

Date:

December 22, 2004

Federal Communications Commission Via: Electronic Filing

Attention:

Authorization & Evaluation Division

Applicant:	International Electronics Inc.
Equipment:	HeadOn Wireless Headset
FCC ID:	JLFHS24
FCC Rules:	15.249

Gentlemen:

On behalf of the Applicant, enclosed please find Application Form 731, Engineering Test Report and all pertinent documentation, the whole for approval of the referenced equipment as shown.

Filing fees are attached.

We trust the same is in order. Should you need any further information, kindly contact the writer who is authorized to act as agent.

Sincerely yours,

Michael Schafer, General Manager

enclosure(s) cc: Applicant MS/del

List Of Exhibits

(FCC Certification (Transmitters) - Revised 9/28/98)

De Angliand	
FCC ID:	JLFHS24
Applicant:	International Electronics Inc.

By Applicant:

- 1. Letter Of Authorization
- 2. Identification Drawings Label Location of Label Compliance Statement Location of Compliance Statement
- 3. Documentation: 2.1033(B)
 - (3) User Manual
 - (4) Operational Description
 - (5) Block Diagram
 - (5) Schematic Diagram
 - (7) Photographs Block Diagram Parts List Active Devices

By M.F.A. Inc.

A. Testimonial & Statement of Certification



Transmitter Certification

of

Model: HeadOn Wireless Headset (JLFHS24)

to

Federal Communications Commission

Rule Part(s) 15.249, Confidentiality

Date Of Report: December 22, 2004

On the Behalf of the Applicant:

International Electronics Inc.

At the Request of:

P.O. 12525

International Electronics Inc. 12609 NE 95 St., Suite 106 Vancouver, WA 98682

Attention of:

Shary Nassimi, President (360) 241-9090 email: iei@nwlink.com

the

David E. Lee, Compliance Test Manager

The Applicant has been cautioned as to the following:

15.21 Information to User.

The users manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.27(a) Special Accessories.

Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer, without additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

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Note: The Dongle (JLFD24) and Headset (JLFHS24) operate as a pair. The units find a channel within their frequency set to establish communication and then remain on that channel until communication ceases or interference breaks the link. The devices are identical from an RF point of view differing only in their Master / Slave functionality.

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Required information per ISO/IEC Guide 25-1990, paragraph 13.2:

a)	Test Report
b) Laboratory: (FCC: 31040/SIT) (Canada: IC 2044)	M. Flom Associates, Inc. 3356 N. San Marcos Place, Suite 107 Chandler, AZ 85225
c) Report Number:	d04c0057
d) Client:	International Electronics Inc. 12609 NE 95 St., Suite 106 Vancouver, WA 98682
e) Identification: Description:	HeadOn, Wireless Headset Remote Unit
f) EUT Condition:	Not required unless specified in individual tests.
g) Report Date: EUT Received:	December 22, 2004 December 15, 2004
h, j, k):	As indicated in individual tests.
i) Sampling method:	No sampling procedure used.
I) Uncertainty:	In accordance with MFA internal quality manual.
m) Supervised by:	1 de
	David E. Lee, Compliance Test Manager
n) Results:	The results presented in this report relate only to the item tested.
o) Reproduction:	This report must not be reproduced, except in full, without written permission from this laboratory.

List Of General Information Required For Certification In Accordance with FCC Rules and Regulations, Volume II, Part 2 and to 15.249, Confidentiality Sub-Part 2.1033 (c)(1): Name and Address of Applicant: International Electronics Inc. 12609 NE 95 St., Suite 106 Vancouver, WA 98682 Manufacturer: Applicant (c)(2): FCC ID: JLFHS24 Model Number: HeadOn, Wireless Headset (c)(3): Instruction Manual(s): Please See Attached Exhibits (c)(4): **Type of Emission**: Digital 2403 - 2479 (c)(5): **FREQUENCY RANGE**, **MHz**: (c)(6): **Power Rating**, W: 33.15mV/m @ 3m Switchable Variable X N/A (c)(7): Maximum Power Rating, W: 50mV/m @ 3m 15.203: Antenna Requirement: X The antenna is permanently attached to the EUT The antenna uses a unique coupling The EUT must be professionally installed

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The antenna requirement does not apply

Page Number

Page Number 3 of 18.

Subpart 2.1033 (continued)

(c)(8): Voltages & Currents in All Elements in Final RF Stage, Including Final Transistor or Solid State Device:

Collector Current, mA	=	10.8
Collector Voltage, Vdc	=	2.2
Supply Voltage, Vdc	=	1.0

(c)(9): Tune-Up Procedure:

Please See Attached Exhibits

(c)(10): Circuit Diagram/Circuit Description:

Including description of circuitry & devices provided for determining and stabilizing frequency, for suppression of spurious radiation, for limiting modulation and limiting power.

