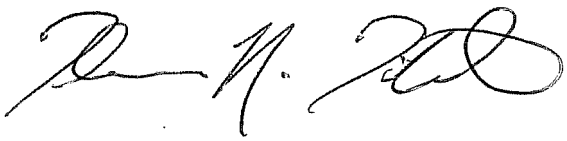
Nemko Test Report:	104149RUS1Rev2
Applicant:	FAAC S.p.A Via Benini 1 Zola Predosa Bologna, Italy
Equipment Under Test: (E.U.T.)	T4 433SLH
In Accordance With:	**FCC Part 15, Subpart C** For Low Power Transmitters Operating Periodically In The Band 40.66 - 40.77 MHz And Above 70 MHz
Tested By:	Nemko USA, Inc. 802 N. Kealy Lewisville, TX 75057-3136

TESTED BY: _____ **DATE:** **26 March 2008**

David Light, Senior Wireless Engineer



APPROVED BY: _____ **DATE:** **9 July, 2008**

Tom Tidwell, Telecom Direct

Total Number of Pages: 21

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Revision History

Rev.	Description	Date
1	Added variant information	2 May, 2008
2	Added spectrum analyzer setting details to page 10	9 July, 2008

Section 1. Summary of Test Results

Manufacturer: FAAC S.p.A

Model No.: T4 433SLH

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 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".

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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 EUT does not operate in the 40.66 – 40.70 MHz band.
2) The EUT does not operate at a periodic rate
3) The EUT is battery powered.

This report refers to the transmitter tested model T4 433SLHand extends also to the variant model T2 433SLHwhich has the same components and enclosure. The only difference is the number of commands (4 commands for the 4 button T4 and 2 commands for the 2 button T2)

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

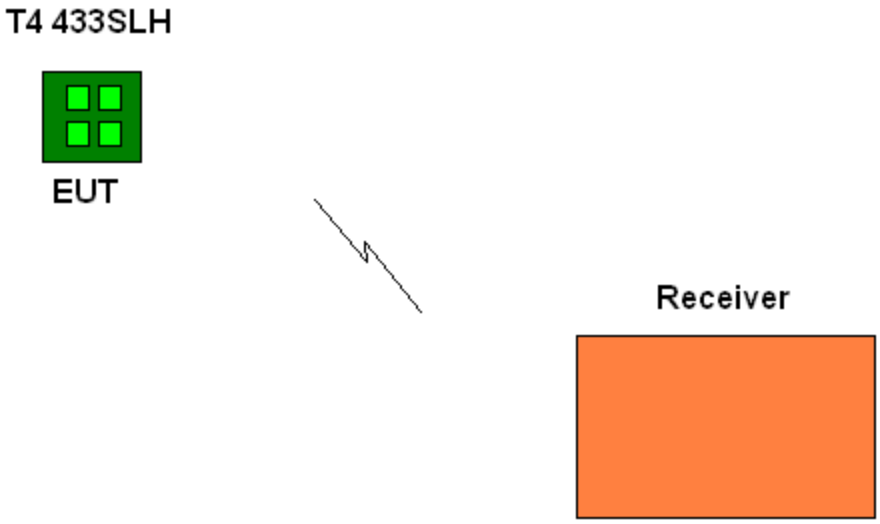
General Equipment Information

Frequency Range:	433.92 MHz +/-100 kHz
Operating Frequency(ies) of Sample:	433.89 MHz
Type of Emission:	OOK
Supply Power Requirement:	6 Vdc
Duty Cycle Correction Factor:	-4.6 dB

Description of E.U.T.

433 MHz momentary operated device for opening gates.

System Diagram



Section 3. Transmission Requirements

NAME OF TEST: Transmission Requirements	PARA. NO.: 15.231(a)
TESTED BY: David Light	DATE: 26 March 2008

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.

