

**Exhibit R: Spurious Radiated Emissions for Radio Outside
of Printer**

FCC ID: HN2EASYLAN

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:

High

Mid

Low

Operating Modes Investigated:

Max Modulated

Antennas Investigated:

Dipole

Omni

Patch

Data Rates Investigated:

Maximum – only one data rate available

Output Power Setting(s) Investigated:

Maximum – only one power level available

Power Input Settings Investigated:

120 VAC, 60 Hz for host device (printer).

Frequency Range Investigated

Start Frequency

30 MHz

Stop Frequency

26 GHz

Software\Firmware Applied During Test

Exercise software	Windows 98 Hyperterminal	Version	Unknown
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Description

Windows 98 Hyperterminal was used to communicate with the RF module embedded firmware.

Equipment Modifications

The following modifications were made to achieve compliance: a) Copper tape was added along the edge of the back RF shield, and b) copper tape was added near the rear I/O mounting screw.

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EASYLAN (EUT) installed outside of printer.	Troy Group, Inc.	00-40-17-OB-74-94	00750740
Printer	INTERMEC	3400E400	E7/199
Dipole antenna	Centurion Inc.	066147	N/A
Patch antenna	Xertex Technologies	067262	102955
Omni Antenna	Cushcraft	063363	N/A

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Antenna Adapter	Yes	.31	No	RF Server	Cushcraft Omni- Directional Antenna / Xertex Patch Antenna
AC Power	No	2.1	No	RF Server	AC Mains

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	Hewlett-Packard	8566B	AAL	03/19/2002	12 mo
Antenna, Biconilog	EMCO	3141	AXE	12/31/2001	12 mo
Pre-Amplifier	Amplifier Research	LN1000A	APS	12/03/2001	12 mo
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APC	11/26/2001	12 mo
Antenna, Horn	EMCO	3115	AHC	08/24/2001	12 mo
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	3115	AHJ	05/16/2001	12 mo
High Pass Filter	RLC Electronics	F-100-4000-5-R (HPF>	HFD	02/04/2002	12 mo

Test Description

Requirement: The field strength of any spurious emissions or modulation products that fall in a restricted band, as defined in 47 CFR 15.205, is measured. The peak level must comply with the limits specified in 47 CFR 15.35(b). The average level (taken with a 10Hz VBW) must comply with the limits specified in 15.209.

Configuration: Each antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT and adjusting the measurement antenna height and polarization (per ANSI C63.4:1992). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

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 except for average measurements above 1 GHz.</i>			

Completed by:



OATS DATA SHEET

EUT: EASLAN Installed Outside of Printer		Work Order: INMC0015
Serial Number: 750740	Date: 4/2/02 20:37	
Customer: INTERMEC	Temperature: 72	
Attendees: None	Tested by: Rod Peloquin	Humidity: 30%
Cust. Ref. No.:	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	
Specification: FCC 15.209	Year: 2001
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 installed outside of printer, 066147 tuned dipole antenna, channels noted in comments below, FFFF data: Soldered RF shields on all available ground pads, tape on lower RF shield grounded to DB-9/DB-25 ground pins

