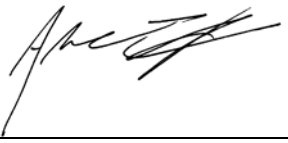
Nemko Test Report:	3651RUS1
Applicant:	RF Code, Inc. 1250 S Clearview Ave Ste 104 Mesa AZ 85208
Equipment Under Test: (E.U.T.)	433 MHz RF Code Security Tag
In Accordance With:	**FCC Part 15, Subpart C** For Low Power Transmitters Operating Periodically In The Band 40.66 - 40.77 MHz And Above 70 MHz
Tested By:	Nemko USA, Inc. 802 N. Kealy Lewisville, TX 75057-3136

TESTED BY: _____ **DATE:** **20 February 2007**

David Light, Senior Wireless Engineer



APPROVED BY: _____ **DATE:** **21 February 2007**

Abe Cox, Key Account Manager

Total Number of Pages: 20

TABLE OF CONTENTS

Section 1. Summary of Test Results

Manufacturer: RF Code, Inc.

Model No.: 433 MHz

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, Subpart C, Paragraph 15.231. All tests were conducted using measurement procedure ANSI C63.4-2003. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.

☒ New Submission ☒ Production Unit

☐ Class II Permissive Change ☐ Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE.
See " Summary of Test Data".

NVLAP®
LAB CODE: 100426-0

Summary Of Test Data

Name of Test	Paragraph No.	Results
Transmission Requirements	15.231(a)	Complies
Radiated Emissions	15.231(b)	Complies
Occupied Bandwidth	15.231(c)	Complies
Frequency Tolerance	15.231(d)	NA 1
Alternate Field Strength Requirements	15.231(e)	NA 2
Powerline Conducted Emissions	15.207	NA 3

Footnotes:

1) The device does not operate within the frequency band 40.66-40.70 MHz
2) The device complies with the requirements of 15.231(a)(3)
3) The device is battery powered.

Section 2. Equipment Under Test (E.U.T.)

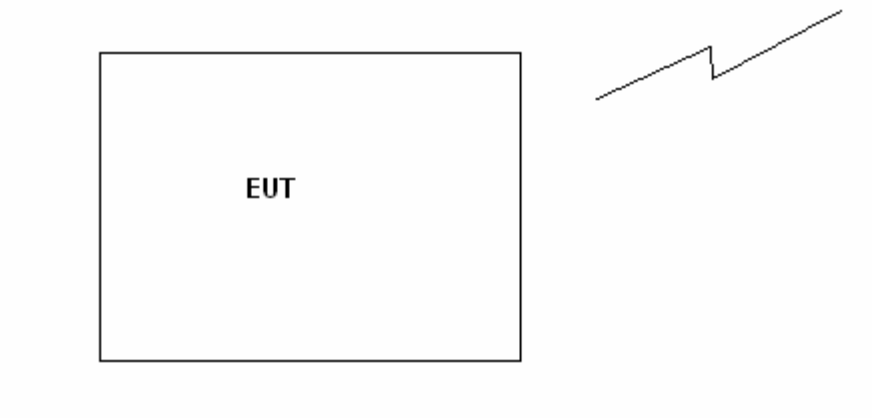
General Equipment Information

Frequency Range:	433.92 MHz Fixed
Operating Frequency(ies) of Sample:	433.92 MHz
Type of Emission:	ASK
Supply Power Requirement:	3 Vdc battery
Duty Cycle Correction Factor:	-14.2 dB (Not used)

Description of E.U.T.

The system provides security for tagged items by monitoring the tag transmissions and signal strength. This data allows determination of each tags' physical location. Movement past a chokepoint, such as a door, or movement beyond a security perimeter can be monitored on a real-time basis.

System Diagram



EUT is a stand alone device

Section 3. Transmission Requirements

NAME OF TEST: Transmission Requirements	PARA. NO.: 15.231(a)
TESTED BY: David Light	DATE: 20 February 2007

Minimum Standard:

15.231(a) Continuous transmissions such as voice, video or data transmissions are not permitted.

15.231(a)(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds after being released.

15.231(a)(2) A transmitter activated automatically shall cease transmission within 5 seconds of activation.

