REV	Δ	Description	Sheet Effected	Date	Drawn	Checked
A				06.11.03	D.Lanuel	S.Cohen

EMC Laboratory

MCM-140

FCCID: GSAMCM 140
Manufactured by
VISONIC.

EMC Test Report

According FCC Part 15 Requirements

Oct 2003

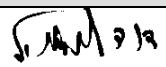
	Function/Title	Name	Signature	Date
Prepared by	Test Engineer	D.Lanuel		06.11.03
Approved by	EMC Lab. Manager	S.Cohen		06.11.03

Table of Contents

1 TEST DATA INFORMATION

a. Description of equipment Under Test.

Equipment Under Test:	MCM-140
FCCID	GSAMGM 140
Manufacturer:	VISONIC.
Serial Numbers:	0001
Mode of Operation:	TX MODE
Receiver operating frequwency:	315MHz
Year of Manufacture:	2003

b. Applicant Information:

Applicant:	VISONIC.
Applicant Address	P.O.B 22020 Tel-Aviv
Telephone:	+972-3-6456789
FAX:	+972-3-6456788
The testing was observed by following applicant's personnel:	A Elshtein

c. Test Performance:

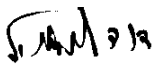
Date of reception for testing:	16.10.03
Dates of testing	20.10.03
Test Laboratory Location	TADIRAN EMC LAB , Hashoftim 26 Holon 58102 ISRAEL Tel: 972-3-5574476 Fax: 972-3-5575320
Applicable EMC Specification:	Federal Communication Commission (FCC), Code of Federal Regulations 47, FCC Docket 89-103,Part 15: Radio Frequency Devices, Sections 15.109, 15.209, & 15.231.

2 TEST SUMMARY AND SIGNATURES.

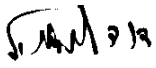
TADIRAN EMC Laboratory has completed testing of E.U.T in accordance with the requirements of the FCC Part 15 Regulations for Class B equipment.

The E.U.T has been found to comply with the emission requirements of the FCC Part 15 Regulations for parts 15.109, 15.209, 15.205 & 15.231

a. Test performed by:

Mr. D. Lanuel Test Engineer 

b. Test Report prepared by:

Mr. D. Lanuel Test Engineer 

c. Test Report Approved by:

Mr. Samuel Cohen EMC Lab. Manager 

3 GENERAL INFORMATION

a. Specification Reference

Section 15.109:	Limits of Radiated Interference Field Strength in the 30MHz to 1000MHz frequency range.unintentional radiators
Section 15.209:	Limits of Radiated Interference Field Strength in the 9KHz to 35000MHz frequency range intentional Radiators
Section 15.205	Limits of Radiated Interference Field Strength in the Restricted bands of operation for intentional radiators
Section 15.231	Limits of Radiated Interference Field Strength in the 30MHz to 1000MHz frequency range for intentional radiators operating in frequency rang above 70MHz

b. Applicable Documents.

3.1 Federal Communication Commission (FCC), Code of Federal Regulations 47, FCC Docket 89-103, Part 15: Radio Frequency Devices, Sections 15.107 & 15.109.

3.2 FCC/OET, Laboratory Measurement Procedures MP-4, July 1987, "FCC Procedures for Measuring RF Emissions from Computing Devices".

3.3 FCC/Office of Science and Technology OST-55, August 1982, "Characteristics of Open Field Test Sites".

3.4 FCC/OET, "FCC Procedure for Measuring Electromagnetic Emissions from Digital Devices", TP-5, March 1989.

3.5 FCC/OET, "Understanding the FCC Regulations Concerning Computing Devices", OST-62, May 1984

3.6 International Special Committee On Radio Interference (CISPR) Publication 16, First Edition 1977, "CISPR Specification for Radio Interference Measuring Apparatus and Measurement Methods".

3.7 American National Standard, "Specifications for Electromagnetic Noise and Field Strength Instrumentation, 9KHz to 1GHz", ANSI C63.2, 1987.

3.8 American National Standard, "Method of Measurement Electromagnetic Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9KHz to 40GHz", ANSI C63.4, 1992.

4 ADMINISTRATIVE DATA

a. Scope

This document describes the measurement procedures and tests for Radiated and conducted emission testing of the MCM-140Manufactured by VISONIC..

b. Administrative Data

The test was performed by the TADIRAN / EMC Laboratory, 26 Hashoftim St. P.O.B. 267, 58102 Holon, ISRAEL.

c. Certification And Qualifications

I Certify that TADIRAN / EMC Laboratory. Conducted the tests performed in order to obtain a technical data presented in this application. Also based on the results of this enclosed data I have concluded that the equipment tested meets or exceeds the requirements of the Rules and regulations governing this application.
TADIRAN / EMC Laboratory, 26 Hashoftim St. P.O.B. 267, 58102 Holon, ISRAEL was established in 1975 to provide Electromagnetic Compatibility testing, Consulting and Engineering. All facility are equipped with modern Automated test equipment and staffed with experienced EMC test engineers. Engineering support is a standard feather of our sites, we are ready to support and assist our customers in meeting the compliance requirements.
Our qualifications include:
Quality assurance MIL-I-45208A
Calibration per MIL-STD-45662A
FCC Listed
ISO 9001 Approved By The International Certification Network "IQNet"
ISO 9001 Approved By the Standards Institute of Israel.
Approved by I.D.F for Compliance with regulation.
Approved by I.A.F for Compliance with regulation
TADIRAN / EMC Laboratory has previously performed FCC testing of similar equipment. Appendix A includes an FCC approval of our application for licensing of a previous generation of a Transceiver product operating under the requirements of FCC part 15.247
for intentional radiator equipment. As well as evidence for our accreditation by ISO 9001 & listing by FCC.

d. Measurement Repeatability information

The test data presented in this report has been acquired using the guidelines set forth in FCC Part 15 .The test data presented in this document are valid only for the equipment identified under the test conditioned described. Repeatability of these tests results will only be achieved with identical test conditions. This conditions include: the same test distance, E.U.T height, measurement site characteristics and the same E.U.T System components, The system must have the same interconnecting cables arranged in identical placement to that in the test set-up, with the system and /or E.U.T functioning in identical mode of operation (i.e. software and so on) as on the date of the test. Any deviation from the test conditions and the environment on the date of test may result in measurement repeatability difficulties. All changes made to the E.U.T during the course of testing as identified in this test report must be incorporated into the E.U.T or identical modes to ensure compliance with the FCC regulations.

e. Measuring Equipment Calibration

(1) Receiving System Calibration

The equipment calibration is traceable. Calibration is performed under the MIL-STD-45662A requirements

f. Antennas calibration

Biconical and Log-periodic antennas are calibrated by using the reference antenna method according to ANSI C63.5-1988, when the reference antenna is the Robert's antenna.
Double-ridged guide antennas (1-18 GHz) are calibrated by using two identical antenna methods according to ANSI C63.2-1987 and SAE ARP-958
Calibration of listed above antennas is performed periodically once a year
Robert antenna is calibrated every three years by using the reference antenna method according to ANSI C63.5-1988, when the reference antenna is the calibrated Robert antenna.
Antennas, which are used according to military standards tests, are calibrated every two years by using two identical antenna methods according to SAE ARP-958.

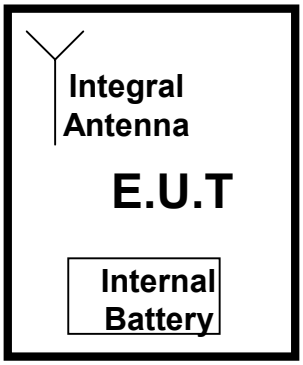
5 E.U.T INFORMATION

a. E.U.T description

1.1. The MCM-140 is a wireless remote control unit for the PowerMax system.
1.2. The MCM-140 is a stand-alone unit. It is battery operated; it has RF transmitter module, a microcontroller, which controls the MCM-140 operation, and one PCB.
1.3. The MCM-140 has one RF channel. It is 315 MHz carrier. modulation ASK (on, off Keying)
1.4. The MCM-140 in panics alert mode transmits 29ms within 2 sec with 100 ms interval between these transmissions.

b. E.U.T Test Configuration

E.UT. test configuration is shown in figure bellow



c. E.U.T Mode of Operation description

(1) TX Mode – 315MHz

(2) Standby

6 OUT OF BAND RADIATED FIELD STRENGTH TEST PROCEDURE

a. Preliminary test set up

(1) The measuring system block diagram shown in Figure 6.a.1.

