

Exhibit L: Spurious Radiated Emissions

FCC ID: CGGAA2

Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Single

Operating Modes Investigated:

Typical

Antennas Investigated:

Single

Data Rates Investigated:

Typical

Output Power Setting(s) Investigated:

N/A

Power Input Settings Investigated:

12VDC from alarm panel

Other Settings Investigated:

RCR-A (35ft range)

RCR-50 (50ft range, no change in output power – just a change pulse width)

Frequency Range Investigated

Start Frequency

30 MHz

Stop Frequency

40 GHz

Software\Firmware Applied During Test

Exercise software

Standard Production
Software

Version

RCR Build 8

Description

Firmware

Equipment Modifications

No EMI suppression devices were added or modified. The EUT was tested as delivered.

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EUT #2	Interlogix Inc.	RCR-50	n/a
EUT #1	Interlogix Inc.	RCR-A	n/a
DC Power Supply	Topward	TPS-2000	946425

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power	No	2.0	No	EUT	Power Supply

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Tektronix	2784	AAO	03/08/2001	24 mo
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	01/17/2000	36 mo
Antenna, Horn	EMCO	3160-09	AHG	01/15/2000	36 mo
Antenna, Horn	EMCO	3160-10	AHI	01/15/2000	36 mo
Pre-Amplifier	Miteq	JS4-26004000-40-SP	APV	06/26/2000	36 mo
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APC	11/26/2001	12 mo
Pre-Amplifier	Amplifier Research	LN1000A	APS	12/03/2001	12 mo
Antenna, Horn	EMCO	3115	AHC	08/24/2001	12 mo
Antenna, Biconilog	EMCO	3141	AXE	12/31/2001	12 mo
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	03/19/2002	12 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	03/19/2002	12 mo

Test Description

Requirement: The field strength of harmonics and spurious radiated emissions shall meet the limits as defined in 47 CFR 15.249; which for this transmitter are equal to the limits of 15.209. If average emission measurements are employed, the provisions in 15.35 for averaging pulsed emissions and for limiting peak emissions apply.

Configuration: The EUT was configured for continuous modulated operation at its single transmit frequency. The spectrum was scanned from 30 MHz to 40 GHz. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT in 3 orthogonal planes (per ANSI C63.4:1992).

To derive average emission measurements, a pulse desensitization factor of -20 dB was utilized. This is the same factor that was used for the original application. The theoretical basis is explained in Hewlett Packard Application Note 150-2, "Spectrum Analysis...Pulsed RF". Since no changes have been made to duty cycle of the pulse modulation used in this device, the -20 dB factor still applies.

The pulse desensitization factor of -20 dB was added to the peak readings to mathematically derive the average levels. Above 1 GHz, peak measurements were made with a resolution bandwidth of 1 MHz and a video bandwidth of 1 MHz. Below 1 GHz, peak measurements were made with a resolution bandwidth of 120 kHz and a video bandwidth of 300 kHz.

Bandwidths Used for Measurements

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 – 0.15	1.0	0.2	0.2
0.15 – 30.0	10.0	9.0	9.0
30.0 – 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0
<i>Measurements were made using the bandwidths and detectors specified. No video filter was used.</i>			

Completed by:



EUT: RCR-A				Work Order: ILGX0247	
Serial Number: n/a				Date: 4/19/02 11:47	
Customer: Interlogix Inc.				Temperature:	
Attendees: Fred Eggers, Feng Tang		Tested by:		Humidity: 0%	
Cust. Ref. No.: 274		Power: 12 Vdc		Job Site:	

