



Flom Test Labs
EMI, EMC, RF Testing Experts Since 1963

toll-free: (866) 311-3268
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<http://www.flomlabs.com>
info@flomlabs.com

Date: September 10, 2007

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: Interflex, LLC
Equipment: Remote control (Point to Point)
FCC ID: VKU-TITANIUM
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,

M. Flom Associates, Inc.

Hoosamuddin S. Bandukwala, Lab Director

enclosure(s)
cc: Applicant
/mdw

Flom Test Labs
3356 N. San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
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MFA p0780007, d0790003



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List Of Exhibits
(FCC **Certification** (Transmitters) - Revised 9/28/98)

Applicant: Interflex, LLC

FCC ID: VKU-TITANIUM

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
4. Draft Specification Information

By F.T.L.

- A. Testimonial & Statement of Certification
- B. Statement of Qualifications



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Transmitter Certification

of

Interflex Beds

Model: TITANIUM

to

Federal Communications Commission

Rule Part(s) 15.249

Date Of Report: September 10, 2007

On the Behalf of the Applicant:

Interflex, LLC

At the Request of:

Interflex, LLC
2830 NE 29th Street
Fort Lauderdale, FL 33306

Attention of:

Joe Piana
Ph: (423)365-5453
Fax: (423)365-6815
email: jpiana@interflexbeds.com

Supervised By:

Hoosamuddin S. Bandukwala, Lab
Director

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 17025-2005, paragraph 5.0:

- a) **Test Report**
- b) Laboratory: Flom Test Lab
(FCC: 31040/SIT) 3356 N. San Marcos Place, Suite 107
(Canada: IC 2044) Chandler, AZ 85225
- c) Report Number: d0790003
- d) Client: Interflex, LLC
2830 NE 29th Street
Fort Lauderdale, FL 33306
- e) Identification: Bed Remote Control
- Description: Hand Wand
- f) EUT Condition: Not required unless specified in individual tests.
- g) Report Date: September 10, 2007
EUT Received:
- h, j, k): As indicated in individual tests.
- i) Sampling method: No sampling procedure used.
- l) Uncertainty: In accordance with FTL internal quality manual.
- m) Supervised by: Hoosamuddin S. Bandukwala
- 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

Sub-Part 2.1033

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

Interflex, LLC
2830 NE 29th Street
Fort Lauderdale, FL 33306

Manufacturer:

(c)(2): **FCC ID:** VKU-TITANIUM

Model Number: TITANIUM

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

Please See Attached Exhibits

(c)(4): **Type of Emission:** N/A

(c)(5): **FREQUENCY RANGE, MHz:** 2402 – 2478

(c)(6): **Power Rating, W:**
 ___ Switchable ___ Variable < X N/A

(c)(7): **Maximum Power Rating, W:** 50 mv/m @ 3m

15.203: **Antenna Requirement:**

- The antenna is permanently attached to the EUT
- X The antenna uses a unique coupling (discrete devices create the antenna)
- The EUT must be professionally installed
- The antenna requirement does not apply

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

There are no user tunable parts in the RF transceiver

(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

☒ N/A

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

Follows

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)
X _____	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

A2LA

“A2LA has accredited Flom Test Labs, 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 17025:2005 ‘General Requirements for the Competence of Testing and Calibration Laboratories’ and any additional program requirements in the identified field of testing.”

Please refer to www.a2la.org for current scope of accreditation.

