Nemko Test Report:	5L0529RUS1
Applicant:	Capton Inc. 601 Montgomery Street Suite 700 San Francisco, CA 98111
Equipment Under Test: **(E.U.T.)**	Beverage Tracker
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
Authorized By:	
Date:	06 December 2005

NVLAP LAB CODE: 100426-0

TABLE OF CONTENTS

Section 1. Summary of Test Results

Manufacturer: Capton Inc.

Model No.: NA

Sample No.	Serial No.	Date Received	Modification Status
1	NA	11/17/2004	PRE PRODUCTION

N/A - Not modified from original state

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
Alternate Field Strength Requirements	15.231(e)	NA
Powerline Conducted Emissions	15.207	NA

Footnotes:

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

General Equipment Information

Frequency Range:	433.9 MHZ FIXED
Operating Frequency(ies) of Sample:	433.9 MHZ
Type of Emission:	OOK
Supply Power Requirement:	3 VOLTS DC Battery
Duty Cycle Correction Factor:	NONE

Description of E.U.T.

The Beverage Tracker is a liquor-monitoring device.

Modifications Incorporated in E.U.T.

The EUT has not been modified from what is described by the brand name and unique type identification stated above.

Test Configuration

The E.U.T. was configured for testing as per typical installation.

The following combinations were investigated to establish worst case configuration:

(1) EUT was place in three orthogonal axis and was found to be worst case on its side.
(2) The EUT was tested with a new battery.

Exercise Mode

The E.U.T. exercise mode used during radiated and conducted testing was designed to exercise the various system components in a manner similar to typical use.

Exercise mode:

(1) Modified to transmit rf carrier continuously

Section 3. Equipment Configuration

Equipment Configuration List:

Item	Description	Model No.	Serial.	Rev.
(A)	Beverage Tracker	NA	NA	-

Inter-connection Cables:

Item	Description	Length (m)
(1)	NO CABLES	

Configuration of the Equipment Under Test (E.U.T)

Continuous Transmit

Section 4. Transmission Requirements

NAME OF TEST: Transmission Requirements	PARA. NO.: 15.231(a)
TESTED BY: Kevin Rose	DATE: May 4, 2005

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.

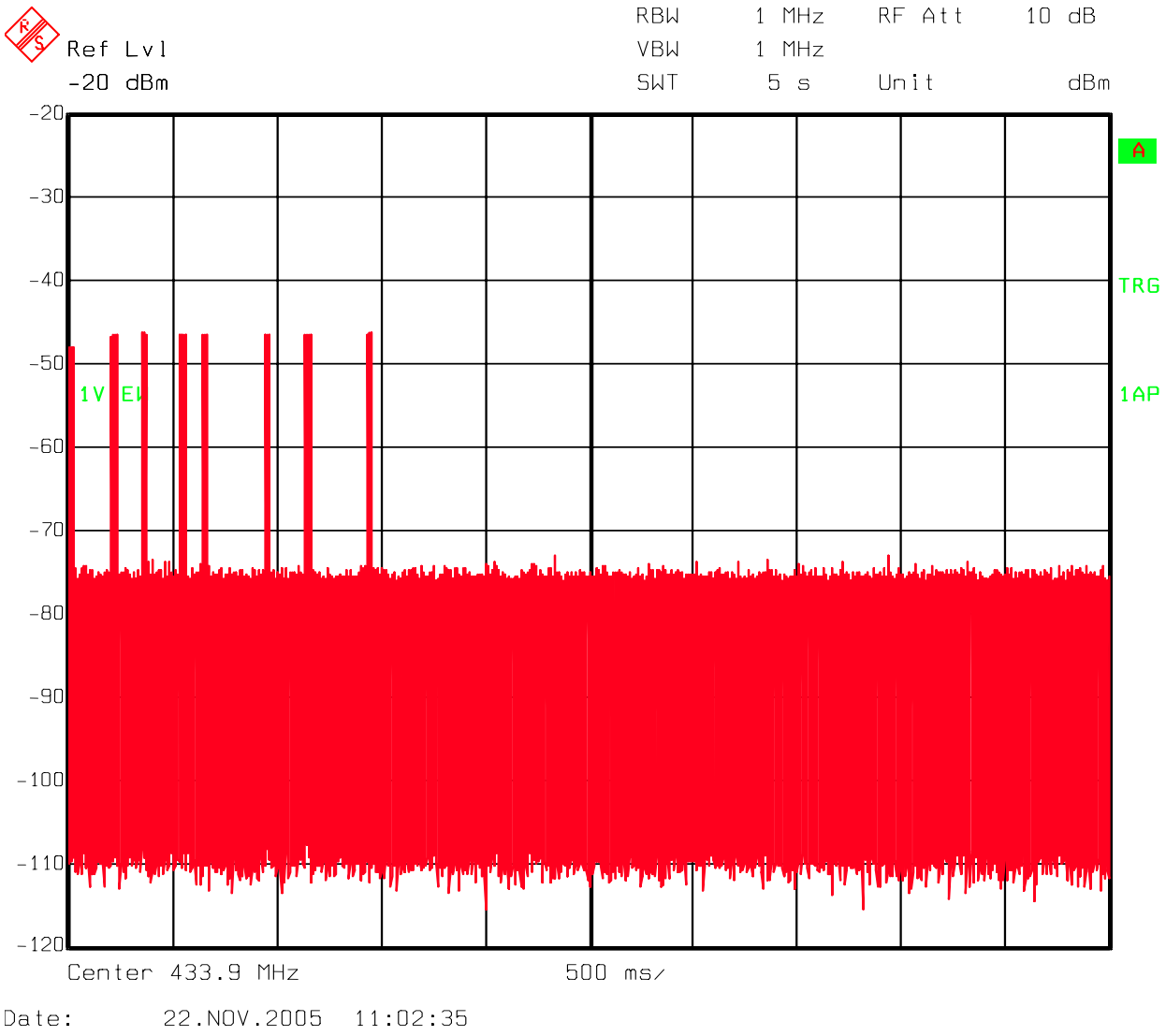
15.231(a)(2) A transmitter activated automatically shall cease transmission within 5 seconds of activation.