Please See Attached Exhibits

(c)(11): Label Information:

Please See Attached Exhibits

(c)(12): Photographs:

Please See Attached Exhibits

(c)(13): Digital Modulation Description:

____ Attached Exhibits _X_ N/A

(c)(14): Test and Measurement Data:

Follows

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<image><image><text><text><text><text><text><text><text><text><text><text>

Enclosure

A2LA

"A2LA has accredited M. Flom Associates, Inc. Chandler, AZ for technical competence in the field of Electrical Testing. The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC 17025 - 1999 'General Requirements for the Competence of Testing and Calibration Laboratories' and any additional program requirements in the identified field of testing."

Certificate Number: 2152-01

NIST

I am pleased to inform you that your laboratory has been validated by the Chinese Taipei Bureau of Standards, Metrology and Inspection (BSMI) under the Asia Pacific Economic Cooperation Mutual Recognition Agreement (APEC MRA). Your laboratory is now formally designated to act as a Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the APEC MRA between the American Institute in Taiwan (AIT) and the Taipei Economic and Cultural Representative Office (TECRO) in the United States, covering equipment subject to Electro-Magnetic Compatibility (EMC) requirements. The names of all validated and nominated laboratories will be posted on the NIST website at http://ts.nist.gov/mra under the 'Asia' category."

BSMI Number: SL2-IN-E-041R

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Sub-part 2.1033(b):

Test and Measurement Data

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Volume II; Part 2, Sub-part J, Sections 2.1031, 2.1033, 2.1035, 2.1041, 2.1043, 2.1045, and the following individual Parts:

15.209 Radiated emission limits; general requirements 15.211 Tunnel radio systems 15.213 Cable locating equipment 15.214 Cordless telephones 15.217 Operation in the band 160-190 kHz Operation in the band 510-1705 kHz 15.219 15.221 Operation in the band 525-1705 kHz (leaky coax) 15.223 Operation in the band 1.705-10 MHz 15.225 Operation in the band 13.553-13.567 MHz 15.227 Operation in the band 26-27.28 MHz (remote control) Operation in the band 40.66-40.70 MHz 15.229 15.231 Periodic operation in the band 40.66-40.70 MHz and above 70 MHz 15.233 Operation within the bands 43.71-44.49, 46.60-46.98 MHz 48.75-49.51 MHz and 49.66-50.0 MHz Operation within the band 49.82-49.90 MHz 15.235 15.237 Operation within the bands 72.0-73.0 MHz, 74.6-74.8 MHz and 75.2-76.0 MHz (auditory assistance) 15.239 Operation in band 88-108 MHz 15.241 Operation in the band 174-216 MHz (biomedical) 15.243 Operation in the band 890-940 MHz (materials) Operation within the bands 902-928 MHz, 2435-2465 MHz, 5785-5815 MHz, 10500-10550 15.245 MHz, and 24075-24175 MHz (filed disturbance sensors) Operation within bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz (spread 15.247 spectrum) X 15.249 Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz Operation within the bands 2.9-3.26 GHz, 3.267-3.332 GHz, 3.339-3.3458 GHz, and 3.358-15.251 3.6 GHz (vehicle identification systems) Specific requirements for asynchronous devices operating in the 1910-1920 MHz and 2390-15.321 2400 MHz bands (Unlicensed PCS) Specific requirements for isochronous devices operating in the 1920-1930 MHz sub-band 15.323 (Unlicensed PCS)

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Standard Test Conditions And Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSIC63.4-1992/2001, section 6.1.9, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104 °F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing.

Measurement results, unless otherwise noted, are worst-case measurements.

Name of Test: Maximum Peak Output Power

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Attached

Specification: 47 CFR 15.249(a)

Spec. Limit: 50mV/m @ 3m

Test Equipment:

Measurement Data

Peak Output Power,

= 33.15 mV/m Worst Case For JLFD24 and JLFHS24 All Channels (2403, 2440, and 2479MHz)

Radiated:

g04a0161: 2004-Oct-11 Mon 08:34:00

Frequency Tuned,	Frequency Emission, MHz	Meter, dBuV	CF, dB	mV/m @ 3m
MHz				
2440.000000	2439.815000	42.41	48	33.15
2440.000000	2439.855000	36.23	48	16.27
2440.000000	2439.860000	35.98	48	15.81
2440.000000	2439.895000	38.07	48	20.11
2440.000000	2439.900000	42.32	48	32.80
2440.000000	2440.005000	39.27	48	23.09
2440.000000	2440.060000	39.27	48	23.09
2440.000000	2440.070000	35.85	48	15.57

