TRaC Wireless Test Report	**:** TTR-001914WUS1
Applicant	**:** CSR Inc
Apparatus	**:** BlueSlim 2 Bluetooth Module
Specification(s)	**:** CFR47 Part 15.247 July 2008
FCCID	**:** PIW-BLUESLIM2
Purpose of Test	**:** CERTFICATION
Authorised by	: 
	: Radio Product Manager
Issue Date	**:**14th January 2011
Authorised Copy Number	**:** *PDF*

Contents

Section 1: Introduction

1.1 General

This report contains an assessment of an apparatus against Electromagnetic Compatibility Standards based upon tests carried out on samples submitted to the Laboratory.

Test performed by:

TRaC Telecoms & Radio [ ]
Unit E
South Orbital Trading Park
Hedon Road
Hull, HU9 1NJ.
United Kingdom.

Telephone: +44 (0) 1482 801801
Fax: +44 (0) 1482 801806

TRaC Telecoms & Radio [X]
Moss View
Nipe Lane
Up Holland
West Lancashire, WN8 9PY
United Kingdom

Telephone: +44 (0) 1695 556666
Fax: +44 (0) 1695 577077

Email: test@tracglobal.com
Web site: http://www.tracglobal.com

Tests performed by: Steven Hodgkinson

Report author: Steven Hodgkinson

1.2 Tests Requested By

This testing in this report was requested by :

CSR Inc.
2425 N Central Expressway
Suite 1000
Richardson
Texas
USA
75080

1.3 Manufacturer

As Above

1.4 Apparatus Assessed

The following apparatus was assessed between 13/12/10 and 12/1/11

BlueSlim 2 Bluetooth Module

The above equipment was a FHSS transmitter operating in the 2400 MHz to 2483.5 MHz band and is a Bluetooth module, designed for use internal to a laptop and used to enable Bluetooth wireless communication within personal computers and laptops.

1.5 Test Result Summary

Full details of test results are contained within Appendix A. The following table summarises the results of the assessment.

The statements relating to compliance with the standards below apply ONLY as qualified in the notes and deviations stated in sections 1.6 to 1.7 of this test report.

Full details of test results are contained within Appendix A. The following table summarises the results of the assessment.

Test Type	Regulation	Measurement standard	Result
Radiated spurious emissions (Restricted bands)	Title 47 of the CFR: Part 15 Subpart (c) 15.247	ANSI C63.10	PASS
Conducted spurious emissions (Non-restricted bands)	Title 47 of the CFR: Part 15 Subpart (c) 15.247	ANSI C63.10	PASS
AC Power conducted emissions	Title 47 of the CFR: Part 15 Subpart (c) 15.207	ANSI C63.10	N/A
20dB Bandwidth and Channel Spacing	Title 47 of the CFR : Part 15 Subpart (c) 15.247(a)(1)(i)	ANSI C63.10	PASS
Conducted Carrier Power	Title 47 of the CFR : Part 15 Subpart (c) 15.247(b)(2)	ANSI C63.10	PASS
Hopping Frequencies	Title 47 of the CFR : Part 15 Subpart (c) 15.247(a)(1)	ANSI C63.10	PASS
Channel Occupancy	Title 47 of the CFR : Part 15 Subpart (c) 15.247(a)(1)(i)	ANSI C63.10	PASS
Unintentional Radiated Spurious Emissions	Title 47 of the CFR: Part 15 Subpart (b) 15.109	ANSI C63.10	PASS

Abbreviations used in the above table:

Mod : Modification
CFR : Code of Federal Regulations
REFE : Radiated Electric Field Emissions
ANSI : American National Standards Institution
PLCE : Power Line Conducted Emissions

1.6 Notes Relating To The Assessment

With regard to this assessment, the following points should be noted:

The results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

The apparatus was set up and exercised using the configurations, modes of operation and arrangements defined in this report only.

Particular operating modes, apparatus monitoring methods and performance criteria required by the standards tested to have been performed except where identified in Section 1.7 of this test report (Deviations from Test Standards).

For emissions testing, throughout this test report, “Pass” indicates that the results for the sample as tested were below the specified limit (refer also to Section 2, Measurement Uncertainty).

Where relevant, the apparatus was only assessed using the monitoring methods and susceptibility criteria defined in this report.

All testing with the exception of testing at the Open Area Test Site was performed under the following environmental conditions:

Temperature	: 17 to 23 °C
Humidity	: 45 to 75 %
Barometric Pressure	: 86 to 106 kPa

All dates used in this report are in the format dd/mm/yy.

This assessment has been performed in accordance with the requirements of ISO/IEC 17025.

1.7 Deviations from Test Standards

There were no deviations from the standards tested to.

Section 2: Measurement Uncertainty

2.1 Application of Measurement Uncertainty

The following table contains the measurement uncertainties for measurements

- The measured value related to the corresponding limit is used to decide whether equipment meets the requirements of the standard.
- The measurement uncertainty value for the measurement of each parameter is recorded in section 2.3 of this report.
- All values of measurement uncertainty are equal to or lower than the values in the table (section 2.2)below as required by the standard

2.2 Measurement Uncertainty Values

For the test data recorded in accordance with note (iii) of Section 2.1 the following measurement uncertainty was calculated:

Radio Testing – General Uncertainty Schedule

All statements of uncertainty are expanded standard uncertainty using a coverage factor of 1.96 to give a 95% confidence where no required test level exists.

[1] Adjacent Channel Power

Uncertainty in test result = **1.86dB**

[2] Carrier Power

Uncertainty in test result (Equipment - TRLUH120) = **2.18dB**
Uncertainty in test result (Equipment – TRL05) = **1.08dB**
Uncertainty in test result (Equipment – TRL479) = **2.48dB**

[3] Effective Radiated Power

Uncertainty in test result = **4.71dB**

[4] Spurious Emissions

Uncertainty in test result = **4.75dB**

[5] Maximum frequency error

Uncertainty in test result (Equipment - TRLUH120) = **119ppm**
Uncertainty in test result (Equipment – TRL05) = **0.113ppm**
Uncertainty in test result (Equipment – TRL479) = **0.265ppm**

[6] Radiated Emissions, field strength OATS 14kHz-18GHz Electric Field

Uncertainty in test result (14kHz – 30MHz) = **4.8dB**, Uncertainty in test result (30MHz – 1GHz) = **4.6dB**, Uncertainty in test result (1GHz-18GHz) = **4.7dB**

[7] Frequency deviation

Uncertainty in test result = **3.2%**

[8] Magnetic Field Emissions

Uncertainty in test result = **2.3dB**

[9] Conducted Spurious

Uncertainty in test result (Equipment TRL479) Up to 8.1GHz = **3.31dB**
Uncertainty in test result (Equipment TRL479) 8.1GHz – 15.3GHz = **4.43dB**
Uncertainty in test result (Equipment TRL479) 15.3GHz – 21GHz = **5.34dB**
Uncertainty in test result (Equipment TRLUH120) Up to 26GHz = **3.14dB**

[10] Channel Bandwidth

Uncertainty in test result = **15.5%**

[11] Amplitude and Time Measurement – Oscilloscope

Uncertainty in overall test level = **2.1dB**, Uncertainty in time measurement = **0.59%,** Uncertainty in Amplitude measurement = **0.82%**

[11] Power Line Conduction

Uncertainty in test result = **3.4dB**

[12] Spectrum Mask Measurements

Uncertainty in test result = **2.59% (frequency)**
Uncertainty in test result = **1.32dB (amplitude)**

[13] Adjacent Sub Band Selectivity

Uncertainty in test result = **1.24dB**

[14] Receiver Blocking – Listen Mode, Radiated

Uncertainty in test result = **3.42dB**

[15] Receiver Blocking – Talk Mode, Radiated

Uncertainty in test result = **3.36dB**

[16] Receiver Blocking – Talk Mode, Conducted

Uncertainty in test result = **1.24dB**

[17] Receiver Threshold

Uncertainty in test result = **3.23dB**

[18] Transmission Time Measurement

Uncertainty in test result = **7.98%**

Section 3: Modifications

3.1 Modifications Performed During Assessment

No modifications were performed during the assessment

Appendix A: Formal Emission Test Results

Abbreviations used in the tables in this appendix:

Spec	: Specification	ALSR	: Absorber Lined Screened Room
Mod	: Modification	OATS	: Open Area Test Site
		ATS	: Alternative Test Site
EUT	: Equipment Under Test		
SE	: Support Equipment	Ref	: Reference
		Freq	: Frequency
L	: Live Power Line		
N	: Neutral Power Line	MD	: Measurement Distance
E	: Earth Power Line	SD	: Spec Distance
Pk	: Peak Detector	Pol	: Polarisation
QP	: Quasi-Peak Detector	H	: Horizontal Polarisation
Av	: Average Detector	V	: Vertical Polarisation
CDN	: Coupling & decoupling network	Mbps	: Mega Bits Per Second

A1 Transmitter Peak Output Power

Carrier power was verified with the EUT transmitting on its lowest, centre and highest carrier frequency in turn.

Test Details:	
Regulation	Title 47 of the CFR: Part15 Subpart (c) 15.247(b)(1)
Measurement standard	ANSI C63.10:2003
EUT sample number	S95
Modification state	0
SE in test environment	S35
SE isolated from EUT	Laptop
EUT set up	Refer to Appendix C
Temperature	20°C

Data Rate = 1Mbps			
Channel Frequency (MHz)	Peak Carrier Power (W)	Limit (W)	Result
2402.0	0.00238	1	PASS
2441.0	0.00381		PASS
2480.0	0.00354		PASS
Data Rate = 2Mbps			
Channel Frequency (MHz)	Peak Carrier Power (W)	Limit (W)	Result
2402.0	0.00172	1	PASS
2441.0	0.00245		PASS
2480.0	0.00208		PASS
Data Rate = 3Mbps			
Channel Frequency (MHz)	Peak Carrier Power (W)	Limit (W)	Result
2402.0	0.00184	1	PASS
2441.0	0.00265		PASS
2480.0	0.00226		PASS

Notes:

Number of hopping channels employed is 79

Conducted Measurement

Measured Peak Carrier power includes highest gain of any antenna to be used.
Highest Gain of any antenna to be used = 1 dBi
Conducted measurements were performed with a temporary antenna connector provided by the client.

A2 RF Antenna Conducted Spurious Emissions

Measurement of conducted spurious emissions at the antenna port was performed using a peak detector with the RBW set to 100kHz and the VBW>RBW. Frequencies were scanned up through to the 10th harmonic with the EUT transmitting on its lowest, centre and highest carrier frequency in turn and operating at data rates of 1Mbps, 2Mbps & 3Mbps at each frequency. Plots were taken of all data rates and frequencies. Only plots of top middle and bottom frequencies for the data rate producing highest output power are contained in appendix B.

Test Details	
Regulation	Title 47 of the CFR: Part 15 Subpart (c) Clause 15.247(d)
Measurement standard	ANSI C63.10:2003
Frequency range	9 kHz to 25 GHz
EUT sample number	S95
Modification state	0
SE in test environment	S35
SE isolated from EUT	Laptop
EUT set up	Refer to Appendix C
Temperature	20°C

The worst case conducted emission measurements at the antenna port are listed below:

Test Details : 1Mbps, 2402MHz, 2441MHZ & 2480MHz

Ref No.	Measured Freq (MHz)	Det.	Is measured Frequency within the Restricted bands (Y/N)	Measured Peak Conducted power (RBW =100kHz) (dBuV)	15.247(d) Limit (dBuV)	Summary
No significant emissions within 20 dB of the limit						

Test Details : 2Mbps, 2402MHz, 2441MHZ & 2480MHz

Ref No.	Measured Freq (MHz)	Det.	Is measured Frequency within the Restricted bands (Y/N)	Measured Peak Conducted power (RBW =100kHz) (dBuV)	15.247(d) Limit (dBuV)	Summary
No significant emissions within 20 dB of the limit						

Test Details : 3Mbps, 2402MHz, 2441MHZ & 2480MHz

Ref No.	Measured Freq (MHz)	Det.	Is measured Frequency within the Restricted bands (Y/N)	Measured Peak Conducted power (RBW =100kHz) (dBuV)	15.247(d) Limit (dBuV)	Summary
No significant emissions within 20 dB of the limit						

Notes:

1. The conducted emission limit for all emissions are based on a transmitted carrier level in a 100kHz RBW. With the EUT transmitting on its lowest, centre and highest carrier frequencies in turn, emissions from the EUT are required to be 20 dB below the level of the highest fundamental as measured within a 100 kHz RBW in accordance with 15.247(d) using a peak detector.
2. The RBW = 100 kHz, Video bandwidth (VBW) > RBW and the radio spectrum was investigated up to the 10th harmonic in accordance15.33 (a)(1).
3. The measurements at 2400 MHz and 2483.5 MHz were made to ensure band edge compliance.
4. The carrier level was measured whilst varying the supply voltage between 85% and 105% of the nominal supply voltage as required by 15.31(e). No variation in carrier level was observed. All other emissions were at least 20dB below the test limit

The limit outside the restricted band in 100 kHz RBW is defined using the following formula in accordance with 15.247(d):

The limit in 100 kHz RBW = (Maximum Peak Conducted Carrier/100kHz) - 20dB

A3 Radiated Electric Field Emissions Within The Restricted Bands of 15.205

Preliminary scans were performed using a peak detector with the RBW = 100kHz. The radiated electric filed emission test applies to spurious emissions and harmonics that fall within the restricted bands listed in Section 15.205. The maximum permitted field strength is listed in Section 15.209. The EUT was set to transmit on its lowest, centre and highest carrier frequency and operating at data rates of 1Mbps, 2Mbps & 3Mbps at each frequency. Plots were taken of all data rates and frequencies. Only plots of top middle and bottom frequencies for the data rate producing highest output power are contained in appendix B.

The following test site was used for final measurements as specified by the standard tested to:

3m open area test site : [ ] 3m alternative test site : [X]

The effect of the EUT set-up on the measurements is summarised in note (c) below.

Test Details: 1Mbps	
Regulation	Title 47 of the CFR: Part 15 Subpart (c) Clause 15.247(d) and Clause 15.205
Measurement standard	ANSI C63.10:2003
Frequency range	30MHz to 25 GHz
EUT sample number	S56
Modification state	0
SE in test environment	S35
SE isolated from EUT	Laptop
EUT set up	Refer to Appendix C
Temperature	20°C
Photographs (Appendix F)	Photograph 1 and 2

The worst case radiated emission measurements for spurious emissions and harmonics that fall within the restricted bands are listed below:

2402 MHz – 1Mbps									
Ref No.	FREQ. (MHz)	MEAS Rx (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBµV/m)	EXTRAP FACT (dB)	FIELD ST'GH (µV/m)	LIMIT (µV/m)
1	4804.00	43.93	1.3	32.8	32.3	45.73	-	193.42	500

2402 MHz – 1Mbps									
Ref No.	FREQ. (MHz)	MEAS Rx (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBµV/m)	EXTRAP FACT (dB)	FIELD ST'GH (µV/m)	LIMIT (µV/m)
1	4881.69	44.73	1.3	33.1	32.4	46.73	-	217.02	500

2402 MHz – 1Mbps									
Ref No.	FREQ. (MHz)	MEAS Rx (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBµV/m)	EXTRAP FACT (dB)	FIELD ST'GH (µV/m)	LIMIT (µV/m)
1	4959.82	41.89	1.4	33.2	32.5	43.99	-	158.31	500

Radiated Electric Field Emissions Within The Restricted Band 15.205 continued:

The effect of the EUT set-up on the measurements is summarised in note (c) below.

Test Details: 1Mbps	
Regulation	Title 47 of the CFR: Part 15 Subpart (c) Clause 15.247(d) and Clause 15.205
Measurement standard	ANSI C63.10:2003
Frequency range	30MHz to 25 GHz
EUT sample number	S56
Modification state	0
SE in test environment	S35
SE isolated from EUT	Laptop
EUT set up	Refer to Appendix C
Temperature	20°C
Photographs (Appendix F)	Photograph 1 and 2

The worst case radiated emission measurements for spurious emissions and harmonics that fall within the restricted bands are listed below:

2441 MHz – 2Mbps									
Ref No.	FREQ. (MHz)	MEAS Rx (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBµV/m)	EXTRAP FACT (dB)	FIELD ST'GH (µV/m)	LIMIT (µV/m)
1	4803.80	45.41	1.3	32.8	32.3	47.21	-	229.35	500

2441 MHz – 2Mbps									
Ref No.	FREQ. (MHz)	MEAS Rx (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBµV/m)	EXTRAP FACT (dB)	FIELD ST'GH (µV/m)	LIMIT (µV/m)
1	4881.80	39.46	1.3	33.1	32.4	41.46	-	118.30	500

2441 MHz – 2Mbps									
Ref No.	FREQ. (MHz)	MEAS Rx (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBµV/m)	EXTRAP FACT (dB)	FIELD ST'GH (µV/m)	LIMIT (µV/m)
1	4959.82	37.18	1.4	33.2	32.5	39.28	-	92.04	500

Radiated Electric Field Emissions Within The Restricted Band 15.205 continued:

The effect of the EUT set-up on the measurements is summarised in note (c) below.

Test Details: 3Mbps	
Regulation	Title 47 of the CFR: Part 15 Subpart (c) Clause 15.247(d) and Clause 15.205
Measurement standard	ANSI C63.10:2003
Frequency range	30MHz to 25 GHz
EUT sample number	S56
Modification state	0
SE in test environment	S35
SE isolated from EUT	Laptop
EUT set up	Refer to Appendix C
Temperature	20°C
Photographs (Appendix F)	Photograph 1 and 2

The worst case radiated emission measurements for spurious emissions and harmonics that fall within the restricted bands are listed below:

2480 MHz – 3Mbps									
Ref No.	FREQ. (MHz)	MEAS Rx (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBµV/m)	EXTRAP FACT (dB)	FIELD ST'GH (µV/m)	LIMIT (µV/m)
1	4804.00	39.82	1.3	32.8	32.3	41.62	-	120.50	500

2480 MHz – 3Mbps									
Ref No.	FREQ. (MHz)	MEAS Rx (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBµV/m)	EXTRAP FACT (dB)	FIELD ST'GH (µV/m)	LIMIT (µV/m)
1	4881.87	39.49	1.3	33.1	32.4	41.49	-	118.71	500

2480 MHz – 3Mbps									
Ref No.	FREQ. (MHz)	MEAS Rx (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBµV/m)	EXTRAP FACT (dB)	FIELD ST'GH (µV/m)	LIMIT (µV/m)
1	4959.90	37.31	1.4	33.2	32.5	39.41	-	93.43	500

Notes:

1 Any testing performed below 30 MHz was performed using a magnetic loop antenna in accordance with ANSI C63.10: section 4.5, Table 1
2 In accordance with 15.35(b), above 1 GHz, emissions measured using a peak detector do not exceed a level 20 dB above the average limit.
3 Measurements at 2400 & 2483.5 MHz were made to ensure band edge compliance.
4 Testing was performed with the EUT orientated in three orthogonal planes and the maximum emissions level recorded. In addition, the EUT antenna was varied within its range of motion in order to maximise emissions.
5 For Frequencies below 1 GHz, RBW= 100 kHz, testing was performed with CISPR16 compliant test receiver with QP detector. Above 1 GHz tests were performed using a spectrum analyser using the following settings:

Peak	RBW= 1MHz, VBW > RBW
Average	RBW= 1MHz, VBW > RBW

These settings as per ANSI C63.10 and DA 00-705.

6 In accordance with DA 00-705, the average level of the spurious radiated emission may be reduced by the duty cycle correction factor. If the dwell time per channel (refer to the measured channel occupancy time, section A7 of this test report) of the hopping signal is less than 100ms then the average measurement may be further adjusted by the duty cycle correction factor which is derived from

$$20\log_{10}\left(\frac{\text{dwell time}}{100ms}\right)$$

The upper and lower frequency of the measurement range was decided according to 47 CFR 15:2008 Clause 15.33(a) and 15.33(a)(1).

