REV	Δ	Description	Sheet Effected	Date	Drawn	Checked
A				10.10.05	D.Lanuel	S.Cohen

EMC Laboratory

TXS-700-2

FCCID: LSQ-TXS-700-2
Manufactured by
Elmotech Ltd.

EMC Test Report

According FCC Part 15 Requirements

October 2005

	Function/Title	Name	Signature	Date
Prepared by	Test Engineer	D.Lanuel		10.10.05
Checked by	Test Engineer	D.Lanuel		10.10.05
Approved by	EMC Lab. Manager	S.Cohen		10.10.05

Table of Contents

Para Page

1 Administrative Data

1.1. Scope

This document describes the measurement procedures and tests for Radiated and conducted emission testing of the TXS-700-2 Manufactured by Elmotech System Ltd

2 General Information

2.1. Description of equipment Under Test

Equipment under Test:	TXS-700-2
FCCID	LSQ-TXL-700-2
Manufacturer:	Elmotech System Ltd.
Serial Numbers:	5290
Mode of Operation:	TX MODE
Receiver operating frequency:	433.92MHZ
Year of Manufacture:	2005

2.2. Applicant Information:

Applicant:	Elmotech 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

2.3. Test Performance:

Date of reception for testing:	28.09.05
Dates of testing	28.09.05
Test Laboratory Location	TADIRAN EMC LAB, Hashoftim 26 Holon 5810-42 ISRAEL Tel: 972-3-5574476 Fax: 972-3-5575320
Applicable EMC Specification:	**F**ederal **C**ommunication **C**ommission (FCC), FCC Part 15: Radio Frequency Devices, Sections 15.109, 15.209 & 15.231.15.207

3 Test Summary and Signatures.

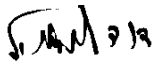
TADIRAN EMC Laboratory has completed testing of E.U.T in accordance with the requirements of the FCC Part 15 Regulations for Class B equipment.

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	15.231 & 15.205	PASS
4	Radiation emission	15.109	PASS

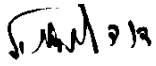
3.1. **Test performed by:**

Mr. D. Lanuel Test Engineer



3.2. **Test Report prepared by:**

Mr. D. Lanuel Test Engineer



3.3. **Test Report Approved by:**

Mr. Samuel Cohen EMC Lab. Manager

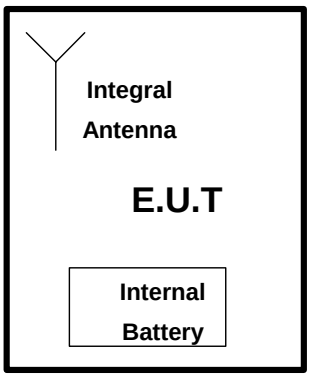
4 E.U.T information

4.1. E.U.T description

4.1.1 The EUT is an wrist watch which contains an integral transmitter. It is used to monitor offender status within an area covered by a local positioning system. The device in active mode transmits 5msec identification & status signal with interval to be a random time of 18-22sec

4.2. E.U.T Test Configuration

E.UT. Test configuration is shown in figure bellow



4.3. E.U.T Mode of Operation description

4.3.1 433.92MHz TX Mode operated by battery

5 BANDWIDTH OF THE EMISSION part 15.231(c)

E.U.T:	TXS-700-2 5290
Test Method:	ANSI 63.4
Date:	28.09.05
Relative Humidity:	40%
Ambient Temperature:	22c
Air Pressure:	1040hpa
Test Setup:	figure 1

Testing Engineer: D.Lanuel **Date** 02.10.05

5.1. Test Results Summary & Conclusions

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

5.2. Limits of bandwidth

The test unit shall meet the limits of Table 1

Table- 1 Limits For Bandwidth

Frequency (MHz)	Bandwidth Max Limits (%)	Bandwidth Max Limits (KHz)
433.92	0.25 of center frequency	1085

5.3. Test Instrumentation and Equipment

Table- 2 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

5.4. Results

Table- 3 Bandwidth Test Result

Frequency (MHz)	Bandwidth (KHz)	Bandwidth Max Limit (KHz)	Plot No	PASS/FAIL
433.92	232	1085	1	PASS

5.5. Procedure

The Bandwidth is determined at the point 20db down from the modulated carrier, while the spectrum analyzer was set to "max hold" and VBW –10KHz.

5.6. **Test Setup**

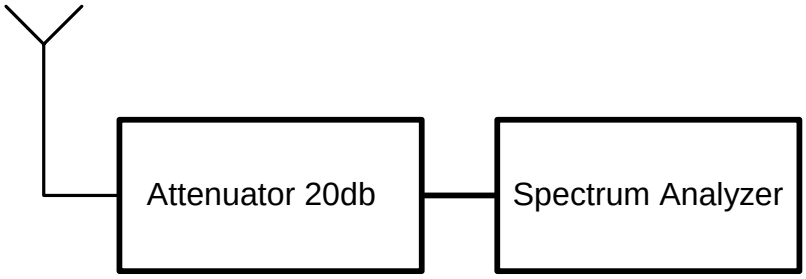


Figure- 1 Bandwidth test setup

6 Field strength of fundamental part 15.231(b)

E.U.T:	TXS-700-2 5290
Test Method:	ANSI 63.4
Date:	28.09.05
Relative Humidity:	40%
Ambient Temperature:	22c
Air Pressure:	1040hpa
Test Setup:	figure-2

Testing Engineer: D.Lanuel **Date** 02.10.05

6.1. Test Results Summary & Conclusions

The E.U.T was found in compliance with Field strength of fundamental requirement

6.2. Limits of Field Strength for fundamental according 15.231(b)

The test unit shall meet the limits of Table 4.

Table- 4 Limits For Fundamental

Frequency (MHz)	Average Max Limits (dBμV/m)	Peak Max Limits (dBμV/m)
433.92	80.8	100.8

6.3. Test Instrumentation and Equipment

Table- 5 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

6.4. **Test Results**

Table- 6 Average Factor

TX Period(min)	Duty Cycle (min)	Average Factor (db)	Plot Reference
5.2ms	5.2/100=0.052	20log0.0.52=-25.6	11,12

Table- 7 Peak Result of Fundamental

Frequency (MHz)	Peak Result (dBμV/m)	Peak Limits (dBμV/m)	Margin (DB)	Plot No	Pass/ Fail
433.92	88.4	100.8	12.4	Plot-2	PASS

Table- 8 Average Result of Fundamental

Peak Result (dBμV/m)	Average Factor	Calculation Results	Average Limits (dBμV/m)	Margin (dB)	Pass/ Fail
88.4	-25.6	62.8	80.8	18	PASS

6.5. **Test Procedure**

The EUT was placed on the top of rotating table 0.8 meters above the ground and the table was rotated 360°, the height of antenna is varied from one to 4 meters (vertical and horizontal polarization) to determine the max field strength of fundamental

6.6. **Test Setup**

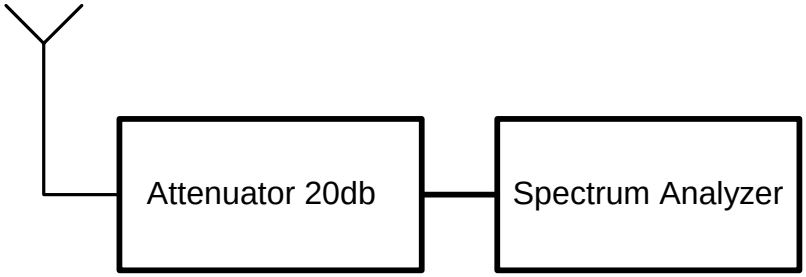


Figure- 2 Field strength of fundamental test setup

7 Radiated emission part 15.231(b) & 15.205

E.U.T:	TXS-700-2 5290
Test Method:	ANSI 63.4
Date:	28.09.05
Relative Humidity:	40%
Ambient Temperature:	22c
Air Pressure:	1040hpa
Test Setup:	figure 3-5

Testing Engineer: D.Lanuel **Date** 10.09.05

7.1. Test Results Summary & Conclusions

The E.U.T was found in compliance with 15.231&15.205 requirements

7.2. Limits of Radiated Interference Field Strength according 15.231

The test unit shall meet the limits of Table 7.

Table- 9 Limits For 15.231(b)

Frequency range(MHz)	Average Limits (dBμV/m)	peak Limits (dBμV/m)
0.009 – 3500	60.8	80.8

Table- 10 Limits For 15.205

Note	Frequency range(MHz)	Limits (dBμV/m) Distance 3meter	Detector
Restricted band	0.009 – 0.490	128 – 93.8	Quasi Peak
	0.490 – 1,705	73.8 - 63	
	1.705 - 30	70	
	30 - 88	40	
	88 - 216	43.5	
	216 - 960	46	
	Above 960	74 peak	Peak

7.3. Test Instrumentation and Equipment

Table- 11 Test Instrumentation and Equipment

Item	Model	Manufacturer	Next Date Calibration
Spectrum Analyzer	8593E	HP	31.01.06
Loop Antenna(10KHz-30MHz)	HFH 2-Z2	Rohde&Schwarz	N.P.C.R
Double Ridge Guide Ant(1-18GHz)	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-003M	Avantek	14.01.06
Low Noise Amplifier (2-6GHz)	MWA-020600	ELISRA	14.01.06

7.4. Preliminary Results

Table- 12 **Preliminary Test Results for intentional Emissions in TX Mode 15.231**

Antenna Polarization	Freq. Range MHz	Res. BW (kHz)	Plot No.	Pass/Fail
Vertical	0.009 – 0.15	0.2	3	Pass
Horizontal			4	Pass
Vertical	0.15 - 30	9	5	Pass
Horizontal			6	Pass
Both Hor.& Ver	30-1000	120	7	Pass
	1,000-2.800	1000	8	Pass
	2.800-4,400	1000	9	Pass

7.5. Final Results

Table 6.e Six Highest Peak Emission Test Results

Freq. (MHz)	Antenna Pol.	Antenna Height(m)	Reading (dBμV/m)	Limit dBμV/m	Margin (dB)	Pass/ Fail
All emission at least 20db below the limit						

*Restricted band

7.6. **Test Procedure**

7.6.1 Preliminary Test Procedure

7.6.1.1 The EUT was placed on the top of a rotating table 0.8 meters above the ground at a chamber shielded

7.6.1.2 The E.U.T was set 3 meters away from the receiving antenna, which was mounted on the top of a variable-height antenna tower.

