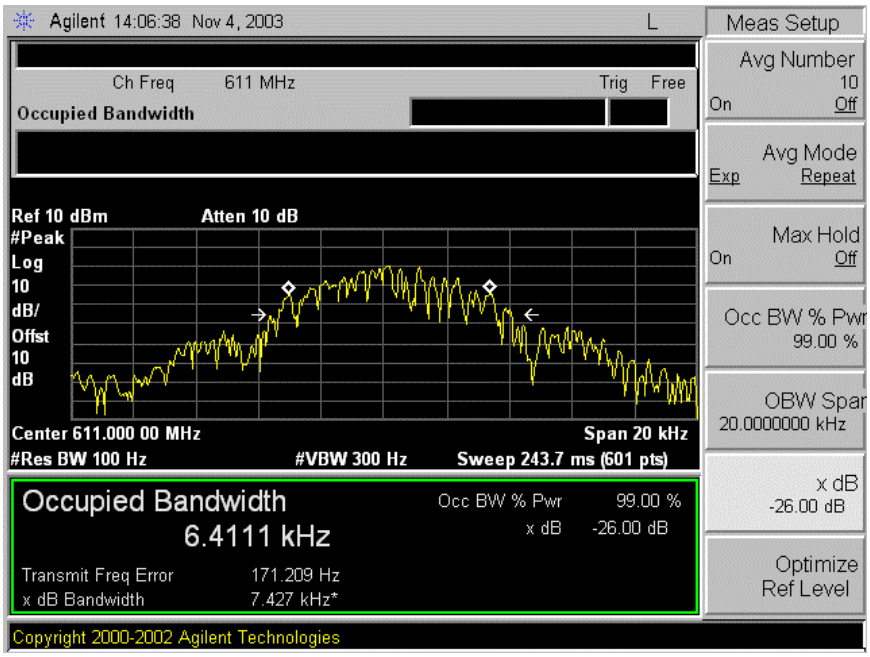
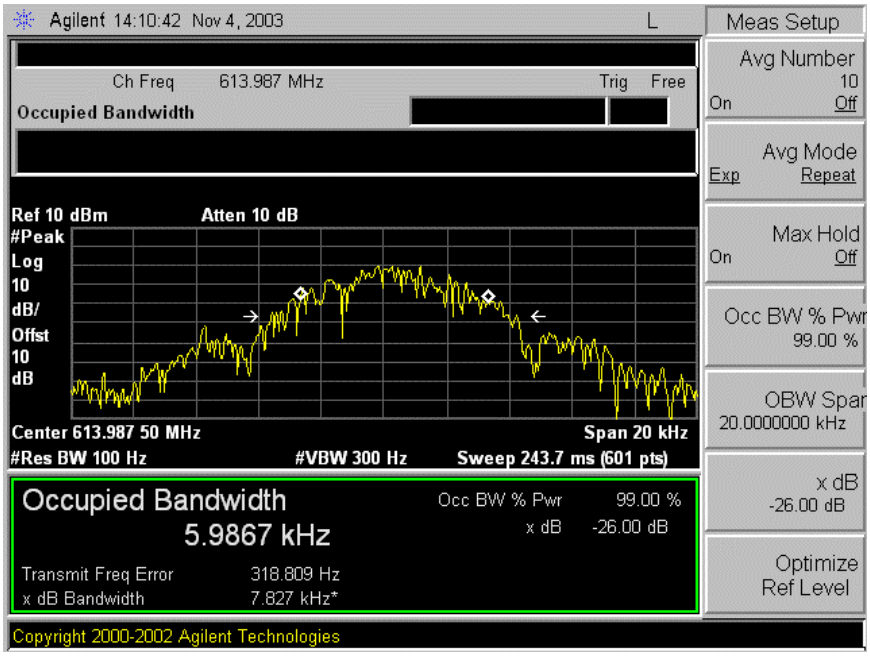
26dB/99% BANDWIDTH MIDDLE CHANNNEL



26dB/99% BANDWIDTH HIGH CHANNNEL



8. PEAK OUPUT POWER

PROVISIONS APPLICABLE

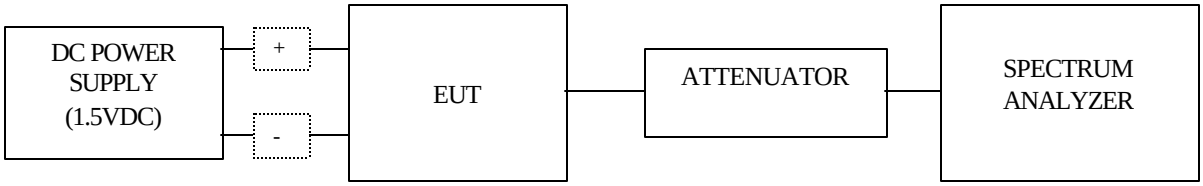
According to CFR47 section 2.1046

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.

