4.4 Radiated Emissions 15.239
Intentional Radiator (Operation in the Band 88 MHz to 108 MHz)

4.4.1 Car Cradle with FM Aerial Antenna and Sure-Connect Setup

The XM Satellite Radio Inc, **Xpress R** receiver was evaluated for two Sure-Connect accessories: Sure-Connect 1.0 and Sure-Connect 1.5. The **Xpress-R** receiver was set up on a wooden table 80 centimeters above the ground plane turntable of the FCC listed Semi-Anechoic test site.

In the Sure-Connect 1.5 setup Diagram 5A, the EUT was placed into a Universal Car Cradle with an XM FM Coupler (Sure-Connect 1.5) connected to the audio output port (line out) of the car cradle. An XM car antenna is attached to the RF jack of the car cradle. A 5V low noise cigarette lighter adapter (CLA) power supply is connected to the radio, and powered by a car battery which is placed on the floor. Additional test data is also reported for EUT programmed to 96.9 MHz:

- Xpress-R playing content from replay memory
- Xpress-R with the alternate display (Ocular LCD) playing live XM signal

The setup is depicted in Photograph 7 of the technical document 07-027ph.

In the Sure-Connect 1.0 setup Diagram 5, the EUT was placed into an Xpress Car Cradle with an XM FM Coupler attached to the RF jack of the car cradle. An XM car antenna is attached to the FM Coupler's RF jack. A 5V cigarette lighter adapter (CLA) power supply is connected to the radio, and powered by a car battery which is placed on the floor.

The Xpress-R unit is evaluated for two different CLAs:

- The ITI dual ferrite CLA
- The ITI Low-Noise CLA

For the second CLA test, additional data is also reported for EUT programmed to 96.9 MHz, playing content from the internal memory.

Diagram 5 above and Photograph 8, representing the setup previously described, are in the separate document entitled, 07-027ph.

For the evaluations with the Sure-Connect accessories, an EMCO 3104 Broadband Biconical antenna was installed on an EMCO pneumatically controlled Antenna Mast at a distance of 3 meters from the system. The 30 to 200 MHz frequency range was automatically scanned on the HP 8566B Spectrum Analyzer operated in the peak detector mode with a bandwidth of 120 kHz obtained through the HP 85650A Quasi Peak Adapter. It should be noted that the RES BW and VBW of the spectrum analyzer must be set to 1 MHz for the Quasi Peak Adapter to provide 120 kHz bandwidth correctly. Hence, in the figures RES BW and VBW are still indicated as 1 MHz. The turntable was incrementally rotated through 360 degrees and at the same time the receiving antenna was scanned in height from 1 to 4 meters in both the horizontal and vertical polarizations. An EMCO 3146 Log Periodic antenna was then installed and the above procedure was repeated for the 200 to 1000 MHz ranges.

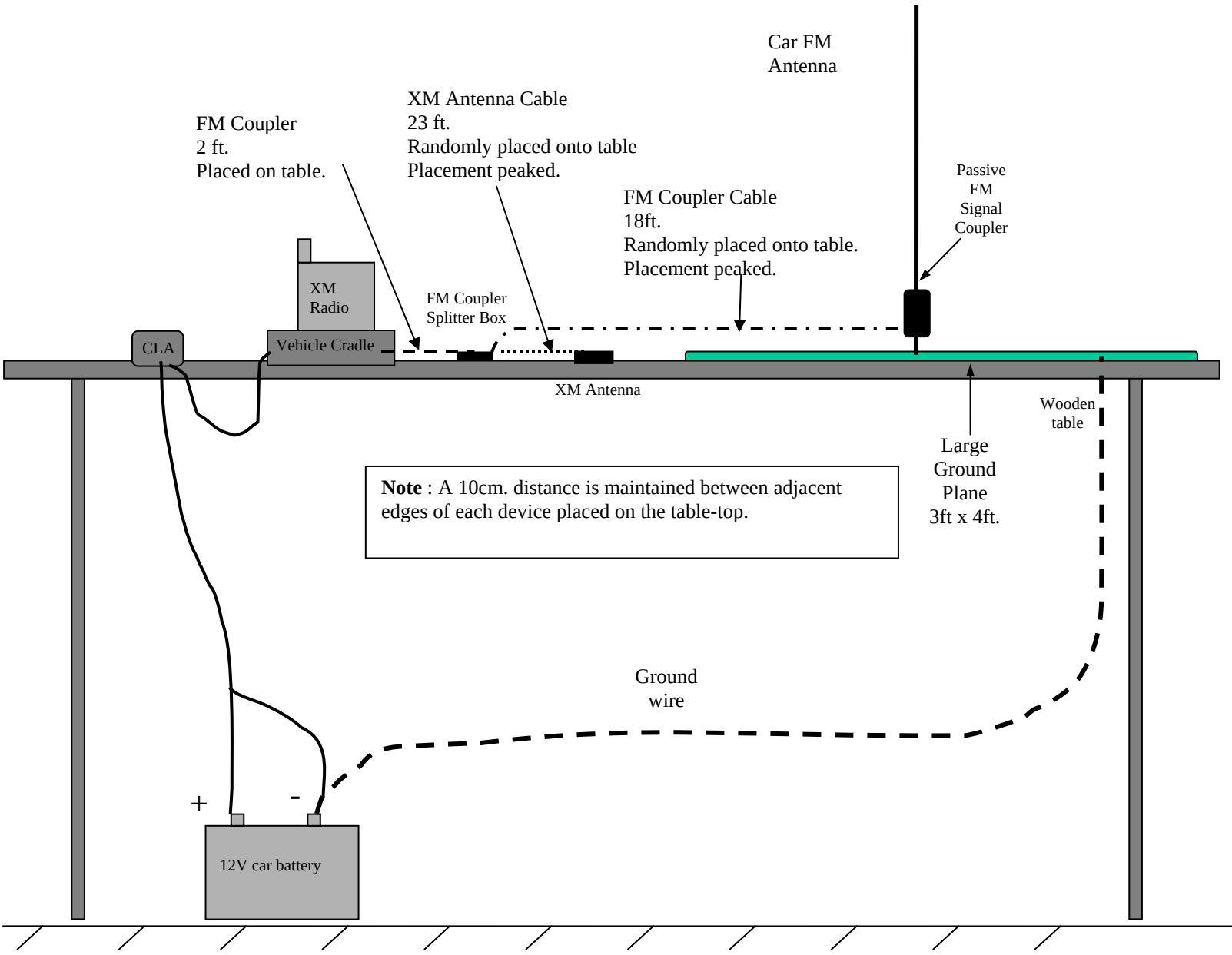


Diagram 5: Intentional Radiator –
FM Aerial Setup with Xpress Car Cradle and SureConnect 1.0

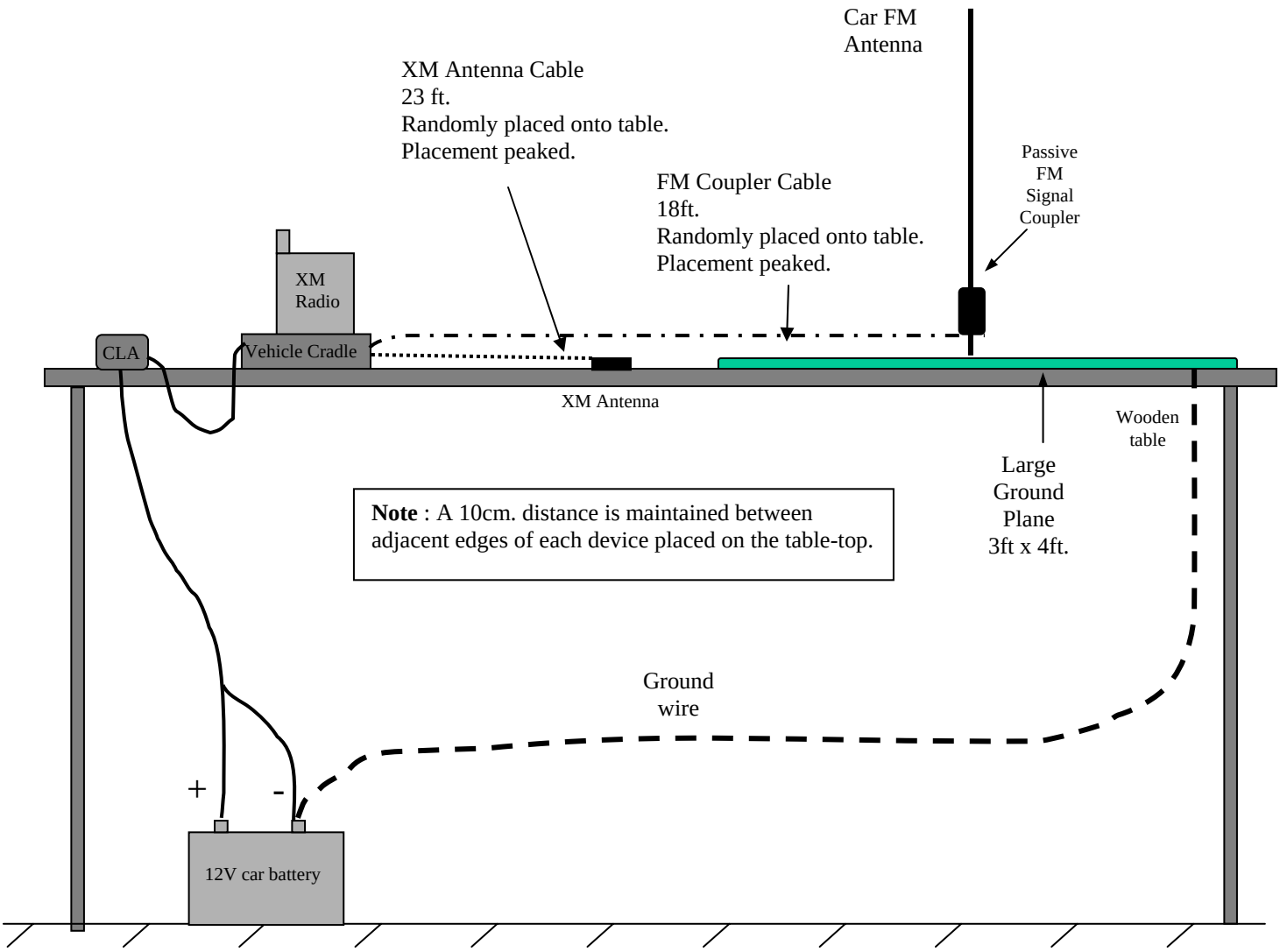


Diagram 5A: Intentional Radiator
FM Aerial Setup with Universal Car Cradle and SureConnect 1.5

The FCC Class B limit lines have been corrected for the appropriate antenna factors, cable loss, and amplifier gain based on the following equation:

E (dBµV/m) = SA reading (dBµV) + Antenna Factor (dB/m) + Cable Loss (dB) - Amp Gain (dB)

It should be noted that the limit line indicated in Figures 80-127 is for FCC Class B unintentional radiators. However, the allowable field strength for Intentional radiation as per Section 15.239 is 250 µV/m or 48 dBµV/m, which is 4.5 dB higher than the unintentional FCC Class B (43.5 dBµV/m) limit in this frequency range. As an example, the measured value at 96.9 MHz on Figure 93 was 1.58 dB (45.08 dBµV/m) above the FCC Class B unintentional limit, but it was 2.92 dB below the intentional Class B limit of 48 dBµV/m.

4.4.1.1 Universal Car Cradle, FM Aerial Antenna and Sure-Connect 1.5 Data

The Xpress-R unit, placed in the Universal Car Cradle, is set to receive a live XM signal.

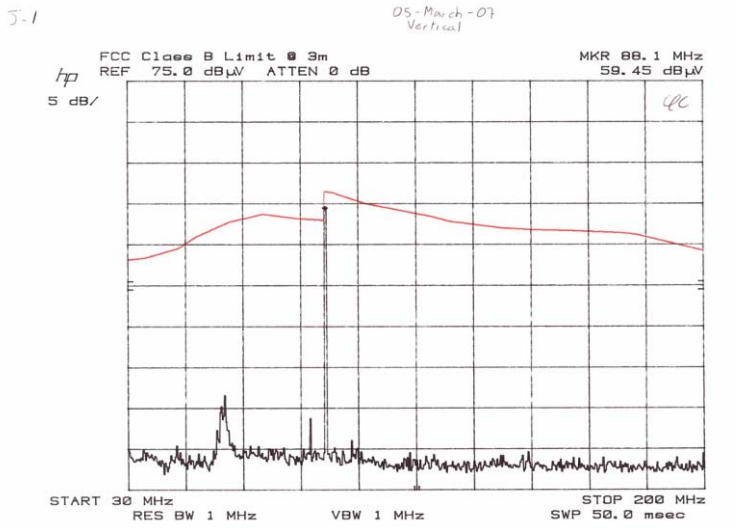


Figure 80 30 MHz to 200 MHz Vertical (FM programmed to 88.1 MHz)

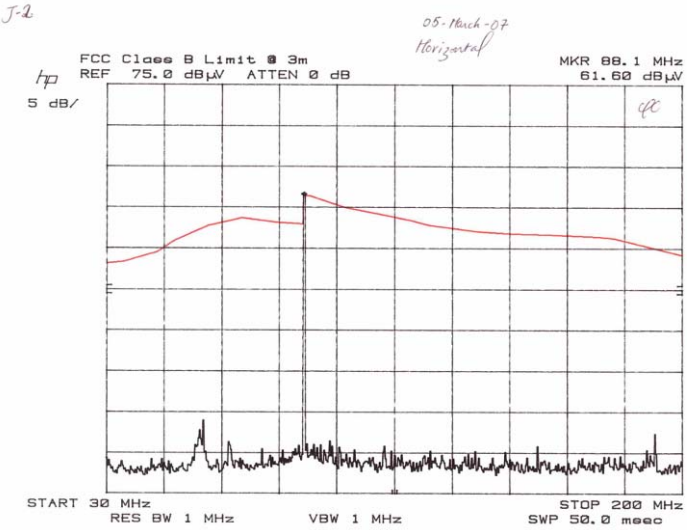


Figure 81 30 MHz to 200 MHz Horizontal (FM programmed to 88.1 MHz)

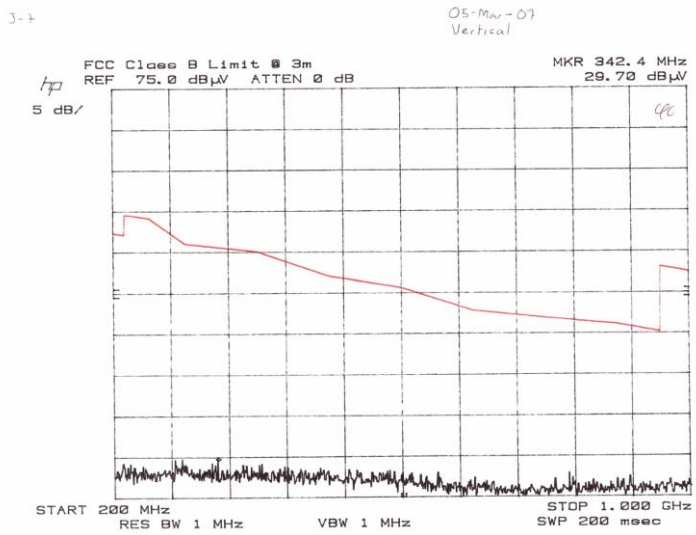


Figure 82 200 MHz to 1 GHZ Vertical (FM programmed to 88.1 MHz)

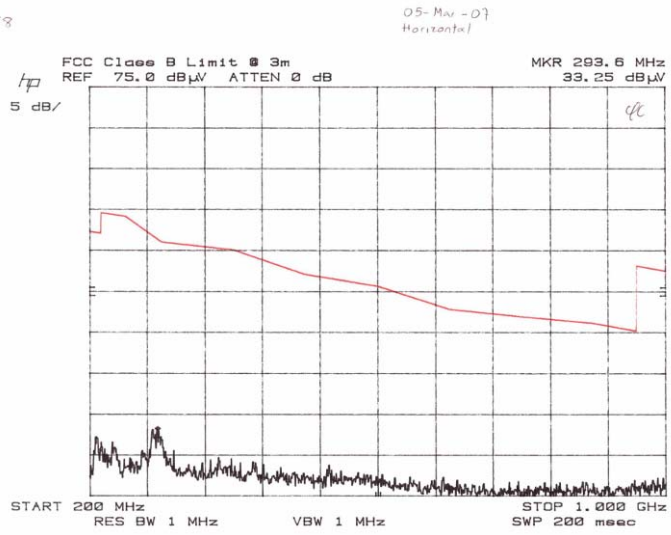


Figure 83 200 MHz to 1 GHz Horizontal (FM programmed to 88.1 MHz)

