REV	Δ	Description	Sheet Effected	Date	Drawn	Checked
A				08.01.06	D.Lanuel	S.Cohen
B		Paragraph 5 modified	9, 32	29.05.06	D.Lanuel	S.Cohen

EMC Laboratory

Ga-ofdm-700-RSU

Manufactured by
WaveIP Ltd.

EMC Test Report

According FCC Part2, 27, 15 Requirements

JAN 2006

	Function/Title	Name	Signature	Date
Prepared b	Test Engineer	D.Lanuel		29.05.06
Checked by	Test Engineer	D.Lanuel		29.05.06
Approved by	EMC Lab. Manager	S.Cohen		29.05.06

Table of Contents

Para **Page**

1 GENERAL Information

Description of equipment under test

Equipment Under Test:	Ga-ofdm-700-RSU
FCCID:	QQ2-GAOFDM700-RSU
Manufacturer:	WaveIP.
Serial Numbers:	00-50C21CCFAE
Mode of Operation:	TX MODE
Assigned frequency band:	740-746MHZ 710-716MHz
Year of Manufacture:	2005

Applicant Information:

Applicant:	WaveIP Ltd.
Applicant Address	TAVOR Building YOKNEAM
Telephone:	+972-4-9937333
FAX:	+972-4-9592614
The testing was observed by:	Yoram Singer
Following applicant's personnel:	Yoram Singer

Test Performance:

Date of reception for testing:	01.11.05
Dates of testing	02.11.05
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, 15.207, 15.111, 2.1046, 2.1049, 2.1055, 27.50, 27.53, 27.54.

2 Test Summary and Signatures.

The E.U.T was found to comply with the requirements of the FCC Part 2, 27, 15 Regulations given below

Test Description	Specification Reference	Date of Testing	Test Report Paragraph	Compliance PASS/FAIL
Occupied 26dbc bandwidth	2.1049	02.11.05	4	PASS
Max peak output power	2.1046 27.50c(1)i	02.11.05	5	PASS
Frequency Stability	2.1055, 27.54	02.11.05	6	PASS
Conducted spurious emission at antenna termination	2.1047, 2.1051, 27.53f	02.11.05	7	PASS
Spurious emission radiated	2.1053, 27.53f	02.11.05	9	PASS
Unintentional radiated emission	15.109	02.11.05	6	PASS
Antenna power conducted for receiver	15.111	02.11.05	10	PASS
Conducted emission	15.207	02.11.05	11	pass

Test performed by:

Mr. D. Lanuel Test Engineer

Test Report prepared by:

Mr. D. Lanuel Test Engineer

Test Report Approved by:

Mr. Samuel Cohen EMC Lab. Manager

3 EUT Description

a. **General**

Model Number(s): Ga-ofdm-700-RSU

Brief Description (Purpose of Device):

GigAccess™ 700-RSU is WaveIP's wireless point-to-multipoint broadband communication system. The basic system - a sector, which consists of an AU (Access Unit) and up to 128 SUs (Subscriber Units) Each with full-duplex communication SUs and the WAN via the AU.

b. **E.U.T Mode of Operation description**

(1) Transmit -743MHz or 713MHz

(2) Receive

(3) Transmitter Power Source
Adapter 220VAC/3.3VDC

4 Occupied Bandwidth for According to 2.1049

E.U.T: Ga-ofdm-700-RSU S/N: 0050C21CCFAE
Date: 02.11.05
Relative Humidity: 38%
Ambient Temperature: 21c
Air Pressure: 1049hpa

Testing Engineer: D.Lanuel **Date** 09.11.05

a. **Test Results Summary & Conclusions**

The E.U.T was found in compliance with OCCUPIED BANDWIDTH

b. **Limits of bandwidth**

The test unit shall meet the limits of Table 4.b

Table 4.b Limits For Bandwidth

Assigned Frequency band(MHz)	Modulation envelope reference point dbc
710 - 716	26dbc
740 - 746	

c. **Test Results**

Table 4.c Bandwidth Test Result

Frequency (MHz)	Bandwidth	Bandwidth (MHz)	Plot Results	PASS/ FAIL
713	16QAM	5.950	Plot-1	PASS
	64QAM	6.125	Plot-2	PASS
	BPSK	6.425	Plot-3	PASS
	QPSK	6.100	Plot-4	PASS
743	16QAM	6.150	Plot-5	PASS
	64QAM	6.150	Plot-6	PASS
	BPSK	6.150	Plot-7	PASS
	QPSK	6.150	Plot-8	PASS

d. **Test Instrumentation and Equipment**

Table 4.d Test Instrumentation and Equipment

Item	Model	Manufacturer	Next Date Calibration
Spectrum Analyzer	8593E	HP	31/01/06
Broadband Antenna	BTA-L	FRANKONIA	10.04.06
20db attenuator	2525-200	ATM	18.03.06

e. **Test Procedure**

The EUT output was connected to the spectrum analyzer through 40db attenuator, The test set up are shown in figure 4e bellow

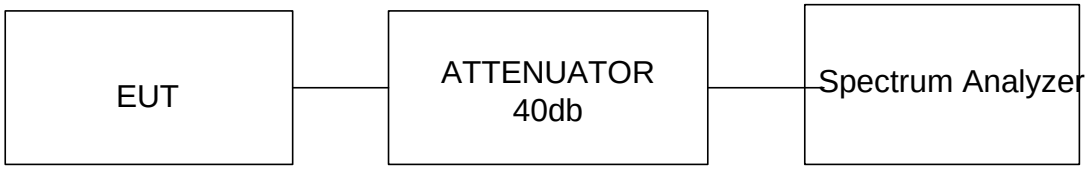


Figure 4e Test Setup for Occupied Bandwidth test

5 Maximum peak output power test according 2.1046 & 27.50

E.U.T:	Ga-ofdm-700-RSU S/N: 0050C21CCFAE
Date:	02.11.05
Relative Humidity:	38%
Ambient Temperature:	21c
Air Pressure:	1049hpa
Test Setup:	Figure 5e

Testing Engineer: D.Lanuel **Date** 09.11.05

a. **Test Results Summary & Conclusions**

The E.U.T was found in compliance with peak output power requirement

b. **Limits**

The test unit shall meet the limits of Table 5.b**.**

Table 5.b peak output power limits

Operating frequency (MHz)	Peak Max Limits(dbm)
713	60
743	

c. **Test Results**

Table 5.c Peak output power Result

Frequency (MHz)	RF out power dbm	**ERP dbm	ERP limit dbm	Plots Result	Pass/ Fail
713MHz	24.16	30.16	60	Plot-9	PASS
743MHz	24.59	30.16	60	Plot-10	PASS

*See calculation bellow-based on test procedure paragraph 5e

**ERP (dbm) =RF output power+ antenna gain (6dbi)

(1) 713MHz peak power calculation –based on plot-9

a) BW correction factor is: 10log 6db BW of emission/analyzer RBW

b) 10log 5.6/3=2.71

c) Output power: 21.45+2.71=24.16

(2) 713MHz peak power calculation –based on plot-10

a) BW correction factor is: 10log 6db BW of emission/analyzer RBW

b) 10log 5.95/3=2.97

c) Output power: 21.62+2.97=24.59

d. **Test Instrumentation and Equipment**

Table 5.d Test Instrumentation and Equipment

Item	Model	Manufacturer	Next Date Calibration
Spectrum Analyzer	8593E	HP	31/01/06
20db attenuator	2525-200	ATM	18.03.06

e. **Test Procedure**

(1) The EUT was adjusted to maximum RF output power

(2) The peak output power was measured with spectrum analyzer as described in associated plots

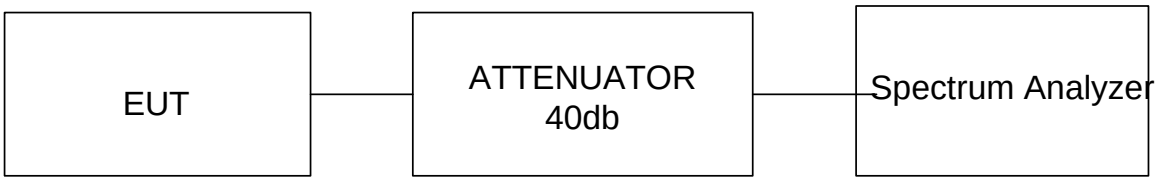
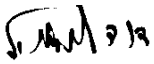


Figure 5e Test Setup for Peak output power

6 Frequency stability according to part 2.1055 & 27.54

E.U.T:	Ga-ofdm-700-RSU S/N: 0050C21CCFAE
Date:	09.11.05
Relative Humidity:	38%
Ambient Temperature:	21c
Air Pressure:	1049hpa
Test Setup:	Figure 5e

Testing Engineer: D.Lanuel  **Date** 16.11.05

a. **Test Results Summary & Conclusions**

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

b. **Limits**

The test unit shall meet the limits of Table 6.b**.**

Table 6.b Frequency stability limits

6 MHz channel (MHz)	Maximum allowed freq displacement
740 - 746	26dbc point shall remain within the assigned band
710 - 716	

c. **Test Results**

Table 6.b Frequency stability test results for 713MHz

T°c	Voltage (V)	Measured 26dbc point left (MHz)	Measured 26dbc point right(MHz)	Max Freq Drift(Hz)	Max Freq Drift (ppm)	Pass/ Fail
-30	Nominal	710.660	715.445	210000	280	Pass
-20	Nominal	710.735	715.415			Pass
-10	Nominal	710.720	715.370			Pass
0	Nominal	710.690	715.310			Pass
10	Nominal	710.615	715.430			Pass
20	+15%	710.600	715.520			Pass
20	Nominal	710.660	715.505			Pass
20	-15%l	710.585	715.520			Pass
30	Nominal	710.675	715.445			Pass
40	Nominal	710.735	715.370			Pass
50	Nominal	710.690	715.310			Pass

Table 6.b Frequency stability test results for 743MHz

T°c	Voltage (V)	Measured 26dbc point left (MHz)	Measured 26dbc point right(MHz)	Max Freq Drift(Hz)	Max Freq Drift (ppm)	Pass/ Fail
-30	Nominal	745.445	740.660	210000	280	Pass
-20	Nominal	745.370	740.735			Pass
-10	Nominal	745.374	740.735			Pass
0	Nominal	745.317	740.690			Pass
10	Nominal	745.405	740.615			Pass
20	+15%	745.527	740.675			Pass
20	Nominal	745.523	740.690			Pass
20	-15%l	745.505	740.720			Pass
30	Nominal	745.433	740.735			Pass
40	Nominal	745.374	740.735			Pass
50	Nominal	745.295	740.615			Pass

d. **Test Instrumentation and Equipment**

Table 5.d Test Instrumentation and Equipment

Item	Model	Manufacturer	Next Date Calibration
Spectrum Analyzer	8593E	HP	31/01/06
20db attenuator	2525-200	ATM	18.03.06

e. **Test Procedure**

(1) The EUT was set as shown in figure 6e

(2) The 26dbc point was measured 10 minute after frequency had been stabilized at temperature rang of -30 - 50°c

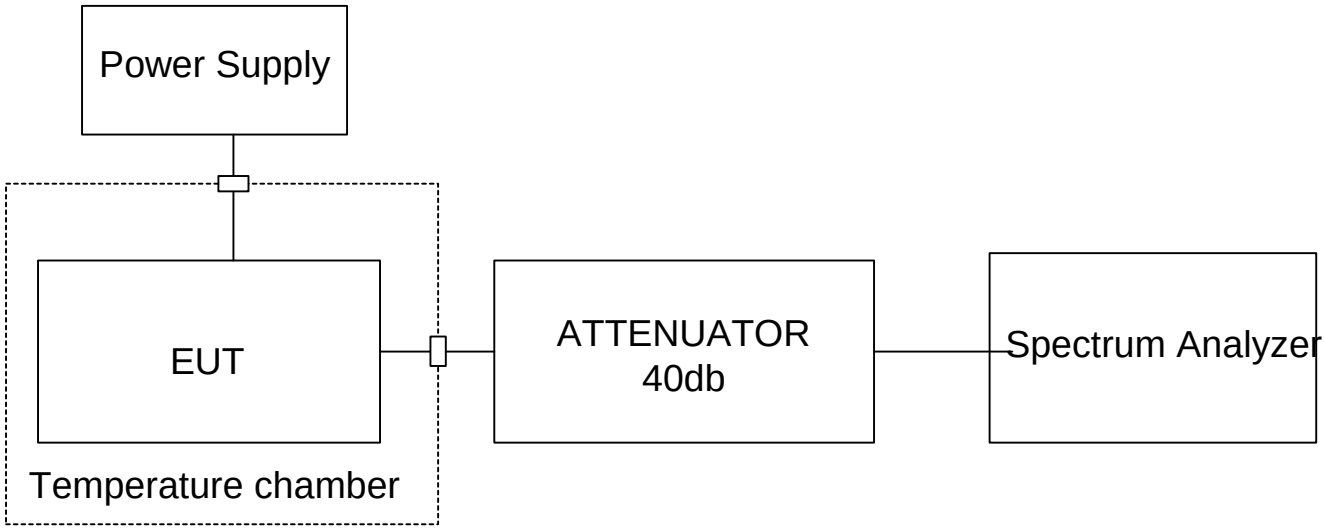


Figure 6e Test Setup for Frequency stability

7 Spurious emission at antenna termination test according t0 2.1047, 2.1051, 27.53f

E.U.T:	Ga-ofdm-700-RSU S/N: 0050C21CCFAE
Date:	02.11.05
Relative Humidity:	38%
Ambient Temperature:	21c
Air Pressure:	1049hpa
Test Setup:	Figure 7.e

Testing Engineer: D.Lanuel **Date** 09.11.05

a. **Test Results Summary & Conclusions**

The E.U.T was found in compliance with Spurious emission at antenna termination test

b. **Limits of conducted emission**

The test unit shall meet the limits of Table 7.b**.**

Table 7.b Limits For 15.247(c)

Frequency range(MHz)	Attenuation below carrier dbc	Limits dbm
0.009 – 7300	43+10logP	-13

c. **Test Results**

Table 7.c Spurious emission at antenna termination test results

Operating Frequency (MHz)	Frequency range (MHz)	Results (dBμV/m)	Plots Result
743MHz	0.009 – 7300	All emission were found Min 30db below the specified limits	11 - 18

d. **Test Instrumentation and Equipment**

Table 7.d Test Instrumentation and Equipment

Item	Model	Manufacturer	Next Date Calibration
Spectrum Analyzer	8593E	HP	31/01/06
20db attenuator	2525-200	ATM	18.03.06

e. **Test Procedure**

The EUT output was connected to the spectrum analyzer through 40db attenuator. The test set up is shown in figure 6e bellow.

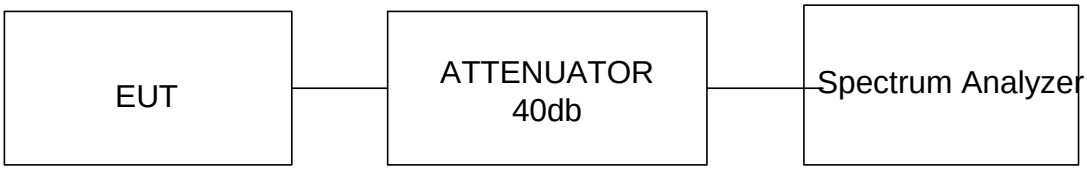
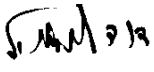


Figure 6e Test Setup for Conducted emission

8 Radiated spurious emission test according 2.1053 & 27.53f

E.U.T:	Ga-ofdm-700-RSU S/N: 0050C21CCFAE
Date:	02.11.05
Relative Humidity:	38%
Ambient Temperature:	21c
Air Pressure:	1049hpa
Test Setup:	Figure 8.e1 – 8.e.2

Testing Engineer: D.Lanuel  **Date** 09/11/05

a. **Test Results Summary & Conclusions**

The E.U.T was found in compliance with radiated spurious emission test

b. **Limit**: The test unit shall meet the Limits. Of table 8.b

Table 8.b Radiated spurious emission limits

Frequency range (MHz)	Attenuation below carrier dbc	Limits dbm	Equivalent strength limit 3m dbµV/m
0.009 – 7300	43+10logP	-13	84.4*

*Equivalent field strength limit was calculated as follows:

$$E_{V/w} = \frac{1}{d}\sqrt{P_W x30x1.64}$$

P=ERP in W
E=field strength in V/m
1.64=gain of ideal dipole
D=test distance in meter

c. **Results**

(1) Preliminary Results

Table 8.c1 Spurious emission field strength test results

Transmitting Frequency	Measuring Frequency Range	Plots Results	PASS/FAIL
713MHz	9KHz- 7.2GHz	19 - 27	PASS
743MHz	9KHz- 7.2GHz	28 - 36	PASS

(2) Final Test Results

Table 8c2 ERP of Spurious emission test results

Freq (MHz)	Field strength dBµV/m	Ant pol	RF gen Out dbm	Cable loss	ERP dbm	Limit dbm	Margin db	Pass/ fail
All radiated spurious emission were found more than 20db below the limit								

d. **Test Instrumentation and Equipment**

Table 8.d Test Instrumentation and Equipment

Item	Model	Manufacturer	Next Date Calibration
Spectrum Analyzer	8593E	HP	31/01/06
Loop Antenna	HFH2-Z2	Rohde &Schwarz	N.P.C.R
Double Ridge Guide Ant	3105	EMCO	24.04.06
Broadband Antenna	BTA-L	FRANKONIA	10.04.06
Low Noise Amplifier (0-1GHz)	AM-1300-N	MITEQ	14.01.06
Low Noise Amplifier (1-4GHz)	AMM 003N	AVANTEK	14.01.06
Low Noise Amplifier (2-6GHz)	MWA-02060	ELISRA	14.01.06
Low Noise Amplifier (6-18GHz)	MWA-06180	ELISRA	14.01.06
High pass filter 1000MHz	1/15G-10EE	WHK	10.02.06
Band reject filter 740 - 746MHz	WRCG700-RSU	WHK	10.02.06

e. **Test Procedure**

Test Procedure for field strength measurement

(1) The EUT was setup as shown in figure 8e1

(2) The EUT was adjusted to produce maximum power output

(3) The Spectrum analyzer was set to 3 MHz bandwidth

Test Procedure for substitution ERP measurement of spurious

(4) The EUT was setup as shown in figure 8e2

(5) RF signal generator was set to the EUT carrier frequency and the RF output level was adjusted to produce the same field strength as it was measured from the EUT

(6) The test antenna height was swept to find maximum emission from substitute antenna and RF signal generator was adjusted to produce the same field strength as it was measured from the EUT

(7) The ERP was calculated as a sum of signal generator output power in dbm and antenna gain

(8) Paragraph 4 through 7 was performed in both horizontal and vertical polarization of the test antenna

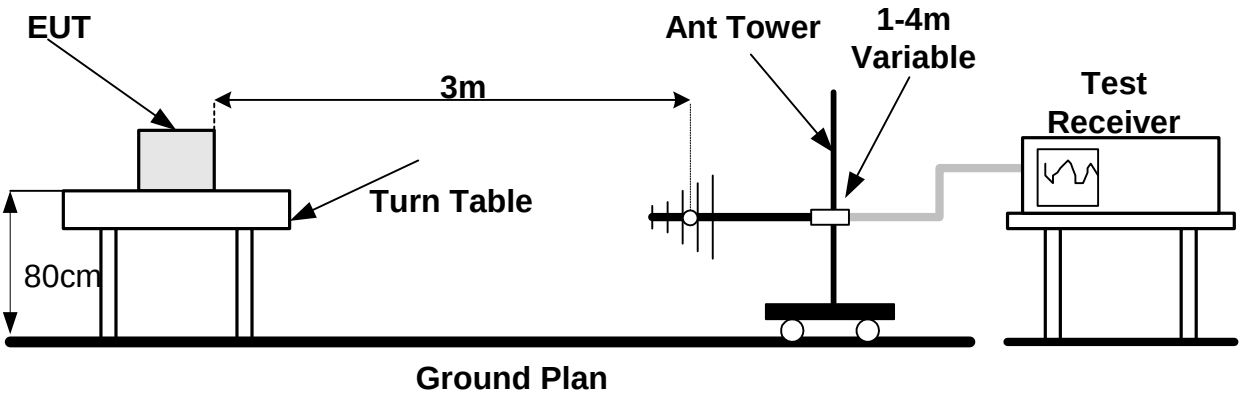


Figure 8e1 Test setup field strength peak power measurement

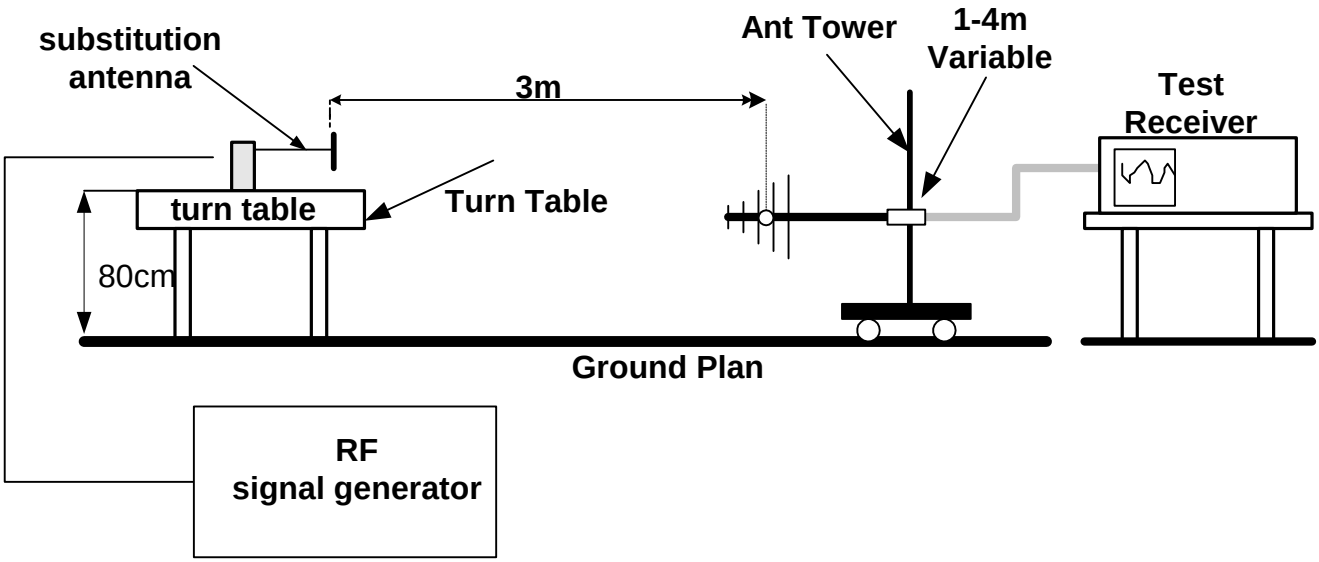


Figure 8e2 Test setup of ERP measurement

9 Unintentional radiated emission test according to 15.109

E.U.T: Ga-ofdm-700-RSU S/N: 0050C21CCFAE
Date: 02.11.05
Relative Humidity: 38%
Ambient Temperature: 21c
Air Pressure: 1049hpa

Testing Engineer: D.Lanuel **Date** 09.11.05

a. **Test Results Summary & Conclusions**

The E.U.T was found in compliance with unintentional radiated emission requirements.

b. **Limit**:

Unintentional radiated emission must comply with 15.109 Limits. See limits in table 9b bellow.

