



MOTOROLA

*Integrated Information Systems Group
8201 E. McDowell Road
Scottsdale, AZ 85252-1417*

Report No. FC00-034

Exhibit 6 – Test Report

Parallel Card Acceptance Device (CAD)

FCC ID: E9U6188

Model No. T6188A (Parallel)

Equipment Manufacturer: Motorola, Inc.
1301 East Algonquin Rd.
Room 1726
Schaumburg, Illinois 60196

Tests Conducted By: CKC Laboratories
5437A Clouds Rest
Mariposa, CA 95338

Tests Period: October 1st through October 22nd, 1999

Test Summary: Complies with FCC Part 15, Subpart C, Unlicensed Low
Power Transceiver



CERTIFICATION TEST REPORT
FOR THE
CARD ACCEPTANCE DEVICE, T6188A (PARALLEL)
FCC PART 15 SUBPART C
15.225
COMPLIANCE

DATE OF ISSUE: APRIL 18, 2000

PREPARED FOR:

Motorola Indala Corporation
3041 Orchard Parkway
San Jose, CA 95134-2017

P.O. No: S99315
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Report No: FC00-034

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Date of test: October 1-22, 1999

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Dennis Ward
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ADMINISTRATIVE INFORMATION

DATE OF TEST: October 1-22, 1999

PURPOSE OF TEST: To demonstrate the compliance of the Card Acceptance Device, T6188A (Parallel), with the requirements for FCC Part 15 Subpart C 15.225 devices.

MANUFACTURER: Motorola Indala Corporation
3041 Orchard Parkway
San Jose, CA 95134-2017

REPRESENTATIVE: Gilbert Roque

TEST LOCATION: CKC Laboratories, Inc.
5473A Clouds Rest
Mariposa, CA 95338

TEST PERSONNEL: D. Oaks

TEST METHOD: ANSI C63.4 1992

FREQUENCY RANGE TESTED: 9 kHz - 1000 MHz

EQUIPMENT UNDER TEST: Card Acceptance Device
Manuf: Motorola
Model: T6188A (Parallel)
Serial: 1
FCC ID: E9U6188 (pending)

SUMMARY OF RESULTS

The Motorola Indala Corporation Card Acceptance Device, T6188A (Parallel), was tested in accordance with ANSI C63.4 1992 for compliance with FCC Part 15 Subpart C 15.225.

As received, the above equipment was found to be fully compliant with the limits for FCC Part 15 Subpart C 15.225. The results in this report apply only to the items tested, as identified herein.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

ERG Transit systems automated fare collection terminal used to electronically pay fares on mass transit.

MEASUREMENT UNCERTAINTY

Associated with data in this report is a ± 4 dB measurement uncertainty.

EUT OPERATING FREQUENCY

The EUT was operating at 13.56 MHz.

TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within $+15^{\circ}\text{C}$ and $+35^{\circ}\text{C}$.
The relative humidity was between 20% and 75%.

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

DC Power Supply

Manuf: HP

Model:

Serial:

FCC ID: N/A

PC

Manuf: Dell

Model: PPL

Serial: Z3ZWD

FCC ID: DoC

REPORT OF MEASUREMENTS

The following tables report the six highest worst case levels recorded during the tests performed on the Card Acceptance Device, T6188A (Parallel). All readings taken are peak readings unless otherwise noted by a "Q" or "A". The data sheets from which these tables were compiled are contained in Appendix B.

Table 1: Fundamental Emission Levels									
FREQUENCY MHz	METER READING dBμV	CORRECTION FACTORS				CORRECTED READING dBμV/m	SPEC LIMIT dBμV/m	MARGIN dB	NOTES
		Mag dB	Amp dB	Cable dB	Dist dB				
13.560	39.5	10.8		0.9		51.2	80.0	-28.8	N

Test Method: ANSI C63.4 1992
 Spec Limit : FCC Part 15.225(a)
 Test Distance: 30 Meters

NOTES: H = Horizontal Polarization
 V = Vertical Polarization
 N = No Polarization
 D = Dipole Reading
 Q = Quasi Peak Reading
 A = Average Reading

COMMENTS: EUT is continuously transmitting on 13.56MHz. EUT is reading and writing to the card located in the field. PC simulates conditions that would be present when connected to a host. No other readings found in the 9kHz – 470MHz range.

Table 2: Six Highest Radiated Emission Levels

FREQUENCY MHz	METER READING dBμV	CORRECTION FACTORS				CORRECTED READING dBμV/m	SPEC LIMIT dBμV/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
40.756	47.4	10.9	-27.1	1.1		32.3	40.0	-7.7	V
162.835	51.4	14.0	-26.7	2.4		41.1	43.5	-2.4	VQ
176.375	47.1	15.7	-26.6	2.5		38.7	43.5	-4.8	VQ
759.460	39.7	21.5	-27.7	5.5		39.0	46.0	-7.0	H
773.014	39.1	21.5	-27.6	5.6		38.6	46.0	-7.4	HQ
949.304	36.0	23.9	-27.2	6.3		39.0	46.0	-7.0	HQ

Test Method:
Spec Limit :
Test Distance:

ANSI C63.4 1992
FCC Part 15.225(b)
3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization
N = No Polarization
D = Dipole Reading
Q = Quasi Peak Reading
A = Average Reading

COMMENTS: EUT is continuously transmitting on 13.56MHz. EUT is operating in normal operating mode, with out a card in the field. PC simulates conditions that would be present when connected to a host.

TABLE A
LIST OF TEST EQUIPMENT
Barn Lab

Ref No.	Instrument/Ancillary	Type	Manufacturer	Serial No.
01	Spectrum Analyzer	8566B	Hewlett Packard	2209A01404
04	Quasi-Peak 8566B	85650A	Hewlett Packard	2811A01267
06	Preamplifier	8447D	Hewlett Packard	1937A02604
09	Biconical Antenna	SAS-200/542	A & H Systems	156
10	Log Periodic Antenna	SAS-200/512	A & H Systems	154
17	Magnetic Loop Antenna	6502	EMCO	01074
21	DC Power Supply	6205C	Hewlett Packard	2228A01775
177	Digital Multimeter	22-183	Radio Shack	
502	Spectrum Analyzer, RF Section	8566B	Hewlett Packard	2209A01404
858	Temperature Chamber	S-1.2 Mini Max	Thermotron Corp	11899

EUT SETUP

The equipment under test (EUT) and the peripheral(s) listed were set up in a manner that represented their normal use. Any special conditions required for the EUT to operate normally are identified in the comments that accompany Table 1 for fundamental radiated emissions and Table 2 for radiated emissions.