15.231(a)(3) Periodic transmissions at regular pre-determined intervals are not permitted. However polling or supervisory transmissions to determine system integrity of transmitters used in security or safety applications are allowed if the periodic rate of transmission does not exceed one transmission of not more than two seconds duration per hour for each transmitter.

15.231(a)(4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm.

Test Results: Complies.

Test Data: Compliance was determined by verification of technical specifications and a functional test on the equipment.

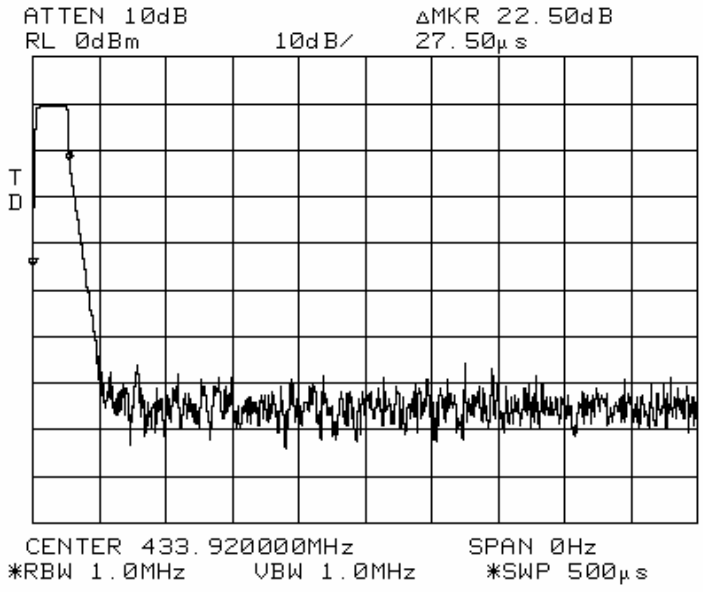
Rationale for Compliance with Transmission Requirements

15.231(a)(1) **15.231(a)(2) :**	☐ Manual activation ☒ Automatic activation	TX deactivation time:
15.231(a)(3) :	☐ Regular, predetermined transmissions ☒ Polling or supervisory transmissions	TX rate and duration:
15.231(a)(4) :	☐ Alarm device operating during the pendancy of alarm condition	
	☒ Non-alarm device	