TEST SPECIFICATIONS

Specification: FCC 15.249	Year: 2001
Method: ANSI C63.4	Year: 2000

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

COMMENTS

EUT OPERATING MODES

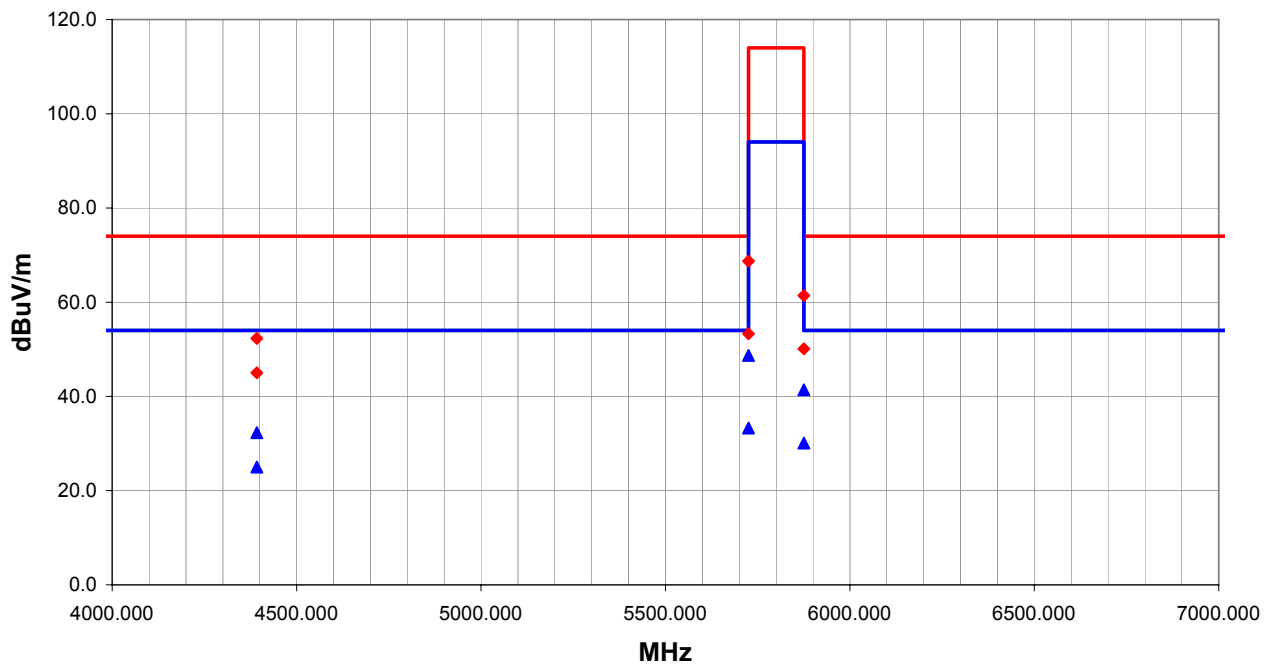
DEVIATIONS FROM TEST STANDARD

No deviations.

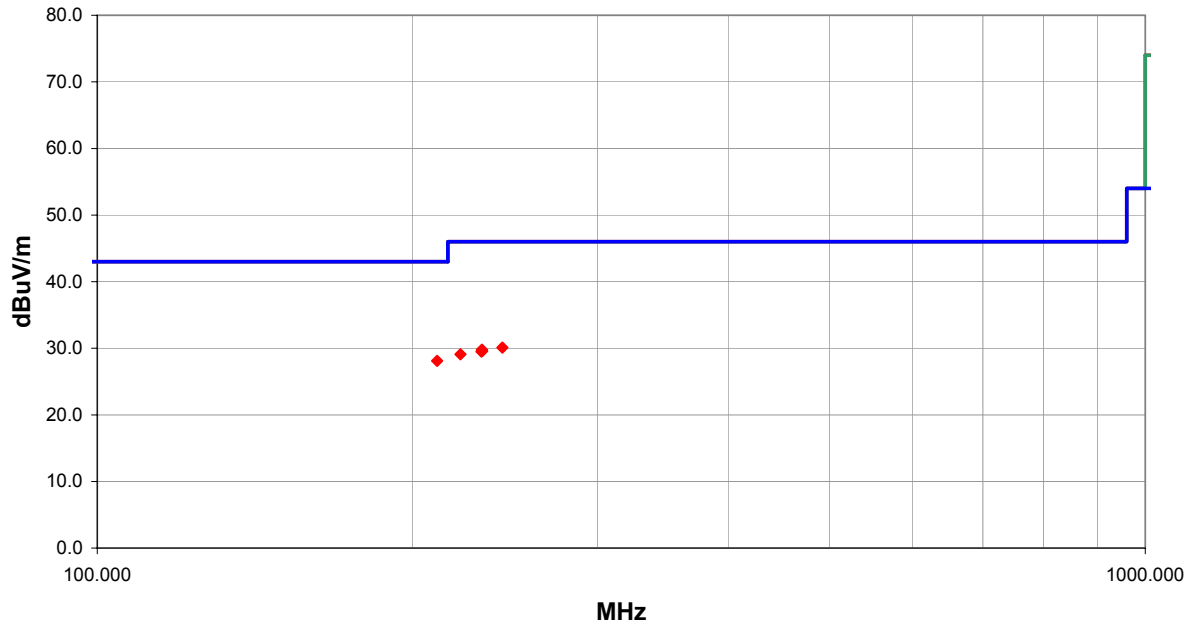
RESULTS	Test Distance (m)	Run #
Pass	3	2