During radiated emissions testing, the EUT was mounted on a nonconductive, rotating table 80 cm above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters. This configuration is typical for radiated emissions testing of wall mounted devices.

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Table A were used to collect the radiated emissions data for the Card Acceptance Device, T6188A (Parallel). For radiated measurements below 30 MHz the mag loop antenna was used. For measurements from 30 MHz to 300 MHz, the biconical antenna was used. For frequencies from 300 to 1000 MHz, the log periodic antenna was used.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dB μ V, and a vertical scale of 10 dB per division.

TABLE B : ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz

SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in Tables 1 and 2 indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the six highest readings, this is indicated as a "Q" or an "A" in the appropriate table. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data for the Card Acceptance Device, T6188A (Parallel).

Peak

In this mode, the Spectrum Analyzer or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the HP Quasi-Peak Adapter for the HP Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

Average

When the frequencies were below 30 MHz, average measurements may be made using the spectrum analyzer. To make these measurements, the test engineer reduces the video bandwidth on the analyzer until the modulation of the signal is filtered out. At this point the analyzer is set into the linear mode and the scan time is reduced.

TEST METHODS

The radiated emissions data of the Card Acceptance Device, T6188A (Parallel), was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance and antenna the data was reduced as shown in the "Sample Calculations". The corrected data was then compared to the FCC Part 15, Subpart C emissions limits to determine compliance.

Preliminary and final measurements were taken in order to better ensure that all emissions from the EUT were found and maximized.

Radiated Emissions Testing

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode. For frequencies below 30 MHz the mag loop antenna was used. The frequency range of 30 MHz - 88 MHz was then scanned with the biconical antenna located about 1.5 meter above the ground plane in the vertical configuration. During this scan, the turntable was rotated and all peaks which were at or near the limit were recorded. The frequency range of 100 - 300 MHz was scanned with the biconical antenna in the same manner, and the peaks recorded. Lastly, a scan of the FM band from 88 - 110 MHz was made, using a reduced resolution bandwidth and a reduced frequency span. The biconical antenna was changed to the horizontal polarity and the above steps were repeated. After changing to the log periodic antenna in the horizontal configuration, the frequency range of 300 - 1000 MHz was scanned. The log periodic antenna was changed to the vertical polarity and the frequency range of 300 - 1000 MHz was again scanned. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

For the final radiated scan, the equipment was again positioned facing the antenna. A thorough scan of all frequencies was manually made using a small frequency span, rotating the turntable as needed. Comparison with the previously recorded measurements was then made.

Using the peak readings from both scans as a guide, the test engineer then maximized the readings with respect to the table rotation and antenna height. Photographs showing the final worst case configuration of the EUT are contained in Appendix A.

Frequency Tolerance

The Card Acceptance Device, T6188A (Parallel) was placed inside a temperature control chamber and tested in accordance with FCC Part 15.225(c). See Appendix B for data sheet.

SAMPLE CALCULATIONS

The basic spectrum analyzer reading was converted using correction factors as shown in the emissions readings in Tables 1 and 2. For radiated emissions in dB μ V/m, the spectrum analyzer reading in dB μ V was corrected by using the following formula:

$$\begin{aligned} & \text{Meter reading (dB}\mu\text{V)} \\ & + \text{Antenna Factor (dB)} \\ & + \text{Cable Loss (dB)} \\ & - \text{Distance Correction (dB)} \\ & - \text{Pre-amplifier Gain (dB)} \\ & = \text{Corrected Reading (dB}\mu\text{V/m)} \end{aligned}$$

This reading was then compared to the applicable specification limit to determine compliance.

A typical data sheet will display the following in column format:

#	Freq MHz	Rdng dB μ V	Cable	Amp	Bicon	Mag	Log	Dist	Corr dB μ V/m	Spec	Margin	Polar
---	-------------	--------------------	-------	-----	-------	-----	-----	------	----------------------	------	--------	-------

means reading number

Freq MHz is the frequency in MHz of the obtained reading.

Rdng dB μ V is the reading obtained on the spectrum analyzer in dB μ V.

Amp is short for the preamplifier factor or gain in dB.

Bicon is the biconical antenna factor in dB.

Log is the log periodic antenna factor in dB.

Mag is the mag loop antenna factor in dB.

Cable is the cable loss in dB of the coaxial cable on the OATS.

Dist is the distance factor (in dB). It is used when testing at a different test distance than the one stated in the spec.

Corr dB μ V/m is the corrected reading which is now in dB μ V/m (field strength).

Spec is the specification limit (dB) stated in the regulations.

Margin is the closeness to the specified limit in dB; + is over and - is under the limit.

Polar is the Polarity of the antenna with respect to earth.