7.6.1.3 The Antenna height varied from one meter to 1.8 meters above the ground and the table was rotated 360°to determine the maximum value of the field strength

7.6.1.4 The antenna was set both horizontal and vertical polarization.

7.6.2 **Final Test Procedure**

7.6.2.1 The EUT was tested at open area for each suspected emission,

7.6.2.2 The test procedure was performed according paragraph d. but the Antenna height varied from one meter to four meters above the ground

7.7. **Final Test Setup**

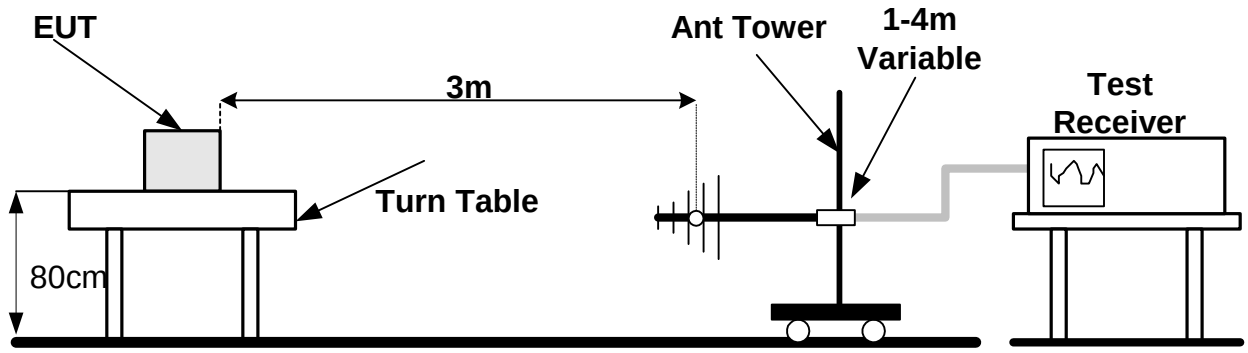


Figure- 3 Radiated Emission Test Configuration

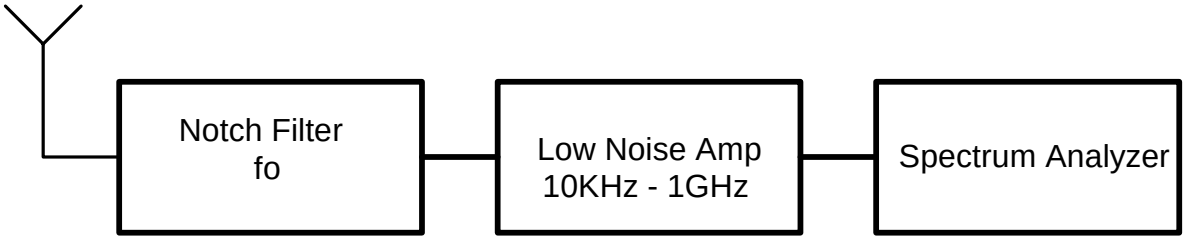


Figure- 4 Radiated Emission test 10KHz – 1,2GHz

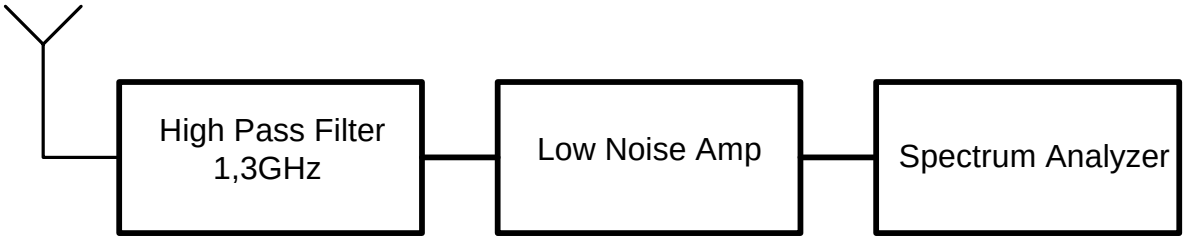


Figure- 5 Radiated Emission test above 1GHz

8 Radiated emission part 15.109- (for STBY mode)

8.1. Preliminary Radiated emission Test Result According Part 15.109

E.U.T:	TXS-700-2 5290
Test Method:	ANSI 63.4
Date:	28.09.05
Relative Humidity:	40%
Ambient Temperature:	22c
Air Pressure:	1040hpa
Test Setup:	figure 6

Testing Engineer: D.Lanuel **Date** 10.09.05

8.2. Test Results Summary & Conclusions

The E.U.T was found in compliance with 15.109 radiated emission requirements

8.3. Limits of Radiated Interference Field Strength according 15.109

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

Table- 13 Limits For 15.109 Class B equipment

Frequency Range (MHz)	Limits (dBμV/m)	Detector
30 - 88	40	Quasi Peak
88 - 216	43.5	
216 - 960	46	
960 - 1000	46	
1000 - 2000	53.9	Average

8.4. Test Instrumentation and Equipment

Table- 14 Test Instrumentation and Equipment

Item	Model	Manufacturer	Next Date Calibration
Spectrum Analyzer	8593E	HP	31.01.06
Loop Antenna(10KHz-30MHz)	HFH 2-Z2	Rohde&Schwarz	N.P.C.R
Double Ridge Guide Ant(1-18GHz)	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-003M	Avantek	14.01.06
Low Noise Amplifier (2-6GHz)	MWA-020600	ELISRA	14.01.06

8.5. Results

8.5.1 Preliminary Test Results

Table- 15 Preliminary Test Results for Unintentional Emissions in RX Mode 15.109

Antenna Polarization	Freq. Range MHz	Res. BW (kHz)	Plot No.	PASS/FAIL
Both	30-1000	120	10	PASS
	1000-2.800	120	11	PASS
	2,800-5000	1000	12	PASS

8.5.2 Final Test Results

Table- 16 Six Highest RX Mode 15.109

Freq. (MHz)	Antenna Pol.	Antenna Height(m)	Reading (dBμV/m)	Limit dBμV/m	Margin (dB)	Pass/ Fail
859.98	V	1.6	37	46	9	PASS
864.2	V	1	27.4	46	18.6	PASS

8.6. Test Procedure

See paragraph 7.f

8.7. **Test Set up**

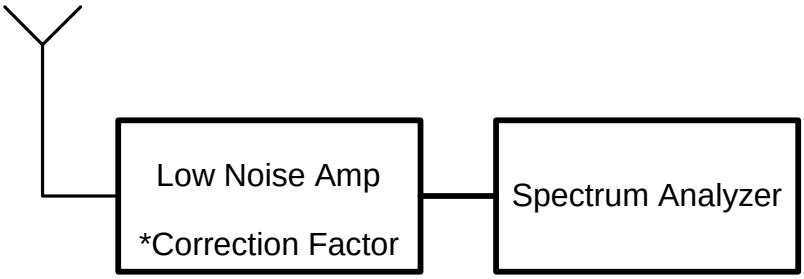
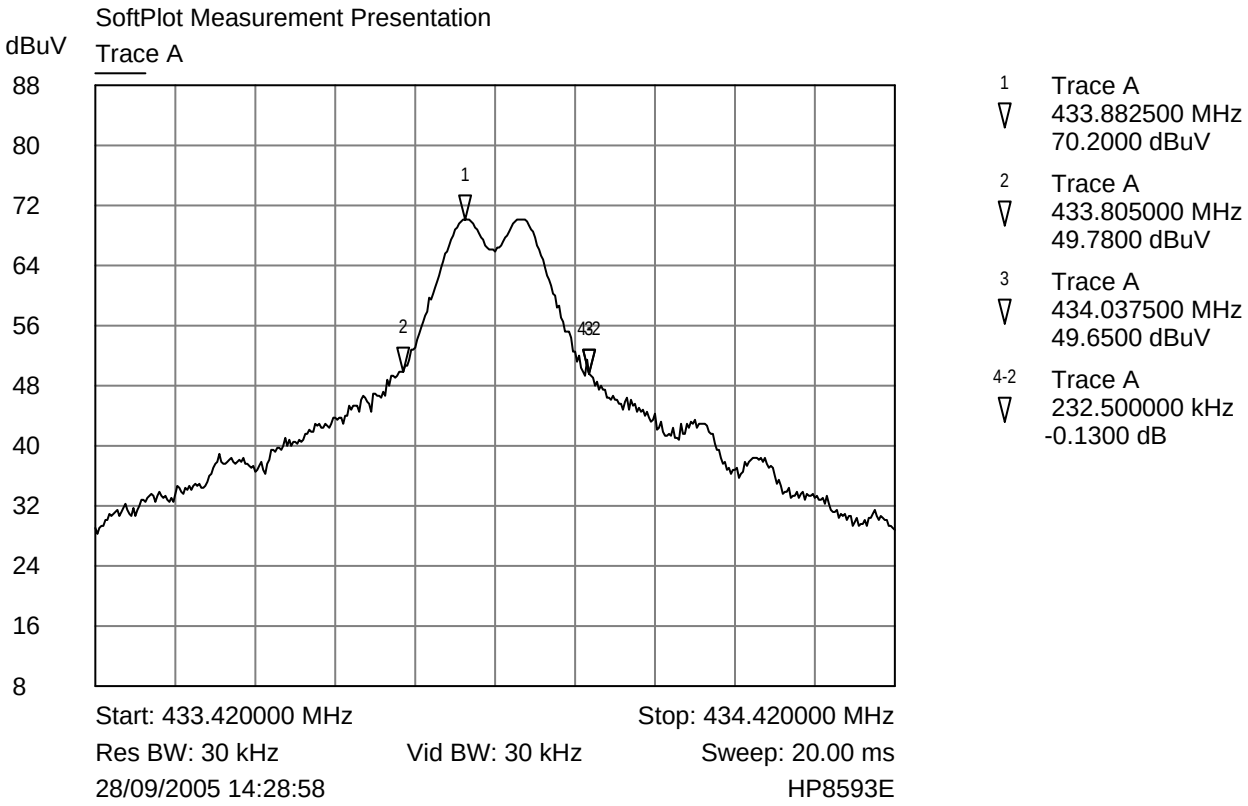