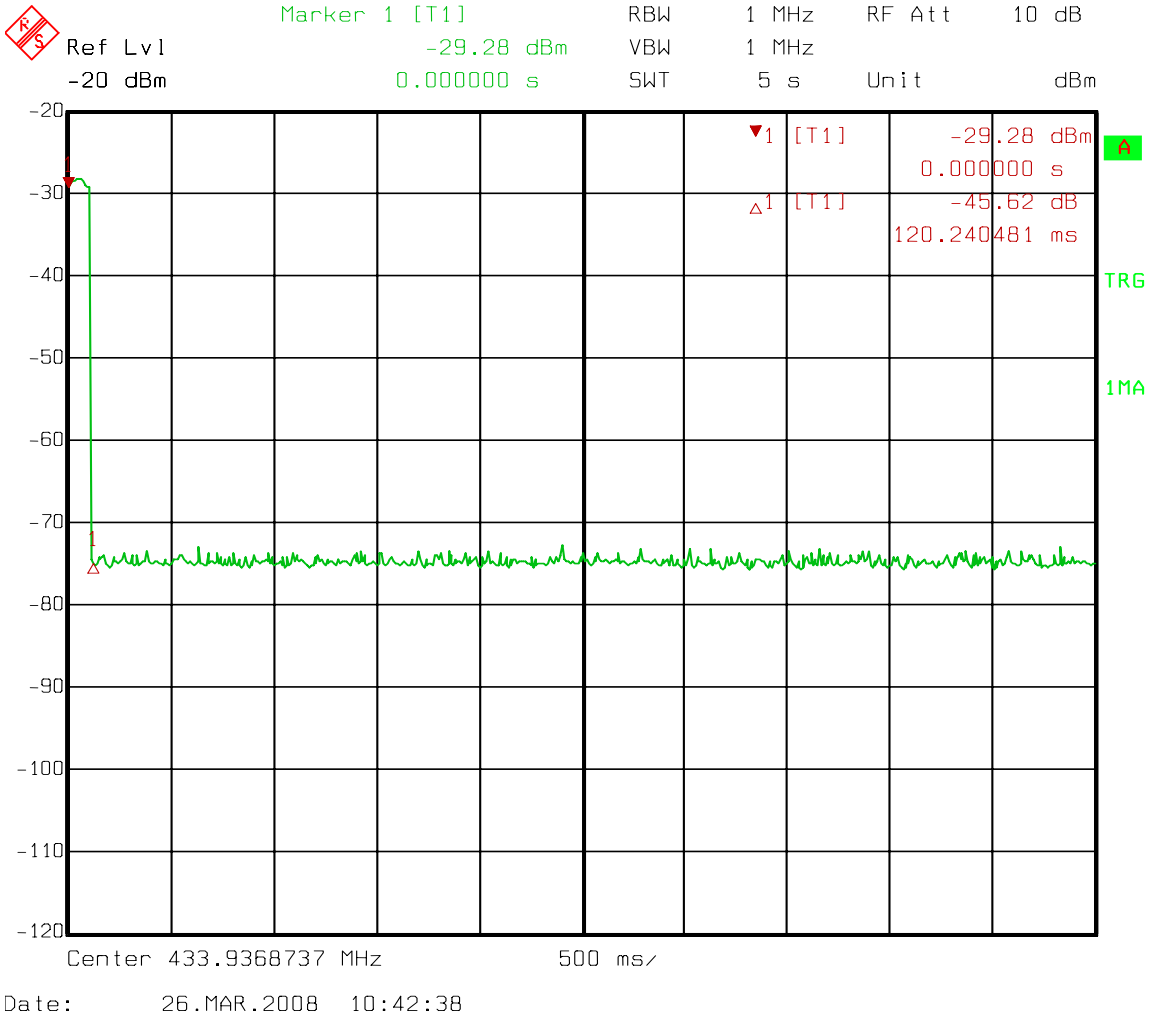
Test Data: Compliance was determined by verification of technical specifications and a functional test on the equipment.

Rationale for Compliance with Transmission Requirements

15.231(a)(1) **15.231(a)(2) :**	☒ Manual activation ☐ Automatic activation	TX deactivation time: 120 mS
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

Deactivation time



Section 4. Radiated Emissions

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.231(b)
TESTED BY: David Light	DATE: 25 March 2008

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 47.7 dBµV/m @ 3m at 868 MHz. This is 13 dB below the specification limit.

Test Data: See attached table.

Below 1 GHz a spectrum analyzer and low noise amplifier are used with a bilog antenna to measure emission levels. The measurement distance is 3 meters. 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. Measurement distance is 3 meters. The spectrum was searched from 30 MHz to 5 GHz.