Certificate number: 2152.01



Name of Test: Field Strength of Fundamental Spurious Radiation

Specification: 47 CFR 15.249

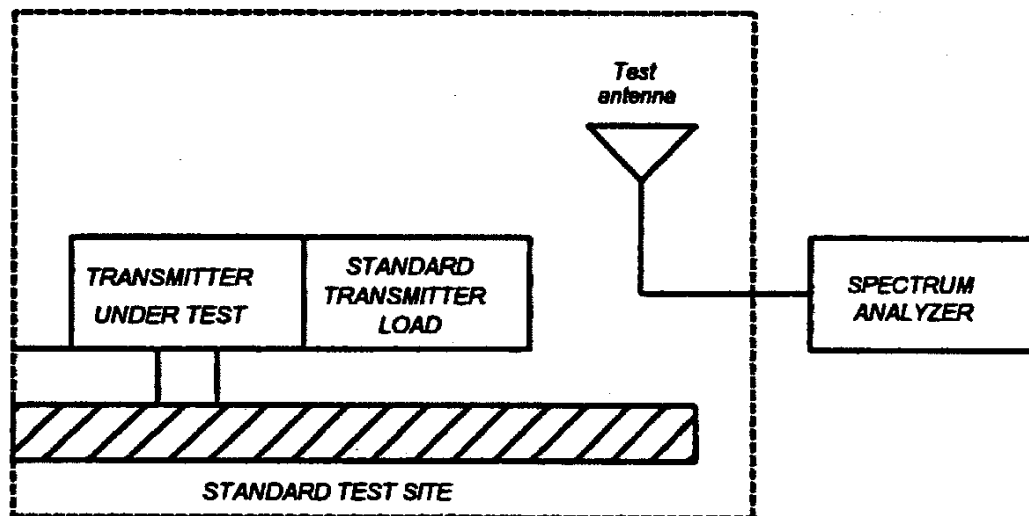
Guide: ANSI C-63.4 2004

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.



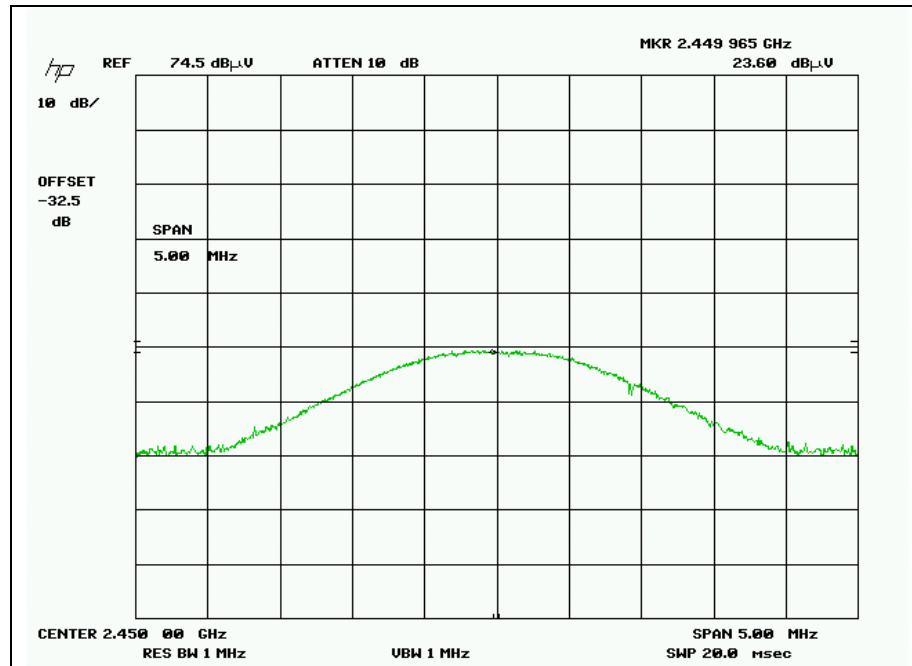
Name of Test: Field Strength of Fundamental Spurious Radiation (Cont.)

- 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).

Test Equipment:	i00049, i00028, i00056, i00267, i00276
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Test Setup: Fundamental Radiated Emissions

State: Fundamental Emission



The fundamental output level was 88.5 dBuV/mtr taken at 3 meters. The limit for the fundamental emission is 50mV/mtr taken at 3 meters (15.249(a,c)). Converting the output level yields the following: $\mu\text{V/mtr} = 10^{(E/20)} = 15.13\mu\text{V/mtr}$

For the Limit: $50\text{mV/mtr} * 1000\mu\text{V/mV} = 50000\mu\text{V/mtr}$

$15.13\mu\text{V/m} \lll 50000\mu\text{V/mtr}$ **PASS**

Name of Test: Field Strength of Spurious Radiation (harmonic related)

Specification: 47 CFR 2.1053(a)

