


Nemko Test Report: 14847RUS1

Applicant: Access Inc.
3208 Commander Drive
Carrollton, TX 75006

**Equipment Under Test:
(E.U.T.)** DOT-433P


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: 

David Light, Senior Wireless Engineer

DATE: 11 August 2008

APPROVED BY: 

DATE: 14 August, 2008

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Section 1. Summary of Test Results

Manufacturer: Axxess, Inc.

Model No.: DOT-433P

Serial No.: None

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 in a semi-anechoic chamber. A description of the test facility is on file with the FCC. FCC site registration number: 90693

- | | | | |
|-------------------------------------|----------------------------|-------------------------------------|---------------------|
| <input type="checkbox"/> | New Submission | <input type="checkbox"/> | Production Unit |
| <input checked="" type="checkbox"/> | Class II Permissive Change | <input checked="" type="checkbox"/> | 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 ON FOLLOWING PAGE.](#)



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This report applies only to the items tested.

Summary Of Test Data

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

Footnotes:

- 1) The EUT operates above 40.70 MHz in accordance with the reduced field strength limits of 15.231(e). The maximum periodic transmit period is once every 15 seconds.
- 2) The EUT is powered by a 3 volt lithium ion battery.

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

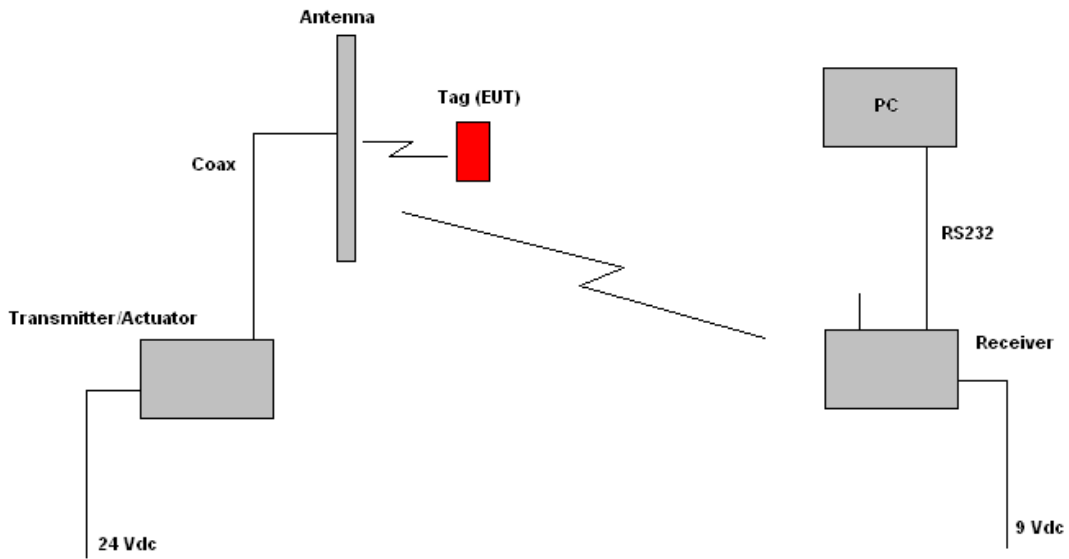
General Equipment Information

Frequency Range:	433.92 MHz
Operating Frequency(ies) of Sample:	433.92 MHz
Type of Emission:	OOK
Supply Power Requirement:	3 Vdc Lithium Ion Battery

Description of E.U.T.

Active RFID tag

System Diagram



Section 3. Periodic Alternate Field Strength Requirements

NAME OF TEST: Periodic Alternate Field Strength Requirements	PARA. NO.: 15.231(e)
TESTED BY: David Light	DATE: 06 August 2008

Minimum Standard: 15.231(e) Intentional radiators may operate at a periodic rate exceeding that specified in paragraph (a) of this section and may be employed for any type of operation, including operation prohibited in paragraph (a) of this section, provided the intentional radiator complies with the provisions of paragraphs (b) through (d) of this section, except the field strength table in paragraph (b) of this section is replaced by the following.