Test Data – Transmission Requirements

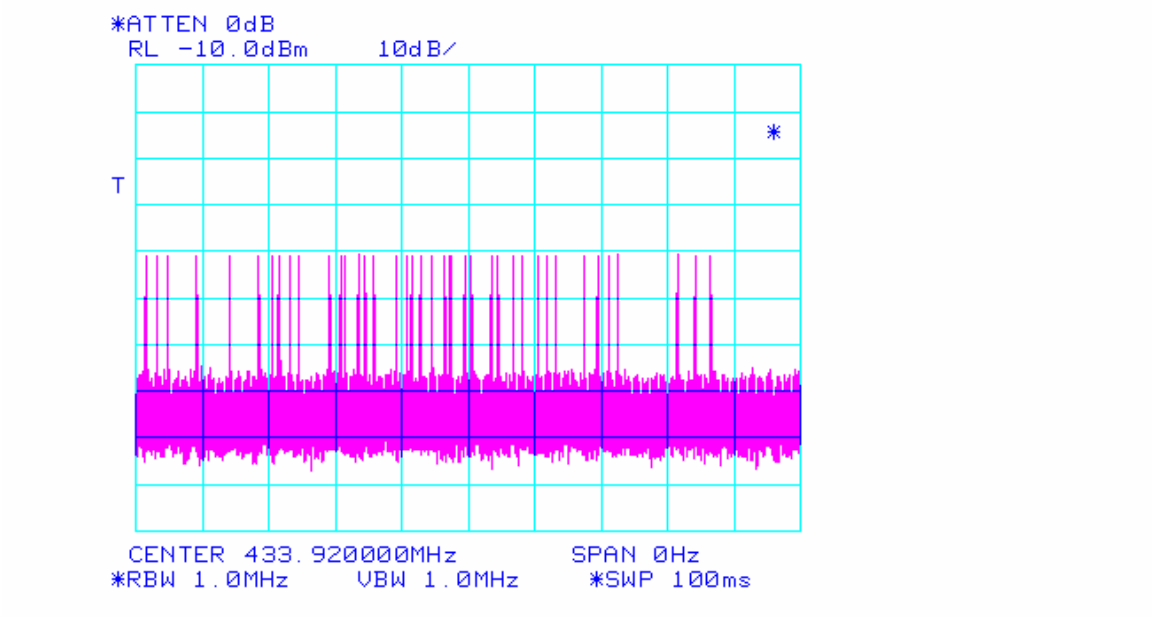
Test Data – Transmission Requirements

Pulse width = 27.5 µS

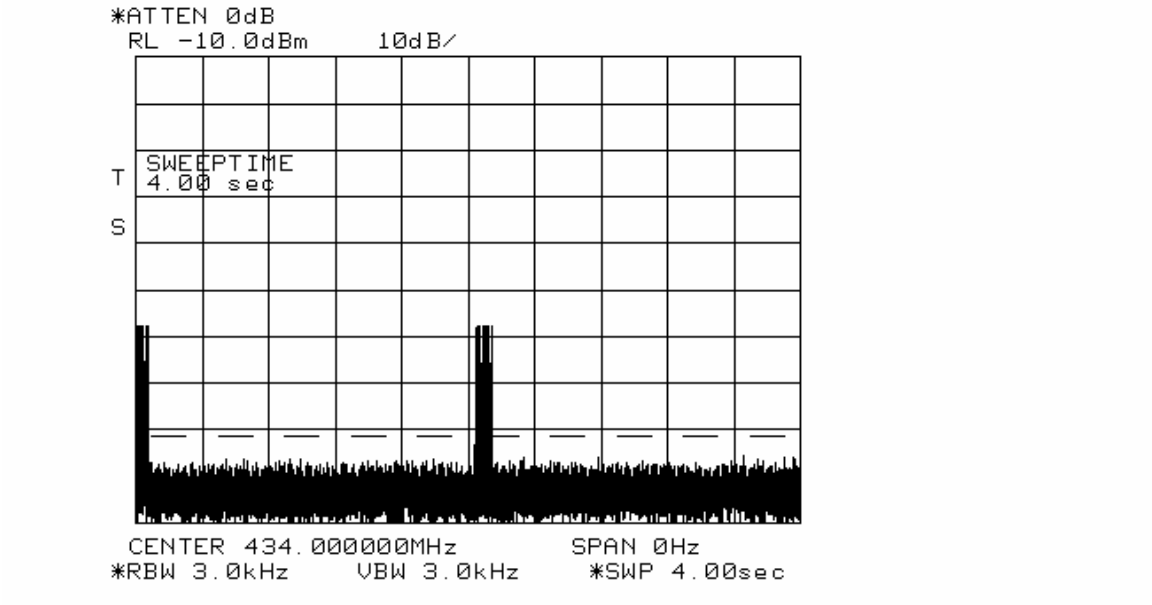


Test Data – Transmission Requirements

40 Pulses in 100 mS (for duty cycle) (1.1 mS)



Tx ON time = 1.1 mS within 2 second interval. Deactivate time less that 5 seconds. 15.231 (a)(2)



1.1 mS pulse train x 1800 pulse trains per hour = 1.980 seconds ON time within 1 hour 15.231(a)(3)

Section 4. Radiated Emissions

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.231(b)
TESTED BY: David Light	DATE: 20 February 2007

Minimum Standard:

Permissible Field Strength Limits (Momentarily Operated Devices

Fundamental Frequency (MHz)	Field Strength of Fundamental Microvolts/Meter at 3 meters; (watts)	Field Strength of Unwanted Emissions Microvolts/Meter at 3 meters; (watts)
40.66 - 40.70	2,250	225
70-130	1, 250	125
130-174	1,250 to 3,750*	125 to 375
174-260 (note 1)	3,750	375
260-470 (note 1)	3,750 to 12,500*	375 to 1,250
Above 470	12,500	1,250

Notes:

# Use quasi-peak or averaging meter. ** Linear interpolation with frequency F in MHz*	*For 130 - 174 MHz: FS (microvolts/m) = (56.82 x F) - 6136* *For 260 - 470 MHz: FS (microvolts/m) = (41.67 x F) - 7083*

Any emissions that fall within the restricted bands of 15.205 shall not exceed the following limits:

Frequency (MHz)	Field Strength (µV/m @ 3m)	Field Strength (dB @ 3m)
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

Test Results: Complies. The worst-case emission level is 59.2 dBµV/m @ 3m at 868 MHz. This is 1.6 dB below the specification limit.

