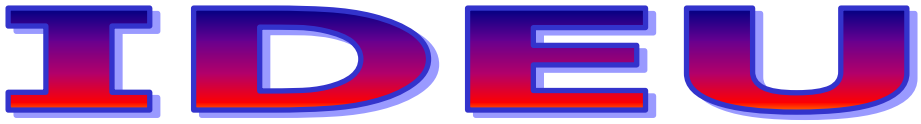
REV	Δ	Description	Sheet Effected	Date	Drawn	Checked
A				27.07.03	D.Lanuel	S.Cohen

EMC Laboratory



FCCID :QUX-IDEU-800
Manufactured by
HomeFree System Ltd.

EMC Test Report

According FCC Part 15 Requirements

JUNE 2003

	Function/Title	Name	Signature	Date
Prepared by	Test Engineer	D.Lanuel		27.07.03
Approved by	EMC Lab. Manager	S.Cohen		27.07.03

Table of Contents

Para Page

1 TEST DATA INFORMATION

a. Description of equipment Under Test.

Equipment Under Test:	IDEU
FCCID	QUX-IDEU-800
Manufacturer:	HomeFree System Ltd.
Serial Numbers:	0001
Mode of Operation:	TX & RX MODE
operating frequency:	318MHZ
Year of Manufacture:	2003

b. Applicant Information:

Applicant:	HomeFree System Ltd.
Applicant Address	2, Habarzel Street Tel-Aviv
Telephone:	+972-3-6478871
FAX:	+972-3-6478872
The testing was observed by following applicant's personnel:	LEV ROSMAN

c. Test Performance:

Date of reception for testing:	22.07.03
Dates of testing	22.07.03
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, 15.209,15.107, 15.207 & 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 was found to comply with the requirements of the FCC Part 15 Regulations given below

Test	Test Description	Section	PASS/FAIL
1	Bandwidth of the emission	15.231	PASS
2	Field strength of fundamental	15.231	PASS
3	Radiation emission	15.109	PASS
4	Radiation emission	15.231 & 15.205	PASS
5	Conducted emission	15.107	PASS
5	Conducted emission	15.207	PASS

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 15.107:	Limits of Mains Terminal Interference Voltage (Conducted Emission) in the 0.15MHz to 30MHz frequency range For unintentional Radiators
Section 15.207:	Limits of Mains Terminal Interference Voltage (Conducted Emission) in the 0.15MHz to 30MHz frequency range For intentional Radiators
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 30MHz to 1000MHz frequency range. 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 IDEU Manufactured by HomeFree System Ltd..

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

The EUT, Wireless Monitoring Unit (iDEU-800), is a wall mounted microprocessor transceiver, operating at 318MHz. It is a part of wandering prevention system. The iDEU extends the reception range of an electronic monitoring receiver by receiving and re-transmitting data. It utilized single antenna.
The EUT powered from mains via AC/DC adapter 7.5V and includes a 3.6V back-up battery.

b. E.U.T Test Configuration

E.UT. test configuration is shown in figure bellow

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c. E.U.T Mode of Operation description

(1) 318MHz TX Mode Mode operated by battary

(2) 318MHz TX Mode operated by AC/DC adapter.

(3) RX Mode operated by battary.

(4) RX Mode operated by AC/DC adapter.

6 RADIATED EMISSION-TEST PROCEDURE

a. Preliminary Test Configurations

(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

(3) Cables configuration shown in Figure 6.a.3

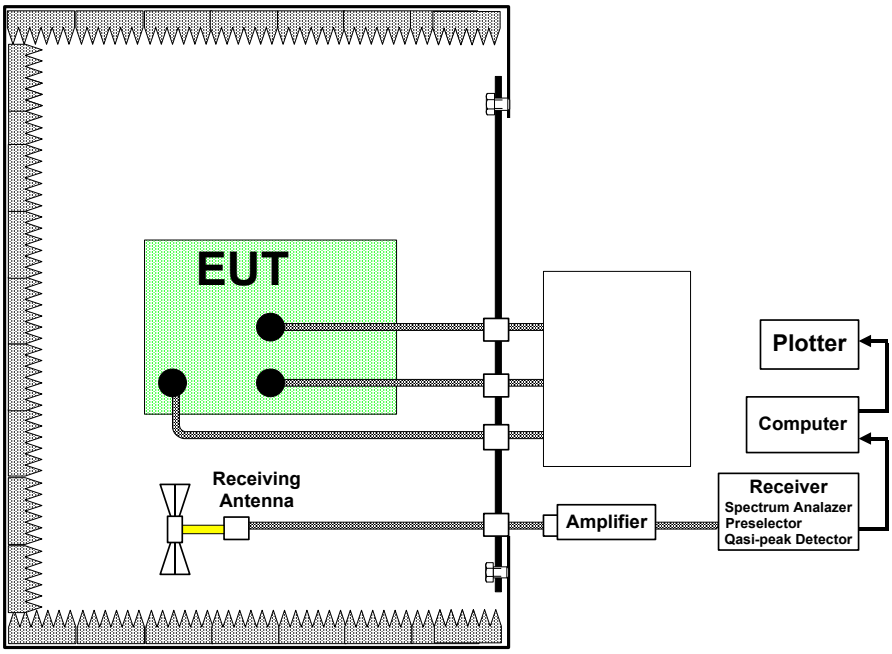


Figure 6.a.1

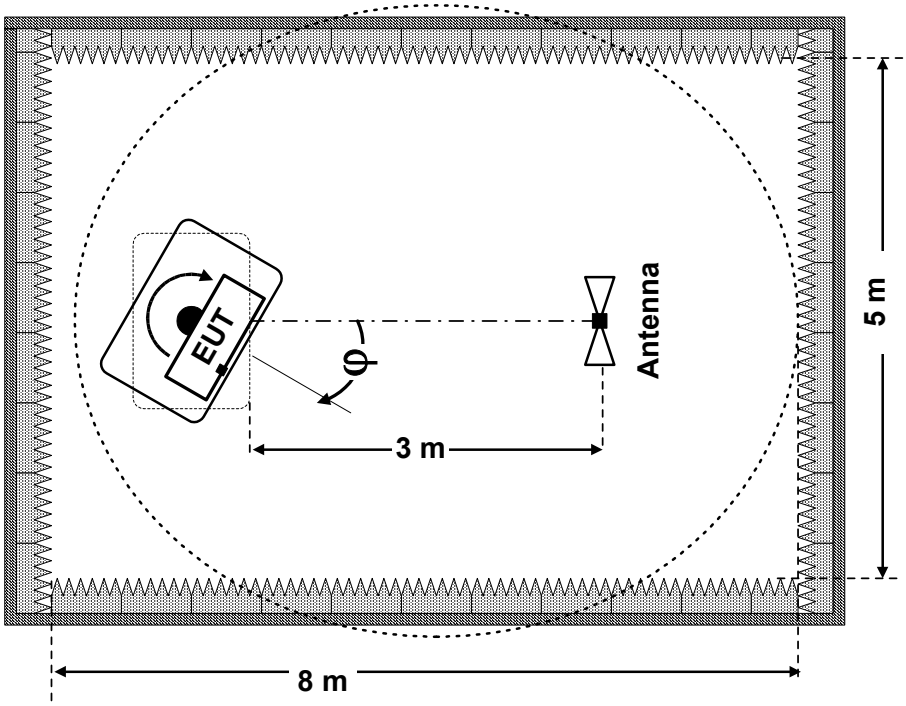


Figure 6.a.2

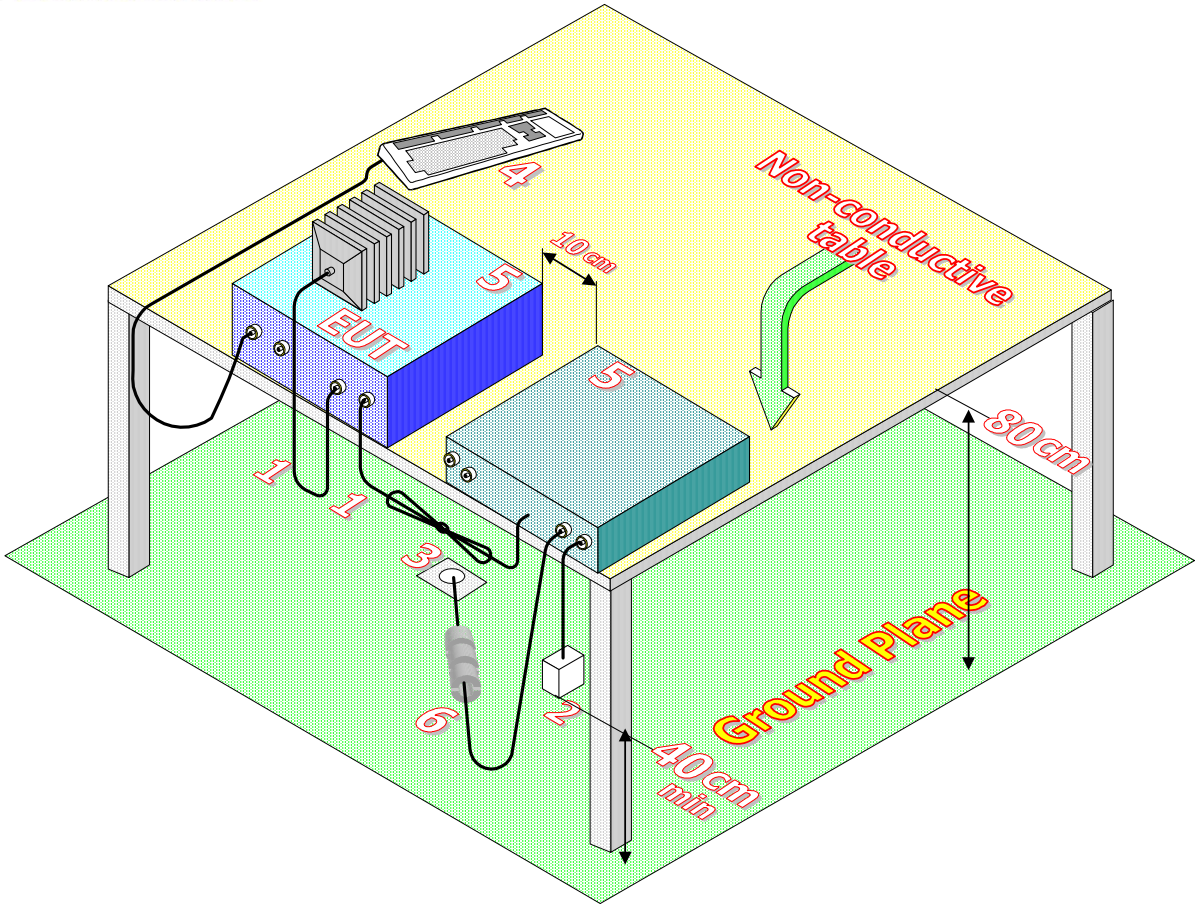


Figure 6.a.3

1. If cables, which hand closer than 40 cm to the horizontal ground plane cannot be shortened to the appropriate length, the excess shall be folded back and forth forming a bundle 30 cm to 40 cm long.
2. The end of I/O signal cables, which are not connected to a peripheral, may be terminated, if required to proper operation using correct terminating impedance.
3 Main junction boxes shall be flush with, and bonded directly to, metal ground plane
4. Cables of hand operated devices such as keyboards, mousses; etc. shall be placed as for normal usage.
5. Peripherals shall be placed at distance 10 cm from each other and from the controller, except for the monitor, which, if for an acceptable installation practice, shall be placed directly on top of the controller.
6. Mains cables, telephone lines or other connections to auxiliary equipment located outside the test area shall drape to the floor, be fitted with ferrite clamps or ferrite tubes placed on the floor at the point where the cable reaches the floor and then routed to the place where they leave the turn table. No extension cords shall be used to mains receptacle.
7 Ferrite clamps or ferrite tubes. No more than one cable per clamp.

b. Preliminary Test Procedure

(1) Maintain setup in absorber-lined shielded room as shown in Figures 6a.1, 6a.2 and 6a.3.

(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

(3) Cables configuration shown in Figure 6.a.3

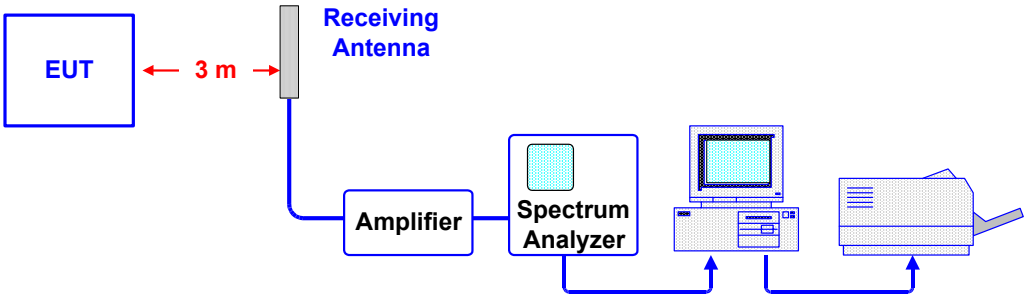


Figure 6.c.1

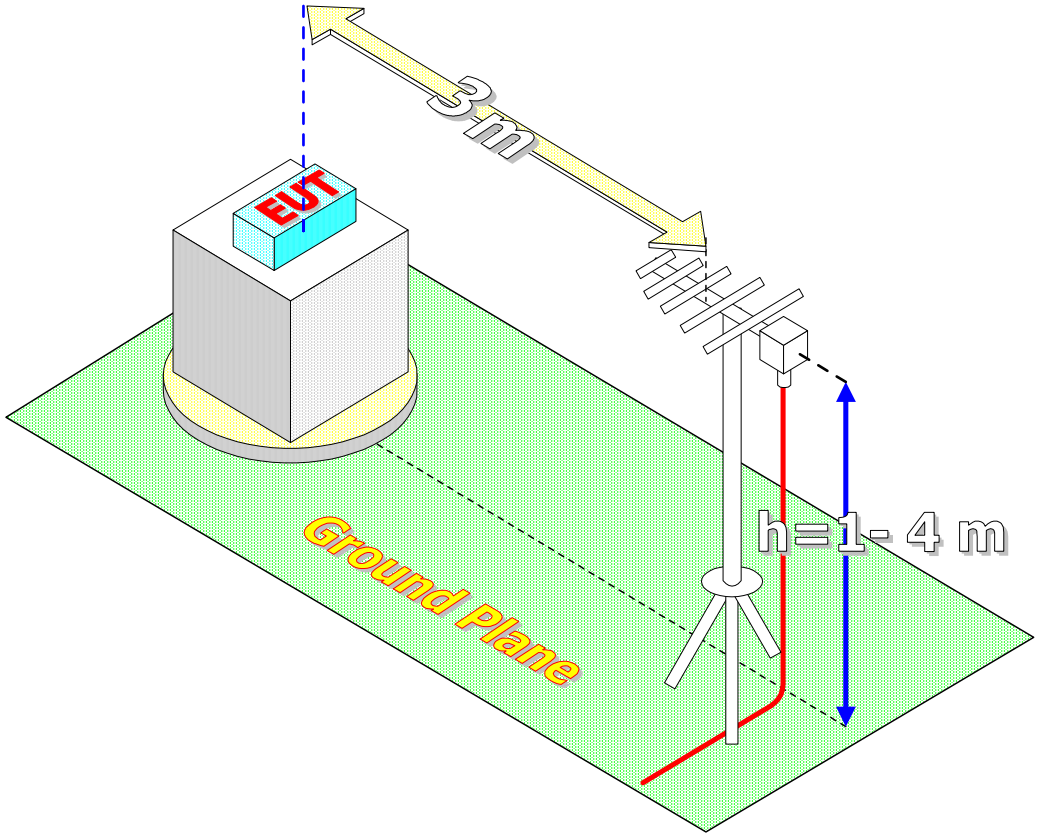


Figure 6.c.2

7 CONDUCTED EMISSIONS, AC POWER LEADS - TEST PROCEDURE

a. Test Setup

(1) Calibration setup shown in Figure 7.a.1.

(2) The testing setup shown in Figure 7.a.2.

(3) configurations for Equipment and cable are shown in Figure 6.a.3.