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

Test Data - Radiated Emissions

Test distance: 3 meters

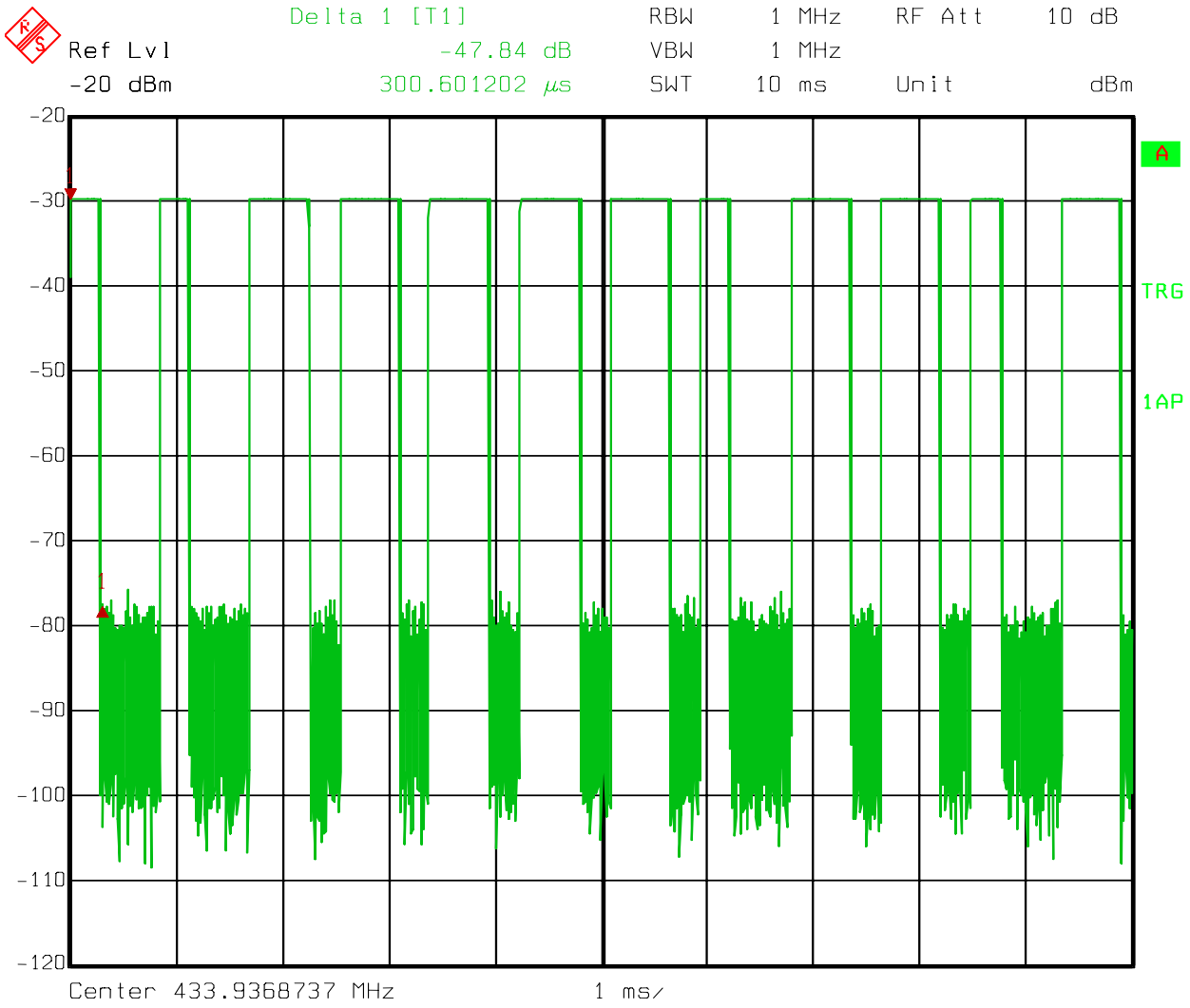
Spectrum Analyzer settings:

Below 1 GHz: RBW=120 kHz, VBW=300 kHz, Detector=Peak
Above 1 GHz: RBW=1 MHz, VBW= 1 MHz, Detector=Peak

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
434.03	H	-4.6	61.8	16.8	1.5	27.6	47.9	80.7	-32.8	Pass	
434.03	V	-4.6	47.8	16.8	1.5	27.6	33.9	80.7	-46.8	Pass	
868.06	H	-4.6	52.7	22.7	4.2	27.3	47.7	60.7	-13.0	Pass	
868.06	V	-4.6	38.5	22.7	4.2	27.3	33.5	60.7	-27.2	Pass	
1302.1	H	-4.6	46.5	25.2	2.0	32.9	36.2	54.0	-17.8	Pass	
1302.1	V	-4.6	44.0	25.2	2.0	32.9	33.7	54.0	-20.3	Pass	
1736.1	H	-4.6	48.6	25.2	2.8	33.9	38.1	60.7	-22.7	Pass	
1736.1	V	-4.6	45.4	25.2	2.8	33.9	34.9	60.7	-25.8	Pass	
2170.2	H	-4.6	48.6	27.9	2.8	33.0	41.7	60.7	-19.0	Pass	
2170.2	V	-4.6	46.7	27.9	2.8	33.0	39.8	60.7	-20.9	Pass	
2604.2	H	-4.6	38.0	29.2	3.6	33.2	33.0	60.7	-27.7	Pass	Noise Floor
2604.2	V	-4.6	39.0	29.2	3.6	33.2	34.0	60.7	-26.7	Pass	Noise Floor
3038	H	-4.6	38.0	30.3	3.6	33.3	34.0	60.7	-26.7	Pass	Noise Floor
3038	V	-4.6	39.0	30.3	3.6	33.3	35.0	60.7	-25.7	Pass	Noise Floor
3474.4	H	-4.6	38.0	30.9	3.6	33.6	34.3	60.7	-26.4	Pass	Noise Floor
3474.4	V	-4.6	39.0	30.9	3.6	33.6	35.3	60.7	-25.4	Pass	Noise Floor
3906.3	H	-4.6	38.0	32.0	4.1	33.6	35.9	54.0	-18.1	Pass	Noise Floor
3906.3	V	-4.6	39.0	32.0	4.1	33.6	36.9	54.0	-17.1	Pass	Noise Floor
4340.3	H	-4.6	38.0	32.0	4.1	32.6	36.9	54.0	-17.1	Pass	Noise Floor
4340.3	V	-4.6	39.0	32.0	4.1	32.6	37.9	54.0	-16.1	Pass	Noise Floor

