FCC CFR47 PART 95 REQUIREMENT

CERTIFICATION REPORT

FOR

WMTS TRANSMITTER

MODEL: ZS-910PA

FCC ID: B6BZS-910PA

REPORT NUMBER: 03I2292-1

ISSUE DATE: NOVEMBER 10, 2003

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

.

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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-910PA
Serial No: N/A

ITEM	TESTING ITEM	APPLIED SPECIFICATION	TESTING RESULTS	REMARK
1	Field Strength	Section 95.115 (a)	Complied	N/A
2	Undesired Emissions	Section 95.115 (b)	Complied	N/A
3	Emissions Types	Section 95.115 (c)	Complied	N/A
4	Channel Use	Section 95.115 (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:

NEELESH RAJ
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

Approved & Released For CCS By:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

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2. GENERAL INFORMATION

2.1 PRODUCT DESCRIPTION

a). Type of EUT: WMTS Transmitter
b). Brand Name: Nihon Kohden
c). Model No: ZS-910PA
d). FCC ID: B6BZS-910PA
e). Power Supply: 1.5V dc (1xAA)
f). Number of Channels: 479 Channels
g). Frequency Range: 608.0125 ~ 613.9875 MHz.
h). RF Conducted Output Power: 1mW
i). Channel Spacing: 25KHz (12.5KHz when interleave)
j). Type of Modulation: F1D
k). Antenna Type: Dedicated

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.

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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.

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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
Spectrum Analyzer	HP	E4446A	US42510266	7/23/2004
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	9001-3245	2/4/2004
Amplifier 1-26GHz	MITEQ	NSP2600-SP	924342	4/25/2004
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	29800	4/26/2004
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	11/20/2003
RF Filter Section	HP	85420E	3705A00256	11/20/2003
Antenna, Bicon/Log, 25 ~ 2000 MHz	ARA	LPB-2520/A	1185	3/6/2004
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/13/2004
Line Filter	Lindgren	LMF-3489	497	CNR
LISN, 10 kHz ~ 30 MHz	FCC	50/250-25-2	114	10/13/2004
EMI Test Receiver	R & S	ESHS 20	827129/006	7/17/2004
10dB Attenuator	Weinschel	56-10	1	N/A
DC Power Supply	HP	E3610A	LR85750C	N/A

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5. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

TEST PERIPHERALS				
Device Type	Manufacturer	Model Number	Serial Number	FCC ID
WMTS TRANSMITTER	NIHON KOHDEN	ZS-910PA	N/A	B6BZS-910PA

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 INPUT	SHIELDED	0.9M	YES	NO	UNTERMINATED

TEST SETUP

During the testing process the EUT was installed with one 1.5VDC battery (periodically changed to ensure 1.5 VDC output). The EUT was tested in the X, Y, and Z positions, Z was found to be worst case.

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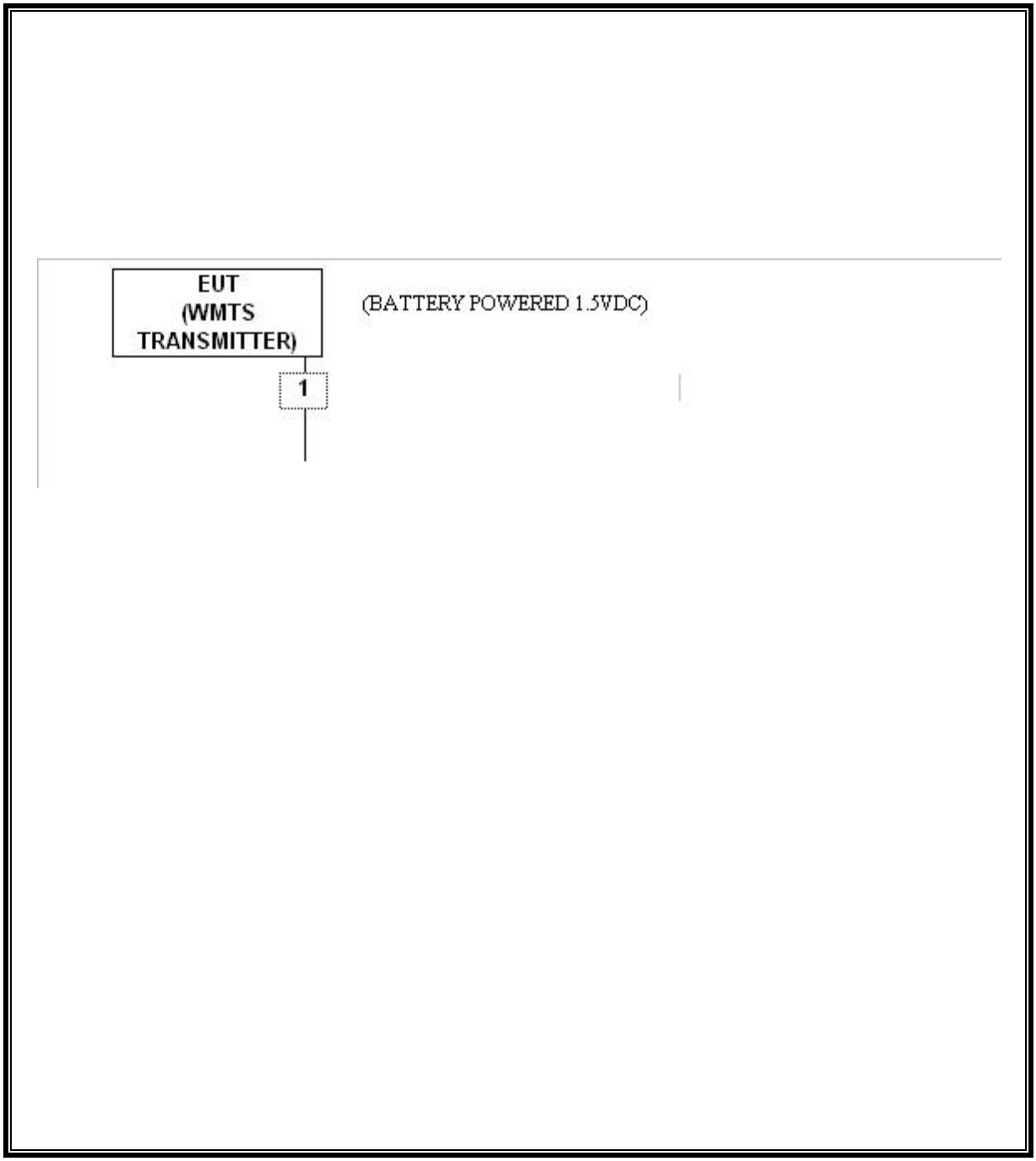
SETUP DIAGRAM FOR TESTS



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6. FIELD STRENTH 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.

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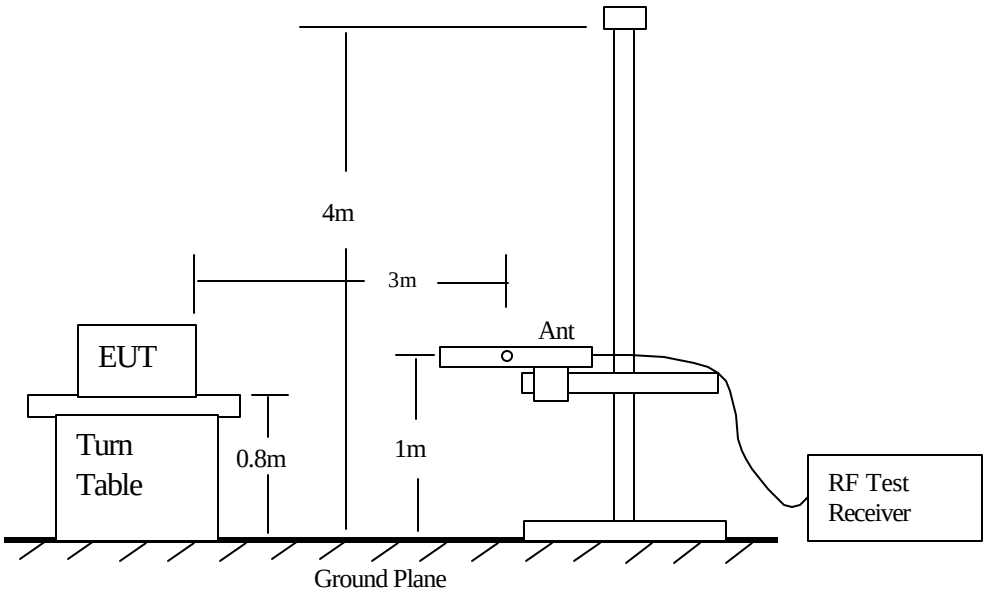
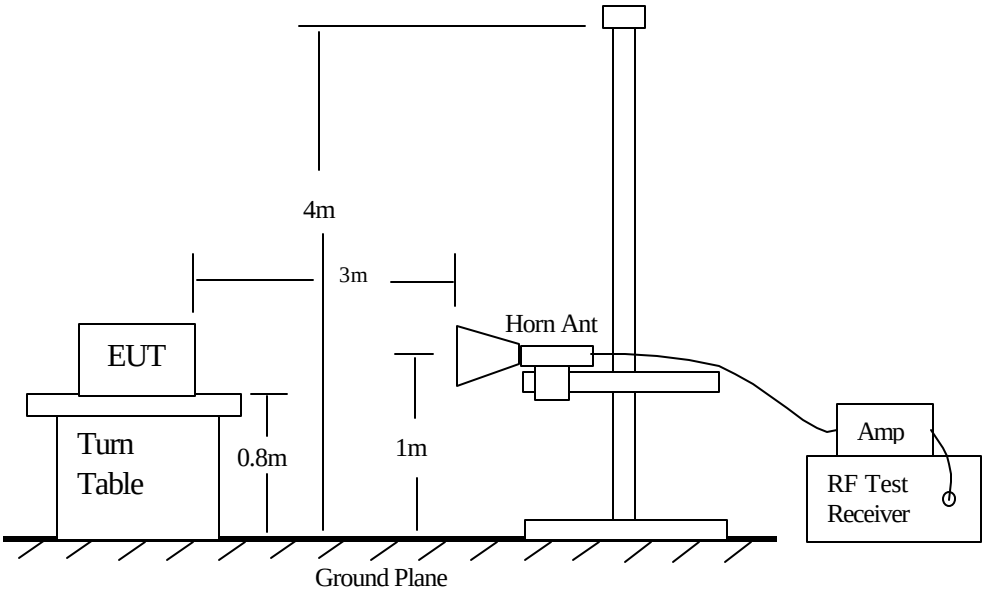


Radiated Emission Measurement 30 to 1000 MHz



Radiated Emission Above 1000 MHz

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TEST RESULTS

95.1115 (a) LOW CHANNEL (VERTICAL)

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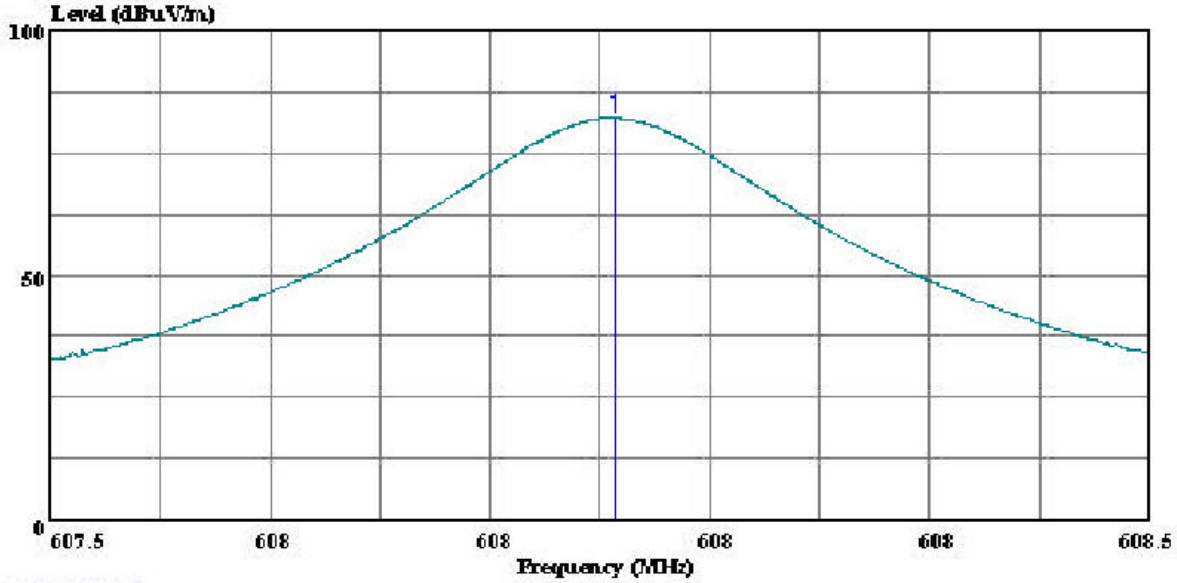
561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 73 File#: Run1.emi Date: 11-18-2003 Time: 13:43:12



(Audix ATC)

Trace: 72 RBW=VBW=100KHz Ref Trace:

Condition: FCC 95H 3m CHAMBER 030306 1185 VERTICAL
Test Eng: : NEELESH RAJ
Project #: : 03I2292
Company: : NIHON KOHDEN
EUT: : WMTS Transmitter
Model No: : ZS-910PA
Configuration: : EUT only
Target of Test: : FCC 95H
Mode of Operation: TX @ Low Channel

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	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	608.014	Peak	61.93	20.30	82.23	106.00	-23.77

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

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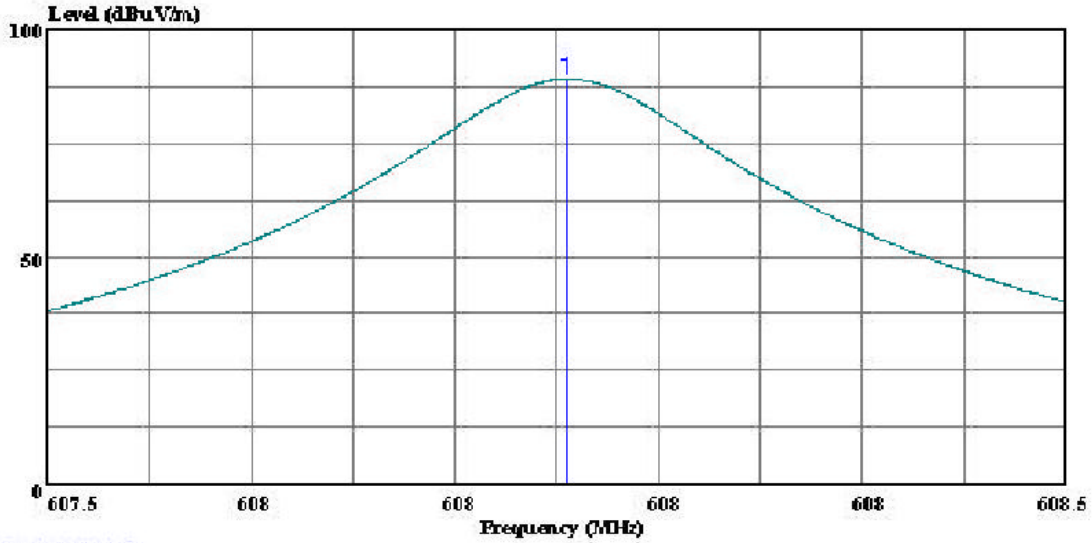
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 71 File#: Run1.emi Date: 11-18-2003 Time: 13:40:18



(Audix ATC)
Trace: 70 RBW=VBW=100KHz Ref Trace:

Condition: FCC 95H 3m CHAMBER 030306 1185 HORIZONTAL
Test Eng: : NEELESH RAJ
Project #: : 03I2292
Company: : NIHON KOHDEN
EUT: : WMTS Transmitter
Model No: : ZS-910PA
Configuration: : EUT only
Target of Test: : FCC 95H
Mode of Operation: TX @ Low Channel

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	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	608.010	Peak	69.00	20.30	89.30	106.00	-16.70

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

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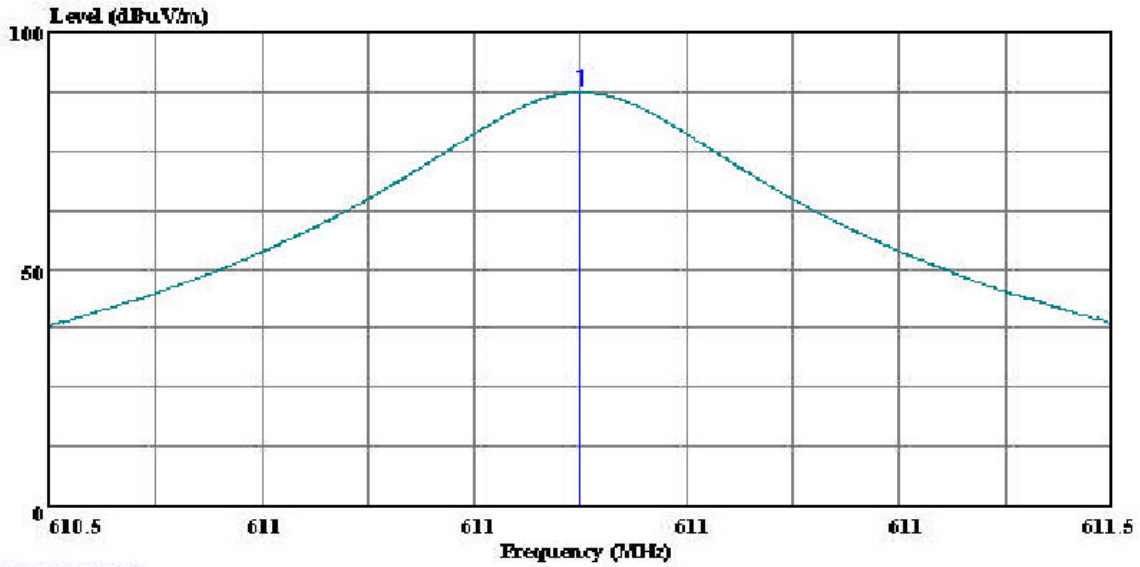
561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 83 File#: Run1.emi Date: 11-14-2003 Time: 17:30:52



(Audix A.TC)
Trace: 82 RBW=VBW=100KHz Ref Trace:

Condition: FCC 95H 3m CHAMBER 030306 1185 VERTICAL
Test Eng: : NEELESH RAJ
Project #: : 03I2292
Company: : NIHON KOHDEN
EUT: : WMTS TRansmitter
Model No: : ZS-910PA
Configuration: : EUT only
Target of Test: : FCC 95H
Mode of Operation: TX @ Mid Channel

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	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	611.000	Peak	67.12	20.33	87.45	106.00	-18.55

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