Radiated emission limits (47 CFR 15: Clause 15.209) for emissions falling within the restricted bands defined in 15.205(a):

Frequency of emission (MHz)	Field strength μV/m	Measurement Distance m	Field strength dBμV/m
0.009-0.490	2400/F(kHz)	300	67.6/F (kHz)
0.490-1.705	24000/F(kHz)	30	87.6/F (kHz
1.705-30	30	30	29.5
30-88	100	3	40.0
88-216	150	3	43.5
216-960	200	3	46.0
Above 960	500	3	54.0

Notes:

(a) Where results have been measured at one distance, and a signal level displayed at another, the results have been extrapolated using the following formula:

$$\text{Extrapolation}\left(\text{dB}\right) = 20\log_{10}\left(\frac{\text{measurement distance}}{\text{specification distance}}\right)$$

The results displayed take into account applicable antenna factors and cable losses.

(b) The levels may have been rounded for display purposes.

(c) The following table summarises the effect of the EUT operating mode, internal configuration and arrangement of cables / samples on the measured emission levels :

	See (i)	See (ii)	See (iii)	See (iv)
Effect of EUT operating mode on emission levels	✓			
Effect of EUT internal configuration on emission levels		✓		
Effect of Position of EUT cables & samples on emission levels		✓		

(i) Parameter defined by standard and / or single possible, refer to Appendix D
(ii) Parameter defined by client and / or single possible, refer to Appendix D
(iii) Parameter had a negligible effect on emission levels, refer to Appendix D
(iv) Worst case determined by initial measurement, refer to Appendix D

A4 20 dB Bandwidth

Title 47 of the CFR: Part 15 Subpart (c) 15.247(a)(1)(i) requires the measurement of the bandwidth of the transmission between the -20 dB points on the transmitted spectrum. The results of this test determine the limits for channel spacing.

Test Details:	
Regulation	Title 47 of the CFR: Part 15 Subpart (c) 15.247(a)(1)
EUT sample number	S95
Modification state	0
SE in test environment	S35
SE isolated from EUT	Laptop
Temperature	20°C
EUT set up	Refer to Appendix C

1Mbps	
Channel Frequency (MHz)	Measured 20 dB Bandwidth (kHz)
2402.0	1153.846
2441.0	1217.948
2480.0	1217.948
2Mbps	
Channel Frequency (MHz)	Measured 20 dB Bandwidth (kHz)
2402.0	1387.820
2441.0	1378.205
2480.0	1375.000
3Mbps	
Channel Frequency (MHz)	Measured 20 dB Bandwidth (kHz)
2402.0	1378.205
2441.0	1378.205
2480.0	1381.410

Plots of the 20 dB bandwidth are contained in Appendix B of this test report.

A5 Carrier Frequency Separation

For systems with an output power greater than 125mW the channel separation shall be a minimum of 25 kHz or the 20 dB bandwidth, whichever is the greater. For systems with output power less than 125mW the channel separation shall be a minimum of 25 kHz or $^2/_3$ of the 20 dB bandwidth whichever is the greater. The formal measurements are detailed below:

Test Details:	
Regulation	Title 47 of the CFR: Part 15 Subpart (c) 15.247(a)(1)
EUT sample number	S95
Modification state	0
SE in test environment	S35
SE isolated from EUT	Laptop
Temperature	20°C
EUT set up	Refer to Appendix C

Operational Data Rate	Measured Channel Spacing (kHz)	Measured 20 dB Bandwidth (kHz)	Limit (kHz)	Result
1Mbps	1000	1217.948	811.965	Pass
2Mbps	1000	1387.820	925.213	Pass
3Mbps	1000	1381.410	920.940	Pass
Limit	25 kHz or $^2/_3$ of the 20 dB bandwidth of the hopping channel Whichever is greater			

Plots of the channel spacing are contained in Appendix B of this test report.

A6 Hopping frequencies

Hopping frequencies were verified using a spectrum analyser, while the EUT was operating in its normal frequency hopping mode.

Test Details:	
Regulation	Title 47 of the CFR : Part 15 Subpart (c) 15.247(a)(1)(i)
EUT sample number	S95
Modification state	0
SE in test environment	S35
SE isolated from EUT	Laptop
Temperature	20°C
EUT set up	Refer to Appendix C

No. of Hopping Channels	Requirement	Result
79	>15	Pass

Plots showing the hopping channels are contained in Appendix B

A7 Channel Occupancy

Channel occupancy time was verified using a spectrum analyser in zero span mode, centred on the middle hopping channel frequency (2441.0 MHz), while the EUT was operating in its normal frequency hopping mode. The other channels were then verified to ensure that the channel occupancy was identical for all channels.

Test Details:	
Regulation	Title 47 of the CFR: Part15 Subpart (c) 15.247(a)(1)
EUT sample number	S95
Modification state	0
SE in test environment	S35
SE isolated from EUT	Laptop
Temperature	20°C
EUT set up	Refer to Appendix C

T_{occ} (ms)	MP (s)	MPTX	AOT (s)	Limit (s)	Result
2.95	31.6	107	0.31575	0.4	Pass

Plots showing the channel occupancy time and time between successive transmissions are contained in Appendix B of this test report. These are identical for all modulation modes.

Average Channel Occupancy Time

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

No. Of utilised hopping channels (N) = 79
One channel occupancy time (T_{occ}) = 2.95ms
Measurement Period (MP) = 31.6 Seconds

Measurement Period = 0.4 x N
Measurement Period = 0.4 x 79
Measurement Period = 31.6 seconds

No. of transmission cycles in measurement period (MPTX) = 107

Average Occupany Time (AOT) = T_{occ} x MPTX
Average Occupany Time (AOT) = 2.95m x 107
Average Occupany Time (AOT) = 315.75ms

A8 Antenna Gain

The maximum antenna gain for the antenna types to be used with the EUT, as declared by the client, is 1 dBi.

A9 Unintentional Radiated Electric Field Emissions - 15.109

Preliminary scans were performed using a peak detector with the RBW = 100kHz. The maximum permitted field strength is listed in Section 15.109. The EUT was set to receive mode only on its lowest, centre and highest carrier frequency in turn.

The following test site was used for final measurements as specified by the standard tested to :

3m open area test site : [ ] 3m alternative test site : [X]

Test Details: 2402.0 MHz	
Regulation	Title 47 of the CFR: Part 15 Subpart (b) Clause 15.109
Measurement standard	ANSI C63.10:2003
Frequency range	30MHz to 25 GHz
EUT sample number	S56
Modification state	0
SE in test environment	S35
SE isolated from EUT	Laptop
EUT set up	Refer to Appendix C
Temperature	15°C
Photographs (Appendix F)	Photograph 1 and 2

The worst case radiated emission measurements for spurious emissions:

Ref No.	FREQ. (MHz)	MEAS Rx (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBµV/m)	EXTRAP FACT (dB)	FIELD ST'GH (µV/m)	LIMIT (µV/m)
1	30.75	2.3	1.1	18.2	-	21.6	-	12.02	100
2	41.4	10.1	1.1	12.3	-	23.5	-	14.96	100
3	52.45	12.9	1.1	6.7	-	20.7	-	10.84	100
4	54.45	19.4	1.1	6.1	-	26.6	-	21.38	100
5	69.9	14.4	1.1	5.4	-	20.9	-	11.09	100
6	485.9	3.3	2.6	17.7	-	23.6	-	15.14	200
7	497.4	5.9	2.6	18	-	26.5	-	21.13	200

Unintentional Radiated Electric Field Emissions 15.109 continued:

Test Details: 2441.0 MHz	
Regulation	Title 47 of the CFR: Part 15 Subpart (b) Clause 15.109
Measurement standard	ANSI C63.10:2003
Frequency range	30MHz to 25 GHz
EUT sample number	S56
Modification state	0
SE in test environment	S35
SE isolated from EUT	Laptop
EUT set up	Refer to Appendix C
Temperature	15°C
Photographs (Appendix F)	Photograph 1 and 2

The worst case radiated emission measurements for spurious emissions:

Ref No.	FREQ. (MHz)	MEAS Rx (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBµV/m)	EXTRAP FACT (dB)	FIELD ST'GH (µV/m)	LIMIT (µV/m)
1	30.75	2.3	1.1	18.2	-	21.6	-	12.02	100
2	41.4	10.1	1.1	12.3	-	23.5	-	14.96	100
3	52.45	12.9	1.1	6.7	-	20.7	-	10.84	100
4	54.45	19.4	1.1	6.1	-	26.6	-	21.38	100
5	69.9	14.4	1.1	5.4	-	20.9	-	11.09	100
6	485.9	3.3	2.6	17.7	-	23.6	-	15.14	200
7	497.4	5.9	2.6	18	-	26.5	-	21.13	200

Unintentional Radiated Electric Field Emissions 15.109 continued:

Test Details: 2480.0 MHz	
Regulation	Title 47 of the CFR: Part 15 Subpart (b) Clause 15.109
Measurement standard	ANSI C63.10:2003
Frequency range	30MHz to 25 GHz
EUT sample number	S56
Modification state	0
SE in test environment	S35
SE isolated from EUT	Laptop
EUT set up	Refer to Appendix C
Temperature	15°C
Photographs (Appendix F)	Photograph 1 and 2

The worst case radiated emission measurements for spurious emissions:

Ref No.	FREQ. (MHz)	MEAS Rx (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBµV/m)	EXTRAP FACT (dB)	FIELD ST'GH (µV/m)	LIMIT (µV/m)
1	30.75	2.3	1.1	18.2	-	21.6	-	12.02	100
2	41.4	10.1	1.1	12.3	-	23.5	-	14.96	100
3	52.45	12.9	1.1	6.7	-	20.7	-	10.84	100
4	54.45	19.4	1.1	6.1	-	26.6	-	21.38	100
5	69.9	14.4	1.1	5.4	-	20.9	-	11.09	100
6	485.9	3.3	2.6	17.7	-	23.6	-	15.14	200
7	497.4	5.9	2.6	18	-	26.5	-	21.13	200

Appendix B: Supporting Graphical Data

This appendix contains graphical data obtained during testing.

Notes:

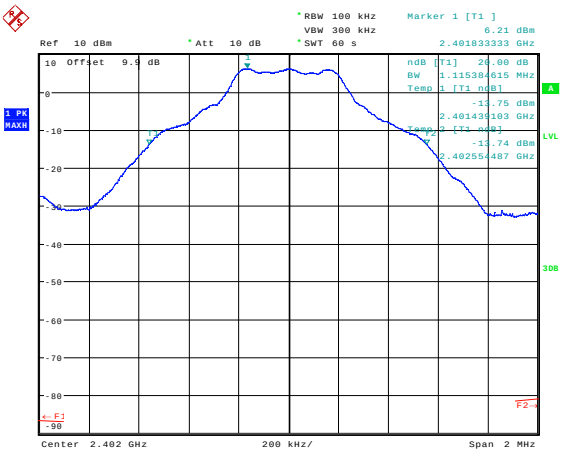
(a) The radiated electric field emissions and conducted emissions graphical data in this appendix is preview data. For details of formal results, refer to Appendix A and Appendix B.

(b) The time and date on the plots do not necessarily equate to the time of the test.

(c) Where relevant, on power line conducted emission plots, the limit displayed is the average limit, which is stricter than the quasi peak limit.

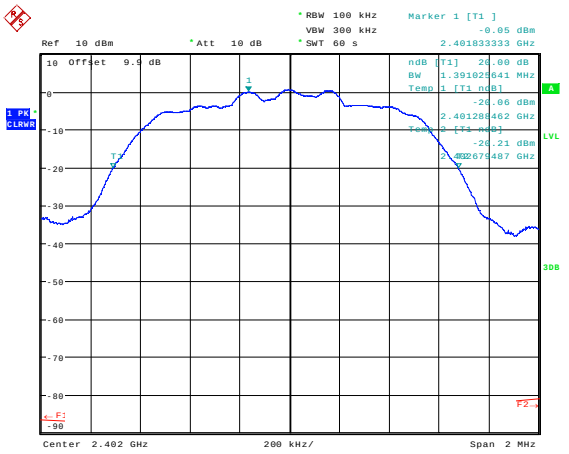
(d) Appendix C details the numbering system used to identify the sample and its modification state.

(e) The plots presented in this appendix may not be a complete record of the measurements performed, but are a representative sample, relative to the final assessment.