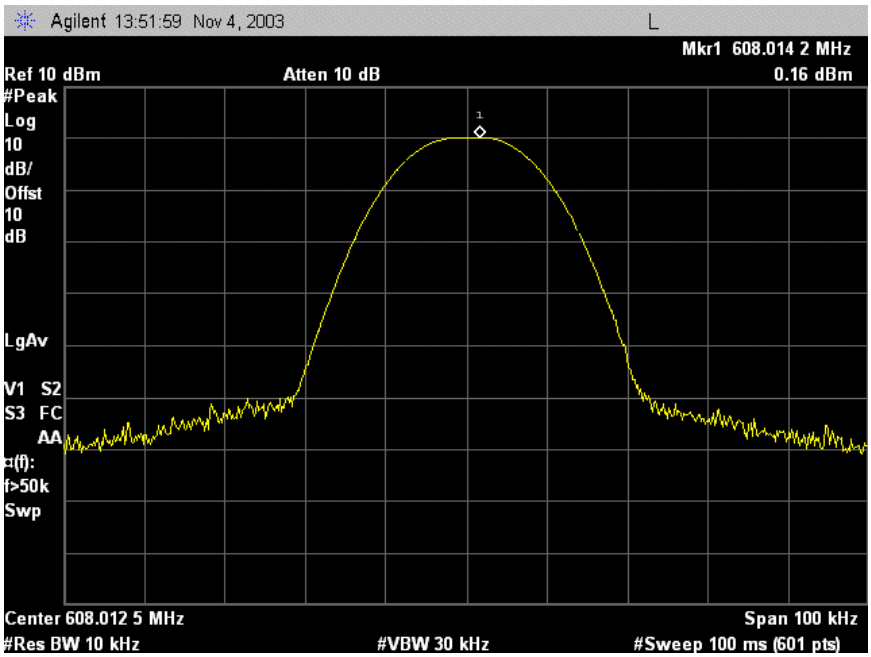


TEST RESULTS

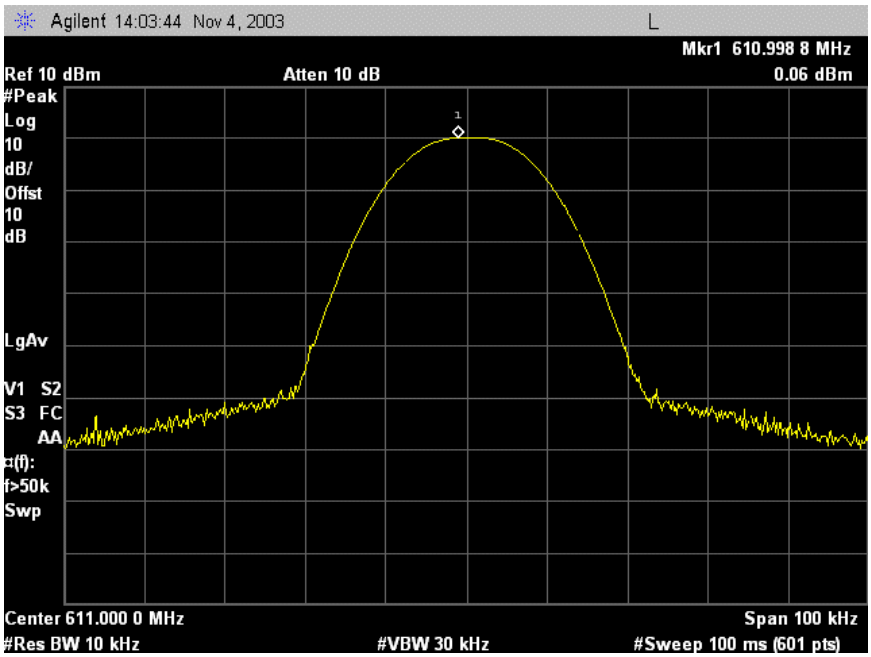
No non-compliance noted:

CHANNEL	FREQUENCY (MHz)	PEAK OUTPUT POWER (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	608.0125	0.16	10.8	-10.64
MIDDLE	611	0.06	10.8	-10.74
HIGH	613.9875	-0.11	10.8	-10.91

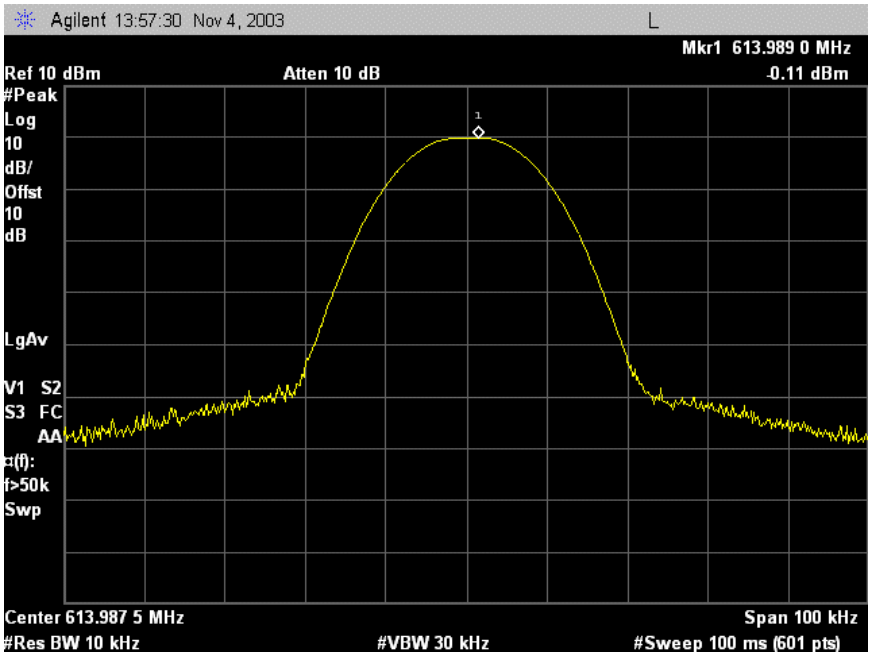
PEAK OUTPUT POWER LOW CHANNNEL



PEAK OUTPUT POWER MIDDLE CHANNNEL



PEAK OUTPUT POWER HIGH CHANNNEL



9. SPURIOUS EMISSIONS AT ANTENNA TERMINAL

PROVISIONS APPLICABLE

According to CFR47 section 2.1051

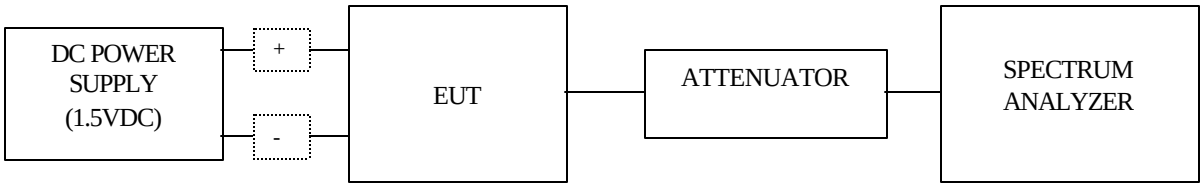
LIMIT

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 100 kHz.