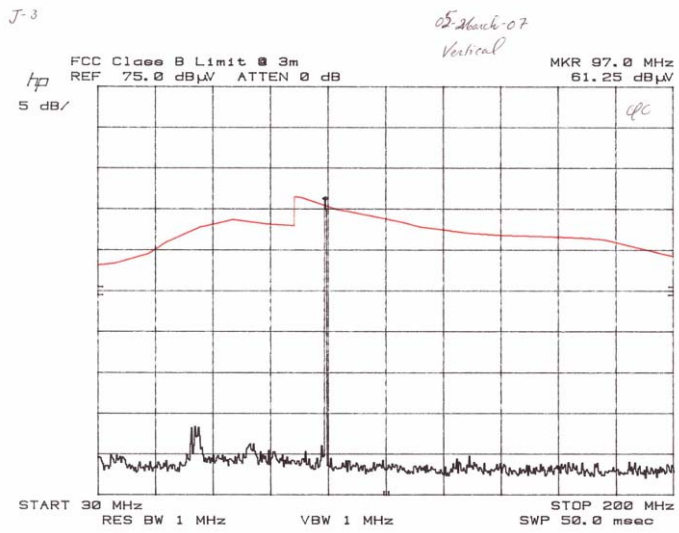


Figure 84 30 MHz to 200 MHz Vertical
(FM programmed to 96.9 MHz)

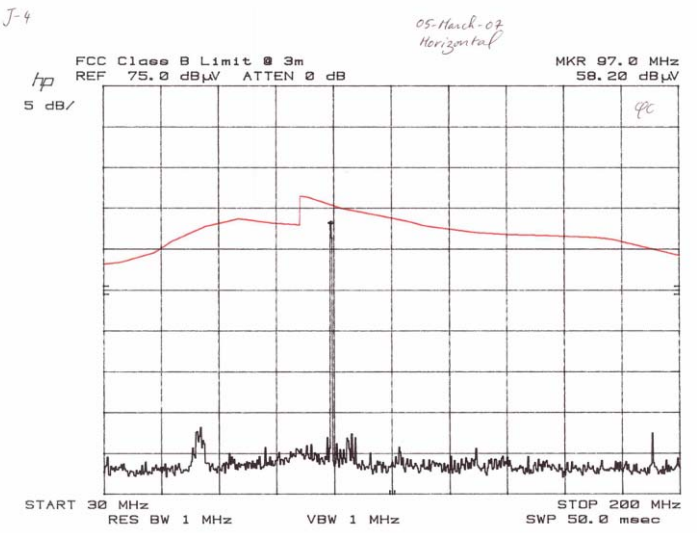


Figure 85 30 MHz to 200 MHz Horizontal
(FM programmed to 96.9 MHz)

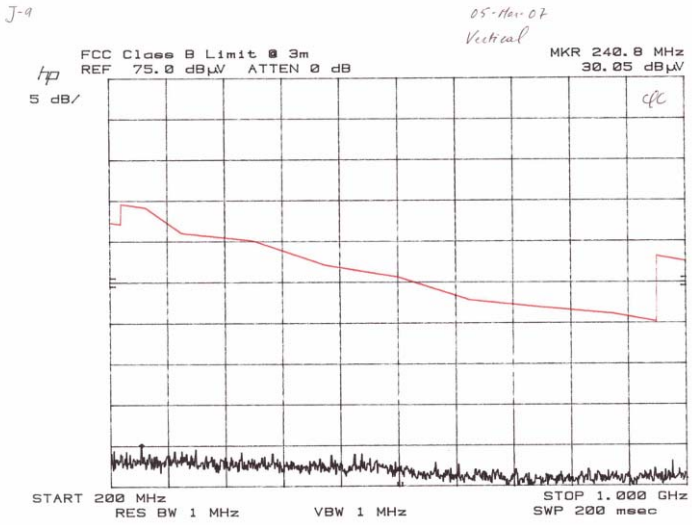


Figure 86 200 MHz to 1 GHZ Vertical
(FM programmed to 96.9 MHz)

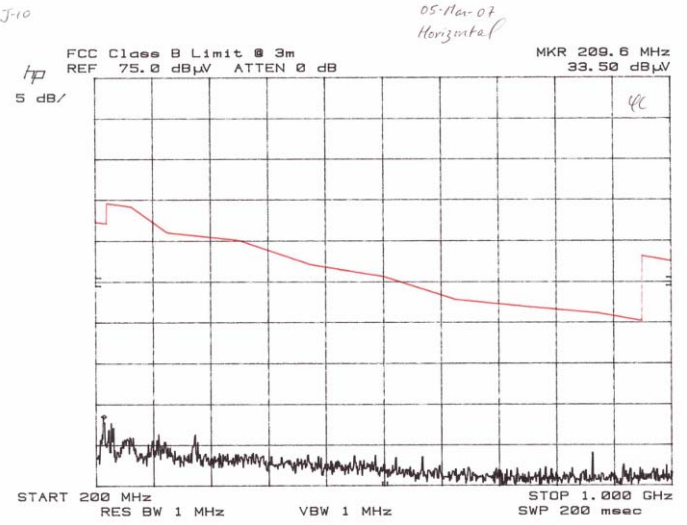


Figure 87 200 MHz to 1 GHz Horizontal
(FM programmed to 96.9 MHz)

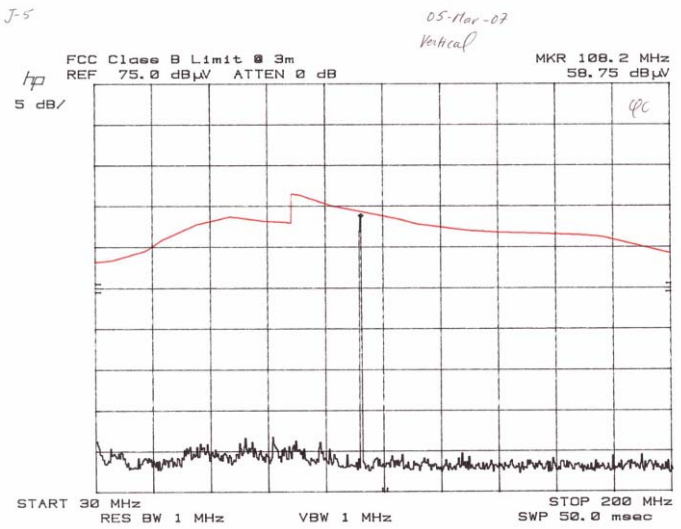


Figure 88 30 MHz to 200 MHz Vertical
(FM programmed to 107.9 MHz)

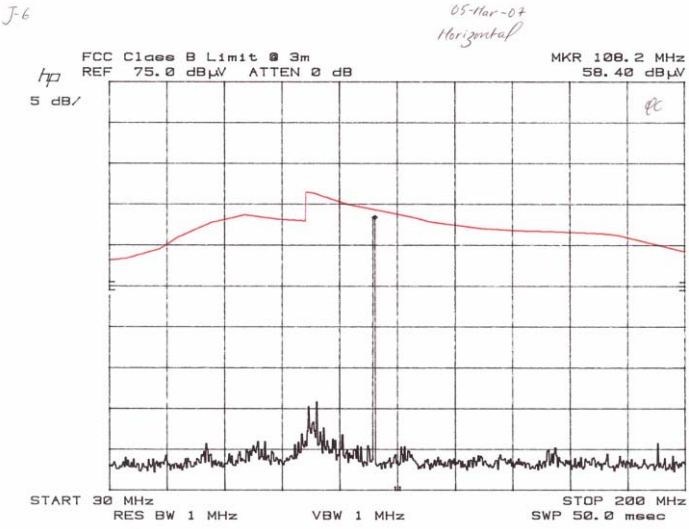


Figure 89 30 MHz to 200 MHz Horizontal
(FM programmed to 107.9 MHz)

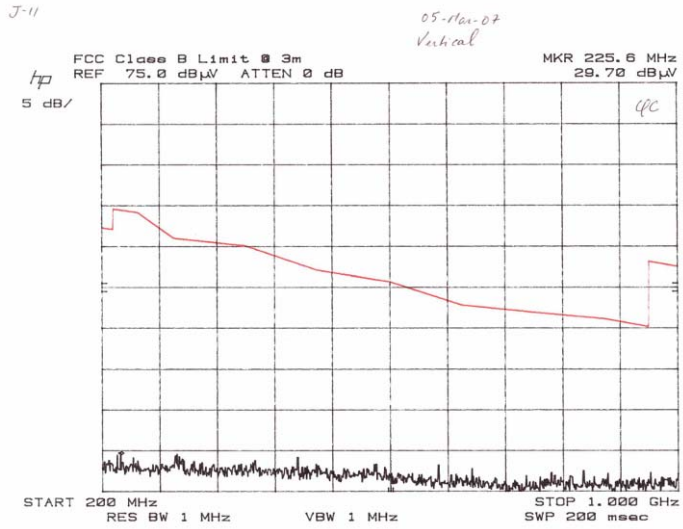


Figure 90 200 MHz to 1 GHz Vertical
(FM programmed to 107.9 MHz)

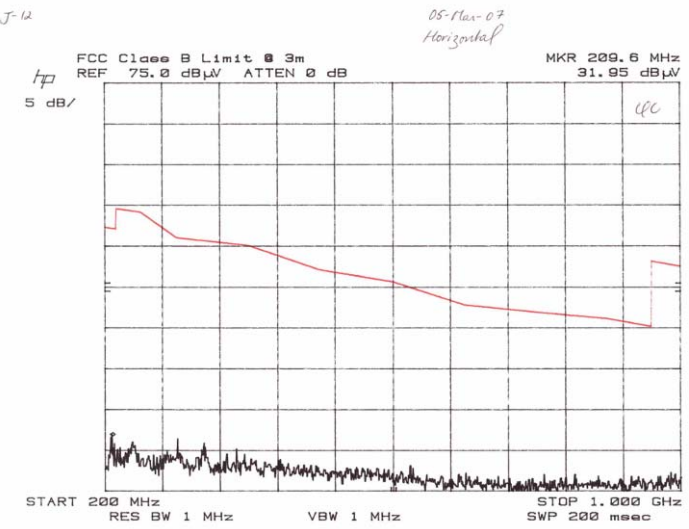


Figure 91 200 MHz to 1 GHz Horizontal
(FM programmed to 107.9 MHz)

4.4.1.1.1 Xpress-R Playing Content from Memory

The Xpress-R receiver , placed in the Universal Car Cradle, programmed to 96.9 MHz, is playing contents from its memory.

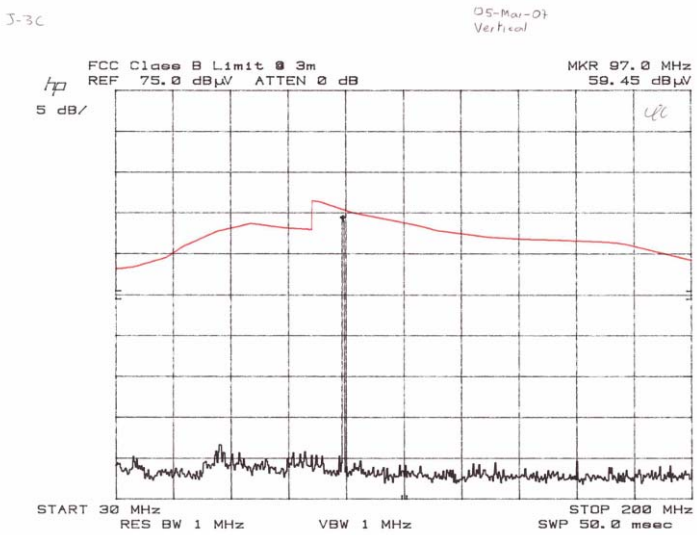


Figure 92 30 MHz to 200 MHz Vertical (FM programmed to 96.9 MHz)

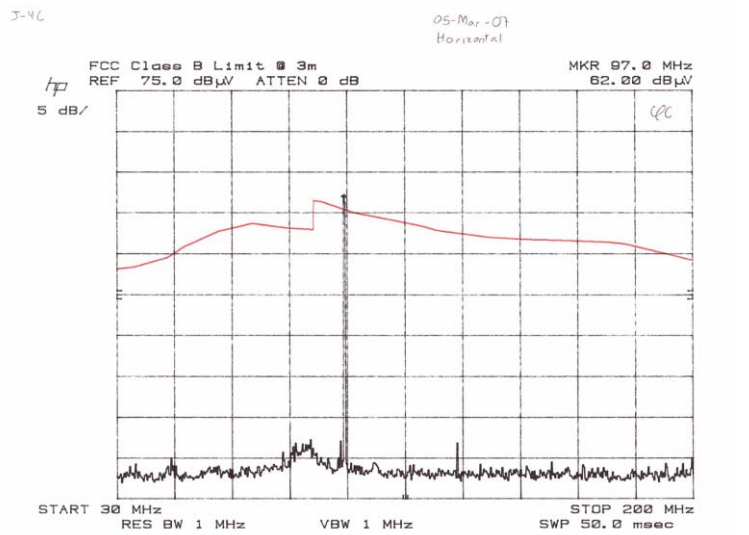


Figure 93 30 MHz to 200 MHz Horizontal (FM programmed to 96.9 MHz)

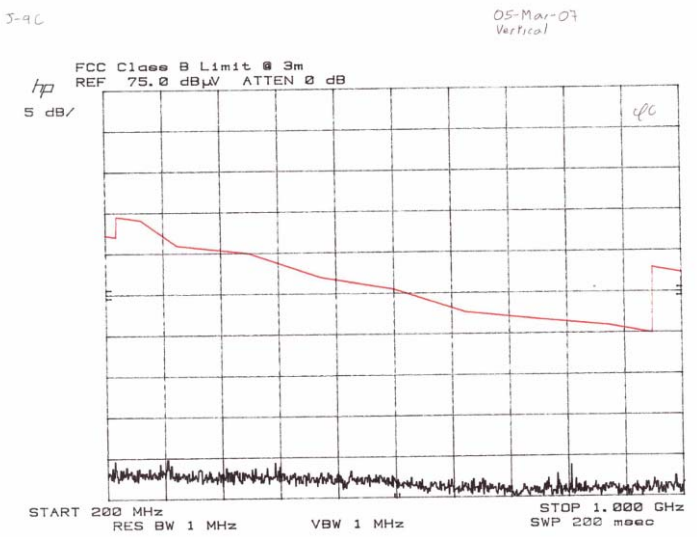


Figure 94 200 MHz to 1 GHZ Vertical (FM programmed to 96.9 MHz)

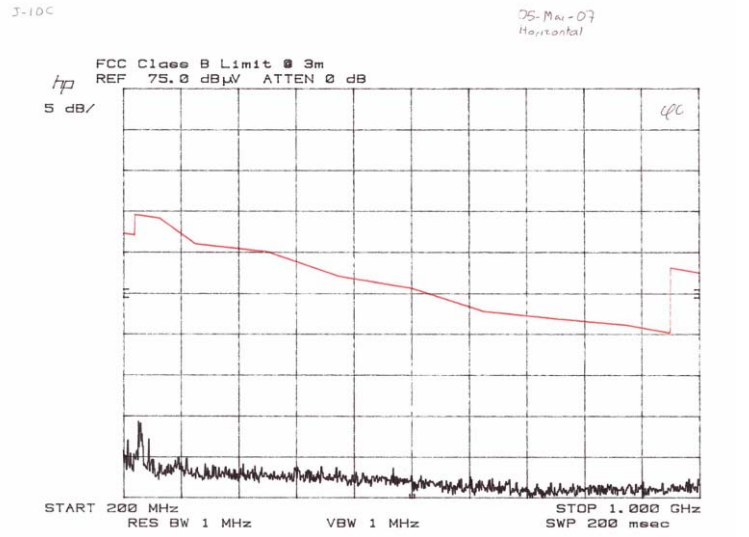


Figure 95 200 MHz to 1 GHz Horizontal (FM programmed to 96.9 MHz

4.4.1.1.2 Xpress-R with Alternate Display

The Xpress-R receiver with the alternate display (Ocular LCD)is programmed to 96.9 MHz and is playing a live XM Satellite Radio content.

