FCC CFR47 PART 95 REQUIREMENT
CLASS II PERMISSIVE CHANGE
CERTIFICATION REPORT

FOR

TELEMETRY MEDICAL TRANSMITTER

MODEL: ZS-940PA

FCC ID: B6BZS-940PA

REPORT NUMBER: 06J10492-1, REVISION C

ISSUE DATE: AUGUST 28, 2006

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

LAB CODE:200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	8/22/06	Initial Issue	Thu
B	8/25/06	Update EUT description, EUT info under section 5, section 9	Thu
C	8/28/06	Update section 9	Thu

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COMPLIANCE CERTIFICATION SERVICES DOCUMENT NO: CCSUP4031C
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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: ZS-940PA

SERIAL NUMBER: 0043

DATE TESTED: AUGUST 11 TO 16, 2006

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 95 SUBPART H	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.

Approved & Released For CCS By: Tested By:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

VIEN TRAN
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA/EIA 603C (2004), 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:	TELEMETRY MEDICAL 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:	Internal (HELICAL MONOPOLE)
l). Antenna Gain:	0 dBi

5.2 CLASS II CHANGE DESCRIPTION

The major change field under this EUT is:

Original Filing	Class II Permissive Change
R009 (200Ohm)	R009 (0 Ohm)
R010 (806Ohm)	not mounted
R011 (806Ohm)	not mounted

5.3 MAXIMUM OUTPUT POWER

The transmitter has the same maximum peak conducted output power as originally certified.

5.4 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 QI-901PK, rev. 02_01.

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

5.5 WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power.

6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**Cal Due**
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	MY43360112	5/3/2007
Peak Power Meter	Agilent / HP	E4416A	GB41291160	12/2/2007
EMI Receiver, 9 kHz ~ 2.9 GHz	Agilent / HP	8542E	3942A00286	2/4/2007
RF Filter Section	Agilent / HP	85420E	3705A00256	2/4/2007
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	9/3/2006
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00931	6/24/2007
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	4/22/2007

7. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

TEST PERIPHERALS				
Device Type	Manufacturer	Model Number	Serial Number	FCC ID
Channel Writer	Nihon Kohden	QI-901PK	1444	N/A
Laptop	HP	ZE 4205	N/A	DoC

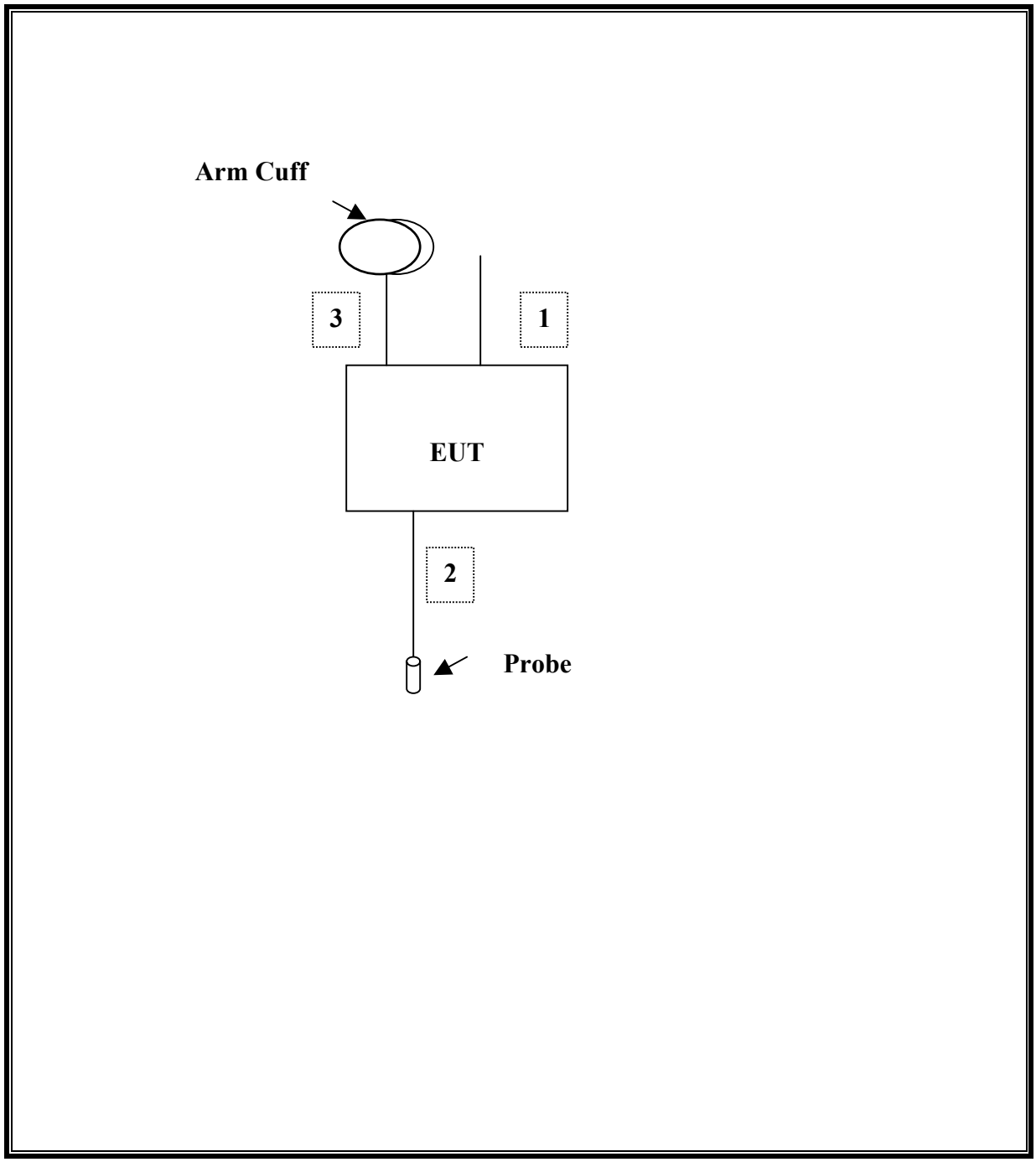
I/O CABLES

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	.8m	Yes	No	N/A
2	Sp02	1	Sp02	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. FIELD STRENGTH AND UNDESIRED 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.

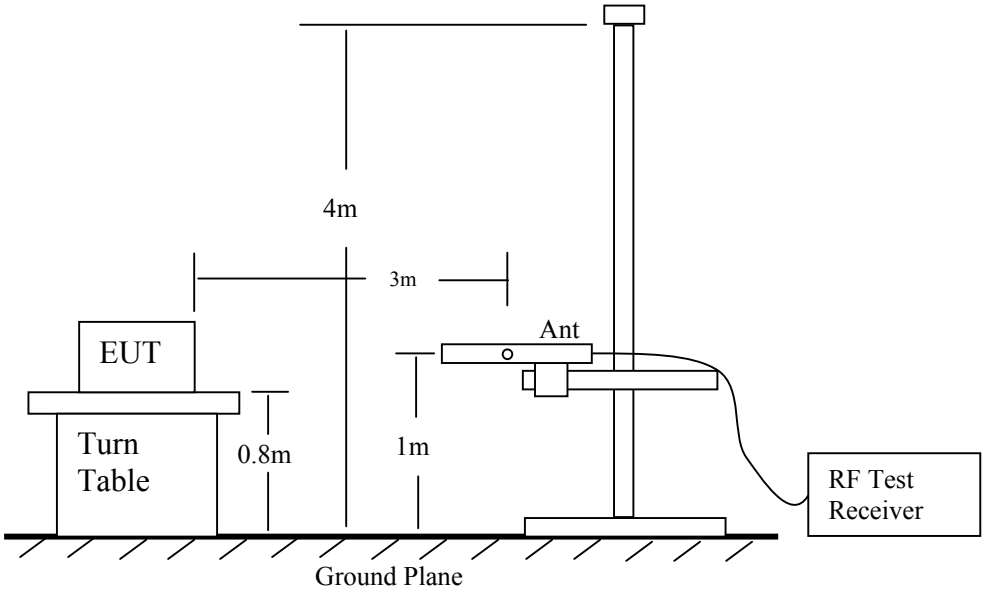
4). The transmitter shall be placed 0.80 meter above the ground plane, the X, Y, and Z positions shall be tested and the worst case reported. The transmitter shall be switched on with typical modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.

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.