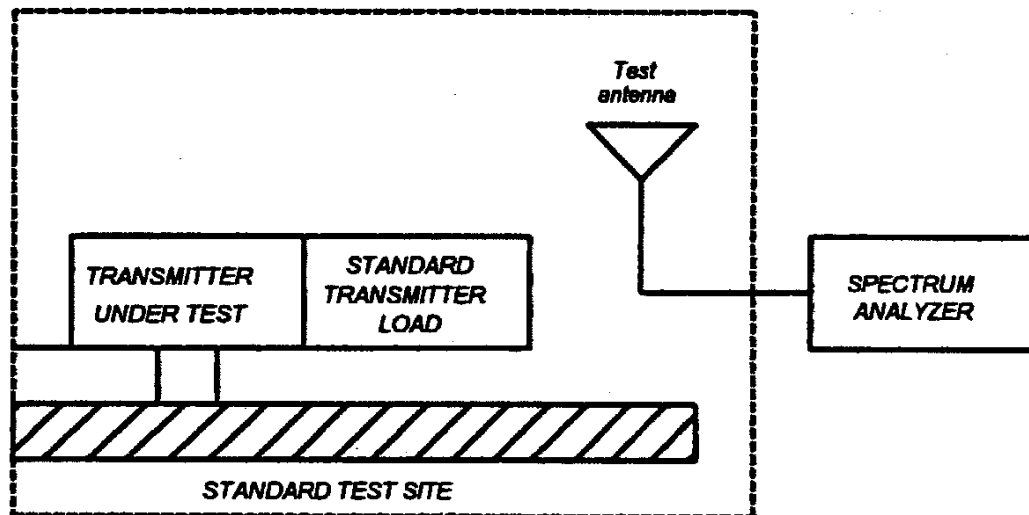
Guide: ANSI C.63.4-2004

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.



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

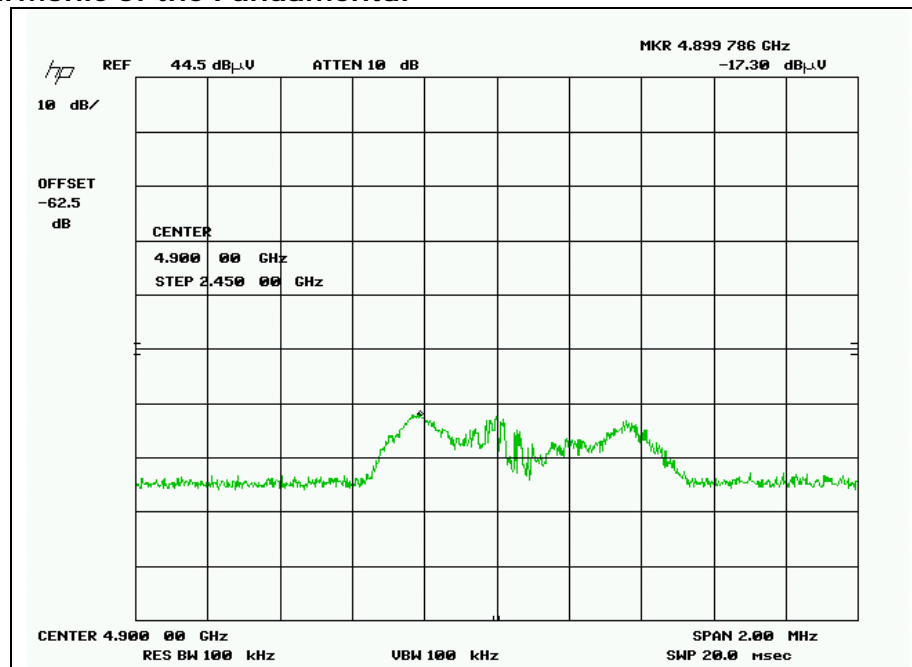
- D) For each spurious measurement the test antenna should be adjusted to the correct length for the frequency involved. This length may be determined from a calibration ruler supplied with the equipment. Measurements shall be made from the lowest radio frequency generated in the equipment to the tenth 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).