Fundamental Frequency (MHz)	Field Strength of Fundamental Microvolts/Meter at 3 meters	Field Strength of Unwanted Emissions Microvolts/Meter at 3 meters
40.66 - 40.70	1000	100
70-130	500	50
130-174	500 to 1500 ¹	50 to 150 ¹
174-260 (note 1)	1500	150
260-470 (note 1)	1500 to 5000 ¹	150 to 500 ¹
Above 470	5000	500

Notes: ¹Linear interpolation with frequency *F* in MHz

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 (dBμV @ 3m)
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

Test Data: See attached table.

Test Results: Complies. The worst-case emission level is 66.0 dB μ V/m at 433.92 MHz. This is 6.9 dB below the specification limit of 72.9 dB μ V/m.

Test Data - Periodic Alternate Field Strength Requirements

- 1) *The device was tested with a fresh battery per 15.31(e).*
- 2) *The EUT was tested on three orthogonal axis' to determine worst-case orientation.*
- 3) *The spectrum was searched from 30 MHz up to 5 GHz. The ambient threshold of sensitivity was sufficient to detect emissions 20 dB below the specification limit across the spectrum..*

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.	Comment
											Transmit at 20 kbps
433.92	H	0.00	44.80	16.80	2.60	0.00	64.20	72.90	-8.70	Pass	Carrier
433.92	V	0.00	36.40	16.80	2.60	0.00	55.80	72.90	-17.10	Pass	Carrier
867.84	H	0.00	41.40	22.60	3.70	33.80	33.90	52.90	-19.00	Pass	
867.84	V	0.00	33.80	22.60	3.70	33.80	26.30	52.90	-26.60	Pass	
											Transmit at 1 kbps
433.92	H	0.00	46.60	16.80	2.60	0.00	66.00	72.90	-6.90	Pass	Carrier
433.92	V	0.00	37.70	16.80	2.60	0.00	57.10	72.90	-15.80	Pass	Carrier
867.84	H	0.00	37.00	22.60	3.70	33.80	29.50	72.90	-43.40	Pass	
867.84	V	0.00	42.70	22.60	3.70	33.80	35.20	72.90	-37.70	Pass	
867.84	V	0.00	33.80	22.60	3.70	33.80	26.30	52.90	-26.60	Pass	

Analyzer Settings: Below 1000 MHz: RBW/VBW = 100 kHz Peak detector

Above 1000 MHz: RBW/VBW = 1 MHz Peak detector

Test Conditions: 22 %RH
30 °C

Measurement Uncertainty: +/-3.6 dB

Test Equipment Used: 1763-993-1783-1785-1659-1767

Repetition rate is programmable in the factory and will not be any faster than once every 15 seconds.