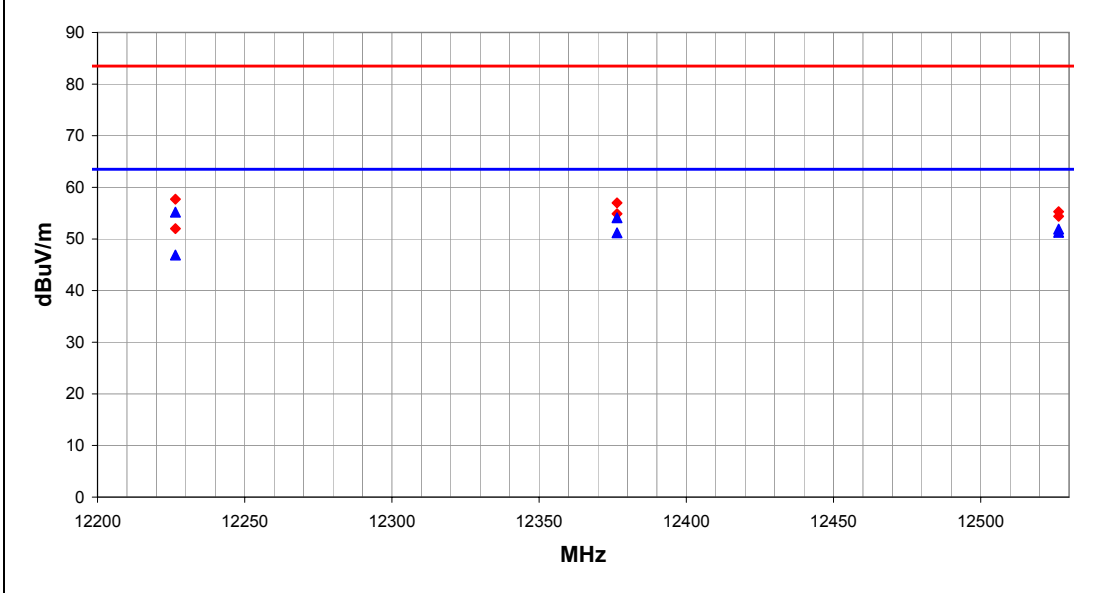
EUT OPERATING MODES

DEVIATIONS FROM TEST STANDARD
 No deviations.

RESULTS	Test Distance (m)	Run #
Pass	1	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 unknown units	Spec. Limit unknown units	Compared to Spec. (dB)	Comments
12226.46	45.7	9.499998	280	1	1	0	H-Horn	AV	0	55.2	63.5	-8.300003	"Channel 1, EUT antenna vertical"
12376.46	44.5	9.600001	280	1	1	0	H-Horn	AV	0	54.1	63.5	-9.399998	"Channel 6, EUT antenna vertical "
12526.46	42.4	9.499999	265	1	1	0	H-Horn	AV	0	51.9	63.5	-11.6	"Channel 11, EUT antenna vertical "
12526.46	41.8	9.499999	90	1	1	0	V-Horn	AV	0	51.3	63.5	-12.2	"Channel 11, EUT antenna vertical "
12376.46	41.6	9.600001	90	1	1	0	V-Horn	AV	0	51.2	63.5	-12.3	"Channel 6, EUT antenna vertical "
12226.46	37.4	9.499998	90	1	1	0	V-Horn	AV	0	46.9	63.5	-16.6	"Channel 1, EUT antenna vertical "
12226.46	48.2	9.499998	280	1	1	0	H-Horn	PK	0	57.7	83.5	-25.8	"Channel 1, EUT antenna vertical"
12376.46	47.4	9.600001	280	1	1	0	H-Horn	PK	0	57	83.5	-26.5	"Channel 6, EUT antenna vertical "
12526.46	45.8	9.499999	265	1	1	0	H-Horn	PK	0	55.3	83.5	-28.2	"Channel 11, EUT antenna vertical "
12376.46	45.3	9.600001	90	1	1	0	V-Horn	PK	0	54.9	83.5	-28.6	"Channel 6, EUT antenna vertical "
12526.46	44.9	9.499999	90	1	1	0	V-Horn	PK	0	54.4	83.5	-29.1	"Channel 11, EUT antenna vertical "
12226.46	42.5	9.499998	90	1	1	0	V-Horn	PK	0	52	83.5	-31.5	"Channel 1, EUT antenna vertical "

OATS DATA SHEET

EUT: EASYLAN Installed Outside of Printer		Work Order: INMC0015
Serial Number: 750740	Date: 4/11/02 10:41	
Customer: INTERMEC Corporation	Temperature: 72	
Attendees: None	Tested by: Rod Peloquin	Humidity: 28%
Cust. Ref. No.:	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	
Specification: FCC 15.209	Year: 2001
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 installed outside of printer, channel 11, 067262 patch antenna, FFFF data: Soldered RF shields on all available ground pads, tape on lower RF shield grounded to DB-9/DB-25 ground pins