(2) E.U.T orientation and antenna position shown in Figure 6.a.2

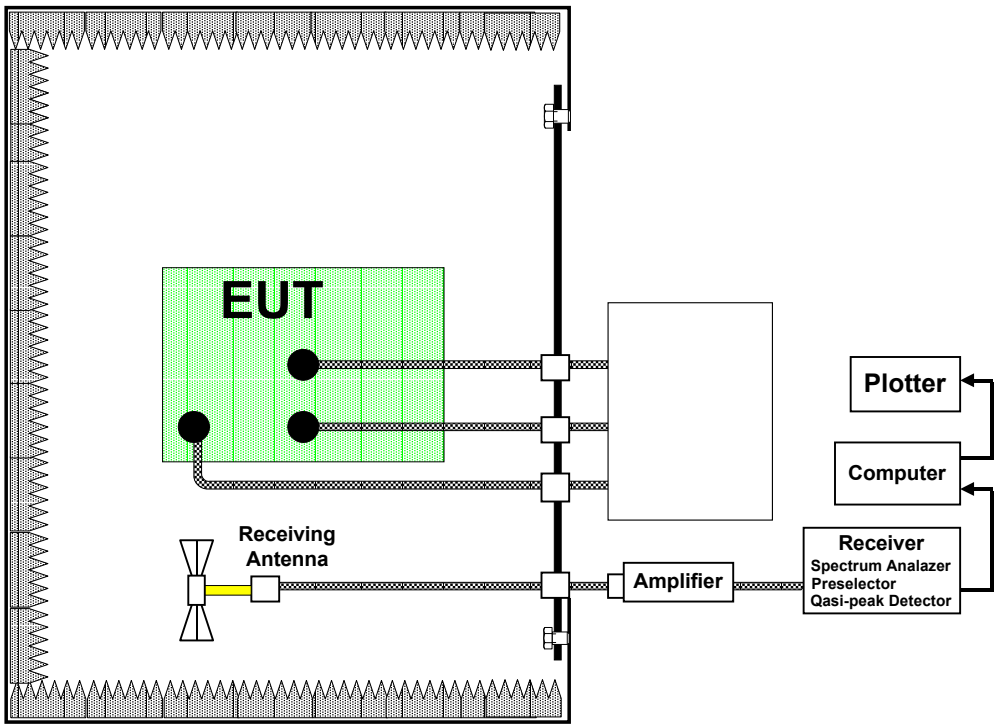


Figure 6a.1

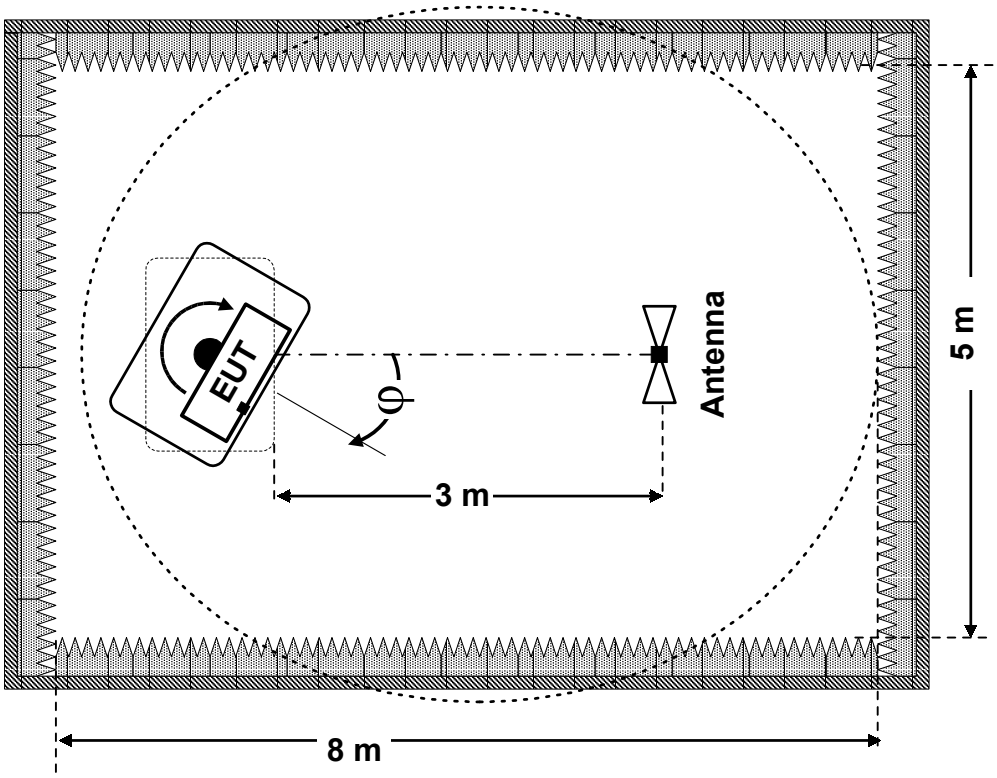


Figure 6.a.2

b. Preliminary Test Procedure

(1) Maintain setup in absorber-lined shielded room as shown in Figures 6.a.1, 6.a.2

(2) Turn on the E.U.T and allow sufficient time for stabilization.

(3) Monitor the frequency range of interest at a fixed antenna height and E.U.T azimuth.

(4) Rotate the E.U.T 360° to maximize the suspected highest amplitude signal.

(5) Move the antenna over its full-allowed range of travel to maximize the suspected highest amplitude signal.

(6) Change the polarity of the antenna and repeat step d and e. compare the result suspected highest amplitude signal with that found for the other polarity. Select and note the higher of the two signals. The signal is termed the highest observed signal with the respect to the limit.

(7) Repeat testing for each operational mode of the E.U.T.

(8) Choose six highest emissions relative to limit and record antenna heights and polarities, E.U.T configuration for each emission frequency.

(9) Perform measurements for selected frequencies using quasi-peak detector.

c. Final test setup

(1) The measuring system block diagram shown in Figure 6.c.1

(2) E.U.T orientation and antenna position shown in Figure 6.c.2

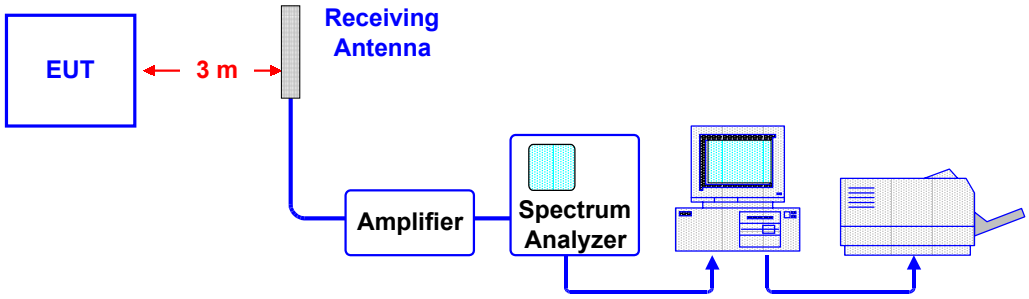


Figure 6.c.1

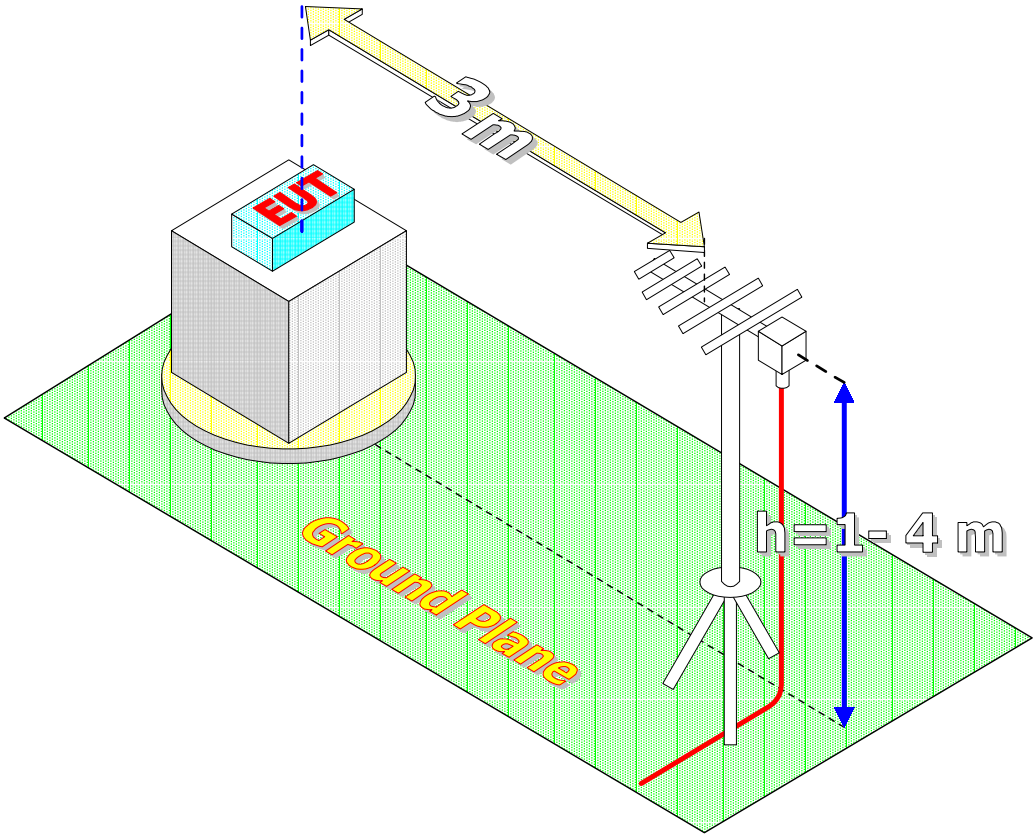


Figure 6.c.2

7 BANDWIDTH OF THE EMISSION PART 15.231—TEST RESULTS

E.U.T:	MCM-140 S/N 001
Test Method:	ANSI 63.4
Date:	20/10/03
Relative Himidity:	37%
Ambient Temprature:	22c
Air Pressure:	1007hpa
Test Setup:	Figure 6.c.1

Testing Engineer: D.Lanuel **Date** 17/11/03

a. General

The test was performed to measure bandwidth of Radiated emission at fundamental Frequency.

b. Test Results Summary & Conclusions

The E.U.T was found in compliance with Bandwidth of Radiated Emission fundamental frequency requirement

c. Limits of Field Strength for fudamental according 15.231

The test unit shall meet the limits of Table 7.c for Class B equipment.

Table 7.C Limits For Bandwidth

Frequency (MHz)	Bandwidth Max Limits (%)	Bandwidth Max Limits (KHz)
314.951	0.25	787.5

d. Test Instrumentation and Equipment

Table 7.d Test Instrumentation and Equipment

Item	Model	Manufacturer	Next Date Calibration
Spectrum Analyzer	8593E	HP	31/01/04
Broadband Antenna	BTA-L	FRANKONIA	10.04.04
Low Noise Amp. (0-1GHz)	AM-1300-N	MITEQ	14.01.04

e. Test Results

Table 6.e Bandwidth Test Result

Frequency (MHz)	Bandwidth (KHz)	Bandwidth Max Limit (KHz)	Plot No	PASS/FAIL
314.951	517.5	787.5	RE/5.RE/6	PASS

8 FIELD STRENGTH OF FUNDAMENTAL PART 15.231-TEST RESULTS

E.U.T:	MCM-140 S/N 001
Test Method:	ANSI 63.4
Date:	20/10/03
Relative Himidity:	33%
Ambient Temprature:	23c
Air Pressure:	1012hpa
Test Setup:	Figure 6.c.1

Testing Engineer: D.Lanuel **Date** 17/11/03

a. General

The test was performed to measure Radiated emission at fundamental Frequency.

b. Test Results Summary & Conclusions

The E.U.T was found in compliance with fundamental frequency requirement

c. Limits of Field Strength for fidamental according 15.231

The test unit shall meet the limits of Table 8.c for Class B equipment.

Table 8.C Limits For Fundamental

Frequency (MHz)	Average Max Limits (dBμV/m)	Peak Max Limits (dBμV/m)
315	75.8	95.8

d. Test Instrumentation and Equipment

Table 8.d Test Instrumentation and Equipment

Item	Model	Manufacturer	Next Date Calibration
Spectrum Analyzer	8593E	HP	31/01/04
Broadband Antenna	BTA-L	FRANKONIA	10.04.04
Low Noise Amp. (0-1GHz)	AM-1300-N	MITEQ	14.01.04

e. Test Results

Table 6.e Average Factor

TX Period(min)	Duty Cycle(min)	Average Factor
29.4	29.4/100=0.294	20log0.112=-10.6

Table 6.e.1 Peak Result of Fundamental

Frequency (MHz)	Peak Result (dBμV/m)	peak Limits (dBμV/m)	Margine (dB)	Plot No	Pass/Fail
314.951	81.5	95.8	14.3	RE/4	PASS

Table 6.e.2 Average Result of Fundamental

Freq. (MHz)	Peak Result (dBμV/m)	Average Factor	Calculation Results	Average Limits (dBμV/m)	Margine dB)	Pass/ Fail
314.951	81.5	-10.6	70.9	75.8	4.9	PASS

9 RADIATED EMISSION PART 15.109-TEST RESULTS.

a. Preliminary Radiated emission Test Result According Part 15.109

E.U.T:	MCM-140 S/N 001
Test Method:	ANSI 63.4
Date:	19/10/03
Relative Himidity:	36%
Ambient Temprature:	23c
Air Pressure:	1023hpa
Test Setup:	Figur 6.c.1

Testing Engineer: D.Lanuel **Date** 17/11/03

b. General

The test was performed to measure Radiated emission at out of band spurious emission at TX OFF period

c. Test Results Summary & Conclusions

The E.U.T was found in compliance with 15.109

d. Limits of Radiated Interference Field Strength according 15.109

The test unit shall meet the limits of Table 9.d for Class B equipment.

Table 9.d Limits For 15.109 Class B equipment

Frequency Range (MHz)	Quasi-peak Limits (dBμV/m)
30 - 88	40
88 - 216	43
216 - 960	46
960 - 2000	54

e. Test Instrumentation and Equipment

Table 9.e Test Instrumentation and Equipment

Item	Model	Manufacturer	Next Date Calibration
Spectrum Analyzer	8593E	HP	31/01/04
Double Ridge Guide Antenna(1-18GHz)	3105	EMCO	24.04.04
Broadband Antenna(30-1000MHz)	BTA-L	FRANKONIA	10.04.04
Low Noise Amplifier (0-1GHz)	AM-1300-N	MITEQ	14.01.04
Low Noise Amplifier (1-2GHz)	SMC-09	MITEQ	14.01.04
Low Noise Amplifier (2-6GHz)	SMC-09	MITEQ	14.01.04

f. Preliminary Results

Table 9.f Preliminary Test Results for Unintentional Emissions in TX Mode 15.109

Configuratiion	Antenna Polarization	Freq. Range MHz	Res. BW (kHz)	Plot No.	PASS/FAIL
Calibratiion	Calibratiion	30	120	Plot REl/1	Pass
		500		Plot RE/2	Pass
		2000		Plot REl/3	Pass
Test	Both Hor.&Ver	30-1000	120	Plot RE/7	Pass
		1000-4000	1000	Plot RE/8	Pass

g. Final Test Results

Table 9.g Six Highest TX Mode 15.109

Mode Of Operation	Freq. (MHz)	peak Reading (*) (dBμV/m)	Limit dBμV/m	Margin (dB)	Polarity Ver/Hor	Height (m)
TX	30-2000	The Emissions are at least 15db below the unintentional limit				

10 RADIATED EMISSION PART 15.231 & 15.205-TEST RESULTS

E.U.T:	MCM-140 S/N 001
Test Method:	ANSI 63.4
Date:	11/06/03
Relative Himidity:	35%
Ambient Temprature:	23c
Air Pressure:	1027hpa
Test Setup:	Figure 6.c.1

Testing Engineer: D.Lanuel **Date** 15/06/03

a. General

The test was performed to measure Radiated emission at out of band spurious emission at intentional period

b. Test Results Summary & Conclusions

The E.U.T was found in compliance with 15.231

c. Limits of Radiated Interference Field Strength according 15.231

The test unit shall meet the limits of Table 10.c for Class B equipment.

Table 10.c Limits For 15.231(b)

Frequency range(MHz)	Average Limits (dBμV/m)	peak Limits (dBμV/m)
0.009 – 3500	55.8	75.8

d. Test Instrumentation and Equipment

Table 10.d Test Instrumentation and Equipment

Item	Model	Manufacturer	Next Date Calibration
Spectrum Analyzer	8593E	HP	31/01/04
Rode Antenna(10KHz-30MHz)	95010-1	ETN	13.11.04
Double Ridge Guide Antenna(1-18GHz)	3105	EMCO	24.04.04
Broadband Antenna	BTA-L	FRANKONIA	10.04.04
Low Noise Amplifier (0-1GHz)	AM-1300-N	MITEQ	14.01.04
Low Noise Amplifier (1-2GHz)	SMC-09	MITEQ	14.01.04
Low Noise Amplifier (2-6GHz)	SMC-09	MITEQ	14.01.04

e. Preliminary Test Results

Table 9.f Preliminary Test Results for intentional Emissions in TX Mode 15.231

Antenna Polarization	Freq. Range MHz	Res. BW (kHz)	Plot No.	PASS/FAIL
	3 - 30	9	Plot RE/9	Pass
	30 - 1000	120	Plot RE/10	Pass
	30 - 1000	120	Plot RE/11	Pass
Vertical	1000 - 2000	1000	Plot RE/12	Pass
Horizontal	1000 - 2000		Plot RE/13	Pass
Vertical	2000 - 4000		Plot RE/14	Pass
Horizontal	2000 - 4000		Plot RE/15	Pass

f. Final Results Results

Table 10.f Six Highest Peak Emission Test Results

Mode Of Operation	Freq. (MHz)	peak Reading (*) (dBμV/m)	Limit dBμV/m	Margin (dB)	Pass/Fail
TX	314.954	81.2	75.8	Fundamental	PASS
	629.90	49	75.8	26.8	PASS

* Restricted bands

Table 10.f.1 Six Highest Average Emission Test Results

Mode Of Operation	Freq. (MHz)	Calculated (dBμV/m)	Limit dBμV/m	Margin (dB)	Pass/Fail
TX	629.90	38.4	55.8	17.4	PASS

*Restricted bands

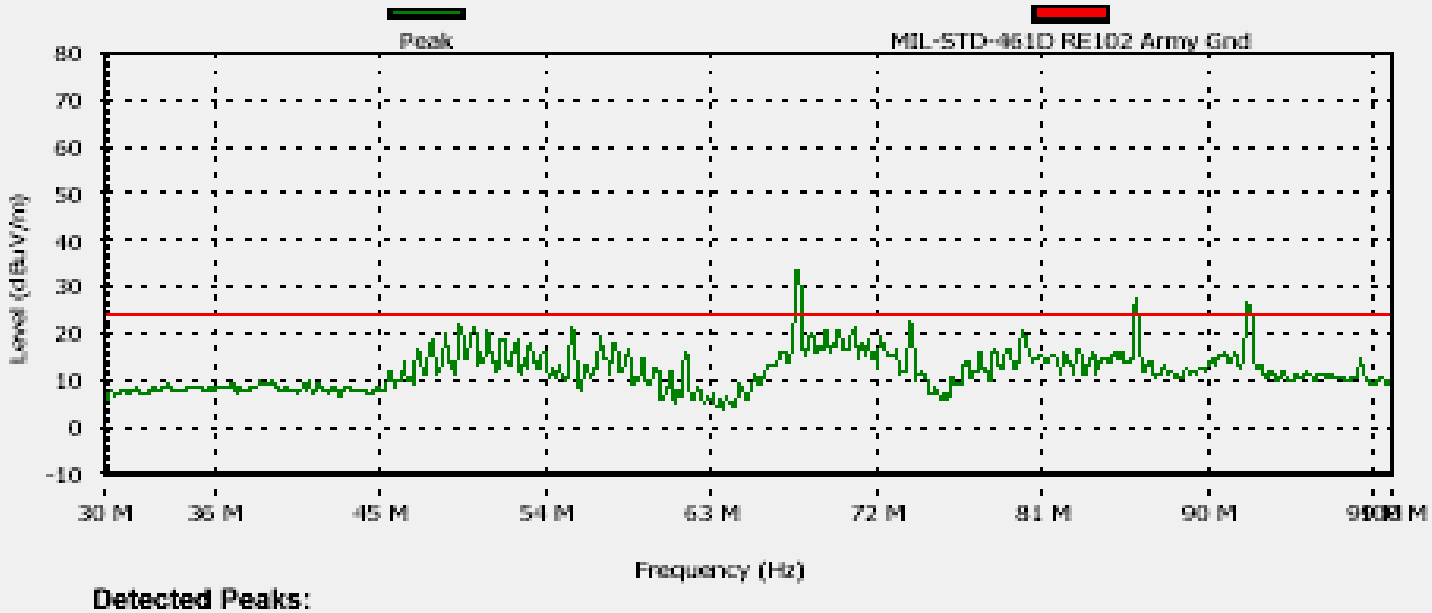
EUT File:
C:\VISONIC\MCM-140\Data\Mcm-140.eut
Order Number:

EUT
Name: MCM 140
Serial Number:

Client
Name: VISONIC
Contact Person:

Radiated Emission

Description: 44) CAFU 30M-100M VER
From 30 MHz to 100 MHz
Graph:



Detected Peaks:

Nr	Frequency (MHz)	PK (dBuV/m)	PK Limit (dBuV/m)	PK Diff (dBuV/m)	PK Pass	Pass	Angle (degrees)	Height (m)
1	67.625	33.4	24.0	9.4	Fail	Fail	0	0
2	86	27.2	24.0	3.2	Fail	Fail	0	0
3	92.125	26.7	24.0	2.7	Fail	Fail	0	0

Settings:
Antenna: Horizontal at 1 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 100 kHz. VBW: 1000 kHz. Sweep time: 5000 ms.
Detect all peaks above 3 dB below the limit lines with a maximum of 3 peaks.

Note:

Plot RE/ 1

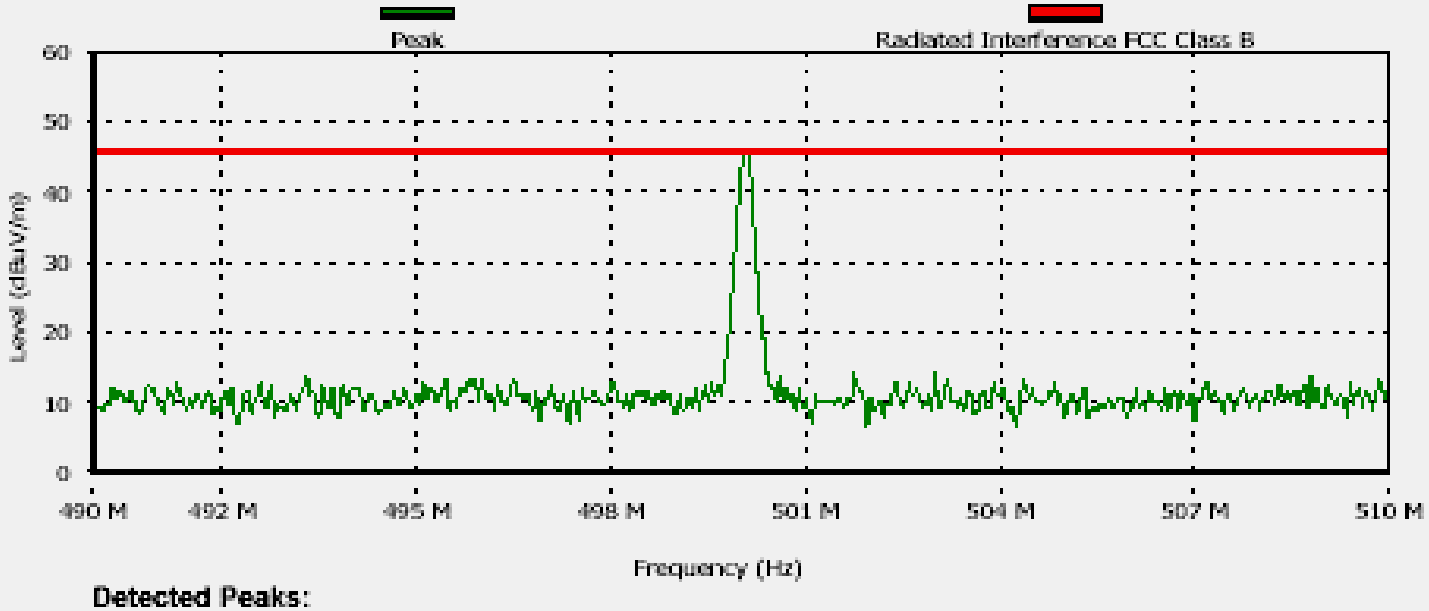
EUT File:
C:\VISONIC\MCM-140\Data\Mcm-140.eut
Order Number:

EUT
Name: MCM 140
Serial Number:

Client
Name: VISONIC
Contact Person:

Radiated Emission

Description: 47) CALIBRATION 500MHz
From 490 MHz to 510 MHz
Graph:



Detected Peaks:

Nr	Frequency (MHz)	PK (dBuV/m)	Pass	Angle (degrees)	Height (m)
1	500.1	45.6	Pass	0	1

Settings:
Antenna: Horizontal at 1 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 100 kHz. VBW: 1000 kHz. Sweep time: 20 ms.
Detect all peaks above 20 dB below the limit lines with a maximum of 6 peaks.