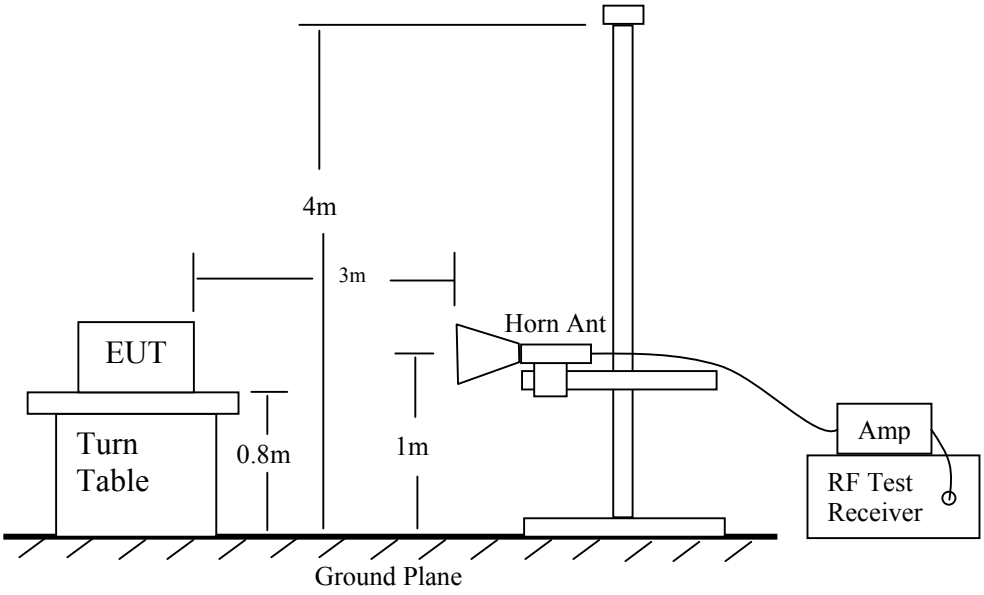
6). The transmitter shall than be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

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

RESULT:

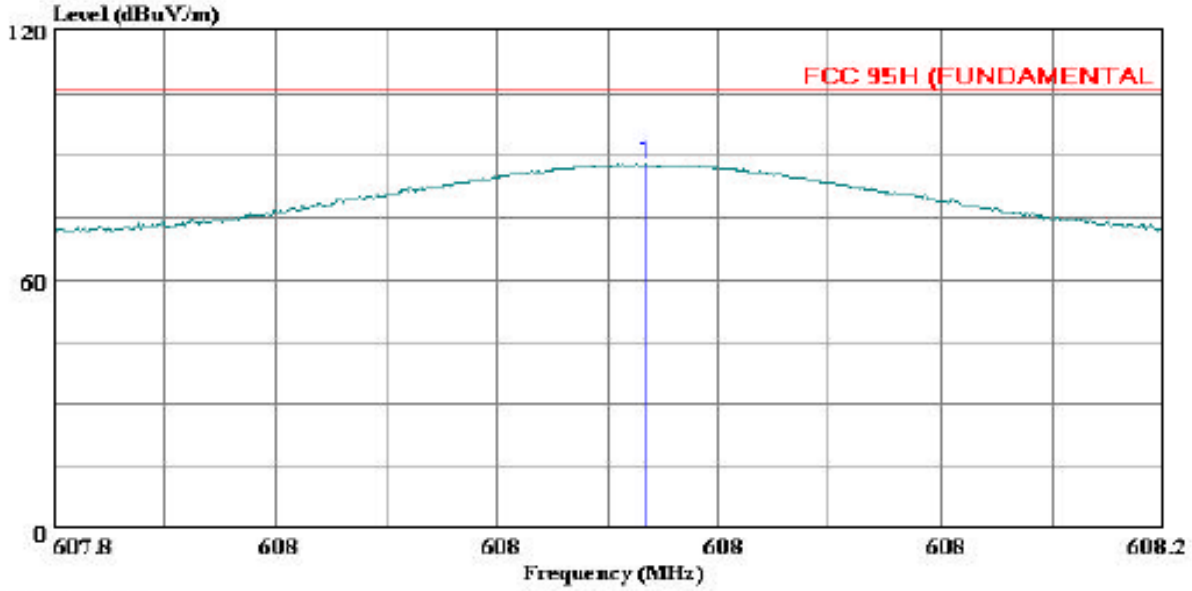
No non-compliance noted:

FUNDAMENTAL

95.1115 (a) LOW CHANNEL (VERTICAL)

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

Data#: 21 File#: Foundamental.EMI Date: 08-11-2006 Time: 19:42:30



(Audix ATC)
Trace: 19 Ref Trace:

Condition: FCC 95H (FUNDAMENTAL VERTICAL
Test Operator: : Mengistu Mekuria
Company: : Nihon Kohden
Project #: : 06U10492
Configuration: : EUT W/ECG, SPO2, and Arm Cuff
Mode of Operation: TX Low Z
Model: : ZS-940PA
Serial Number: : 00044
Test Target : FCC Part 95H

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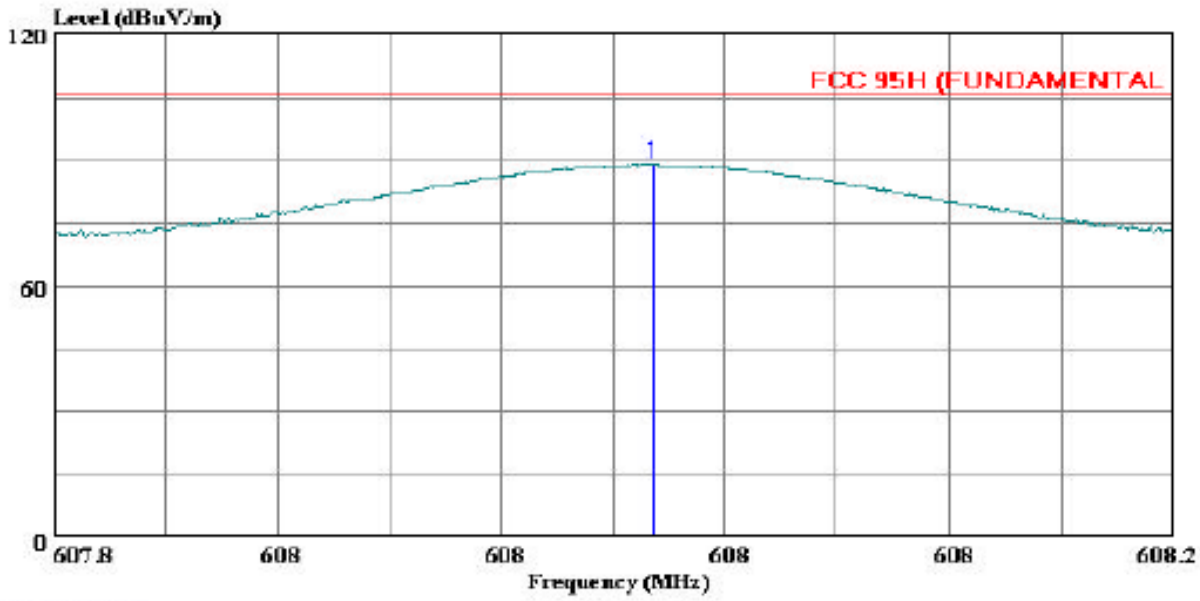
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	608.014	66.32	21.63	87.95	106.00	-18.05	Peak

95.1115 (a) **LOW CHANNEL (HORIZONTAL)**

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

Data#: 18 File#: Foundamental.EMI Date: 08-11-2006 Time: 19:34:01



(Audix ATC)
Trace: 17 Ref Trace:

Condition: FCC 95H (FUNDAMENTAL HORIZONTAL
Test Operator: : Mengistu Mekuria
Company: : Nihon Kohden
Project #: : 06U10492
Configuration: : EUT W/ECG, SPO2, and Arm Cuff
Mode of Operation: TX Low Z
Model: : ZS-940PA
Serial Number: : 00044
Test Target : FCC Part 95H

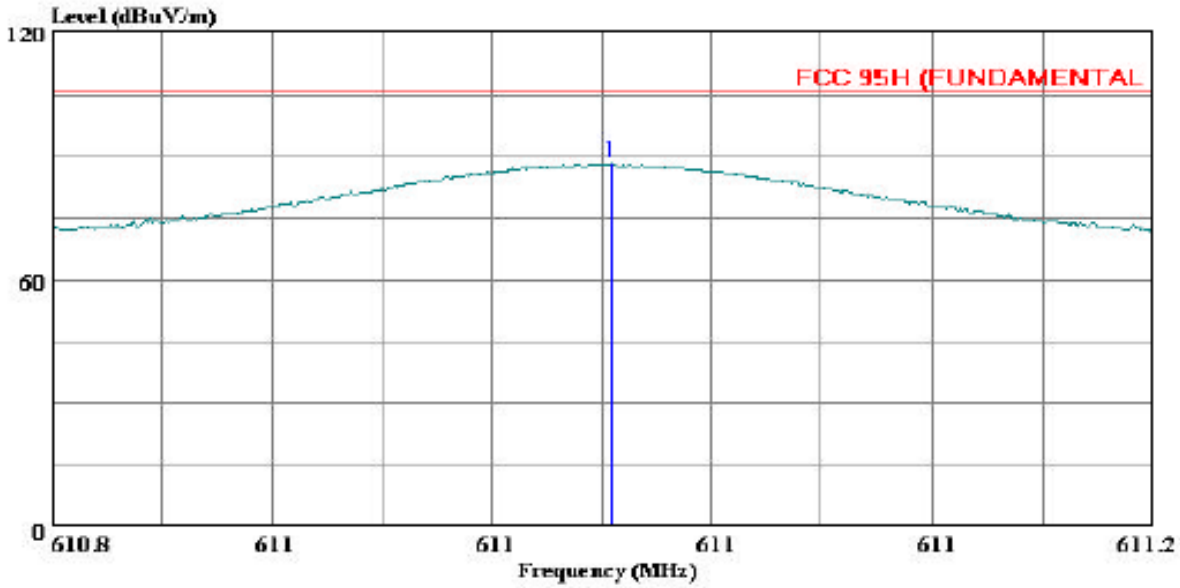
Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	608.015	67.76	21.63	89.39	106.00	-16.61	Peak

95.1115 (a) **MIDDLE CHANNEL (VERTICAL)**

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

Data#: 6 File#: Foundamental.EMI Date: 08-11-2006 Time: 12:39:20



(Audix ATC)

Trace: 5 Ref Trace:

Condition: FCC 95H (FUNDAMENTAL VERTICAL
Test Operator: : Mengistu Mekuria
Company: : Nihon Kohden
Project #: : 06U10492
Configuration: : EUT W/ECG, SPO2, and Arm Cuff
Mode of Operation: TX Mid Z
Model: : ZS-940PA
Serial Number: : 00044
Test Target : FCC Part 95H

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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	611.004	66.60	21.67	88.27	106.00	-17.73	Peak

95.1115 (a) **MIDDLE CHANNEL (HORIZONTAL)**

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

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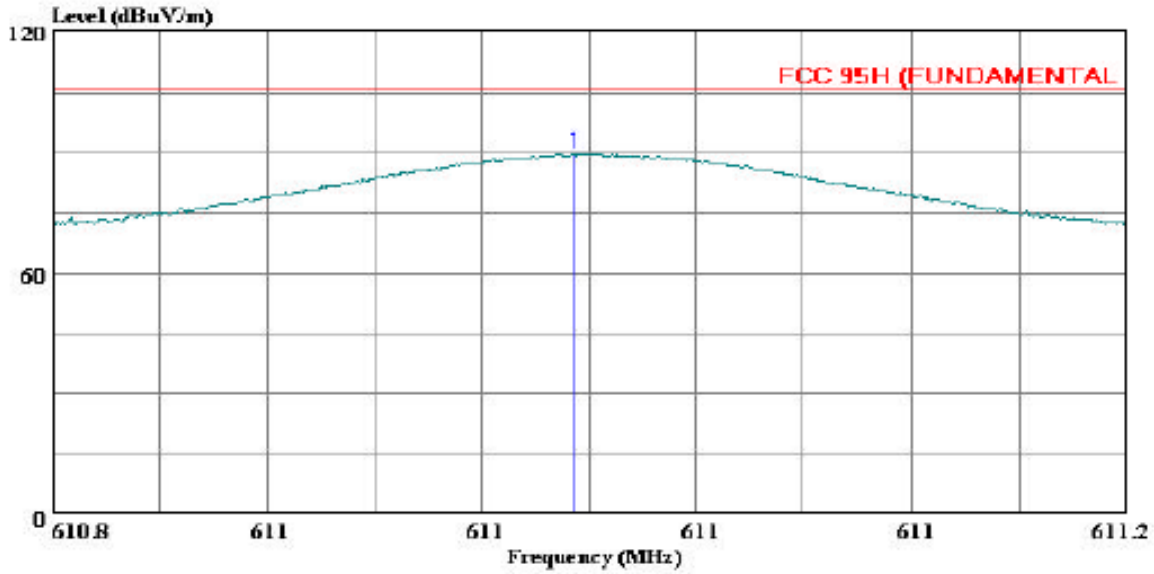

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Condition: FCC 95H (FUNDAMENTAL HORIZONTAL
Test Operator: : Mengistu Mekuria
Company: : Nihon Kohden
Project #: : 06U10492
Configuration: : EUT W/ECG, SPO2, and Arm Cuff
Mode of Operation: TX Mid Z
Model: : ZS-940PA
Serial Number: : 00044
Test Target : FCC Part 95H

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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	610.995	68.10	21.67	89.77	106.00	-16.23	Peak

95.1115 (a) **HIGH CHANNEL (VERTICAL)**

COMPLIANCE Engineering Services, Inc.
561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

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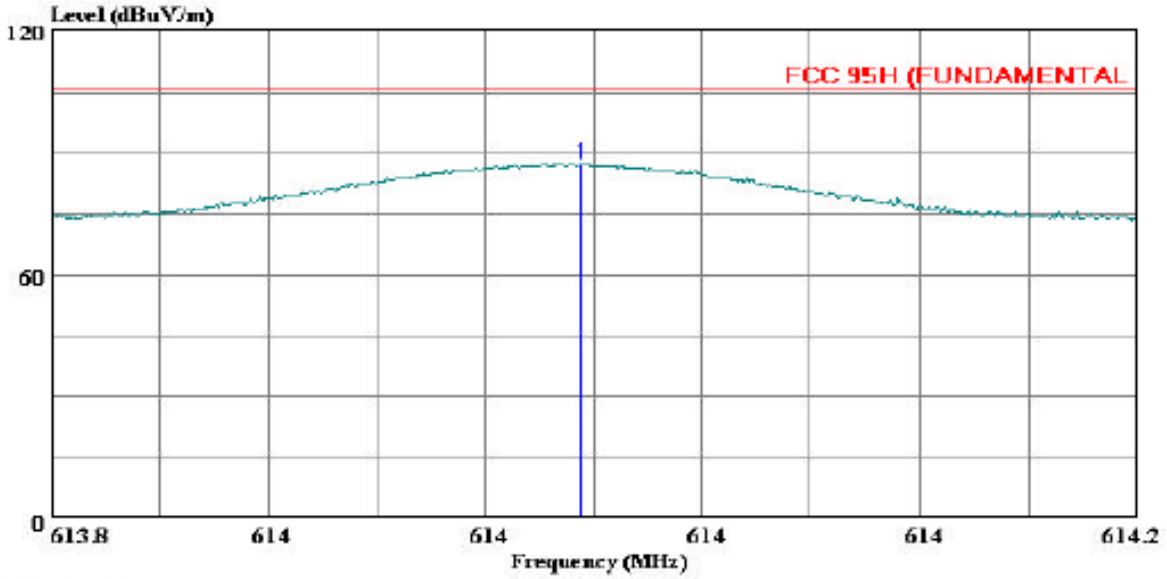

(Audix ATC)
Trace: 29 Ref Trace:

Condition: FCC 95H (FUNDAMENTAL VERTICAL
Test Operator: : Mengistu Mekuria
Company: : Nihon Kohden
Project #: : 06U10492
Configuration: : EUT W/ECG, SPO2, and Arm Cuff
Mode of Operation: TX High Z
Model: : ZS-940PA
Serial Number: : 00044
Test Target : FCC Part 95H

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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	613.996	65.66	21.70	87.36	106.00	-18.64	Peak

95.1115 (a) **HIGH CHANNEL (HORIZONTAL)**

COMPLIANCE Engineering Services, Inc.
561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

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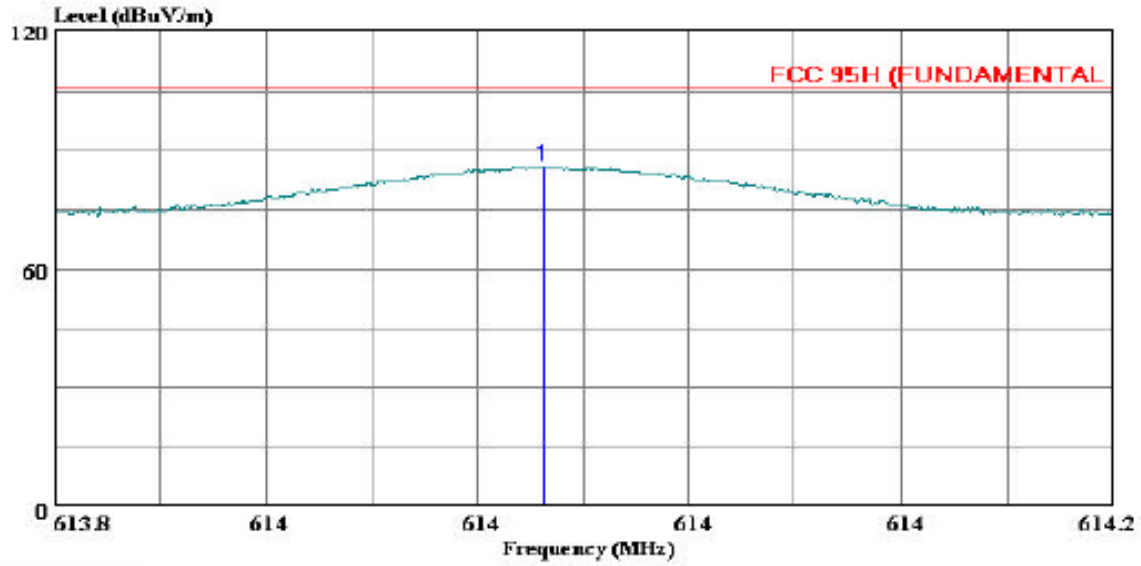

(Audix ATC)
Trace: 27 Ref Trace:

Condition: FCC 95H (FUNDAMENTAL HORIZONTAL
Test Operator: : Mengistu Mekuria
Company: : Nihon Kohden
Project #: : 06U10492
Configuration: : EUT W/ECG, SPO2, and Arm Cuff
Mode of Operation: TX High Z
Model: : ZS-940PA
Serial Number: : 00044
Test Target : FCC Part 95H

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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	613.985	64.32	21.70	86.02	106.00	-19.98	Peak

Tx BELOW 1GHz

95.1115 (a) LOW CHANNEL (VERTICAL)