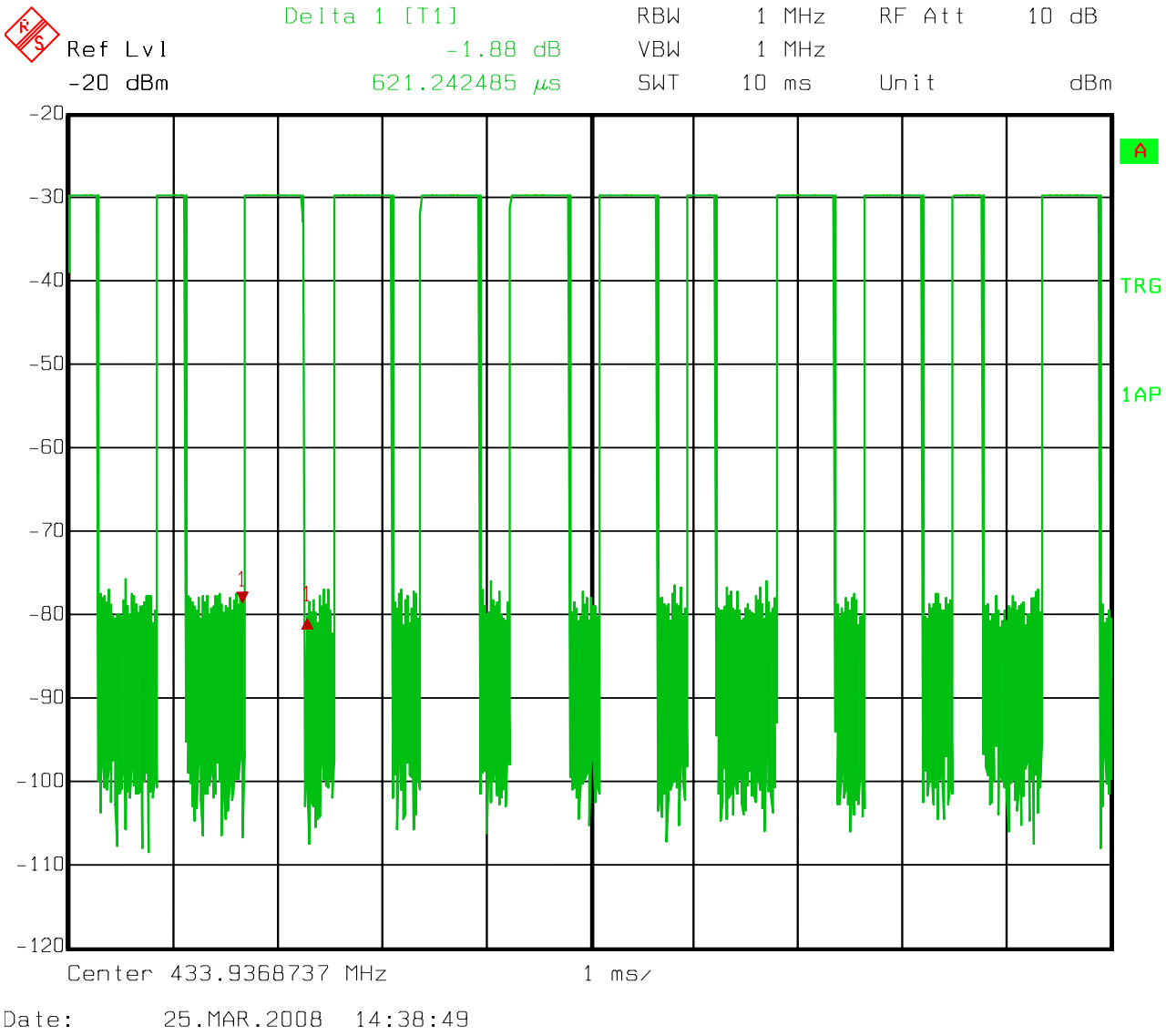
Note: Fresh batteries were used for the radiated emission testing.