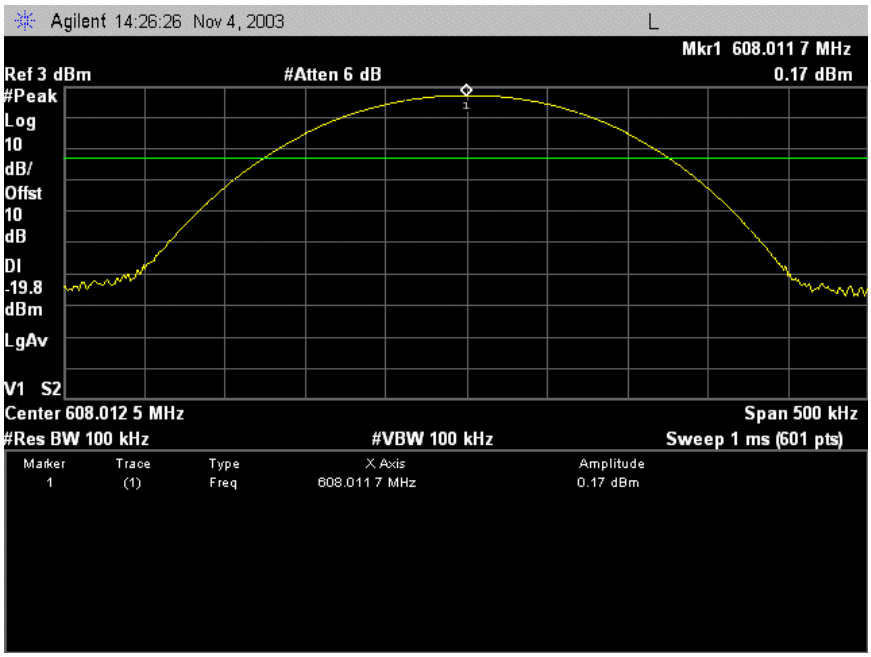
The spectrum from 30 MHz to 10 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.



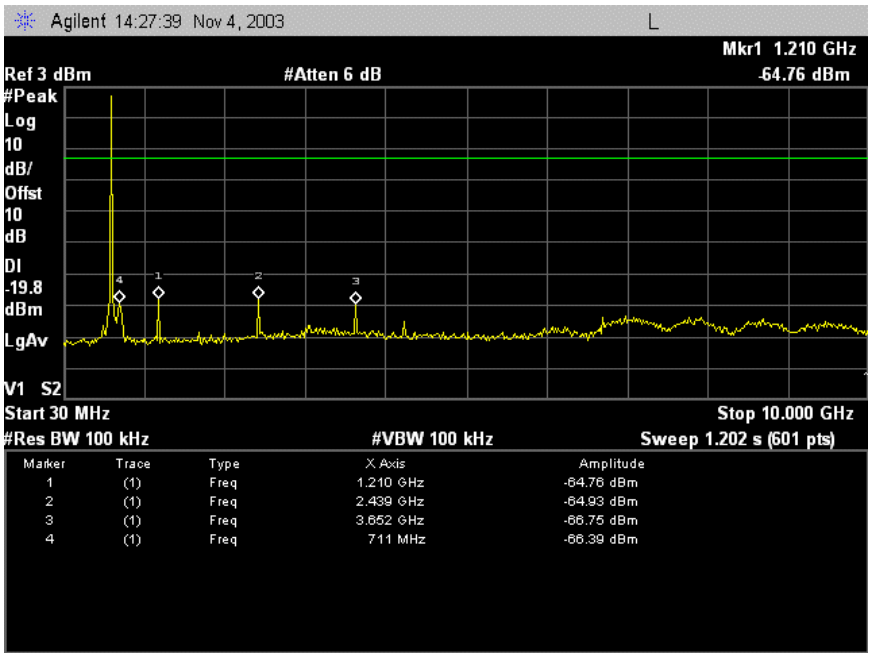
TEST RESULTS

No non-compliance noted:

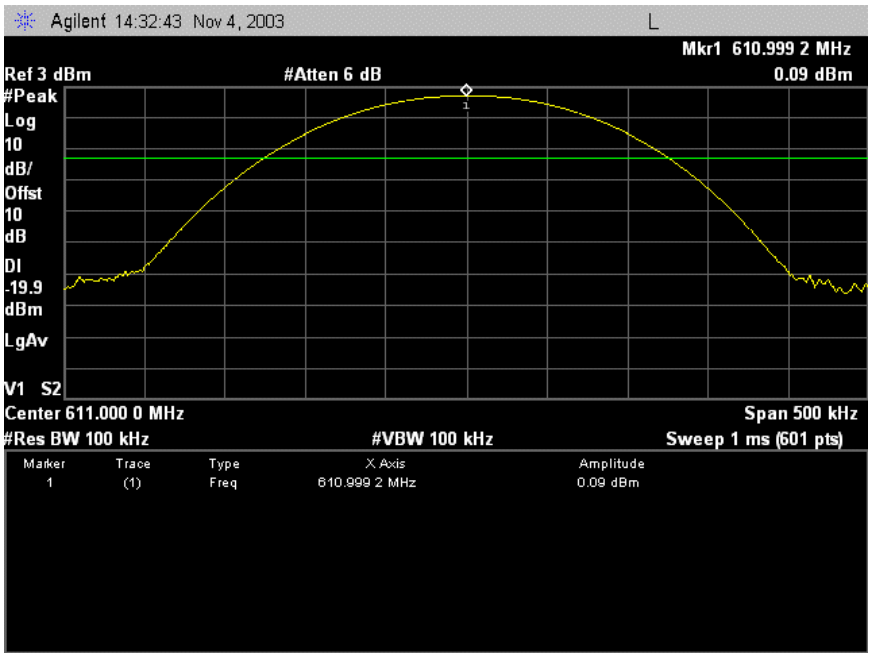
LOW CHANNEL FUNDAMENTAL



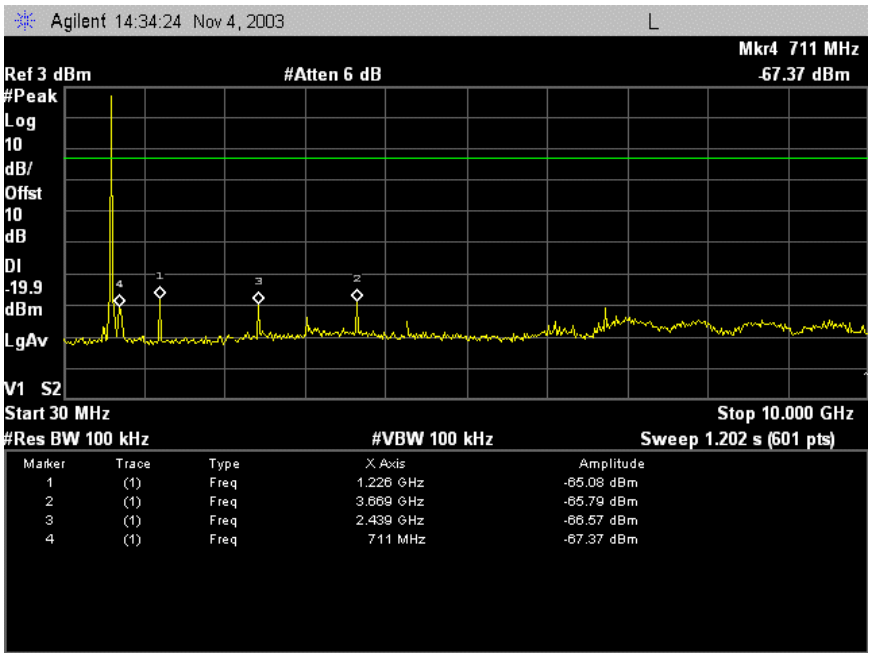
LOW CHANNEL SPURIOUS



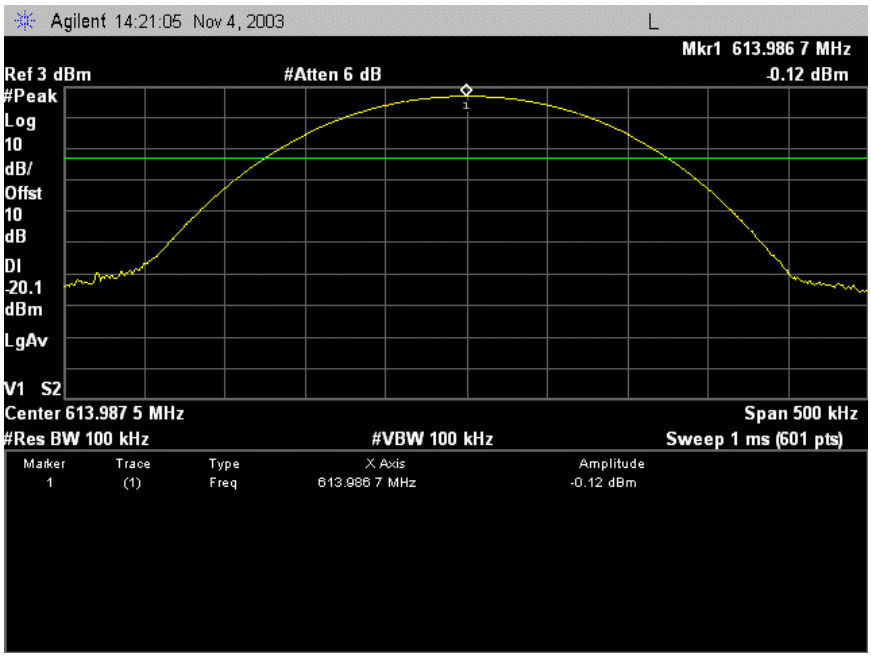
MID CHANNEL FUNDAMENTAL



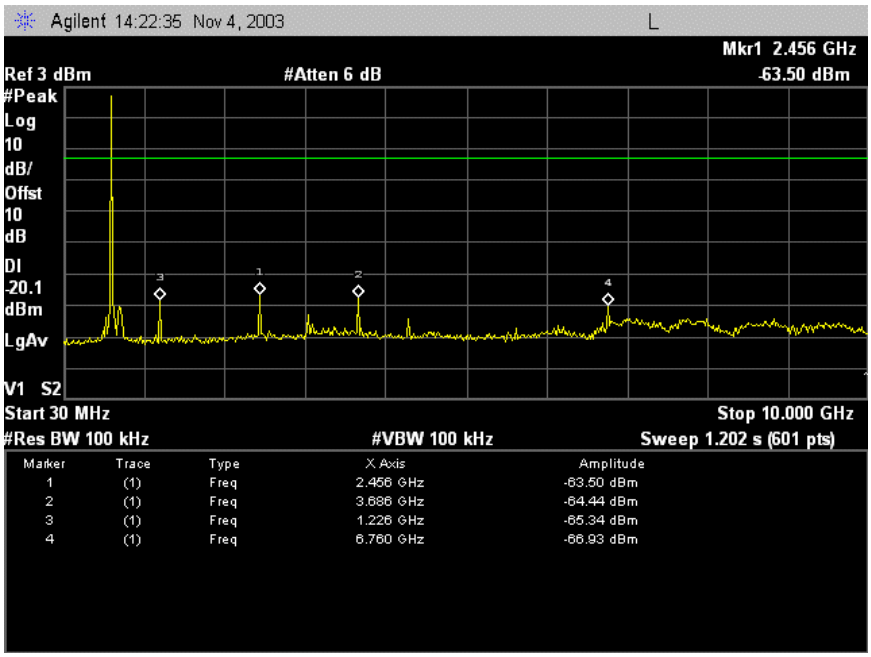
MID CHANNEL SPURIOUS



HIGH CHANNEL FUNDAMENTAL



HIGH CHANNEL SPURIOUS



10. FREQUENCY STABILITY MEASUREMENT

PROVISIONS APPLICABLE

According to CFR 47 section 2.1055

LIMIT

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

TEST PROCEDURE

Frequency stability versus environmental temperature

1) Set the temperature of chamber to 25°C @ low/high channel. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.