Figure- 6 Radiated Emission test 9KHz – 10GHz

Test Results Plot No 1



1 Trace A
433.882500 MHz
70.2000 dBuV

2 Trace A
433.805000 MHz
49.7800 dBuV

3 Trace A
434.037500 MHz
49.6500 dBuV

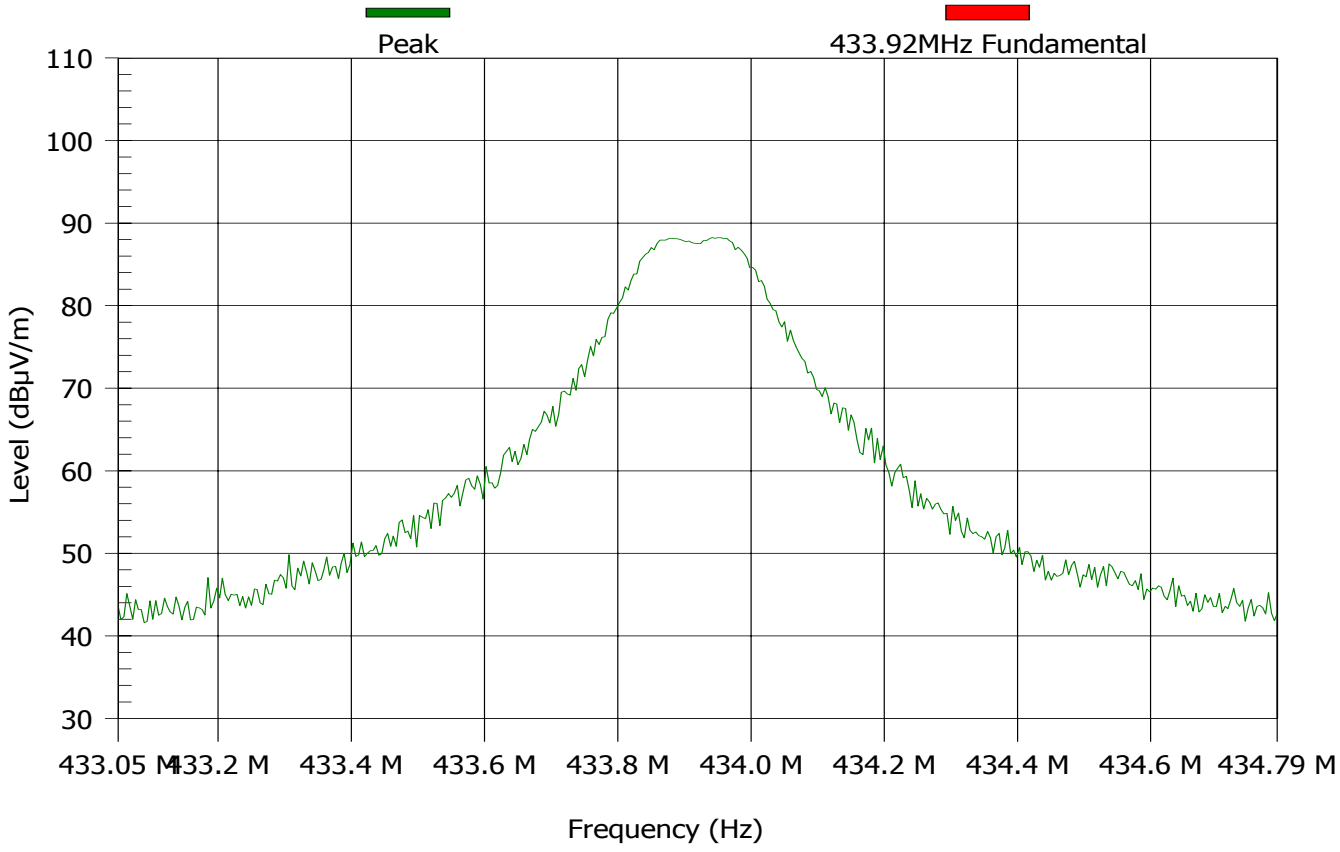
4-2 Trace A
232.500000 kHz
-0.1300 dB

Test Results Plot No 2

Radiated Power 433.92MHz

Test & EUT General Information		Receiver Setting	
EUT Name:	TXS-700-2	Spect Analyzer	S.A HP 8593E
S/N:	5290	Ref. Level:	100 dBµV
Date of Test:		RBW:	120 kHz
Test Engineer:	SHIMON KOZLINER	VBW:	1000 kHz
Antenna:	Frankonia BTA-L_A 3m	Sweep Time:	Auto: 20 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	No Description Available

TEST REMARKS:28 September 2005
11:50:33



MAXIMUM RESULT DEVIATION:

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

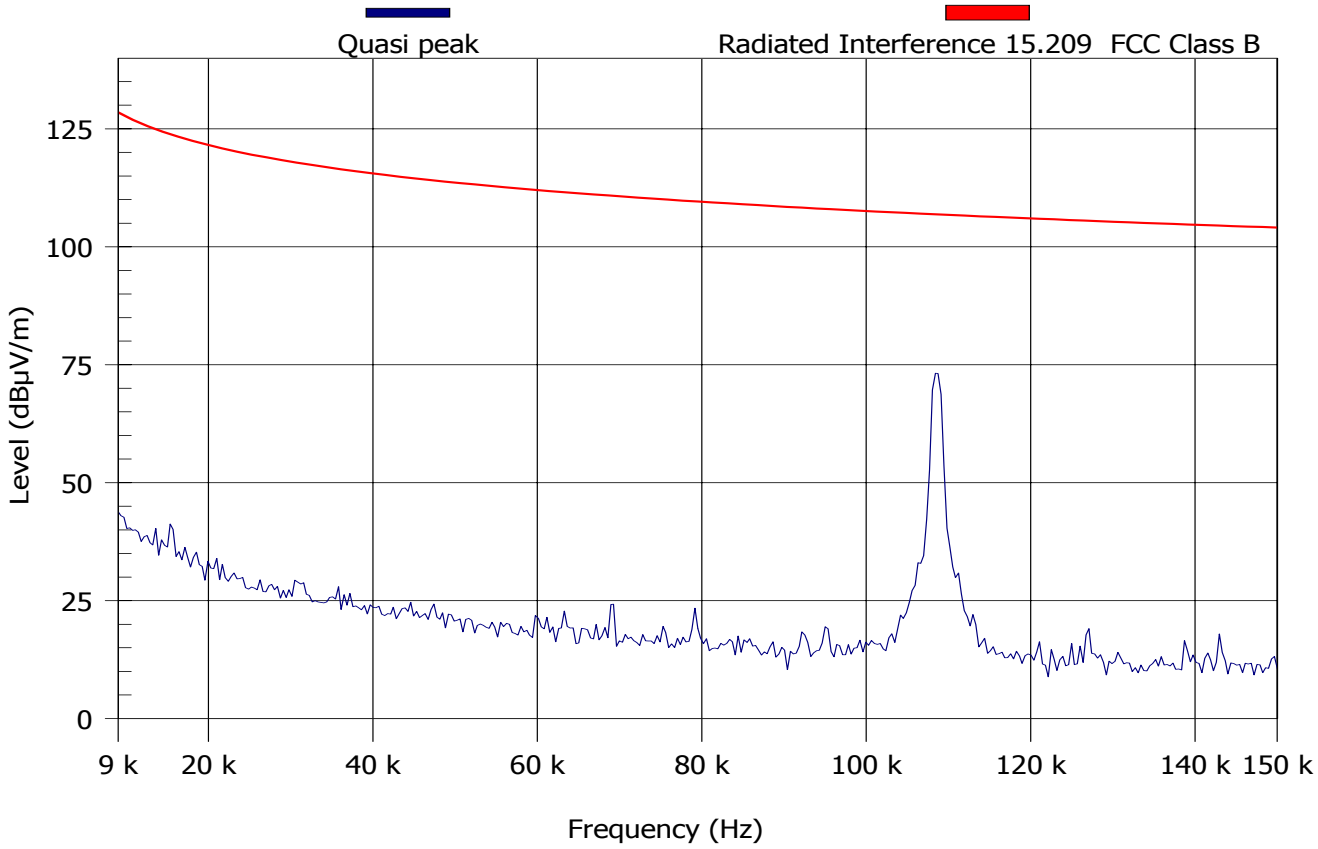
Nr	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	Result	Angle (degrees)	Height (m)	H/V
1	433.953	88.4	100.8	Pass	0	1.6	V

Test Results Plot No 3

FCC 15-209 9-150KHz VER TX

Test & EUT General Information		Receiver Setting	
EUT Name:	TXS-700-2	Spect Analyzer	S.A HP 8593E
S/N:	5290	Ref. Level:	60 dBµV
Date of Test:		RBW:	300 Hz
Test Engineer:		VBW:	300 Hz
Antenna:	Frankonia BTA-L_B 3m	Sweep Time:	Auto: 4.7 s
Polarization:	Vertical	Pre Amplifier	

TEST REMARKS:28-09-2005
14:20



MAXIMUM RESULT DEVIATION:

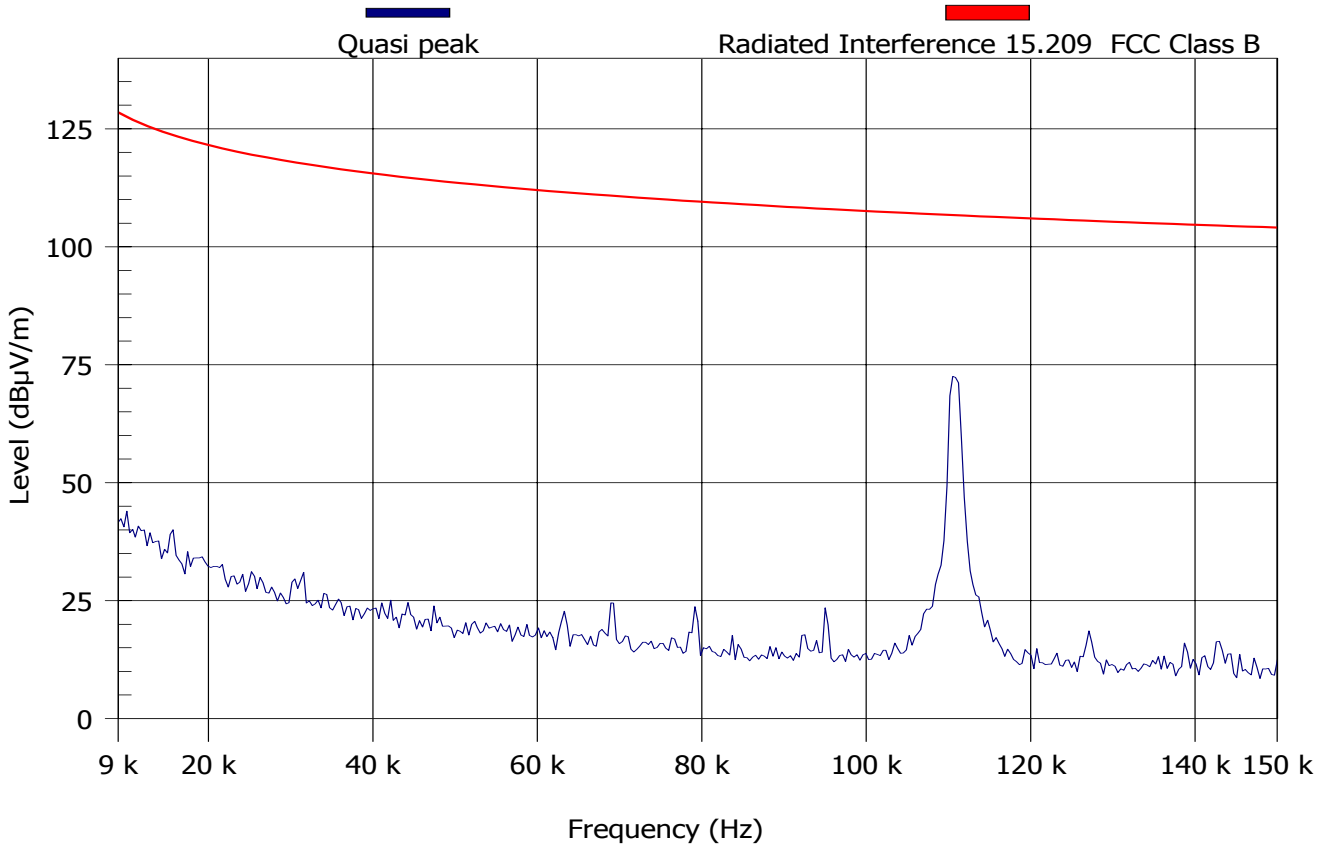
Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.
None

Test Results Plot No 4

FCC 15-209 9-150KHz HOR TX

Test & EUT General Information		Receiver Setting	
EUT Name:	TXS-700-2	Spect Analyzer	S.A HP 8593E
S/N:	5290	Ref. Level:	70 dBµV
Date of Test:		RBW:	300 Hz
Test Engineer:		VBW:	300 Hz
Antenna:	Frankonia BTA-L_B 3m	Sweep Time:	Auto: 4.7 s
Polarization:	Horizontal	Pre Amplifier	

TEST REMARKS:28-09-2005
14:15



MAXIMUM RESULT DEVIATION:

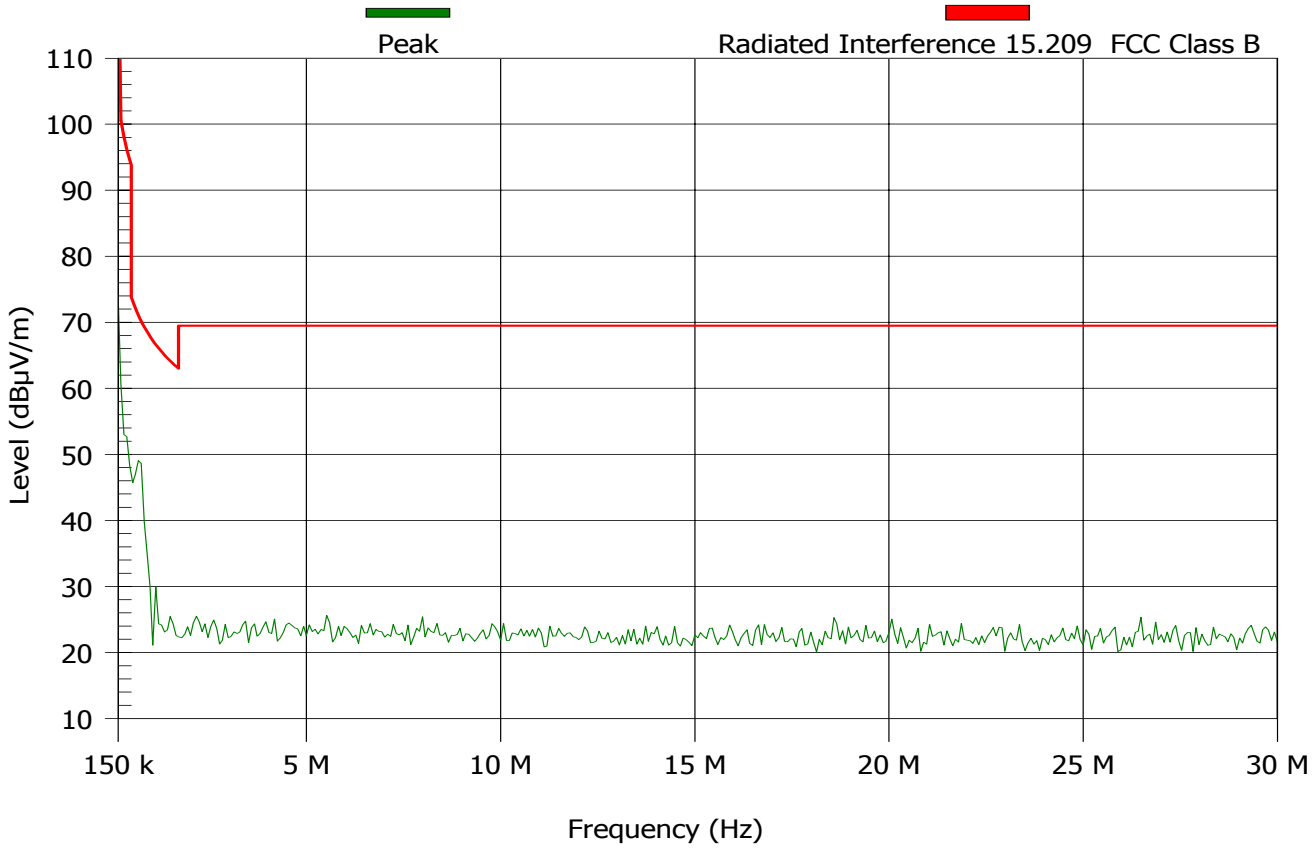
Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.
None

Test Results Plot No 5

FCC 15-209 0.15-30MHz VER TX

Test & EUT General Information		Receiver Setting	
EUT Name:	TXS-700-2	Spect Analyzer	S.A HP 8593E
S/N:	5290	Ref. Level:	70 dBµV
Date of Test:		RBW:	9 kHz
Test Engineer:		VBW:	30 kHz
Antenna:	Frankonia BTA-L_B 3m	Sweep Time:	Auto: 1.11 s
Polarization:	Vertical	Pre Amplifier	

TEST REMARKS:



MAXIMUM RESULT DEVIATION:

