



FCC CFR47 PART 95 REQUIREMENT

CERTIFICATION REPORT

FOR

TRANSMITTER FOR MEDICAL

MODEL: ZM-940PA

FCC ID: B6BZM-940PA

REPORT NUMBER: 05I3334-1

ISSUE DATE: APRIL 18, 2005

Prepared for

**NIHON KOHDEN CORPORATION
1-31-4, NISHIOCHIAI SHINJUKU-KU
TOKYO 161-8560, JAPAN**

Prepared by

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



Revision History

<u>Rev.</u>	<u>Revisions</u>	<u>Revised By</u>
B	Updated the authorized bandwidth for emission type F1D is 20KHz, and CFR 47 section 2.1049	Thu

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	4
2. TEST METHODOLOGY.....	5
3. FACILITIES AND ACCREDITATION	5
4. CALIBRATION AND UNCERTAINTY.....	5
4.1 MEASURING INSTRUMENT CALIBRATION	5
4.2 MEASUREMENT UNCERTAINTY	5
5. EQUIPMENT UNDER TEST.....	6
5.1 DESCRIPTION OF EUT	6
5.2 MAXIMUM OUTPUT POWER.....	6
5.3 SOFTWARE AND FIRMWARE	6
5.4 WORST-CASE CONFIGURATION AND MODE	6
6. TEST AND MEASUREMENT EQUIPMENT.....	7
7. SETUP OF EQUIPMENT UNDER TEST (RF).....	8
8. SETUP OF EQUIPMENT UNDER TEST (DIGITAL CONFIG #1).....	10
9. SETUP OF EQUIPMENT UNDER TEST (DIGITAL CONFIG #2).....	12
10. FIELD STRENGTH AND UNDESIRE EMISSIONS MEASUREMENT	14
11. EMISSION BANDWIDTH.....	31
12. PEAK OUTPUT POWER	35
13. SPURIOUS EMISSIONS AT ANTENNA TERMINAL	39
14. FREQUENCY STABILITY MEASUREMENT	46
15. RADIATED EMISSIONS FOR DIGITAL PORTION	50
16. POWER LINE CONDUCTED EMISSIONS	57
17. SETUP PHOTOS	61

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: NIHON KOHDEN CORPORATION
1-31-4, NISHIOCHIAI SHINJUKU-KU
TOKYO 161-8560, JAPAN

EUT DESCRIPTION: TRANSMITTER FOR MEDICAL

MODEL: ZM-940PA

SERIAL NUMBER: 90001

DATE TESTED: April 12 – 14, 2005

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 95 SUBPART H	NO NON-COMPLIANCE NOTED
DIGITAL DEVICE CONFIGURATION: FCC PART 15 SUBPART B	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. 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 Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Tested By:

Approved & Released For CCS By:



THANH NGUYEN
EMC TECHNICIAN
COMPLIANCE CERTIFICATION SERVICES



THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA/EIA 603A (2001), ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15 and FCC CFR 47 Part 95.

3. FACILITIES AND ACCREDITATION

The test sites and 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>.

4. CALIBRATION AND UNCERTAINTY

4.1 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.

4.2 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
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

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

5. EQUIPMENT UNDER TEST

5.1 DESCRIPTION OF EUT

a). Type of EUT:	WMTS TRANSMITTER
b). Brand Name:	NIHON KOHDEN
c). Model No:	ZM-940PA
d). FCC ID:	B6BZM-940PA
e). Power Supply:	4.5 VDC (3 x AA)
f). Number of Channels:	239 Channels
g). Frequency Range:	608.025 ~ 613.9750 MHz.
h). RF Conducted Output Power:	1 mW
i). Channel Spacing:	50 KHz (25 KHz when interleave)
j). Type of Modulation:	F1D
k). Antenna Type:	INTERNAL (HELICAL MONOPOLE)
l). Antenna Gain:	0 dBi

5.2 MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

608 to 614 MHz Authorized Band

Frequency Range (MHz)	Modulation	Output Power (dBm)	Output Power (mW)
608.025 - 613.975	F1D	0.31	1.07

5.3 SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was Channel Writer Application rev. 1.0.1.0.

The EUT driver software installed in the host support equipment during testing was QI901PK, rev. 02_01.

The test utility software used during testing was Channel.exe.

5.4 WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at 608.025 MHz.

6. 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
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	03/29/2006
30MHz---- 2Ghz	Sunol Sciences	JB1 Antenna	A121003	03/03/2006
Antenna, Horn 1 ~ 18 GHz	EMCO	3117	29301	09/12/2005
Preamplifier, 1 ~ 26 GHz	Miteq	NSP2600-44	646456	08/17/2005
EMI Test Receiver	R & S	ESHS20	8271299/0006	10/22/2005
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	08/30/2005
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/21/2005
Site A Line Stabilizer / Conditioner	Tripplite	LC-1800a	A0051681	CNR
Spectrum analyzer	Agilent	E4446A	MY43360112	01/20/2006
RF filter section	HP	85420E	3705A00256	03/29/2006
Temperature/Humidity Chamber	Thermotron	SE 600-10-10	29800	05/13/2005
DC Power supply	HP	E3610A	KR24104150	N/A

7. SETUP OF EQUIPMENT UNDER TEST (RF)

SUPPORT EQUIPMENT

N/A

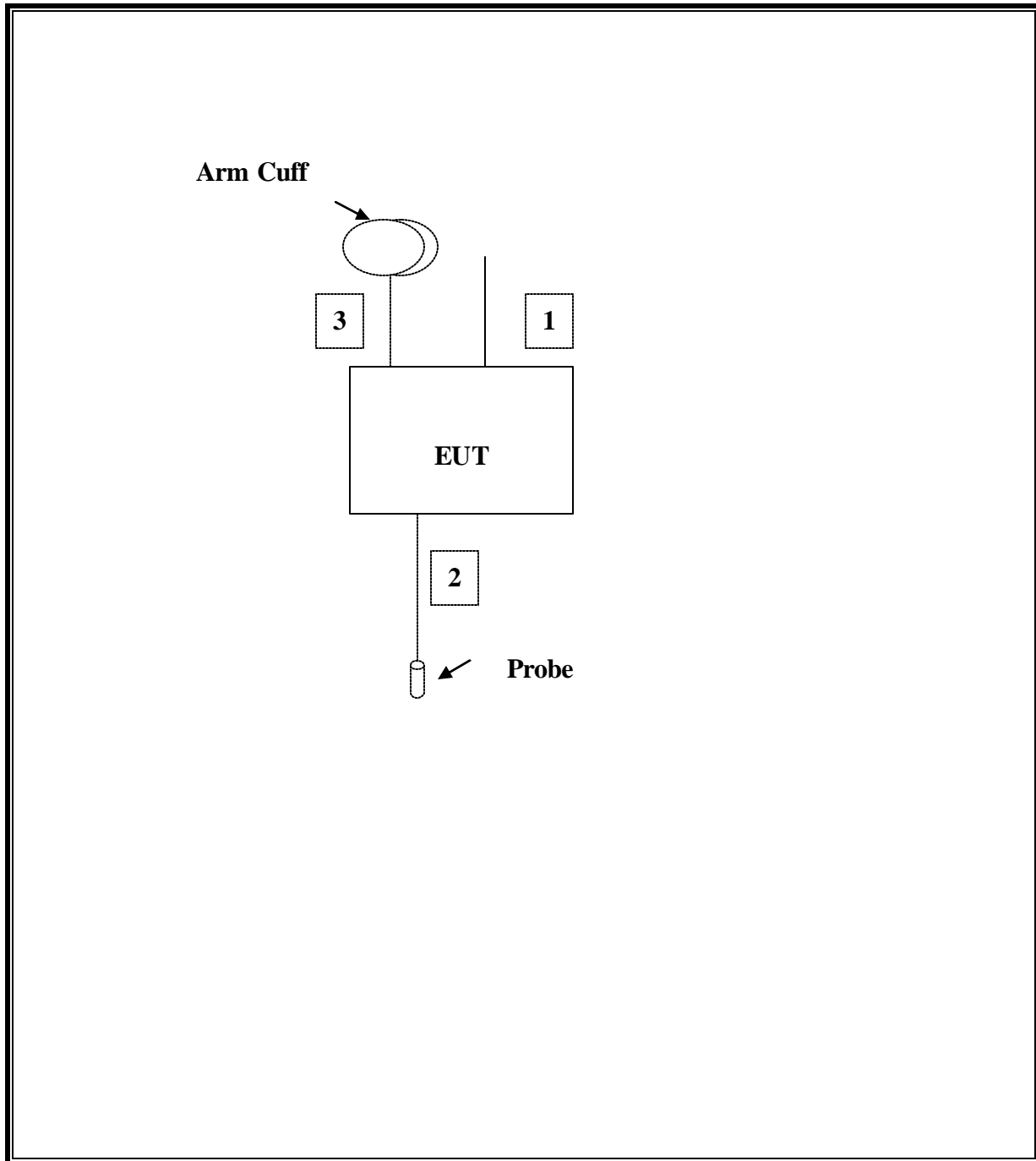
I/O CABLES

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	Un-shielded	.7m	Yes	No	N/A
2	SpO2	1	SpO2	Un-shielded	.7m	Yes	No	Probe
3	NIBP	1	NIBP socket	Rubber	.3m	No	No	Connect to Arm Cuff

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 TEST



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

SUPPORT EQUIPMENT

N/A

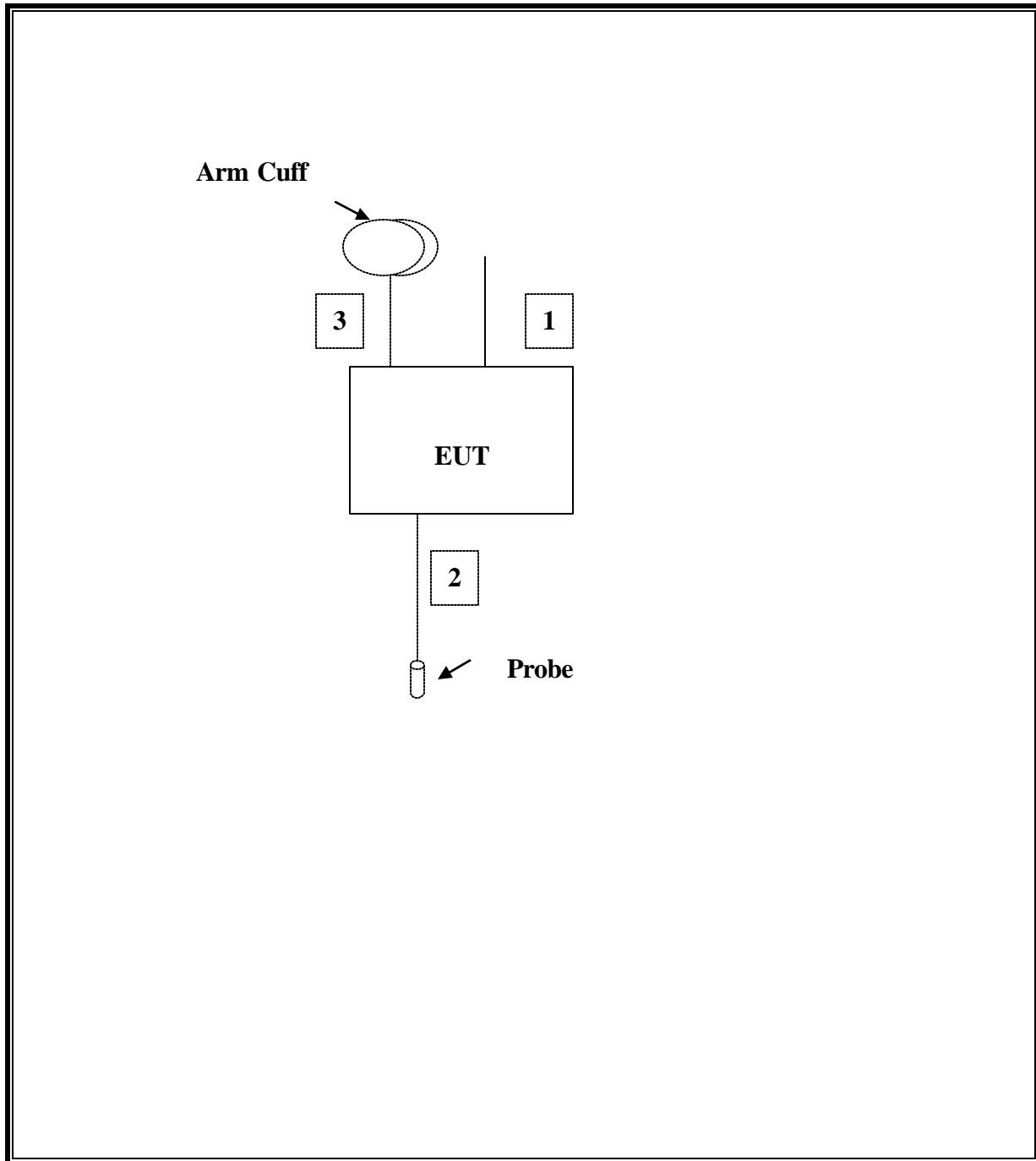
I/O CABLES

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	Un-shielded	.7m	Yes	No	N/A
2	SpO2	1	SpO2	Un-shielded	.7m	Yes	No	Probe
3	NIBP	1	NIBP socket	Rubber	3m	No	No	Connect to Arm Cuff

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 (Y). During the testing process the EUT was put in continuous transmit mode and NIBP was active.