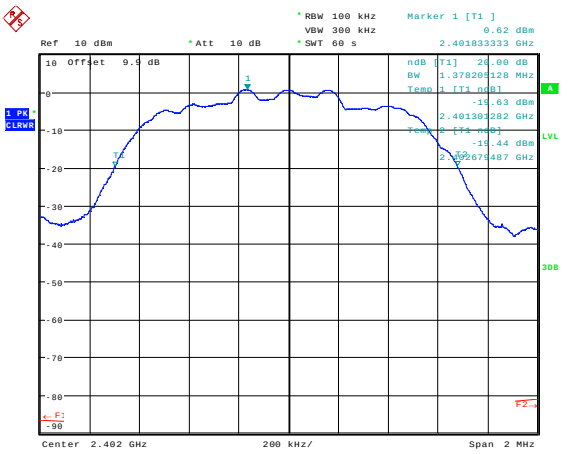
Date: 6.JAN.2011 13:26:00

20dB Bandwidth – 1Mbps



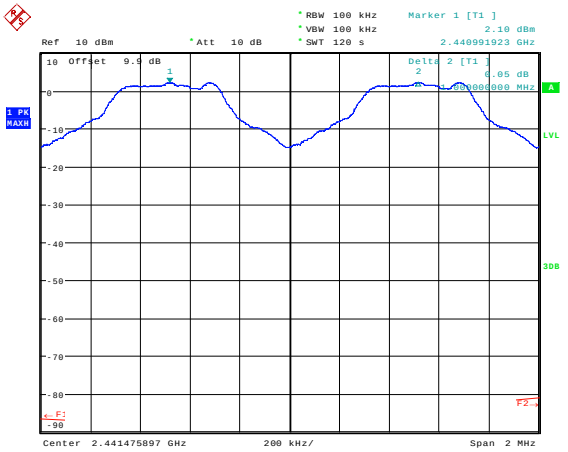
Date: 6.JAN.2011 13:33:25

20dB Bandwidth – 2Mbps



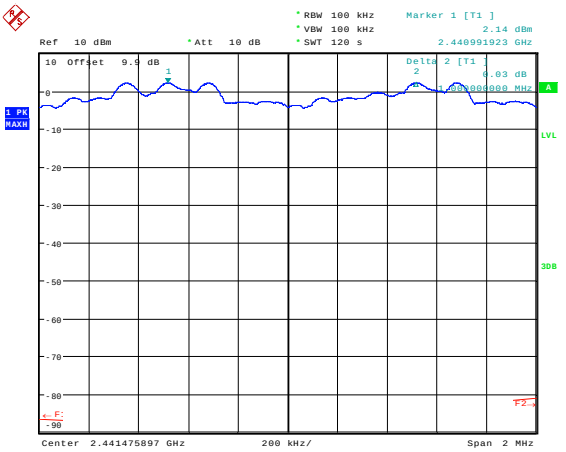
Date: 6.JAN.2011 13:39:48

20dB Bandwidth – 3Mbps



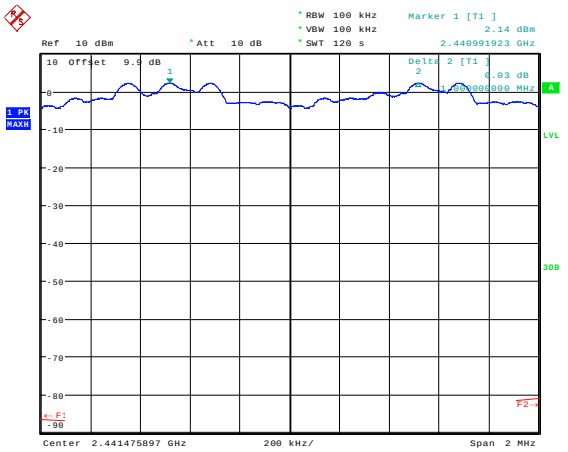
Date: 6.JAN.2011 15:46:59

Channel Spacing – 1Mbps



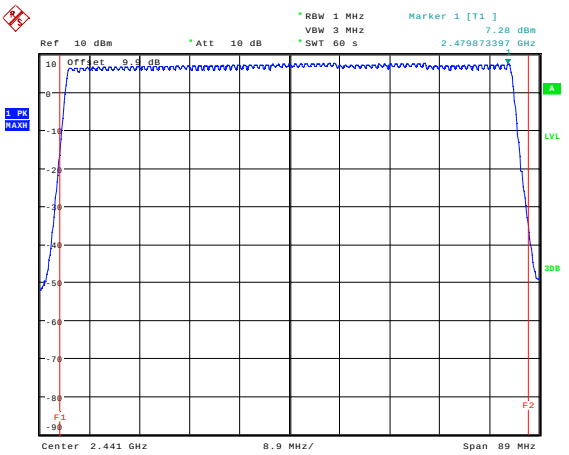
Date: 6.JAN.2011 15:38:34

Channel Spacing – 2Mbps



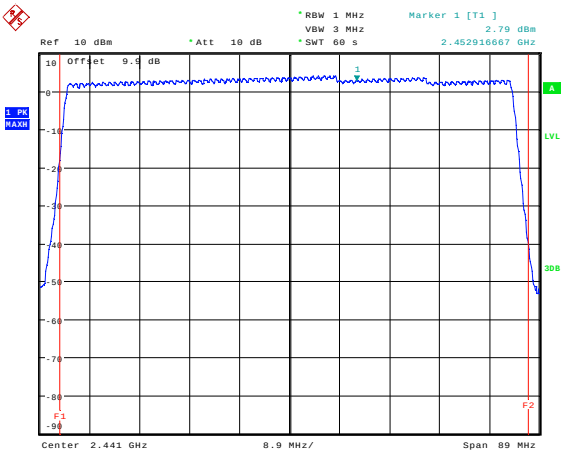
Date: 6.JAN.2011 15:38:34

Channel Spacing – 3Mbps



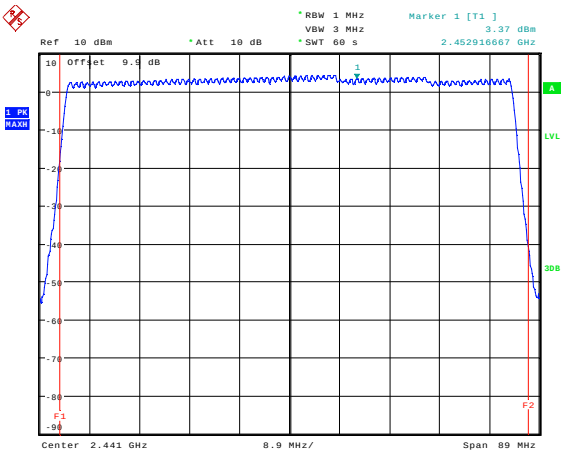
Date: 6.JAN.2011 11:28:06

Number of Hopping Channels – 1Mbps



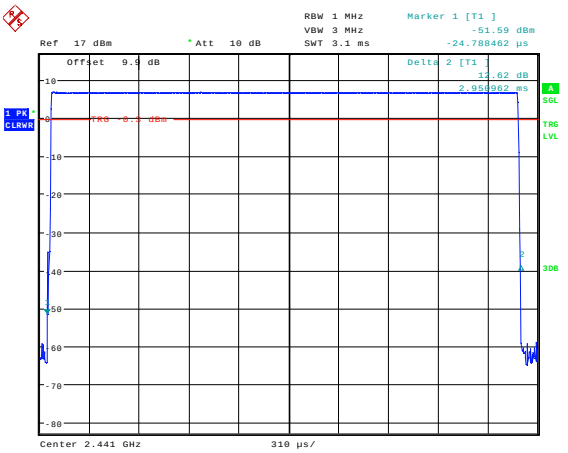
Date: 6.JAN.2011 11:54:46

Number of Hopping Channels – 2Mbps



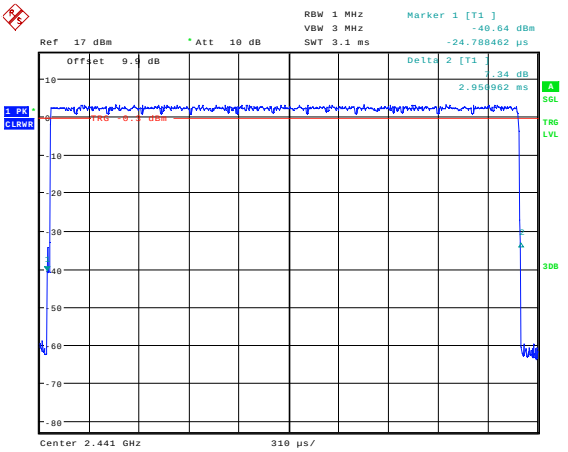
Date: 6.JAN.2011 12:10:13

Number of Hopping Channels – 3Mbps



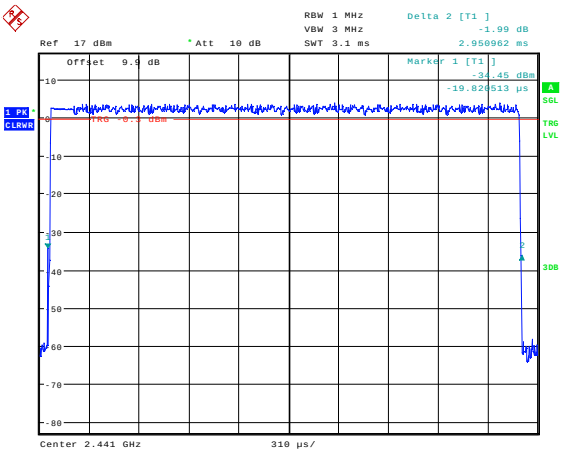
Date: 7.JAN.2011 13:09:09

Channel Occupancy Time – 1Mbps



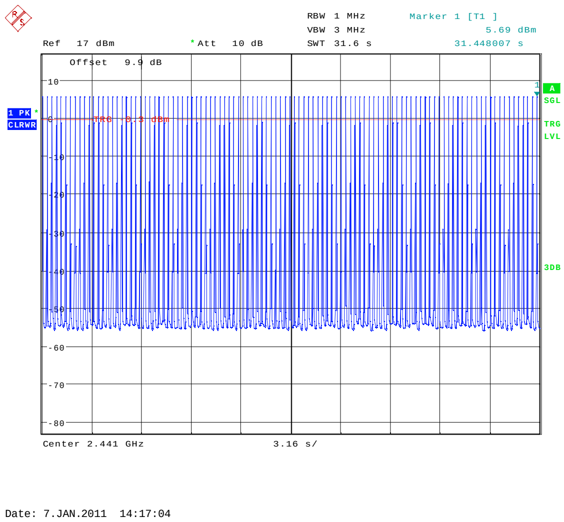
Date: 7.JAN.2011 13:12:40

Channel Occupancy Time – 2Mbps

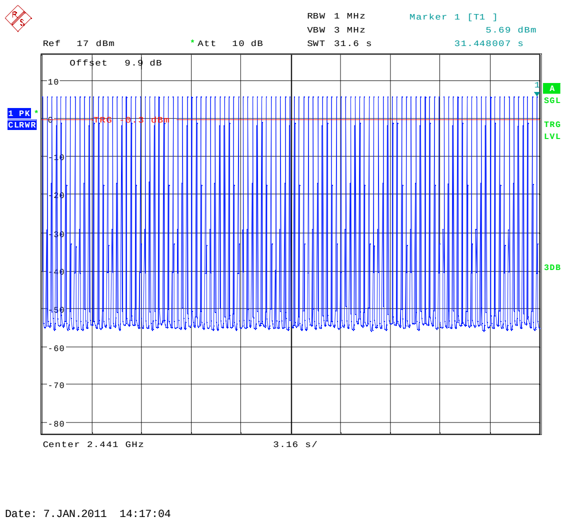


Date: 7.JAN.2011 13:17:04

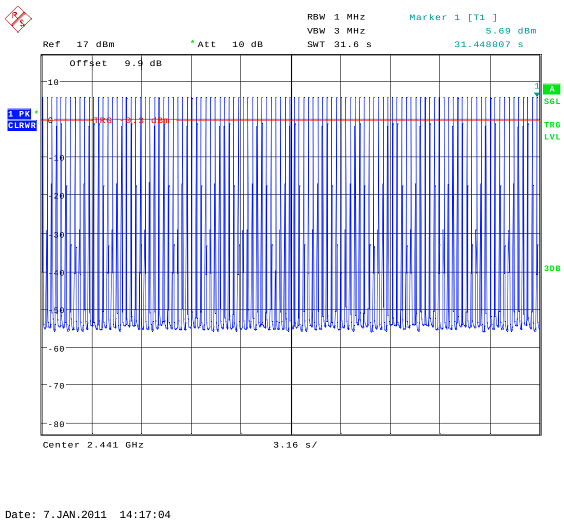
Channel Occupancy Time – 3Mbps



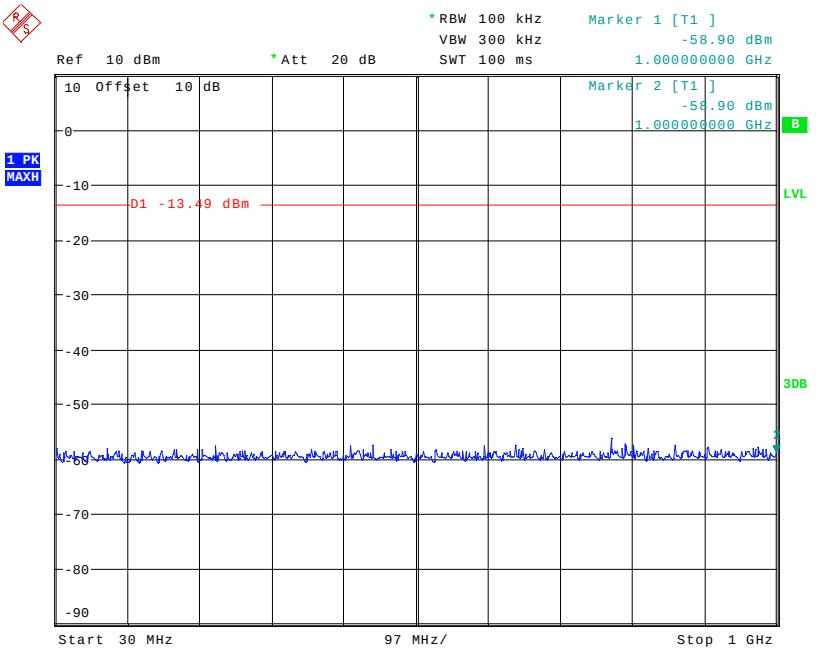
Channel repetition time – 1Mbps



Channel repetition time – 1Mbps

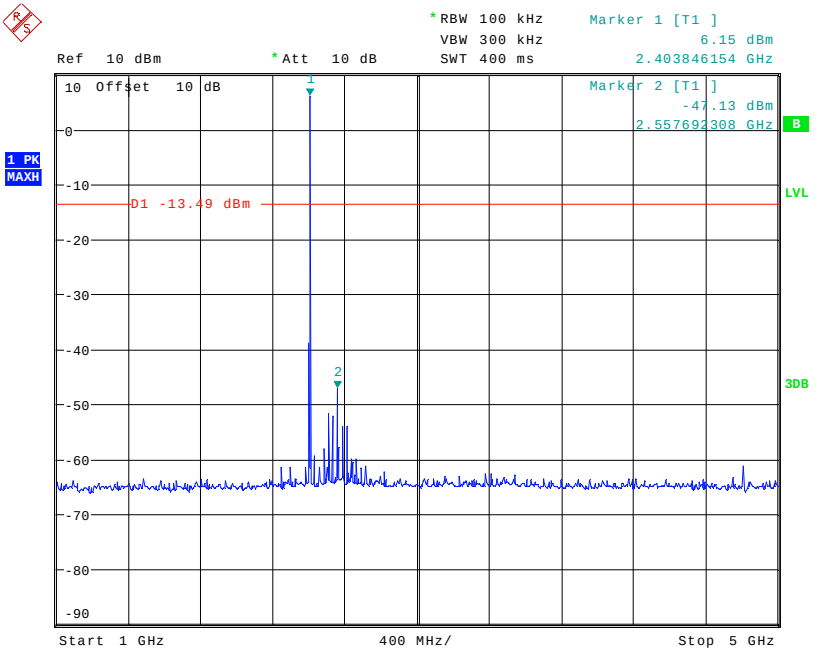


Channel repetition time – 1Mbps



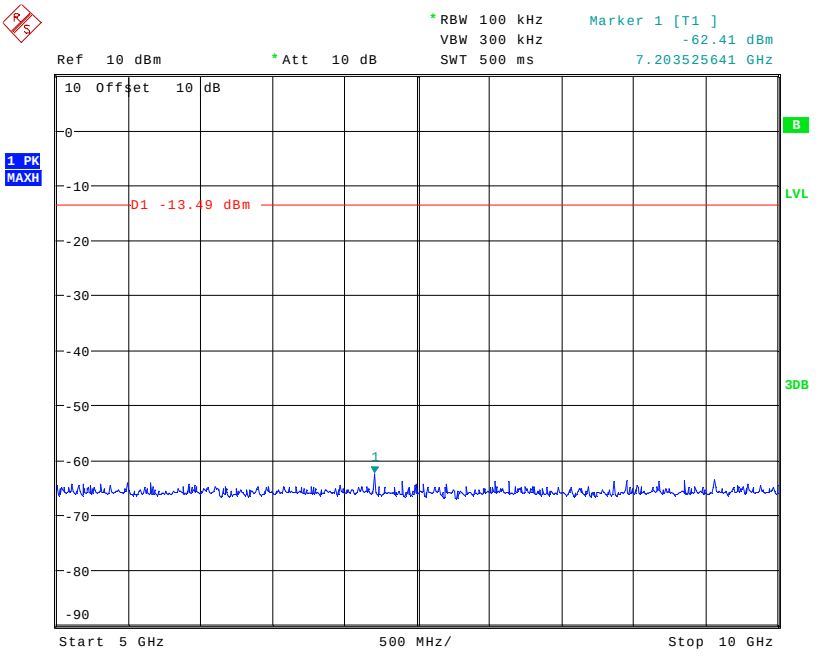
Date: 13.JAN.2011 11:24:31

Conducted spurious emissions 30 MHz to 1 GHz – 2402.0MHz – 1Mbps



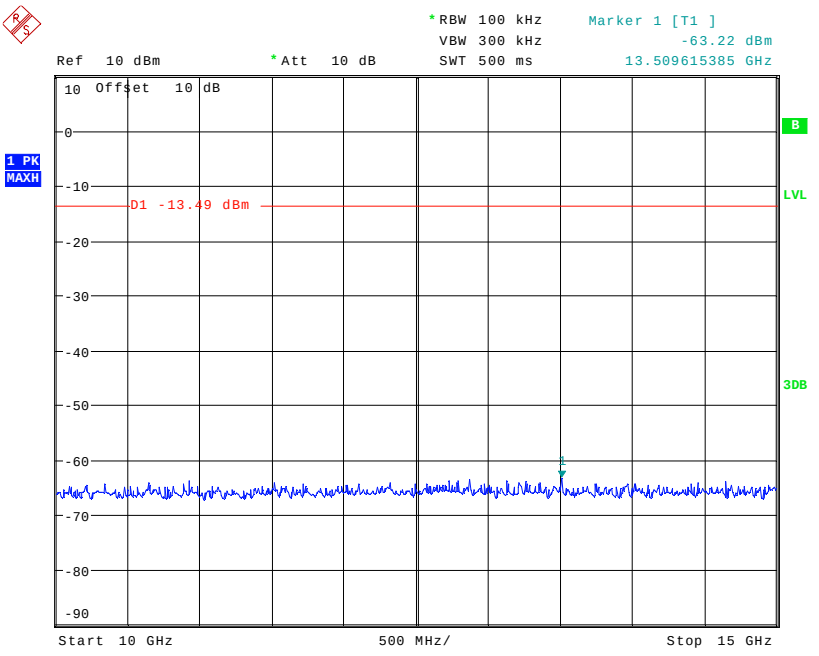
Date: 13.JAN.2011 11:23:58

Conducted spurious emissions 1 GHz to 5 GHz – 2402.0MHz – 1Mbps



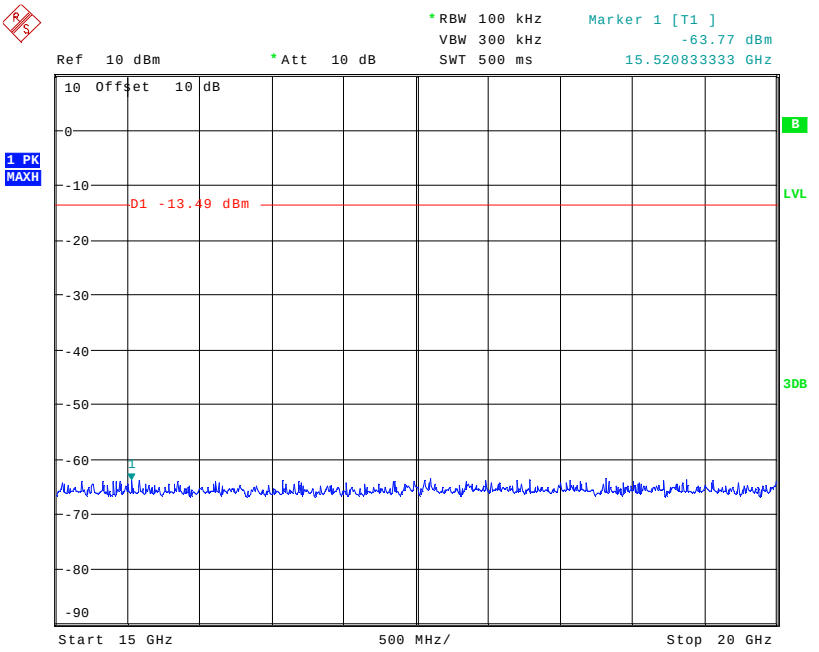
Date: 13.JAN.2011 11:25:39

Conducted spurious emissions 5 GHz to 10 GHz – 2402.0MHz – 1Mbps



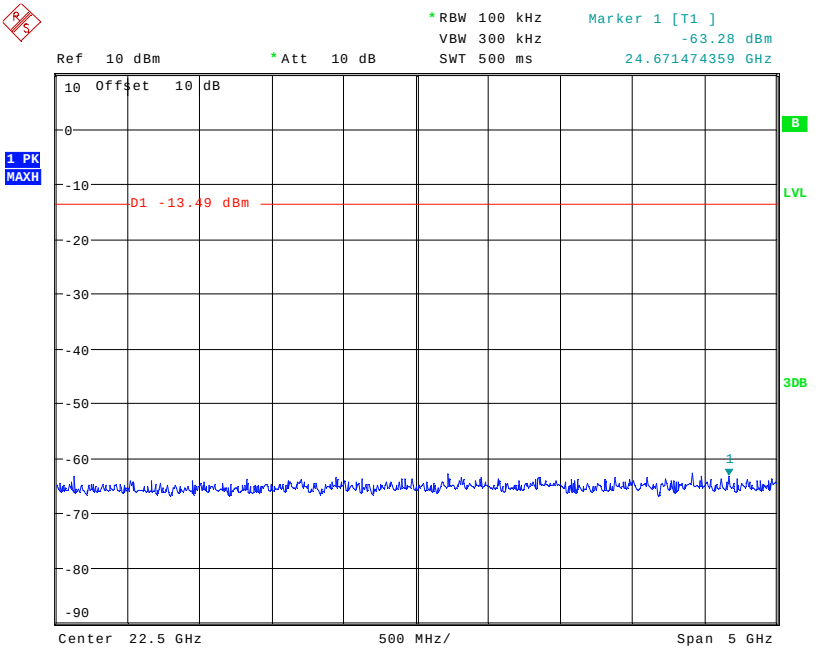
