



1250 Peterson Dr., Wheeling, IL 60090

Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

FCC Rules and Regulations / Intentional Radiators

Operational in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz, Bands

Part 15, Subpart C, Section 15.247

THE FOLLOWING **MEETS** THE ABOVE TEST SPECIFICATION

Formal Name: Neptune 2- Wireless  
Kind of Equipment: Wireless Transceiver Module  
Test Configuration: Header Connectors (Tested at 3.6 vdc)  
Model Number(s): 0702-014-028  
Model(s) Tested: 0702-014-028  
Serial Number(s): NA  
Date of Tests: December 5, & 6, 2007  
Test Conducted For: Stryker Instruments  
4100 East Milham Aveune  
Kalamazoo, MI 49001

**NOTICE:** "This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government". Please see the "Additional Description of Equipment Under Test" page listed inside of this report.

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SIGNATURE PAGE

Report By:

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William Stumpf  
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Approved By:

Brian Mattson  
General Manager

Company:

Stryker Instruments



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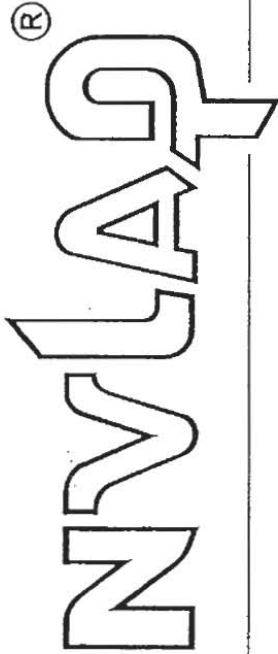
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United States Department of Commerce  
National Institute of Standards and Technology



# Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 100276-0

**D.L.S. Electronic Systems, Inc.**  
Wheeling, IL

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,  
listed on the Scope of Accreditation, for:*

## **ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS**

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.  
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality  
management system (refer to joint ISO-ILAC-IAF Communiqué dated 18 June 2005).*

2007-10-01 through 2008-09-30

Effective dates



*Dolly J. Buses*  
For the National Institute of Standards and Technology

NVI AP-01C (REV. 2006-09-13)



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## 1.0 SUMMARY OF TEST REPORT

It was found that the Neptune 2- Wireless, Model Number(s) 0702-014-028, **meets** the radio interference radiated emission requirements of the FCC "Rules and Regulations", Part 15, Subpart C, Section 15.247 for operational in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz, Bands.

## 2.0 INTRODUCTION

On December 5, & 6, 2007, a series of radio frequency interference measurements was performed on Neptune 2- Wireless, Model Number(s) 0702-014-028, Serial Number: NA. The tests were performed according to the procedures of the FCC as stated in the "Methods of Measurement of Radio-Noise Emissions for Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" found in the American National Standards Institute, ANSI C63.4-2003. Tests were performed by personnel of D.L.S. Electronic Systems, Inc. who are responsible to Donald L. Sweeney, Senior EMC Engineer.

D.L.S. Electronic Systems, Inc. is a full service EMC/Safety Testing Laboratory accredited to ISO 17025. NVLAP Certificate and Scope can be viewed at <http://www.dlsemc.com/certificate>. Our facilities are registered with the FCC, Industry Canada, and VCCI.

## 3.0 OBJECT

The purpose of this series of tests was to determine if the test sample could meet the radio frequency interference emission requirements of the FCC "Rules and Regulations", Part 15, Subpart C, Sections 15.205, 15.209 & 15.247 for Intentional Radiators operating in the Bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.



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#### 4.0 TEST SET-UP

All emission tests were performed at D.L.S. Electronic Systems, Inc. and set up according to the American National Standards Institute, ANSI C63.4-2003, Section 8, (Figures 11a and 11b).

All radiated emissions tests were performed with the test item placed on a 80 cm high rotating non-conductive table, located in the test room. Equipment normally operated on the floor was placed on a metal covered turntable which is flush with the surrounding conducting ground plane. The ground plane has an electrical isolation layer over its surface approximately 7 mm thick. The EUT is separated from the turntable ground plane by a non-conductive layer. The equipment under test was set up according to ANSI C63.4-2003, Sections 6 and 8.

#### 5.0 TEST EQUIPMENT (Bandwidths and Detector Function)

All preliminary data below 1000 MHz was automatically plotted using the HP Spectrum Analyzer or ESI 26/40 Fixed Tuned Receiver. The data was taken using Peak, Quasi-Peak or the Average Detector Functions as required. This information was then used to determine the frequencies of maximum emissions. Above 1000 MHz, final data was taken using the Average Detector.

Below 1000 MHz, final data was taken using the ESI 26/40 Fixed Tuned Receiver. These plots were made using the Peak or Quasi-Peak Detector functions, with manual measurements performed on the questionable frequencies using the Quasi-Peak or the Average Detector Function of the ESI 26/40 Fixed Tuned Receiver as required. Above 1000 MHz, final data was taken using the Average Detector on the Spectrum Analyzer.

The bandwidths shown below are specified by ANSI C63.4-2003, Section 4.2.

Frequency Range	Bandwidth (-6 dB)
10 to 150 kHz	200 Hz
150 kHz to 30 MHz	9 kHz
30 MHz to 1 GHz	120 kHz
Above 1 GHz	1 MHz

A list of the equipment used can be found in Table 1. All primary equipment was calibrated against known reference standards with a verified traceable path to NIST.



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## 6.0 AMBIENT MEASUREMENTS

For emissions measurements, broadband antennas and an EMI Test Receiver with a panoramic spectrum display are used. First the frequency range is scanned and displayed on the test receiver display. Next the scanned frequency range is divided into smaller ranges, and then it is manually tuned through to determine the emissions from the EUT. A headset or loudspeaker is connected to the test receiver's AM/FM demodulated output as an aid in detecting ambient signals and finding frequencies of significant emission from the EUT. If there is any doubt as to the source of the emission, it is further investigated by rotating the EUT, or by disconnecting the power from the EUT.

The EUT is set up in its typical configuration and operated in its various modes. For tabletop systems, cables are manipulated within the range of likely configurations. For floor-standing equipment, the cables are located in the same manner as the user would install them and no further manipulation is made. If the manner of cable installation is not known, or if it changes with each installation, cables or wires for floor-standing equipment shall be manipulated to the extent possible to produce the maximum level of emissions. For each mode of operation, the frequency spectrum is monitored. Variations in antenna height, antenna polarization, EUT azimuth, and cable or wire placement (each variable within bounds specified elsewhere) are explored to produce the emissions that have the highest amplitude relative to the limit. These methods are performed to the specifications in ANSI C63.4-2003.





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7.0 DESCRIPTION OF TEST SAMPLE: (See also Paragraph 8.0)

7.1 Description:

The test sample is an IEEE 802.15.4 wireless radio module. It is a radio transceiver operating in the frequency band of 2.400 to 2.483 GHz. The radio can be operated using a Chipcon SmartRF04EB 1.9 evaluation board accompanied with the SmartRF software tools.

7.2 PHYSICAL DIMENSIONS OF EQUIPMENT UNDER TEST

Length: 38mm x Width: 41mm x Height: 13mm

7.3 LINE FILTER USED:

N/A

7.4 INTERNAL CLOCK FREQUENCIES:

Switching Power Supply Frequencies:

N/A

Clock Frequencies:

32 MHz, 2405, 2410, 2415, 2420, 2425, 2430, 2435, 2440, 2445, 2450, 2455, 2460, 2465, 2470, 2475, 2480 MHz

7.5 DESCRIPTION OF ALL CIRCUIT BOARDS:

1. Neptune 2 Wireless

PN: 0702014028 Revision None

8.0 ADDITIONAL DESCRIPTION OF TEST SAMPLE:  
(See also Paragraph 7.0)

1: There were no additional descriptions noted at the time of test.

NOTE:

The EUT was tested in the following modes:

Continuous Transmit  
Continuous Receive  
Low, Mid & High Channels



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## 9.0 PHOTO INFORMATION AND TEST SET-UP

Item 0 Neptune 2- Wireless

Model Number: 0702-014-028 Serial Number: NA

Item 1 Non-shielded Power/Control Cable to EUT with Plastic Shells. 2m

Item 2 Chicon SmartRF04EB 1.9 Evaluation Board

Item 3 Dell PC

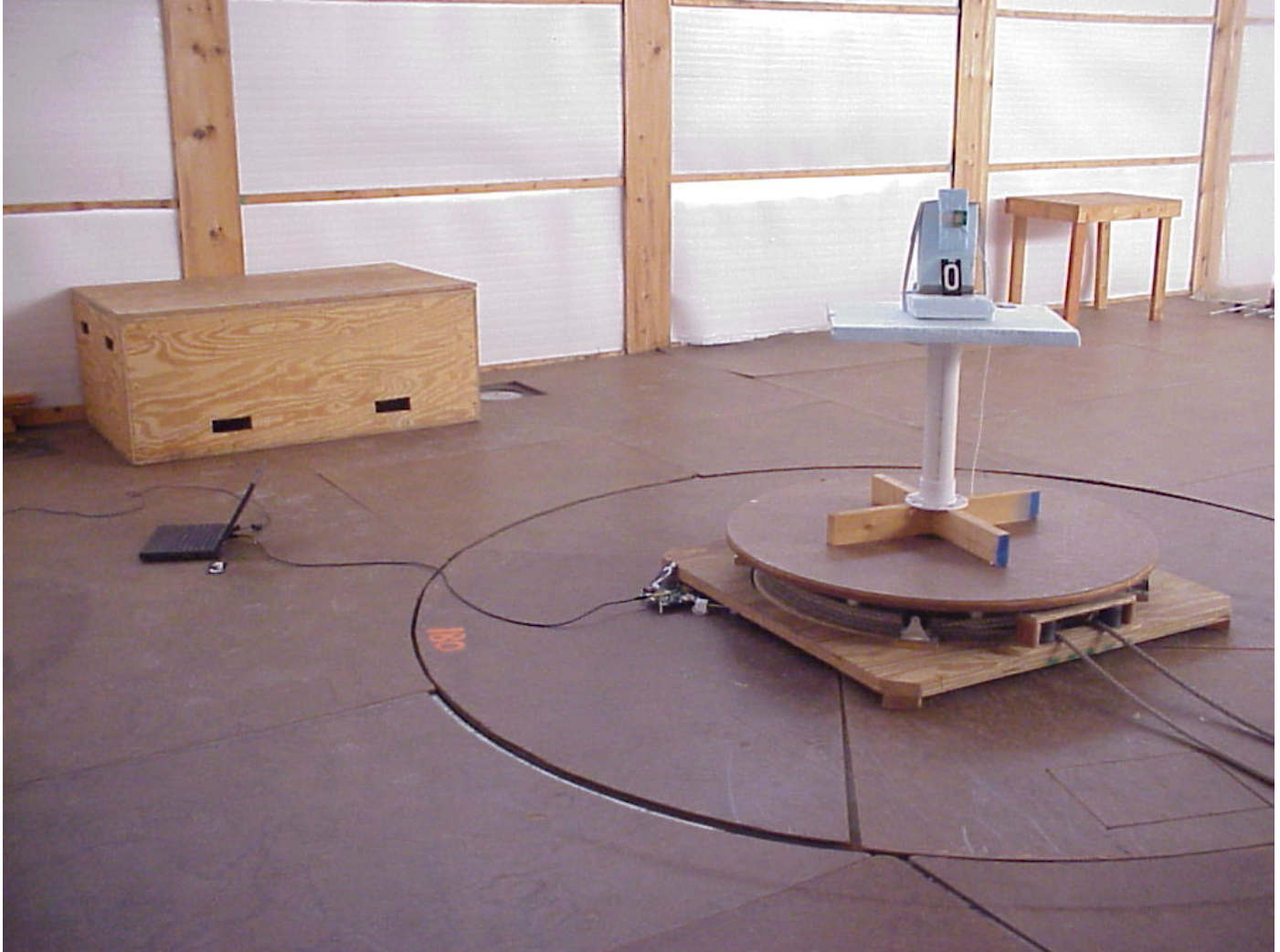
Model Number: Latitude CPX , Serial Number: Stryker Instruments INS000424



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## 10.0 RADIATED PHOTOS TAKEN DURING TESTING

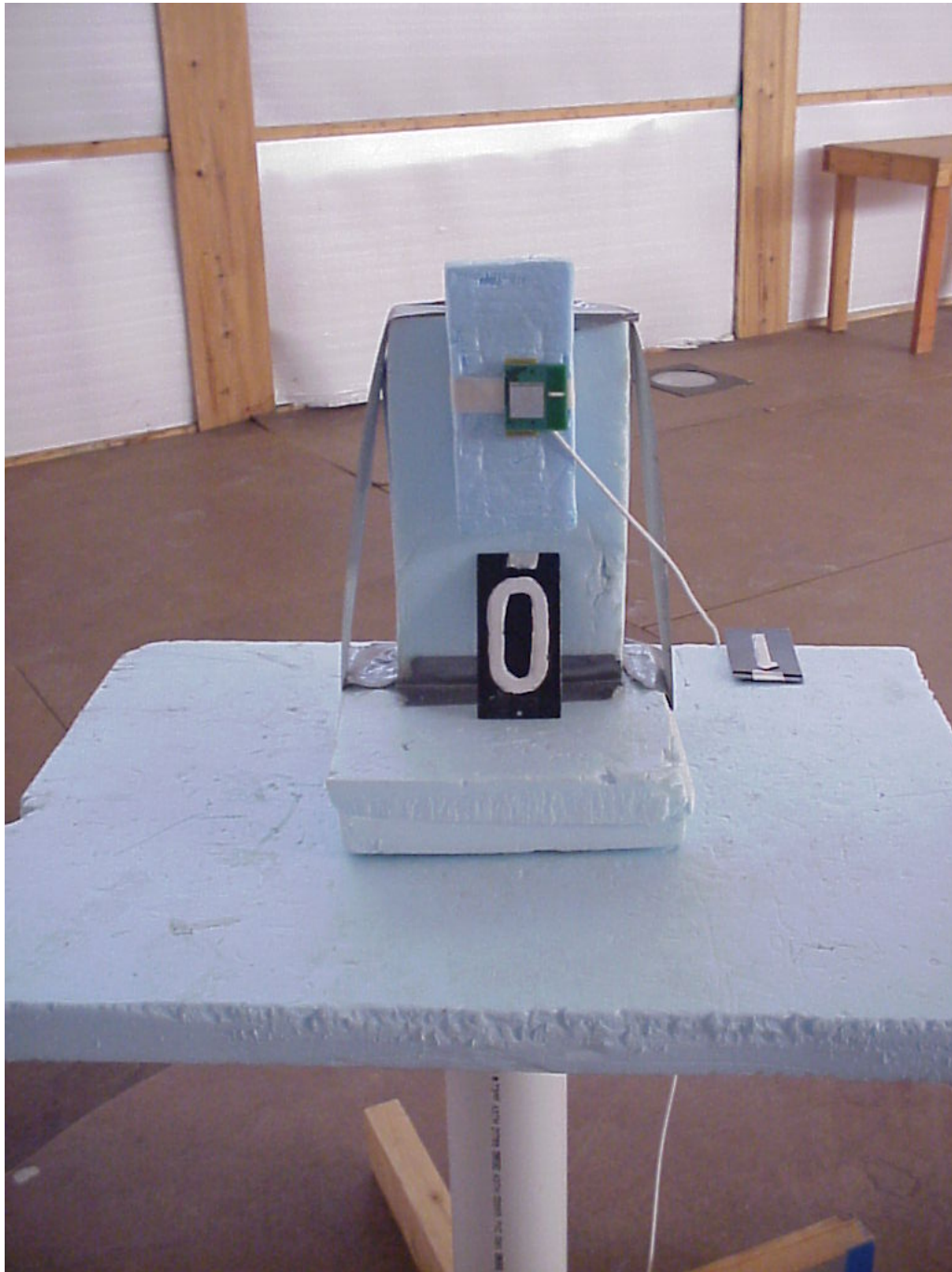




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## 10.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)

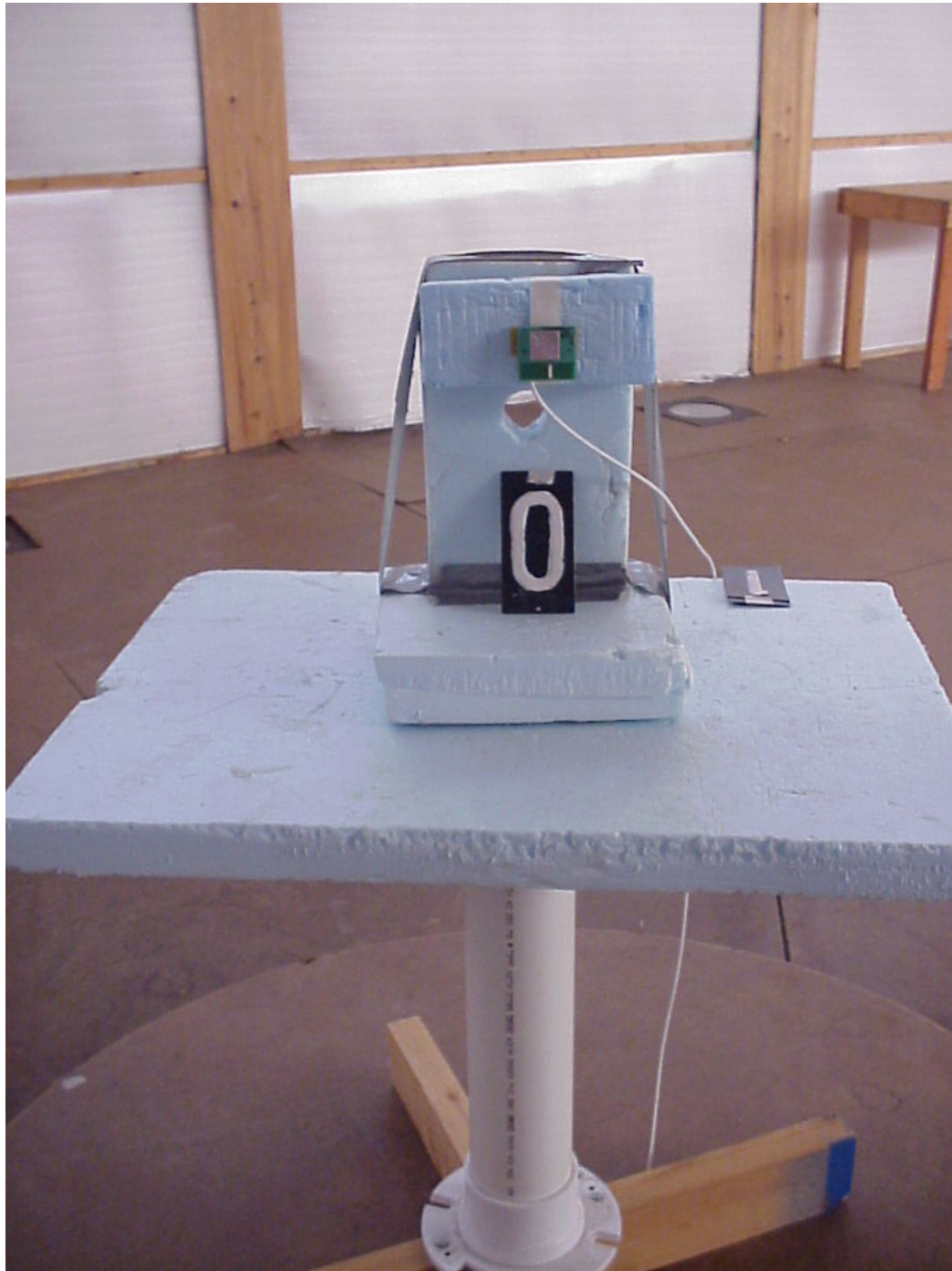




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## 10.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)