SETUP DIAGRAM FOR TEST



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

SUPPORT EQUIPMENT

TEST PERIPHERALS				
Device Type	Manufacturer	Model Number	Serial Number	FCC ID
PC	HP	Vectra VL400 MT	US03763261	DoC
Mouse	HP	M-S34	LZB74708572	DZL211029
Keyboard	HP	SK-2502	HR805238420	GYUR41SK
Printer	HP	2225C	2541S41679	BS46XU2225C
Modem	ACEEX	1414	9013538	IFAXDM1414
Monitor	Dell	M780	5322DE20E049	DoC
Channel Writer	NIHON KOHDEN	QI-901PK	90001	N/A

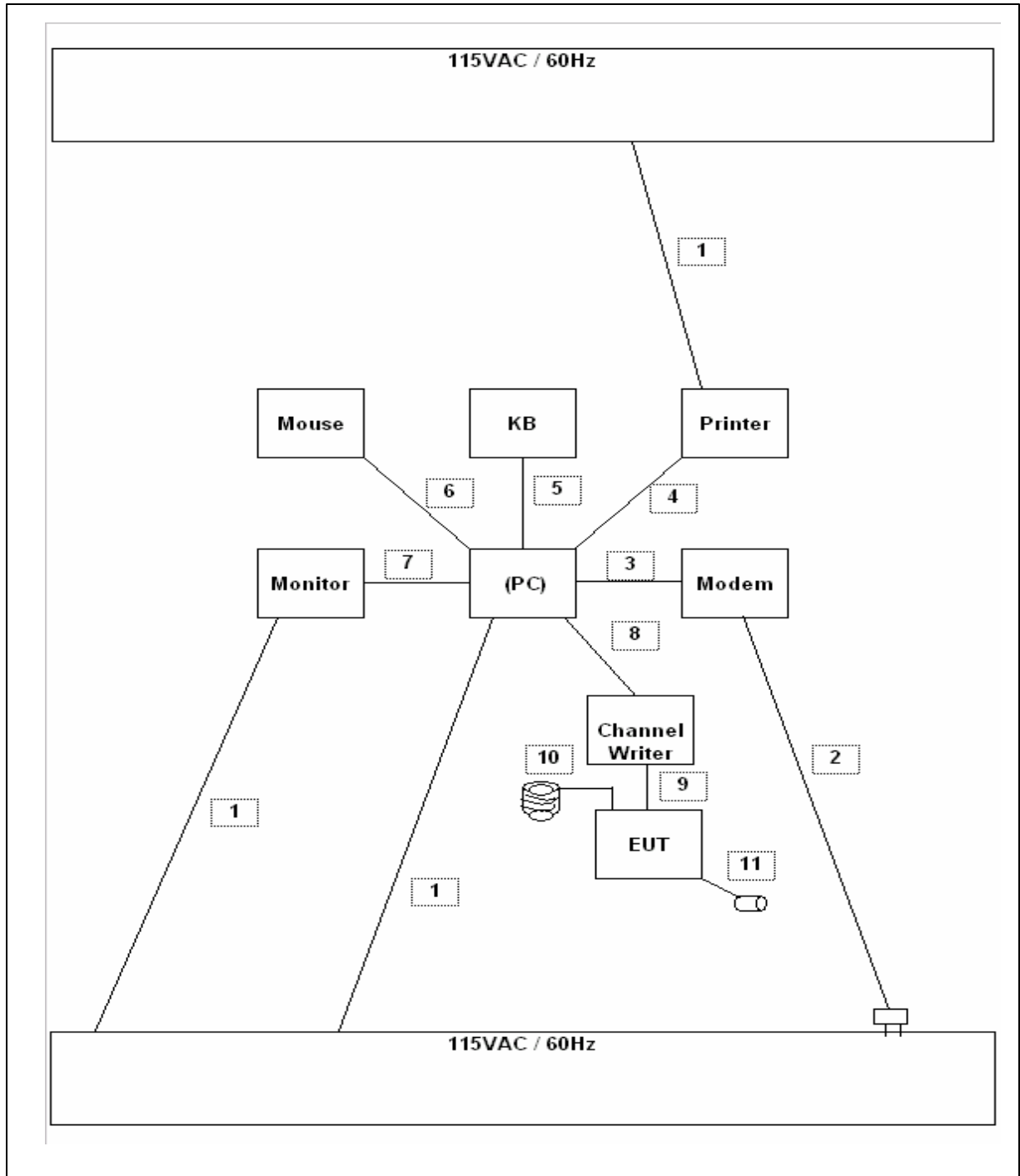
I/O CABLES

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	AC	3	US 115V	Un-shielded	2m	No	No	N/A
2	DC	1	DC Plug	Un-shielded	2m	No	No	N/A
3	Serial	1	DB9	Shielded	1m	Yes	No	N/A
4	Parallel	1	DB25	Shielded	2m	Yes	Yes	N/A
5	KB	1	PS/2	Shielded	2m	Yes	No	N/A
6	Mouse	1	PS/2	Un-shielded	2m	Yes	No	N/A
7	Video	1	DB15	Shielded	2m	Yes	Yes	One Torroid on Each End
8	USB	1	USB	Shielded	1.5m	Yes	Yes	N/A
9	ECG	1	ECG	Un-shielded	.7m	Yes	No	N/A
10	Sp02	1	Sp02	Un-shielded	.7m	Yes	No	Probe
11	NIBP	1	NIBP socket	Rubber Hose	.3m	No	No	Connect to Arm cuff

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 TEST



10. FIELD STRENGTH AND UNDESIRE EMISSIONS MEASUREMENT

PROVISIONS APPLICABLE

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

LIMIT

(a) FUNDAMENTAL

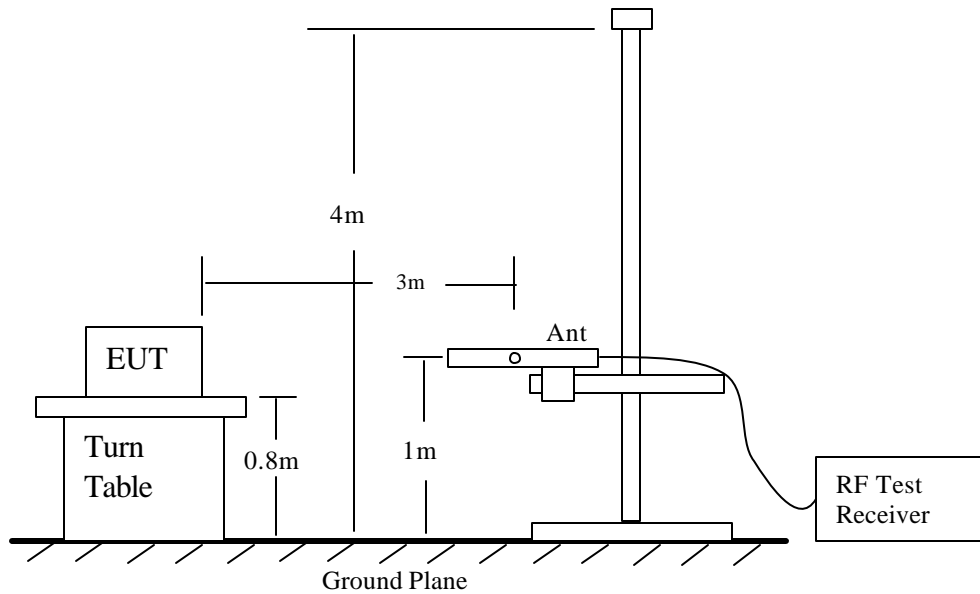
FREQUENCY (MHz)	LIMIT (dBuV/m)
608-614	106 QUASI-PEAK

(b) SPURIOUS

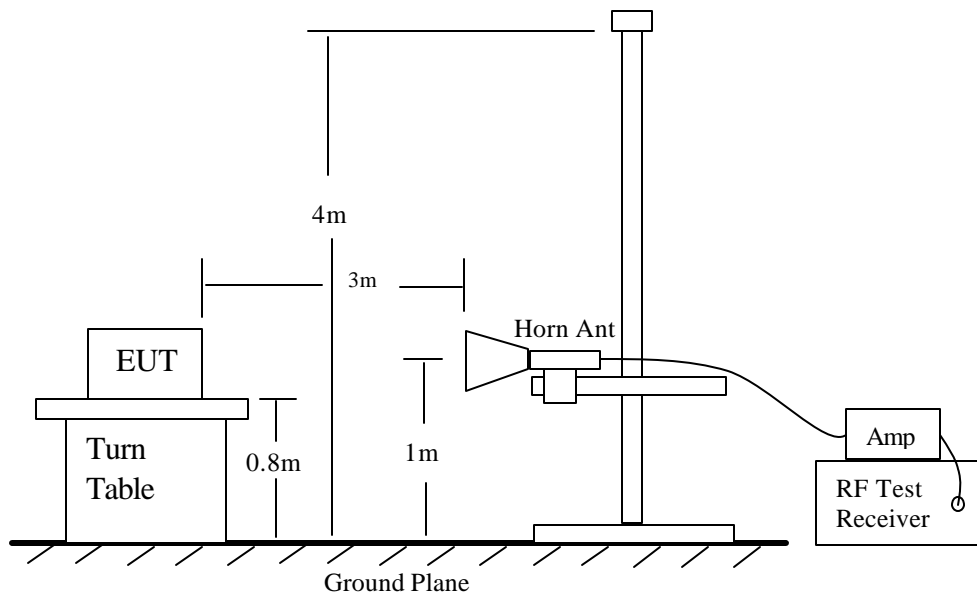
FREQUENCY (MHz)	LIMIT (dBuV/m)
30-960	46 QUASI-PEAK
>960	54 AVERAGE

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

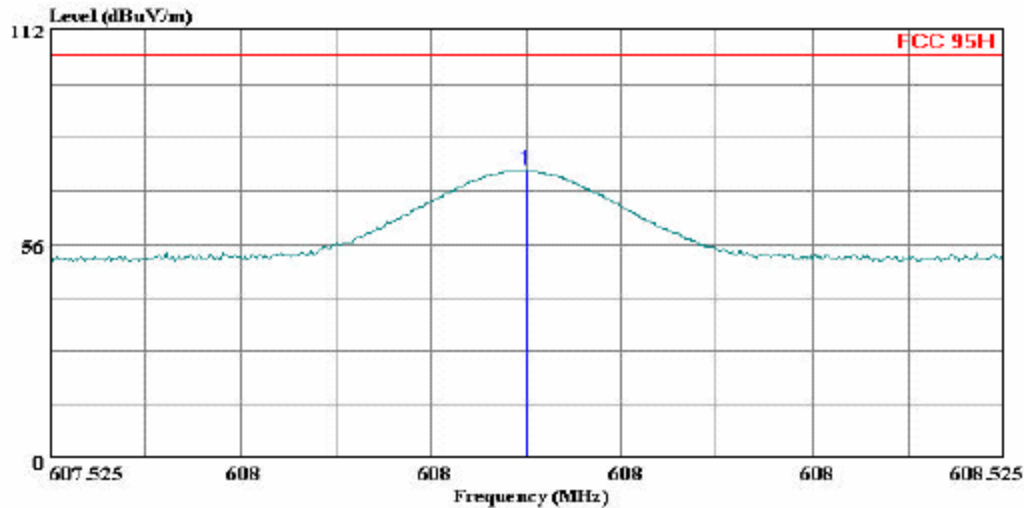
95.1115 (a)

LOW CHANNEL (VERTICAL)



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

Data#: 24 File#: EMILOW.BMI Date: 04-12-2005 Time: 17:47:13



(Auxil ATC)

Trace: 23

Ref Trace:

Condition: FCC 95H VERTICAL
Test Operator: : Thanh Nguyen
Project #: : 05I3334-1
Company: : NIHON KOHDEN Corporation
EUT: : Transmitter for Medical
Model No : ZM-940PA
Configuration: : EUT
Target of Test: : FCC 95H
Mode of Operation: Tx Low Channel

Page: 1

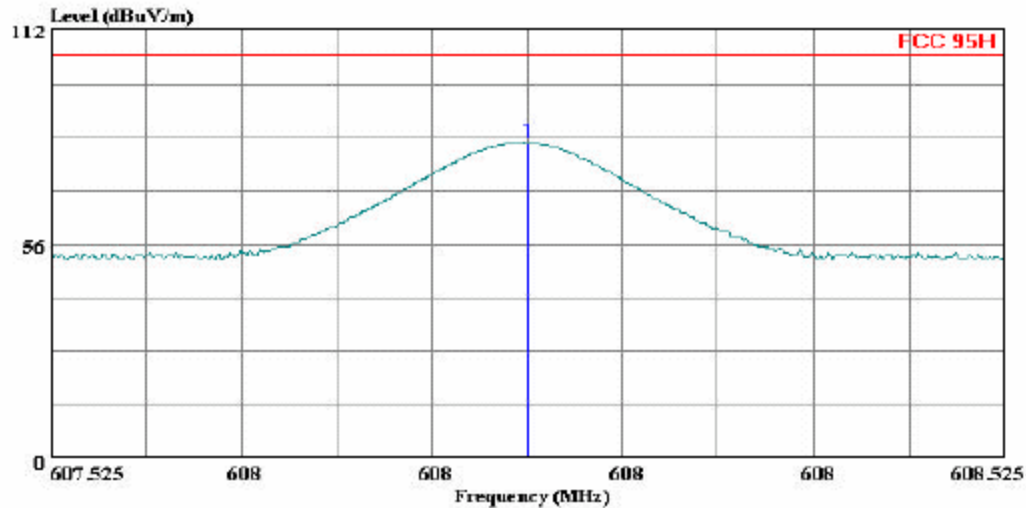
	Freq	Read	Limit	Over	
	MHz	Level	Factor	Level	Line
		dBuV	dB	dBuV/m	dBuV/m
					dB
1	608.025	53.78	21.63	75.41	106.00
					-30.59 Peak

95.1115 (a) LOW CHANNEL (HORIZONTAL)



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

Data#: 22 File#: EMILOW.EMI Date: 04-12-2005 Time: 17:43:59



(Auxiliary ATC)

Trace: 21

Ref Trace:

Condition: FCC 95H HORIZONTAL
Test Operator: : Thanh Nguyen
Project #: : 05I3334-1
Company: : NIHON KOHDEN Corporation
EUT: : Transmitter for Medical
Model No : ZM-940PA
Configuration: : EUT
Target of Test: : FCC 95H
Mode of Operation: Tx Low Channel

