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FCC PART 15.249 AND IC RSS-210
TEST REPORT
UNLICENSED INTENTIONAL RADIATOR

Applicant	HUNTERS SPECIALTIES, INC.
Address	6000 HUNTINGTON COURT N.E.
	CEDAR RAPIDS IOWA 52402 USA
FCC ID	T35JS-3
IC	8676A-JS3
Model Number	JS-3
Product Description	DIGITAL GAME CALLER - GALLOWS
Date Sample Received	6/19/2012
Date Tested	6/20/2012
Tested By	Joe Scoglio
Approved By	Mario R. de Aranzeta
Report Number	1074ZUT12TestReport.doc
Test Results	☒ PASS ☐ FAIL

ACCREDITED
Certificate #0955-01

TABLE OF CONTENT

GENERAL REMARKS

The attached report shall not be reproduced except in full without the written permission of Timco Engineering Inc.

Summary

The device under test does:
☒ fulfill the general approval requirements as identified in this test report
☐ not fulfill the general approval requirements as identified in this test report

Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

ACCREDITED
Certificate # 0955-01

I attest that the necessary measurements were made, under my supervision, at:

Timco Engineering Inc.
849 NW State Road 45
Newberry, Fl 32669

Authorized Signatory Name:
Mario de Aranzeta C.E.T.
Compliance Engineer/ Lab. Supervisor

Date: July/12/2012

GENERAL INFORMATION

DUT Specification

The test results relate only to the items tested.			
Applicable Standard	Part 15.249		
DUT Description	DIGITAL GAME CALLER - GALLOWS		
FCC ID	T35JS-3		
Model Number	JS-3		
Operating Frequency	TX: 2440.30	RX: Same	
DUT Power Source	☐ 110–120Vac/50– 60Hz		
	☐ DC Power		
	☒ Battery Operated Exclusively		
Test Item	☐ Prototype	☒ Pre-Production	☐ Production
Type of Equipment	☐ Fixed	☐ Mobile	☒ Portable
Antenna Connector	FCC Rules require that the antenna connector be unique.		
Test Facility	Timco Engineering Inc. located at 849 NW State Road 45 Newberry, FL 32669 USA.		
Test Conditions	Temperature: 26°C Relative humidity: 50%		
Test Exercise	The DUT was placed in continuous transmit mode of operation.		
Modifications			

Test Supporting Equipment

Supporting Device	Manufacturer	Model / FCC ID	Serial Number
N/A			

EMC EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	12/20/10	12/20/10
3-Meter OATS	TEI	N/A	N/A	02/05/09	02/05/12
Antenna: Passive Loop	EMC Test Systems	EMCO 6512	9706-1211	06/02/09	06/02/12
Frequency Counter	HP	5385A	2730A03025	08/17/11	08/17/13
Frequency Counter	HP	5352B	2632A00165	06/22/11	06/22/13
Digital Multimeter	Fluke	77	43850817	02/22/12	02/22/13
Digital Multimeter	Fluke	FLUKE-77-3	79510405	06/13/11	06/13/13
Frequency Counter	HP	5385A	3242A07460	06/22/11	06/22/13
Antenna: Active Loop	ETS-Lindgren	6502	00062529	09/23/10	09/23/12
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A		05/10/10
Temperature Chamber	Thermotron Corp.	S1.2 Mini Max	25-1420-09	06/18/10	06/18/12
Analyzer Silver Tower Quasi-Peak Adapter	HP	85650A	3303A01844	11/23/10	11/23/12
Analyzer Silver Tower RF Preselector	HP	85685A	2926A00983	11/10/10	11/10/12
Analyzer Silver Tower Spectrum Analyzer	HP	8566B Opt 462	3552A22064 3638A08608	11/10/10	11/10/12
Antenna: Biconnical	Eaton	94455-1	1057	05/31/11	05/31/13
Antenna: Log-Periodic	Eaton	96005	1243	05/31/11	05/31/13

TEST PROCEDURES

Radiation Interference: ANSI C63.4-2003 using a spectrum analyzer, a preselector, a quasi-peak adapter, and an appropriate antenna. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100 kHz with an appropriate sweep speed and the video bandwidth was 300 kHz up to 1 GHz and 1 MHz with a video BW of 3 MHz above 1 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The spectrum was searched to at least the tenth (10) harmonic of the fundamental.