2) Set SA Resolution Bandwidth to 300 Hz and Video Resolution Bandwidth to 300 Hz and Frequency Span to 20 KHz. Record this frequency as reference frequency.

3) Repeat step 2 with a 10°C decreased per stage until the lowest temperature -30°C is measured, record all measured frequencies on each temperature step.

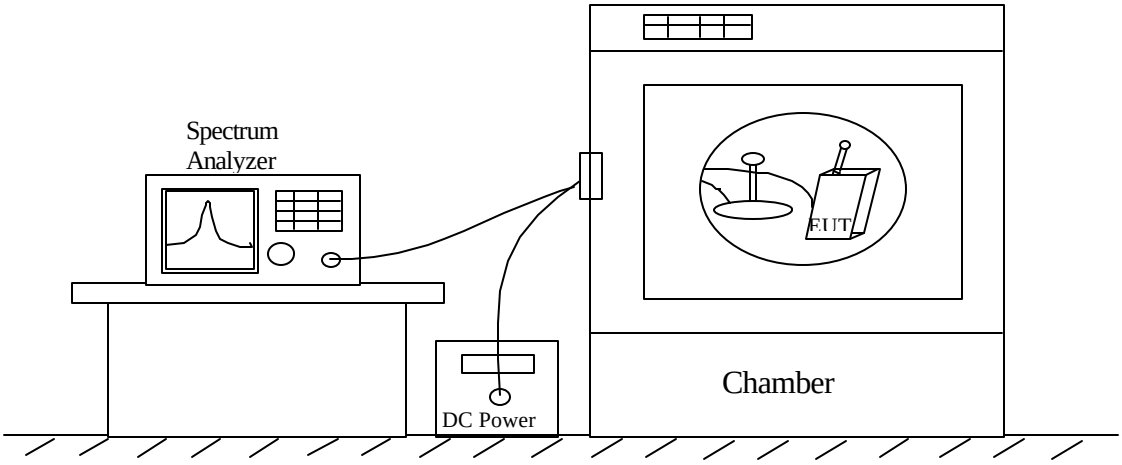
3) Repeat step 2 with a 10°C increased per stage until the highest temperature +65°C is measured; record all measured frequencies on each temperature step.

Frequency stability versus input voltage

1). Setup the configuration as shown below for frequencies measured at temperature if it is 25°C.

2). Set SA center frequency to the EUT radiated frequency. Set SA Resolution Bandwidth to 300 Hz and Video Resolution Bandwidth to 300 Hz and Frequency Span to 20 KHz. Record this frequency as reference frequency.

3). For battery operated only device, supply the EUT primary voltage at the operating end point which is specified by manufacturer and record the frequency.



Frequency stability measurement configuration

TEST RESULTS

No non compliant noted

LOW CHANNEL

Reference Frequency: Low Channel Limit: 608 MHz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Limit (MHz)	Margin
1.50	50	608.01315	608.000	-0.01315
1.50	40	608.01312	608.000	-0.01312
1.50	30	608.01255	608.000	-0.01255
1.50	***25***	***608.01250***	608.000	-0.01250
1.50	20	608.01216	608.000	-0.01216
1.50	10	608.01184	608.000	-0.01184
1.50	5	608.01212	608.000	-0.01212
1.50	0	608.01251	608.000	-0.01251
1.50	-10	608.01377	608.000	-0.01377
1.50	-20	608.01647	608.000	-0.01647
1.50	-30	608.02044	608.000	-0.02044

Reference Frequency: Low Channel Limit: 608 MHz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Limit (MHz)	Margin
1.50	***25***	***608.01250***	***608.000***	***-0.01250***
0.51 (endpoint)	25	***608.01242***	608.000	-0.01242
0.9	25	***608.01249***	608.000	-0.01249
1.275 (85%)	25	***608.01250***	608.000	-0.01250
1.6	25	***608.01249***	608.000	-0.01249
1.725 (115%)	25	***608.01247***	608.000	-0.01247

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

- Operating temp: 5 – 40 deg. C
- Operating voltage: 0.9-1.6 VDC

HIGH CHANNEL

Reference Frequency: High Channel Limit: 614 MHz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Limit (MHz)	Margin
1.50	50	613.98815	614.000	0.01185
1.50	40	613.98812	614.000	0.01188
1.50	30	613.98755	614.000	0.01245
1.50	***25***	***613.98750***	614.000	0.01250
1.50	20	613.98716	614.000	0.01284
1.50	10	613.98684	614.000	0.01317
1.50	5	613.98712	614.000	0.01288
1.50	0	613.98751	614.000	0.01249
1.50	-10	613.98877	614.000	0.01123
1.50	-20	613.99147	614.000	0.00853
1.50	-30	613.99544	614.000	0.00456

Reference Frequency: High Channel Limit: 614 MHz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Limit (MHz)	Margin
1.50	***25***	***613.98750***	***614.000***	***0.01250***
0.51 (endpoint)	25	***613.98742***	614.000	0.01258
0.9	25	***613.98749***	614.000	0.01251
1.275 (85%)	25	***613.98750***	614.000	0.01250
1.6	25	***613.98749***	614.000	0.01251
1.725 (115%)	25	***613.98747***	614.000	0.01253