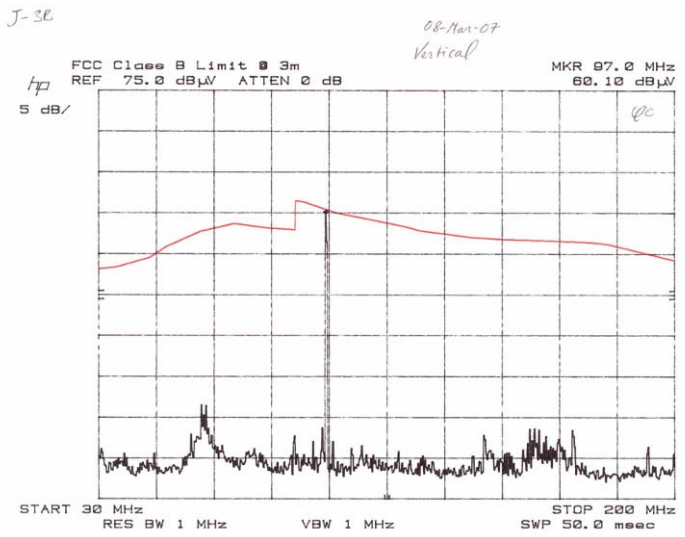


Figure 96 30 MHz to 200 MHz Vertical (FM programmed to 96.9 MHz)

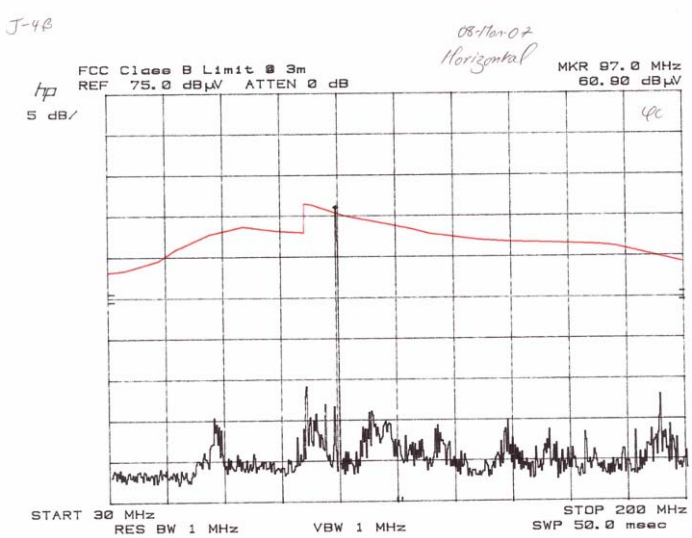


Figure 97 30 MHz to 200 MHz Horizontal (FM programmed to 96.9 MHz)

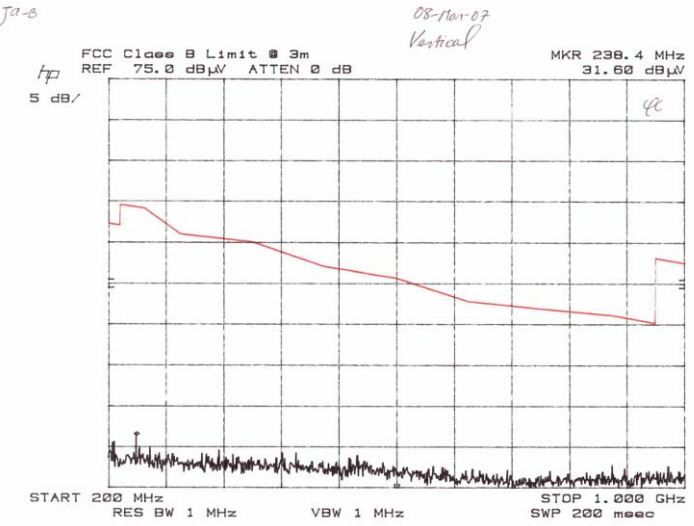


Figure 98 200 MHz to 1 GHZ Vertical (FM programmed to 96.9 MHz)

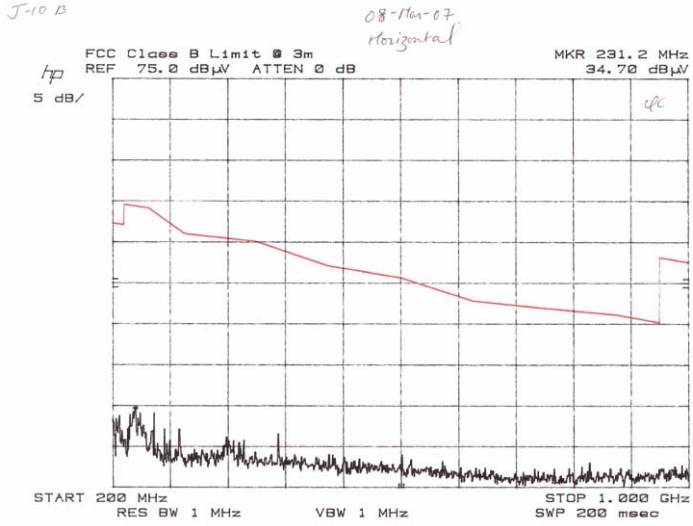


Figure 99 200 MHz to 1 GHz Horizontal (FM programmed to 96.9 MHz)

4.4.1.2 Xpress Car Cradle, FM Aerial Antenna and Sure-Connect 1.0 Data ITI Dual Ferrite CLA

In this configuration, the Xpress-R receiver is placed in the Xpress Car Cradle and powered by the Dual Ferrite CLA.

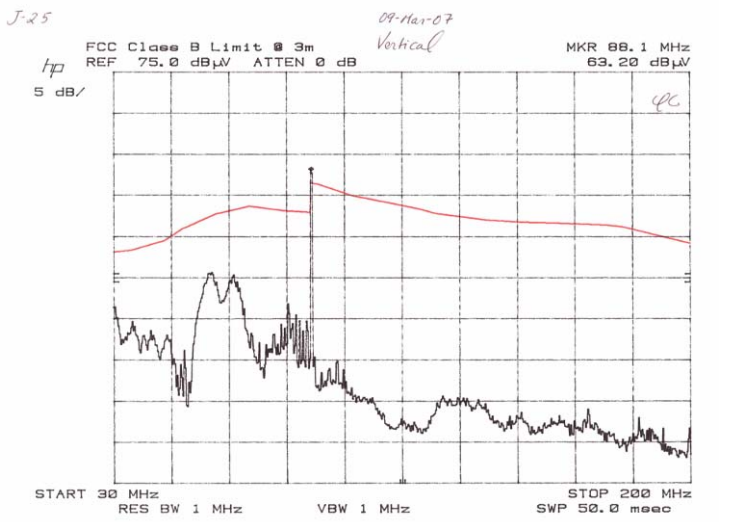


Figure 100 30 MHz to 200 MHz Vertical (FM programmed to 88.1 MHz)

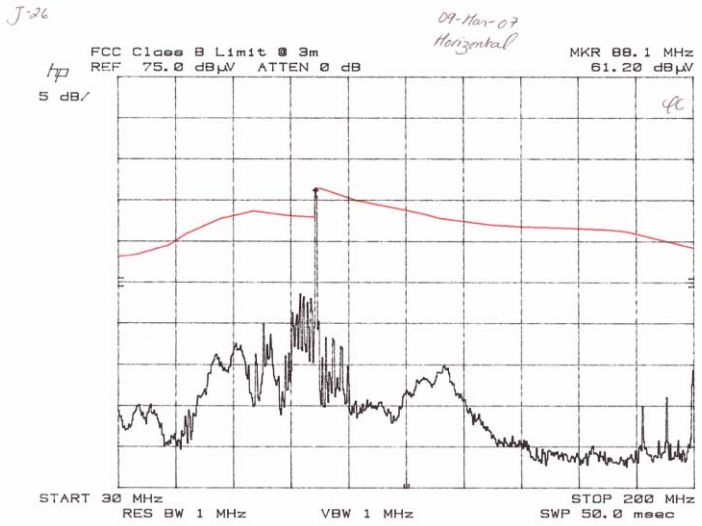


Figure 101 30 MHz to 200 MHz Horizontal (FM programmed to 88.1 MHz)

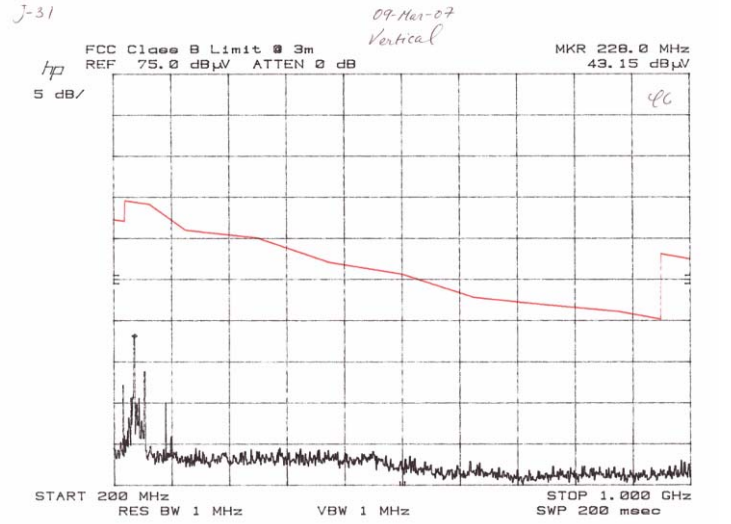


Figure 102 200 MHz to 1 GHZ Vertical (FM programmed to 88.1 MHz)

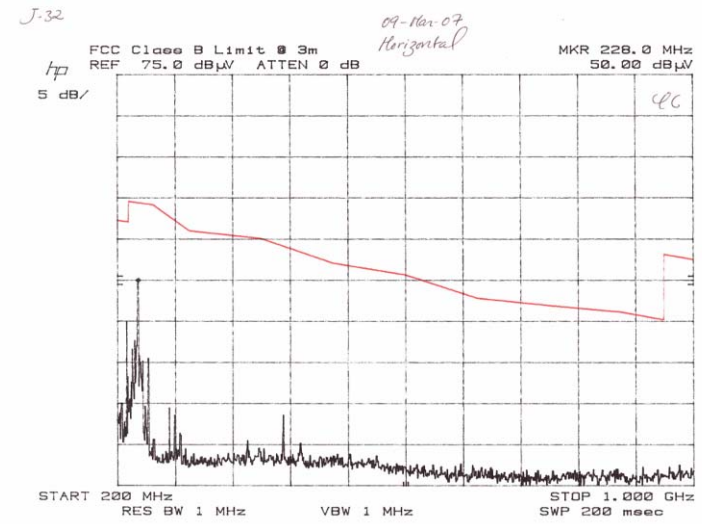


Figure 103 200 MHz to 1 GHz Horizontal (FM programmed to 88.1 MHz

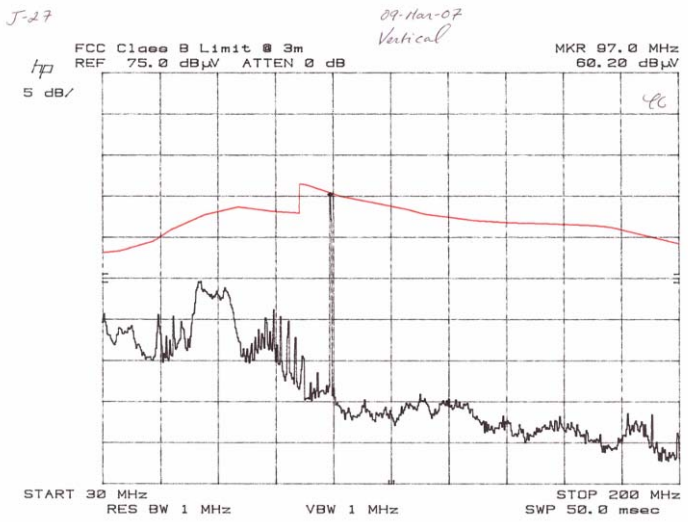


Figure 104 30 MHz to 200 MHz Vertical (FM programmed to 96.9 MHz)

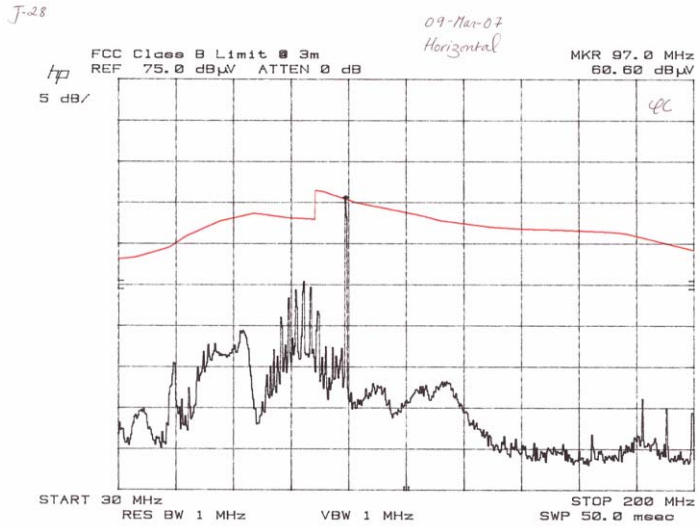


Figure 105 30 MHz to 200 MHz Horizontal (FM programmed to 96.9 MHz)

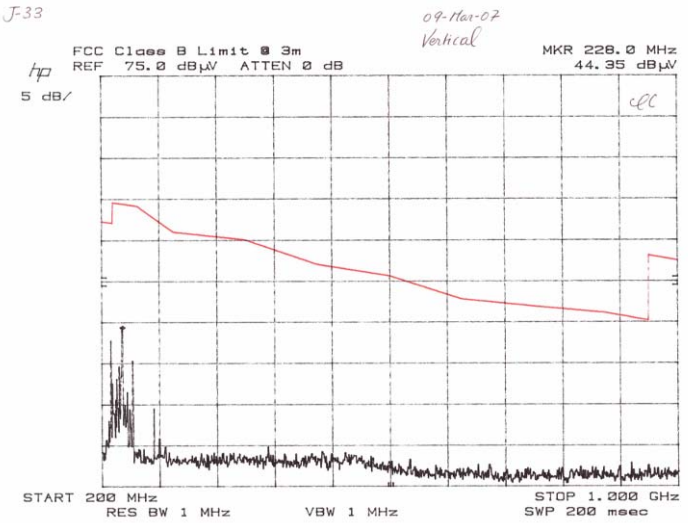


Figure 106 200 MHz to 1 GHZ Vertical (FM programmed to 96.9 MHz)

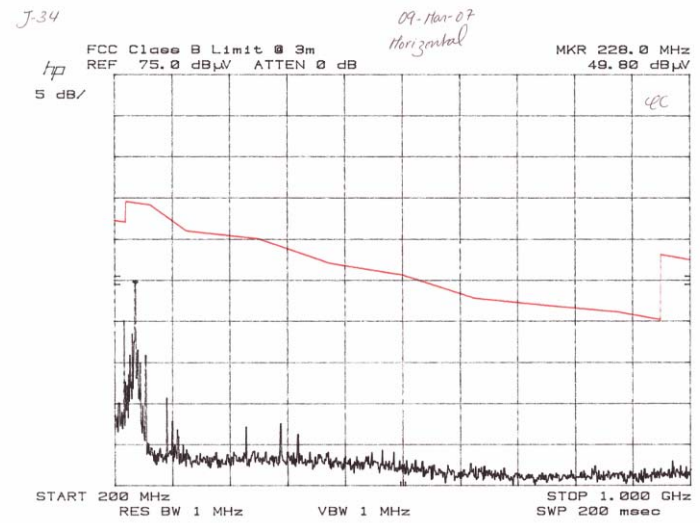


Figure 107 200 MHz to 1 GHz Horizontal (FM programmed to 96.9 MHz)

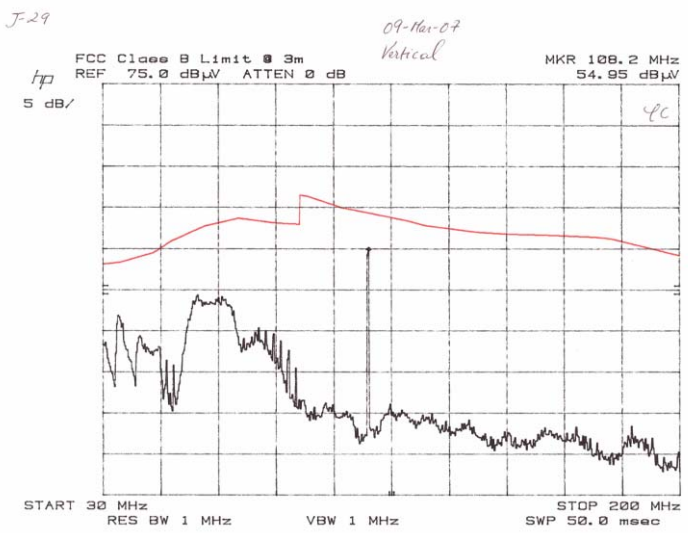


Figure 108 30 MHz to 200 MHz Vertical
(FM programmed to 107.9 MHz)

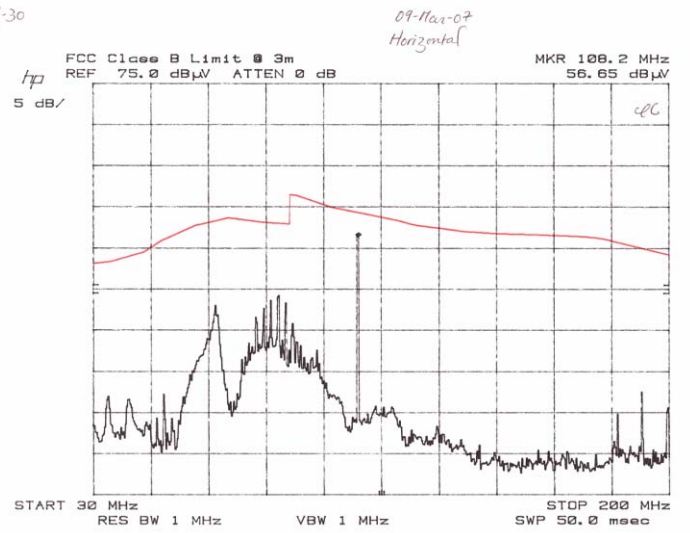


Figure 109 30 MHz to 200 MHz Horizontal
(FM programmed to 107.9 MHz)

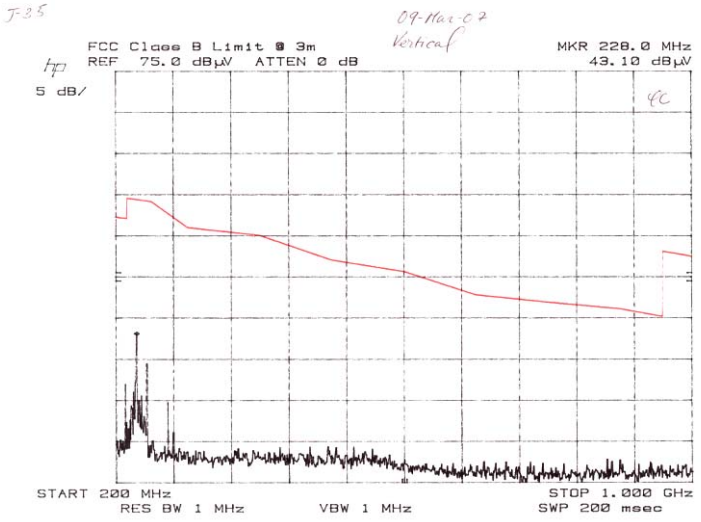


Figure 110 200 MHz to 1 GHz Vertical
(FM programmed to 107.9 MHz)

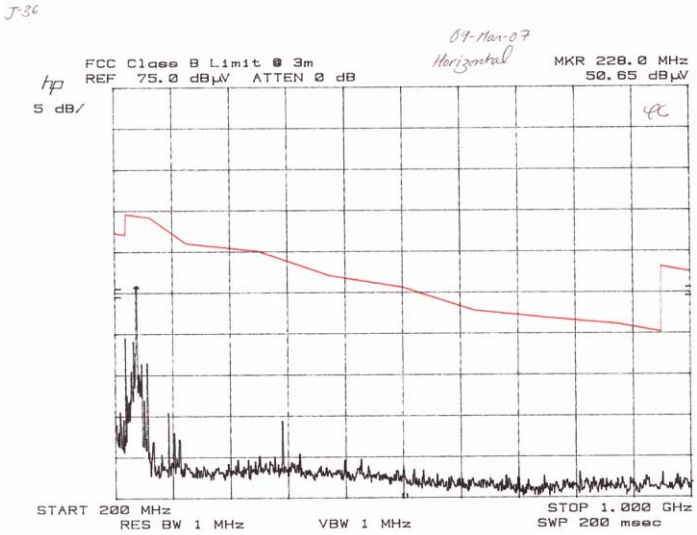


Figure 111 200 MHz to 1 GHz Horizontal
(FM programmed to 107.9 MHz)

4.4.1.3 Xpress Car Cradle, FM Aerial Antenna and Sure-Connect 1.0, ITI Low Noise CLA Data

In this configuration, the Xpress-R receiver is placed in the Xpress-Cradle powered by an ITI Low-Noise CLA.