Test Equipment:

Asset (as applicable)	Description	s/n	Cycle	Last Cal
Transducer				
i00088	EMCO 3109-B 25MHz-300MHz	2336	24 mo.	Sep-06
i00089	Apriel 2001 200MHz-1GHz	001500	24 mo.	Sep-06
i00103	EMCO 3115 1GHz-18GHz	9208-3925	24 mo.	Sep-06
Amplifier				
i00028	HP 8449A	2749A00121	12 mo.	Jan-07
Spectrum Analyzer				
i00029	HP 8563E	3213A00104	12 mo.	Jan-07
i00033	HP 85462A	3625A00357	12 mo.	Jan-07
i00048	HP 8566B	2511AD1467	6 mo.	Jan-07

Test Setup: Radiated Emissions

State: 2nd Harmonic of the Fundamental



Name of Test: Field Strength of Spurious Radiation

The 2nd harmonic output level was -17.30dBuV/mtr taken at 3 meters. The limit for the harmonic emissions is 500uV/mtr taken at 3 meters (15.249(a, c)). Converting the output level yields the following:

$$\text{uV/mtr} = 10^{(E/20)} = .136\text{uV/mtr}$$

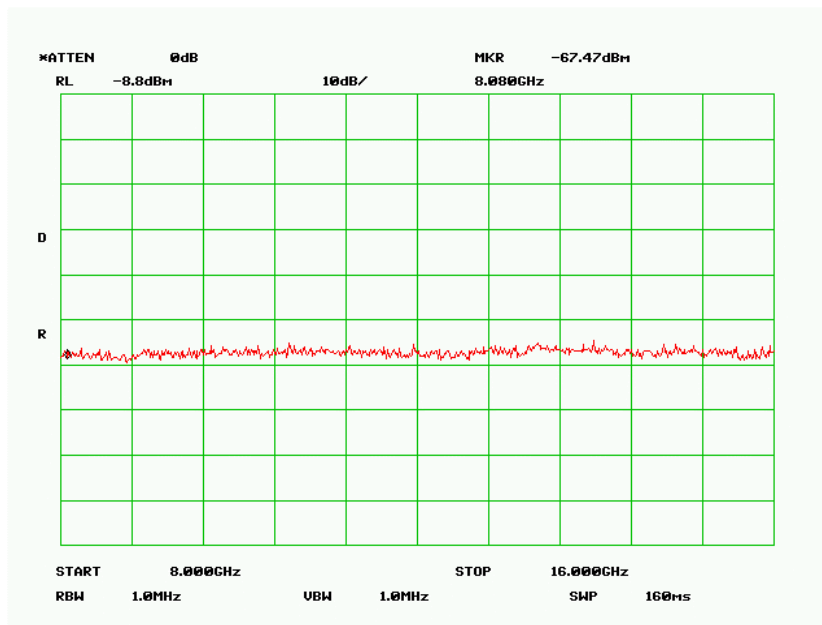
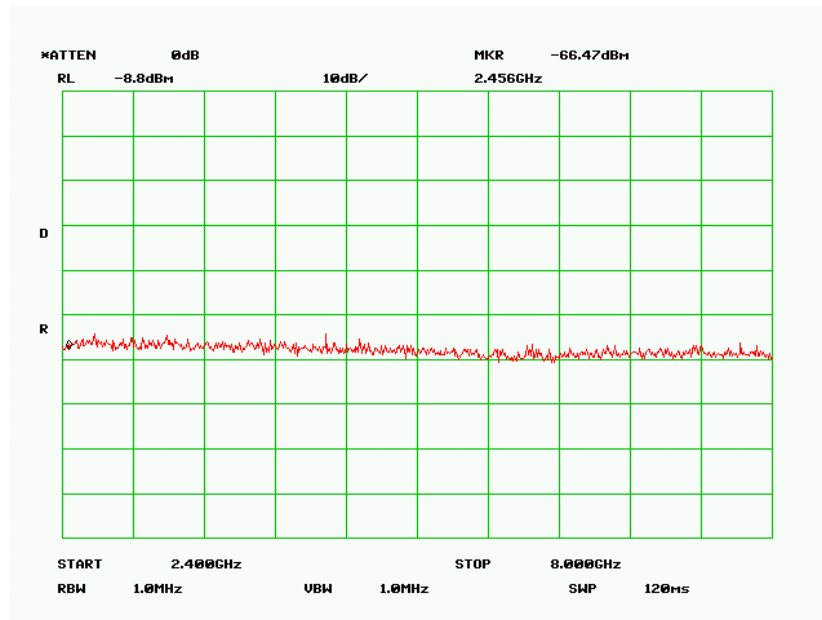
0.136uv/mtr <<< 500uV/mtr PASS