Page: 1

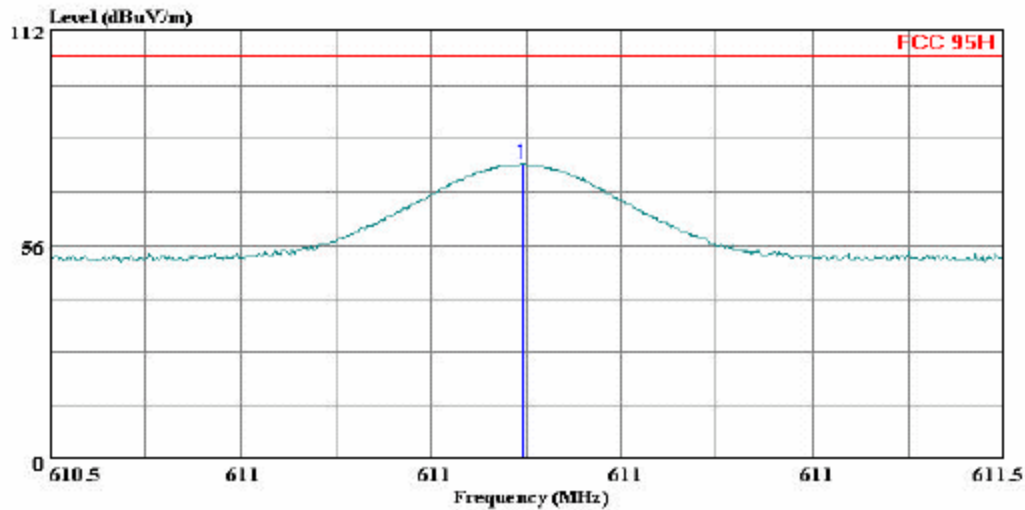
	Read			Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1 608.026	60.98	21.63	82.61	106.00	-23.39	Peak

95.1115 (a) MIDDLE CHANNEL (VERTICAL)



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

Data#: 18 File#: EMILOW.EMI Date: 04-12-2005 Time: 17:31:35



(Auxiliary ATC)
Trace: 17

Ref Trace:

Condition: FCC 95H VERTICAL
Test Operator: : Thanh Nguyen
Project #: : 05I3334-1
Company: : NIHON KOHDEN Corporation
EUT: : Transmitter for Medical
Model No : ZM-940PA
Configuration: : EUT
Target of Test: : FCC 95H
Mode of Operation: Tx Mid Channel

Page: 1

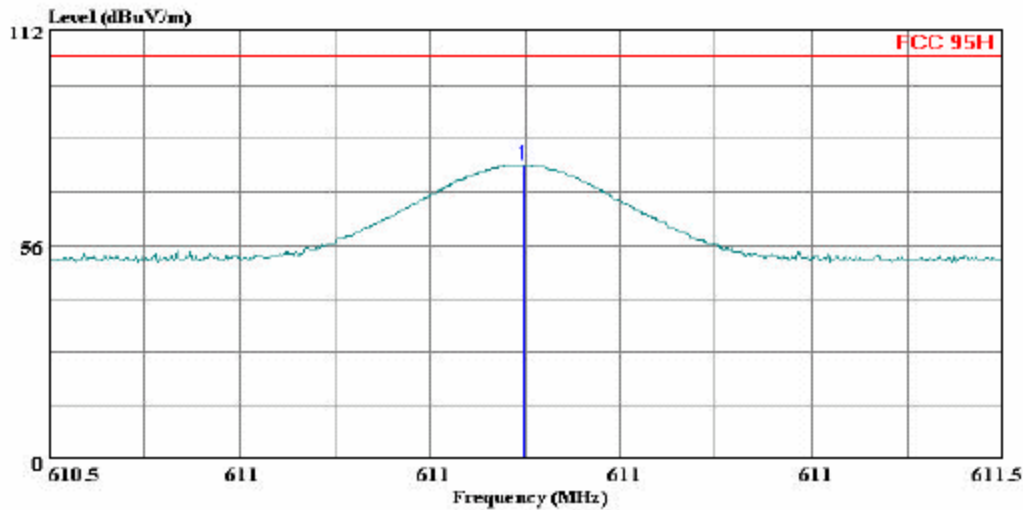
	Read		Limit	Over	
Freq	Level	Factor	Level	Line	Limit Remark
MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1 610.997	55.68	21.67	77.35	106.00	-28.65 Peak

95.1115 (a) MIDDLE CHANNEL (HORIZONTAL)



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

Data#: 20 File#: EMILOW.EMI Date: 04-12-2005 Time: 17:34:24



(Auxiliary ATC)

Trace: 19

Ref Trace:

Condition: FCC 95H HORIZONTAL
Test Operator: : Thanh Nguyen
Project #: : 05I3334-1
Company: : NIHON KOHDEN Corporation
EUT: : Transmitter for Medical
Model No : ZM-940PA
Configuration: : EUT
Target of Test: : FCC 95H
Mode of Operation: Tx Mid Channel

Page: 1

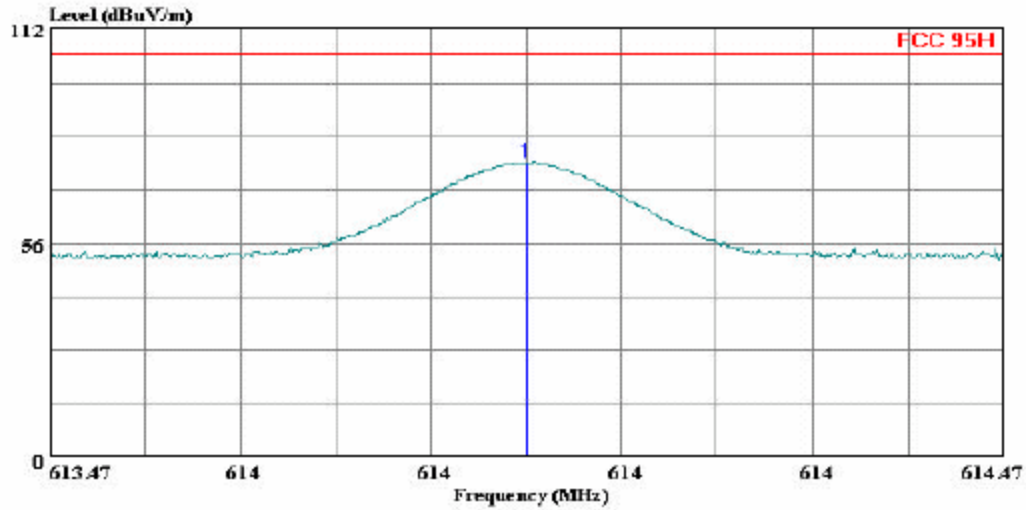
	Read			Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1 610.999	55.49	21.67	77.16	106.00	-28.84	Peak

95.1115 (a) HIGH CHANNEL (VERTICAL)



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

Data#: 10 File#: EMILOW.EMI Date: 04-12-2005 Time: 17:00:27



(Auxiliary)

Trace: 9

Ref Trace:

Condition: FCC 95H VERTICAL
Test Operator: : Thanh Nguyen
Project #: : 05I3334-1
Company: : NIHON KOHDEN Corporation
EUT: : Transmitter for Medical
Model No : ZM-940PA
Configuration: : EUT
Target of Test: : FCC 95H
Mode of Operation: Tx High Channel, Y Position

Page: 1

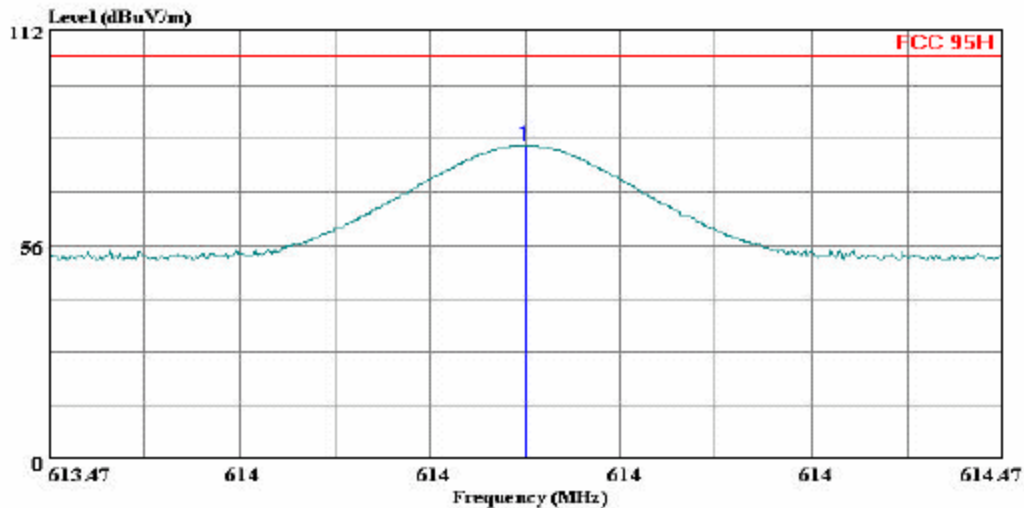
	Read		Limit	Over	
Freq	Level	Factor	Level	Line	Limit Remark
MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1 613.970	55.50	21.72	77.22	106.00	-28.78 Peak

95.1115 (a) HIGH CHANNEL (HORIZONTAL)



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

Data#: 12 File#: EMILow.EMI Date: 04-12-2005 Time: 17:04:22



(Auxiliary ATC)

Trace: 11

Ref Trace:

Condition: FCC 95H HORIZONTAL
Test Operator: : Thanh Nguyen
Project #: : 05I3334-1
Company: : NIHON KOHDEN Corporation
EUT: : Transmitter for Medical
Model No : ZM-940PA
Configuration: : EUT
Target of Test: : FCC 95H
Mode of Operation: Tx High Channel, Y Position

Page: 1

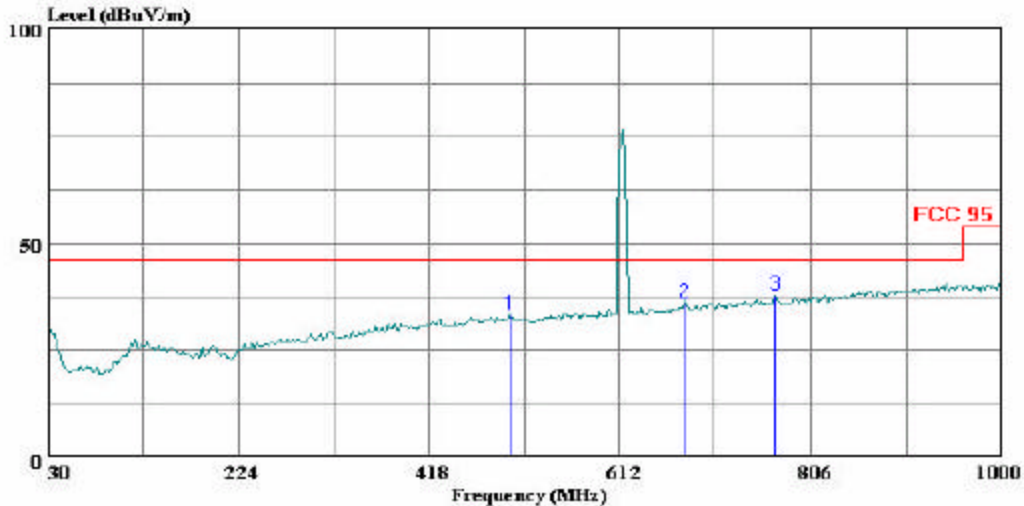
		Read		Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1	613.970	60.50	21.72	82.22	106.00	-23.78 Peak

95.1115 (b) LOW CHANNEL (VERTICAL UNDER 1 GHz)



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

Data#: 30 File#: EMILOW.EMI Date: 04-15-2005 Time: 16:05:41



(Auxiliary ATC)

Trace: 29

Ref Trace:

Condition: FCC 95 VERTICAL
Test Operator: : Thanh Nguyen
Project #: : 05I3334-1
Company: : NIHON KOHDEN Corporation
EUT: : Transmitter for Medical
Model No : ZM-940PA
Configuration: : EUT with ECG , SPO2 and Arm cuff
Target of Test: : FCC 95H
Mode of Operation: Transmit Low Channel.

Page: 1

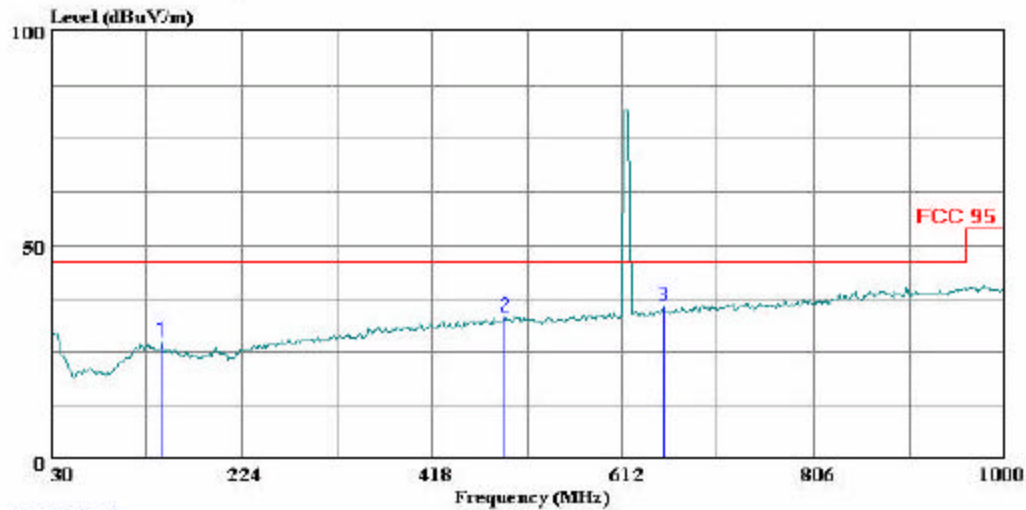
	Freq	Read		Limit	Over	
	MHz	Level	Factor	Level	Line	Limit Remark
		dBuV	dB	dBuV/m	dBuV/m	dB
1	500.450	12.85	20.23	33.09	46.00	-12.91 Peak
2	679.900	13.33	22.83	36.16	46.00	-9.84 Peak
3	769.140	13.73	24.13	37.86	46.00	-8.14 Peak

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



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

Data#: 32 File#: EMILOW.EMI Date: 04-15-2005 Time: 16:17:56



(Auxiliary ATC)

Trace: 31

Ref Trace:

Condition: FCC 95 HORIZONTAL
Test Operator: : Thanh Nguyen
Project #: : 05I3334-1
Company: : NIHON KOHDEN Corporation
EUT: : Transmitter for Medical
Model No : ZM-940PA
Configuration: : EUT with ECG , SPO2 and Arm cuff
Target of Test: : FCC 95H
Mode of Operation: Transmit Low Channel.