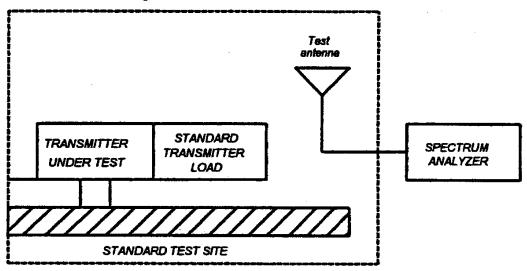
Supervised By:

David E. Lee, Compliance Test Manager

Page Number	8 of 18.
Name of Test:	Field Strength of Spurious Radiation
Specification:	47 CFR 2.1053(a)
Guide:	ANSI/TIA/EIA-603-1992/2001, Paragraph 1.2.12 and Table 16, 47 CFR 22.917

Measurement Procedure

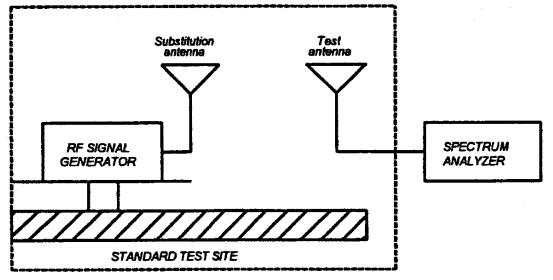
- 1.2.12.1 Definition: Radiated spurious emissions are emissions from the equipment when transmitting into a non-radiating load on a frequency or frequencies which are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communications desired.
- 1.2.12.2 Method of Measurement
- A) Connect the equipment as illustrated
- B) Adjust the spectrum analyzer for the following settings:
 1) Resolution Bandwidth 100 kHz (<1 GHZ), 1 MHZ (> 1GHz).
 2) Video Bandwidth = 3 times Resolution Bandwidth, or 30 kHz (22.917)
 3) Sweep Speed ≤2000 Hz/second
 - 4) Detector Mode = Mean or Average Power
- C) Place the transmitter to be tested on the turntable in the standard test site. The transmitter is transmitting into a non-radiating load which is placed on the turntable. The RF cable to this load should be of minimum length.



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Name of Test:Field Strength of Spurious Radiation (Cont.)

- D) For each spurious measurement the test antenna should be adjusted to the correct length for the frequency involved. This length may be determined from a calibration ruler supplied with the equipment. Measurements shall be made from the lowest radio frequency generated in the equipment to the tenth harmonic of the carrier, except for the region close to the carrier equal to \pm the test bandwidth (see section 1.3.4.4).
- E) For each spurious frequency, raise and lower the test antenna from 1 m to 4 m to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity. Repeat this procedure to obtain the highest possible reading. Record this maximum reading.
- F) Repeat step E) for each spurious frequency with the test antenna polarized vertically.



G) Reconnect the equipment as illustrated.

- H) Keep the spectrum analyzer adjusted as in step B).
- I) Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground.

Page Number 10 of 18.

Name of Test: Field Strength of Spurious Radiation (Cont.)

- J) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non-radiating cable. With the antennas at both ends horizontally polarized and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.
- K) Repeat step J) with both antennas vertically polarized for each spurious frequency.
- L) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps J) and K) by the power loss in the cable between the generator and the antenna and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna.
- M) The levels recorded in step L) are absolute levels of radiated spurious emissions in dBm. The radiated spurious emissions in dB can be calculated by the following:

Radiated spurious emissions dB =

10log₁₀(TX power in watts/0.001) - the levels in step I)

NOTE: It is permissible that other antennas provided can be referenced to a dipole.

Tes	t Equipment	:			
	Asset	Description	s/n	Cycle	Last Cal
	(as applica	able)		Per ANSI C63.4-195	2/2000 Draft, 10.1.4
Tra	nsducer				
	i00088	EMCO 3109-B 25MHz-300MHz	2336	24 mo.	Sep-03
	i00065	EMCO 3301-B Active Monopole	2635	24 mo.	Sep-03
Х	i00089	Aprel 2001 200MHz-1GHz	001500	24 mo.	Sep-03
Х	i00103	EMCO 3115 1GHz-18GHz	9208-3925	24 mo.	Jan-04
Amj	olifier				
Х	i00028	HP 8449A	2749A00121	12 mo.	May-04
Spe	ctrum Anal	yzer			
Х	i00029	HP 8563E	3213A00104	12 mo.	May-04
Х	i00033	HP 85462A	3625A00357	12 mo.	Aug-04
	i00048	HP 8566B	2511AD1467	12 mo.	Oct-04