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## 10.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)

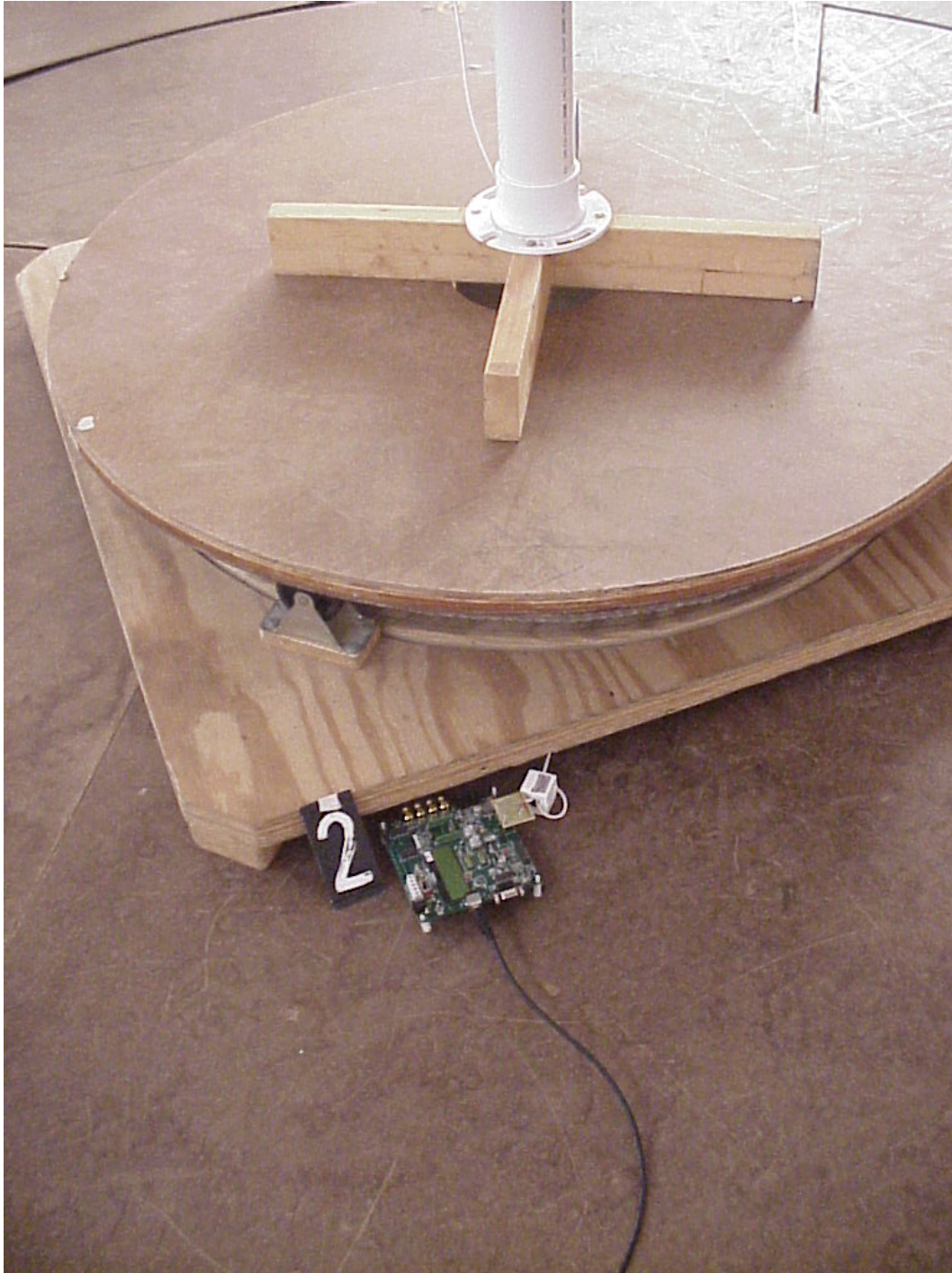




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## 10.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)



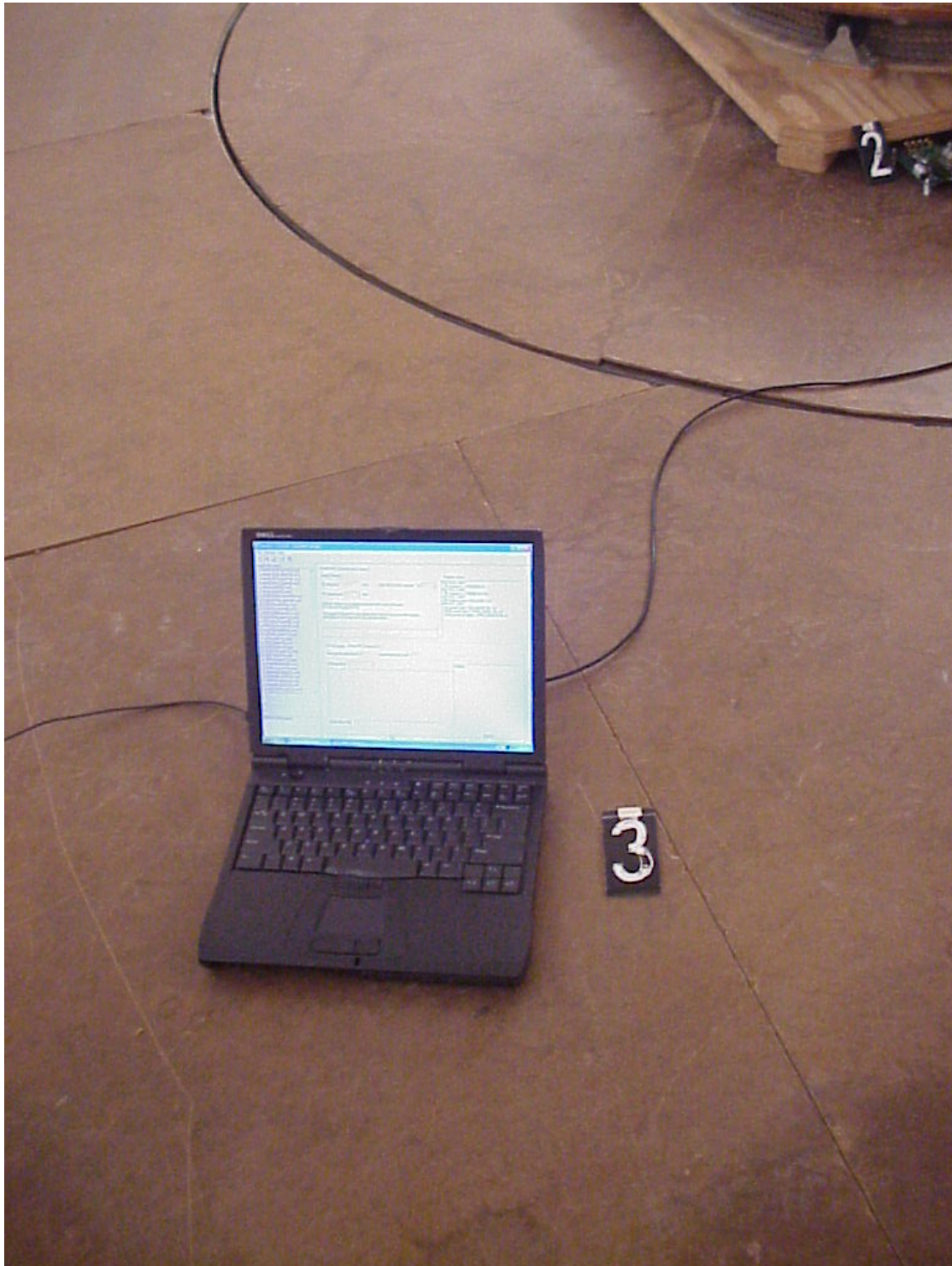




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## 10.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)





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## 10.0 CONDUCTED PHOTOS TAKEN DURING TESTING





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## 11.0 RESULTS OF TESTS

The radio interference emission charts can be seen on the pages at the end of this report. Data sheets indicating the test measurements taken during testing can also be found at the end of this report.

## 12.0 CONCLUSION

It was found that the Neptune 2- Wireless, Model Number(s) 0702-014-028 **meets** the radio interference conducted and radiated emission requirements of the FCC "Rules and Regulations", Part 15, Subpart C, Section 15.247 for operational in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz, Bands.



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TABLE 1 – EQUIPMENT LIST

<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model Number</b>	<b>Serial Number</b>	<b>Frequency Range</b>	<b>Cal Due Dates</b>
Receiver	Rohde & Schwarz	ESI 26	837491/010	20 Hz – 26 GHz	11/08
Receiver	Rohde & Schwarz	ESI 40	837808/006	20 Hz – 40 GHz	12/08
Receiver	Rohde & Schwarz	ESI 40	837808/005	20 Hz – 40 GHz	12/08
Antenna	EMCO	3104C	00054891	20 MHz – 200 MHz	2/08
Antenna	Electrometrics	LPA-25	1114	200 MHz – 1 GHz	3/08
Antenna	EMCO	3104C	00054892	20 MHz – 200 MHz	3/08
Antenna	Electrometrics	3146	1205	200 MHz – 1 GHz	3/08
Antenna	EMCO	3104C	97014785	20 MHz – 200 MHz	2/08
Antenna	EMCO	3146	97024895	200 MHz – 1 GHz	3/08
Antenna	Rohde & Schwarz	HUF-Z1	829381001	20 MHz – 1 GHz	2/08
Antenna	Rohde & Schwarz	HUF-Z1	829381005	20 MHz – 1 GHz	8/08
Horn Antenna	EMCO	3115	4451	1 GHz – 18 GHz	5/08
Horn Antenna	EMCO	3115	99035731	1 GHz – 18 GHz	6/08
Horn Antenna	EMCO	3115	6204	1 GHz – 18 GHz	5/08
Horn Antenna	COM POWER	AH 118	071127	1 GHz – 18 GHz	5/08

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.



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TABLE 1 – EQUIPMENT LIST

<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model Number</b>	<b>Serial Number</b>	<b>Frequency Range</b>	<b>Cal Due Dates</b>
Horn Antenna	EMCO	3116	2549	18 GHz – 40 GHz	5/08
Horn Antenna	ETS Lindgren	3116	00062917	18 GHz – 40 GHz	10/08
Horn Antenna	A.H. Systems	SAS-574	221	18 GHz – 40 GHz	4/08
Horn Antenna	A.H. Systems	SAS-574	222	18 GHz – 40 GHz	4/08
LISN	Solar	8012-50-R-24-BNC	8305116	10 MHz – 30 MHz	8/08
LISN	Solar	8012-50-R-24-BNC	814548	10 MHz – 30 MHz	8/08
LISN	Solar	9252-50-R-24-BNC	961019	10 MHz – 30 MHz	12/08
LISN	Solar	9252-50-R-24-BNC	971612	10 MHz – 30 MHz	10/08
LISN	Solar	9252-50-R-24-BNC	92710620	10 MHz – 30 MHz	7/08
Attenuator-10dB Fixed	Pasternack	PE7014-10	198	DC-18GHz	9/08
Preamp	Miteq	AMF-8B-180265-40-10P-H/S	181	18GHz-26GHz	9/08
Preamp	Ciao	CA118-4010	184a	1GHz-18GHz	1/09
Filter- High-Pass	Q-Microwave	100461	192B	Fc = 2.9GHz	5/08
Horn Antenna	EMCO	3116	2549	18 – 40GHz	5/08
Signal Generator	Hewlett-Packard	HP8341B	2819A01017	10MHz – 20GHz	8/08
RF Cable	Insulated Wire Inc.	KPS-1501-1182-KPS	CBL042	30MHz - 40GHz	12/08

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.



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## APPENDIX A

# TEST PROCEDURE

Part 15, Subpart C, Section 15.247 (a-h)

OPERATION WITHIN THE BAND 902-928 MHz,

2400-2483.5 MHz AND 5725-5857 MHz



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## APPENDIX A

### 1.0 AC POWER LINE CONDUCTED EMISSION MEASUREMENTS

If applicable, the conducted emissions were measured over the frequency range from 150 kHz to 30 MHz in accordance with the power line measurements as specified in the American National Standards Institute, ANSI C63.4-2003, Section 12. Since the device is operated from the public utility lines, the 115 Vac 60 Hz power leads, high and low sides, were to be measured by connecting the measuring equipment to the appropriate meter terminal of the LISN. All signals were then recorded. The allowed levels for Intentional Radiators cannot exceed the following:

Frequency of Emissions (MHz)	Conducted Limits (dBuV)	
	Quasi Peak	Average
.15 to .5	66 to 56	56 to 46
.5 to 5	56	46
5 to 30	60	50



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## APPENDIX A

# DATA AND GRAPH(S) TAKEN DURING TESTING

## PART 15.207



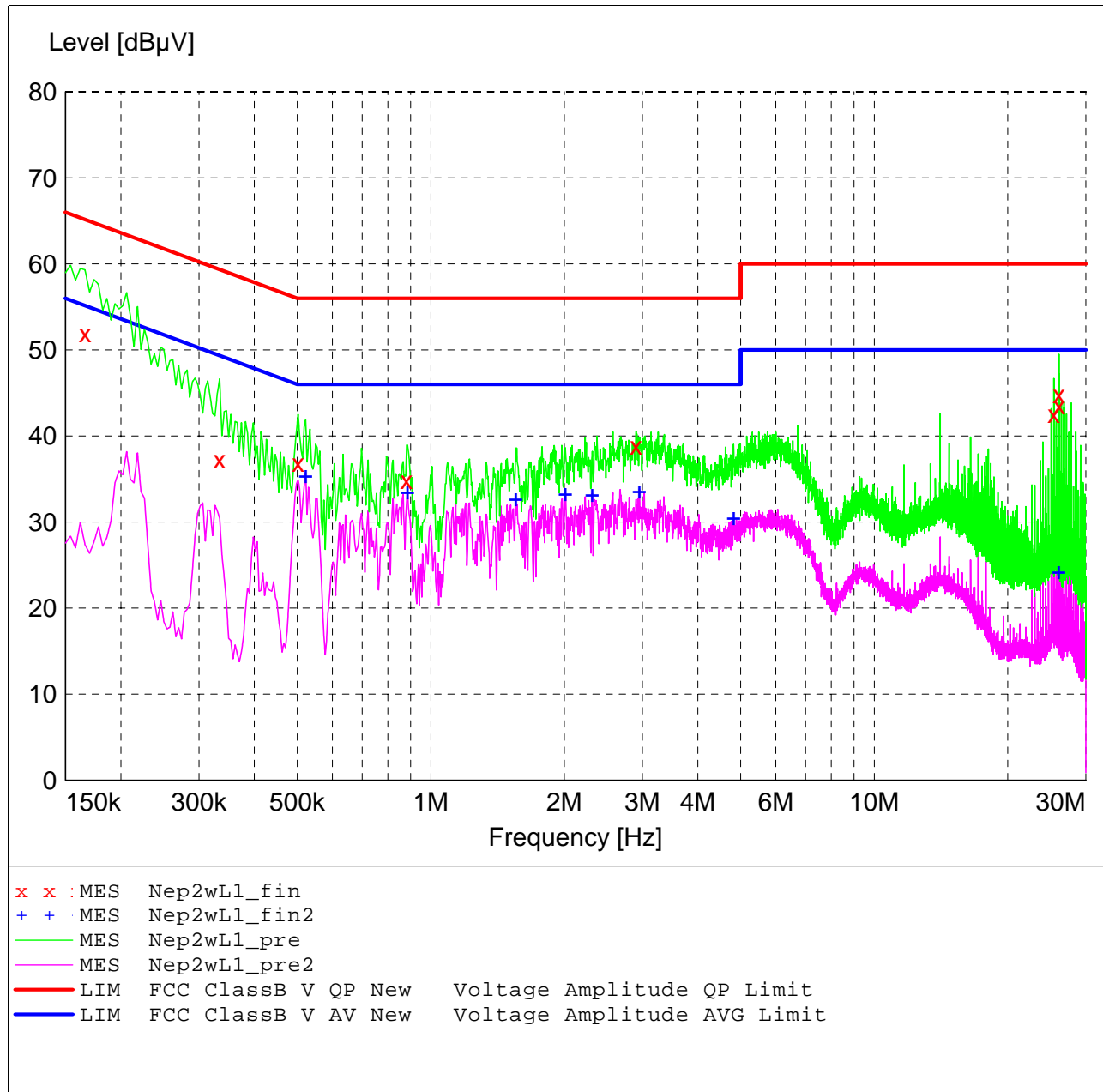
**FCC Part 15 Class B**

**Voltage Mains Test**

EUT: Neptune 2 wireless  
 Manufacturer: Stryker Instruments  
 Operating Condition: 70 deg. F, 29% R.H.  
 Test Site: DLS O.F. Site 1 (Screenroom)  
 Operator: Craig B  
 Test Specification:  
 Comment: Line 1  
 Date: 01-17-2008

**SCAN TABLE: "Line Cond Scrn RmFin"**

Short Description:		Line Conducted Emissions					Transducer
Start	Stop	Step	Detector	Meas. Time	IF Bandw.		
150.0 kHz	30.0 MHz	4.0 kHz	QuasiPeak	5.0 s	9 kHz	LISN DLS#128	
CISPR AV							



**MEASUREMENT RESULT: "Nep2wL1\_fin"**

1/17/2008 1:16PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.166000	51.90	11.3	65	13.3	QP	---	---
0.334000	37.20	10.5	59	22.2	QP	---	---
0.502000	36.90	10.3	56	19.1	QP	---	---
0.882000	34.90	10.2	56	21.1	QP	---	---
2.902000	38.80	10.4	56	17.2	QP	---	---
25.414000	42.50	11.7	60	17.5	QP	---	---
26.082000	44.80	11.8	60	15.2	QP	---	---
26.118000	43.50	11.8	60	16.5	QP	---	---

**MEASUREMENT RESULT: "Nep2wL1\_fin2"**

1/17/2008 1:16PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.522000	35.50	10.3	46	10.5	CAV	---	---
0.886000	33.60	10.2	46	12.4	CAV	---	---
1.554000	32.80	10.3	46	13.2	CAV	---	---
2.010000	33.40	10.3	46	12.6	CAV	---	---
2.310000	33.30	10.3	46	12.7	CAV	---	---
2.954000	33.70	10.4	46	12.3	CAV	---	---
4.822000	30.60	10.5	46	15.4	CAV	---	---
26.082000	24.30	11.8	50	25.7	CAV	---	---