Duty Cycle



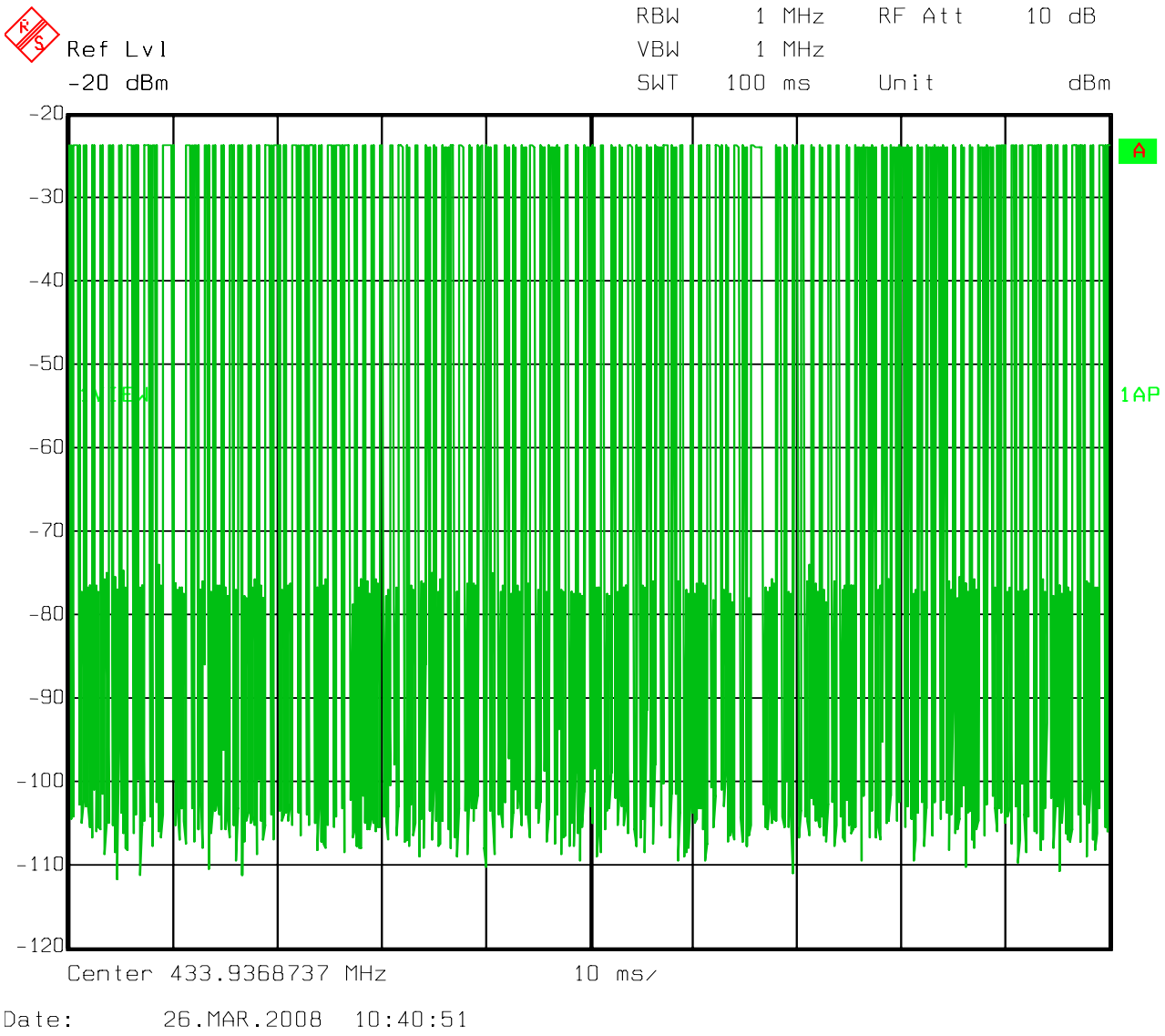
Narrow pulse = 300.6 uS

Duty Cycle



Wide pulse = 621.2 uS

Duty Cycle



25 Narrow pulses @ 300.6 uS each in 100 mS = 15.3 mS
70 Wide pulses @ 621.2 uS each in 100 mS = 43.5 mS

58.8 mS total in 100 mS