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

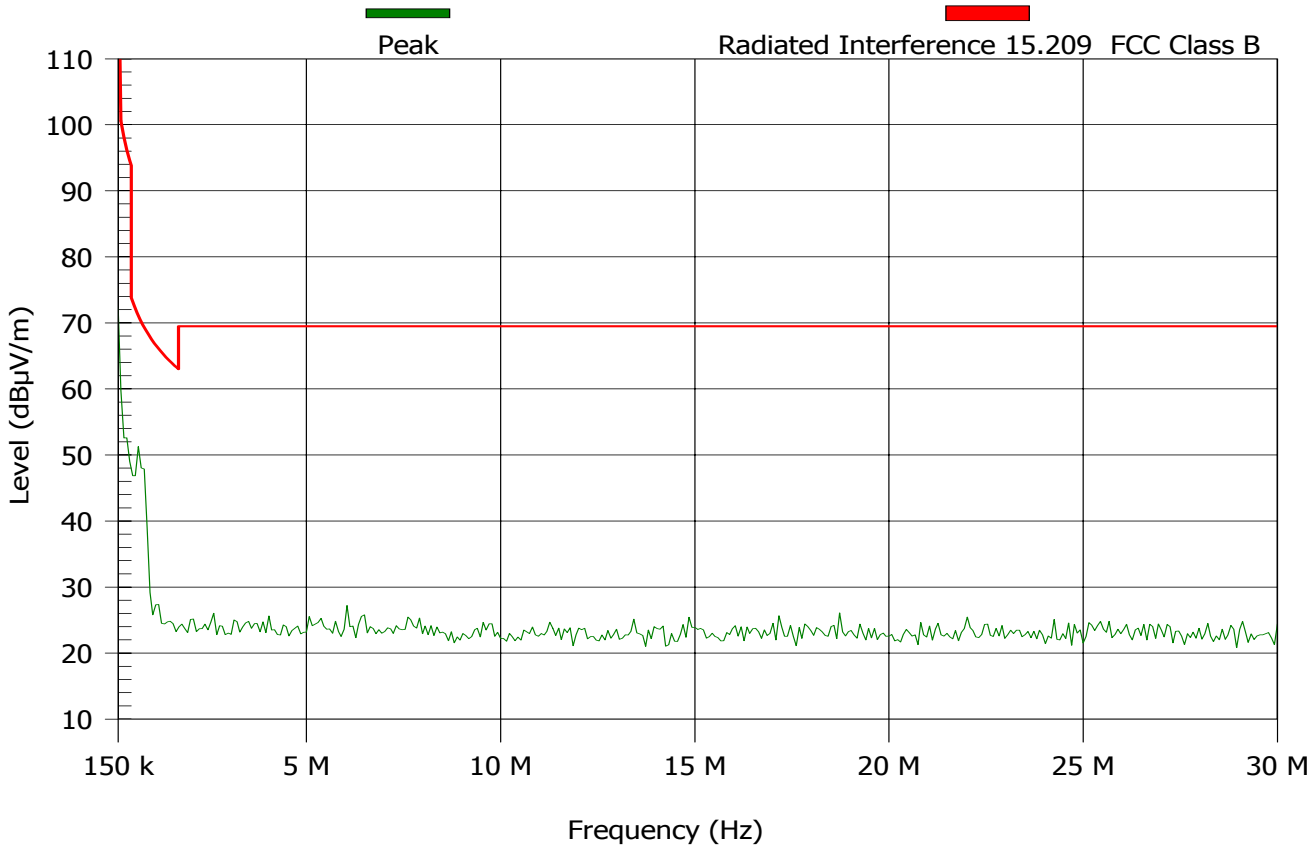
None

Test Results Plot No 6

FCC 15-209 0.15-30MHz HOR TX

Test & EUT General Information		Receiver Setting	
EUT Name:	TXS-700-2	Spect Analyzer	S.A HP 8593E
S/N:	5290	Ref. Level:	70 dBµV
Date of Test:		RBW:	9 kHz
Test Engineer:		VBW:	30 kHz
Antenna:	Frankonia BTA-L_B 3m	Sweep Time:	Auto: 1.11 s
Polarization:	Horizontal	Pre Amplifier	

TEST REMARKS:28-09-2005
14:20



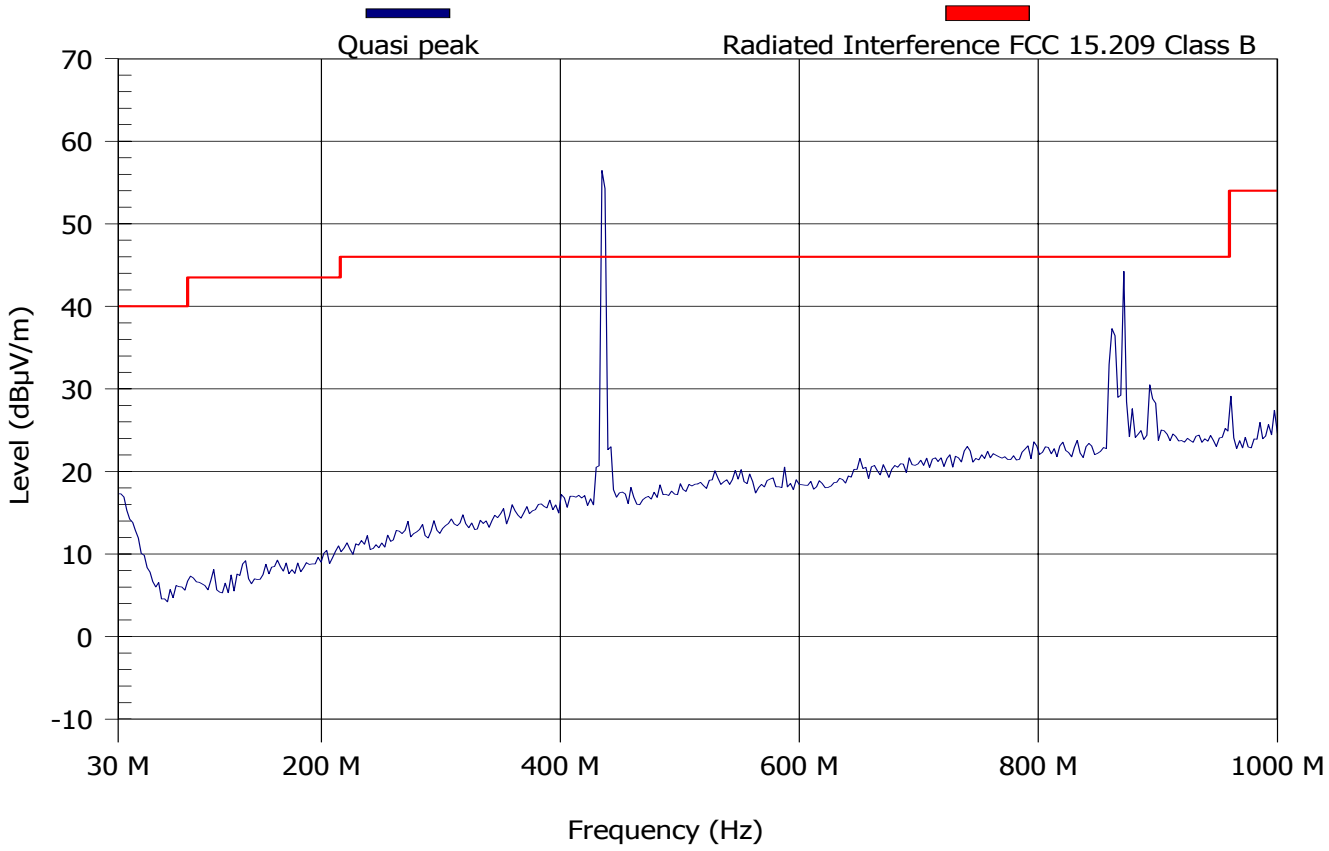
MAXIMUM RESULT DEVIATION:

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

Test Results Plot No 7
FCC-15.209 30-1000MHz TX

Test & EUT General Information		Receiver Setting	
EUT Name:	TXS-700-2	Spect Analyzer	S.A HP 8567A
S/N:	5290	Ref. Level:	100 dBµV
Date of Test:		RBW:	120 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:	Tadiran Horn	Sweep Time:	Auto: 202.08 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	LNA 29db 0.01-1GHz No-3

TEST REMARKS:



MAXIMUM RESULT DEVIATION:
Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

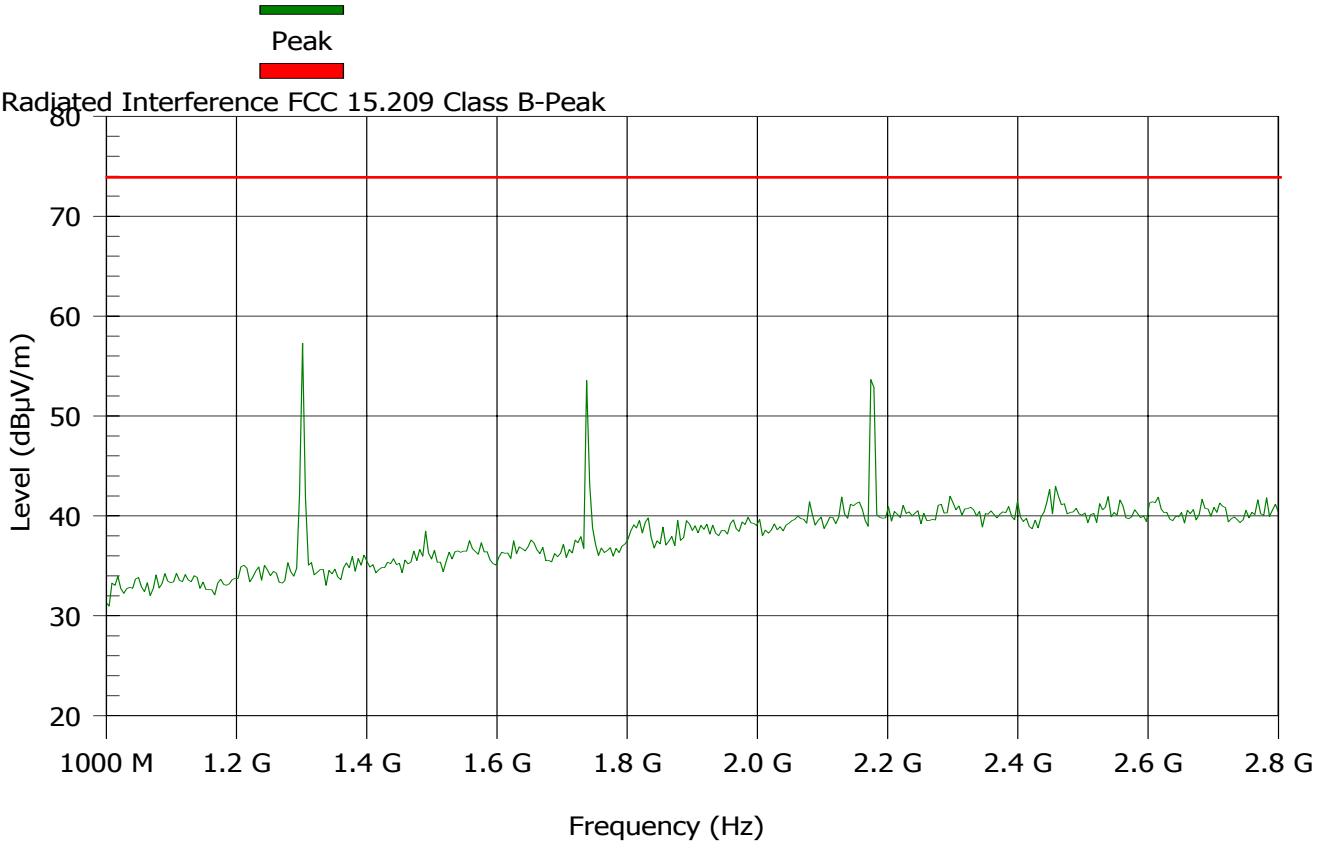
Freq (MHz)	PK Max (dBµV/m)	QP (dBµV/m)	QP Limit (dBµV/m)	Result	Angle (degrees)	Height (m)	H/V
433.725	52.4	50.4	46	Fail	0	1.6	V
434.119	50.8	49.1	46	Fail	0	1.6	V
*862.294	37.4	34.6	46	Pass	0	1.6	V
*867.838	40.2	39.8	46	Pass	0	1.6	V
*867.838	44.5	44.2	46	Pass	0	1	H