Date: 13.JAN.2011 11:26:02

Conducted spurious emissions 10 GHz to 15 GHz – 2402.0MHz – 1Mbps



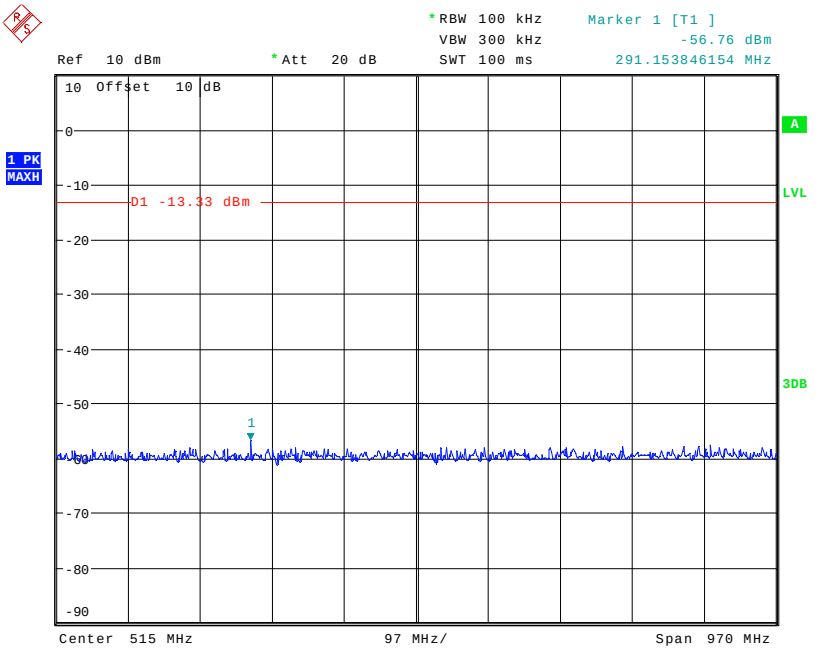
Date: 13.JAN.2011 11:26:22

Conducted spurious emissions 15 GHz to 20 GHz – 2402.0MHz – 1Mbps



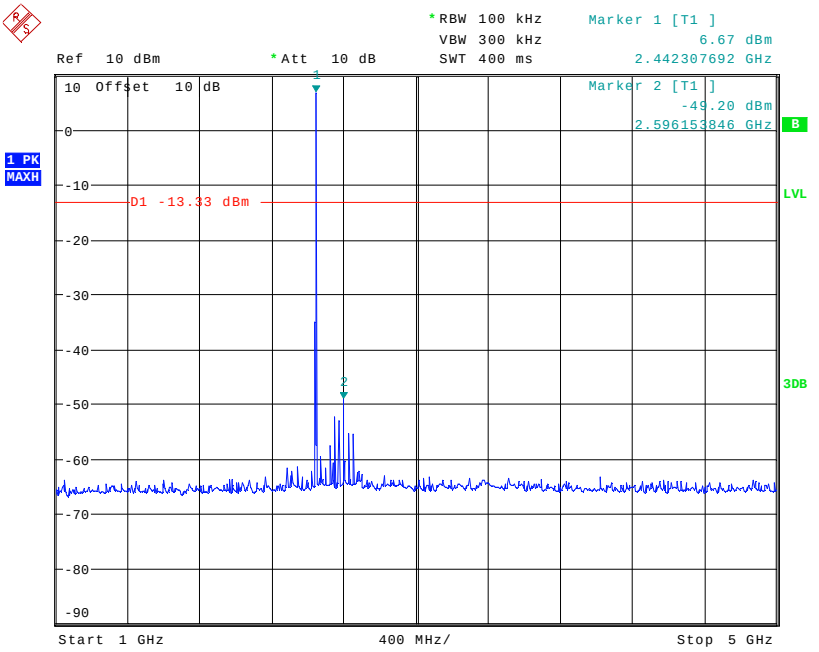
Date: 13.JAN.2011 11:26:49

Conducted spurious emissions 20 GHz to 25 GHz – 2402.0MHz 1Mbps



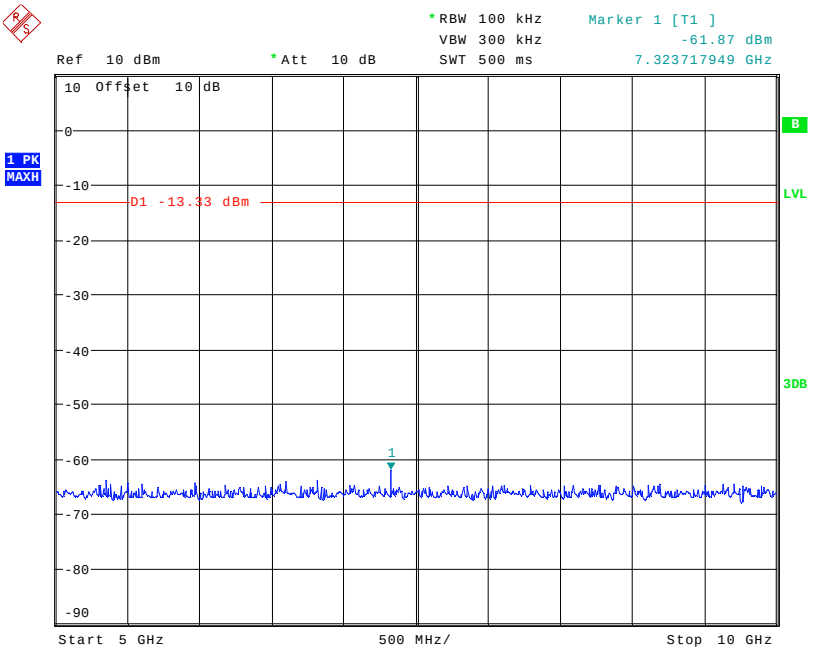
Date: 13.JAN.2011 11:28:18

Conducted Spurious emissions 30 MHz to 1 GHz – 2441.0 MHz – 1Mbps



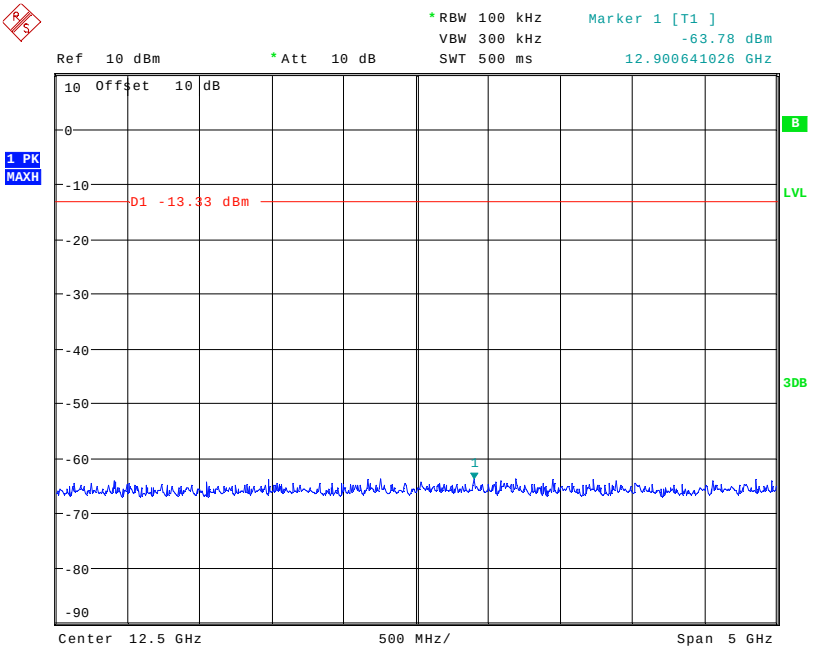
Date: 13.JAN.2011 11:27:59

Conducted Spurious emissions 1 GHz to 5 GHz – 2441.0 MHz – 1Mbps



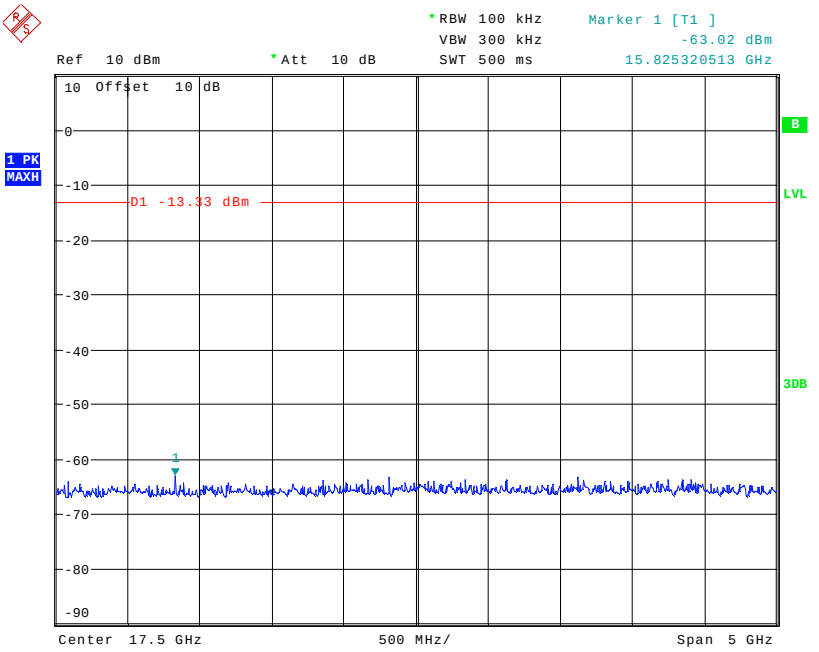
Date: 13.JAN.2011 11:28:36

Conducted Spurious emissions 5 GHz to 10 GHz – 2441.0 MHz – 1Mbps



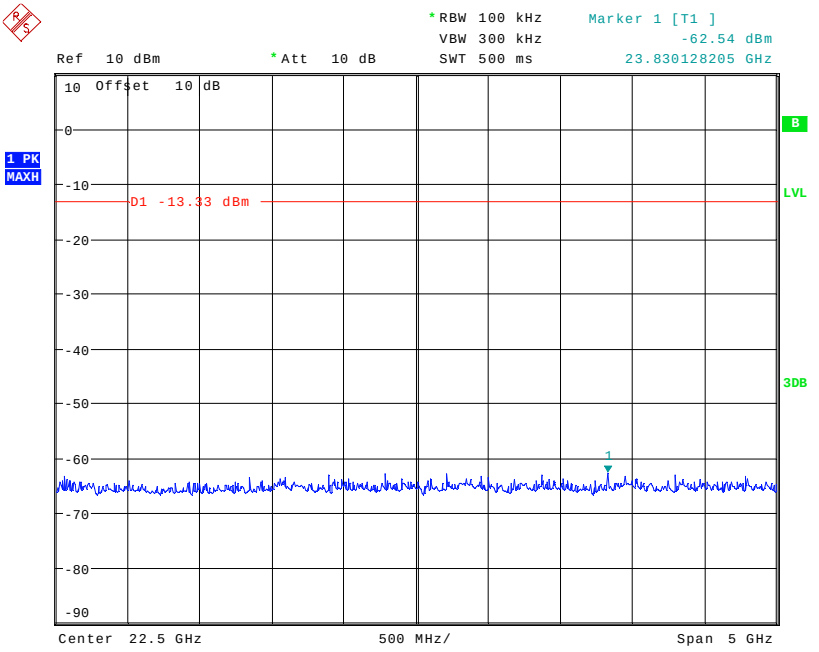
Date: 13.JAN.2011 11:28:54

Conducted Spurious emissions 10 GHz to 15GHz – 2441.0 MHz – 1Mbps



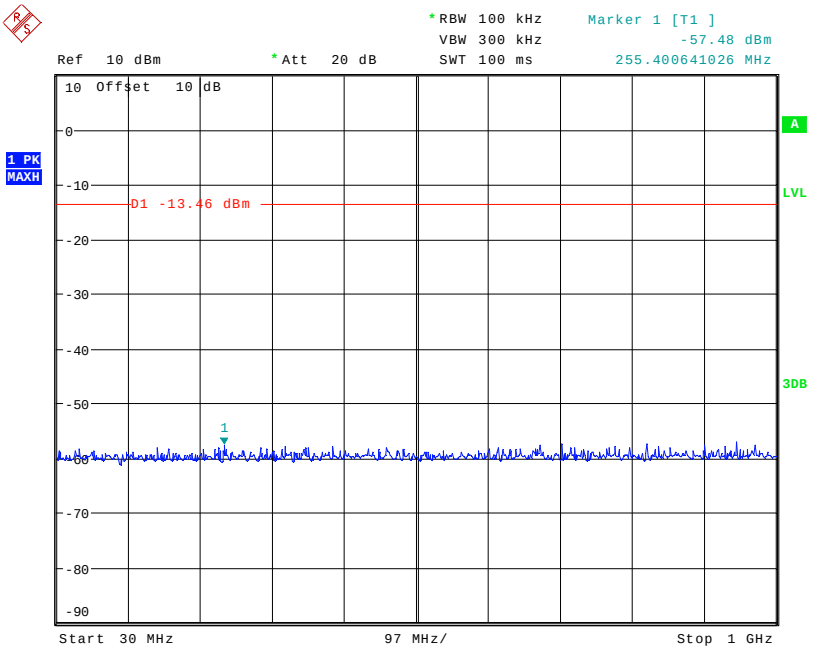
Date: 13.JAN.2011 11:29:09

Conducted Spurious emissions 15 GHz to 20GHz – 2441.0 MHz – 1Mbps



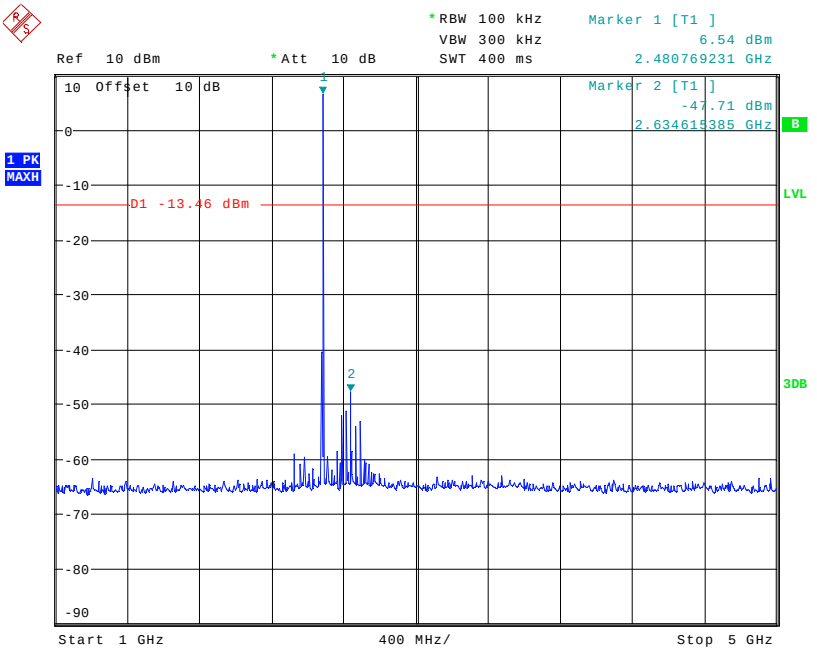
Date: 13.JAN.2011 11:29:27

Conducted Spurious emissions 20 GHz to 25GHz – 2441.0 MHz – 1Mbps



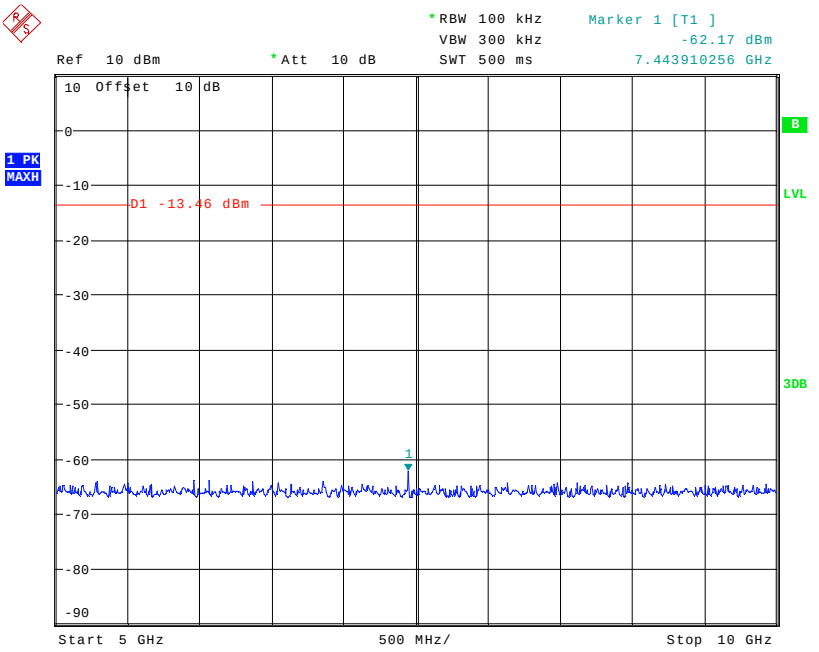
Date: 13.JAN.2011 11:31:32

Conducted Spurious emissions 30 MHz to 1 GHz – 2480.0MHz – 1Mbps



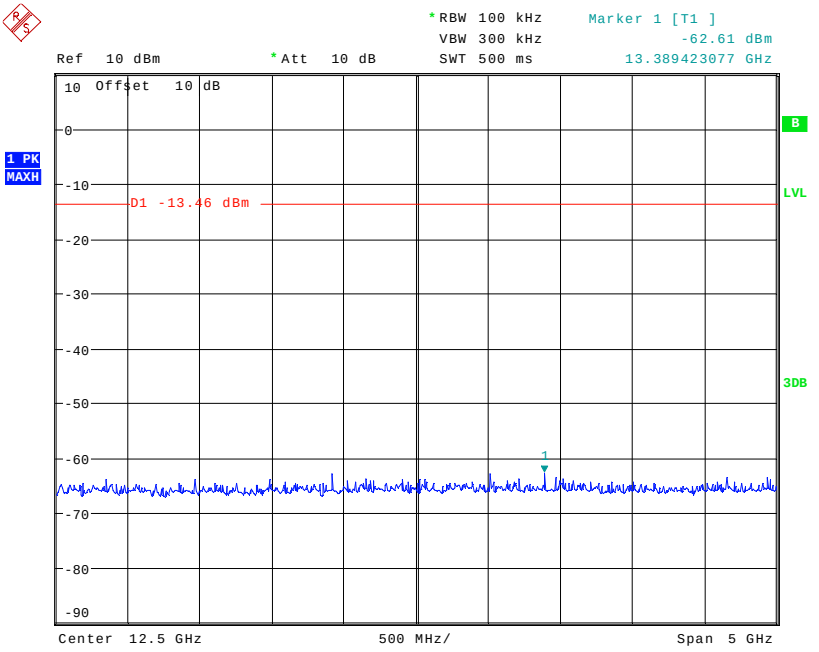
Date: 13.JAN.2011 11:31:13

Conducted Spurious emissions 1 GHz to 5 GHz – 2480.0MHz – 1Mbps



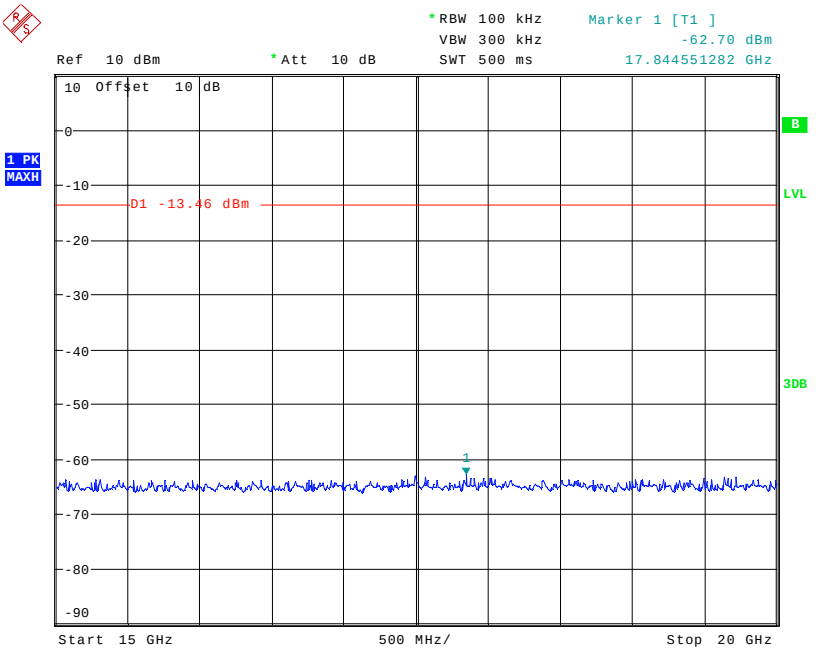
Date: 13.JAN.2011 11:31:59

Conducted Spurious emissions 5 GHz to 10 GHz– 2480.0MHz – 1Mbps



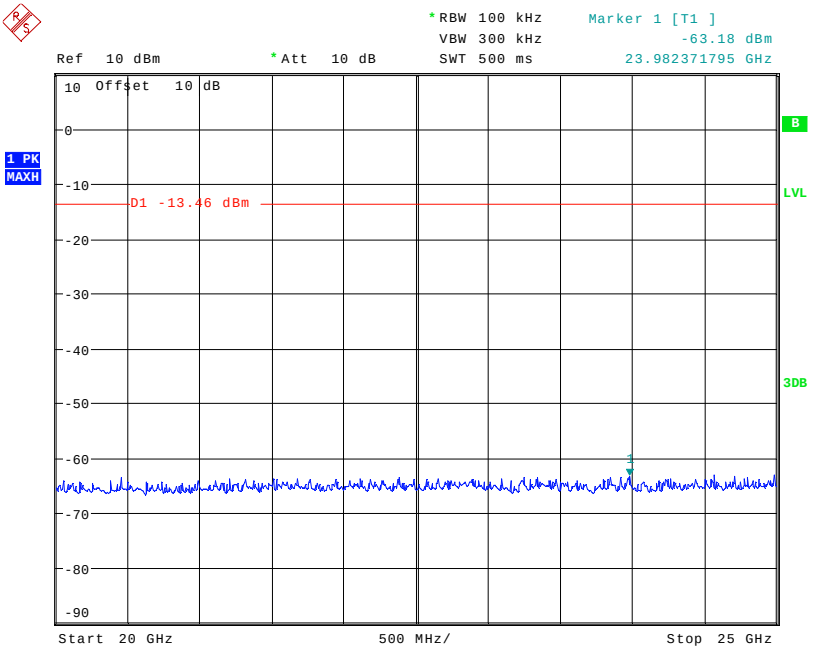
Date: 13.JAN.2011 11:32:29

Conducted Spurious emissions 10 GHz to 15 GHz– 2480.0MHz – 1Mbps



Date: 13.JAN.2011 11:33:19

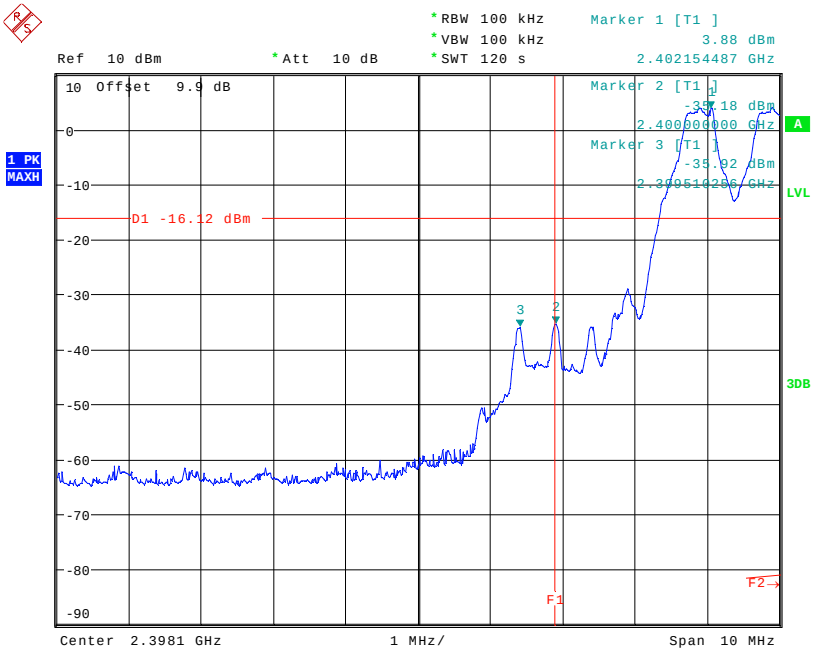
Conducted Spurious emissions 15 GHz to 20 GHz– 2480.0MHz – 1Mbps