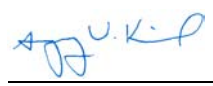
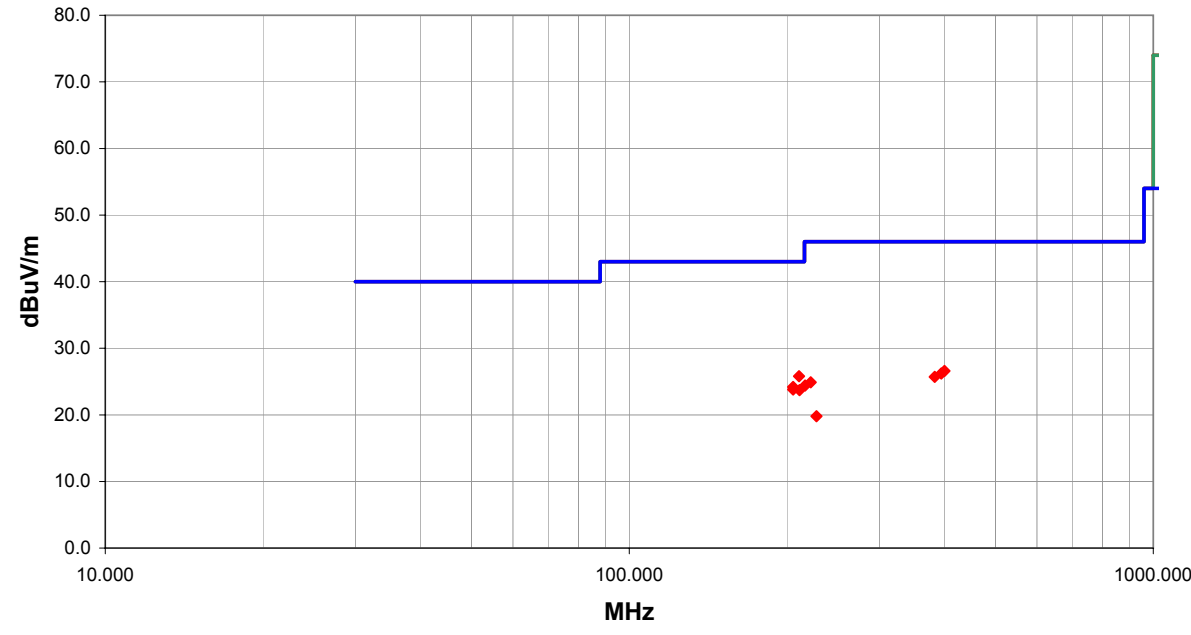
Other

Tested By:



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Pulse Desensitization Factor	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
5725.000	61.6	7.1	13.0	1.3	20.0	0.0	V-Horn	AV	0.0	48.7	54.0	-5.3
5875.000	54.3	7.1	0.0	1.3	20.0	0.0	V-Horn	AV	0.0	41.4	54.0	-12.6
5725.000	46.2	7.1	76.0	1.3	20.0	0.0	H-Horn	AV	0.0	33.3	54.0	-20.7
4392.000	47.6	4.7	29.0	1.1	20.0	0.0	V-Horn	AV	0.0	32.3	54.0	-21.7
5875.000	43.0	7.1	19.0	1.2	20.0	0.0	H-Horn	AV	0.0	30.1	54.0	-23.9
4392.000	40.3	4.7	297.0	1.2	20.0	0.0	H-Horn	AV	0.0	25.0	54.0	-29.0
5725.000	61.6	7.1	13.0	1.3	0.0	0.0	V-Horn	PK	0.0	68.7	74.0	-5.3
5875.000	54.3	7.1	0.0	1.3	0.0	0.0	V-Horn	PK	0.0	61.4	74.0	-12.6
5725.000	46.2	7.1	76.0	1.3	0.0	0.0	H-Horn	PK	0.0	53.3	74.0	-20.7
4392.000	47.6	4.7	29.0	1.1	0.0	0.0	V-Horn	PK	0.0	52.3	74.0	-21.7
5875.000	43.0	7.1	19.0	1.2	0.0	0.0	H-Horn	PK	0.0	50.1	74.0	-23.9
4392.000	40.3	4.7	297.0	1.2	0.0	0.0	H-Horn	PK	0.0	45.0	74.0	-29.0