Duty cycle = 20 log (58.8/100) = -4.6 dB

Section 5. Occupied Bandwidth

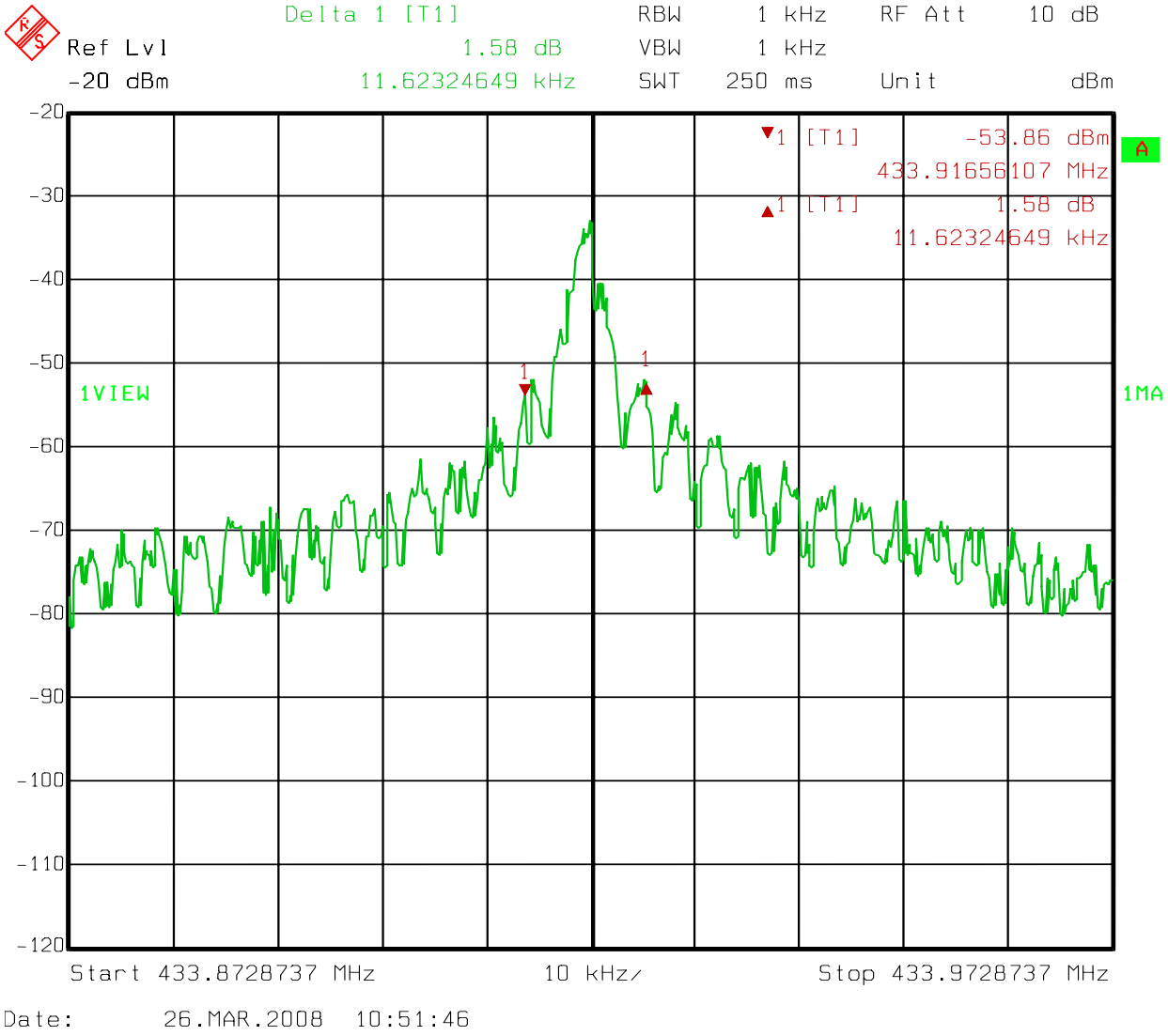
NAME OF TEST: Occupied Bandwidth	PARA. NO.: 15.231(c)
TESTED BY: David Light	DATE: 26 March 2008

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.

Test Data: See attached graph.

