



M. Flom Associates, Inc.

International Compliance Testing Laboratory

3356 N. San Marcos Place, Suite 107
Chandler, AZ 85225

toll-free: (866) 311-3268
fax: (480) 926-3598

<http://www.mflom.com>
info@mflom.com

Date: May 17, 2005

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: Nimble Motorsports, LLC
Equipment: Nimble Motorsports Remote
FCC ID: R65DART1
FCC Rules: 15.247, Confidentiality

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,

David E. Lee, Quality Manager

enclosure(s)
cc: Applicant
DEL/del

M. Flom Associates, Inc.
3356 North San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
(480) 926-3100 phone, (480) 926-3598 fax

FCC ID: R65DART1 FCC ID: R65DART1
MFA p0540003, d0550034



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Transmitter Certification

of

FCC ID: R65DART1
Model: Nimble Motorsports Remote

to

Federal Communications Commission

Rule Part(s) 15.247, Confidentiality

Date Of Report: May 17, 2005

On the Behalf of the Applicant:

Nimble Motorsports, LLC

At the Request of:

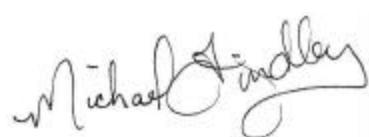
P.O. K.M. Credit Card

Nimble Motorsports, LLC
7100 Rob River Way
Sacramento, CA 95831

Attention of:

Kelly Murray
916-428-1423
Email: kelly@nimblemotorsports.com

Supervised by:



Michael Findley, Laboratory Manager



List Of Exhibits

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

Applicant: Nimble Motorsports, LLC

FCC ID: R65DART1

By Applicant:

1. Letter Of Authorization
2. Identification Drawings
 - Id Label
 - Location Info
 - Attestation Statement(S)
 - Location of Compliance Statement
3. Documentation: 2.1033(B)
 - (3) User Manual(S)
 - (4) Operational Description
 - (5) Block Diagram
 - (5) Schematic Diagram
 - (7) External Photographs
 - Internal Photographs
 - Parts List
 - Tune Up Info
 - Active Devices
4. Draft Specification Information

By M.F.A. Inc.

- A. Testimonial & Statement of Certification



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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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:

d0550034

d) Client:

Nimble Motorsports, LLC
7100 Rob River Way
Sacramento, CA 95831

e) Identification:

Nimble Motorsports Remote

FCC ID: R65DART1

Description:

2.4 GHz Remote control

f) EUT Condition:

Not required unless specified in individual tests.

g) Report Date:

May 17, 2005

EUT Received:

April 6, 2005

h, j, k):

As indicated in individual tests.

i) Sampling method:

No sampling procedure used.

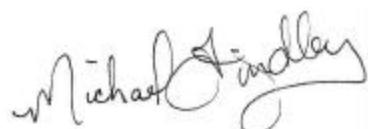
l) Uncertainty:

In accordance with MFA internal quality manual.

n) Results:

The results presented in this report relate only to the item tested.

m) Supervised by:



Michael Findley, Laboratory Manager

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

15.247, Confidentiality

Sub-Part 2.1033

(c)(1): Name and Address of Applicant:

Nimble Motorsports, LLC
7100 Rob River Way
Sacramento, CA 95831

Manufacturer:

Applicant

(c)(2): FCC ID: R65DART1

Model Number: Nimble Motorsports Remote

(c)(3): Instruction Manual(s):

Please See Attached Exhibits

(c)(4): Type of Emission: DSSS

(c)(5): FREQUENCY RANGE, MHz: 2435.800 - 2463.300

(c)(6): Power Rating, W: 0.0001
____ Switchable ____ Variable N/A

(c)(7): Maximum Power Rating, W: Non FH \leq 1W Peak

15.203: Antenna Requirement:

- The antenna is permanently attached to the EUT
- The antenna uses a unique coupling
- The EUT must be professionally installed
- The antenna requirement does not apply



Subpart 2.1033 (continued)

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

Collector Current, A	= per manual
Collector Voltage, Vdc	= per manual
Supply Voltage, Vdc	= 6.0

(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



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**



UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899

September 15, 1999

Mr. Morris Flom
M. Flom Associates Inc.
3356 N. San Marcos Place, Suite 107
Chandler, AZ 85224

Dear Mr. Flom:

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 Arrangement (APEC MRA). Your laboratory is now formally designated as set out in the 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.