NORTHWEST										REV df1.87 03/21/2002																																																																																														
EMC										OATS DATA SHEET																																																																																														
EUT: RCR-A					Work Order: ILGX0247																																																																																																			
Serial Number: n/a					Date: 4/19/02 14:51																																																																																																			
Customer: Interlogix Inc.					Temperature: 72																																																																																																			
Attendees: Fred Eggers, Feng Tang					Tested by: Greg Kiemel					Humidity: 0%																																																																																														
Cust. Ref. No.: 274					Power: 12 Vdc					Job Site: EV01																																																																																														
TEST SPECIFICATIONS																																																																																																								
Specification: FCC Part 15 Class B										Year: 2000																																																																																														
Method: ANSI C63.4										Year: 1992																																																																																														
SAMPLE CALCULATIONS																																																																																																								
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator																																																																																																								
COMMENTS																																																																																																								
EUT OPERATING MODES																																																																																																								
DEVIATIONS FROM TEST STANDARD																																																																																																								
No deviations.																																																																																																								
RESULTS																																																																																																								
Pass										Test Distance (m)		Run #																																																																																												
										3		5																																																																																												
Other																																																																																																								
										 Tested By: _____																																																																																														
																																																																																																								
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Freq (MHz)</th> <th>Amplitude (dBuV)</th> <th>Factor (dB)</th> <th>Azimuth (degrees)</th> <th>Height (meters)</th> <th>Distance (meters)</th> <th>External Attenuation (dB)</th> <th>Polarity</th> <th>Detector</th> <th>Distance Adjustment (dB)</th> <th>Adjusted dBuV/m</th> <th>Spec. Limit dBuV/m</th> <th>Compared to Spec. (dB)</th> </tr> </thead> <tbody> <tr> <td>211.017</td> <td>45.6</td> <td>-17.5</td> <td>158.0</td> <td>2.0</td> <td>3.0</td> <td>0.0</td> <td>H-Bilog</td> <td>PK</td> <td>0.0</td> <td>28.1</td> <td>43.0</td> <td>-14.9</td> </tr> <tr> <td>243.545</td> <td>46.5</td> <td>-16.4</td> <td>135.0</td> <td>1.3</td> <td>3.0</td> <td>0.0</td> <td>H-Bilog</td> <td>PK</td> <td>0.0</td> <td>30.1</td> <td>46.0</td> <td>-15.9</td> </tr> <tr> <td>232.795</td> <td>46.4</td> <td>-16.6</td> <td>133.0</td> <td>1.3</td> <td>3.0</td> <td>0.0</td> <td>H-Bilog</td> <td>PK</td> <td>0.0</td> <td>29.8</td> <td>46.0</td> <td>-16.2</td> </tr> <tr> <td>233.010</td> <td>46.2</td> <td>-16.6</td> <td>138.0</td> <td>1.3</td> <td>3.0</td> <td>0.0</td> <td>H-Bilog</td> <td>PK</td> <td>0.0</td> <td>29.6</td> <td>46.0</td> <td>-16.4</td> </tr> <tr> <td>232.580</td> <td>46.1</td> <td>-16.6</td> <td>127.0</td> <td>1.3</td> <td>3.0</td> <td>0.0</td> <td>H-Bilog</td> <td>PK</td> <td>0.0</td> <td>29.5</td> <td>46.0</td> <td>-16.5</td> </tr> <tr> <td>222.087</td> <td>46.0</td> <td>-16.9</td> <td>133.0</td> <td>2.0</td> <td>3.0</td> <td>0.0</td> <td>H-Bilog</td> <td>PK</td> <td>0.0</td> <td>29.1</td> <td>46.0</td> <td>-16.9</td> </tr> </tbody> </table>														Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	211.017	45.6	-17.5	158.0	2.0	3.0	0.0	H-Bilog	PK	0.0	28.1	43.0	-14.9	243.545	46.5	-16.4	135.0	1.3	3.0	0.0	H-Bilog	PK	0.0	30.1	46.0	-15.9	232.795	46.4	-16.6	133.0	1.3	3.0	0.0	H-Bilog	PK	0.0	29.8	46.0	-16.2	233.010	46.2	-16.6	138.0	1.3	3.0	0.0	H-Bilog	PK	0.0	29.6	46.0	-16.4	232.580	46.1	-16.6	127.0	1.3	3.0	0.0	H-Bilog	PK	0.0	29.5	46.0	-16.5	222.087	46.0	-16.9	133.0	2.0	3.0	0.0	H-Bilog	PK	0.0	29.1	46.0	-16.9
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)																																																																																												
211.017	45.6	-17.5	158.0	2.0	3.0	0.0	H-Bilog	PK	0.0	28.1	43.0	-14.9																																																																																												
243.545	46.5	-16.4	135.0	1.3	3.0	0.0	H-Bilog	PK	0.0	30.1	46.0	-15.9																																																																																												
232.795	46.4	-16.6	133.0	1.3	3.0	0.0	H-Bilog	PK	0.0	29.8	46.0	-16.2																																																																																												
233.010	46.2	-16.6	138.0	1.3	3.0	0.0	H-Bilog	PK	0.0	29.6	46.0	-16.4																																																																																												
232.580	46.1	-16.6	127.0	1.3	3.0	0.0	H-Bilog	PK	0.0	29.5	46.0	-16.5																																																																																												
222.087	46.0	-16.9	133.0	2.0	3.0	0.0	H-Bilog	PK	0.0	29.1	46.0	-16.9																																																																																												

