



**FCC CFR47 PART 95 REQUIREMENT**

**CERTIFICATION REPORT**

**FOR**

**TRANSMITTER FOR MEDICAL**

**MODEL: ZS-940PA**

**FCC ID: B6BZS-940PA**

**REPORT NUMBER: 04I2957-1**

**ISSUE DATE: OCTOBER 1, 2004**

*Prepared for*

**NIHON KOHDEN CORPORATION  
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*Prepared by*

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561F MONTEREY ROAD,  
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## 1. VERIFICATION OF COMPLIANCE

Inspection Institution: COMPLIANCE CERTIFICATION SERVICES  
561F MONTEREY ROAD,  
MORGAN HILL, CA 95037, USA  
TEL: (408) 463-0885 FAX: (408) 463-0888

Applicant: NIHON KOHDEN CORPORATION  
Manufacturer: NIHON KOHDEN CORPORATION  
Brand Name: NIHON KOHDEN  
Model No/Name: ZS-940PA  
Serial No: N/A

ITEM	TESTING ITEM	APPLIED SPECIFICATION	TESTING RESULTS	REMARK
1	Field Strength	Section 95.1115 (a)	Complied	N/A
2	Undesired Emissions	Section 95.1115 (b)	Complied	N/A
3	Emissions Types	Section 95.1115 (c)	Complied	N/A
4	Channel Use	Section 95.1115 (d)	Complied	N/A
5	RF Output Power	Section 2.1046	Complied	N/A
6	Occupied Bandwidth	Section 2.1049	Complied	N/A
7	Spurious Emissions at Antenna Terminal	Section 2.1051	Complied	N/A
8	Frequency Stability	Section 2.1055	Complied	N/A
9	Radiated Emissions	Section 15.109	Complied	N/A
10	Power Line Conducted Emissions	Section 15.107 (a)	Complied	N/A

The above equipment was tested by Compliance Certification Services for compliance with the requirements set forth in the FCC PART 95. The results of testing in this report apply to the product/system, which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties. **Warning** : This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification will constitute fraud and shall nullify the document.

Tested By:

Approved & Released For CCS By:



NEELESH RAJ  
EMC ENGINEER  
COMPLIANCE CERTIFICATION SERVICES



THU CHAN  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

## 2. GENERAL INFORMATION

### 2.1 PRODUCT DESCRIPTION

a). Type of EUT:	WMTS TRANSMITTER
b). Brand Name:	NIHON KOHDEN
c). Model No:	ZS-940PA
d). FCC ID:	B6BZS-940PA
e). Power Supply:	4.5 VDC (3 x AA)
f). Number of Channels:	479 Channels
g). Frequency Range:	608.0125 ~ 613.9875 MHz.
h). RF Conducted Output Power:	1 mW
i). Channel Spacing:	25 KHz (12.5 KHz when interleave)
j). Type of Modulation:	F1D
k). Antenna Type:	HELICAL MONOPOLE
l). Antenna Gain:	0 dBi

### 2.2 METHODOLOGY

Both conducted and radiated testing were performed according to the procedures documented in chapter 13 of ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, and 2.1055.

### 2.3 FACILITIES AND ACCREDITATION

The open area test sites and conducted measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.



No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.

## 2.4 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

## 2.5 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

## 3. REQUIREMENTS OF PROVISION

### 3.1 LABELING REQUIREMENT

Each equipment for which a type acceptance application is filed on or after May 1, 1981 shall bear an identification plate or label pursuant to section 2.925 (Identification of equipment) and section 2.926 (FCC Identifier).

### 3.2 USER INFORMATION

The users 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 the compliance could void the user's authority to operate the equipment.

#### 4. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/13/2004
Site A Line Stabilizer / Conditioner	Tripplite	LC-1800a	A0051681	CNR
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	8/30/2005
EMI Test Receiver	R & S	ESHS 20	827129/006	10/22/2005
Spectrum Analyzer	Agilent	E4446A	MY43360112	1/13/2005
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	2238	9/12/2005
Amplifier 1-26GHz	MITEQ	NSP2600-SP	924341	8/17/2005
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	11/21/2004
RF Filter Section	HP	85420E	3705A00256	11/21/2004
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	29800	5/13/2005
DC Power Supply	HP	E3610A	KR24104150	N/A
Bilog Antenna	ARA	LBP-25201A	1185	9/13/2005

## 5. SETUP OF EQUIPMENT UNDER TEST (RF)

### SUPPORT EQUIPMENT

N/A

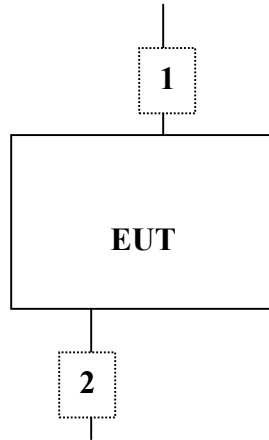
### I/O CABLES

TEST I / O CABLES								
Cable No	I/O Port	# of I/O Port	Connector Type	Type of Cable	Cable Length	Data Traffic	Bundled	Remark
1	ECG	1	ECG	UNSHIELDED	0.87M	YES	NO	N/A
2	Sp02	1	Sp02	UNSHIELDED	0.70M	YES	NO	PROBE

### TEST SETUP

The EUT was installed with three 1.5 VDC batteries (periodically changed to ensure 4.5 VDC output). The EUT was tested in the X, Y, and Z positions, X was found to be worst case. During the testing process the EUT was put in continuous transmit mode.

## SETUP DIAGRAM FOR TESTS





## 6. SETUP OF EQUIPMENT UNDER TEST (DIGITAL CONFIG #1)

### SUPPORT EQUIPMENT

N/A

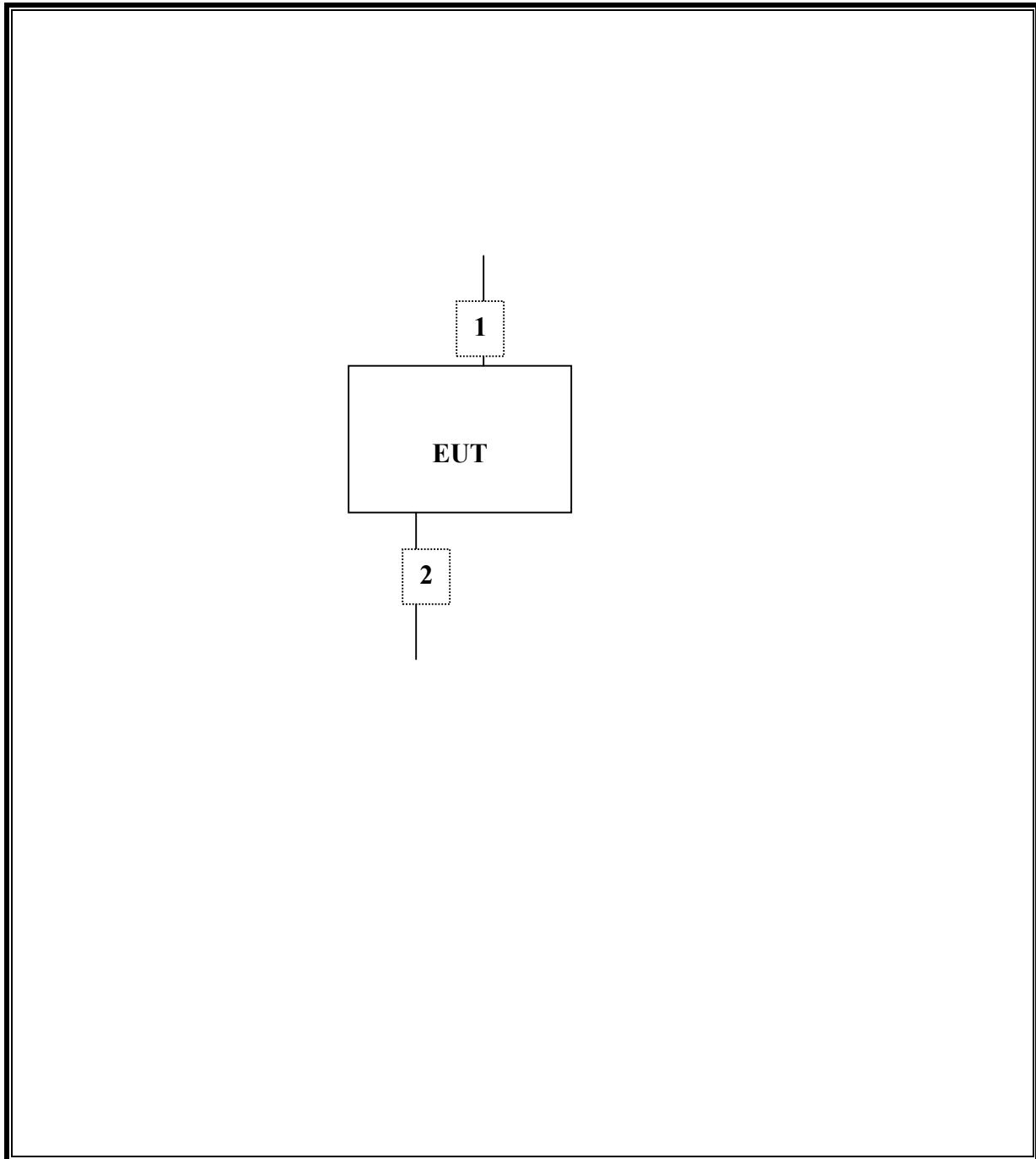
### I/O CABLES

TEST I / O CABLES								
Cable No	I/O Port	# of I/O Port	Connector Type	Type of Cable	Cable Length	Data Traffic	Bundled	Remark
1	ECG	1	ECG	UNSHIELDED	0.87M	YES	NO	N/A
2	Sp02	1	Sp02	UNSHIELDED	0.70M	YES	NO	PROBE

### TEST SETUP

The EUT was installed with three 1.5 VDC batteries (periodically changed to ensure 4.5 VDC output). Worst case position was tested (X). During the testing process the EUT was put in continuous transmit mode and NIBP was active.

## SETUP DIAGRAM FOR TESTS



## 7. SETUP OF EQUIPMENT UNDER TEST (DIGITAL CONFIG #2)

### SUPPORT EQUIPMENT

TEST PERIPHERALS				
Device Type	Manufacturer	Model Number	Serial Number	FCC ID
CHANNEL WRITER	NIHON KOHDEN	QI-901PK	N/A	N/A
PRINTER	HP	2225C	2541S41679	BS46XU2225C
MONITOR	GVC	MPRII	N/A	N/A
COMPUTER	HP	VECTRA	US82209954	N/A

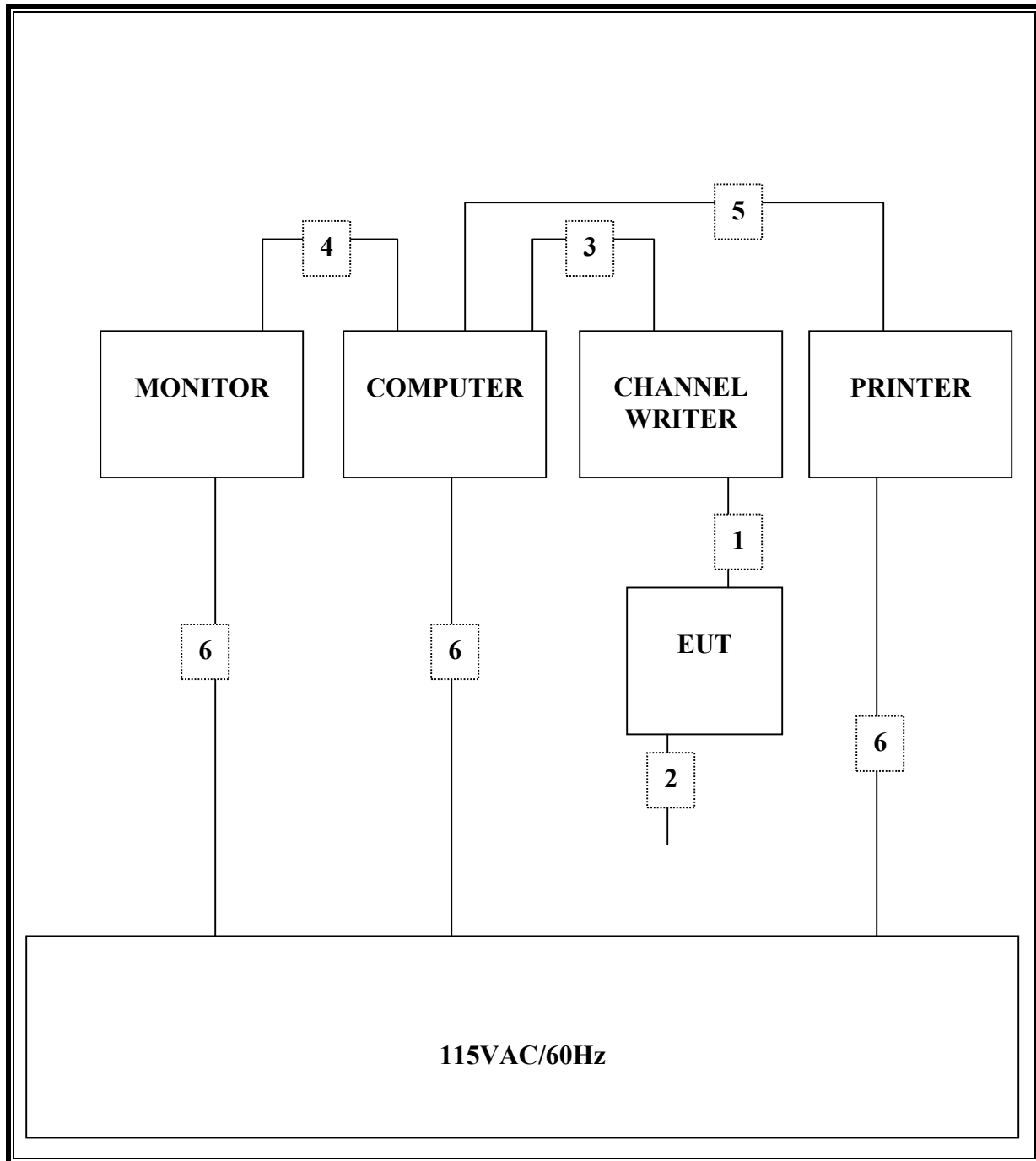
### I/O CABLES

TEST I / O CABLES								
Cable No	I/O Port	# of I/O Port	Connector Type	Type of Cable	Cable Length	Data Traffic	Bundled	Remark
1	ECG	1	ECG	UNSHIELDED	0.25M	YES	NO	N/A
2	Sp02	1	Sp02	UNSHIELDED	0.70M	YES	NO	PROBE
3	USB	1	USB	SHIELDED	1.58M	YES	YES	N/A
4	VIDEO	1	DB-15	SHIELDED	1.86M	YES	YES	N/A
5	PARALLEL	1	DB-25	SHIELDED	1.86M	NO	YES	FERRITE P C END
6	AC	1	AC	UNSHIELDED	1.86M	NO	NO	N/A

### TEST SETUP

The EUT was installed with three 1.5 VDC batteries (periodically changed to ensure 4.5 VDC output). Worst case position was tested (X). During the testing process the EUT was connected to the channel writer and EUT was set in changing channel/print mode.

## SETUP DIAGRAM FOR TESTS



## 8. FIELD STRENGTH AND UNDESIRE EMISSIONS MEASUREMENT

### PROVISIONS APPLICABLE

According to CFR 47 section 95.1115 (a) & (b).

#### LIMIT

##### (a) FUNDAMENTAL

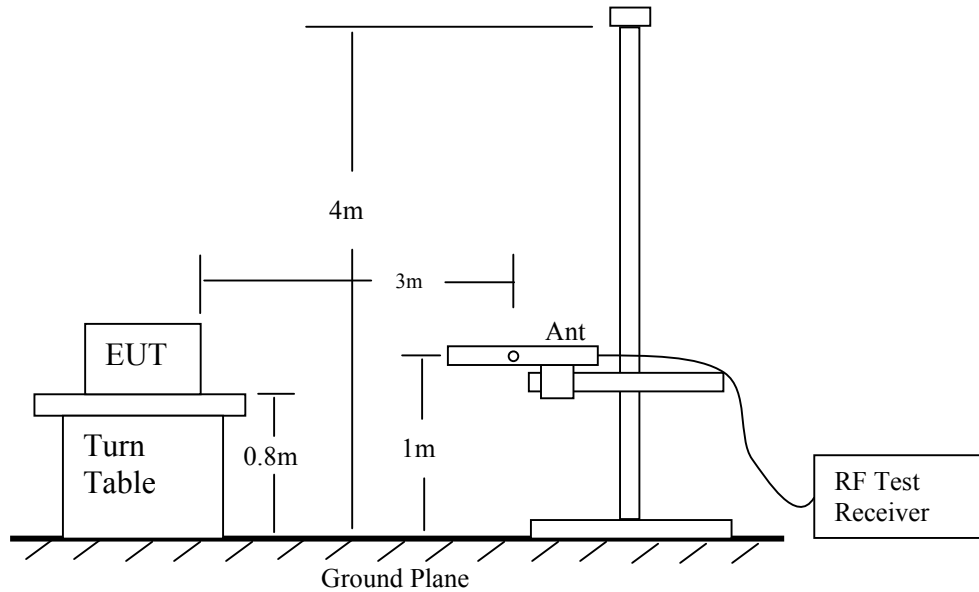
FREQUENCY (MHz)	LIMIT (dBuV/m)
608-614	106 QUASI-PEAK

##### (b) SPURIOUS

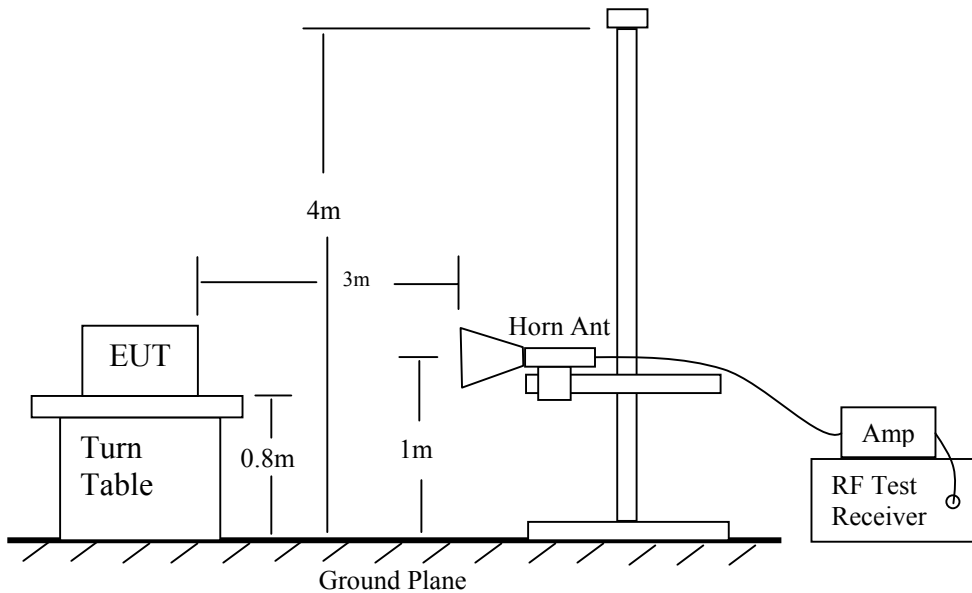
FREQUENCY (MHz)	LIMIT (dBuV/m)
30-960	46 QUASI-PEAK
>960	54 AVERAGE

### TEST PROCEDURE

- 1). On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.
- 2). The test antenna shall be oriented initially for vertical and horizontal polarization located 3m from the EUT to correspond to the frequency of the transmitter.
- 3). The output of the test antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
- 4). The transmitter shall be placed 0.80 meter above the ground plane, the X, Y, and Z positions shall be tested and the worst case reported. The transmitter shall be switched on with typical modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
- 5). The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- 6). The transmitter shall than be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- 7). The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- 8). The maximum signal level detected by the measuring receiver shall be noted.