APPENDIX A
INFORMATION ABOUT THE EQUIPMENT UNDER TEST

INFORMATION ABOUT THE EQUIPMENT UNDER TEST	
Test Software/Firmware:	Cad Tools V 0.61
CRT was displaying:	Correctly reading cards
Power Supply Manufacturer:	N/A
Power Supply Part Number:	N/A
AC Line Filter Manufacturer:	N/A
AC Line Filter Part Number:	N/A
Line voltage used during testing:	12VDC

I/O PORTS	
Type	#
Terminal (Parallel Data) Port	1
Antenna Input (antenna board)	1
Antenna Output (control board)	1

CRYSTAL OSCILLATORS	
Type	Freq In MHz
XT cut, crystal	13.56Mhz
AT cut , Crystal	18.432Mhz

PRINTED CIRCUIT BOARDS				
Function	Model & Rev	Clocks, MHz	Layers	Location
Control Board	CLN7255 Rev A	13.56, 18.432	6	Center
Antenna Board	N/A	N/A	2	

CABLE INFORMATION

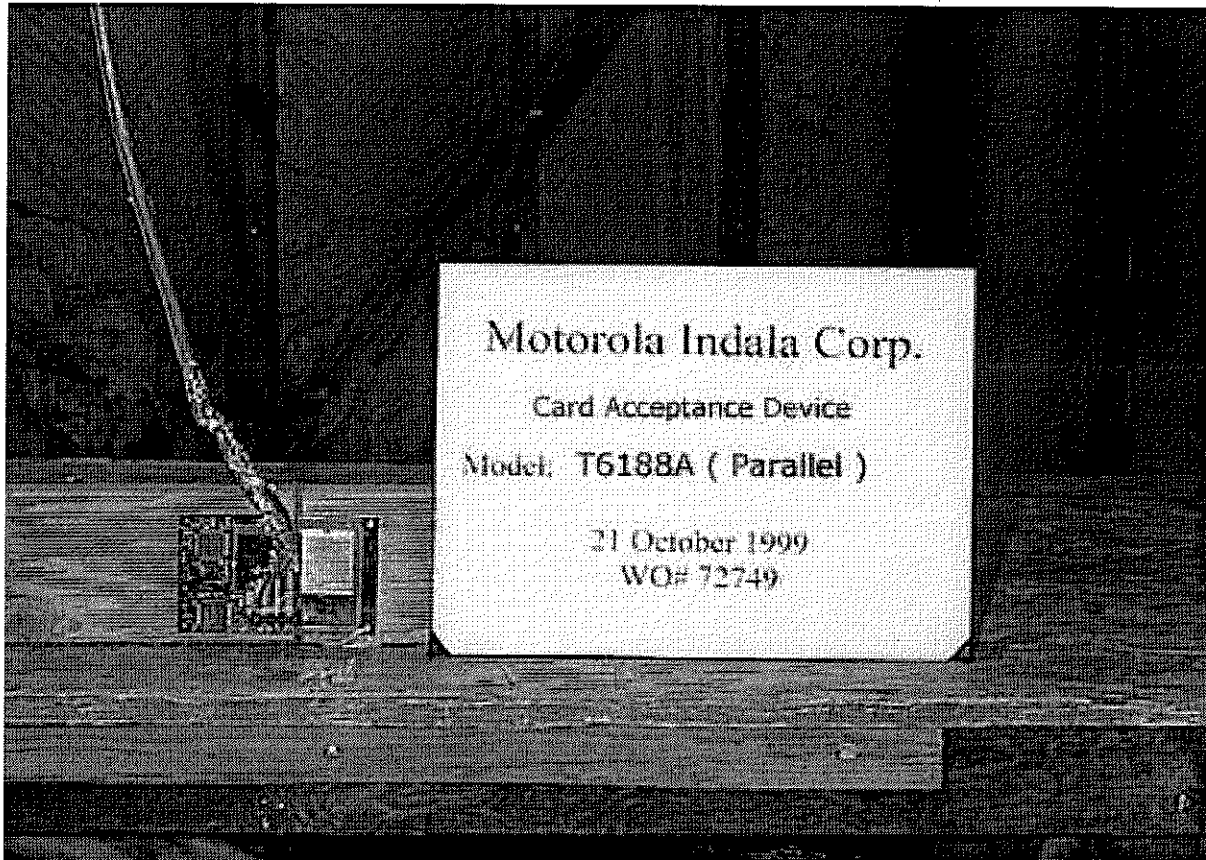
Cable #:	1	Cable(s) of this type:	1
Cable Type:	Interconnect Cable	Shield Type:	None
Construction:	Stranded 26AWG	Length In Meters:	100mm
Connected To End (1):	Antenna output	Connected To End (2):	Antenna Input
Connector At End (1):	Shrouded Header	Connector At End (2):	Shrouded Header
Shield Grounded At (1):	N/a	Shield Grounded At (2):	N/a
Part Number:	06103-001	Number of Conductors:	6
Notes and/or description:			

Cable #:	2	Cable(s) of this type:	1
Cable Type:	Parallel Cable	Shield Type:	Foil
Construction:	Stranded 24AWG	Length In Meters:	>2m
Connected To End (1):	PC laptop	Connected To End (2):	PC I/O
Connector At End (1):	DB25	Connector At End (2):	DB16
Shield Grounded At (1):	PC	Shield Grounded At (2):	None
Part Number:		Number of Conductors:	16
Notes and/or description:			

REQUIRED EUT CHANGES TO COMPLY:

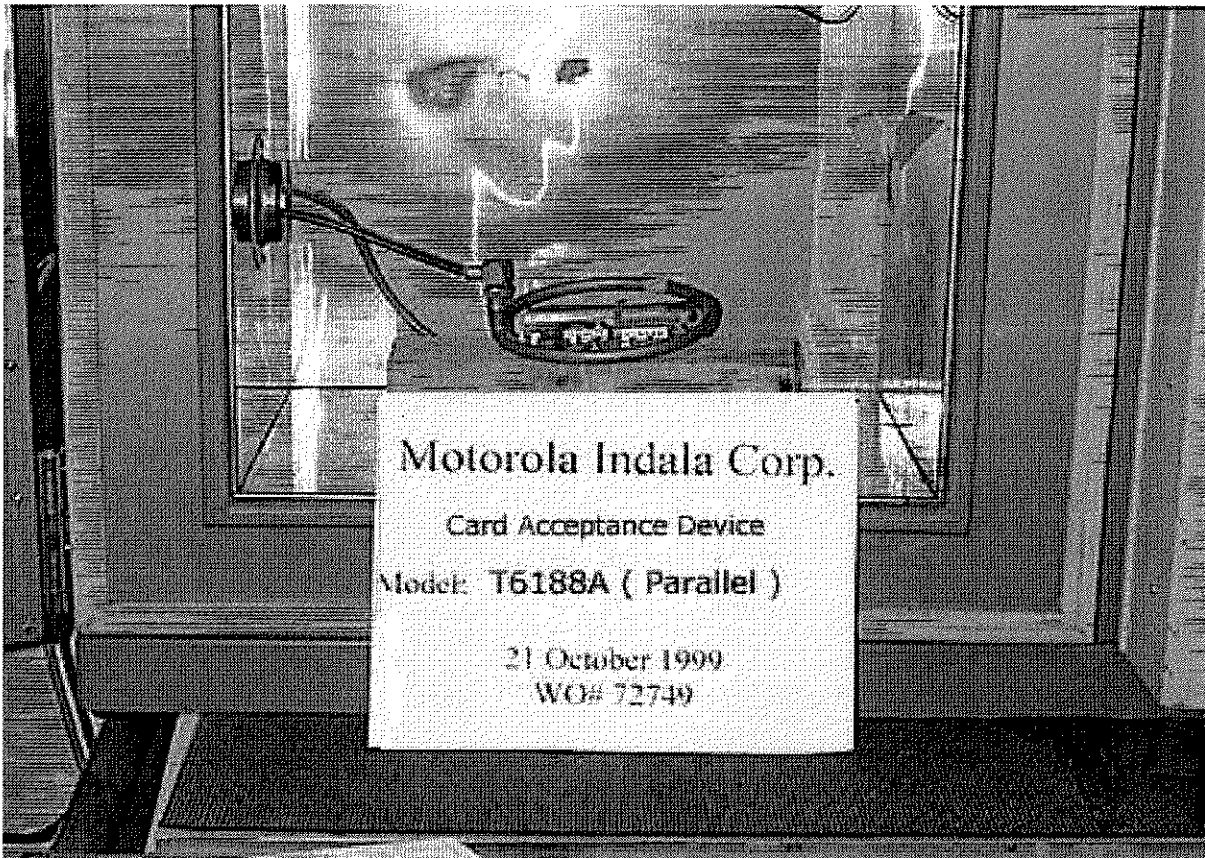
None.

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View

PHOTOGRAPH SHOWING FREQUENCY TOLERANCE



APPENDIX B
MEASUREMENT DATA SHEETS

Test Location: 5473A Clouds Rest • • • Mariposa, CA 95338

Customer: **Motorola**

Specification: **FCC 15.225(a)**

Work Order #: **72749**

Date: Fri Oct-01-1999

Test Type: **Maximized Emissions**

Time: 11:05:09

Equipment: **Card Acceptance Device**

Sequence#: 1

Manufacturer: **Motorola**

Tested By: D.Oaks

Model: **T6188A (Parallel)**

S/N: 1

Function	Manufacturer	Model #	S/N
Card Acceptance Device *	Motorola	T6188A (Parallel)	1

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	HP		
PC	Dell	PPL	Z3ZWD

Test Conditions / Notes:

EUT is continuously transmitting on 13.56MHz. EUT is reading and writing to the card located in the field. PC simulates conditions that would be present when connected to a host. No other readings found in the 9kHz – 470MHz range.

Measurement Data: Reading listed by margin. Test Distance: 30 Meters

#	Freq MHz	Rdng dBμV	Mag Cable FCC			Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
			dB	dB	dB					
1	13.560M	39.5	+10.8	+0.9	+0.0	+0.0	51.2	80.0	-28.8	None

Test Location: 5473A Clouds Rest • • • Mariposa, CA 95338

Customer: **Motorola**
Specification: **FCC 15.225/15.209**
Work Order #: **72749**
Test Type: **Maximized Emissions**
Equipment: **Card Acceptance Device**
Manufacturer: **Motorola**
Model: **T6188A (Parallel)**
S/N: **1**

Date: Thu Oct-21-1999
Time: 10:26:48
Sequence#: 8
Tested By: D.Oaks

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Card Acceptance Device	Motorola	T6188A (Parallel)	1

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	HP		
PC	Dell	PPL	Z3ZWD

Test Conditions / Notes:

EUT is continuously transmitting on 13.56MHz. EUT is operating in normal operating mode, with out a card in the field. PC simulates conditions that would be present when connected to a host.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	Amp dB	Bicon dB	Log dB	Cable dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	162.835M	51.4	-26.7	+14.0	+0.0	+2.4	+0.0	41.1	43.5	-2.4	Vert
QP											
^	162.835M	52.9	-26.7	+14.0	+0.0	+2.4	+0.0	42.6	43.5	-0.9	Vert
3	176.375M	47.1	-26.6	+15.7	+0.0	+2.5	+0.0	38.7	43.5	-4.8	Vert
QP											
^	176.354M	48.8	-26.6	+15.7	+0.0	+2.5	+0.0	40.4	43.5	-3.1	Vert
5	949.304M	36.0	-27.2	+0.0	+23.9	+6.3	+0.0	39.0	46.0	-7.0	Horiz
QP											
^	949.300M	37.8	-27.2	+0.0	+23.9	+6.3	+0.0	40.8	46.0	-5.2	Horiz
7	759.460M	39.7	-27.7	+0.0	+21.5	+5.5	+0.0	39.0	46.0	-7.0	Horiz
8	773.014M	39.1	-27.6	+0.0	+21.5	+5.6	+0.0	38.6	46.0	-7.4	Horiz
QP											
^	773.003M	41.6	-27.6	+0.0	+21.5	+5.6	+0.0	41.1	46.0	-4.9	Horiz
10	40.756M	47.4	-27.1	+10.9	+0.0	+1.1	+0.0	32.3	40.0	-7.7	Vert
11	284.848M	40.7	-26.3	+20.5	+0.0	+3.3	+0.0	38.2	46.0	-7.8	Vert
QP											
^	284.799M	42.2	-26.3	+20.5	+0.0	+3.3	+0.0	39.7	46.0	-6.3	Vert