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 one second 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 See Attached Graphs.

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



Transmitter Release Time < 150 mS

Rationale for Compliance with Transmission Requirements

15.231(a)(1) **15.231(a)(2) :**	☒ Manual activation ☐ Automatic activation	TX deactivation time: <10 nanosec.
15.231(a)(3) :	☐ Regular, predetermined transmissions ☐ Polling or supervisory transmissions	No polling or regular predetermined transmissions.
15.231(a)(4) :	☐ Alarm device operating during the pendancy of alarm condition	
	☒ Non-alarm device	

The device is designed to transmit when the drink canister is tipped. The device transmits a short ID transmission and ceases to transmit until the canister is tipped again.

Section 5. Radiated Emissions

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.231(b)
TESTED BY: Kevin Rose	DATE: November 24, 2005

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.	*For 130 - 174 MHz: FS (microvolts/m) = (56.82 x F) - 6136*
** Linear interpolation with frequency F in MHz*	*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 50.2 dBµV/m @ 3m at 4339 MHz in the vertical polarity. This is 3.8 dB below the specification limit of 54 dBµV/m.

Test Data: See attached table.

Above 1 GHz a spectrum analyzer and low noise amplifier are used to measure emission levels. The spectrum analyzer resolution bandwidth was set to 1 MHz and video bandwidth was 3 MHz.

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

The device was tested with a new battery.

Test Data - Radiated Emissions

Radiated Emissions Data

Complete X
Preliminary

Job # : 5l0529R
Page 1

Test # : REHE-01
of 1

Client Name : Capton Inc.
EUT Name : Beverage Tracker
EUT Model # : na
EUT Part # : na
EUT Serial # : na
EUT Config. : CW tx full power

Specification : 15.231
Reference :

Rod. Ant. #:
Bicon Ant.#:
Log Ant.#: 759
Horn Ant.#: 993
Dipole Ant.#:
Cable#: 1522
Preamp#: 10
Limiter#: na
Atten #: na
Detector#: 1659

Temp. (deg. C) : 18
Humidity (%) : 29
EUT Voltage : 3DC
EUT Frequency : NA
Phase: NA
Location: D OATS
Distance: 3

Date : 11/28/05
Time : 9:00
Staff : Kevin Rose
Photo ID: 5L0529 REHE-01
Peak Bandwidth: 100 KHz
Video Bandwidth 100 KHz