Formula Of Conversion Factors: The field strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBμV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the preselector was accounted for in the spectrum analyzer meter reading.

Example:			
Freq (MHz)	Meter Reading	+ ACF	+ CL = FS
33	20 dBμV	+ 10.36 dB	+ 0.5 = 30.86 dBμV/m @ 3m

Power Line Conducted Interference: The procedure used was ANSI C63.4-2003 using a 50uH LISN. Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed. The spectrum was scanned from 0.15 to 30 MHz.

Occupied Bandwidth: A small sample of the transmitter output was fed into the spectrum analyzer and the attached plot was printed. The vertical scale is set to -10 dBm per division.

ANSI C63.4-2003 10.1 Measurement Procedures: The DUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The DUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes. Emissions attenuated more than 20 dB below the permissible value are not reported.

RADIATION INTERFERENCE

Rules Part No.: 15.249, 15.209

Requirements:

Frequency	Limits
Part 15.209	
9 to 490 kHz	2400/F (kHz) µV/m @ 300 meters
490 to 1705 kHz	24000/F (kHz) µV/m @ 30 meters
1705 kHz to 30 MHz	29.54 dBµV/m @ 30 meters
30 – 88	40.0 dBµV/m @ 3 meters
80 – 216	43.5 dBµV/m @ 3 meters
216 – 960	46.0 dBµV/m @ 3 meters
Above 960	54.0 dBµV/m @ 3 meters
Part 15.249	
Fundamental 902 – 928 MHz	94.0 dBµV/m @ 3 meters
Fundamental 2.4 – 2.4835 MHz	94.0 dBµV/m @ 3 meters
Harmonics	54.0 dBµV/m @ 3 meters

Test Data: Emissions were measured from the lowest frequency generated or 9 kHz to the tenth harmonic of the desired.

Average

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBµV	Ant. Pol	Coax Loss dB	Correction Factor dB/m	Field Strength dBµV/m	Margin dB
2,440.3	2,440.30	11.4	H	3.21	32.48	47.09	6.91
2,440.3	2,440.30	12.3	V	3.21	32.48	47.99	6.01
2,440.3	4,880.70	4.5	H	4.94	34.43	43.87	10.13
2,440.3	4,880.70	6.6	V	4.94	34.43	45.97	8.03
2,440.3	7,321.10	4.3	H	5.79	36.14	46.23	7.77
2,440.3	7,321.10	5.7	V	5.79	36.14	47.63	6.37