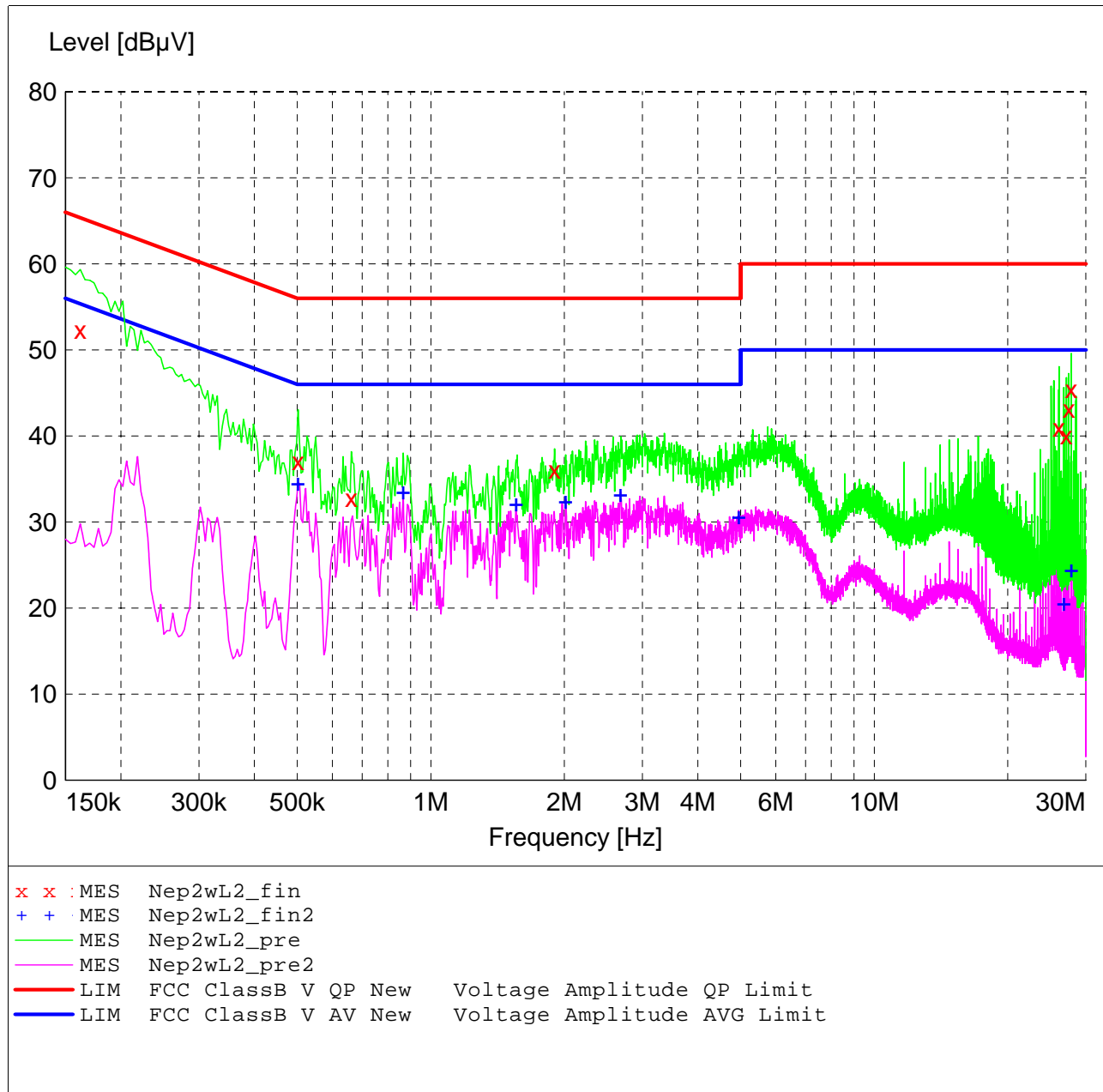
**FCC Part 15 Class B**

**Voltage Mains Test**

EUT: Neptune 2 wireless  
 Manufacturer: Stryker Instruments  
 Operating Condition: 70 deg. F, 29% R.H.  
 Test Site: DLS O.F. Site 1 (Screenroom)  
 Operator: Craig B  
 Test Specification:  
 Comment: Line 2  
 Date: 01-17-2008

**SCAN TABLE: "Line Cond Scrn RmFin"**

Short Description:		Line Conducted Emissions					Transducer
Start	Stop	Step	Detector	Meas. Time	IF Bandw.		
150.0 kHz	30.0 MHz	4.0 kHz	QuasiPeak	5.0 s	9 kHz	LISN DLS#128	
CISPR AV							



**MEASUREMENT RESULT: "Nep2wL2\_fin"**

1/17/2008 1:22PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.162000	52.30	11.4	65	13.1	QP	---	---
0.502000	37.10	10.3	56	18.9	QP	---	---
0.662000	32.80	10.2	56	23.2	QP	---	---
1.902000	36.10	10.3	56	19.9	QP	---	---
26.106000	40.90	11.8	60	19.1	QP	---	---
27.122000	40.10	11.9	60	19.9	QP	---	---
27.462000	43.10	12.0	60	16.9	QP	---	---
27.814000	45.40	12.0	60	14.6	QP	---	---

**MEASUREMENT RESULT: "Nep2wL2\_fin2"**

1/17/2008 1:22PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.502000	34.60	10.3	46	11.4	CAV	---	---
0.866000	33.60	10.2	46	12.4	CAV	---	---
1.558000	32.20	10.3	46	13.8	CAV	---	---
2.014000	32.50	10.3	46	13.5	CAV	---	---
2.678000	33.30	10.4	46	12.7	CAV	---	---
4.946000	30.70	10.4	46	15.3	CAV	---	---
26.766000	20.60	11.9	50	29.4	CAV	---	---
27.814000	24.50	12.0	50	25.5	CAV	---	---



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## APPENDIX A

### 2.0 SPURIOUS EMISSIONS AT ANTENNA TERMINALS – PART 15.247(c)

Spurious conducted emissions were measured at the antenna terminals. Plots were made showing the amplitude of each harmonic emission with the equipment operated. As shown by the radiated charts there was no reason to believe that there were any spurious emissions other than the harmonics that were than individually investigated when doing the conducted test at the antenna terminals. Measurements were made up to the 10<sup>th</sup> harmonic of the fundamental.

The allowed emissions for transmitters operating in the 2400 MHz - 2483.5 MHz bands for Neptune 2- Wireless equipment are found under Part 15, Section 15.247(c). This paragraph states that in any 100 kHz bandwidth outside the frequency band which the spread spectrum intentional radiator is operating, the radio frequency power produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

**NOTE: See the following pages for the data and graphs of the actual measurements made:**



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APPENDIX A

CONDUCTED EMISSION DATA AND GRAPH(S)

TAKEN FOR

SPURIOUS EMISSION MEASUREMENTS MADE

AT THE ANTENNA TERMINALS

PART 15.247(c)





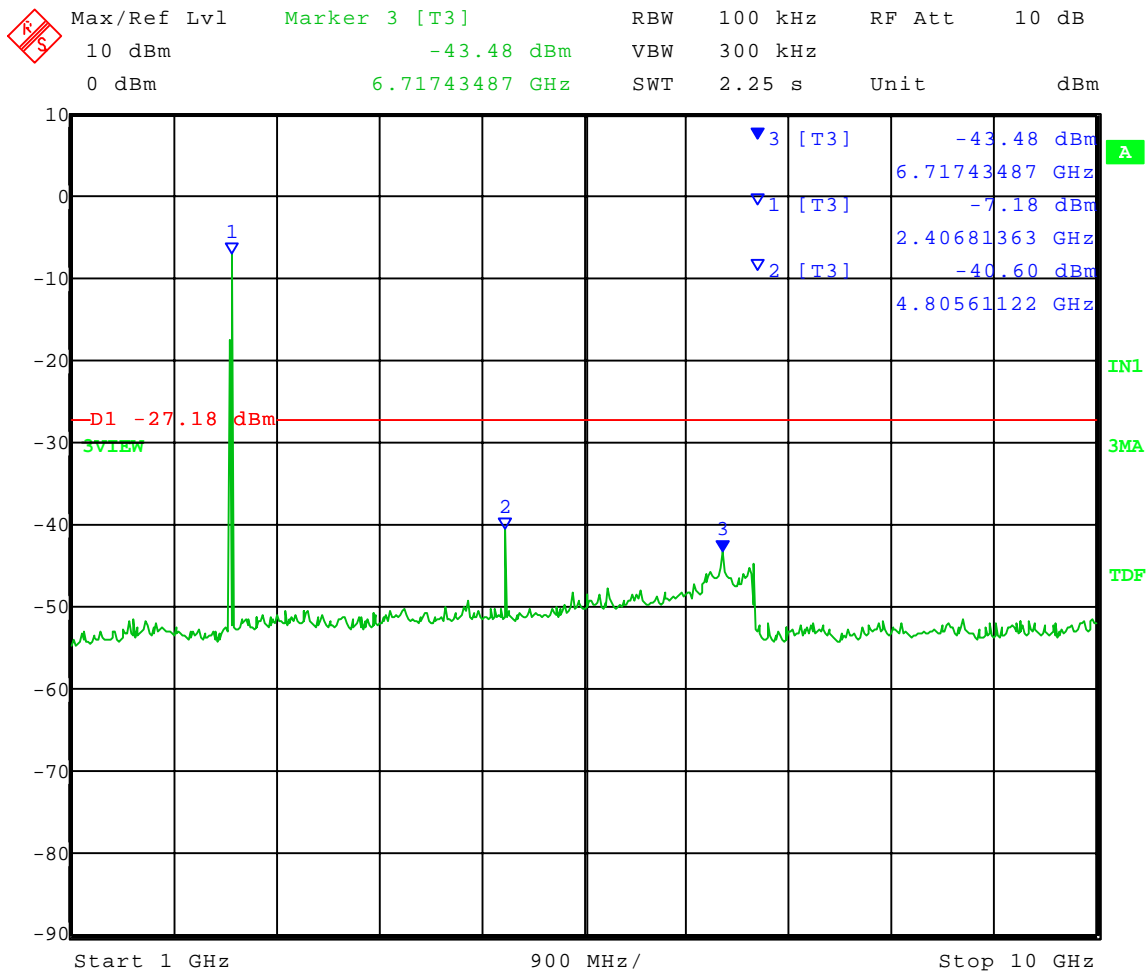
Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 12-06-2007  
 Company: Stryker Instruments  
 EUT: Neptune 2 wireless  
 Test: Spurious Emissions - Conducted  
 Operator: Craig B  
 Comment: Low Channel Transmit = 2.405 GHz  
 Frequency Range: 1 to 10 GHz  
 Limit = -27.18 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.DEC.2007 14:19:50







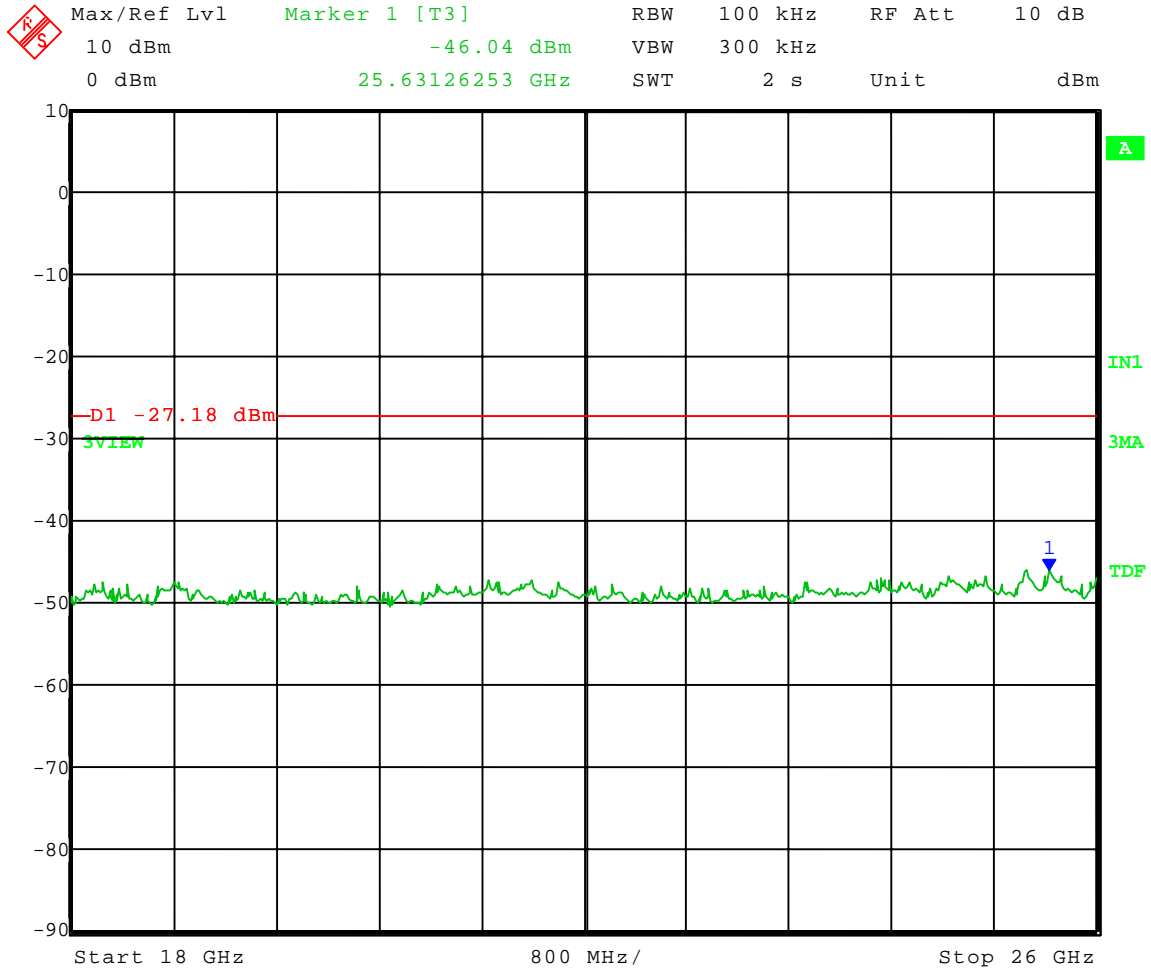
Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

### APPENDIX A

Test Date: 12-06-2007  
Company: Stryker Instruments  
EUT: Neptune 2 wireless  
Test: Spurious Emissions - Conducted  
Operator: Craig B  
Comment: **Low Channel** Transmit = 2.405 GHz  
Frequency Range: **18 to 26 GHz**  
Limit = -27.18 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.DEC.2007 14:22:33





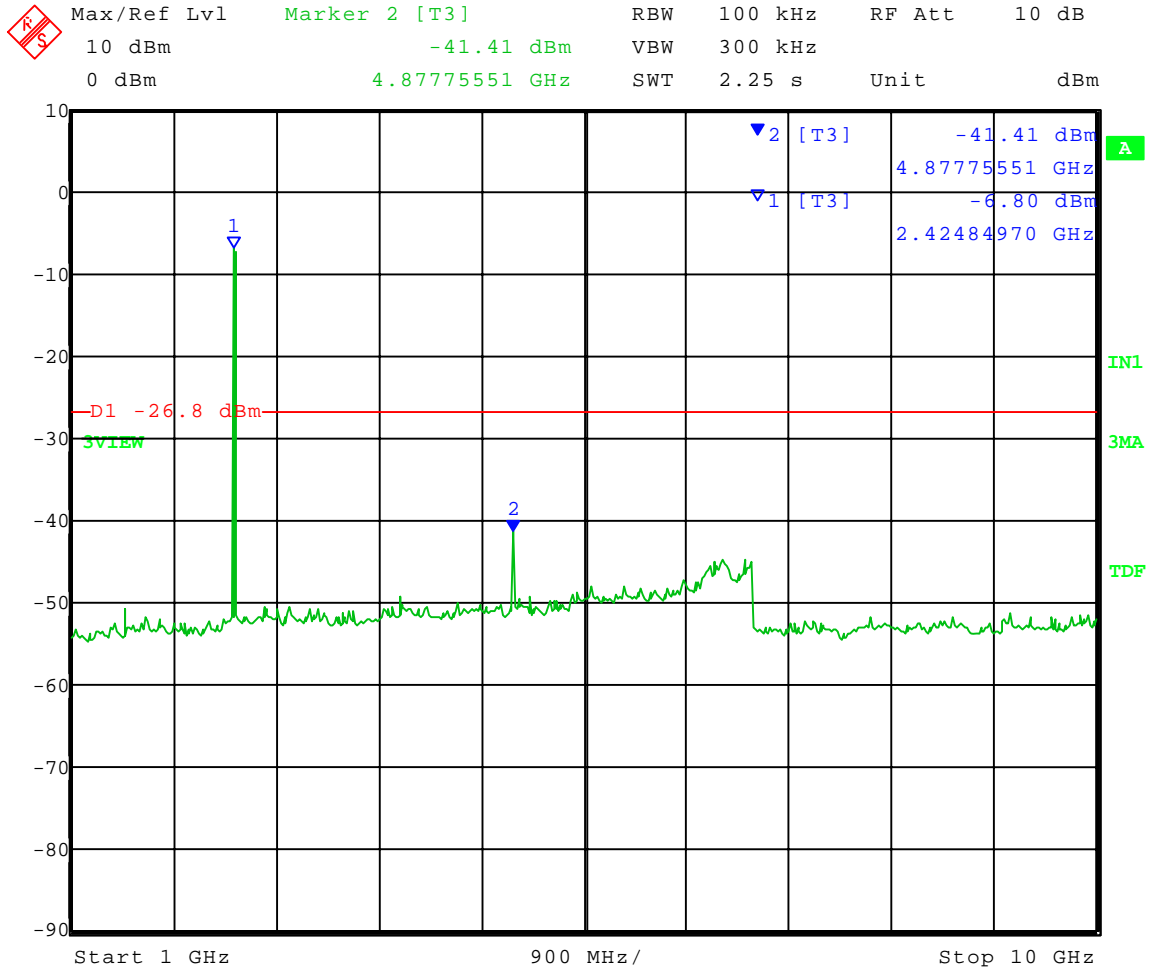
Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 12-06-2007  
 Company: Stryker Instruments  
 EUT: Neptune 2 wireless  
 Test: Spurious Emissions - Conducted  
 Operator: Craig B  
 Comment: Middle Channel Transmit = 2.440 GHz  
 Frequency Range: 1 to 10 GHz  
 Limit = -26.80 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.DEC.2007 14:25:39