EUT OPERATING MODES

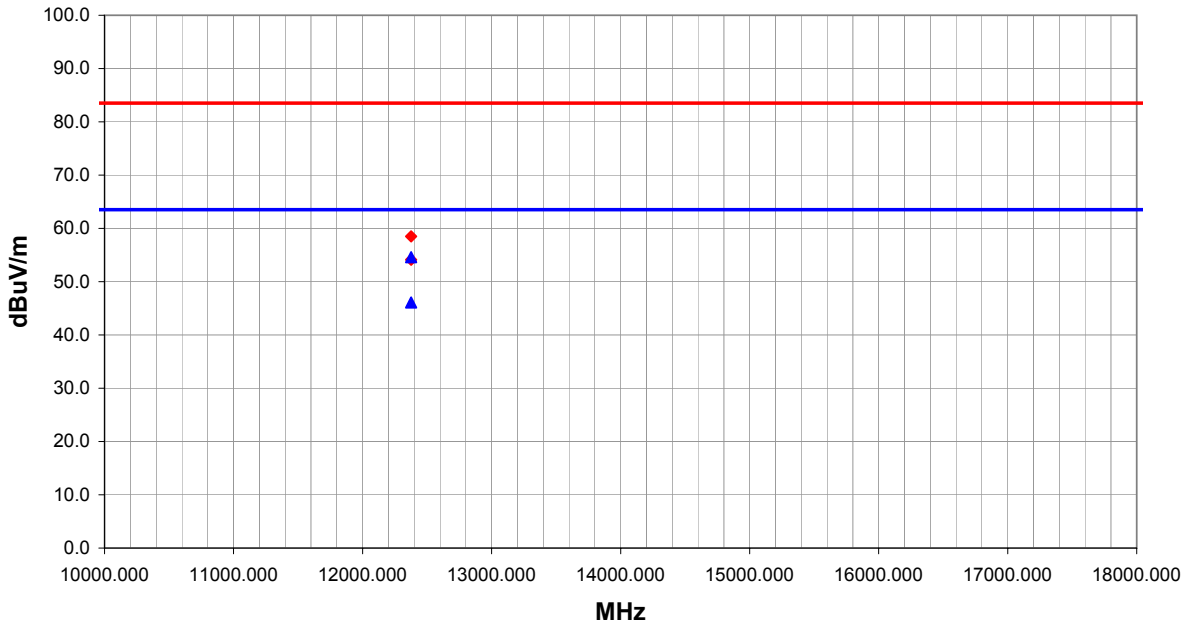
DEVIATIONS FROM TEST STANDARD
 No deviations.

RESULTS	Test Distance (m)	Run #
Pass	1	2

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)	Comments
12376.000	42.3	12.3	290.0	1.0	1.0	0.0	H-Horn	AV	0.0	54.6	63.5	-8.9	"Channel 11 "
12376.000	33.8	12.3	295.0	1.0	1.0	0.0	V-Horn	AV	0.0	46.1	63.5	-17.4	"Channel 11 "
12376.000	46.2	12.3	290.0	1.0	1.0	0.0	H-Horn	PK	0.0	58.5	83.5	-25.0	"Channel 11 "
12376.000	41.8	12.3	295.0	1.0	1.0	0.0	V-Horn	PK	0.0	54.1	83.5	-29.4	"Channel 11 "

OATS DATA SHEET

EUT: EASLAN Installed Outside of Printer		Work Order: INMC0015
Serial Number: 750740	Date: 4/3/02 19:34	
Customer: INTERMEC Corporation	Temperature: 72	
Attendees: None	Tested by: Rod Peloquin	Humidity: 30%
Cust. Ref. No.:	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS		
Specification: FCC 15.209	Year: 2001	
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 installed outside of printer, 063363 omni antenna, channels noted in comments below, FFFF data: Soldered RF shields on all available ground pads, tape on lower RF shield grounded to DB-9/DB-25 ground pins