Peak

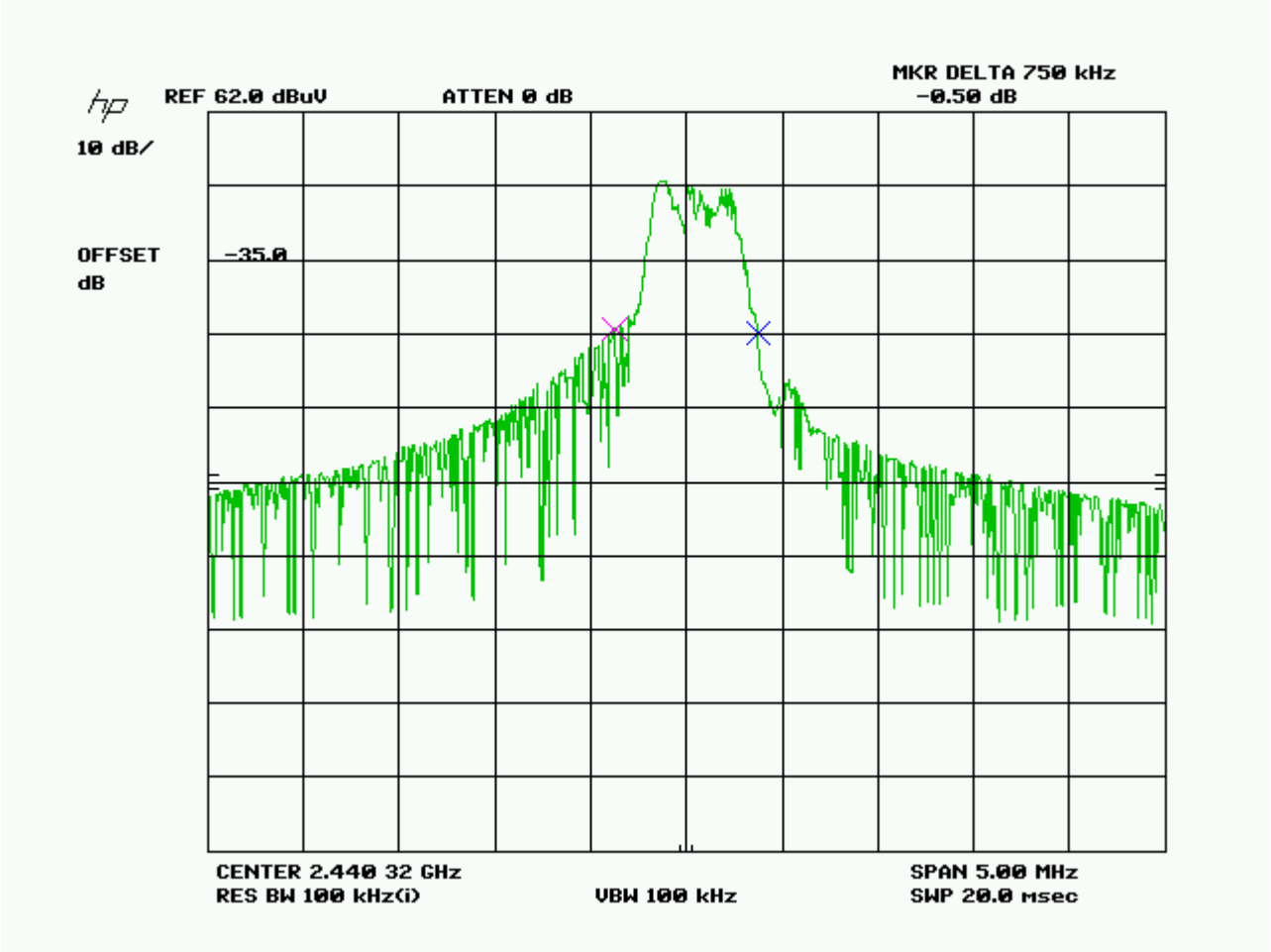
Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBµV	Ant. Polarity	Coax Loss dB	Correction Factor dB/m	Duty Cycle CF dB	Field Strength dBµV/m	Margin dB
2,440.3	2,440.30	70.9	H	3.21	32.48	-25.1	81.49	32.51
2,440.3	2,440.30	75.9	V	3.21	32.48	-25.1	86.49	27.51
2,440.3	4,880.70	40.4	H	4.94	34.43	-25.1	54.67	19.33
2,440.3	4,880.70	41.5	V	4.94	34.43	-25.1	55.77	18.23
2,440.3	7,321.10	32.8	H	5.79	36.14	-25.1	49.63	24.37
2,440.3	7,321.10	44.1	V	5.79	36.14	-25.1	60.93	13.07
2,440.3	9,760.80	15.7	V	6.83	36.91	-25.1	34.34	39.66
2,440.3	9,760.80	19.1	H	6.83	36.91	-25.1	37.74	36.26

OCCUPIED BANDWIDTH

Rules Part No.: 15.249 (d)

Requirements: The field strength of any emissions appearing outside the bandedges and up to 10 kHz above and below the band edges shall be attenuated at least 50 dB below the level of the carrier or to the general limits of 15.249.

Test Data:



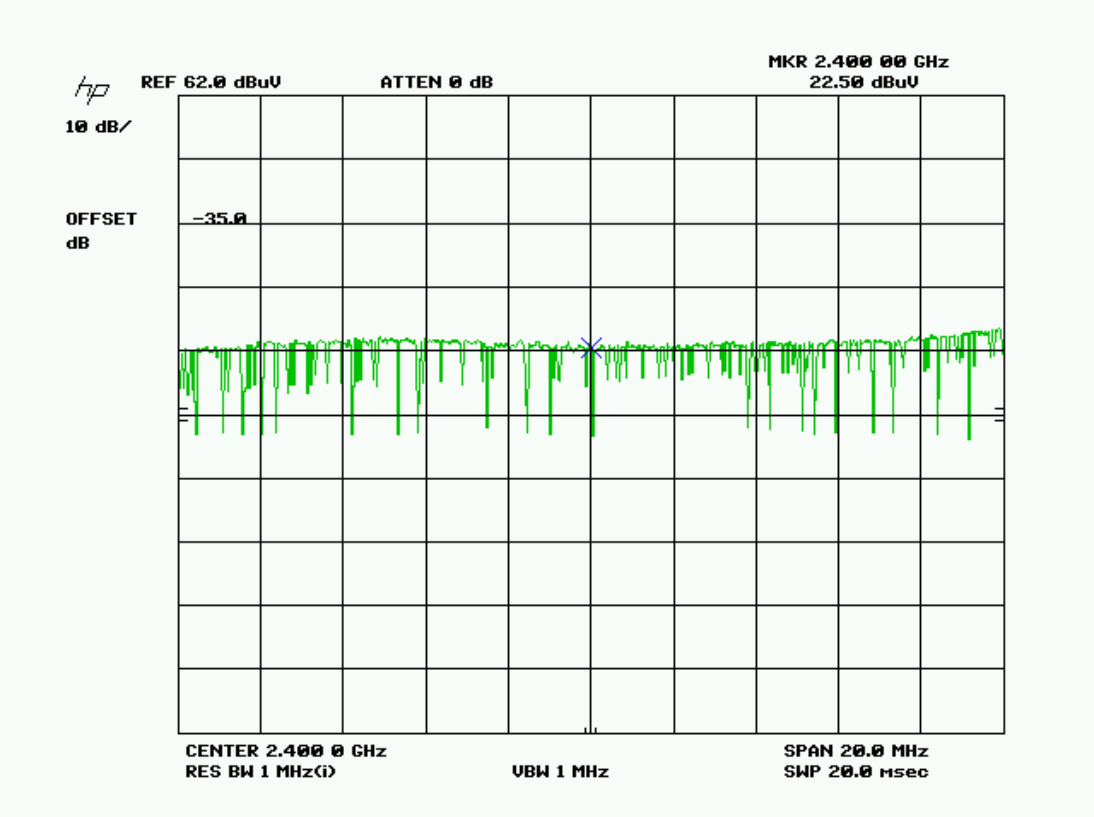
BAND EDGE COMPLIANCE

Rules Part No.: 15.249 (d)

Requirements: 40 dBc or in the case of restricted bands 54 dBµV/m.

Test Data:

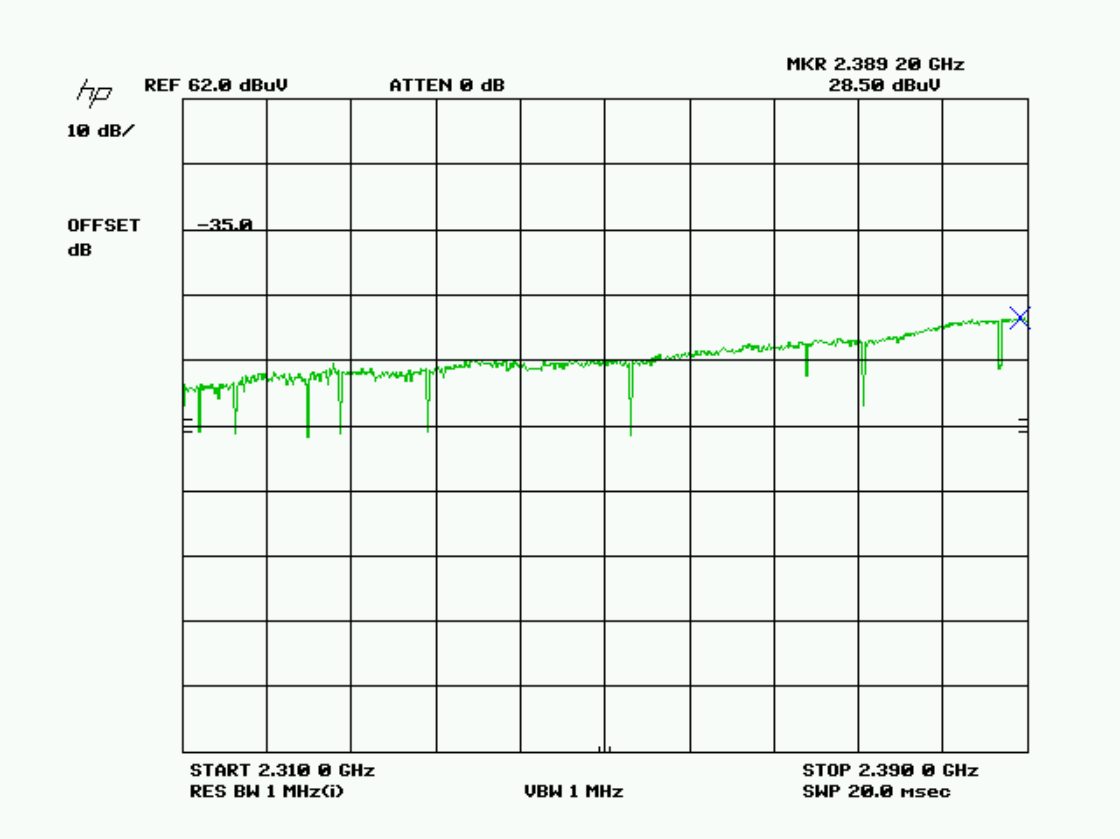
Lower bandedge



Peak Plot

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBµV	Ant. Polarity V/H	Coax Loss dB	Correction Factor dB/m	Duty Cycle CF	Field Strength dBµV/m	Margin dB
2,439.7	2,400.00	22.5	V	3.18	32.40	-25.1	32.98	21.02

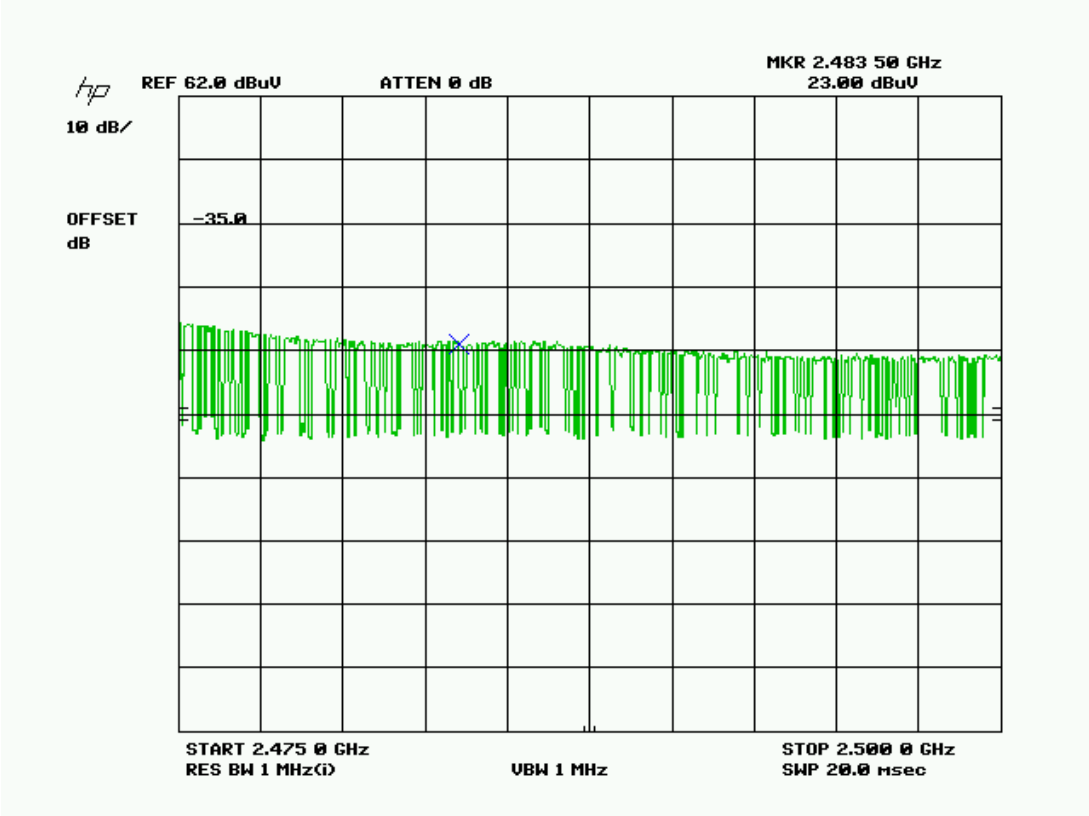
Lower non-adjacent restricted band



Peak Plot

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBµV	Ant. Polarity V/H	Coax Loss dB	Correction Factor dB/m	Duty Cycle CF	Field Strength dBµV/m	Margin dB
2,439.7	2,389.20	28.5	V	3.17	32.38	-25.1	38.95	15.05