Test Data: See attached table.

Spectrum Analyzer Settings: Below 1 GHz – RBW=VBW=100 kHz Peak detector
Above 1 GHz – RBW=VBW=1 MHz Peak detector

In the case of handheld equipment, the E.U.T. is rotated in three planes to obtain worst-case results.

Test Data - Radiated Emissions

Radiated Emissions Data

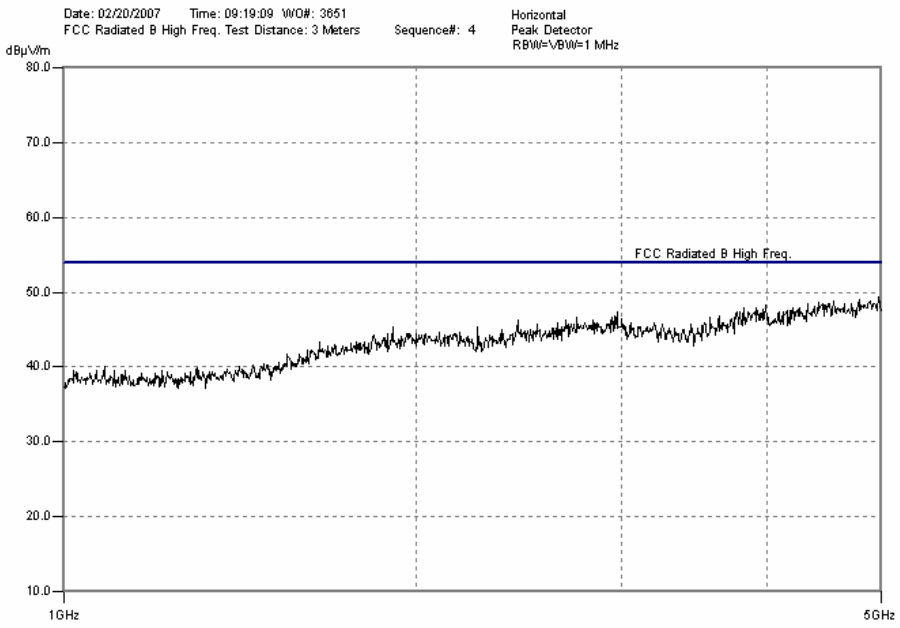
Complete	X			Job # :	3651
Preliminary				Page	1
Test # :	REHE-01				
of	1				

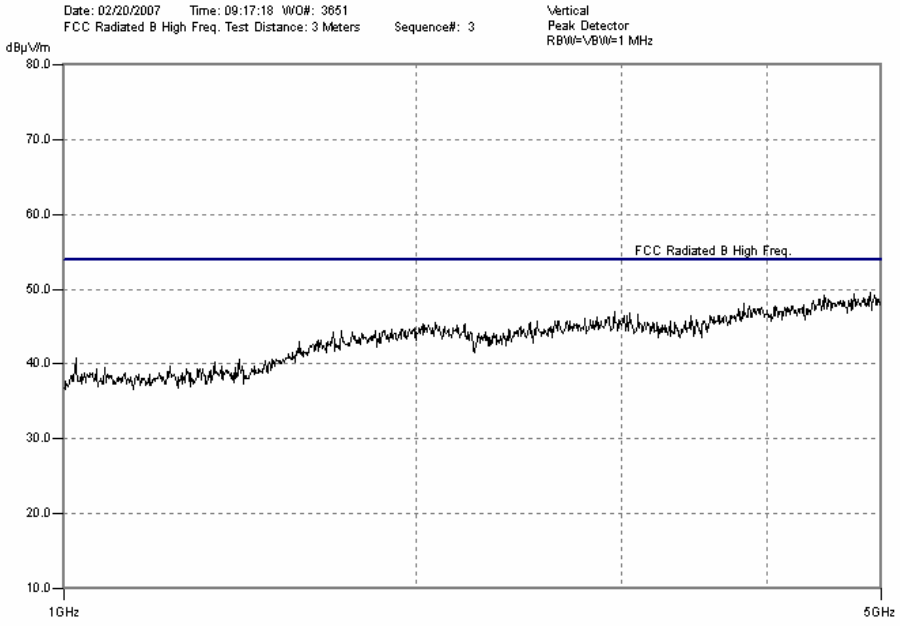
Client Name :	RF Code, Inc.				
EUT Name :	RF Code Security Tag				
EUT Model # :	433 MHz				
EUT Part # :	00048540				
EUT Serial # :	00048540				
EUT Config. :	Tx - Stand alone				
Specification :	CFR47 Part 15.231			Reference :	CFR 47, Part 15.205
Rod. Ant. #:		Temp. (deg. C) :	21	Date :	02/20/07
Bicon Ant.#:	760	Humidity (%) :	32	Time :	10:00
Log Ant.#:	1304	EUT Voltage :	3	Staff :	D. Light
Horn Ant.#:	993	EUT Frequency :	dc	Photo ID:	NA
Dipole Ant.#:		Phase:	na	Peak Bandwidth:	100 KHz
Cable#:	1522	Location:	D oats	Video Bandwidth	100 KHz
Preamp#:	678	Distance:	3 m	QP Bandwidth:	120 KHz
Preamp#:	1016	Barometric pressure:	1016		
Atten #:	NA				
Detector#:	1464				