13	203.486M	40.8	-26.5	+18.3	+0.0	+2.7	+0.0	35.3	43.5	-8.2	Vert
	QP										
^	203.482M	41.9	-26.5	+18.3	+0.0	+2.7	+0.0	36.4	43.5	-7.1	Vert
15	542.489M	41.9	-27.7	+0.0	+18.6	+4.6	+0.0	37.4	46.0	-8.6	Horiz
	QP										
^	542.491M	42.8	-27.7	+0.0	+18.6	+4.6	+0.0	38.3	46.0	-7.7	Horiz
17	786.561M	37.7	-27.5	+0.0	+21.6	+5.6	+0.0	37.4	46.0	-8.6	Horiz
18	705.211M	38.6	-27.8	+0.0	+21.1	+5.4	+0.0	37.3	46.0	-8.7	Horiz
	QP										
^	705.195M	40.5	-27.8	+0.0	+21.1	+5.4	+0.0	39.2	46.0	-6.8	Horiz
20	556.049M	41.4	-27.7	+0.0	+18.8	+4.6	+0.0	37.1	46.0	-8.9	Horiz
	QP										
^	556.038M	43.3	-27.7	+0.0	+18.8	+4.6	+0.0	39.0	46.0	-7.0	Horiz
22	678.085M	38.6	-27.8	+0.0	+20.8	+5.3	+0.0	36.9	46.0	-9.1	Horiz
23	569.610M	40.4	-27.7	+0.0	+19.0	+4.7	+0.0	36.4	46.0	-9.6	Horiz
	QP										
^	569.612M	41.5	-27.7	+0.0	+19.0	+4.7	+0.0	37.5	46.0	-8.5	Horiz
25	650.981M	38.7	-27.8	+0.0	+20.3	+5.2	+0.0	36.4	46.0	-9.6	Horiz
26	732.336M	37.3	-27.8	+0.0	+21.3	+5.5	+0.0	36.3	46.0	-9.7	Horiz
27	271.273M	40.3	-26.3	+18.8	+0.0	+3.2	+0.0	36.0	46.0	-10.0	Vert
28	189.905M	39.8	-26.5	+17.6	+0.0	+2.6	+0.0	33.5	43.5	-10.0	Vert
29	637.403M	38.6	-27.8	+0.0	+20.1	+5.1	+0.0	36.0	46.0	-10.0	Vert
30	745.833M	36.7	-27.8	+0.0	+21.4	+5.5	+0.0	35.8	46.0	-10.2	Vert
31	122.120M	44.1	-26.8	+13.8	+0.0	+2.0	+0.0	33.1	43.5	-10.4	Vert
32	637.392M	38.2	-27.8	+0.0	+20.1	+5.1	+0.0	35.6	46.0	-10.4	Horiz
33	664.509M	37.5	-27.8	+0.0	+20.6	+5.3	+0.0	35.6	46.0	-10.4	Horiz
34	67.848M	46.6	-26.8	+8.2	+0.0	+1.4	+0.0	29.4	40.0	-10.6	Vert
	QP										
^	67.844M	49.0	-26.8	+8.2	+0.0	+1.4	+0.0	31.8	40.0	-8.2	Vert
36	976.399M	39.9	-27.1	+0.0	+24.2	+6.4	+0.0	43.4	54.0	-10.6	Horiz

37	827.250M	34.7	-27.4	+0.0	+22.2	+5.9	+0.0	35.4	46.0	-10.6	Horiz
QP											
^	827.231M	36.8	-27.4	+0.0	+22.2	+5.9	+0.0	37.5	46.0	-8.5	Horiz
39	854.369M	34.2	-27.4	+0.0	+22.6	+6.0	+0.0	35.4	46.0	-10.6	Horiz
40	488.242M	40.5	-27.6	+0.0	+17.8	+4.4	+0.0	35.1	46.0	-10.9	Horiz
41	949.280M	31.8	-27.2	+0.0	+23.9	+6.3	+0.0	34.8	46.0	-11.2	Vert
42	556.032M	39.0	-27.7	+0.0	+18.8	+4.6	+0.0	34.7	46.0	-11.3	Vert
43	854.363M	33.4	-27.4	+0.0	+22.6	+6.0	+0.0	34.6	46.0	-11.4	Vert
44	610.281M	37.7	-27.8	+0.0	+19.7	+5.0	+0.0	34.6	46.0	-11.4	Vert
45	935.708M	31.9	-27.2	+0.0	+23.7	+6.2	+0.0	34.6	46.0	-11.4	Horiz
QP											
^	935.718M	34.9	-27.2	+0.0	+23.7	+6.2	+0.0	37.6	46.0	-8.4	Horiz
47	54.322M	44.2	-26.9	+9.9	+0.0	+1.3	+0.0	28.5	40.0	-11.5	Vert
QP											
^	54.311M	46.3	-26.9	+9.9	+0.0	+1.3	+0.0	30.6	40.0	-9.4	Vert
49	827.248M	33.8	-27.4	+0.0	+22.2	+5.9	+0.0	34.5	46.0	-11.5	Vert
50	515.366M	39.4	-27.6	+0.0	+18.2	+4.5	+0.0	34.5	46.0	-11.5	Horiz
51	583.152M	37.8	-27.8	+0.0	+19.3	+4.8	+0.0	34.1	46.0	-11.9	Vert
52	610.275M	37.1	-27.8	+0.0	+19.7	+5.0	+0.0	34.0	46.0	-12.0	Horiz
53	922.156M	31.5	-27.3	+0.0	+23.6	+6.2	+0.0	34.0	46.0	-12.0	Horiz
54	569.588M	37.8	-27.7	+0.0	+19.0	+4.7	+0.0	33.8	46.0	-12.2	Vert
55	583.153M	37.5	-27.8	+0.0	+19.3	+4.8	+0.0	33.8	46.0	-12.2	Horiz
56	800.129M	33.6	-27.4	+0.0	+21.7	+5.7	+0.0	33.6	46.0	-12.4	Vert
57	461.115M	39.2	-27.4	+0.0	+17.4	+4.4	+0.0	33.6	46.0	-12.4	Horiz
58	596.718M	36.6	-27.8	+0.0	+19.5	+4.9	+0.0	33.2	46.0	-12.8	Vert
59	664.513M	34.9	-27.8	+0.0	+20.6	+5.3	+0.0	33.0	46.0	-13.0	Vert