Radiated Emission Measurement 30 to 1000 MHz



Radiated Emission Above 1000 MHz

## TEST RESULTS

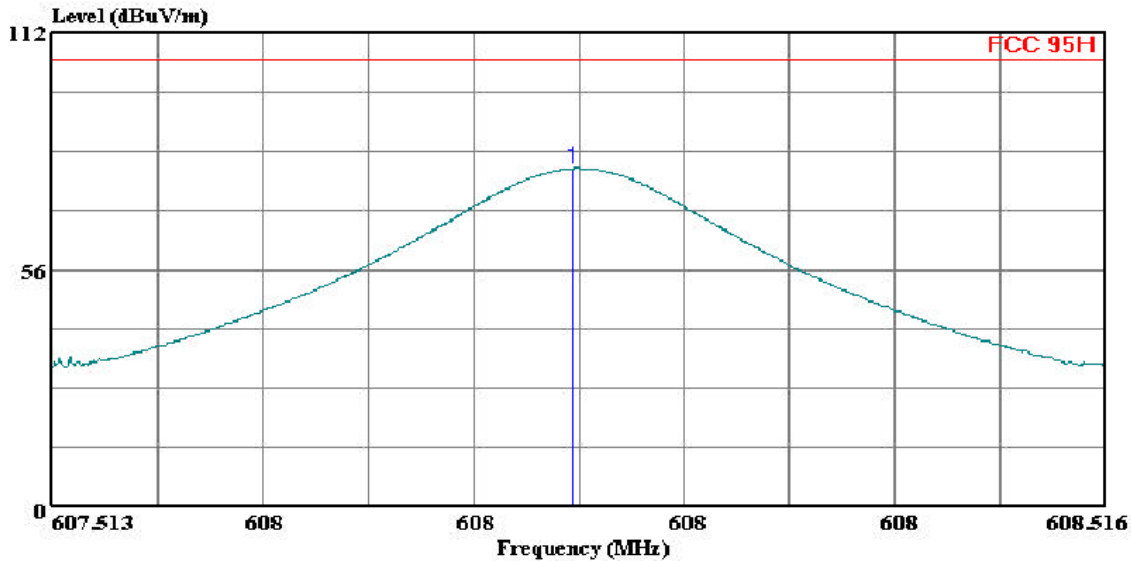
95.1115 (a)

### LOW CHANNEL (VERTICAL)



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Data#: 4 File#: RUN1.EMI Date: 09-28-2004 Time: 21:42:43



(Auxil ATC)

Trace: 1

Ref Trace:

Condition: FCC 95H VERTICAL RBW=VBW=100KHz  
Test Operator: : NEELESH RAJ  
Project #: : 04I2957  
Company: : NIHON KODEN  
EUT: : TRANSMITTER FOR MEDICAL  
Model No: : ZS-940PA  
Configuration: : EUT  
Target of Test: : FCC 95  
Mode of Operation: LOW CHANNEL TX

Page: 1

			Read		Limit	Over
	Freq Remark		Level	Factor	Level	Line
	MHz		dBuV	dB	dBuV/m	dBuV/m
1	608.009 Peak		57.95	21.90	79.85	106.00

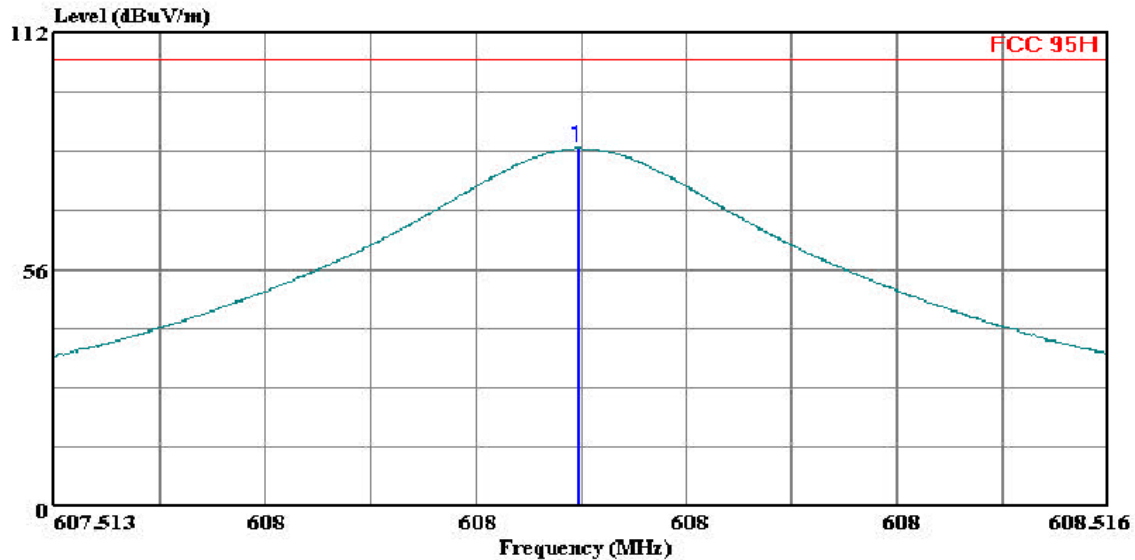
95.1115 (a)

LOW CHANNEL (HORIZONTAL)



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Data#: 6 File#: RUN1.EMI Date: 09-28-2004 Time: 21:48:42



(Aux ATC)

Trace: 5

Ref Trace:

Condition: FCC 95H HORIZONTAL RBW=VBW=100KHz  
Test Operator: : NEELESH RAJ  
Project #: : 04I2957  
Company: : NIHON KODEN  
EUT: : TRANSMITTER FOR MEDICAL  
Model No: : ZS-940PA  
Configuration: : EUT  
Target of Test: : FCC 95  
Mode of Operation: LOW CHANNEL TX

Page: 1

	Freq	Remark	Read		Limit	Over
			Level	Factor		
	MHz		dBuV	dB	dBuV/m	dBuV/m
1	608.012	Peak	62.82	21.90	84.72	106.00 -21.28



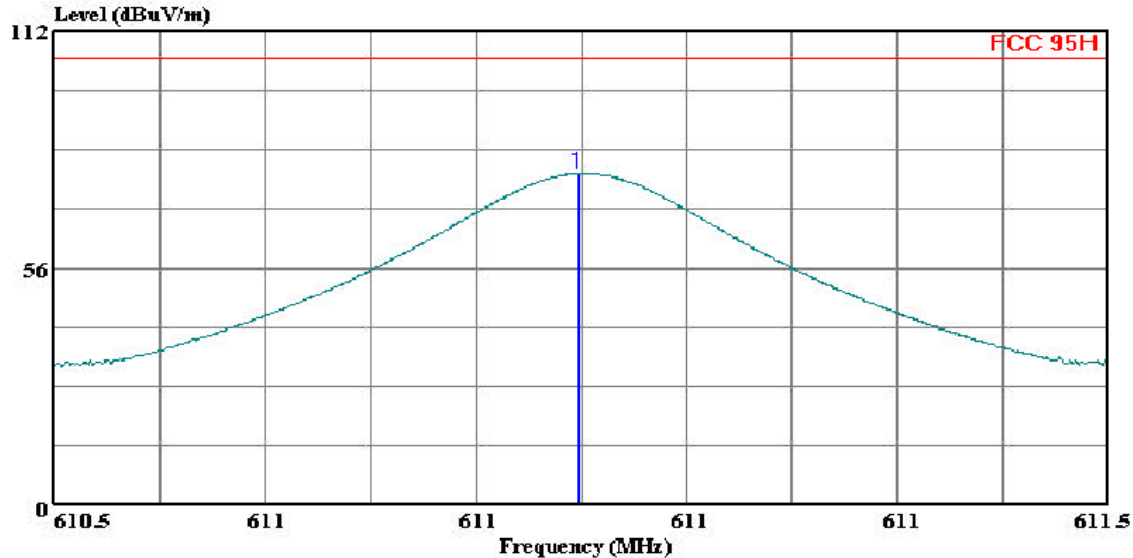
95.1115 (a)

MIDDLE CHANNEL (VERTICAL)



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Data#: 12 File#: RUN1.EMI Date: 09-28-2004 Time: 22:02:54



(Aux1 ATC)

Trace: 11

Ref Trace:

Condition: FCC 95H VERTICAL RBW=VBW=100KHz  
Test Operator: : NEELESH RAJ  
Project #: : 04I2957  
Company: : NIHON KODEN  
EUT: : TRANSMITTER FOR MEDICAL  
Model No: : ZS-940PA  
Configuration: : EUT  
Target of Test: : FCC 95  
Mode of Operation: MIDDLE CHANNEL TX

Page: 1

	Freq	Remark	Read		Limit	Over
			Level	Factor	Line	Limit
	MHz		dBuV	dB	dBuV/m	dB
1	610.997	Peak	56.51	21.91	78.42	-27.58

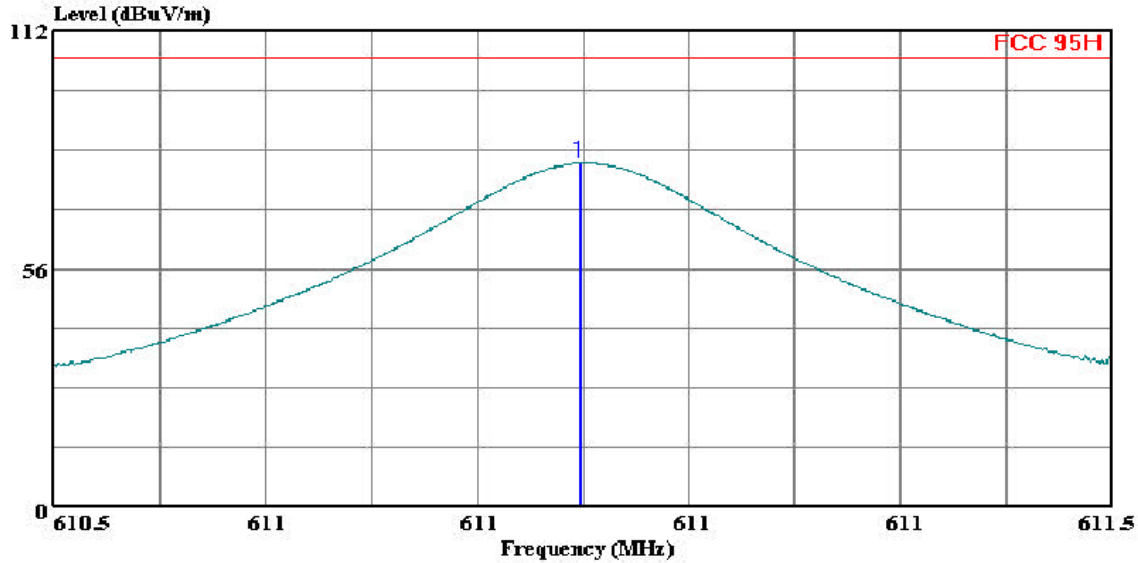
95.1115 (a)

MIDDLE CHANNEL (HORIZONTAL)



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Data#: 16 File#: RUN1.EMI Date: 09-28-2004 Time: 22:09:58



(AudiX ATC)

Trace: 15

Ref Trace:

Condition: FCC 95H HORIZONTAL RBW=VBW=100KHz  
Test Operator: : NEELESH RAJ  
Project #: : 04I2957  
Company: : NIHON KODEN  
EUT: : TRANSMITTER FOR MEDICAL  
Model No: : ZS-940PA  
Configuration: : EUT  
Target of Test: : FCC 95  
Mode of Operation: MIDDLE CHANNEL TX

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	Freq	Remark	Read Level	Factor	Level	Limit	Over
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	610.997	Peak	59.07	21.91	80.98	106.00	-25.02

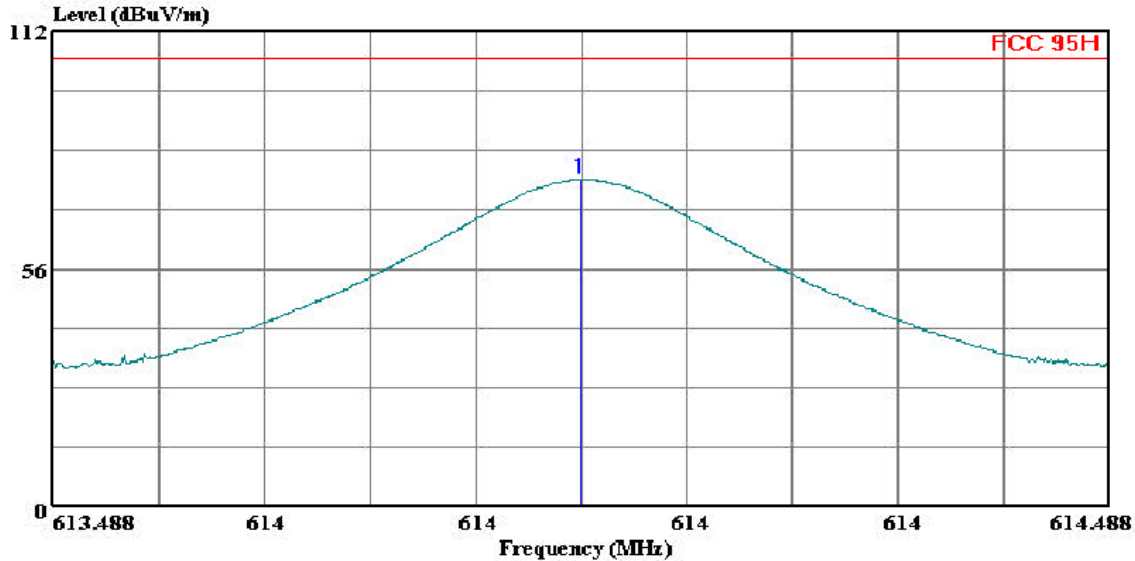
95.1115 (a)

HIGH CHANNEL (VERTICAL)



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Data#: 24 File#: RUN1.EMI Date: 09-28-2004 Time: 22:26:05



(Auxiliary ATC)

Trace: 23

Ref Trace:

Condition: FCC 95H VERTICAL RBW=VBW=100KHz  
Test Operator: : NEELESH RAJ  
Project #: : 04I2957  
Company: : NIHON KODEN  
EUT: : TRANSMITTER FOR MEDICAL  
Model No: : ZS-940PA  
Configuration: : EUT  
Target of Test: : FCC 95  
Mode of Operation: HIGH CHANNEL TX

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			Read		Limit	Over
Freq	Remark	Level	Factor	Level	Line	Limit
MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	613.987 Peak	55.20	21.96	77.16	106.00	-28.84

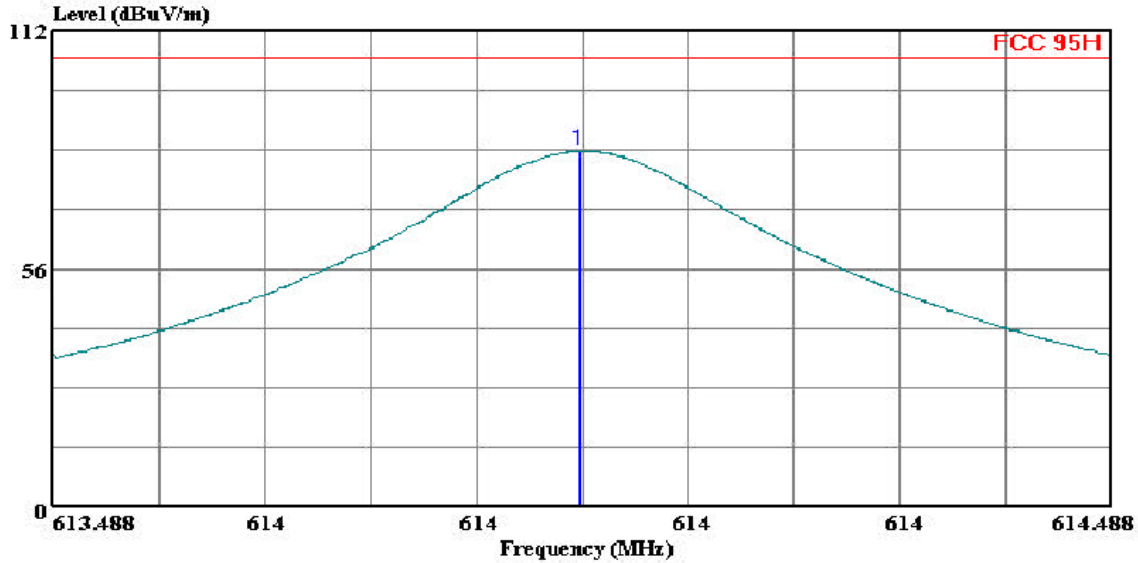
95.1115 (a)

HIGH CHANNEL (HORIZONTAL)



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Data#: 20 File#: RUN1.EMI Date: 09-28-2004 Time: 22:19:46



(Audi ATC)

Trace: 19

Ref Trace:

Condition: FCC 95H HORIZONTAL RBW=VBW=100KHz  
Test Operator: : NEELESH RAJ  
Project #: : 04I2957  
Company: : NIHON KODEN  
EUT: : TRANSMITTER FOR MEDICAL  
Model No: : ZS-940PA  
Configuration: : EUT  
Target of Test: : FCC 95  
Mode of Operation: HIGH CHANNEL TX

Page: 1

	Freq	Remark	Read Level	Factor	Limit Level	Over Limit
	MHz		dBuV	dB	dBuV/m	dB
1	613.985	Peak	61.89	21.96	83.85	106.00 -22.15