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	QP readings Comment
434	H	0	59.6	17.6	8.0	13.4	71.8	80.8	-9.0	Pass	
436	V	0	39	17.6	8.0	13.4	51.2	80.8	-29.6	Pass	
868	H	0	37	23.2	11.9	12.9	59.2	60.8	-1.6	Pass	
868	V	0	28	23.2	11.9	12.9	50.2	60.8	-10.6	Pass	
The spectrum was searched from 30 MHz to 5000 MHz.											
Any emissions within 20 dB of the specification limit are reported.											

The device was tested with a fresh battery

Test Data - Radiated Emissions





Radiated Photograph

Section 5. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 15.231(c)
TESTED BY: David Light	DATE: 20 February 2007

Minimum Standard: 15.231(c) The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

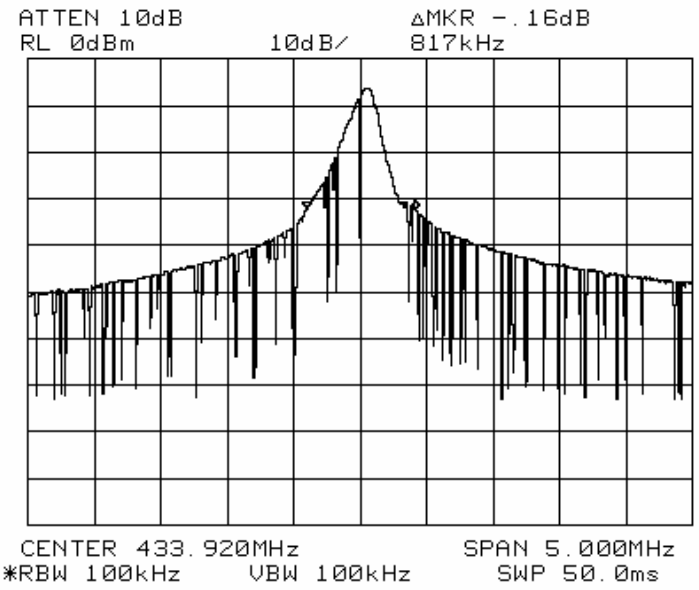
Test Results: Complies. See attached graph.

Test Data: See attached graph.