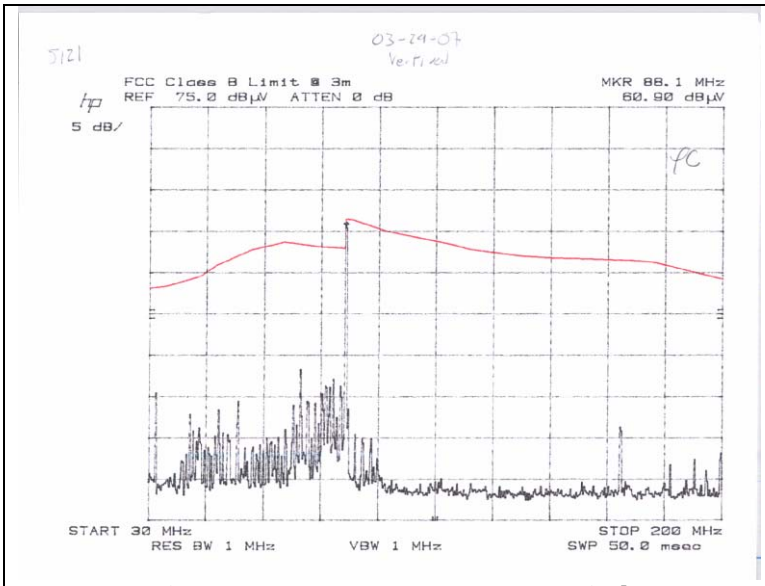


Figure 112 30 MHz to 200 MHz Vertical (FM programmed to 88.1 MHz)

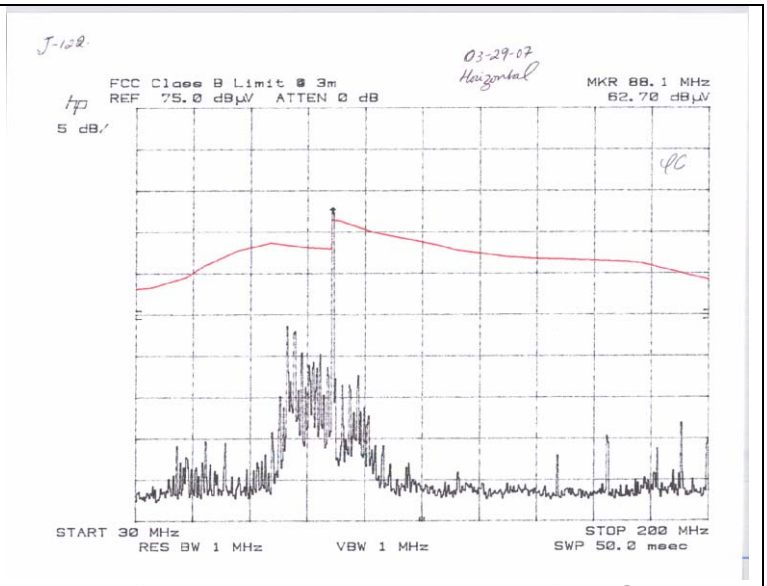


Figure 113 30 MHz to 200 MHz Horizontal (FM programmed to 88.1 MHz)

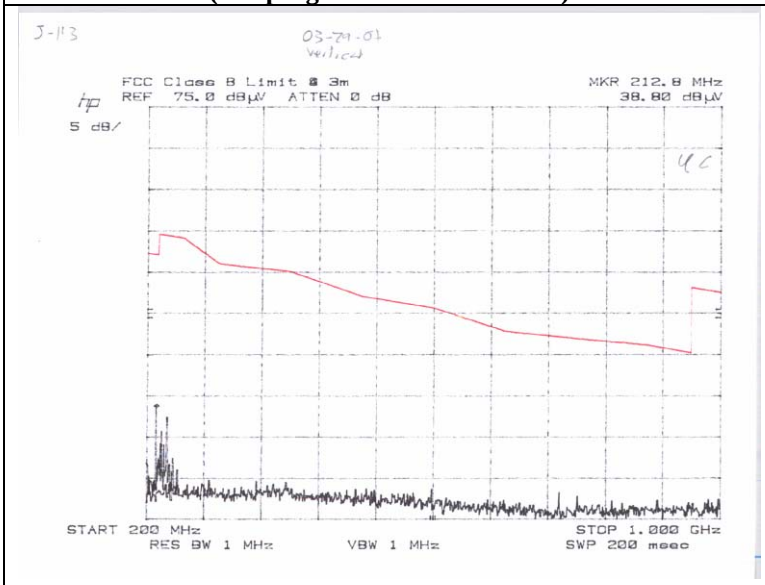


Figure 114 200 MHz to 1 GHz Vertical (FM programmed to 88.1 MHz)

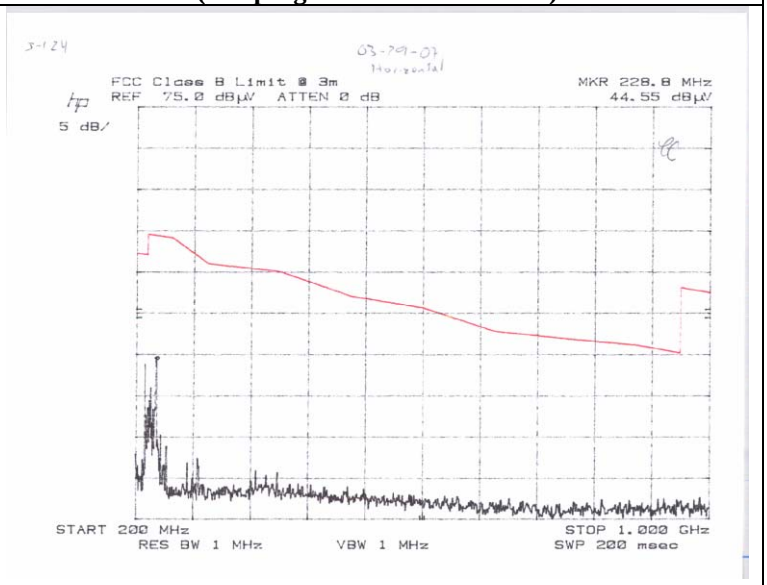


Figure 115 200 MHz to 1 GHz Horizontal (FM programmed to 88.1 MHz)

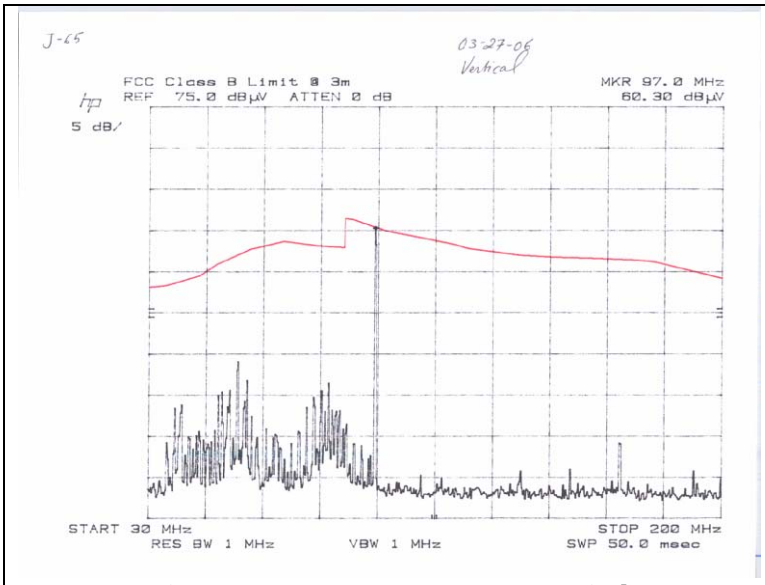


Figure 116 30 MHz to 200 MHz Vertical (FM programmed to 96.9 MHz)

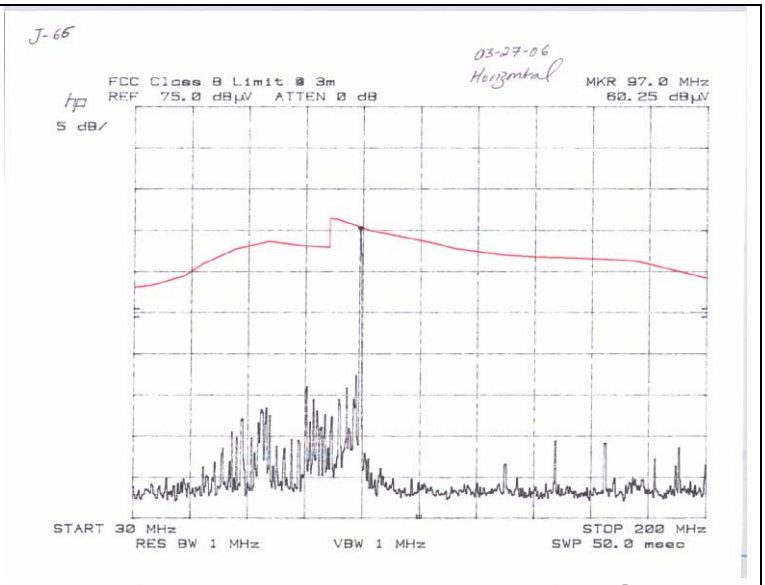


Figure 117 30 MHz to 200 MHz Horizontal (FM programmed to 96.9 MHz)

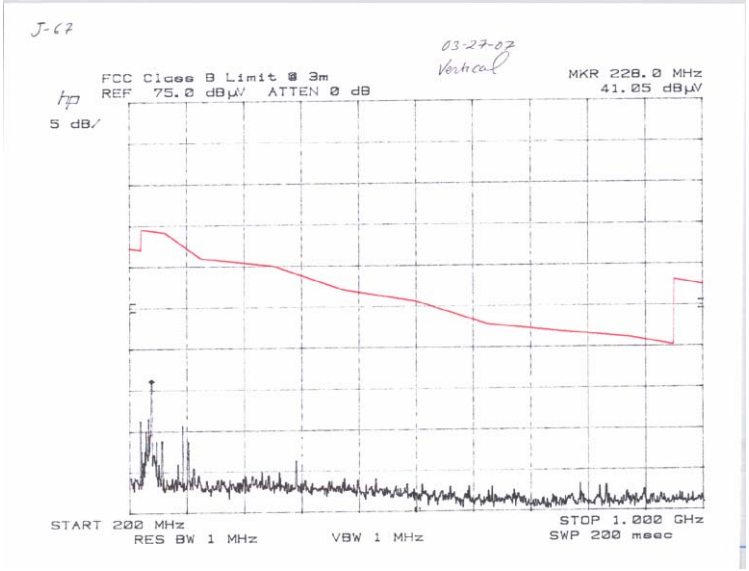


Figure 118 200 MHz to 1 GHz Vertical (FM programmed to 96.9 MHz)

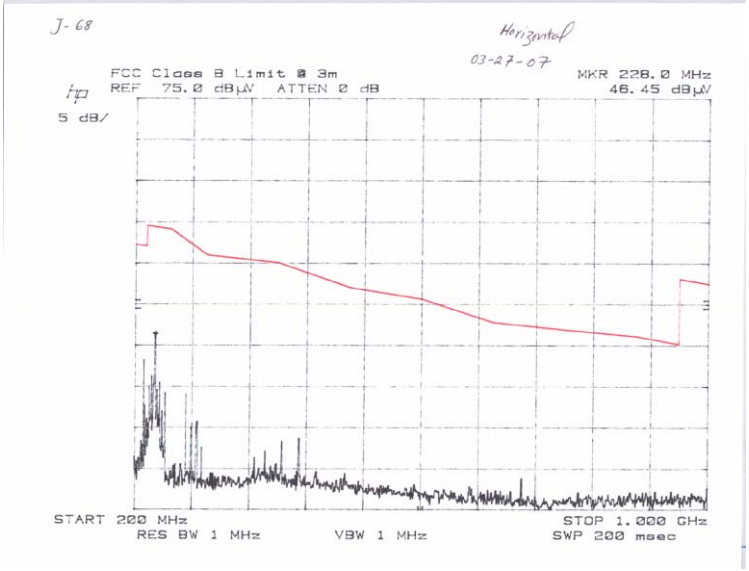


Figure 119 200 MHz to 1 GHz Horizontal (FM programmed to 96.9 MHz)

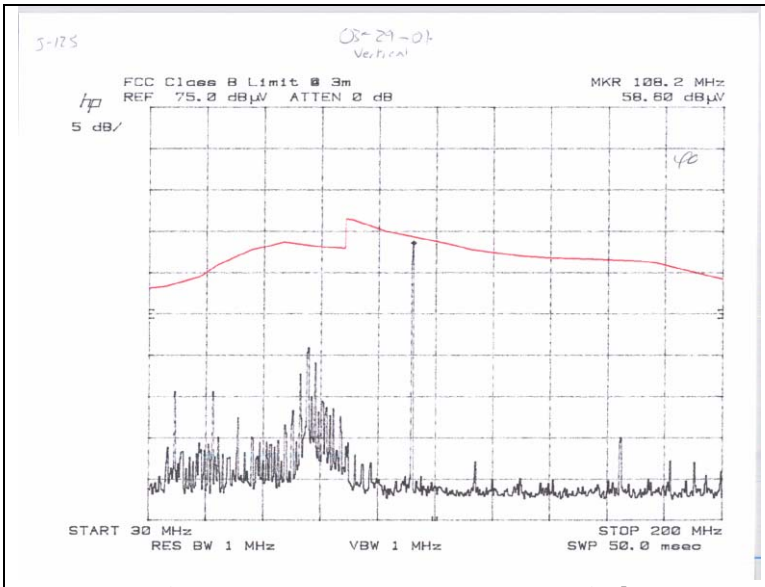


Figure 120 30 MHz to 200 MHz Vertical (FM programmed to 107.9 MHz)

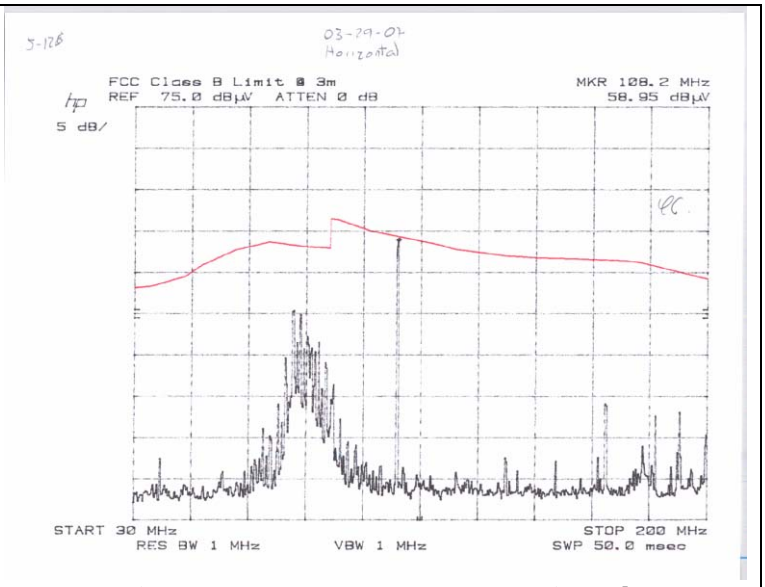


Figure 121 30 MHz to 200 MHz Horizontal (FM programmed to 107.9 MHz)