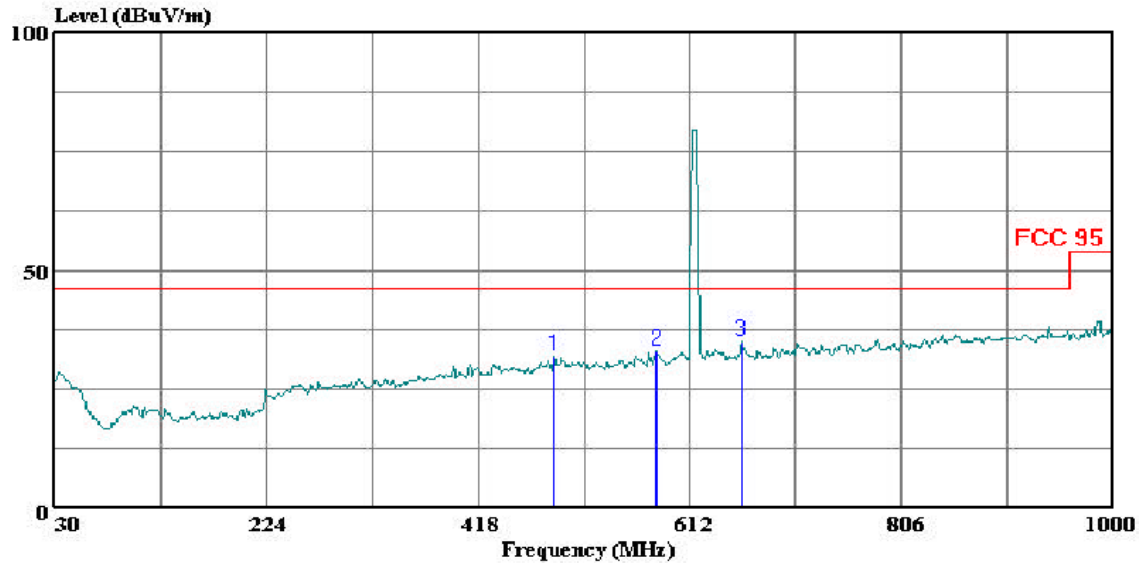
95.1115 (b)

LOW CHANNEL (VERTICAL UNDER 1 GHz)



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Data#: 10 File#: RUN1.EMI Date: 09-28-2004 Time: 21:55:20



(AudiX ATC)

Trace: 9

Ref Trace:

Condition: FCC 95 VERTICAL RBW=VBW=100KHz  
Test Operator: : NEELESH RAJ  
Project #: : 04I2957  
Company: : NIHON KODEN  
EUT: : TRANSMITTER FOR MEDICAL  
Model No: : ZS-940PA  
Configuration: : EUT  
Target of Test: : FCC 95  
Mode of Operation: LOW CHANNEL TX

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	Freq	Remark	Read Level	Factor	Level	Limit	Over
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	487.840	Peak	11.83	19.86	31.69	46.00	-14.31
2	581.930	Peak	11.20	21.55	32.75	46.00	-13.25
3	659.530	Peak	12.49	22.47	34.96	46.00	-11.04

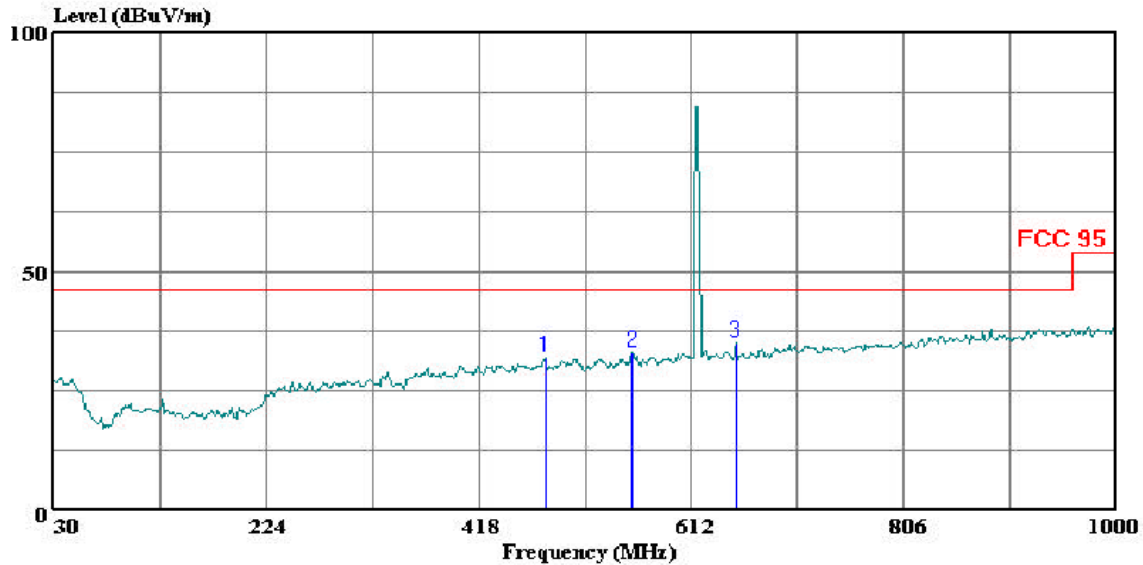
95.1115 (b)

LOW CHANNEL (HORIZONTAL UNDER 1GHz)



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Tel: (408) 463-0888  
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Data#: 8 File#: RUN1.EMI Date: 09-28-2004 Time: 21:51:49



(AUX ATC)

Trace: 7

Ref Trace:

Condition: FCC 95 HORIZONTAL RBW=VBW=100KHZ  
Test Operator: : NEELESH RAJ  
Project #: : 04I2957  
Company: : NIHON KODEN  
EUT: : TRANSMITTER FOR MEDICAL  
Model No: : ZS-940PA  
Configuration: : EUT  
Target of Test: : FCC 95  
Mode of Operation: LOW CHANNEL TX

Page: 1

			Read		Limit	Over
Freq	Remark	Level	Factor	Level	Line	Limit
MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	478.140 Peak	12.29	19.64	31.93	46.00	-14.07
2	557.680 Peak	11.72	21.08	32.80	46.00	-13.20
3	652.740 Peak	12.48	22.43	34.91	46.00	-11.09

## 95.1115 (b) LOW CHANNEL (VERTICAL & HORIZONTAL ABOVE 1GHz)

09/30/04 High Frequency Measurement																			
Compliance Certification Services, Morgan Hill Open Field Site																			
Test Engr: NEELESH RAJ																			
Project #: 04I2957																			
Company: NIHON KOHDEN																			
EUT Descrip.: TRANSMITTER FOR MEDICAL																			
EUT M/N: ZS-940PA																			
Test Target: FCC 95																			
Mode Oper: LOW CHANNEL TX																			
Test Equipment:																			
EMCO Horn 1-18GHz T60; S/N: 2238 @3m				Pre-amplifier 1-26GHz T86 Miteq 924341				Pre-amplifier 26-40GHz				Horn > 18GHz				Limit FCC 15.209			
Hi Frequency Cables				2 foot cable 2_Neelesh				3 foot cable				4 foot cable				12 foot cable 12_Neelesh			
				HPF				Reject Filter								Peak Measurements RBW=VBW=1MHz			
																Average Measurements RBW=1MHz; VBW=10Hz			
f GHz	Dist (m)	Read Pk dBuV	Read Avg dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)				
1.216	3.0	55.5	50.0	24.6	1.7	-42.1	0.0	0.0	39.7	34.2	74	54	-34.3	-19.8	V				
1.824	3.0	50.3	38.4	27.0	2.1	-42.2	0.0	0.0	37.2	25.3	74	54	-36.8	-28.7	V				
2.432	3.0	53.3	46.7	28.2	2.4	-42.3	0.0	0.0	41.7	35.1	74	54	-32.3	-18.9	V				
3.040	3.0	56.2	52.4	30.2	2.7	-42.4	0.0	0.0	46.7	42.9	74	54	-27.3	-11.1	V				
3.648	3.0	50.2	39.9	31.8	3.0	-42.6	0.0	0.0	42.4	32.1	74	54	-31.6	-21.9	V				
4.256	3.0	53.3	47.0	32.8	3.3	-43.1	0.0	0.0	46.3	39.9	74	54	-27.7	-14.1	V				
4.864	3.0	50.6	40.0	33.0	3.6	-44.1	0.0	0.0	43.1	32.5	74	54	-30.9	-21.5	V				
5.472	3.0	51.0	40.0	34.1	3.8	-44.8	0.0	0.0	44.1	33.1	74	54	-29.9	-20.9	V				
6.080	3.0	51.6	41.1	34.4	4.1	-45.4	0.0	0.0	44.6	34.2	74	54	-29.4	-19.8	V				
1.216	3.0	55.2	51.3	24.6	1.7	-42.1	0.0	0.0	39.3	35.4	74	54	-34.7	-18.6	H				
1.824	3.0	50.2	39.0	27.0	2.1	-42.2	0.0	0.0	37.1	25.9	74	54	-36.9	-28.1	H				
2.432	3.0	53.9	47.7	28.2	2.4	-42.3	0.0	0.0	42.3	36.0	74	54	-31.7	-18.0	H				
3.040	3.0	57.9	54.8	30.2	2.7	-42.4	0.0	0.0	48.4	45.3	74	54	-25.6	-8.7	H				
3.648	3.0	47.9	39.7	31.8	3.0	-42.6	0.0	0.0	40.1	31.9	74	54	-33.9	-22.1	H				
4.256	3.0	52.6	44.2	32.8	3.3	-43.1	0.0	0.0	45.6	37.2	74	54	-28.4	-16.8	H				
4.864	3.0	50.5	41.0	33.0	3.6	-44.1	0.0	0.0	43.0	33.5	74	54	-31.0	-20.5	H				
5.472	3.0	51.3	40.0	34.1	3.8	-44.8	0.0	0.0	44.4	33.1	74	54	-29.6	-20.9	H				
6.080	3.0	49.9	41.3	34.4	4.1	-45.4	0.0	0.0	42.9	34.3	74	54	-31.1	-19.7	H				
NO OTHER SPURIOUS EMISSIONS DETECTED ABOVE THE SYSTEM NOISE FLOOR -20dB TO THE LIMIT																			
f	Measurement Frequency					Amp	Preamp Gain					Avg Lim	Average Field Strength Limit						
Dist	Distance to Antenna					D Corr	Distance Correct to 3 meters					Pk Lim	Peak Field Strength Limit						
Read	Analyzer Reading					Avg	Average Field Strength @ 3 m					Avg Mar	Margin vs. Average Limit						
AF	Antenna Factor					Peak	Calculated Peak Field Strength					Pk Mar	Margin vs. Peak Limit						
CL	Cable Loss					HPF	High Pass Filter												

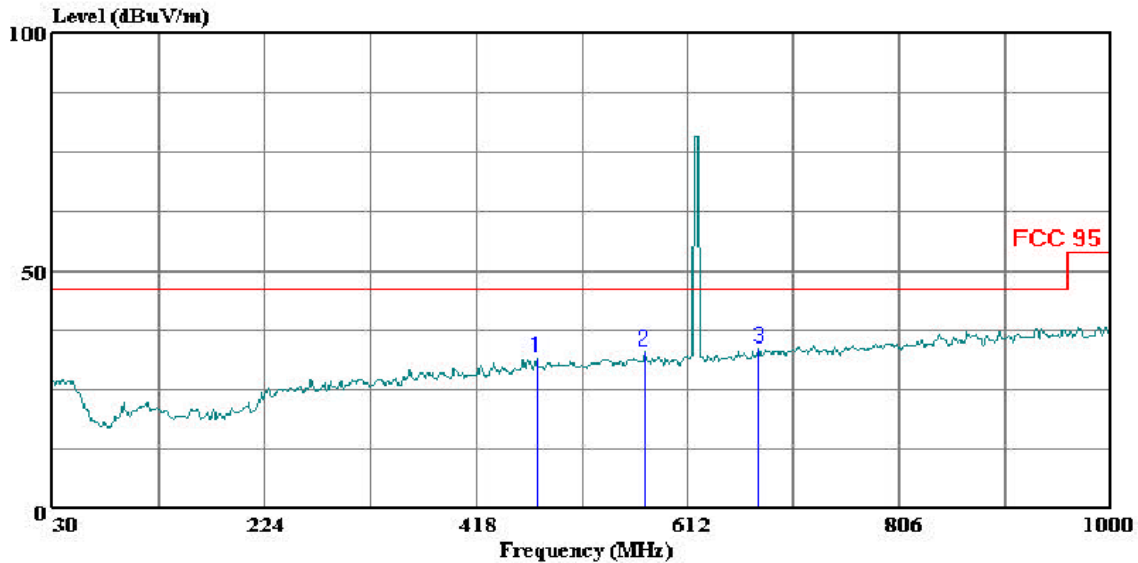
95.1115 (b)

MIDDLE CHANNEL (VERTICAL UNDER 1 GHz)



561F Monterey Road  
Morgan Hill, CA 95037  
Tel: (408) 463-0888  
Fax: (408) 463-0885

Data#: 14 File#: RUN1.EMI Date: 09-28-2004 Time: 22:05:31



(Auxiliary ATC)

Trace: 13

Ref Trace:

Condition: FCC 95 VERTICAL RBW=VBW=100KHz  
Test Operator: : NEELESH RAJ  
Project #: : 04I2957  
Company: : NIHON KODEN  
EUT: : TRANSMITTER FOR MEDICAL  
Model No: : ZS-940PA  
Configuration: : EUT  
Target of Test: : FCC 95  
Mode of Operation: MIDDLE CHANNEL TX

Page: 1

	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	473.290	Peak	11.87	19.53	31.40	46.00	-14.60
2	572.230	Peak	11.37	21.37	32.74	46.00	-13.26
3	676.990	Peak	10.92	22.71	33.63	46.00	-12.37

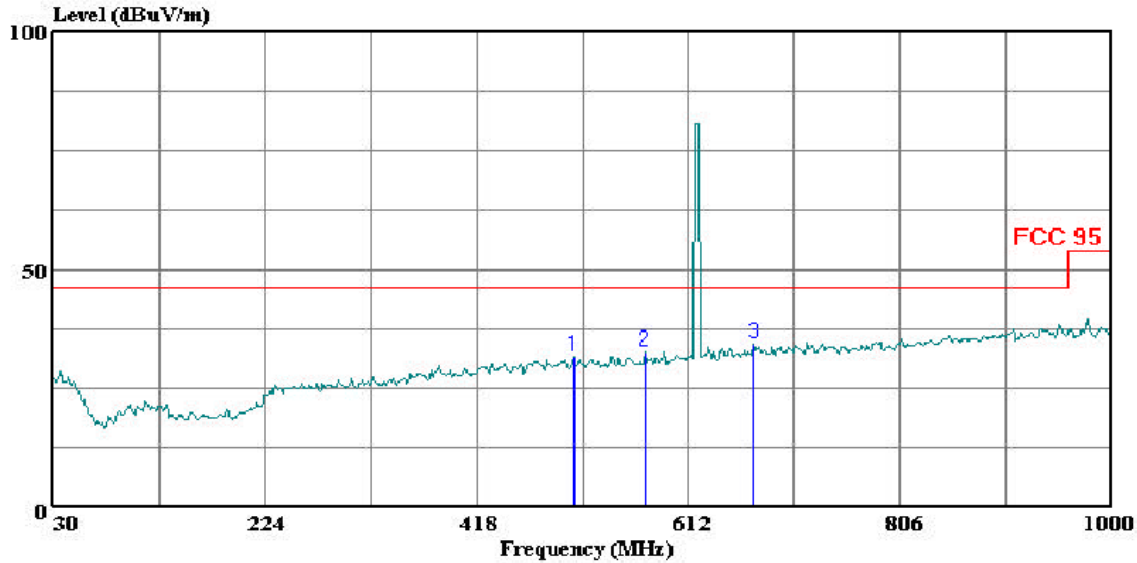


95.1115 (b) MIDDLE CHANNEL (HORIZONTAL UNDER 1GHz)



561F Monterey Road  
Morgan Hill, CA 95037  
Tel: (408) 463-0888  
Fax: (408) 463-0885

Data#: 18 File#: RUN1.EMI Date: 09-28-2004 Time: 22:11:35



(Auxiliary ATC)

Trace: 17

Ref Trace:

Condition: FCC 95 HORIZONTAL RBW=VBW=100KHz  
Test Operator: : NEELESH RAJ  
Project #: : 04I2957  
Company: : NIHON KODEN  
EUT: : TRANSMITTER FOR MEDICAL  
Model No: : ZS-940PA  
Configuration: : EUT  
Target of Test: : FCC 95  
Mode of Operation: MIDDLE CHANNEL TX

Page: 1

			Read		Limit	Over
	Freq	Remark	Level	Factor	Level	Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m
1	507.240	Peak	11.15	20.21	31.36	46.00
2	572.230	Peak	11.17	21.37	32.54	46.00
3	672.140	Peak	11.74	22.64	34.38	46.00

## 95.1115 (b) MIDDLE CHANNEL (VERTICAL & HORIZONTAL ABOVE 1GHz)

09/30/04 High Frequency Measurement  
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: NEELESH RAJ  
Project #: 04I2957  
Company: NIHON KOHDEN  
EUT Descip.: TRANSMITTER FOR MEDICAL  
EUT M/N: ZS-940PA  
Test Target: FCC 95  
Mode Oper: MIDDLE CHANNEL TX

Test Equipment:

EMCO Horn 1-18GHz T60; S/N: 2238 @3m	Pre-amplifier 1-26GHz T86 Miteq 924341	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit FCC 15.209
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Hi Frequency Cables

2 foot cable 2_Neelesh	3 foot cable	4 foot cable	12 foot cable 12_Neelesh	HPF	Reject Filter
---------------------------	--------------	--------------	-----------------------------	-----	---------------