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
433	V		39.17	17.5	7.8	0.0	64.5	80.8	-16.3	Pass	FLAT ORIENTATION
433	H		49.3	17.5	7.8	0.0	74.6	80.8	-6.2	Pass	
868	V		47.5	23.2	1.7	28.7	43.7	60.8	-17.1	Pass	
867.7	H		56.7	23.2	1.7	28.7	52.9	60.8	-7.9	Pass	
1300	V		50.0	24.6	2.0	31.7	44.9	54.0	-9.1	Pass	
1300	H		47.7	24.6	2.0	31.7	42.6	54.0	-11.4	Pass	
1733	V		51.8	26	2.2	31.8	48.2	60.8	-12.6	Pass	
1733	H		57.0	26	2.2	31.8	53.4	60.8	-7.4	Pass	
2170	V		50.5	29	2.7	33	49.2	60.8	-11.6	Pass	
2170	H		52.5	29	2.7	33	51.2	60.8	-9.6	Pass	
2603	V		49.2	29.1	3.1	32.8	48.6	60.8	-12.2	Pass	
2603	H		50.3	29.1	3.1	32.8	49.7	60.8	-11.1	Pass	
3037	V		56.3	29.7	3.5	32.5	57.0	60.8	-3.8	Pass	
3037	H		55.8	29.7	3.5	32.5	56.5	60.8	-4.3	Pass	
3471	V		47.0	29.9	3.7	32.7	47.9	60.8	-12.9	Pass	
3471	H		44.0	29.9	3.7	32.7	44.9	60.8	-15.9	Pass	
3905	V		48.3	31	3.8	32.8	50.3	54.0	-3.7	Pass	
3905	H		46.2	31	3.8	32.8	48.8	54.0	-5.2	Pass	
4339	V		45.8	32	3.9	31.5	50.2	54.0	-3.8	Pass	
4339	H		42.8	32	3.9	31.5	47.2	54.0	-6.8	Pass	
											scanned from
											30-4400MHz

..\EMCShare\AUTOMATE\DATASHTS\RADEMEV Rev C.xls Document Control #EMC DS EM RAD HFE

All measurements are PEAK.

Radiated Photographs (Worst Case Configuration)

FRONT VIEW

REAR VIEW

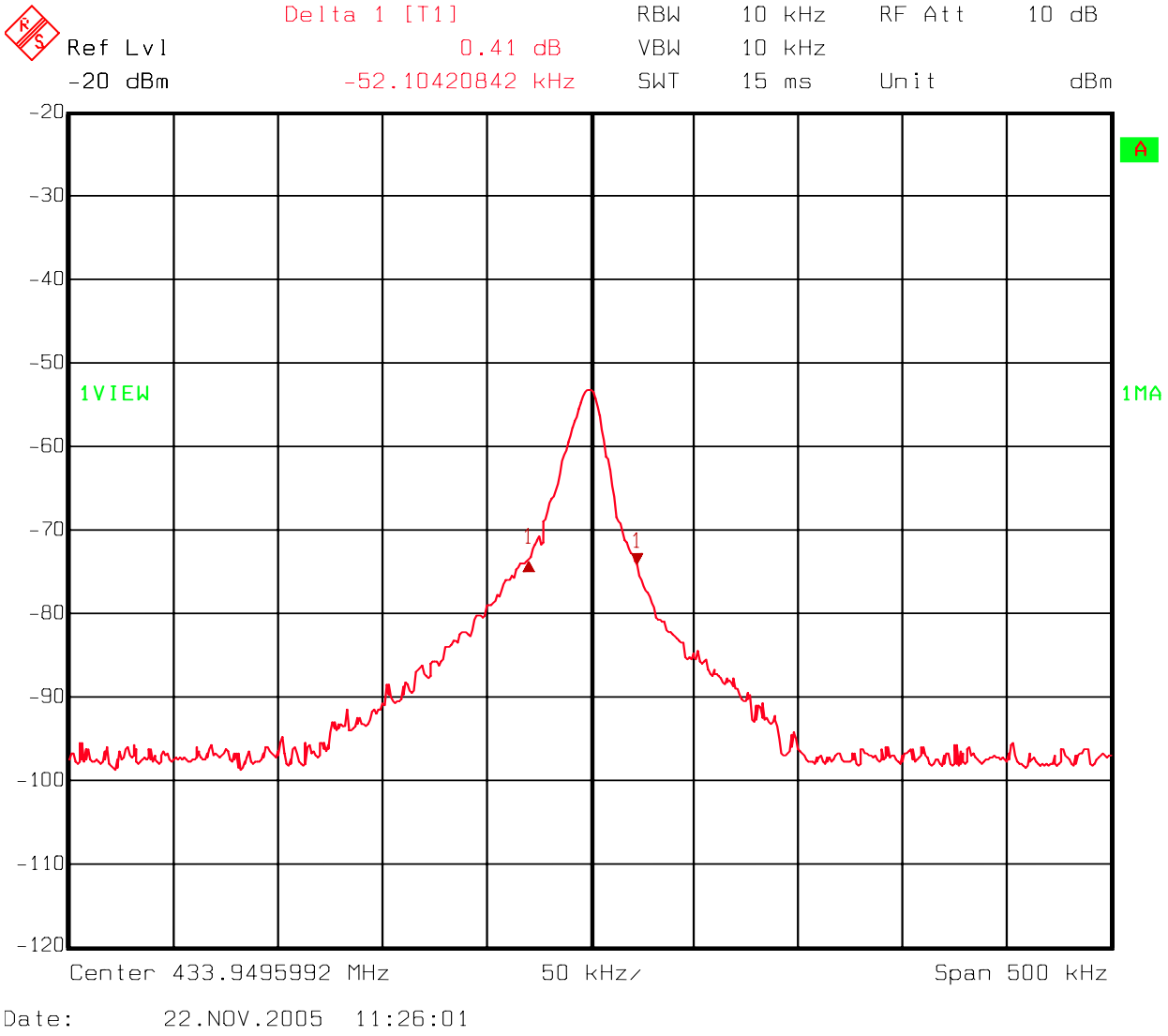
Section 6. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 15.231(c)
TESTED BY: Kevin Rose	DATE: November 24, 2005