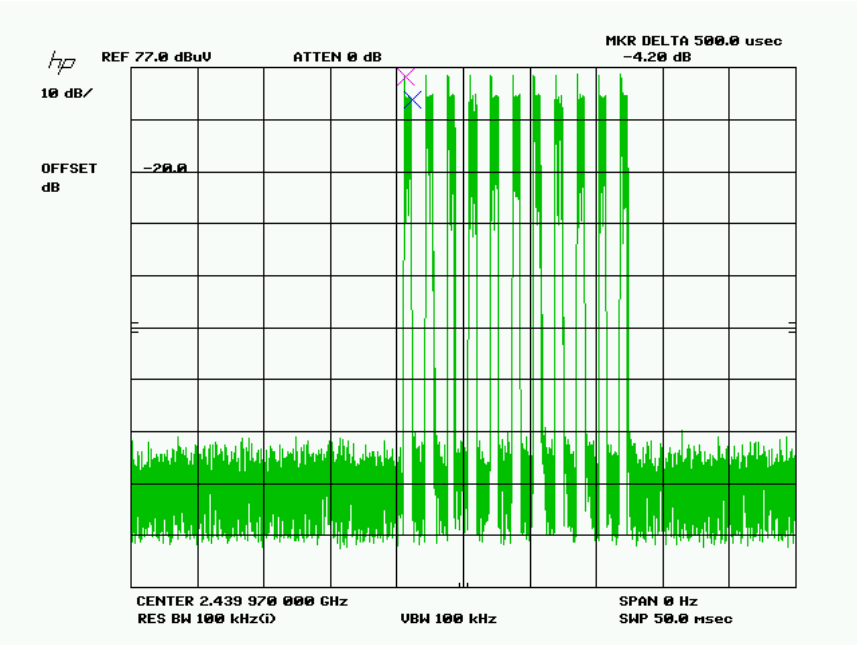
Upper bandedge

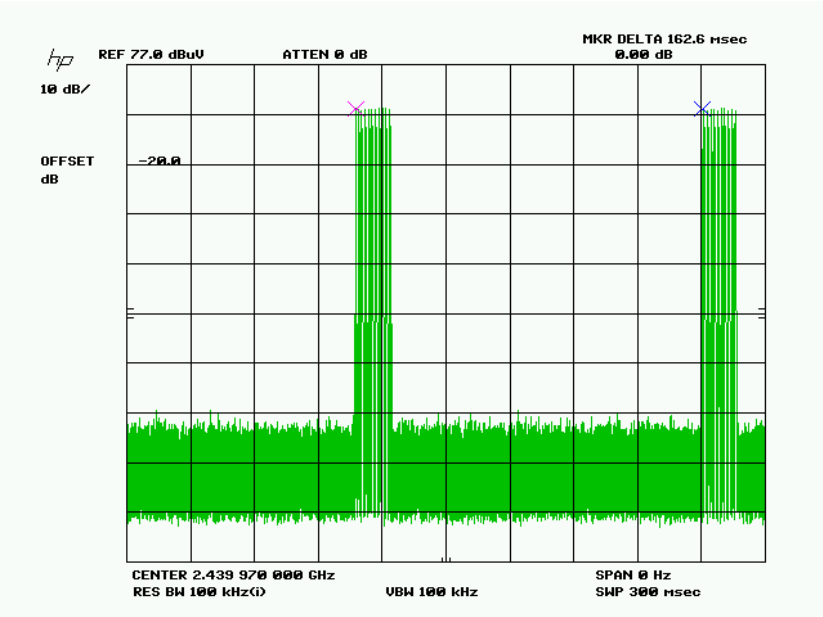


Peak Plot

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBµV	Ant. Polarity V/H	Coax Loss dB	Correction Factor dB/m	Duty Cycle CF	Field Strength dBµV/m	Margin dB
2,439.7	2,383.50	23.0	V	3.17	32.37	-25.1	33.44	20.56

DUTY CYCLE





Total # of pulses: 11 in 100 ms
Duration of pulse: .5 ms maximum duration of pulse according to manufacturer.
20*log ((11*.5)/100)=20*log (0.055)=25.2 dB

POWER LINE CONDUCTED INTERFERENCE

Rules Part No.: 15.207

Requirements:

Frequency (MHz)	Quasi Peak Limits (dBµV)	Average Limits (dBµV)
0.15 – 0.5	66 – 56	56 – 46
0.5 – 5.0	56	46
5.0 – 30	60	50

Test Data:

N/A
Battery or vehicle powered DUT.