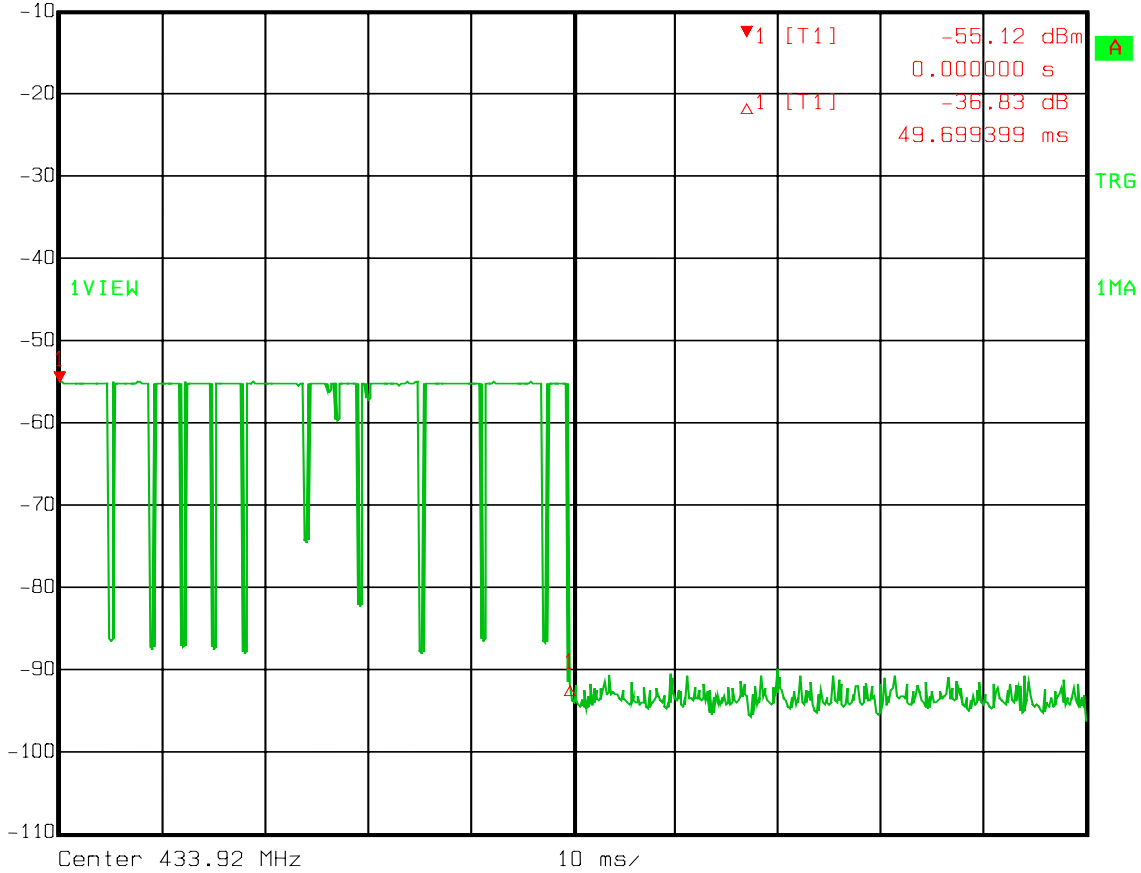
Pulse width



Ref Lvl
-10 dBm

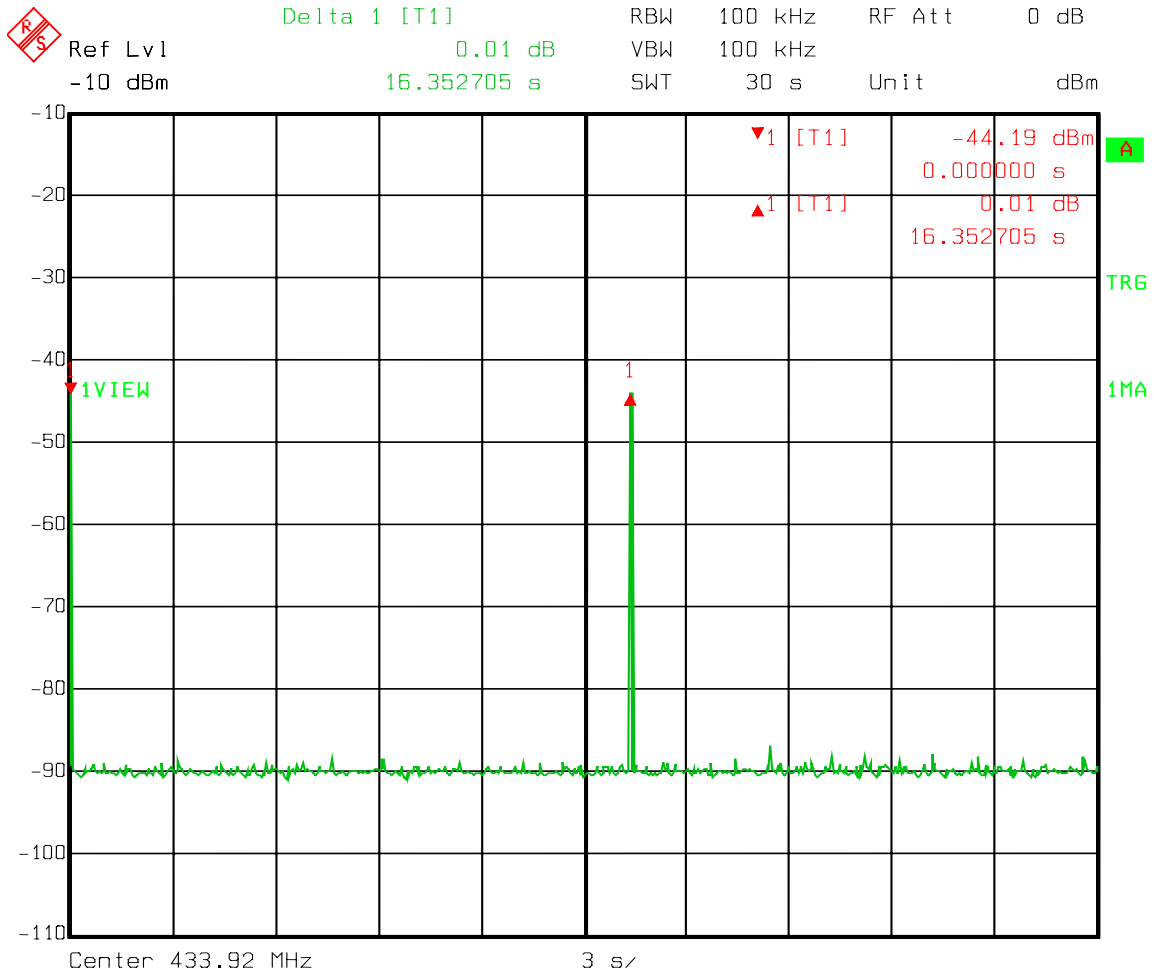
Marker 1 [T1]
-55.12 dBm
0.000000 s

RBW 100 kHz RF Att 0 dB
VBW 100 kHz
SWT 100 ms Unit dBm



Date: 25.JUL.2008 10:34:54

Maximum Pulse Repetition Rate