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.

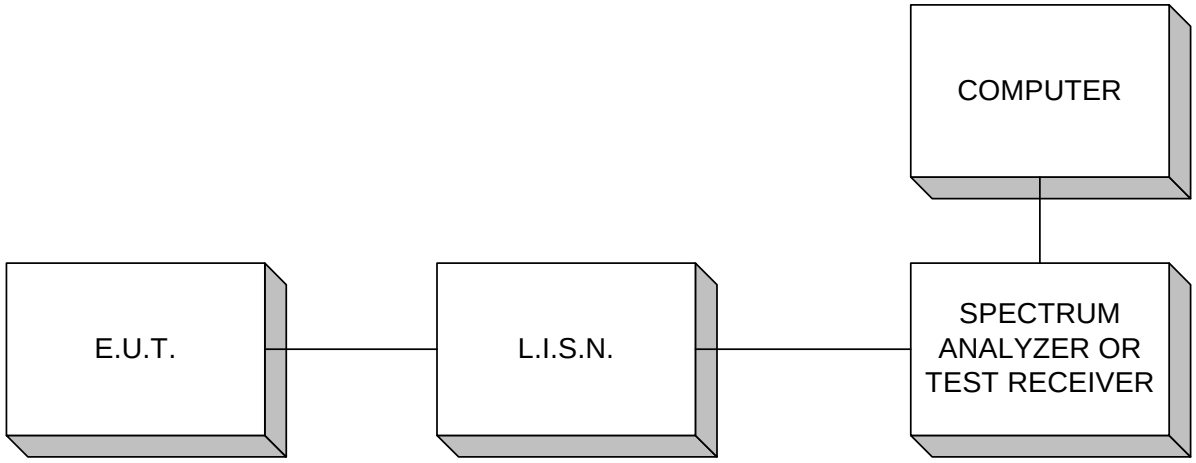
Test Results: Complies. See attached graph.

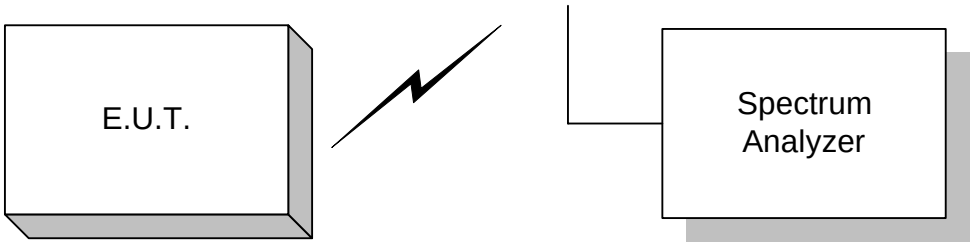
Test Data: See attached graph.