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

- Operating temp: 5 – 40 deg. C
- Operating voltage: 0.9-1.6 VDC

11. SETUP FOR DIGITAL DEVICE TESTS

SUPPORT EQUIPMENT

TEST PERIPHERALS				
Device Type	Manufacturer	Model Number	Serial Number	FCC ID
ACCESSORY				
LAPTOP	HP	PP2210	N/A	N/A
AC ADAPTER	COMPAQ	PPP014L	310001080D	N/A
PRINTER	HP	2225C	2541S41679	BS46XU2225C
USB MOUSE	MICROSOFT	WHEEL MOUSE OPTICAL USB	49423242	N/A
EUT				
CHANNEL WRITER	NIHON KOHDEN	QI-901PK	N/A	N/A
WMTS TRANSMITTER	NIHON KOHDEN	ZS-910PA	N/A	B6BZS-910PA

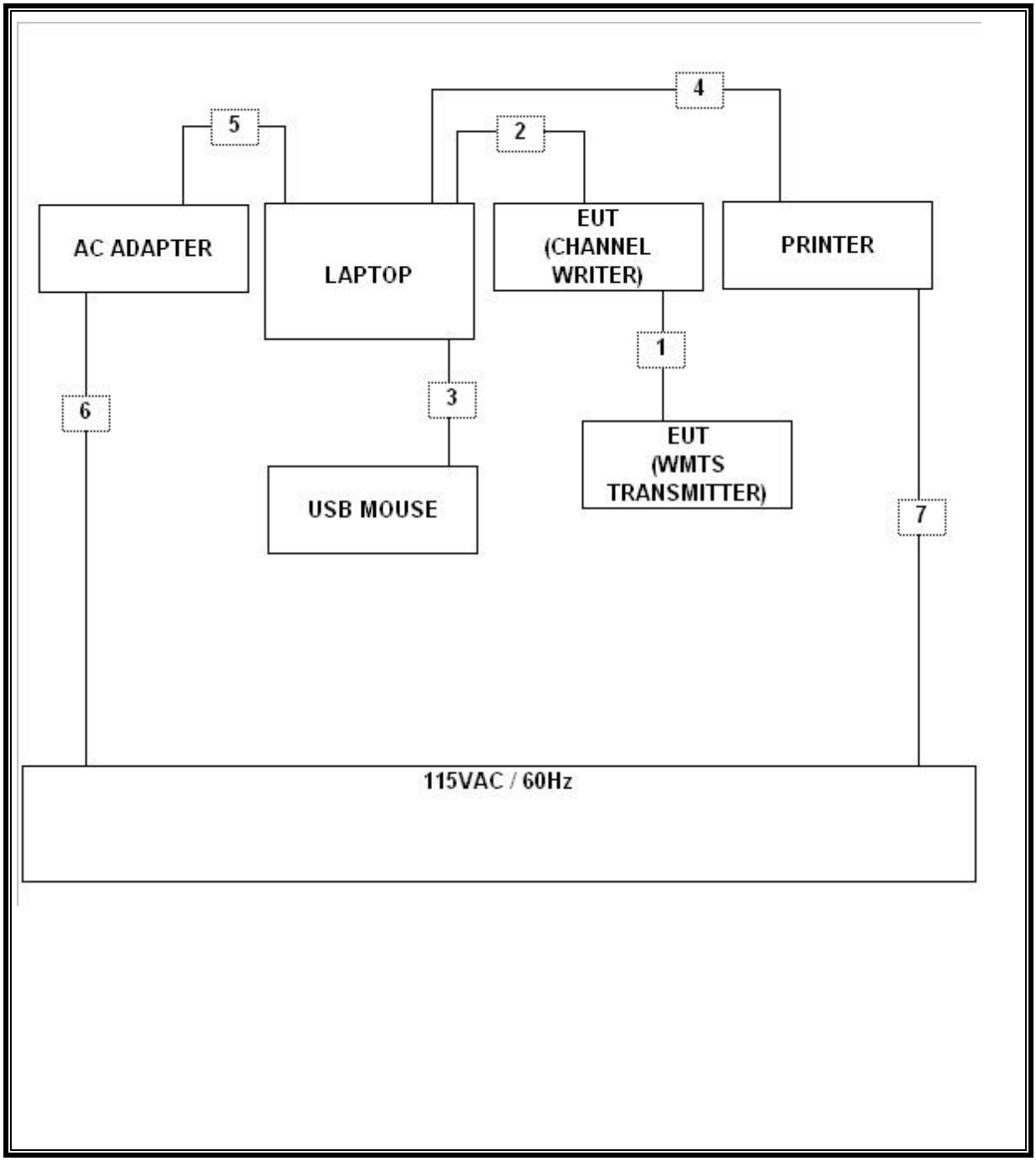
I/O CABLES

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	UNSHIELDED	0.2794M	YES	NO	N/A
2	USB	1	USB	SHIELDED	1.55M	YES	NO	N/A
3	USB	2	USB	SHIELDED	1.86	YES	NO	N/A
4	PARALLEL	1	DB-25	SHIELDED	1.9	YES	YES	N/A
5	DC PWR	1	DC PWR	UNSHIELDED	1.86	NO	NO	N/A
6	AC PWR	1	AC PWR	UNSHIELDED	1.86	NO	NO	N/A
7	AC PWR	1	AC PWR	UNSHIELDED	1.86	NO	NO	N/A

TEST SETUP

During the testing process the WMTS transmitter was connected to the channel writer, and was placed in changing channels mode. The worst-case configuration was found to be the with the channel writer connected to the laptop via its USB port, all tests were done in this worst-case configuration.

SETUP DIAGRAM FOR DIGITAL DEVICE TESTS



12. RADIATED EMISSIONS

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).