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	143.490	12.71	14.63	27.34	46.00	-18.67	Peak
2	492.690	13.03	20.11	33.14	46.00	-12.86	Peak
3	654.680	13.23	22.43	35.66	46.00	-10.34	Peak

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

04/13/05 High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thanh Nguyen
Project #:05I3334-1
Company: NIHON KOHDEN Corporation.
EUT Descrip.: Transmitter for medical.
EUT M/N:ZM-94PA
Test Target: FCC Part 95H
Mode Oper:Tx low Channel 9002 (608.025MHz)

Test Equipment:

EMCO Horn 1-18GHz T120; S/N: 29310 @3m	Pre-amplifier 1-26GHz T63 Miteq 646456	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit FCC 15.209
---	---	------------------------	--------------	---------------------

Hi Frequency Cables

2 foot cable 2_Thanh	3 foot cable	4 foot cable	12 foot cable 12_Thanh
-------------------------	--------------	--------------	---------------------------

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)
1.216	3.0	55.2	43.5	28.0	1.5	-38.4	0.0	0.0	46.2	34.5	74	54	-27.8	-19.5	V
1.824	3.0	57.1	43.5	30.7	1.9	-38.7	0.0	0.0	50.9	37.3	74	54	-23.1	-16.7	V
2.432	3.0	54.3	43.5	32.1	2.2	-39.0	0.0	0.0	49.6	38.8	74	54	-24.4	-15.2	V
3.040	3.0	57.2	45.1	32.5	2.5	-38.6	0.0	0.0	53.6	41.5	74	54	-20.4	-12.5	V
1.216	3.0	56.7	46.3	28.0	1.5	-38.4	0.0	0.0	47.8	37.4	74	54	-26.2	-16.6	H
1.824	3.0	57.1	43.4	30.7	1.9	-38.7	0.0	0.0	50.9	37.2	74	54	-23.1	-16.8	H
2.432	3.0	57.8	44.6	32.1	2.2	-39.0	0.0	0.0	53.1	39.9	74	54	-20.9	-14.1	H
3.040	3.0	56.3	44.4	32.5	2.5	-38.6	0.0	0.0	52.7	40.8	74	54	-21.3	-13.2	H
No other spurious emissions were detected above 3GHz															

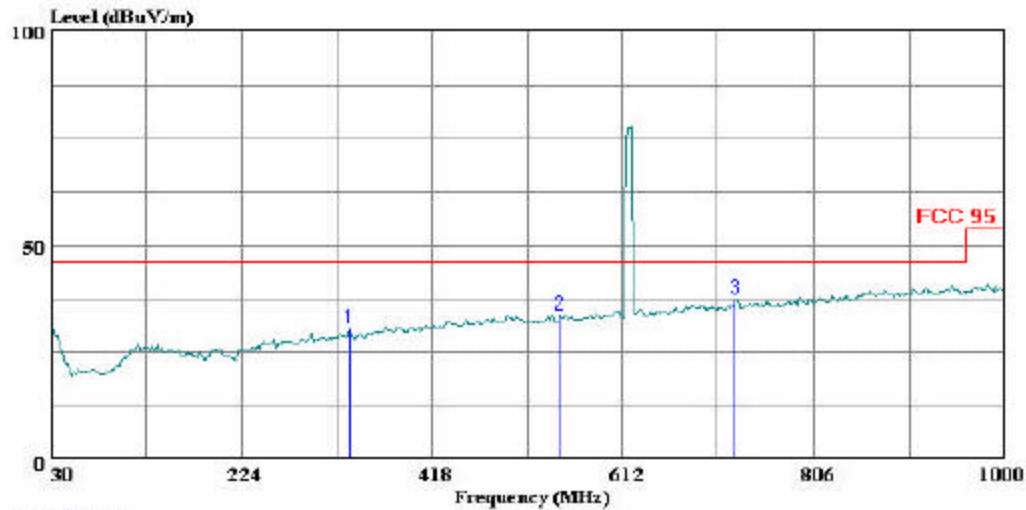
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field 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#: 36 File#: EMILOW.EMI Date: 04-15-2005 Time: 16:33:04



(Auxilx ATC)

Trace: 35

Ref Trace:

Condition: FCC 95 VERTICAL
Test Operator: : Thanh Nguyen
Project #: : 05I3334-1
Company: : NIHON KOHDEN Corporation
EUT: : Transmitter for Medical
Model No : ZM-940PA
Configuration: : EUT with ECG , SPO2 and Arm cuff
Target of Test: : FCC 95H
Mode of Operation: Tramit MID Channel.

Page: 1

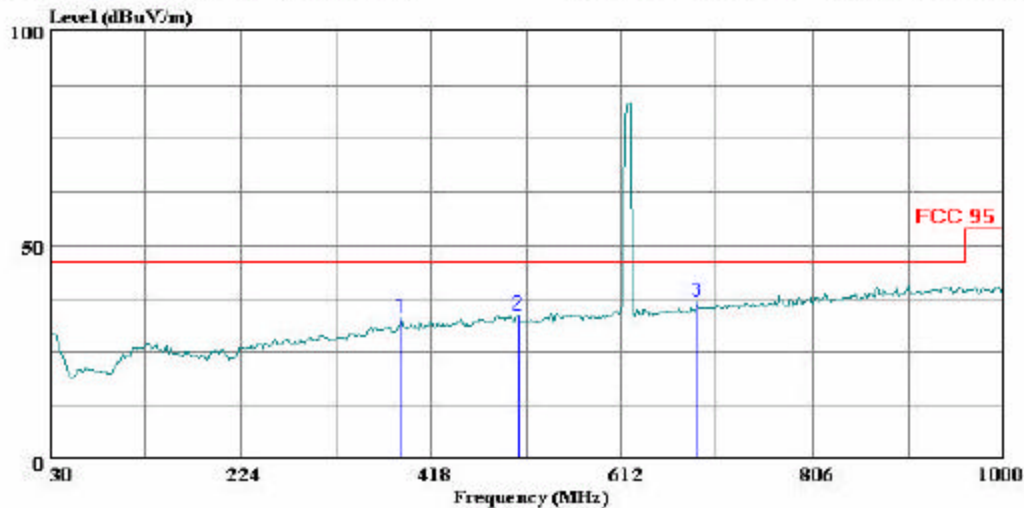
	Freq	Read		Limit	Over	
	MHz	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1	334.580	13.98	16.53	30.51	46.00	-15.49 Peak
2	547.980	12.84	20.86	33.70	46.00	-12.30 Peak
3	727.430	13.98	23.53	37.51	46.00	-8.49 Peak

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



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

Data#: 34 File#: EMILOW.EMI Date: 04-15-2005 Time: 16:28:27



(Auxiliary ATC)

Trace: 33

Ref Trace:

Condition: FCC 95 HORIZONTAL
Test Operator: : Thanh Nguyen
Project #: : 05I3334-1
Company: : NIHON KOHDEN Corporation
EUT: : Transmitter for Medical
Model No : ZM-940PA
Configuration: : EUT with ECG , SPO2 and Arm cuff
Target of Test: : FCC 95H
Mode of Operation: Transmit MID Channel.

Page: 1

	Freq	Read	Read	Limit	Over	
	MHz	Level	Factor	Line	Limit	Remark
		dBuV	dB	dBuV/m	dBuV/m	dB
1	387.930	15.02	17.77	32.79	46.00	-13.21 Peak
2	507.240	13.27	20.31	33.58	46.00	-12.42 Peak
3	688.630	13.66	22.87	36.53	46.00	-9.47 Peak

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

04/13/05 High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thanh Nguyen
Project #: 05I3334-1
Company: NIHON KOHDEN Corporation.
EUT Descrip.: Transmitter for medical.
EUT M/N: ZM-94PA
Test Target: FCC Part 95H
Mode Oper: Tx Mid Channel 9240 (611.000MHz)

Test Equipment:

EMCO Horn 1-18GHz T120; S/N: 29310 @3m	Pre-amplifier 1-26GHz T63 Miteq 646456	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit FCC 15.209
---	---	------------------------	--------------	---------------------

Hi Frequency Cables

2 foot cable 2_Thanh	3 foot cable	4 foot cable	12 foot cable 12_Thanh	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	Fctr 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	56.7	44.0	28.0	1.5	-38.4	0.0	0.0	47.8	35.1	74	54	-26.2	-18.9	V
1.833	3.0	55.3	43.2	30.7	1.9	-38.7	0.0	0.0	49.1	37.0	74	54	-24.9	-17.0	V
2.444	3.0	56.4	44.9	32.1	2.2	-39.0	0.0	0.0	51.7	40.2	74	54	-22.3	-13.8	V
3.055	3.0	58.2	45.1	32.6	2.5	-38.6	0.0	0.0	54.7	41.5	74	54	-19.3	-12.5	V
1.222	3.0	57.4	45.7	28.0	1.5	-38.4	0.0	0.0	48.5	36.8	74	54	-25.5	-17.2	H
1.833	3.0	56.3	43.2	30.7	1.9	-38.7	0.0	0.0	50.2	37.0	74	54	-23.8	-17.0	H
2.444	3.0	55.9	44.4	32.1	2.2	-39.0	0.0	0.0	51.2	39.7	74	54	-22.8	-14.3	H
3.055	3.0	56.2	44.1	32.6	2.5	-38.6	0.0	0.0	52.6	40.6	74	54	-21.4	-13.4	H

No other spurious emissions were detected above 3GHz

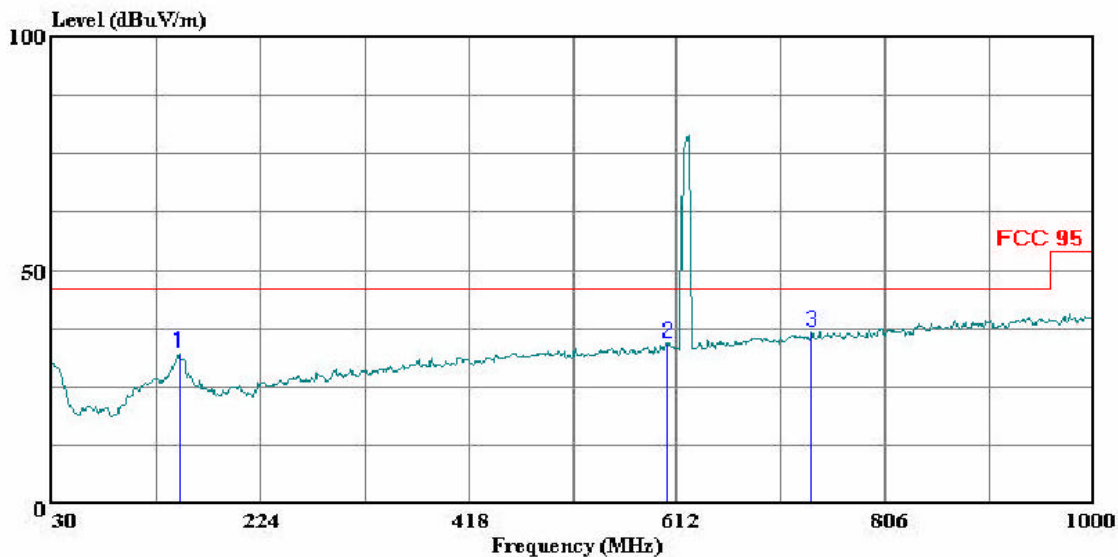
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

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



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

Data#: 2 File#: EMILow.EMI Date: 04-12-2005 Time: 16:28:27



(Audix ATC)

Trace: 1

Ref Trace:

Condition: FCC 95 VERTICAL
Test Operator: : Thanh Nguyen
Project #: : 05I3334-1
Company: : NIHON KOHDEN Corporation
EUT: : Transmitter for Medical
Model No : ZM-940PA
Configuration: : EUT with ECG , SPO2 and Arm cuff
Target of Test: : FCC 95H
Mode of Operation: Tx High Channel