Date: 13.JAN.2011 11:33:41

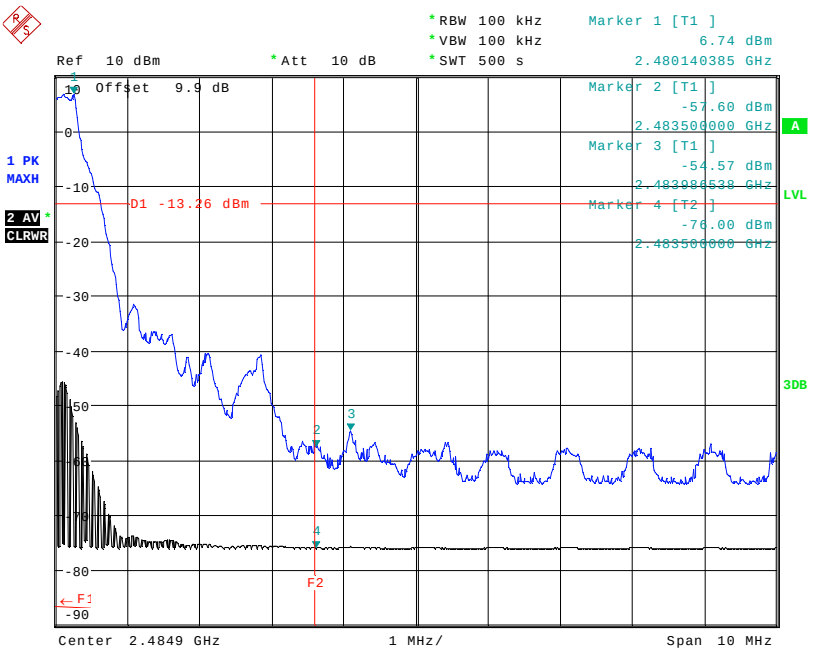
Conducted Spurious emissions 20 GHz to 25 GHz– 2480.0MHz – 1Mbps

Conducted Bandedge Compliance



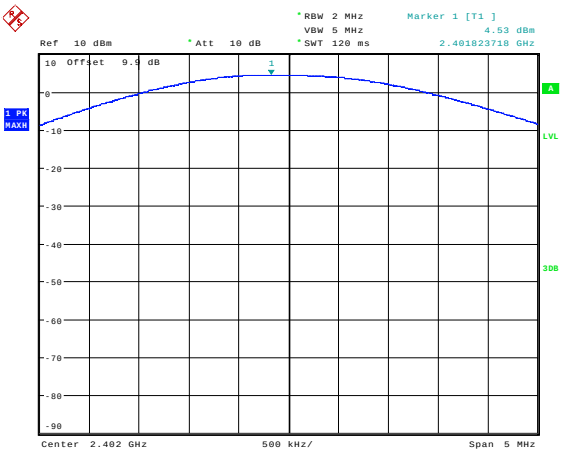
Date: 6.JAN.2011 16:05:19

Lower Bandedge – 1Mbps



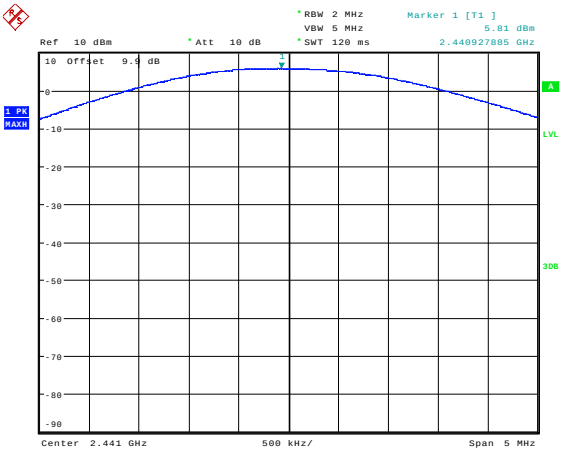
Date: 7.JAN.2011 09:16:27

Upper Bandedge – 1Mbps



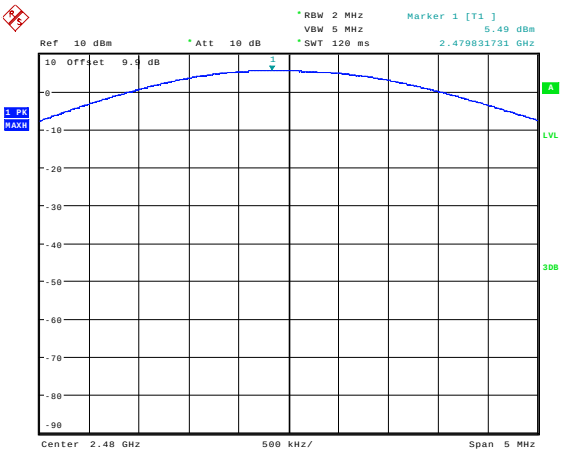
Date: 7.JAN.2011 11:52:19

Conducted carrier power 2402.0MHz – 1Mbps



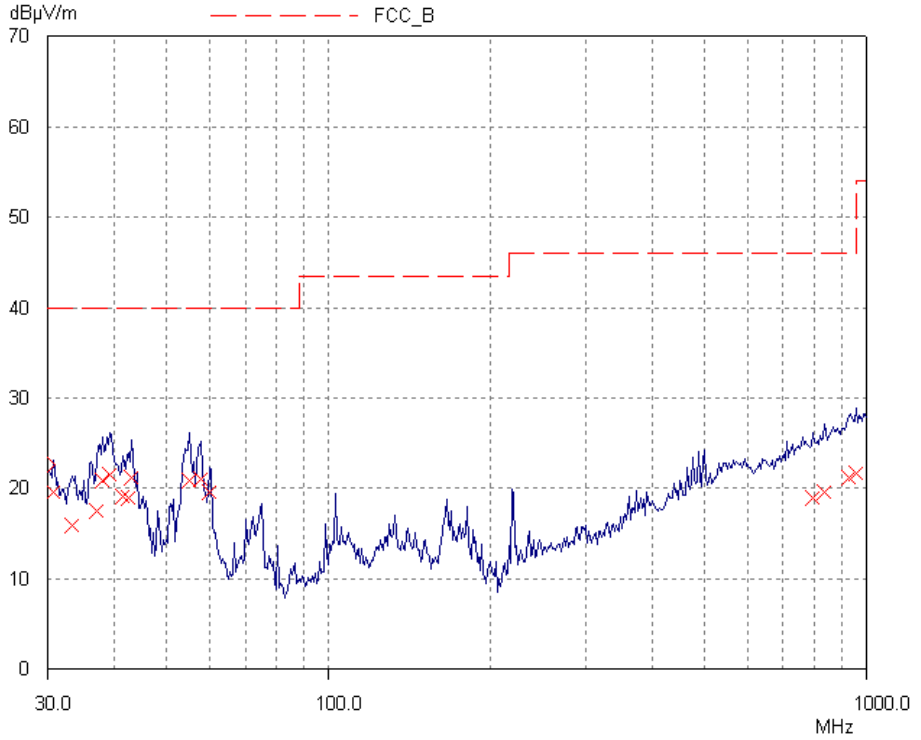
Date: 7.JAN.2011 11:47:18

Conducted carrier power 2441.0 MHz – 1Mbps

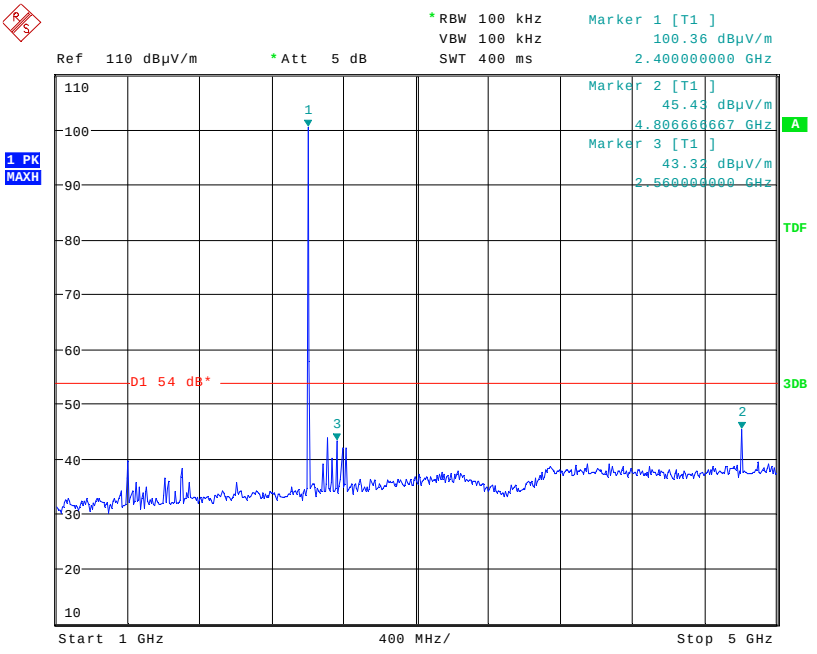


Date: 7.JAN.2011 11:55:36

Conducted carrier power 2480.0 MHz – 1Mbps

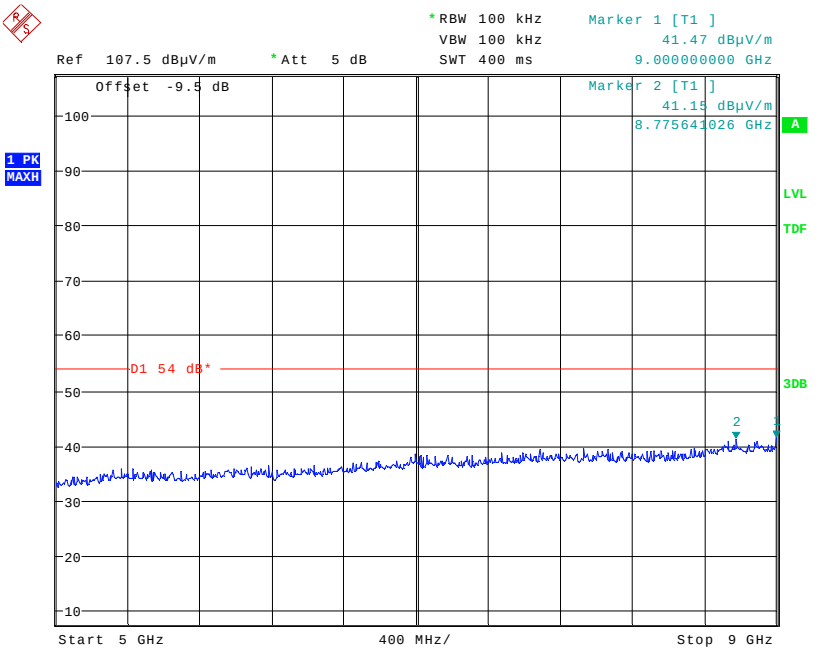


Radiated Spurious emissions 30 MHz to 1 GHz – 2402.0MHz – 1Mbps



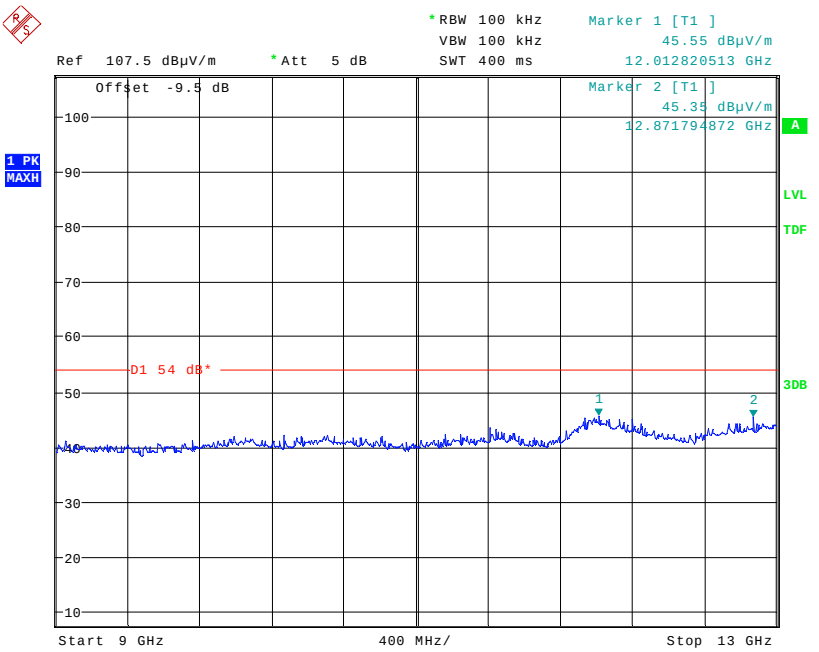
Date: 13.DEC.2010 13:33:56

Radiated Spurious emissions 1 GHz to 5 GHz – 2402.0MHz – 1Mbps



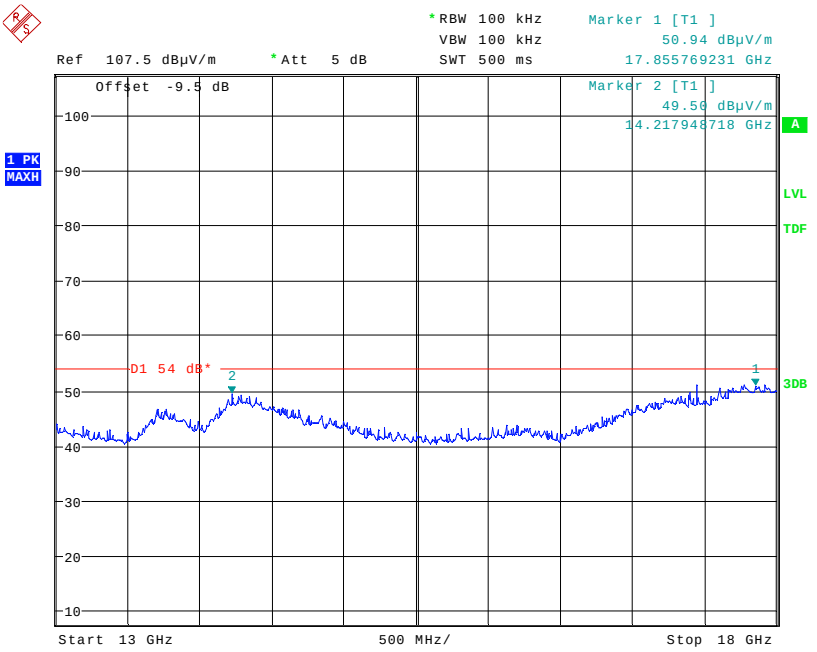
Date: 14.DEC.2010 10:49:32

Radiated Spurious emissions 5 GHz to 9 GHz – 2402.0MHz – 1Mbps



Date: 14.DEC.2010 10:48:23

Radiated Spurious emissions 9 GHz to 13 GHz – 2402.0MHz – 1Mbps



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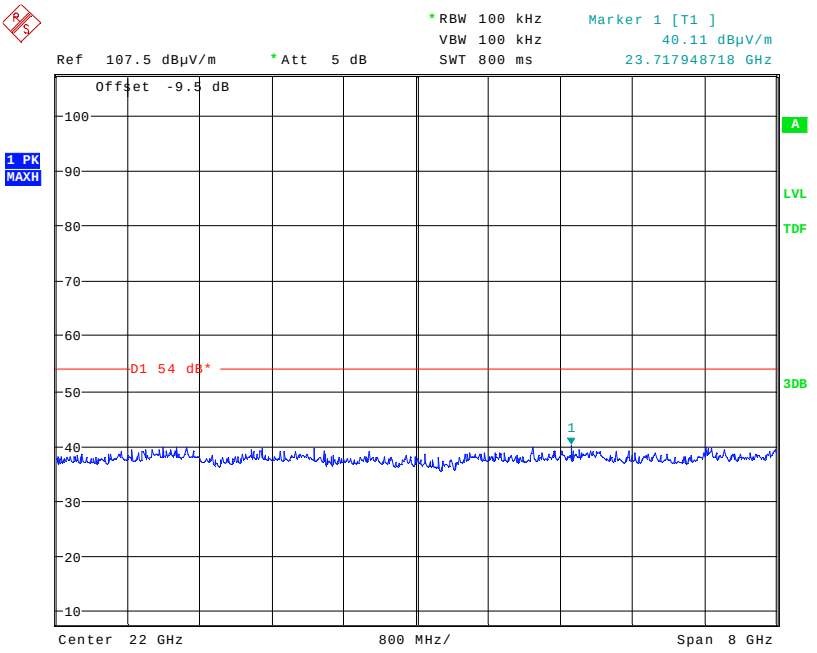
Radiated Spurious emissions 13 GHz to 18GHz – 2402.0MHz – 1Mbps



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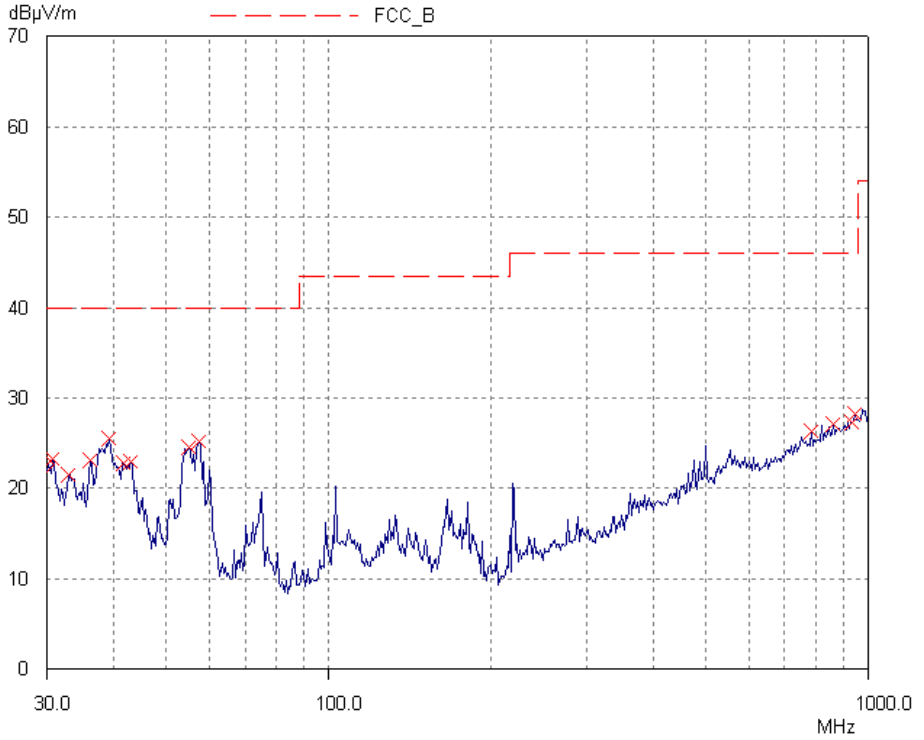
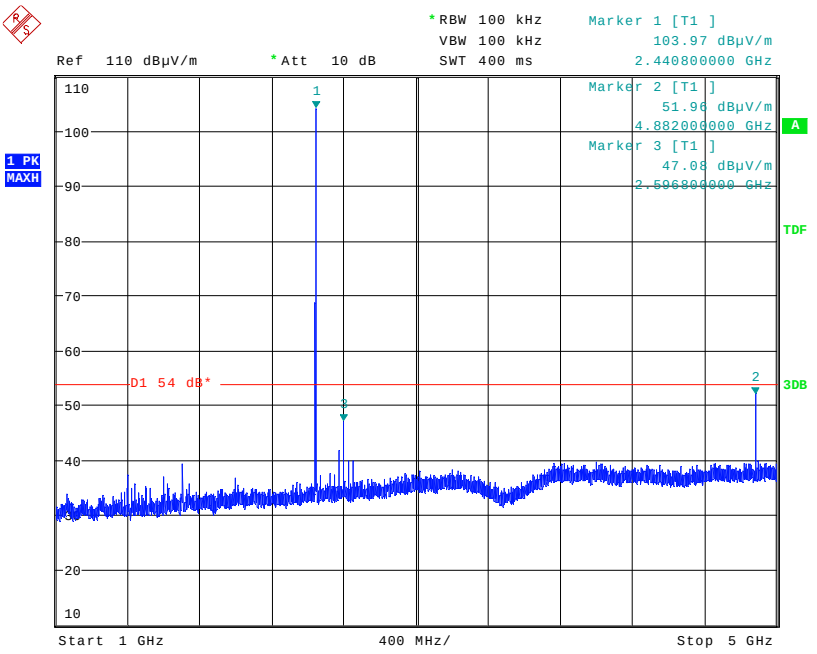
Radiated Spurious emissions 18 GHz to 25 GHz – 2402.0MHz – 1Mbps