Note:

Plot RE/ 2

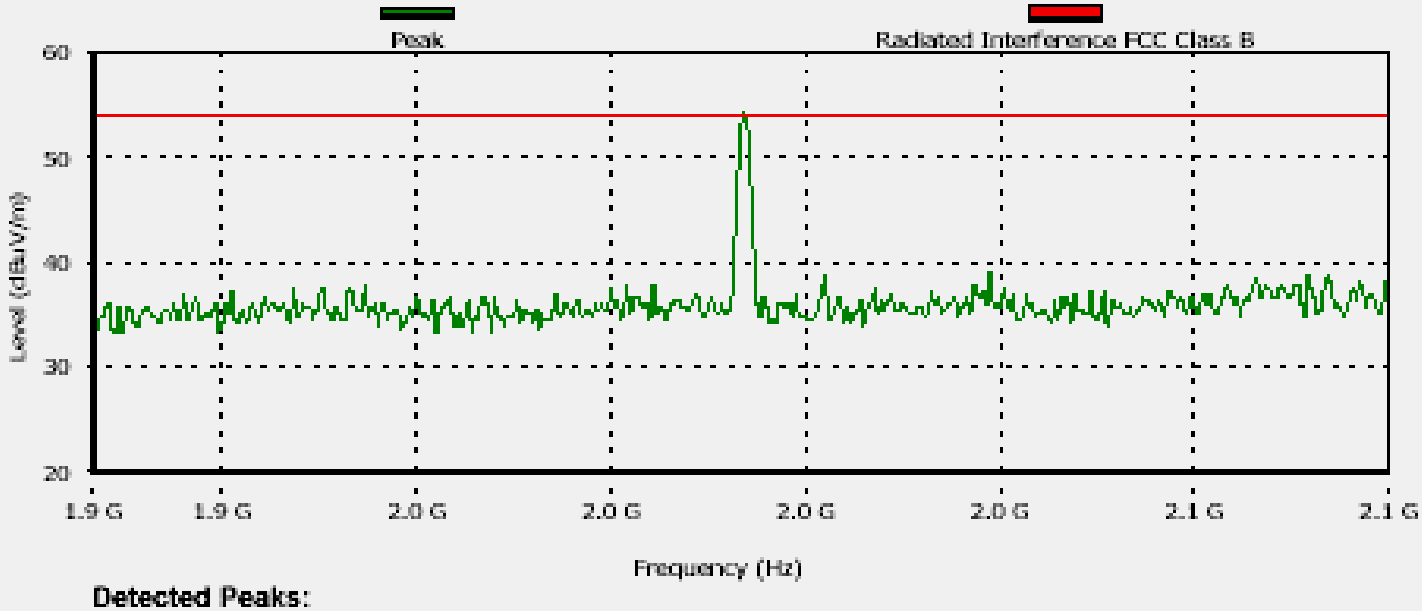
EUT File:
C:\VISONIC\MCM-140\Data\Mcm-140.eut
Order Number:

EUT
Name: MCM 140
Serial Number:

Client
Name: VISONIC
Contact Person:

Radiated Emission

Description: 49) CALIBRATION 2000MHz
From 1900 MHz to 2100 MHz
Graph:



Detected Peaks:

Nr	Frequency (MHz)	PK (dBuV/m)	Pass	Angle (degrees)	Height (m)
1	2000.5	54.2	Pass	0	1

Settings:
Antenna: Horizontal at 1 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 1000 kHz. VBW: 1000 kHz. Sweep time: 20 ms.
Detect all peaks above 20 dB below the limit lines with a maximum of 1 peaks.

Note:

Plot RE/ 3

EUT File:
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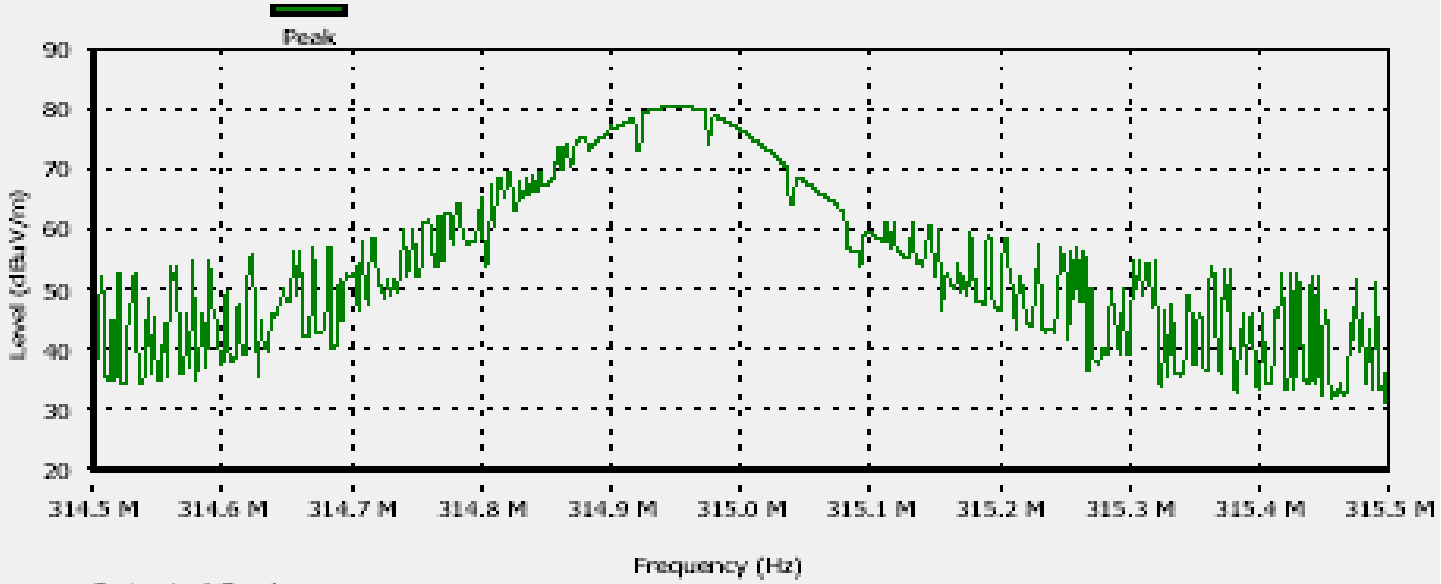
Order Number:

EUT
Name: MCM 140
Serial Number:

Client
Name: VISONIC
Contact Person:

Radiated Emission

Description: 19) 315MHz Fundamental
From 314.5 MHz to 315.5 MHz
Graph:



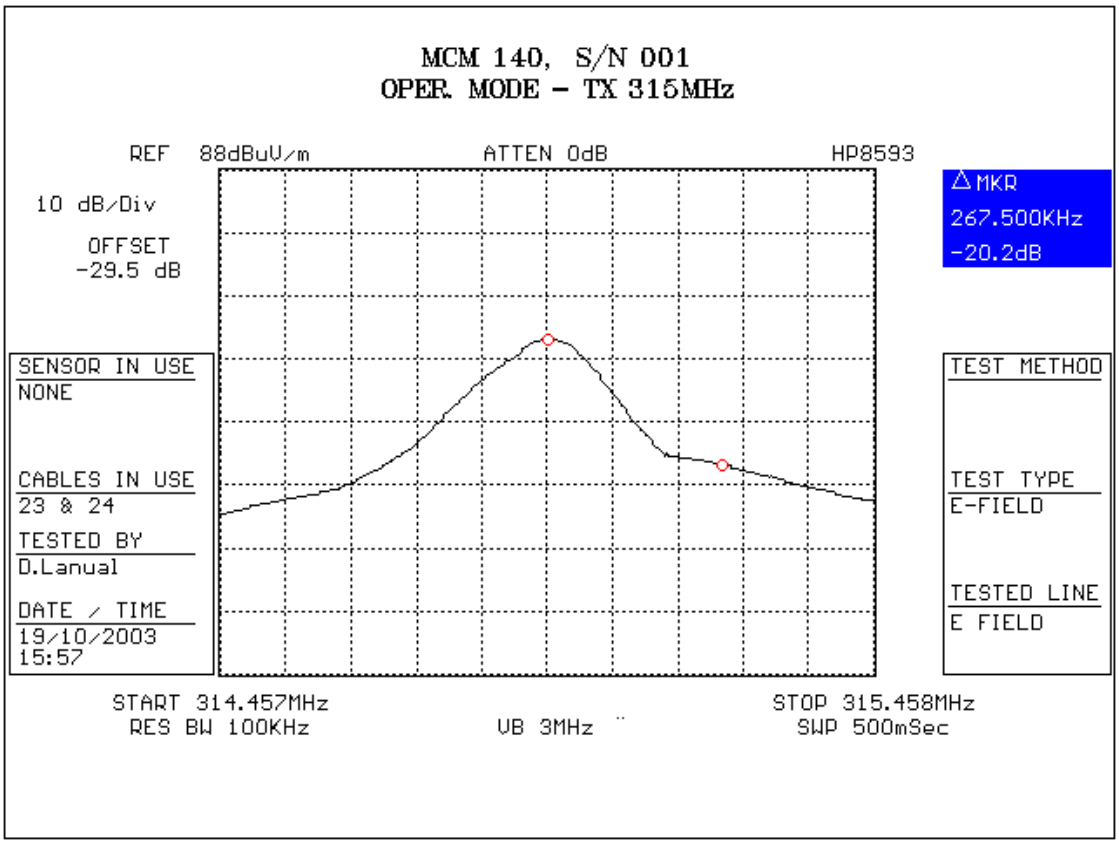
Detected Peaks:

Nr	Frequency (MHz)	PK (dBuV/m)	Pass	Angle (degrees)	Height (m)
1	314.682	58.1	Pass	125	1
2	314.951	81.5	Pass	120	1

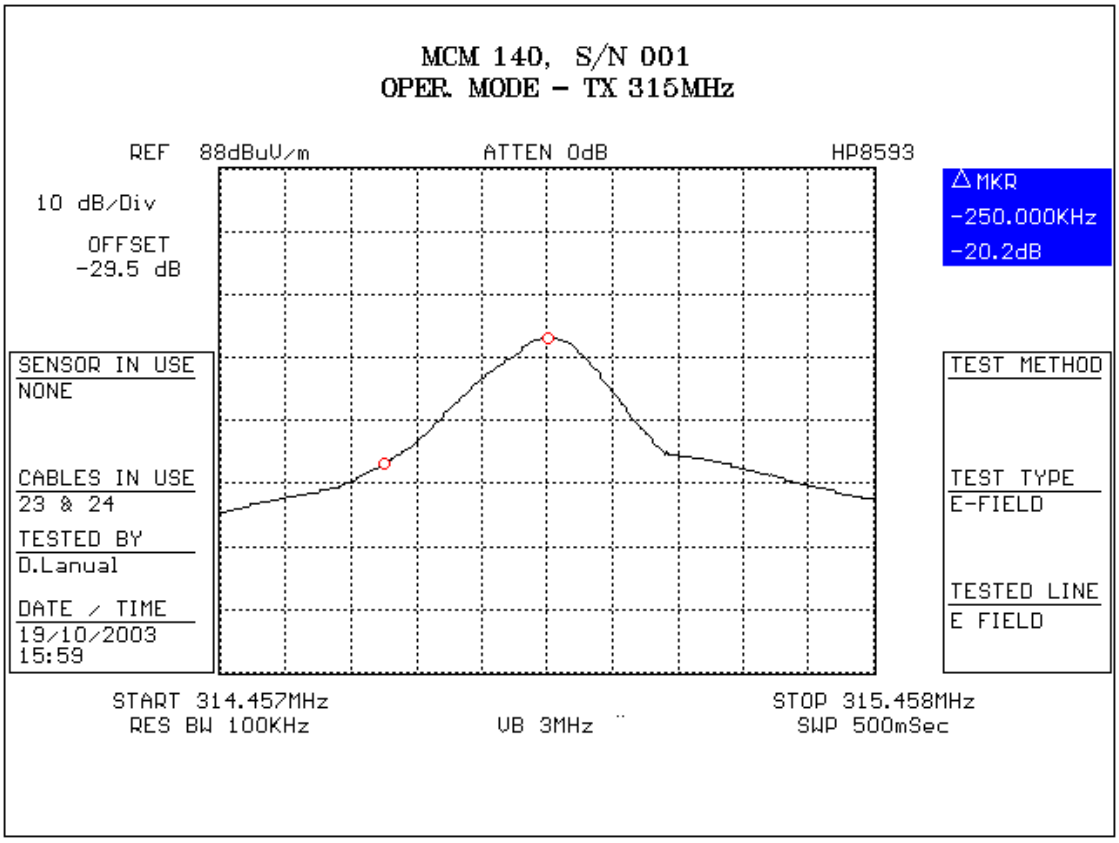
Settings:
Antenna: Horizontal at 0 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 120 kHz. VBW: 1000 kHz. Sweep time: 20 ms.
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.
Measure the peaks with the peak detector