EUT OPERATING MODES

DEVIATIONS FROM TEST STANDARD

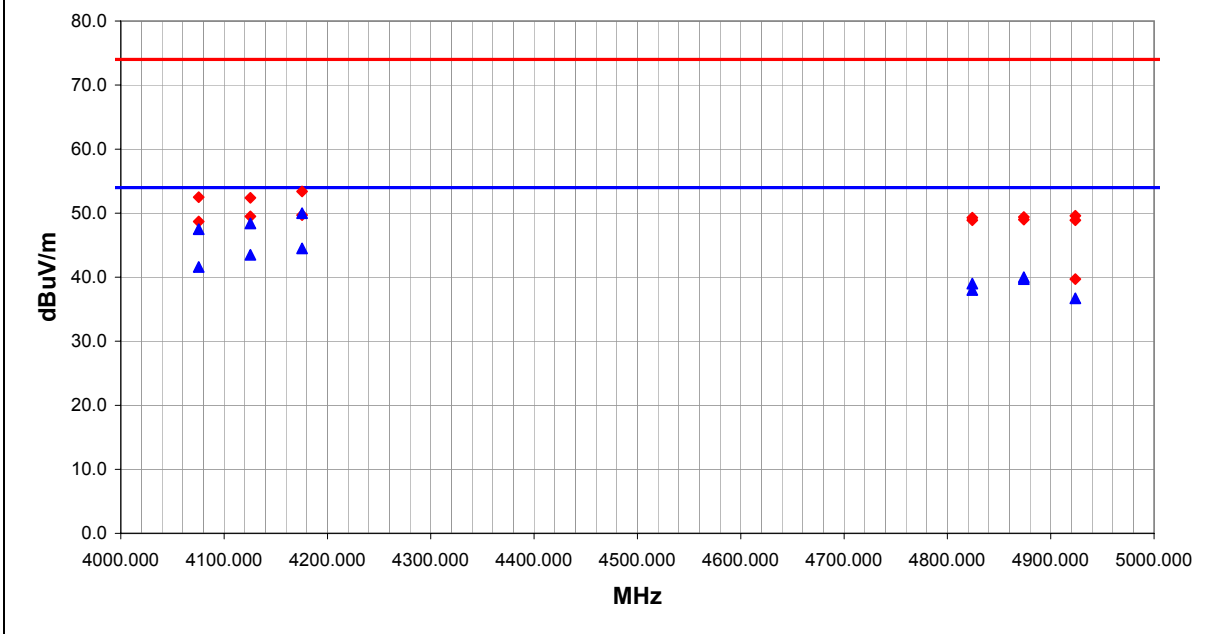
No deviations.