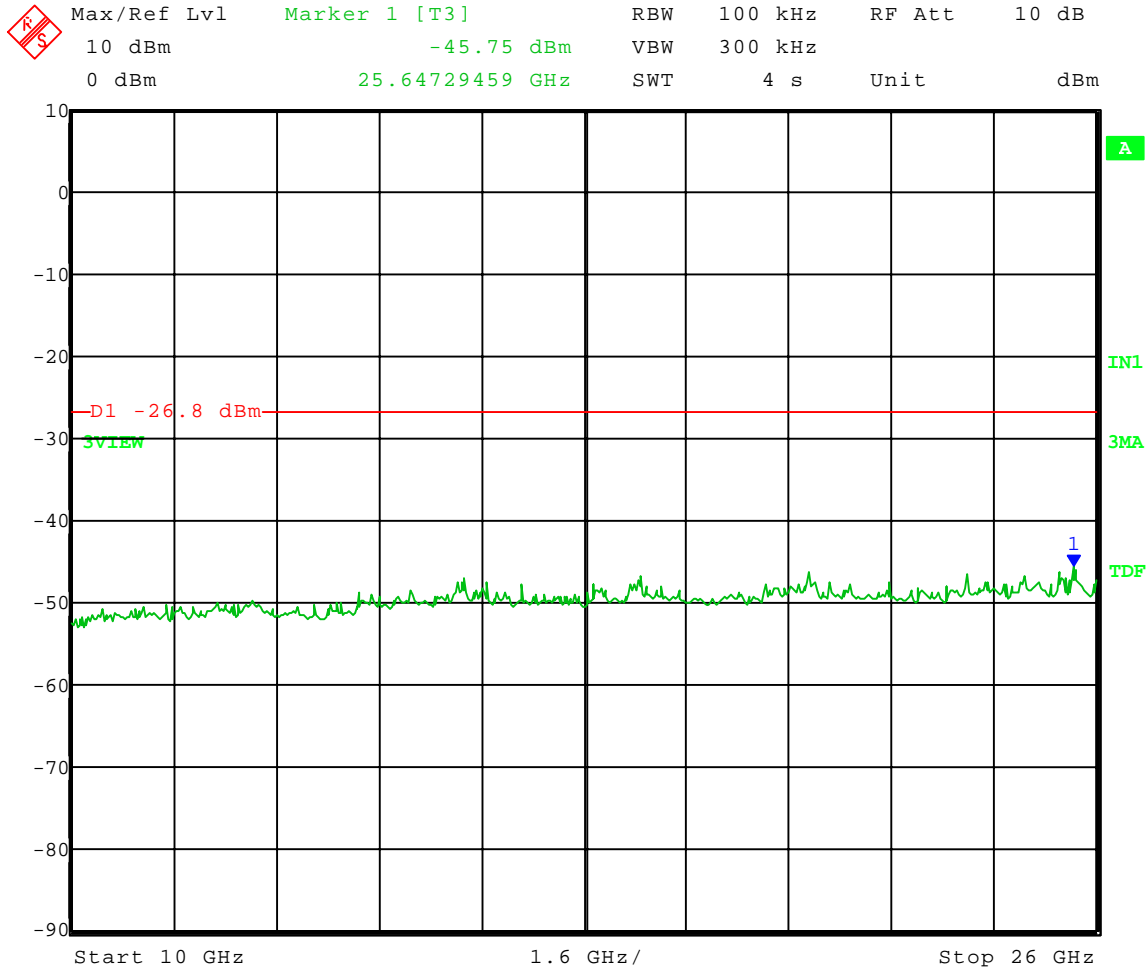
Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

### APPENDIX A

Test Date: 12-06-2007  
Company: Stryker Instruments  
EUT: Neptune 2 wireless  
Test: Spurious Emissions - Conducted  
Operator: Craig B  
Comment: Middle Channel Transmit = 2.440 GHz  
Frequency Range: 18 to 26 GHz  
Limit = -26.80 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.DEC.2007 14:28:08





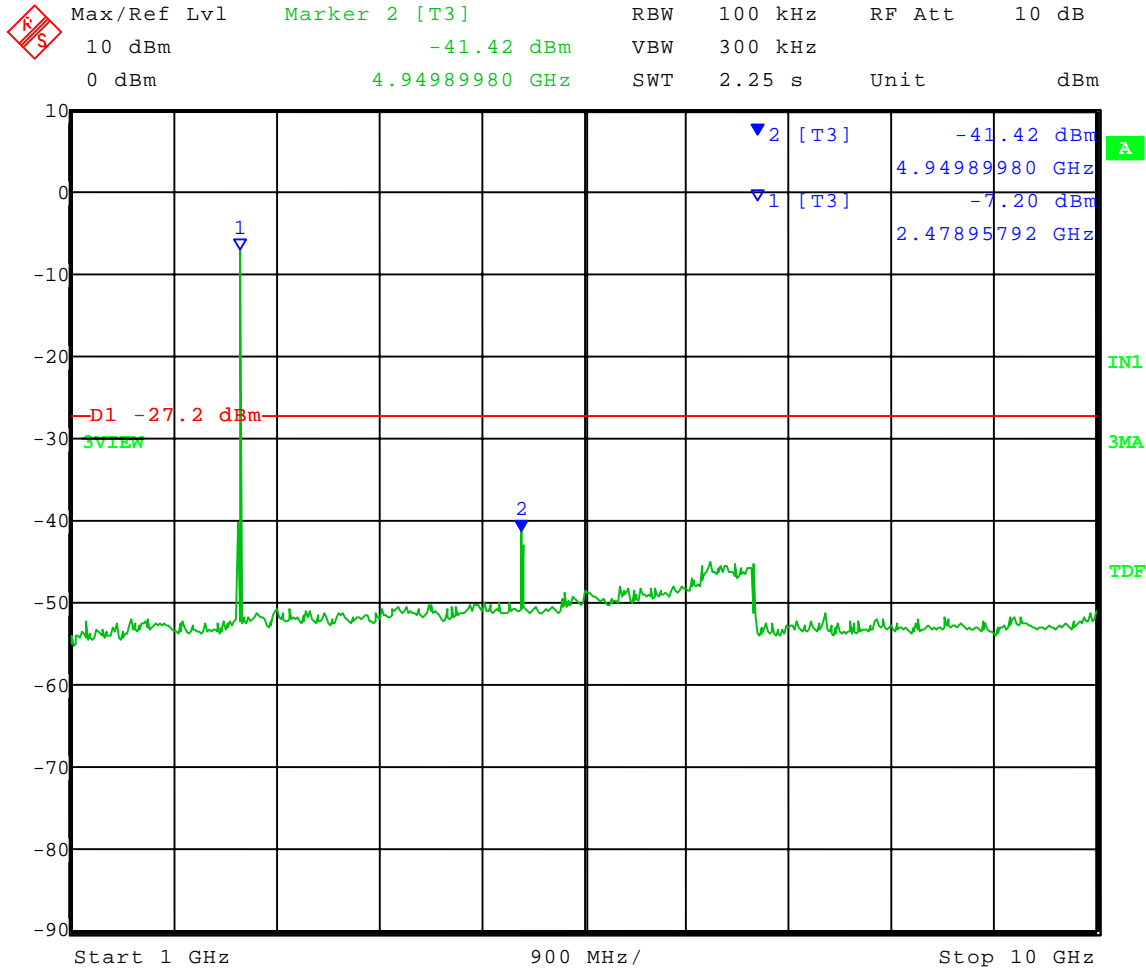
Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 12-06-2007  
 Company: Stryker Instruments  
 EUT: Neptune 2 wireless  
 Test: Spurious Emissions - Conducted  
 Operator: Craig B  
 Comment: **High Channel** Transmit = 2.480 GHz  
 Frequency Range: **1 to 10 GHz**  
 Limit = -27.20 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.DEC.2007 14:31:42





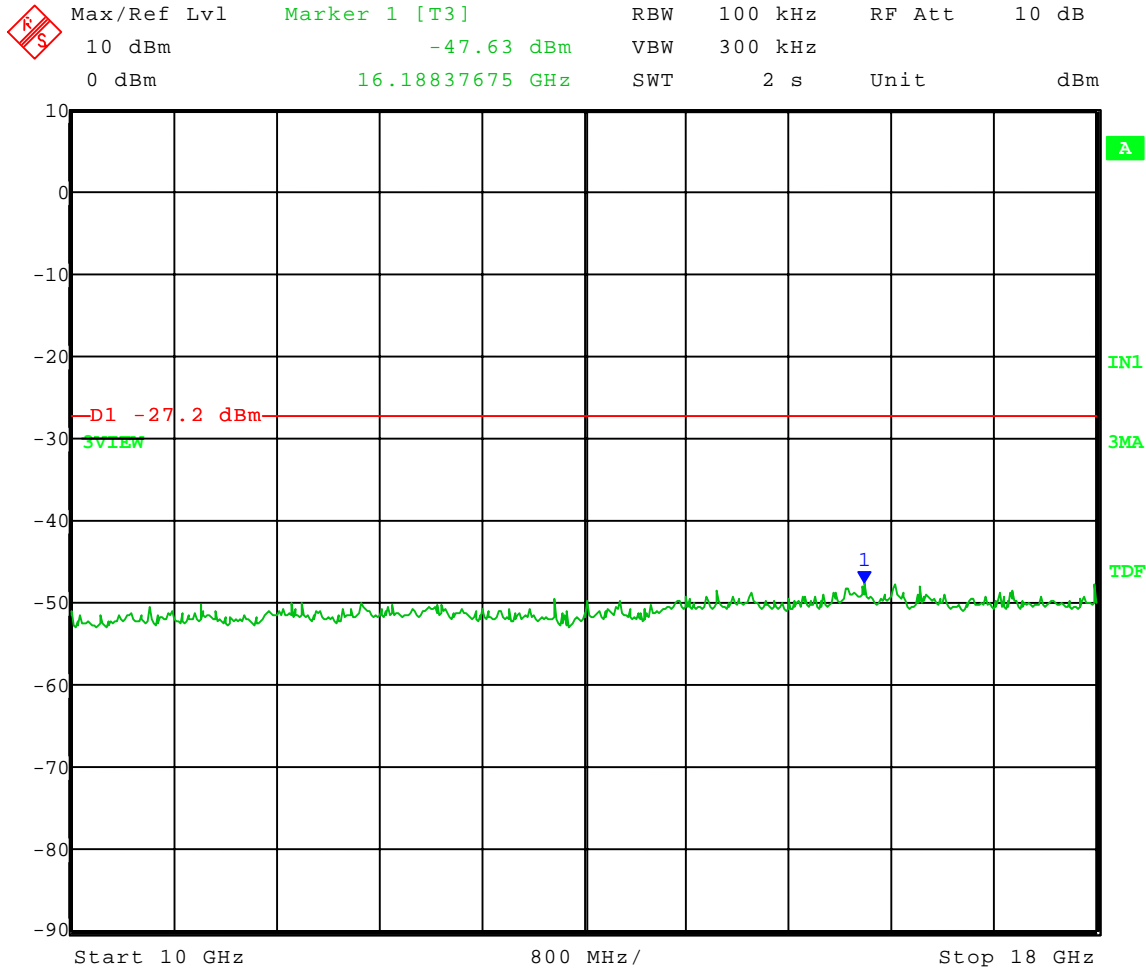
Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

### APPENDIX A

Test Date: 12-06-2007  
 Company: Stryker Instruments  
 EUT: Neptune 2 wireless  
 Test: Spurious Emissions - Conducted  
 Operator: Craig B  
 Comment: **High Channel** Transmit = 2.480 GHz  
 Frequency Range: **10 to 18 GHz**  
 Limit = -27.20 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.DEC.2007 14:32:52



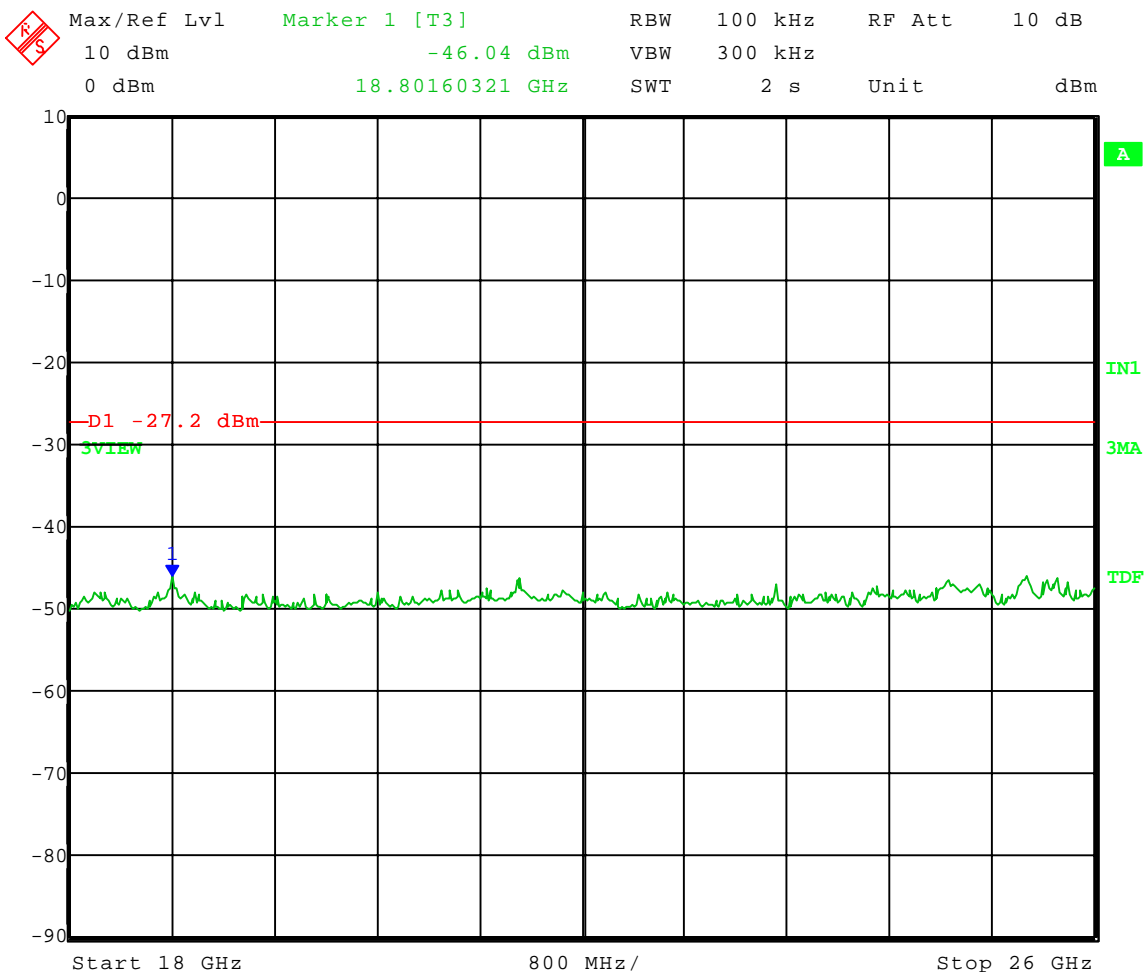
Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 12-06-2007  
Company: Stryker Instruments  
EUT: Neptune 2 wireless  
Test: Spurious Emissions - Conducted  
Operator: Craig B  
Comment: **High Channel** Transmit = 2.480 GHz  
Frequency Range: **18 to 26 GHz**  
Limit = -27.20 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.DEC.2007 14:34:44

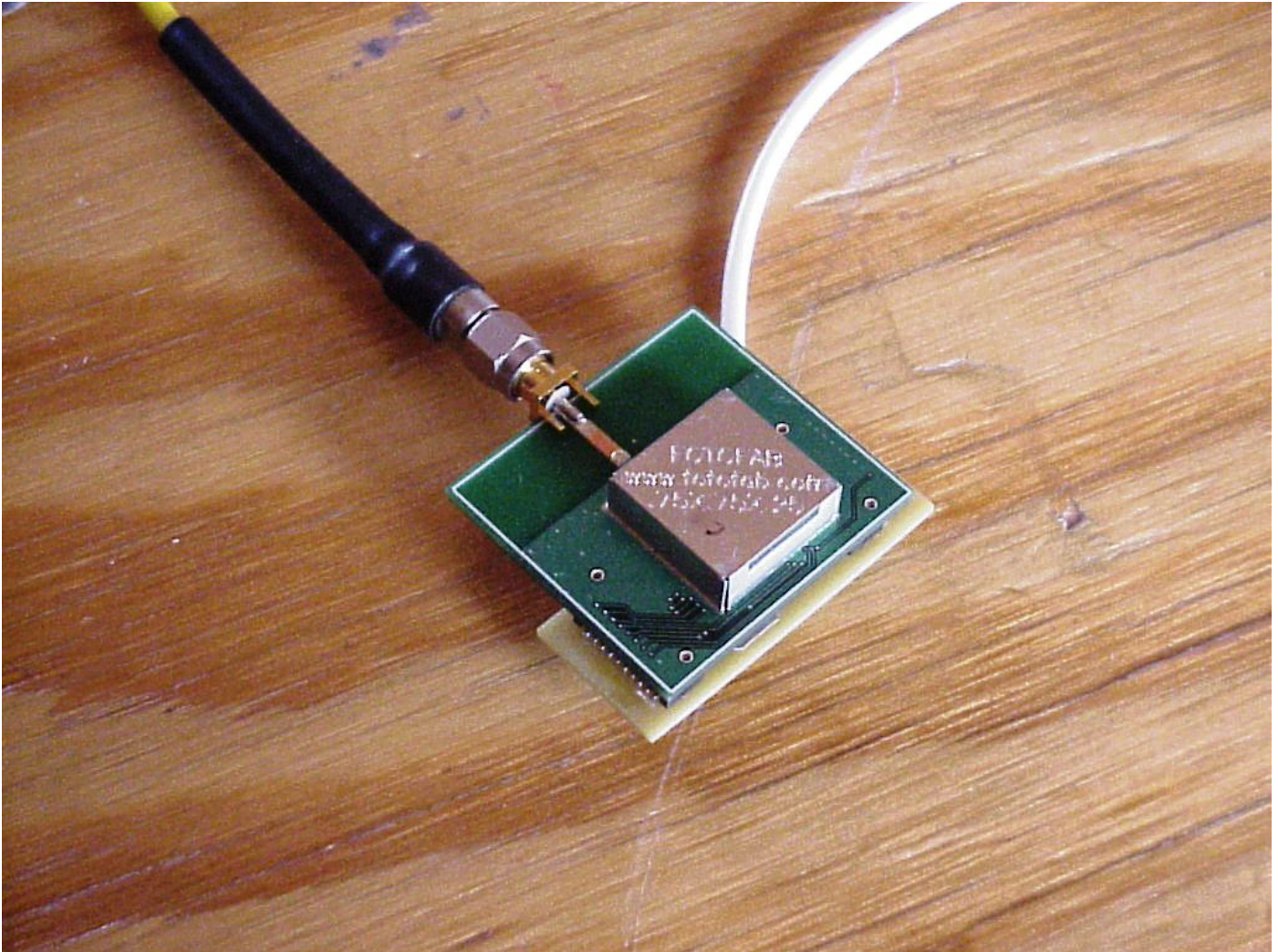


Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

### 3.0 CONDUCTED EMISSIONS (ANTENNA TERMINAL) PHOTOS TAKEN DURING TESTING





Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

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## APPENDIX A

### 4.0 RESTRICTED BANDS

As stated in Section 15.205a, the fundamental emission from the Neptune 2- Wireless shall not fall within any of the bands listed below:

Frequency in MHz	Frequency in MHz	Frequency in MHz	Frequency in GHz
.0900 to .1100	162.0125 to 167.17	2310.0 to 2390	9.30 to 9.50
.4900 to .5100	167.7200 to 173.20	2483.5 to 2500	10.60 to 12.70
2.1735 to 2.1905	240.000 to 285.00	2655.0 to 2900	13.25 to 13.40
8.362 to 8.3660	322.200 to 335.40	3260.0 to 3267	14.47 to 14.50
13.36 to 13.410	399.900 to 410.00	3332.0 to 3339	15.35 to 16.20
25.50 to 25.670	608.000 to 614.00	3345.8 to 3358	17.70 to 21.40
37.50 to 38.250	960.000 to 1240.00	3600.0 to 4400	22.01 to 23.13
73.00 to 75.500	1300.000 to 1427.00	4500.0 to 5250	23.60 to 24.00
108.00 to 121.94	1435.000 to 1626.50	5350.0 to 5450	31.20 to 31.80
123.00 to 138.00	1660.000 to 1710.00	7250.0 to 7750	36.43 to 36.50
149.90 to 150.00	1718.800 to 1722.20	8025.0 to 8500	ABOVE 38.60
156.70 to 156.90	2200.000 to 2300.00	9000.0 to 9200	

#### NOTE:

The noise floor within the Restricted Bands for the EMC Receiver will typically lay 20 dB below the limit.

### 5.0 BAND EDGE AND RESTRICTED BAND COMPLIANCE

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the attenuation below the general limits specified in 15.209 is not required.

The field strength of any **radiated emissions** which fall within the restricted bands shall not exceed the general radiated emissions limits as stated Section 15.209.

**NOTE:** See the following page(s) for the graph(s) made showing compliance for Band Edge and Restricted Band:



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Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

APPENDIX A

DATA AND GRAPH(S) TAKEN SHOWING  
THE BAND EDGE CONDUCTED COMPLIANCE  
PART 15.247(c)



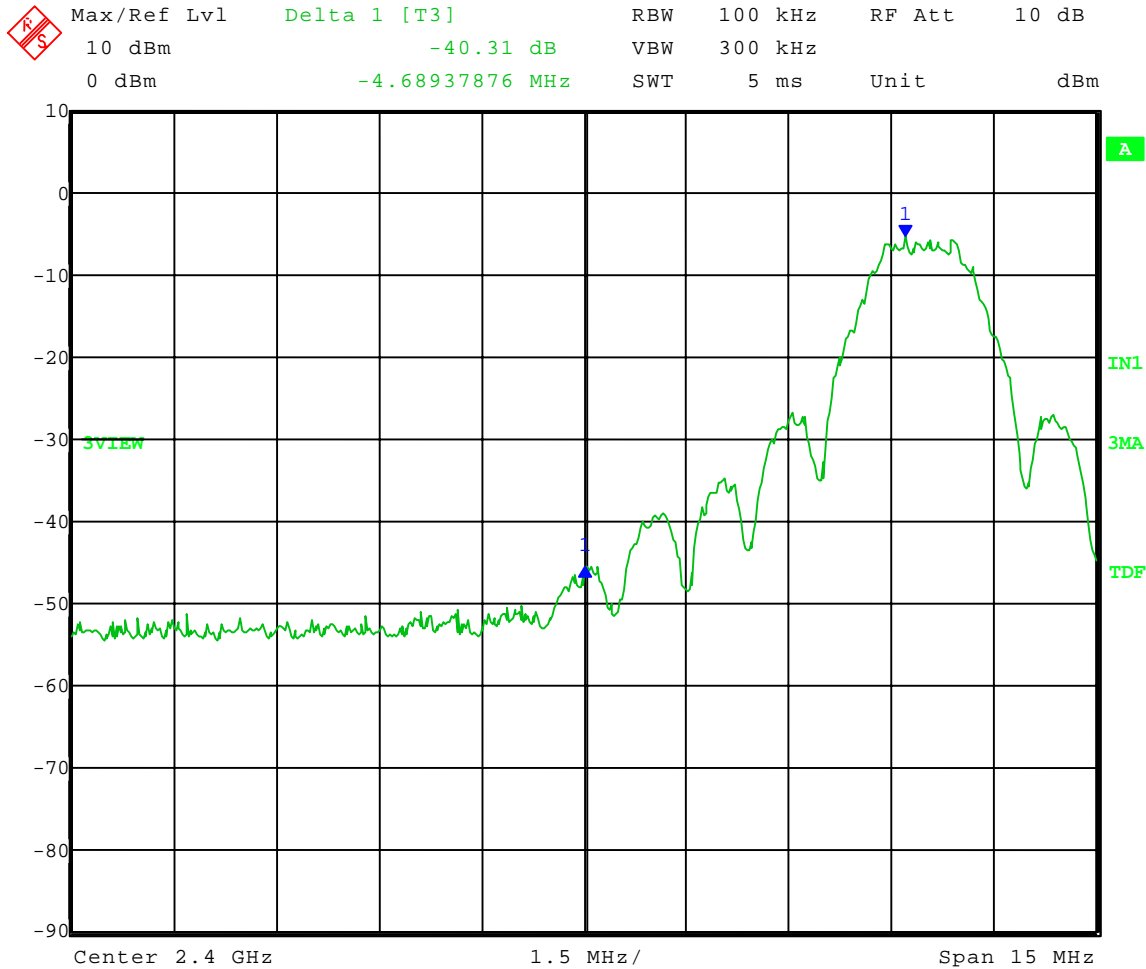
Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 12-06-2007  
 Company: Stryker Instruments  
 EUT: Neptune 2 wireless  
 Test: Low Band-Edge Compliance - **Conducted**  
 Operator: Craig B  
 Comment: **Low Channel:** Frequency – 2.405 GHz

Band-Edge Frequency = 2.4 GHz  
 Band-Edge > 20 dB Below Peak In-Band Emission



Date: 6.DEC.2007 13:35:06



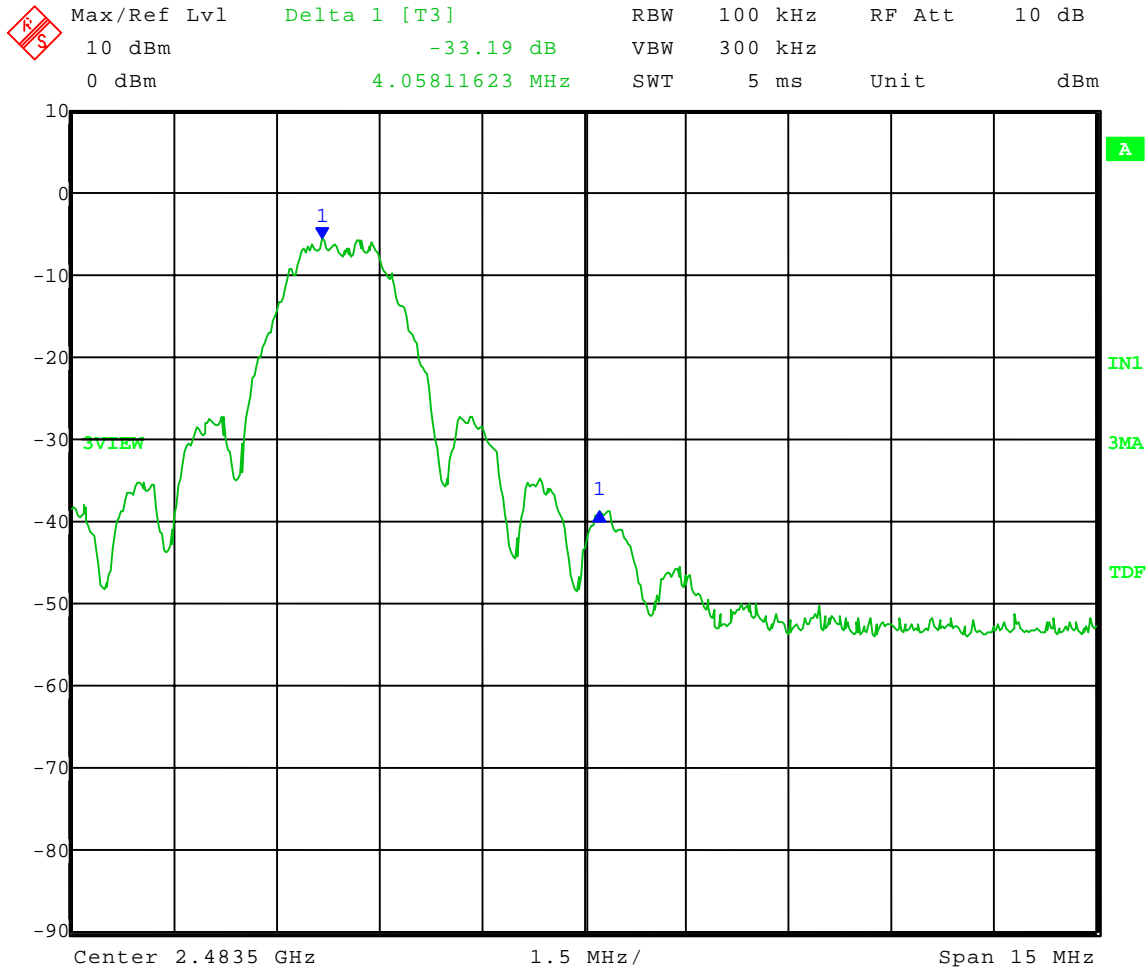
Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

### APPENDIX A

Test Date: 12-06-2007  
Company: Stryker Instruments  
EUT: Neptune 2 wireless  
Test: Upper Band-Edge Compliance - **Conducted**  
Operator: Craig B  
Comment: **High Channel:** Frequency – 2.480 GHz

Band-Edge Frequency = 2.4835 GHz  
Band-Edge > 20 dB Below Peak In-Band Emission



Date: 6.DEC.2007 13:37:25



1250 Peterson Dr., Wheeling, IL 60090

Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

APPENDIX A

DATA AND GRAPH(S) TAKEN SHOWING THE  
UPPER BAND EDGE RADIATED COMPLIANCE  
PART 15.247(c)  
BAND EDGE FALLS ON THE RESTRICTED  
FREQUENCY BAND





Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

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## APPENDIX A

### Radiated Upper Band-Edge measurement

Test Procedure: "Measurement of Digital Transmission Systems Operating under Section 15.247 (March 23, 2005)

The EUT was investigated at the low and high channels of operation to determine band-edge compliance. Because the upper band-edge coincides with a restricted band, bandedge compliance for the upper band-edge was determined using the radiated mark-delta method. The radiated field strength of the fundamental emission was first determined and then the mark-delta method was used to determine the field strength of the band-edge emissions. The lower band-edge compliance was determined using the marker-delta method in which the radio frequency power that is produced by the EUT is at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of desired power.

#### Upper Band-Edge Marker Delta Method

Frequency (MHz)	Antenna Polarity (H/V)	Fundamental Field Strength (dB $\mu$ V/m)	Duty Cycle Correction (dB)	Delta-Marker (dB)	Band-Edge Field Strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
2480 (Peak)	H	98.13	N/A	-32.22	65.91	74	8.09
2480 (Avg)	H	95.48	-26.7	-32.22	36.56	54	17.44

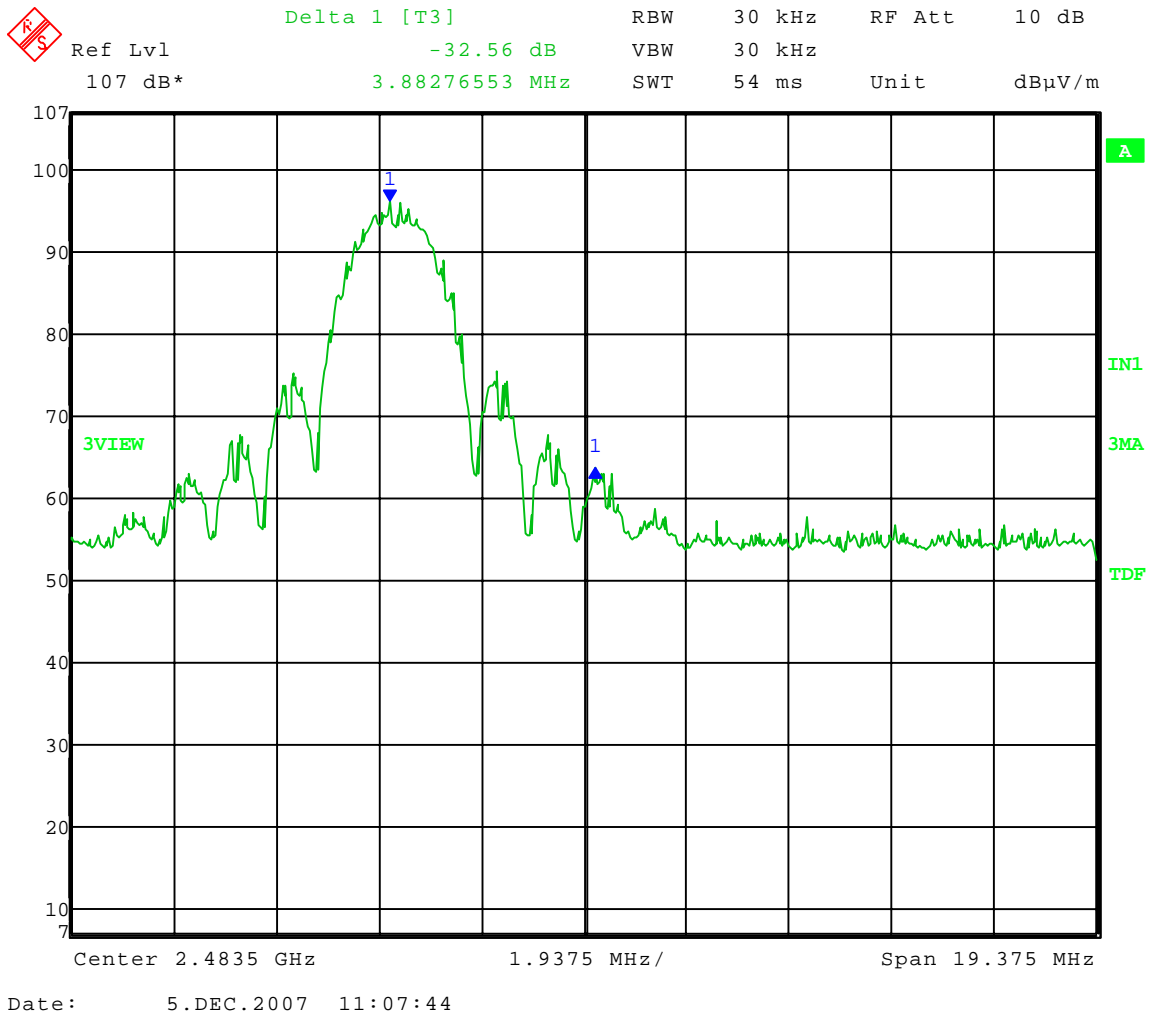


Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

### APPENDIX A

Test Date: 12-06-2007  
Company: Stryker Instruments  
EUT: Neptune 2 wireless  
Test: Upper Band-Edge Radiated – Marker Delta Method  
Operator: Craig B  
Comment: **High Channel**: Frequency – 2.480 GHz





1250 Peterson Dr., Wheeling, IL 60090

Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

APPENDIX A

DATA AND GRAPH(S) TAKEN SHOWING

THE RESTRICTED BAND COMPLIANCE

PART 15.247(c)



Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

**Radiated Spurious Emissions in Restricted Bands**

**Tested at a 3 Meter Distance**

**EUT:** Neptune 2 wireless  
**Manufacturer:** Stryker Instruments  
**Operating Condition:** 68 deg F; 22% R.H.  
**Test Site:** Site 3  
**Operator:** Craig B  
**Test Specification:** FCC Part 15.247(d) and FCC Part 15.205  
**Comment:**  
**Date:** 12/05/2007

- Notes:** (1) Peak measurements were taken with RBW = 1 MHz, VBW = 3 MHz  
 (2) Average measurements were taken with RBW = 1 MHz, VBW = 10 Hz  
 (3) All other restricted band emissions at least 20 dB under the limit.

**Channel 0B:**

Frequency (GHz)	Measurement Type	Ant. Pol.	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Duty Cycle Correction (dB)	Final Corrected (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Comment
4.81	Average	Vert	42.22	32.82	-32.2	42.84	26.7	16.14	54	37.86	Res. Band
4.81	Max Peak	Vert	51.06	32.82	-32.2	51.68	---	51.68	74	22.32	Res. Band
4.81	Average	Horz	43.8	32.82	-32.2	44.42	26.7	17.72	54	-36.28	Res. Band
4.81	Max Peak	Horz	51.66	32.82	-32.2	52.28	---	52.28	74	21.72	Res. Band



Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

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## APPENDIX A

### Radiated Spurious Emissions in Restricted Bands

#### Tested at a 3 Meter Distance

**EUT:** Neptune 2 wireless  
**Manufacturer:** Stryker Instruments  
**Operating Condition:** 68 deg F; 22% R.H.  
**Test Site:** Site 3  
**Operator:** Craig B  
**Test Specification:** FCC Part 15.247(d) and FCC Part 15.205  
**Comment:**  
**Date:** 12/05/2007

- Notes:** (1) Peak measurements were taken with RBW = 1 MHz, VBW = 3 MHz  
 (2) Average measurements were taken with RBW = 1 MHz, VBW = 10 Hz  
 (3) All other restricted band emissions at least 20 dB under the limit.

#### Channel 12:

Frequency (GHz)	Measurement Type	Ant. Pol.	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Duty Cycle Correction (dB)	Final Corrected (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Comment
4.88	Average	Vert	43.45	32.96	-32.1	44.31	26.7	17.61	54	36.39	Res. Band
4.88	Max Peak	Vert	50.39	32.96	-32.1	51.25	---	51.25	74	22.75	Res. Band
4.88	Average	Horz	43.97	32.96	-32.1	44.83	26.7	18.13	54	35.87	Res. Band
4.88	Max Peak	Horz	51.27	32.96	-32.1	52.13	---	52.13	74	21.87	Res. Band



Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

**Radiated Spurious Emissions in Restricted Bands**

**Tested at a 3 Meter Distance**

**EUT:** Neptune 2 wireless  
**Manufacturer:** Stryker Instruments  
**Operating Condition:** 68 deg F; 22% R.H.  
**Test Site:** Site 3  
**Operator:** Craig B  
**Test Specification:** FCC Part 15.247(d) and FCC Part 15.205  
**Comment:**  
**Date:** 12/05/2007

- Notes:** (1) Peak measurements were taken with RBW = 1 MHz, VBW = 3 MHz  
 (2) Average measurements were taken with RBW = 1 MHz, VBW = 10 Hz  
 (3) All other restricted band emissions at least 20 dB under the limit.