As of August 1, 1999, you may submit test data to BSMI to verify that the equipment to be imported into Chinese Taipei satisfies the applicable EMC requirements. Your assigned BSMI number is **SL2-IN-E-041R**; you must use this number when sending test reports to BSMI. Your designation will remain in force as long as your NVLAP and/or A2LA and/or BSMI accreditation remains valid for the CNS 13438.

Please note that BSMI requires that the entity making application for the approval of regulated equipment must make an application in person at the Taipei Economic and Cultural Representative Office of the Republic of China, who are authorized to sign the test reports. You can send this information via fax to C-Taipei CAB Response Manager at 101-973-5414. I am also enclosing a copy of the cover sheet that, according to BSMI requirements, must accompany every test report.

NIST

If you have any questions, please contact Robert Gladhill at 301-975-4273 or Joe Phillips at 301-973-5521. We appreciate your continued interest in our international conformity assessment activities.

Sincerely,

Patricia L. Collins
Patricia L. Collins, Ph.D.
Director, Office of Standards Services

Enclosure

BSMI Number: **SL2-IN-E-041R**

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
- _____ 15.219 Operation in the band 510-1705 kHz
- _____ 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)
- _____ 15.229 Operation in the band 40.66-40.70 MHz
- _____ 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
- _____ 15.235 Operation within the band 49.82-49.90 MHz
- _____ 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)
- _____ 15.245 Operation within the bands 902-928 MHz, 2435-2465 MHz, 5785-5815 MHz, 10500-10550 MHz, and 24075-24175 MHz (filed disturbance sensors)
- 15.247 Operation within bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz (spread spectrum)
- _____ 15.249 Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz
- _____ 15.251 Operation within the bands 2.9-3.26 GHz, 3.267-3.332 GHz, 3.339-3.3458 GHz, and 3.358-3.6 GHz (vehicle identification systems)
- _____ 15.321 Specific requirements for asynchronous devices operating in the 1910-1920 MHz and 2390-2400 MHz bands (Unlicensed PCS)
- _____ 15.323 Specific requirements for isochronous devices operating in the 1920-1930 MHz sub-band (Unlicensed PCS)



Standard Test Conditions and Engineering Practices

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

In accordance with ANSI C63.4-1992/2001, 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
Specification: 47 CFR 15.247(b)
Spec. Limit: = 1 Watt peak (0.25 if <50 Hopping Channels)
Test Equipment: Attached

Measurement Data

Antenna Gain, dBi	= -12.8
Peak Output Power, Watts	= 0.0001 Worst Case For All Channels

Radiated:
g0540063: 2005-Apr-07 Thu 09:42:00

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV	CF, dB	uV/m @ 3m	EIRP, dBm	EIRP, W
2450.000000	2449.935300	23.98	48.4	4159.11	-22.8	0.0000052

g0550012: 2005-May-17 Tue 09:24:00

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV	CF, dB	uV/m @ 3m	EIRP, dBm	EIRP, W
0.000000	2435.800000	36.87	32.68	3002.62	-25.7	0.0000027

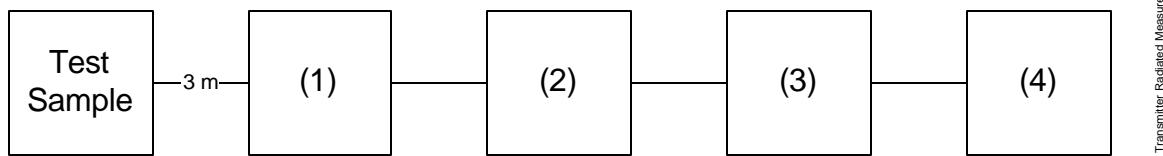
g0550013: 2005-May-17 Tue 09:29:00

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV	CF, dB	uV/m @ 3m	EIRP, dBm	EIRP, W
0.000000	2463.300000	37.58	32.75	3284.73	-24.9	0.0000032