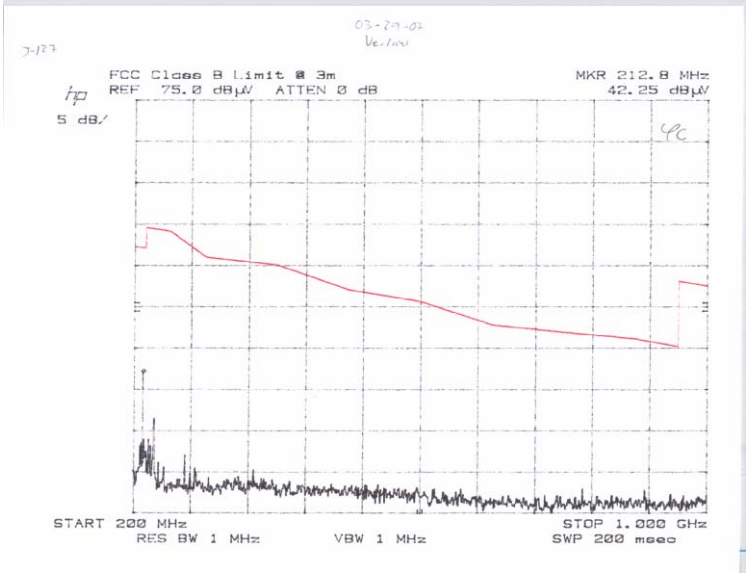


Figure 122 200 MHz to 1 GHz Vertical (FM programmed to 107.9 MHz)

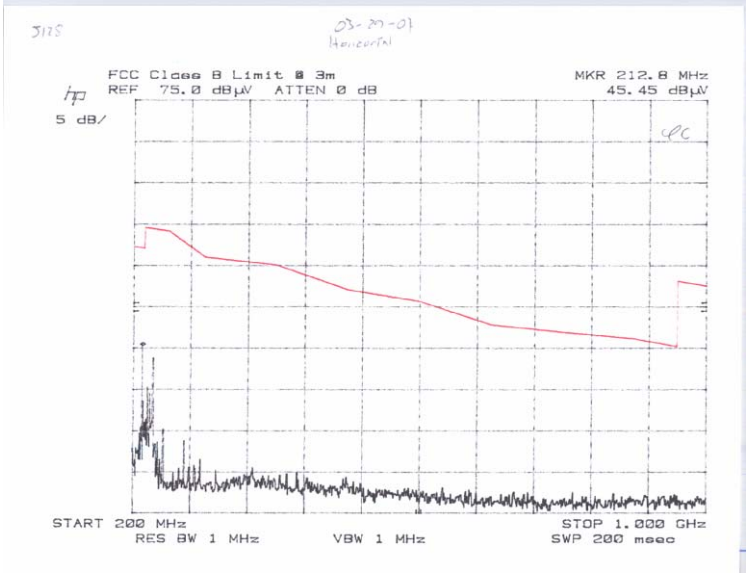


Figure 123 200 MHz to 1 GHz Horizontal (FM programmed to 107.9 MHz)

4.4.1.3.1 Xpress Car Cradle, FM Aerial Antenna and Sure-Connect 1.0, ITI Low Noise CLA Data, Playing Content from Memory

In this configuration, the Xpress-R unit is placed in the Xpress Car Cradle powered by the ITI Low-Noise CLA. The EUT is set to play contents from its internal memory.

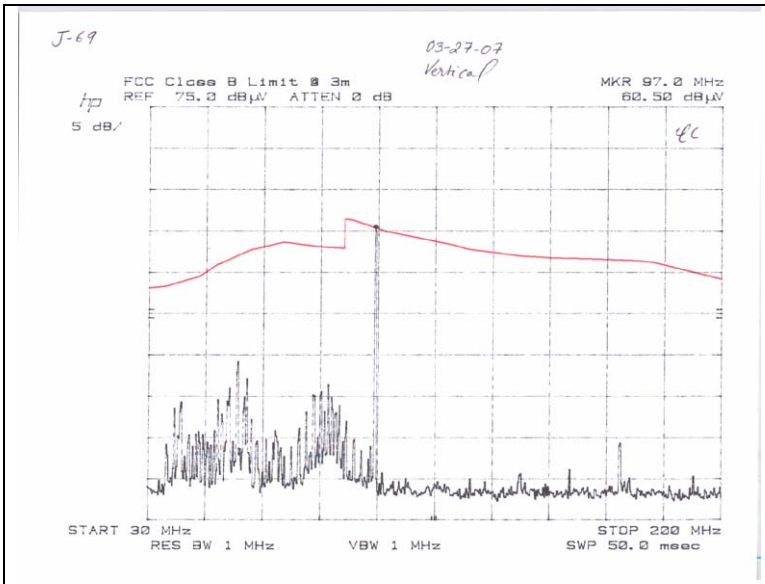


Figure 124 30 MHz to 200 MHz Vertical (FM programmed to 96.9 MHz)

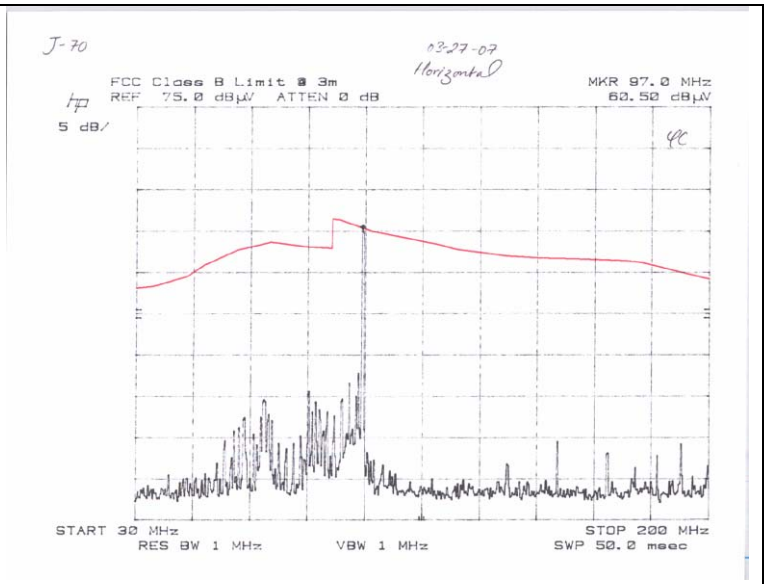


Figure 125 30 MHz to 200 MHz Horizontal (FM programmed to 96.9 MHz)

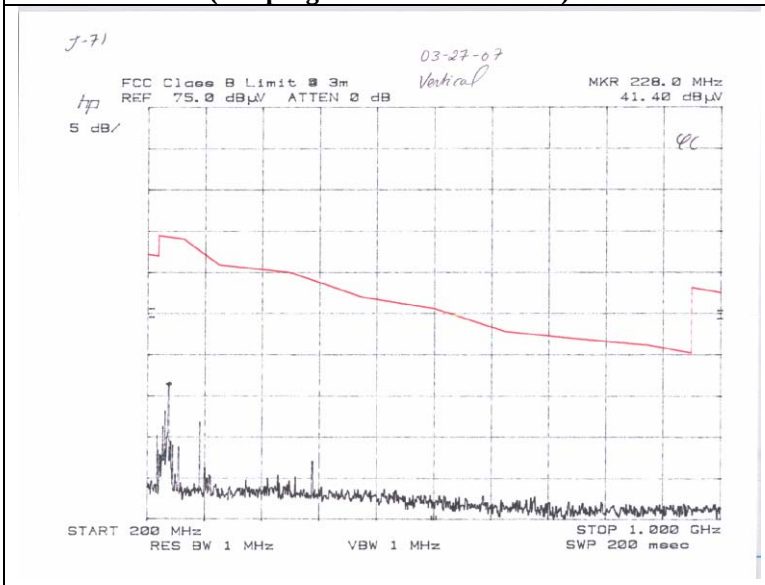


Figure 126 200 MHz to 1 GHz Vertical (FM programmed to 96.9 MHz)

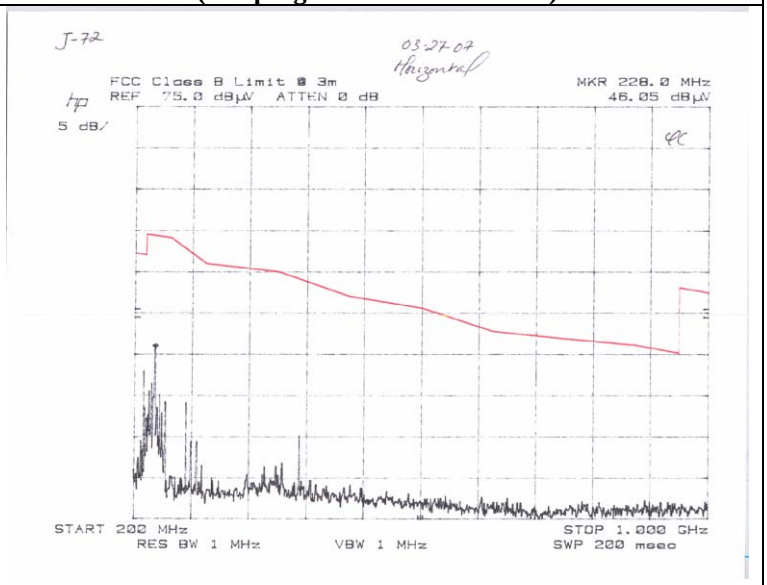


Figure 127 200 MHz to 1 GHz Horizontal (FM programmed to 96.9 MHz)

4.4.2 Data Table

The following table shows peak emissions that were within 5dB of the limit for Figures 80 to 127. Where noted, the QP measurement or intentional radiator limit is used.

		Frequency	Peak Voltage	Quasi Peak	Correction Factor	Corrected Peak Voltage	FCC Limit	Margin to Limit
Figure	Plot ID	(MHz)	(dBµV)	(dBµV)	(dB/m)	(dBµV/m)	dBµV/m	dB
81	J-2	88.1	61.6		17.95	43.65	48*	4.35
84	J-3	96.9	61.25		16.92	44.33	48*	3.67
88	J-5	107.9	58.75		15.85	42.9	48*	5.1
89	J-6	107.9	58.4		15.85	42.55	48*	5.45
92	J-3C	96.9	59.45		16.92	42.53	48*	5.47
93	J-4C	96.9	62.0		16.92	45.08	48*	2.92
96	J-3B	96.9	60.1		16.92	43.18	48*	4.82
97	J-4B	96.9	60.9		16.92	43.98	48*	4.02
100	J-25	88.1	63.2		17.95	45.25	48*	2.75
101	J-26	88.1	61.2		17.95	43.25	48*	4.75
104	J-27	96.9	60.2		16.92	43.28	48*	4.72
105	J-28	96.9	60.6		16.92	43.68	48*	4.32
112	J-121	88.1	60.9		17.95	42.95	48*	5.05
113	J-122	88.1	62.7		17.95	44.75	48*	3.25
116	J-65	96.9	60.3		16.92	43.38	48*	4.62
117	J-66	96.9	60.25		16.92	43.33	48*	4.67
120	J-125	107.9	58.6		15.85	42.75	48*	5.25
121	J-126	107.9	58.95		15.85	43.1	48*	4.9
124	J-69	96.9	60.5		16.92	43.58	48*	4.42
125	J-70	96.9	60.6		16.92	43.68	48*	4.32

Table 3: Measurements from FAU 3-m chamber

*Note that the intentional radiator limit is used for these frequency points.

It can be seen from the data above that the emissions did not exceed the limit. Hence the device is in compliance.

4.5. Radiated Emissions Measured on Vehicles 15.239

Per FCC instructions, the FM fundamental power measurements using the FM Coupler device were measured on three different vehicles which utilize embedded FM antennas in the vehicle's glass.

The test vehicles that were used during the test include:

- Lexus SUV
- Toyota Camry
- Cadillac Escalade

The XM satellite Radio, Inc. **Xpress-R** receiver was evaluated respectively in the Universal Car Cradle and the Xpress Car Cradle.

4.5.1 In Vehicle Measurements Test Setup

TEST PROCEDURE

1. The satellite radio receiver and FM Coupler were installed in each vehicle per the installation guidelines provided to the user and tuned to one of the three test FM frequencies.
2. The RBW and VBW of the spectrum analyzer were set to 120 kHz and 300 kHz, respectively. A peak detector was utilized.
3. For tests where the receiving antenna is in Vertical polarization, the receive antenna is initially placed at one meter from the ground. For Horizontal polarization, the receive antenna is initially placed at three meters from the ground.
4. While monitoring the power of the fundamental FM emission, the receive antenna base is moved horizontally along one of the vehicles sides, at 3 meters from the vehicle. The position that produces the highest emission is found.
5. At the position found in step (4) above, the antenna is moved vertically from 1 meter to 4 meters. The highest FM emission is found and recorded.
6. The above procedure is repeated for each of the four sides of the vehicle.
7. The above procedure is repeated for each of three FM frequencies (88.7 MHz, 96.9 MHz and 107.1 MHz). The low and high frequency measurements were taken at 88.7 and 107.1 MHz, respectively, in lieu of 88.1 and 107.7 MHz to avoid interference from FM broadcast stations that were detected on the test range.
8. The cable loss, amplifier gain, and antenna factors are used to determine the absolute field strength from each peak power measurement as shown in the table below.

Test Frequency (MHz)	Vertical Polarization V-Factor	Horizontal Polarization H-Factor
88.7	-19.2 dB/m	-18.8 dB/m
96.9	-20.0 dB/m	-18.2 dB/m
107.1	-21.0 dB/m	-18.7 dB/m

Table 4: Calibration Factors for In-Vehicle Measurements

Diagram 6: In-Vehicle Measurement Method

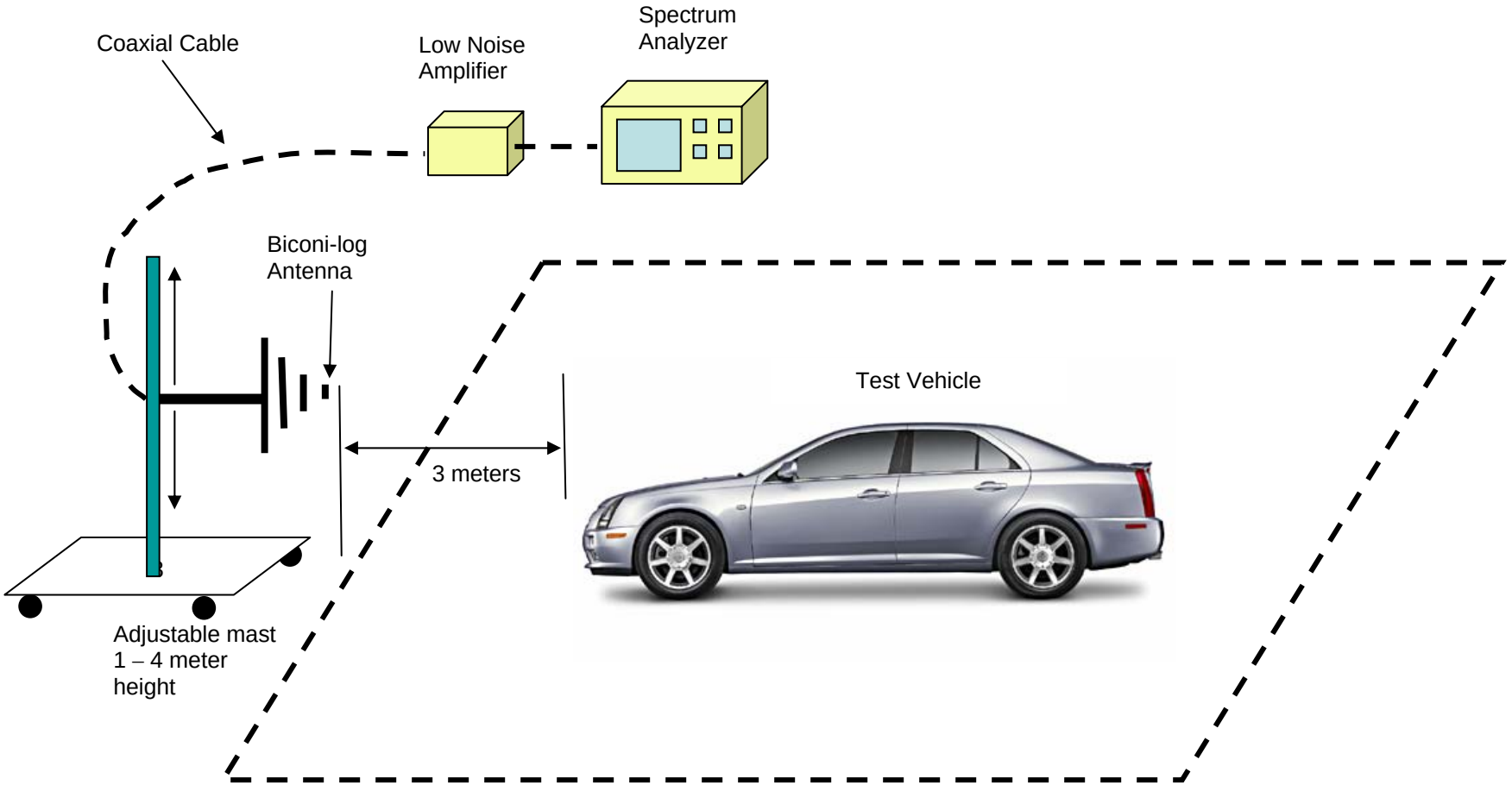
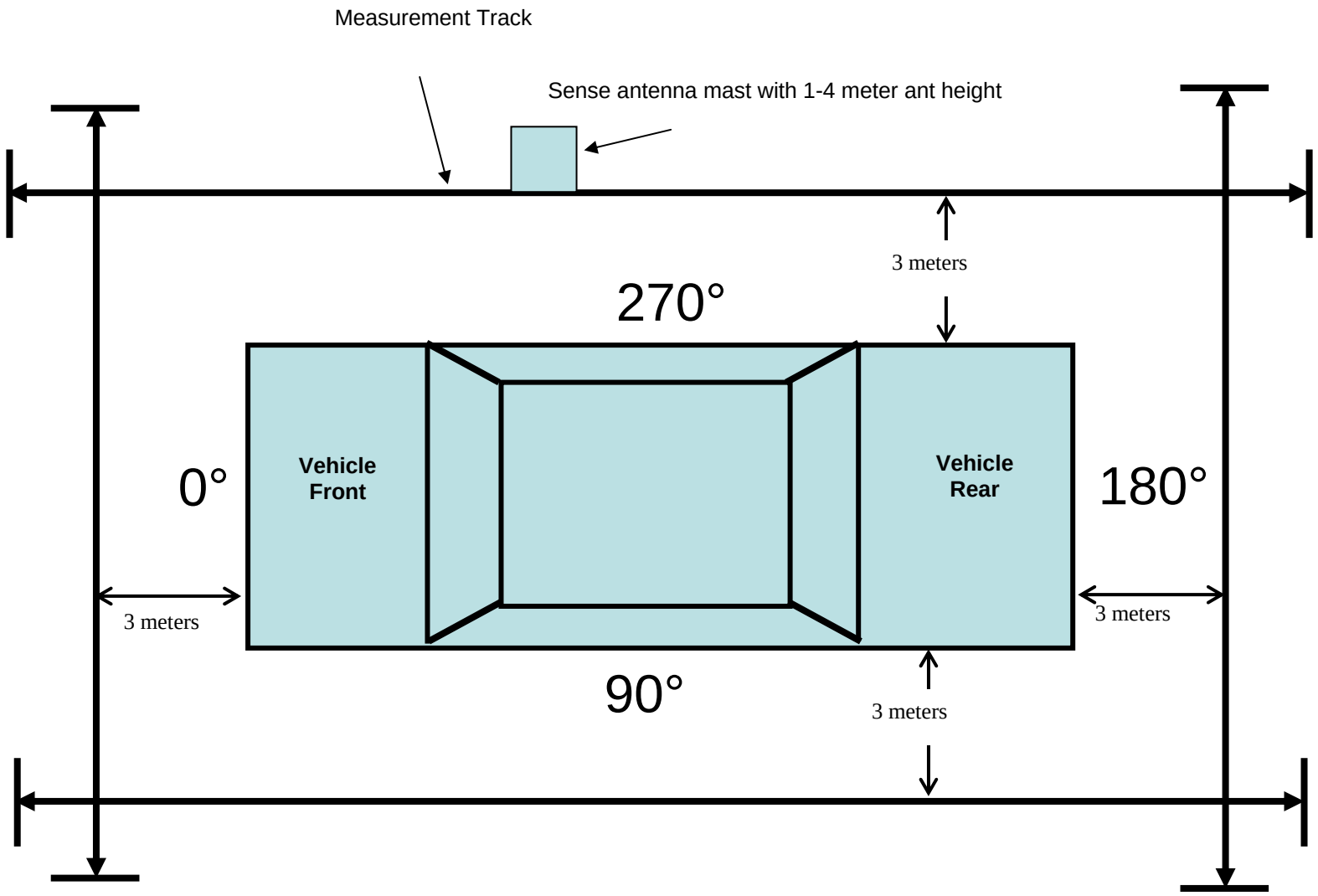


Diagram 7: In Vehicle Measurement Method



4.5.2 Test Data – In-Vehicle Measurements
Universal Cradle

Product Description	Freq (MHz)	V-factor (dB/m)	FAU OATS reading VERTICAL				Meas. Peak	Corr. Peak	Limit	Margin
			0 deg	90 deg	180 Deg	270 deg	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
Lexus SUV	88.7	-19.20	46.3	43.5	51.4	47.5	51.4	32.2	48	15.8
	96.9	-20.00	43.9	44.6	47.8	50.4	50.4	30.4	48	17.6
	107.1	-21.00	47.4	48	49.3	49	49.3	28.3	48	19.7
Toyota Camry	88.7	-19.20	47.7	48.9	53.3	48.5	53.3	34.1	48	13.9
	96.9	-20.00	45.1	44.3	45.9	46.6	46.6	26.6	48	21.4
	107.1	-21.00	50.8	45.5	51.3	46.3	51.3	30.3	48	17.7
Cadillac Escalade	88.7	-19.20	51.84	50.74	53.24	59.64	59.6	40.4	48	7.6
	96.9	-20.00	50.69	51.19	55.89	61.89	61.9	41.9	48	6.1
	107.1	-21.00	48.94	50.49	54.74	57.79	57.8	36.8	48	11.2

Table 6: Vertical Polarization results from In-Vehicle Measurements

Product Description	Freq (MHz)	H-Factor (dB/m)	FAU OATS reading HORIZONTAL				Meas. Peak	Corr. Peak	Limit	Margin
			0 deg	90 deg	180 Deg	270 deg	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
Lexus SUV	88.7	-18.8	43.1	42.3	40.6	42.8	43.1	24.3	48	23.7
	96.9	-18.2	43.2	42	43.3	44.6	44.6	26.4	48	21.6
	107.1	-18.7	44.3	44.5	44.4	45.6	45.6	26.9	48	21.1
Toyota Camry	88.7	-18.8	44	52.4	39.2	45	52.4	33.6	48	14.4
	96.9	-18.2	40.8	44.1	41.3	43.8	44.1	25.9	48	22.1
	107.1	-18.7	47.5	49.5	46	46.7	49.5	30.8	48	17.2
Cadillac Escalade	88.7	-18.8	51.34	48.24	48.09	49.99	51.3	32.5	48	15.5
	96.9	-18.2	48.49	48.74	48.54	47.59	48.7	30.5	48	17.5
	107.1	-18.7	48.54	48.24	48.74	48.49	48.7	30.0	48	18.0

Table 7: Horizontal Polarization results from In-Vehicle Measurements

4.5.2 Test Data – In-Vehicle Measurements
Xpress Cradle

Product Description	Freq (MHz)	V-factor (dB/m)	FAU OATS reading VERTICAL				Meas. Peak	Corr. Peak	Limit	Margin
			0 deg	90 deg	180 Deg	270 deg	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
Lexus SUV	88.7	-19.20	43.09	49.59	54.04	50.44	54.0	34.8	48	13.2
	96.9	-20.00	44.64	44.89	50.34	52.34	52.3	32.3	48	15.7
	107.1	-21.00	48.94	50.24	55.84	53.39	55.8	34.8	48	13.2
Toyota Camry	88.7	-19.20	47.2	50.9	55.2	50.6	55.2	36.0	48	12.0
	96.9	-20.00	58.3	58.3	63.3	55.7	63.3	43.3	48	4.7
	107.1	-21.00	57.9	57.3	60.1	53.8	60.1	39.1	48	8.9
Cadillac Escalade	88.7	-19.20	48.84	52.94	54.34	59.74	59.7	40.5	48	7.5
	96.9	-20.00	49.49	54.99	57.24	62.34	62.3	42.3	48	5.7
	107.1	-21.00	52.39	55.14	47.49	62.59	62.6	41.6	48	6.4

Table 8: Vertical Polarization results from In-Vehicle Measurements

Product Description	Freq (MHz)	H-Factor (dB/m)	FAU OATS reading HORIZONTAL				Meas. Peak	Corr. Peak	Limit	Margin
			0 deg	90 deg	180 Deg	270 deg	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
Lexus SUV	88.7	-18.8	41.2	45.39	43.14	43.39	45.4	26.6	48	21.4
	96.9	-18.2	43.3	48.69	47.89	49.04	49.0	30.8	48	17.2
	107.1	-18.7	45.8	47.94	47.49	49.54	49.5	30.8	48	17.2
Toyota Camry	88.7	-18.8	47	54.6	45.4	51.7	54.6	35.8	48	12.2
	96.9	-18.2	53.2	61.9	50.1	60.9	61.9	43.7	48	4.3
	107.1	-18.7	53.5	60.8	48.3	58.8	60.8	42.1	48	5.9
Cadillac Escalade	88.7	-18.8	48.59	47.84	46.74	49.59	49.6	30.8	48	17.2
	96.9	-18.2	49.79	48.79	48.59	49.09	49.8	31.6	48	16.4
	107.1	-18.7	51.19	51.34	46.54	51.94	51.9	33.2	48	14.8

Table 9: Horizontal Polarization results from In-Vehicle Measurements

It can be seen from the previous data that the emissions did not exceed the limit. Hence, the device is in compliance.

4.6 Occupied Bandwidth – Section 15.239(a)

4.6.1 Occupied Bandwidth Test Setup

The Xpress-R unit was evaluated in the Universal Car Cradle and in the Xpress Car Cradle.

The occupied bandwidth test was performed using an FM direct adapter to maximize the power into the spectrum analyzer. The unit was programmed to the minimum and maximum FM frequencies as well as one mid-range frequency (88.1 MHz, 96.9 MHz and 107.9 MHz). The XM Satellite Radio, Inc. Xpress-R receiver was evaluated in three modes:

- The FM carrier modulated by live XM Satellite Radio signal.
- The FM carrier unmodulated.
- The FM carrier modulated by the audio signal played from the device's memory.

For the first two configurations, EUT was set to receive live over-the-air signal. *It was verified that the unit could not be programmed outside of this frequency range.* The FM audio level was maximized during the occupied bandwidth measurements.

A Rhode & Schwarz, FSQ8, spectrum analyzer was used for the evaluation. The resolution bandwidth (RBW) of the spectrum was set to 2 kHz which corresponds to 1% of the maximum allowed bandwidth of 200 kHz. The Spectrum Analyzer was set to the average detector mode and the peak emissions were recorded with the command max hold. The minimum observation time for each configuration was about 5 minutes. Photograph 18, representing the setup described above, is included in the separate document entitled, 07-027ph.

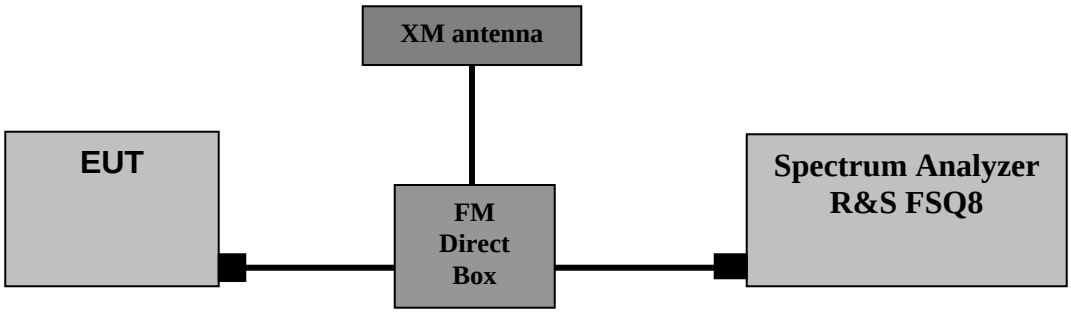


Diagram 8: Occupied Bandwidth Setup

4.6.2 Occupied Bandwidth with Universal Car Cradle

These results correspond to the Xpress-R unit evaluated in the Universal Car Cradle.

