16	0.41	54.82	60.00 -5.18 QP
11	8.78	34.12	0.14	0.48	34.74	50.00 -15.26 Average
12	8.78	48.91	0.14	0.48	49.53	60.00 -10.47 QP

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**Test Mode D: 8 foot unshielded product working at 9.5MHz**

L line:

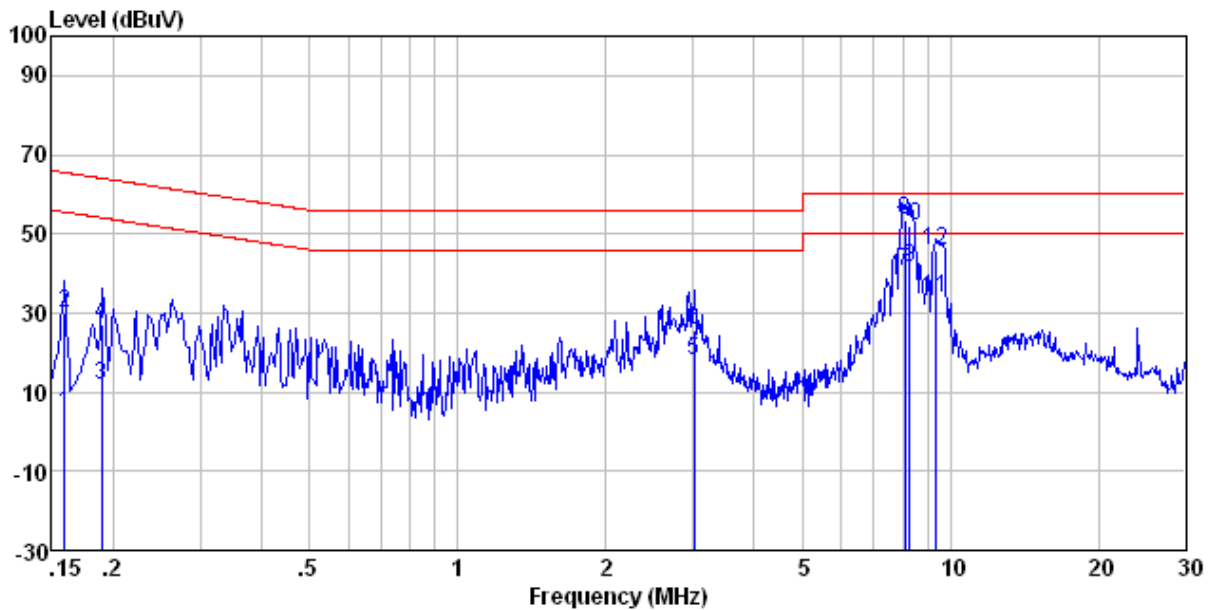


	Read Freq	Cable Loss	LISII Factor	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dB	
1	0.18	20.87	0.10	0.15	21.12	54.64 -33.52 Average
2	0.18	36.50	0.10	0.15	36.75	64.64 -27.89 Peak
3	2.69	16.21	0.12	0.30	16.63	46.00 -29.37 Average
4	2.69	34.00	0.12	0.30	34.42	56.00 -21.58 Peak
5	8.06	40.55	0.16	0.41	41.12	50.00 -8.88 Average
6	8.06	56.85	0.16	0.41	57.42	60.00 -2.58 Peak
7	8.37	42.05	0.15	0.44	42.64	50.00 -7.36 Average
8 P	8.37	57.68	0.15	0.44	58.27	60.00 -1.73 Peak
9	9.35	28.89	0.12	0.54	29.55	50.00 -20.45 Average
10	9.35	48.16	0.12	0.54	48.82	60.00 -11.18 Peak
11	9.60	20.83	0.11	0.56	21.50	50.00 -28.50 Average
12	9.60	48.69	0.11	0.56	49.36	60.00 -10.64 Peak

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**N Line:**



	Freq	Read	Cable	LISII	Limit	Over	Remark
	MHz	dBuV	dB	dB	dBuV	dB	
1	0.16	4.17	0.10	0.18	4.45	-51.07	Average
2	0.16	29.76	0.10	0.18	30.04	-35.48	QP
3	0.19	11.49	0.10	0.12	11.71	-42.35	Average
4	0.19	26.88	0.10	0.12	27.10	-36.96	QP
5	3.03	17.58	0.13	0.30	18.01	-27.99	Average
6	3.03	25.11	0.13	0.30	25.54	-30.46	QP
7	8.11	39.99	0.16	0.41	40.56	-9.44	Average
8	8.11	52.85	0.16	0.41	53.42	-6.58	QP
9	8.28	40.76	0.16	0.43	41.35	-8.65	Average
10	8.28	51.31	0.16	0.43	51.90	-8.10	QP
11	9.35	33.32	0.12	0.54	33.98	-16.02	Average
12	9.35	45.09	0.12	0.54	45.75	-14.25	QP

**End of Report**

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