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Radiated Emissions

Test Setup:

State:

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Name of Test:Field Strength of Spurious Radiation (JLFD24 + JLFHS24)g04a0165: 2004-Oct-12 Tue 08:26:00State: 2:High Power

Frequency Tuned,	Frequency Emission,	Meter, dBuV	CF, dB	uV/m@3m
MHz	MHz			
2403.000	4806.250	37.40	13.10	332
2440.000	4879.683	37.31	13.15	331
2479.000	4957.889	36.60	13.20	301
2403.000	7208.991	36.90	15.15	398
2440.000	7319.842	38.17	15.26	467
2479.000	7436.998	37.50	15.30	426
2403.000	9611.993	29.99	20.90	346
2440.000	9759.842	30.10	21.03	354
2479.000	9916.033	29.50	21.10	338
2403.000	12015.112	28.00	25.10	446
2440.000	12199.842	28.40	25.40	489
2479.000	12394.998	27.00	25.60	426
2403.000	14417.975	33.50	13.00	208
2440.000	14639.842	32.50	12.95	186
2479.000	14874.010	31.11	12.90	158
2403.000	16820.880	30.00	10.00	100
2440.000	17079.842	31.83	9.95	120
2479.000	17353.003	32.00	9.90	123

Supervised By:

David E. Lee, Compliance Test Manager

Page Number	13 of 18.
Name of Test:	Radiated Spurious Emissions (Non-Harmonic)
Specification:	47 CFR 15.249(c)
Guide:	ANSI/TIA/EIA-603-1992, Paragraph 2.2.1
Test Equipment:	As per previous page

15.249(c):

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emissions limits in § 15.209, whichever is the lesser attenuation.

General Radiated Emission Limits Per 15.209:

Field Strength, µV/m @ 3m		
100		
150		
200		
500		
-		

Measurement Results:

Radiated Spurious Emissions (Non-Harmonic)

Frequency of Carrier, MHz	=	2403, 2440, 2479
Spectrum Searched	=	0 to 10 x F _C
All Other Emissions	=	= 20 dB Below Limit
Limit, μV /m @ 3m	=	50 dBc or § 15.209

All Spurious Emissions Were 20 db or more below the 15.209 limit

System Sensitivity is -130 dBm

David E. Lee, Compliance Test Manager

Page Number	14 of 18.
Name of Test:	Emission Masks (Occupied Bandwidth)
Specification:	47 CFR 2.1049I(1)
Guide:	ANSI/TIA/EIA-603-1992, Paragraph 2.2.11
Test Equipment:	As per previous page

Measurement Procedure

The EUT and test equipment were set up as shown on the following page, with the Spectrum Analyzer connected.

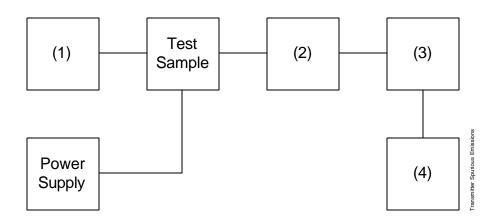
For EUTs supporting audio modulation, the audio signal generator was adjusted to the frequency of maximum response and with output level set for ± 2.5 kHz deviation (or 50% modulation). With level constant, the signal level was increased 16 dB.

For EUTs supporting digital modulation, the digital modulation mode was operated to its maximum extent.

The Occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown on the test results.

Transmitter Spurious Emission

Test A. Occupied Bandwidth (In-Band Spurious) Test B. Out-of-Band Spurious



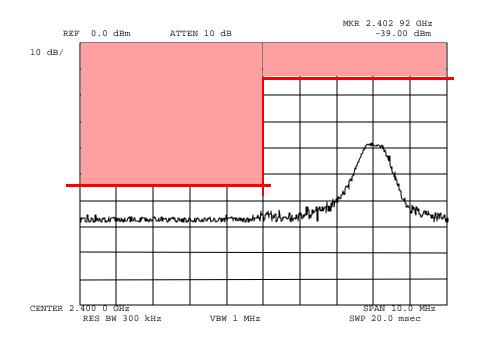
Tes	t Equipment Asset (as applica	Description	s/n	Cycle Per ANSI C63.4-1992/2	Last Cal
(2)	Transducer				
	i00088	EMCO 3109-B 25MHz-300MHz	2336	24 mo.	Sep-03
	i00065	EMCO 3301-B Active Monopole	2635	24 mo.	Sep-03
Х	i00089	Aprel 2001 200MHz-1GHz	001500	24 mo.	Sep-03
	i00103	EMCO 3115 1GHz-18GHz	9208-3925	24 mo.	Jan-04
(3)	Amplifier				
	i00028	HP 8449A	2749A00121	12 mo.	May-04
(4)	Spectrum A	nalyzer			
	i00029	HP 8563E	3213A00104	12 mo.	May-04
	i00033	HP 85462A	3625A00357	12 mo.	Aug-04
Х	i00048	HP 8566B	2511AD1467	12 mo.	Oct-04