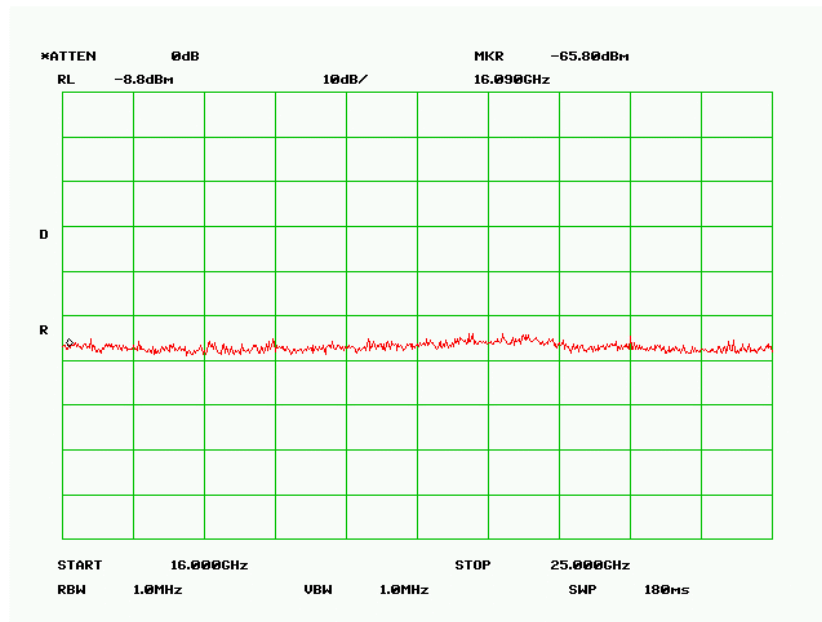
Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV	CF, dB	uV/m @3m	Limit, uV/mtr
2450.0	4900.000	-17.30	62.5	.136	500

No other observable spurious emissions were observed past the 2nd harmonic up to the 10th harmonic.

Name of Test: Field Strength of Spurious Radiation 15.249(d)

A panoramic display of the Spurious Emissions of the EUT taken with the EUT transmitting at 2441MHz.





The preceding pictures show the spurious emissions (excluding harmonics) of the EUT with the transmitter running at 2441MHz. All spurious emissions are below 38 dBuV/mtr across the band from 2400Mhz to 25GHz. The limit for spurious emission from 15.209 is 54dBuV/mtr.

Therefore there are no observable spurious emissions that extend above 54dBuV/mtr.

Name of Test: Peak vs. Average Field Strength limits 15.249(e)

The peak field strength of any emission shall not exceed the maximum permitted average limits specified by more than 20 dB under any condition of modulation. The peak readings taken on the Spurious 2nd harmonics were less than the average limit of 54 dBuV/mtr

The second harmonic of the fundamental shows up on the analyzer. The following are the results of the testing.

Tuned Freq (MHz)	Emission Freq (MHz)	Monitored Level (dBuV/m)	Detector	Limit (dBuV/m)	Result
2402	4803	53.3	Peak	74	Pass
2402	4803	32.3	Average	54	Pass
2441	4882	48.3	Peak*	74	Pass
2478	4956	46.8	Peak*	74	Pass

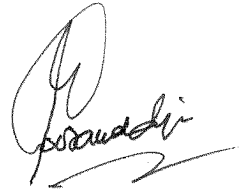
There were no observable harmonics past the 2nd harmonic all the way up to the 10th harmonic.

<p style="text-align: center;">Testimonial and Statement of Certification</p>
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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.

Flom Test Lab



Hoosamuddin S. Bandukwala, Lab Director