**Channel 1A:**

Frequency (GHz)	Measurement Type	Ant. Pol.	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Duty Cycle Correction (dB)	Final Corrected (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Comment
4.96	Average	Vert	43.84	33.12	-32.0	44.96	26.7	18.26	54	35.74	Res. Band
4.96	Max Peak	Vert	51.48	33.12	-32.0	52.60	---	52.60	74	21.4	Res. Band
4.96	Average	Horz	44.36	33.12	-32.0	45.48	26.7	18.78	54	35.22	Res. Band
4.96	Max Peak	Horz	51.05	33.12	-32.0	52.17	---	52.17	74	21.83	Res. Band



Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

### 6.0 FIELD STRENGTH OF FUNDAMENTAL AND SPURIOUS EMISSION MEASUREMENTS

The radiated measurements made at D.L.S. Electronic Systems, Inc., for the Neptune 2-Wireless, Model Number: 0702-014-028, are shown in tabulated and graph form. Preliminary radiation measurements were performed at a 3 meter test distance with the limits adjusted linearly when required. The frequency range from 30 MHz to over 960 MHz, depending upon the fundamental frequency as stated in Part 15.33a, was automatically scanned and plotted at various angles.

Measurements for the Neptune 2- Wireless were made up to 26000 MHz, in accordance with Section 15.33a for Intentional Radiators with a fundamental frequency of 2480 MHz. For intentional radiators, the frequency range to be investigated is determined by the lowest radio frequency generated by the device without going below 30 MHz, up to at least the tenth harmonic of the highest fundamental frequency or 10 GHz, whichever is lower. At those frequencies where significant signals were detected, measurements were made over the entire frequency range specified in FCC Part 15, Subpart C, Section 15.247 at the open field test site, located at Genoa City, Wisconsin, FCC file number **31040/SIT**. When required, limits were extrapolated using a linear extrapolation.

All signals in the frequency range of 30 MHz to 2000 MHz were measured with a Biconical Antenna or tuned dipoles and from 200 MHz to 1000 MHz, a Log Periodic or Tuned Dipoles were used. From 1000 MHz to 25 GHz Horn Antennas were used. During the test the equipment was rotated and the antenna was raised and lowered from 1 meter to 4 meters to find the maximum level of emissions. In order to find maximum emissions, the cables were moved through all the positions the equipment would be expected to experience in the field. The EUT, peripheral equipment and cables were configured to meet the conditions in ANSI C63.4-2003, Clauses 6 & 8. Tests were made with the receive antenna(s) in both the horizontal and vertical planes of polarization. In each case, the table was rotated to find the maximum emissions.



Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

### 6.0 FIELD STRENGTH OF FUNDAMENTAL AND SPURIOUS EMISSION MEASUREMENTS (CON'T)

As stated in Section 15.247(b) the allowed maximum peak output power of the transmitter shall not exceed 1 Watt. In any 100 kHz bandwidth outside these frequency bands (the power that is produced by the modulation products of the spreading sequence), the information sequence and the carrier frequency shall be either at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Attenuation below the general limits specified in 15.209 is not required.

Field strength limits are at a distance of 3 meters. The emission limits shown are based on measurement instrumentation employing an average detector.

Emissions radiated outside of the specified frequency bands, except for harmonics are attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Preliminary radiated emission measurements were performed at a 3 meter test distance. The frequency range from 30 MHz to 1000 MHz was automatically scanned and plotted at various angles.

#### **NOTE:**

**All radiated emissions measurements were made at a test room temperature of 70°F at 24% relative humidity.**





1250 Peterson Dr., Wheeling, IL 60090

Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

APPENDIX A

RADIATED DATA AND GRAPH(S) TAKEN FOR  
FIELD STRENGTH OF FUNDAMENTAL AND  
SPURIOUS EMISSION MEASUREMENTS

PART 15.247

**FCC Part 15 Class B**

**Electric Field Strength**

EUT: Neptune 2 wireless  
Manufacturer: Stryker Instruments  
Operating Condition: 70 deg. F; 24% R.H.  
Test Site: DLS O.F. Site 3  
Operator: Craig B  
Test Specification:  
Comment: Tx and Rx; Low, Mid, and High channels  
Date: 12-05-2007

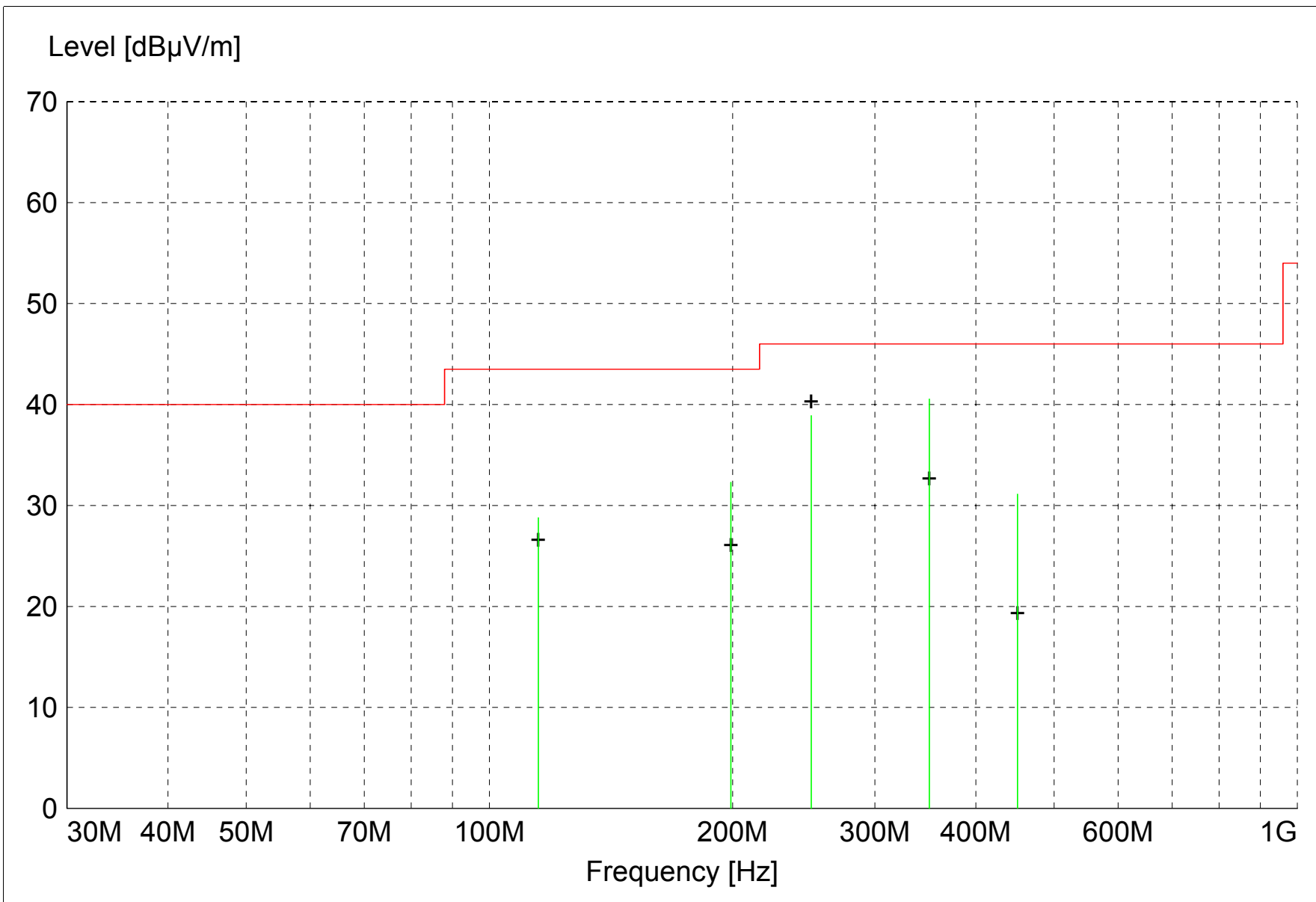
**TEXT: "Site 3 MidV 3M"**

Short Description: Test Set-up Vert30-1000MHz  
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/005

Antennas ---  
Biconical -- EMCO 3104C SN: 9701-4785  
Log Periodic -- EMCO 3146 SN: 9702-4895

Pre-Amp --- Rohde&Schwarz TS-PR10 SN: 032001/005

TEST SET-UP: EUT Measured at 3 Meters with VERTICAL Antenna Polarization



||||| MES A1258\_F1V\_Quasi-Peak  
 + + · MES A1258\_F1V\_Peak\_List  
 — LIM FCC ClassB F QP/AV Field Strength FCC Class B 3m

**MEASUREMENT RESULT: "A1258\_F1V\_Final"**

12/5/2007 3:37PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dB $\mu$ V	Factor	Loss	Level	dB $\mu$ V/m	dB	Ant.	Angle	Detector	
		dB $\mu$ V/m	dB	dB $\mu$ V/m	dB $\mu$ V/m		m	deg		
350.310000	47.74	14.25	-21.5	40.5	46.0	5.5	1.00	225	QUASI-PEAK	From eval board; not EUT
250.220000	48.95	11.81	-21.9	38.9	46.0	7.1	1.00	180	QUASI-PEAK	From eval board; not EUT
198.995000	38.88	16.16	-22.7	32.3	43.5	11.2	1.00	190	QUASI-PEAK	None
114.955000	40.05	12.19	-23.4	28.8	43.5	14.7	1.00	45	QUASI-PEAK	None
450.400000	35.84	16.31	-21.0	31.1	46.0	14.9	1.00	90	QUASI-PEAK	From eval board; not EUT

**FCC Part 15 Class B**

**Electric Field Strength**

EUT: Neptune 2 wireless  
Manufacturer: Stryker Instruments  
Operating Condition: 70 deg. F; 24% R.H.  
Test Site: DLS O.F. Site 3  
Operator: Craig B  
Test Specification:  
Comment: Tx and Rx; Low, Mid, and High channels  
Date: 12-05-2007

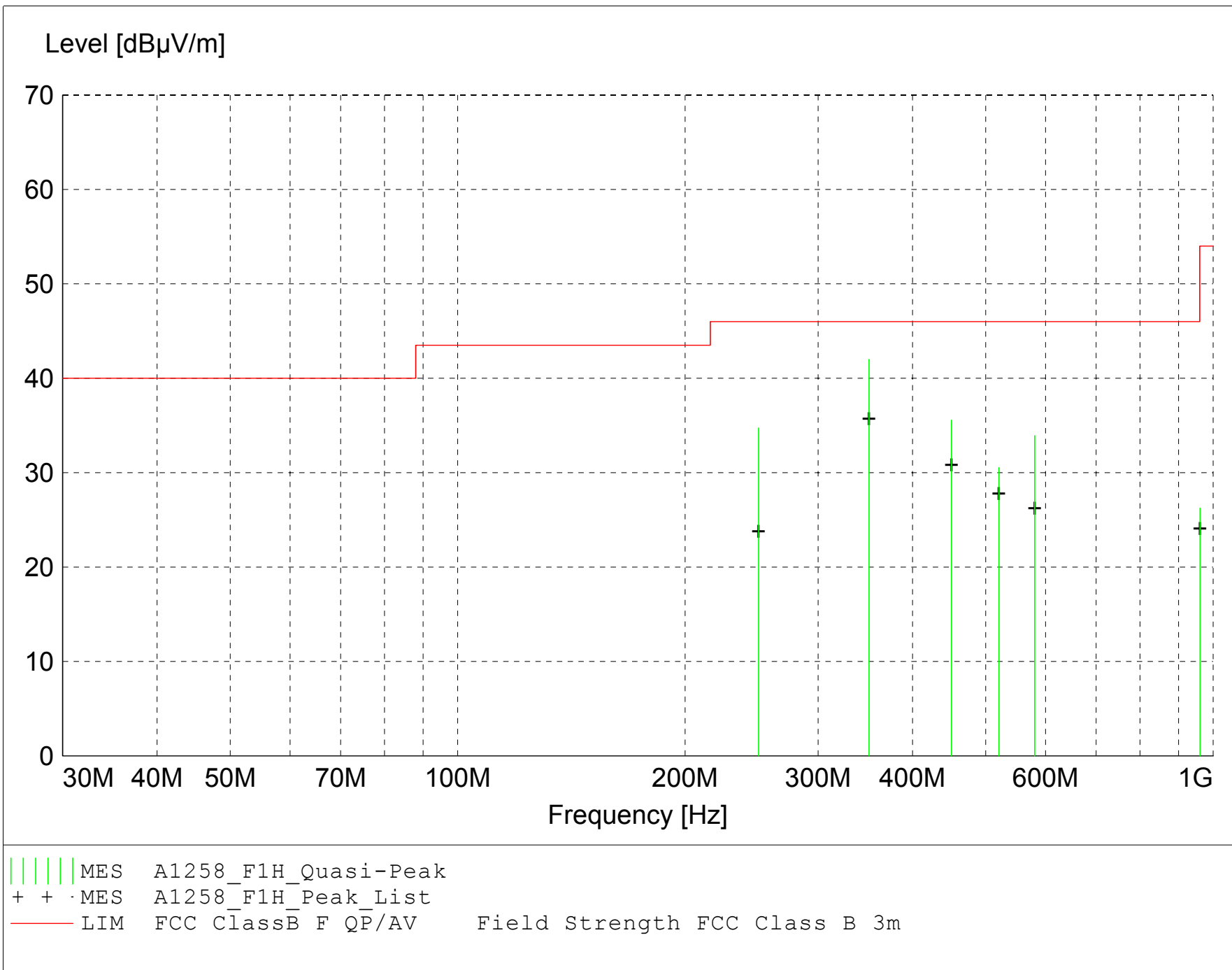
**TEXT: "Site 3 MidH 3M"**

Short Description: Test Set-up Horz30-1000MHz  
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/005

Antennas ---  
Biconical -- EMCO 3104C SN: 9701-4785  
Log Periodic -- EMCO 3146 SN: 9702-4895

Pre-Amp --- Rohde&Schwarz TS-PR10 SN: 032001/005

TEST SET-UP: EUT Measured at 3 Meters with HORIZONTAL Antenna Polarization



**MEASUREMENT RESULT: "A1258\_F1H\_Final"**

12/5/2007 3:46PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
350.300000	49.21	14.25	-21.5	42.0	46.0	4.0	2.50	270	QUASI-PEAK	From eval board; not EUT
450.400000	40.28	16.31	-21.0	35.6	46.0	10.4	1.20	280	QUASI-PEAK	From eval board; not EUT
250.220000	44.79	11.81	-21.9	34.7	46.0	11.3	2.10	180	QUASI-PEAK	From eval board; not EUT
580.510000	35.97	18.43	-20.5	33.9	46.0	12.1	1.00	0	QUASI-PEAK	From eval board; not EUT
520.460000	33.45	17.98	-20.9	30.5	46.0	15.5	1.00	0	QUASI-PEAK	From eval board; not EUT
960.840000	20.64	23.18	-17.6	26.2	54.0	27.8	1.00	45	QUASI-PEAK	From eval board; not EUT



Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

DLS Electronic Systems, Inc.

Company: Stryker Instruments  
 Operator: Craig B  
 Date of test: 12-05-2007  
 Temperature: 68 deg. F  
 Humidity: 22% R.H.

### EIRP - Substitution Method

Model: Neptune 2 wireless								
Channel: 0B								
Frequency and Polarization (MHz)	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and subst. antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [EIRP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [EIRP] (mW)
2405 vertical	99.15	-6.80	1.85	9.59	0.94	30.00	29.06	1.24
2405 horizontal	101.51	-6.50	1.58	9.59	1.51	30.00	28.49	1.42

EIRP = Signal generator output - cable loss + antenna gain

ERP<sub>(ref. to ½λ dipole)</sub> = Signal generator output - cable loss + antenna gain - 2.15





Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

DLS Electronic Systems, Inc.

Company: Stryker Instruments  
 Operator: Craig B  
 Date of test: 12-05-2007  
 Temperature: 68 deg. F  
 Humidity: 22% R.H.

### EIRP - Substitution Method

Model: <b>Neptune 2 wireless</b>								
Channel: <b>12</b>								
Frequency and Polarization (MHz)	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and subst. antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [EIRP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [EIRP] (mW)
2440 vertical	98.88	-6.80	1.86	9.63	0.97	30.00	29.03	1.25
2440 horizontal	100.36	-6.90	1.86	9.63	0.87	30.00	29.13	1.22

EIRP = Signal generator output - cable loss + antenna gain

ERP<sub>(ref. to ½λ dipole)</sub> = Signal generator output - cable loss + antenna gain - 2.15



Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

DLS Electronic Systems, Inc.

Company: Stryker Instruments  
 Operator: Craig B  
 Date of test: 12-05-2007  
 Temperature: 68 deg. F  
 Humidity: 22% R.H.