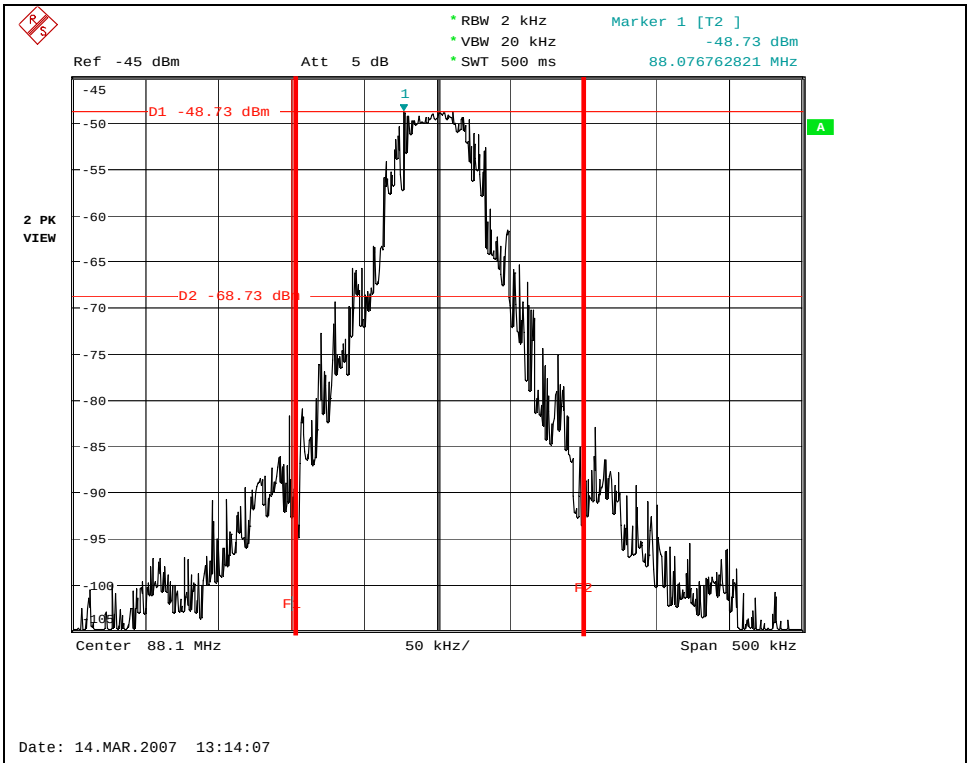


Figure 128: 88.1 MHz With Modulation

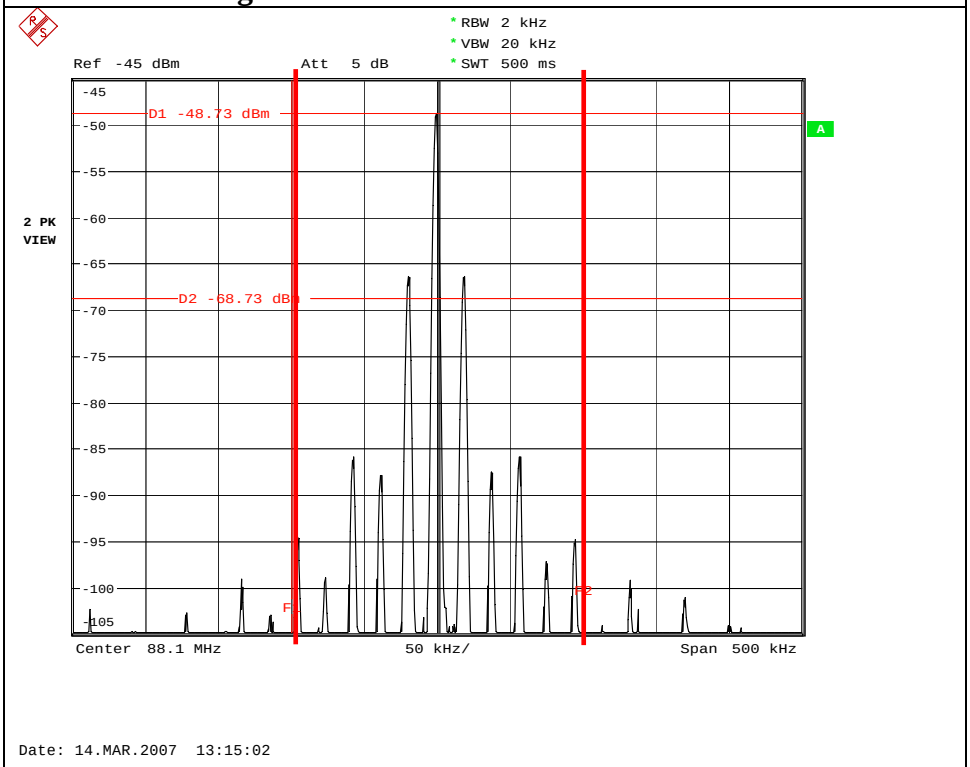


Figure 129: 88.1 MHz No Modulation

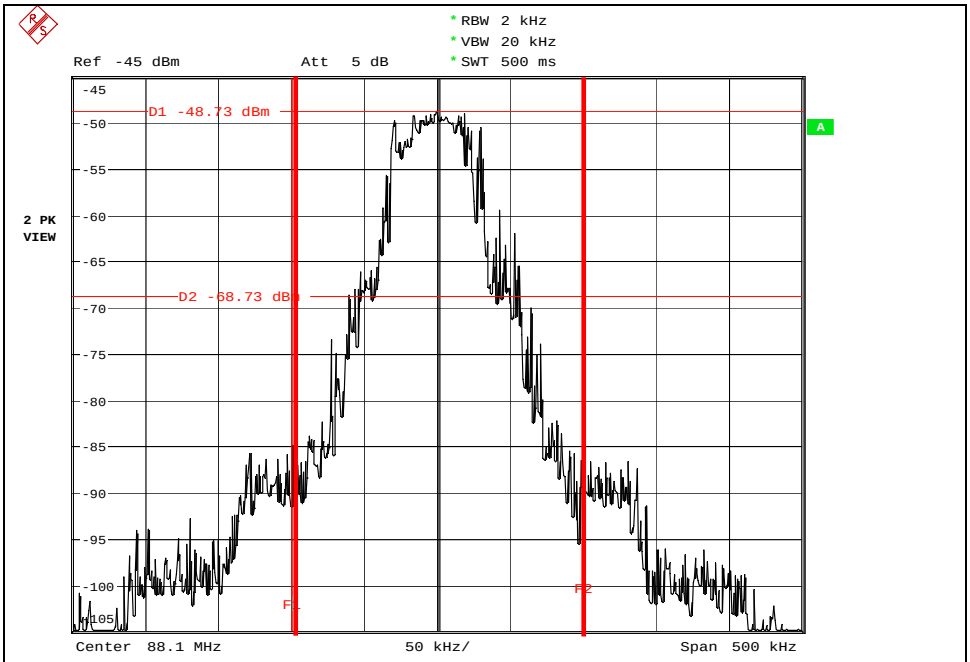


Figure 130: 88.1 MHz with Modulation Playing Content from Memory

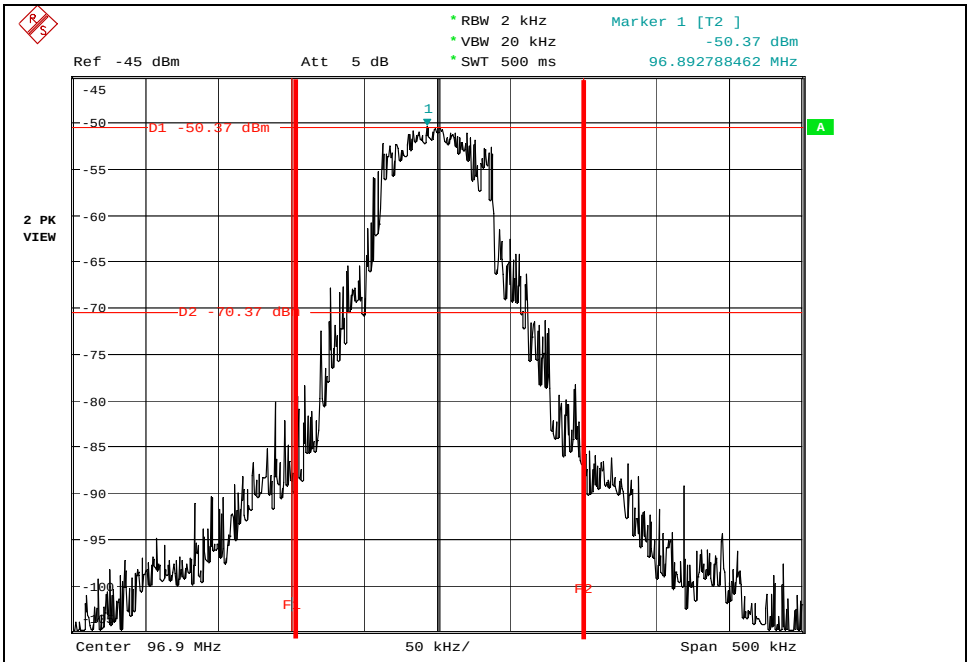


Figure 131: 96.9 MHz With Modulation

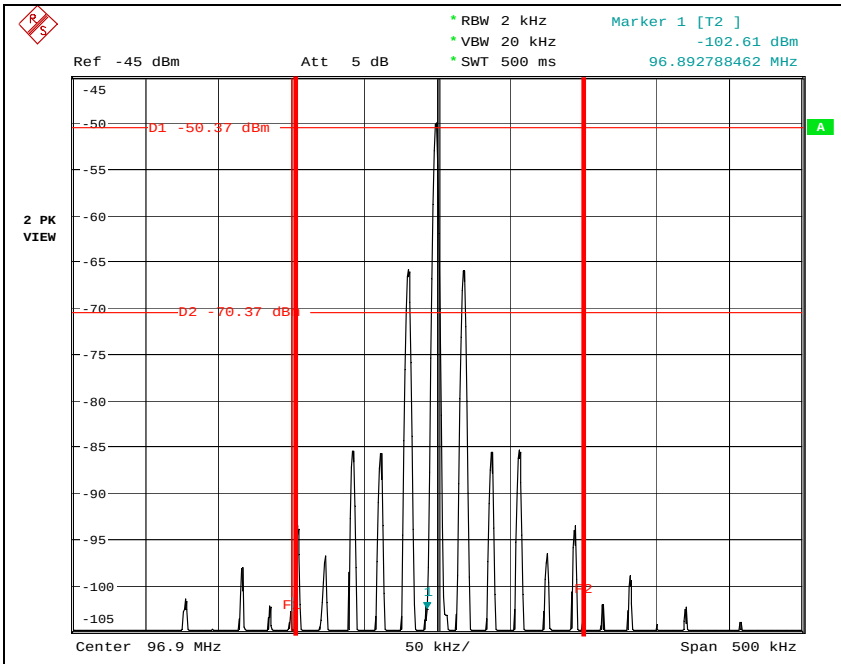


Figure 132: 96.9 MHz No Modulation

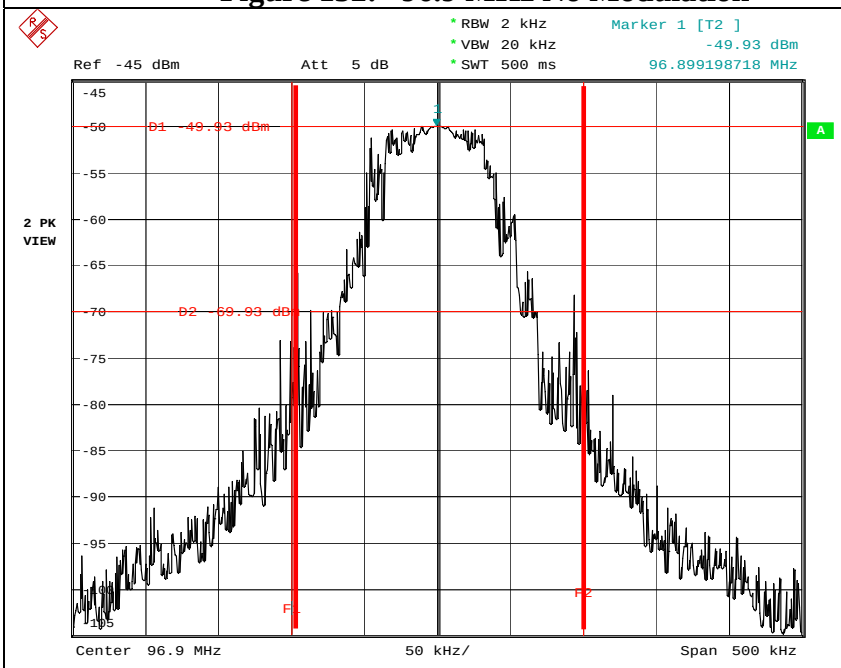


Figure 133: 96.9 MHz With Modulation Playing Content from Memory

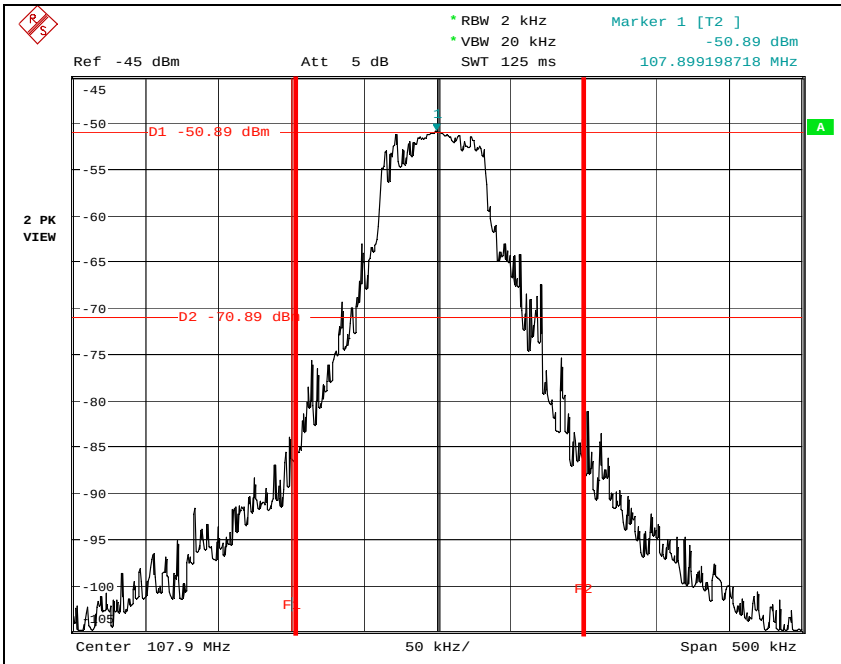


Figure 134: 107.9 MHz With Modulation

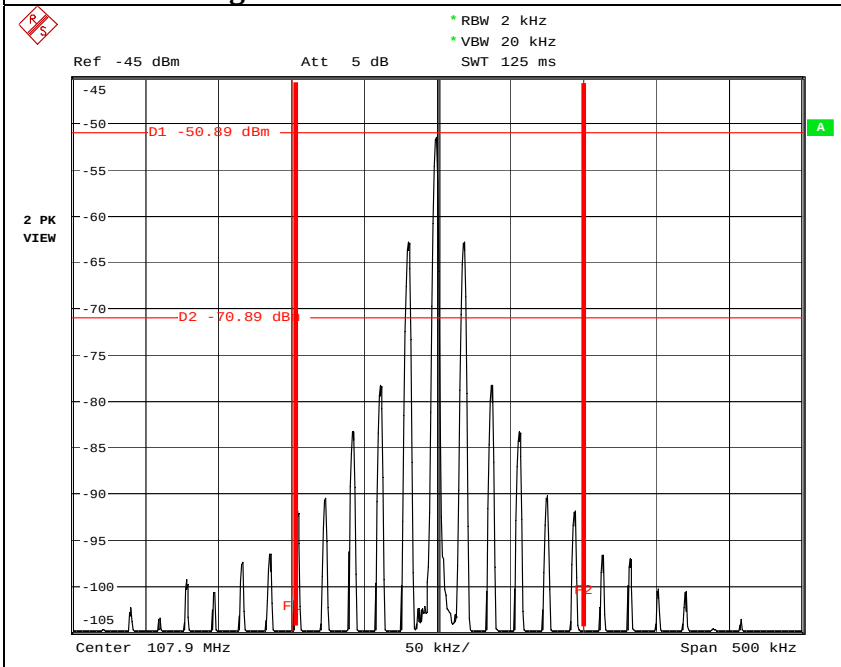


Figure 135: 107.9 MHz No Modulation

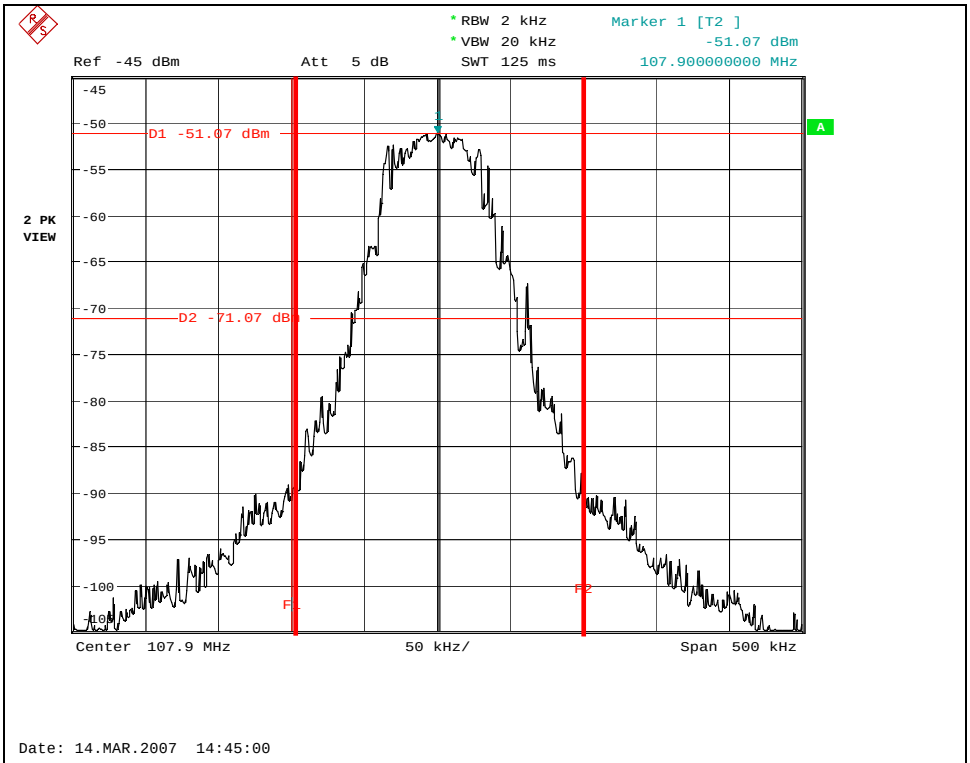


Figure 136: 107.9 MHz With Modulation Playing Content from Memory

4.6.3 Occupied Bandwidth with Xpress Car Cradle

These results correspond to the Xpress-R unit evaluated in the Xpress Car Cradle.