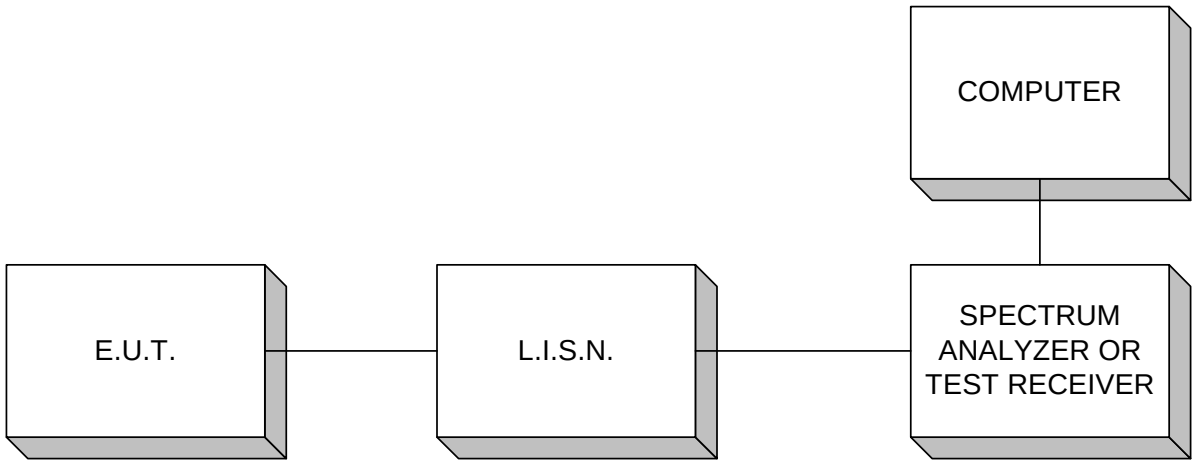
Test Data – Occupied Bandwidth



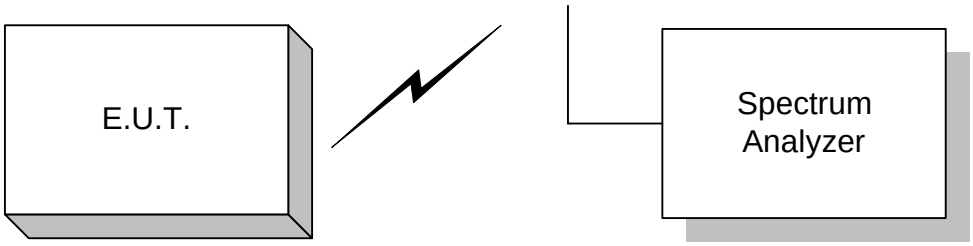
Limit = 0.25% of 434 MHz = 1.085 MHz

Section 6. Block Diagrams

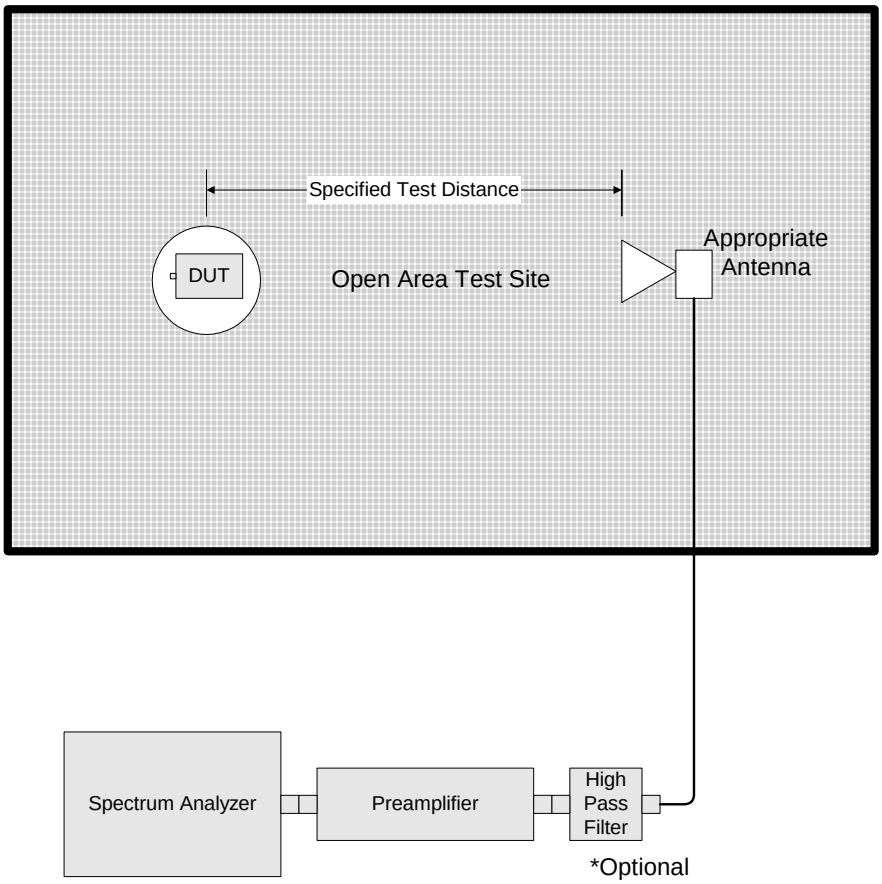
Conducted Emissions



Occupied Bandwidth, Duty Cycle

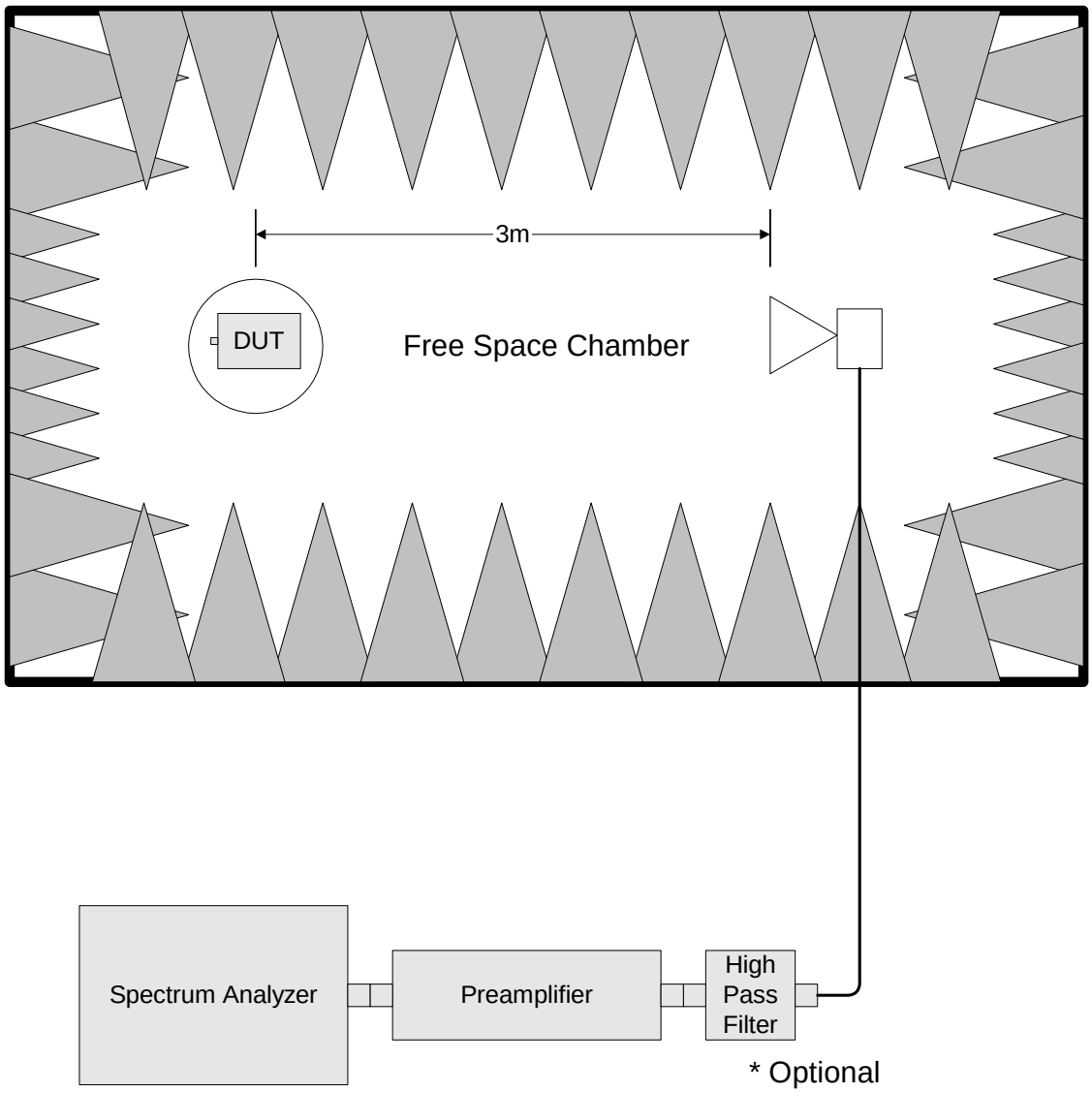


Outdoor Test Site For Radiated Emissions



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 7. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1762	Cable	Nemko USA, Inc. None	10/27/1904	09/19/07	09/19/08
1763	Bilog Antenna	Schaffner CBL 6111D	22926	09/21/07	09/20/08
1767	EMI Test Receiver 20Hz - 26.5 GHz	ROHDE & SCHWARZ ESIB26	837491/0002	09/20/07	09/19/08
1625	CABLE, 18 ft	MEGAPHASE 10311 1GVT4	N/A	09/19/07	09/19/08
1483	Cable 4m	Storm PR90-010-144	N/A	09/19/07	09/19/08
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	05/01/07	04/30/08
1025	PREAMP, 25dB	Nemko USA, Inc. LNA25	399	12/07/07	12/06/08
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	05/26/06	05/26/08
1310	Antenna horn	Electro Metrics RGA-60	6174	08/31/07	08/30/08

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			