NORTHWEST EMC						OATS DATA SHEET						REV df1.87 03/21/2002	
EUT: RCR-50						Work Order: ILGX0247							
Serial Number: n/a						Date: 4/19/02 9:27							
Customer: Interlogix Inc.						Temperature: 72							
Attendees: Fred Eggers, Feng Tang				Tested by: Greg Kiemel		Humidity: 35%							
Cust. Ref. No.: 274				Power: 12 Vdc		Job Site: EV01							
TEST SPECIFICATIONS													
Specification: FCC Part 15 Class B										Year: 2000			
Method: ANSI C63.4										Year: 1992			
SAMPLE CALCULATIONS													
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation													
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator													
COMMENTS													
EUT OPERATING MODES													
DEVIATIONS FROM TEST STANDARD													
No deviations.													
RESULTS													
Pass						Test Distance (m)				Run #			
						3				1			
Other													
 Tested By: _____													
													
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	
210.812	43.3	-17.5	60.0	1.0	3.0	0.0	V-Bilog	PK	0.0	25.8	43.0	-17.2	
205.482	41.9	-17.7	360.0	1.0	3.0	0.0	V-Bilog	PK	0.0	24.2	43.0	-18.8	
205.482	41.5	-17.7	223.0	2.0	3.0	0.0	H-Bilog	PK	0.0	23.8	43.0	-19.2	
211.222	41.2	-17.5	215.0	2.0	3.0	0.0	H-Bilog	PK	0.0	23.7	43.0	-19.3	
399.417	38.6	-12.0	96.0	1.4	3.0	0.0	V-Bilog	PK	0.0	26.6	46.0	-19.4	
393.827	38.3	-12.1	101.0	1.2	3.0	0.0	V-Bilog	PK	0.0	26.2	46.0	-19.8	
382.647	37.9	-12.2	92.0	1.7	3.0	0.0	V-Bilog	PK	0.0	25.7	46.0	-20.3	
221.882	41.8	-16.9	311.0	1.0	3.0	0.0	V-Bilog	PK	0.0	24.9	46.0	-21.1	
216.552	41.6	-17.2	321.0	1.0	3.0	0.0	V-Bilog	PK	0.0	24.4	46.0	-21.6	
227.622	36.5	-16.7	153.0	2.0	3.0	0.0	V-Bilog	PK	0.0	19.8	46.0	-26.2	

EUT:	RCR-50	Work Order:	ILGX0247
Serial Number:	n/a	Date:	4/19/02 13:37
Customer:	Interlogix Inc.	Temperature:	72
Attendees:	Fred Eggers, Feng Tang	Humidity:	35%
Cust. Ref. No.:	274	Power:	12 Vdc
		Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.249	Year:	2001
Method:	ANSI C63.4	Year:	2000

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation
 Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

COMMENTS

EUT OPERATING MODES

DEVIATIONS FROM TEST STANDARD

No deviations.