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

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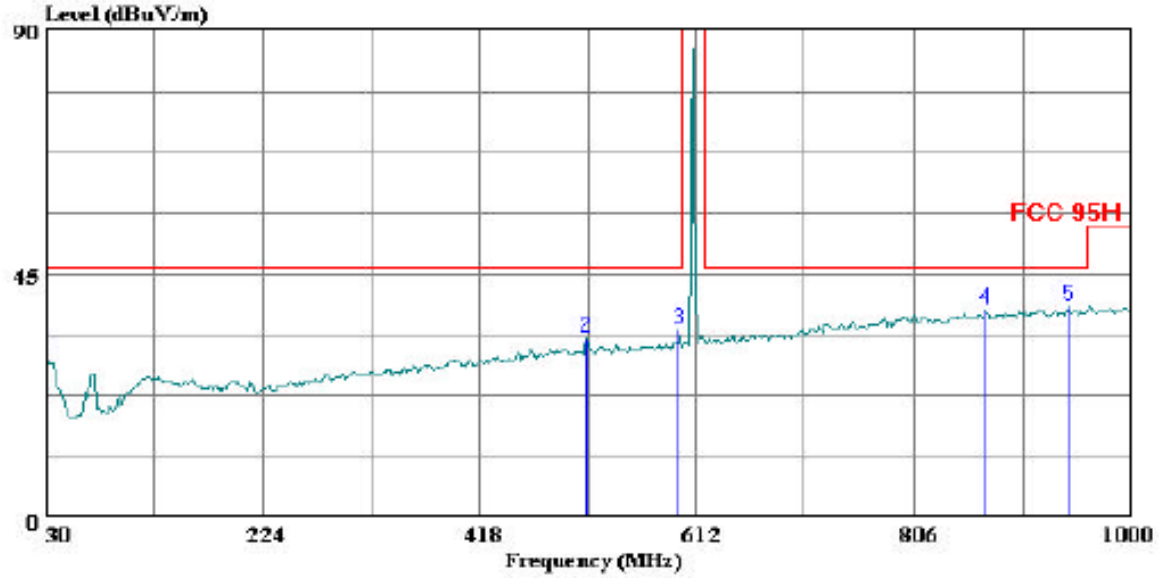

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Condition: FCC 95H VERTICAL
Test Operator : Mengistu Mekuria
Company : Nihon Kohden
Project # : 06U10492
Configuration : EUT W/ECG, SPO2, and Arm Cuff
Mode of Operation: TX Low Z
Model : ZS-940PA
Serial Number : 00044
Test Target : FCC Part 95H

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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	30.970	8.93	20.45	29.38	46.00	-16.62	Peak
2	514.030	12.72	20.44	33.16	46.00	-12.84	Peak
3	596.480	13.07	21.48	34.55	46.00	-11.45	Peak
4	868.080	12.72	25.47	38.19	46.00	-7.81	Peak
5	943.740	12.42	26.43	38.85	46.00	-7.15	Peak

95.1115 (a) **LOW CHANNEL (HORIZONTAL)**

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

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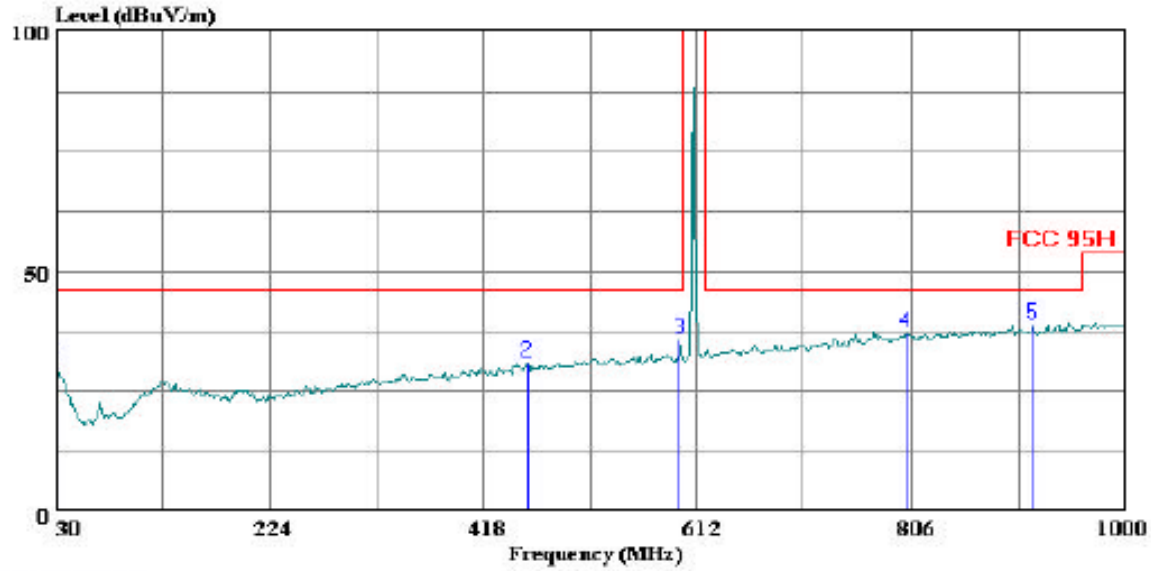

(Audix ATC)
Trace: 25 Ref Trace:

Condition: FCC 95H HORIZONTAL
Test Operator : Mengistu Mekuria
Company : Nihon Kohden
Project #: : 06U10492
Configuration: : EUT W/ECG, SPO2, and Arm Cuff
Mode of Operation: TX Low Z
Model: : ZS-940PA
Serial Number: : 00044
Test Target : FCC Part 95H

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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	30.970	9.31	20.45	29.76	46.00	-16.24	Peak
2	458.740	11.27	19.39	30.66	46.00	-15.34	Peak
3	596.480	14.03	21.48	35.51	46.00	-10.49	Peak
4	800.180	12.29	24.58	36.87	46.00	-9.13	Peak
5	914.640	12.81	26.03	38.84	46.00	-7.16	Peak

95.1115 (a) **MIDDLE CHANNEL (VERTICAL)**

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

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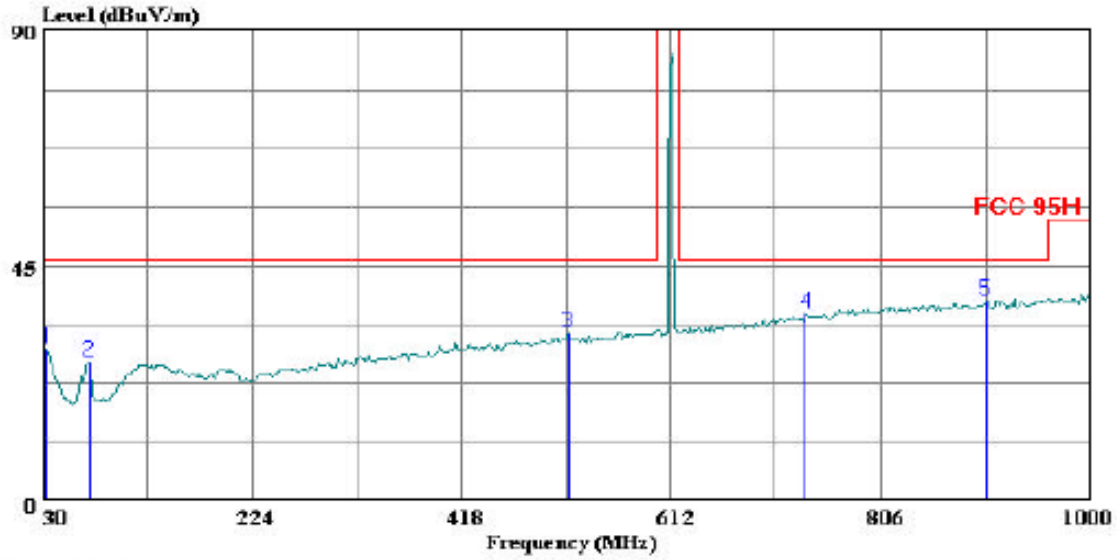

(Audix ATC)
Trace: 13 Ref Trace:

Condition: FCC 95H VERTICAL
Test Operator: : Mengistu Mekuria
Company: : Nihon Kohden
Project #: : 06U10492
Configuration: : EUT W/ECG, SPO2, and Arm Cuff
Mode of Operation: TX Mid Z
Model: : ZS-940PA
Serial Number: : 00044
Test Target : FCC Part 95H

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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	33.880	10.01	19.05	29.06	46.00	-16.94	Peak
2	72.680	17.22	9.23	26.45	46.00	-19.55	Peak
3	516.940	11.72	20.48	32.19	46.00	-13.81	Peak
4	737.130	12.17	23.67	35.84	46.00	-10.16	Peak
5	902.030	12.39	25.93	38.32	46.00	-7.68	Peak

95.1115 (a) **MIDDLE CHANNEL (HORIZONTAL)**

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

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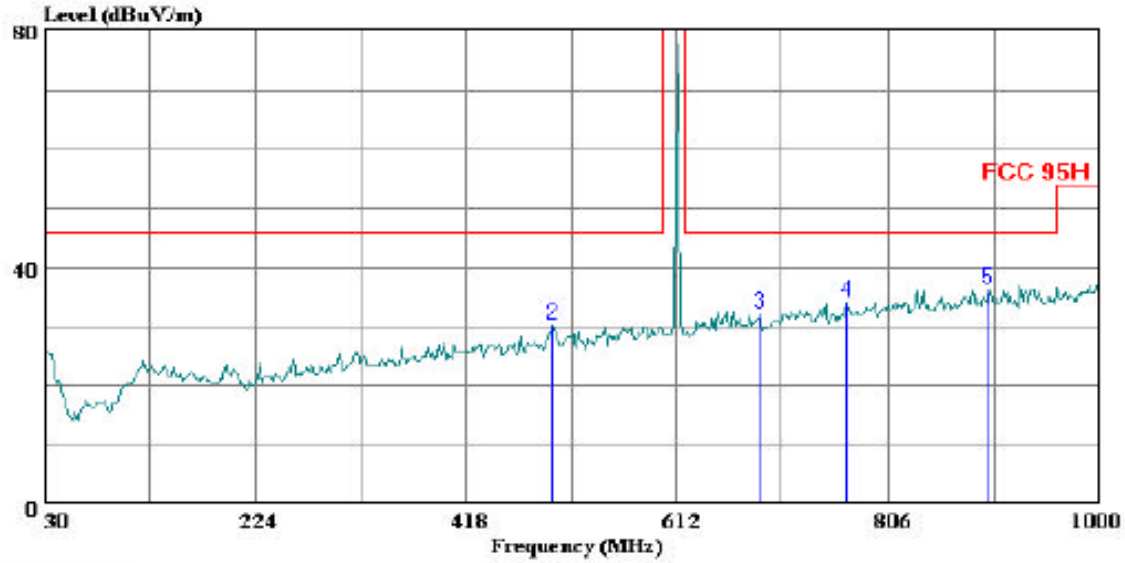