*Not in restricted bands

Test Results Plot No 8
FCC 15-209 1-2.8GHz TX

Test & EUT General Information		Receiver Setting	
EUT Name:	TXS-700-2	Spect Analyzer	S.A HP 8593E
S/N:	5290	Ref. Level:	70 dBµV
Date of Test:		RBW:	1000 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:	Frankonia BTA-L_B 3m	Sweep Time:	Auto: 36 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	LNA 29db 0.01-1GHz No-3

TEST REMARKS:28-09-2005
13:40

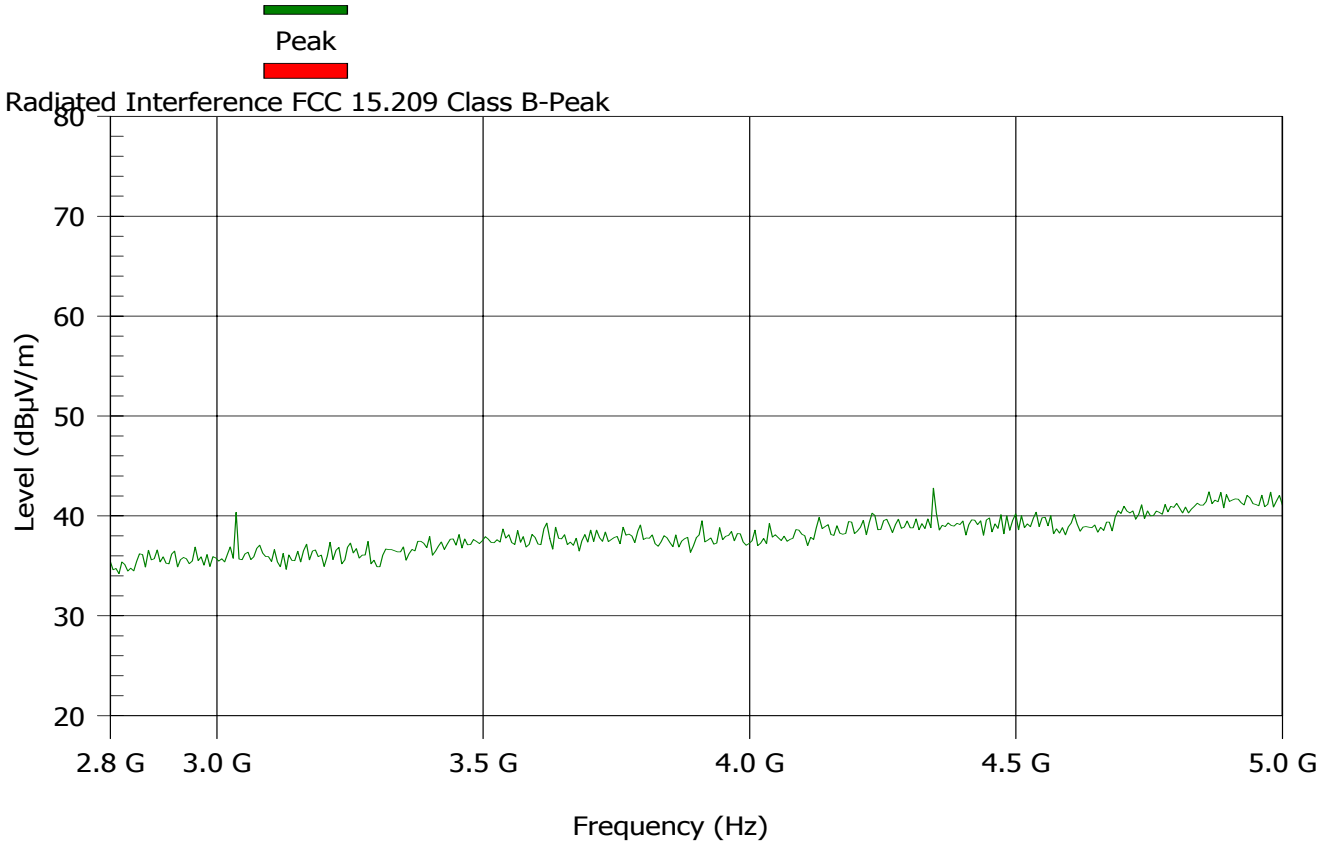


MAXIMUM RESULT DEVIATION:
Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.
None

Test Results Plot No 9
FCC 15-209 2.8-5GHz TX

Test & EUT General Information		Receiver Setting	
EUT Name:	TXS-700-2	Spect Analyzer	S.A HP 8593E
S/N:	5290	Ref. Level:	70 dBµV
Date of Test:		RBW:	1000 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:	Frankonia BTA-L_B 3m	Sweep Time:	Auto: 44 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	LNA 29db 0.01-1GHz No-3

TEST REMARKS:28-09-2005
13:50

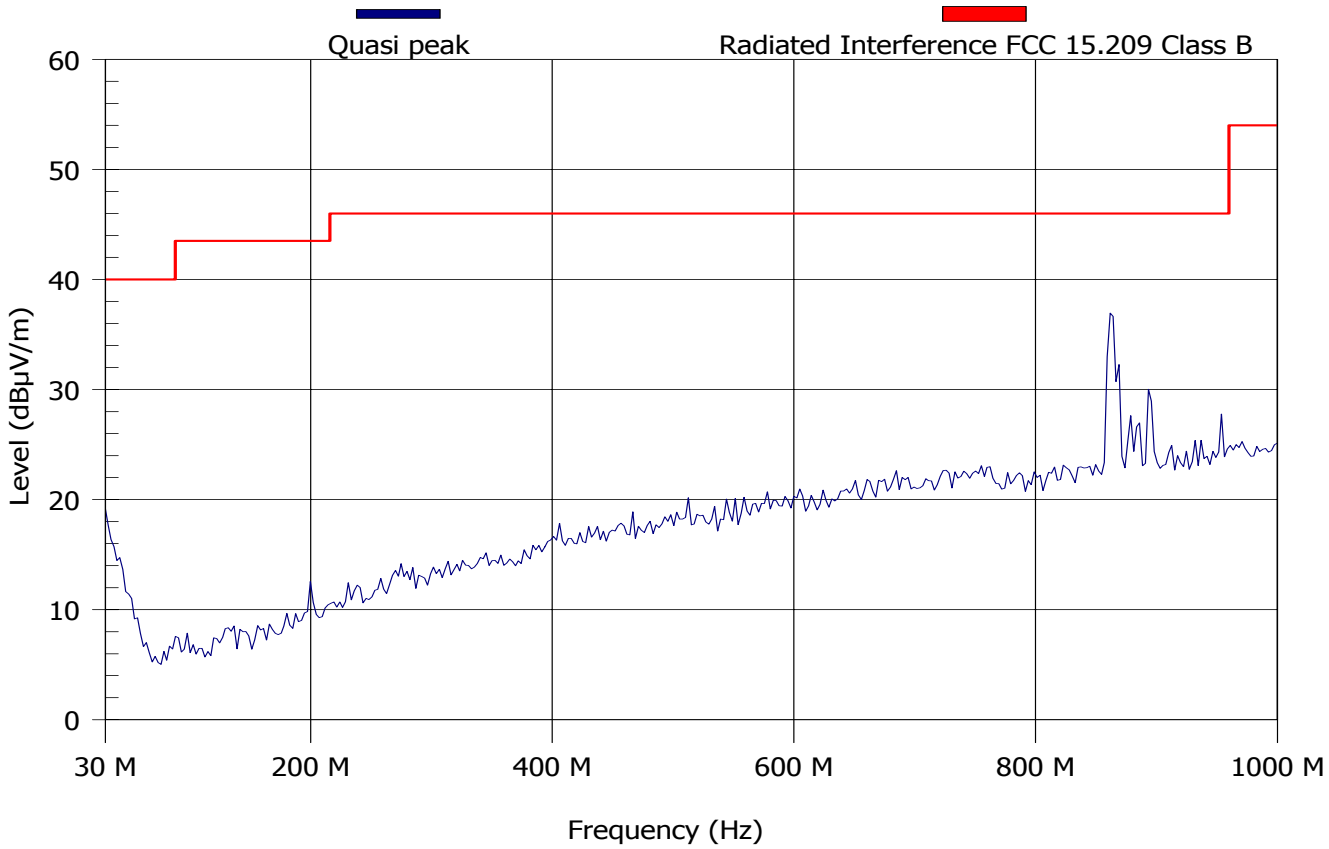


MAXIMUM RESULT DEVIATION:
Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.
None

Test Results Plot No 10
FCC-15.209 30-1000MHz Stby

Test & EUT General Information		Receiver Setting	
EUT Name:	TXS-700-2	Spect Analyzer	S.A HP 8567A
S/N:	5290	Ref. Level:	100 dBµV
Date of Test:		RBW:	120 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:	Tadiran Horn	Sweep Time:	Auto: 202.08 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	LNA 29db 0.01-1GHz No-3