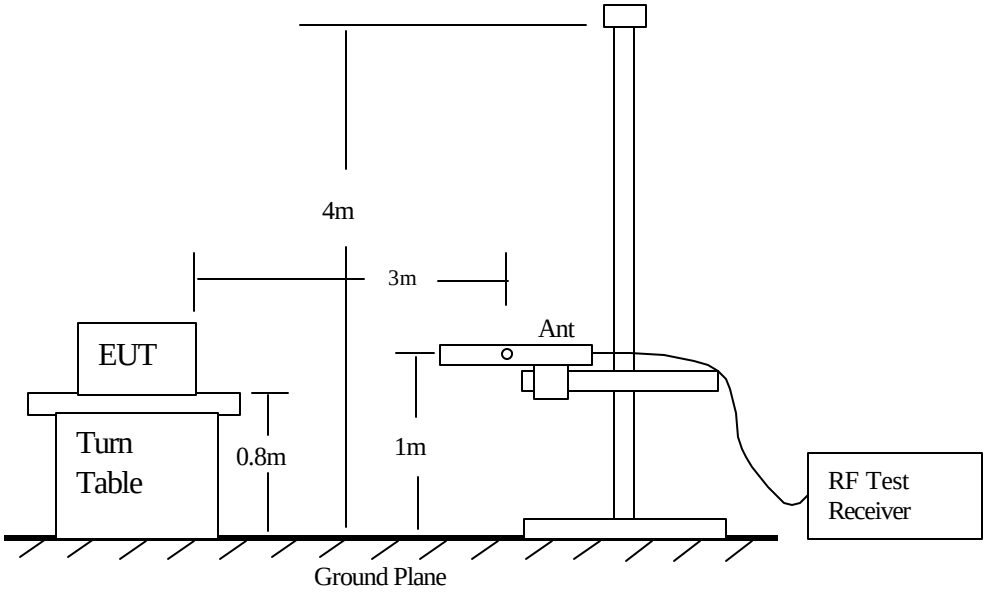
MEASUREMENT PROCEDURE

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

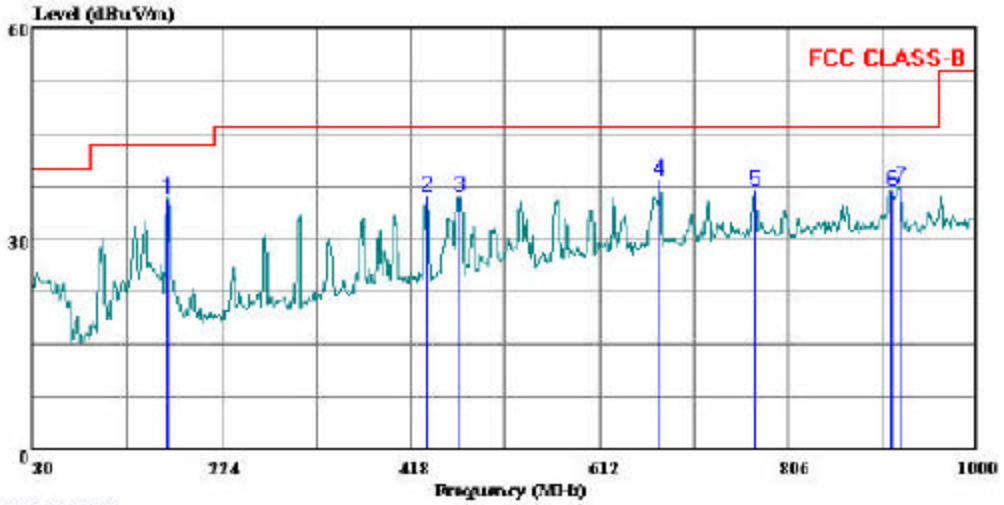
TEST RESULTS

No non-compliance noted:

DIGITAL SPURIOUS EMISSIONS 30 TO 1000 MHz (VERTICAL)

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

Data#: 44 File#: Run1.emi Date: 11-05-2003 Time: 13:41:53



Trace: 43 Ref Trace:

Condition: FCC CLASS-B 3m CHAMBER 030306 1185 VERTICAL
Test Eng: : NEELESH RAJ
Project #: : 03I2292
Company: : NIHON KOHDEN
EUT: : WMTS TRANSMITTER
Model No: : ZS-910PA
Configuration: : EUT/CHANNEL WRITER/PRINTER/USB MOUSE/LAPTOP/AC ADAP.
Target of Test: : FCC CLASS B
Mode of Operation: CHANGING CHANNELS

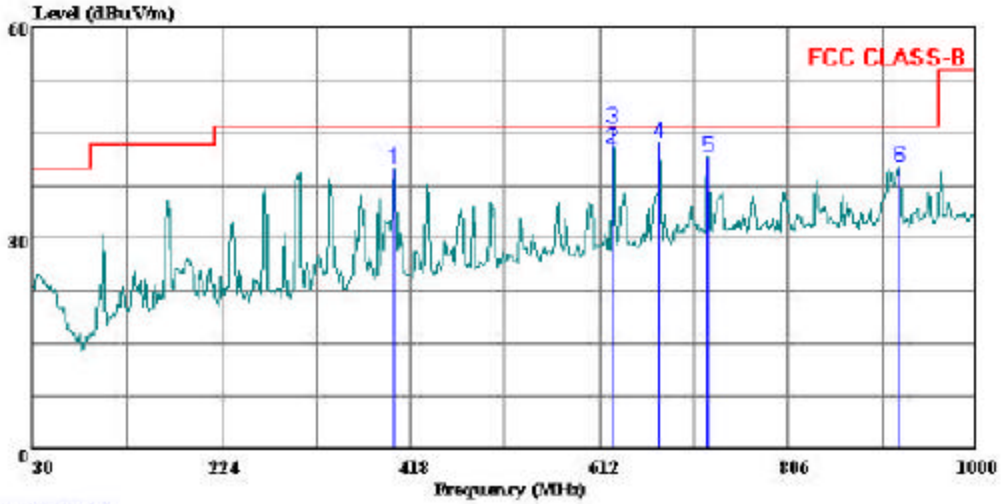
Page: 1

	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	167.740	Peak	25.77	10.08	35.85	43.50	-7.65
2	434.490	Peak	18.69	17.35	36.04	46.00	-9.96
3	468.440	Peak	17.86	18.16	36.02	46.00	-9.98
4	674.080	Peak	17.40	21.07	38.47	46.00	-7.53
5	771.080	Peak	14.56	22.38	36.94	46.00	-9.06
6	911.730	Peak	13.07	23.90	36.97	46.00	-9.03
7	919.490	Peak	13.59	23.94	37.53	46.00	-8.47