Supervised by:

Michael Findley, Laboratory Manager

Transmitter Radiated Measurements



Transmitter Radiated Measurements

Asset (as applicable)	Description	s/n		
(1) Transducer				
X i00091	Emco 3115	001469	24 mo.	Jan-04
i00089	Aprel Log Periodic	001500	24 mo.	Sep-03
i00088	EMCO 3301-B Biconical	2336	24 mo.	Sep-03
(2) High Pass Filter (if required)				
(3) Preamp				
X i00028	HP 8449 (+30 dB)	2749A00121		
(4) Spectrum Analyzer				
i00048	HP 8566B	2511A01467	12 mo.	Aug-04
i00057	HP 8557A	1531A00191	12 mo.	Jul-04
X i00029	HP 8563E	3213A00104	12 mo.	May-04

Test Setup:

Radiated Emissions



Name of Test: Out of Band Emissions

Specification: 47 CFR 15.247(c), 15.209(a)

Spec. Limit: See Below

Test Equipment: As per previous page

Search Antennas:

10 kHz - 32 MHz:	LOOP 94598-1
32 MHz - 1 GHz:	SINGER DM105, T ₁ T ₂ T ₃
1 GHz - 18 GHz:	EMCO 3115

Limit

In any 100 kHz bandwidth outside these frequency bands, radio frequency power that is produced by the modulation products of the spreading sequence, information sequence, and the carrier frequency shall be either:

at least 20 dB below that in any 100 kHz bandwidth within the band that contains the highest level of the desired power

or

shall not exceed the general levels specified in 15.209(a), whichever results in the lesser attenuation. All other emissions outside these bands shall not exceed the general radiated emission limits specified in 15.209(a).

Measurements Procedure:

At first, bench tests were performed to locate the emissions around the antenna terminals.

In the field, tests were conducted over the range shown. The test sample was set up on a wooden turntable above ground, and at a distance of three meters from the antenna connected to the spectrum analyzer.

In order to obtain the maximum response at each frequency, the turntable was rotated, and the search antenna was raised and lowered. The EUT was also adjusted for maximum response.

The field strength was calculated from:

$$E \mu\text{V}/\text{m} @ 3 \text{ m} = \text{LOG}_{10}^{-1}(\text{dBm} + 107 + \text{A.F.} + \text{C.L.})$$

The following results are worst case conditions. Tests were conducted in Horizontal and Vertical polarization modes.

Measurement Results: Attached

Name of Test: Out of Band Emissions

Measurement Results

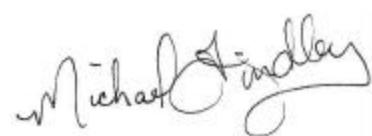
g0550014: 2005-May-17 Tue 09:46:00

STATE: 2:High Power

Ambient Temperature: 23°C ± 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	ERP, dBm
2440.250000	4880.500000	-44.8
2440.250000	7249.500000	-25.1
2440.250000	9726.000000	-22.1
2440.250000	12161.000000	-24.5
2440.250000	14596.000000	-24.0
2440.250000	17031.000000	-29.4

Supervised by:



Michael Findley, Laboratory Manager

Name of Test: Restricted Bands of Operation

Specification: 47 CFR 15.205

Test Equipment: As per attached page

Measurement Procedure

The EUT was set up on a three meter open field site according to the procedure on ANSI C63.4.