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Name of Test:

Emission Masks (Occupied Bandwidth)

g04c0060: 2004-Dec-17 Fri 10:29:00 State: 2:High Power



Power: Modulation: HIGH LOW BAND EDGE 15.209 Limit, -53dBm (500uV/m @ 3m)

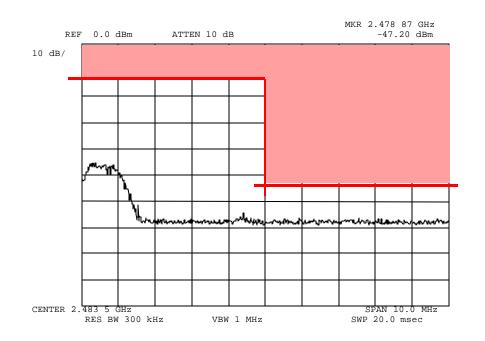
David E. Lee, Compliance Test Manager

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Name of Test:

Emission Masks (Occupied Bandwidth)

g04c0061: 2004-Dec-17 Fri 10:30:00 State: 2:High Power



Power: Modulation: HIGH HIGH BAND EDGE 15.209 Limit, -53dBm (500uV/m @ 3m)

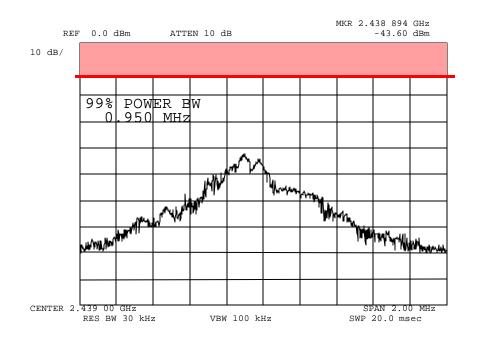
David E. Lee, Compliance Test Manager

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Name of Test:

Emission Masks (Occupied Bandwidth)

g04c0065: 2004-Dec-17 Fri 10:39:00 State: 2:High Power



Power: Modulation: HIGH 99% POWER BANDWIDTH 15.249 Limit, -13dBm (50mV/m @ 3m)

David E. Lee, Compliance Test Manager

Radiated Measurements For Part 15 Transmitters with Integral Antennas

Radiated Measurements

Range Of Measurement	Specification	Resolution B/W	Video B/A
30 to 1000 MHz	CISPR	=100 kHz	=100 kHz
>1000 MHz	FCC, 15.37(b)	1 MHz	=1 MHz
(if averaging)	FCC, 15.37(b)	1 MHz	10 Hz

Measuring Equipment

a. Antennas:

EMCO 3109	20 - 300 MHz
APREL AALP2001	200 - 1000 MHz
APREL AAB20200	20 - 200 MHz
APREL AAH118	1 - 18 GHz

b. Instruments:

HP8566B	Spectrum Analyzer
HP85685A	Preselector, w/ preamp below
HP85650A	Quasi Peak Adapter
HP8449	Preamp, above 2 GHz

All test instrumentation is calibrated every January and every July. In addition, all test instrumentation is calibrated daily, or as required by the manufacturer. A Calibration Agreement is maintained with Hewlett Packard.

2 GHz

Occupied Bandwidth

Occupied Bandwidth is measured as a radiated signal without attenuators and/or filter. RBW, VBW and scan settings as shown were set to produce a meaningful result in accordance with ANSI C63.4, Section 13.1.7.

Part 15.21, Information to User

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly avoided by the party responsible for compliance could void the user's authority to operate the equipment.

§ 15.205 Restricted Bands of Operation

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.25
0.495-0.505	16.69475-16.69625	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-339.4	3600-4400	
13.36-13.41			

(a) Except as shown in paragraph (b) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

Testimonial and Statement of Certification

This is to certify that:

- 1. **That** the application was prepared either by, or under the direct supervision of, the undersigned.
- 2. **That** the technical data supplied with the application was taken under my direction and supervision.
- 3. **That** the data was obtained on representative units, randomly selected.
- 4. **That**, to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.

David E. Lee, Compliance Test Manager

Certifying Engineer: