Electromagnetic Compatibility Test Report

Tests Performed on a Trilithic, Inc.

EASyCAP EAS encoder/decoder Transciever, Model EASyCap-1

Radiometrics Document RP-7064A

Product Detail: FCC ID: P4V-EASYCAP-1 Equipment type: EAS system
Test Standards: US CFR Title 47, Chapter I, FCC Part 11 & 15 Subpart C FCC Part 15 CFR Title 47: 2011 This report concerns: Original Grant for Certification FCC Parts 11.32(d) and 15 Subpart B

Tests Performed For:	*Test Facility:*
Trilithic, Inc. 9710 Park Davis Dr. Indianapolis, IN 46235	**Radiometrics Midwest Corporation** 12 East Devonwood Romeoville, IL 60446 (815) 293-0772

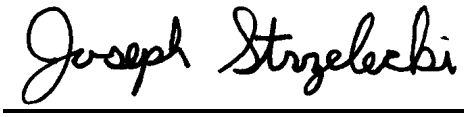
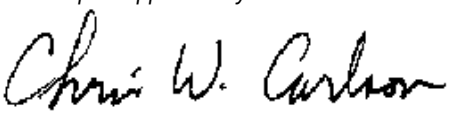
Test Date(s): (Month-Day-Year)
August 4 and 5, 2011

Document RP-7064A Revisions:

Rev.	Issue Date	Affected Sections	Revised By
0	October 6, 2011		
1	November 2, 2011	Pages 1, 20, 23	Joseph Strzelecki

Table of Contents

1 ADMINISTRATIVE DATA

Equipment Under Test: A Trilithic, Inc., EASyCAP EAS encoder/decoder Model: EASyCap-1 Serial Number: none This will be referred to as the EUT in this Report	
Date EUT Received at Radiometrics: (Month-Day-Year) August 3, 2011	*Test Date(s): (Month-Day-Year)* August 4 and 5, 2011
Test Report Written By: Joseph Strzelecki Senior EMC Engineer	*The Tests were not Witnessed by Personnel from:* The Tests were not Witnessed by Personnel from Trilithic, Inc.
Radiometrics' Personnel Responsible for Test:  Joseph Strzelecki Senior EMC Engineer NARTE EMC-000877-NE	*Test Report Approved By*  Chris W. Carlson Director of Engineering NARTE EMC-000921-NE

2 TEST SUMMARY AND RESULTS

The EUT (Equipment Under Test) is a EASyCAP EAS encoder/decoder, Model EASyCap-1, manufactured by Trilithic, Inc. The detailed test results are presented in a separate section. The following is a summary of the test results.

Environmental Phenomena	Frequency Range	Basic Standard	Test Result
RF Radiated Emissions	30 – 2000 MHz	FCC Part 15	Pass
Conducted Emissions, AC Mains	0.45 - 30 MHz	FCC Part 15	Pass
Antenna Conducted Emissions	0.1 – 2000 MHz	FCC Part 15	Pass
Broadcast frequency Immunity	1 to 787 MHz	FCC Part 11.32(d)	Pass

2.1 RF Exposure Compliance Requirements

The EUT is not a transmitter, so it does not have any RF exposure requirements.

3 EQUIPMENT UNDER TEST (EUT) DETAILS

3.1 EUT Description

The EUT is a EASyCAP EAS encoder/decoder, Model EASyCap-1, manufactured by Trilithic, Inc. The EUT was in good working condition during the tests, with no known defects.

3.2 Related Submittals

Trilithic, Inc. is not submitting any other products simultaneously for equipment authorization related to the EUT.

4 TESTED SYSTEM DETAILS

4.1 Tested System Configuration

The system was configured for testing in a typical fashion. The EUT was placed on an 80-cm high, nonconductive test stand. The testing was performed in conditions as close as possible to installed conditions. Wiring was consistent with manufacturer's recommendations.

The EUT was tested as a stand-alone device. Power was supplied at 115 VAC, 60 Hz single-phase to its external power supply. The identification for all equipment, plus descriptions of all cables used in the tested system, are:

Tested System Configuration List

Item	Description	Type*	Manufacturer	Model Number	Serial Number
1	EASyCAP EAS encoder/decoder	E	Trilithic, Inc.	EASyCap-1	none
2	USB Keyboard	P	Microsoft	KB0GK2001	IMJW0009101302158
3	USB Mouse	P	Hewlett-Packard	269588-011	Rev. 0k

* Type: E = EUT, P = Peripheral, S = Support Equipment; H = Host Computer

List of System Cables

QTY	Length (m)	Cable Description	Shielded?
1	1.8	AC Cord	No
3	1.0	Audio In cable	Yes
3	1.0	Audio Out cable	Yes
2	1.0	AES/EBU inputs XLRcomm	Yes
2	1.0	AES/EBU outputs XLRcomm	Yes
1	1.0	Video In RG-59	Yes
1	1.0	Video Out RG-59	Yes
2	0.9	USB cable	Yes
2	1.8	dB9 cable	Yes
1	1.8	Phone cable	Yes
1	10.0	Ethernet to Hub cable	No
6	1.0	F Cables to Radio Input	Yes
6	1.0	Contact Closure Output cable	Yes
4	1.0	General purpose input cable	Yes
3	1.0	Balanced Audio input	Yes
2	1.0	Audio Switch input	Yes
2	1.0	Audio Switch output	Yes
1	10.0	Audio input to Laptop	Yes
1	10.0	Audio output to Laptop	Yes

4.2 Operating mode

The EASyPLUS-1 was Scanning for EAS FSK. It was in full-page video out mode. All EAS audio out lines were set to Active Audio output on. The display was active. All internal POTs software was programmed to Max Volume.

During the tests, the EUT was tuned to the following frequencies.

AM Radio	520, 1070, 1340 and 1720 kHz
FM Radio	87.9, 93.5, 94.7 and 107.9 MHz
WRX Weather Radio FM	162.4, 162.425, 162.450, 162.475, 162.500, 162.525 and 162.550 MHz

4.3 Special Accessories

No special accessories were used during the tests in order to achieve compliance.

4.4 Equipment Modifications

No modifications were made to the EUT at Radiometrics' test facility in order to comply with the standards listed in this report.

5 TEST SPECIFICATIONS AND RELATED DOCUMENTS

Document	Date	Title
FCC CFR Title 47	2011	Code of Federal Regulations Title 47, Chapter 1, Federal Communications Commission, Part 15 - Radio Frequency Devices
ANSI C63.4-2003	2003	Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

The test procedures used are in accordance with the Industry Canada RSS-GEN and ANSI document C63.4-2003, "Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The specific procedures are described herein. Radiated testing was performed at an antenna to EUT distance of 3 meters. The antenna was raised and lowered from 1 to 4 meters.

6 RADIOMETRICS' TEST FACILITIES

The results of these tests were obtained at Radiometrics Midwest Corp. in Romeoville, Illinois, USA. Radiometrics is accredited by A2LA (American Association for Laboratory Accreditation) to conform to ISO/IEC 17025: 2005 "General Requirements for the Competence of Calibration and Testing Laboratories". Radiometrics' Lab Code is 121191 and Certification Number is 1495.01. Radiometrics' scope of accreditation includes all of the test methods listed herein. A copy of the accreditation can be accessed on our web site (www.radiomet.com). Radiometrics accreditation status can be verified at A2LA's web site (www.a2la2.org).

The following is a list of shielded enclosures located in Romeoville, Illinois used during the tests:

Chamber A: Is an anechoic chamber that measures 24' L X 12' W X 12' H. The walls and ceiling are fully lined with ferrite absorber tiles. The floor has a 10' x 10' section of ferrite absorber tiles located in the center. Panashield of Rowayton, Connecticut manufactured the chamber. The enclosure is NAMAS certified.

Chamber E: Is a custom made anechoic chamber that measures 52' L X 30' W X 18' H. The walls and ceiling are fully lined with RF absorber. Pro-shield of Collinsville, Oklahoma manufactured the chamber.

Test Station F: Is an area that measures 10' D X 12' W X 10' H. The floor and back wall are metal shielded. This area is used for conducted emissions measurements.

A separate ten-foot long, brass plated, steel ground rod attached via a 6 inch copper braid grounds each of the above chambers. Each enclosure is also equipped with low-pass power line filters.

The FCC has accepted these sites as test site number US1065. The FCC test site Registration Number is 732175. Details of the site characteristics are on file with the Industry Canada as site number IC3124A-1.

A complete list of the test equipment is provided herein. The calibration due dates are indicated on the equipment list. The equipment is calibrated in accordance to ANSI/NCSL Z540-1 with traceability to the National Institute of Standards and Technology (NIST).

7 DEVIATIONS AND EXCLUSIONS FROM THE TEST SPECIFICATIONS

There were no deviations or exclusions from the test specifications.

8 CERTIFICATION

Radiometrics Midwest Corporation certifies that the data contained herein was taken under conditions that meet or exceed the requirements of the test specification and the data contained herein was taken with calibrated test equipment. The results relate only to the EUT listed herein.

9 TEST EQUIPMENT TABLE

RMC ID	Manufacturer	Description	Model No.	Serial No.	Frequency Range	Cal Period	Cal Date
AMP-05	RMC/Celeritek	Pre-amplifier	MW110G	1001	1.0-12GHz	12 Mo.	01/19/11
AMP-22	Anritsu	Pre-amplifier	MH648A	M23969	0.1-1200MHz	12 Mo.	01/18/11
ANT-13	EMCO	Horn Antenna	3115	2502	1.0-18GHz	24 Mo.	11/18/10
ANT-44	Impossible Machine	Super Log Antenna	SL-20M2G	1002	20-2000MHz	24 Mo.	11/25/09
HPF-01	Solar	High Pass Filter	7930-100	HPF-1	0.15-30MHz	24 Mo.	10/27/09
LSN-01	Electrometrics	50 uH LISN	FCC/VDE 50/2	1001	0.01-30MHz	24 Mo.	06/14/11
LSN-03	Farnell	50 uH LISN	1EXLSN30B	000314	0.01-30MHz	24 Mo.	06/14/11
REC-01	Hewlett Packard	Spectrum Analyzer	8566A	2106A02115, 2209A01349	30Hz-22GHz	12 Mo.	10/29/10
REC-03	Anritsu	Spectrum Analyzer	MS2601B	MT94589	0.01-2200MHz	12 Mo.	03/18/11
REC-07	Anritsu	Spectrum Analyzer	MS2601A	MT53067	0.01-2200MHz	12 Mo.	01/21/11
THM-02	Fluke	Temp/Humid Meter	971	93490471	N/A	12 Mo.	04/01/10

Note: All calibrated equipment is subject to periodic checks.

10 TEST SECTIONS

10.1 AC Conducted Emissions

The tests and limits are in accordance with FCC section 15.207 and RSS Gen section 7.2.2.

A computer-controlled analyzer was used to perform the conducted emissions measurements. The frequency range was divided into 500 subranges equally spaced on a logarithmic scale. The computer recorded the peak of each subrange. This data was then plotted on semi-log graph paper generated by the computer and plotter. Adjusting the positions of the cables and orientation of the test system then maximizes the highest emissions.

Mains Conducted emission measurements were performed using a 50 Ohm/50 uH Line Impedance Stabilization Network (LISN) as the pick-up device. Measurements were repeated on both leads within the power cord. If the EUT power cord exceeded 80 cm in length, the excess length of the power cord was made into a 30 to 40 cm bundle near the center of the cord. The LISN was placed on the floor at the base of the test platform and electrically bonded to the ground plane.

FCC Limits of Conducted Emissions at the AC Mains Ports

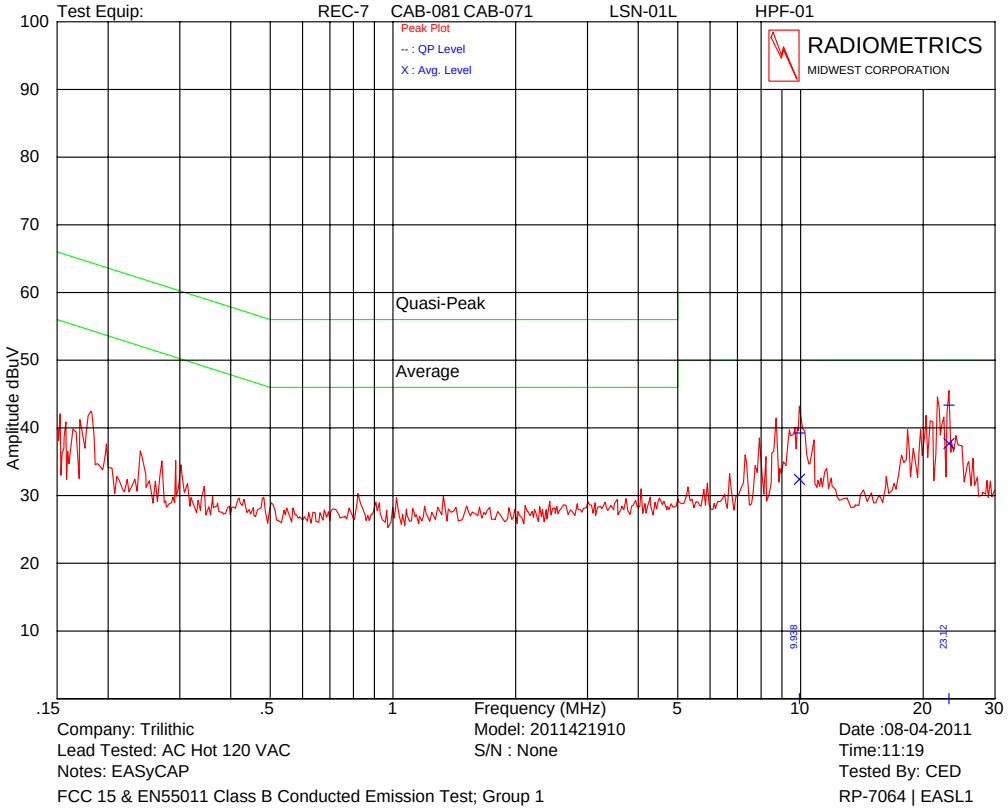
Frequency Range (MHz)	Class B Limits (dBuV)	
	Quasi-Peak	Average
0.150 - 0.50*	66 - 56	56 - 46
0.5 – 5.0	56	46
5.0 - 30	60	50
* The limit decreases linearly with the logarithm of the frequency in this range.		

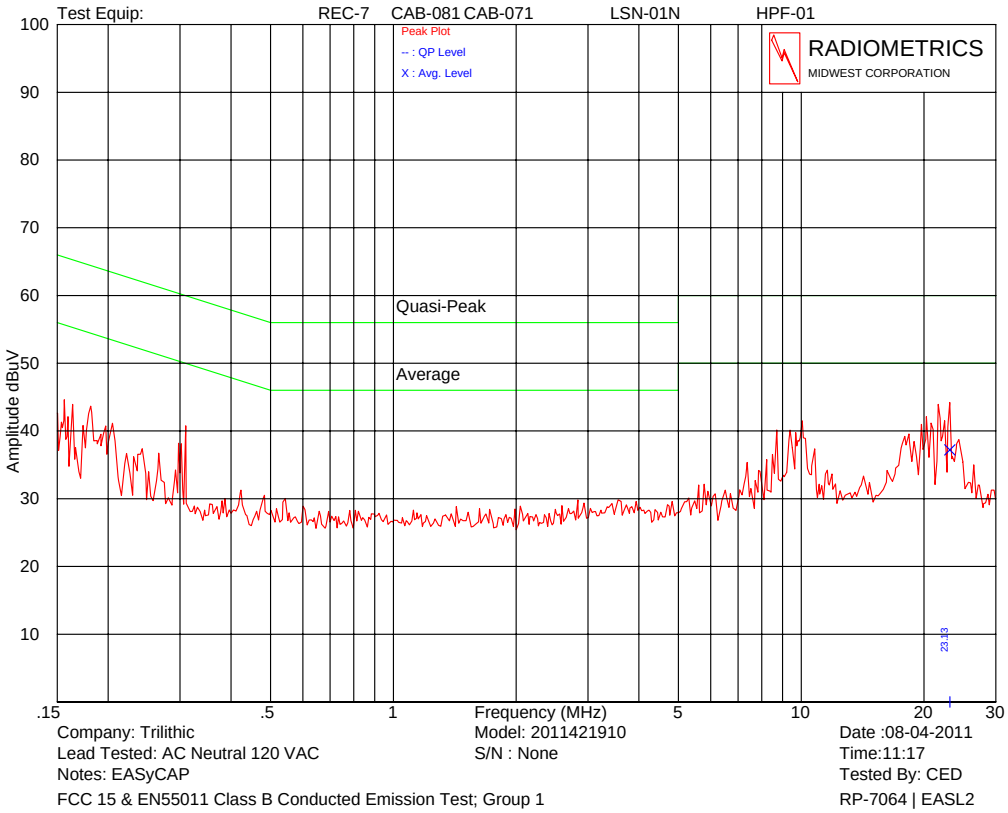
The initial step in collecting conducted data is a peak detector scan and the plotting of the measurement range. Significant peaks are then marked as shown on the following table, and these signals are then measured with the quasi-peak detector. The following represents the worst case emissions from the host computer (with the EUT connected) power cord, after testing all modes of operation.

Test Date : August 4, 2011
The Amplitude is the final corrected value with cable and LISN Loss.

Lead Tested	Frequency MHz	QP Amplitude	QP Limit	Average Amplitude	Average Limit
AC Neutral	23.136	44.2 P	60.0	37.2	50.0
AC Hot	9.939	39.3Q	60.0	32.4	50.0
AC Hot	23.130	43.3Q	60.0	37.7	50.0

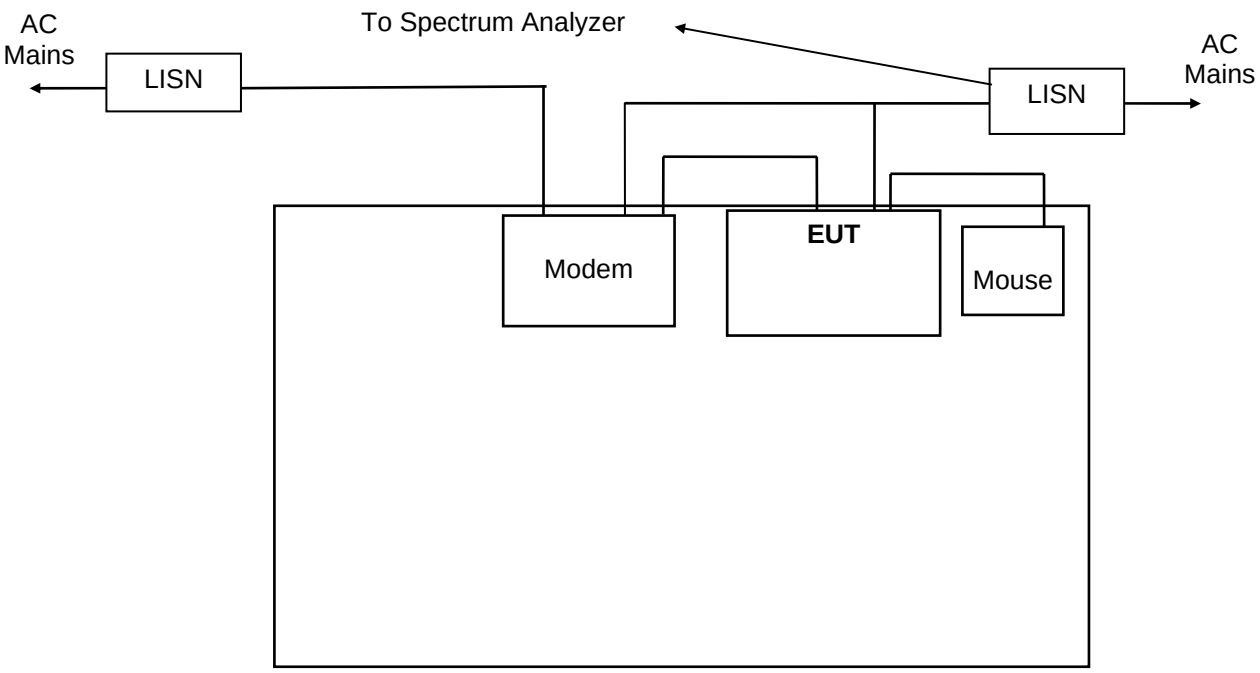
The above are the worst case results with three frequencies test for each EUT
* QP readings are quasi-peak with a 9 kHz bandwidth and no video filter.





Judgment: Passed by at least 6 dB

Figure 1. Conducted Emissions Test Setup



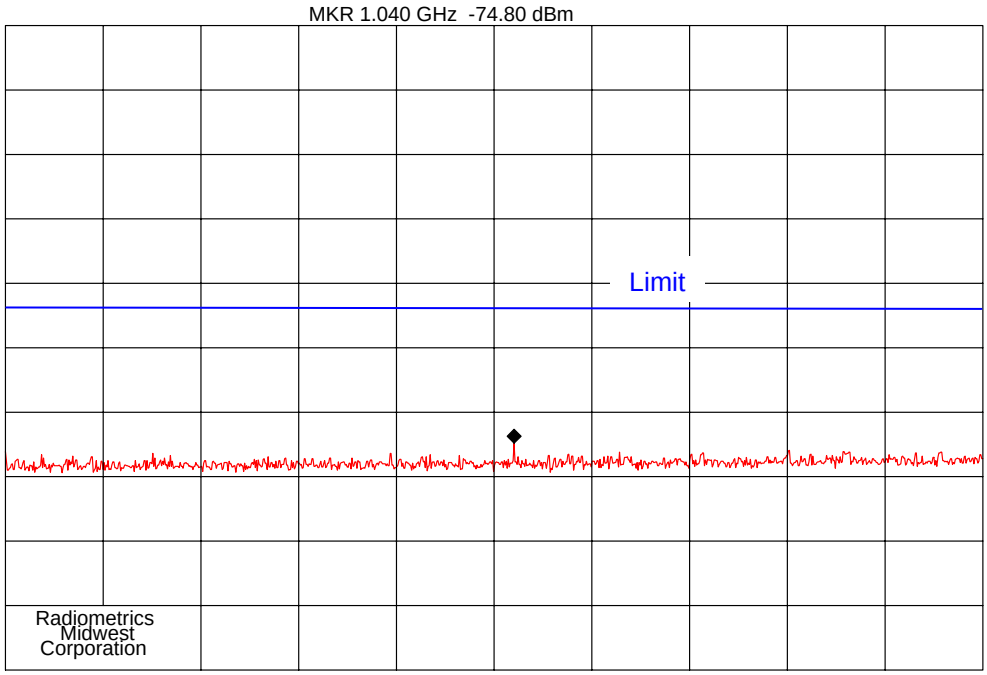
Notes:
- LISN's at least 80 cm from EUT chassis
- Vertical conductive plane 40 cm from rear of table top
- EUT power cord bundled

10.2 Antenna Conducted Test Results

For each plot, the EUT was tuned to the low, middle, and high frequencies in each band while the analyzer was in MAX mode.

The frequency range from 0.15 to 2000 MHz was scanned and plotted using the peak detector function. The EUT was connected to the spectrum analyzer via a 6 inch coaxial cable with less than 1 dB of loss at 2000 MHz. A separate plot was produced for each antenna port.

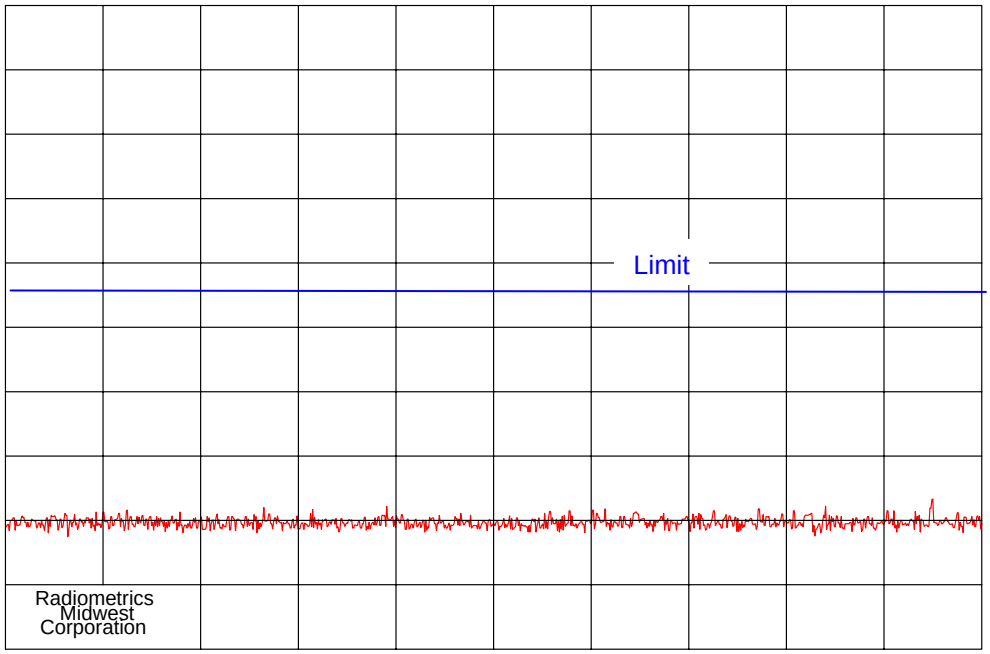
Limit = -54dBm= 2 nW
Judgment: passed by 6.6 dB



Company: Trilithic
START 1 MHz
RES BW 100 kHz
10 dB/
Notes: Antenna Power, Radio 6; Weather

ITEM : EASyCAP
REF -10.0 dBm
VBW 300 kHz
Time: 10:35

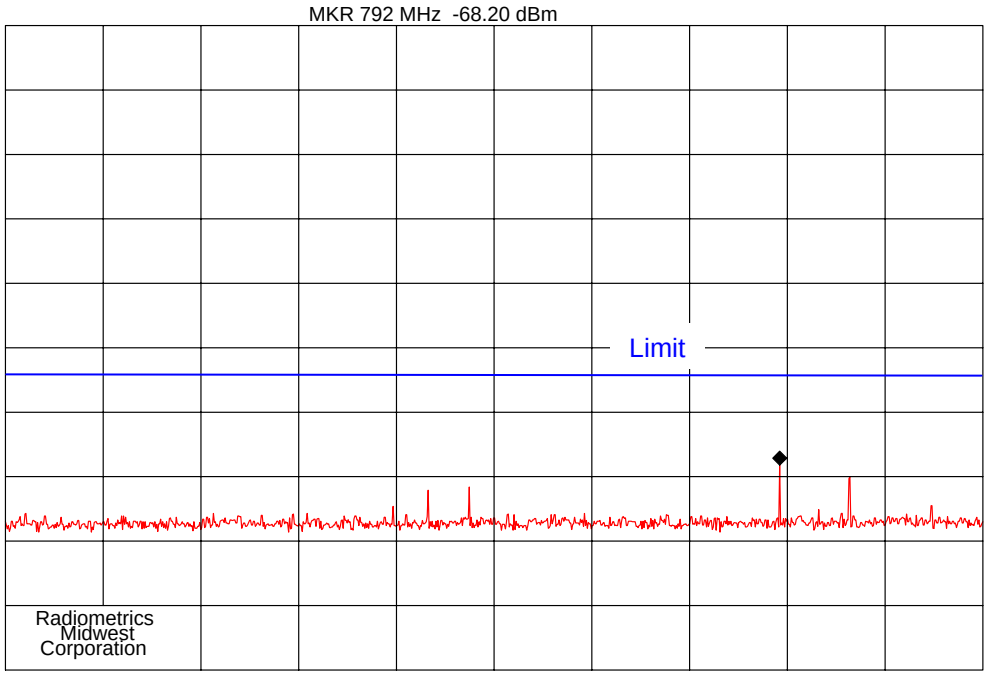
Date : 08-05-2011
STOP 2.00 GHz
ATTEN 10 dB
SWP 600 msec
File: P6-WEA



Company: Trilithic
START 150 kHz
RES BW 10 kHz
10 dB/
Notes: Antenna Power, Radio 1; AM

ITEM : EASyCAP
REF -10.0 dBm
VBW 30 kHz
Time: 11:08

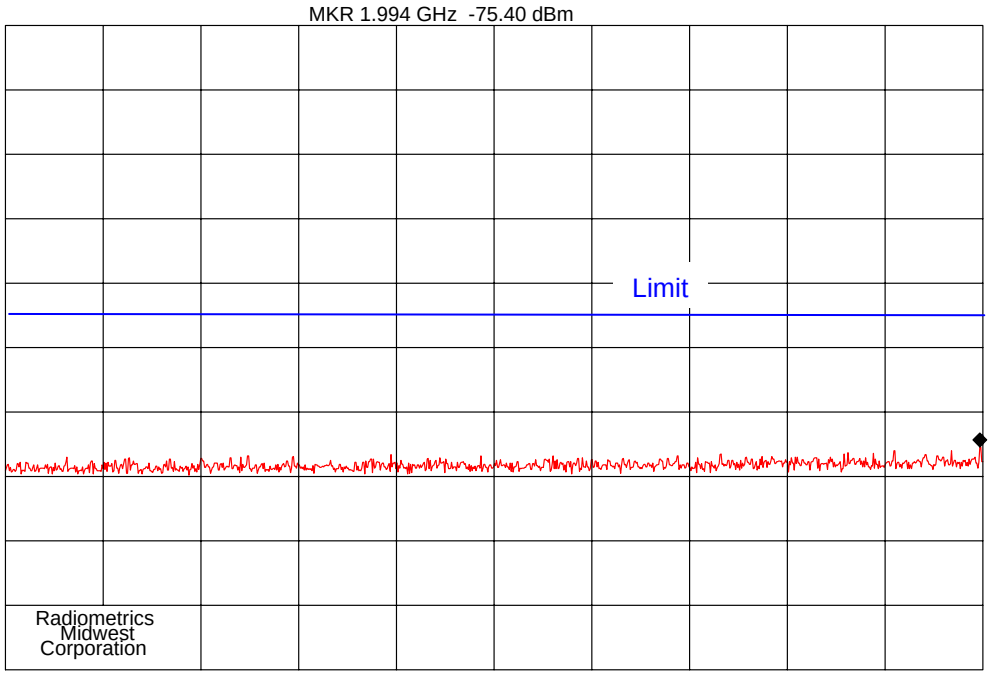
Date : 08-05-2011
STOP 30.0 MHz
ATTEN 10 dB
SWP 896 msec
File: P1-AM



Company: Trilithic
START 1 MHz
RES BW 100 kHz
10 dB/
Notes: Antenna Power, Radio 1; FM

ITEM : EASyCAP
REF 0.0 dBm
VBW 300 kHz
Time: 11:07

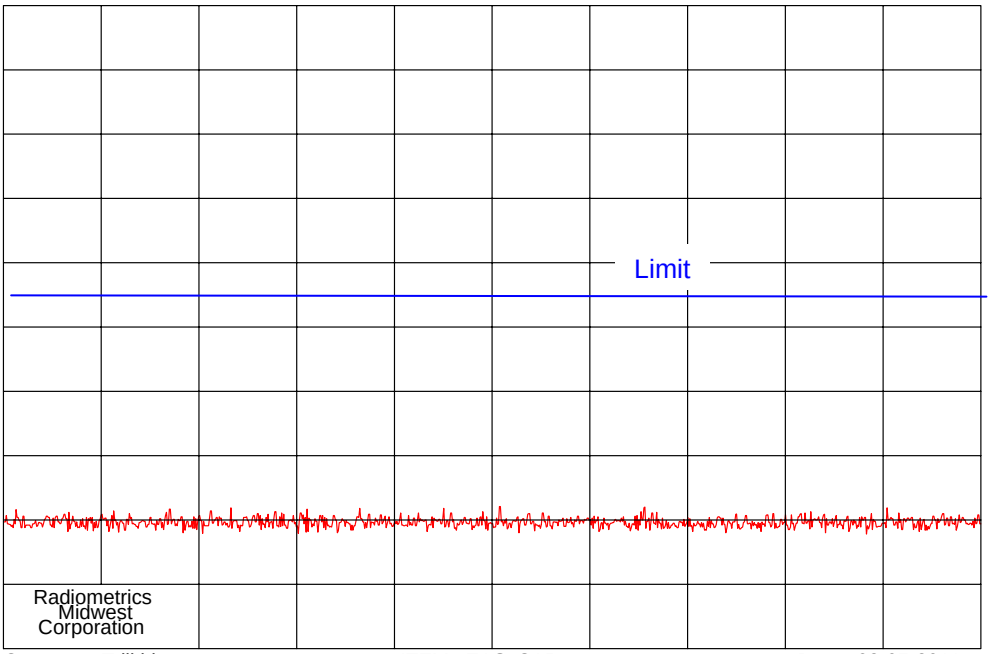
Date : 08-05-2011
STOP 1.00 GHz
ATTEN 10 dB
SWP 300 msec
File: P1-FM



Company: Trilithic
START 1 MHz
RES BW 100 kHz
10 dB/
Notes: Antenna Power, Radio 1; Weather

ITEM : EASyCAP
REF -10.0 dBm
VBW 300 kHz
Time: 11:06

Date : 08-05-2011
STOP 2.00 GHz
ATTEN 10 dB
SWP 600 msec
File: P1-Wea

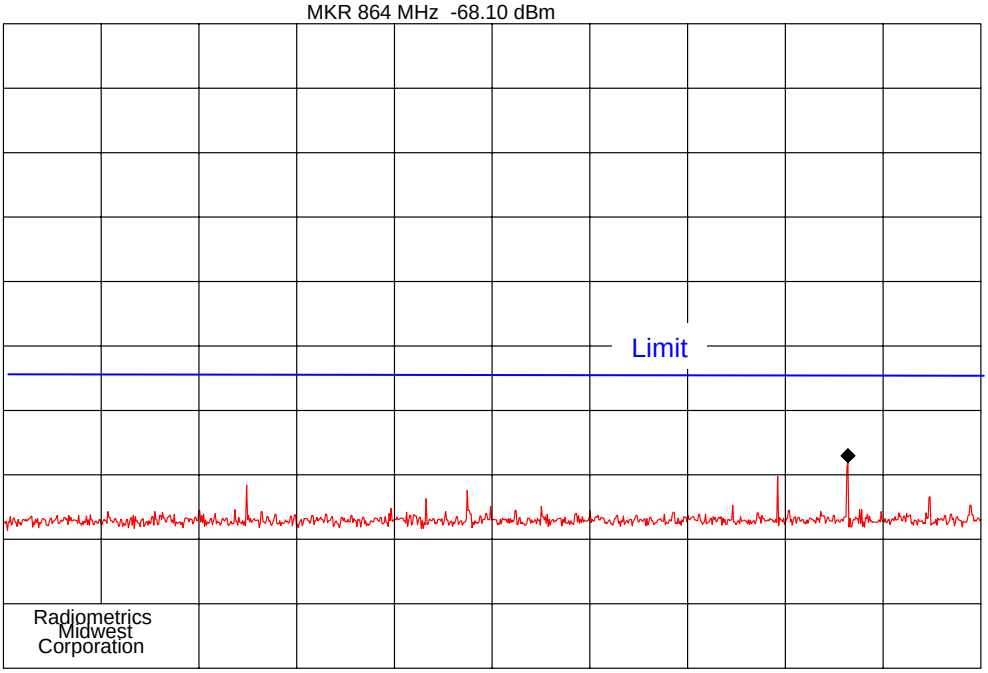


Company: Trilithic
START 150 kHz
RES BW 10 kHz
10 dB/
Notes: Antenna Power, Radio 2; AM

ITEM : EASyCAP
REF -10.0 dBm
VBW 30 kHz
Time: 10:59

Date : 08-05-2011
STOP 30.0 MHz
ATTEN 10 dB
SWP 896 msec
File: P2-AM

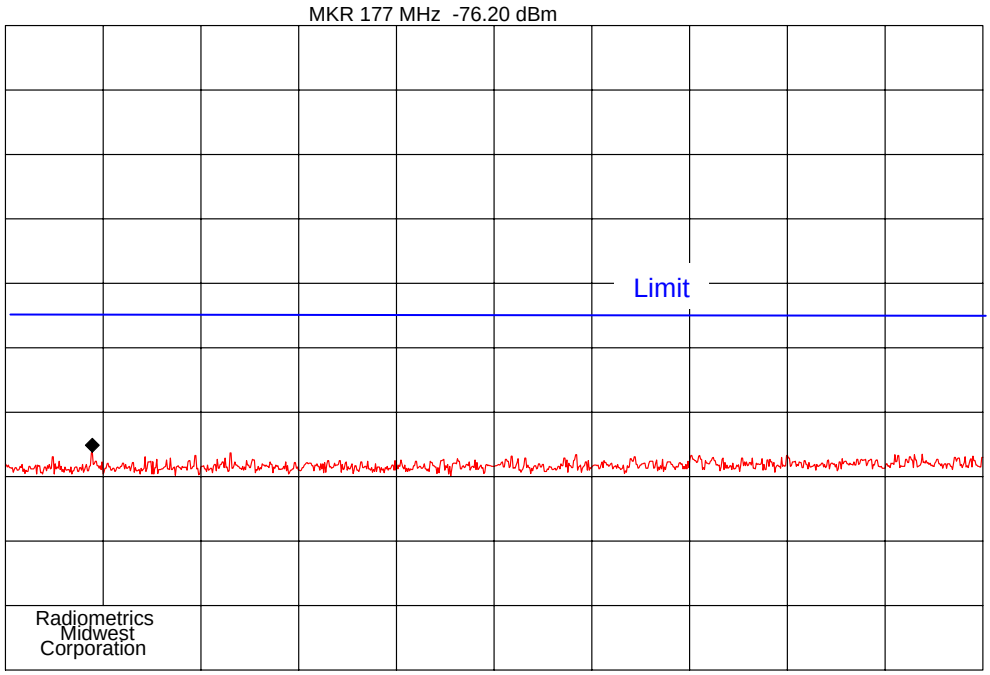
MKR 864 MHz -68.10 dBm



Company: Trilithic
START 1 MHz
RES BW 100 kHz
10 dB/
Notes: Antenna Power, Radio 2; FM

ITEM : EASyCAP
REF 0.0 dBm
VBW 300 kHz
Time: 11:00

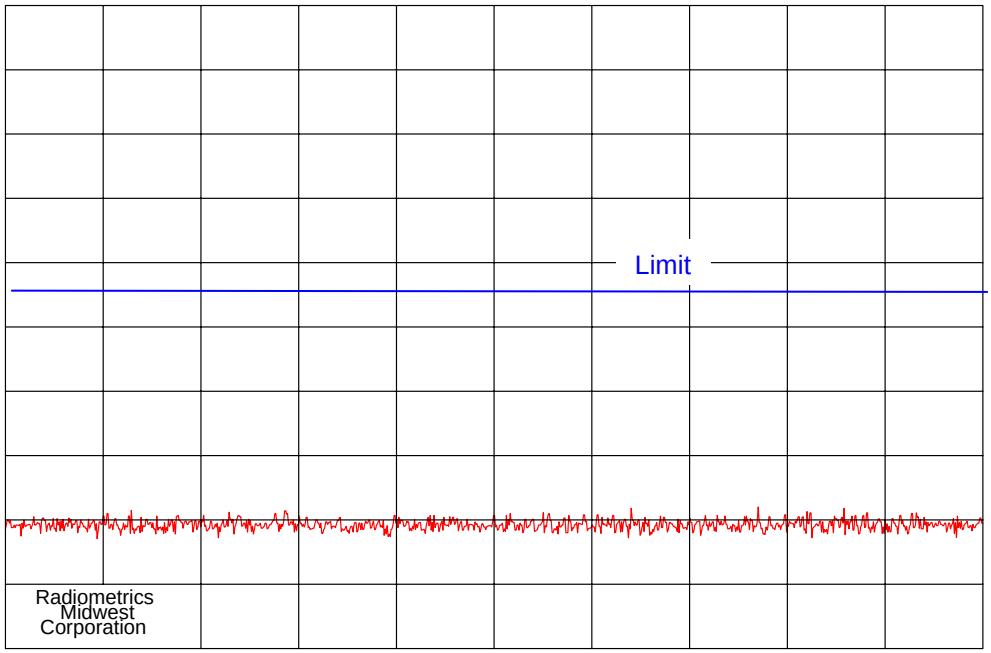
Date : 08-05-2011
STOP 1.00 GHz
ATTEN 10 dB
SWP 300 msec
File: P2-FM



Company: Trilithic
START 1 MHz
RES BW 100 kHz
10 dB/
Notes: Antenna Power, Radio 2; Weather

ITEM : EASyCAP
REF -10.0 dBm
VBW 300 kHz
Time: 11:02

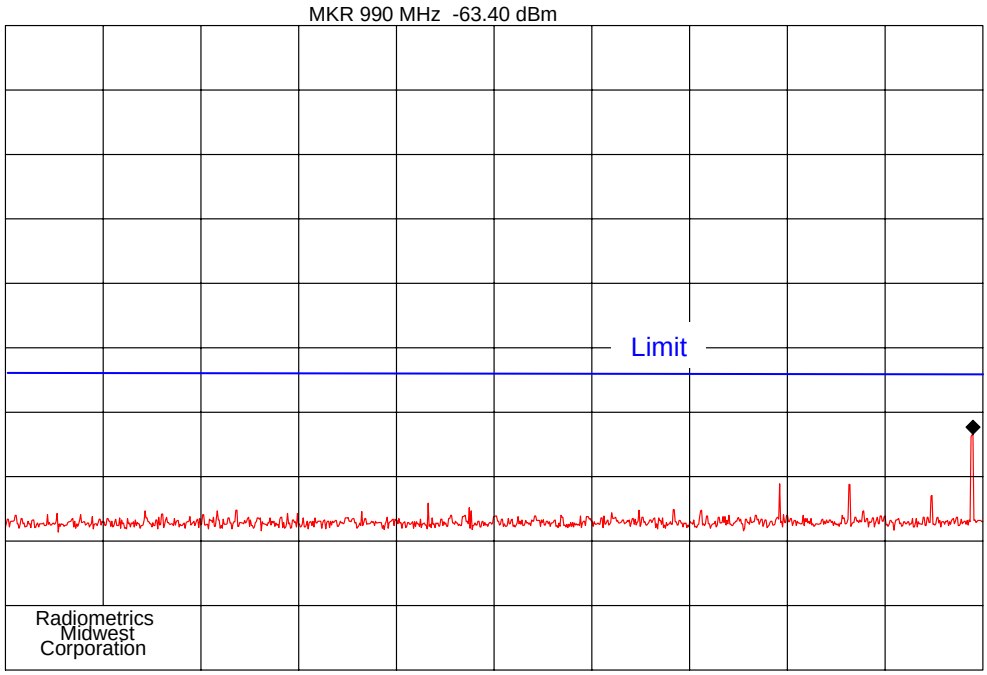
Date : 08-05-2011
STOP 2.00 GHz
ATTEN 10 dB
SWP 600 msec
File: P2-Wea



Company: Trilithic
START 150 kHz
RES BW 10 kHz
10 dB/
Notes: Antenna Power, Radio 3; AM

ITEM : EASyCAP
REF -10.0 dBm
VBW 30 kHz
Time: 10:56

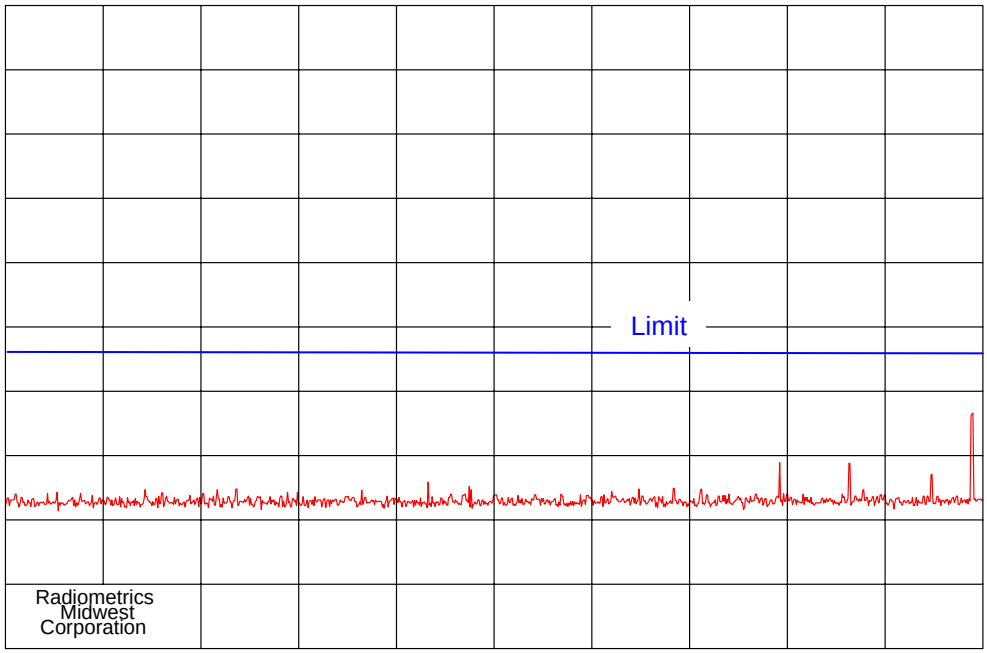
Date : 08-05-2011
STOP 30.0 MHz
ATTEN 10 dB
SWP 896 msec
File: P3-AM



Company: Trilithic
START 1 MHz
RES BW 100 kHz
10 dB/
Notes: Antenna Power, Radio 3; FM

ITEM : EASyCAP
REF 0.0 dBm
VBW 300 kHz
Time: 10:56

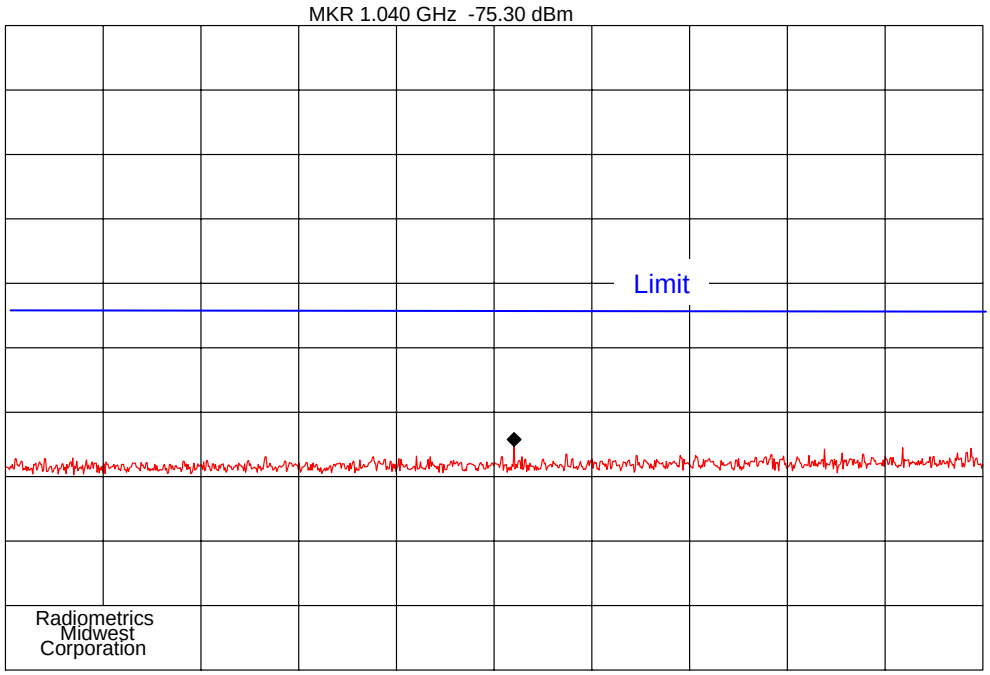
Date : 08-05-2011
STOP 1.00 GHz
ATTEN 10 dB
SWP 300 msec
File: P3-FM



Company: Trilithic
START 1 MHz
RES BW 100 kHz
10 dB/
Notes: Antenna Power, Radio 3; FM

ITEM : EASyCAP
REF 0.0 dBm
VBW 300 kHz
Time: 10:55

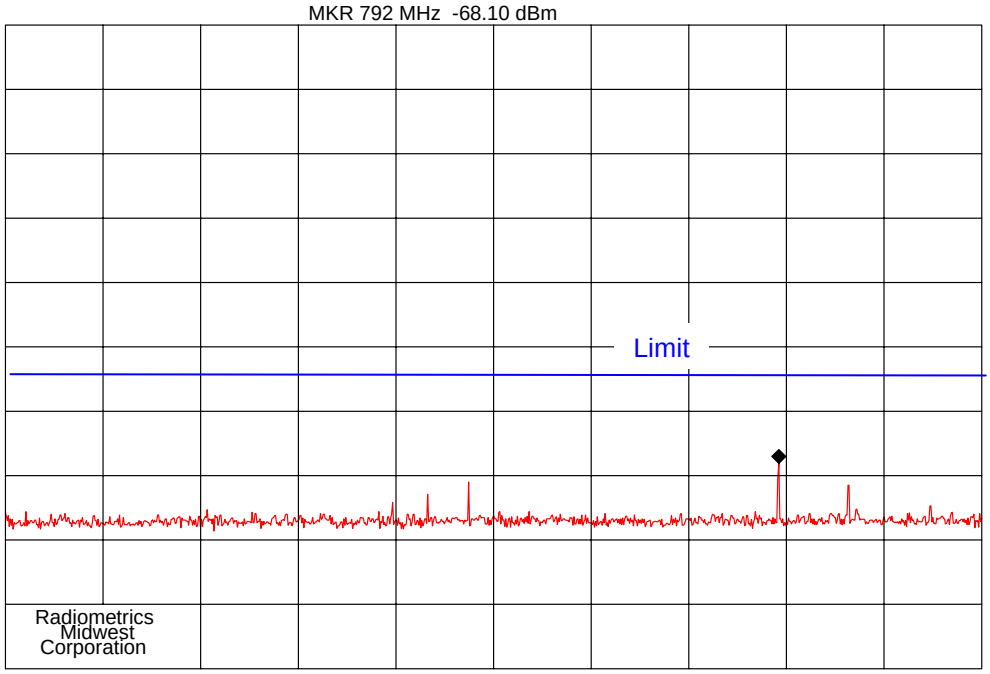
Date : 08-05-2011
STOP 1.00 GHz
ATTEN 10 dB
SWP 300 msec
File: P3-FMX



Company: Trilithic
START 1 MHz
RES BW 100 kHz
10 dB/
Notes: Antenna Power, Radio 3; Weather

ITEM : EASyCAP
REF -10.0 dBm
VBW 300 kHz
Time: 10:54

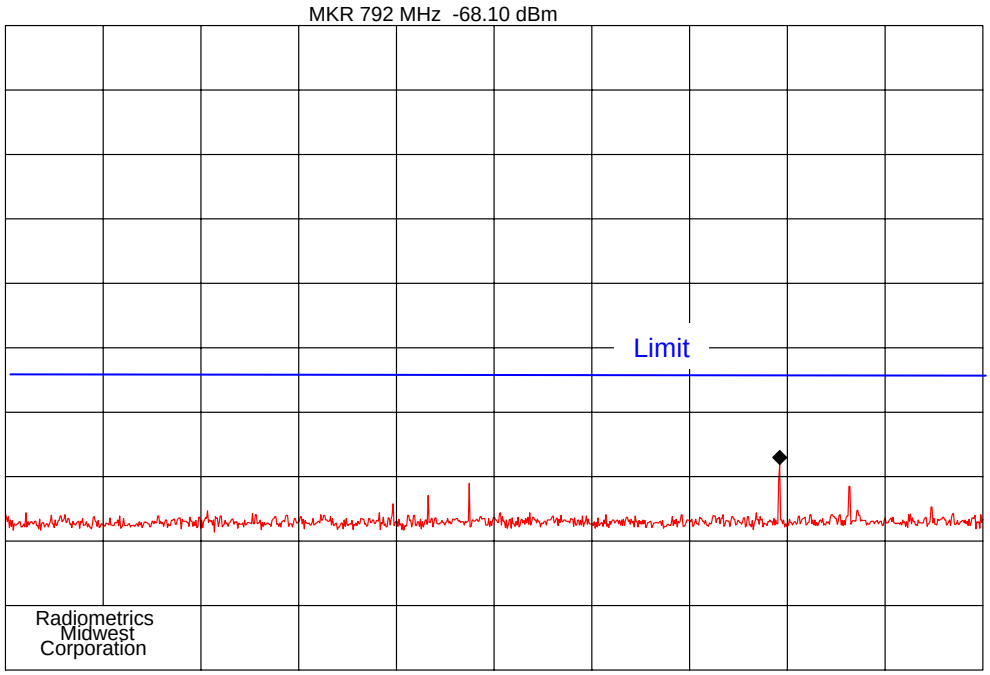
Date : 08-05-2011
STOP 2.00 GHz
ATTEN 10 dB
SWP 600 msec
File: P3-Wea



Company: Trilithic
START 1 MHz
RES BW 100 kHz
10 dB/
Notes: Antenna Power, Radio 4; FM

ITEM : EASyCAP
REF 0.0 dBm
VBW 300 kHz
Time: 10:49

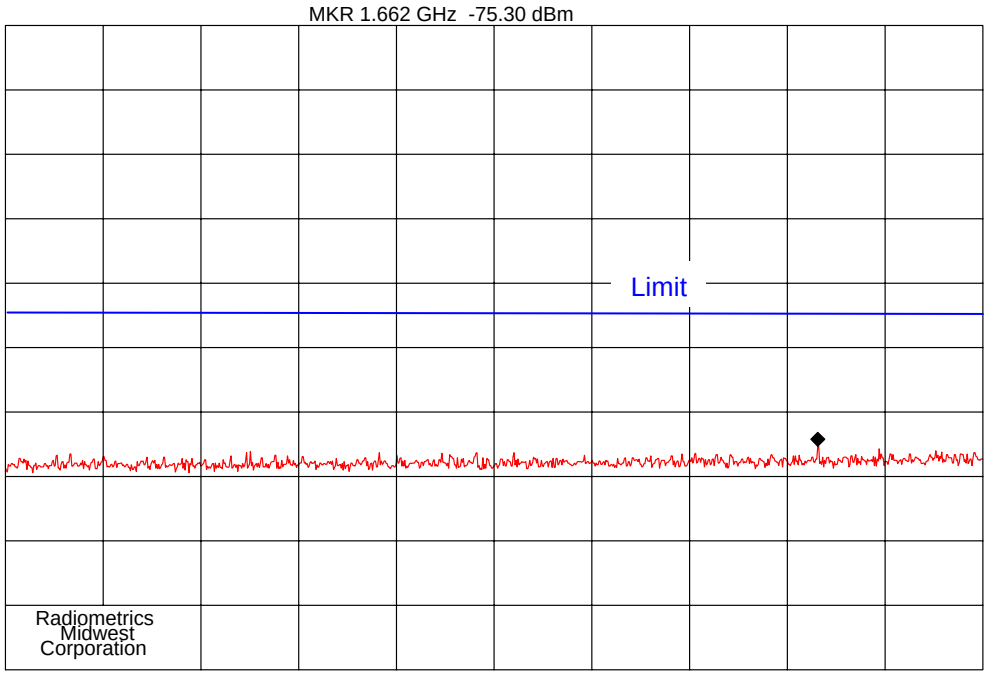
Date : 08-05-2011
STOP 1.00 GHz
ATTEN 10 dB
SWP 300 msec
File: P4-AM



Company: Trilithic
START 1 MHz
RES BW 100 kHz
10 dB/
Notes: Antenna Power, Radio 4; FM

ITEM : EASyCAP
REF 0.0 dBm
VBW 300 kHz
Time: 10:50

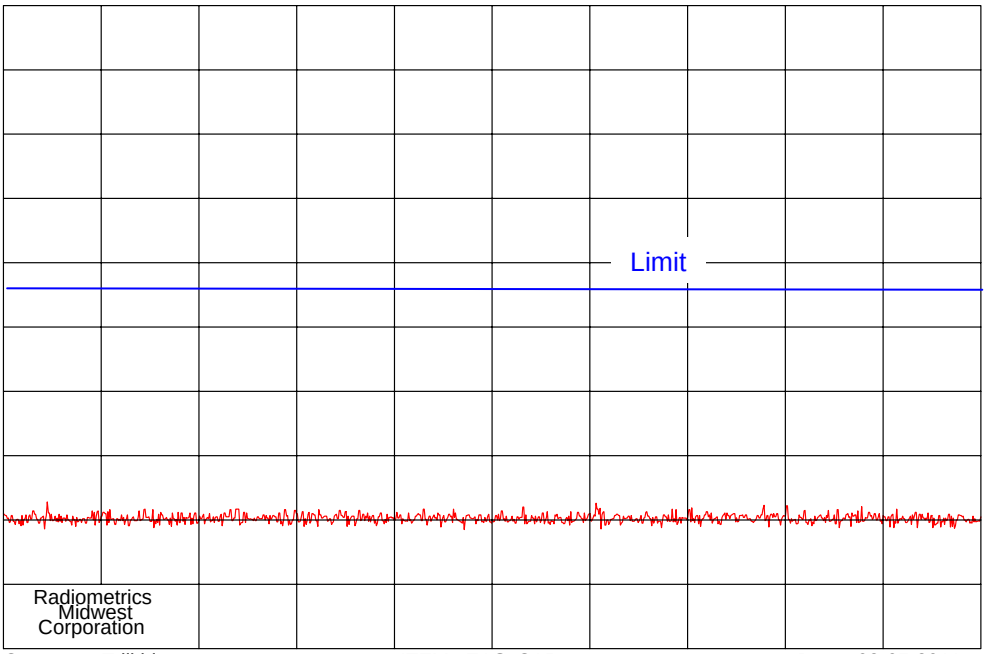
Date : 08-05-2011
STOP 1.00 GHz
ATTEN 10 dB
SWP 300 msec
File: P4-FM



Company: Trilithic
START 1 MHz
RES BW 100 kHz
10 dB/
Notes: Antenna Power, Radio 4; Weather

ITEM : EASyCAP
REF -10.0 dBm
VBW 300 kHz
Time: 10:51

Date : 08-05-2011
STOP 2.00 GHz
ATTEN 10 dB
SWP 600 msec
File: P4-Wea

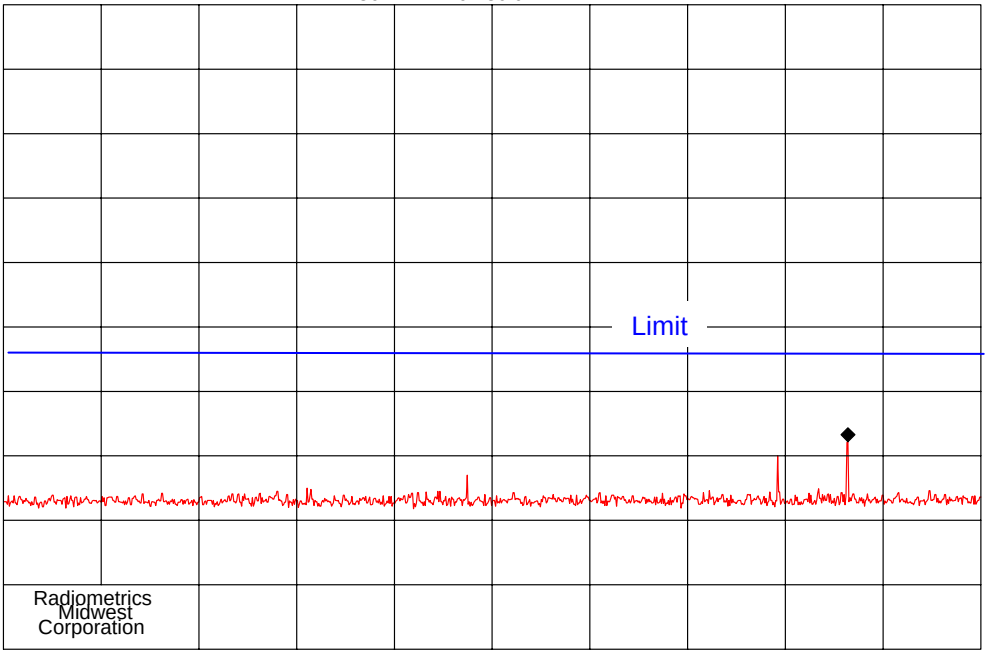


Company: Trilithic
START 150 kHz
RES BW 10 kHz
10 dB/
Notes: Antenna Power, Radio 5; AM

ITEM : EASyCAP
REF -10.0 dBm
VBW 30 kHz
Time: 10:44

Date : 08-05-2011
STOP 30.0 MHz
ATTEN 10 dB
SWP 896 msec
File: P5-AM

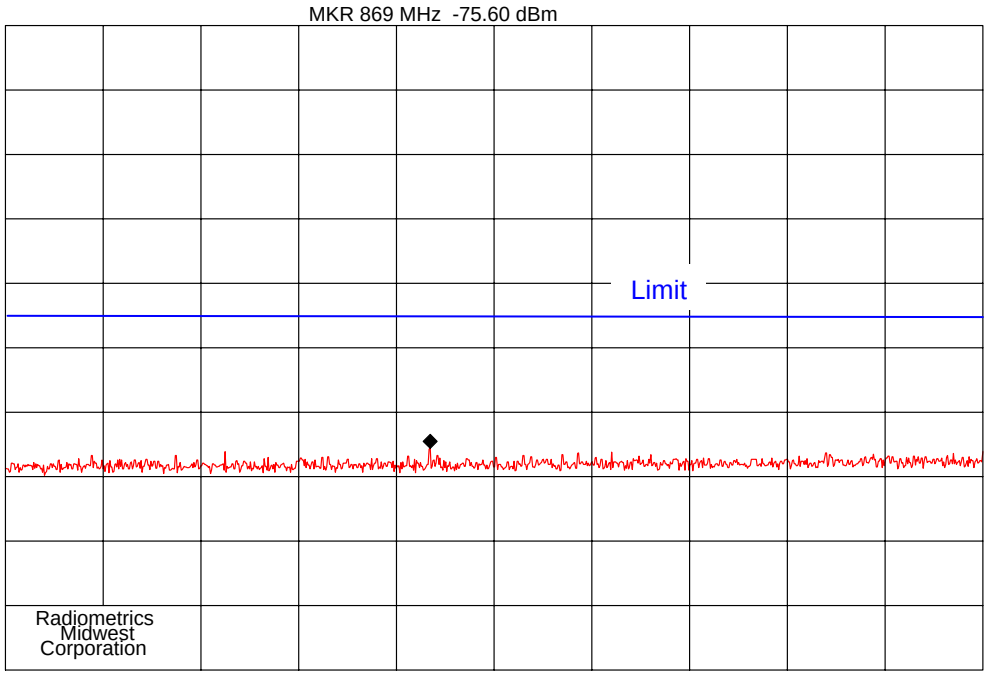
MKR 864 MHz -67.80 dBm



Company: Trilithic
START 1 MHz
RES BW 100 kHz
10 dB/
Notes: Antenna Power, Radio 5; FM

ITEM : EASyCAP
REF 0.0 dBm
VBW 300 kHz
Time: 10:41

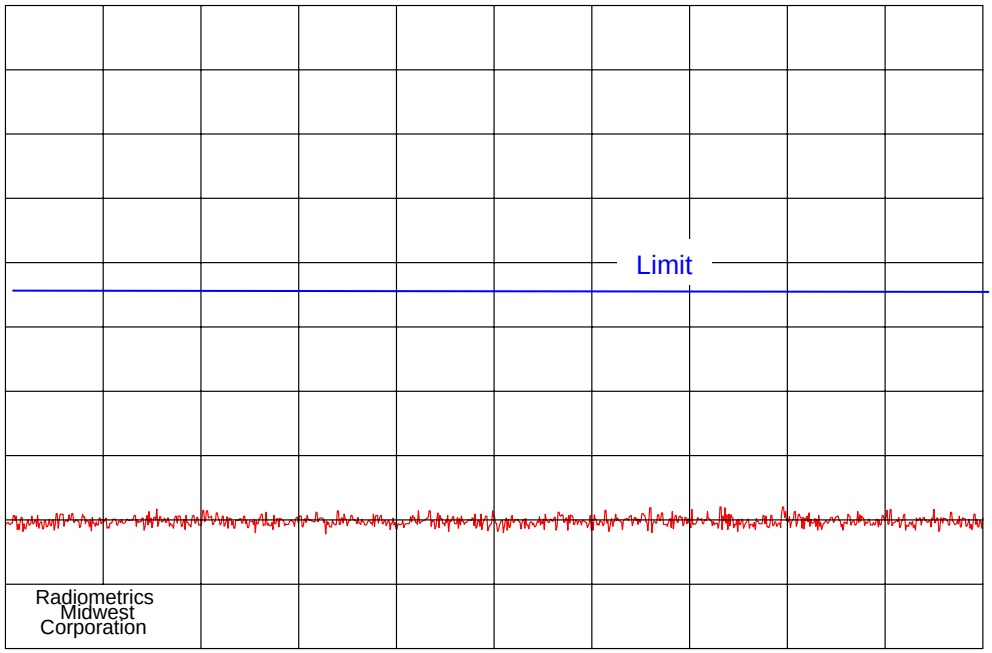
Date : 08-05-2011
STOP 1.00 GHz
ATTEN 10 dB
SWP 300 msec
File: P5-FM



Company: Trilithic
START 1 MHz
RES BW 100 kHz
10 dB/
Notes: Antenna Power, Radio 5; Weather

ITEM : EASyCAP
REF -10.0 dBm
VBW 300 kHz
Time: 10:39

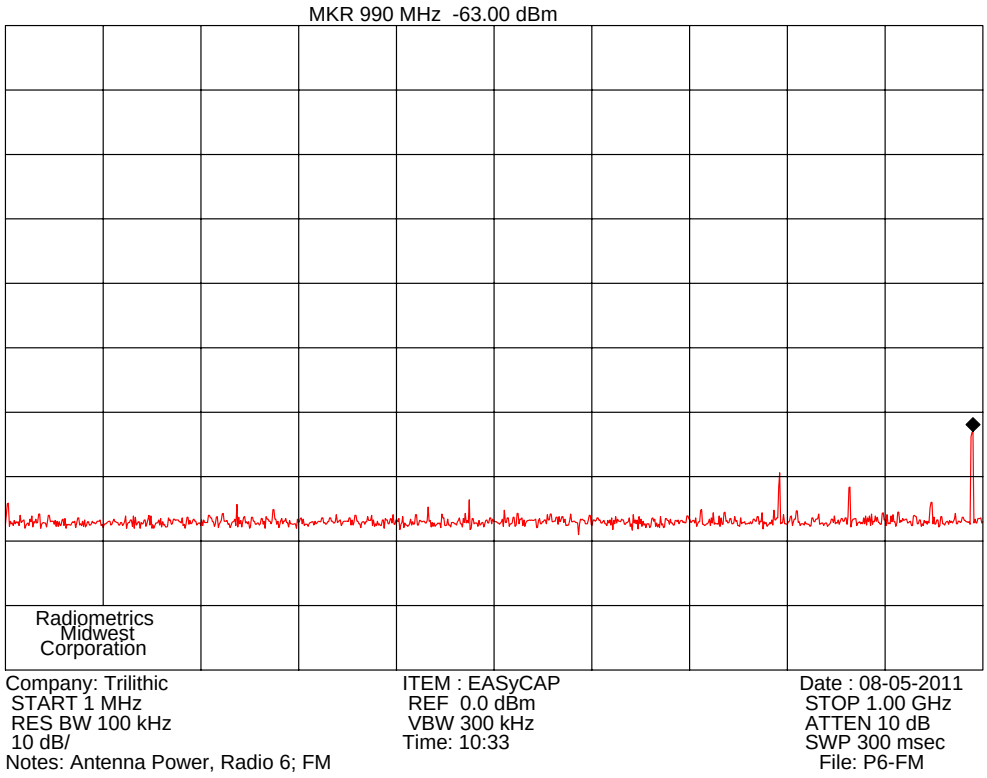
Date : 08-05-2011
STOP 2.00 GHz
ATTEN 10 dB
SWP 600 msec
File: P5-WEA



Company: Trilithic
START 150 kHz
RES BW 10 kHz
10 dB/
Notes: Antenna Power, Radio 6; AM

ITEM : EASyCAP
REF -10.0 dBm
VBW 30 kHz
Time: 10:26

Date : 08-05-2011
STOP 30.0 MHz
ATTEN 10 dB
SWP 896 msec
File: P6-AM



10.3 Radiated RF Emissions

Radiated emission measurements were performed with linearly polarized broadband antennas. The results obtained with these antennas can be correlated with results obtained with a tuned dipole antenna. The radiated emission measurements were performed with a spectrum analyzer. The bandwidth used from 150 kHz to 30 MHz is 9 or 10 kHz and the bandwidth from 30 MHz to 1000 MHz is 100 or 120 kHz. Above 1 GHz, a 1 MHz bandwidth is used. A 10 dB linearity check is performed prior to start of testing in order to determine if an overload condition exists.

From 30 to 1000 MHz, an Anritsu spectrum analyzer was used. For tests from 1 to 5 GHz, an HP 8566 spectrum analyzer was used. Figure 4 herein lists the details of the test equipment used during radiated emissions tests.

Final radiated emissions measurements were performed inside of an anechoic chamber at a test distance of 3 meters. The anechoic chamber is designated as Chamber E. This Chamber meets the Site Attenuation requirements of ANSI C63.4 and CISPR 16-1. Chamber E is located at 12 East Devonwood Ave. Romeoville, Illinois EMI test lab.

The entire frequency range from 30 to 5000 MHz was slowly scanned with particular attention paid to those frequency ranges which appeared high. Measurements were performed using two antenna polarizations, (vertical and horizontal). The worst case emissions were recorded. All measurements may be performed using either the peak, average or quasi-peak detector functions. If the peak detector data exceeds or is marginally close to the limits, the measurements are repeated using a quasi-peak detector or average function as required by the specification for final determination of compliance.

The detected emission levels were maximized by rotating the EUT, adjusting the positions of all cables, and by scanning the measurement antenna from 1 to 4 meters above the ground.

10.3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and by subtracting the Amplifier Gain from the measured reading. The basic equation is as follows:

FS = RA + AF + CF - AG

Where: FS = Field Strength
RA = Receiver Amplitude
AF = Antenna Factor
CF = Cable Attenuation Factor
AG = Amplifier Gain

10.3.2 Unintentional Radiated Emissions Test Results

Test Date	8/4/2011
Test Distance	3 Meters
Specification	FCC Part 15 Subpart C & RSS-210
Abbreviations	P = peak; Q = QP Pol = Antenna Polarization; V = Vertical; H = Horizontal; For Antenna Type Bi-Log = (ANT-44); Horn = (ANT-13)

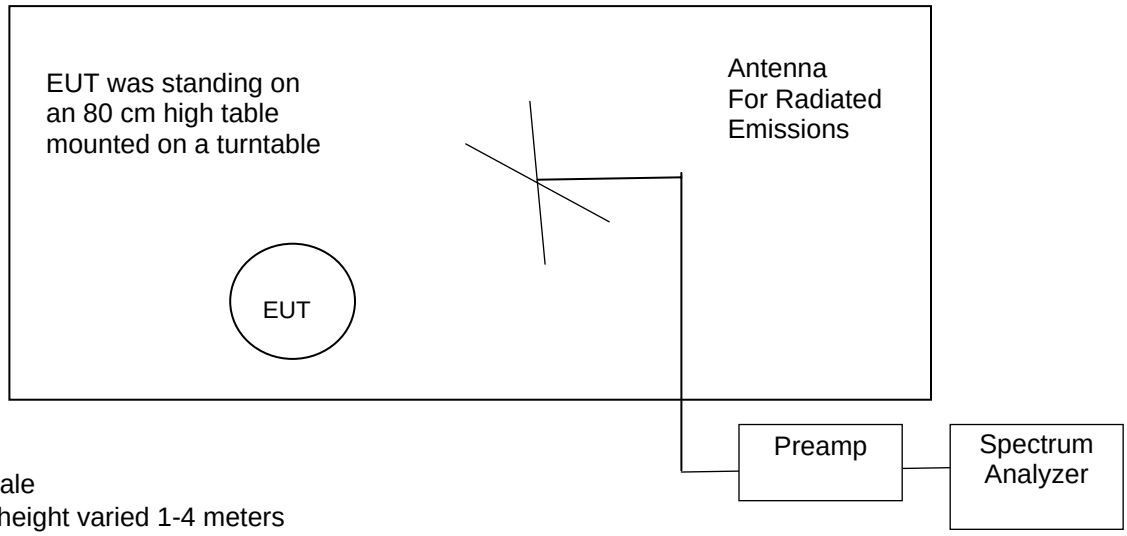
Freq. MHz	Meter Reading dBuV	Antenna Factor dB	Antenna Pol/ Type	Corr. Factors dB	Field Strength dBuV/m EUT	Field Strength dBuV/m Limit	Margin Under Limit dB
56.8	42.0P	11.8	H/44	-27.7	26.0	40.0	14.0
72.0	36.0P	7.2	H/44	-27.4	15.8	40.0	24.2
86.8	38.4P	7.6	H/44	-27.3	18.7	40.0	21.3
120.0	40.9Q	14.4	H/44	-27.0	28.4	43.5	15.1
138.0	44.9P	11.7	H/44	-26.8	29.8	43.5	13.7
156.8	40.8P	10.3	H/44	-26.7	24.4	43.5	19.1
183.6	45.7P	9.3	H/44	-26.4	28.6	43.5	14.9
199.2	41.2P	9.6	H/44	-26.2	24.5	43.5	19.0
250.2	50.5P	12.6	H/44	-26.0	37.1	46.0	8.9
277.1	48.8P	13.1	H/44	-25.8	36.0	46.0	10.0
323.6	52.5P	13.5	H/44	-25.7	40.4	46.0	5.6
368.4	47.6P	15.0	H/44	-25.5	37.1	46.0	8.9
399.7	46.2P	15.7	H/44	-25.4	36.5	46.0	9.5
431.6	42.4P	16.9	H/44	-25.2	34.1	46.0	11.9
460.6	48.9Q	16.8	H/44	-24.9	40.8	46.0	5.2
499.4	42.5P	17.0	H/44	-24.8	34.7	46.0	11.3
553.0	39.8P	18.0	H/44	-24.3	33.5	46.0	12.5
625.0	39.8P	18.6	H/44	-23.6	34.8	46.0	11.2
666.6	40.3Q	19.9	H/44	-23.5	36.7	46.0	9.3
667.0	45.3P	19.9	H/44	-23.5	41.7	46.0	4.3
784.0	42.2P	20.5	H/44	-22.8	39.9	46.0	6.1
876.0	38.6P	21.3	H/44	-21.7	38.1	46.0	7.9
968.0	36.6P	22.1	H/44	-20.8	37.8	54.0	16.2
1060.0	36.4P	23.6	H/44	-21.8	38.2	54.0	15.8
1106.0	33.8P	23.8	H/44	-21.6	36.0	54.0	18.0

1151.0	34.3P	24.3	H/44	-21.4	37.1	54.0	16.9
1242.0	36.3P	24.9	H/44	-21.1	40.1	54.0	13.9
1334.0	31.6P	25.4	H/44	-20.7	36.4	54.0	17.6
1426.0	35.4P	25.7	H/44	-20.3	40.8	54.0	13.2
1471.0	32.8P	26.1	H/44	-20.1	38.8	54.0	15.2
1519.0	30.9P	26.4	H/44	-19.8	37.5	54.0	16.5
1655.0	29.0P	27.6	H/44	-19.2	37.3	54.0	16.7
1835.0	29.5P	28.4	H/44	-18.4	39.5	54.0	14.5
1959.0	28.4P	28.9	H/44	-17.9	39.4	54.0	14.6
57.6	46.5P	11.6	V/44	-27.7	30.5	40.0	9.5
78.0	46.9P	6.8	V/44	-27.3	26.5	40.0	13.5
120.0	52.2Q	14.4	V/44	-27.0	38.6	43.5	4.9
131.6	44.8P	13.2	V/44	-26.9	31.1	43.5	12.4
155.6	43.1P	10.2	V/44	-26.7	26.6	43.5	16.9
183.6	46.9P	9.3	V/44	-26.4	29.8	43.5	13.7
250.2	48.5P	12.6	V/44	-26.0	35.2	46.0	10.8
288.8	43.3P	12.6	V/44	-25.8	30.1	46.0	15.9
307.9	42.3P	13.5	V/44	-25.7	30.1	46.0	15.9
336.4	38.8P	14.0	V/44	-25.6	27.3	46.0	18.7
375.1	43.0P	14.8	V/44	-25.5	32.3	46.0	13.7
414.3	41.9P	16.6	V/44	-25.3	33.2	46.0	12.8
415.4	43.6P	16.7	V/44	-25.3	35.0	46.0	11.0
460.2	45.5P	16.8	V/44	-24.9	37.4	46.0	8.6
499.4	40.6P	17.0	V/44	-24.8	32.8	46.0	13.2
501.0	41.8P	17.0	V/44	-24.8	34.0	46.0	12.0
553.0	42.6P	18.0	V/44	-24.3	36.3	46.0	9.7
599.0	41.1P	18.8	V/44	-23.8	36.2	46.0	9.8
691.0	41.5P	19.8	V/44	-23.6	37.8	46.0	8.2
805.0	40.6P	20.3	V/44	-22.5	38.4	46.0	7.6
875.0	33.3P	21.3	V/44	-21.7	32.9	46.0	13.1
904.0	32.9P	21.4	V/44	-21.5	32.8	46.0	13.2
968.0	32.3P	22.1	V/44	-20.8	33.6	54.0	20.4
1056.0	34.7P	23.6	V/44	-21.8	36.5	54.0	17.5
1119.0	35.6P	24.0	V/44	-21.5	38.0	54.0	16.0
1169.0	36.9P	24.4	V/44	-21.4	39.9	54.0	14.1
1198.0	34.5P	24.5	V/44	-21.3	37.7	54.0	16.3
1242.0	33.7P	24.9	V/44	-21.1	37.6	54.0	16.4
1332.0	35.1P	25.4	V/44	-20.7	39.8	54.0	14.2
1422.0	30.6P	25.6	V/44	-20.3	35.9	54.0	18.1
1612.0	31.2P	27.3	V/44	-19.6	39.0	54.0	15.0
1680.0	31.7P	27.8	V/44	-19.0	40.5	54.0	13.5
1701.0	32.1P	27.9	V/44	-19.0	41.0	54.0	13.0
1794.0	30.6P	27.9	V/44	-18.6	39.9	54.0	14.1
1847.0	29.7P	28.5	V/44	-18.4	39.9	54.0	14.1
1963.0	28.5P	28.9	V/44	-17.9	39.5	54.0	14.5

Judgment: Passed by 4.9 dB

Figure 2. Drawing of Radiated Emissions Setup

Chamber E, anechoic



Notes:
- Not to Scale
- Antenna height varied 1-4 meters
- Distance from antenna to tested system is 3 meters
- AC cords not shown. They are connected to AC outlet with low-pass filter on turntable

Frequency Range	Receive Antenna	Pre-Amplifier	Spectrum Analyzer
0.01 to 30 MHz	ANT-53	None	REC-07
30 to 1000 MHz	ANT-44	AMP-22	REC-07
1 to 5 GHz	ANT-13	AMP-05	REC-01

10.4 Radiated RF Immunity Test Results

The field intensity was monitored using an Amplifier Research isotropic field sensor. The field sensor was positioned adjacent to the case of the EUT. The amplitude of the applied field was relayed to a remote indicator outside of the enclosure via fiber optic cable. The field strength measured is equivalent to the RMS level. If the EUT responded to the applied signal, the amplitude of the signal was reduced and then slowly raised until the threshold of response was determined. The nature of the response was recorded in addition to the frequency and threshold amplitude of the applied signal. The EUT operation was constantly monitored during the tests. RF signals in the frequency range from 26 to 1000 MHz were generated using an ARA Super-Log antenna. At 1.0 MHz, an E-Field generating antenna was used.

Manufacturer:	Trilithic	Specification:	FCC part 11.32 (d)
Model:	Easycap-1	Description:	Radiated RF Immunity
Serial Number:	None	Test Date:	08/05/2011
Test Personnel	Joseph Strzelecki	Test Location	Chamber D
Test Requirements	10 V/m in the AM band; 0.5 V/m in FM or TV frequency band		
Applied Modulation	Continuous Wave		
Notes:	AM = 80% 1kHz; FM = 10 kHz dev at 1 kHz; Each tested seperately		

Modulation	Frequency MHz	Applied V/m	Antenna Polarization	EUT Mode	Test Results
CW	1.0	11	Vertical	Encode	No Malfunction
CW	1.0	11	Vertical	Decode	No Malfunction
AM	1.0	11	Vertical	Encode	No Malfunction
AM	1.0	11	Vertical	Decode	No Malfunction
FM	59.7	1.5	Horizontal	Encode	No Malfunction
FM	59.7	1.5	Horizontal	Decode	No Malfunction
CW	59.7	1.5	Horizontal	Encode	No Malfunction
CW	59.7	1.5	Horizontal	Decode	No Malfunction
CW	59.7	1.5	Vertical	Encode	No Malfunction
CW	59.7	1.5	Vertical	Decode	No Malfunction
FM	59.7	1.5	Vertical	Encode	No Malfunction
FM	59.7	1.5	Vertical	Decode	No Malfunction
CW	81.8	1.5	Horizontal	Encode	No Malfunction
CW	81.8	1.5	Horizontal	Decode	No Malfunction
FM	81.8	1.5	Horizontal	Encode	No Malfunction
FM	81.8	1.5	Horizontal	Decode	No Malfunction
CW	81.8	1.5	Vertical	Encode	No Malfunction
CW	81.8	1.5	Vertical	Decode	No Malfunction
FM	81.8	1.5	Vertical	Encode	No Malfunction
FM	81.8	1.5	Vertical	Decode	No Malfunction
FM	100.1	1.5	Horizontal	Encode	No Malfunction
FM	100.1	1.5	Horizontal	Decode	No Malfunction
CW	100.1	1.5	Horizontal	Encode	No Malfunction
CW	100.1	1.5	Horizontal	Decode	No Malfunction
FM	100.1	1.5	Vertical	Encode	No Malfunction
FM	100.1	1.5	Vertical	Decode	No Malfunction
CW	100.1	1.5	Vertical	Encode	No Malfunction
CW	100.1	1.5	Vertical	Decode	No Malfunction
FM	199.3	1.5	Horizontal	Encode	No Malfunction
FM	199.3	1.5	Horizontal	Decode	No Malfunction
CW	199.3	1.5	Horizontal	Encode	No Malfunction
CW	199.3	1.5	Horizontal	Decode	No Malfunction
FM	199.3	1.5	Vertical	Encode	No Malfunction
FM	199.3	1.5	Vertical	Decode	No Malfunction
CW	199.3	1.5	Vertical	Encode	No Malfunction
CW	199.3	1.5	Vertical	Decode	No Malfunction
CW	567.4	1.5	Vertical	Encode	No Malfunction
CW	567.4	1.5	Vertical	Decode	No Malfunction
FM	567.4	1.5	Vertical	Encode	No Malfunction
FM	567.4	1.5	Vertical	Decode	No Malfunction
CW	567.4	1.5	Horizontal	Encode	No Malfunction
CW	567.4	1.5	Horizontal	Decode	No Malfunction
FM	567.4	1.5	Horizontal	Encode	No Malfunction
FM	567.4	1.5	Horizontal	Decode	No Malfunction
CW	787.8	1.5	Vertical	Encode	No Malfunction
CW	787.8	1.5	Vertical	Decode	No Malfunction
FM	787.8	1.5	Vertical	Encode	No Malfunction
FM	787.8	1.5	Vertical	Decode	No Malfunction
CW	787.8	1.5	Horizontal	Encode	No Malfunction
CW	787.8	1.5	Horizontal	Decode	No Malfunction
FM	787.8	1.5	Horizontal	Encode	No Malfunction
FM	787.8	1.5	Horizontal	Decode	No Malfunction
Overall Result	Pass The EUT was fully functional during and after the test.				