60	718.757M	34.1	-27.8	+0.0	+21.2	+5.4	+0.0	32.9	46.0	-13.1	Horiz
	QP										
^	718.763M	38.9	-27.8	+0.0	+21.2	+5.4	+0.0	37.7	46.0	-8.3	Horiz
62	800.130M	32.8	-27.4	+0.0	+21.7	+5.7	+0.0	32.8	46.0	-13.2	Horiz
63	650.967M	34.9	-27.8	+0.0	+20.3	+5.2	+0.0	32.6	46.0	-13.4	Vert
64	623.829M	35.5	-27.8	+0.0	+19.9	+5.0	+0.0	32.6	46.0	-13.4	Horiz
65	935.727M	29.8	-27.2	+0.0	+23.7	+6.2	+0.0	32.5	46.0	-13.5	Vert
66	31.633M	39.4	-27.0	+13.0	+0.0	+1.0	+0.0	26.4	40.0	-13.6	Vert
67	135.673M	41.0	-26.8	+13.6	+0.0	+2.1	+0.0	29.9	43.5	-13.6	Vert
68	881.443M	30.4	-27.3	+0.0	+23.0	+6.1	+0.0	32.2	46.0	-13.8	Horiz
69	284.820M	34.6	-26.3	+20.5	+0.0	+3.3	+0.0	32.1	46.0	-13.9	Horiz
70	908.595M	29.9	-27.3	+0.0	+23.4	+6.1	+0.0	32.1	46.0	-13.9	Vert
71	732.325M	32.9	-27.8	+0.0	+21.3	+5.5	+0.0	31.9	46.0	-14.1	Vert
72	542.477M	36.4	-27.7	+0.0	+18.6	+4.6	+0.0	31.9	46.0	-14.1	Vert
73	447.541M	37.6	-27.4	+0.0	+17.3	+4.4	+0.0	31.9	46.0	-14.1	Horiz
74	596.713M	35.0	-27.8	+0.0	+19.5	+4.9	+0.0	31.6	46.0	-14.4	Horiz
75	691.627M	33.0	-27.8	+0.0	+21.0	+5.4	+0.0	31.6	46.0	-14.4	Horiz
76	203.469M	34.3	-26.5	+18.3	+0.0	+2.7	+0.0	28.8	43.5	-14.7	Horiz
77	528.930M	36.1	-27.7	+0.0	+18.4	+4.5	+0.0	31.3	46.0	-14.7	Vert
78	705.194M	32.5	-27.8	+0.0	+21.1	+5.4	+0.0	31.2	46.0	-14.8	Vert
79	773.001M	31.4	-27.6	+0.0	+21.5	+5.6	+0.0	30.9	46.0	-15.1	Vert
80	623.832M	33.8	-27.8	+0.0	+19.9	+5.0	+0.0	30.9	46.0	-15.1	Vert
81	515.355M	35.7	-27.6	+0.0	+18.2	+4.5	+0.0	30.8	46.0	-15.2	Vert
82	678.078M	32.3	-27.8	+0.0	+20.8	+5.3	+0.0	30.6	46.0	-15.4	Vert
83	366.212M	35.3	-26.7	+0.0	+18.1	+3.7	+0.0	30.4	46.0	-15.6	Vert

84	718.728M	31.5	-27.8	+0.0	+21.2	+5.4	+0.0	30.3	46.0	-15.7	Vert
85	420.439M	36.2	-27.2	+0.0	+16.9	+4.1	+0.0	30.0	46.0	-16.0	Vert
86	691.637M	31.3	-27.8	+0.0	+21.0	+5.4	+0.0	29.9	46.0	-16.1	Vert
87	501.781M	34.9	-27.6	+0.0	+17.9	+4.4	+0.0	29.6	46.0	-16.4	Horiz
88	393.313M	35.5	-26.9	+0.0	+16.9	+3.9	+0.0	29.4	46.0	-16.6	Vert
89	434.000M	35.3	-27.3	+0.0	+17.1	+4.2	+0.0	29.3	46.0	-16.7	Horiz
90	433.998M	35.2	-27.3	+0.0	+17.1	+4.2	+0.0	29.2	46.0	-16.8	Horiz
91	406.893M	35.5	-27.1	+0.0	+16.7	+4.0	+0.0	29.1	46.0	-16.9	Vert
92	447.559M	34.7	-27.4	+0.0	+17.3	+4.4	+0.0	29.0	46.0	-17.0	Vert
93	339.059M	32.5	-26.5	+0.0	+19.4	+3.6	+0.0	29.0	46.0	-17.0	Vert
94	488.230M	34.0	-27.6	+0.0	+17.8	+4.4	+0.0	28.6	46.0	-17.4	Vert
95	311.963M	30.8	-26.4	+0.0	+20.7	+3.5	+0.0	28.6	46.0	-17.4	Horiz
96	420.432M	34.8	-27.2	+0.0	+16.9	+4.1	+0.0	28.6	46.0	-17.4	Horiz
97	311.953M	30.7	-26.4	+0.0	+20.7	+3.5	+0.0	28.5	46.0	-17.5	Vert
98	393.303M	34.6	-26.9	+0.0	+16.9	+3.9	+0.0	28.5	46.0	-17.5	Horiz
99	501.794M	33.4	-27.6	+0.0	+17.9	+4.4	+0.0	28.1	46.0	-17.9	Vert
100	366.202M	32.5	-26.7	+0.0	+18.1	+3.7	+0.0	27.6	46.0	-18.4	Horiz
101	461.096M	32.9	-27.4	+0.0	+17.4	+4.4	+0.0	27.3	46.0	-18.7	Vert
102	474.666M	32.8	-27.5	+0.0	+17.6	+4.4	+0.0	27.3	46.0	-18.7	Horiz
103	406.875M	33.7	-27.1	+0.0	+16.7	+4.0	+0.0	27.3	46.0	-18.7	Horiz
104	474.690M	32.4	-27.5	+0.0	+17.6	+4.4	+0.0	26.9	46.0	-19.1	Vert
105	379.749M	29.7	-26.8	+0.0	+17.5	+3.8	+0.0	24.2	46.0	-21.8	Vert