Page: 1

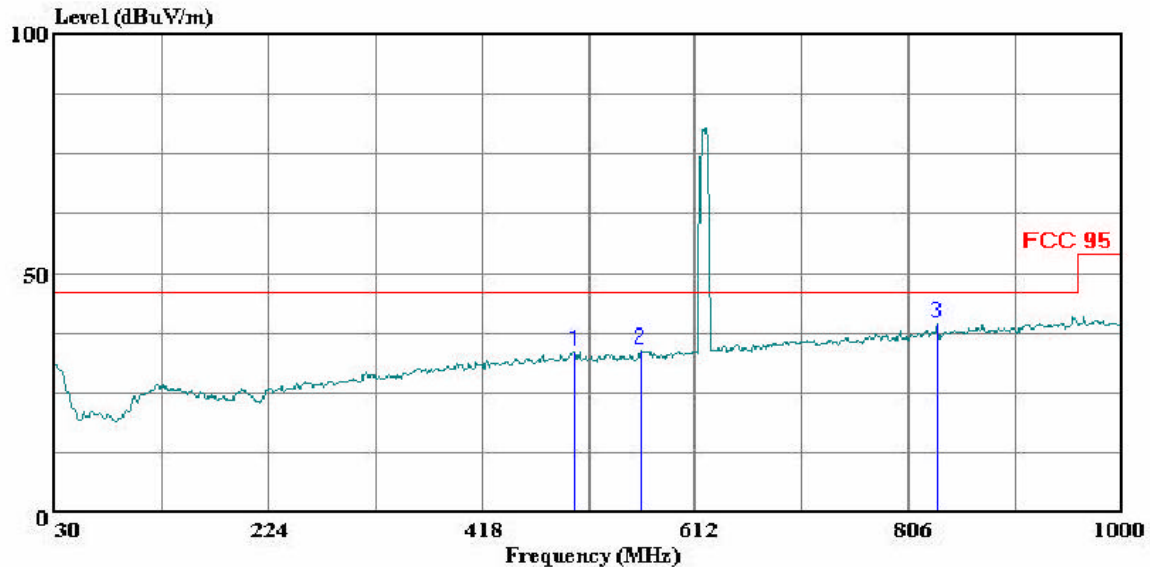
	Freq	Read		Limit	Over	
	MHz	Level	Factor	Level	Line	Limit Remark
		dBuV	dB	dBuV/m	dBuV/m	dB
1	148.340	18.02	14.33	32.34	46.00	-13.66 Peak
2	603.270	12.79	21.55	34.35	46.00	-11.65 Peak
3	737.130	13.13	23.67	36.80	46.00	-9.20 Peak

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



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

Data#: 4 File#: EMI Low.EMI Date: 04-12-2005 Time: 16:36:22



(Audix.ATC)

Trace: 3

Ref Trace:

Condition: FCC 95 HORIZONTAL
Test Operator: : Thanh Nguyen
Project #: : 05I3334-1
Company: : NIHON KOHDEN Corporation
EUT: : Transmitter for Medical
Model No : ZM-940PA
Configuration: : EUT with ECG , SPO2 and Arm cuff
Target of Test: : FCC 95H
Mode of Operation: Tx High Channel

Page: 1

	Freq	Read		Limit	Over	
	MHz	Level	Factor	Line	Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1	502.390	13.44	20.24	33.68	46.00	-12.32 Peak
2	562.530	12.97	21.02	33.99	46.00	-12.01 Peak
3	832.190	14.52	24.95	39.47	46.00	-6.53 Peak

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

04/13/05 High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thanh Nguyen
Project #: 05I3334-1
Company: NIHON KOHDEN Corporation.
EUT Descrip.: Transmitter for medical.
EUT M/N: ZM-94PA
Test Target: FCC Part 95H
Mode Oper: Tx Mid Channel 9478 (631.975MHz)

Test Equipment:

EMCO Horn 1-18GHz T120; S/N: 29310 @3m	Pre-amplifier 1-26GHz T63 Miteq 646456	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit FCC 15.209
---	---	------------------------	--------------	---------------------

Hi Frequency Cables

2 foot cable 2_Thanh	3 foot cable	4 foot cable	12 foot cable 12_Thanh	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	Fitr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
1.228	3.0	57	43.9	28.0	1.5	-38.4	0.0	0.0	48.2	35.0	74	54	-25.8	-19.0	V
1.842	3.0	58.7	43.2	30.7	1.9	-38.7	0.0	0.0	52.6	37.0	74	54	-21.4	-17.0	V
2.456	3.0	57.9	44.1	32.1	2.2	-39.0	0.0	0.0	53.2	39.4	74	54	-20.8	-14.6	V
3.070	3.0	56.5	45.1	32.6	2.5	-38.6	0.0	0.0	53.0	41.5	74	54	-21.0	-12.5	V
1.228	3.0	56.1	45.3	28.0	1.5	-38.4	0.0	0.0	47.2	36.4	74	54	-26.8	-17.6	H
1.842	3.0	55.6	43.5	30.7	1.9	-38.7	0.0	0.0	49.4	37.4	74	54	-24.6	-16.6	H
2.456	3.0	54.7	44.7	32.1	2.2	-39.0	0.0	0.0	50.0	40.0	74	54	-24.0	-14.0	H
3.070	3.0	56.3	44.4	32.6	2.5	-38.6	0.0	0.0	52.7	40.8	74	54	-21.3	-13.2	H

No other spurious emissions were detected above 3GHz

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		

11. EMISSION BANDWIDTH

PROVISIONS APPLICABLE

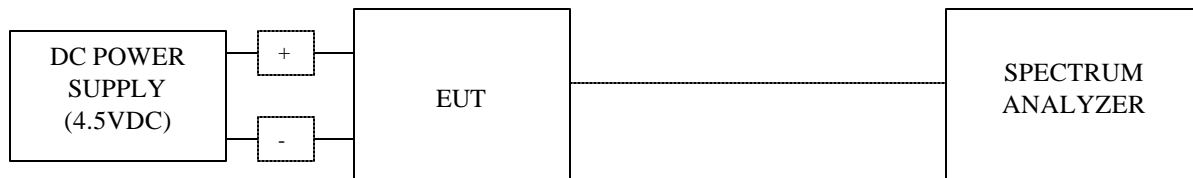
According to CFR 47 section 2.1049

LIMIT

The 26dB bandwidth shall be less than 20 KHz (F1D).

TEST PROCEDURE

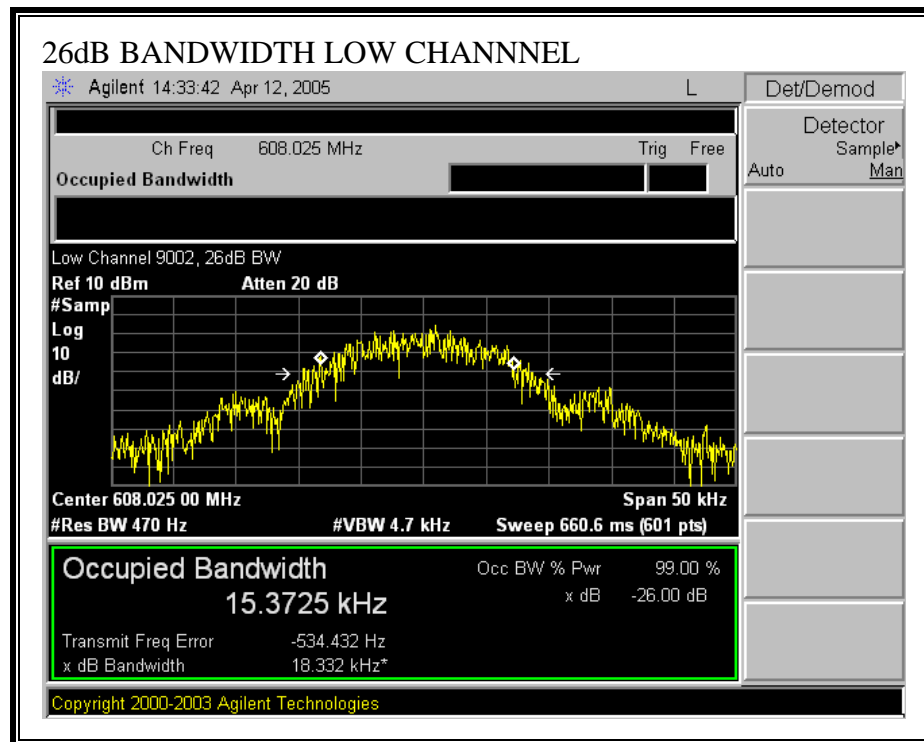
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 26dB bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 26dB bandwidth function is utilized.

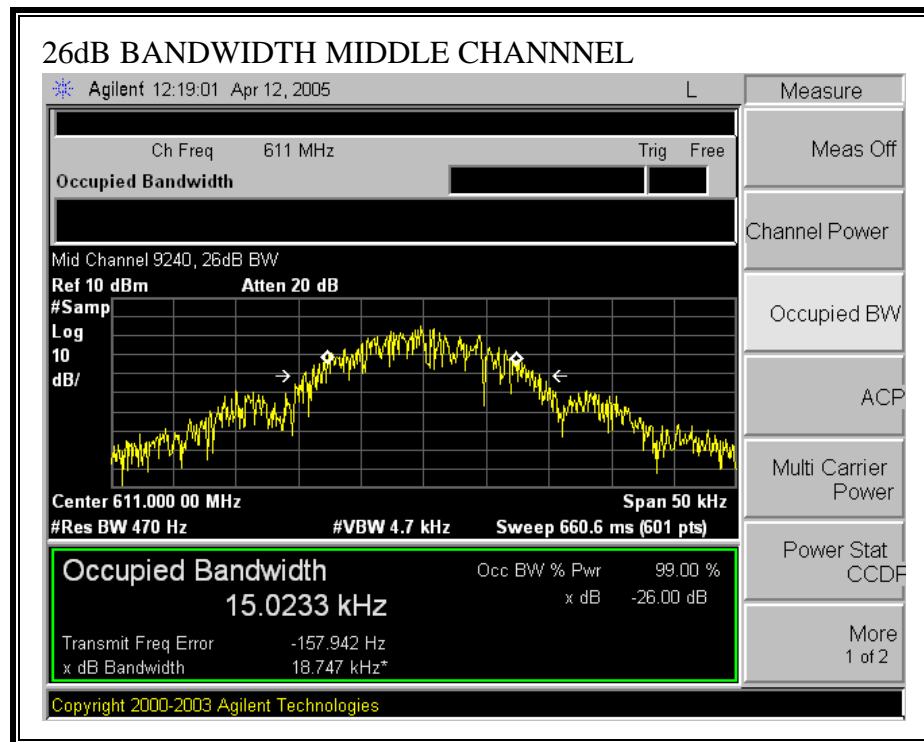


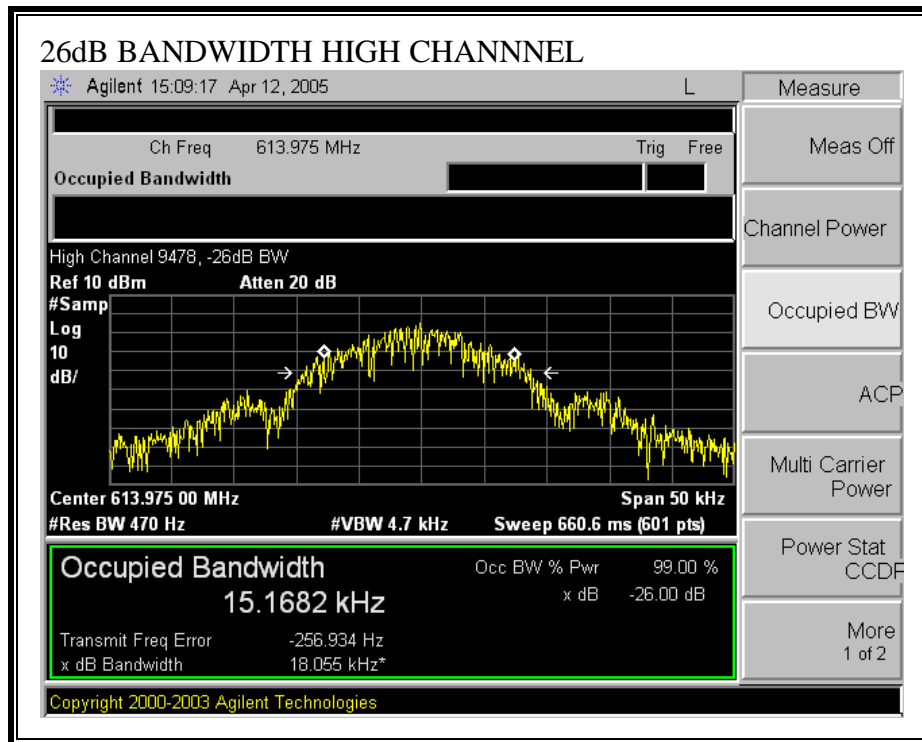
TEST RESULTS

No non-compliance noted:

CHANNEL	FREQUENCY (MHz)	26 dB BANDWIDTH (KHz)	99% BANDWIDTH (KHz)
LOW	608.025	18.332	15.3725
MIDDLE	611	18.747	15.0233
HIGH	613.975	18.055	15.1682







12. PEAK OUTPUT POWER

PROVISIONS APPLICABLE

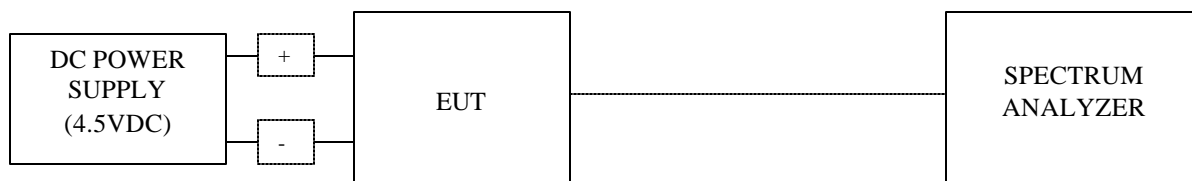
According to CFR47 section 2.1046

LIMIT

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

TEST PROCEDURE

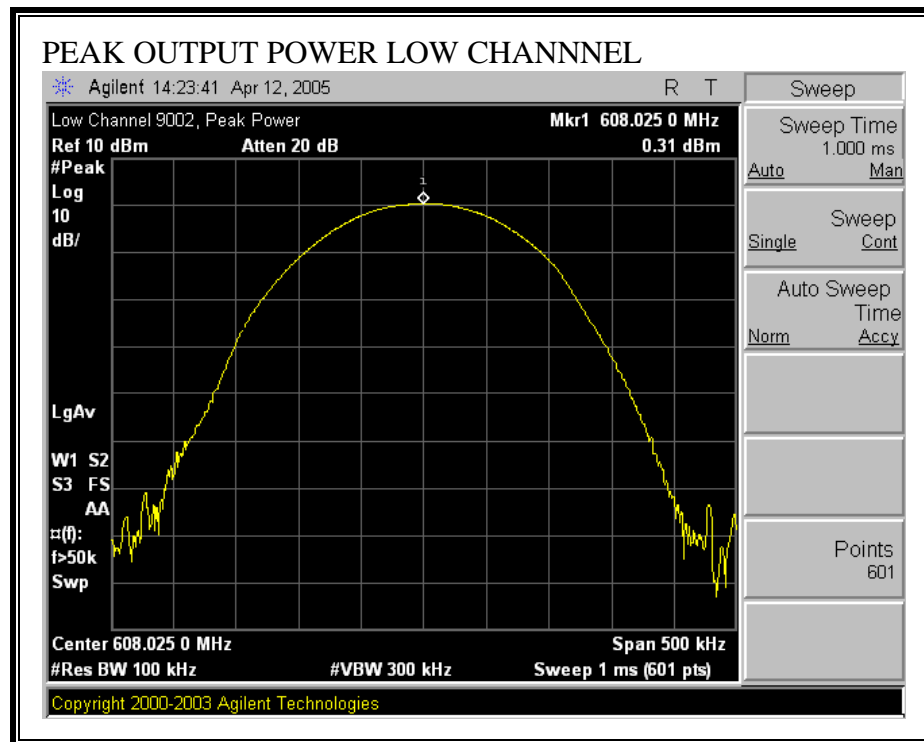
The transmitter output is connected to the spectrum analyzer. The RBW is set greater than the 26dB bandwidth. The VBW is set to 3 times the RBW.