### EIRP - Substitution Method

Model: Neptune 2 wireless								
Channel: LA								
Frequency and Polarization (MHz)	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and subst. antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [EIRP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [EIRP] (mW)
2480 vertical	97.50	-7.90	1.86	9.68	-0.08	30.00	30.08	0.98
2480 horizontal	99.26	-7.90	1.86	9.68	-0.08	30.00	30.08	0.98

$EIRP = \text{Signal generator output} - \text{cable loss} + \text{antenna gain}$

$ERP_{(\text{ref. to } \frac{1}{2}\lambda \text{ dipole})} = \text{Signal generator output} - \text{cable loss} + \text{antenna gain} - 2.15$



1250 Peterson Dr., Wheeling, IL 60090

Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

## APPENDIX A

# DUTY CYCLE CORRECTION FACTOR GRAPH

## PART 15.247



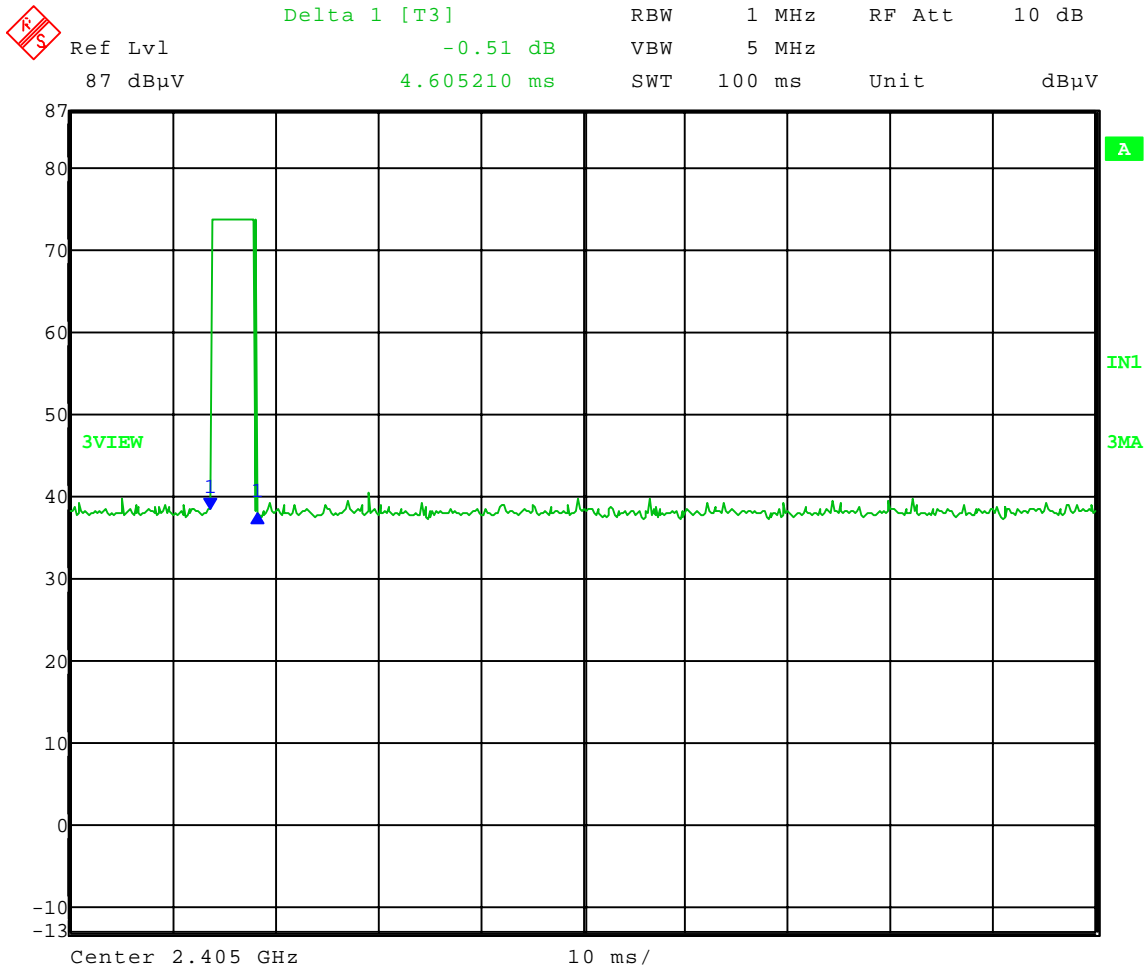
Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 12-05-2007  
 Company: Stryker Instruments  
 EUT: Neptune 2 wireless  
 Test: Duty Cycle  
 Operator: Craig B

Comment: Total on Time = 4.61 ms during 100 ms Sweep  
 $20 \log(4.61 / 100) = -26.7$   
**Duty Cycle Correction Factor = 26.7 dB**



Date: 5.DEC.2007 09:26:23



1250 Peterson Dr., Wheeling, IL 60090

Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

## APPENDIX A

# 6 dB BANDWIDTH GRAPHS

## PART 15.247



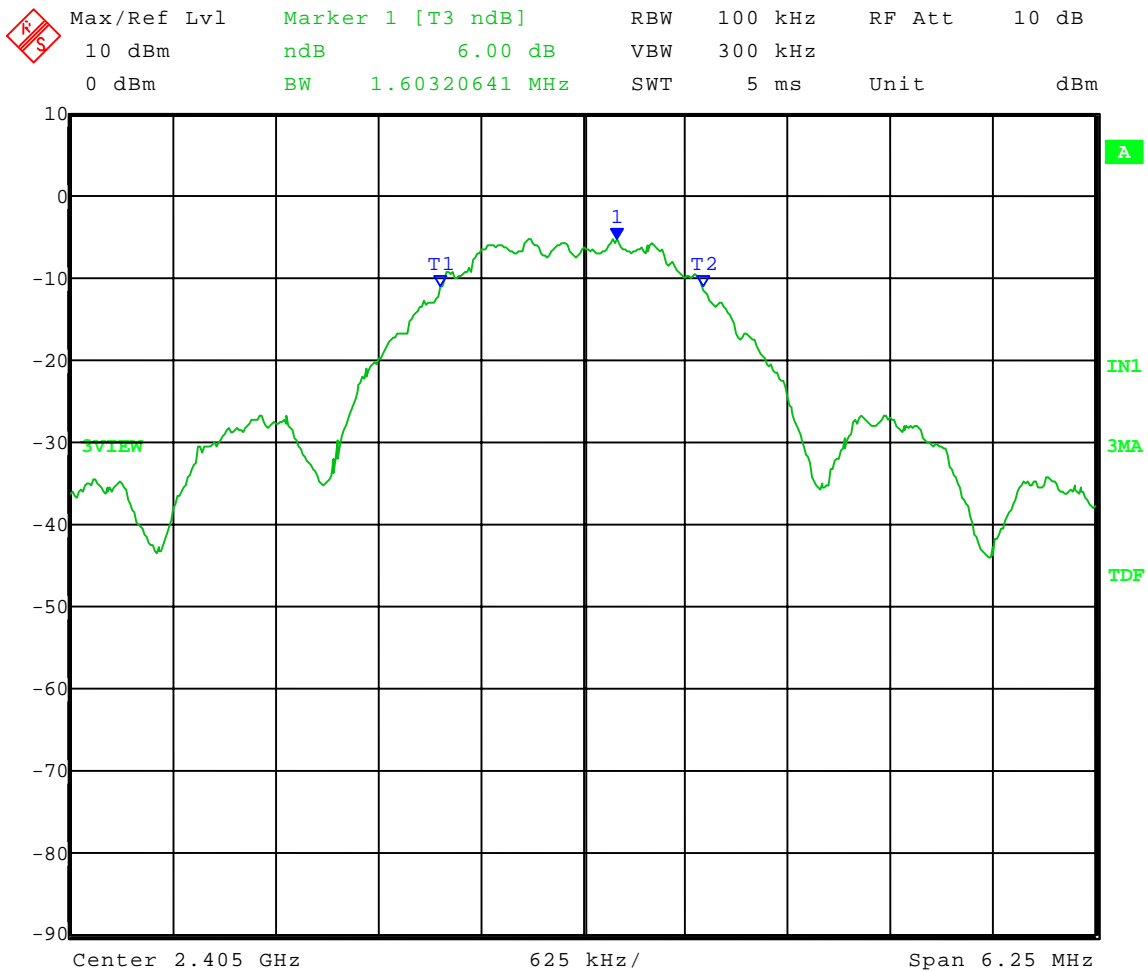
Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

### APPENDIX A

Test Date: 12-06-2007  
Company: Stryker Instruments  
EUT: Neptune 2 wireless  
Test: 6 dB Bandwidth - Conducted  
Operator: Craig B  
Comment: **Low Channel:** Frequency – 2.405 GHz

6 dB Bandwidth = 1.603 MHz



Date: 6.DEC.2007 13:41:10



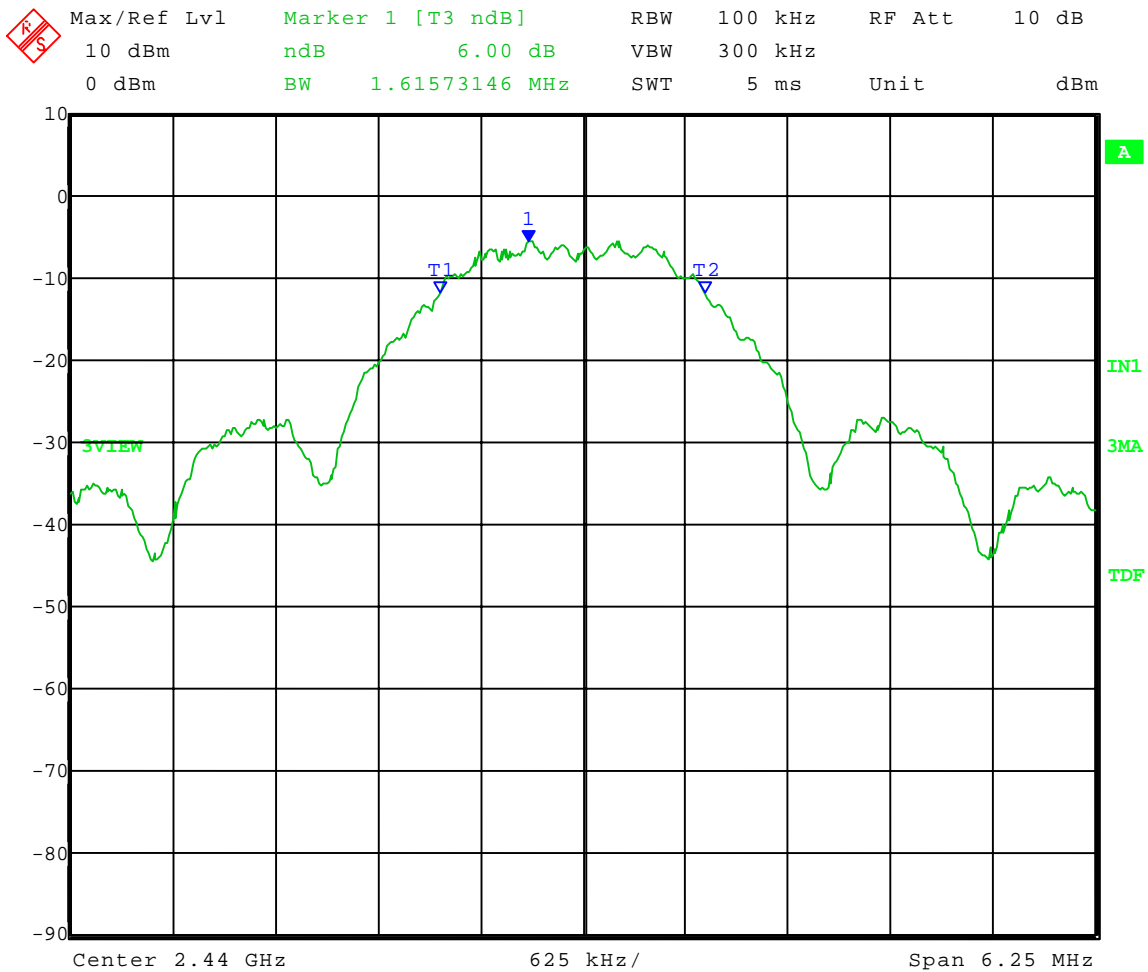
Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 12-06-2007  
 Company: Stryker Instruments  
 EUT: Neptune 2 wireless  
 Test: 6 dB Bandwidth - Conducted  
 Operator: Craig B  
 Comment: **Middle Channel:** Frequency – 2.440 GHz

6 dB Bandwidth = 1.616 MHz



Date: 6.DEC.2007 13:42:59



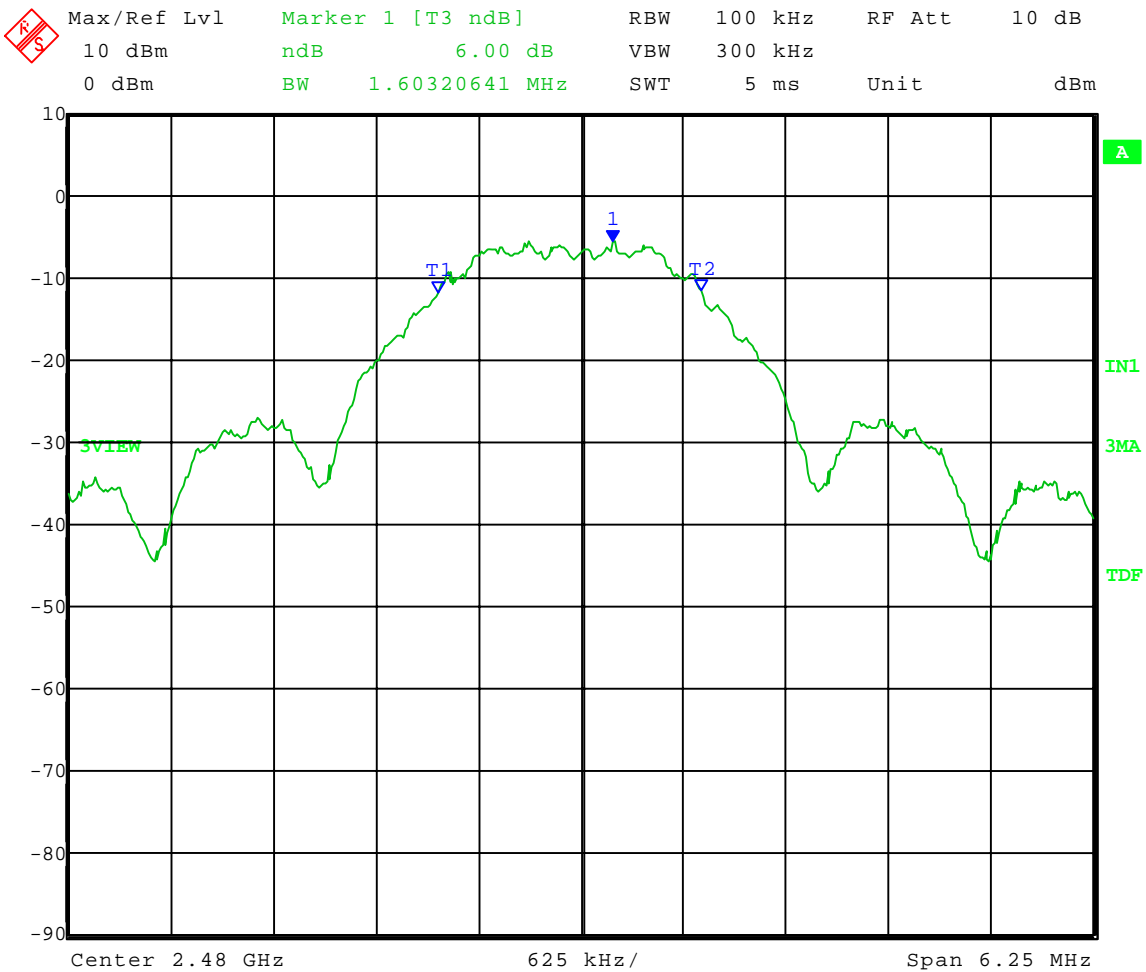
Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 12-06-2007  
 Company: Stryker Instruments  
 EUT: Neptune 2 wireless  
 Test: 6 dB Bandwidth - Conducted  
 Operator: Craig B  
 Comment: **High Channel:** Frequency – 2.480 GHz

6 dB Bandwidth = 1.603 MHz



Date: 6.DEC.2007 13:45:03





1250 Peterson Dr., Wheeling, IL 60090

Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

## APPENDIX A

# PEAK POWER SPECTRAL DENSITY GRAPH(S)

## PART 15.247



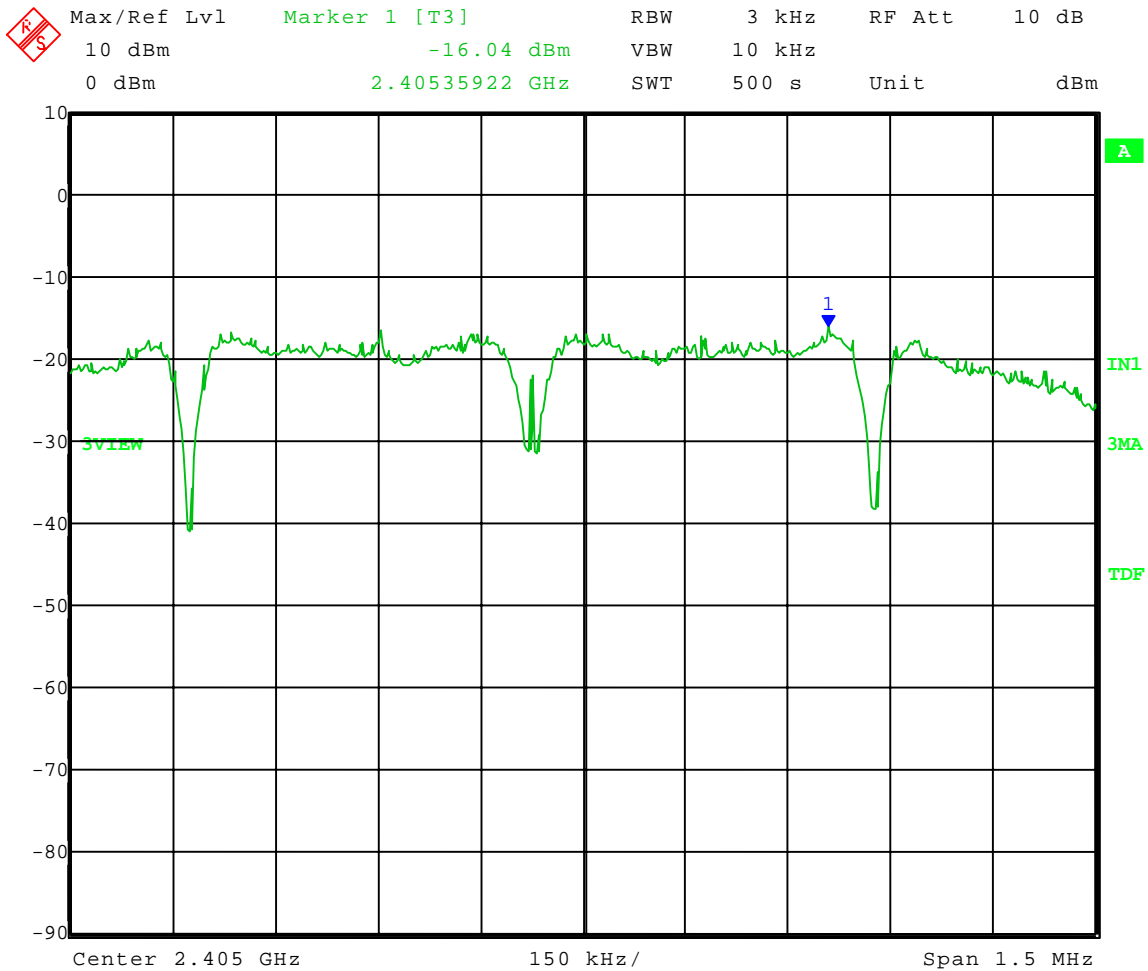
Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

### APPENDIX A

Test Date: 12-06-2007  
Company: Stryker Instruments  
EUT: Neptune 2 wireless  
Test: Peak Power Spectral Density - Conducted  
Operator: Craig B  
Comment: **Low Channel**: Frequency – 2.405 GHz  
Limit: 8 dBm