DIGITAL SPURIOUS EMISSIONS 30 TO 1000 MHz (HORIZONTAL)

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

Data#: 48 File#: Run1.emi Date: 11-05-2003 Time: 13:46:31



Trace: 45 Ref Trace:

Condition: FCC CLASS-B 3m CHAMBER 030306 1185 HORIZONTAL
Test Eng: : NEELESH RAJ
Project #: : 03I2292
Company: : NIHON KOHDEN
EUT: : WMTS TRANSMITTER
Model No: : ZS-910PA
Configuration: : EUT/CHANNEL WRITER/PRINTER/USB MOUSE/LAPTOP/AC ADAP.
Target of Test: : FCC CLASS B
Mode of Operation: CHANGING CHANNELS

Page: 1

	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	400.540	Peak	23.64	16.46	40.10	46.00	-5.90
2	625.580	QP	22.39	20.53	42.92	46.00	-3.08
3	625.580	Peak	25.11	20.54	45.65	46.00	-0.35
4	674.080	Peak	22.47	21.07	43.54	46.00	-2.46
5	722.580	Peak	19.95	21.66	41.61	46.00	-4.39
6	919.490	Peak	16.43	23.94	40.37	46.00	-5.63

13. POWERLINE 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 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

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

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

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

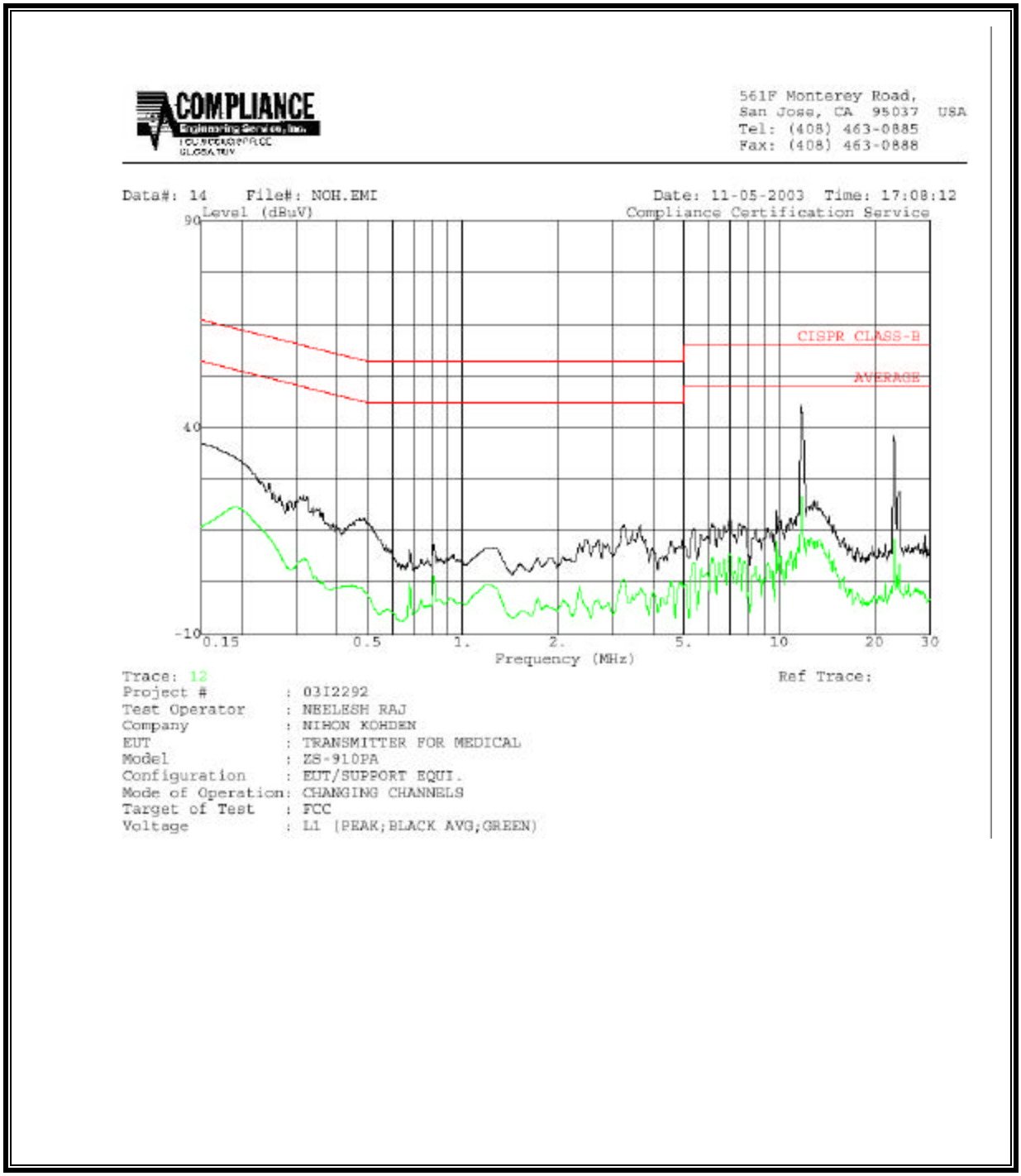
TEST RESULTS

No non-compliance noted:

6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
11.68	45.42	--	23.10	0.00	60.00	50.00	-14.58	-26.90	L1
22.90	38.16	--	13.08	0.00	60.00	50.00	-21.84	-36.92	L1
0.15	36.02	--	16.09	0.00	66.00	56.00	-29.98	-39.91	L1
11.87	48.20	--	26.14	0.00	60.00	50.00	-11.80	-23.86	L2
0.15	37.72	--	17.71	0.00	66.00	56.00	-28.28	-38.29	L2
0.19	35.23	--	22.62	0.00	64.91	54.91	-29.68	-32.29	L2
6 Worst Data									

LINE 1 RESULTS



LINE 2 RESULTS