TEST REMARKS:28-09-2005
12:20



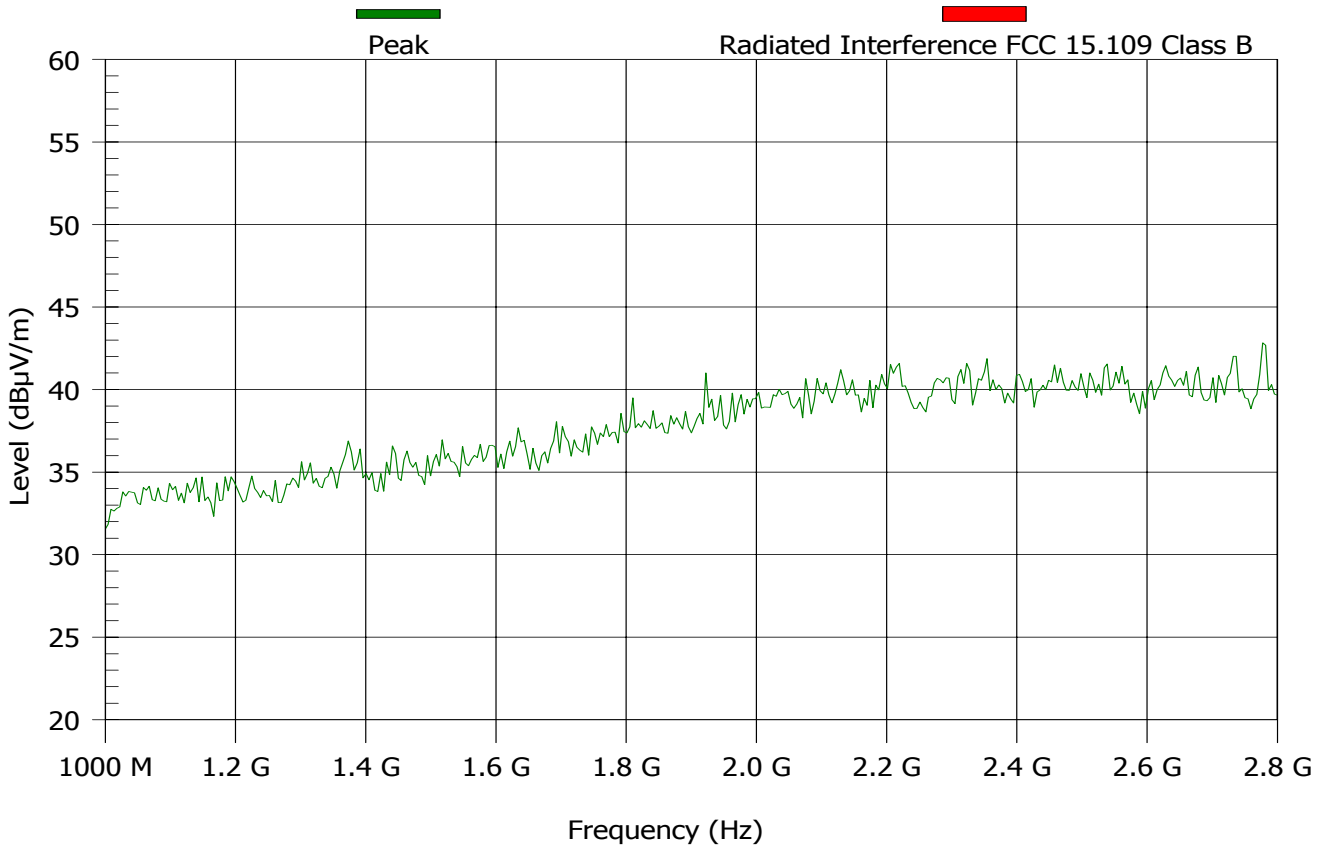
MAXIMUM RESULT DEVIATION:
Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

Frequency (MHz)	PK Max (dBµV/m)	QP (dBµV/m)	QP Limit (dBµV/m)	Result	Angle (degrees)	Height (m)	H/V
859.98	38.8	37	46	Pass	0	1.6	V
864.2	36.7	27.4	46	Pass	0	1	V

Test Results Plot No 11
FCC 15-109 1-2.8GHz

Test & EUT General Information		Receiver Setting	
EUT Name:	TXS-700-2	Spect Analyzer	S.A HP 8593E
S/N:	5290	Ref. Level:	70 dBµV
Date of Test:		RBW:	1000 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:	Frankonia BTA-L_B 3m	Sweep Time:	Auto: 36 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	LNA 29db 0.01-1GHz No-3

TEST REMARKS:28-09-2005
13:20

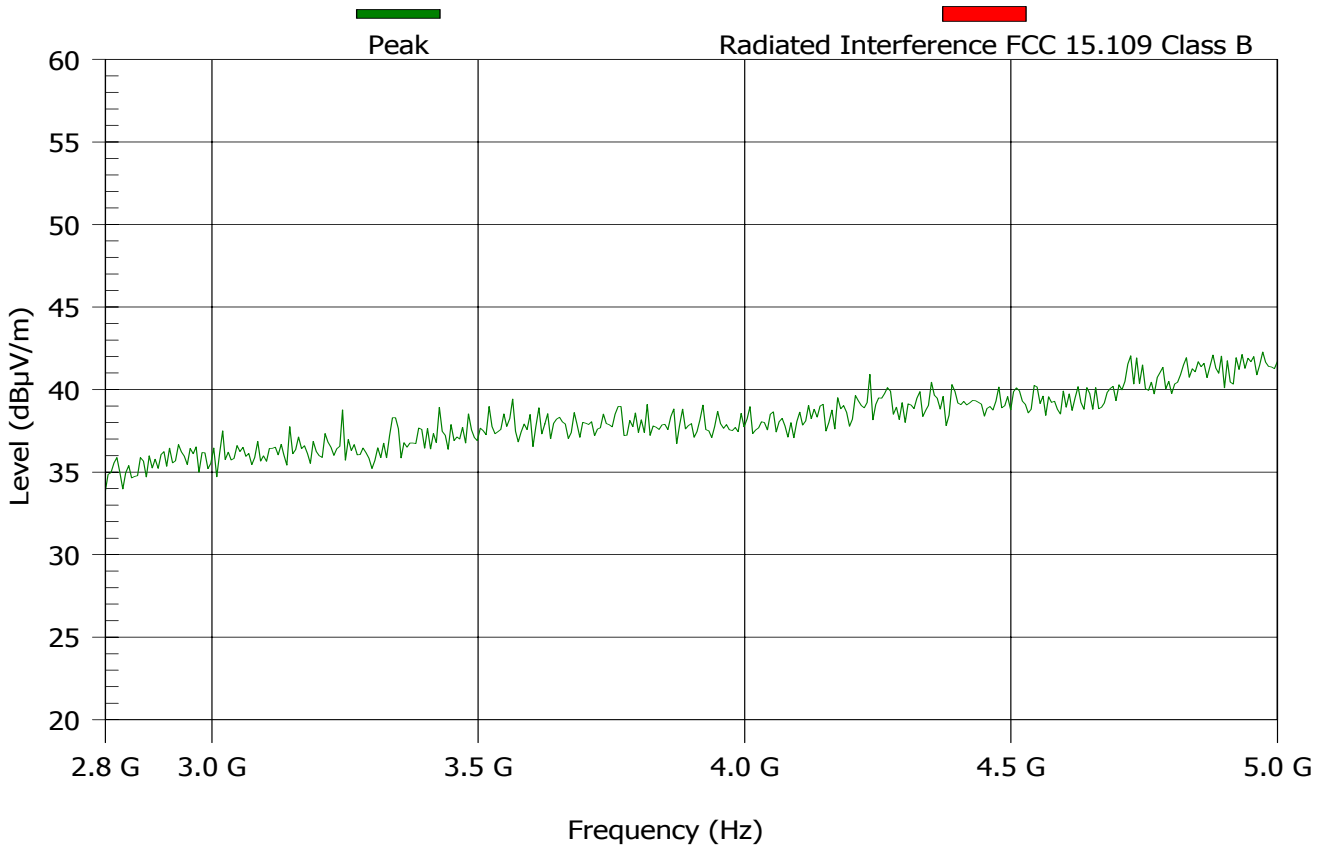


MAXIMUM RESULT DEVIATION:
Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.
None

Test Results Plot No 12
FCC 15-109 2.8-5GHz Stby

Test & EUT General Information		Receiver Setting	
EUT Name:	TXS-700-2	Spect Analyzer	S.A HP 8593E
S/N:	5290	Ref. Level:	70 dBµV
Date of Test:		RBW:	1000 kHz
Test Engineer:		VBW:	1000 kHz
Antenna:	Frankonia BTA-L_B 3m	Sweep Time:	Auto: 44 ms
Polarization:	Horizontal and Vertical	Pre Amplifier	LNA 29db 0.01-1GHz No-3