Date: 25.JUL.2008 10:36:52

Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 15.231(c)
TESTED BY: David Light	DATE: 06 August 2008

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.](#)

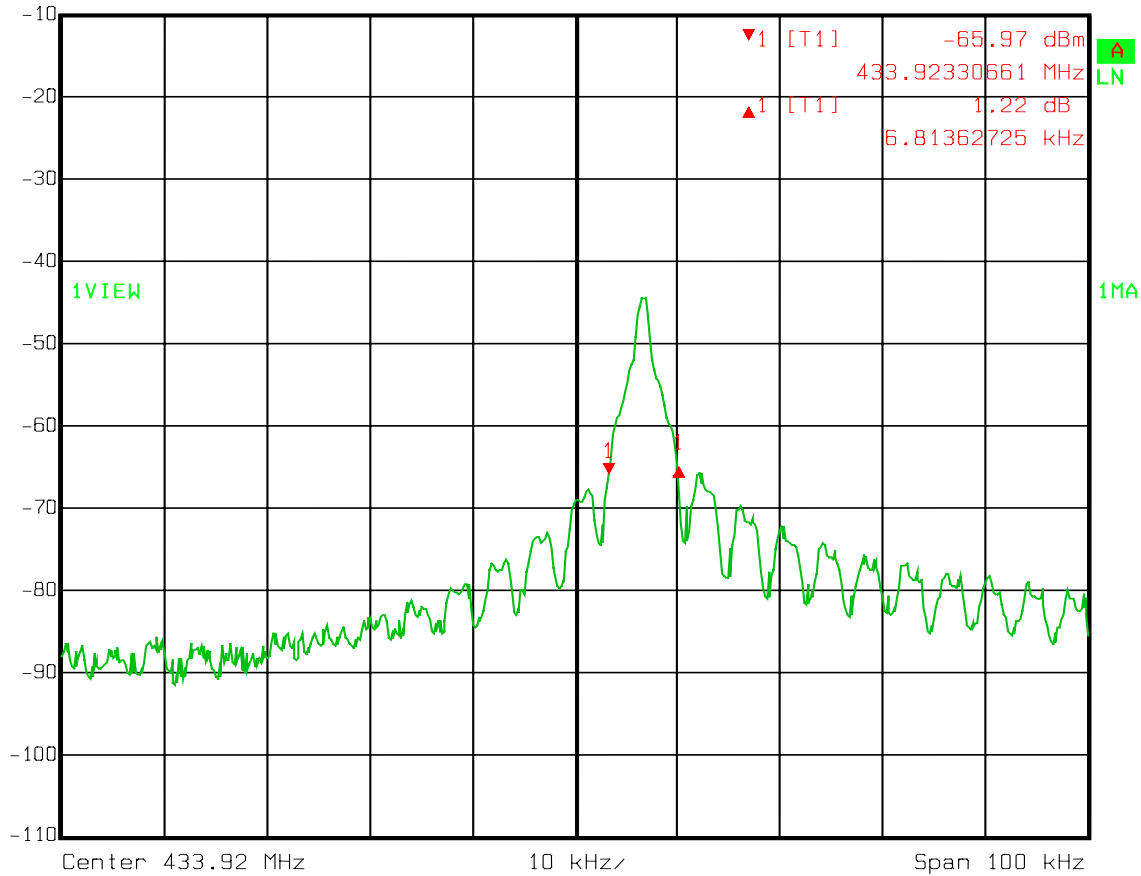
Test Data: See attached graph.