Radiated Spurious emissions 30 MHz to 1 GHz – 2441.0MHz – 1Mbps



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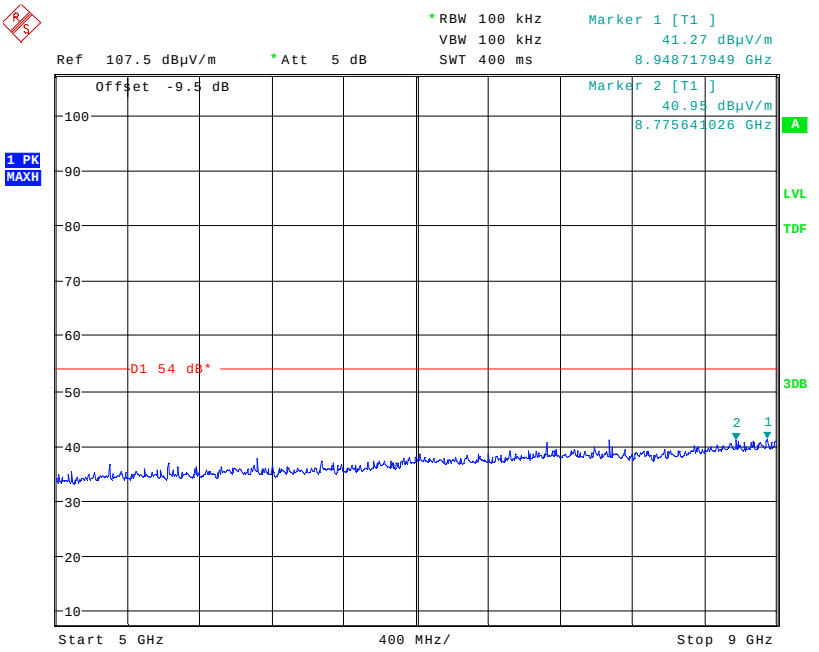
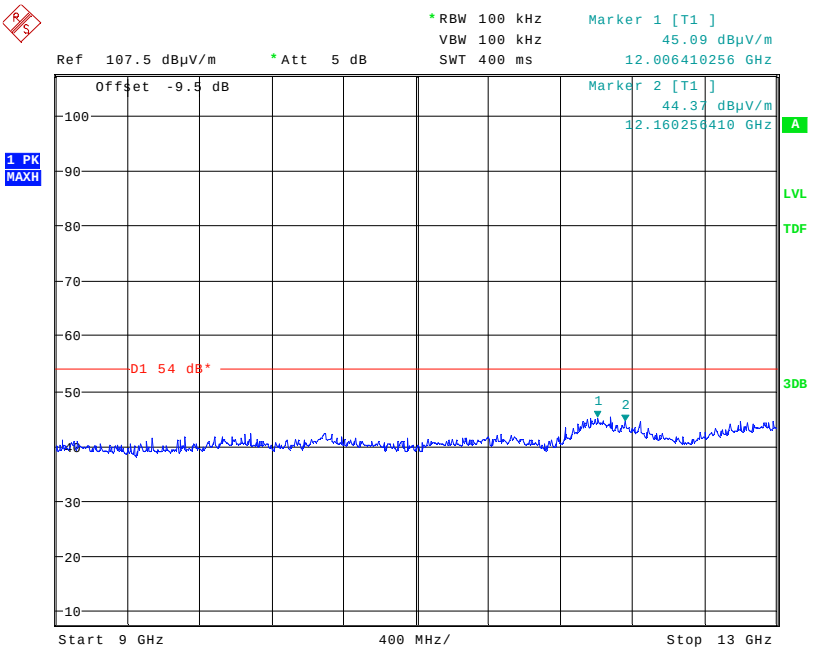
Radiated Spurious emissions 1 GHz to 5 GHz – 2441.0MHz – 1Mbps



Date: 14.DEC.2010 10:52:23

Radiated Spurious emissions 5 GHz to 9 GHz – 2441.0MHz – 1Mbps



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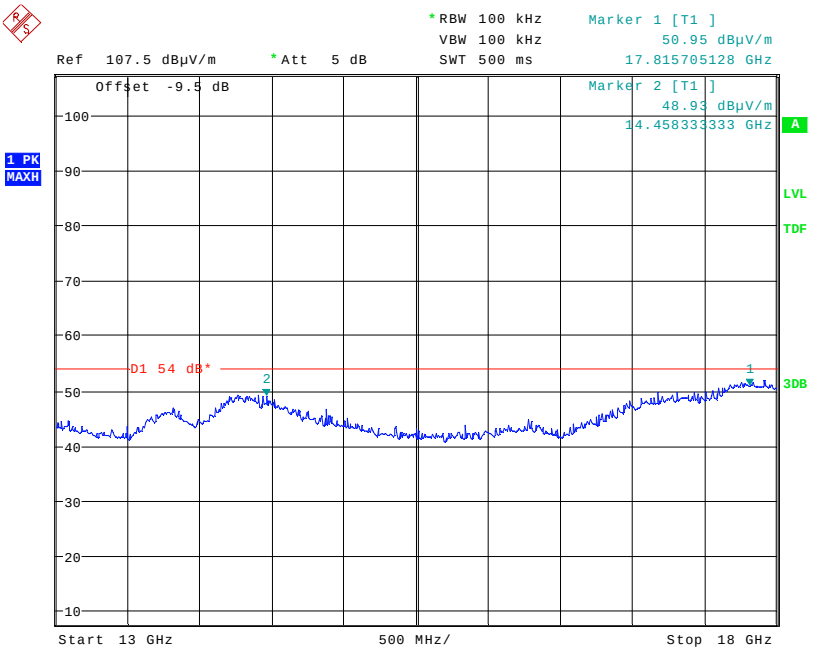
Radiated Spurious emissions 9 GHz to 13 GHz – 2441.0MHz – 1Mbps



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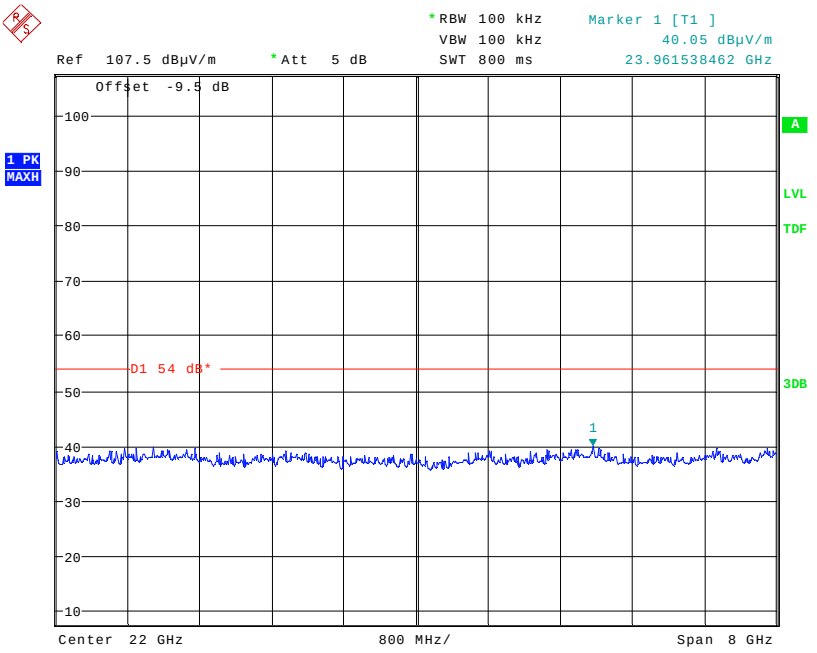
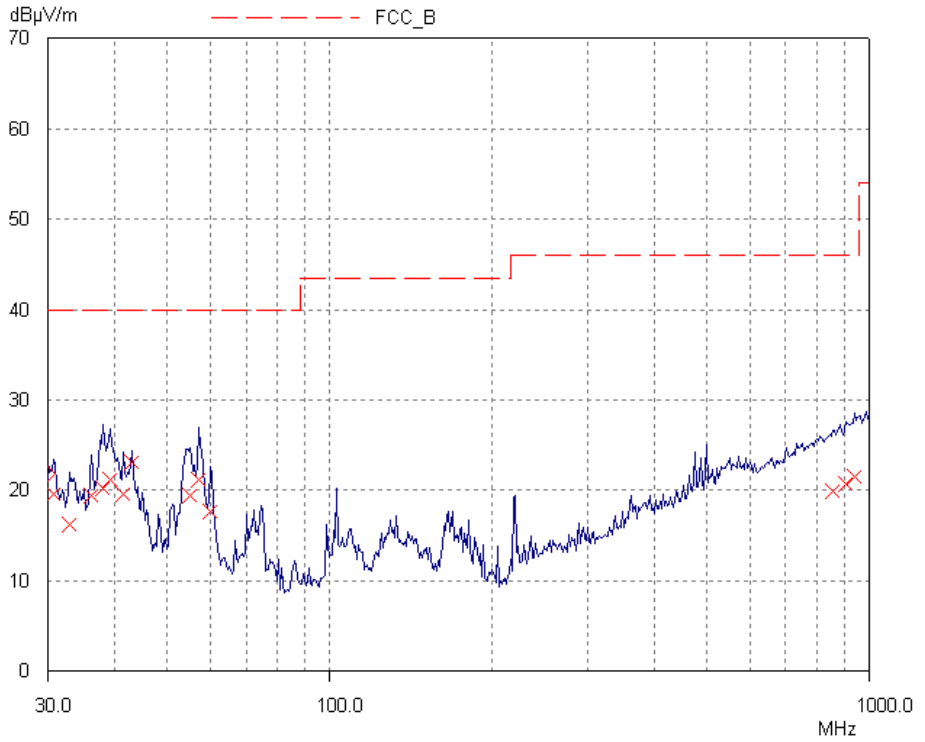
Radiated Spurious emissions 13 GHz to 18GHz – 2441.0MHz – 1Mbps

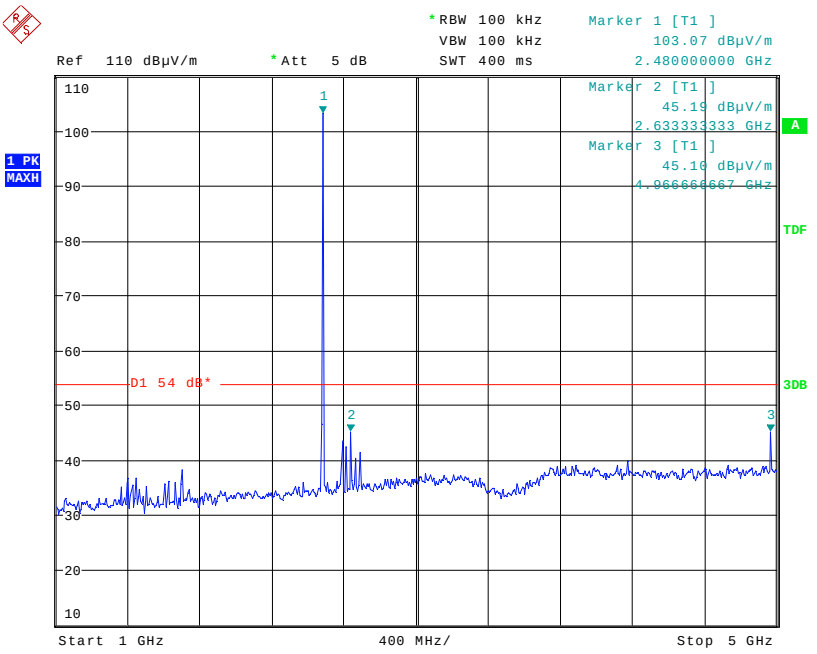


Date: 14.DEC.2010 15:25:31

Radiated Spurious emissions 18 GHz to 25 GHz – 2441.0MHz – 1Mbps



Radiated Spurious emissions 30 MHz to 1 GHz – 2480.0MHz – 1Mbps



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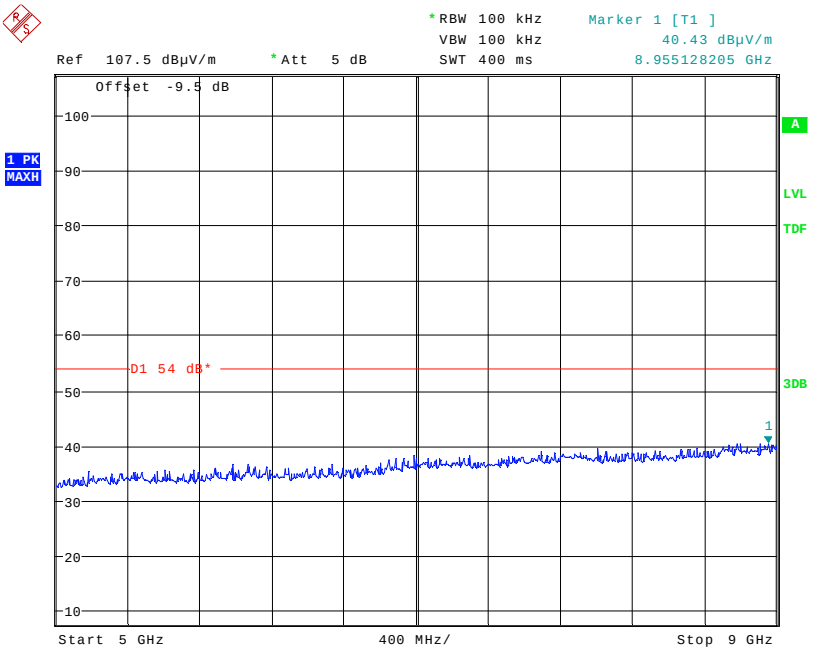
Radiated Spurious emissions 1 GHz to 5 GHz – 2480.0MHz – 1Mbps



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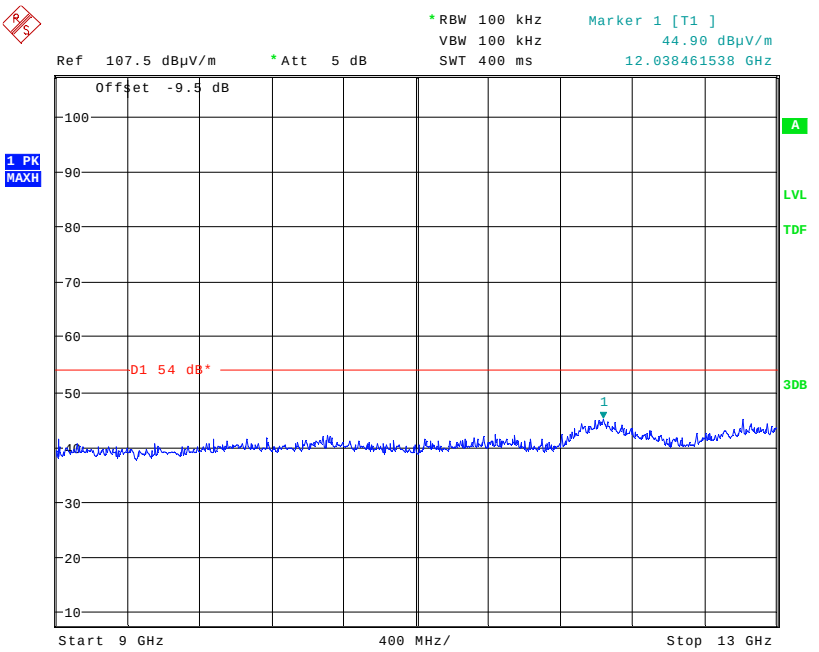
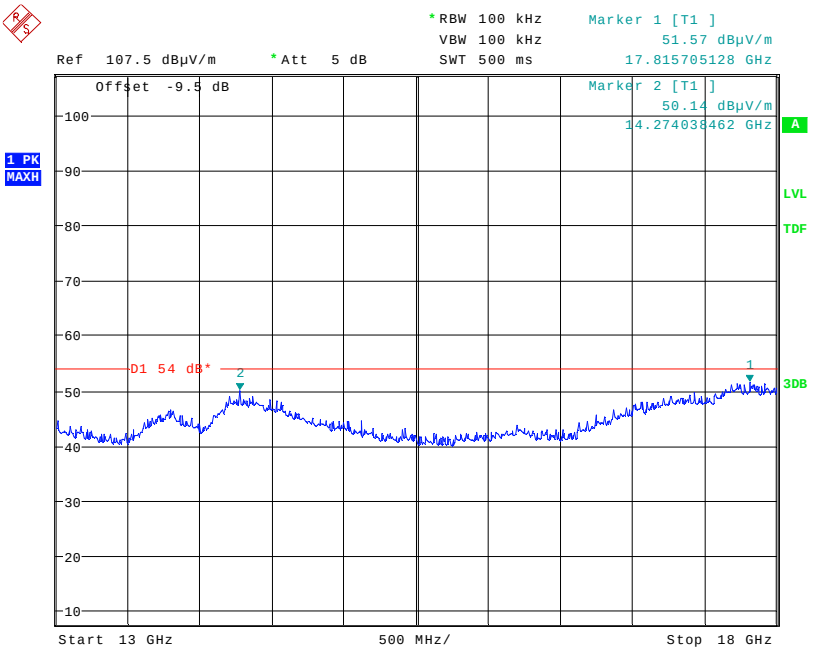
Radiated Spurious emissions 5 GHz to 9 GHz – 2480.0MHz – 1Mbps



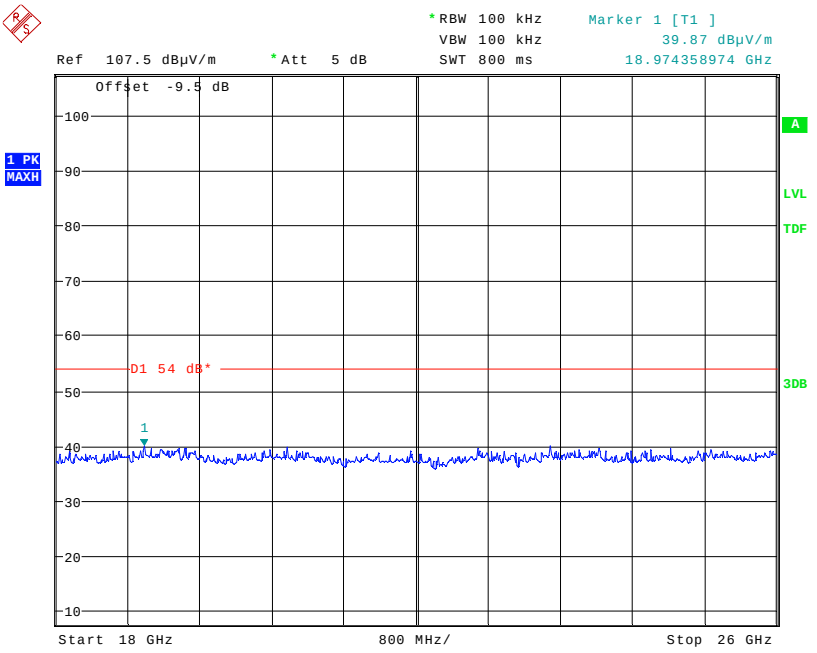
Date: 14.DEC.2010 10:29:19

Radiated Spurious emissions 9 GHz to 13 GHz – 2480.0MHz – 1Mbps



Date: 14.DEC.2010 10:30:04

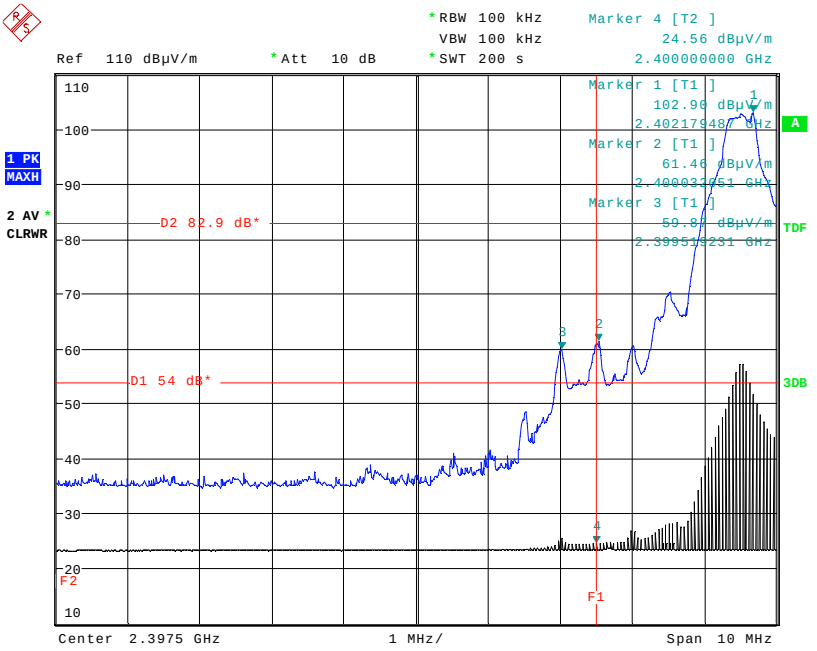
Radiated Spurious emissions 13 GHz to 18GHz – 2480.0MHz – 1Mbps