Peak Measurements  
RBW=VBW=1MHz

Average Measurements  
RBW=1MHz; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filt dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
1.222	3.0	55.5	51.2	24.6	1.7	-42.1	0.0	0.0	39.6	35.4	74	54	-34.4	-18.6	V
1.833	3.0	50.4	38.5	27.1	2.1	-42.2	0.0	0.0	37.3	25.4	74	54	-36.7	-28.6	V
2.444	3.0	52.3	47.6	28.3	2.4	-42.3	0.0	0.0	40.7	36.0	74	54	-33.3	-18.0	V
3.055	3.0	56.4	52.0	30.3	2.7	-42.4	0.0	0.0	47.0	42.6	74	54	-27.0	-11.4	V
3.666	3.0	50.3	40.1	31.8	3.0	-42.6	0.0	0.0	42.6	32.4	74	54	-31.4	-21.6	V
4.277	3.0	53.4	47.2	32.8	3.3	-43.1	0.0	0.0	46.4	40.2	74	54	-27.6	-13.8	V
4.888	3.0	50.7	41.3	33.0	3.6	-44.1	0.0	0.0	43.2	33.8	74	54	-30.8	-20.2	V
5.499	3.0	51.3	41.0	34.2	3.8	-44.9	0.0	0.0	44.5	34.2	74	54	-29.5	-19.8	V
6.110	3.0	51.4	41.0	34.5	4.1	-45.4	0.0	0.0	44.5	34.1	74	54	-29.5	-19.9	V
1.222	3.0	55.4	52.1	24.6	1.7	-42.1	0.0	0.0	39.5	36.3	74	54	-34.5	-17.7	H
1.833	3.0	50.3	38.6	27.1	2.1	-42.2	0.0	0.0	37.3	25.5	74	54	-36.7	-28.5	H
2.444	3.0	54.0	48.1	28.3	2.4	-42.3	0.0	0.0	42.4	36.5	74	54	-31.6	-17.5	H
3.055	3.0	57.0	55.0	30.3	2.7	-42.4	0.0	0.0	47.5	45.6	74	54	-26.5	-8.4	H
3.666	3.0	48.6	40.3	31.8	3.0	-42.6	0.0	0.0	40.8	32.6	74	54	-33.2	-21.4	H
4.277	3.0	52.1	44.0	32.8	3.3	-43.1	0.0	0.0	45.1	37.0	74	54	-28.9	-17.0	H
4.888	3.0	50.4	41.3	33.0	3.6	-44.1	0.0	0.0	42.9	33.9	74	54	-31.1	-20.1	H
5.499	3.0	51.2	40.7	34.2	3.8	-44.9	0.0	0.0	44.4	33.8	74	54	-29.6	-20.2	H
6.110	3.0	50.0	41.2	34.5	4.1	-45.4	0.0	0.0	43.1	34.3	74	54	-30.9	-19.7	H
NO OTHER SPURIOUS EMISSIONS DETECTED ABOVE THE SYSTEM NOISE FLOOR -20dB TO THE LIMIT															

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

95.1115 (b)

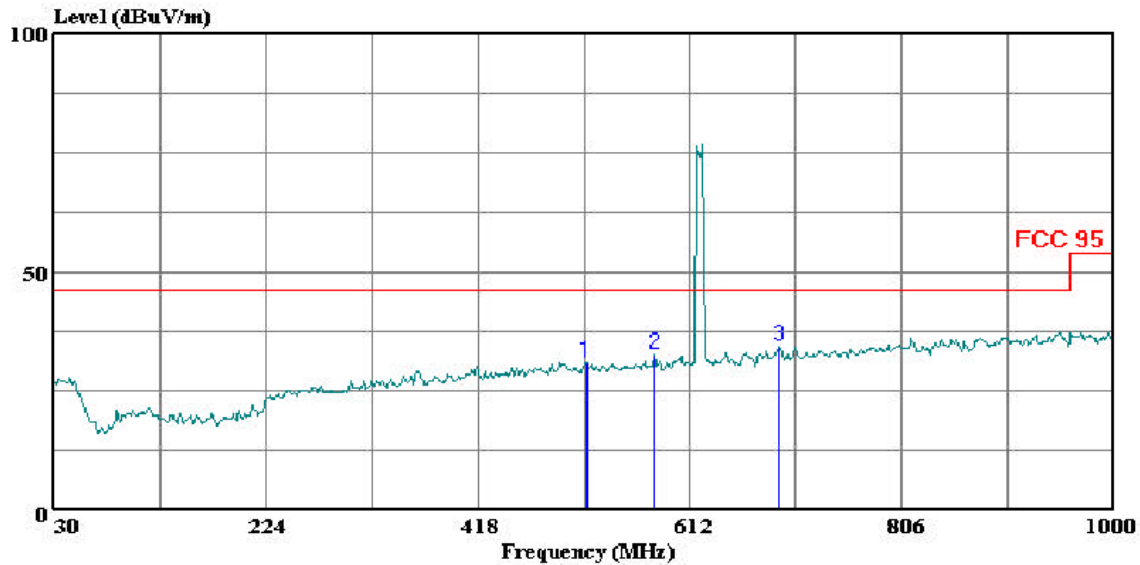
HIGH CHANNEL (VERTICAL UNDER 1 GHz)



561F Monterey Road  
Morgan Hill, CA 95037  
Tel: (408) 463-0888  
Fax: (408) 463-0885

Data#: 26 File#: RUN1.EMI

Date: 09-28-2004 Time: 22:27:43



(Auxiliary ATC)

Trace: 25

Ref Trace:

Condition: FCC 95 VERTICAL RBW=VBW=100KHz  
Test Operator: : NEELESH RAJ  
Project #: : 04I2957  
Company: : NIHON KODEN  
EUT: : TRANSMITTER FOR MEDICAL  
Model No: : ZS-940PA  
Configuration: : EUT  
Target of Test: : FCC 95  
Mode of Operation: HIGH CHANNEL TX

Page: 1

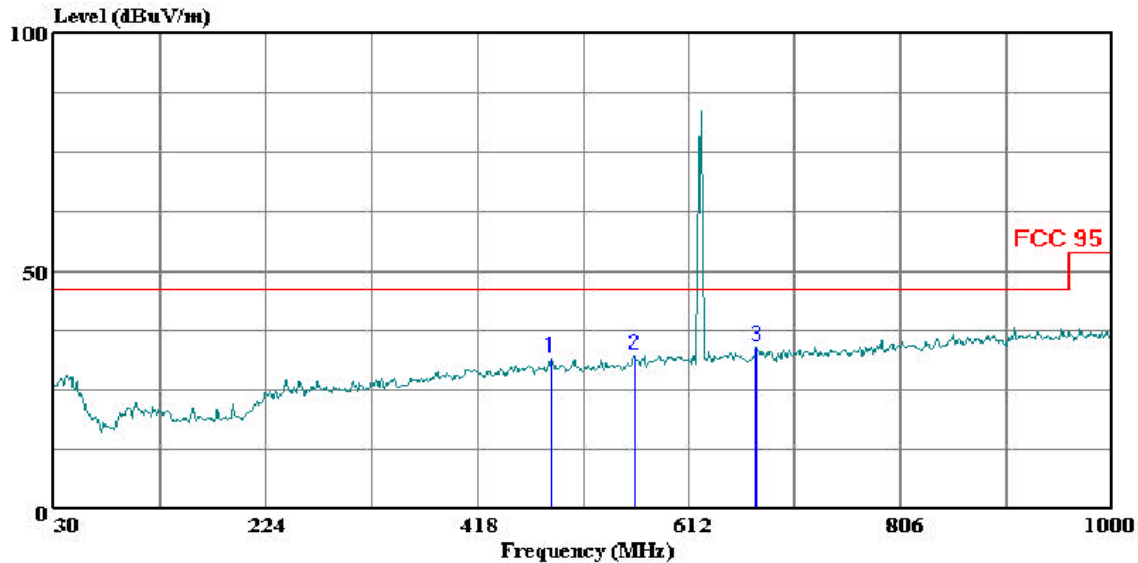
			Read		Limit	Over
	Freq	Remark	Level	Factor	Level	Line
	MHz		dBuV	dB	dBuV/m	dB
1	516.940	Peak	10.55	20.34	30.90	46.00 -15.10
2	579.990	Peak	11.01	21.54	32.55	46.00 -13.45
3	693.480	Peak	11.55	22.87	34.42	46.00 -11.58

95.1115 (b) HIGH CHANNEL (HORIZONTAL UNDER 1GHz)



561F Monterey Road  
Morgan Hill, CA 95037  
Tel: (408) 463-0888  
Fax: (408) 463-0885

Data#: 22 File#: RUN1.EMI Date: 09-28-2004 Time: 22:21:53



(AudiX ATC)

Trace: 21

Ref Trace:

Condition: FCC 95 HORIZONTAL RBW=VBW=100KHZ  
Test Operator: : NEELESH RAJ  
Project #: : 04I2957  
Company: : NIHON KODEN  
EUT: : TRANSMITTER FOR MEDICAL  
Model No: : ZS-940PA  
Configuration: : EUT  
Target of Test: : FCC 95  
Mode of Operation: HIGH CHANNEL TX

Page: 1

	Freq	Remark	Read Level	Factor	Level	Limit	Over
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	484.930	Peak	11.57	19.81	31.38	46.00	-14.62
2	562.530	Peak	11.09	21.18	32.27	46.00	-13.73
3	674.080	Peak	11.16	22.66	33.82	46.00	-12.18

## 95.1115 (b) HIGH CHANNEL (VERTICAL & HORIZONTAL ABOVE 1GHz)

09/30/04 High Frequency Measurement  
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: NEELESH RAJ  
Project #: 04I2957  
Company: NIHON KOHDEN  
EUT Descr.: TRANSMITTER FOR MEDICAL  
EUT M/N: ZS-940PA  
Test Target: FCC 95  
Mode Oper: HIGH CHANNEL TX

Test Equipment:

EMCO Horn 1-18GHz T60; S/N: 2238 @3m	Pre-amplifier 1-26GHz T86 Miteq 924341	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit FCC 15.209
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Hi Frequency Cables

2 foot cable 2_Neelesh	3 foot cable	4 foot cable	12 foot cable 12_Neelesh	HPF	Reject Filter
---------------------------	--------------	--------------	-----------------------------	-----	---------------

Peak Measurements  
RBW=VBW=1MHz

Average Measurements  
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filt dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
1.227975	3.0	53.5	50.1	24.6	1.7	-42.1	0.0	0.0	37.7	34.3	74	54	-36.3	-19.7	V
1.841963	3.0	50.3	39.7	27.1	2.1	-42.2	0.0	0.0	37.3	26.7	74	54	-36.7	-27.3	V
2.455950	3.0	54.3	48.9	28.3	2.5	-42.3	0.0	0.0	42.8	37.4	74	54	-31.2	-16.6	V
3.069938	3.0	57.6	52.3	30.3	2.7	-42.4	0.0	0.0	48.2	42.9	74	54	-25.8	-11.1	V
3.683925	3.0	50.4	40.4	31.9	3.0	-42.6	0.0	0.0	42.7	32.7	74	54	-31.3	-21.3	V
4.297913	3.0	54.0	47.3	32.8	3.3	-43.2	0.0	0.0	47.0	40.3	74	54	-27.0	-13.7	V
4.911900	3.0	51.3	42.3	33.0	3.6	-44.1	0.0	0.0	43.8	34.8	74	54	-30.2	-19.2	V
5.525888	3.0	50.3	43.2	34.2	3.9	-44.9	0.0	0.0	43.5	36.3	74	54	-30.5	-17.7	V
6.139875	3.0	52.0	41.3	34.5	4.1	-45.4	0.0	0.0	45.2	34.5	74	54	-28.8	-19.5	V
1.227975	3.0	55.4	53.2	24.6	1.7	-42.1	0.0	0.0	39.6	37.4	74	54	-34.4	-16.6	H
1.841963	3.0	51.0	39.7	27.1	2.1	-42.2	0.0	0.0	38.0	26.6	74	54	-36.0	-27.4	H
2.455950	3.0	52.3	49.1	28.3	2.5	-42.3	0.0	0.0	40.8	37.6	74	54	-33.2	-16.4	H
3.069938	3.0	56.8	55.6	30.3	2.7	-42.4	0.0	0.0	47.4	46.2	74	54	-26.6	-7.8	H
3.683925	3.0	47.7	40.4	31.9	3.0	-42.6	0.0	0.0	40.0	32.7	74	54	-34.0	-21.3	H
4.297913	3.0	53.2	44.2	32.8	3.3	-43.2	0.0	0.0	46.2	37.2	74	54	-27.8	-16.8	H
4.911900	3.0	50.6	41.0	33.0	3.6	-44.1	0.0	0.0	43.1	33.5	74	54	-30.9	-20.5	H
5.525888	3.0	51.4	40.8	34.2	3.9	-44.9	0.0	0.0	44.5	33.9	74	54	-29.5	-20.1	H
6.139875	3.0	51.3	41.5	34.5	4.1	-45.4	0.0	0.0	44.5	34.7	74	54	-29.5	-19.3	H
NO OTHER SPURIOUS EMISSIONS DETECTED ABOVE THE SYSTEM NOISE FLOOR -20dB TO THE LIMIT															

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

## 9. EMISSION BANDWIDTH

### PROVISIONS APPLICABLE

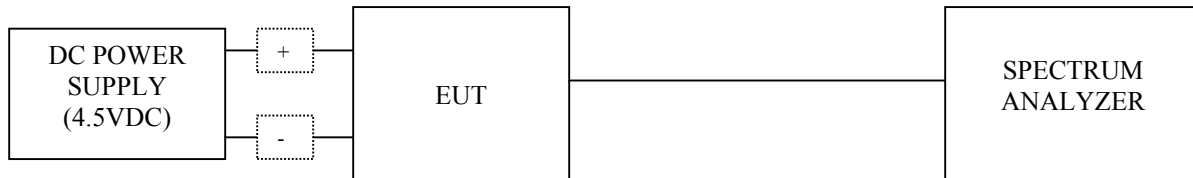
According to CFR 47 section 2.1046

### LIMIT

The 26dB bandwidth shall be less than 8.5 KHz (MANF. SHEET).

### TEST PROCEDURE

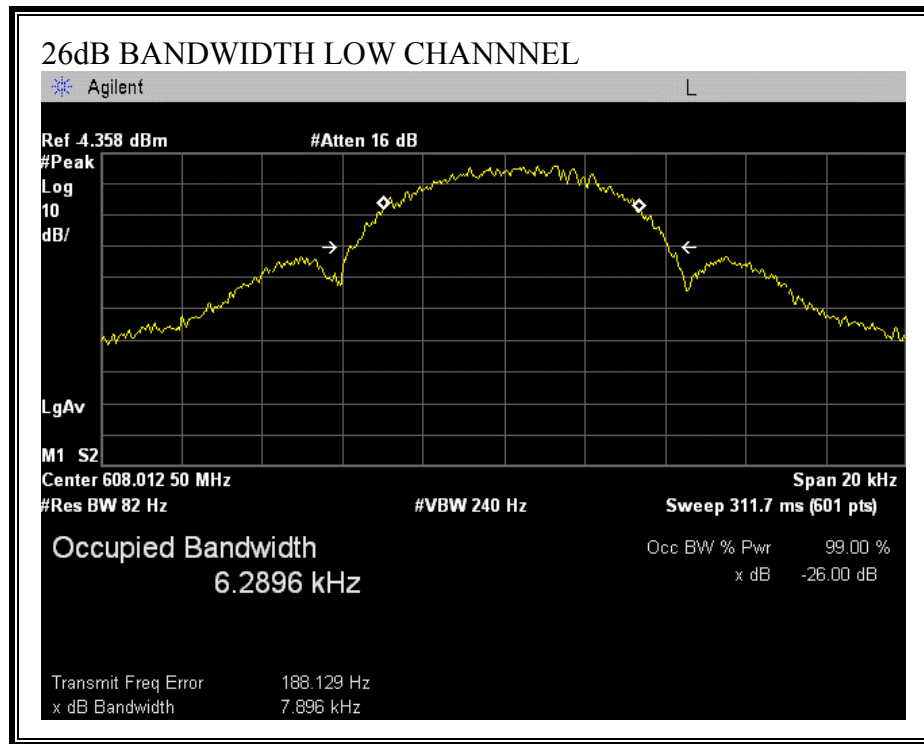
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 26dB bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 26dB bandwidth function is utilized.

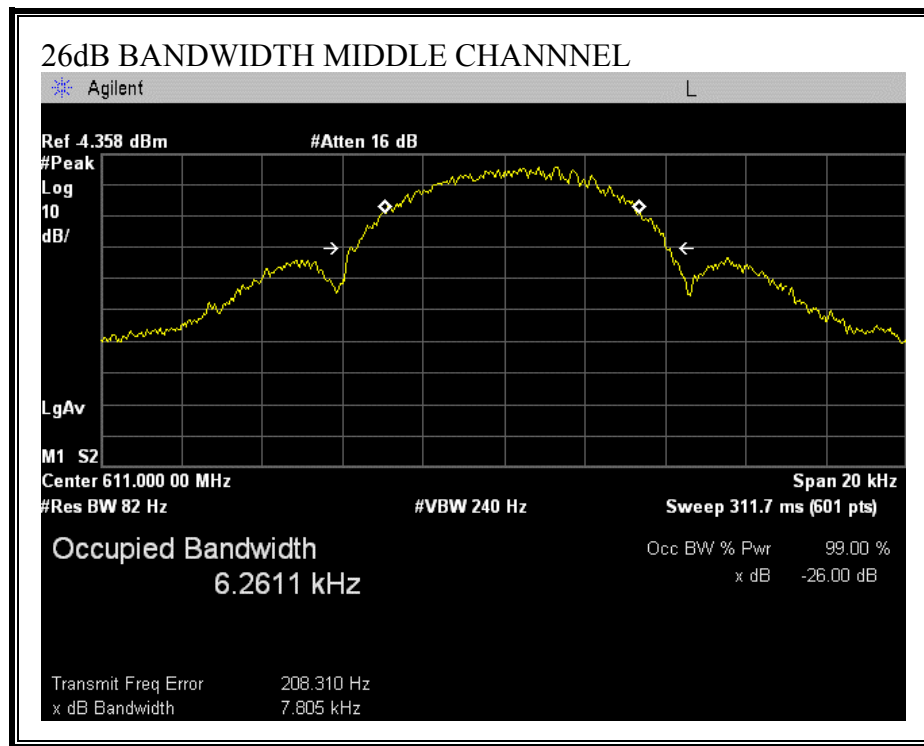


### TEST RESULTS

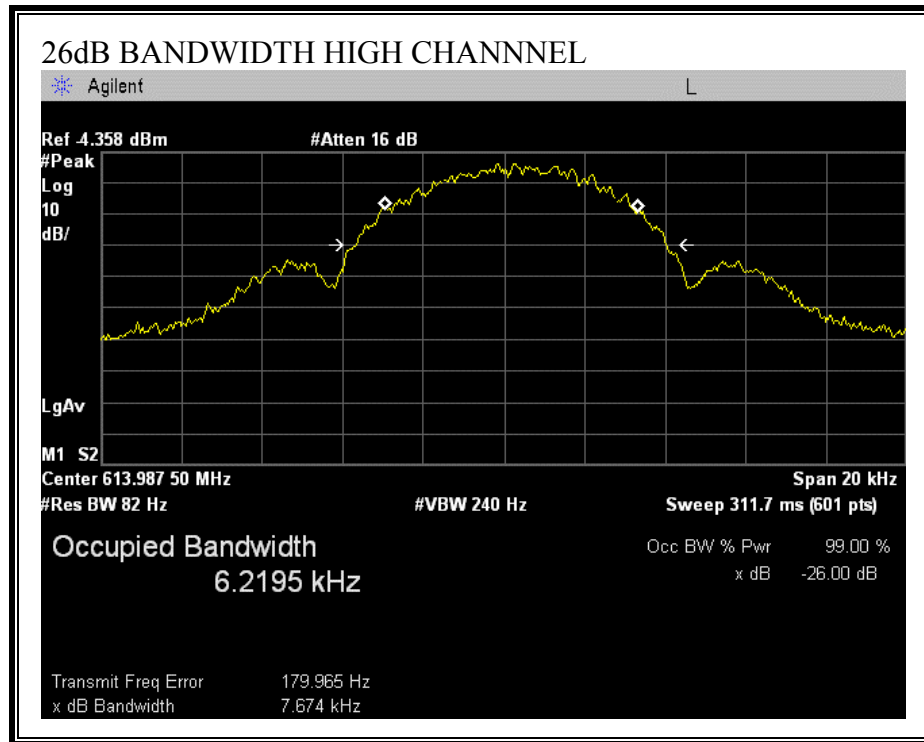
No non-compliance noted:

CHANNEL	FREQUENCY (MHz)	26 dB BANDWIDTH (KHz)	99% BANDWIDTH (KHz)
LOW	608.0125	7.896	6.2896
MIDDLE	611	7.805	6.2611
HIGH	613.9875	7.674	6.2195









## 10. PEAK OUTPUT POWER

### PROVISIONS APPLICABLE

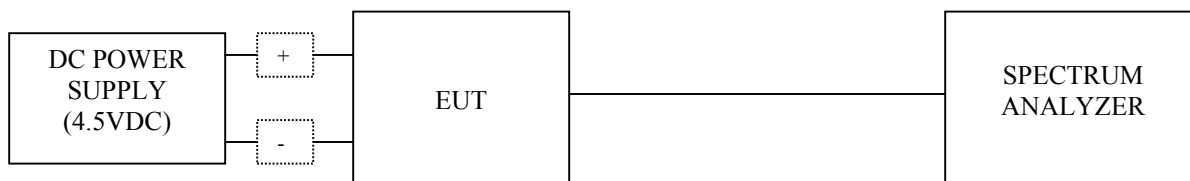
According to CFR47 section 2.1046

### LIMIT

FREQUENCY (MHz)	LIMIT (dBm)
608-614	10.8

### TEST PROCEDURE

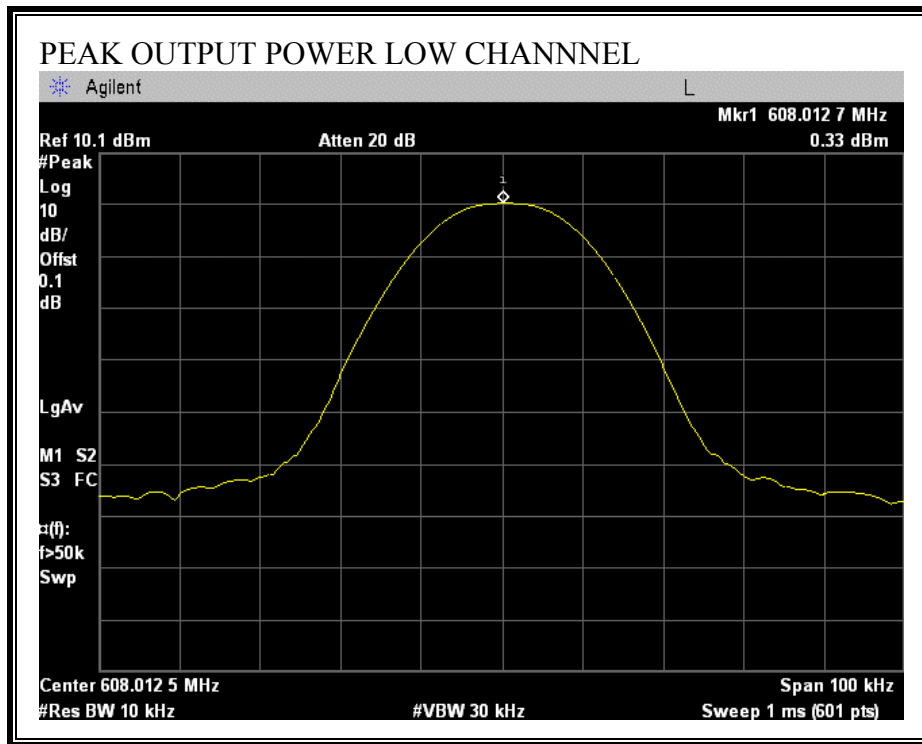
The transmitter output is connected to the spectrum analyzer. The RBW is set greater than the 26dB bandwidth. The VBW is set to 3 times the RBW.

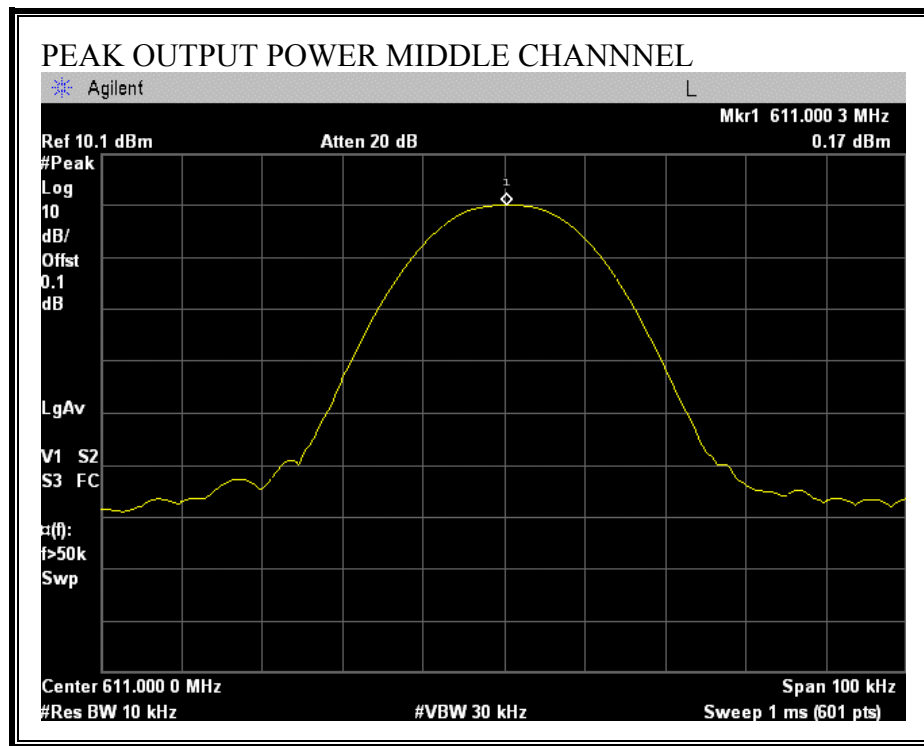


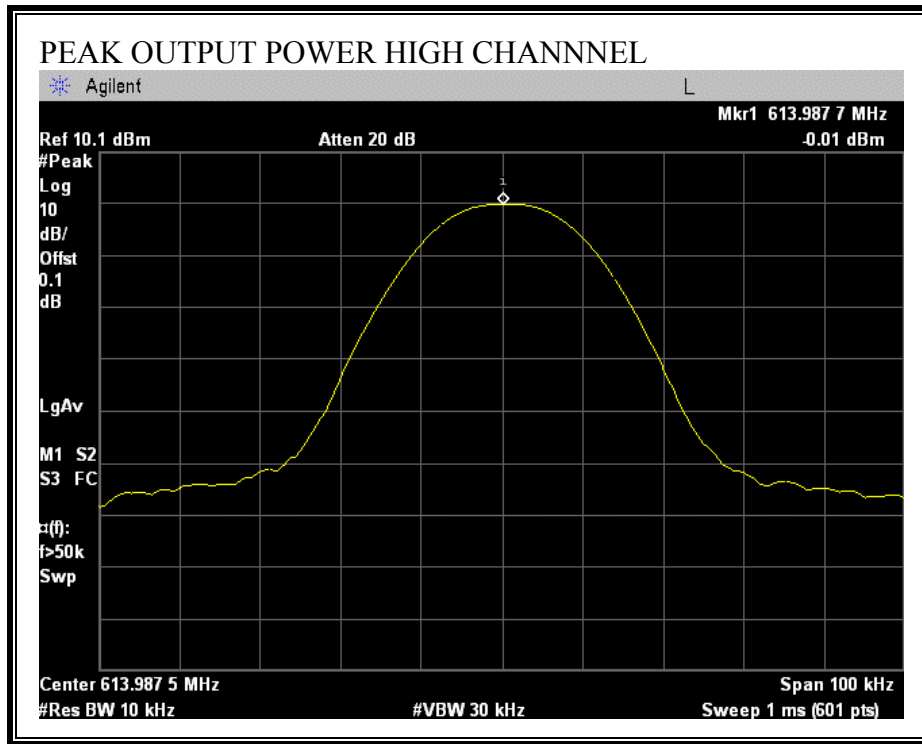
### TEST RESULTS

No non-compliance noted:

CHANNEL	FREQUENCY (MHz)	PEAK OUTPUT POWER (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	608.0125	0.33	10.8	-10.47
MIDDLE	611	0.17	10.8	-10.63
HIGH	613.9875	-0.01	10.8	-10.81







## 11. SPURIOUS EMISSIONS AT ANTENNA TERMINAL

### PROVISIONS APPLICABLE

According to CFR47 section 2.1051

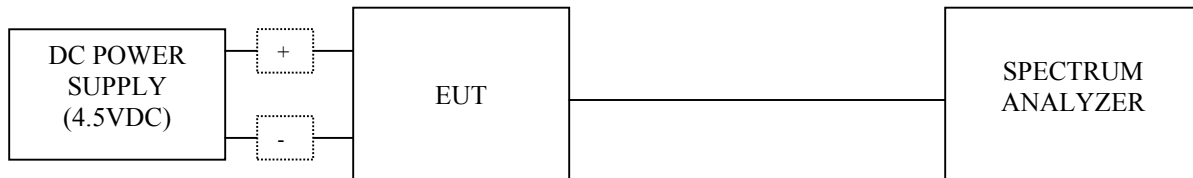
### LIMIT

All the conducted emission spurious level shall be at least -20dBc below the band that contains the highest level of desired power.

### TEST PROCEDURE

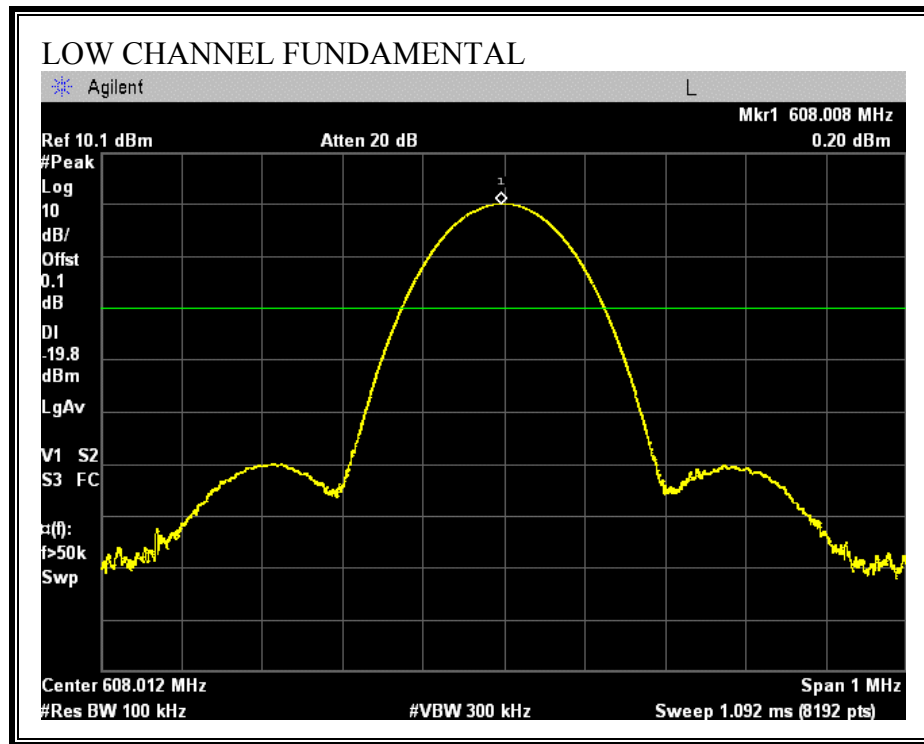
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz. The VBW is set to 300 kHz.

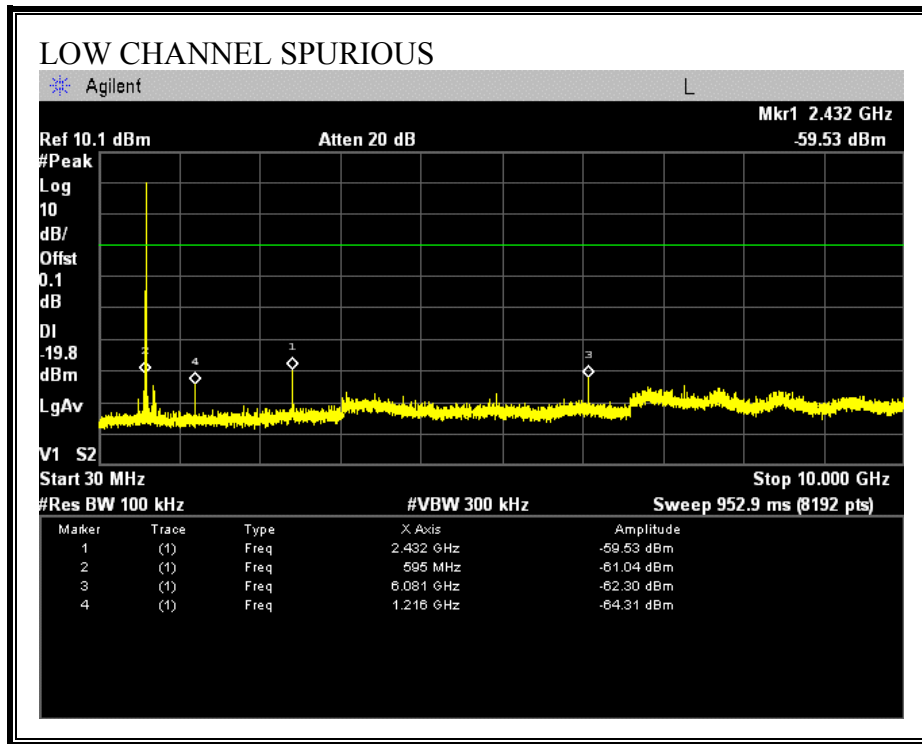
The spectrum from 30 MHz to 10 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.



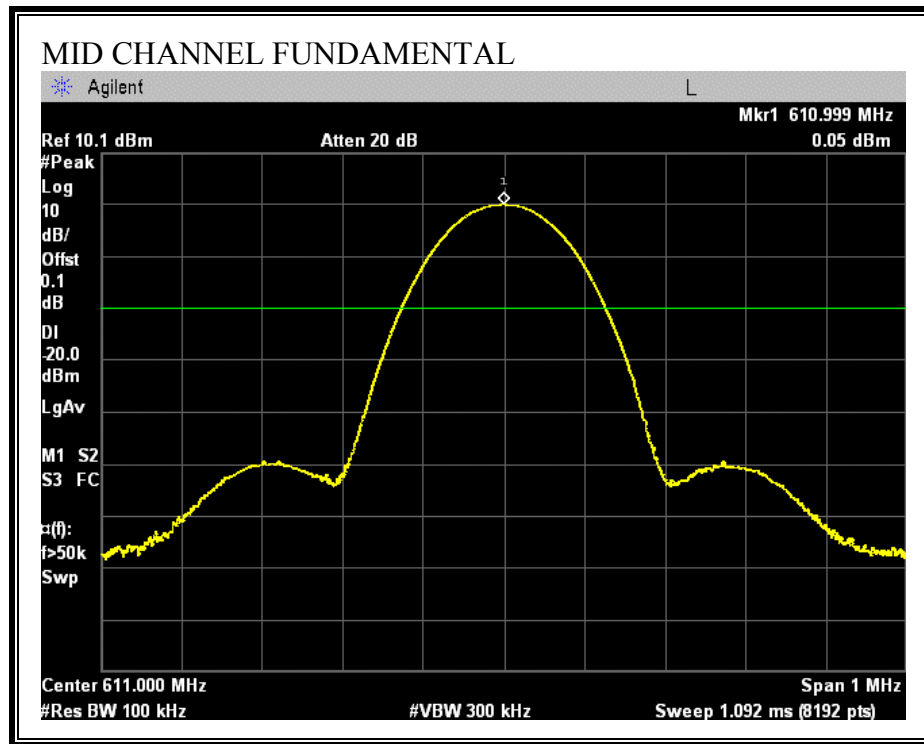
### TEST RESULTS

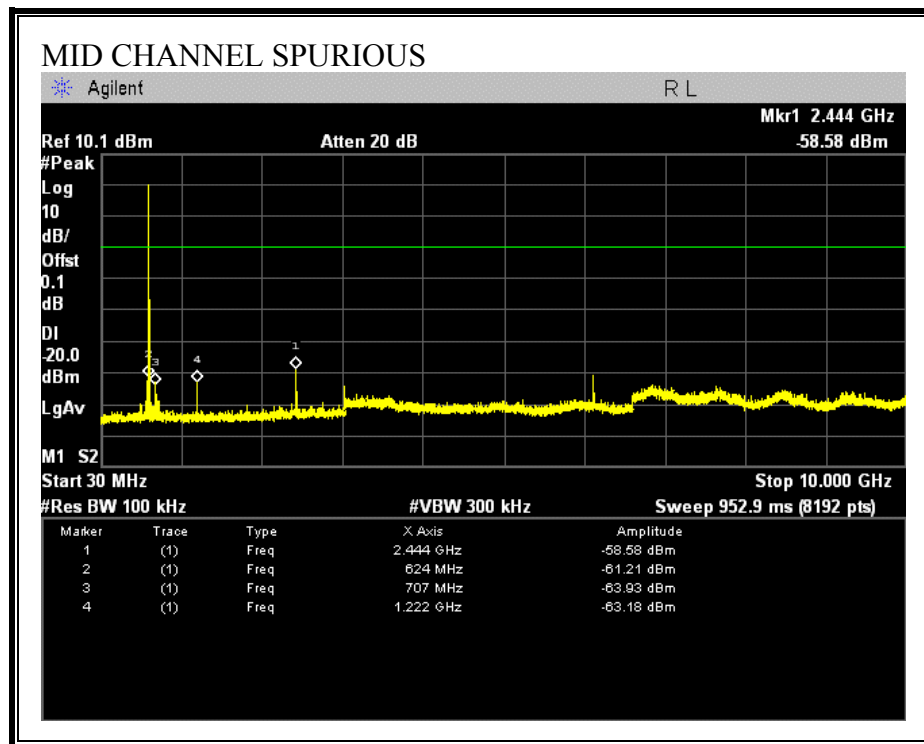
No non-compliance noted:

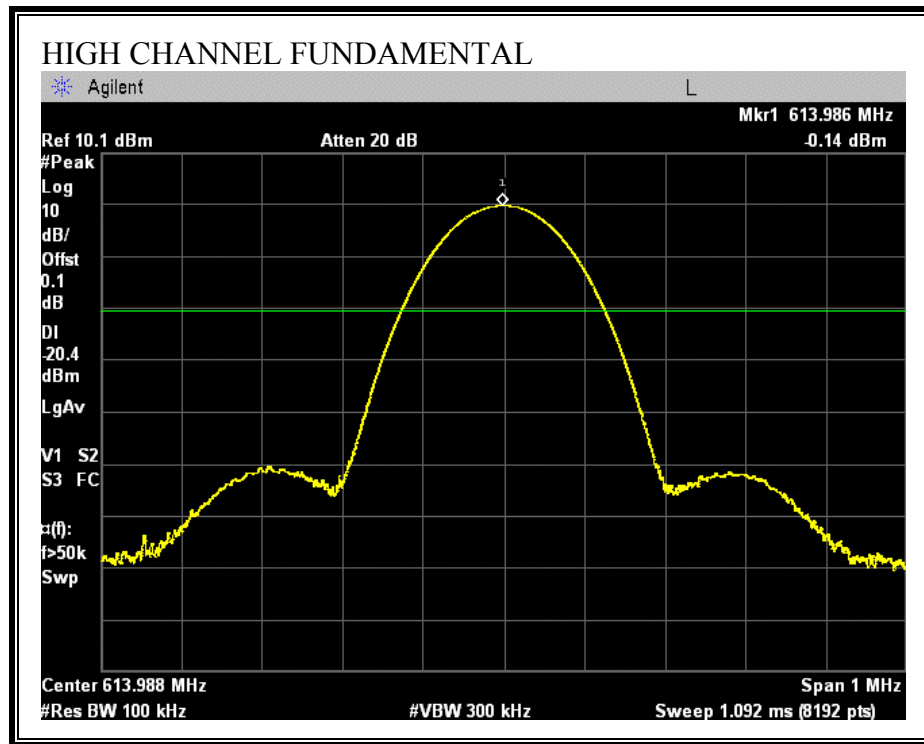


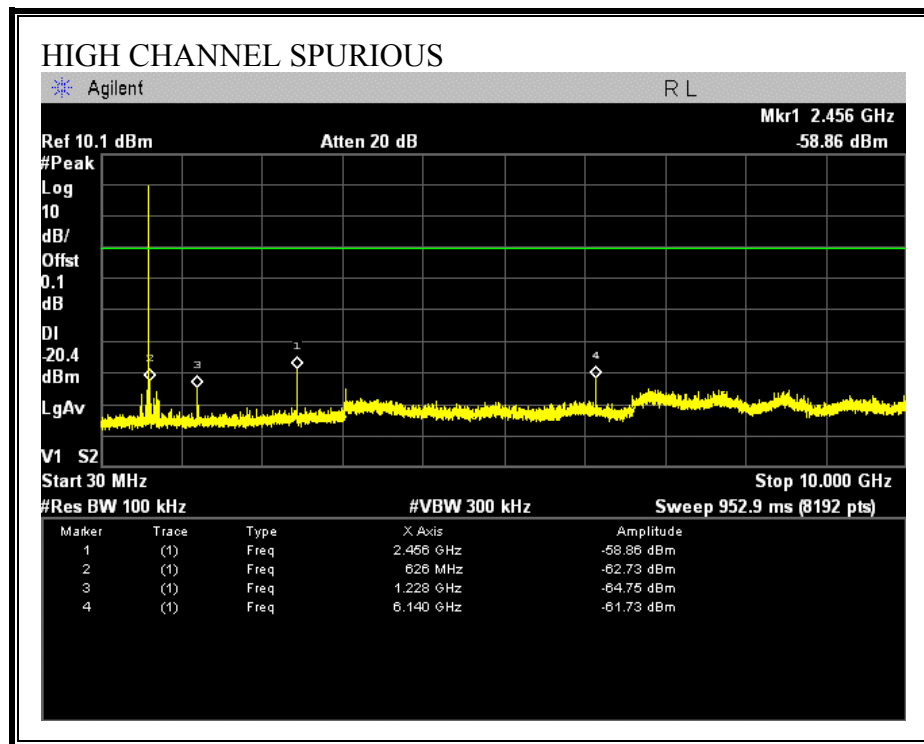












## 12. FREQUENCY STABILITY MEASUREMENT

### PROVISIONS APPLICABLE

According to CFR 47 section 2.1055

### LIMIT

An emission is maintained within the band of operation under the manf's specified conditions.

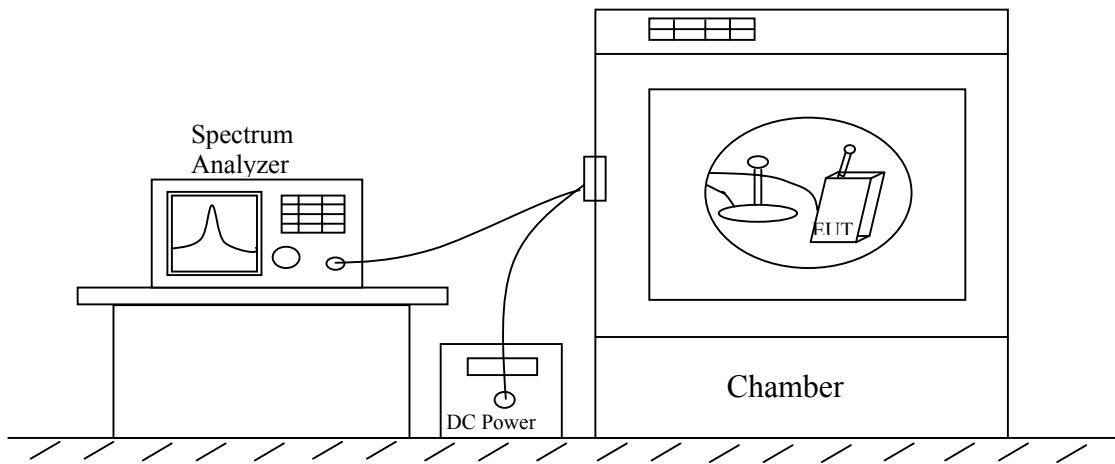
### TEST PROCEDURE

#### Frequency stability versus environmental temperature

- 1) Set the temperature of chamber to 25°C @ low/high channel. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.
- 2) Set SA Resolution Bandwidth to 300 Hz and Video Resolution Bandwidth to 300 Hz and Frequency Span to 20 KHz. Record this frequency as reference frequency.
- 3) Repeat step 2 with a 10°C decreased per stage until the lowest temperature -30°C is measured, record all measured frequencies on each temperature step.
- 3) Repeat step 2 with a 10°C increased per stage until the highest temperature +65°C is measured; record all measured frequencies on each temperature step.

#### Frequency stability versus input voltage

- 1). Setup the configuration as shown below for frequencies measured at temperature if it is 25°C.
- 2). Set SA center frequency to the EUT radiated frequency. Set SA Resolution Bandwidth to 300 Hz and Video Resolution Bandwidth to 300 Hz and Frequency Span to 20 KHz. Record this frequency as reference frequency.
- 3). For battery operated only device, supply the EUT primary voltage at the operating end point which is specified by manufacturer and record the frequency.



*Frequency stability measurement configuration*

## **TEST RESULTS**

No non compliant noted

## LOW CHANNEL

Reference Frequency: LOW CHANNEL				
Limit: 608 MHz				
Power Supply (Vdc)	Environment Temperature (C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Limit (MHz)	Margin
4.50	50	608.01329	608.000	0.013285266
4.50	40	608.01315	608.000	0.013151145
4.50	30	608.01261	608.000	0.012613175
<b>4.50</b>	<b>25</b>	<b>608.01250</b>	<b>608.000</b>	<b>0.01250</b>
4.50	20	608.01251	608.000	0.012512157
4.50	10	608.01253	608.000	0.012532534
4.50	0	608.01259	608.000	0.012592438
4.50	-10	608.01262	608.000	0.012615162
4.50	-20	608.01263	608.000	0.012632175
4.50	-30	608.01290	608.000	0.012895439
Reference Frequency: LOW CHANNEL				
Limit: 608 MHz				
Power Supply (Vdc)	Environment Temperature (C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Limit (MHz)	Margin
<b>4.5 (Normal)</b>	<b>25</b>	<b>608.01250</b>	<b>608.000</b>	<b>0.0125</b>
3.825 (85%)	<b>25</b>	608.01310	608.000	0.013097765
5.175 (115%)	<b>25</b>	608.01310	608.000	0.013097765
3.15 (endpoint)	<b>25</b>	608.01310	608.000	0.013097666

\*Operating environment of the EUT is specified in the user manual as follows;

- Operating temp: 5 – 40 deg. C
- Operating voltage: 3.2 - 4.8 VDC

## HIGH CHANNEL

Reference Frequency: HIGH CHANNEL				
Limit: 614 MHz				
Power Supply (Vdc)	Environment Temperature (C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Limit (MHz)	Margin
4.50	50	613.98816	614.000	-0.011842344
4.50	40	613.98814	614.000	-0.011862677
4.50	30	613.98765	614.000	-0.012346357
<b>4.50</b>	<b>25</b>	<b>613.98750</b>	<b>614.000</b>	<b>-0.01250</b>
4.50	20	613.98750	614.000	-0.012499236
4.50	10	613.98751	614.000	-0.012494542
4.50	0	613.98799	614.000	-0.012013872
4.50	-10	613.98755	614.000	-0.012446357
4.50	-20	613.98864	614.000	-0.011356377
4.50	-30	613.99755	614.000	-0.002447655
Reference Frequency: HIGH CHANNEL				
Limit: 614 MHz				
Power Supply (Vdc)	Environment Temperature (C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Limit (MHz)	Margin
<b>4.5 (Normal)</b>	<b>25</b>	<b>613.98750</b>	<b>614.000</b>	<b>-0.0125</b>
3.825 (85%)	<b>25</b>	613.98750	614.000	-0.012499675
5.175 (115%)	<b>25</b>	613.99750	614.000	-0.002499675
3.15 (endpoint)	<b>25</b>	613.98767	614.000	-0.012333649

\*Operating environment of the EUT is specified in the user manual as follows;

- Operating temp: 5 – 40 deg. C
- Operating voltage: 3.2 - 4.2 VDC



### 13. RADIATED EMISSIONS FOR DIGITAL PORTION

#### PROVISIONS APPLICABLE

According to CFR47 section 15.109

#### LIMITS

§15.109 (a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Field Strength (microvolts/meter)
30 - 88	100
88 - 216	150
216 - 960	200
Above 960	500

§15.109 (c) In the emission tables above, the tighter limit applies at the band edges. Sections 15.33 and 15.35 which specify the frequency range over which radiated emissions are to be measured and the detector functions and other measurement standards apply.

§15.109 (g) As an alternative to the radiated emission limits shown in paragraphs (a) and (b) of this section, digital devices may be shown to comply with the standards contained in the Third Edition of International Electrotechnical Commission ("IEC"), International Special Committee on Radio Interference (CISPR) Pub. 22 (1997), "Information Technology Equipment -- Radio Disturbance Characteristics -- Limits and Methods of Measurement." This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of CISPR publications may be purchased from the Global Engineering Documents, P. O. Box 8500 (S-4485), Philadelphia, PA 19178-4485, (303) 792-2181 or (800) 624-3974. Copies also may be inspected, but not reproduced, during normal business hours at the following locations: Federal Communications Commission, Reference Information Center, Room CY-A257, 445 12th Street, SW., Washington, DC, and Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC. In addition:

(1) The test procedure and other requirements specified in this part shall continue to apply to digital devices.

(2) If, in accordance with §15.33 of this part, measurements must be performed above 1000 MHz, compliance above 1000 MHz shall be demonstrated with the emission limit in paragraph (a) or (b) of this section, as appropriate. Measurements above 1000 MHz may be performed at the distance specified in the CISPR 22 publications for measurements below 1000 MHz provided the limits in paragraphs (a) and (b) of this section are extrapolated to the new measurement distance using an inverse linear distance extrapolation factor (20 dB/decade), e.g., the radiated limit above 1000 MHz for a Class B digital device is 150 uV/m, as measured at a distance of 10 meters.

(3) The measurement distances shown in CISPR Pub. 22, including measurements made in accordance with this paragraph above 1000 MHz, are considered, for the purpose of §15.31(f)(4) of this part, to be the measurement distances specified in this part.

(4) If the radiated emissions are measured to demonstrate compliance with the alternative standards in this paragraph, compliance must also be demonstrated with the conducted limits shown in §15.107(e).

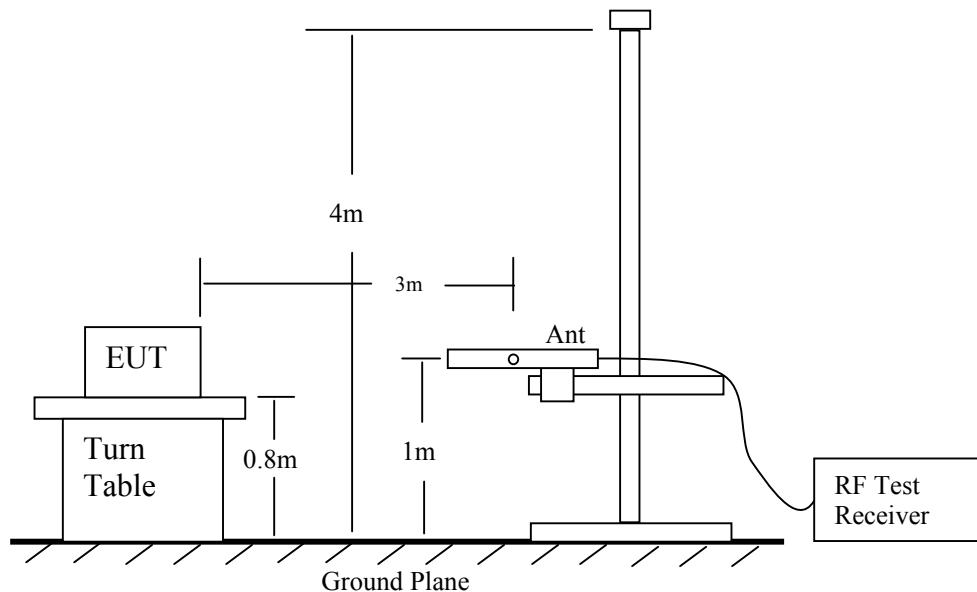
## MEASUREMENT PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.



Radiated Emission Measurement 30 to 1000 MHz

## TEST RESULTS

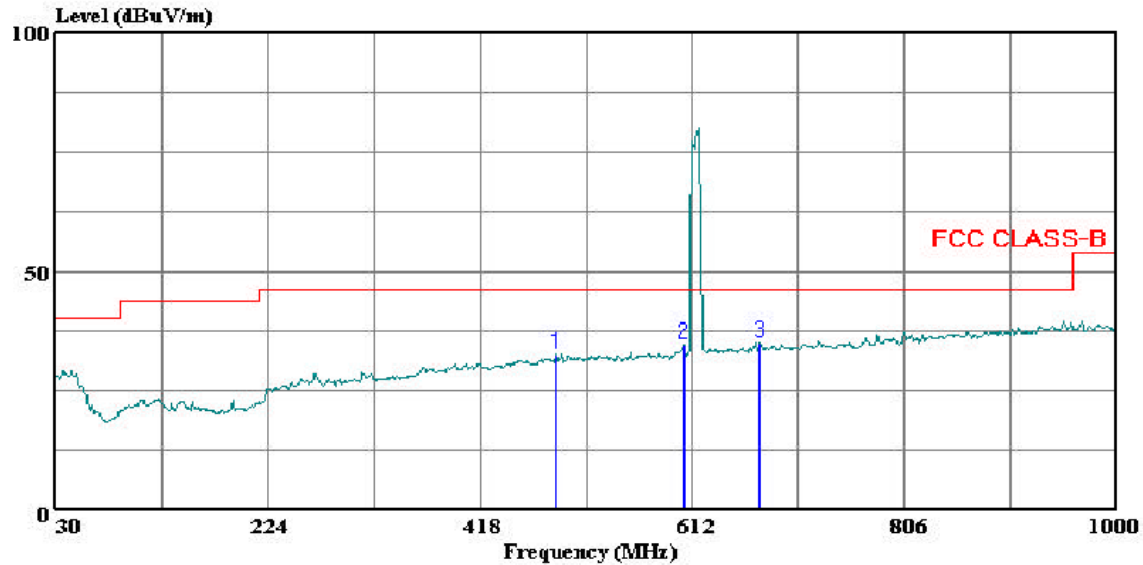
No non-compliance noted:

**DIGITAL SPURIOUS EMISSIONS 30 TO 1000 MHz (VERTICAL)**  
**DIGITAL CONFIGURATION #1**



561F Monterey Road  
Morgan Hill, CA 95037  
Tel: (408) 463-0888  
Fax: (408) 463-0885

Data#: 28 File#: RUN1.EMI Date: 09-28-2004 Time: 23:12:00



(Auxiliary ATC)

Trace: 27

Ref Trace:

Condition: FCC CLASS-B VERTICAL  
Test Operator: : NEELESH RAJ  
Project #: : 04I2957  
Company: : NIHON KODEN  
EUT: : TRANSMITTER FOR MEDICAL  
Model No: : ZS-940PA  
Configuration: : DIGITAL CONFIG#1  
Target of Test: : FCC B  
Mode of Operation: NIBP ACTIVE  
: TX WORST CASE (LOW CHANNEL)