Test Data – Occupied Bandwidth

1 kbps data rate



Delta 1 [T1] RBW 1 kHz RF Att 10 dB
Ref Lvl 1.22 dB VBW 1 kHz Mixer -20 dBm
-10 dBm 6.81362725 kHz SWT 250 ms Unit dBm



Date: 11.AUG.2008 13:37:19

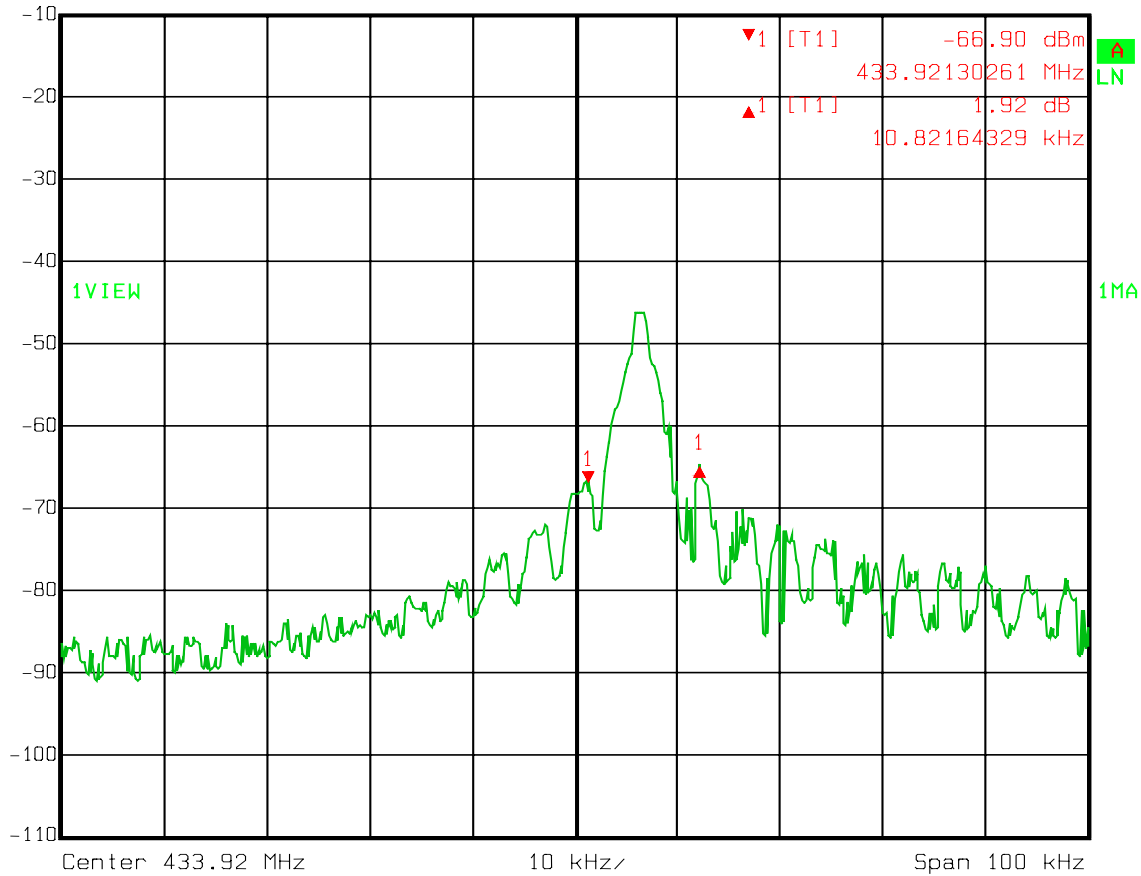
Limit = $0.0025 \times 434 = 1.085$ MHz

Test Data – Occupied Bandwidth

20 kbps data rate



Delta 1 [T1] RBW 1 kHz RF Att 10 dB
Ref Lvl -10 dBm 1.92 dB VBW 1 kHz Mixer -20 dBm
10.82164329 kHz SWT 250 ms Unit dBm