Note:

Plot RE/ 4



Plot RE/ 5



Plot RE/ 6

EUT File:
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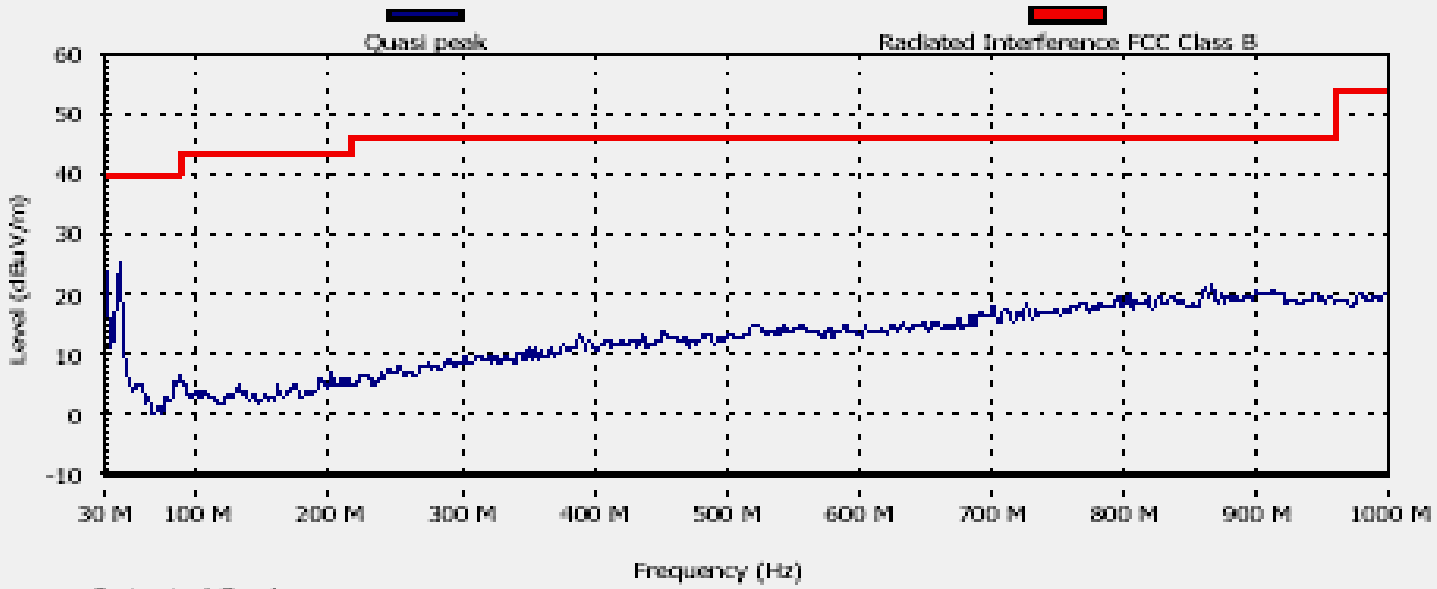
Order Number:

EUT
Name: MCM 140
Serial Number:

Client
Name: VISONIC
Contact Person:

Radiated Emission

Description: 29) RE FCC 15.109 Class B 30MHz-1GHz
From 30 MHz to 1000 MHz
Graph:



Detected Peaks:

M	Frequency (MHz)	PK (dBuV/m)	AVG (dBuV/m)	QP (dBuV/m)	RMS (dBuV/m)	PK Limit (dBuV/m)	PK Diff (dB)	AVG Limit (dBuV/m)	AVG Diff (dB)	QP Limit (dBuV/m)	QP Diff (dB)	RMS Limit (dBuV/m)	RMS Diff (dB)	PK Pass	AVG Pass	QP Pass	RMS Pass	Pass	Angle (degrees)	Height (m)

Settings:
Antenna: Horizontal at 3 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 120 kHz. VBW: 1000 kHz. Sweep time: 202.0830078125 ms.
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.
Measure the peaks with the quasi-peak detector

Note:

Plot RE/ 7

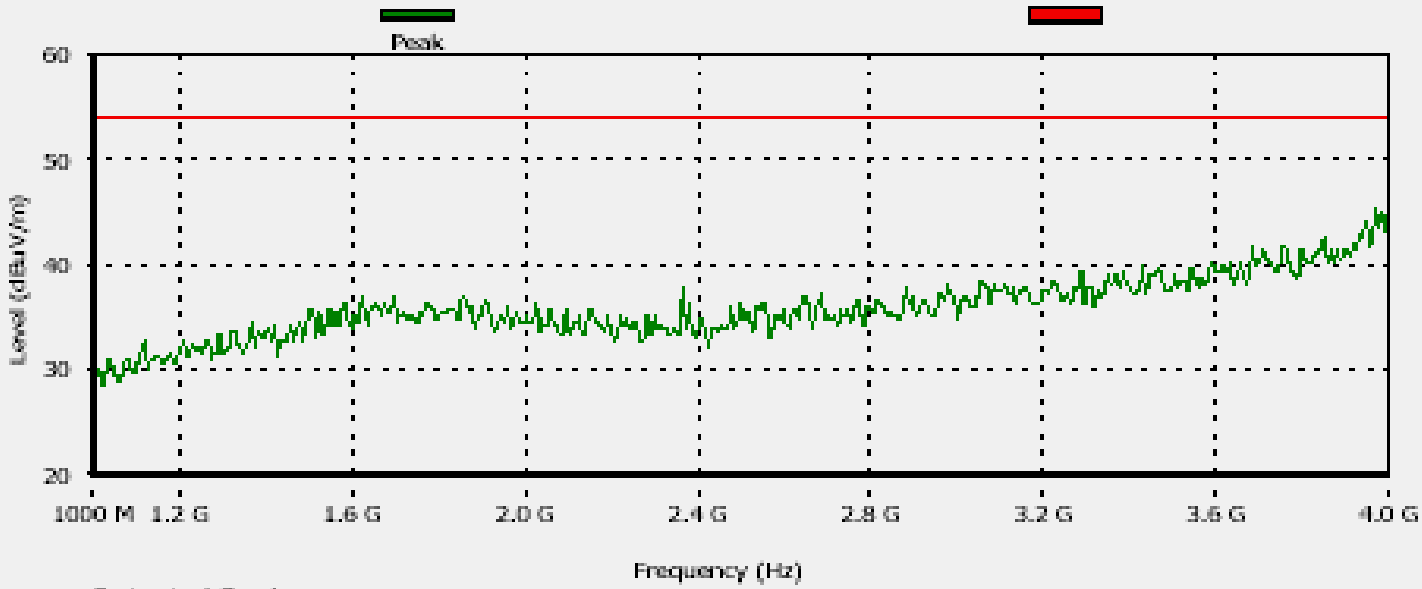
EUT File:
C:\VISONIC\MCM-140\Data\Mcm-140.eut
Order Number:

EUT
Name: MCM 140
Serial Number:

Client
Name: VISONIC
Contact Person:

Radiated Emission

Description: 45) RE FCC 15.109 Class B 2-4GHz BOTH
From 1000 MHz to 4000 MHz
Graph:



Detected Peaks:

M	Frequency (MHz)	PK (dBuV/m)	AVG (dBuV/m)	QP (dBuV/m)	RMS (dBuV/m)	PK Limit (dBuV/m)	PK Diff (dB)	AVG Limit (dBuV/m)	AVG Diff (dB)	QP Limit (dBuV/m)	QP Diff (dB)	RMS Limit (dBuV/m)	RMS Diff (dB)	PK Pass	AVG Pass	QP Pass	RMS Pass	Pass	Angle (degrees)	Height (m)

Settings:
Antenna: Horizontal at 3 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 1000 kHz. VBW: 1000 kHz. Sweep time: 26.42799949646 ms.
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.
Measure the peaks with the peak detector

Note:

Plot RE/ 8

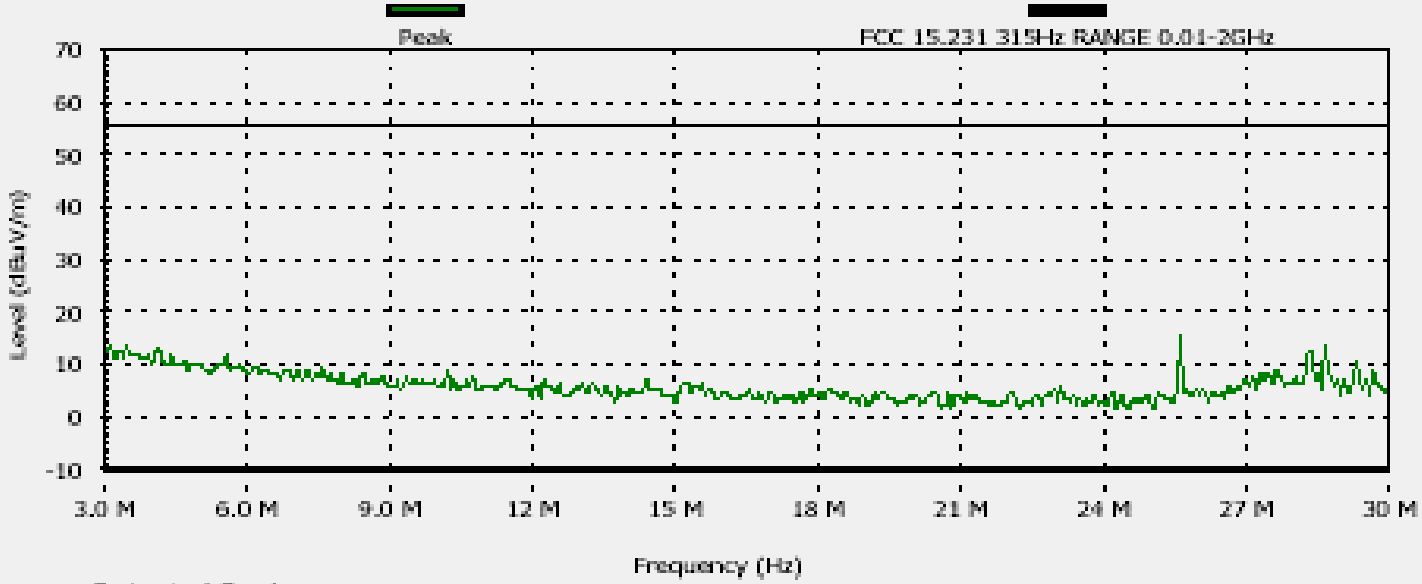
EUT File:
C:\VISONIC\MCM-140\Data\Mcm-140.eut
Order Number:

EUT
Name: MCM 140
Serial Number:

Client
Name: VISONIC
Contact Person:

Radiated Emission

Description: 16) RE FCC 15.231 315MHz Class B 3MHz-30MHz VER
From 3 MHz to 30 MHz
Graph:



Detected Peaks:

M	Frequency (MHz)	PK (dBuV/m)	AVG (dBuV/m)	QP (dBuV/m)	RMS (dBuV/m)	PK Limit (dBuV/m)	PK Diff (dB)	AVG Limit (dBuV/m)	AVG Diff (dB)	QP Limit (dBuV/m)	QP Diff (dB)	RMS Limit (dBuV/m)	RMS Diff (dB)	PK Pass	AVG Pass	QP Pass	RMS Pass	Pass	Angle (degrees)	Height (m)

Settings:
Antenna: Horizontal at 3 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 9 kHz. VBW: 30 kHz. Sweep time: 1000 ms.
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.
Measure the peaks with the peak detector

Note:

Plot RE/ 9

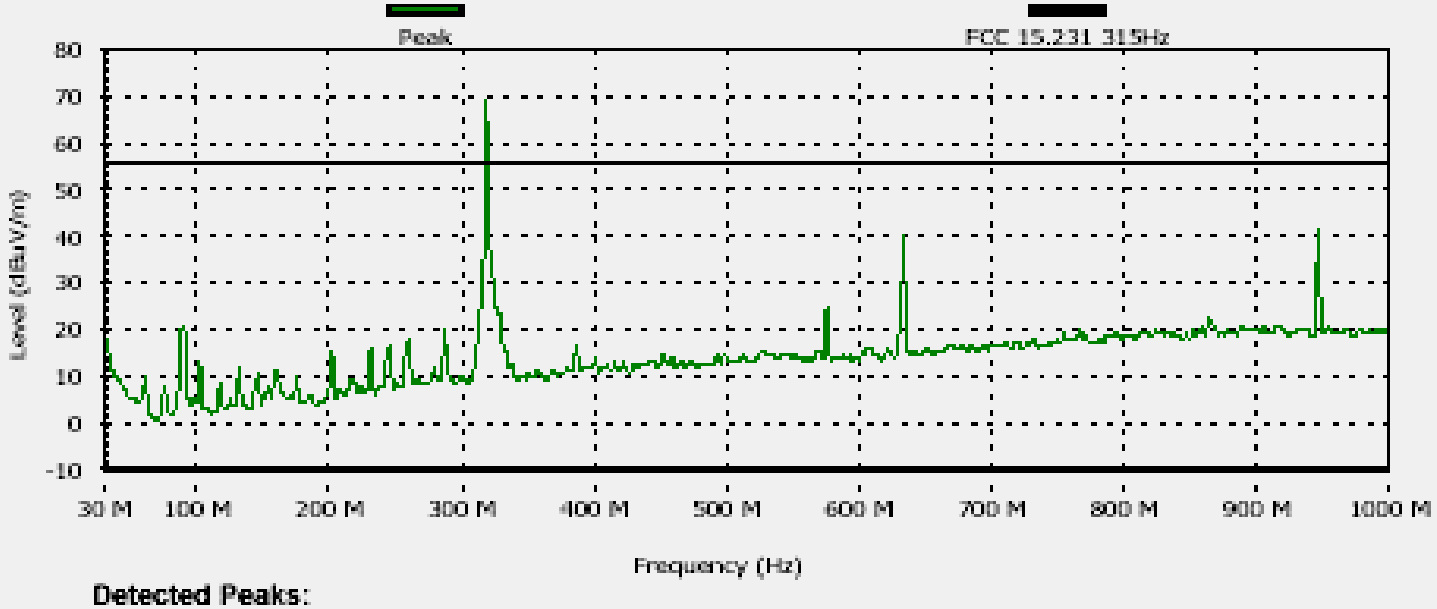
EUT File:
C:\VISONIC\MCM-140\Data\Mcm-140.eut
Order Number:

EUT
Name: MCM 140
Serial Number:

Client
Name: VISONIC
Contact Person:

Radiated Emission

Description: 13) RE FCC 15.231 315MHz Class B 30MHz-1GHz VER
From 30 MHz to 1000 MHz
Graph:



Detected Peaks:

Nr	Frequency (MHz)	PK (dBuV/m)	PK Limit (dBuV/m)	PK Diff (dBuV/m)	PK Pass	Pass	Angle (degrees)	Height (m)
1	314.954	77.1	55.8	21.3	Fail	Fail	0	1

Settings:
Antenna: Horizontal at 3 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 120 kHz. VBW: 1000 kHz. Sweep time: 202.0830078125 ms.
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.
Measure the peaks with the peak detector

Note:

Plot RE/ 10

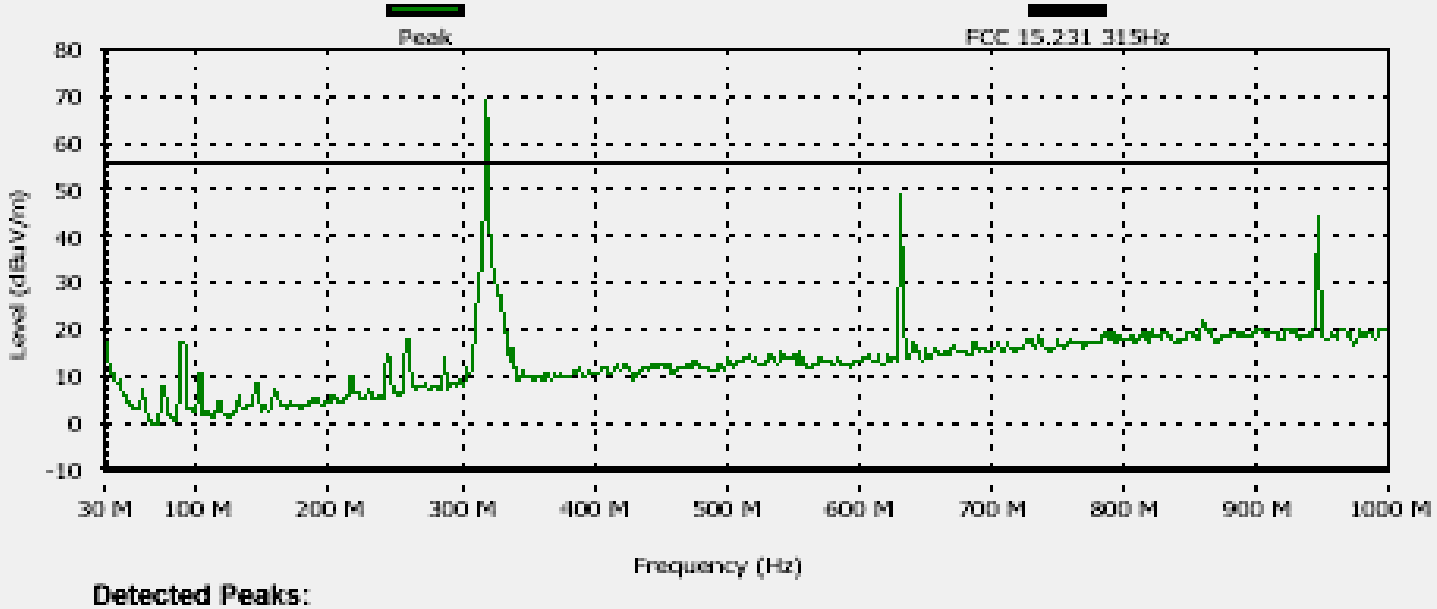
EUT File:
C:\VISONIC\MCM-140\Data\Mcm-140.eut
Order Number:

EUT
Name: MCM 140
Serial Number:

Client
Name: VISONIC
Contact Person:

Radiated Emission

Description: 15) RE FCC 15.231 315MHz Class B 30MHz-1GHz HOR
From 30 MHz to 1000 MHz
Graph:



Detected Peaks:

Nr	Frequency (MHz)	PK (dBuV/m)	PK Limit (dBuV/m)	PK Diff (dBuV/m)	PK Pass	Pass	Angle (degrees)	Height (m)
1	314.954	81.2	55.8	25.4	Fail	Fail	175	1

Settings:
Antenna: Horizontal at 3 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 120 kHz. VBW: 1000 kHz. Sweep time: 202.0830078125 ms.
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.
Measure the peaks with the peak detector

Note:

Plot RE/ 11

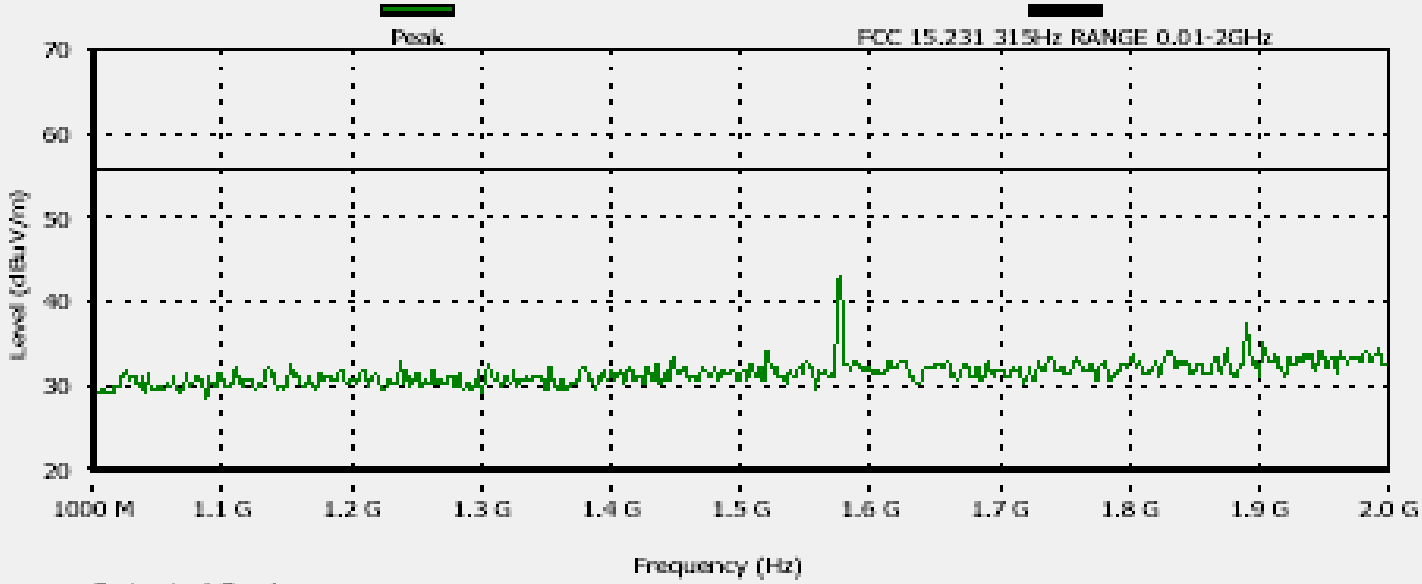
EUT File:
C:\VISONIC\MCM-140\Data\Mcm-140.eut
Order Number:

EUT
Name: MCM 140
Serial Number:

Client
Name: VISONIC
Contact Person:

Radiated Emission

Description: 8) RE FCC 15.231 315MHz Class B 1-2.8GHz VER
From 1000 MHz to 2000 MHz
Graph:



Detected Peaks:

M	Frequency (MHz)	PK (dBuV/m)	AVG (dBuV/m)	QP (dBuV/m)	RMS (dBuV/m)	PK Limit (dBuV/m)	PK Diff (dB)	AVG Limit (dBuV/m)	AVG Diff (dB)	QP Limit (dBuV/m)	QP Diff (dB)	RMS Limit (dBuV/m)	RMS Diff (dB)	PK Pass	AVG Pass	QP Pass	RMS Pass	Pass	Angle (degrees)	Height (m)

Settings:
Antenna: Horizontal at 3 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 1000 kHz. VBW: 1000 kHz. Sweep time: 20 ms.
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.
Measure the peaks with the peak detector

Note:

Plot RE/ 12

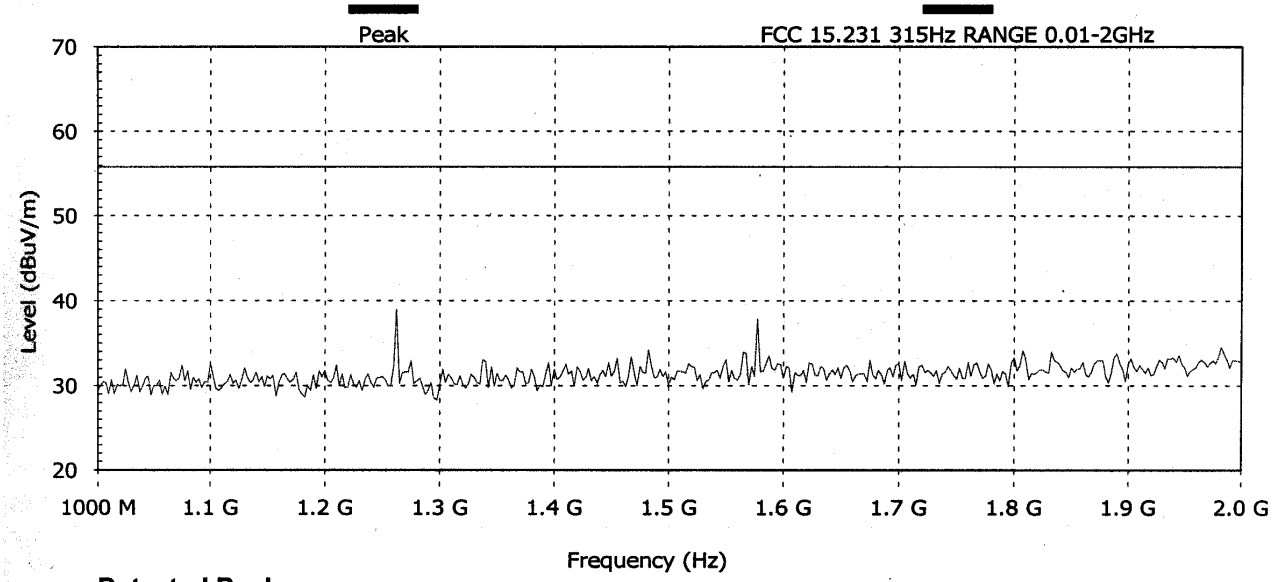
EUT File:
S:\EMC_LAB\common\VISONIC\MCM-140\Data\Mcm-140.eut
Order Number:

EUT
Name: MCM 140
Serial Number:

Client
Name: VISONIC
Contact Person:

Radiated Emission

Description: 10) RE FCC 15.231 315MHz Class B 1-2GHz HOR
From 1000 MHz to 2000 MHz
Graph:



Detected Peaks:

Nr	Frequency (MHz)	PK (dBuV/m)	AVG (dBuV/m)	QP (dBuV/m)	RMS (dBuV/m)	PK Limit (dBuV/m)	PK Diff (dBuV/m)	AVG Limit (dBuV/m)	AVG Diff (dBuV/m)	QP Limit (dBuV/m)	QP Diff (dBuV/m)	RMS Limit (dBuV/m)	RMS Diff (dBuV/m)	PK Pass	AVG Pass	QP Pass	RMS Pass	Pass	Angle (degrees)	Height (m)

Settings:
Antenna: Horizontal at 3 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 1000 kHz. VBW: 1000 kHz. Sweep time: 20 ms.
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.
Measure the peaks with the peak detector

Note:

Plot RE/ 13

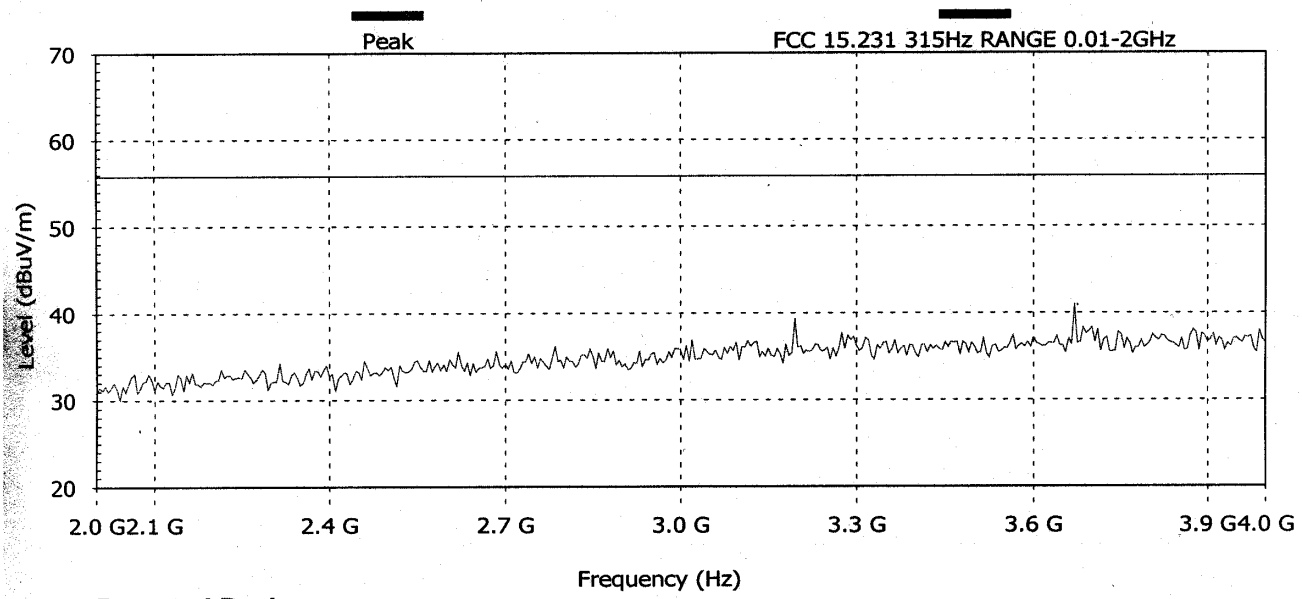
EUT File:
S:\EMC_LAB\common\VISONIC\MCM-140\Data\Mcm-140.eut
Order Number:

EUT
Name: MCM 140
Serial Number:

Client
Name: VISONIC
Contact Person:

Radiated Emission

Description: 9) RE FCC 15.231 315MHz Class B 2-4GHz VER
From 2000 MHz to 4000 MHz
Graph:



Detected Peaks:

Nr	Frequency (MHz)	PK (dBuV/m)	AVG (dBuV/m)	QP (dBuV/m)	RMS (dBuV/m)	PK Limit (dBuV/m)	PK Diff (dBuV/m)	AVG Limit (dBuV/m)	AVG Diff (dBuV/m)	QP Limit (dBuV/m)	QP Diff (dBuV/m)	RMS Limit (dBuV/m)	RMS Diff (dBuV/m)	PK Pass	AVG Pass	QP Pass	RMS Pass	Pass	Angle (degrees)	Height (m)

Settings:
Antenna:
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 1000 kHz. VBW: 1000 kHz. Sweep time: 26.427999496
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.
Measure the peaks with the peak detector

Note:

Plot RE/ 14

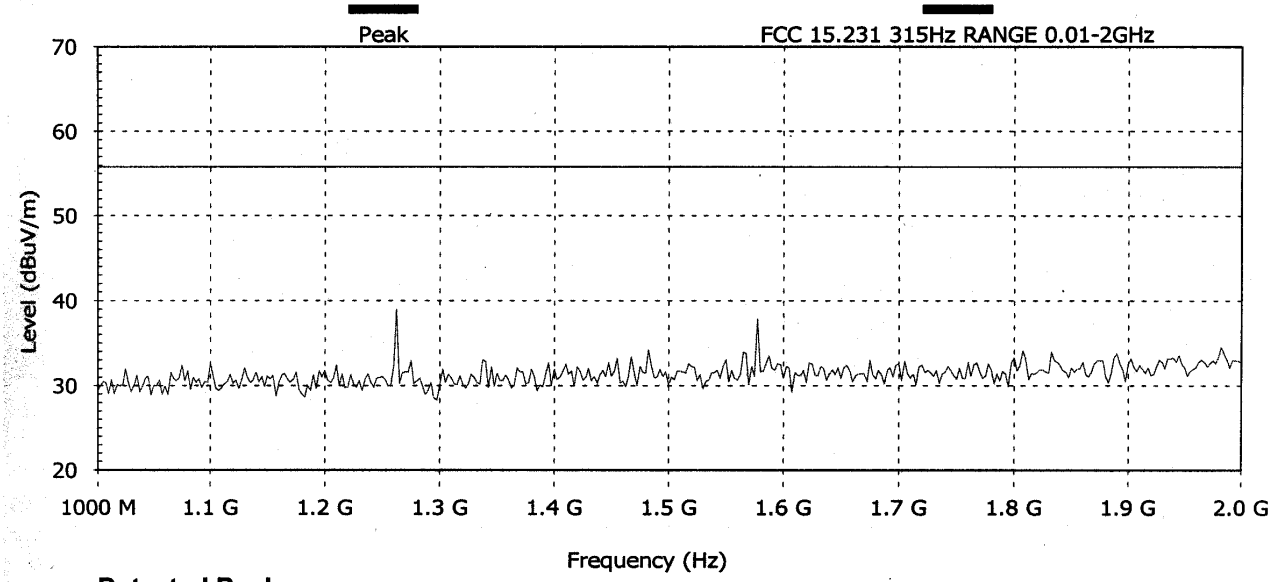
EUT File:
S:\EMC_LAB\common\VISONIC\MCM-140\Data\Mcm-140.eut
Order Number:

EUT
Name: MCM 140
Serial Number:

Client
Name: VISONIC
Contact Person:

Radiated Emission

Description: 10) RE FCC 15.231 315MHz Class B 1-2GHz HOR
From 1000 MHz to 2000 MHz
Graph:



Detected Peaks:

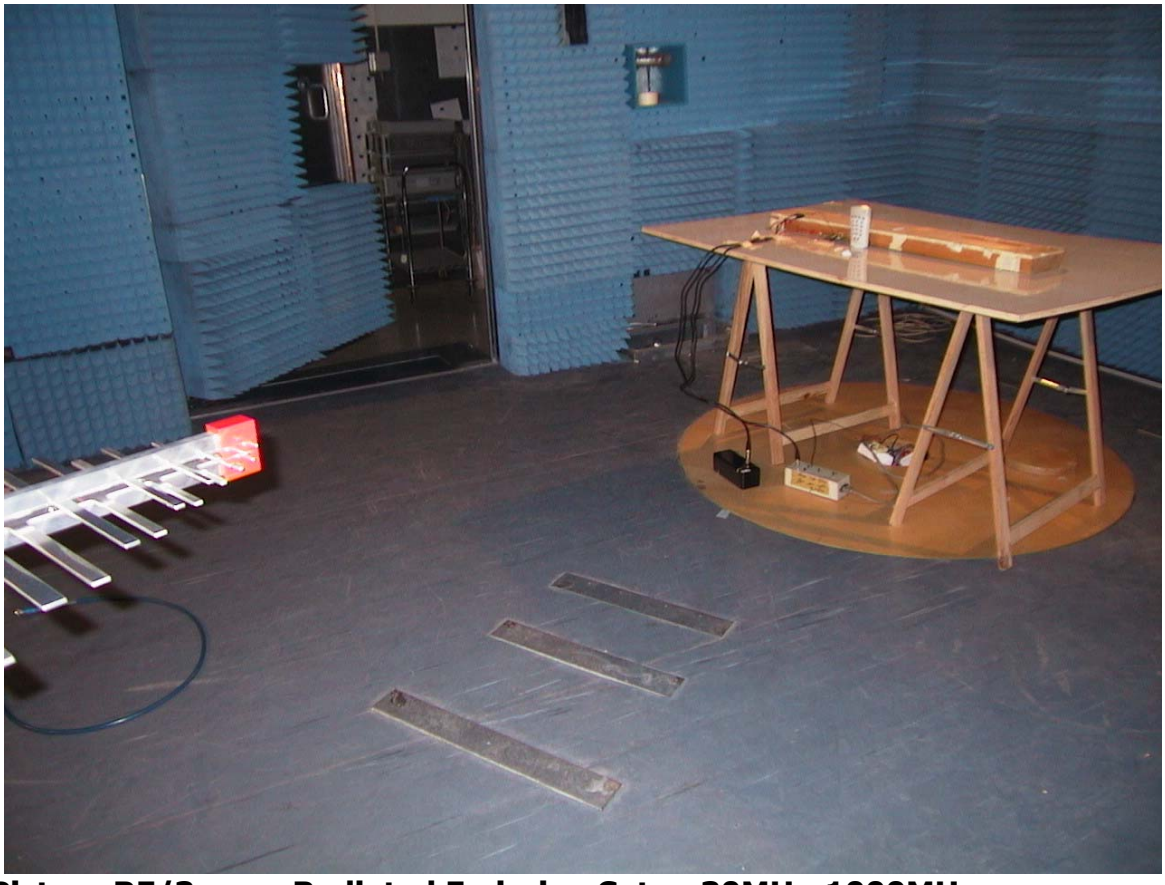
Nr	Frequency (MHz)	PK (dBuV/m)	AVG (dBuV/m)	QP (dBuV/m)	RMS (dBuV/m)	PK Limit (dBuV/m)	PK Diff (dBuV/m)	AVG Limit (dBuV/m)	AVG Diff (dBuV/m)	QP Limit (dBuV/m)	QP Diff (dBuV/m)	RMS Limit (dBuV/m)	RMS Diff (dBuV/m)	PK Pass	AVG Pass	QP Pass	RMS Pass	Pass	Angle (degrees)	Height (m)

Settings:
Antenna: Horizontal at 3 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 1000 kHz. VBW: 1000 kHz. Sweep time: 20 ms.
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.
Measure the peaks with the peak detector

Note:

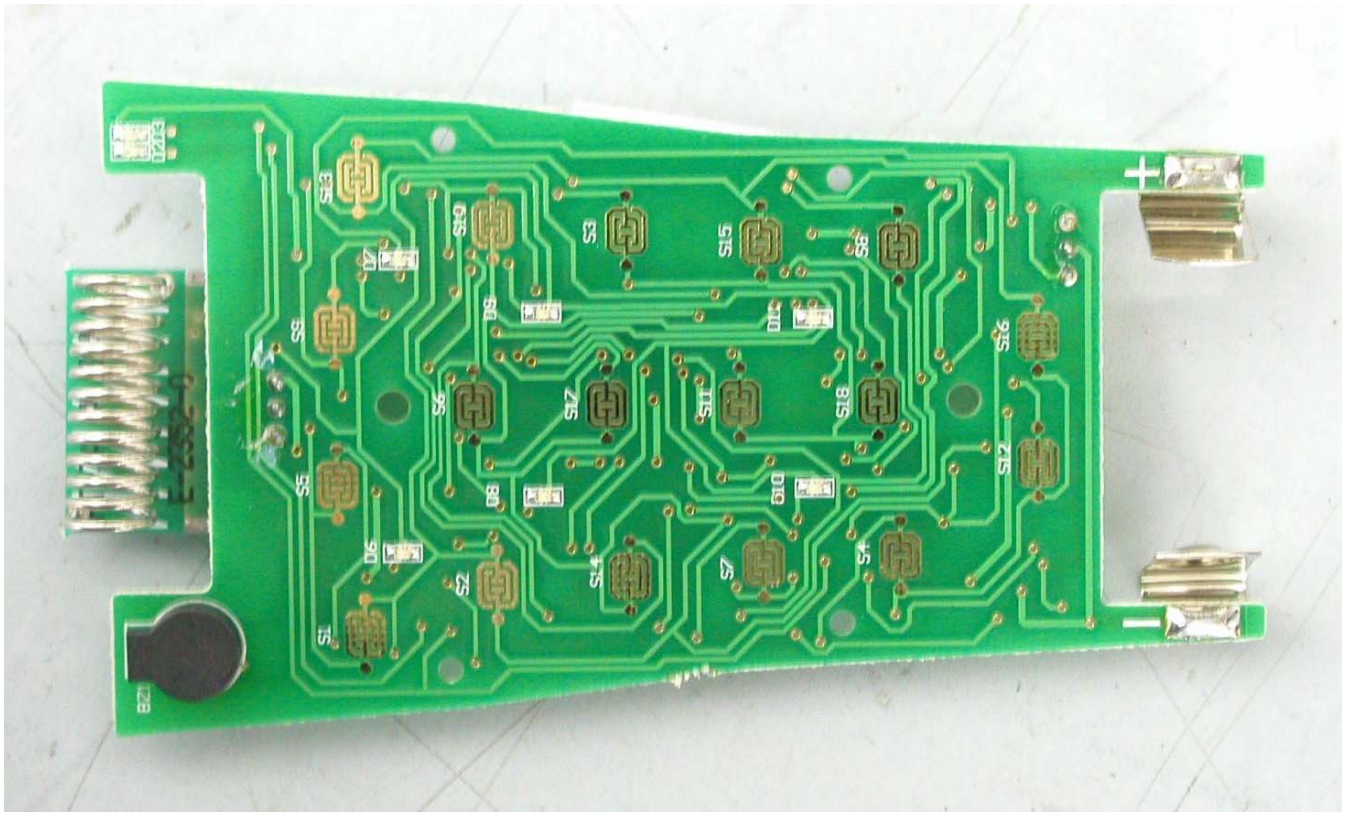
Plot RE/ 15

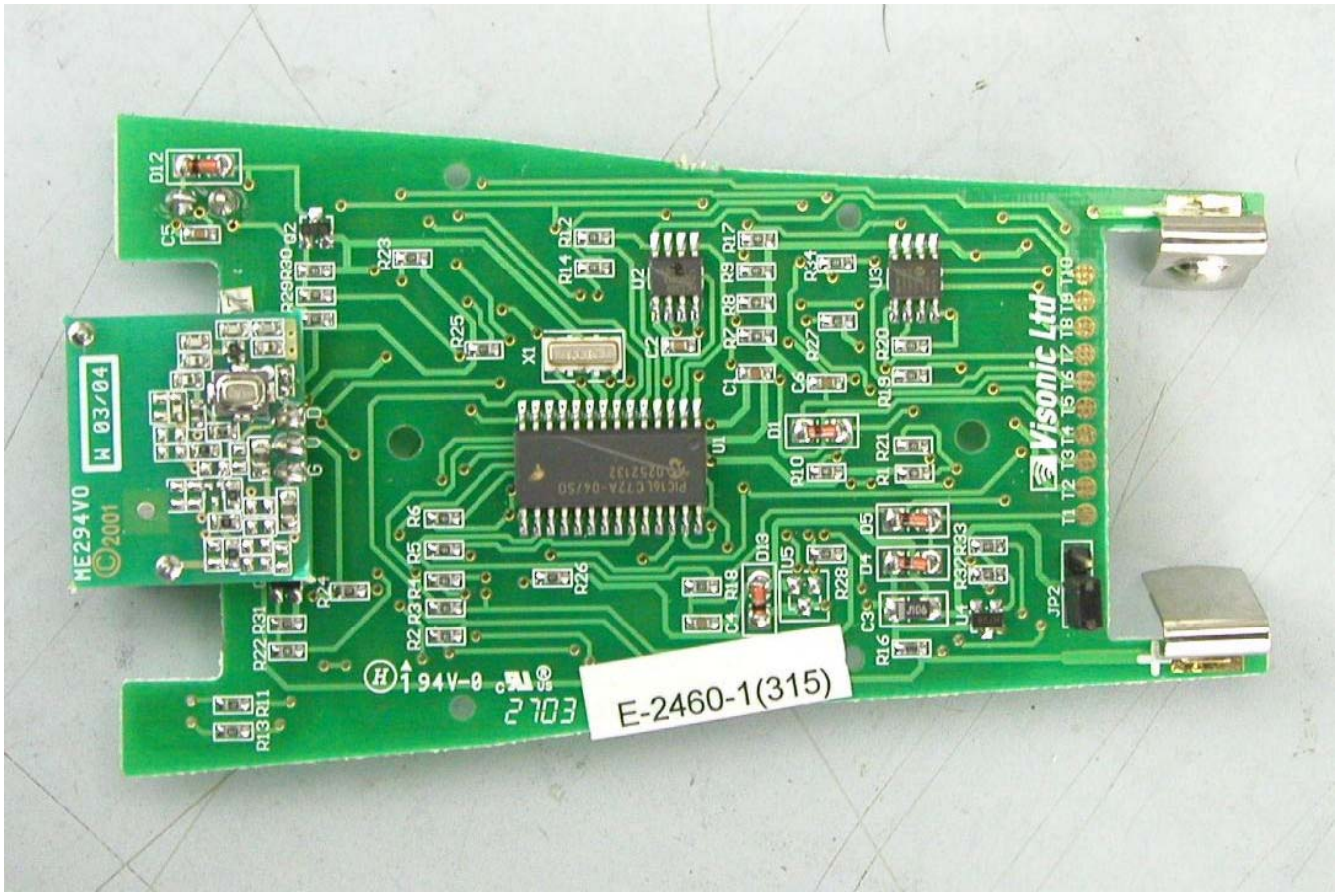
Picture RE/2 Radiated Emission Setup 9KHz-30MHz



Picture RE/3 Radiated Emission Setup 30MHz-1000MHz

Picture RE/3 Radiated Emission Setup 1GHz-3.5GHz

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1
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3
4
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