RESULTS	Test Distance (m)	Run #
Pass	3	3

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	Spec. Limit (dB)	Compared to Spec. (dB)	Comments
4175.483	45.2	4.8	36.0	1.2	3.0	0.0	H-Horn	AV	0.0	50.0	54.0	-4.0	"Channel 11"	
4125.480	43.6	4.8	331.0	1.7	3.0	0.0	H-Horn	AV	0.0	48.4	54.0	-5.6	"Channel 6"	
4075.481	42.8	4.7	99.0	1.4	3.0	0.0	H-Horn	AV	0.0	47.5	54.0	-6.5	"Channel 1"	
4175.483	39.7	4.8	337.0	1.4	3.0	0.0	V-Horn	AV	0.0	44.5	54.0	-9.5	"Channel 11"	
4125.480	38.7	4.8	336.0	1.6	3.0	0.0	V-Horn	AV	0.0	43.5	54.0	-10.5	"Channel 6"	
4075.481	36.9	4.7	36.0	1.4	3.0	0.0	V-Horn	AV	0.0	41.6	54.0	-12.4	"Channel 1"	
4873.880	33.8	6.2	60.0	2.9	3.0	0.0	H-Horn	AV	0.0	40.0	54.0	-14.0	"Channel 6"	
4873.880	33.5	6.2	75.0	1.4	3.0	0.0	V-Horn	AV	0.0	39.7	54.0	-14.3	"Channel 6"	
4824.078	33.0	6.0	293.0	1.1	3.0	0.0	V-Horn	AV	0.0	39.0	54.0	-15.0	"Channel 1"	
4824.078	32.0	6.0	341.0	1.3	3.0	0.0	H-Horn	AV	0.0	38.0	54.0	-16.0	"Channel 1"	
4923.875	30.1	6.6	79.0	1.4	3.0	0.0	H-Horn	AV	0.0	36.7	54.0	-17.3	"Channel 11"	
4175.483	48.6	4.8	36.0	1.2	3.0	0.0	H-Horn	PK	0.0	53.4	74.0	-20.6	"Channel 11"	
4075.481	47.8	4.7	99.0	1.4	3.0	0.0	H-Horn	PK	0.0	52.5	74.0	-21.5	"Channel 1"	
4125.480	47.6	4.8	331.0	1.7	3.0	0.0	H-Horn	PK	0.0	52.4	74.0	-21.6	"Channel 6"	
4175.483	44.9	4.8	337.0	1.4	3.0	0.0	V-Horn	PK	0.0	49.7	74.0	-24.3	"Channel aa"	
4923.875	43.0	6.6	75.0	1.5	3.0	0.0	V-Horn	PK	0.0	49.6	74.0	-24.4	"Channel 11"	
4125.480	44.7	4.8	336.0	1.6	3.0	0.0	V-Horn	PK	0.0	49.5	74.0	-24.5	"Channel 6"	
4873.880	43.2	6.2	60.0	2.9	3.0	0.0	H-Horn	PK	0.0	49.4	74.0	-24.6	"Channel 6"	
4824.078	43.3	6.0	293.0	1.1	3.0	0.0	V-Horn	PK	0.0	49.3	74.0	-24.7	"Channel 1"	
4873.880	42.8	6.2	75.0	1.4	3.0	0.0	V-Horn	PK	0.0	49.0	74.0	-25.0	"Channel 6"	
4824.078	42.9	6.0	341.0	1.3	3.0	0.0	H-Horn	PK	0.0	48.9	74.0	-25.1	"Channel 1"	
4923.875	42.3	6.6	79.0	1.4	3.0	0.0	H-Horn	PK	0.0	48.9	74.0	-25.1	"Channel 11"	
4075.481	44.0	4.7	36.0	1.4	3.0	0.0	V-Horn	PK	0.0	48.7	74.0	-25.3	"Channel 1"	
4923.875	33.1	6.6	75.0	1.5	3.0	0.0	V-Horn	PK	0.0	39.7	74.0	-34.3	"Channel 11"	

OATS DATA SHEET

EUT: EASLAN Installed Outside of Printer		Work Order: INMC0015
Serial Number: 750740	Date: 4/3/02 19:16	
Customer: INTERMEC Corporation	Temperature: 72	
Attendees: None	Tested by: Rod Peloquin	Humidity: 28%
Cust. Ref. No.:	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	
Specification: FCC 15.209	Year: 2001
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 installed outside of printer, 067262 patch antenna, channels noted in comments below, FFFF data: Soldered RF shields on all available ground pads, tape on lower RF shield grounded to DB-9/DB-25 ground pins