Page: 1

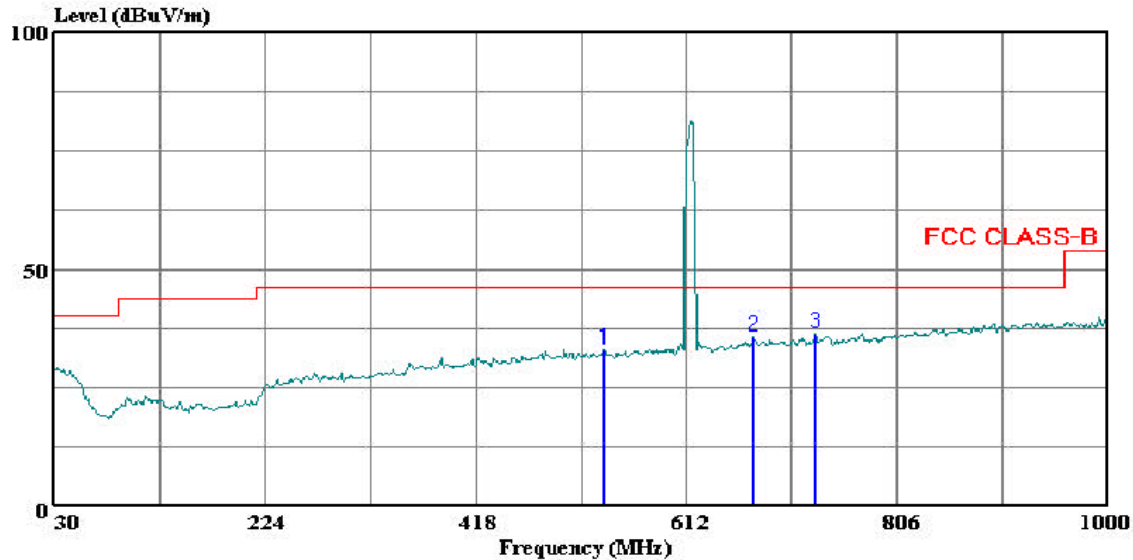
	Freq	Remark	Read Level	Factor	Limit Level	Over Line	Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	487.840	Peak	12.66	19.86	32.52	46.00	-13.48
2	604.240	Peak	12.66	21.85	34.51	46.00	-11.49
3	674.080	Peak	12.44	22.66	35.10	46.00	-10.90

**DIGITAL SPURIOUS EMISSIONS 30 TO 1000 MHz (HORIZONTAL)**  
**DIGITAL CONFIGURATION #1**



561F Monterey Road  
Morgan Hill, CA 95037  
Tel: (408) 463-0888  
Fax: (408) 463-0885

Data#: 30 File#: RUN1.EMI Date: 09-28-2004 Time: 23:17:08



(Aidx ATC)

Trace: 29

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL  
Test Operator: : NEELESH RAJ  
Project #: : 04I2957  
Company: : NIHON KODEN  
EUT: : TRANSMITTER FOR MEDICAL  
Model No: : ZS-940PA  
Configuration: : DIGITAL CONFIG#1  
Target of Test: : FCC CLASS B  
Mode of Operation: NIBP ACTIVE  
: TX WORST CASE (LOW CHANNEL)

Page: 1

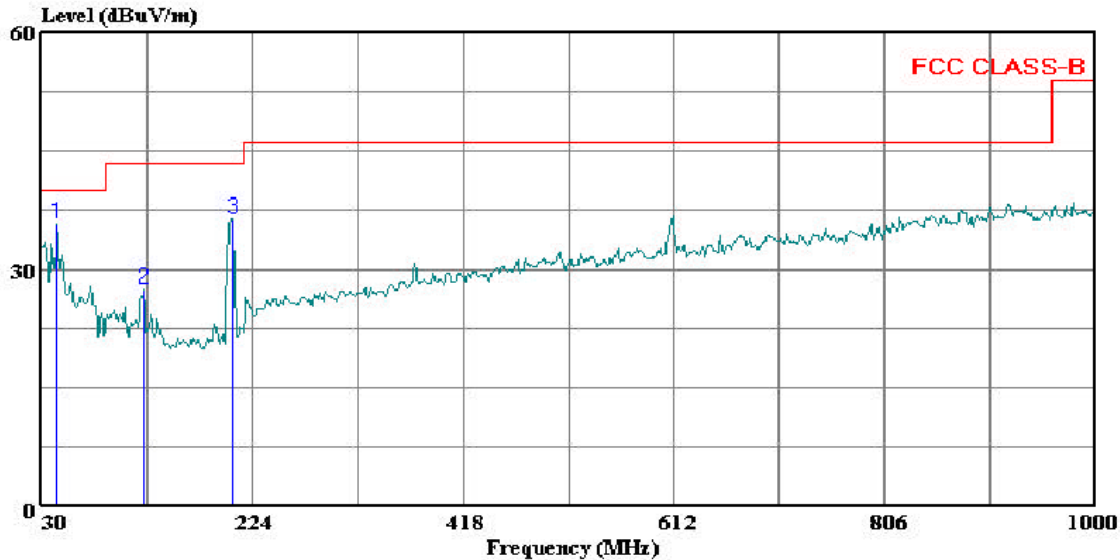
	Freq	Remark	Read Level	Factor	Level	Limit	Over
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	536.340	Peak	12.24	20.78	33.02	46.00	-12.98
2	674.080	Peak	12.95	22.66	35.61	46.00	-10.39
3	730.340	Peak	12.97	23.39	36.36	46.00	-9.64

**DIGITAL SPURIOUS EMISSIONS 30 TO 1000 MHz (VERTICAL)**  
**DIGITAL CONFIGURATION #2**



561F Monterey Road  
Morgan Hill, CA 95037  
Tel: (408) 463-0888  
Fax: (408) 463-0885

Data#: 34 File#: RUN1.EMI Date: 09-28-2004 Time: 23:53:30



(Aidx ATC)

Trace: 33

Ref Trace:

Condition: FCC CLASS-B VERTICAL  
Test Operator: : NEELESH RAJ  
Project #: : 04I2957  
Company: : NIHON KODEN  
EUT: : TRANSMITTER FOR MEDICAL  
Model No: : ZS-940PA  
Configuration: : DIGITAL CONFIG#2  
Target of Test: : FCC CLASS B  
Mode of Operation: PRINT/CHANGE CHANNEL

Page: 1

	Freq	Remark	Read Level	Factor	Level	Limit	Over
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	43.580	Peak	17.00	18.78	35.78	40.00	-4.22
2	124.090	Peak	14.72	12.75	27.47	43.50	-16.03
3	206.540	Peak	23.99	12.35	36.34	43.50	-7.16

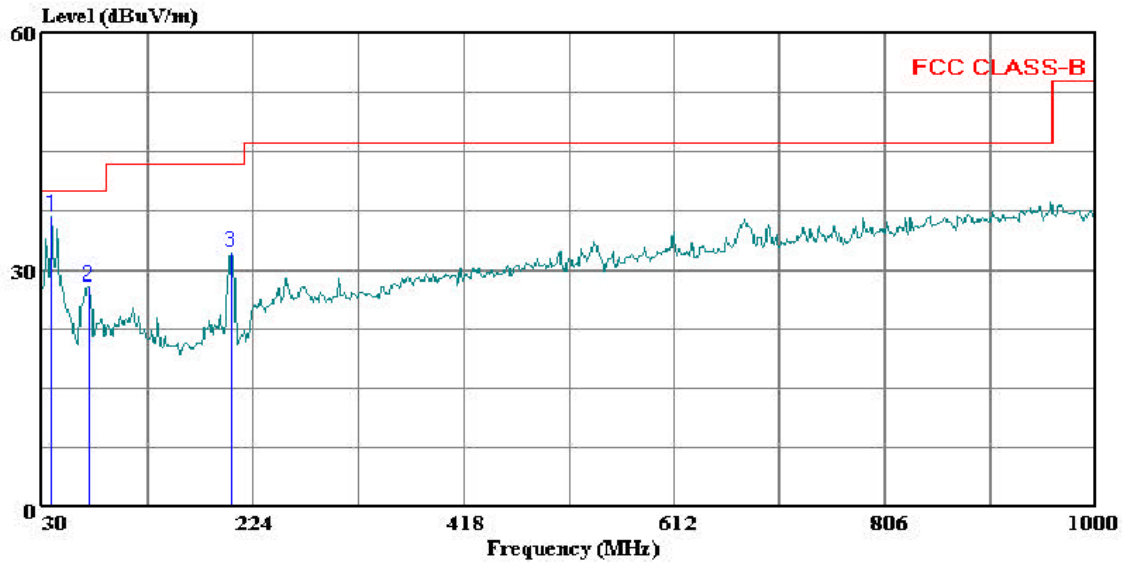
**DIGITAL SPURIOUS EMISSIONS 30 TO 1000 MHz (HORIZONTAL)**  
**DIGITAL CONFIGURATION #2**



561F Monterey Road  
Morgan Hill, CA 95037  
Tel: (408) 463-0888  
Fax: (408) 463-0885

Data#: 32 File#: RUN1.EMI

Date: 09-28-2004 Time: 23:50:07



(Audix ATC)

Trace: 31

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL  
Test Operator: : NEELESH RAJ  
Project #: : 04I2957  
Company: : NIHON KODEN  
EUT: : TRANSMITTER FOR MEDICAL  
Model No: : ZS-940PA  
Configuration: : DIGITAL CONFIG#2  
Target of Test: : FCC CLASS B  
Mode of Operation: PRINT/CHANGE CHANNEL

Page: 1

	Freq	Remark	Read Level	Factor	Level	Limit	Over
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	38.730	Peak	17.73	19.00	36.73	40.00	-3.27
2	72.680	Peak	19.15	8.75	27.90	40.00	-12.10
3	203.630	Peak	20.05	12.15	32.20	43.50	-11.30

## 14. POWER LINE CONDUCTED EMISSIONS

### PROVISIONS APPLICABLE

According to CFR 47 section 15.107 (a)

### LIMIT

§15.107 (a) Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

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

\* Decreases with the logarithm of the frequency.

### TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

### TEST RESULTS

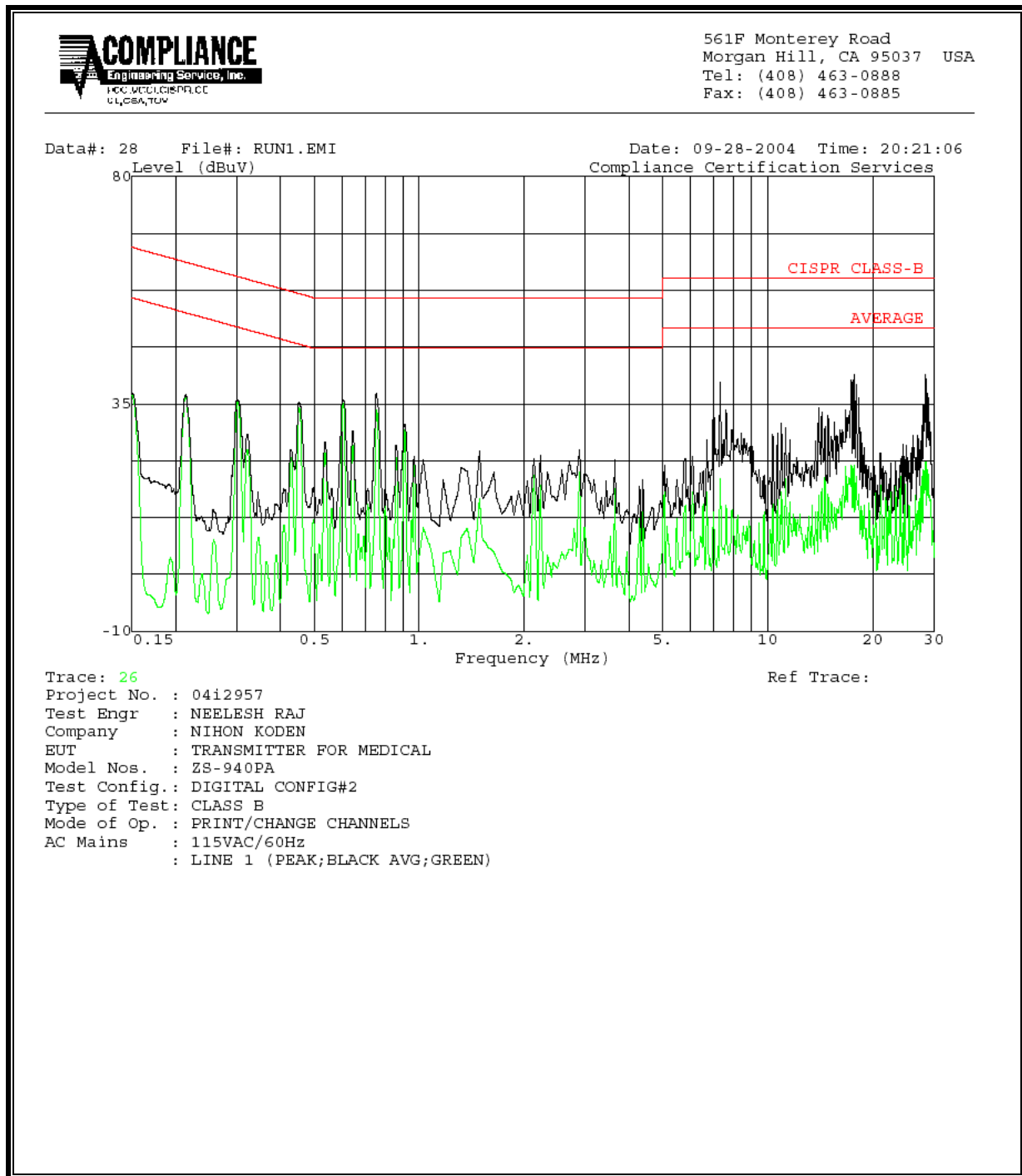
No non-compliance noted:



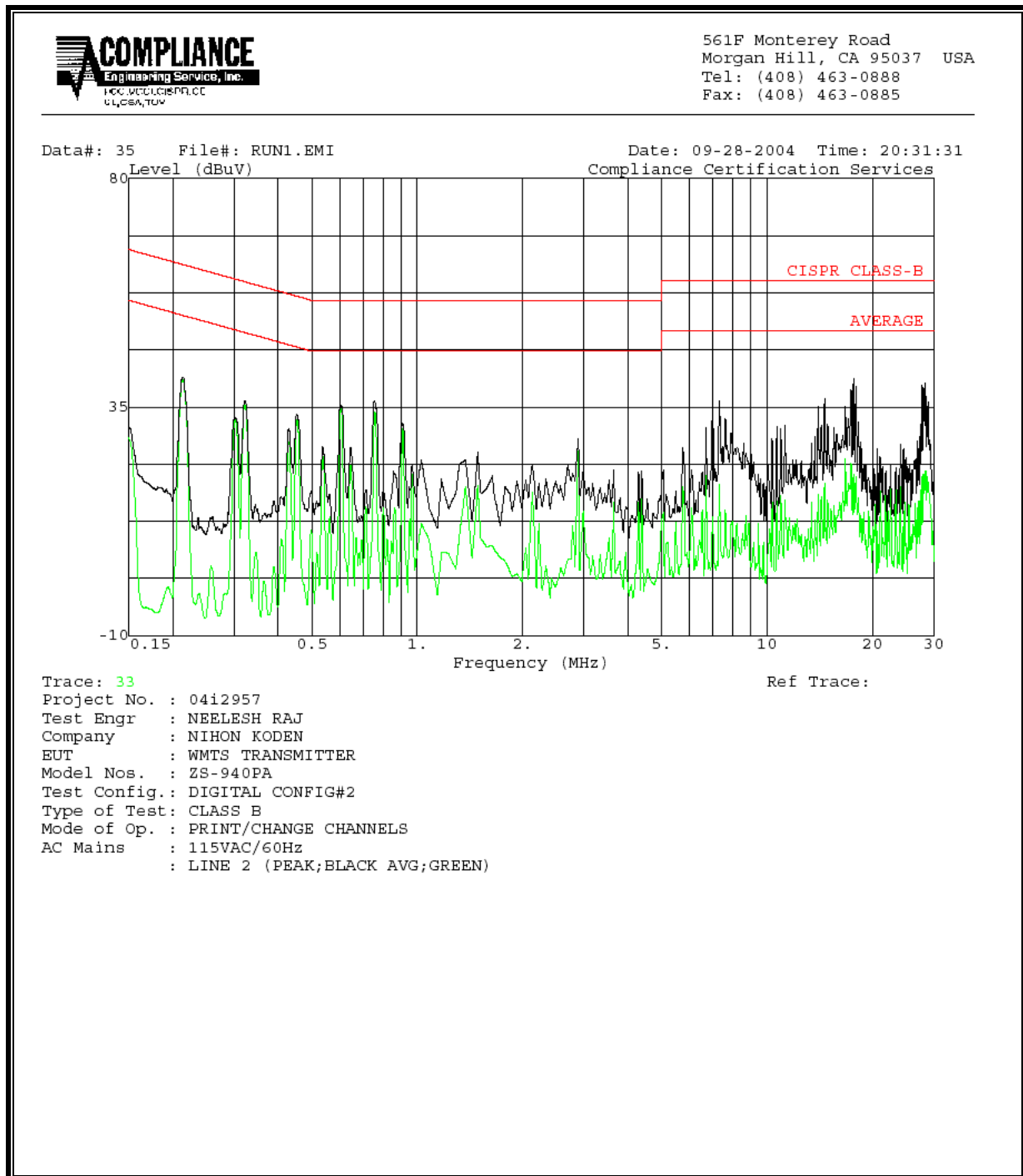
## 6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
28.30	40.90	--	23.61	0.00	60.00	50.00	-19.10	-26.39	L1
17.66	40.82	--	22.88	0.00	60.00	50.00	-19.18	-27.12	L1
7.29	39.38	--	20.29	0.00	60.00	50.00	-20.62	-29.71	L1
28.30	39.62	--	28.30	0.00	60.00	50.00	-20.38	-21.70	L2
17.66	40.58	--	24.76	0.00	60.00	50.00	-19.42	-25.24	L2
6.99	36.62	--	21.59	0.00	60.00	50.00	-23.38	-28.41	L2
6 Worst Data									