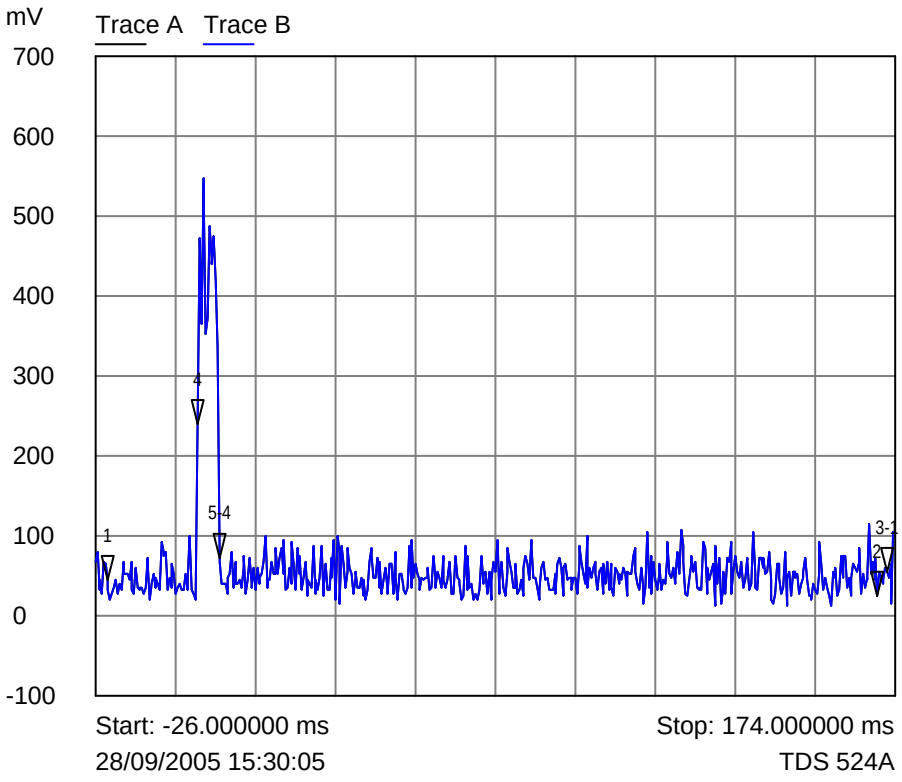
TEST REMARKS:28-09-2005
13:55



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

Test Results Plot No 13

SoftPlot Measurement Presentation



1 Trace A
-23.200000 ms
44.0766 mV

2 Trace A
169.600000 ms
24.0702 mV

3-1 Trace A
195.200000 ms
12.0038 mV

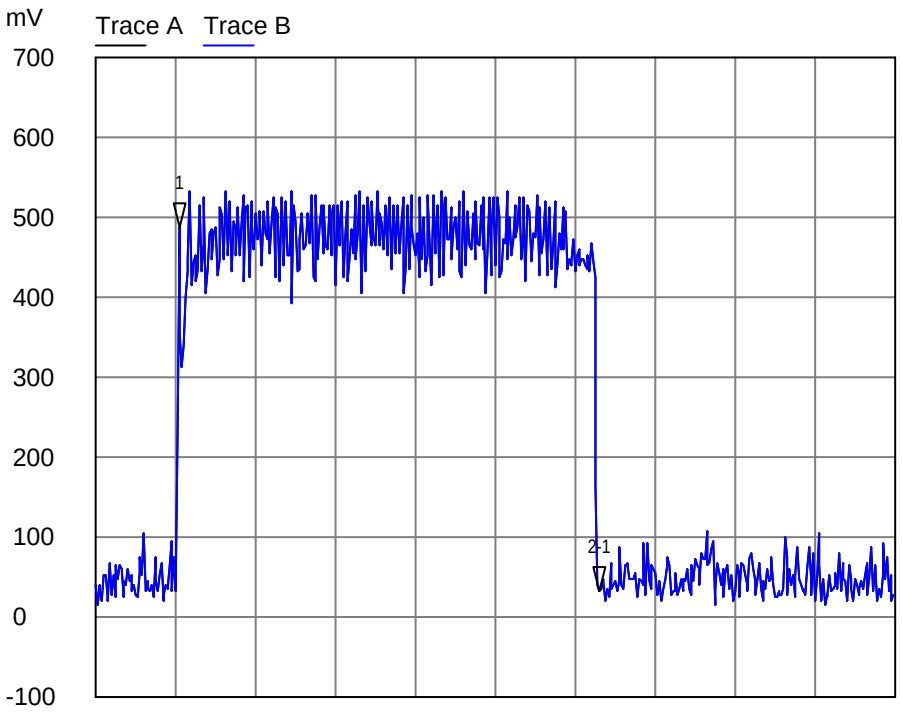
4 Trace B
-400.000000 us
240.1393 mV

5-4 Trace A
5.200000 ms
-168.0538 mV

Start: -26.000000 ms
Stop: 174.000000 ms
28/09/2005 15:30:05
TDS 524A

Test Results Plot No 14

SoftPlot Measurement Presentation



1 Trace A
-260.000000 us
488.1562 mV

2-1 Trace A
5.260000 ms
-456.1459 mV

Start: -1.300000 ms
Stop: 8.700000 ms
28/09/2005 15:12:13
TDS 524A

Photo-1 Radiated Emission up to 30MHz

Photo-2 Radiated Emission 30MHz – 1GHz

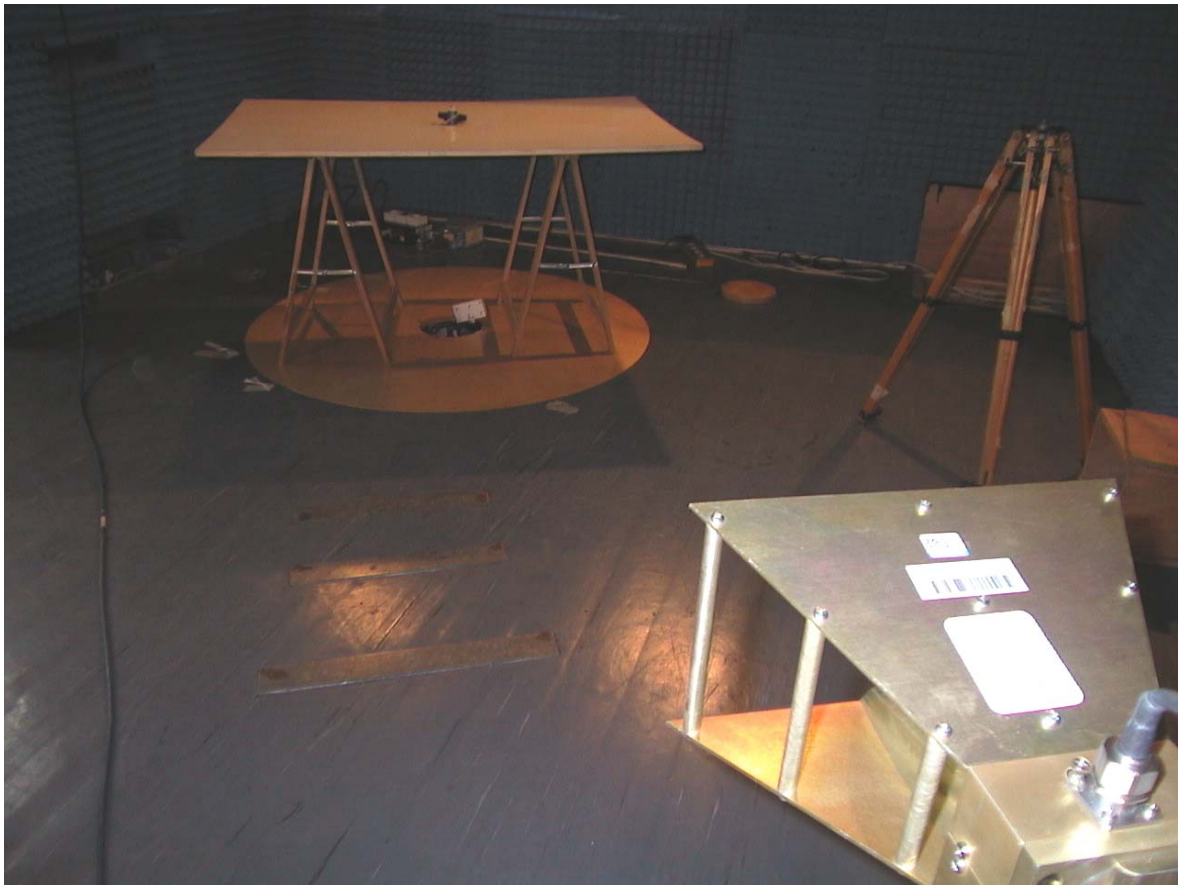


Photo-3 Radiated Emission 1GHz – 18GHz

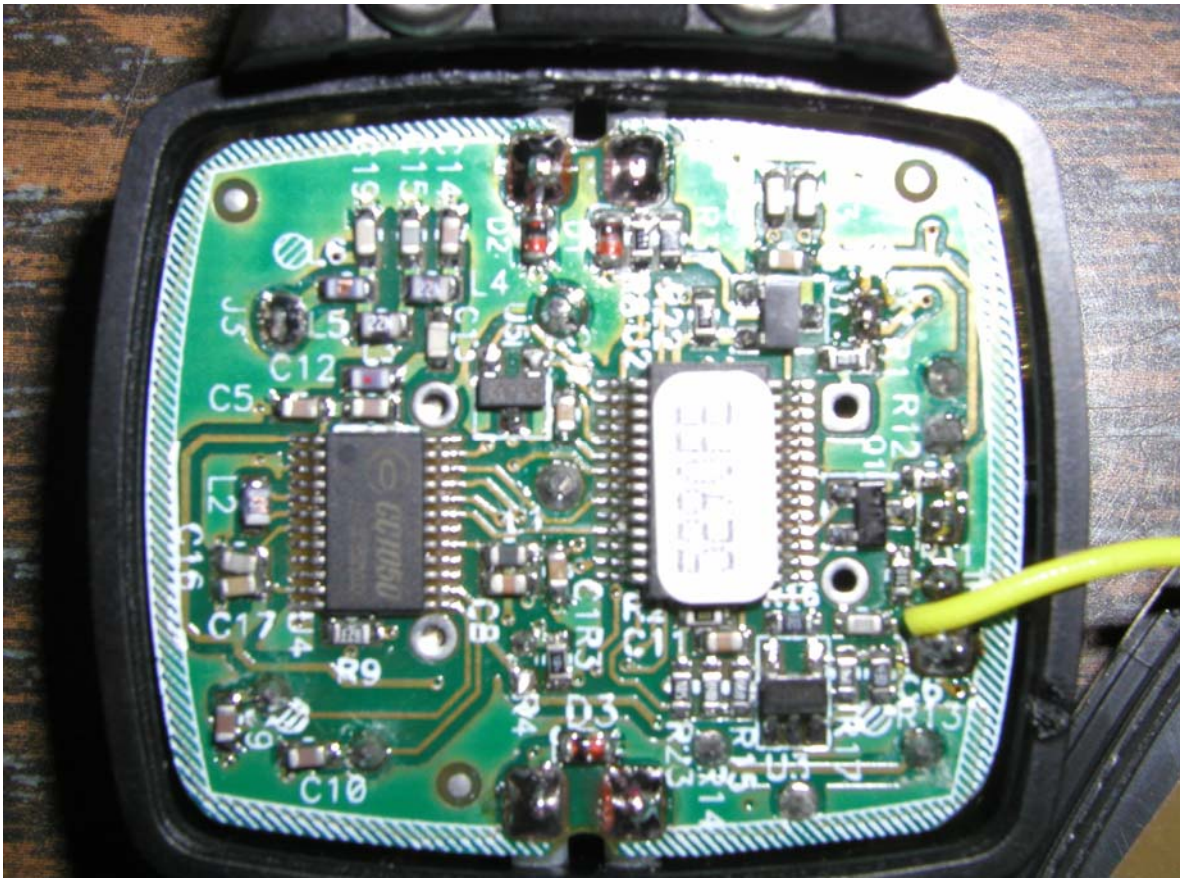


Photo-4 EUT

Photo-5 EUT

9 CORRECTION FACTORS

DOUBLE RIDGE HORN Model 3105 S/N:00-50C2-1C-C468 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
7000	36.2
8000	36.9
9000	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:00-50C2-1C-C468 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	900	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		

10 Abbreviations and Acronyms

The following abbreviations and acronyms are applicable in this document

BW Bandwidth

R.BW Resolution Bandwidth

V.BW Video Bandwidth

db Decibel

EMI Electromagnetic interference

E.U.T Equipment under test

LISN Line impedance stabilization network

N.P.C.R Non Periodic Calibration Requisite

S/N Serial number

QP Quasi peak

PK Peak