(Audix ATC)
Trace: 15 Ref Trace:

Condition: FCC 95H HORIZONTAL
Test Operator : Mengistu Mekuria
Company : Nihon Kohden
Project #: : 06U10492
Configuration: : EUT W/ECG, SPO2, and Arm Cuff
Mode of Operation: TX Mid Z
Model: : ZS-940PA
Serial Number: : 00044
Test Target : FCC Part 95H

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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	30.000	5.67	20.45	26.12	46.00	-19.88	Peak
2	497.540	9.92	20.19	30.11	46.00	-15.89	Peak
3	688.630	9.18	22.87	32.05	46.00	-13.95	Peak
4	766.230	9.93	24.09	34.02	46.00	-11.98	Peak
5	897.180	10.47	25.85	36.32	46.00	-9.68	Peak

95.1115 (a) **HIGH CHANNEL (VERTICAL)**

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

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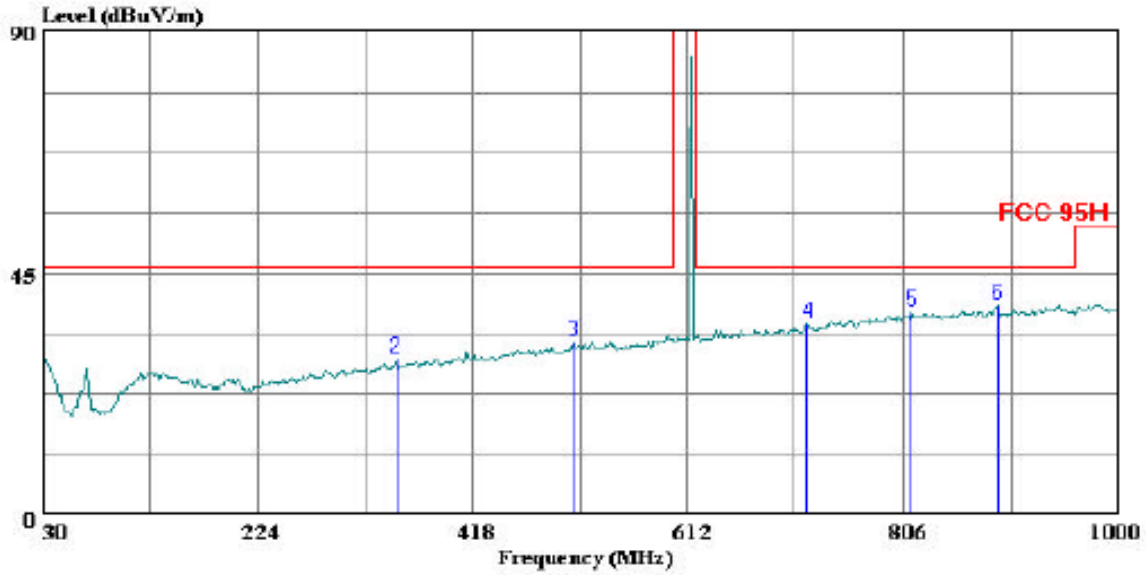


(Audix ATC)
Trace: 31 Ref Trace:

Condition: FCC 95H VERTICAL
Test Operator: : Mengistu Mekuria
Company: : Nihon Kohden
Project #: : 06U10492
Configuration: : EUT W/ECG, SPO2, and Arm Cuff
Mode of Operation: TX High Z
Model: : ZS-940PA
Serial Number: : 00044
Test Target : FCC Part 95H

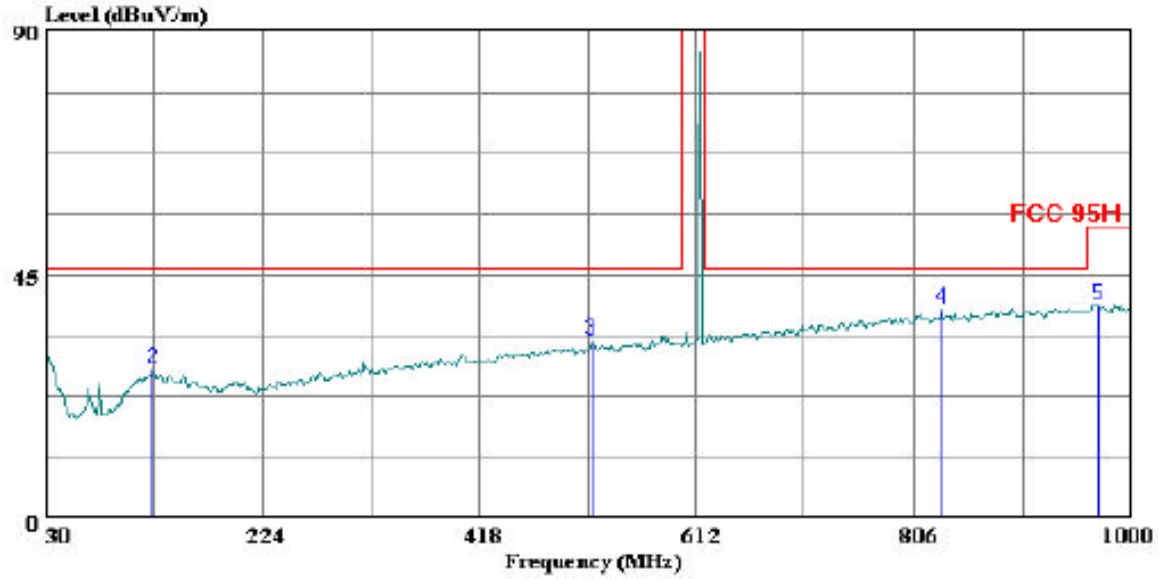
Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	30.000	9.80	20.45	30.25	46.00	-15.75	Peak
2	349.130	11.98	16.89	28.87	46.00	-17.13	Peak
3	509.180	11.81	20.36	32.17	46.00	-13.83	Peak
4	720.640	12.15	23.49	35.64	46.00	-10.36	Peak
5	812.790	13.05	24.77	37.82	46.00	-8.18	Peak
6	890.390	13.22	25.81	39.03	46.00	-6.97	Peak

95.1115 (a) **HIGH CHANNEL (HORIZONTAL)**

COMPLIANCE Engineering Services, Inc.
561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 34 File#: Foundamental.EMI Date: 08-12-2006 Time: 12:31:13



(Audix ATC)

Trace: 33 Ref Trace:

Condition: FCC 95H HORIZONTAL
Test Operator : Mengistu Mekuria
Company : Nihon Kohden
Project # : 06U10492
Configuration : EUT W/ECG, SPO2, and Arm Cuff
Mode of Operation: TX High Z
Model : ZS-940PA
Serial Number : 00044
Test Target : FCC Part 95H

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	30.000	9.94	20.45	30.39	46.00	-15.61	Peak
2	126.030	12.13	15.25	27.38	46.00	-18.62	Peak
3	518.880	12.14	20.54	32.68	46.00	-13.32	Peak
4	829.280	13.72	24.92	38.64	46.00	-7.36	Peak
5	969.930	12.68	26.66	39.34	54.00	-14.66	Peak

HARMONIC & SPUR

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

High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

Company: Nion Kohden
Project #: 06J10492
Date: 8/12/2006
Test Engineer: Mengistu Mekuria
Configuration: EUT and Supporting Devices
Mode: Tx Low Z

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T144 Miteq 3008A00931			

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
Can 187207004		Can 187209002		

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	Fltr 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	51.0	42.3	26.0	2.3	-39.2	0.0	0.0	40.1	31.5	74	54	-33.9	-22.5	H
1.824	3.0	46.2	34.5	27.5	2.6	-38.3	0.0	0.0	37.9	26.2	74	54	-36.1	-27.8	H
2.432	3.0	50.0	42.3	28.7	2.8	-37.5	0.0	0.0	44.0	36.2	74	54	-30.0	-17.8	H
3.040	3.0	49.8	43.1	30.5	3.0	-37.3	0.0	0.0	46.0	39.3	74	54	-28.0	-14.7	H
1.216	3.0	54.8	50.4	26.0	2.3	-39.2	0.0	0.0	43.9	39.5	74	54	-30.1	-14.5	V
1.824	3.0	48.3	34.5	27.5	2.6	-38.3	0.0	0.0	40.1	26.2	74	54	-33.9	-27.8	V
2.432	3.0	48.1	39.0	28.7	2.8	-37.5	0.0	0.0	42.1	33.0	74	54	-31.9	-21.0	V
3.040	3.0	51.0	46.9	30.5	3.0	-37.3	0.0	0.0	47.3	43.1	74	54	-26.7	-10.9	V
			No other emssions were detected above system noise floor												

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) MID CHANNEL (VERTICAL & HORIZONTAL ABOVE 1GHz)