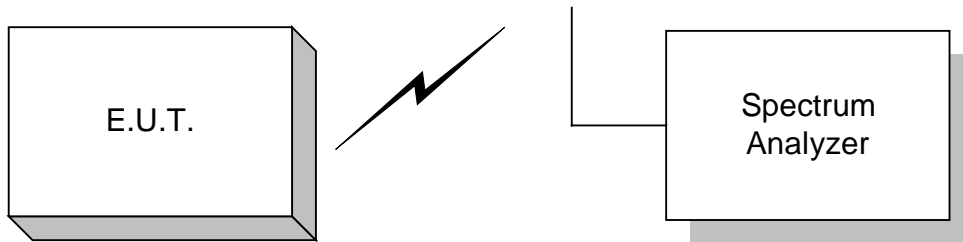


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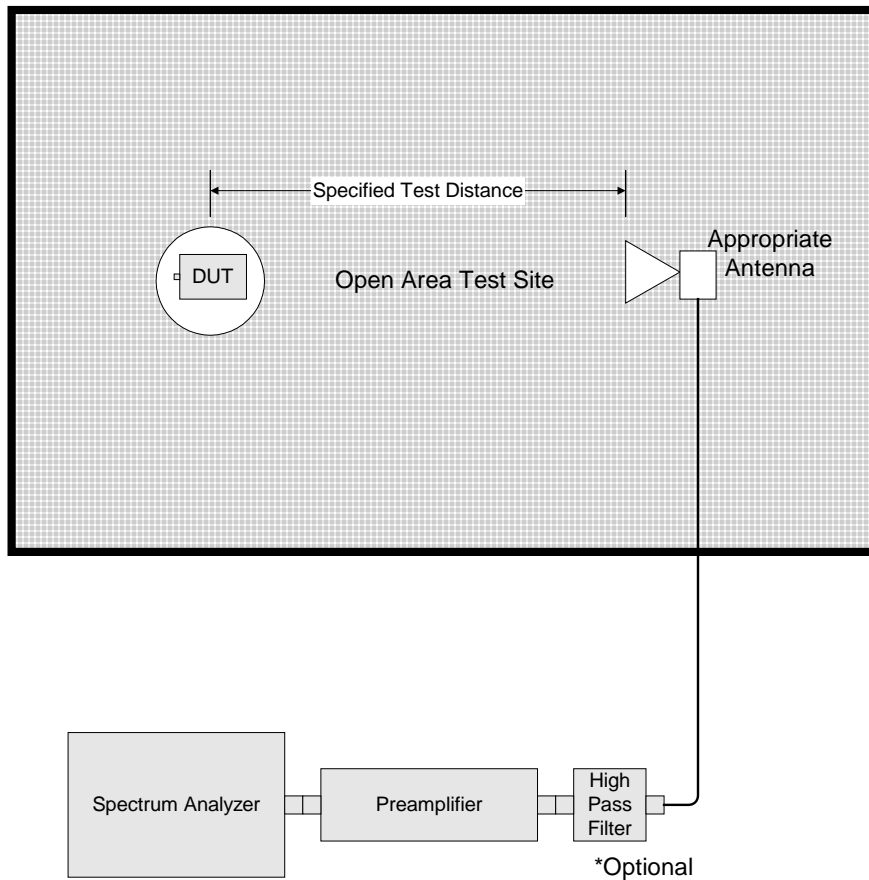
Limit = $0.0025 \times 434 = 1.085$ MHz