## LINE 1 RESULTS

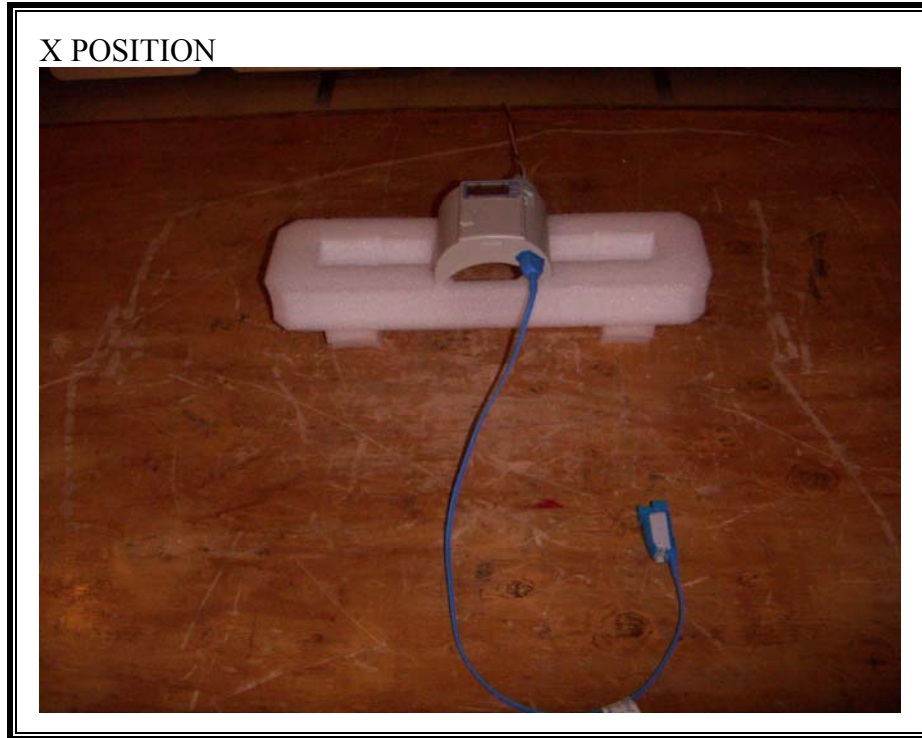


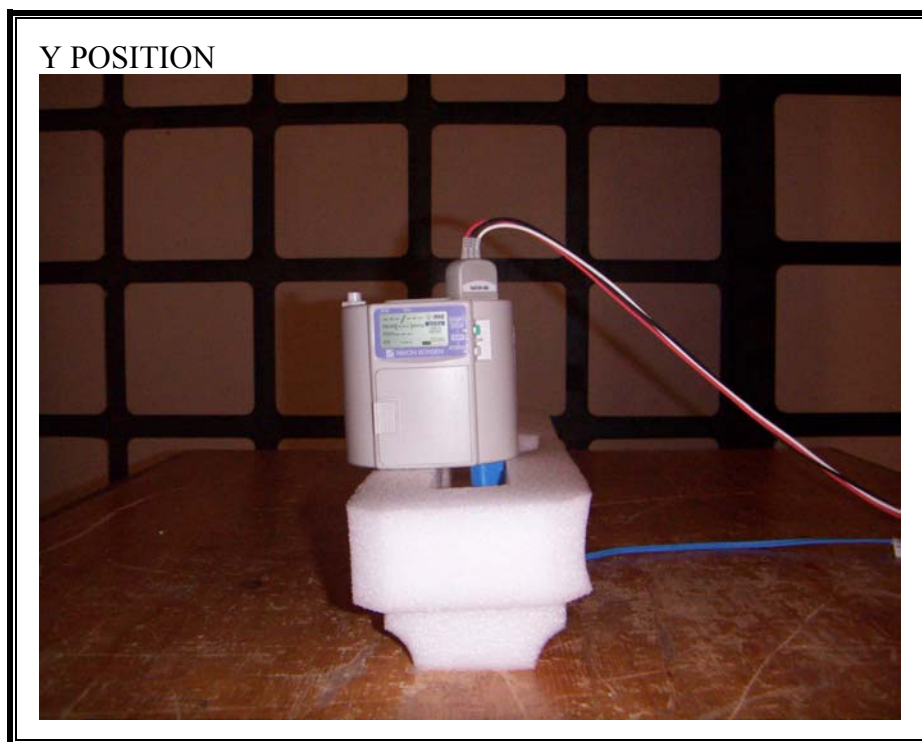
## LINE 2 RESULTS

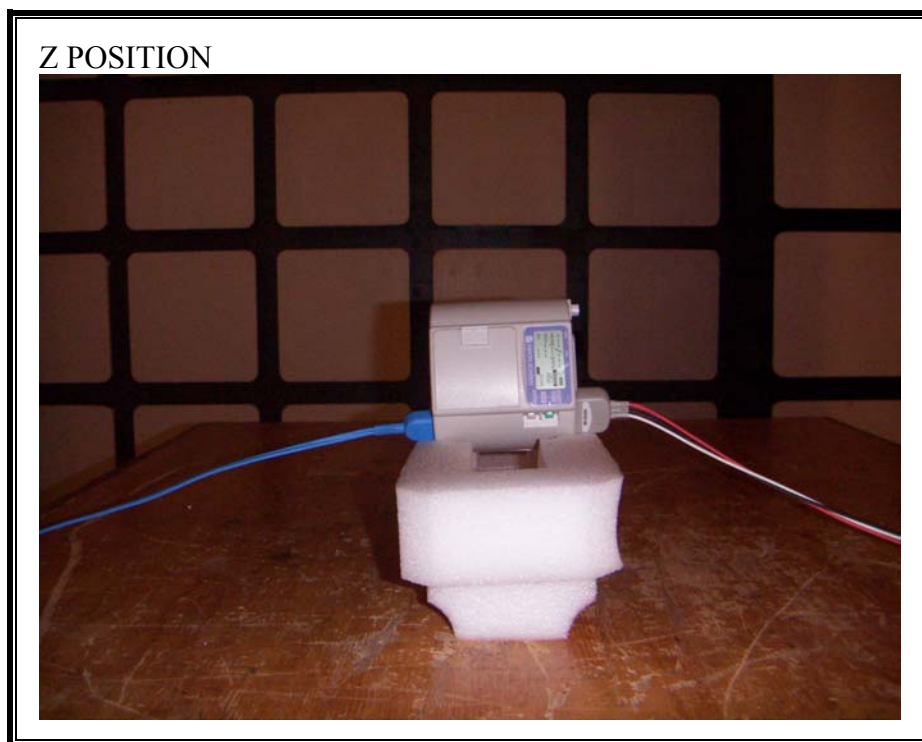


## 15. SETUP PHOTOS

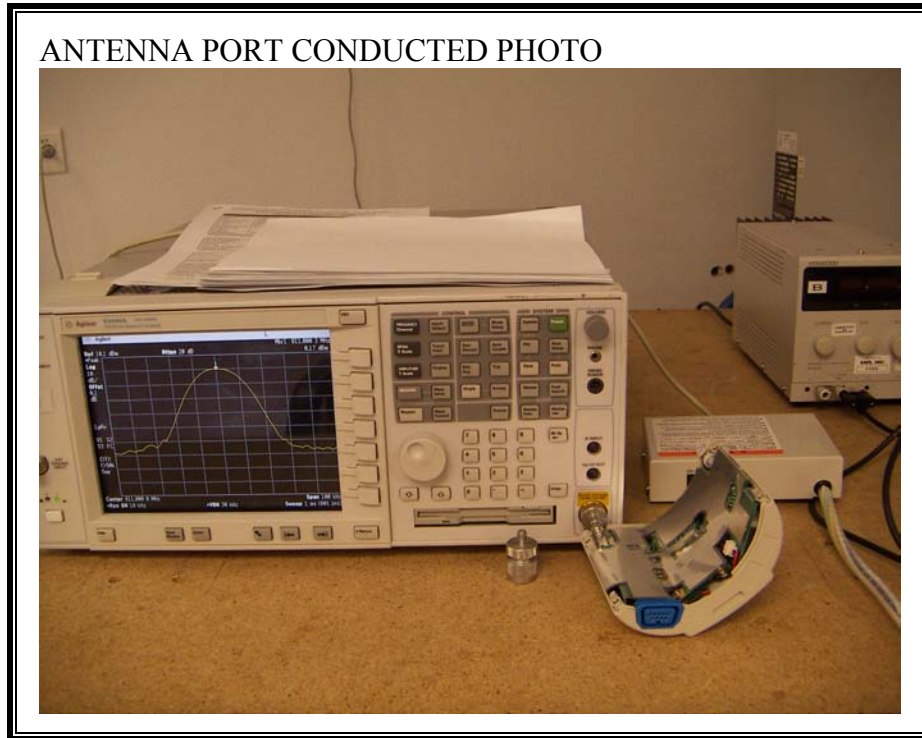
### RADIATED RF MEASUREMENT SETUP





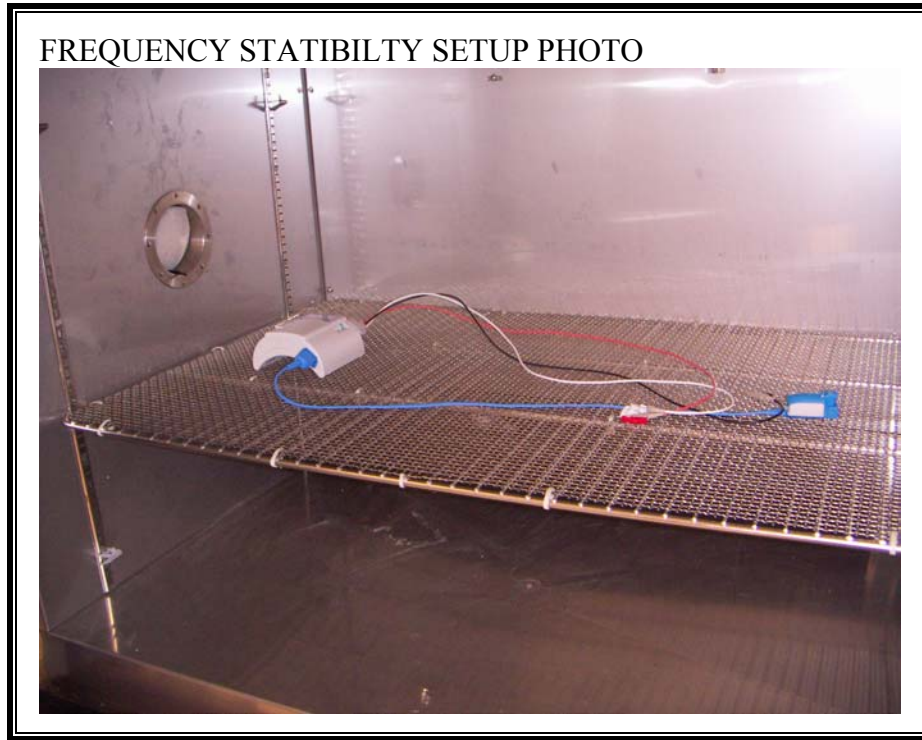


## ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP



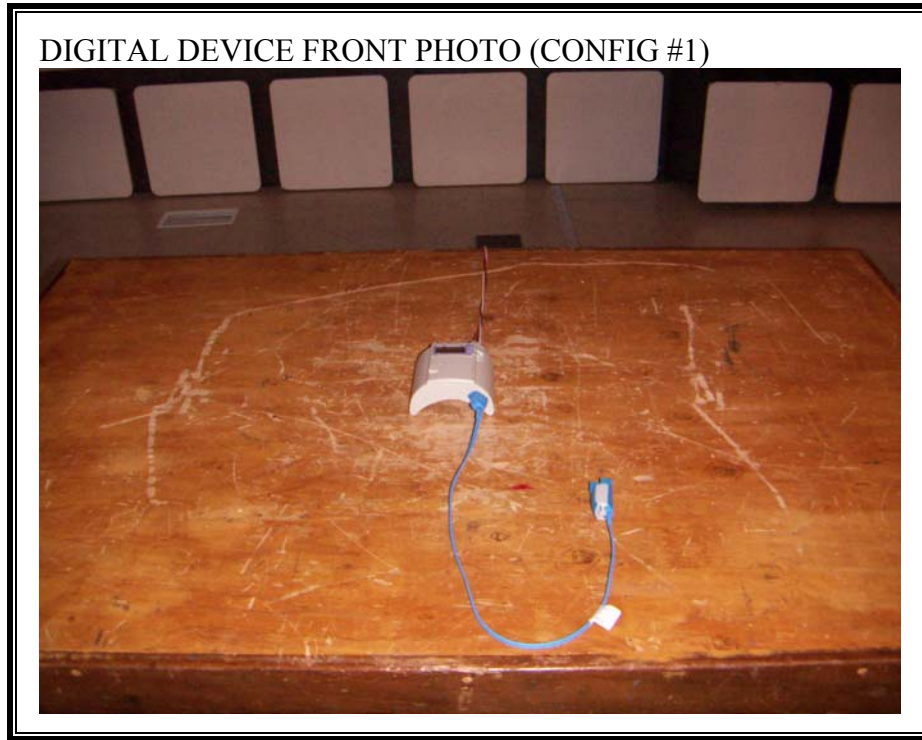


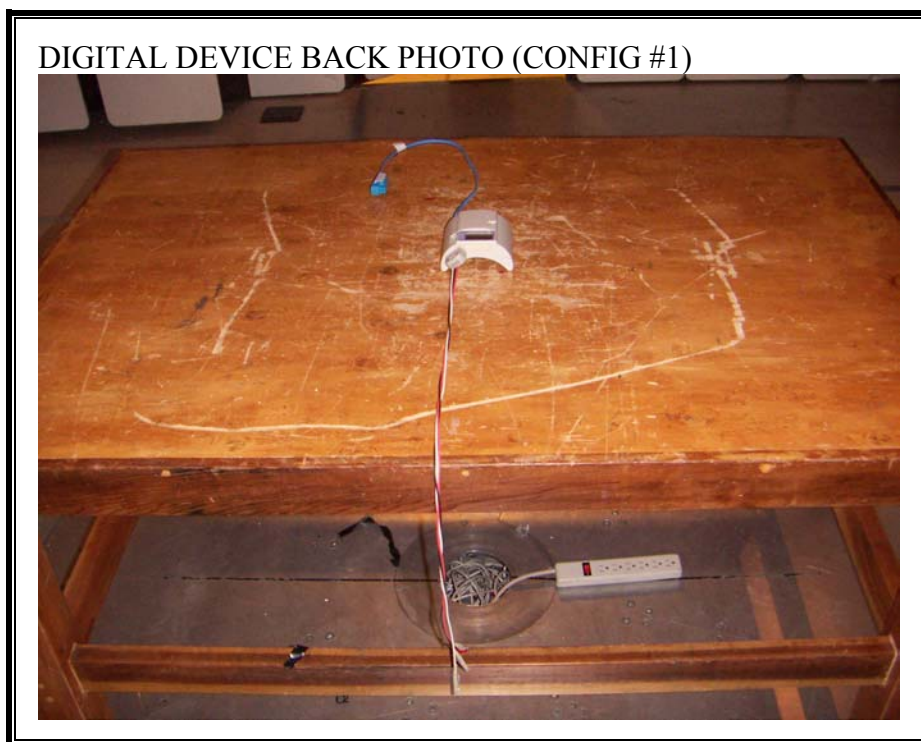
## FREQUENCY SATIABILITY MEASUREMENT SETUP



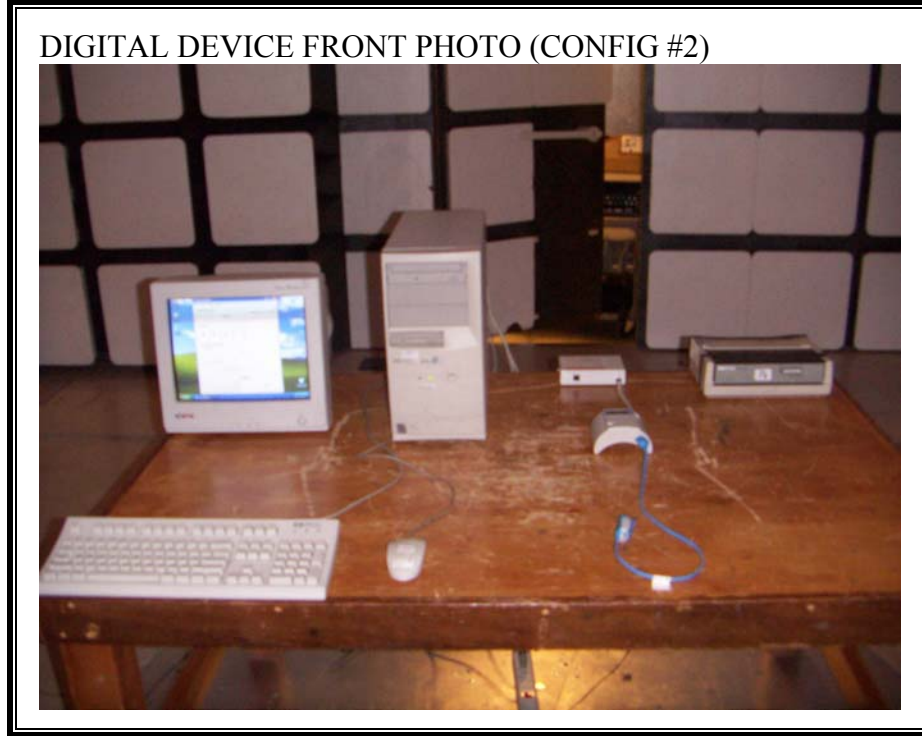


**DIGITAL DEVICE RADIATED EMISSIONS SETUP (CONFIGURATION #1)**

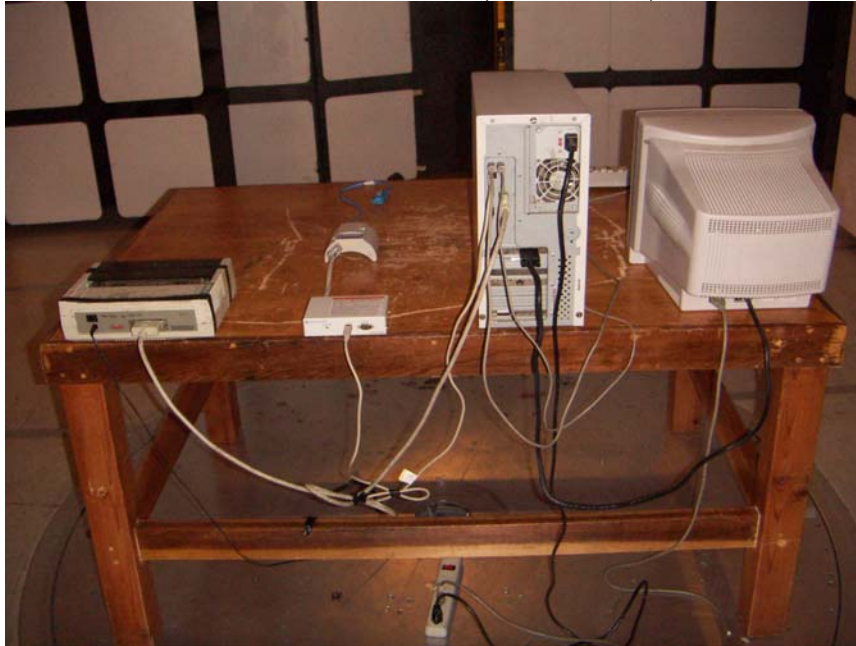




**DIGITAL DEVICE RADIATED EMISSIONS SETUP (CONFIGURATION #2)**



DIGITAL DEVICE BACK PHOTO (CONFIG #2)



## AC POWER LINE CONDUCTED EMISSIONS MEASUREMENT SETUP

LINE CONDUCTED FRONT PHOTO





LINE CONDUCTED BACK PHOTO



## 16. APPENDIX

**EXHIBIT 1: User Manual**

**EXHIBIT 2: EUT External Photos**

**EXHIBIT 3: EUT Internal Photos**

**EXHIBIT 4: Schematic**

**EXHIBIT 5: Block Diagram**

**EXHIBIT 6: Operational Description**

**EXHIBIT 7: Report of Measurements**

**EXHIBIT 8: Setup photo**

**EXHIBIT 9: Labeling**