EUT OPERATING MODES

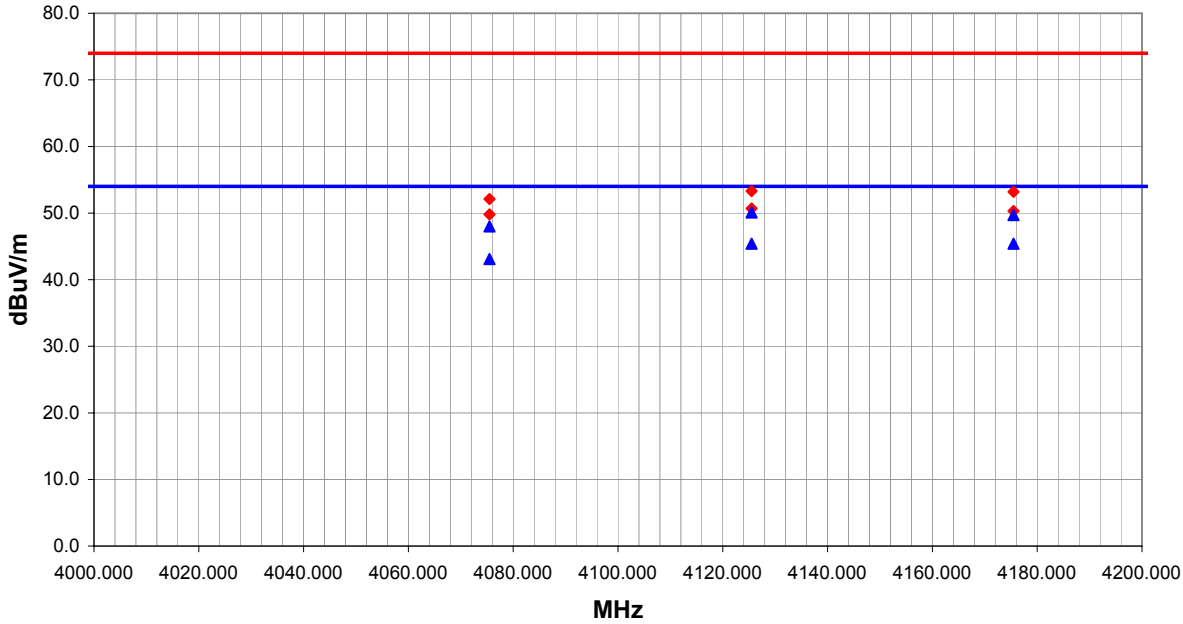
DEVIATIONS FROM TEST STANDARD
 No deviations.

RESULTS	Test Distance (m)	Run #
Pass	3	4

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)	Comments
4125.484	45.3	4.8	324.0	1.7	3.0	0.0	H-Horn	AV	0.0	50.1	54.0	-3.9	"Channel 6 "
4175.483	44.9	4.8	303.0	1.3	3.0	0.0	H-Horn	AV	0.0	49.7	54.0	-4.3	"Channel 11 "
4075.483	43.3	4.7	327.0	1.5	3.0	0.0	H-Horn	AV	0.0	48.0	54.0	-6.0	"Channel 1 "
4125.484	40.6	4.8	50.0	1.1	3.0	0.0	V-Horn	AV	0.0	45.4	54.0	-8.6	"Channel 6 "
4175.483	40.6	4.8	284.0	1.1	3.0	0.0	V-Horn	AV	0.0	45.4	54.0	-8.6	"Channel 11 "
4075.483	38.4	4.7	74.0	1.3	3.0	0.0	V-Horn	AV	0.0	43.1	54.0	-10.9	"Channel 1 "
4125.484	48.5	4.8	324.0	1.7	3.0	0.0	H-Horn	PK	0.0	53.3	74.0	-20.7	"Channel 6 "
4175.483	48.4	4.8	303.0	1.3	3.0	0.0	H-Horn	PK	0.0	53.2	74.0	-20.8	"Channel 11 "
4075.483	47.4	4.7	327.0	1.5	3.0	0.0	H-Horn	PK	0.0	52.1	74.0	-21.9	"Channel 1 "
4125.484	45.9	4.8	50.0	1.1	3.0	0.0	V-Horn	PK	0.0	50.7	74.0	-23.3	"Channel 6 "
4175.483	45.5	4.8	284.0	1.1	3.0	0.0	V-Horn	PK	0.0	50.3	74.0	-23.7	"Channel 11 "
4075.483	45.1	4.7	74.0	1.3	3.0	0.0	V-Horn	PK	0.0	49.8	74.0	-24.2	"Channel 1 "