Sensitivity of system was measured:

Below 2 GHz:

CISPR Bandwidths	=	8 dB μ V
1 MHz RBW, 1 MHz VBW	=	12 dB μ V
1 MHz RBW, 10 Hz VBW	=	3 dB μ V

Above 2 GHz:

1 MHz RBW, 1 MHz VBW	=	33 dB μ V
1 MHz RBW, 10 Hz VBW	=	22 dB μ V

Sensitivity of system with preamps:

Below 2 GHz:

Preamps are not used in this range.

Above 2 GHz:

Peak	=	3 dB μ V
Average	=	-8 dB μ V

Cable Loss:

915 MHz	=	-0.8 dB μ V
2450 MHz	=	-3 dB μ V

Note:

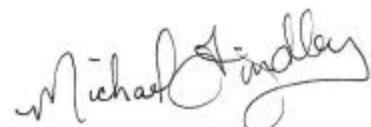
dB loss vs. frequency included in programmed software.

Reference Level Offset:

set @ 1 dB, accounts for cable and connector loss.

Test Results: No harmonic or spurious emissions were detected in the restricted bands in excess of the limits of 15.205. System measurement sensitivity was -130 dBm.

Supervised By:



Michael Findley, Laboratory Manager

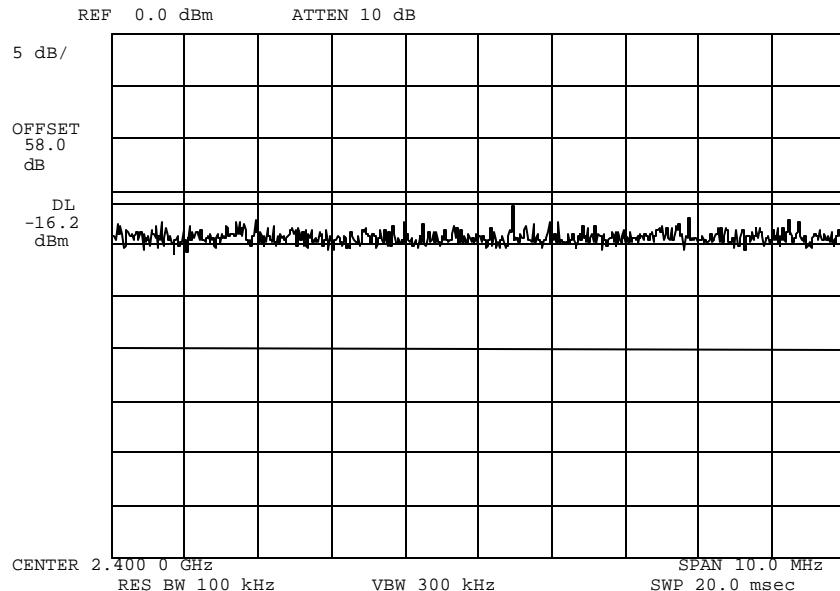
Name of Test: Emissions At Band Edges

Test Equipment: As for "Out of Band Emissions"

g0540066: 2005-Apr-27 Wed 10:19:00

State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power:
Modulation:

High
Lower Band Edge

Performed by:



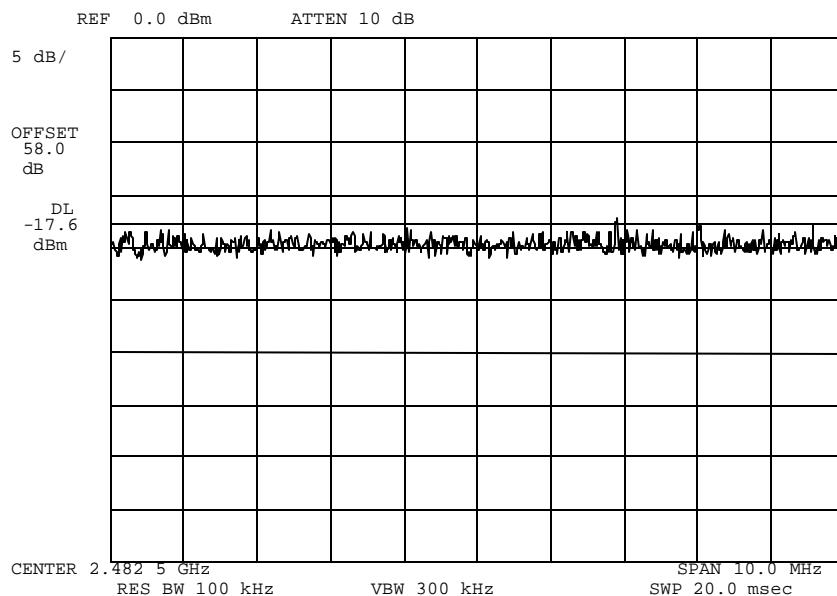
Bobby Leanio

Name of Test: Emissions At Band Edges

g0540067: 2005-Apr-27 Wed 10:20:00

State: 2:High Power

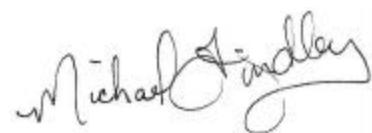
Ambient Temperature: 23°C ± 3°C



Power:
Modulation:

High
Upper Band Edge

Supervised By:



Michael Findley, Laboratory Manager



Name of Test: Allowed Occupied Bandwidth

Specification: 47 CFR 15.247(a)(2)

Test Equipment: As per attached page

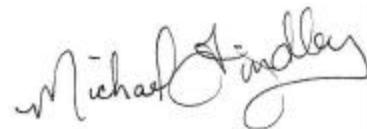
Limits

Rule	Type	BANDS (MHz)	LIMIT (kHz)
15.247(a)(1)(i)	F.H.	902-928	20 dB BW = 500
15.247(a)(1)(ii)	F.H.	2400-2483.5, 5725-5850	20 dB BW = 1000
15.247(a)(2)	D.S.	ALL	6 dB BW = 500

Measurement Data

Measured Bandwidth, kHz = 880
Results = Attached

Supervised By:

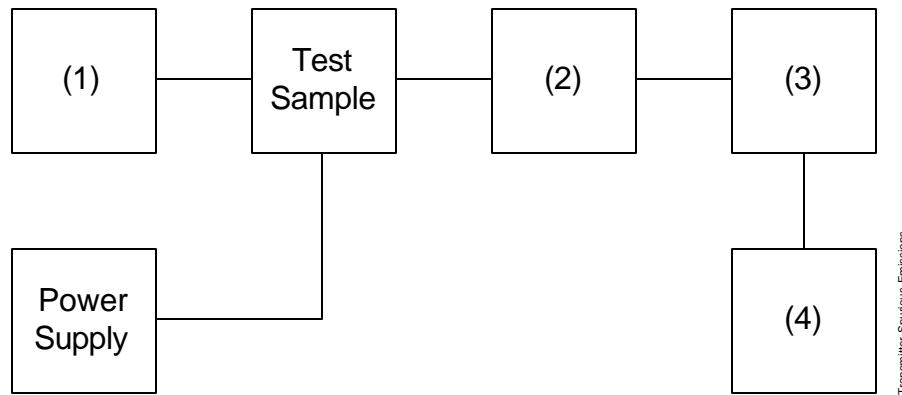


Michael Findley
Michael Findley, Laboratory Manager

Transmitter Spurious Emission

Test A. Occupied Bandwidth (In-Band Spurious)