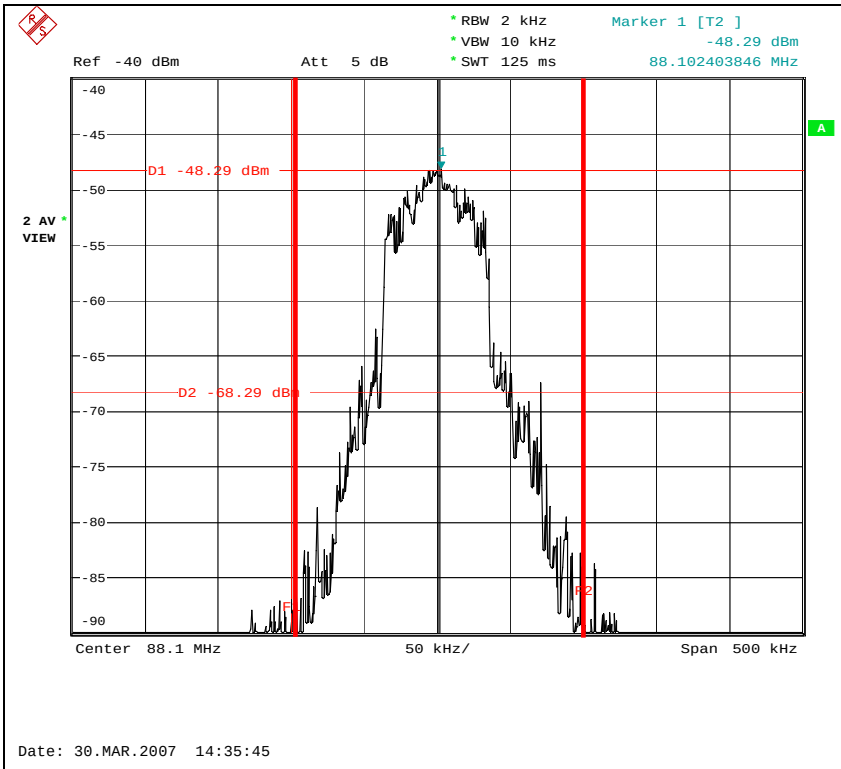


Figure 137: 88.1 MHz With Modulation

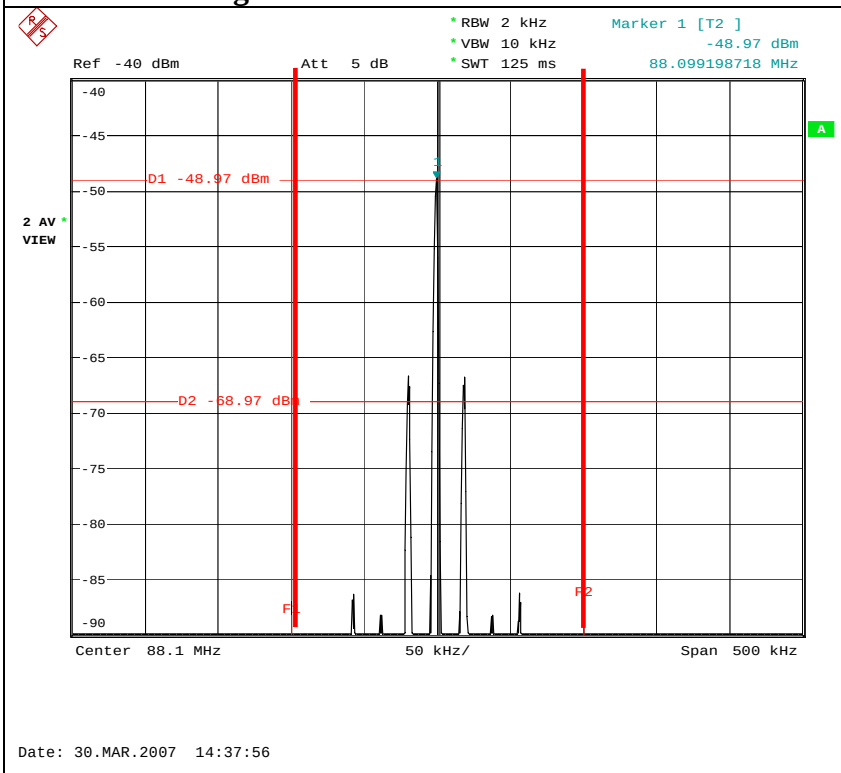


Figure 138: 88.1 MHz no Modulation

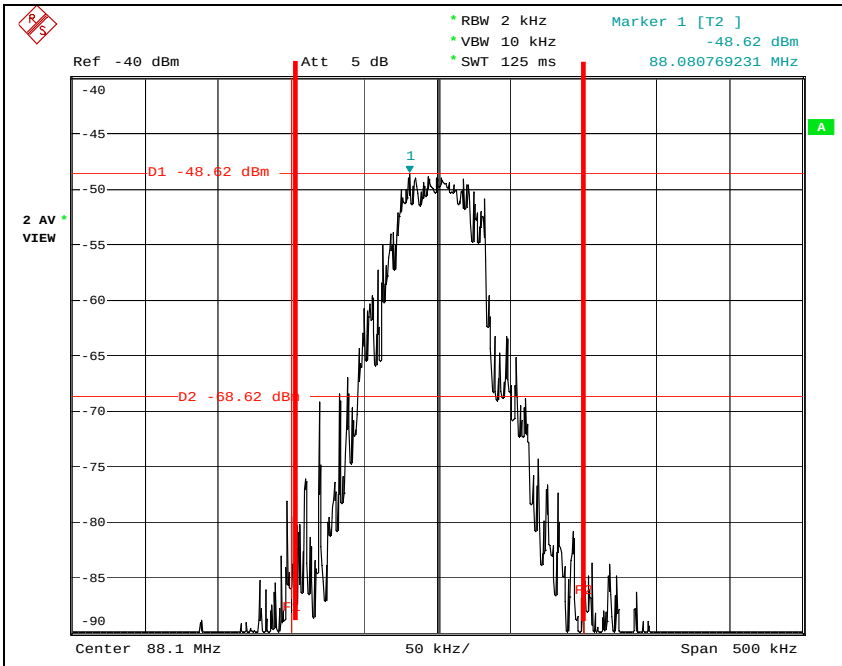


Figure 139: 88.1 MHz With Modulation Playing Content from Memory

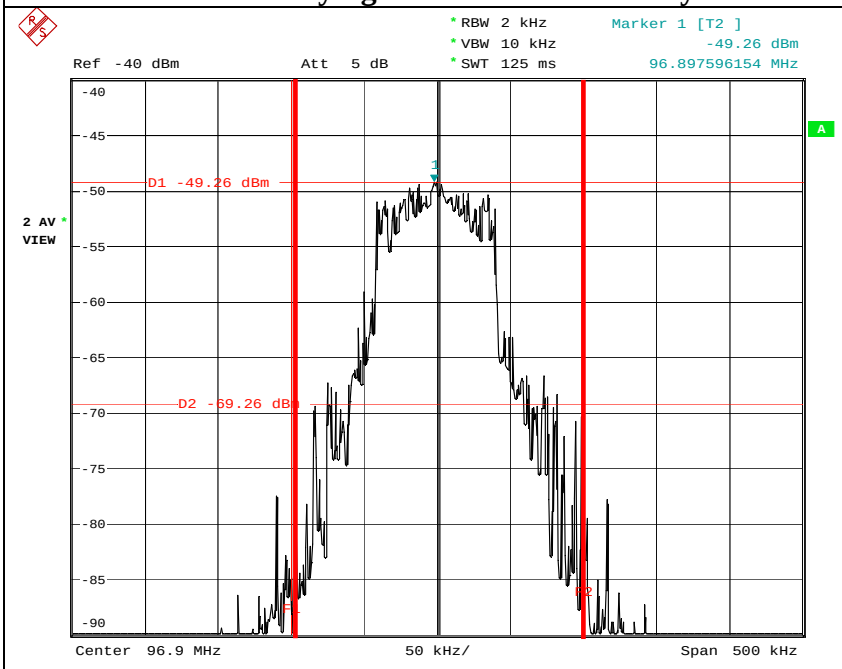


Figure 140: 96.9 MHz With Modulation

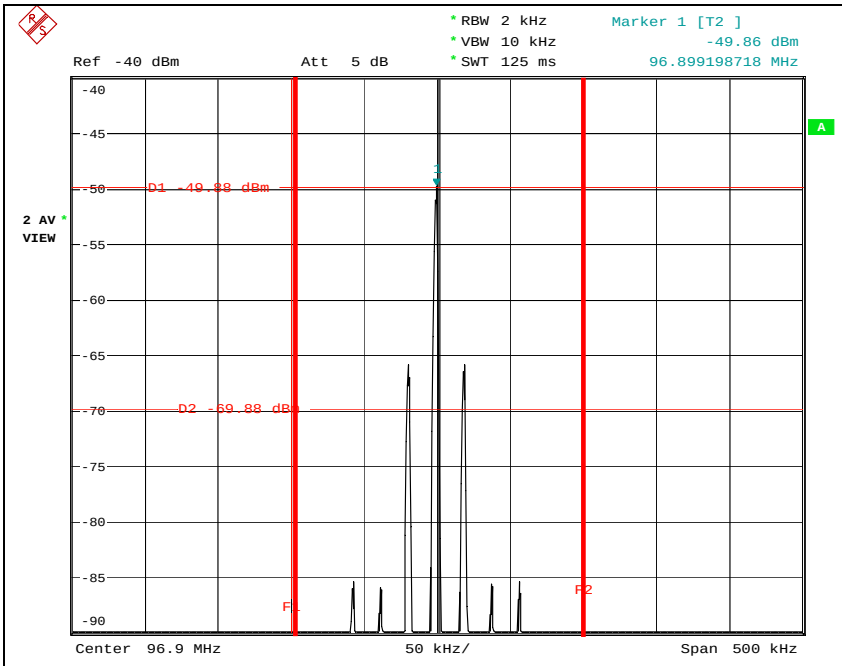


Figure 141: 96.9 MHz no Modulation

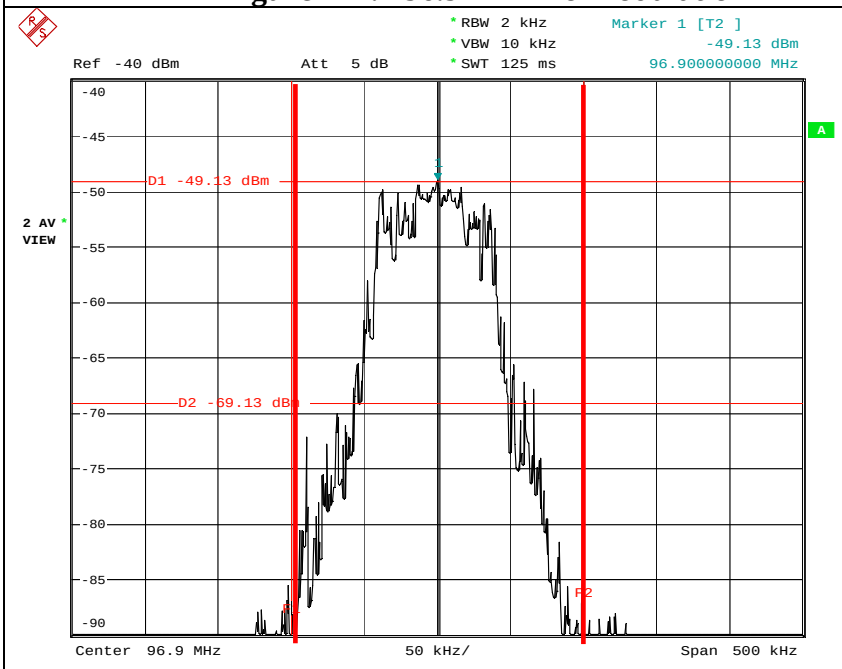


Figure 142: 96.9 MHz With Modulation Playing Content from Memory

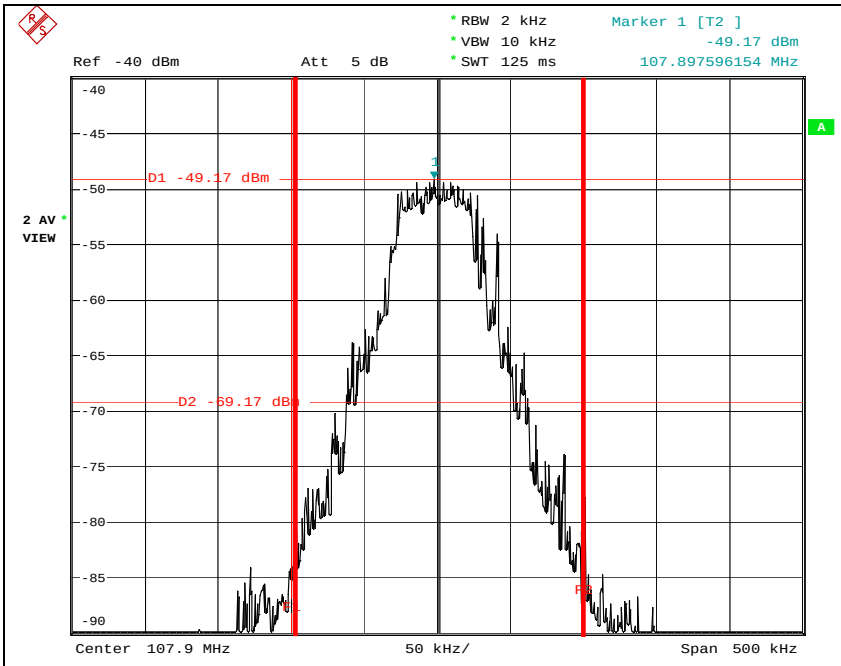


Figure 143: 107.9 MHz With Modulation

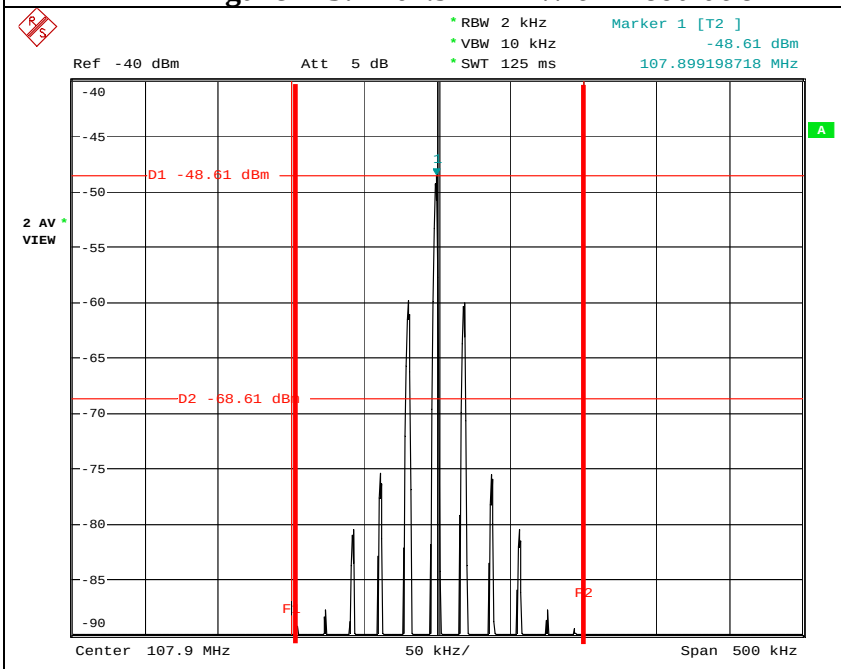


Figure 144: 107.9 MHz no Modulation

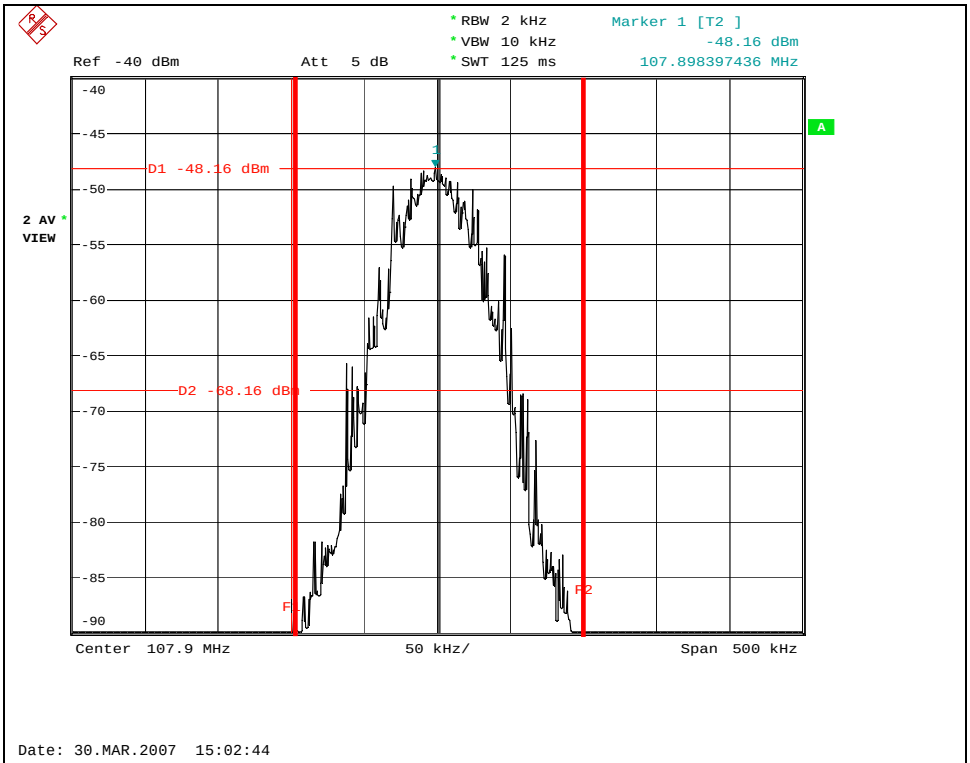


Figure 145: 107.9 MHz With Modulation Playing Content from Memory

It can be seen from the previous figures that the FM audio signal did not exceed the 200 kHz bandwidth. Hence the device is in compliance.

4.7 TEST EQUIPMENT

FAU EMI LAB

FAU EMI R&D LABORATORY TEST EQUIPMENT						
Equipment Type	**Manufacturer**	**Description**	**Model**	**Serial No.**	**Calibration Date**	**Calibration Interval (Years)**
Spectrum Analyzer	Hewlett Packard	RF Section	8566B	2403A06381	Aug-22-06	2
Spectrum Analyzer	Hewlett Packard	Display	85662A	2407A06381	Aug-22-06	2
Spectrum Analyzer	Hewlett Packard	Quasi Peak Adapter	85650A	2430A00559	Aug-22-06	2
RF Preselector	Hewlett Packard	Preselector	85685A	2510A00151	Feb-8-06	2
LISN	EMCO	LISN	3825/2R	1095	March-10-06	2
Antenna	EMCO	Biconical	3108	2147	Feb-24-06	2
Antenna	EMCO	Log Periodic	3146	1385	Feb-24-06	2
Amplifier	Hewlett Packard	Amplifier	8447D	2443A03952	Dec-01-06	2

IN-VEHICLE TEST SETUP

Equipment Type	**Manufacturer**	**Model**	**Cal Date**	**Due Date**
Spectrum Analyzer	Rhode & Schwarz	FSIQ7	3/28/2006	3/28/2007
Low Noise Amplifier	Sonoma	Inst310	6/9/2006	6/9/2007
Biconilog Antenna	ETS-Lindgren	3142C	6/5/2006	6/5/2007

OCCUPIED BANDWIDTH TEST SETUP

Equipment Type	**Manufacturer**	**Model**	**Cal Date**	**Due Date**
Spectrum Analyzer	Rhode & Schwarz	FSQ8	3/28/2006	3/28/2007

4.8 TEST FACILITY

FAU EMI Research and Development Laboratory
Department of Electrical Engineering
Florida Atlantic University
Boca Raton, Florida 33431
(561) 361-4390

A2LA Certificate Number: 2129.01
FCC Registration: 90599
Industry of Canada: IC46405-4076

Description:	The 3-m semi-anechoic chamber and Power Line Conducted Spurious Voltage test setup is constructed and calibrated to meet the FCC requirements of Section 2.948, as well as Industry Canada RSS 212 Issue 1.
Site Filing:	A site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046, and with the Industry Canada, Certification and Engineering Bureau, 3701 Carling Ave., Building 94, P.O. Box 11490, Station "H", Ottawa Ontario, K2H 8S2.
Instrument Tolerance:	All measuring equipment is in accordance with ANSI C63.4 and CISPR 22 requirements.

End Report