Table 9b Limits For 15.109 Class B equipment

Frequency Range (MHz)	Quasi-peak Limits (dBμV/m)	Peak Limit	Average Limit
30 - 88	40	NA	NA
88 - 216	43.5		
216 - 960	46		
960 - 1000	54		
Above 1000	NA	74	54

c. **Test Results**

Table 9.c .Preliminary test results

Antenna Polarization	Frequency Range(MHz)	Plots Results	PASS/ FAIL
Both	30-1000	37	PASS
	1-2.8GHz	38	PASS
	2.8 – 6GHz	39	PASS
	6GHz – 6.5GHz	40	PASS
	6.5GHz – 7.5GHz	41	PASS

Table 9c1 Six Highest 15.109

Freq. (MHz	QP Reading (dbµV/m)	QP Limit (dbµV/m)	Margin (db)	Compliance PASS/FAIL	Plots
30.958	34.6	40	-5.4	PASS	37
494.998	43.5	46	-2.5	PASS	

d. **Test Instrumentation and Equipment**

Table 9.d Test Instrumentation and Equipment

Item	Model	Manufacturer	Next Date Calibration
Spectrum Analyzer	8593E	HP	31/01/06
Loop Antenna	HFH2-Z2	Rohde &Schwarz	N.P.C.R
Double Ridge Guide Antenna(1-18GHz)	3105	EMCO	24.04.06
Broadband Antenna(30-1000MHz)	BTA-L	FRANKONIA	10.04.06
Low Noise Amplifier (0-1GHz)	AM-1300-N	MITEQ	14.01.06
Low Noise Amplifier (1-4GHz)	SMC-09	MITEQ	14.01.06
Low Noise Amplifier (2-6GHz)	SMC-09	MITEQ	14.01.06
Low Noise Amplifier (6-10GHz)	SMC-09	MITEQ	14.01.06

e. **Procedure**

The EUT output was connected to the spectrum analyzer through appropriate low noise amplifier while the EUT is in STBY mode.

10 Antenna power conduction for receive according part 15.111

E.U.T: Ga-ofdm-700-RSU S/N: 0050C21CCFAE
Date: 18.09.05
Relative Humidity: 38%
Ambient Temperature: 21c
Air Pressure: 1049hpa

Testing Engineer: D.Lanuel **Date** 27/09/05

a. **Test Results Summary & Conclusions**

The E.U.T was found in compliance with Antenna power conduction for receive requirements.

b. **Limit**:

Antenna power conduction for receive must comply with 15.111 Limits. See limits in table 9b bellow.

Table 10b Limits For 15.111

Frequency range (MHz)	Mode of operation	Spurious (nw)	Spurious (dbµv)
30 - 2000	Receive	2	50

c. **Test Results**

Table 10.c Test results

Mode of Operation	Frequency Range(MHz)	Plots Results	PASS/ FAIL
Receive	30-1000	42	PASS
	1-2.8GHz	43	PASS

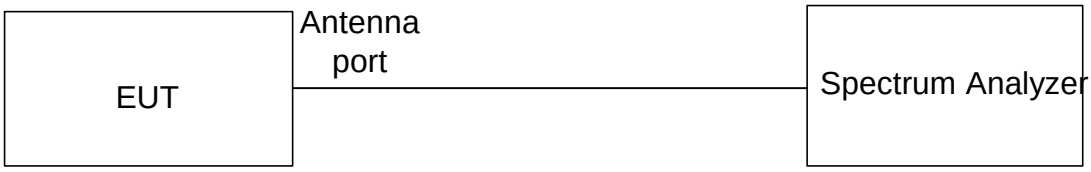
d. **Test Instrumentation and Equipment**

Table 10.d Test Instrumentation and Equipment

Item	Model	Manufacturer	Next Date Calibration
Spectrum Analyzer	8593E	HP	31/01/06

e. **Procedure**

The EUT output was connected to the spectrum analyzer while the EUT is in receiving mode.



11 Conducted emission test according to 15.207.15.107

E.U.T: Ga-ofdm-700-RSU S/N: 0050C21CCFAE-
Date: 02.11.05
Relative Humidity: 38%
Ambient Temperature: 23°c
Air Pressure: 1049hpa
Test Setup: Figure 11f, 12f

Testing Engineer: D.Lanuel **Date** 09.11.05

a. **Test Results Summary & Conclusions**

The E.U.T was found in compliance with conducted emission power leads requirements.

b. **Limit**:

Conducted emission must comply with 15.207 Limits. See limits in table 10b bellow.

Table 11.b Limits For 15.207 Class B equipment

Frequency (MHz)	Quasi-peak Limits (dBμV/m)
0.15 – 0.5	66-56
0.5 - 5	56
5 - 30	60

c. **Test Results**

Table 11.c Test results

Frequency Range (MHz)	Tested Line	Plots Results	PASS/ FAIL
0.15 - 30	PHASE	44	PASS
0.15 - 30	NEUTRAL	45	PASS

d. Test Instrumentation and Equipment

Table 11.d Test Instrumentation and Equipment

Item	Model	Manufacturer	Next Date Calibration
Spectrum Analyzer	8593E	HP	31/01/06
LISN	DC-AC-20A/01	TADIRAN	N.P.C.R
20DB attenuator	2525	ATM	18.03.06

e. Test Procedure

a) *The EUT was placed on the top of table 1m by 1.5m, raised 0.8 meters above the conducting ground plane*

b) *The rear panel of the EUT was located 40cm to the vertical wall of the screen room*

c) *Each EUT power leads were individually connected through an LISN to the input power source. Unused 50 ohm connector of the LISN was terminated in 50ohm and other was connected to the spectrum analyzer through 20db attenuator for maximum conducted interference*

f. Test setup

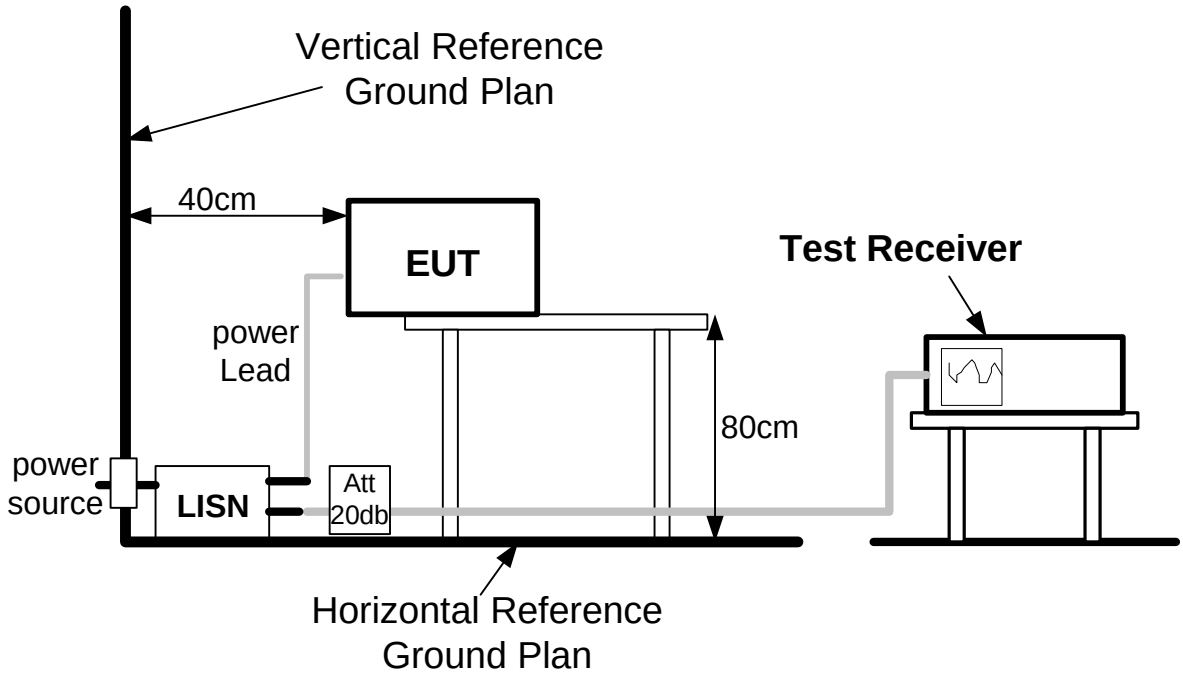


Figure- 11f Conducted emission Test Configuration

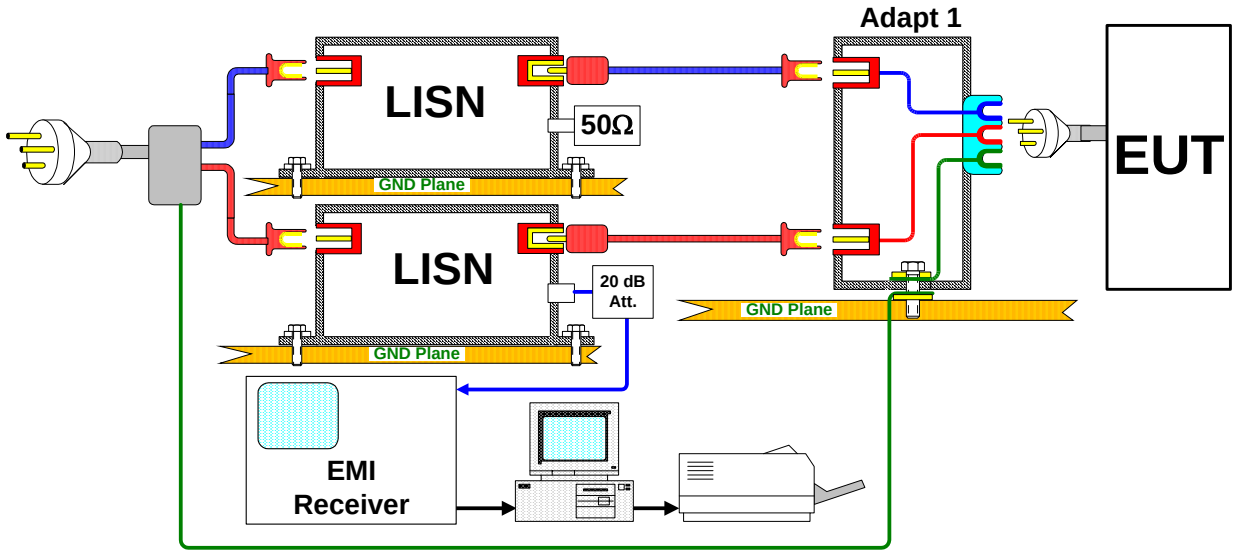
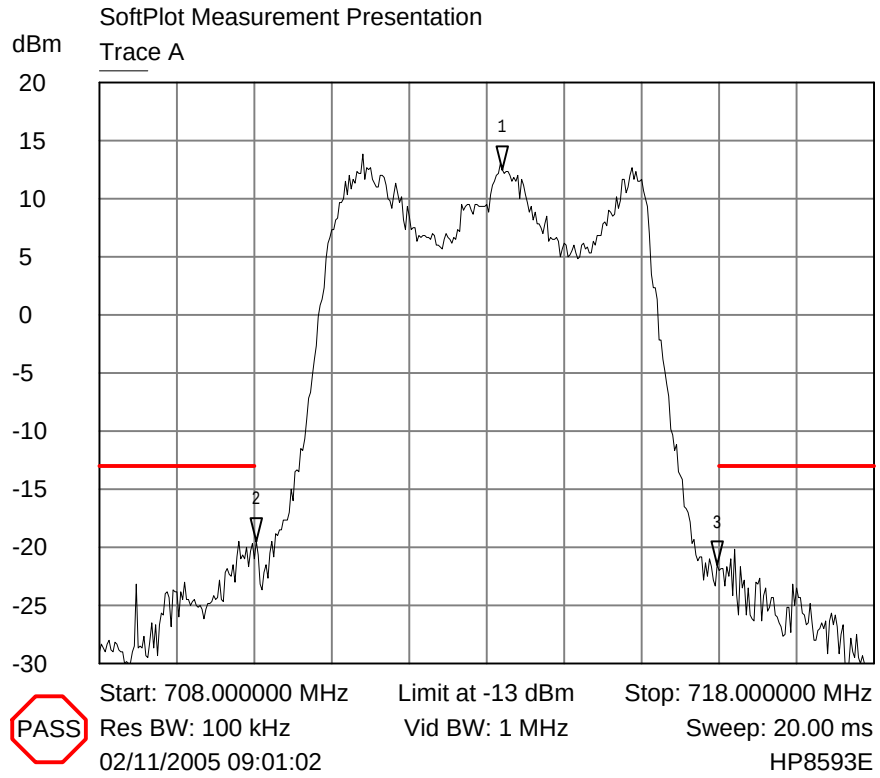


Figure- 12f Conducted emission Test setup

12 Plots

a. Occupied bandwidth plots 1-8

Test Results Plot No 1

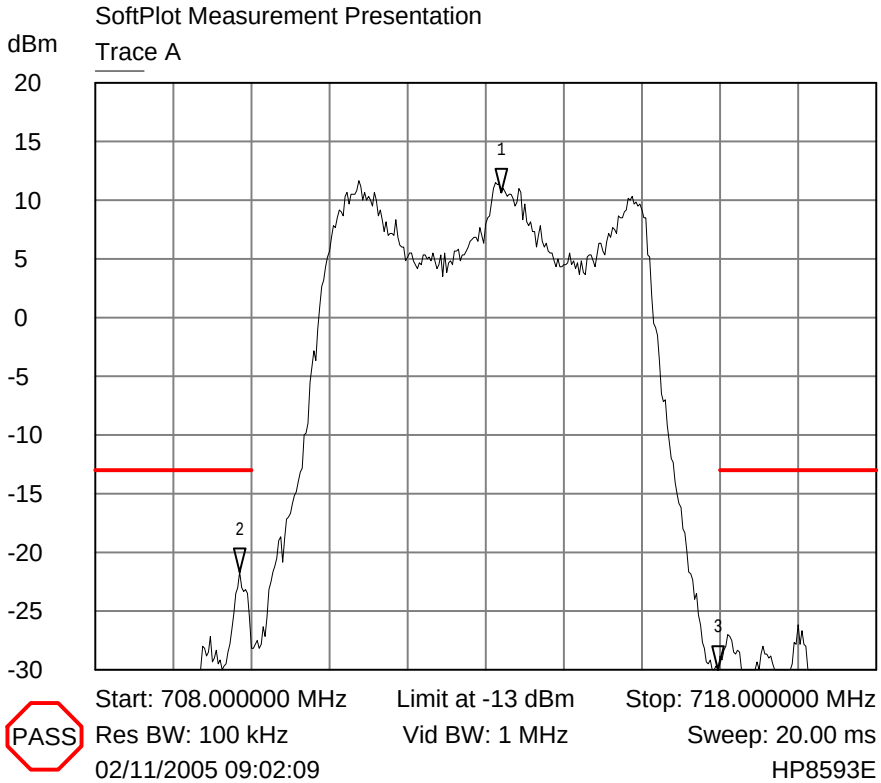


1 Trace A
713.200000 MHz
12.5800 dBm

2 Trace A
710.025000 MHz
-19.5500 dBm

3 Trace A
715.975000 MHz
-21.4500 dBm

Test Results Plot No 2

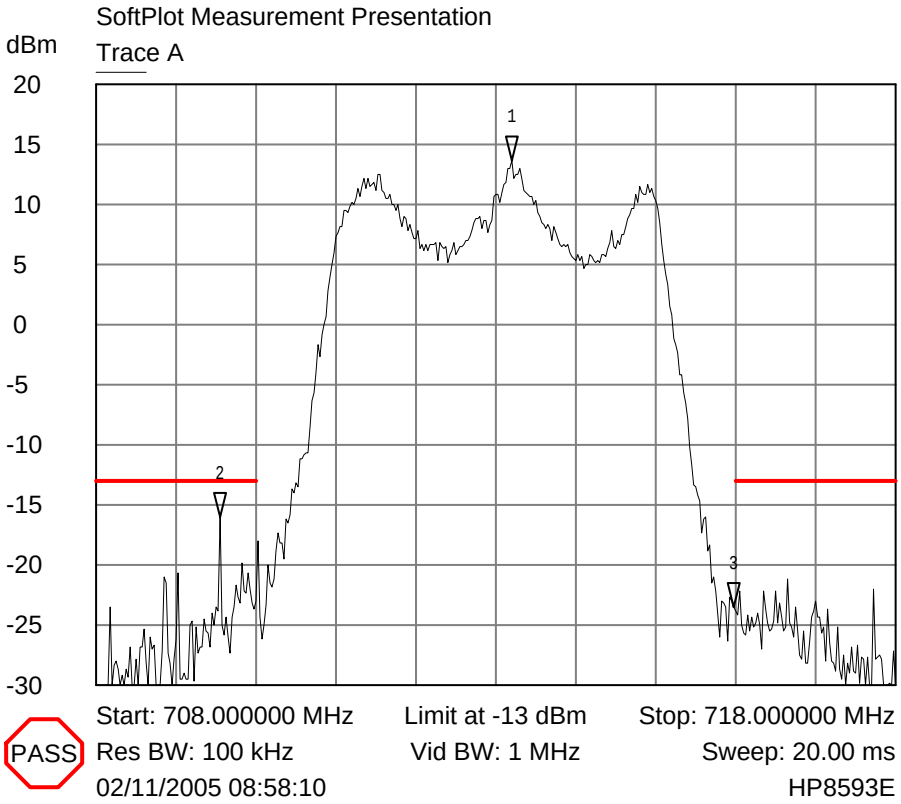


1 Trace A
713.200000 MHz
10.6000 dBm

2 Trace A
709.850000 MHz
-21.6000 dBm

3 Trace A
715.975000 MHz
-30.6800 dBm

Test Results Plot No 3

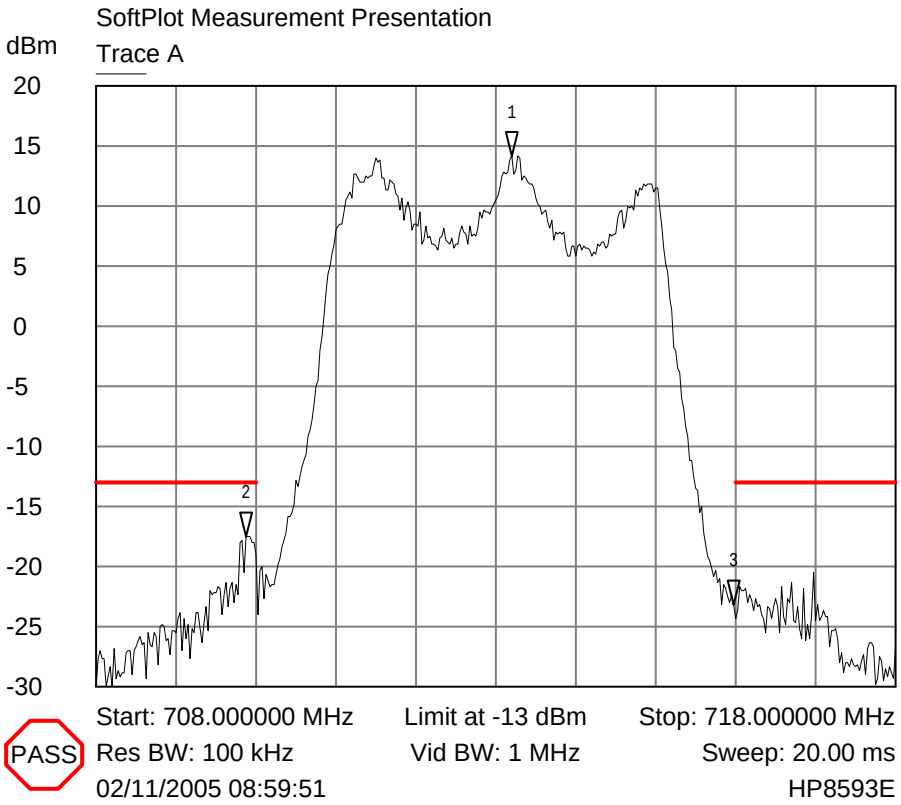


1 Trace A
713.200000 MHz
13.6100 dBm

2 Trace A
709.550000 MHz
-16.0300 dBm

3 Trace A
715.975000 MHz
-23.4900 dBm

Test Results Plot No 4



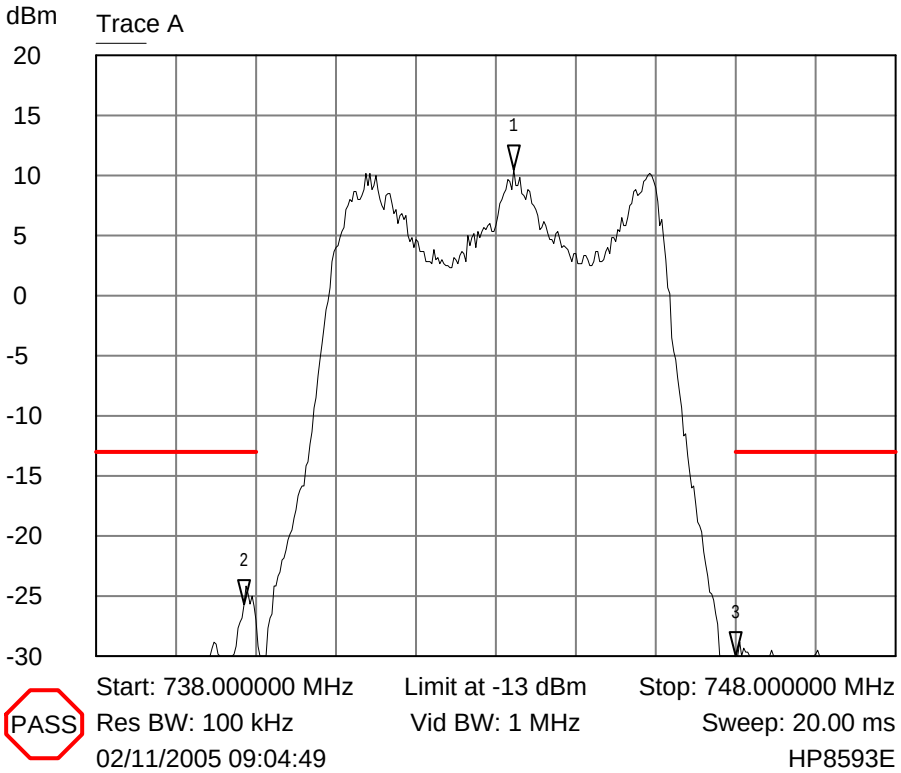
1 Trace A
713.200000 MHz
14.1200 dBm

2 Trace A
709.875000 MHz
-17.5500 dBm

3 Trace A
715.975000 MHz
-23.1400 dBm

Test Results Plot No 5

SoftPlot Measurement Presentation
Trace A



1 Trace A
743.225000 MHz
10.4700 dBm

2 Trace A
739.850000 MHz
-25.7100 dBm

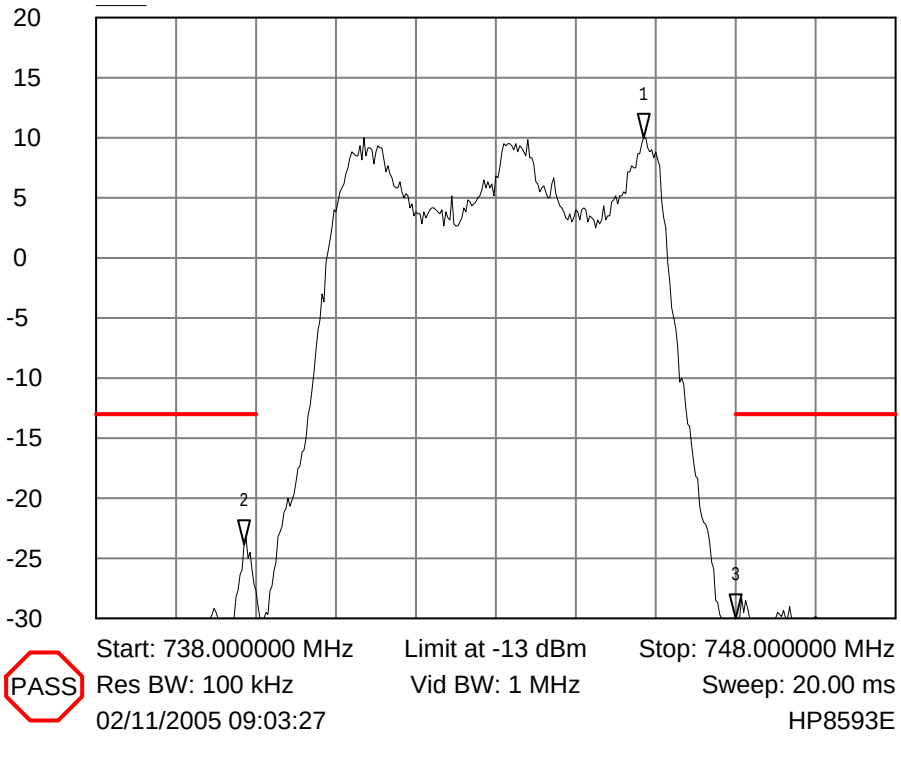
3 Trace A
746.000000 MHz
-31.9700 dBm

PASS

Start: 738.000000 MHz | Limit at -13 dBm | Stop: 748.000000 MHz
Res BW: 100 kHz | Vid BW: 1 MHz | Sweep: 20.00 ms
02/11/2005 09:04:49 | HP8593E

Test Results Plot No 6

SoftPlot Measurement Presentation
Trace A



1 Trace A
744.850000 MHz
10.0600 dBm

2 Trace A
739.850000 MHz
-23.9100 dBm

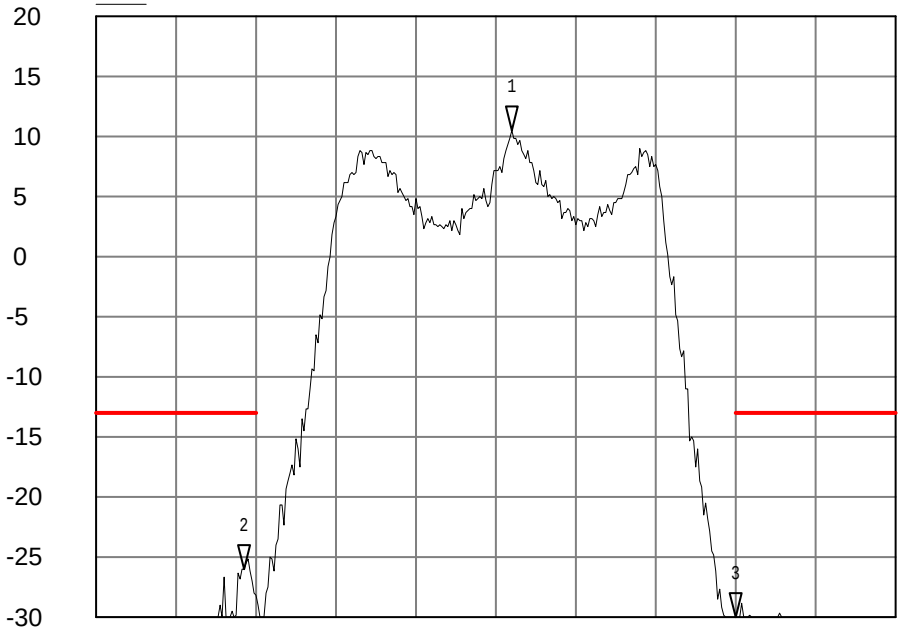
3 Trace A
746.000000 MHz
-33.0100 dBm

PASS

Start: 738.000000 MHz | Limit at -13 dBm | Stop: 748.000000 MHz
Res BW: 100 kHz | Vid BW: 1 MHz | Sweep: 20.00 ms
02/11/2005 09:03:27 | HP8593E

Test Results Plot No 7

SoftPlot Measurement Presentation
Trace A



1 Trace A
743.200000 MHz
10.5400 dBm

2 Trace A
739.850000 MHz
-26.0500 dBm

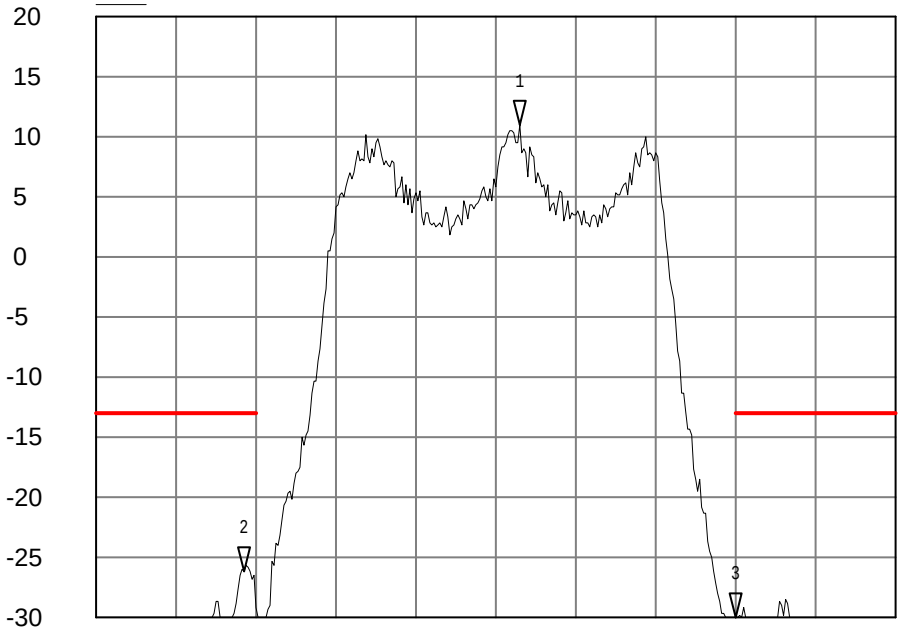
3 Trace A
746.000000 MHz
-32.3800 dBm

PASS

Start: 738.000000 MHz | Limit at -13 dBm | Stop: 748.000000 MHz
Res BW: 100 kHz | Vid BW: 1 MHz | Sweep: 20.00 ms
02/11/2005 09:06:32 | HP8593E

Test Results Plot No 8

SoftPlot Measurement Presentation
Trace A



1 Trace A
743.300000 MHz
10.9500 dBm

2 Trace A
739.850000 MHz
-26.1200 dBm

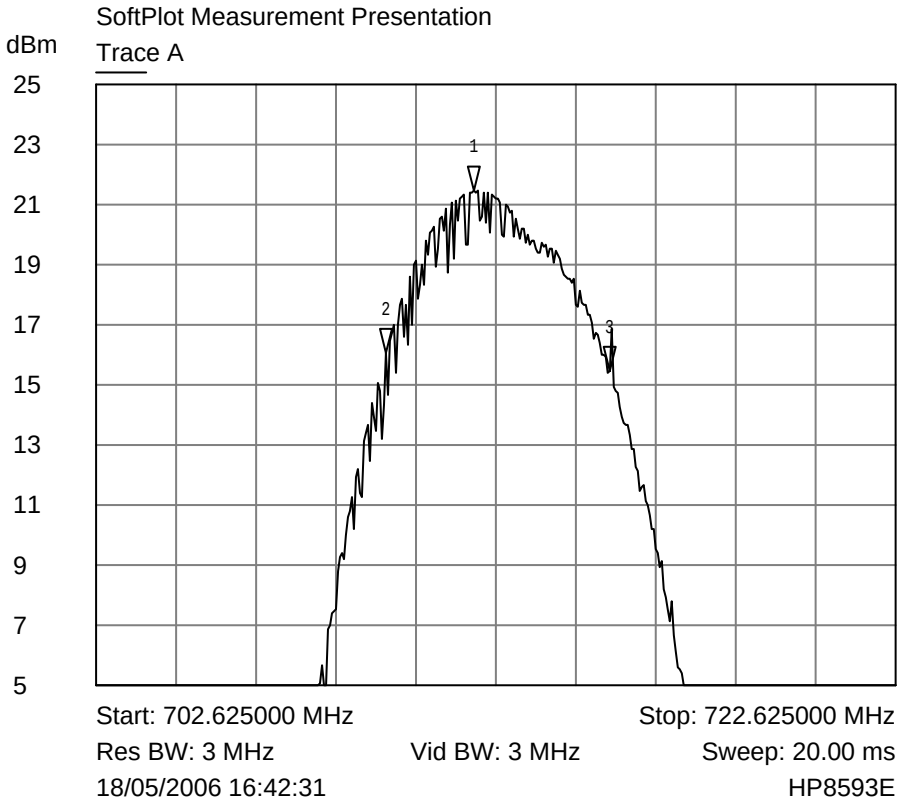
3 Trace A
746.000000 MHz
-31.6700 dBm

PASS

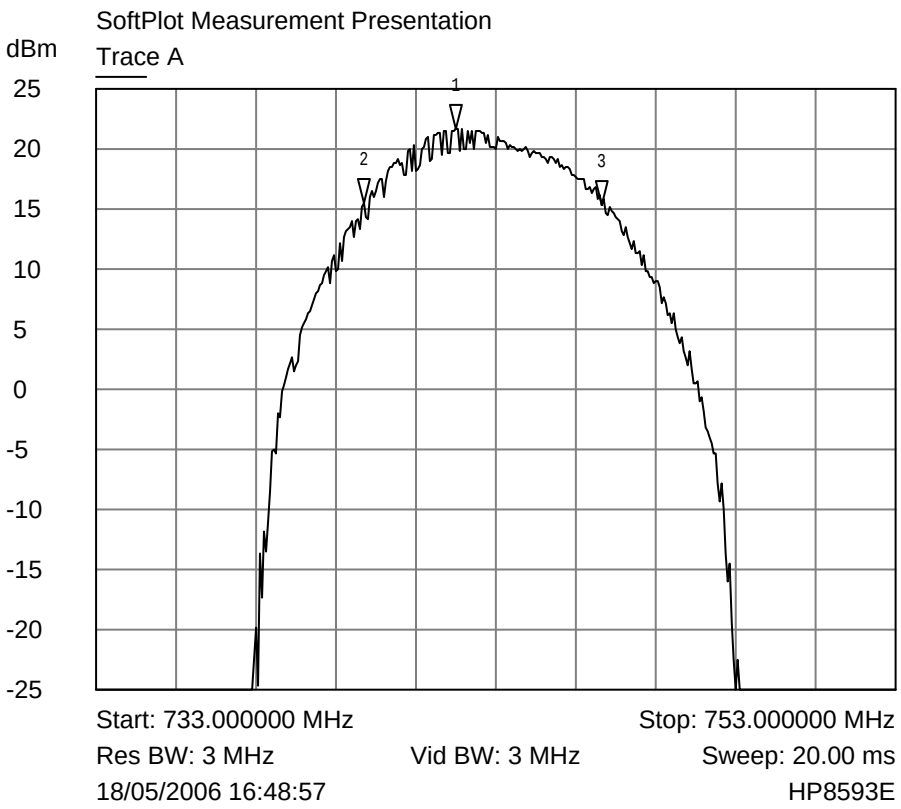
Start: 738.000000 MHz | Limit at -13 dBm | Stop: 748.000000 MHz
Res BW: 100 kHz | Vid BW: 1 MHz | Sweep: 20.00 ms
02/11/2005 09:05:42 | HP8593E

b. **Maximum peak output power plots 9, 10**

Test Results Plot No 9

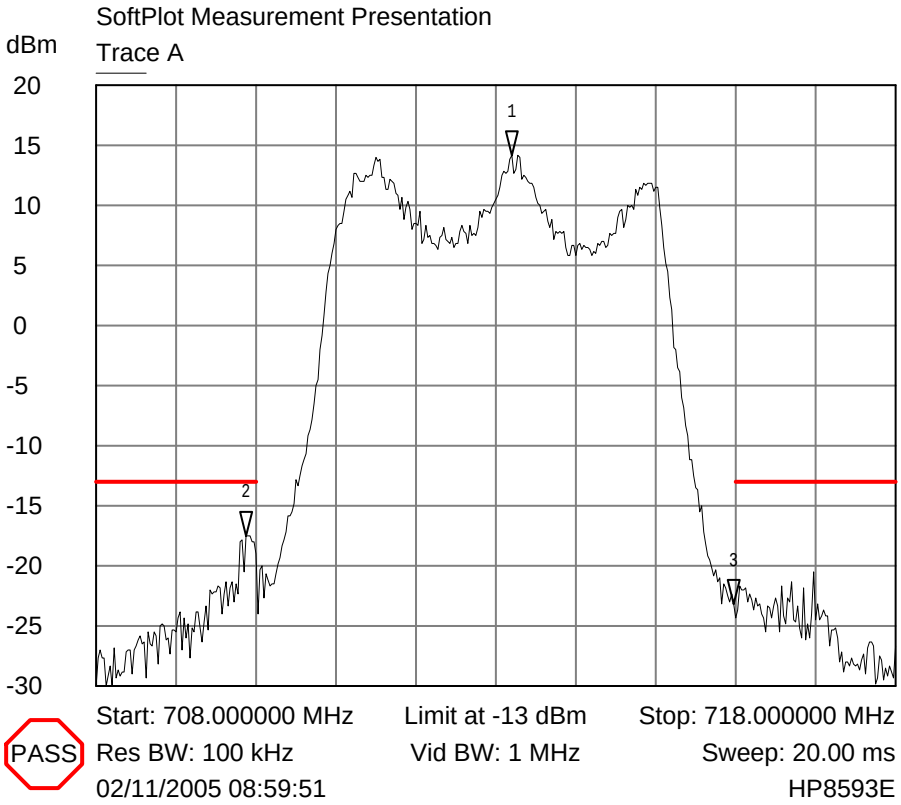


Test Results Plot No 10

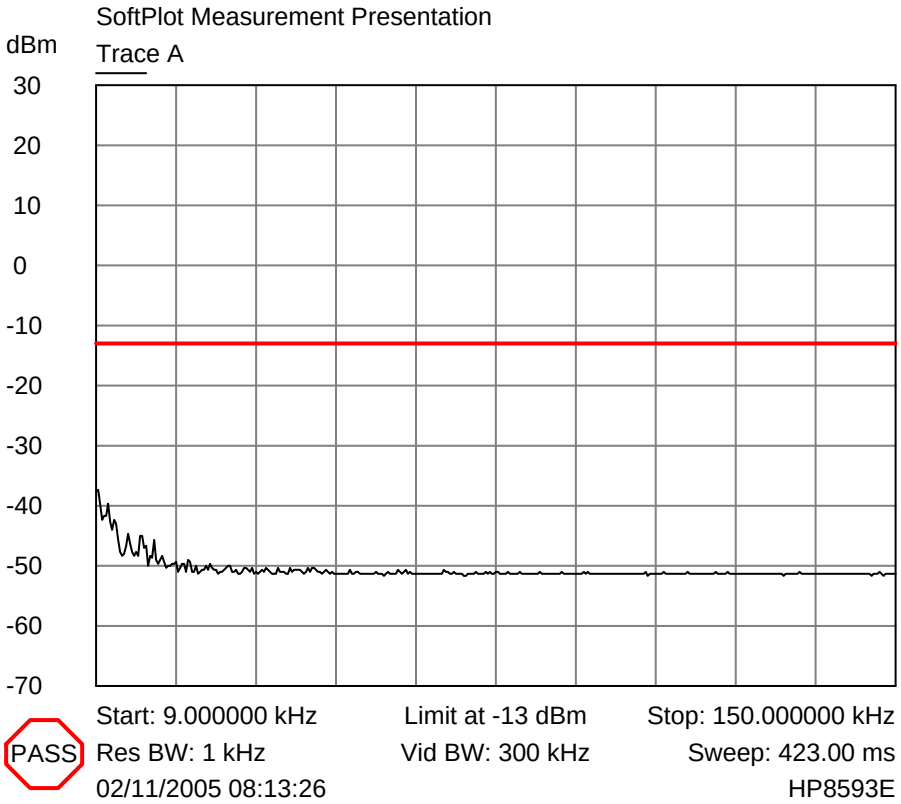


c. Spurious at antenna terminals 11 – 18

Test Results Plot No 11

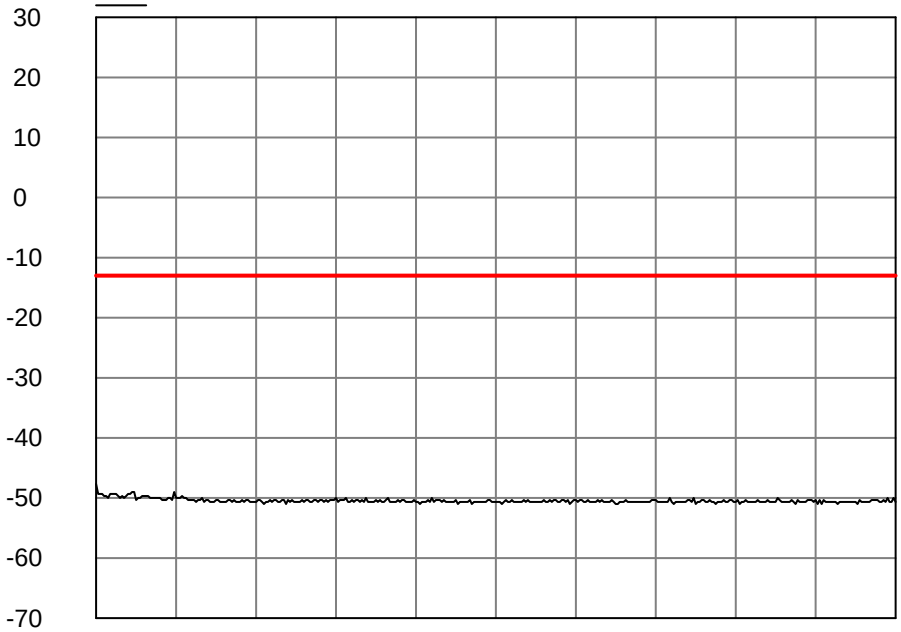


Test Results Plot No 12



Test Results Plot No 13

SoftPlot Measurement Presentation
Trace A

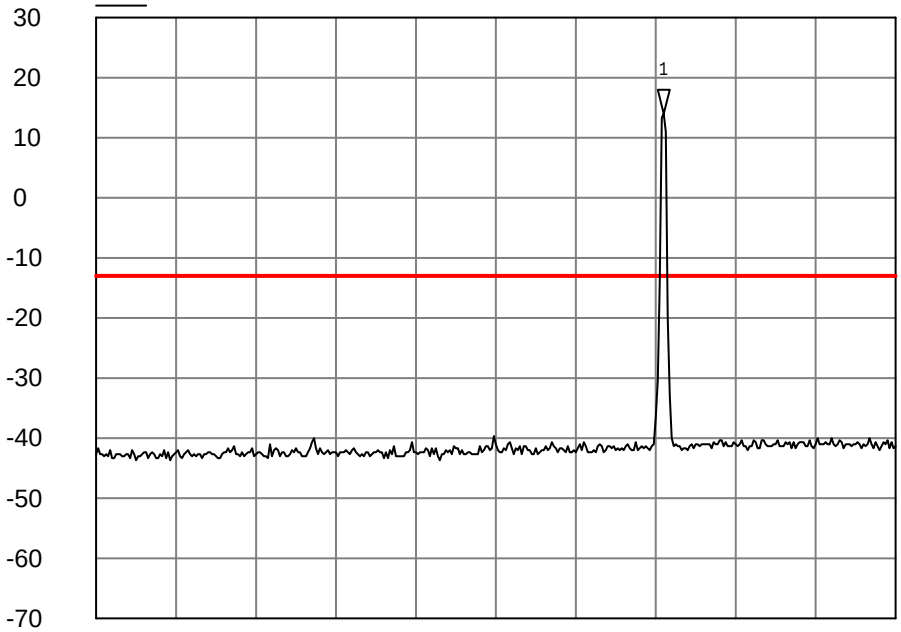


PASS

Start: 150.000000 kHz | Limit at -13 dBm | Stop: 30.000000 MHz
Res BW: 10 kHz | Vid BW: 300 kHz | Sweep: 895.50 ms
02/11/2005 08:15:34 | HP8593E

Test Results Plot No 14

SoftPlot Measurement Presentation
Trace A

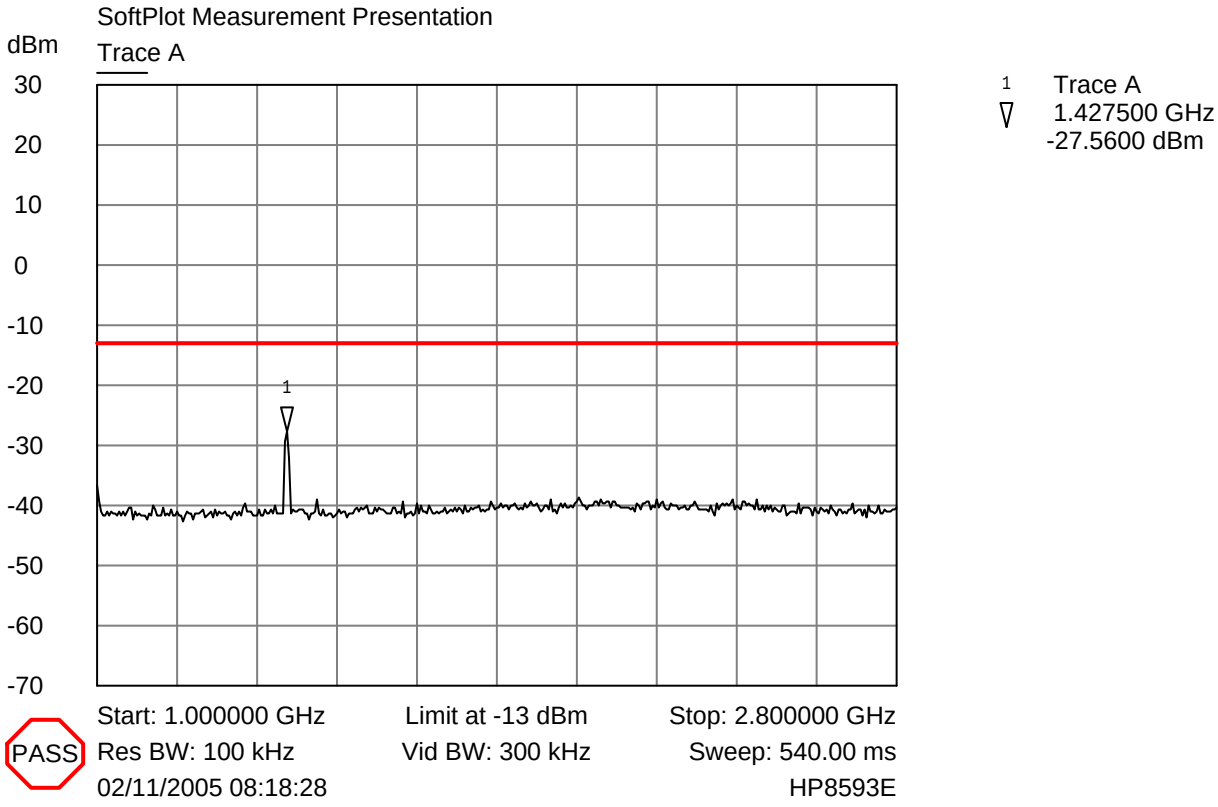


1 Trace A
718.700000 MHz
13.9800 dBm

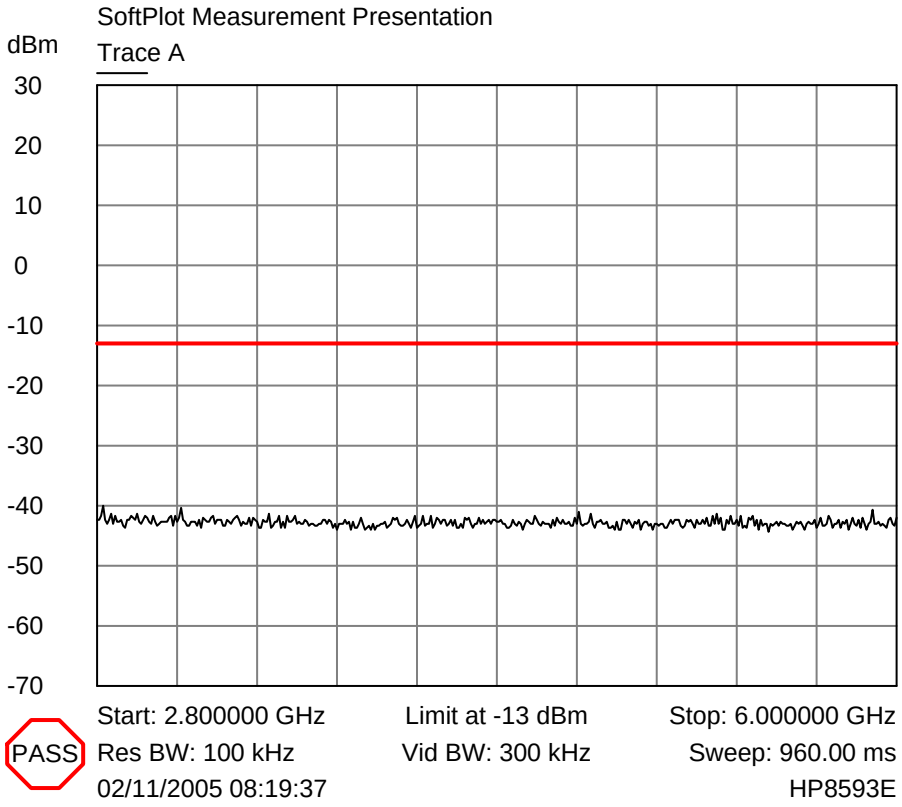
FAIL HIGH

Start: 30.000000 MHz | Limit at -13 dBm | Stop: 1.000000 GHz
Res BW: 100 kHz | Vid BW: 300 kHz | Sweep: 291.00 ms
02/11/2005 08:16:54 | HP8593E

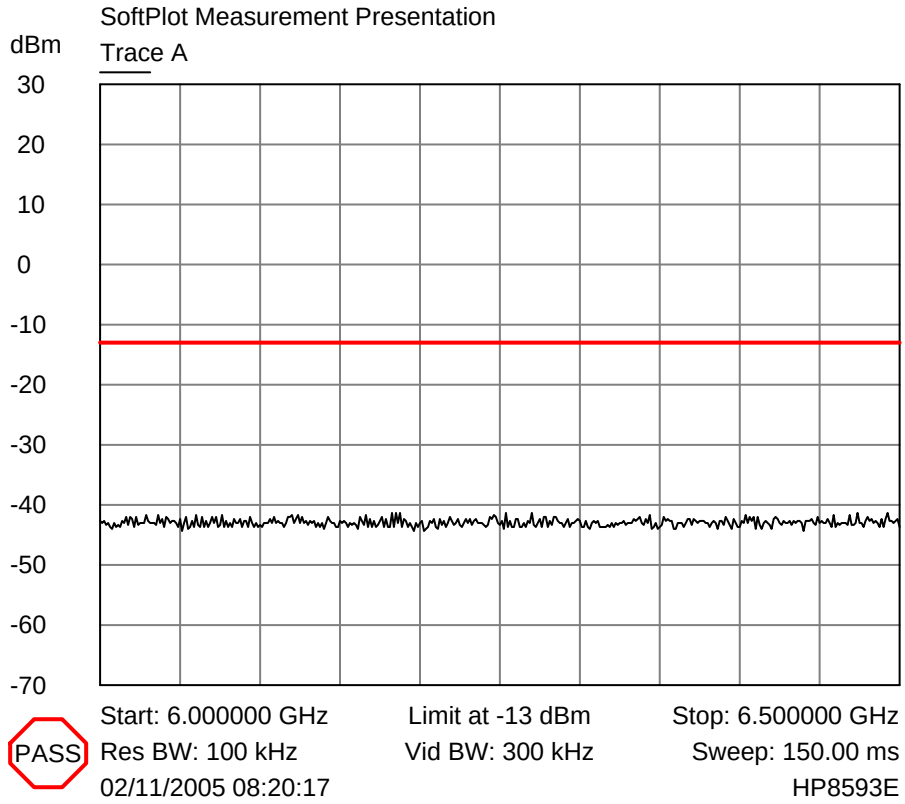
Test Results Plot No 15



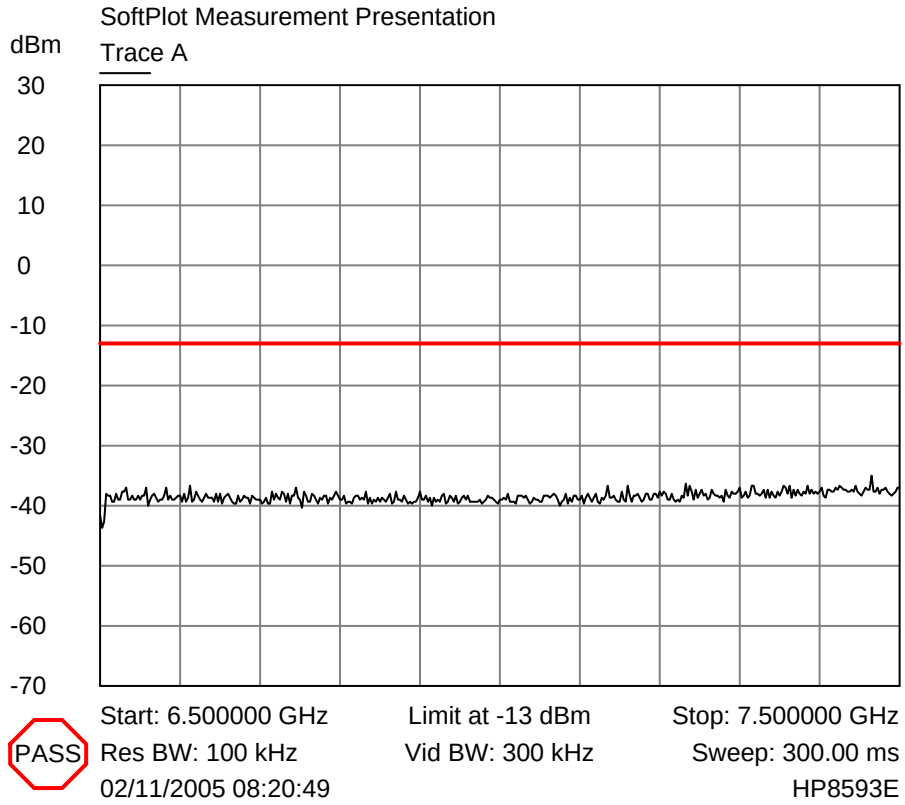
Test Results Plot No 16



Test Results Plot No 17



Test Results Plot No 18



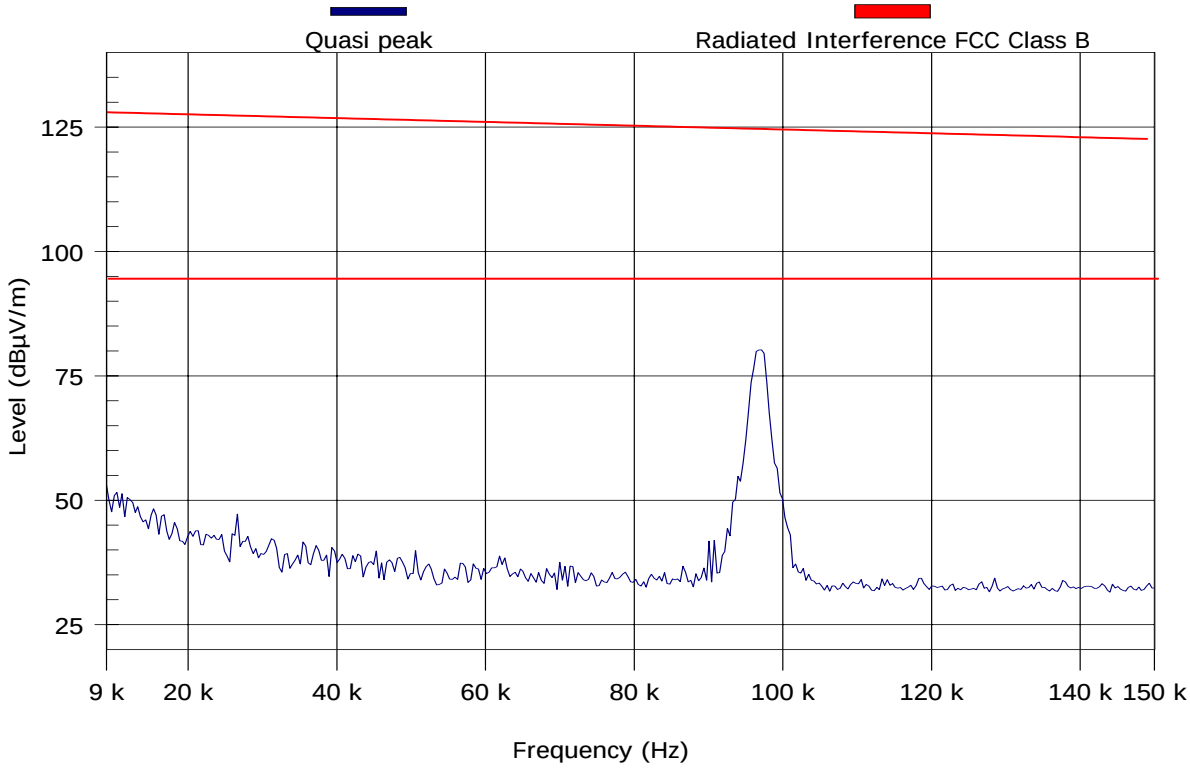
d. **Radiated spurious emission 19 – 36**

Test Results Plot No 19

FCC 2.1053, 27.53 EMISSION 0.009-0.15MHz 743 6db VER

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	1000 Hz
Test Engineer:		VBW:	1000 kHz
Antenna:	Rohde & Schwarz HFH 2-Z2	Sweep Time:	Auto: 423 ms
Polarization:	Horizontal	Pre Amplifier	No Description Available

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

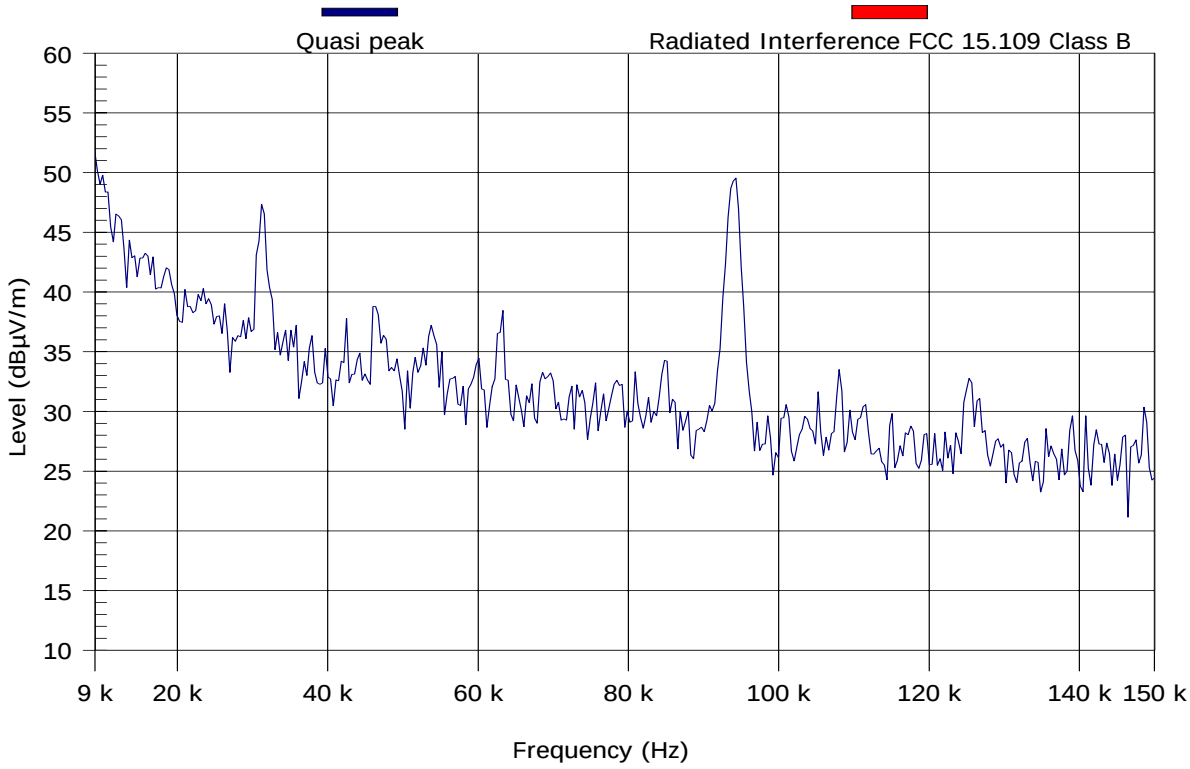
Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.
None

Test Results Plot No 20

FCC 2.1053, 27.53 EMISSION 0.009-0.15MHz 743 6db HOR

Test & EUT General Information		Receiver Setting	
EUT Name:	GA-OFDM-700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	70 dBµV
Date of Test:		RBW:	1000 Hz
Test Engineer:		VBW:	1000 kHz
Antenna:	Rohde & Schwarz HFH 2-Z2	Sweep Time:	Auto: 423 ms
Polarization:	Horizontal	Pre Amplifier	No Description Available

TEST REMARKS:Horizontal



MAXIMUM RESULT DEVIATION:

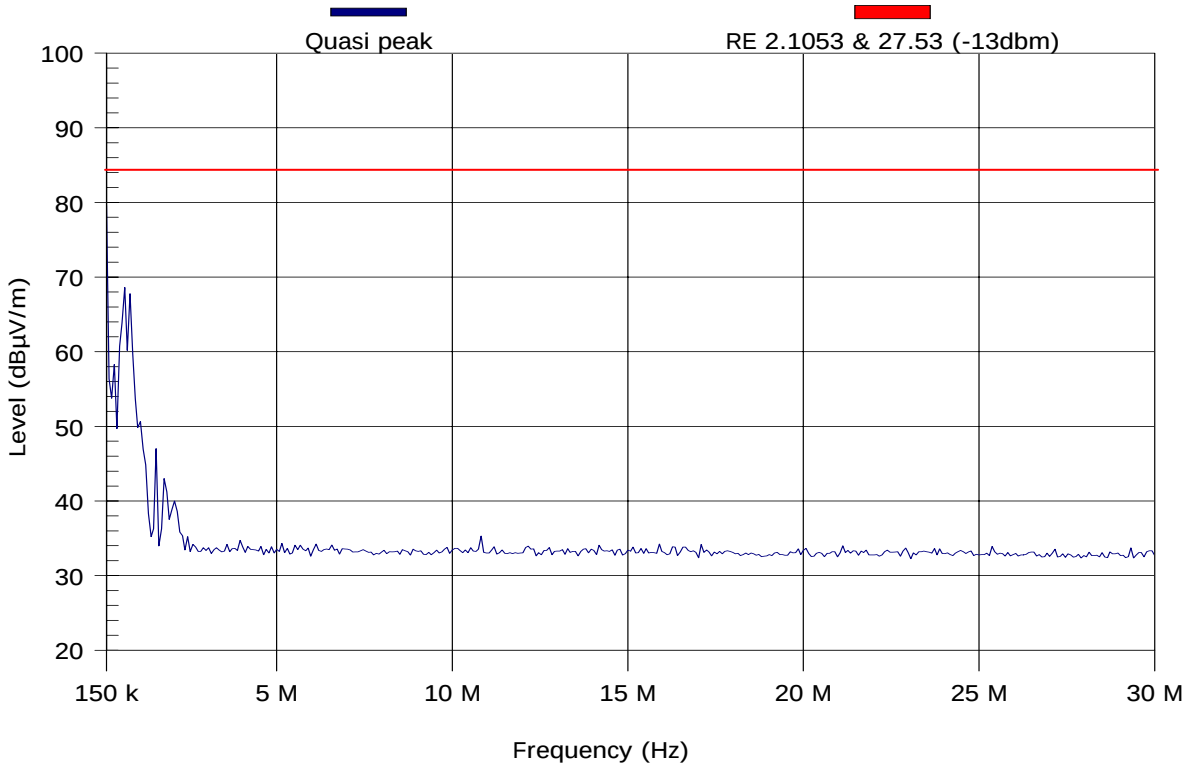
Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.
None

Test Results Plot No 21

FCC 2.1053, 27.53 EMISSION 0.15-30MHz 743 6db VER

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	9 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:	Rohde & Schwarz HFH 2-Z2	Sweep Time:	Auto: 1.11 s
Polarization:	Vertical	Pre Amplifier	No Description Available

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

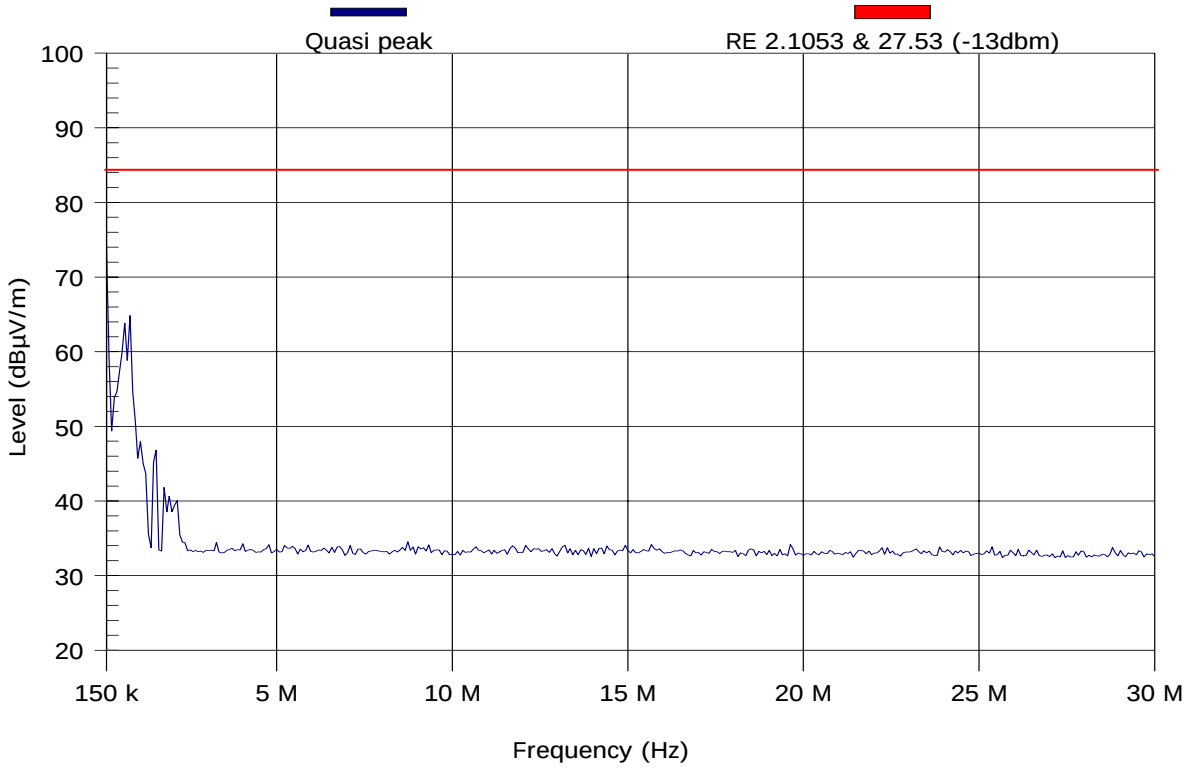
None

Test Results Plot No 22

FCC 2.1053, 27.53 EMISSION 0.15-30MHz 743 6db HOR

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	9 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:	Rohde & Schwarz HFH 2-Z2	Sweep Time:	Auto: 1.11 s
Polarization:	Horizontal	Pre Amplifier	No Description Available

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

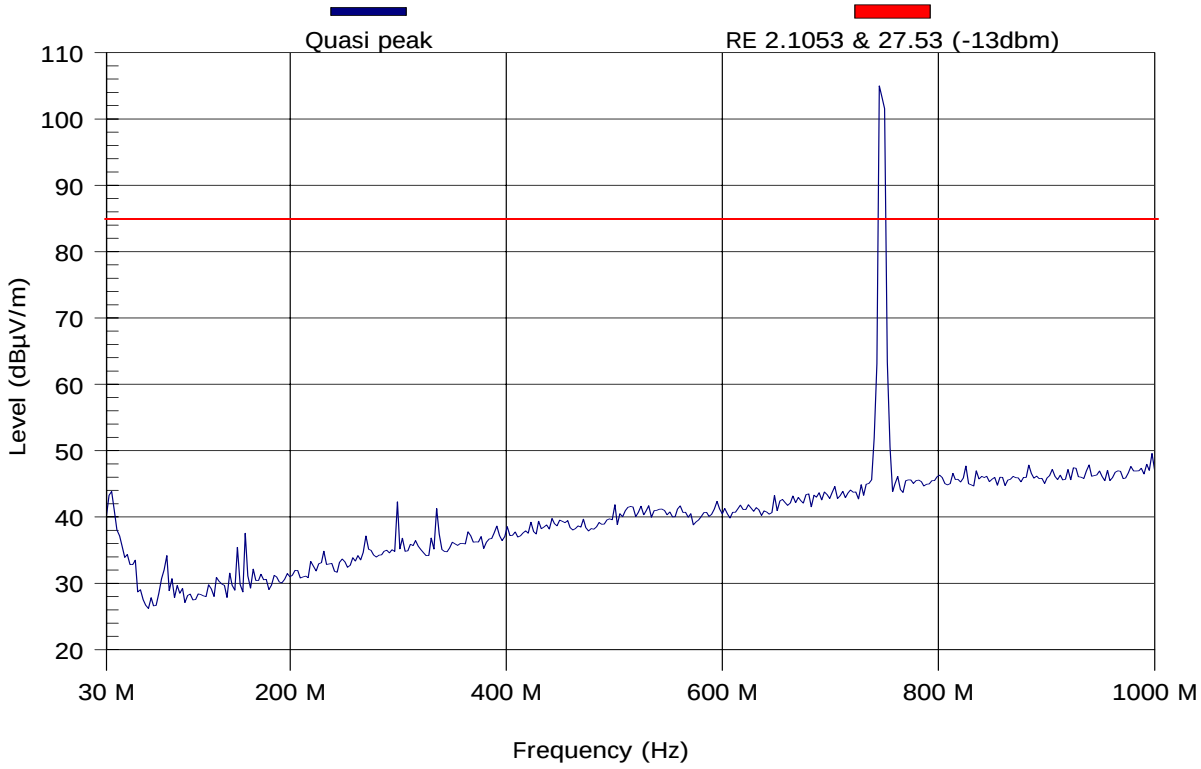
None

Test Results Plot No 23

FCC 2.1053, 27.53 EMISSION 30-1000MHz 743 6db

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	100 kHz
Test Engineer:		VBW:	300 kHz
Antenna:		Sweep Time:	Auto: 291 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

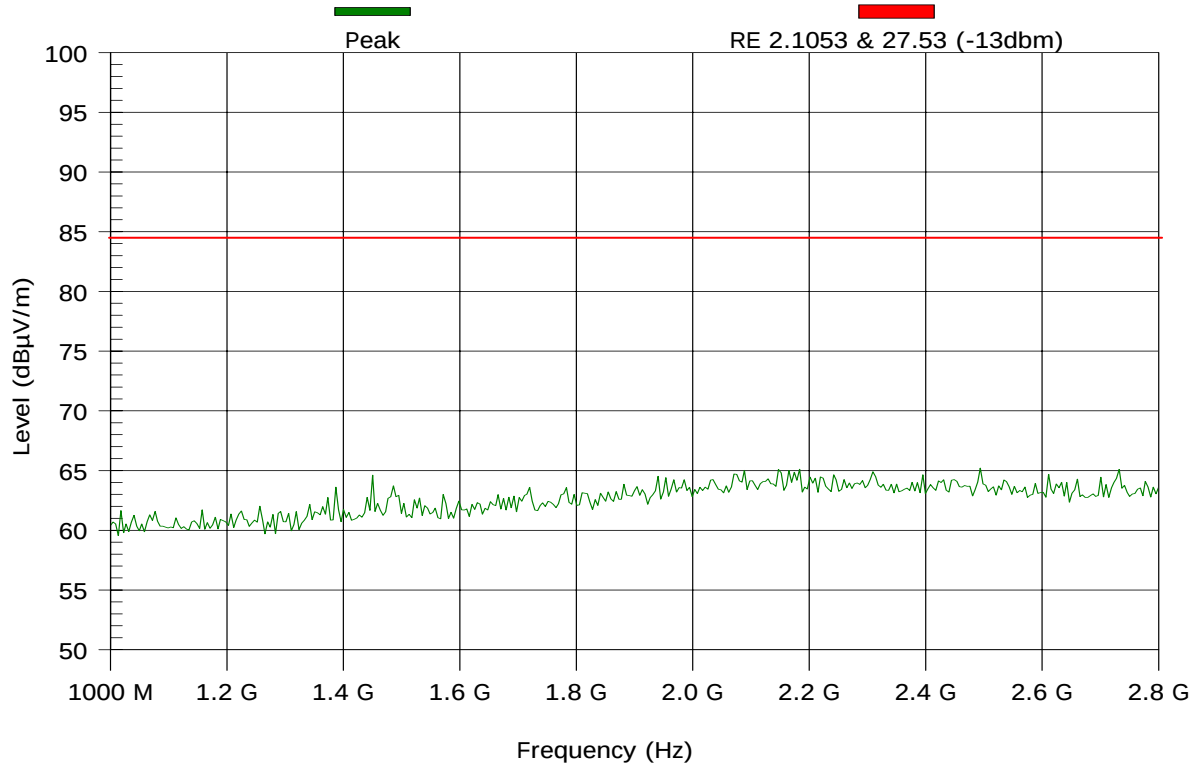
Frequency (MHz)	PK MaxHold (dBµV/m)	PK Limit (dBµV/m)	Result	Angle (degrees)	Height (m)	H/V
743.36	106.5	94		0	1	V

Test Results Plot No 24

FCC 2.1053, 27.53 EMISSION 1-2.8GHz 743 6db

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	100 kHz
Test Engineer:		VBW:	300 kHz
Antenna:		Sweep Time:	Auto: 540 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

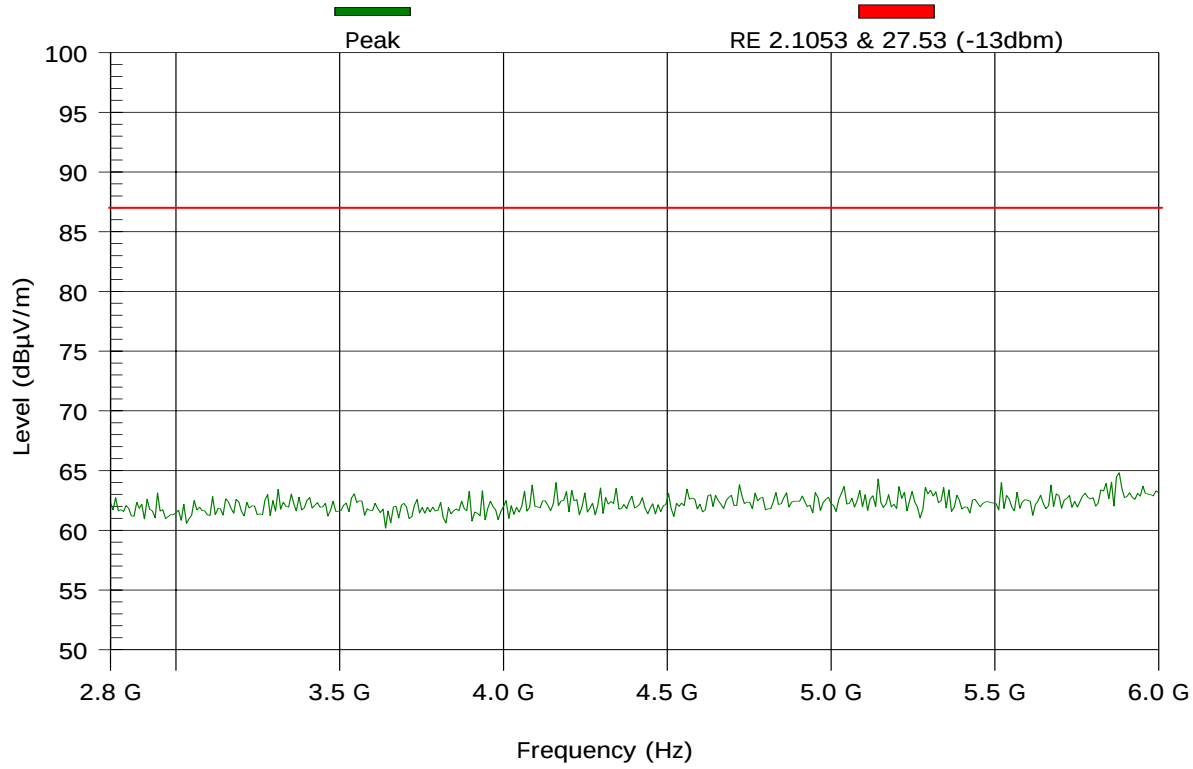
Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.
None

Test Results Plot No 25

FCC 2.1053, 27.53 EMISSION 2.8-6GHz 743 6db

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	100 kHz
Test Engineer:		VBW:	300 kHz
Antenna:		Sweep Time:	Auto: 960 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

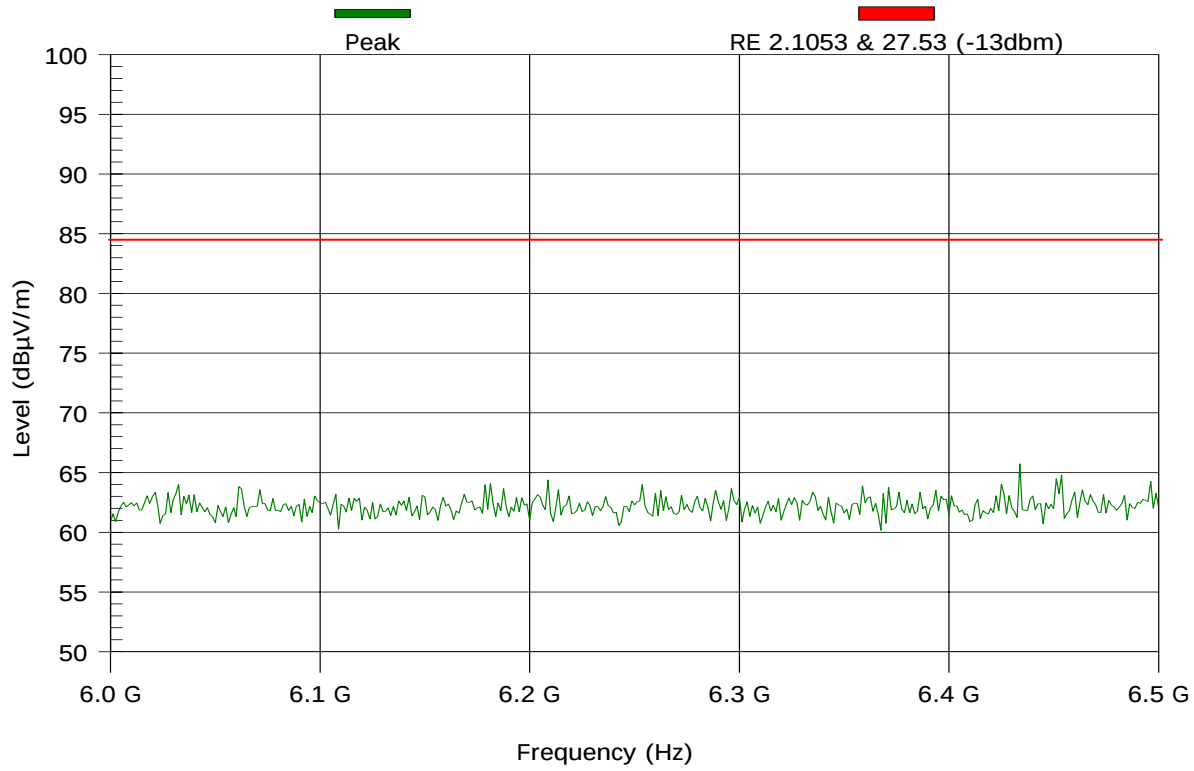
None

Test Results Plot No 26

FCC 2.1053, 27.53 EMISSION 6-6.5GHz 743 6db

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	100 kHz
Test Engineer:		VBW:	300 kHz
Antenna:		Sweep Time:	Auto: 150 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

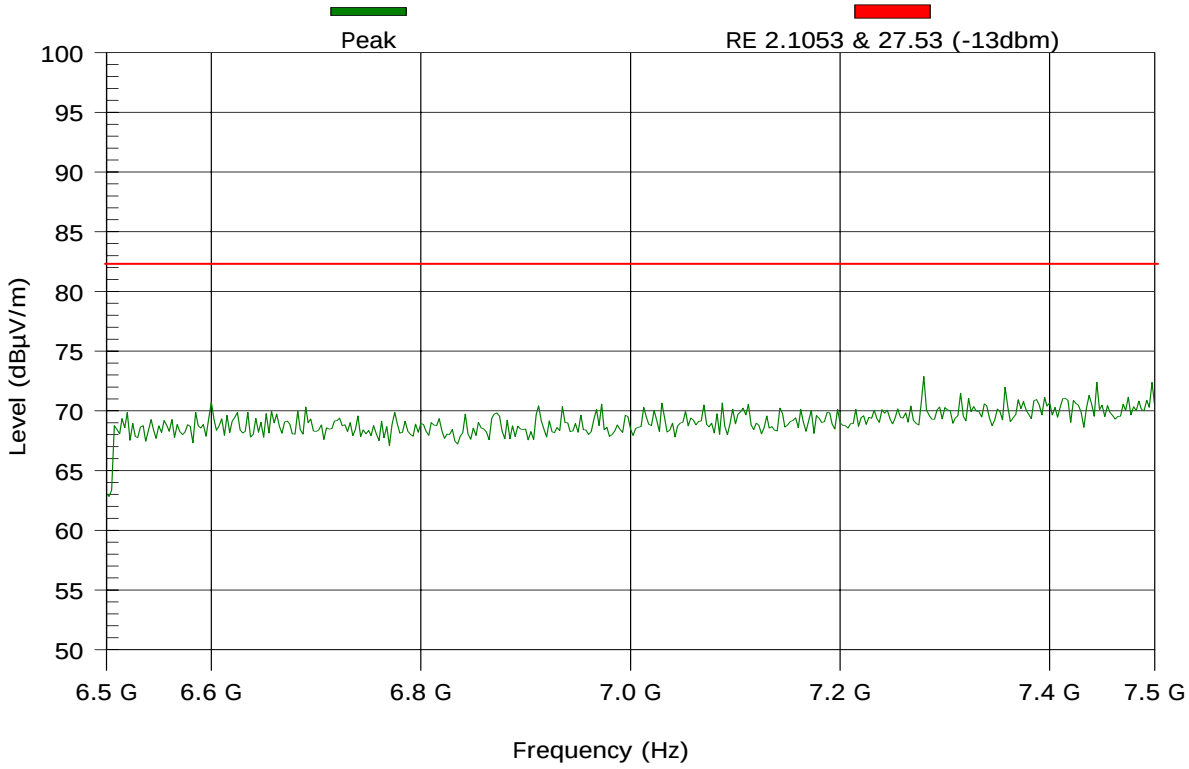
None

Test Results Plot No 27

FCC 2.1053, 27.53 EMISSION 6.5-7.5GHz 743 6db

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	100 kHz
Test Engineer:		VBW:	300 kHz
Antenna:		Sweep Time:	Auto: 300 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

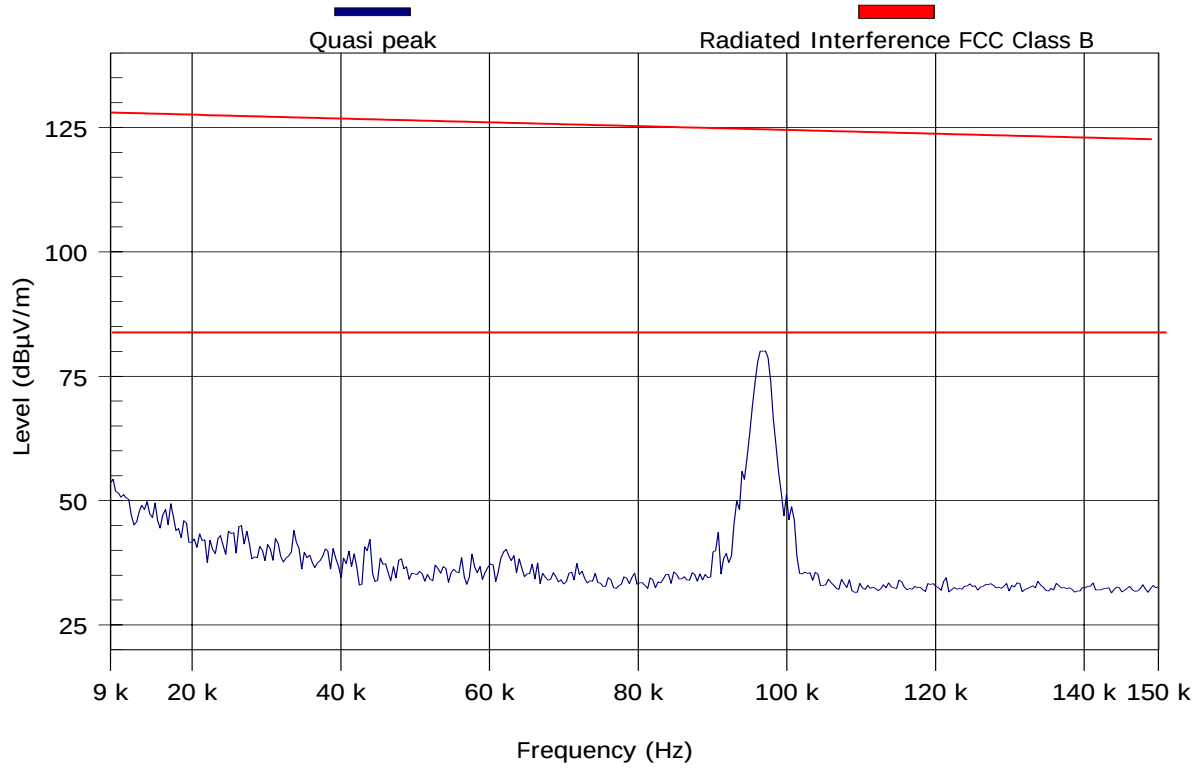
Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.
None

Test Results Plot No 28

FCC 2.1053, 27.53 EMISSION 0.009-0.15MHz 713 6db VER

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	1000 Hz
Test Engineer:		VBW:	1000 kHz
Antenna:	Rohde & Schwarz HFH 2-Z2	Sweep Time:	Auto: 423 ms
Polarization:	Horizontal	Pre Amplifier	No Description Available

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

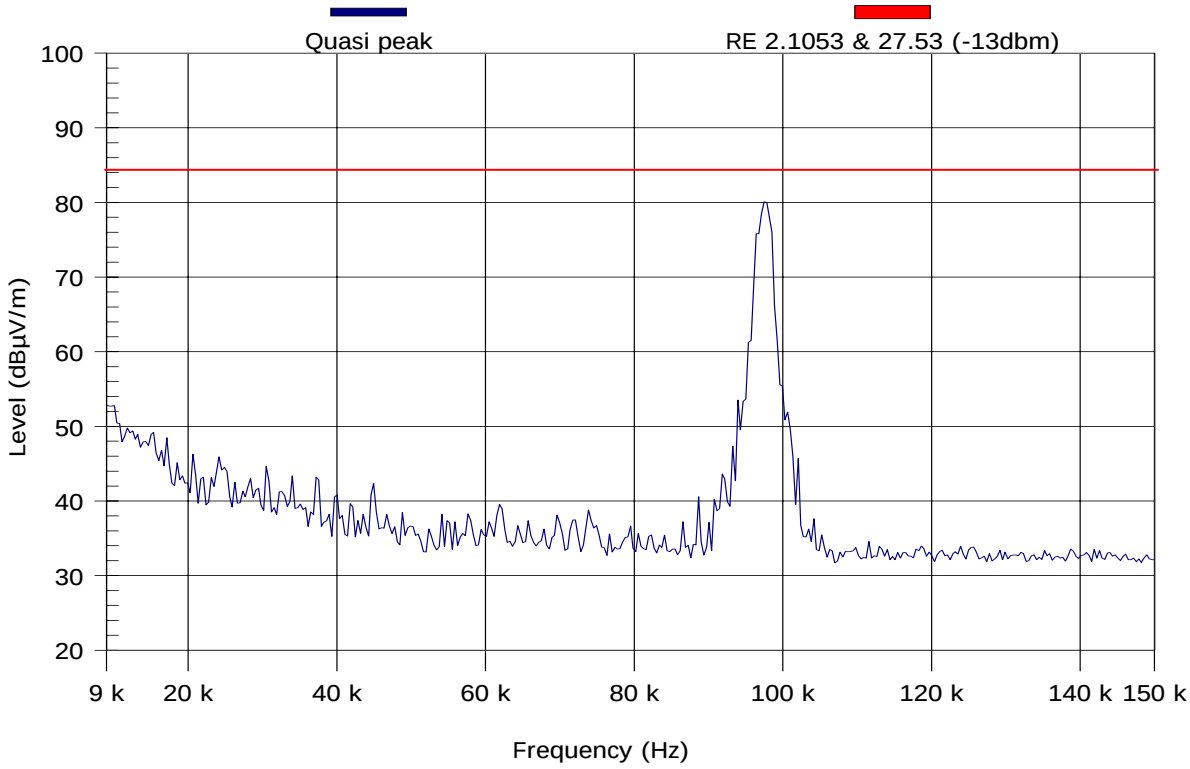
None

Test Results Plot No 29

FCC 2.1053, 27.53 EMISSION 0.009-0.15MHz 713 6db HOR

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	1000 Hz
Test Engineer:		VBW:	1000 kHz
Antenna:	Rohde & Schwarz HFH 2-Z2	Sweep Time:	Auto: 423 ms
Polarization:	Horizontal	Pre Amplifier	No Description Available

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

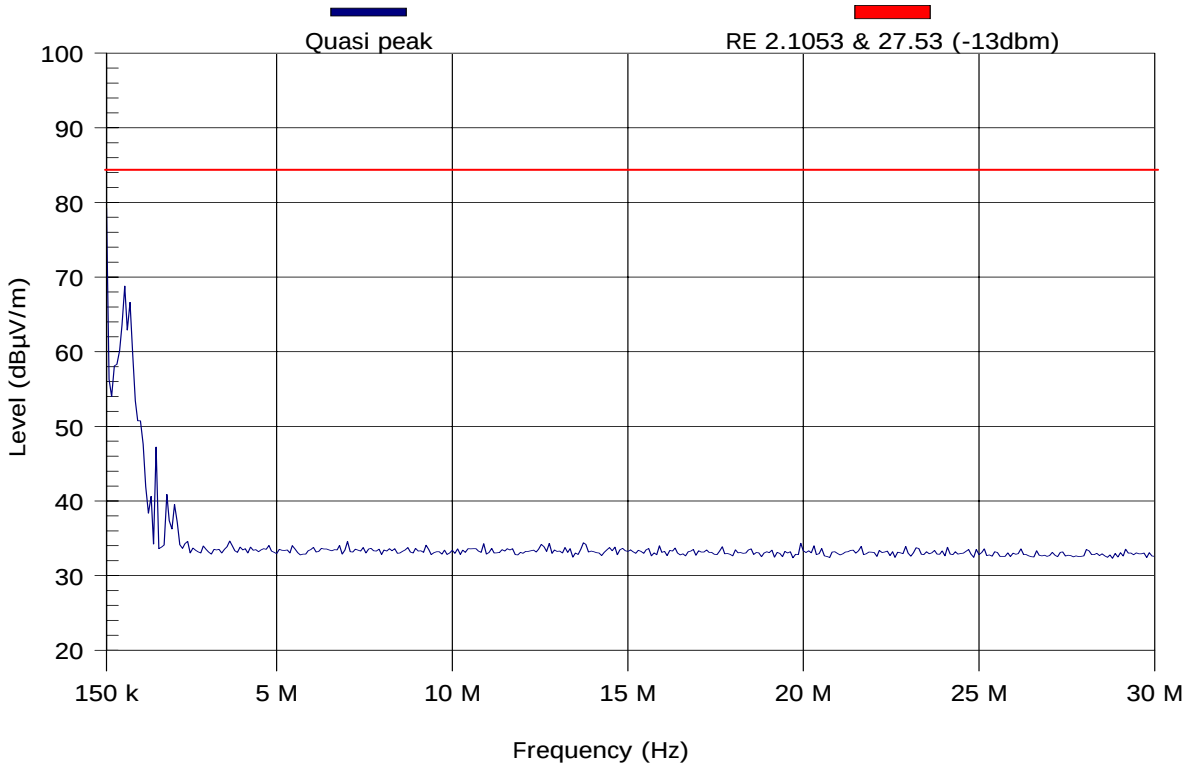
None

Test Results Plot No 30

FCC 2.1053, 27.53 EMISSION 0.15-30MHz 713 6db VER

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	9 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:	Rohde & Schwarz HFH 2-Z2	Sweep Time:	Auto: 1.11 s
Polarization:	Vertical	Pre Amplifier	No Description Available

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

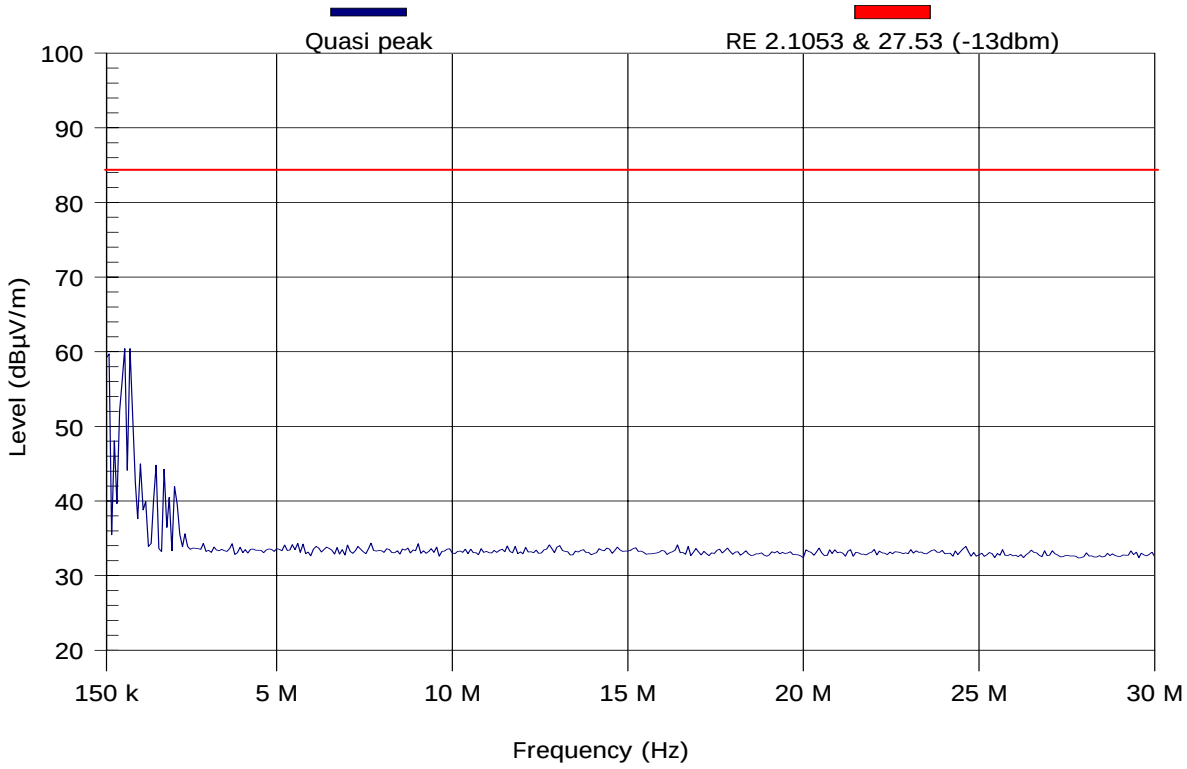
None

Test Results Plot No 31

FCC 2.1053, 27.53 EMISSION 0.15-30MHz 713 6db HOR

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	9 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:	Rohde & Schwarz HFH 2-Z2	Sweep Time:	Auto: 1.11 s
Polarization:	Horizontal	Pre Amplifier	No Description Available

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

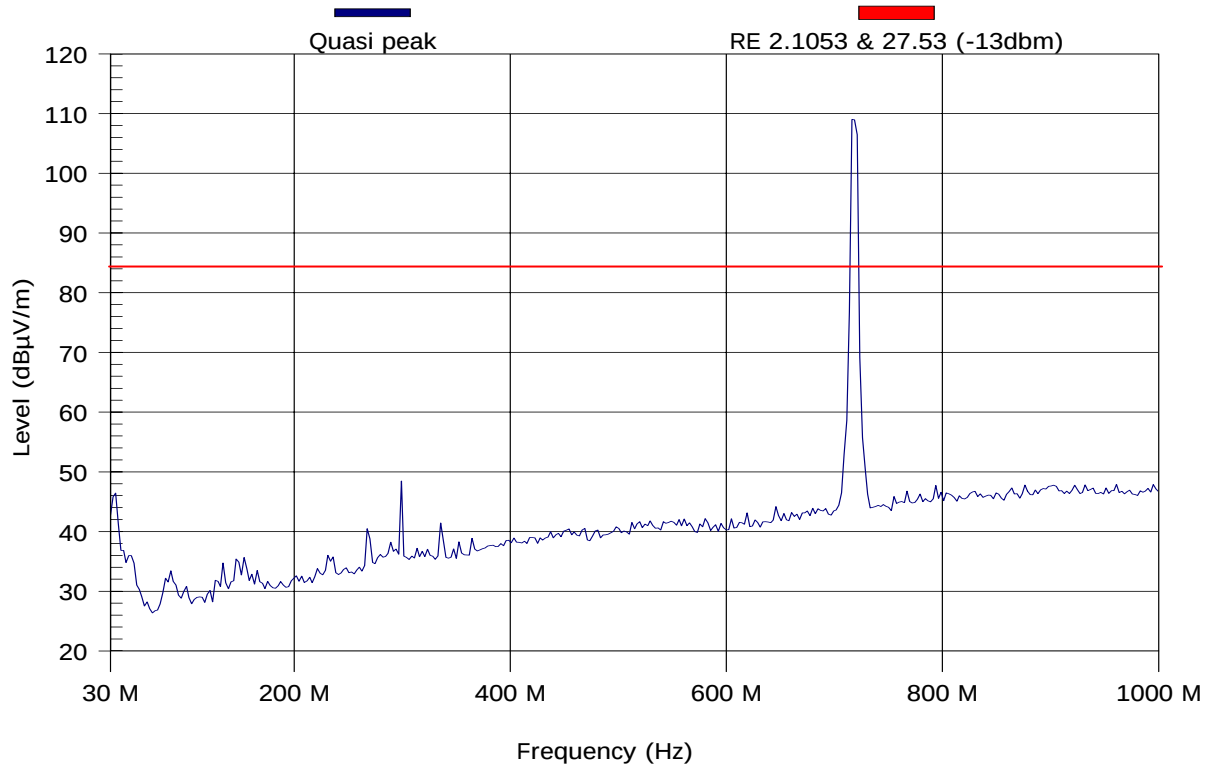
None

Test Results Plot No 32

FCC 2.1053, 27.53 EMISSION 30-1000MHz 713 6db

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	1000 Hz
Test Engineer:		VBW:	300 kHz
Antenna:		Sweep Time:	Auto: 291 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

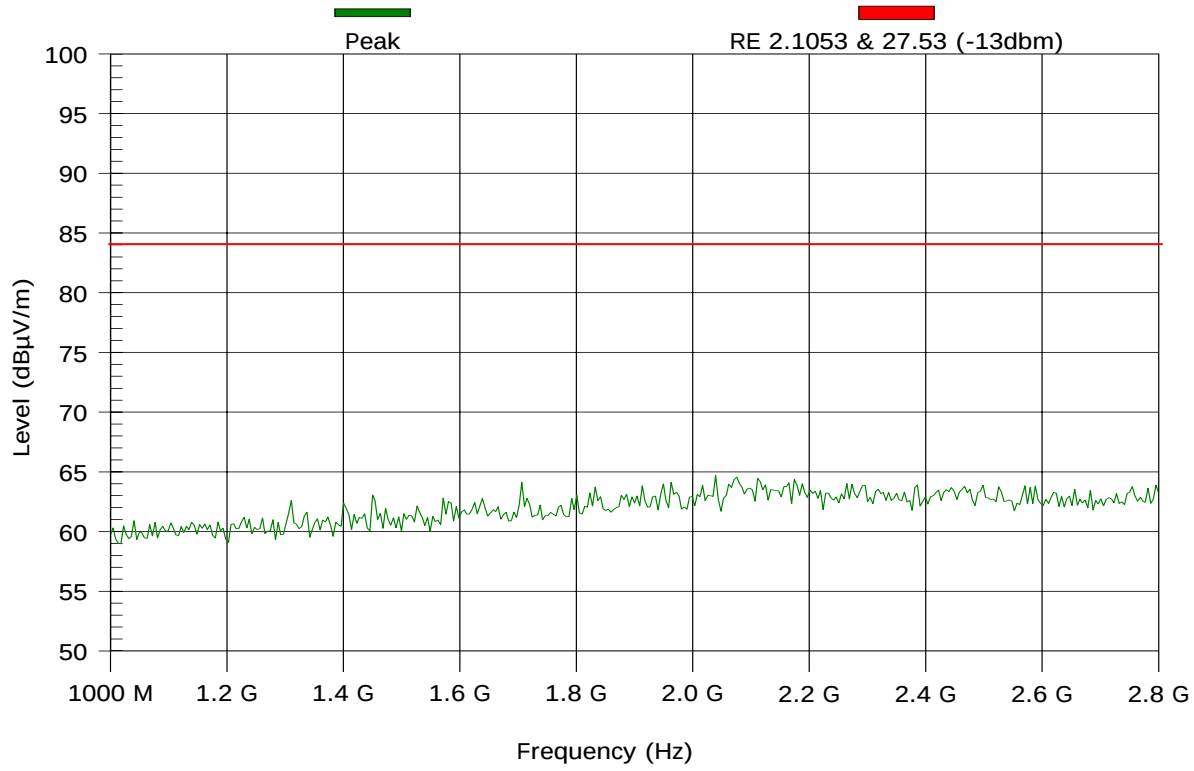
Frequency (MHz)	PK MaxHold (dBµV/m)	PK Limit (dBµV/m)	Result	Angle (degrees)	Height (m)	H/V
713.309	111.8	94		0	1	H

Test Results Plot No 33

FCC 2.1053, 27.53 EMISSION 1-2.8GHz 713 6db

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	100 kHz
Test Engineer:		VBW:	300 kHz
Antenna:		Sweep Time:	Auto: 540 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

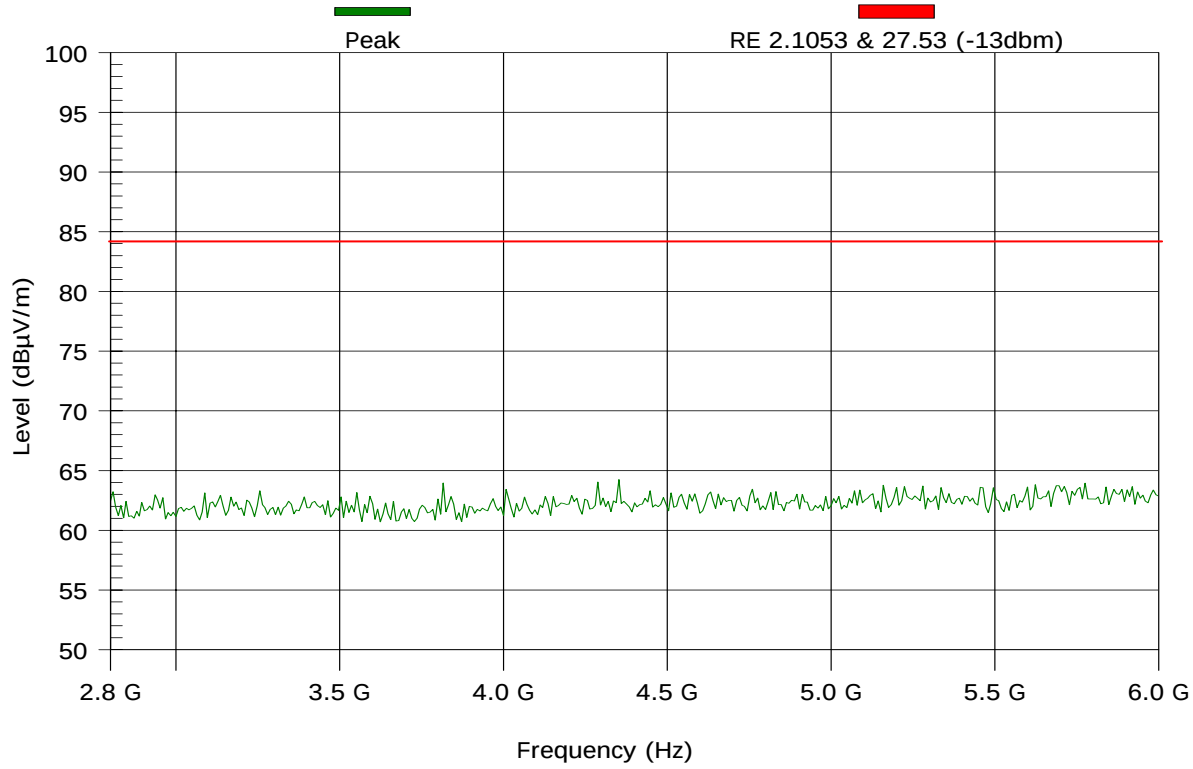
None

Test Results Plot No 34

FCC 2.1053, 27.53 EMISSION 2.8-6GHz 713 6db

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	100 kHz
Test Engineer:		VBW:	300 kHz
Antenna:		Sweep Time:	Auto: 960 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

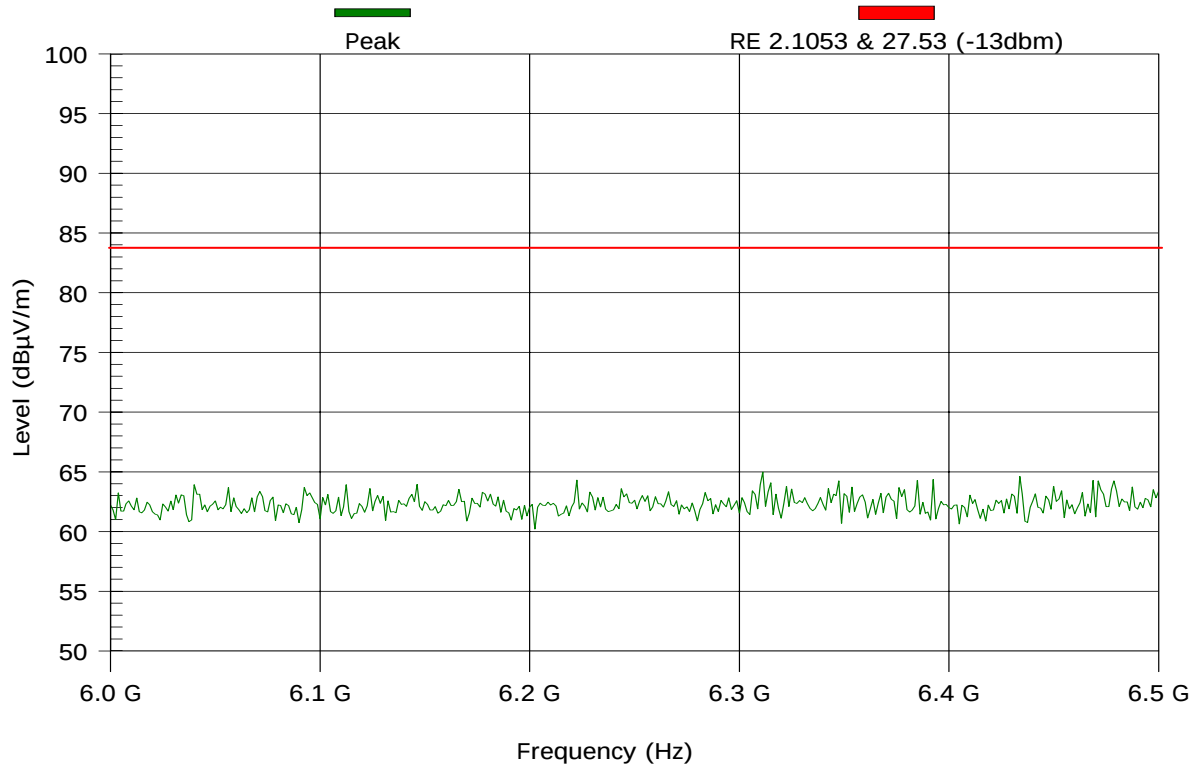
Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.
None

Test Results Plot No 35

FCC 2.1053, 27.53 EMISSION 6-6.5GHz 713 6db

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	100 kHz
Test Engineer:		VBW:	300 kHz
Antenna:		Sweep Time:	Auto: 150 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

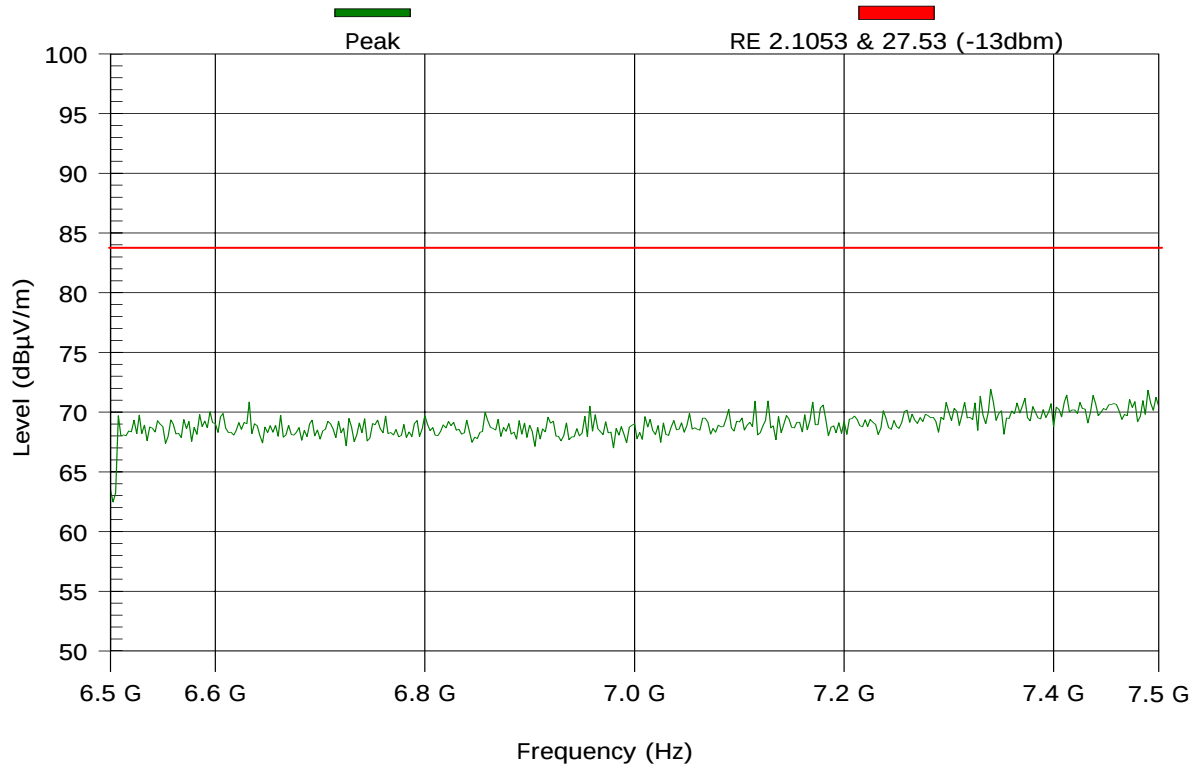
None

Test Results Plot No 36

FCC 2.1053, 27.53 EMISSION 6.5-7.5GHz 713 6db

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	100 kHz
Test Engineer:		VBW:	300 kHz
Antenna:		Sweep Time:	Auto: 300 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

None

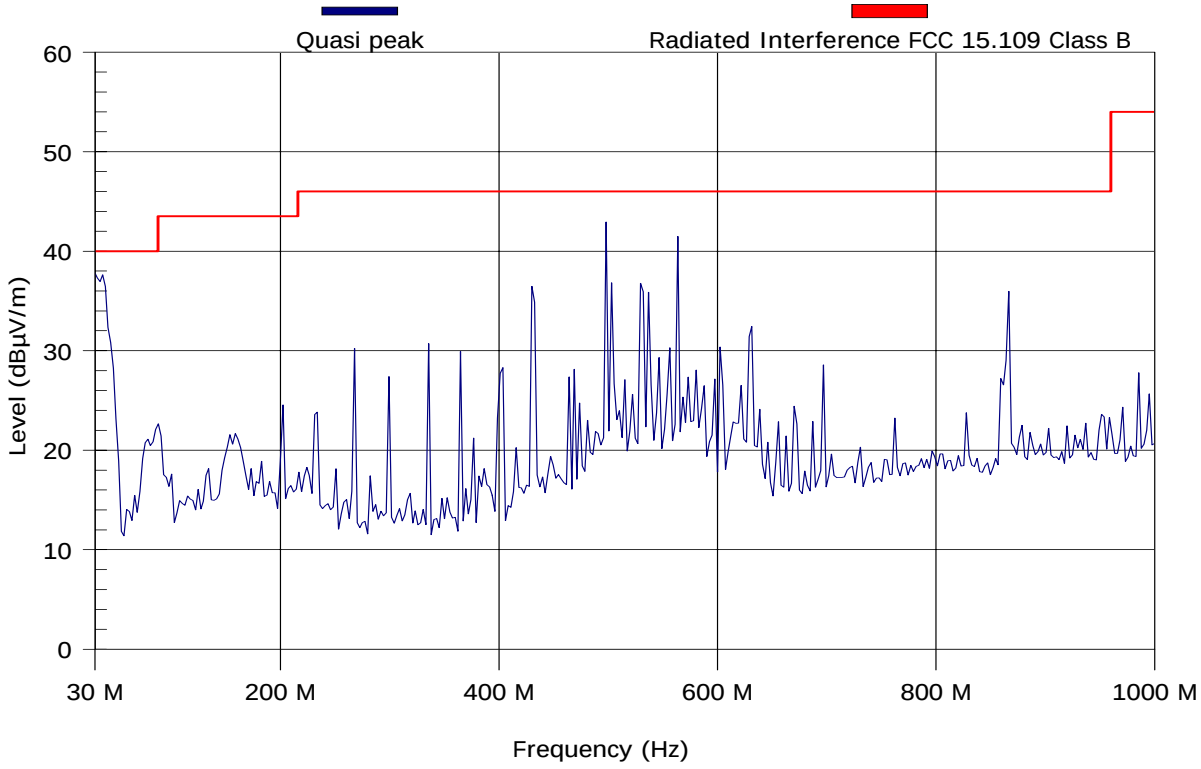
e. **Unintentional radiated emission 37 – 41**

Test Results Plot No 37

RE102 FCC-15.109 30-1000MHz STBY

Test & EUT General Information		Receiver Setting	
EUT Name:	GA-OFDM-700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	70 dBµV
Date of Test:		RBW:	120 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:	Frankonia BTA-L_A 3m	Sweep Time:	Auto: 202.08 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	LNA 29db 0.01-1GHz No-3

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

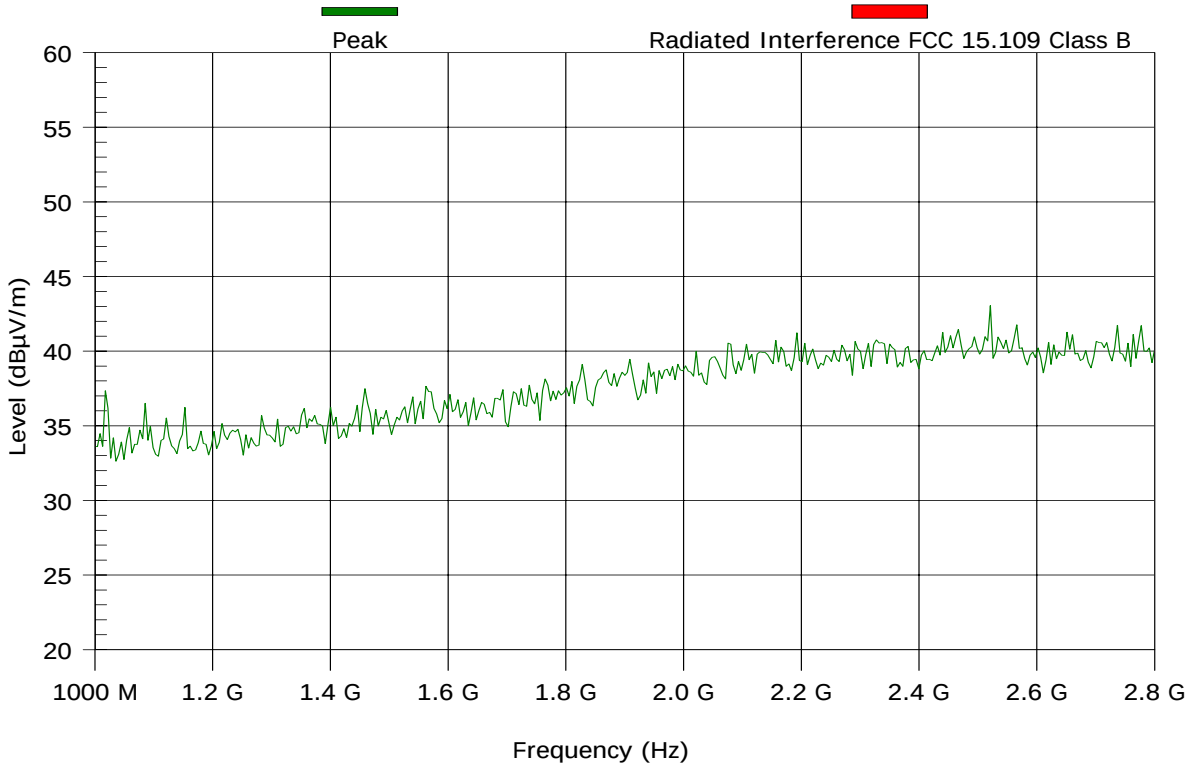
Frequency (MHz)	PK MaxHold (dBµV/m)	Results	QP Limit (dBµV/m)	Angle (degrees)	Height (m)
30.082	34.8	34.5	40	180	1.6
30.958	36.1	34.6	40	180	1.6
37.765	35.8	34.9	40	180	1.6
494.998	43.7	43.5	46	0	1.6
560.999	40.9	40.6	46	0	1.6

Test Results Plot No 38

FCC 1-2.8GHz STBY

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	1000 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:	ARA DRG1840 18-40GHz SER-1058	Sweep Time:	Auto: 36 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	LNA 44db 6-18 GHz

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

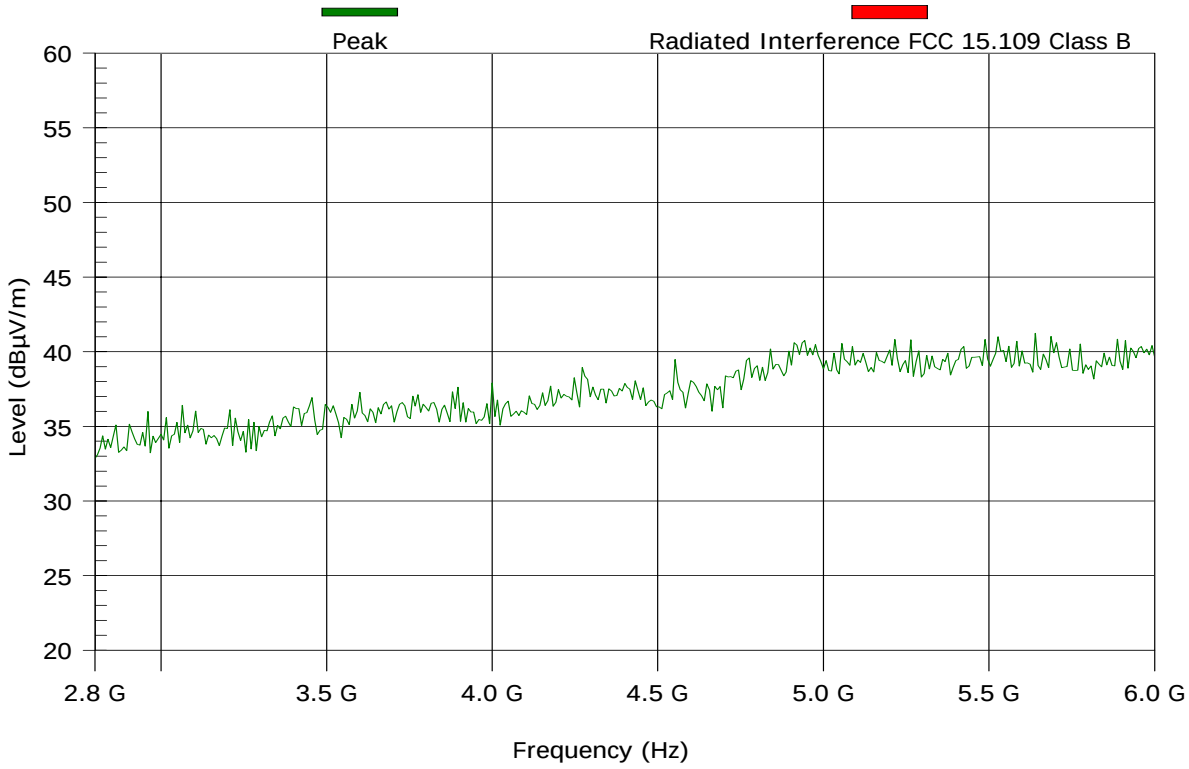
Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.
None

Test Results Plot No 39

FCC 2.8-6GHz STBY

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	1000 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:	ARA DRG1840 18-40GHz SER-1058	Sweep Time:	Auto: 64 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	LNA 44db 6-18 GHz