Test Data – Occupied Bandwidth

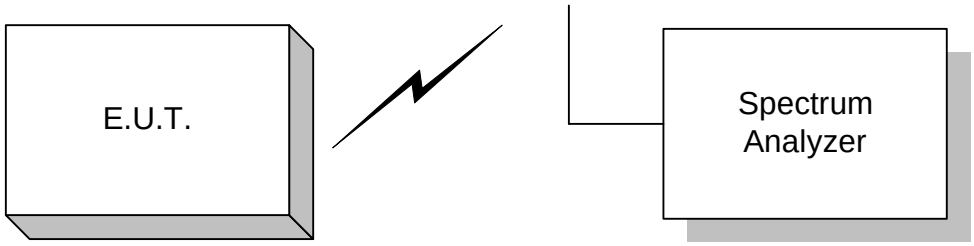
26 dB Bandwidth = 817 kHz

Limit = 0.25% of carrier = 1.08 MHz

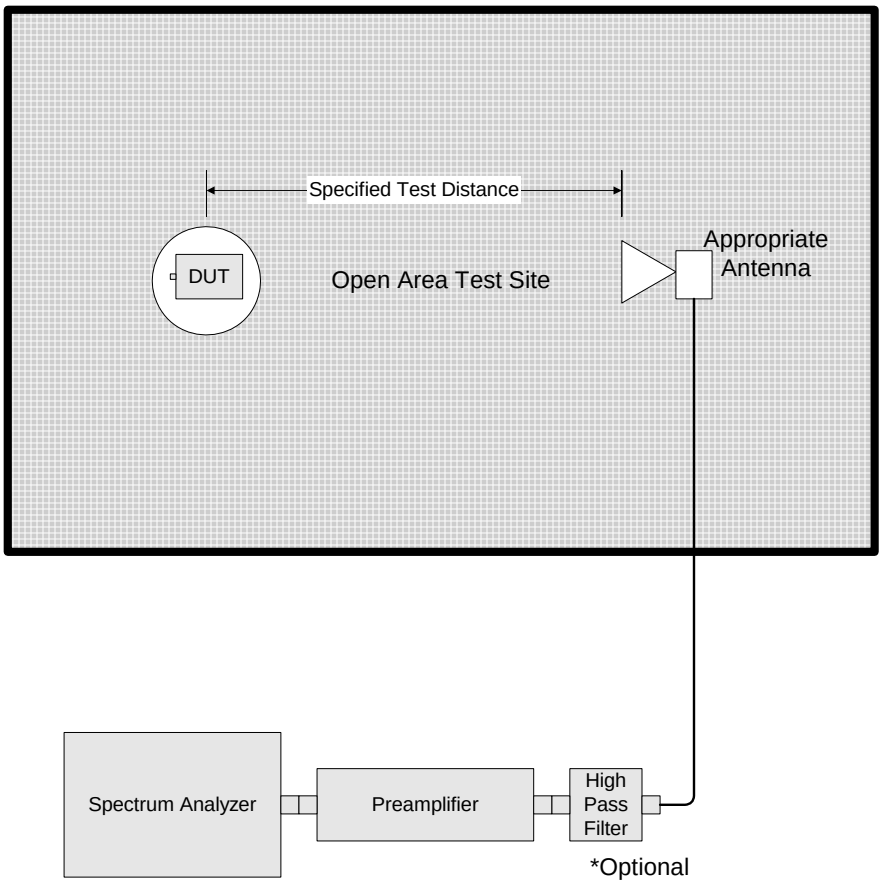


Section 6. Block Diagrams

Occupied Bandwidth, Duty Cycle

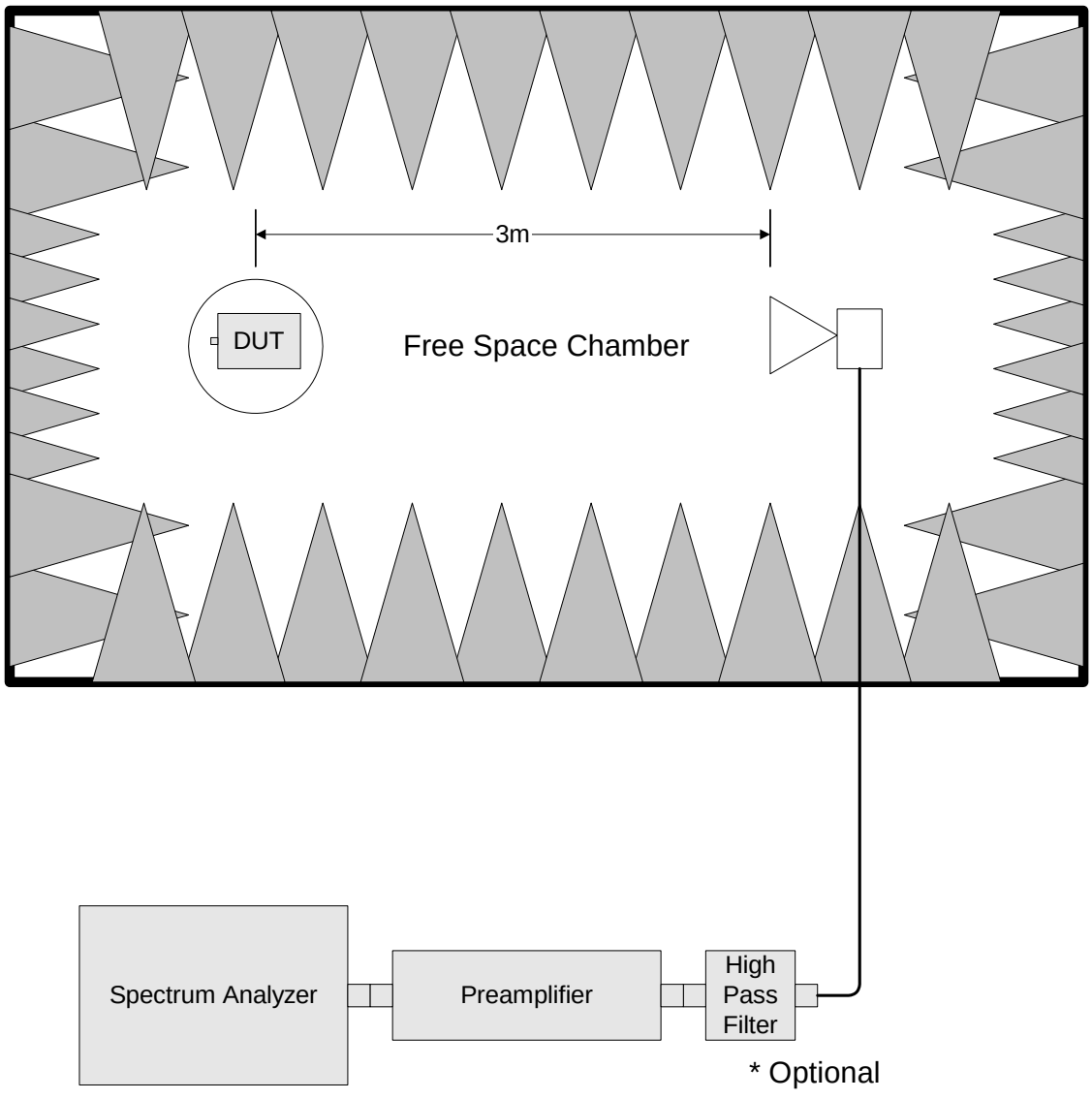


Outdoor Test Site For Radiated Emissions



Radiated Emissions 30 MHz - 1 GHz

The spectrum was searched up to the 10th harmonic of the fundamental frequency of operation.



Radiated Emissions above 1 GHz

Section 7. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
760	Antenna biconical	Electro Metrics MFC-25	477	01/19/07	01/19/08
1304	HORN ANTENNA	ELECTRO METRICS RGA-60	6151	07/28/06	07/28/08
993	Horn antenna	A.H. Systems SAS-200/571	XXX	08/01/05	08/02/07
1522	Cable Assy, LAB 5 - D OATS	Nemko USA, Inc. Site D OATS	N/A	05/09/06	05/09/07
678	PREAMP, 15DB	Nemko USA, Inc. 30MHZ-1.4GHZ	408	10/03/06	10/03/07
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	04/20/06	04/20/07
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	01/24/07	01/24/09

ANNEX A - RESTRICTED BANDS

Annex A Restricted Bands of Operation

(a) Except as shown in paragraph (d) 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	4.5-5.15
0.49 - 0.51	16.69475-16.69525	608-614	5.35-5.46
2.1735 - 2.1905	16.80425-16.80475	960-1240	7.25-7.75
3.020 - 3.026	25.5-25.67	1300-1427	8.025-8.5
4.125 - 4.128	37.5-38.25	1435-1626.6	9.0-9.2
4.17725 - 4.17775	73-74.6	1645.5-1646.5	9.3-9.5
4.20725 - 4.20775	74.8-75.2	1660-1710	10.6-12.7
6.215 - 6.218	108-121.94	1718.8-1722.2	13.25-13.4
6.31175 - 6.31225	123-138	2220-2300	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	322-335.4	3600-4400	Above 38.6
13.36 - 13.41			