Section 5. Block Diagrams

Occupied Bandwidth, Duty Cycle

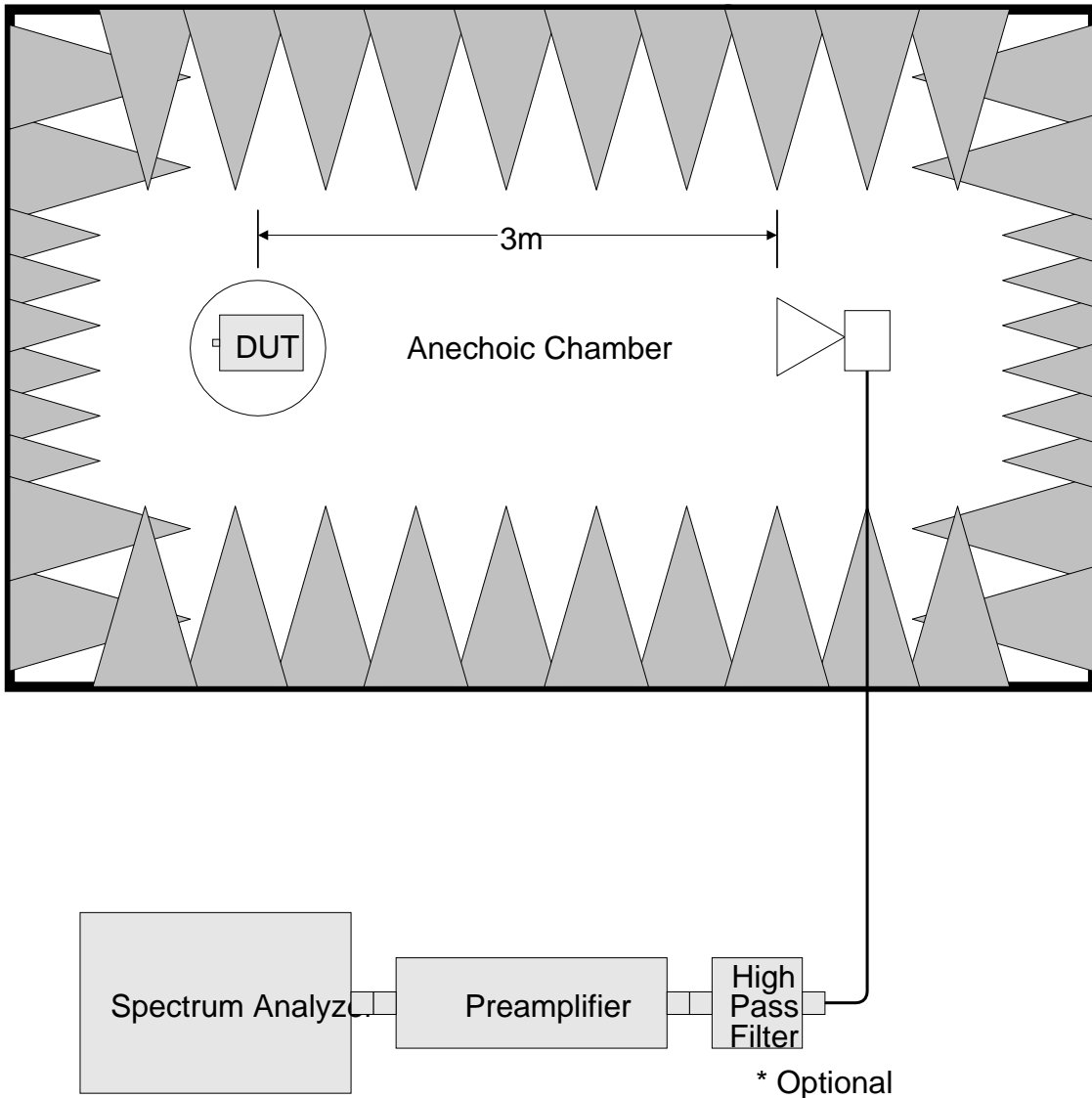


Test Site For Radiated Emissions



Radiated Emissions 30 MHz - 1 GHz

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



Section 6. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1763	Bilog Antenna	Schaffner CBL 6111D	22926	09/21/07	09/20/08
993	Horn antenna	A.H. Systems SAS-200/571	XXX	08/31/07	08/30/08
1783	Cable	Nemko 0	0	06/12/08	06/12/09
1785	Preamplifier 20 MHz to 18 GHz	A.H. Systems PAM-0126	143	07/29/08	07/29/09
1659	Spectrum Analyzer	Rhode & Schwarz FSP	973353	01/24/07	01/24/09
1767	EMI Test Receiver 20Hz - 26.5 GHz	ROHDE & SCHWARZ ESIB26	837491/0002	09/20/07	09/19/08

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			