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

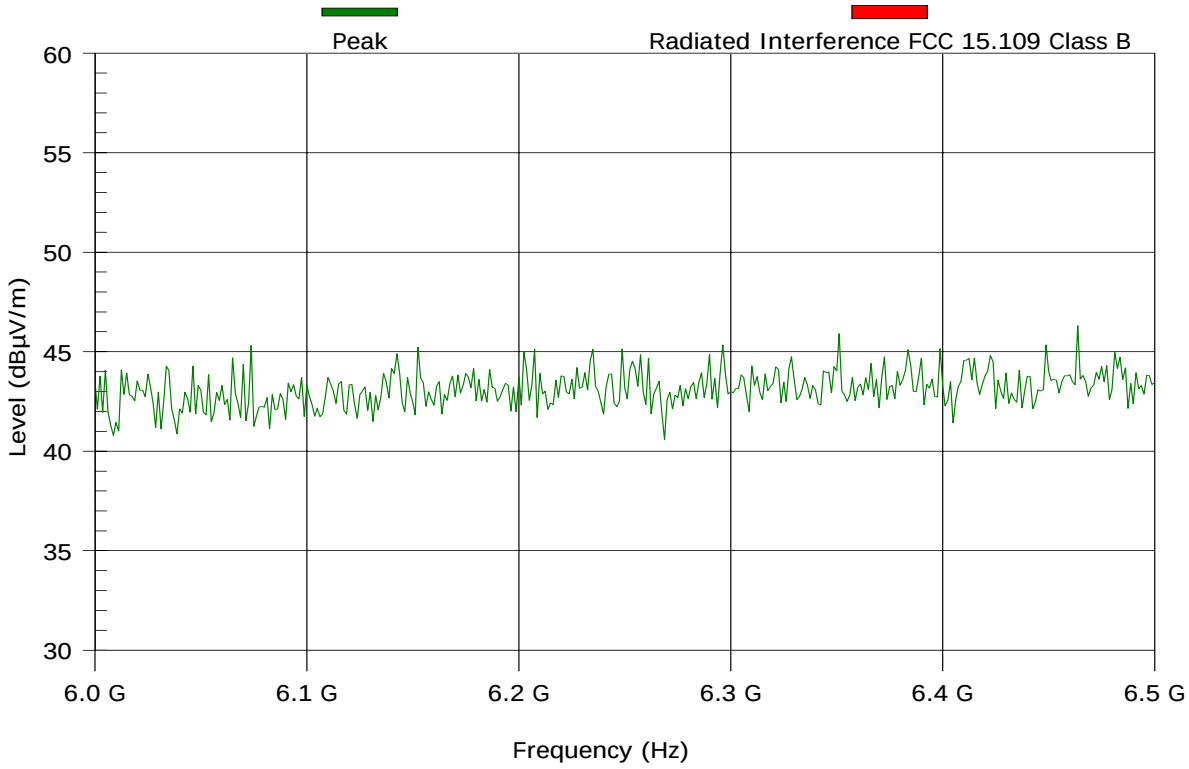
None

Test Results Plot No 40

FCC 6-6.5GHz STBY

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	1000 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:	ARA DRG1840 18-40GHz SER-1058	Sweep Time:	Auto: 20 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	LNA 44db 6-18 GHz

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

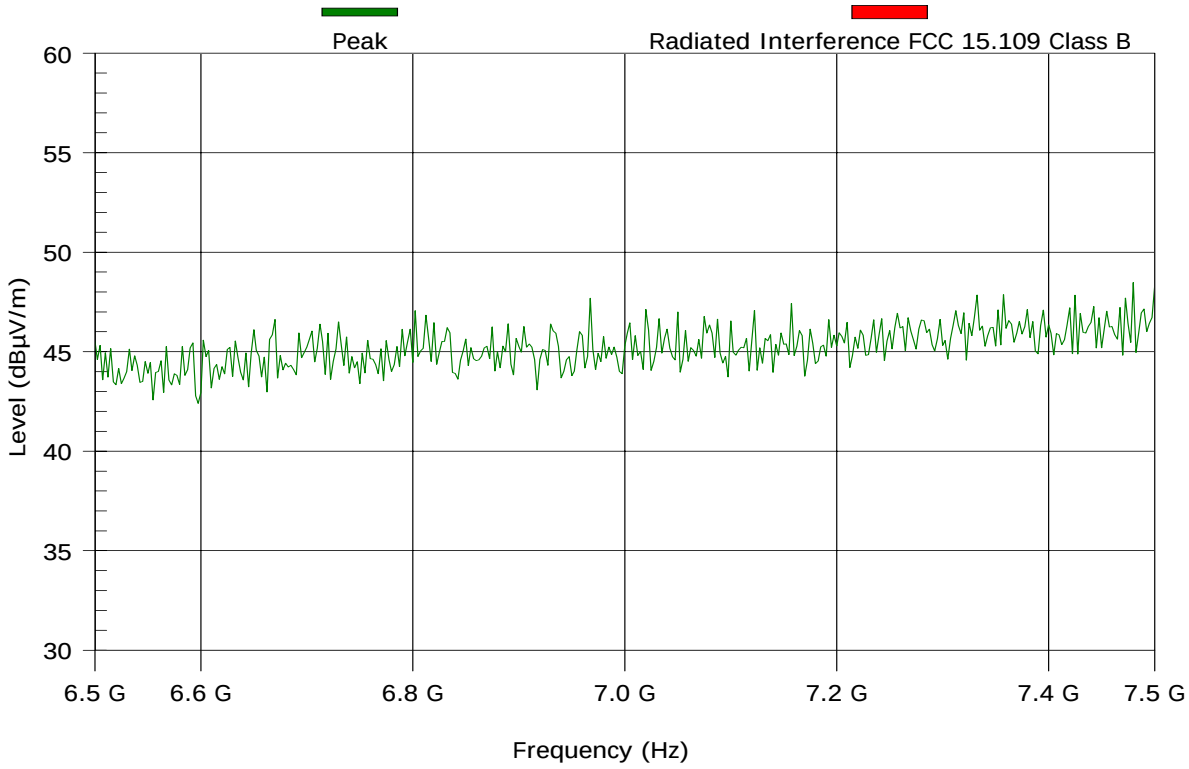
None

Test Results Plot No 41

FCC 6.5-7.5GHz STBY

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	1000 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:	ARA DRG1840 18-40GHz SER-1058	Sweep Time:	Auto: 40 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	LNA 44db 6-18 GHz

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

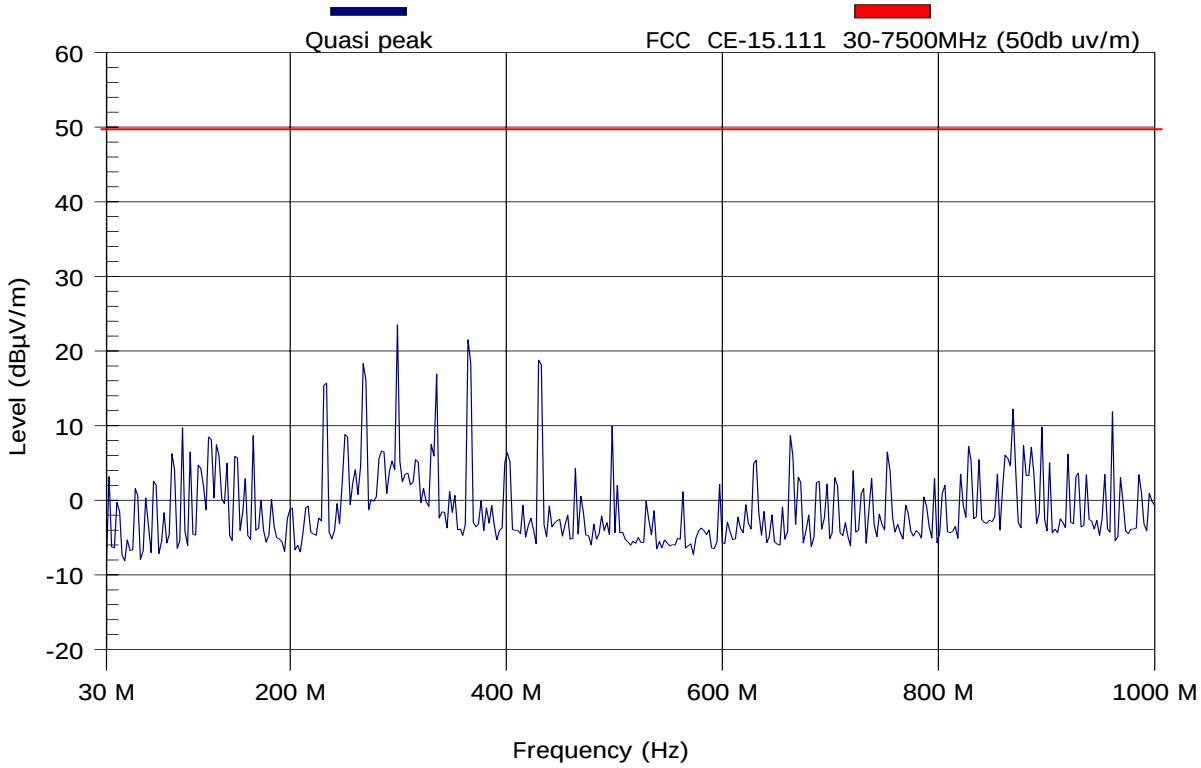
f. **Antenna power conduction for receiver 42 – 43**

Test Results Plot No 42

FCC CE-15.111 30-1000MHz STBY

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	70 dBµV
Date of Test:		RBW:	120 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:		Sweep Time:	Auto: 202.08 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	No Description Available

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

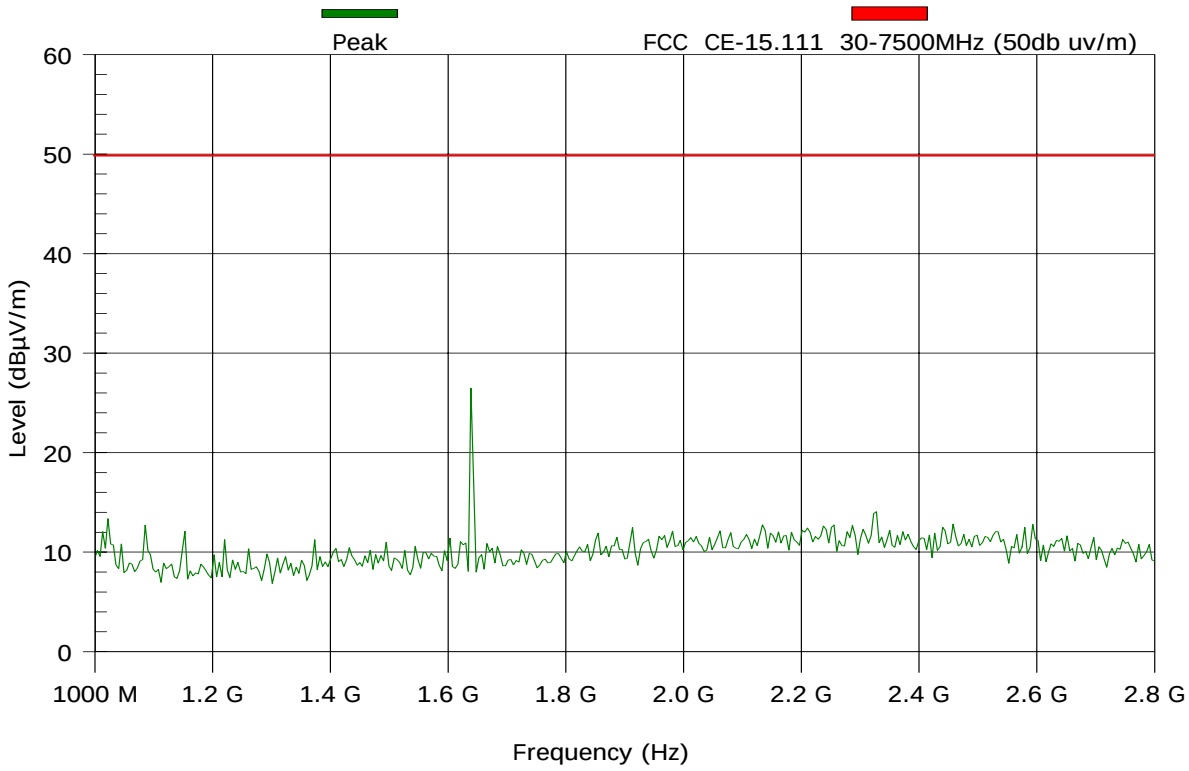
None

Test Results Plot No 43

FCC CE-15.111 1-2.8GHz STBY

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	90 dBµV
Date of Test:		RBW:	1000 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:		Sweep Time:	Auto: 36 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	LNA 44db 6-18 GHz

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.
None

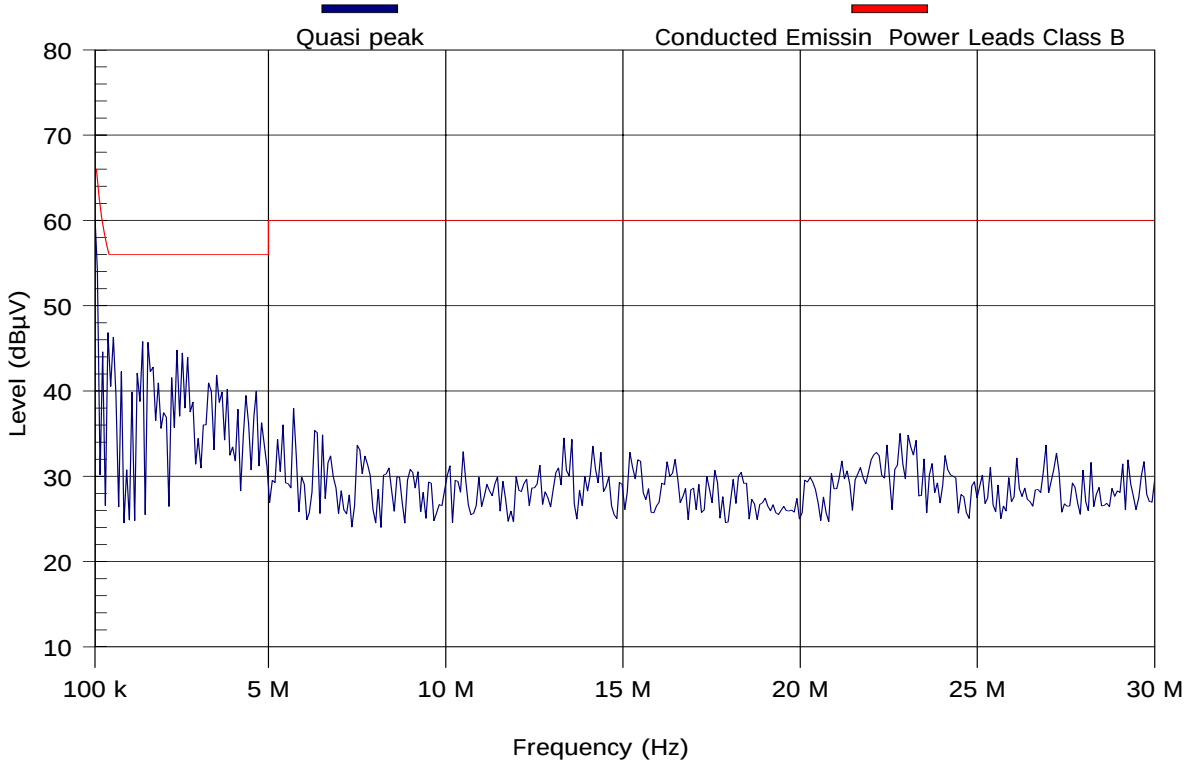
g. **Conducted emission 44 – 45**

Test Results Plot No 44

CE FCC 15.207 150K-30MHz PHASE

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	80 dBµV
Date of Test:		RBW:	9 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:		Sweep Time:	Auto: 1.11 s
Polarization:	||7| polarization||	Pre Amplifier	

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

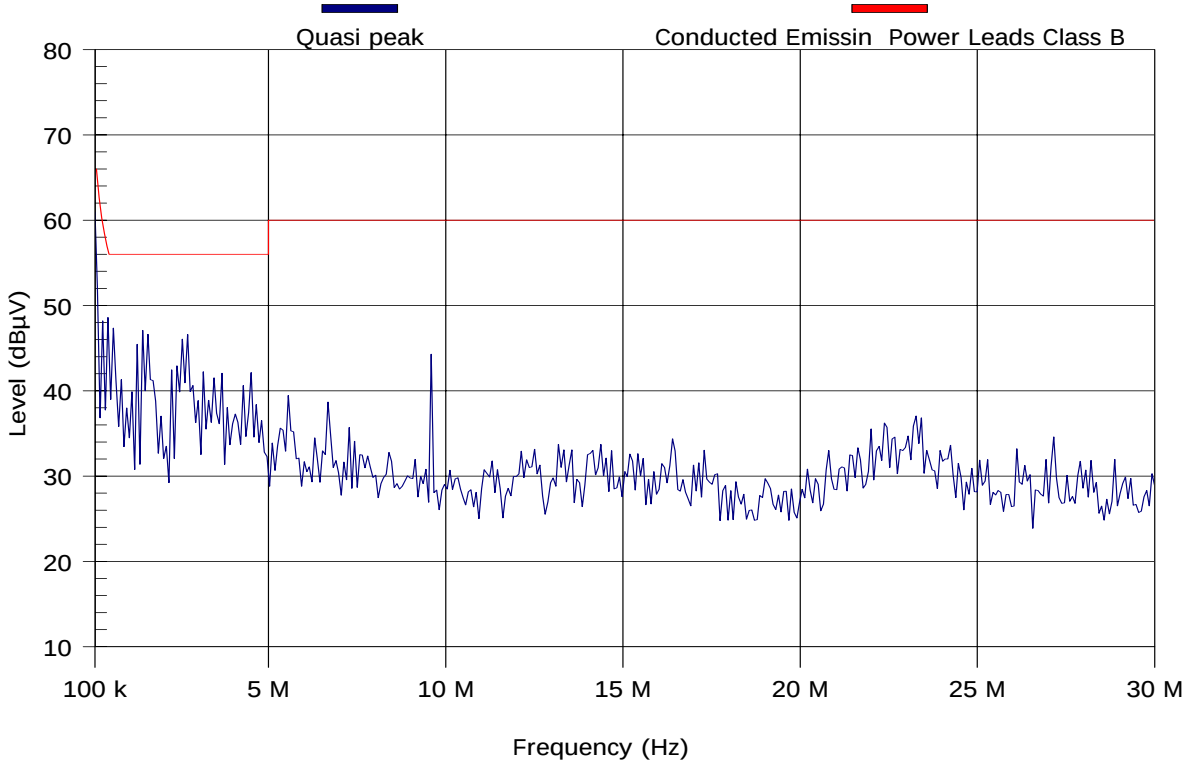
Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

Test Results Plot No 45

CE FCC 15.207 150K-30MHz NEUTRAL

Test & EUT General Information		Receiver Setting	
EUT Name:	GA_OFDM_700-RSU	Spect Analyzer	S.A HP 8593E
S/N:	0050C21CCFAE	Ref. Level:	80 dBµV
Date of Test:		RBW:	9 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:		Sweep Time:	Auto: 1.11 s
Polarization:	||4| polarization||	Pre Amplifier	

TEST REMARKS:2-NOV-2005



MAXIMUM RESULT DEVIATION:

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

13 CORRECTION FACTORS

Correction Factor for **line impedance stabilization network** model DC-AC-20A-01

Frequency (KHz)	Correction Factor (db)
10	4.4
20	1.6
30	0.8
40	0.4
50	0.3
60	0.25
70	0.15
100	0.1
200	0

DOUBLE RIDGE HORN Model 3105 S/N:0050C21CCFAE-C3-3D 2052 Antenna Factor

Frequency (MHz)	Ant. Factor (db/m)
1000	24.4
2000	26.2
3000	30
4000	32.6
5000	33.8
6000	34.9
700-RSU0	36.2
8000	36.9
700-RSU0	37.8
10000	38.4
11000	39.1
12000	40.1
13000	42
14000	40.6
15000	39.3
16000	40.3

Antenna Factor for broadband antenna model BTA-L S/N:0050C21CCFAE-C3-3D 980045L

Frequency (KHz)	Ant. Factor (db/m)	Frequency (KHz)	Ant. Factor (db/m)
30	19.05	300	14.35
32	19.13	310	14.28
34	18.74	320	14.43
36	18.03	330	14.13
38	16.61	340	14.48
40	15.44	350	14.89
45	13.66	360	15.12
50	11.52	370	15.70
55	10.04	380	15.78
60	7.68	390	16.22
65	6.11	400	16,45
70	5.47	425	16.99
75	5.98	450	17.59
80	6.86	475	17.28
85	7.20	500	17.69
90	7.47	525	18.91
95	7.23	550	19.06
100	7.20	575	18.20
105	7.30	600	18.87
110	7.37	625	18.81
115	7.02	650	19.64
120	6.82	675	19.92
125	7.05	700	20.66
130	7.83	725	21.08
135	9.61	750	21.53
140	7.93	775	22.39
145	8.03	800	22.66
150	8.29	825	22.87
160	8.72	850	22.65
170	9.18	875	23.12
180	9.05	700	23.70
190	9.80	925	23.40
200	10.61	950	23.43
210	10.34	975	23.30
220	11.21	1000	24.02
230	11.69		
240	11.62		
250	11.85		
260	12.45		
270	13.16		
280	13.48		
290	13.74		

14 Abbreviations and Acronyms

The following abbreviations and acronyms are applicable in this document

BW	Bandwidth
Db	Decibel
EMI	Electromagnetic interference
E.U.T	Equipment under test
LISN	Line impedance stabilization network
RBW	Resolution band width
S/N	Serial number
VBW	Video bandwidth