Date: 14.DEC.2010 15:14:39

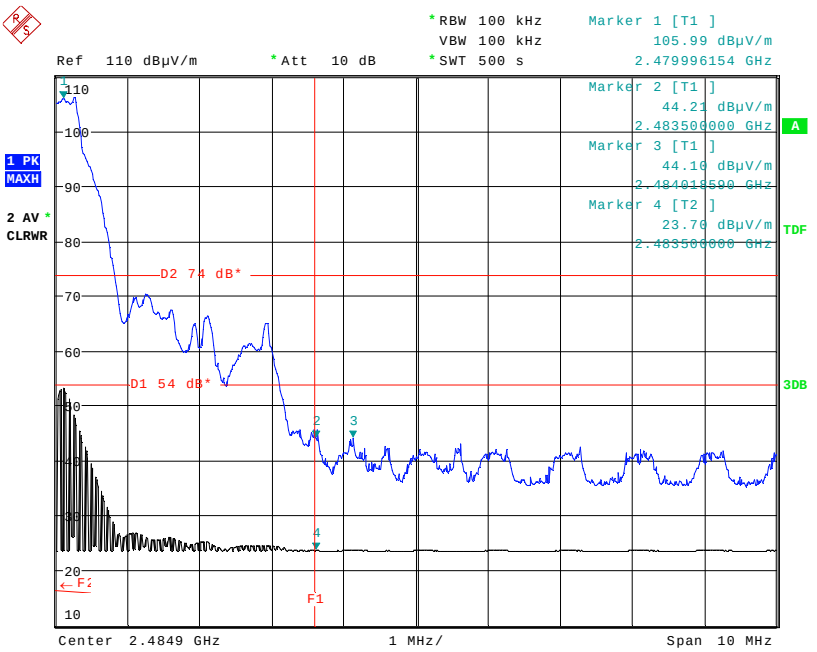
Radiated Spurious emissions 18 GHz to 25 GHz – 2480.0MHz – 1Mbps

Radiated Bandedge Compliance



Date: 13.JAN.2011 08:54:09

Lower Bandedge



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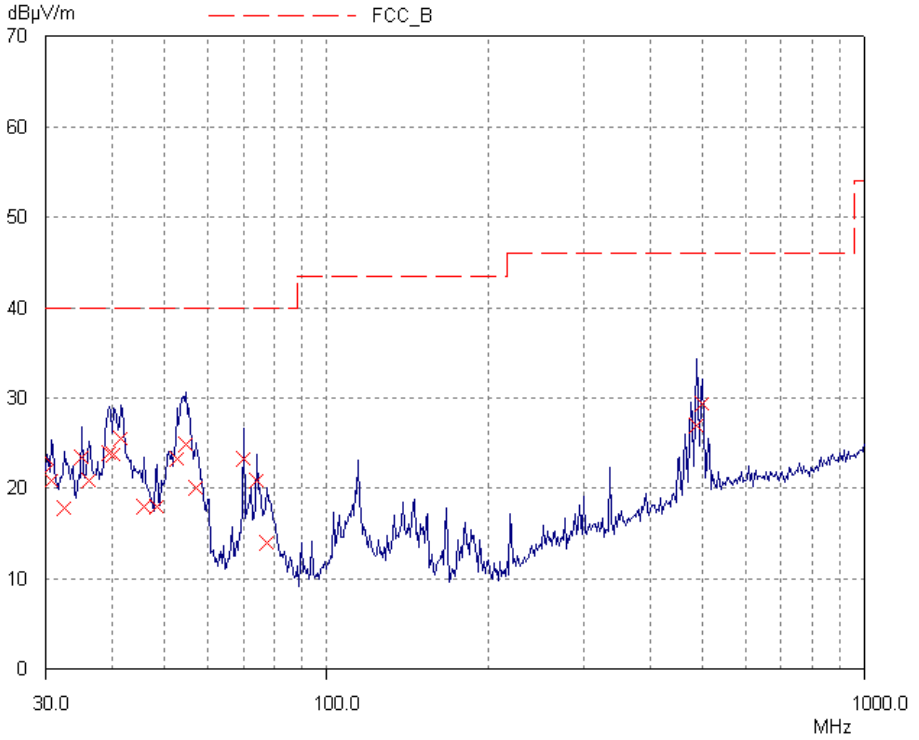
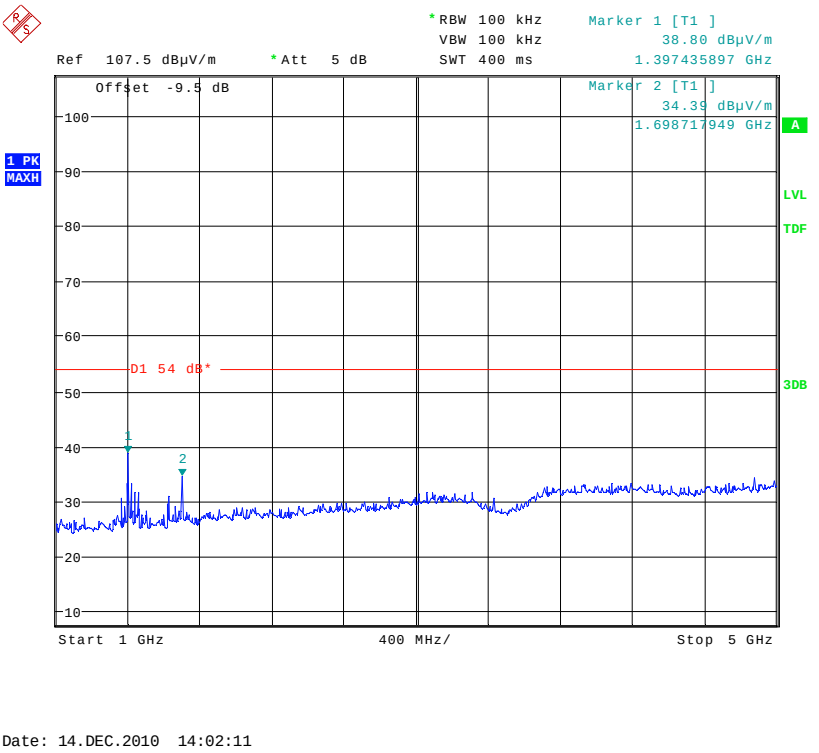
Upper Bandedge

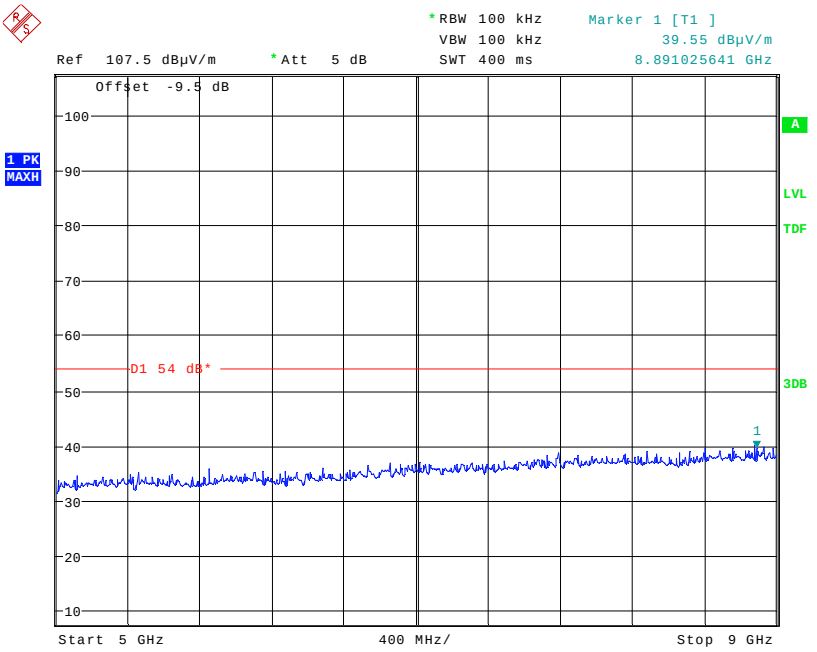


Unintentional Radiated Spurious emissions 30 MHz to 1 GHz – 2402.0MHz



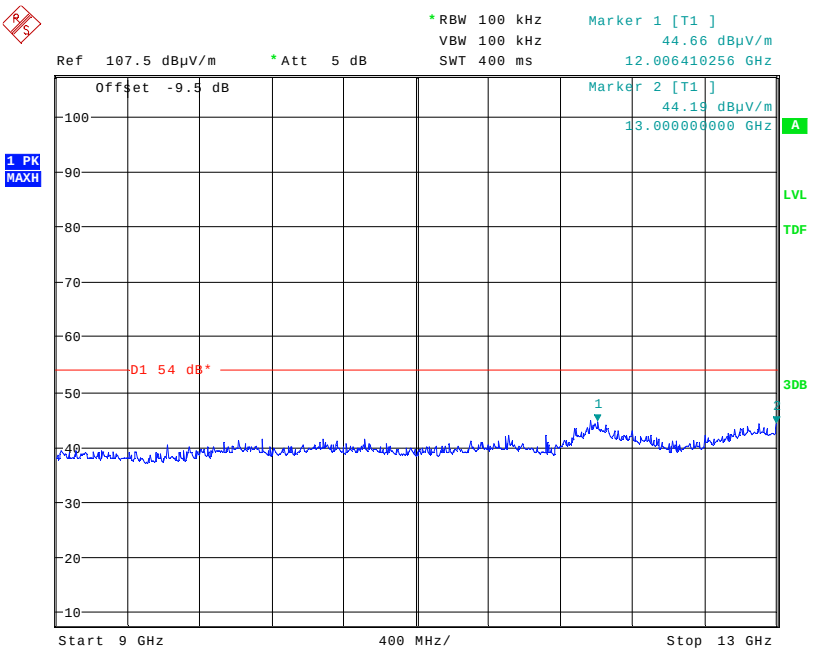
Date: 14.DEC.2010 14:02:11

Unintentional Radiated Spurious emissions 1 GHz to 5 GHz – 2402.0MHz



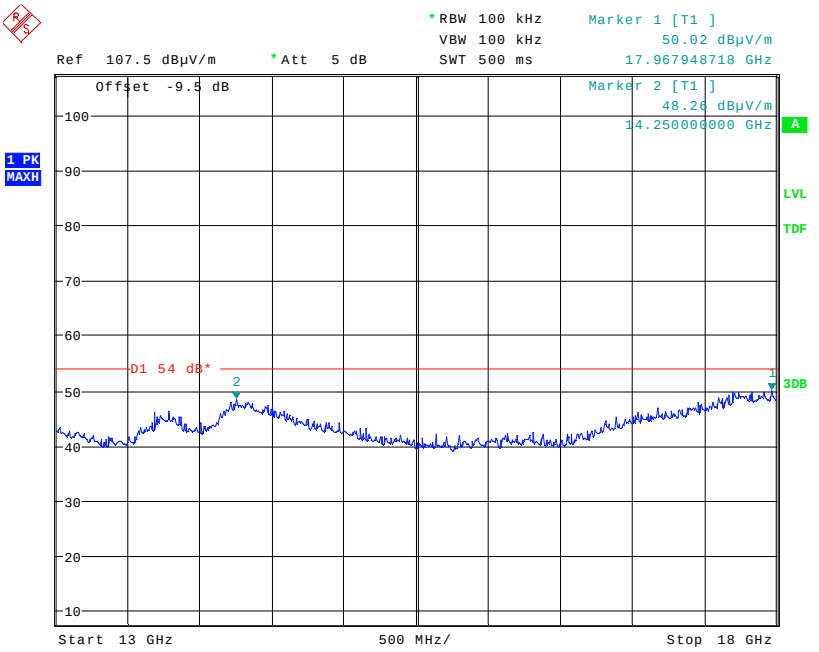
Date: 14.DEC.2010 14:00:42

Unintentional Radiated Spurious emissions 5 GHz to 9 GHz – 2402.0MHz



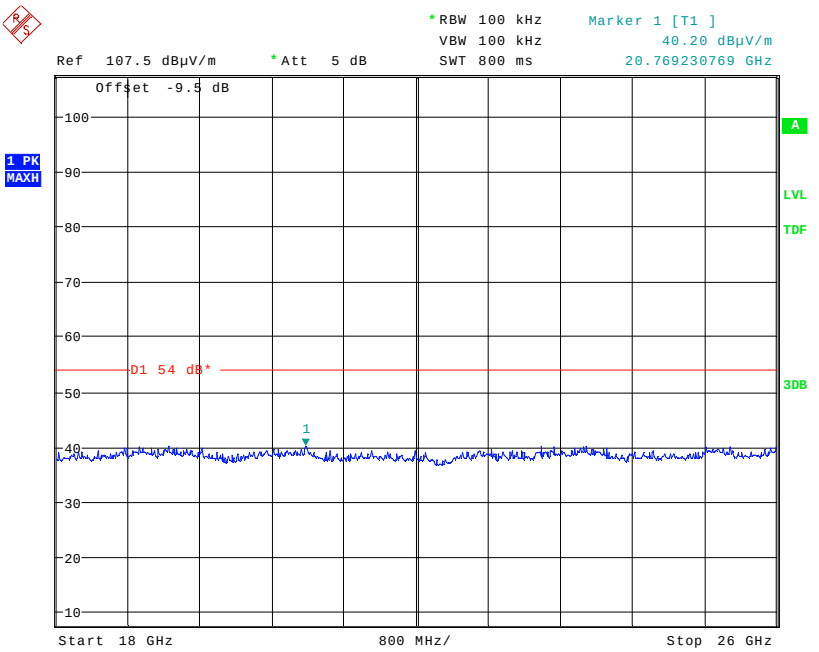
Date: 14.DEC.2010 13:59:55

Unintentional Radiated Spurious emissions 9 GHz to 13 GHz – 2402.0MHz



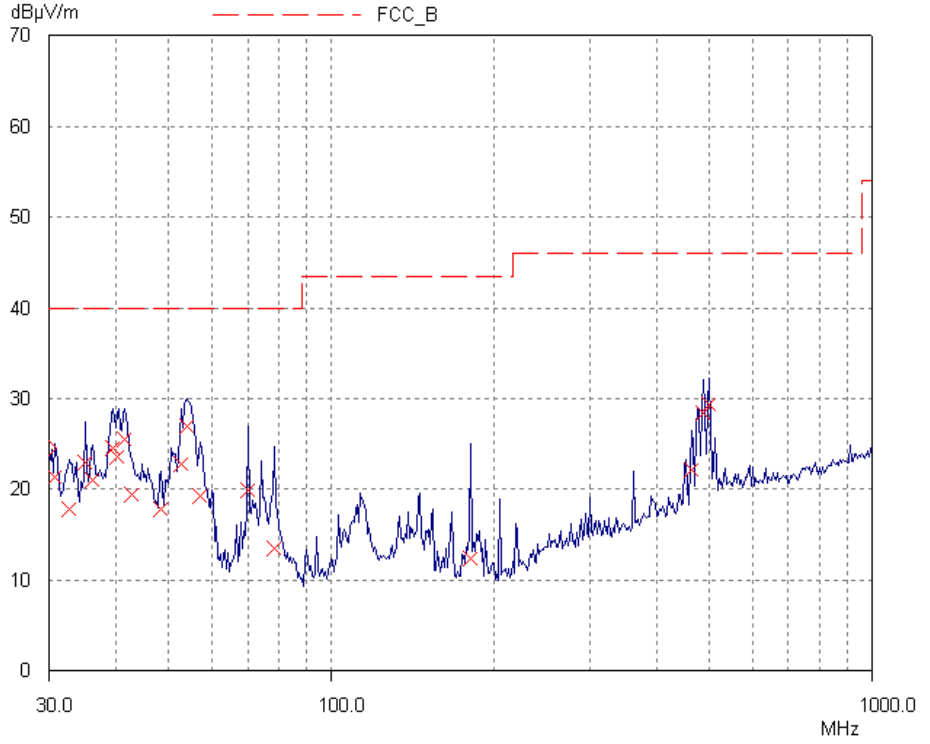
Date: 14.DEC.2010 13:59:14

Unintentional Radiated Spurious emissions 13 GHz to 18GHz – 2402.0MHz

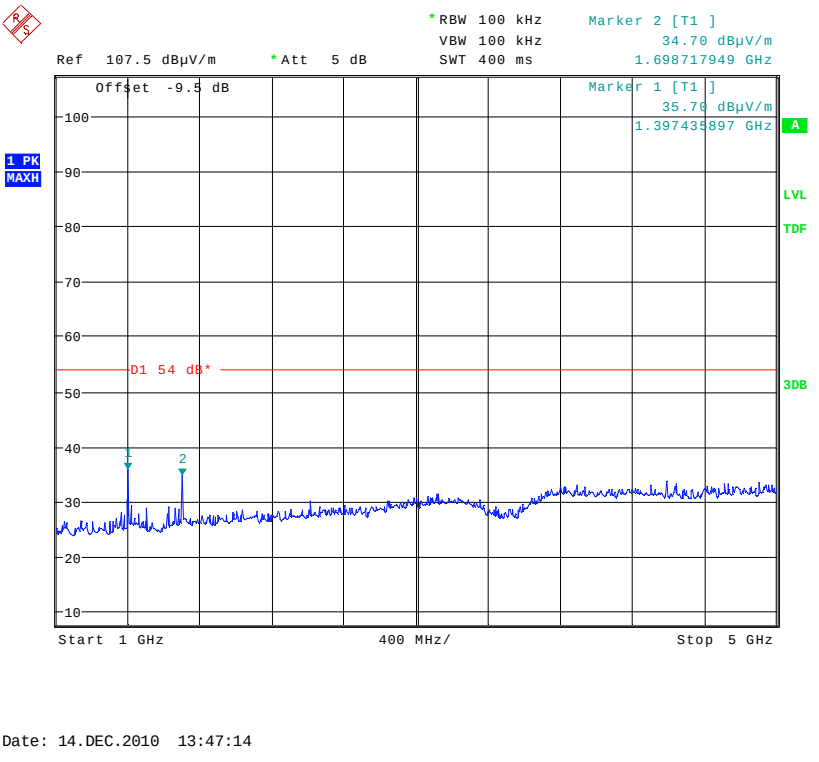


Date: 14.DEC.2010 15:06:40

Unintentional Radiated Spurious emissions 18 GHz to 25 GHz – 2402.0MHz



Unintentional Radiated Spurious emissions 30 MHz to 1 GHz – 2441.0MHz



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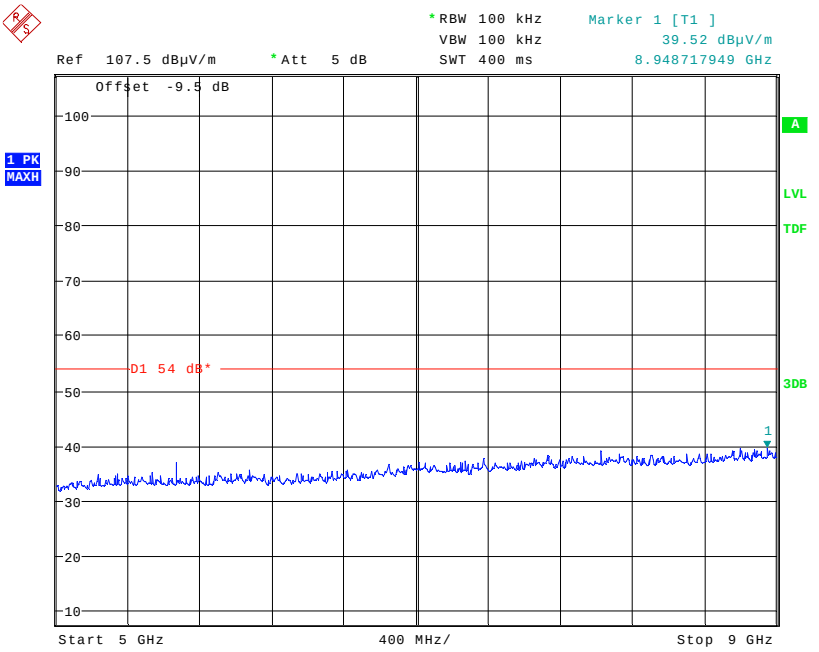
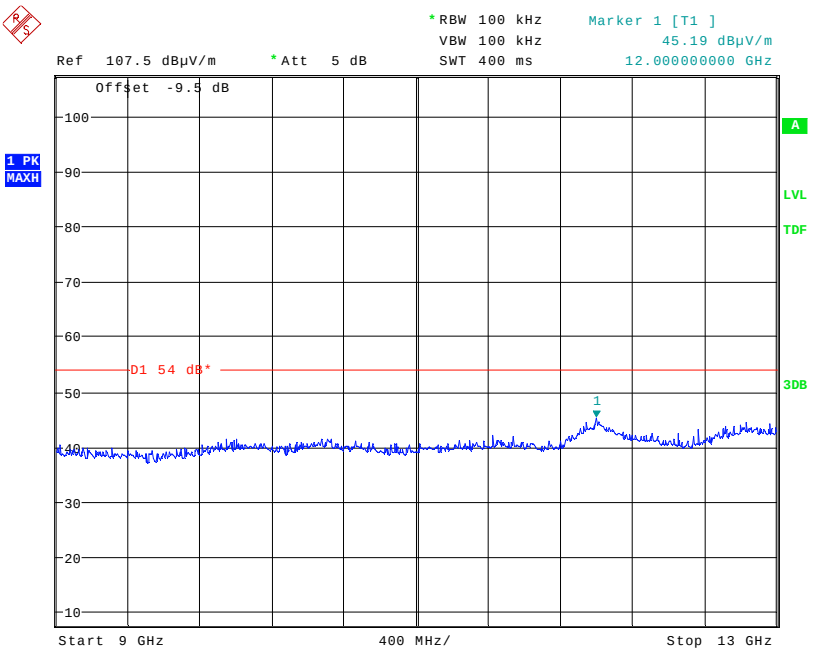
Unintentional Radiated Spurious emissions 1 GHz to 5 GHz – 2441.0MHz