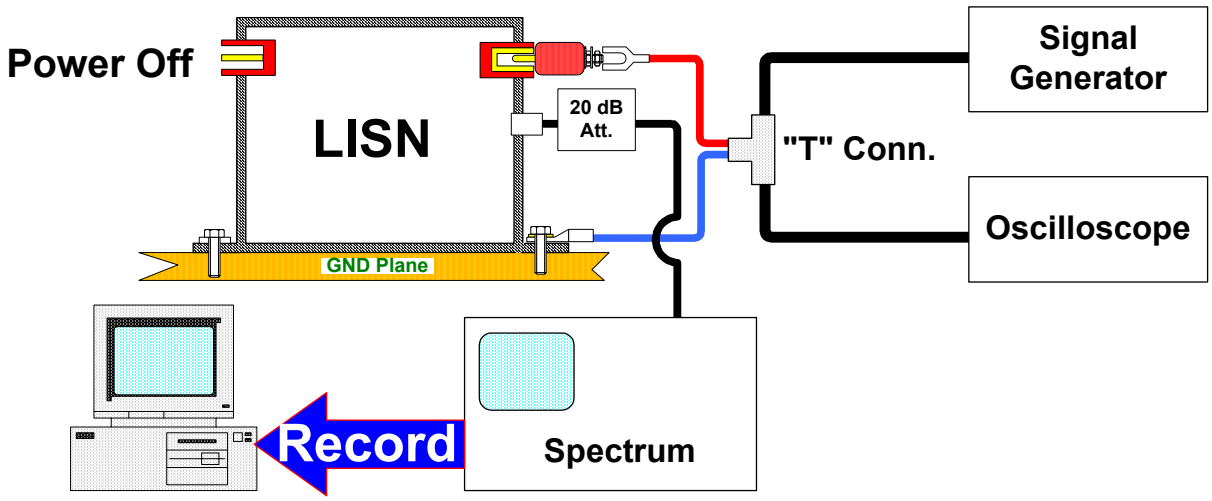


Figure 7.a.1

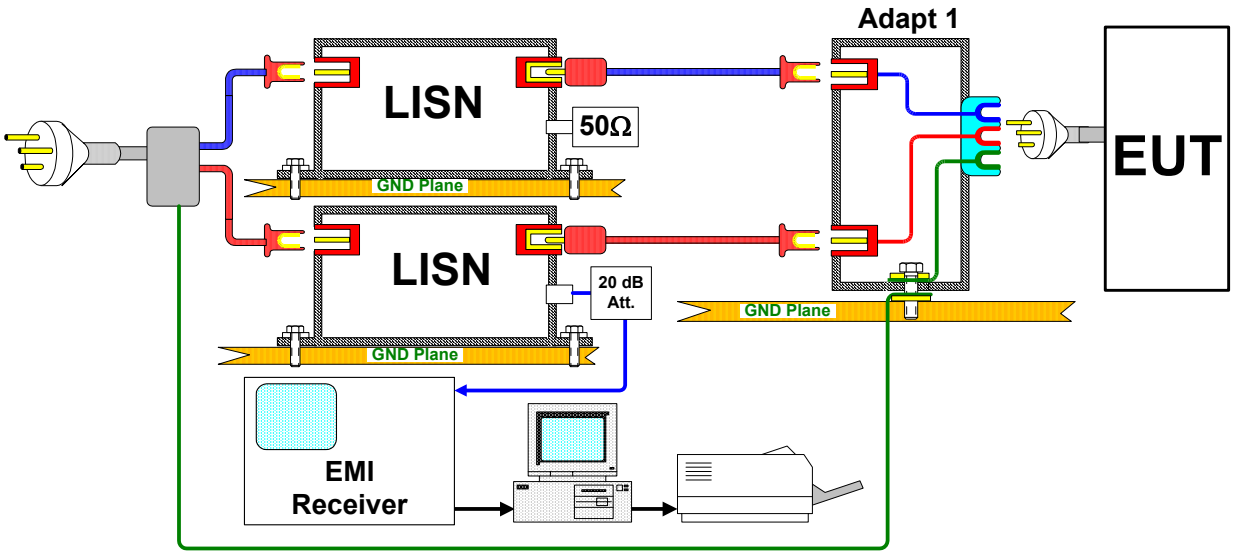


Figure 7.a.2

b. Test Procedure

The test procedure shall be as follows:

(1) Calibration.

Perform the measured system check using the calibration setup shown in Figure 7.a.1.

(2) Turn on the measurement equipment and allow sufficient time for stabilization.

(3) Apply the calibrated signal level, which is 6 dB below the limit given in Table 1 at 500kHz and 29 MHz to the power output terminal of LISN.

(4) Scan the spectrum analyzer for each frequency in the same manner as a normal data scan. Verify that the spectrum analyzer indicates a level within ± 3 dB of injected level. Correction factor shall be applied for LISN and 20 dB for attenuator.

(5) E.U.T Testing. Perform emission data scan using the measurement setup shown in Figures 7.a.2 and 7.a.3.

(6) Turn on the E.U.T to operational mode and allow sufficient time for stabilization.

(7) Select (Phase) lead for testing.

(8) Scan the spectrum analyzer over the applicable frequency range

(9) Repeat (2) and (3) for (Neutral) lead.

(10) Choose six highest emissions relative to limit and feel the appropriate Table.

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

8 BANDWIDTH OF THE EMISSION PART 15.231—TEST RESULTS

E.U.T:	IDEU S/N 001
Test Method:	ANSI 63.4
Date:	22/07/03
Relative Himidity:	40%
Ambient Temprature:	23c
Air Pressure:	1007hpa

Testing Engineer: D.Lanuel **Date** 24/07/**03**

a. Test Results Summary & Conclusions

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

b. Limits of bandwidth

The test unit shall meet the limits of Table 8.b

Table 8.b Limits For Bandwidth

Frequency (MHz)	Bandwidth Max Limits (%)	Bandwidth Max Limits (KHz)
318.01000	0.25	795

c. Test Instrumentation and Equipment

Table 8.c 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

d. Test Results

Table 8.d Bandwidth Test Result

Frequency (MHz)	Bandwidth (KHz)	Bandwidth Max Limit (KHz)	Plot No	PASS/FAIL
318	422.5	795	13.1	PASS

9 FIELD STRENGTH OF FUNDAMENTAL PART 15.231-TEST RESULTS

E.U.T:	IDEU S/N 001
Test Method:	ANSI 63.4
Date:	22/07/03
Relative Himidity:	44%
Ambient Temprature:	22c
Air Pressure:	1010hpa

Testing Engineer: D.Lanuel **Date** 24/07/**03**

a. Test Results Summary & Conclusions

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

b. Limits of Field Strength for fundamental according 15.231

The test unit shall meet the limits of Table 9.b.

Table 9.b Limits For Fundamental

Frequency (MHz)	Average Max Limits (dBμV/m)	Peak Max Limits (dBμV/m)
318.01000	75.8	95.8

c. Test Instrumentation and Equipment

Table 9.c 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

d. Test Results

Table 9.d Average Factor

TX Period(min)	Duty Cycle(min)	Average Factor	Plot No
8.3ms	17/100=0.083	20log0.083=-21.6	13.2

Table 9.d.1 Peak Result of Fundamental

Mode of Opeeration	Frequency (MHz)	Peak Result (dBμV/m)	peak Limits (dBμV/m)	Margine (dB)	Plot No	Pass/Fail
Battary	318.07200	92	95.8	3.8	13.3	PASS
AC/DC adapter	318.07200	94.9	95.8	0.9	13.4	PASS

Table 9.d.2 Average Result of Fundamental

Mode of Opeeration	Peak Result (dBμV/m)	Average Factor	Calculation Results	Average Limits (dBμV/m)	Margine (dB)	Pass/Fail
Battary	92	-21.6	70.4	75.8	5.4	PASS
AC/DC adapter	94.9	-21.6	73.3	75.8	2.5	PASS

10 RADIATED EMISSION PART 15.231 & 15.205-TEST RESULTS

E.U.T:	IDEU S/N 001
Test Method:	ANSI 63.4
Date:	22/07/03
Relative Himidity:	39%
Ambient Temprature:	24c
Air Pressure:	1100hpa

Testing Engineer: D.Lanuel **Date** 24/07/**03**

a. Test Results Summary & Conclusions

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

b. Limits of Radiated Interference Field Strength according 15.231

The test unit shall meet the limits of Table 10.b.

Table 10.b Limits For 15.231(b)

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

c. Test Instrumentation and Equipment

Table 10.c 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

d. Preliminary Test Results

Table 10.d Preliminary Test Results for intentional Emissions in TX Mode 15.231

Operational Mode	Antenna Polarization	Freq. Range MHz	Res. BW (kHz)	Plot No.	PASS/FAIL
TX AC/DC Adapter	Both Hor.&Ver	0.009 – 0.15	0.2	13.5	Pass
		0.15 - 30	9	13.6	Pass
		30-200	120	13.7	Pass
		200-318	120	13.8	Pass
		320-1000	120	13.9	Pass
		1000-2000	1000	13.10	Pass
		2000-3500	1000	13.11	Pass
TX Battary	Both Hor.&Ver	0.009 – 0.15	0.2	13.12	Pass
		0.15 - 30	9	13.13	Pass
		30-200	120	13.14	Pass
		200-318	120	13.15	Pass
		319-400	120	13.16	Pass
		400-800	120	13.17	Pass
		800-1000	120	13.18	Pass
		1000-2000	1000	13.19	Pass
		2000-3500	1000	13.20	Pass

e. Final Results Results

Table 10.e Six Highest Peak Emission Test Results

Mode Of Operation	Freq. (MHz)	peak Reading (*) (dBμV/m)	Limit dBμV/m	Margin (dB)	Pass/Fail
TX AC/DC Adap.	1592.5	51	75.8	24.8	PASS

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

Mode Of Operation	Freq. (MHz)	Calculated (dBμV/m)	Limit dBμV/m	Margin (dB)	Pass/Fail
TX AC/DC Adap.	1592.5	29.4	55.8	26.4	PASS

Average emission calculate: Peak value + Average factor(-21.6)

Table 10.e.2 Six Highest Peak Emission Test Results

Mode Of Operation	Freq. (MHz)	peak Reading (*) (dBμV/m)	Limit dBμV/m	Margin (dB)	Pass/Fail
TX battery.	1592.5	51	75.8	24.8	PASS
	1737.5	45	75.8	30.8	PASS

Table 10.e.3 Six Highest Average Emission Test Results

Mode Of Operation	Freq. (MHz)	Calculated (dBμV/m)	Limit dBμV/m	Margin (dB)	Pass/Fail
TX battery.	1592.5	29.4	55.8	26.4	PASS
	1592.5	23.4	55.8	32.4	PASS

Average emission calculate: Peak value + Average factor(-21.6)

11 RADIATED EMISSION PART 15.109-TEST RESULTS.

a. Preliminary Radiated emission Test Result According Part 15.109

E.U.T:	IDEU S/N 001
Test Method:	ANSI 63.4
Date:	22/07/03
Relative Himidity:	42%
Ambient Temprature:	25c
Air Pressure:	1100hpa

Testing Engineer: D.Lanuel **Date** 24/07/**03**

b. Test Results Summary & Conclusions

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

c. Limits of Radiated Interference Field Strength according 15.109

The test unit shall meet the limits of Table 11.c for Class B equipment.

Table 11.c 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

d. Test Instrumentation and Equipment

Table 11.d 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

e. Preliminary Results

Table 11.e Preliminary Test Results for Unintentional Emissions in RX Mode 15.109

Configuration	Antenna Polarization	Freq. Range MHz	Res. BW (kHz)	Plot No.	PASS/FAIL
Calibration	Calibration	4 30 200 956 1200	120	Stored on the EMC lab computer	Max Dev +/-3db
RX AC/DC Adapter	Both	30-1000	120	13.21	Pass
		1000-2000	120	13.22	Pass
		2000-3500	1000	13.23	Pass
RX Battary	Both	30-1000	120	13.24	Pass
		1000-2000	120	13.25	Pass
		2000-3500	1000	13.26	Pass

f. Final Test Results

Table 11.f Six Highest RX Mode 15.109

Mode Of Operation	Freq. (MHz)	Quasi peak Reading (*) (dBμV/m)	Limit dBμV/m	Margin (dB)	Polarity Ver/Hor	Height (m)
RX AC/DC Adapter	30-3500	The Emissions are at least 15db below the unintentional limits.				

RX battery	30-35 00	The Emissions are at least 15db below the unintentional limits.

12 CONDUCTED EMISSIONS, AC POWER LEADS ACCORDING TO FCC 15.107 & 15.207

a. Preliminary Radiated emission Test Result According Part 15.109

E.U.T:	IDEU S/N 001
Test Method:	ANSI 63.4
Date:	22/07/03
Relative Himidity:	44%
Ambient Temprature:	25c
Air Pressure:	1027hpa

Testing Engineer: D.Lanuel **Date** 24/07/**03**

b. Test Results Summary & Conclusions

The E.U.T was found in compliance with 15.107 & 15.207

c. Limits of 15.107 & 15.207

The test unit shall meet the limits of Table 12.c for Class B equipment.

Table 12.c Limits

Frequency Range MHz	Quasi-peak Limits dBμV
0.15 – 0.50	66 to 56*
0.50 - 5	56
5 - 30	60

*Decreases with the logarithm of the frequency

d. Test Instrumentation and Equipment

Table 12.d – Test Instrumentation and Equipment

Item	Model	Manufacturer	Next Date Calibration
Spectrum Analyzer	8593E	HP	31/01/04
Signal Generator	2017	Marconi	21/06/03
LISN	FCC-LISN-3B	FISCHER	31/08/04

e. Test Results

Table 12.e Calibration Results

Lead P/N	Frequency MHz	Plot No.	Result
Neutral	0.5	Stored on the EMC lab computer	Max deviation=2db
	10		
	29		
Phase(Line 2)	0.5	Stored on the EMC lab computer	Max deviation=2db
	10		
	29		

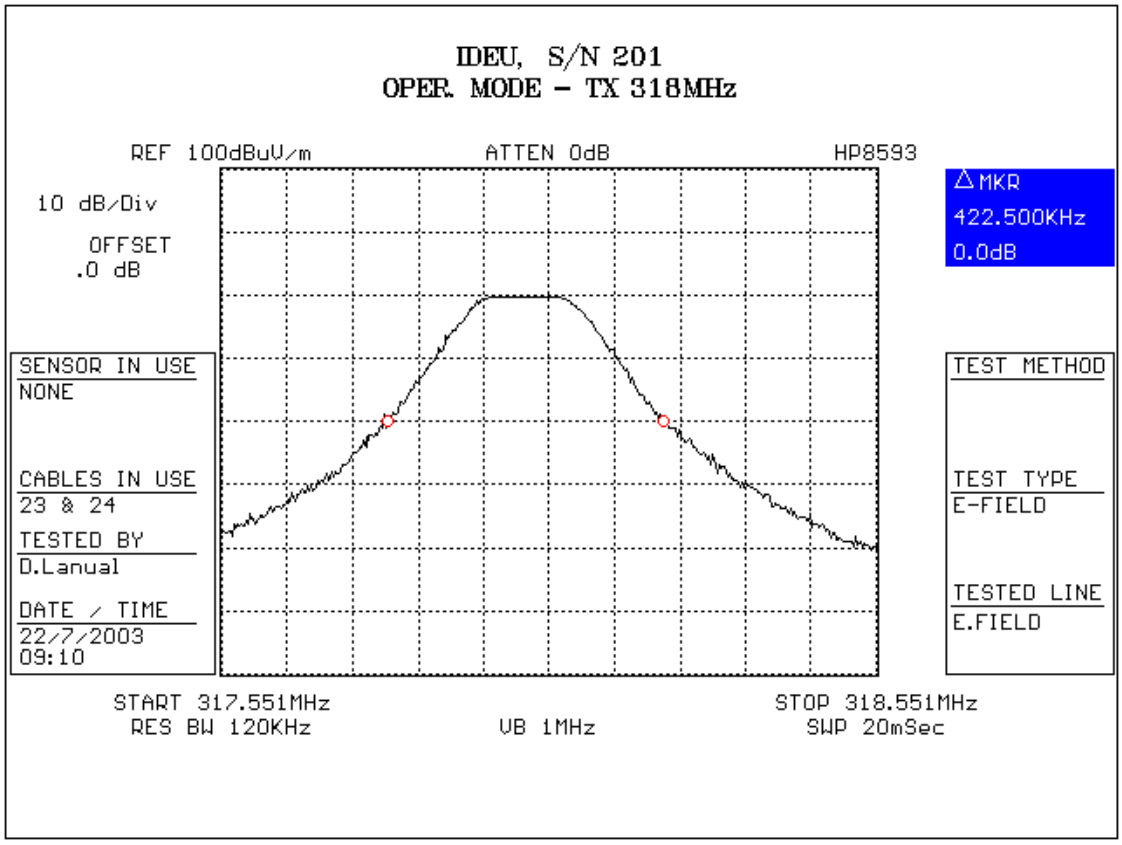
Table 12.e.1 Test Results 15.207

Lead P/N	Mode of Operation	Frequency Range (MHz)	Resolution BW (kHz)	Plot No.	PASS/FAIL
Neutral	TX	0.15 – 0.5	9	13.27	PASS
		0.5 - 30		13.28	PASS
Phase	TX	0.15 – 0.5	9	13.29	PASS
		0.5 - 30		13.30	PASS

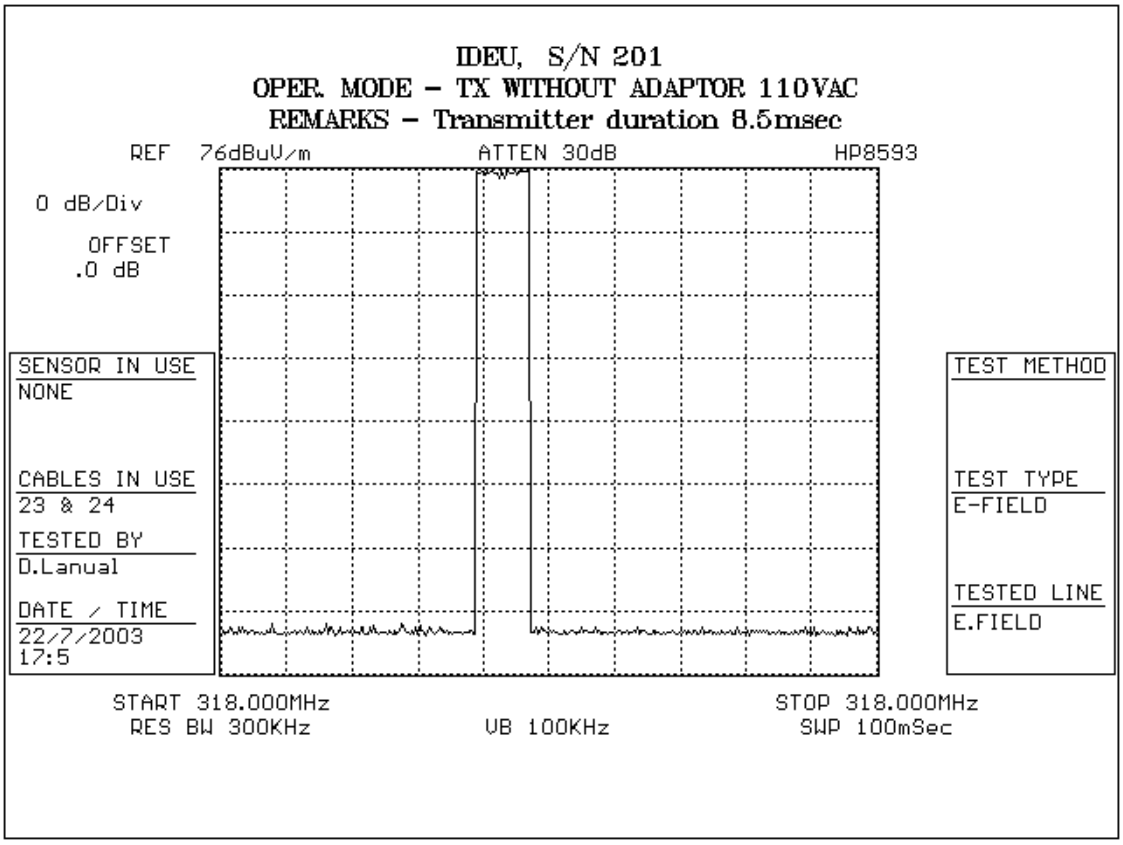
Table 12.e.2 Test Results 15.107

Lead P/N	Mode of Operation	Frequency Range (MHz)	Resolution BW (kHz)	Plot No.	PASS/FAIL
Neutral	RX	0.15 – 0.5	9	CE/ 31	PASS
		0.5 - 1		CE/ 32	PASS
Phase	RX	0.15 – 0.5	9	CE/ 33	PASS
		0.5 - 1		CE/ 34	PASS

13 PLOTS



Plot 13. 1 Bandwidth



Plot 13. 2 Duty Cycle

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

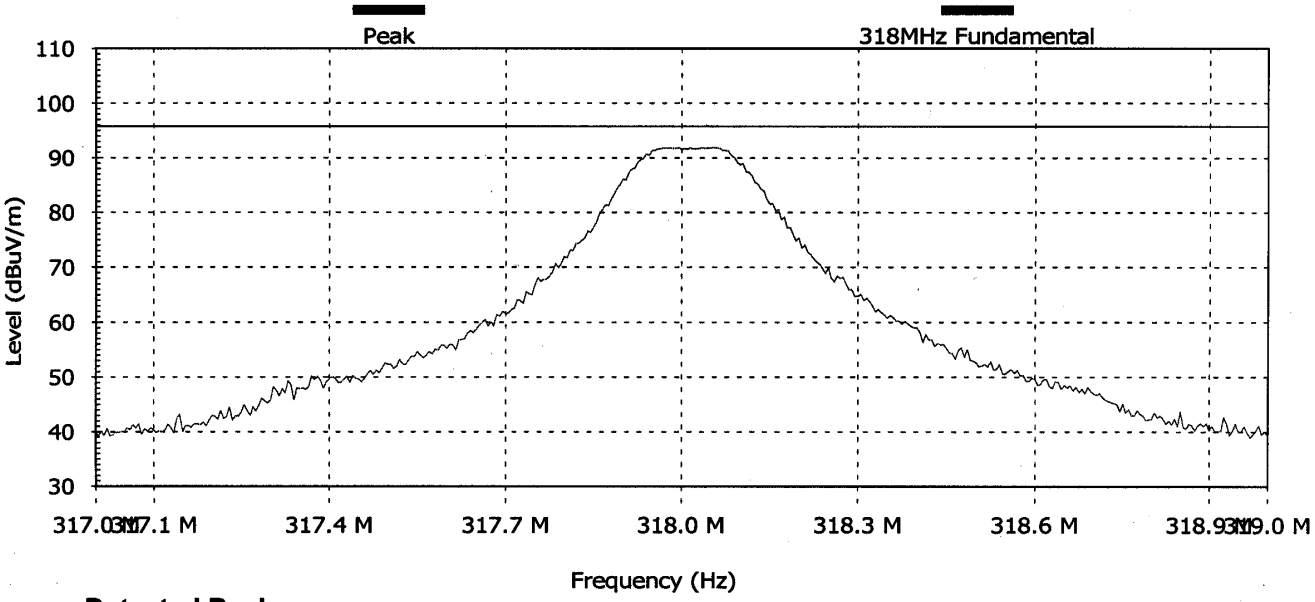
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 3) RE FCC 15.231 Carrier 318MHz
From 317 MHz to 319 MHz

Graph:



Detected Peaks:

Nr	Frequency (MHz)	Type	PK (dBuV/m)	PK Limit (dBuV/m)	PK Diff (dBuV/m)	PK Pass	Pass	Angle (degrees)	Height (m)	H/V
1	318.051	Disc. NB	92.0	95.8	-3.8	Pass	Pass	185	1	V

Settings:
Antenna: Both Polarizations at 3.0 m
Ref. Level: 110.0 dBuV/m Att: 0 dB. RBW: 120 kHz. VBW: 1000 kHz. Sweep time: 20 ms.
Detect all peaks above 10 dB below the limit lines with a maximum of 1 peaks.
Measure the peaks with the peak detector

Plot 13. 3 Field strength of fundamental Battery Mode

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

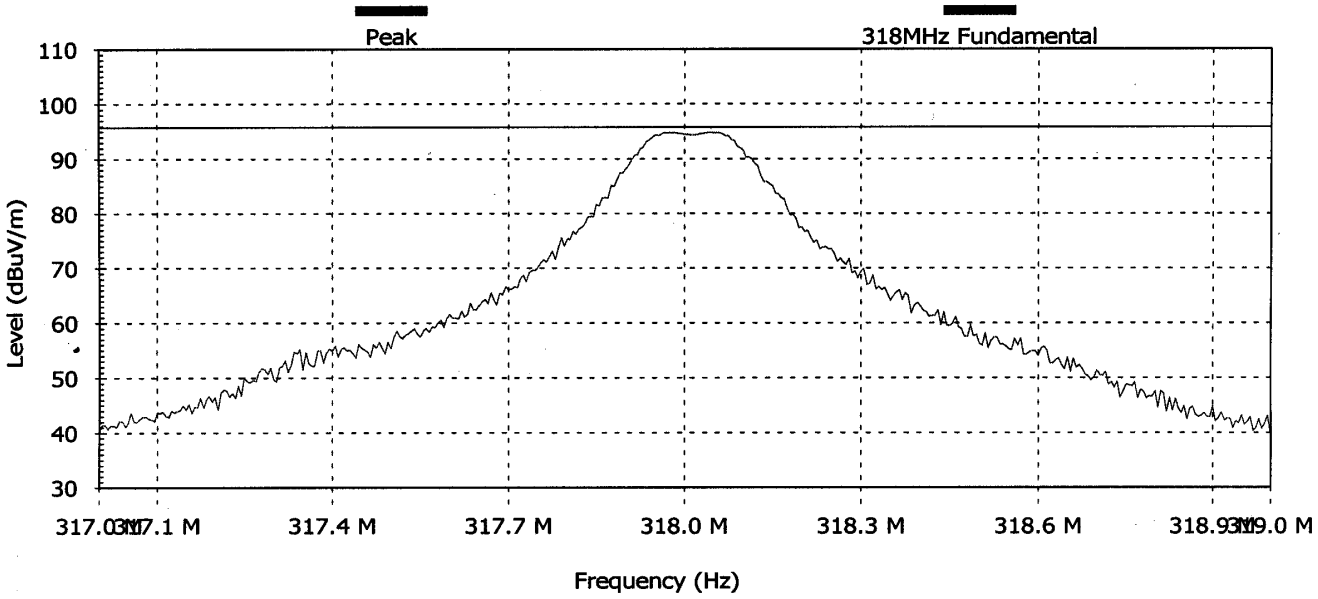
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 15) RE FCC 15.231 Carrier 318MHz
From 317 MHz to 319 MHz

Graph:

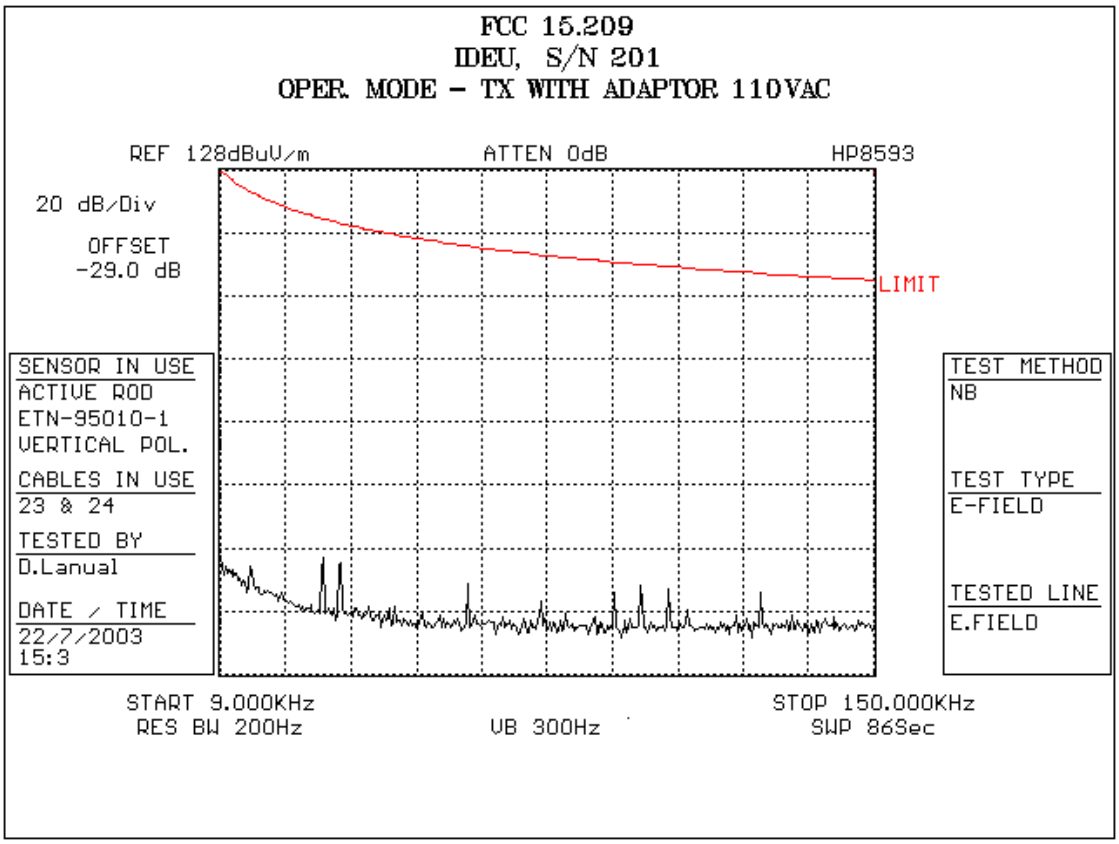


Detected Peaks:

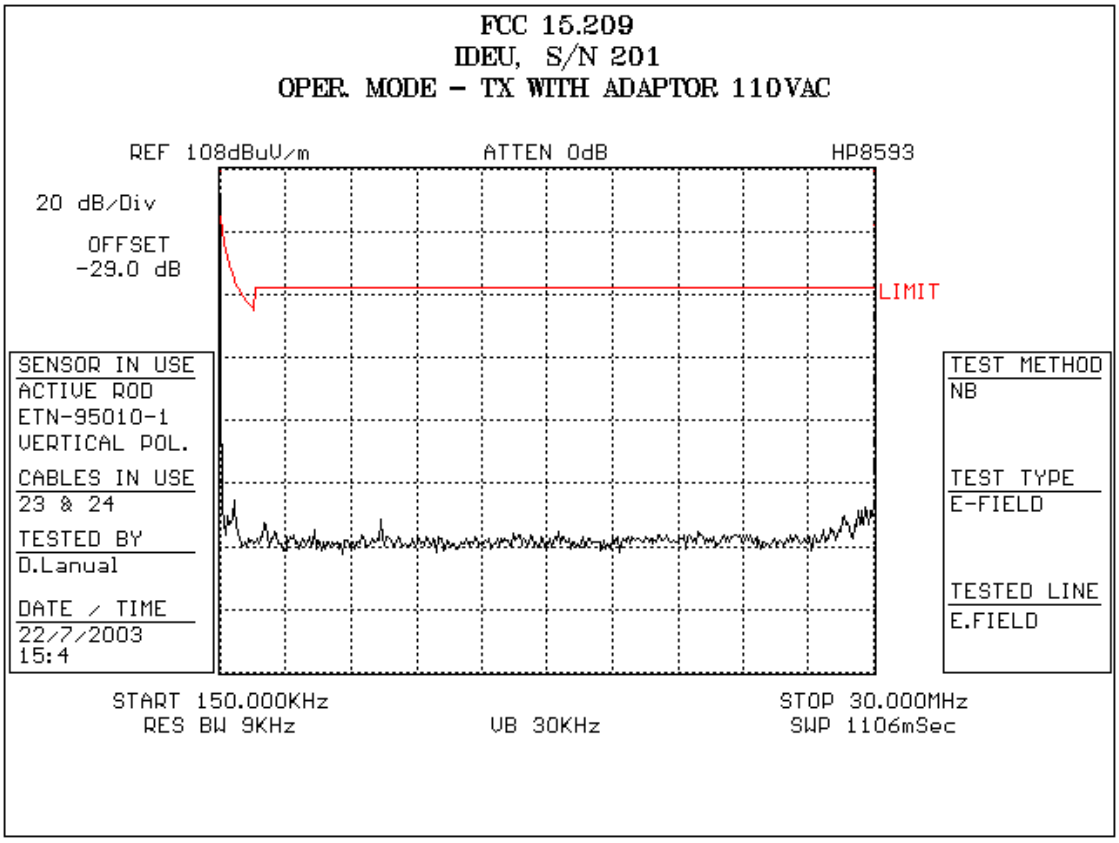
Nr	Frequency (MHz)	Type	PK (dBuV/m)	PK Limit (dBuV/m)	PK Diff (dBuV/m)	PK Pass	Pass	Angle (degrees)	Height (m)	H/V
1	318.039	Disc. NB	94.9	95.8	-0.9	Pass	Pass	95	1	V

Settings:
Antenna: Both Polarizations at 3.0 m
Ref. Level: 110.0 dBuV/m Att: 0 dB. RBW: 120 kHz. VBW: 1000 kHz. Sweep time: 20 ms.
Detect all peaks above 10 dB below the limit lines with a maximum of 1 peaks.
Measure the peaks with the peak detector

Plot 13. 4 Field strength of fundamental-DC/AC Adapter Mode



Plot 13. 5



Plot 13. 6

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

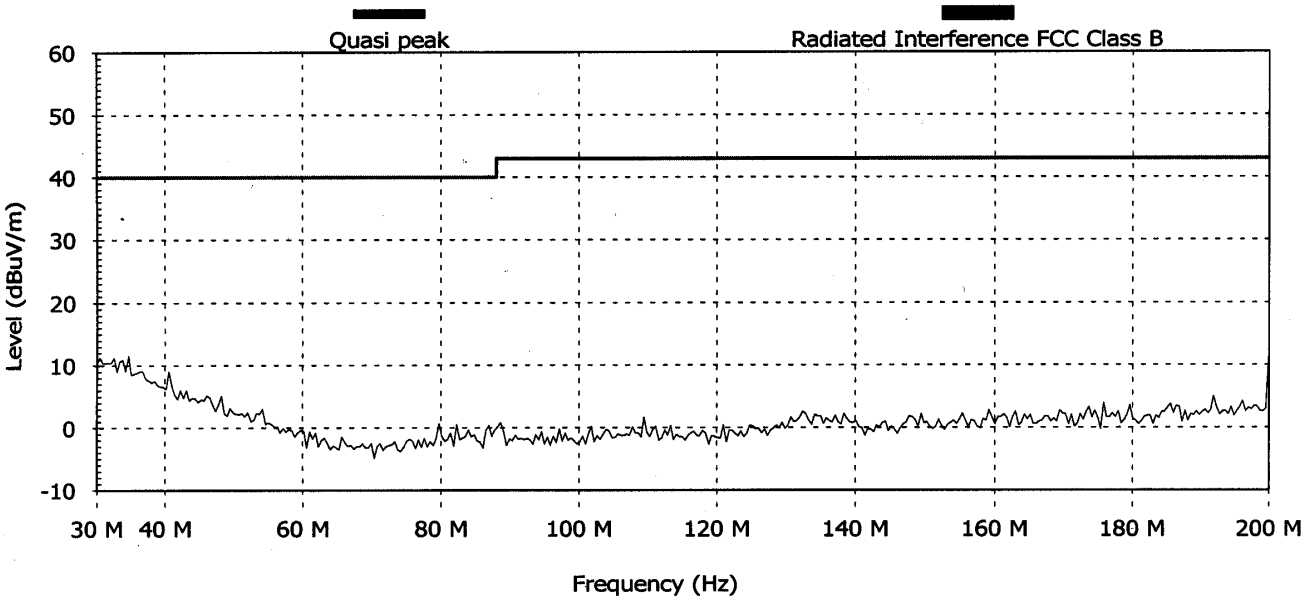
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 6) RE FCC 15.109 30-200MHz
From 30 MHz to 200 MHz

Graph:



Settings:
Antenna: Both Polarizations at 3.0 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 120 kHz. VBW: 1000 kHz. Sweep time: 35.4169998168
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.

Note:
with biconical 3m

Plot 13. 7

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

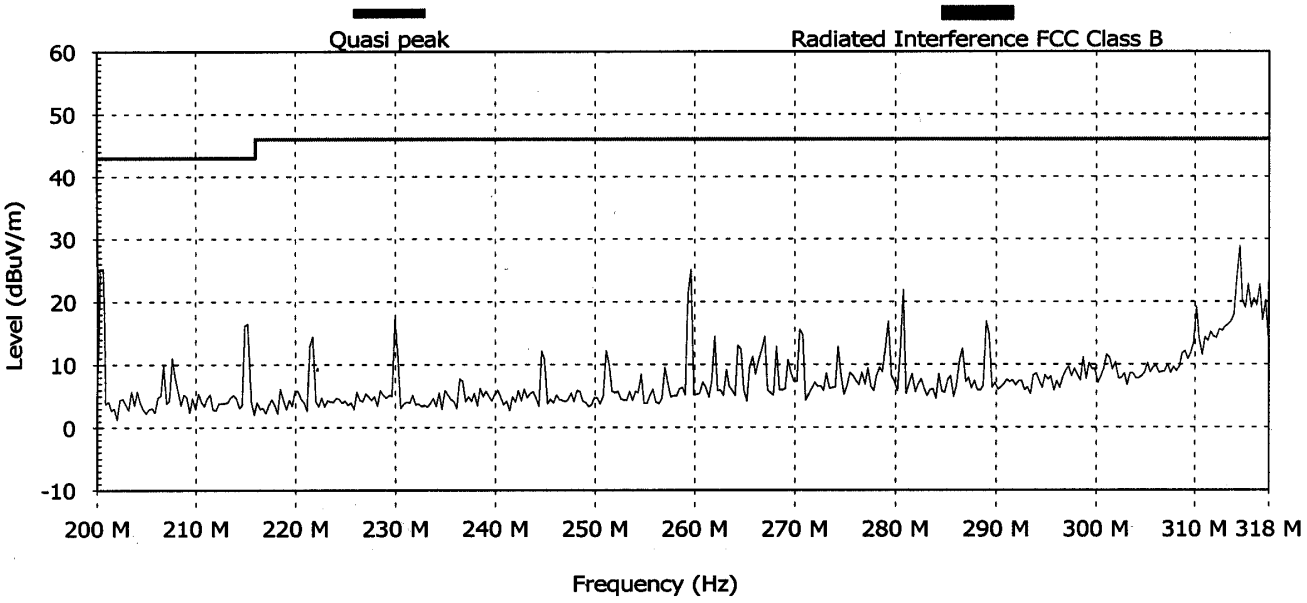
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 17) RE FCC 15.109 30-200MHz-power
From 200 MHz to 317.5 MHz

Graph:



Settings:
Antenna: Both Polarizations at 3.0 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 120 kHz. VBW: 1000 kHz. Sweep time: 24.4790000915
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.

Note:
with biconical 3m

Plot 13. 8

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

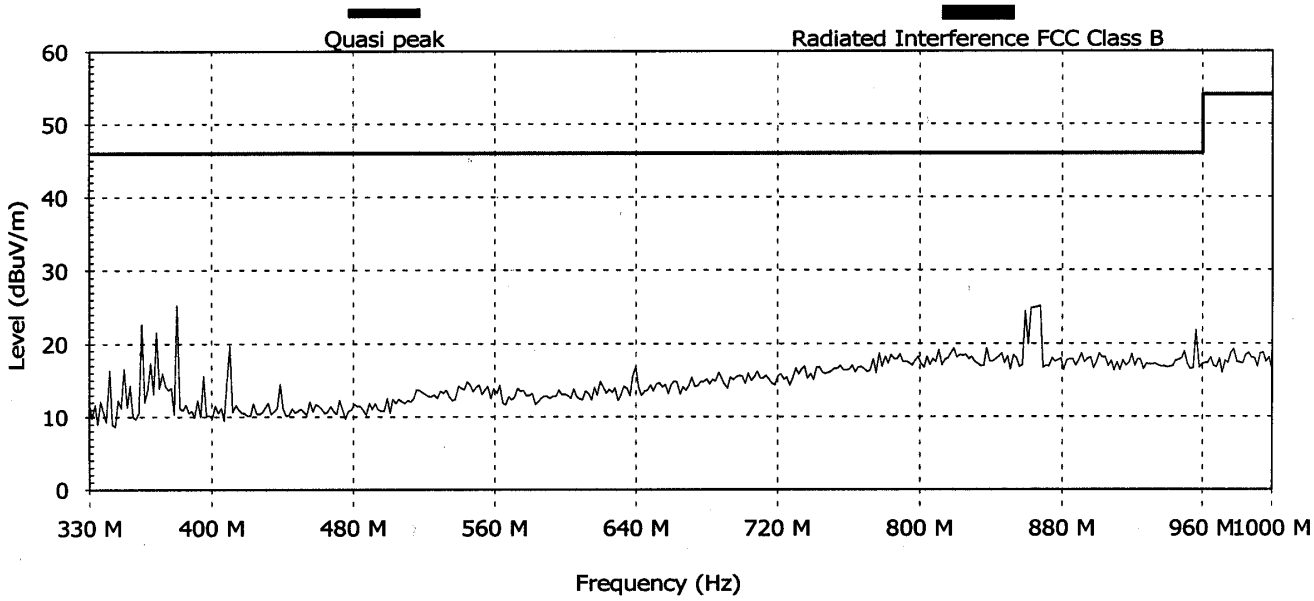
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 18) RE FCC 15.109 30-200MHz-power
From 330 MHz to 1000 MHz

Graph:



Settings:
Antenna: Both Polarizations at 3.0 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 120 kHz. VBW: 1000 kHz. Sweep time: 139.583007812
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.

Note:
with biconical 3m

Plot 13. 9

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

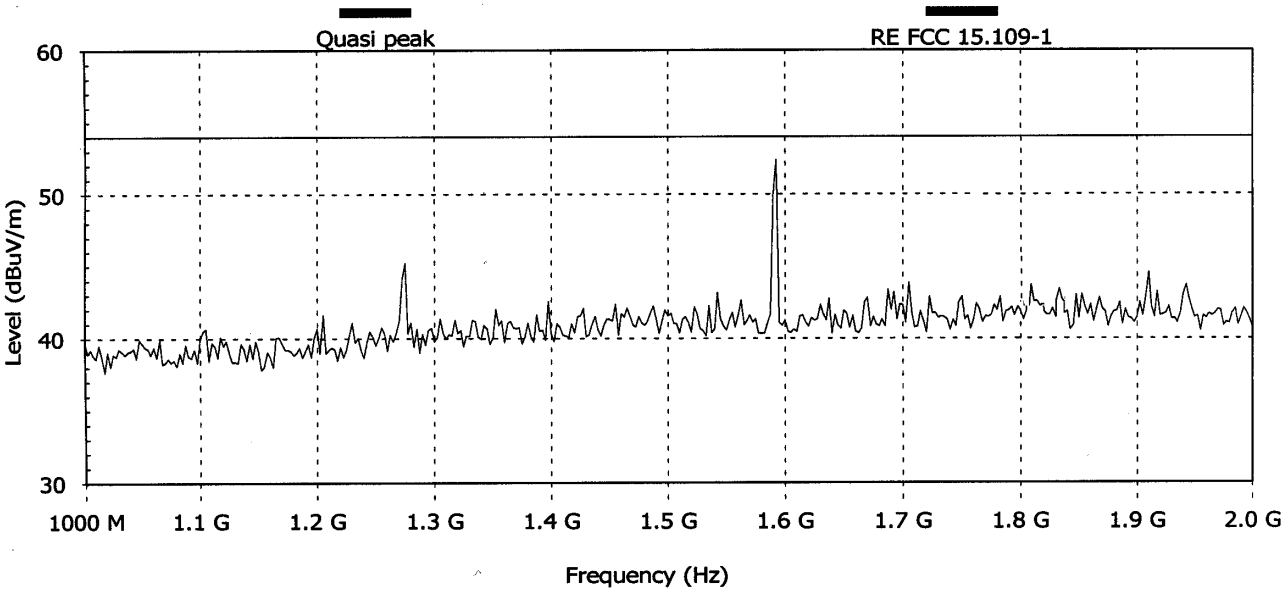
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 26) RE FCC 15.109 1000M-2000M.power
From 1000 MHz to 2000 MHz

Graph:



Detected Peaks:

Nr	Frequency (MHz)	Type	PK (dBuV/m)	Pass	Angle (degrees)	Height (m)	H/V
1	1592.5	Cont.	52.4	Pass	180	1	V

Settings:
Antenna: Both Polarizations at 3.0 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.

Plot 13. 10

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

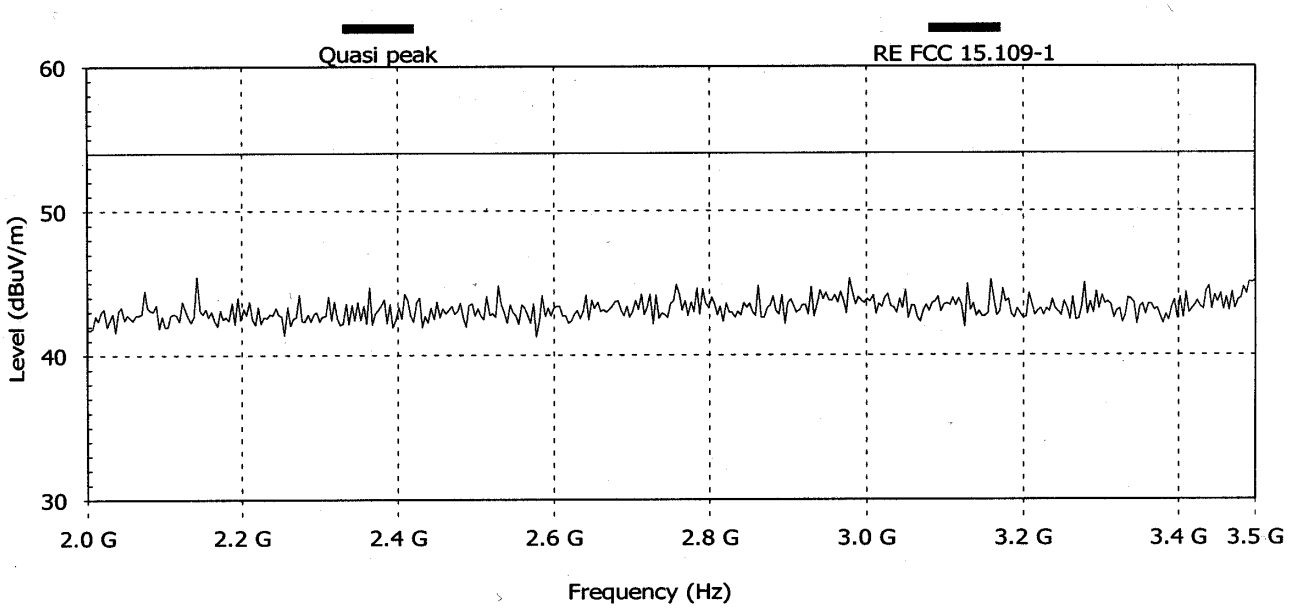
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 31) RE FCC 15.109 2000M-4000M.power TX
From 2000 MHz to 3500 MHz

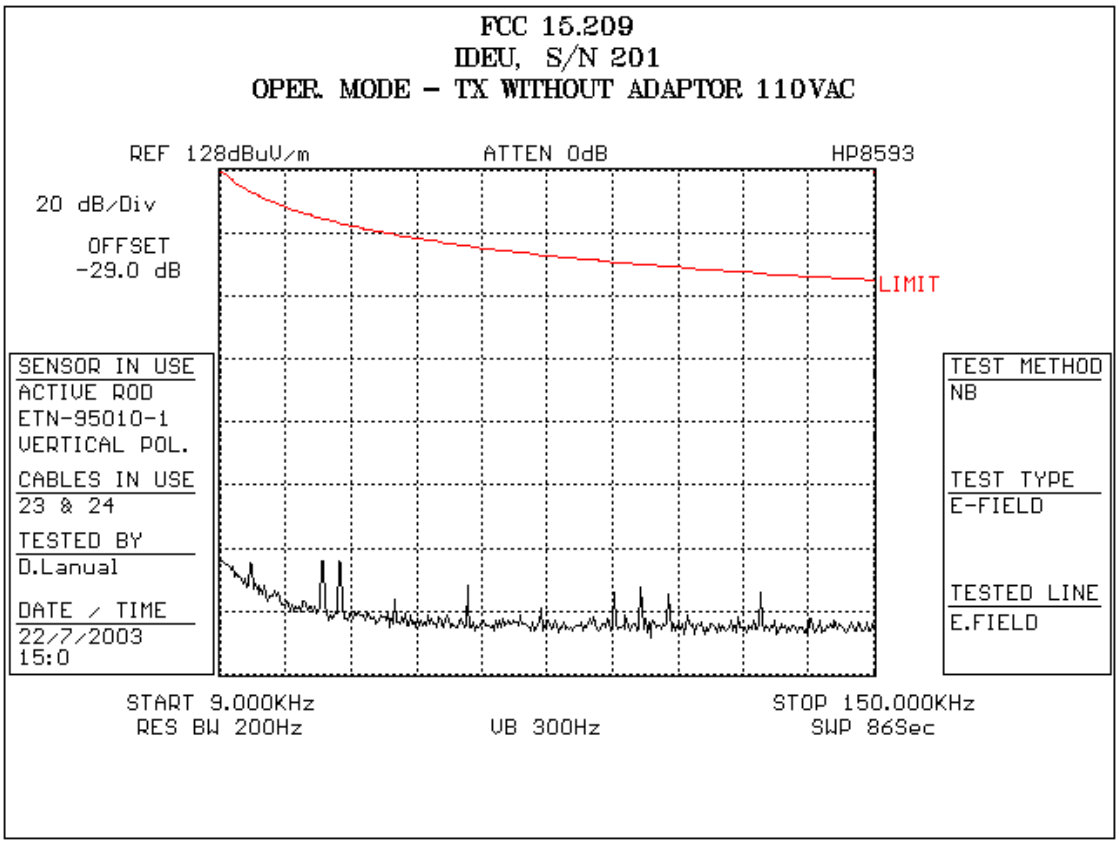
Graph:



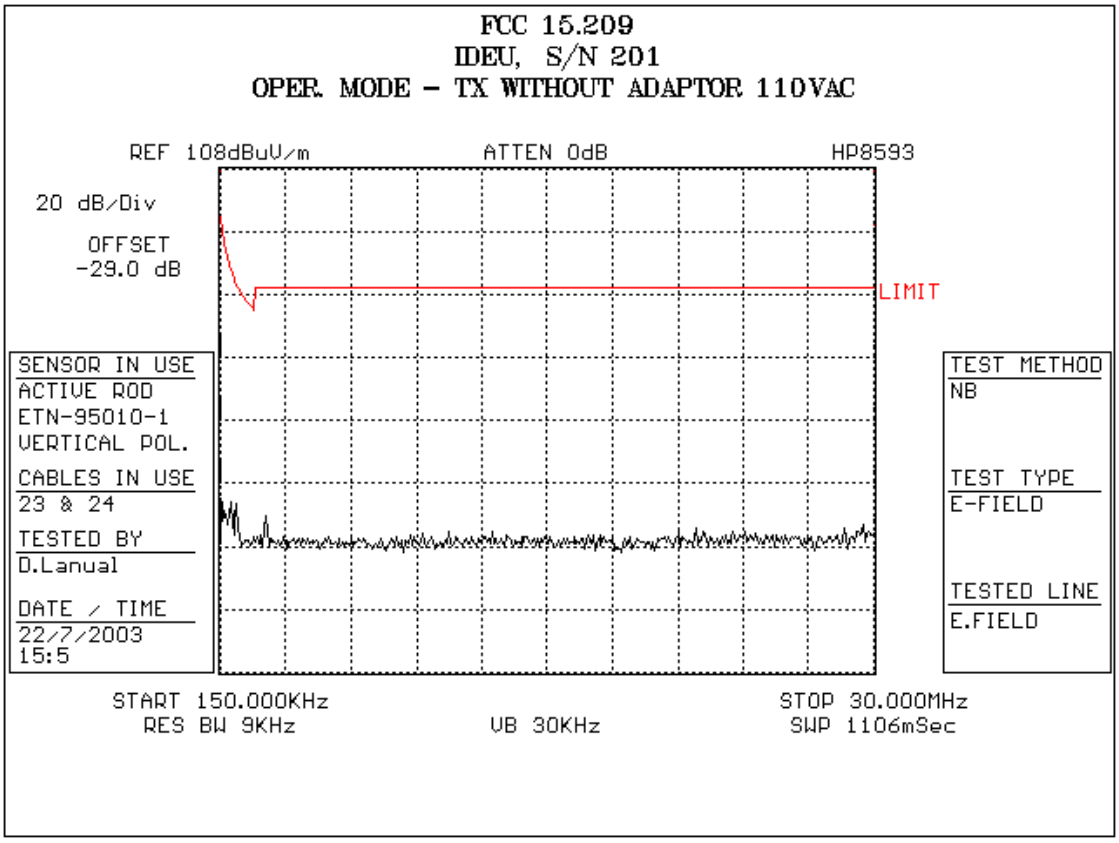
Settings:
Antenna: Both Polarizations at 3.0 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 1000 kHz. VBW: 1000 kHz. Sweep time: 20 ms.
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.

Note:
with biconical 3m

Plot 13. 11



Plot 13. 12



Plot 13. 13

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

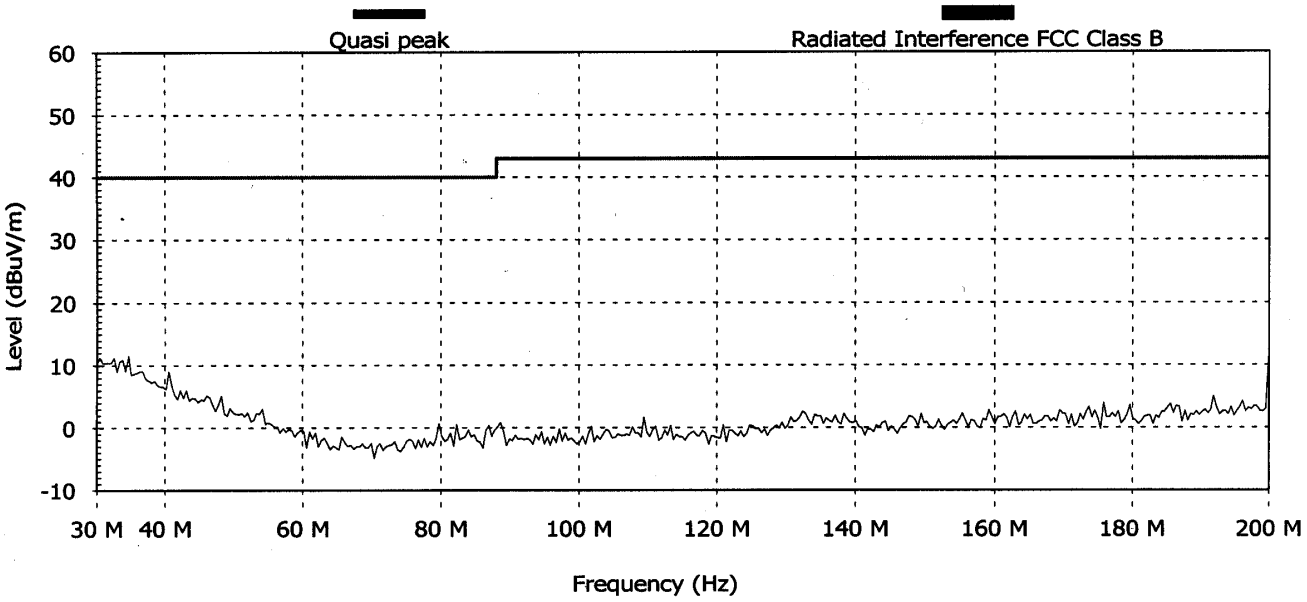
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 6) RE FCC 15.109 30-200MHz
From 30 MHz to 200 MHz

Graph:



Settings:
Antenna: Both Polarizations at 3.0 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 120 kHz. VBW: 1000 kHz. Sweep time: 35.4169998168
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.

Note:
with biconical 3m

Plot 13. 14

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

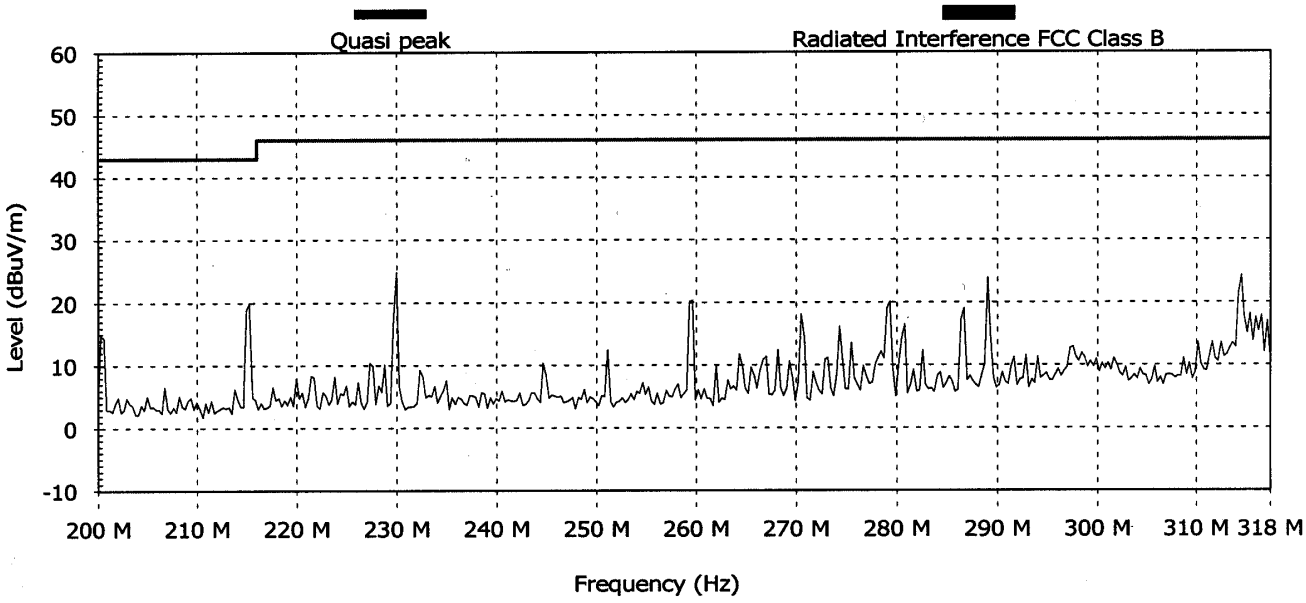
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 7) RE FCC 15.109 30-200MHz
From 200 MHz to 317.5 MHz

Graph:



Settings:
Antenna: Both Polarizations at 3.0 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 120 kHz. VBW: 1000 kHz. Sweep time: 24.4790000915
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.

Note:
with biconical 3m

Plot 13. 15

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

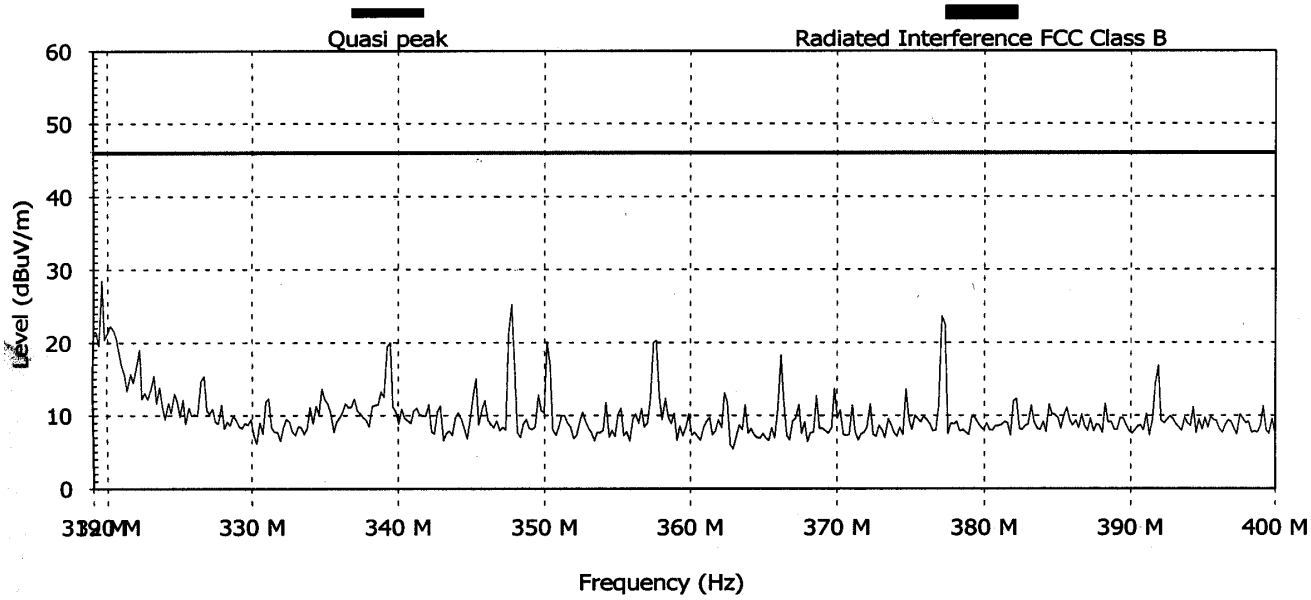
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 8) RE FCC 15.109 30-200MHz
From 319 MHz to 400 MHz

Graph:



Settings:
Antenna: Both Polarizations at 3.0 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.

Note:
with biconical 3m

Plot 13. 16

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

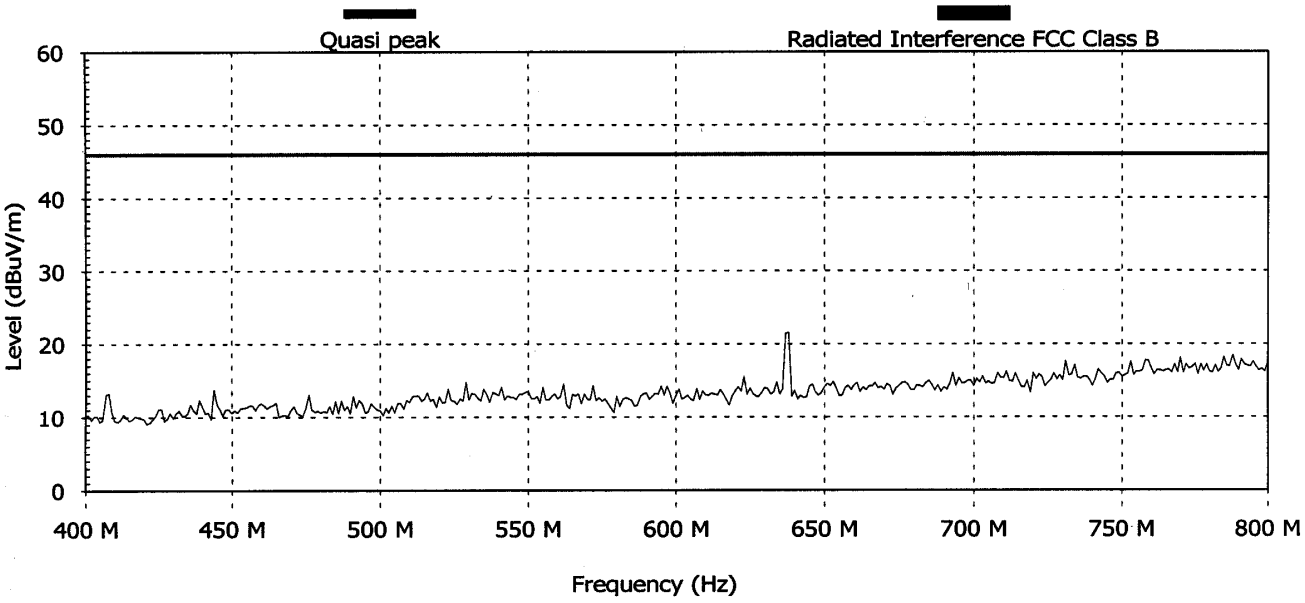
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 9) RE FCC 15.109 30-200MHz
From 400 MHz to 800 MHz

Graph:



Settings:
Antenna: Both Polarizations at 3.0 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 120 kHz. VBW: 1000 kHz. Sweep time: 83.3330001831
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.

Note:
with biconical 3m

Plot 13. 17

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

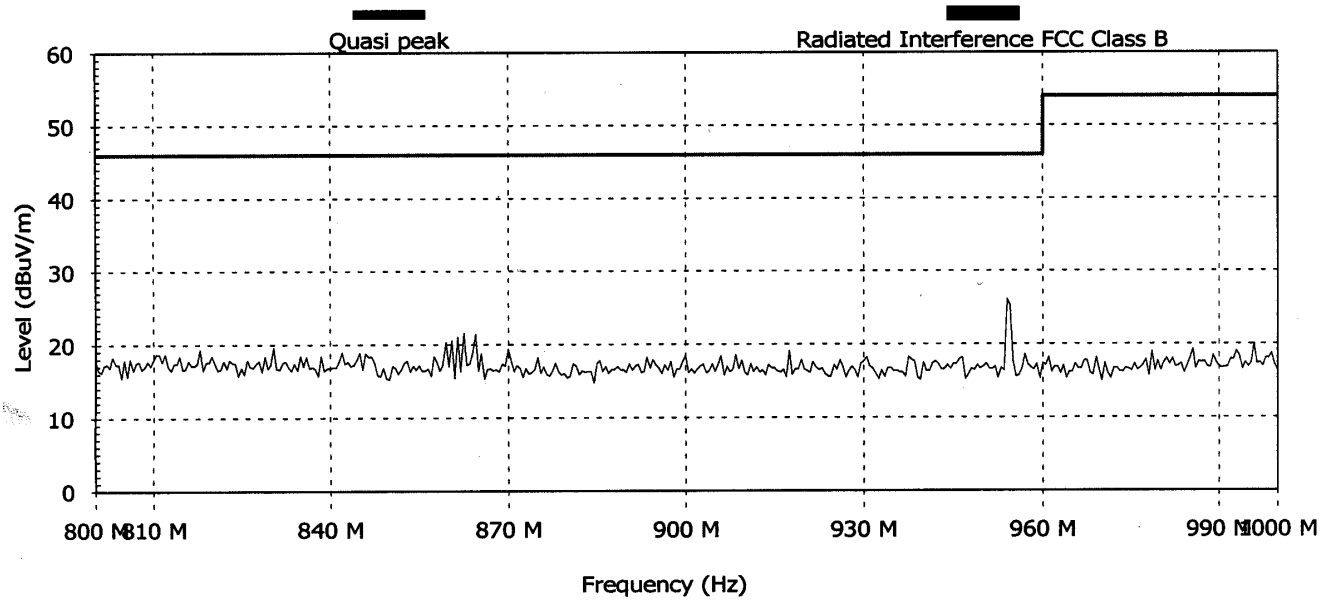
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 10) RE FCC 15.109 30-200MHz
From 800 MHz to 1000 MHz

Graph:



Settings:
Antenna: Both Polarizations at 3.0 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 120 kHz. VBW: 1000 kHz. Sweep time: 41.6669998168
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.

Note:
with biconical 3m

Plot 13. 18

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

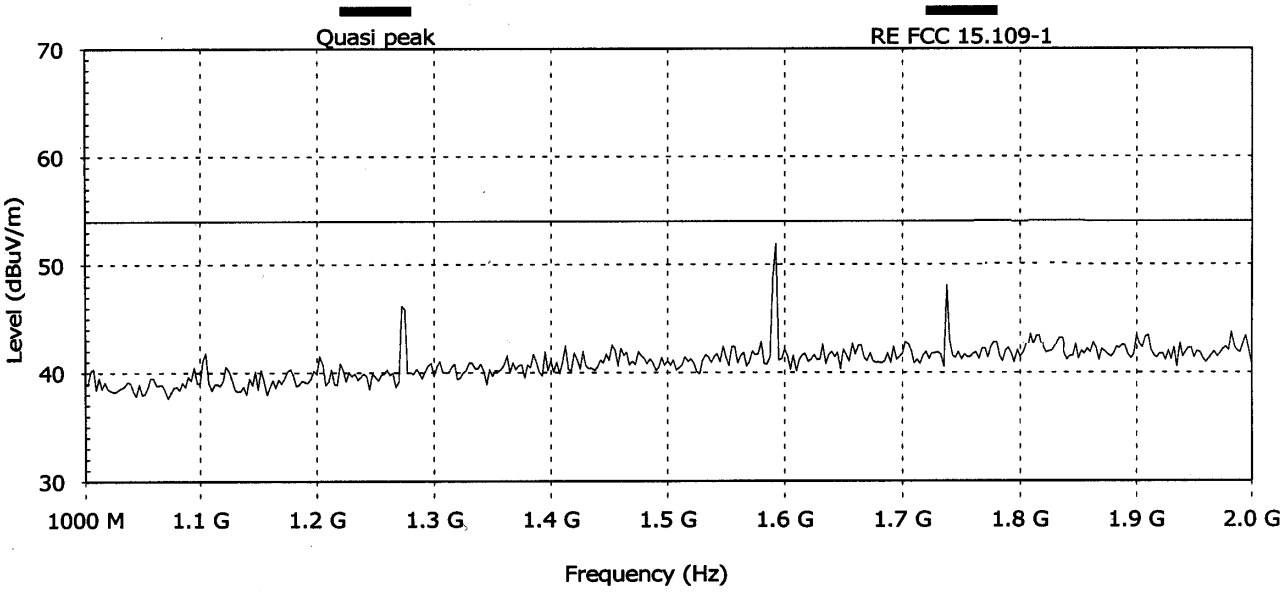
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 25) RE FCC 15.109 1000M-2000M
From 1000 MHz to 2000 MHz

Graph:



Detected Peaks:

Nr	Frequency (MHz)	Type	PK (dBuV/m)	Pass	Angle (degrees)	Height (m)	H/V
1	1592.5	Cont.	51.9	Pass	0	1	V
2	1737.5	Disc.	48.1	Pass	180	1	V

Settings:
Antenna: Both Polarizations at 3.0 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.

Plot 13. 19

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

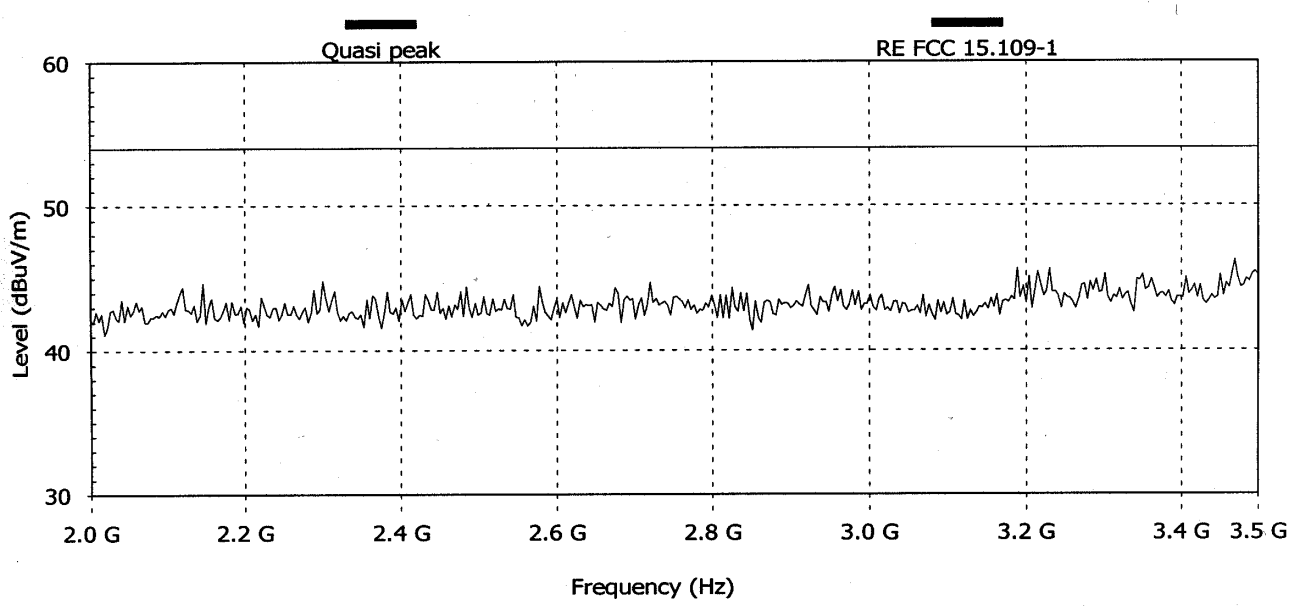
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 32) RE FCC 15.109 2000M-4000M. TX
From 2000 MHz to 3500 MHz

Graph:



Settings:
Antenna: Both Polarizations at 3.0 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.

Note:
with biconical 3m

Plot 13. 20

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

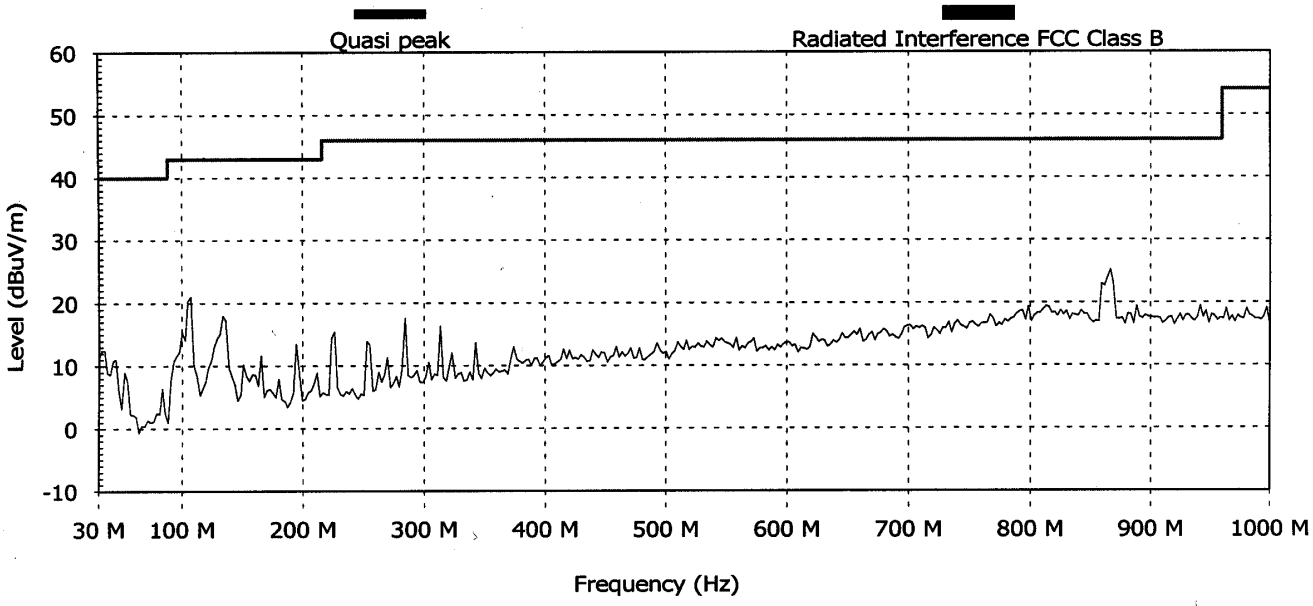
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 19) RE FCC 15.109 30-200MHz-RX power
From 30 MHz to 1000 MHz

Graph:



Settings:
Antenna: Both Polarizations at 3.0 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 120 kHz. VBW: 1000 kHz. Sweep time: 202.083007812
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.

Note:
with biconical 3m

Plot 13. 21

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

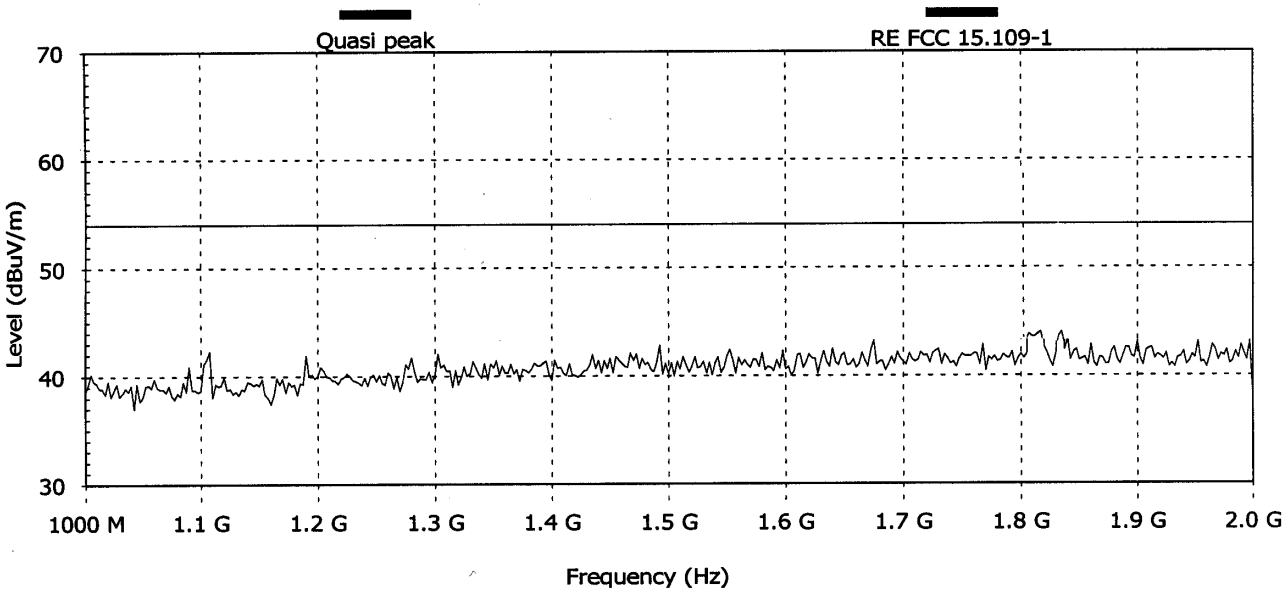
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 27) RE FCC 15.109 1000M-2000M.RX power
From 1000 MHz to 2000 MHz

Graph:



Settings:
Antenna: Both Polarizations at 3.0 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.

Plot 13. 22

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

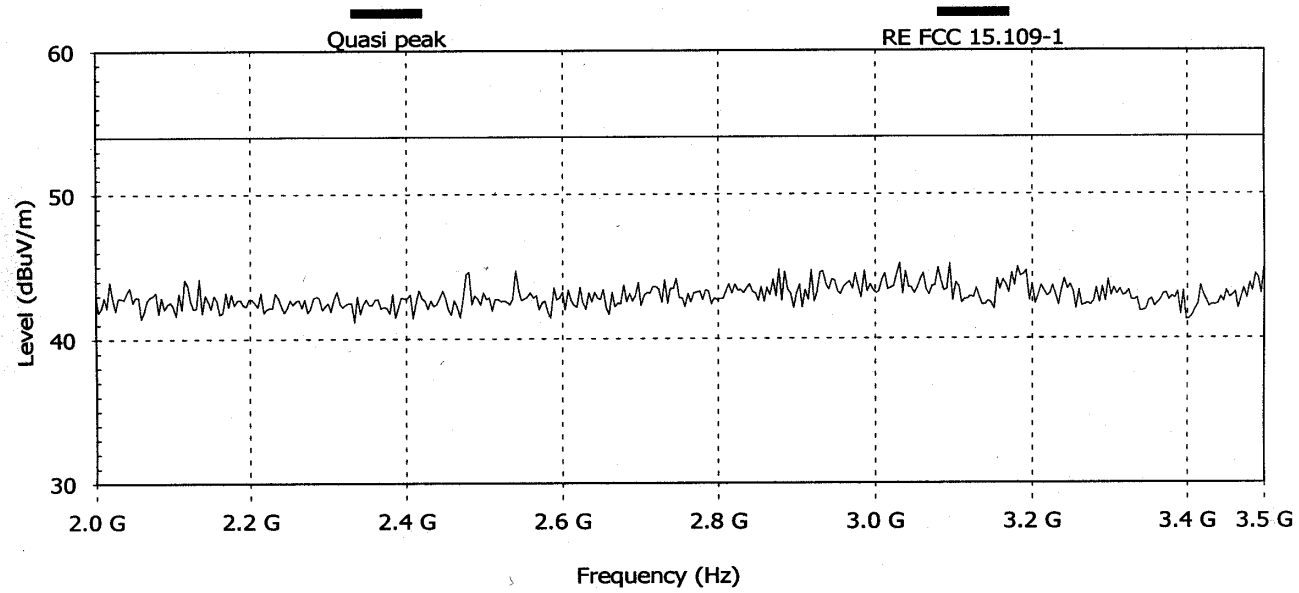
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 30) RE FCC 15.109 2000M-4000M.power RX
From 2000 MHz to 3500 MHz

Graph:



Settings:
Antenna: Both Polarizations at 3.0 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.

Note:
with biconical 3m

Plot 13. 23

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

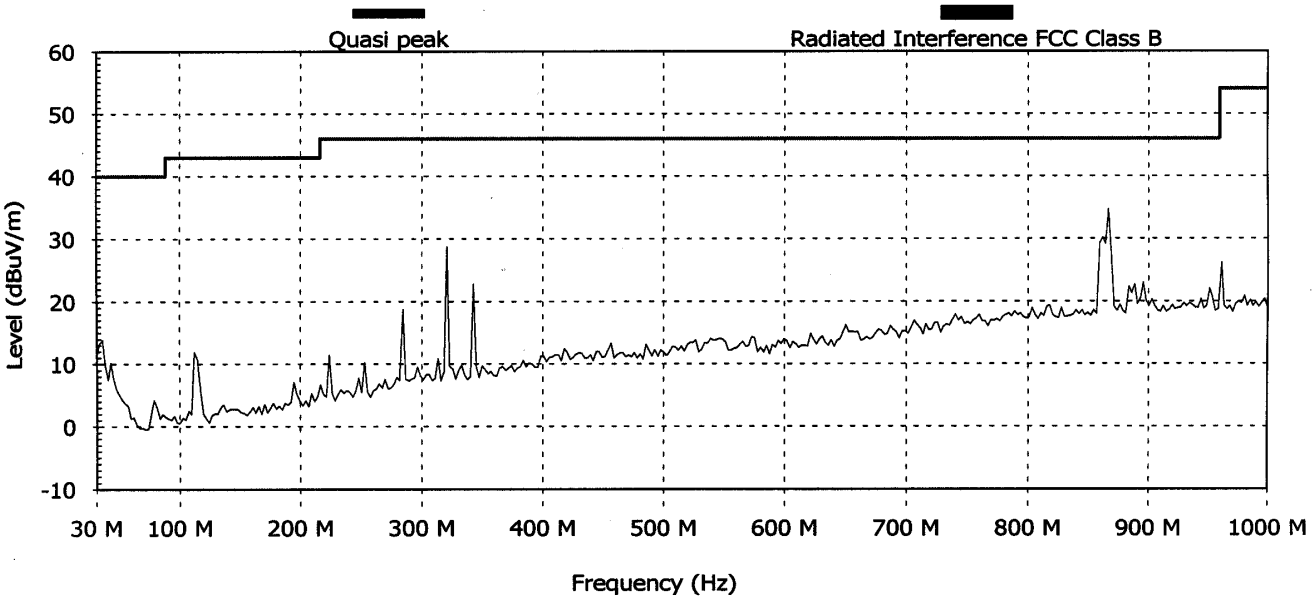
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 12) RE FCC 15.109 30-200MHz-RX
From 30 MHz to 1000 MHz

Graph:



Settings:
Antenna: Both Polarizations at 3.0 m
Ref. Level: 70.0 dBuV/m Att: 0 dB. RBW: 120 kHz. VBW: 1000 kHz. Sweep time: 202.083007812
Detect all peaks above 6 dB below the limit lines with a maximum of 6 peaks.

Note:
with biconical 3m

Plot 13. 24

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

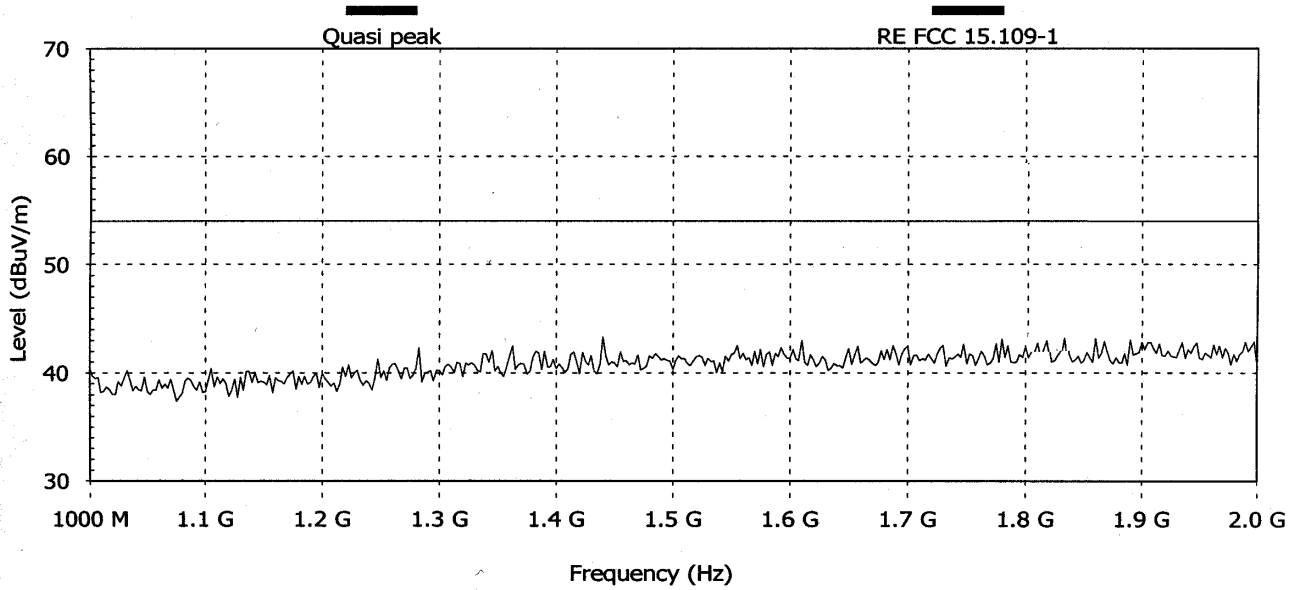
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 28) RE FCC 15.109 1000M-2000M.RX
From 1000 MHz to 2000 MHz

Graph:



Detected Peaks:

Nr	Frequency (MHz)	Type	PK (dBuV/m)	Pass	Angle (degrees)	Height (m)	H/V
1	1812.5	Cont.	54.5	Pass	180	1	V
2	1835	Cont.	56.5	Pass	180	1	H

Settings:
Antenna: Both Polarizations at 3.0 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.

Note:
with biconical 3m

Plot 13. 25

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

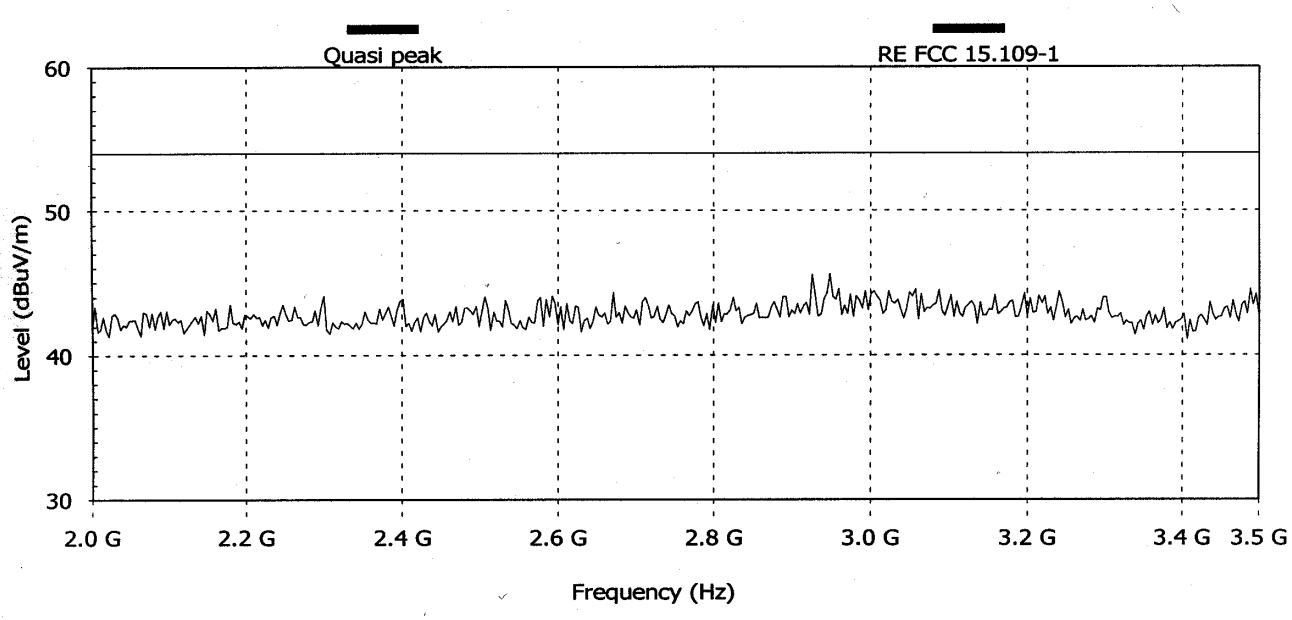
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Radiated Emission

Description: 29) RE FCC 15.109 2000M-4000M.RX
From 2000 MHz to 3500 MHz

Graph:



Settings:
Antenna: Both Polarizations at 3.0 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.

Note:
with biconical 3m

Plot 13. 26

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

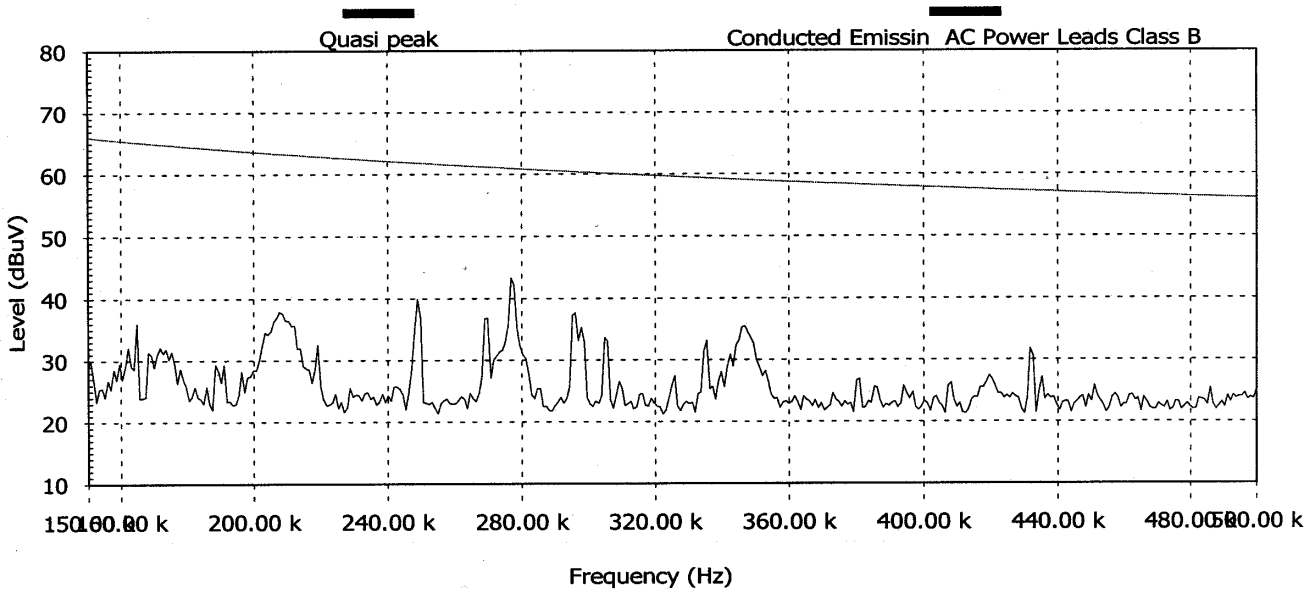
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Conducted Emission LISN

Description: 40) CE FCC CLASS B
From 150 kHz to 500 kHz

Graph:



Settings:
Ref. Level: 80.0 dBuV Att: 0 dB. RBW: 9 kHz. VBW: 1000 kHz. Sweep time: 33.3330001831055 "
Detect all peaks above 10 dB, below the limit lines with a maximum of 6 peaks.
Measure the peaks with the quasi-peak detector

Note:
TX Mode

Plot 13. 27

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

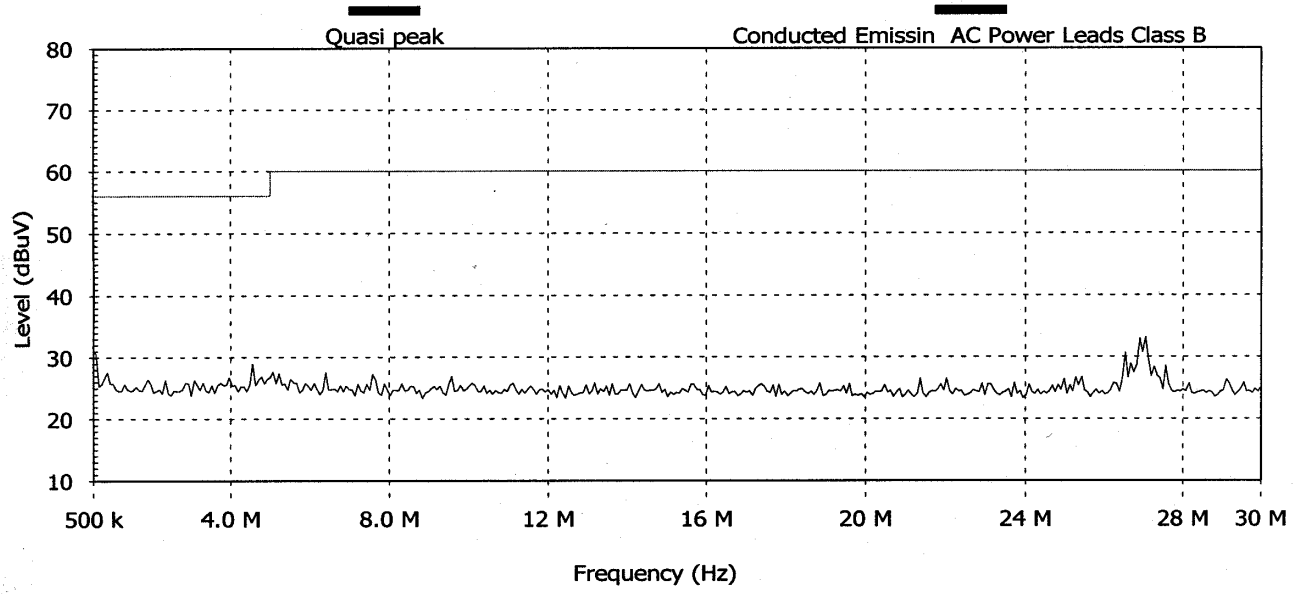
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Conducted Emission LISN

Description: 39) CE FCC CLASS B
From 500 kHz to 30 MHz

Graph:



Settings:
Ref. Level: 80.0 dBuV Att: 0 dB. RBW: 9 kHz. VBW: 1000 kHz. Sweep time: 1092.59289550781 "
Detect all peaks above 10 dB, below the limit lines with a maximum of 6 peaks.
Measure the peaks with the quasi-peak detector

Note:
TX Mode

Plot 13. 28

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

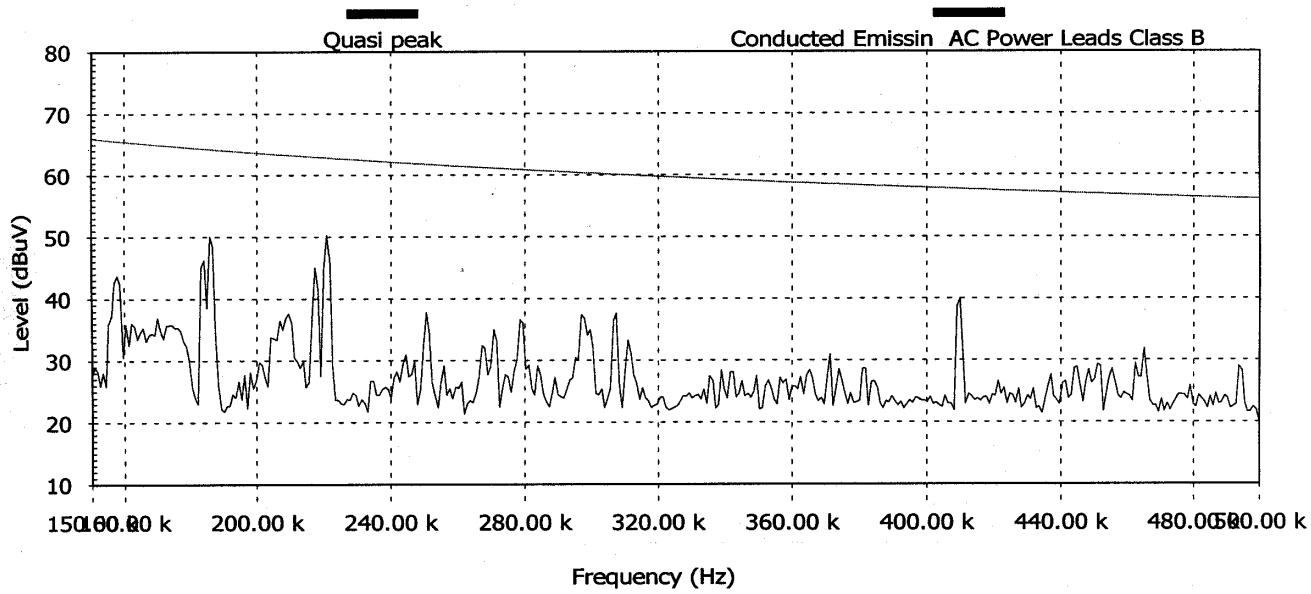
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Conducted Emission LISN

Description: 41) CE FCC CLASS B
From 150 kHz to 500 kHz

Graph:



Settings:
Ref. Level: 80.0 dBuV Att: 0 dB. RBW: 9 kHz. VBW: 1000 kHz. Sweep time: 33.3330001831055 "
Detect all peaks above 10 dB, below the limit lines with a maximum of 6 peaks.
Measure the peaks with the quasi-peak detector

Note:
TX Mode

Plot 13. 29

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

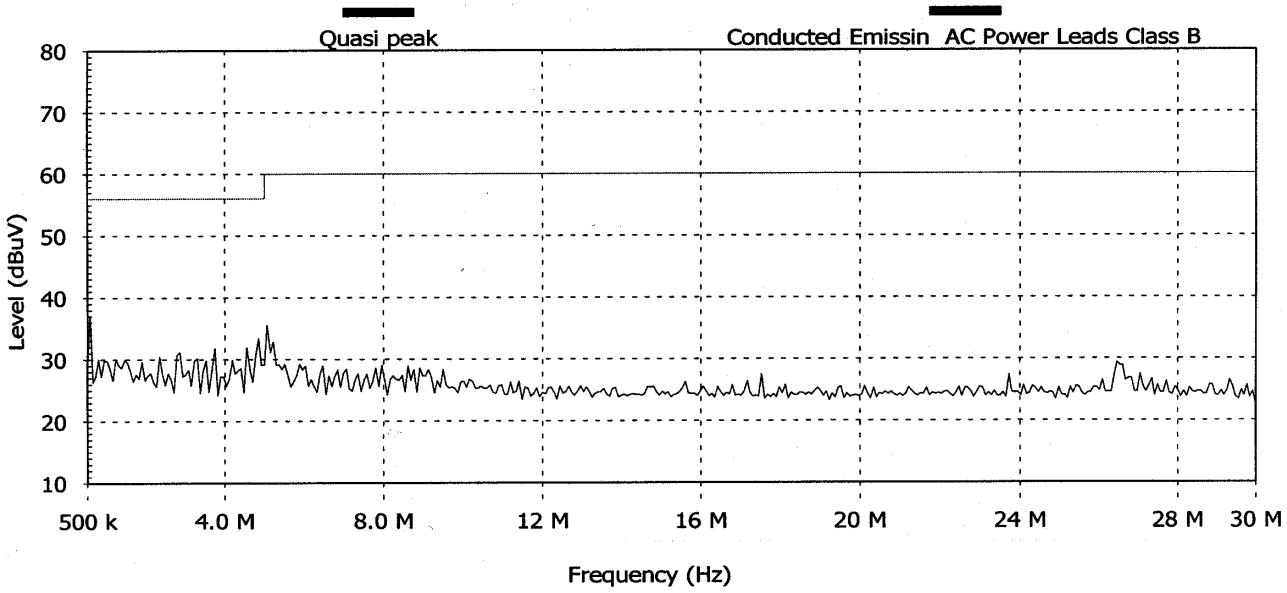
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Conducted Emission LISN

Description: 42) CE FCC CLASS B
From 500 kHz to 30 MHz

Graph:



Settings:
Ref. Level: 80.0 dBuV Att: 0 dB. RBW: 9 kHz. VBW: 1000 kHz. Sweep time: 1092.59289550781 "
Detect all peaks above 10 dB, below the limit lines with a maximum of 6 peaks.
Measure the peaks with the quasi-peak detector

Note:
TX Mode

Plot 13. 30

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

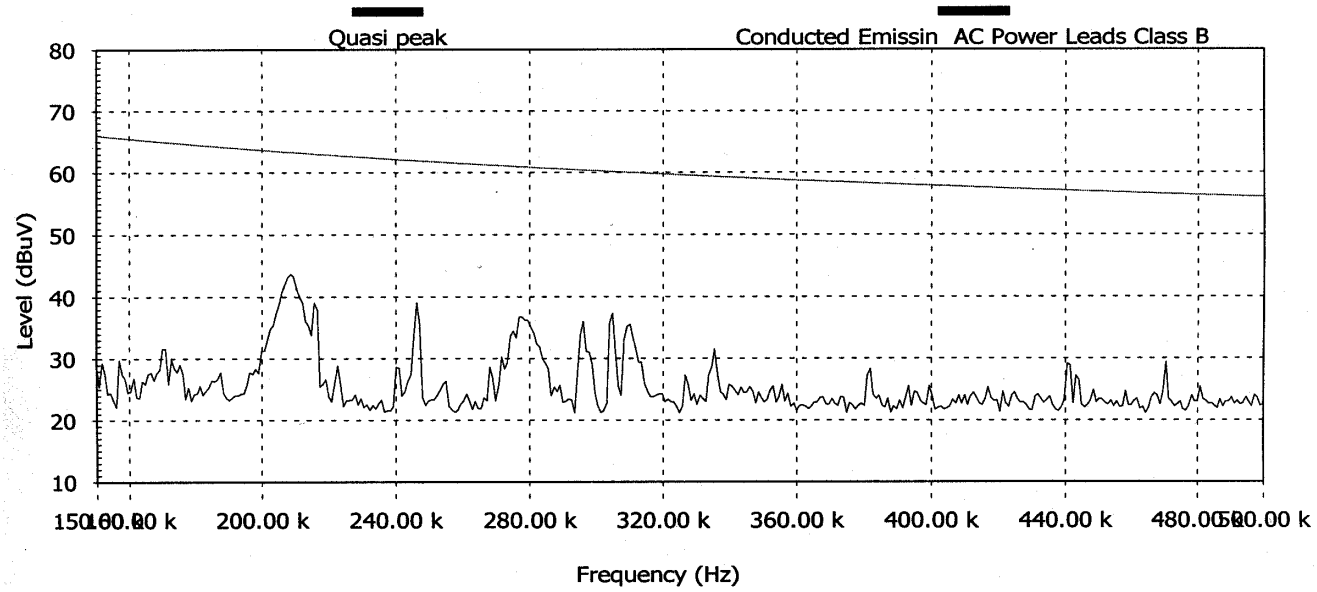
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Conducted Emission LISN

Description: 37) CE FCC CLASS B
From 150 kHz to 500 kHz

Graph:



Settings:
Ref. Level: 80.0 dBuV Att: 0 dB. RBW: 9 kHz. VBW: 1000 kHz. Sweep time: 33.3330001831055 "
Detect all peaks above 10 dB, below the limit lines with a maximum of 6 peaks.
Measure the peaks with the quasi-peak detector

Note:
RX Mode

Plot 13. 31

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

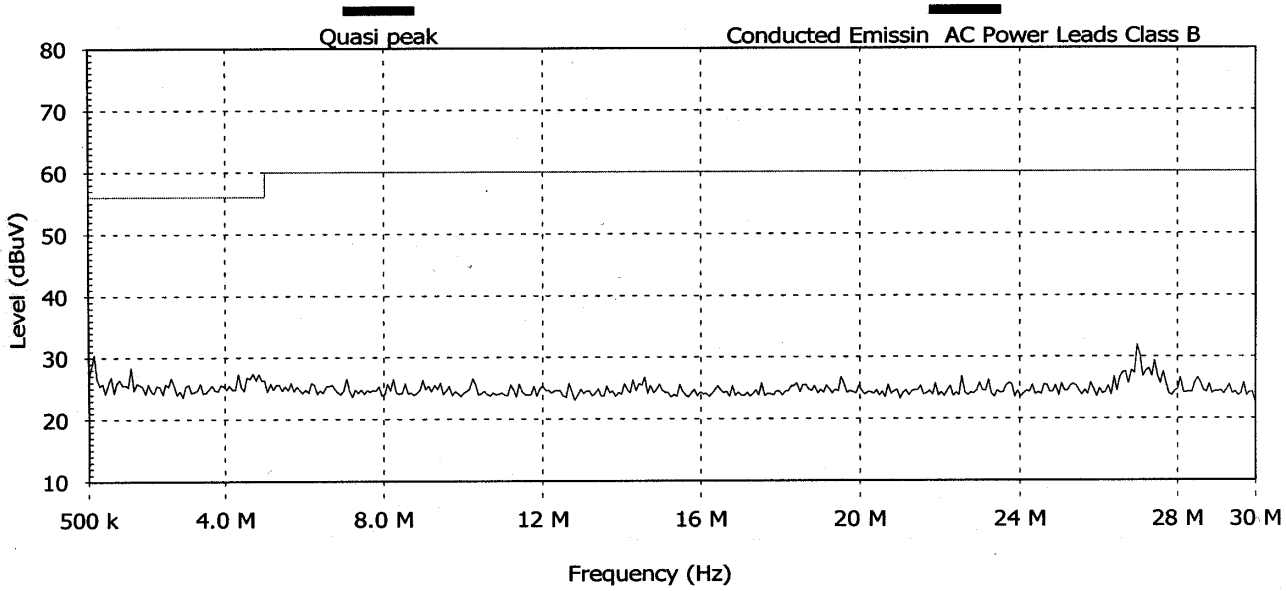
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Conducted Emission LISN

Description: 38) CE FCC CLASS B
From 500 kHz to 30 MHz

Graph:



Settings:
Ref. Level: 80.0 dBuV Att: 0 dB. RBW: 9 kHz. VBW: 1000 kHz. Sweep time: 1092.59289550781 "
Detect all peaks above 10 dB, below the limit lines with a maximum of 6 peaks.
Measure the peaks with the quasi-peak detector

Note:
RX Mode

Plot 13. 32

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

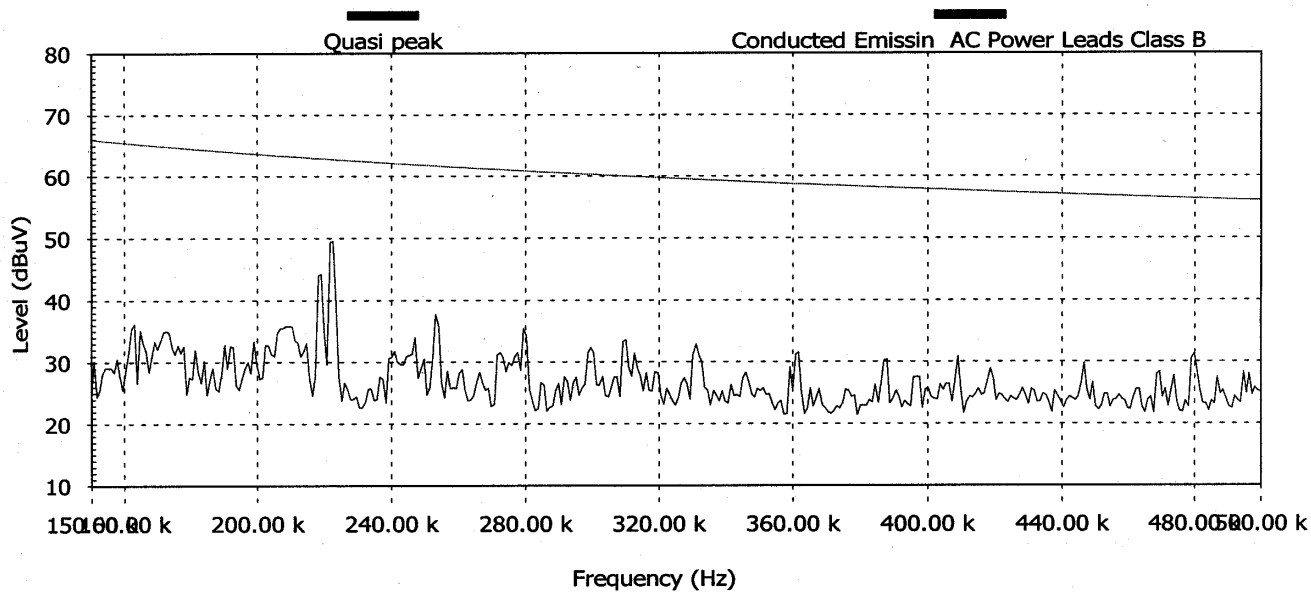
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Conducted Emission LISN

Description: 44) CE FCC CLASS B
From 150 kHz to 500 kHz

Graph:



Settings:
Ref. Level: 80.0 dBuV Att: 0 dB. RBW: 9 kHz. VBW: 1000 kHz. Sweep time: 33.3330001831055 "
Detect all peaks above 10 dB, below the limit lines with a maximum of 6 peaks.
Measure the peaks with the quasi-peak detector

Note:
RX Mode

Plot 13. 33

EUT File:
S:\EMC_LAB\common\DAMATEC\IDEU\Data\Ideu.eut
Order Number:

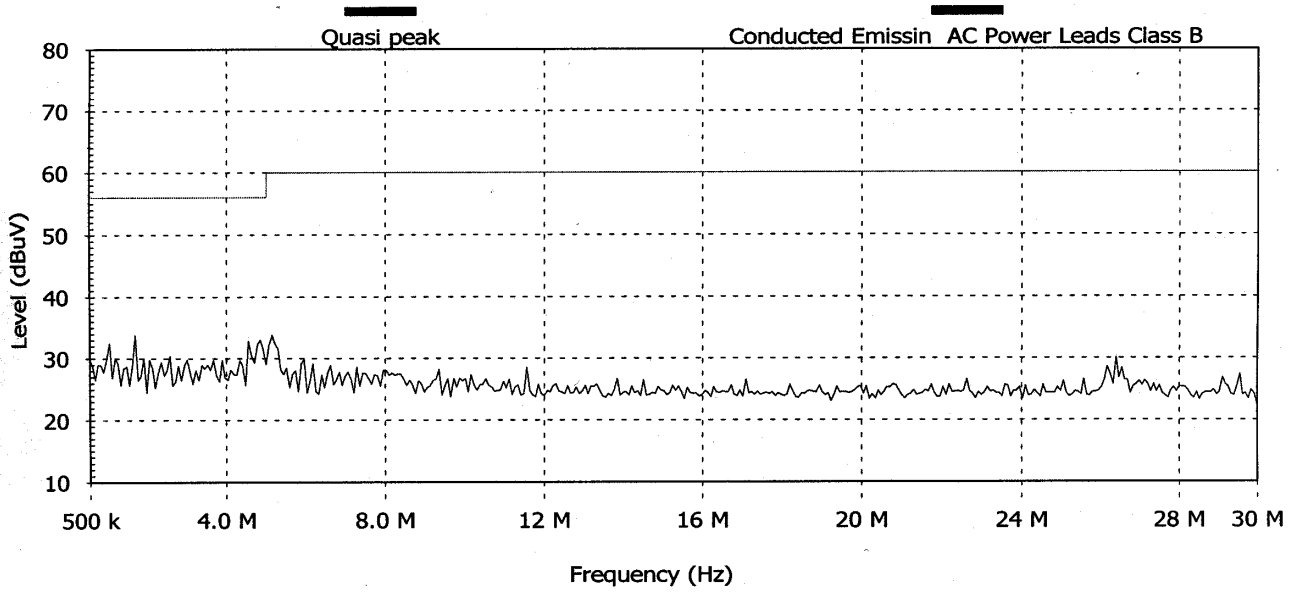
EUT
Name:
Serial Number:

Client
Name:
Contact Person:

Conducted Emission LISN

Description: 43) CE FCC CLASS B
From 500 kHz to 30 MHz

Graph:



Settings:
Ref. Level: 80.0 dBuV Att: 0 dB. RBW: 9 kHz. VBW: 1000 kHz. Sweep time: 1092.59289550781 "
Detect all peaks above 10 dB, below the limit lines with a maximum of 6 peaks.
Measure the peaks with the quasi-peak detector

Note:
RX Mode

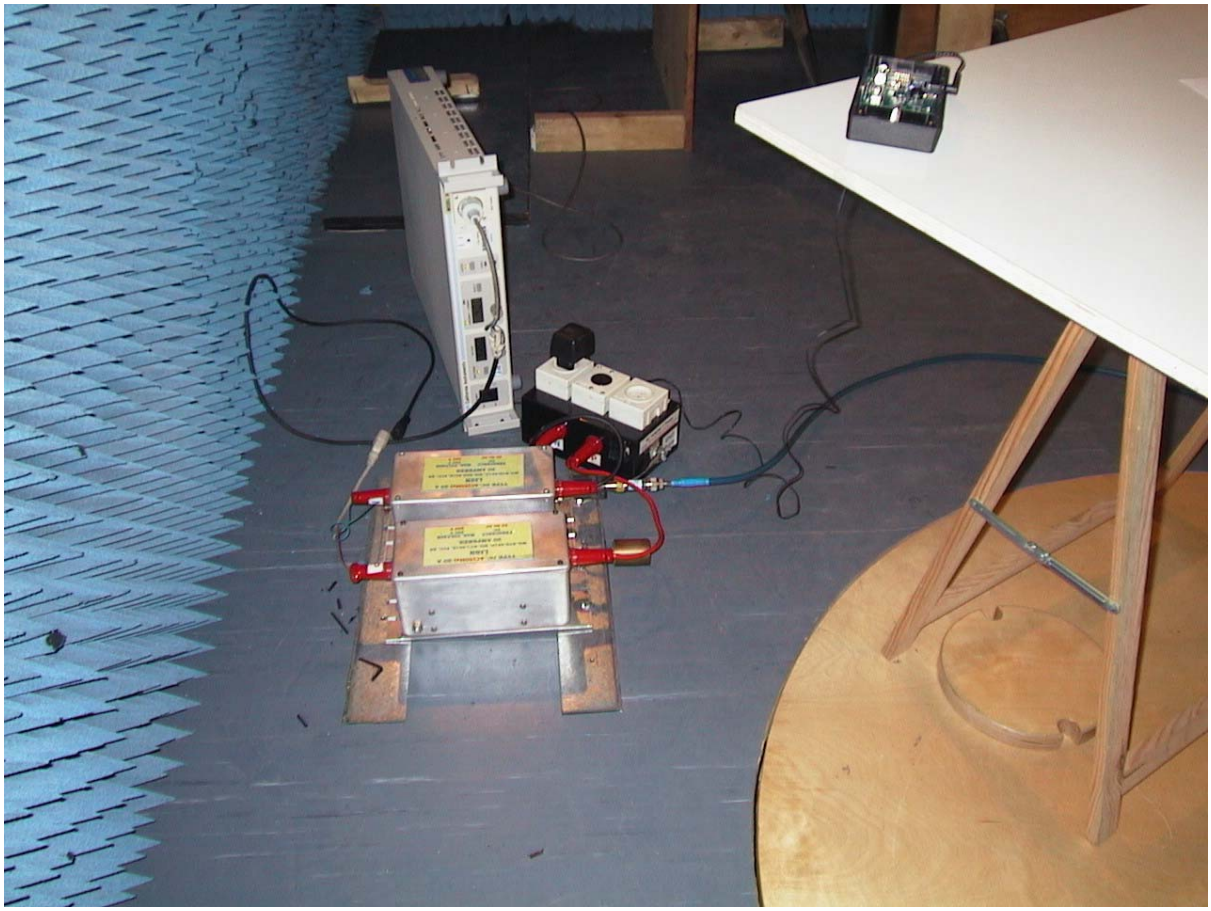
Plot 13. 34

14 PICTURES

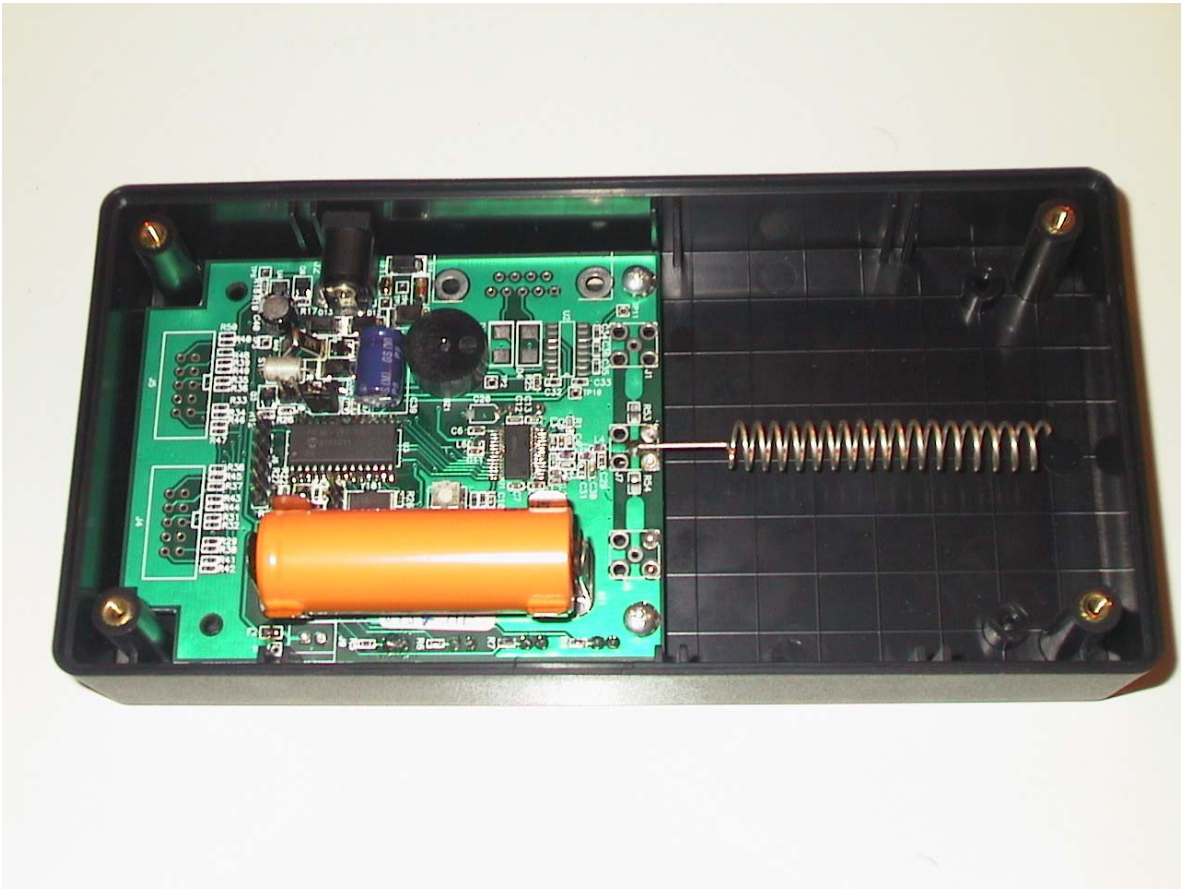
Picture 14.1 Radiated Emission Setup 9KHz-30MHz

Picture 14.2 Radiated Emission Setup 30MHz-1000MHz

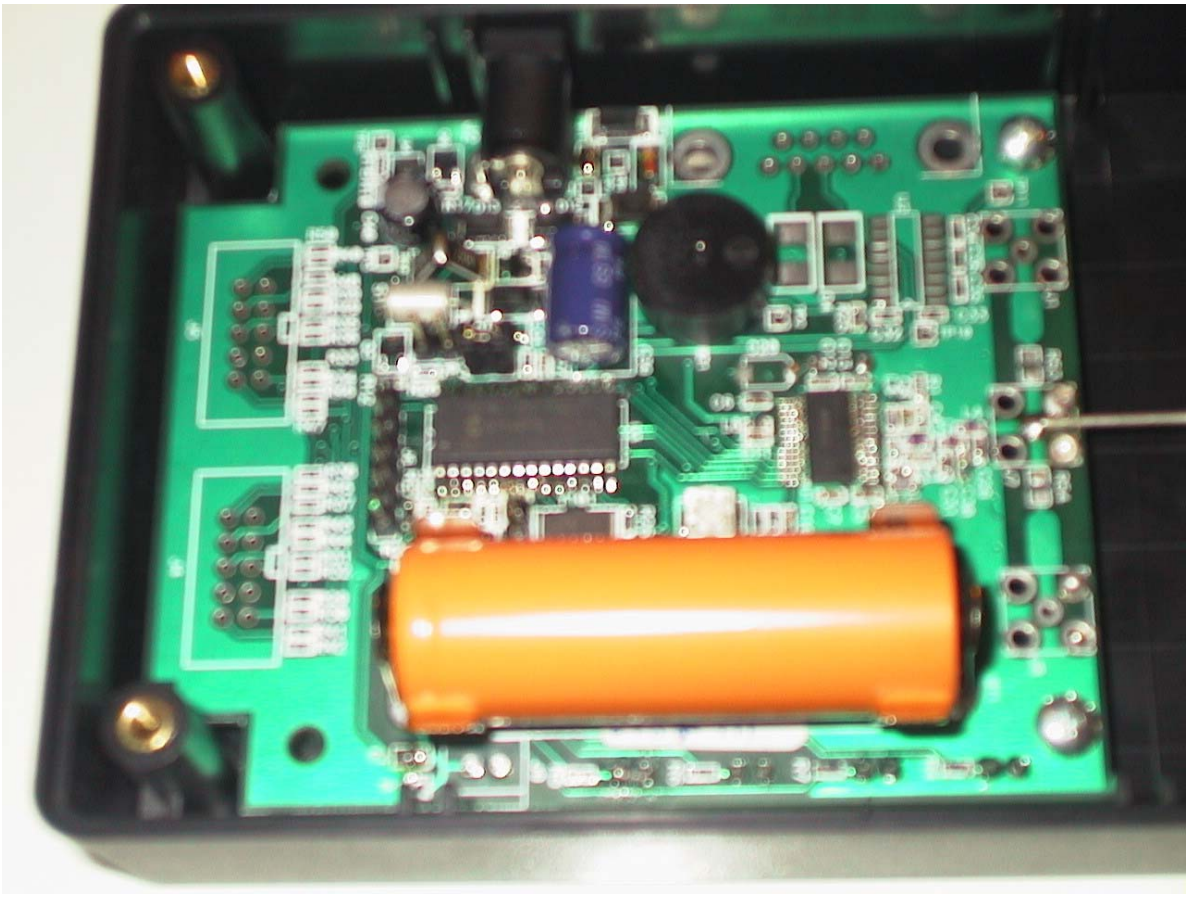
Picture 14.3 Radiated Emission Setup 1GHz-3.5GHz



Picture 14.4 Conducted Emission Setup



Picture 14.5 EUT



Picture 14.6 EUT