Test B. Out-of-Band Spurious



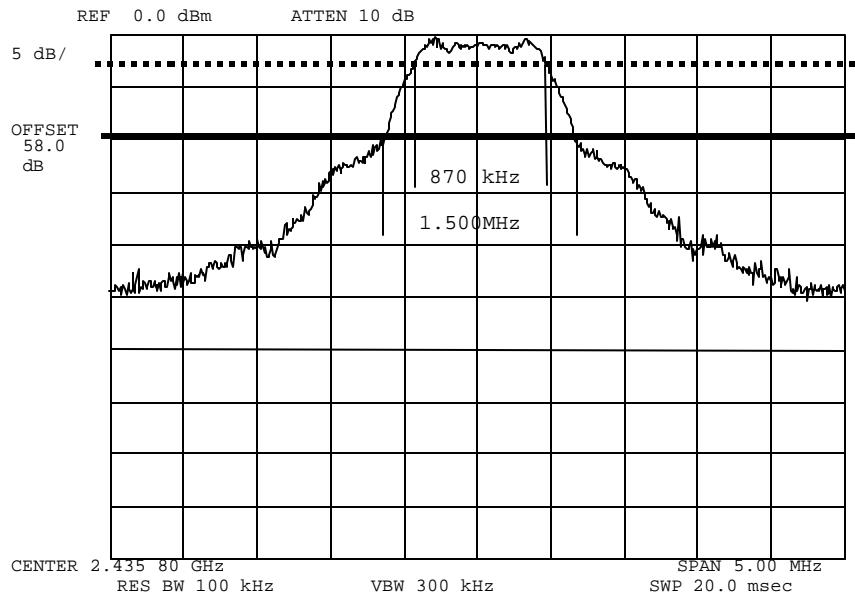
Asset	Description (as applicable)	s/n		
(1) Audio Oscillator/Generator	i00017 HP 8903A	2216A01753	12 mo.	May-05
(2) Coaxial Attenuator (if required)				
i00122	Narda 766-10	7802	NCR	
i00123	Narda 766-10	7802A	NCR	
i00069	Bird 8329 (30 dB)	1006	NCR	
i00113	Sierra 661A-3D	1059	NCR	
(3) Filters; Notch, HP, LP, BP (if required)				
i00126	Eagle TNF-1	100-250	NCR	
i00125	Eagle TNF-1	50-60	NCR	
i00124	Eagle TNF-1	250-850	NCR	
(4) Spectrum Analyzer				
X i00048	HP 8566B	2511A01467	12 mo.	Aug-04
i00029	HP 8563E	3213A00104	12 mo.	May-04

Name of Test: Emission Masks (Occupied Bandwidth)
Indicating 6/20 dB Bandwidth

Measurement Results

g0540063: 2005-Apr-27 Wed 10:10:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: High
Channel: Low

Performed by:



Bobby Leanio

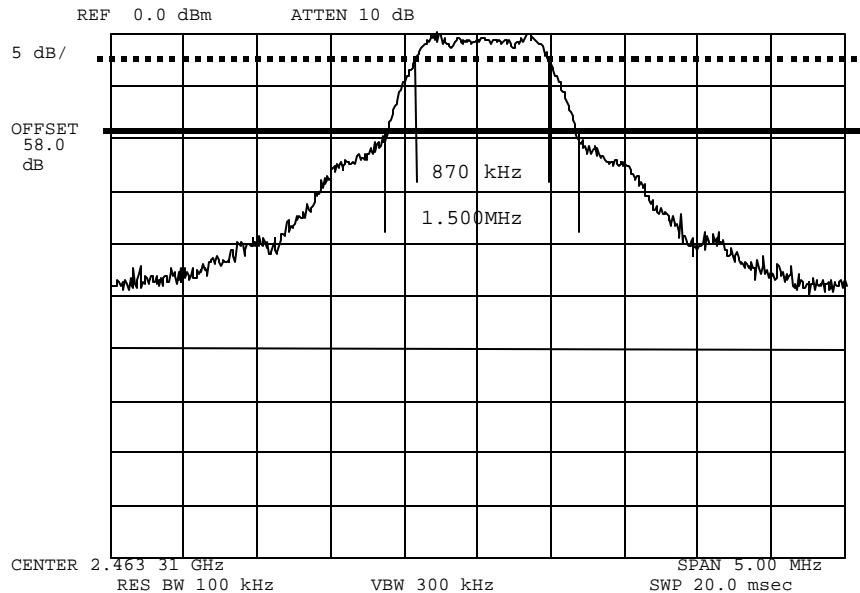
Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0540064: 2005-Apr-27 Wed 10:13:00

State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: High
Channel: High

Performed by:



Bobby Leanio

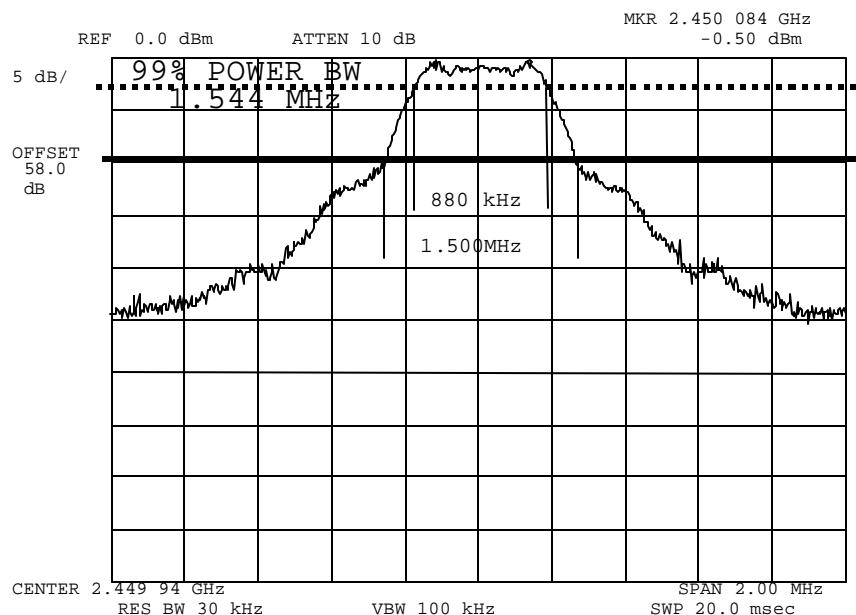
Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0540065: 2005-Apr-27 Wed 10:15:00

State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: High
Channel: Middle
Modulation: 99% Power Bandwidth

Performed by:



Bobby Leanio

Name of Test: Spread Spectrum Technology
Direct Sequence Systems

15.247(a)(2) Minimum 6 dB Bandwidth

Results: Please see results for "Allowed Occupied Bandwidth"

Name of Test: Spread Spectrum Technology
Direct Sequence Systems

15.247(d) Transmitter Power Density

Limit: The transmitter power density peak over any 1 second interval shall not be greater than 8 dBm in any 3 kHz Bandwidth within these bands.

Results:

Frequency	Measured dBm @ 1Hz	Calculated dBm @ 3kHz	Margin dBm
2435.800	-50.60	-15.8	-23.80
2440.000	-59.10	-24.3	-32.30
2463.300	-57.10	-22.3	-30.30

Power Spectral Density per 3-kHz bandwidth = Power Spectral Density per 1-Hz bandwidth + Bandwidth Correction Factor.
Bandwidth Correction Factor = $10 \log (3 \text{ kHz} / 1 \text{ Hz}) = 34.8 \text{ dB}$

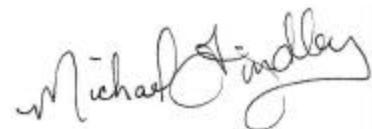
15.247(e) Processing Gain

Limit: The processing gain shall be = 10 dB
Results: See Applicant's statement

NOTE:

Device uses Nordic n RF 2401A chip.

Supervised By:



Michael Findley, Laboratory Manager



Name of Test: Necessary Bandwidth and Emission Bandwidth

Specification: 47 CFR 2.202(g)

Modulation

Necessary Bandwidth (Measured): 1.544MHz

Supervised By:



Michael Findley, Laboratory Manager

END OF TEST REPORT



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 (if averaging)	FCC, 15.37(b)	1 MHz	=1 MHz
	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 2 GHz
HP85650A	Quasi Peak Adapter
HP8449	Preamp, above 2 GHz
HP8563E	Spectrum Analyzer, 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.

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

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

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			

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.

Certifying Engineer:



Michael Findley, Laboratory Manager