High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

Company: Nion Kohden
Project #: 06J10492
Date: 8/12/2006
Test Engineer: Mengistu Mekuria
Configuration: EUT and Supporting Devices
Mode: Tx Mid Z

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T144 Miteq 3008A00931			

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
Can 187207004		Can 187209002		

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	Fltr 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	50.6	44.7	26.0	2.3	-39.2	0.0	0.0	41.2	36.7	74	54	-32.8	-17.3	H
1.833	3.0	45.8	33.8	27.5	2.6	-38.3	0.0	0.0	37.0	25.6	74	54	-37.0	-28.4	H
2.444	3.0	49.6	42.5	28.7	2.8	-37.5	0.0	0.0	43.5	35.1	74	54	-30.5	-18.9	H
3.055	3.0	48.6	43.2	30.6	3.1	-37.3	0.0	0.0	47.1	43.1	74	54	-26.9	-10.9	H
1.222	3.0	52.0	47.5	26.0	2.3	-39.2	0.0	0.0	39.8	33.8	74	54	-34.2	-20.2	V
1.833	3.0	45.3	33.8	27.5	2.6	-38.3	0.0	0.0	37.6	25.5	74	54	-36.4	-28.5	V
2.444	3.0	49.5	41.1	28.7	2.8	-37.5	0.0	0.0	43.6	36.5	74	54	-30.4	-17.5	V
3.055	3.0	50.8	46.8	30.6	3.1	-37.3	0.0	0.0	44.9	39.5	74	54	-29.1	-14.5	V
						No other emssions were detected above system noise floor									

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 & HORIZONTAL ABOVE 1GHz)

High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

Company: Nion Kohden
Project #: 06J10492
Date: 8/12/2006
Test Engineer: Mengistu Mekuria
Configuration: EUT and Supporting Devices
Mode: Tx Hi Z

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T144 Miteq 3008A00931			

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
Can 187207004		Can 187209002		

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	Fltr 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	51.7	45.6	26.0	2.3	-39.2	0.0	0.0	43.7	35.4	74	54	-30.3	-18.6	H
1.842	3.0	45.5	33.4	27.5	2.6	-38.3	0.0	0.0	39.5	26.1	74	54	-34.5	-27.9	H
2.456	3.0	48.8	42.0	28.7	2.8	-37.5	0.0	0.0	41.5	31.7	74	54	-32.5	-22.3	H
3.070	3.0	43.2	43.2	30.6	3.1	-37.3	0.0	0.0	45.9	41.1	74	54	-28.1	-12.9	H
1.228	3.0	54.6	46.3	26.0	2.3	-39.2	0.0	0.0	40.8	34.7	74	54	-33.2	-19.3	V
1.842	3.0	47.7	34.3	27.5	2.6	-38.3	0.0	0.0	37.3	25.2	74	54	-36.7	-28.8	V
2.456	3.0	47.4	37.6	28.7	2.8	-37.5	0.0	0.0	42.9	36.1	74	54	-31.1	-17.9	V
3.070	3.0	49.5	44.8	30.6	3.1	-37.3	0.0	0.0	39.5	39.5	74	54	-34.5	-14.5	V
						No other emssions were detected above system noise floor									

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

§ 2.1049 The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the following conditions as applicable…

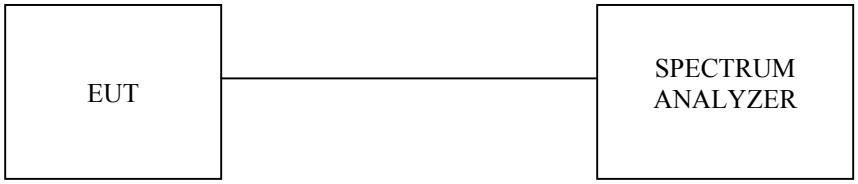
§ 95.633 Emission bandwidth
(a) The authorized bandwidth (maximum permissible bandwidth of a transmission) for emission type H1D, J1D, R1D, H3E, J3E or R3E is 4 kHz. The authorized bandwidth for emission type A1D or A3E is 8 kHz. The authorized bandwidth for emission type F1D, G1D, F3E or G3E is 20 kHz.

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 >= the RBW. The sweep time is coupled. The spectrum analyzer internal 26dB bandwidth function is utilized.

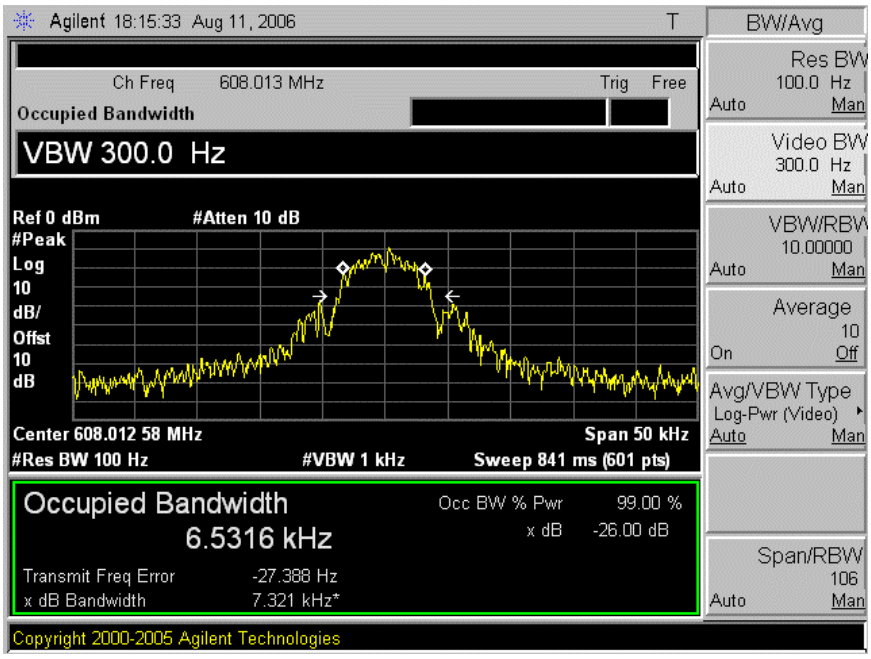


RESULTS

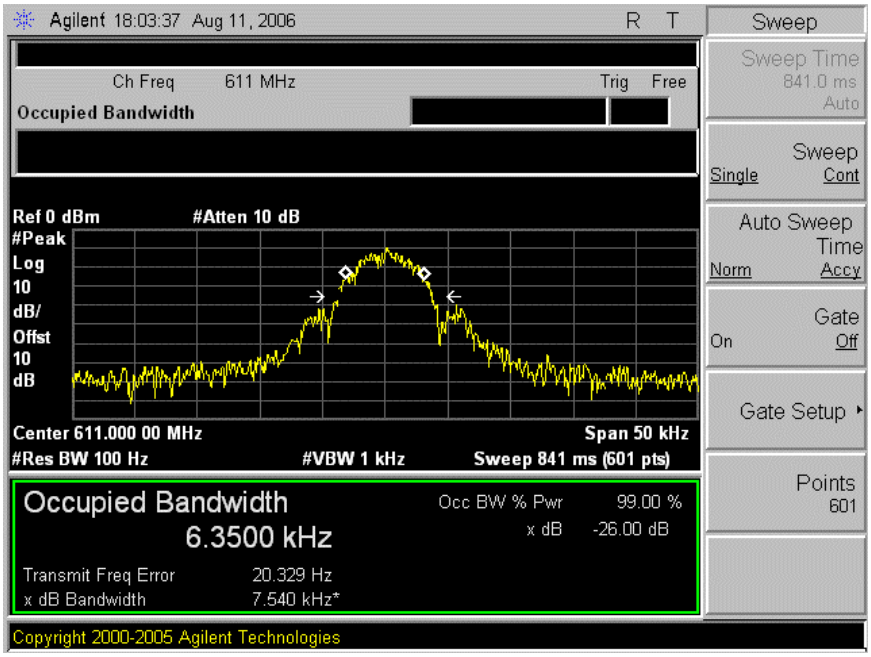
No non-compliance noted:

CHANNEL	FREQUENCY (MHz)	99% BANDWIDTH (kHz)	26 dB BANDWIDTH (kHz)
LOW	608.02	6.5316	7.321
MIDDLE	611.02	6.3500	7.540
HIGH	613.96	5.9142	7.532

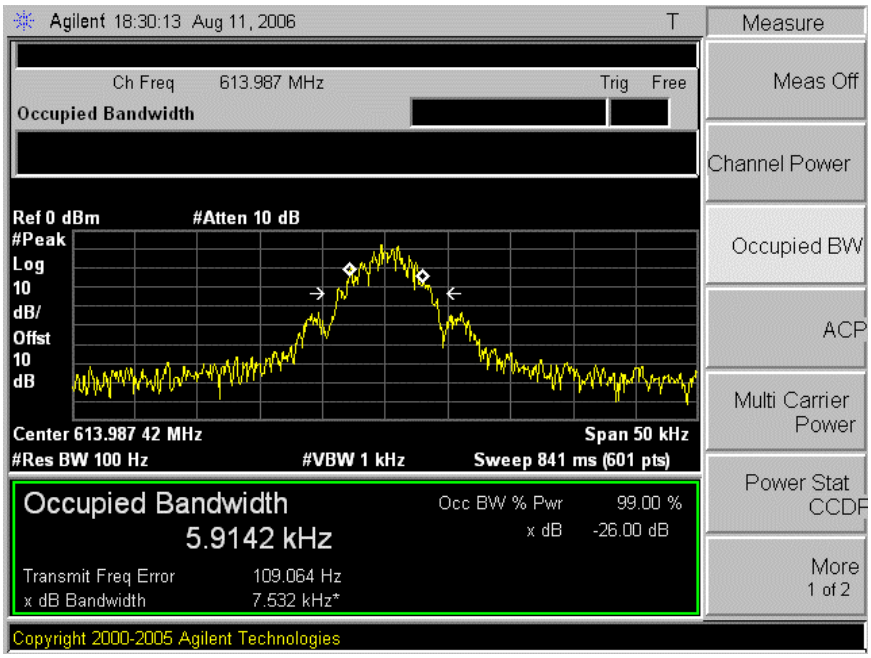
26dB BANDWIDTH LOW CHANNNEL



26dB BANDWIDTH MIDDLE CHANNNEL



26dB BANDWIDTH HIGH CHANNNEL



10. PEAK OUTPUT POWER

PROVISIONS APPLICABLE

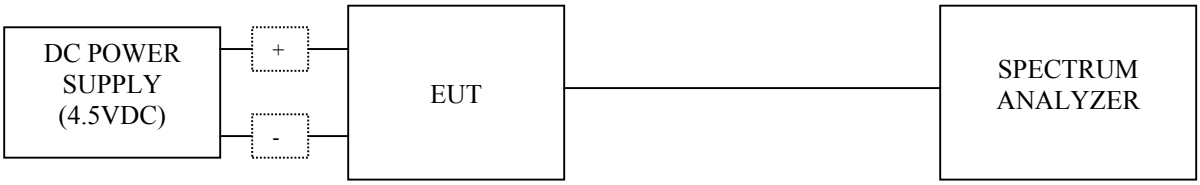
According to CFR47 section 2.1046

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 then the 26dB bandwidth. The VBW is set to 3 times the RBW.

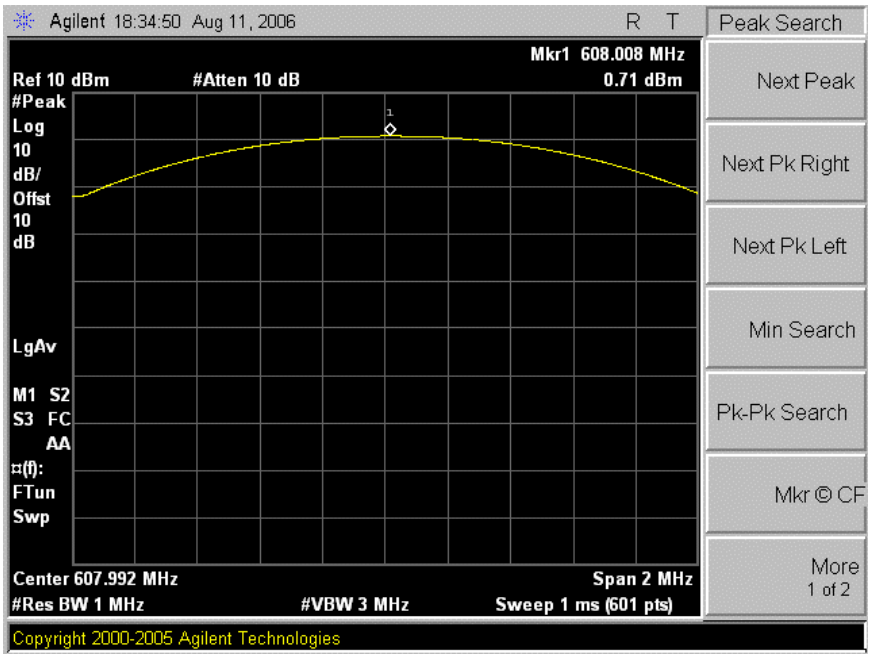


TEST RESULTS

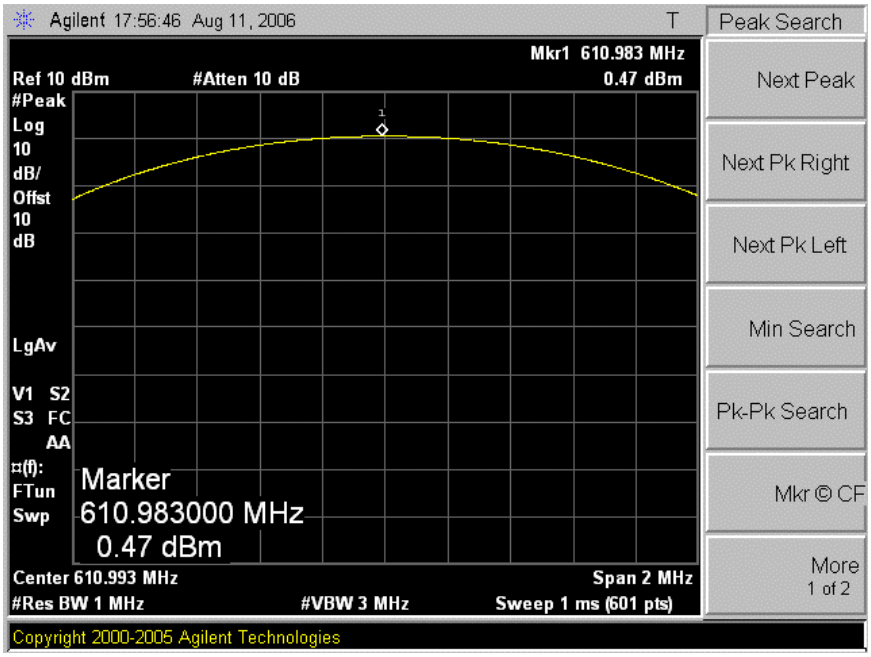
No non-compliance noted:

CHANNEL	FREQUENCY (MHz)	PEAK OUTPUT POWER (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	608	0.71	10.8	-10.09
MIDDLE	611	0.47	10.8	-10.33
HIGH	614	0.28	10.8	-10.52

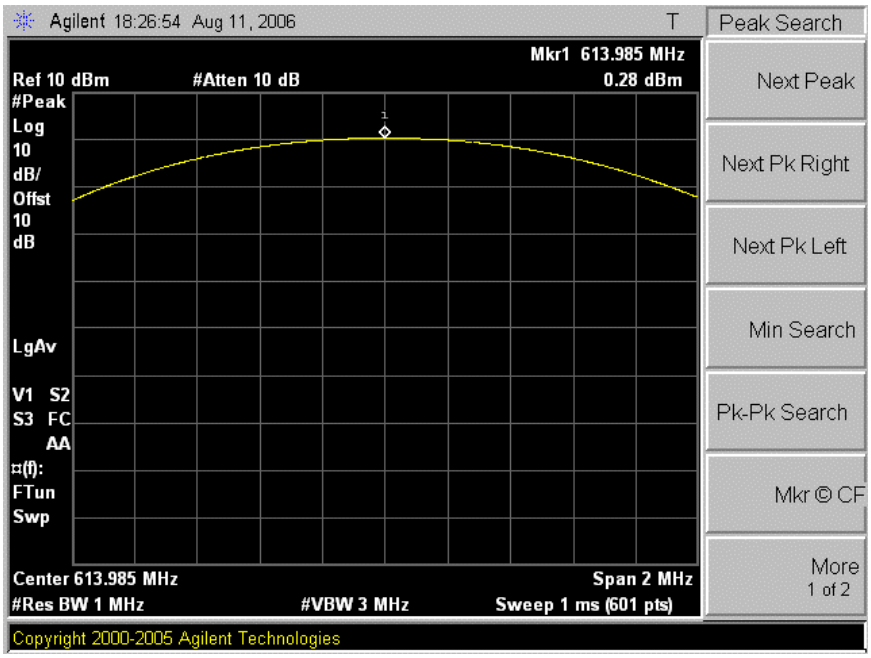
PEAK OUTPUT POWER LOW CHANNNEL



PEAK OUTPUT POWER MIDDLE CHANNNEL



PEAK OUTPUT POWER HIGH CHANNNEL



11. SPURIOUS EMISSIONS AT ANTENNA TERMINAL

PROVISIONS APPLICABLE

According to CFR47 section 2.1051

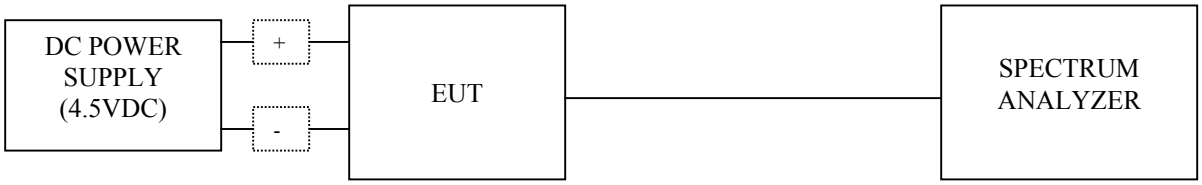
LIMIT

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.

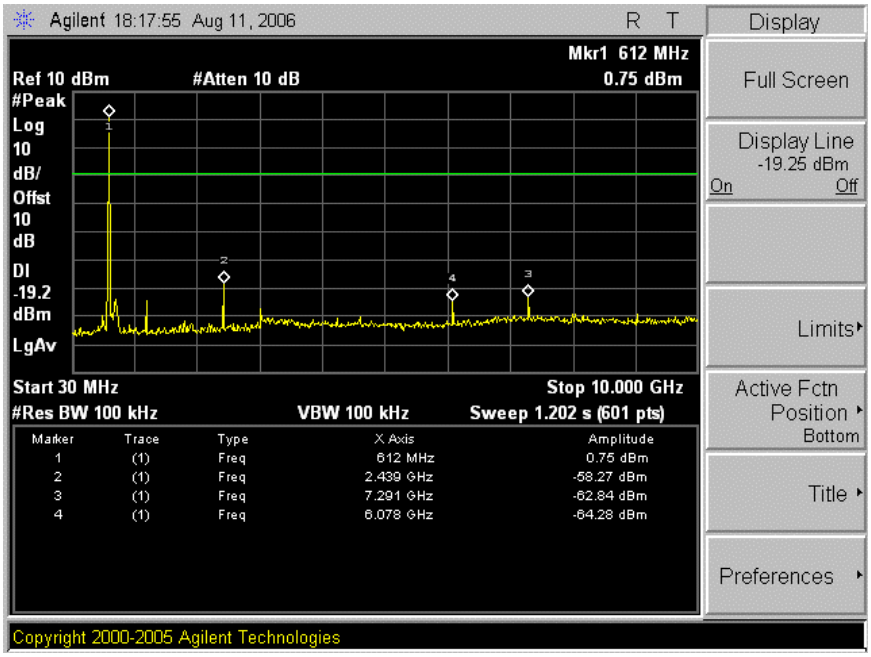
The spectrum from 30 MHz to 10 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.



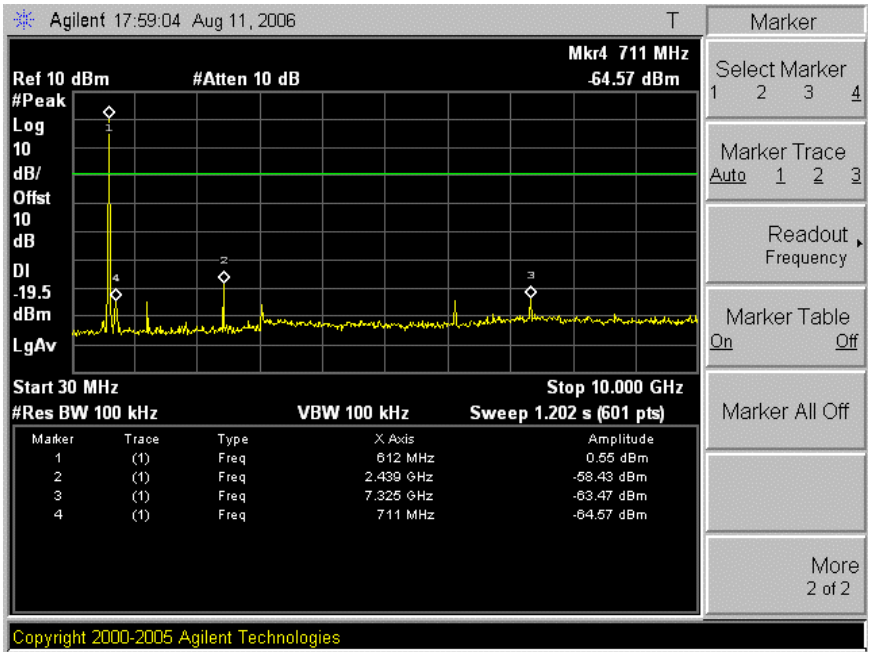
RESULTS

No non-compliance noted:

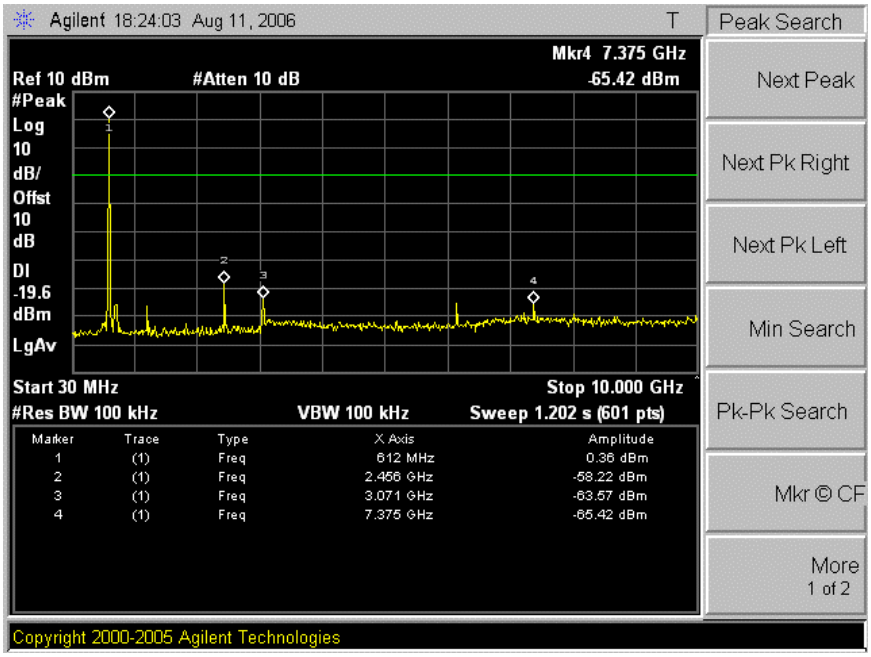
LOW CHANNEL SPURIOUS



MID CHANNEL SPURIOUS



HIGH CHANNEL SPURIOUS



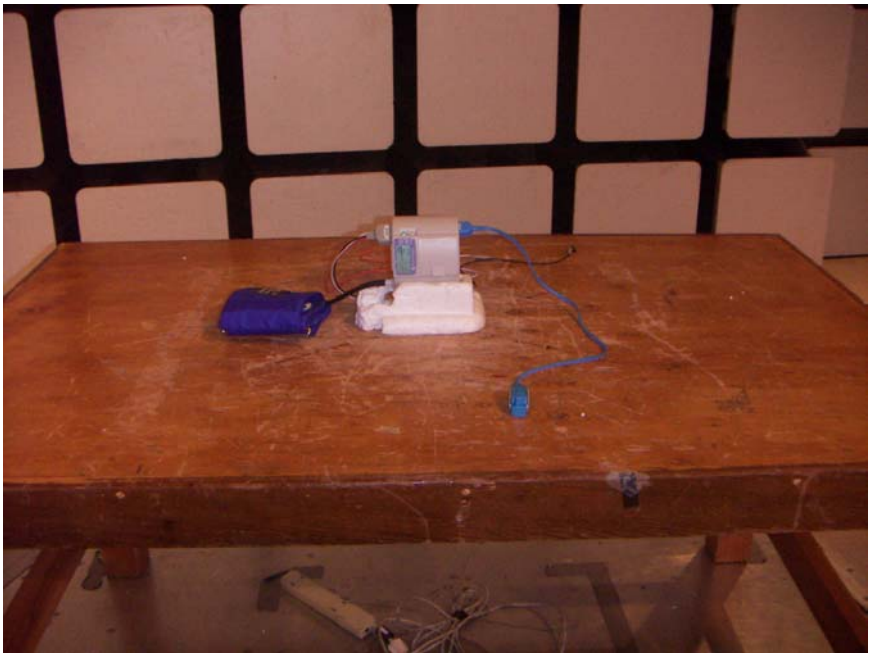
12. SETUP PHOTOS

RADIATED RF MEASUREMENT SETUP

X POSITION

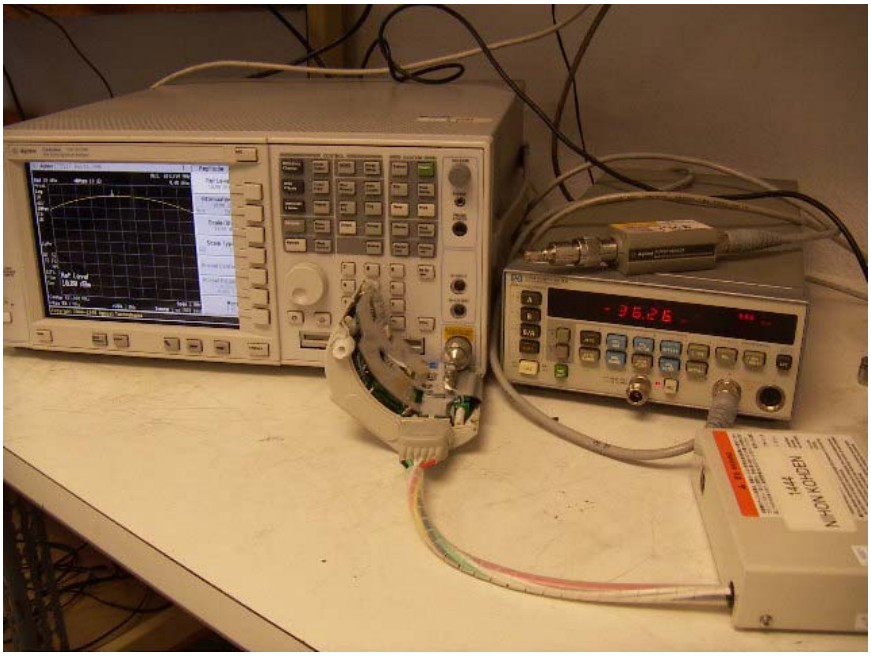
Y POSITION

Z POSITION



ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP

ANTENNA PORT CONDUCTED PHOTO



END OF REPORT

COMPLIANCE CERTIFICATION SERVICES DOCUMENT NO: CCSUP4031C
561F MONTEREY ROAD, MORGAN HILL, CA 95037 USA TEL: (408) 463-0885 FAX: (408) 463-0888