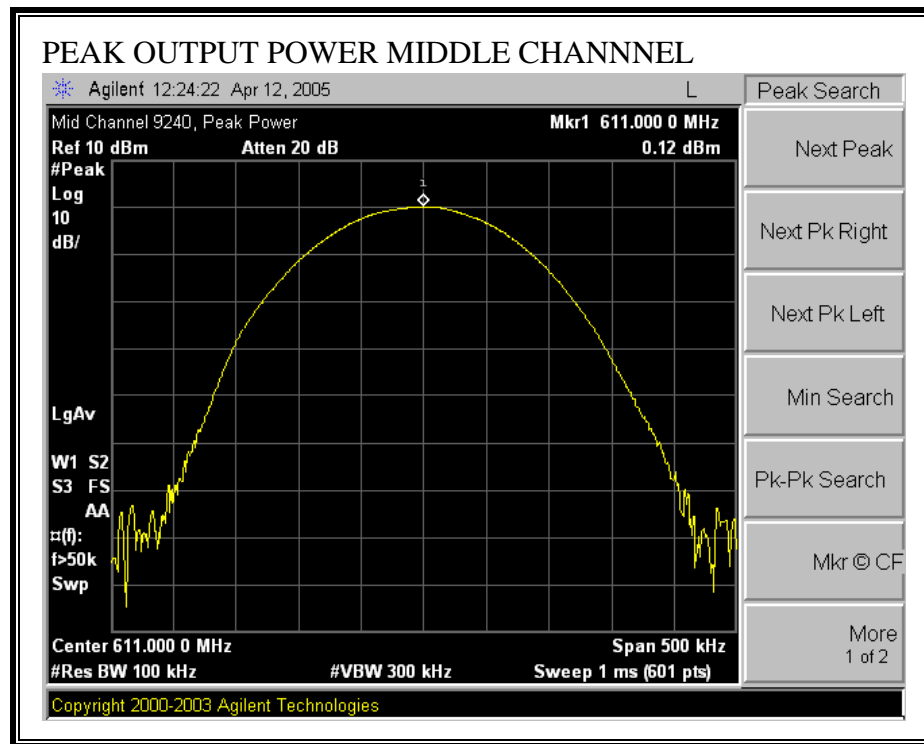


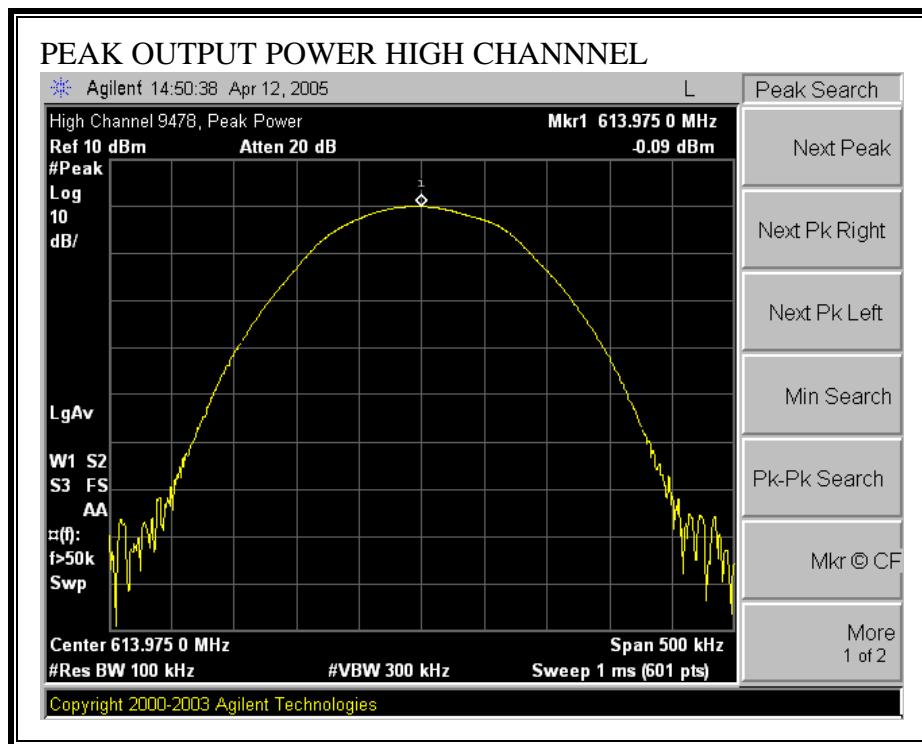
TEST RESULTS

No non-compliance noted:

CHANNEL	FREQUENCY (MHz)	PEAK OUTPUT POWER (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	608.025	0.31	10.8	-10.47
MIDDLE	611	0.12	10.8	-10.63
HIGH	613.975	-0.09	10.8	-10.81







13. SPURIOUS EMISSIONS AT ANTENNA TERMINAL

PROVISIONS APPLICABLE

According to CFR47 section 2.1051

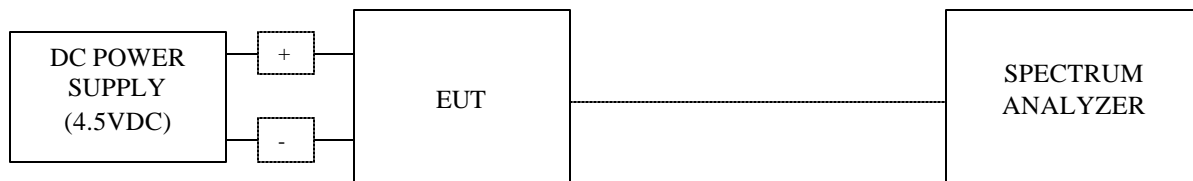
LIMIT

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

TEST PROCEDURE

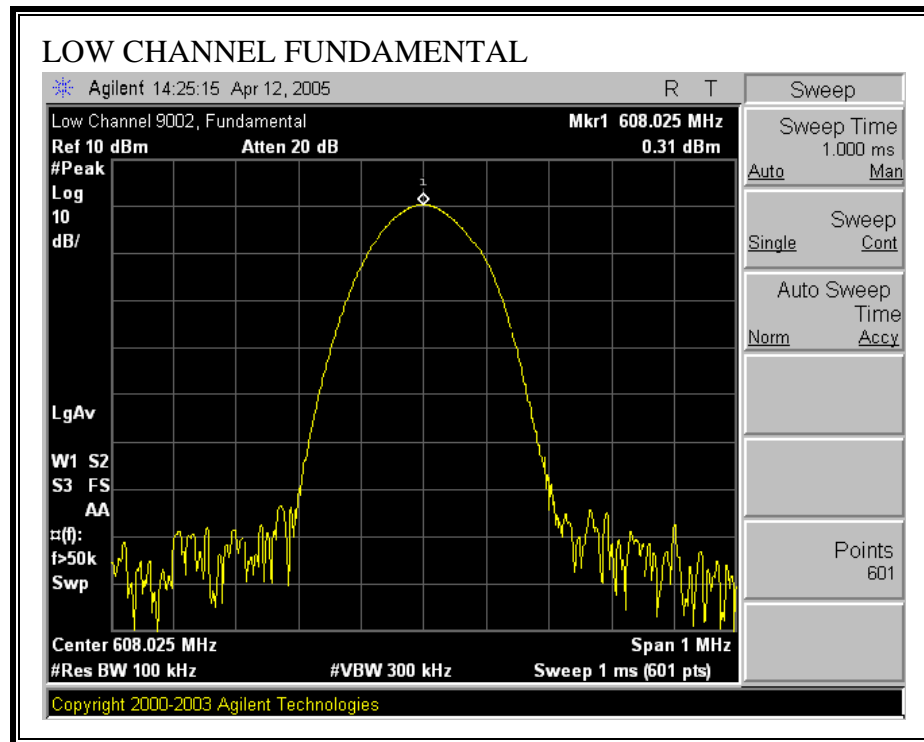
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz. The VBW is set to 300 kHz.

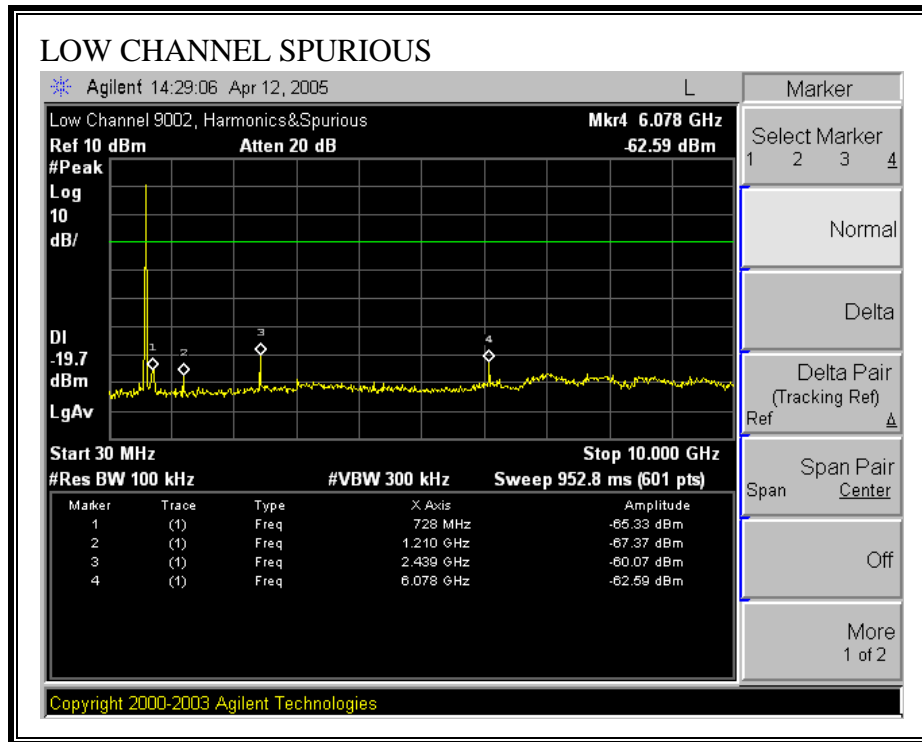
The spectrum from 30 MHz to 10 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

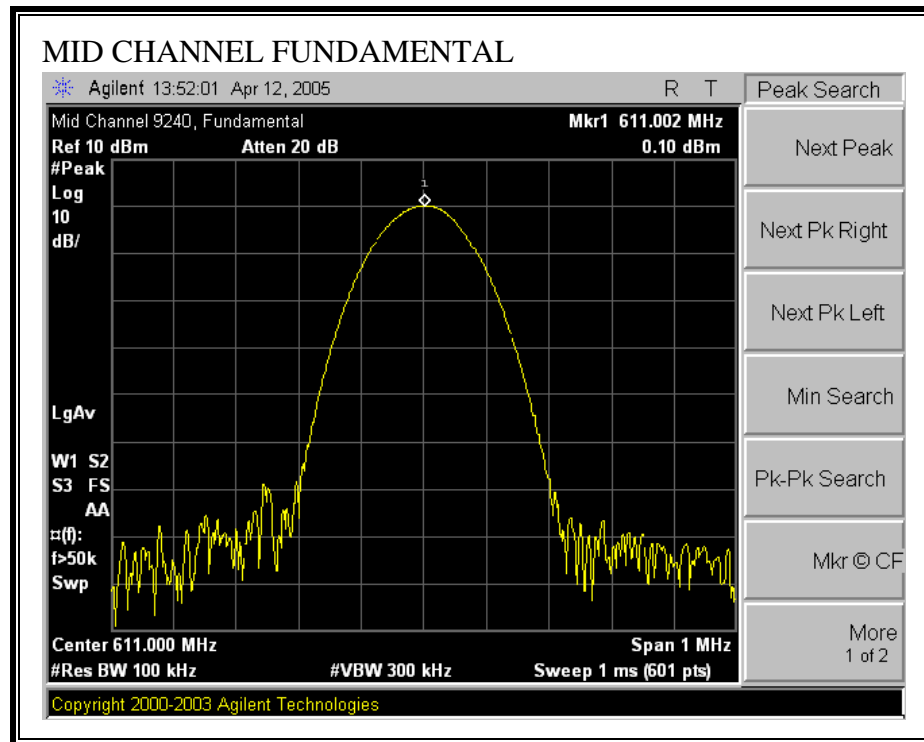


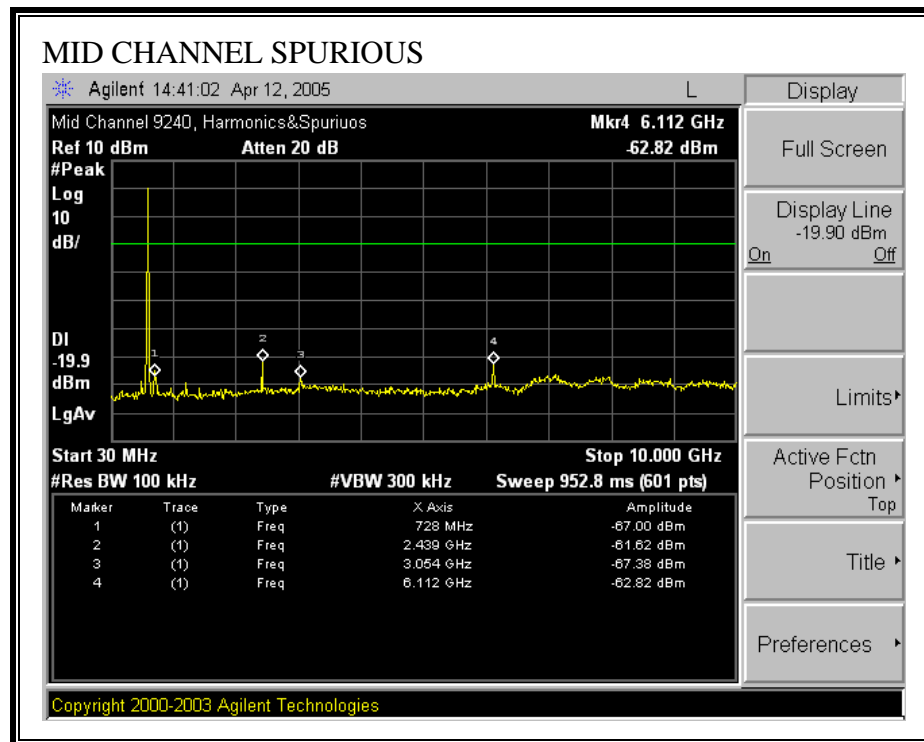
TEST RESULTS

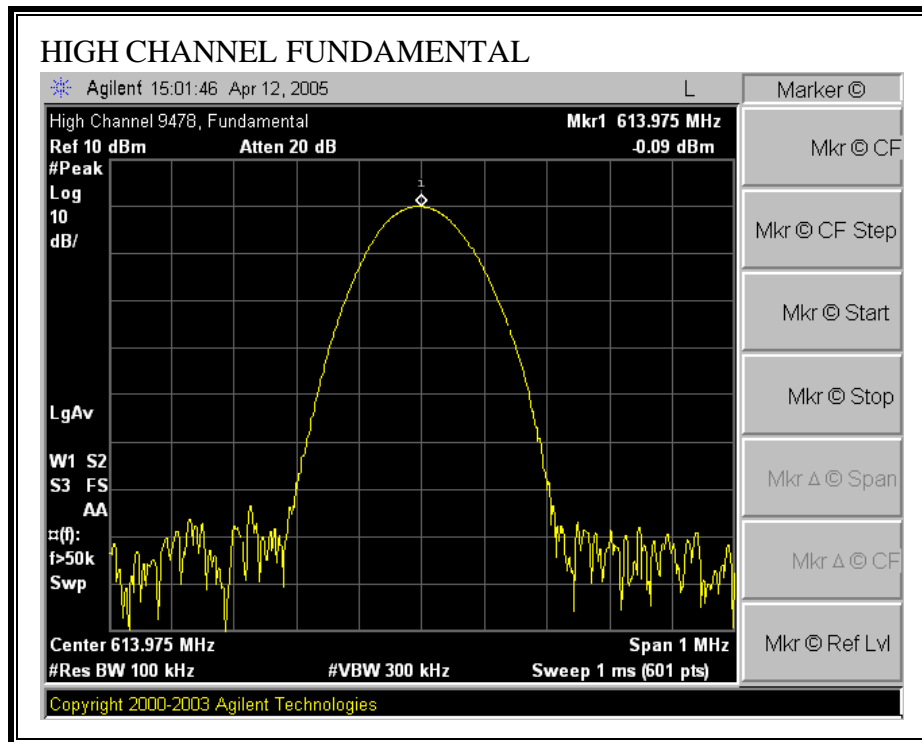
No non-compliance noted:

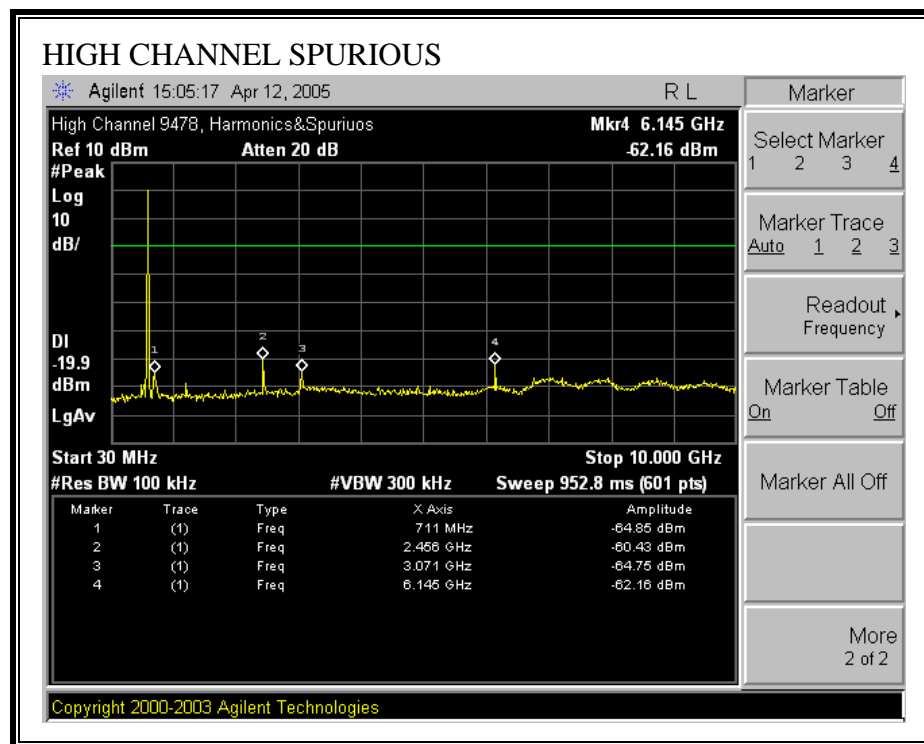












14. FREQUENCY STABILITY MEASUREMENT

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.

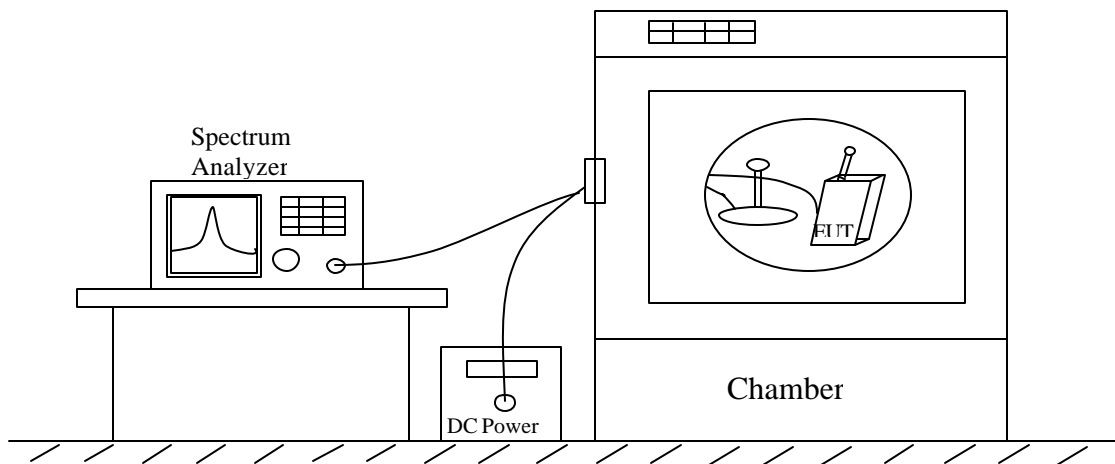
TEST PROCEDURE

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 608.025 MHz				
Limit: 608 MHz				
Power Supply (Vdc)	Environment Temperature (C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Limit (MHz)	Margin (MHz)
4.50	50	608.02506	608.000	0.025057328
4.50	40	608.02501	608.000	0.025005578
4.50	30	608.02491	608.000	0.02491352
4.50	25	608.02508	608.000	0.02508
4.50	20	608.02496	608.000	0.024956087
4.50	10	608.02497	608.000	0.024966097
4.50	0	608.02500	608.000	0.025002397
4.50	-10	608.02489	608.000	0.024887024
4.50	-20	608.02492	608.000	0.024923548
4.50	-30	608.02479	608.000	0.024791575

Reference Frequency: LOW CHANNEL 608.025 MHz				
Limit: 608 MHz				
Power Supply (Vdc)	Environment Temperature (C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Limit (MHz)	Margin (MHz)
4.5 (Normal)	25	608.02508	608.000	0.02508
3.825 (85%)	25	608.02502	608.000	0.025019332
5.175 (115%)	25	608.02501	608.000	0.025005647
3.15 (endpoint)	25	608.02506	608.000	0.02506

*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 613.975MHz				
Limit: 614 MHz				
Power Supply (Vdc)	Environment Temperature (C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Limit (MHz)	Margin (MHz)
4.50	50	613.97505	614.000	-0.02494567
4.50	40	613.97505	614.000	-0.024946625
4.50	30	613.97500	614.000	-0.025002047
4.50	25	613.97501	614.000	-0.02499
4.50	20	613.97500	614.000	-0.025000003
4.50	10	613.97497	614.000	-0.025034006
4.50	0	613.97499	614.000	-0.025009704
4.50	-10	613.97523	614.000	-0.024767496
4.50	-20	613.97498	614.000	-0.025024521
4.50	-30	613.97488	614.000	-0.025120459

Reference Frequency:HIGH CHANNEL 613.975MHz				
Limit: 614 MHz				
Power Supply (Vdc)	Environment Temperature (C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Limit (MHz)	Margin (MHz)
4.5 (Normal)	25	613.97501	614.000	-0.024993955
3.825 (85%)	25	613.97501	614.000	-0.024985651
5.175 (115%)	25	613.97502	614.000	-0.024980278
3.15 (endpoint)	25	613.97500	614.000	-0.02500

*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

15. 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).

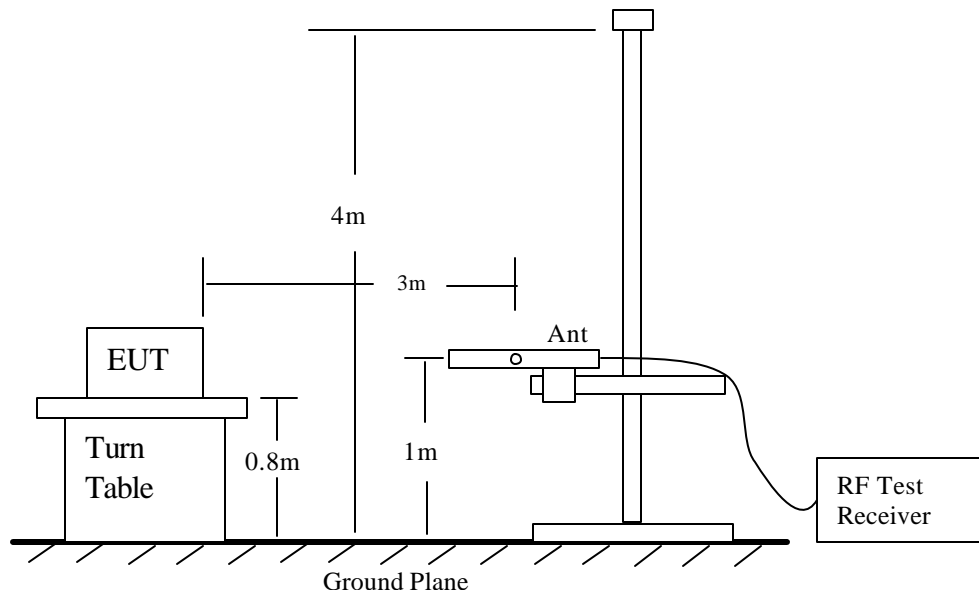
MEASUREMENT PROCEDURE

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

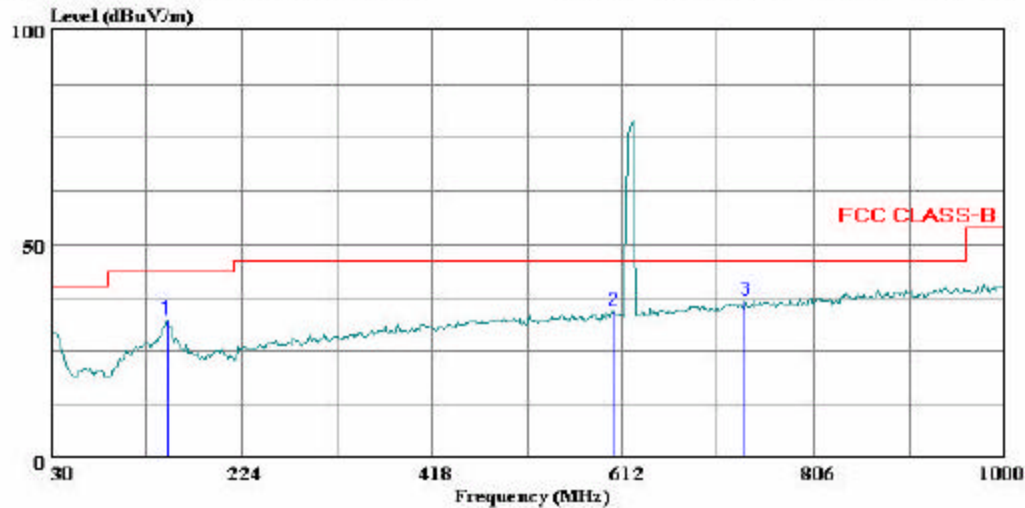
No non-compliance noted:

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#: 2 File#: EMIow.EMI Date: 04-12-2005 Time: 16:28:27



(Auxilx ATC)

Trace: 1

Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator: : Thanh Nguyen
Project #: : 05I3334-1
Company: : NIHON KOHDEN Corporation
EUT: : Transmitter for Medical
Model No : ZM-940PA
Configuration: : Digital config #1(EUT with Cuff,ECG)
Target of Test: : FCC Class B
Mode of Operation: NIBP Activate
: Tx Worst case High Channel.

Page: 1

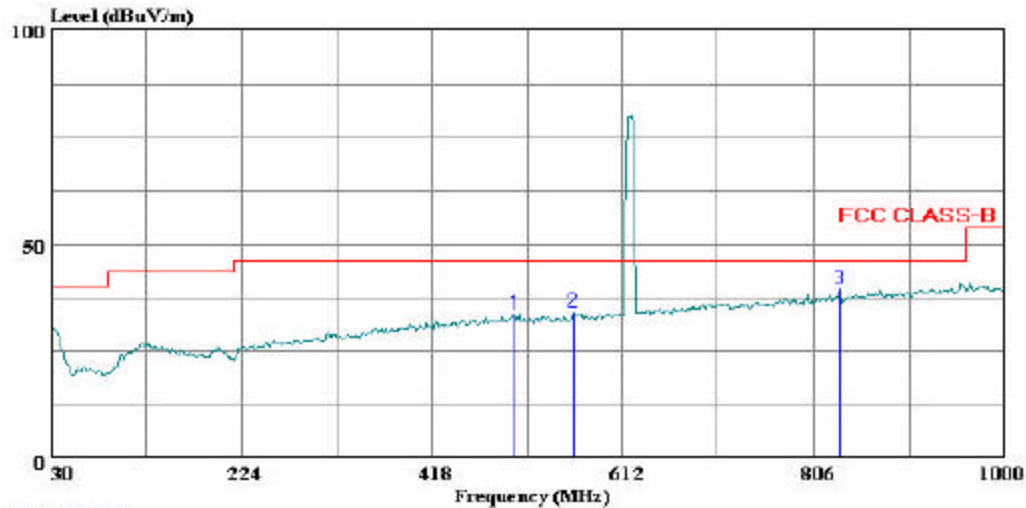
	Freq	Read		Limit	Over	
	MHz	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1	148.340	18.02	14.33	32.34	43.50	-11.16 Peak
2	603.270	12.79	21.55	34.35	46.00	-11.65 Peak
3	737.130	13.13	23.67	36.80	46.00	-9.20 Peak

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#: 4 File#: EMILow.EMI Date: 04-12-2005 Time: 16:36:22



(Auxiliary ATC)
Trace: 3

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Thanh Nguyen
Project #: : 05I3334-1
Company: : NIHON KOHDEN Corporation
EUT: : Transmitter for Medical
Model No : ZM-940PA
Configuration: : Digital Config #1 (EUT with Cuff, ECG)
Target of Test: : FCC Class B
Mode of Operation: NIBP Activate
: Tx Worst Case High Channel.

Page: 1

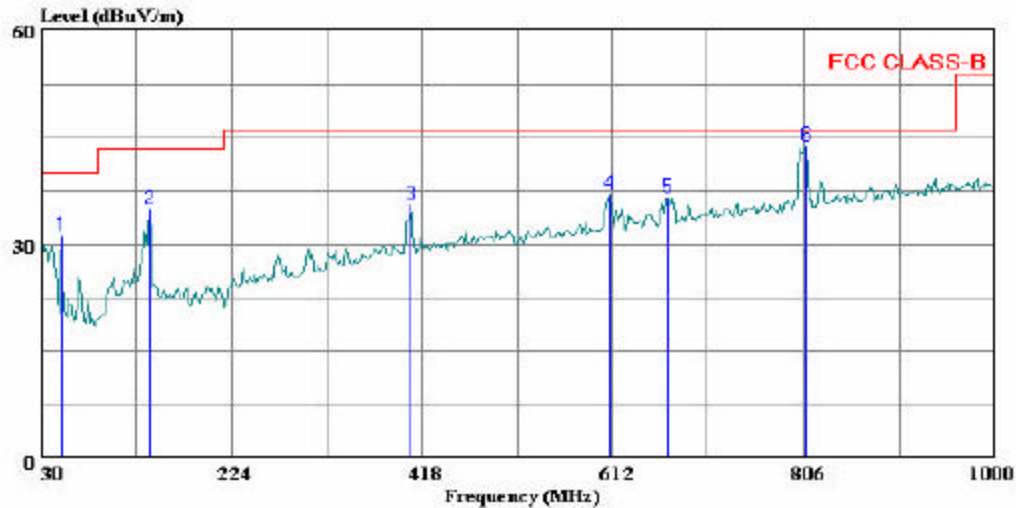
	Freq	Read		Limit	Over	
	MHz	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1	502.390	13.44	20.24	33.68	46.00	-12.32 Peak
2	562.530	12.97	21.02	33.99	46.00	-12.01 Peak
3	832.190	14.52	24.95	39.47	46.00	-6.53 Peak

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#: 26 File#: EMI Low.EMI Date: 04-12-2005 Time: 18:15:41



(Auxiliary ATC)

Trace: 25

Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator: : Thanh Nguyen
Project #: : 05I3334-1
Company: : NIHON KOHDEN Corporation
EUT: : Transmitter for Medical
Model No : ZM-940PA
Configuration: : EUT , channel writer, PC and Peripheral
Target of Test: : FCC Class B
Mode of Operation: Print/Change channel

Page: 1

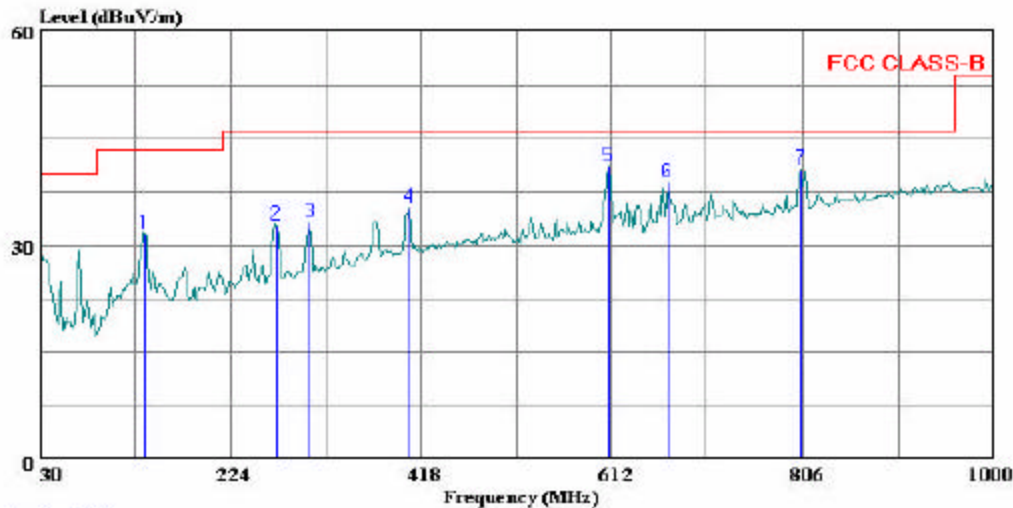
	Read			Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	51.340	22.07	9.05	31.12	40.00	-8.88 Peak
2	140.580	20.10	14.77	34.87	43.50	-8.63 Peak
3	407.330	17.27	18.21	35.48	46.00	-10.52 Peak
4	609.090	15.34	21.66	37.00	46.00	-9.00 Peak
5	668.260	13.81	22.66	36.46	46.00	-9.54 Peak
6	807.940	19.06	24.69	43.75	46.00	-2.25 Peak

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#: 28 File#: EMILow.EMI Date: 04-12-2005 Time: 18:19:46



(Auxiliary ATC)
Trace: 27

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Thanh Nguyen
Project #: : 05I3334-1
Company: : NIHON KOHDEN Corporation
EUT: : Transmitter for Medical
Model No : ZM-940PA
Configuration: : EUT , channel writer, PC and Peripheral
Target of Test: : FCC Class B
Mode of Operation: Print/Change channel

Page: 1

	Freq	Read		Limit	Over	
	MHz	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1	136.700	16.71	14.93	31.64	43.50	-11.86 Peak
2	270.560	18.15	14.63	32.78	46.00	-13.22 Peak
3	305.480	17.40	15.80	33.20	46.00	-12.80 Peak
4	405.390	17.04	18.18	35.22	46.00	-10.78 Peak
5	609.090	19.49	21.66	41.15	46.00	-4.85 Peak
6	669.230	16.08	22.65	38.73	46.00	-7.27 Peak
7	803.090	16.14	24.59	40.73	46.00	-5.27 Peak

16. 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 μ 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

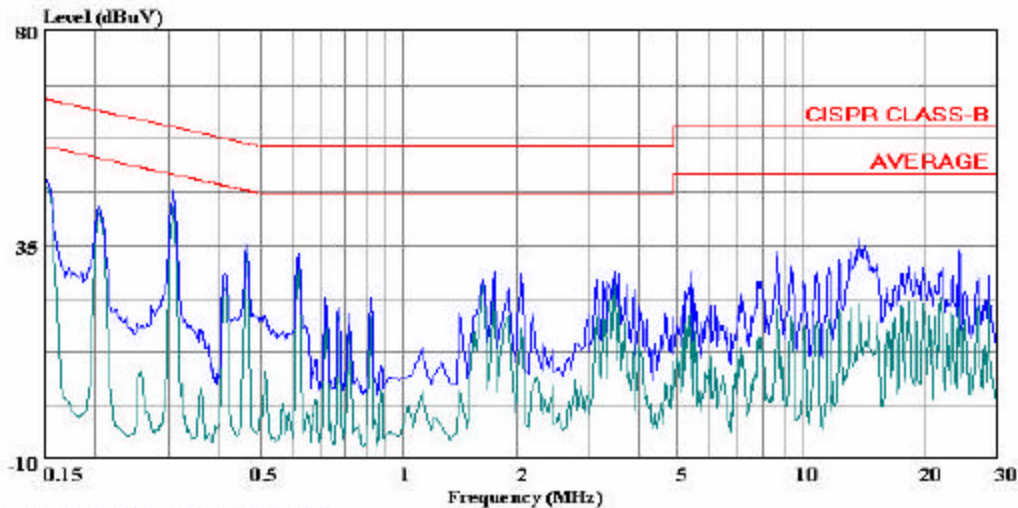
CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.31	46.56	--	43.39	0.00	60.02	50.02	-13.46	-6.63	L1
0.15	49.92	--	47.62	0.00	65.89	55.89	-15.97	-8.27	L1
13.84	36.36	--	22.57	0.00	60.00	50.00	-23.64	-27.43	L1
0.31	43.56	--	40.13	0.00	60.05	50.05	-16.49	-9.92	L2
0.15	46.14	--	43.79	0.00	65.89	55.89	-19.75	-12.10	L2
13.99	39.82	--	26.62	0.00	60.00	50.00	-20.18	-23.38	L2
6 Worst Data									

LINE 1 RESULT



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

Data#: 7 File#: Lc.emi Date: 04-13-2005 Time: 14:47:29



(Compliance Certification Services)

Trace: 5

Ref Trace:

Project No. : 05I3334-1
Test Engr : Thanh Nguyen
Company : NIHON KOHDEN Corporation.
EUT : Transmitter for Medical
Model No. : ZM-940PA
Test Config.: EUT, Ch. writer, PC with basic peripheral.
Mode of Op. : NIBP activate, Print and change channel
Type of Test: FCC Class B
Power Mains : 115VAC/60Hz
 : L1: PK(Black), AV(Green)

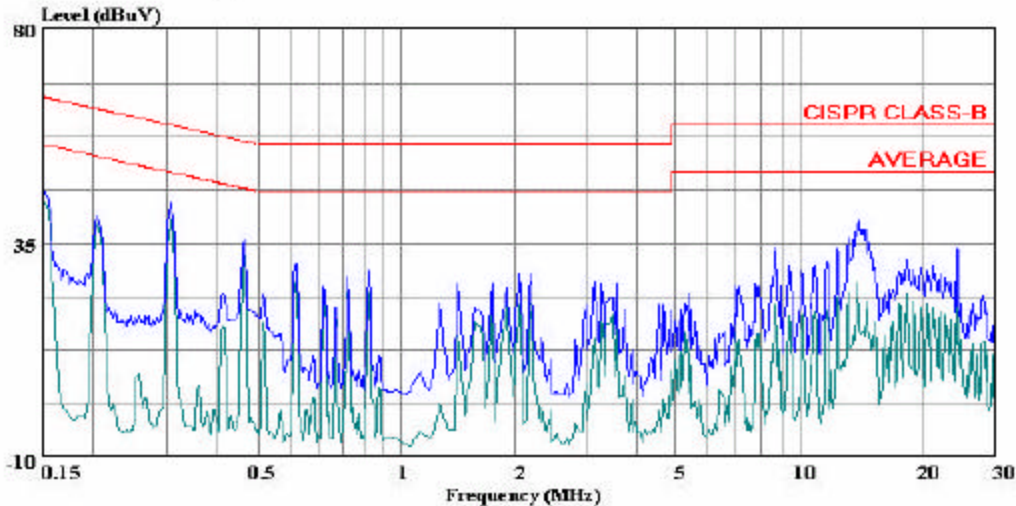
LINE 2 RESULT



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

Data#: 14 File#: Lc.emi

Date: 04-13-2005 Time: 15:01:09



(Compliance Certification Services)

Trace: 12

Ref Trace:

Project No. : 05I3334-1
Test Engr : Thanh Nguyen
Company : NIHON KOHDEN Corporation.
EUT : Transmitter for Medical
Model No. : ZM-940PA
Test Config.: EUT, Ch. writer, PC with basic peripheral.
Mode of Op. : NIBP activate, Print and change channel
Type of Test: FCC Class B
Power Mains : 115VAC/60Hz
 : L2: PK(Black), AV(Green)