FCC PART 15.222(C) FREQUENCY TOLERANCE

Temperature	Voltage	Frequency	Pass/Fail
-20°C	12.0VDC	13.560247 MHz	Pass
-10°C	12.0VDC	13.560272 MHz	Pass
00°C	12.0VDC	13.560271 MHz	Pass
+10°C	12.0VDC	13.560253 MHz	Pass
+20°C	12.0VDC	13.560220 MHz	Pass
+20°C	10.2VDC	13.560216 MHz	Pass
+20°C	13.8VDC	13.560216 MHz	Pass
+30°C	12.0VDC	13.560185 MHz	Pass
+40°C	12.0VDC	13.560157 MHz	Pass
+50°C	12.0VDC	13.560134 MHz	Pass



MOTOROLA

*Integrated Information Systems Group
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Scottsdale, AZ 85252-1417*

**AC CONDUCTED EMISSIONS
SUPPLEMENTAL DATA**

**FOR TEST REPORT
#FC00-034**

CARD ACCEPTANCE DEVICE (Parallel)

Tested By:

**Motorola IISG
EMC Test Facility
8201 E. McDowell Rd.
Scottsdale, Arizona 85252**

PURPOSE:

The attached data is for the AC Conducted Emissions compliance to be verified as part of transmitter modular approval per requirement no. 5 of Public Notice DA 00-1407. As stated, unless the transmitter module is battery powered, it must comply with the AC line conducted requirements found in Section 15.207.

TEST METHOD:

The test methods of ANSI 63.4 were used for performing the tests. A Universal Power Source (UPS) manufactured by Power Designs, Inc., Model 6050A, was used as the AC power mains interface and DC source for the Parallel CAD. This generic commercial off the shelf (COTS) power supply was used since no specific source has been identified for AC power applications. As specified in Paragraph 13.1.3.1, the tests were performed with a dummy load connected to the antenna output terminals since it has a detachable antenna board. The dummy load simulates the impedance of the PCB loop antenna at $2\ \Omega$ in series with a $1.3\mu\text{H}$ inductance.



FIGURE 6A - 1 Parallel CAD AC CONDUCTED EMISSIONS TEST SETUP

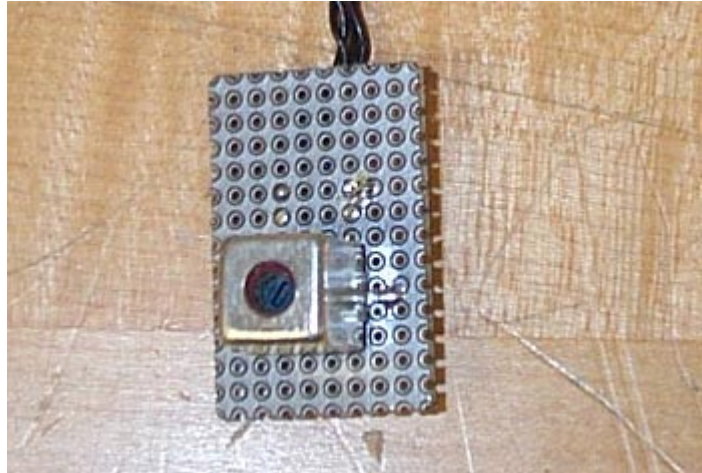


FIGURE 6A - 2 Antenna dummy load

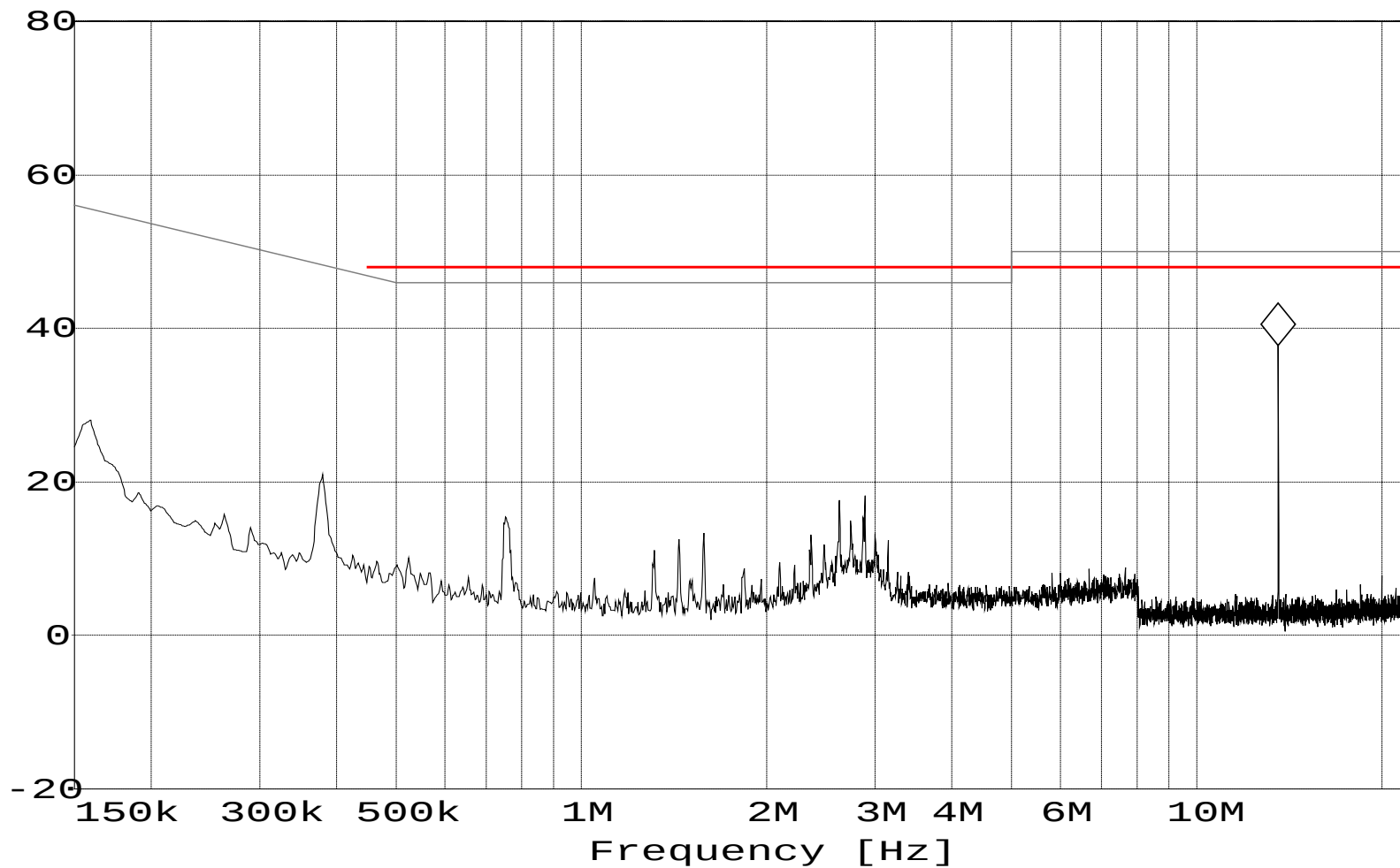
TEST RESULTS:

The Parallel CAD complies with the AC Conducted Emission requirements. The conducted emissions scans are shown in the subsequent pages.

Marker : 13.56 MHz 37.78 dBμV

Level [dBμV]

Parallel CAD 120VAC Hi Conducted Emissions
w/Universal Power Source; Power Designs, Inc.; Model 6050A

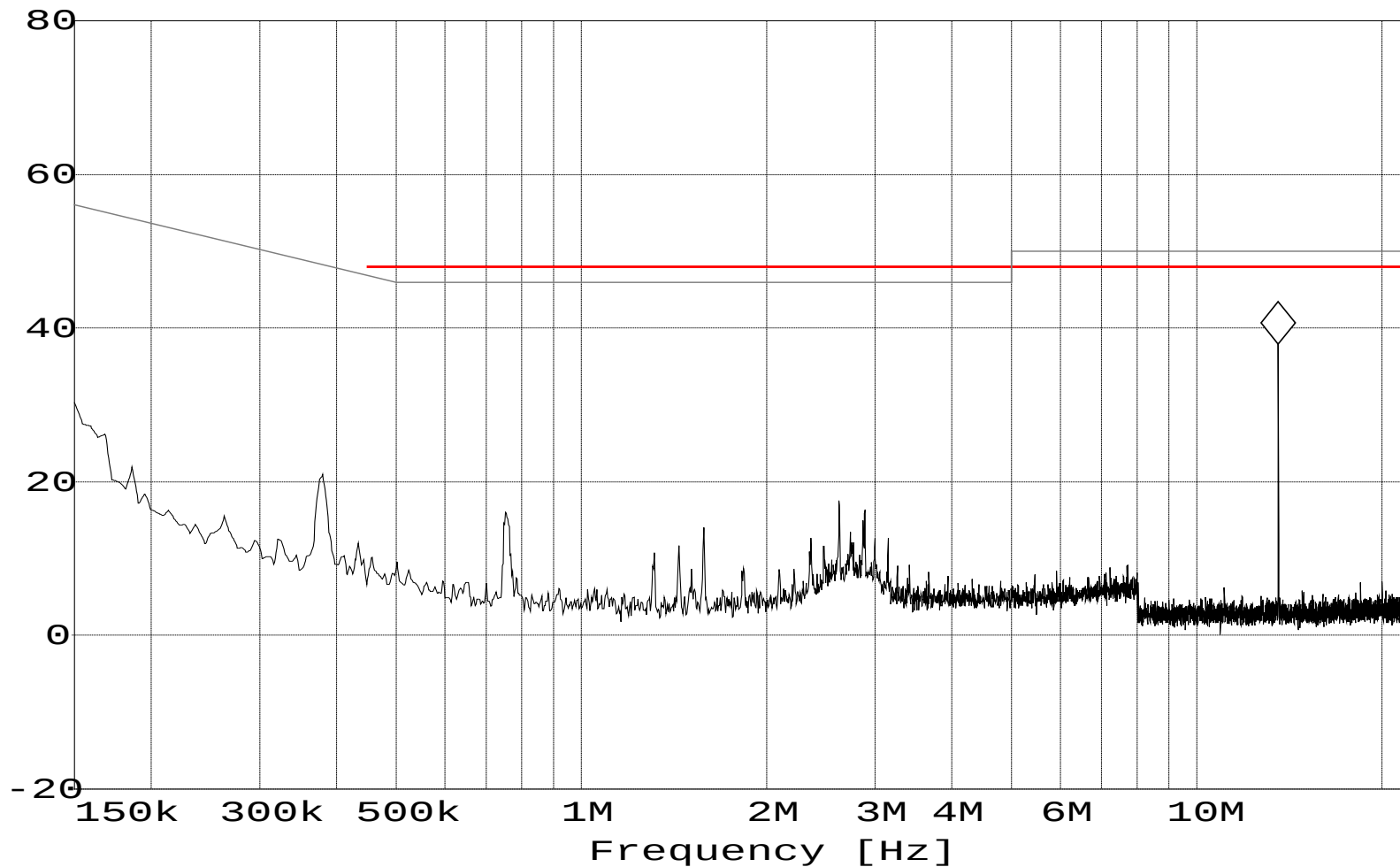


— MES 120V hi P w/load
— LIM Cis 22 Cond. Avg/B
— LIM FCC Cond. Class B

Marker : 13.56 MHz 37.9 dBμV

Level [dBμV]

Parallel CAD 120VAC Rtn Conducted Emissions
w/Universal Power Source; Power Designs, Inc.; Model 6050A



— MES 120V 1ø P w/load
— LIM Cis 22 Cond. Avg/B
— LIM FCC Cond. Class B