3 kHz Bandwidth = -16.04 dBm



Date: 6.DEC.2007 13:56:31



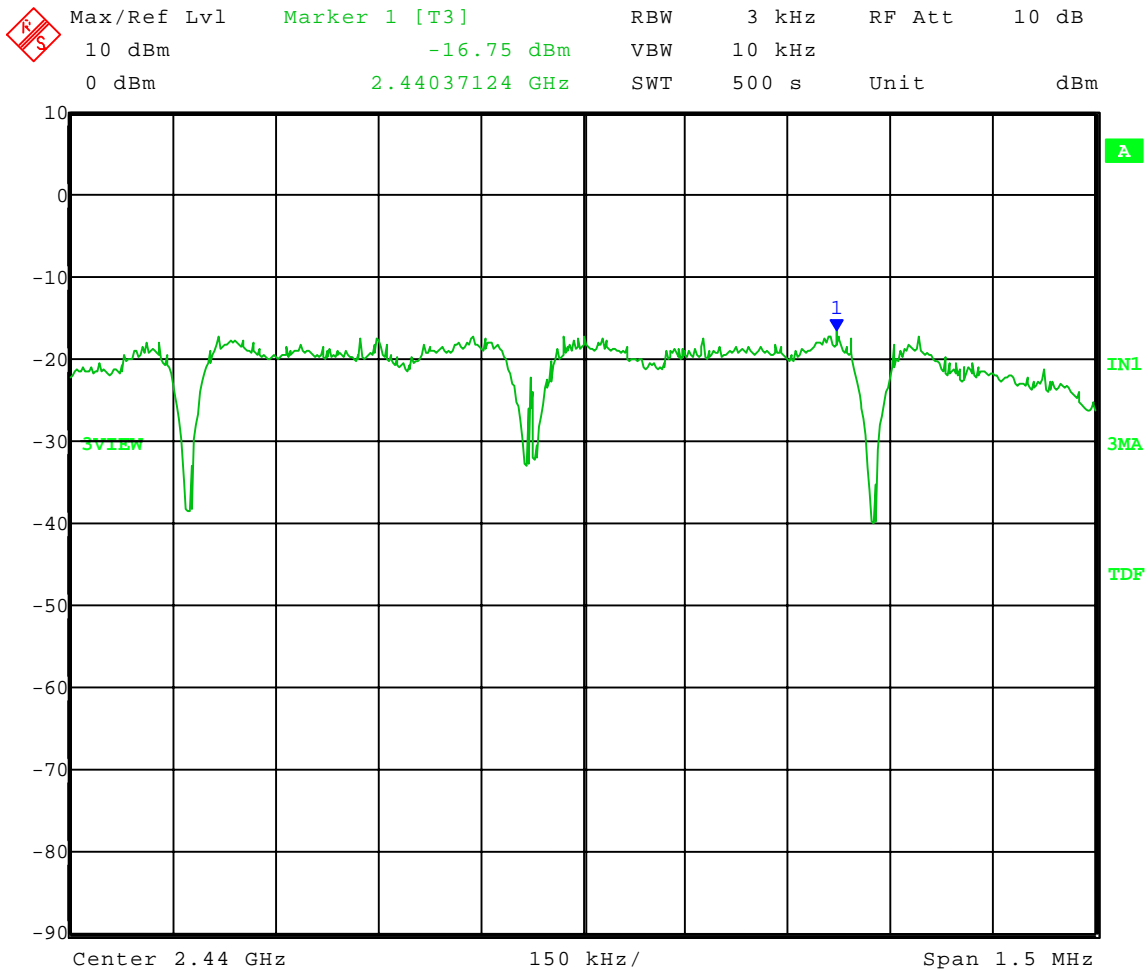
Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 12-06-2007  
 Company: Stryker Instruments  
 EUT: Neptune 2 wireless  
 Test: Peak Power Spectral Density - Conducted  
 Operator: Craig B  
 Comment: **Middle Channel:** Frequency - 2.440 GHz  
 Limit: 8 dBm

3 kHz Bandwidth = -16.75 dBm



Date: 6.DEC.2007 14:06:14



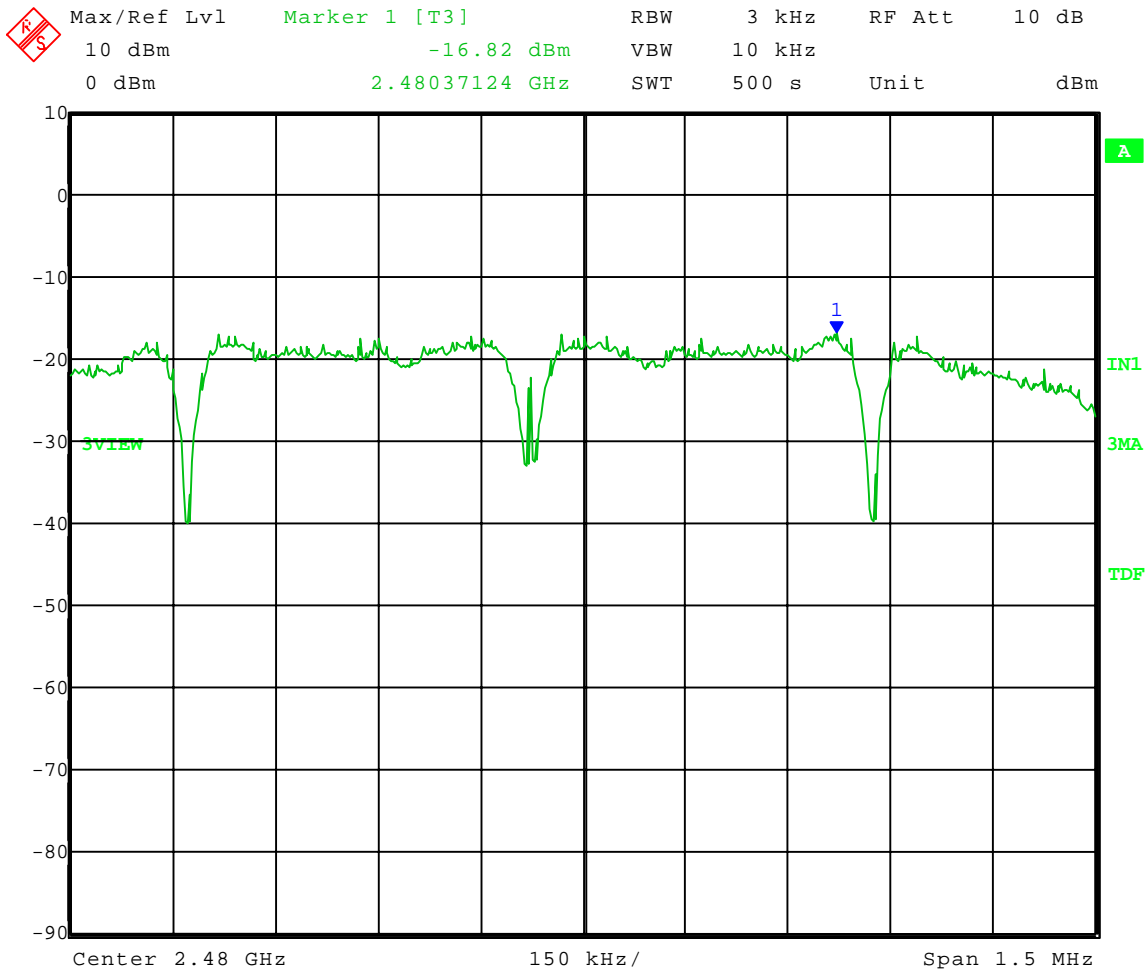
Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

### APPENDIX A

Test Date: 12-06-2007  
Company: Stryker Instruments  
EUT: Neptune 2 wireless  
Test: Peak Power Spectral Density - Conducted  
Operator: Craig B  
Comment: **High Channel:** Frequency - 2.480 GHz  
Limit: 8 dBm

3 kHz Bandwidth = -16.82 dBm



Date: 6.DEC.2007 14:15:45



1250 Peterson Dr., Wheeling, IL 60090

Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

## APPENDIX A

# CONDUCTED PEAK OUTPUT POWER GRAPHS

## PART 15.247



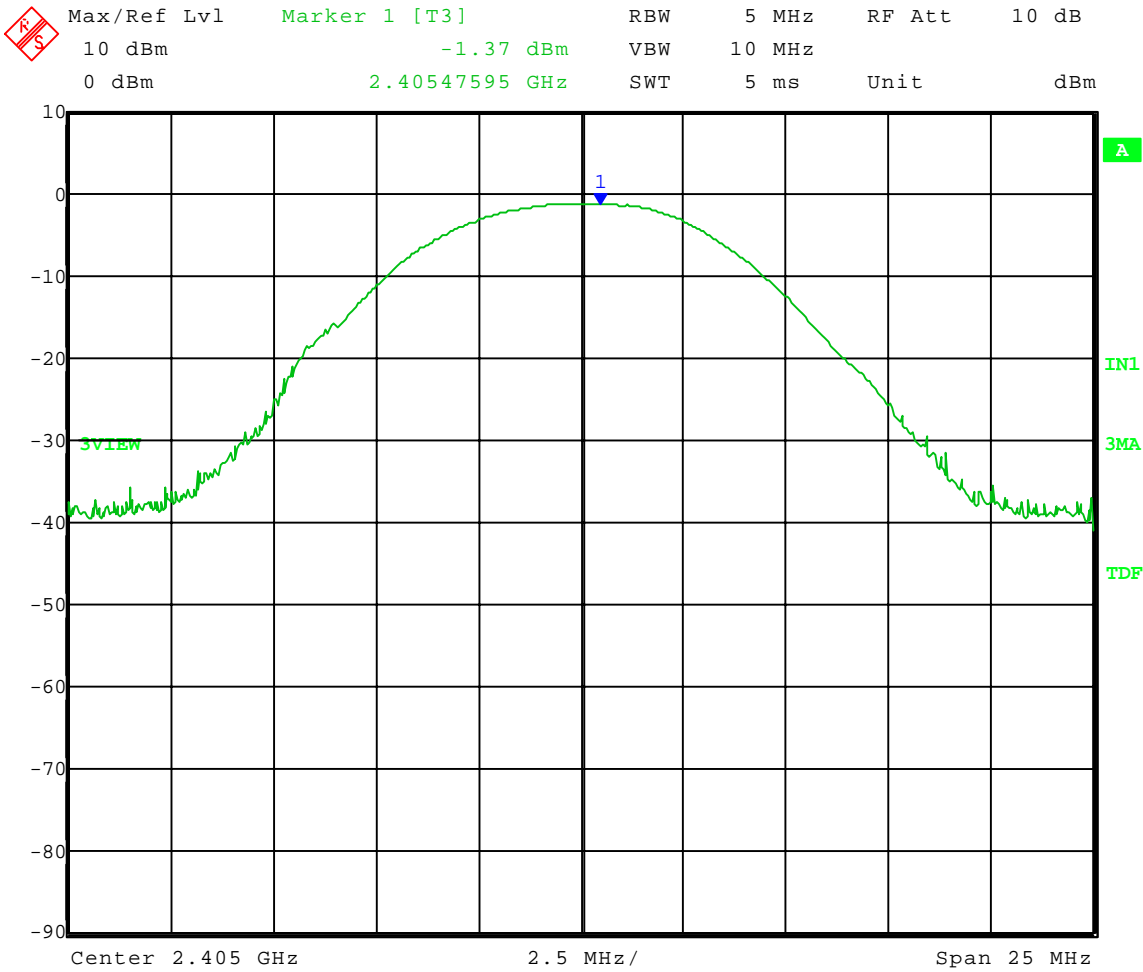
Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 12-06-2007  
 Company: Stryker Instruments  
 EUT: Neptune 2 wireless  
 Test: Peak Power Output - Conducted  
 Operator: Craig B  
 Comment: **Low Channel**: Frequency – 2.405 GHz

Peak Output Power = -1.37 dBm = **0.73 mW**



Date: 6.DEC.2007 13:27:57



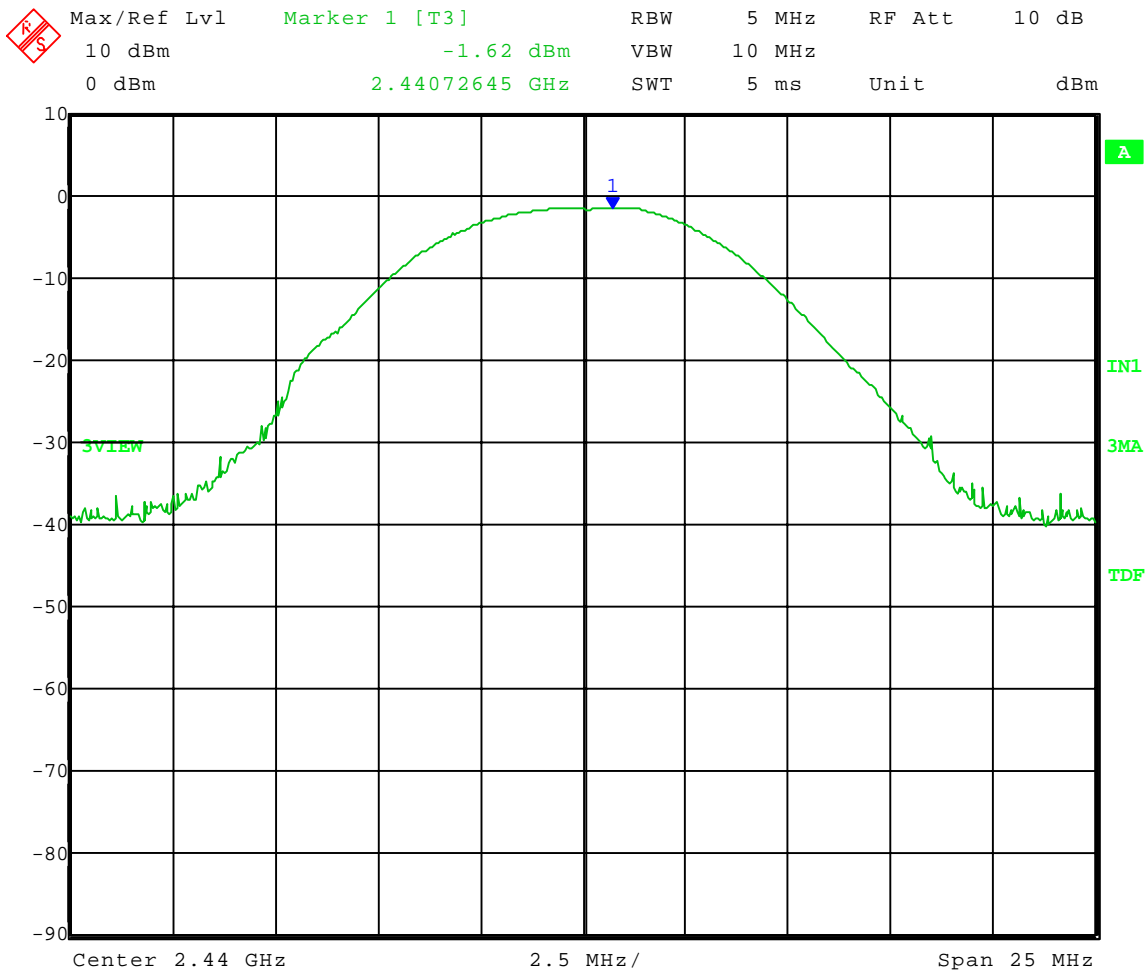
Company: Stryker Instruments  
Model Tested: 0702-014-028  
Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

### APPENDIX A

Test Date: 12-06-2007  
Company: Stryker Instruments  
EUT: Neptune 2 wireless  
Test: Peak Power Output - Conducted  
Operator: Craig B  
Comment: **Middle Channel**: Frequency – 2.440 GHz

Peak Output Power = -1.62 dBm = **0.69 mW**



Date: 6.DEC.2007 13:29:27



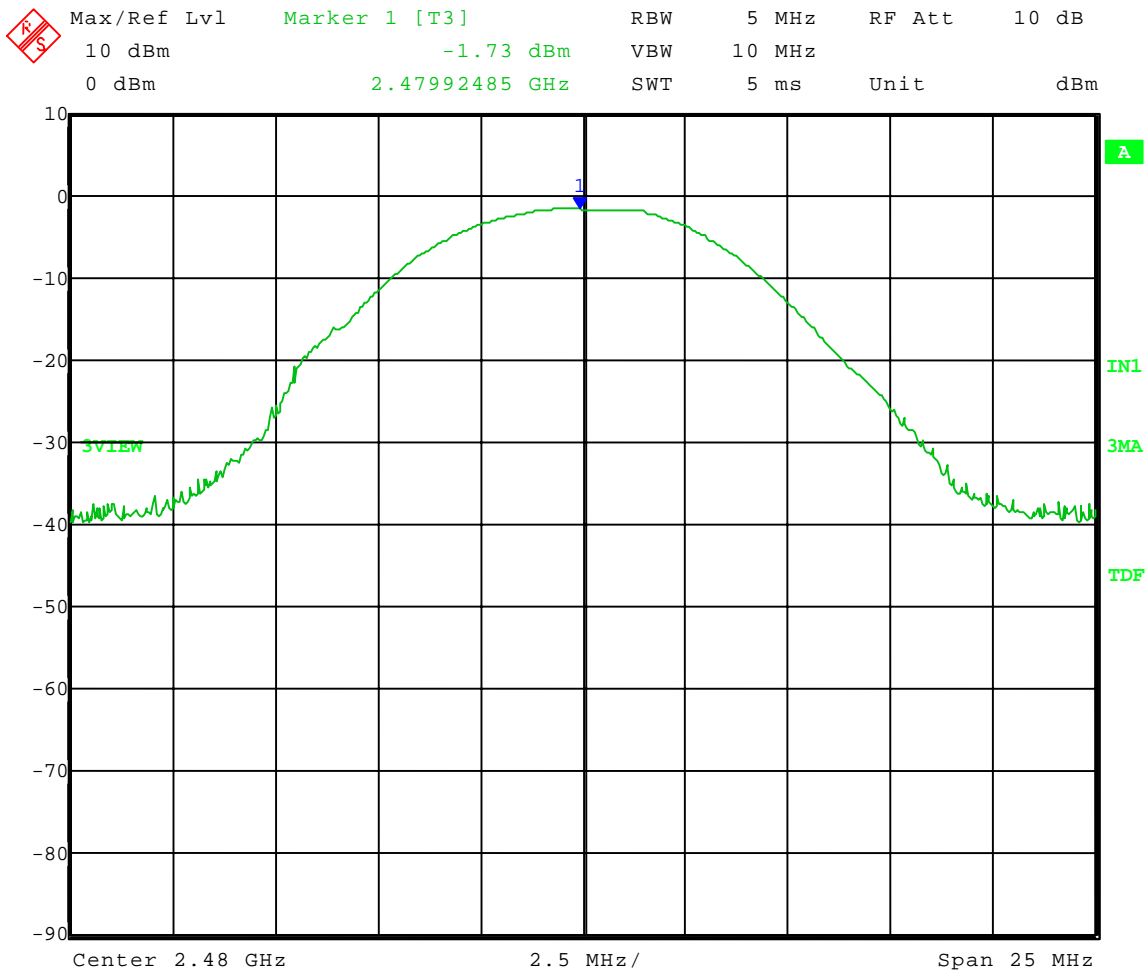
Company: Stryker Instruments  
 Model Tested: 0702-014-028  
 Report Number: 13781

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 12-06-2007  
 Company: Stryker Instruments  
 EUT: Neptune 2 wireless  
 Test: Peak Power Output - Conducted  
 Operator: Craig B  
 Comment: **High Channel**: Frequency – 2.480 GHz

Peak Output Power = -1.73 dBm = **0.67 mW**



Date: 6.DEC.2007 13:31:19