Delta 1 [T1]
RBW 10 kHz
RF Att 10 dB
Ref Lvl
0.41 dB
VBW 10 kHz
-20 dBm
-52.10420842 kHz
SWT 15 ms
Unit dBm
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
1VIEW
1MA
A
1
1
Center 433.9495992 MHz
50 kHz/
Span 500 kHz
Date: 22.NOV.2005 11:26:01

Section 7. Block Diagrams

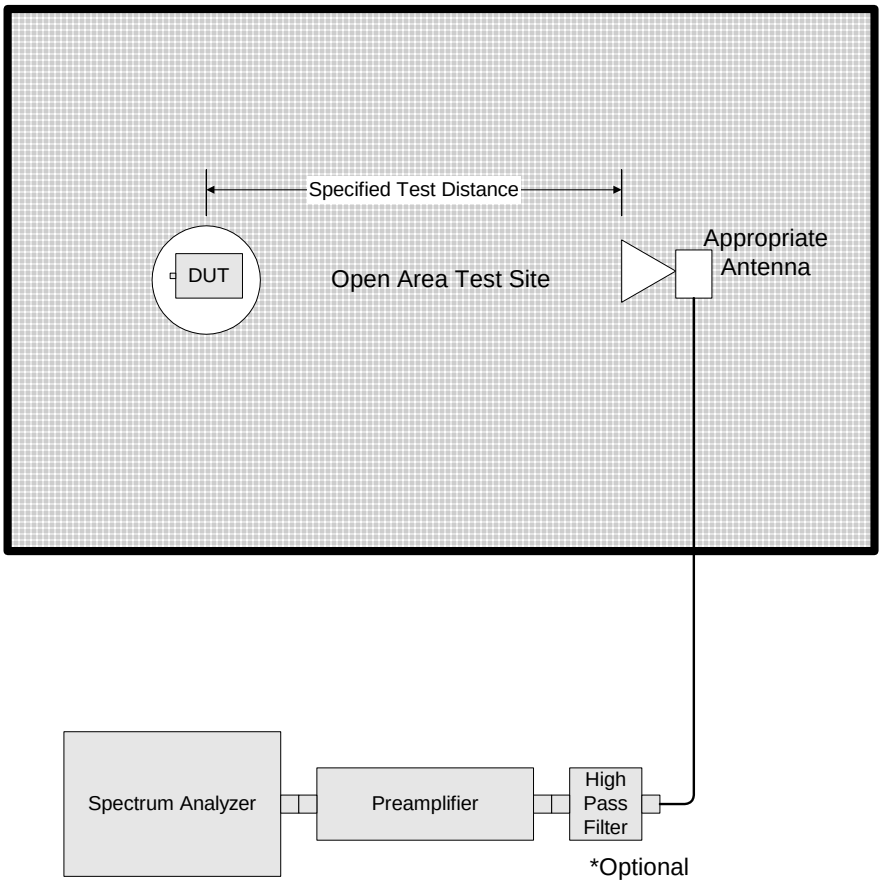
Conducted Emissions





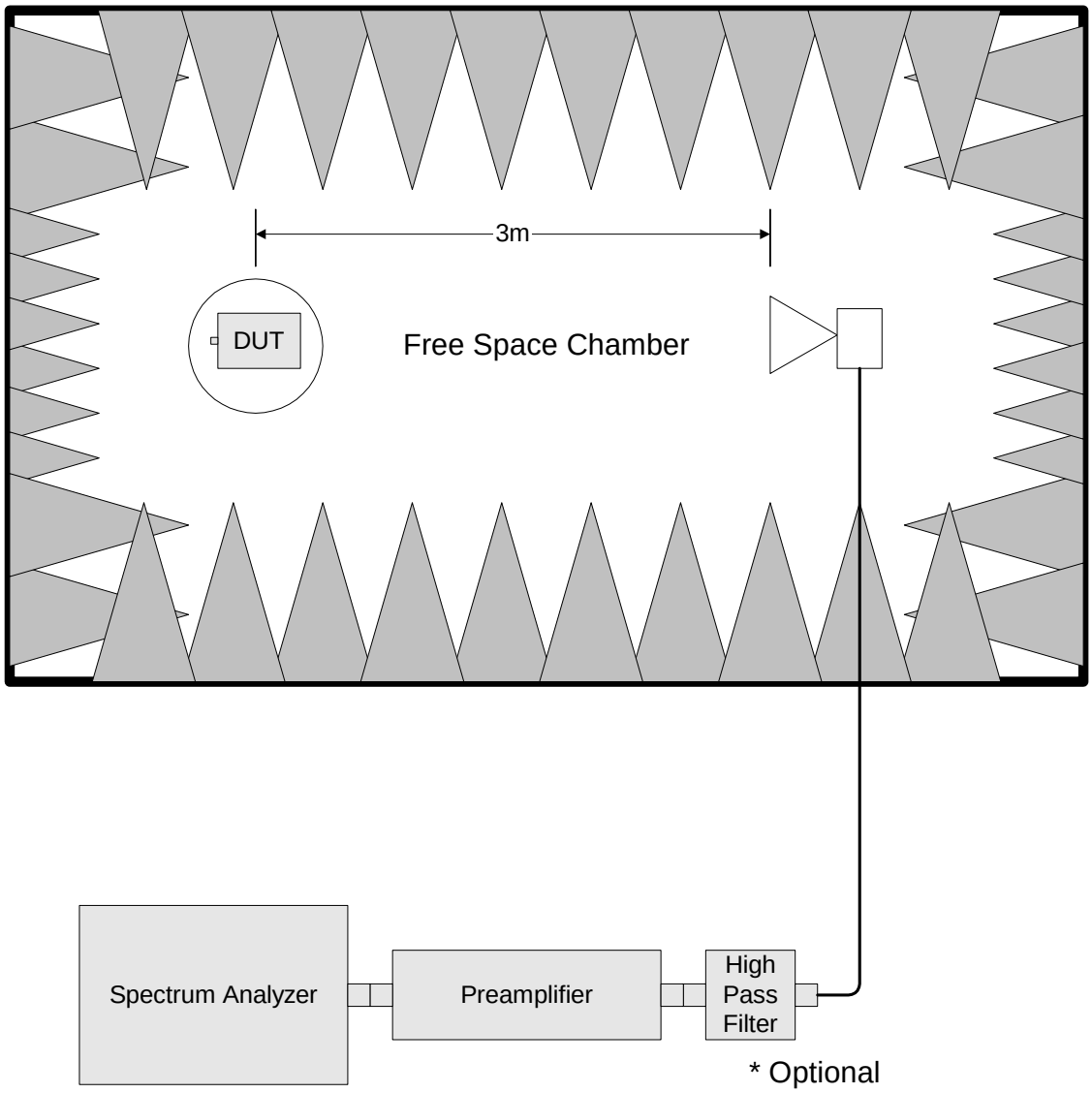
Occupied Bandwidth, Duty Cycle

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 8. Test Equipment List

Nemko ID	Description	Manufacturer / Model Number	Serial Number	Calibration Date	Calibration Due
1484	Cable 2.0-18.0 Ghz	Storm / PR90-010-072	N/A	08/26/05	08/26/06
1485	Cable 2.0-18.0 Ghz	Storm / PR90-010-216	N/A	08/02/05	08/26/06
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ / FSEK30	830844/006	03/23/05	03/23/06
993	Horn antenna	A.H. Systems / SAS-200/571	XXX	08/04/05	08/04/07
1016	Pre-Amp	HEWLETT PACKARD / 8449A	2749A00159	11/12/05	11/12/06
791	PREAMP, 25dB	ICC / LNA25	398	11/12/05	11/12/06
760	Antenna biconical	Electro Metrics / MFC-25	477	08/04/05	08/04/06
759	ANTENNA, LOG PERIODIC	A.H. SYSTEMS / SAS-200/510	556	08/04/05	08/04/06
1482	Band Pass Filter	K & L / 11SH10-4000/T12000-0/0	2	Cal B4 Use	N/A
1481	Microwave Highpass Filter	K & L / 3DH1-2000/T8000-0/0	4	Cal B4 Use	N/A
1464	Spectrum analyzer	Hewlett Packard / 8563E	3551A04428	01/14/05	01/15/07

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			