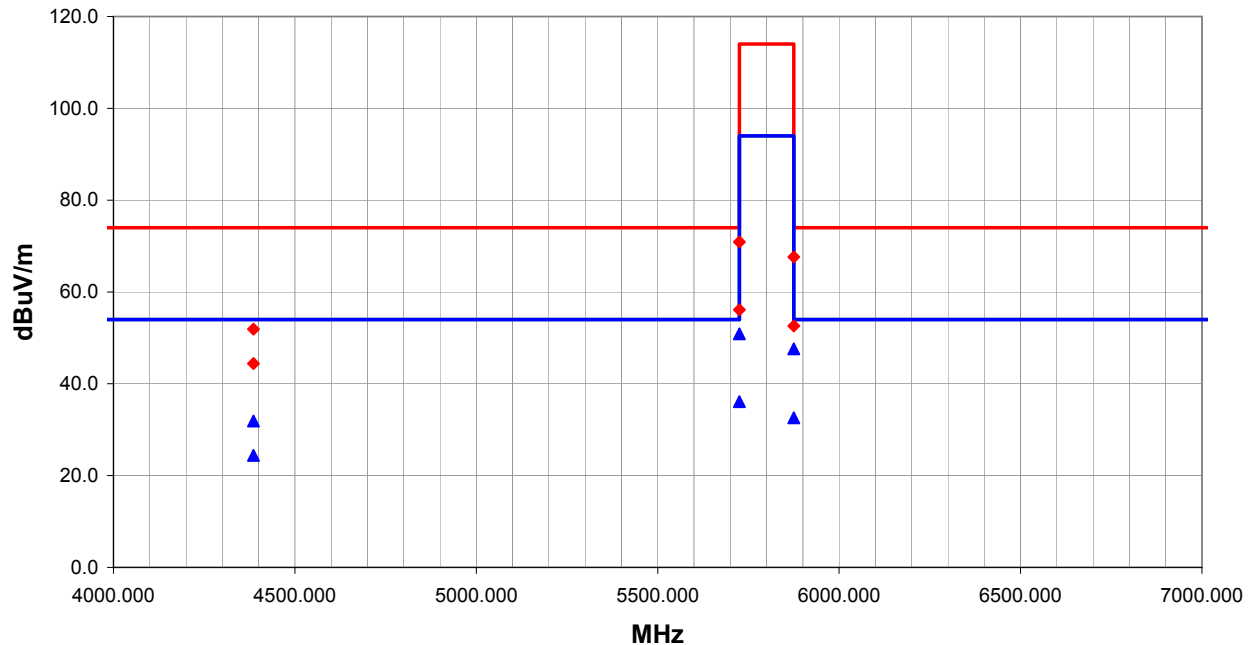
RESULTS

Test Distance (m)	Run #
3	3

Other



Tested By:



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Pulse Desensitization Factor	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
5725.000	63.8	7.1	25.0	1.4	20.0	0.0	V-Horn	AV	0.0	50.9	54.0	-3.1
5875.000	60.5	7.1	36.0	1.1	20.0	0.0	V-Horn	AV	0.0	47.6	54.0	-6.4
5725.000	49.0	7.1	63.0	1.6	20.0	0.0	H-Horn	AV	0.0	36.1	54.0	-17.9
5875.000	45.5	7.1	67.0	1.3	20.0	0.0	H-Horn	AV	0.0	32.6	54.0	-21.4
4386.000	47.2	4.7	30.0	1.3	20.0	0.0	V-Horn	AV	0.0	31.9	54.0	-22.1
4386.000	39.7	4.7	326.0	1.6	20.0	0.0	H-Horn	AV	0.0	24.4	54.0	-29.6
5725.000	63.8	7.1	25.0	1.4	0.0	0.0	V-Horn	PK	0.0	70.9	74.0	-3.1
5875.000	60.5	7.1	36.0	1.1	0.0	0.0	V-Horn	PK	0.0	67.6	74.0	-6.4
5725.000	49.0	7.1	63.0	1.6	0.0	0.0	H-Horn	PK	0.0	56.1	74.0	-17.9
5875.000	45.5	7.1	67.0	1.3	0.0	0.0	H-Horn	PK	0.0	52.6	74.0	-21.4
4386.000	47.2	4.7	30.0	1.3	0.0	0.0	V-Horn	PK	0.0	51.9	74.0	-22.1
4386.000	39.7	4.7	326.0	1.6	0.0	0.0	H-Horn	PK	0.0	44.4	74.0	-29.6