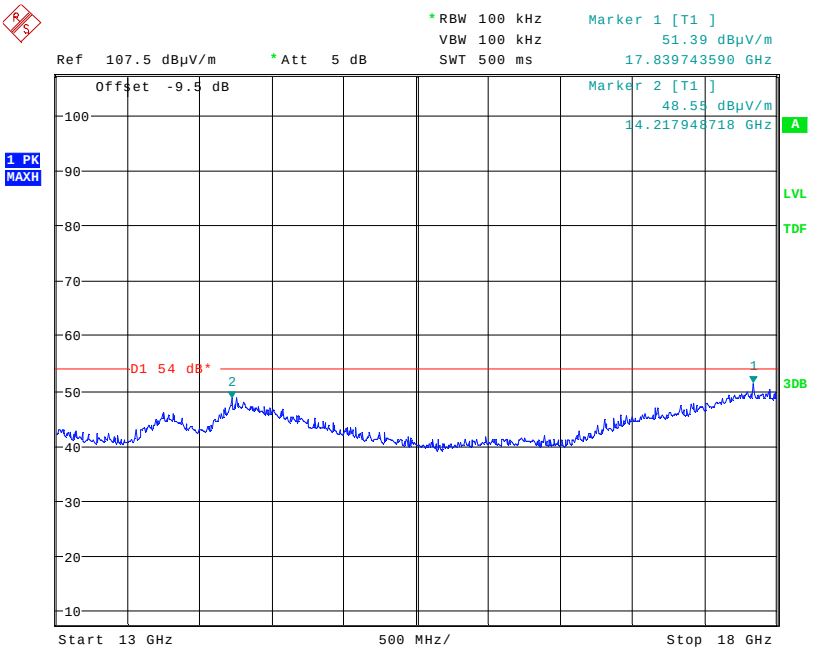
Date: 14.DEC.2010 13:48:04

Unintentional Radiated Spurious emissions 5 GHz to 9 GHz – 2441.0MHz



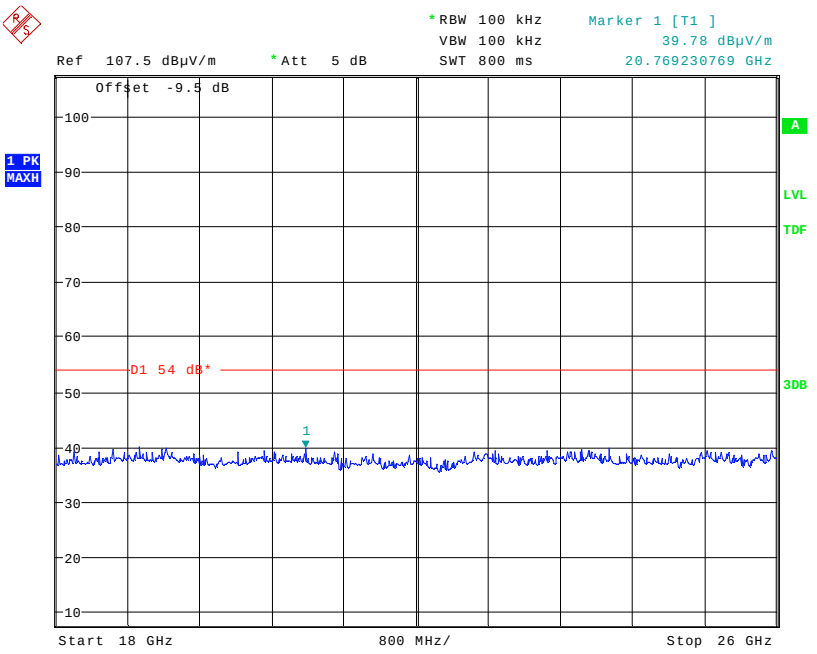
Date: 14.DEC.2010 13:50:10

Unintentional Radiated Spurious emissions 9 GHz to 13 GHz – 2441.0MHz



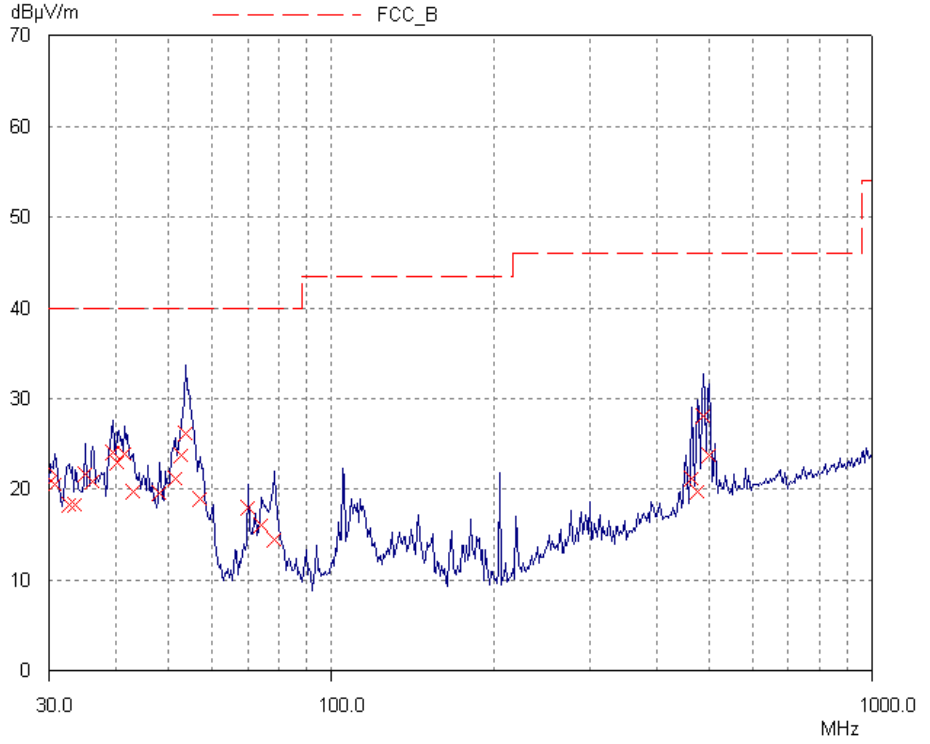
Date: 14.DEC.2010 13:50:58

Unintentional Radiated Spurious emissions 13 GHz to 18GHz – 2441.0MHz

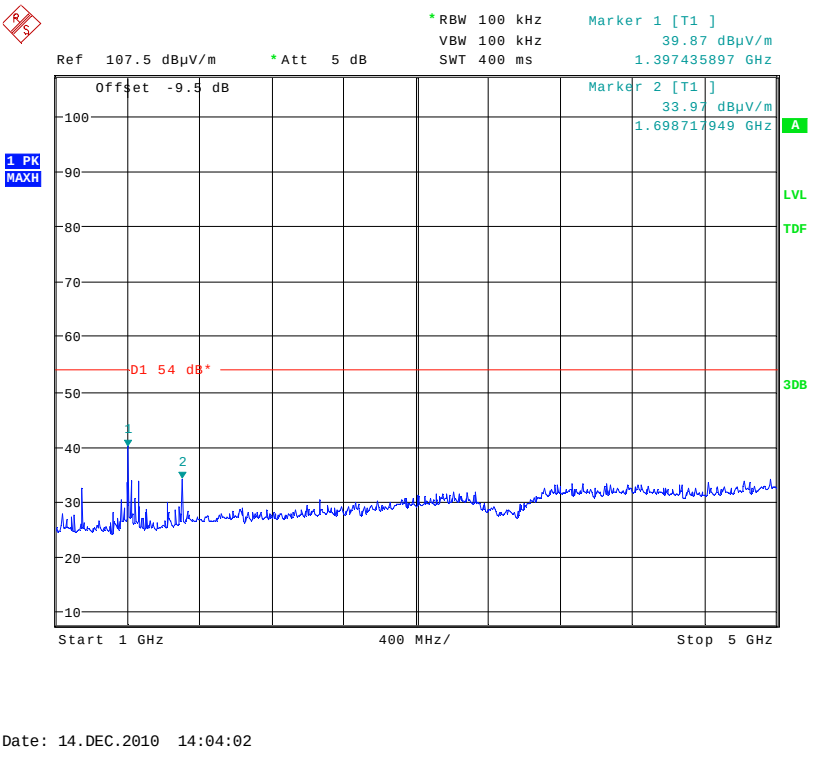


Date: 14.DEC.2010 15:07:52

Unintentional Radiated Spurious emissions 18 GHz to 25 GHz – 2441.0MHz

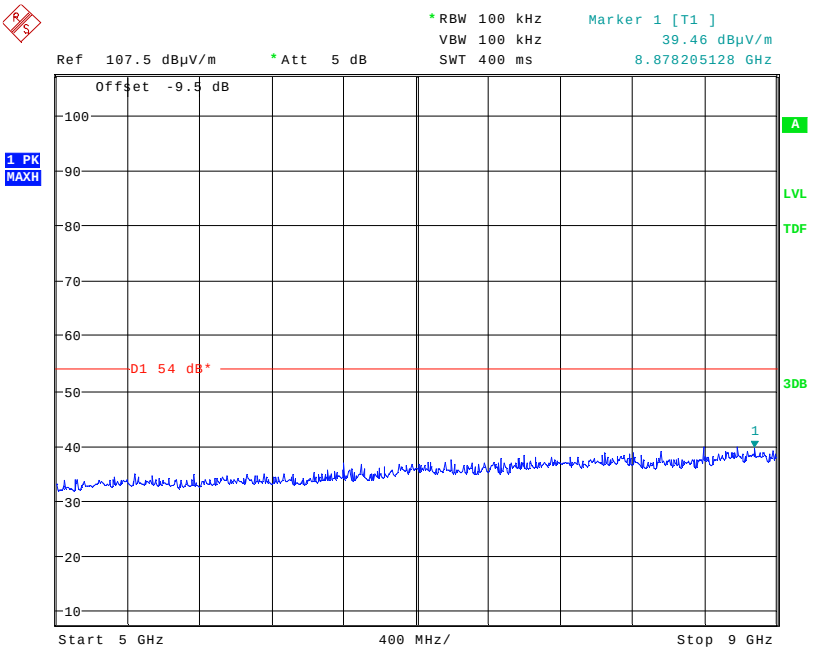


Unintentional Radiated Spurious emissions 30 MHz to 1 GHz – 2480.0MHz



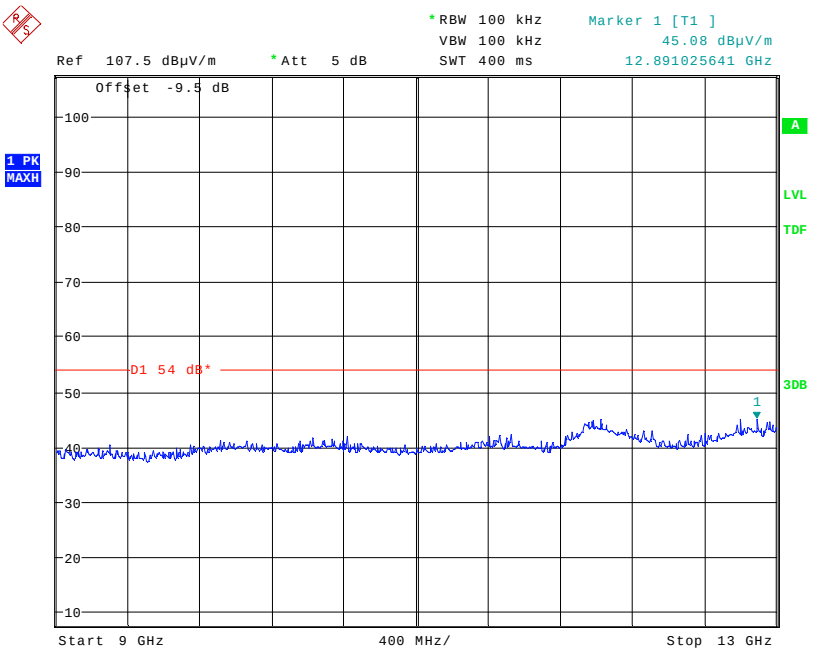
Date: 14.DEC.2010 14:04:02

Unintentional Radiated Spurious emissions 1 GHz to 5 GHz – 2480.0MHz



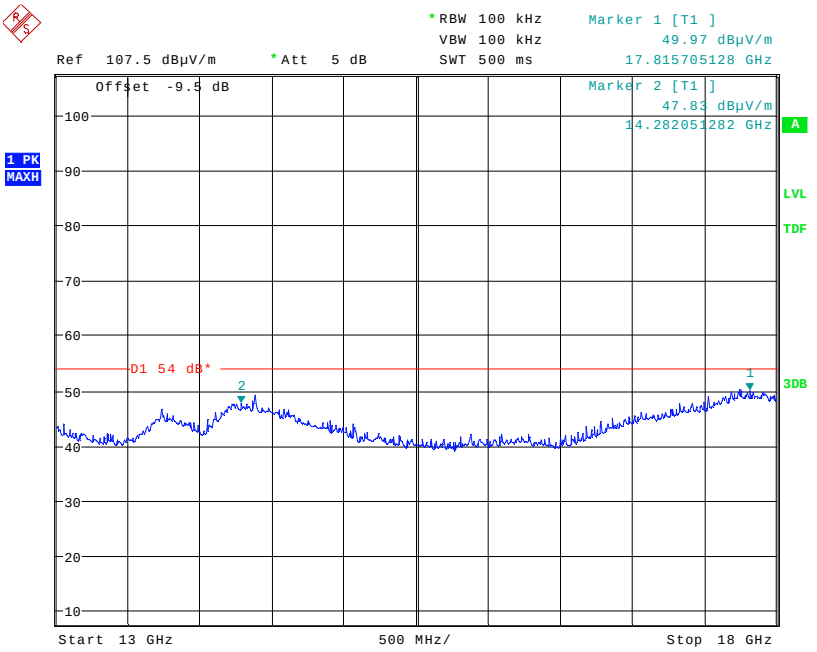
Date: 14.DEC.2010 14:05:25

Unintentional Radiated Spurious emissions 5 GHz to 9 GHz – 2480.0MHz



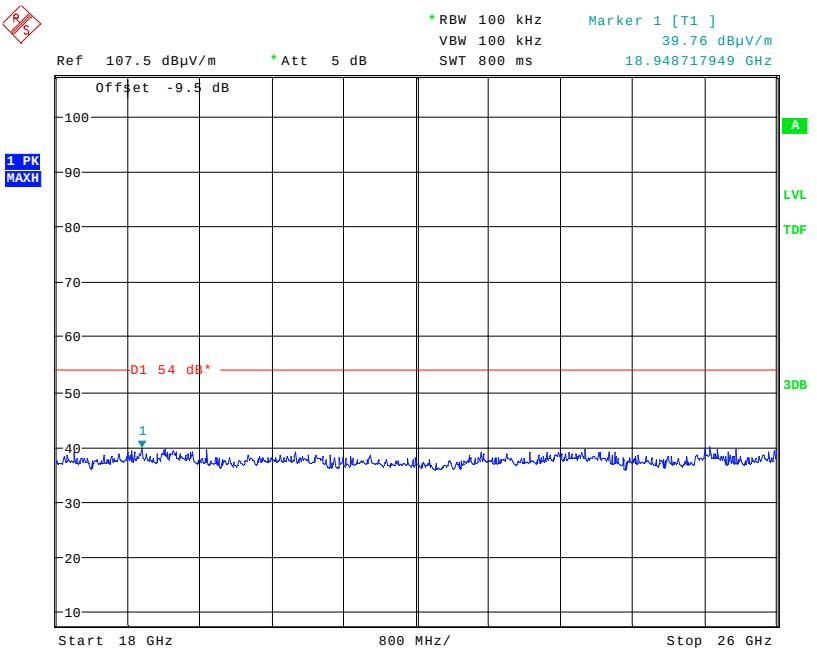
Date: 14.DEC.2010 14:06:44

Unintentional Radiated Spurious emissions 9 GHz to 13 GHz – 2480.0MHz



Date: 14.DEC.2010 14:07:33

Unintentional Radiated Spurious emissions 13 GHz to 18GHz – 2480.0MHz



Date: 14.DEC.2010 15:08:55

Unintentional Radiated Spurious emissions 18 GHz to 25 GHz – 2480.0MHz

Appendix C: Additional Test and Sample Details

This appendix contains details of:

1. The samples submitted for testing.
2. Details of EUT operating mode(s)
3. Details of EUT configuration(s) (see below).
4. EUT arrangement (see below).

Throughout testing, the following numbering system is used to identify the sample and it's modification state:

Sample No: Sxx Mod w

where:

xx = sample number eg. S01
w = modification number eg. Mod 2

The following terminology is used throughout the test report:

Support Equipment (SE) is any additional equipment required to exercise the EUT in the applicable operating mode. Where relevant SE is divided into two categories:

SE in test environment: The SE is positioned in the test environment and is not isolated from the EUT (e.g. on the table top during REFE testing).

SE isolated from the EUT: The SE is isolated via filtering from the EUT. (e.g. equipment placed externally to the ALSR during REFE testing).

EUT configuration refers to the internal set-up of the EUT. It may include for example:

Positioning of cards in a chassis.
Setting of any internal switches.
Circuit board jumper settings.
Alternative internal power supplies.

Where no change in EUT configuration is **possible**, the configuration is described as “single possible configuration”.

EUT arrangement refers to the termination of EUT ports / connection of support equipment, and where relevant, the relative positioning of samples (EUT and SE) in the test environment.

For further details of the test procedures and general test set ups used during testing please refer to the related document "EMC Test Methods - An Overview", which can be supplied by TRaC Telecoms & Radio upon request.

C1) Test samples

The following samples of the apparatus were submitted by the client for testing :

Sample No.	Description	Identification
S56	Blue Slim 2 Bluetooth Module – Radiated Sample	None
S95	Blue Slim 2 Bluetooth Module – Conducted Sample	None

The following samples of apparatus were submitted by the client as host, support or drive equipment (auxiliary equipment):

Sample No.	Description	Identification
S35	USB – Blue Slim module interface	None

The following samples of apparatus were supplied by TRaC Telecoms & Radio as support or drive equipment (auxiliary equipment):

Identification	Description
Toshiba	Laptop

C2) EUT Operating Mode During Testing.

During testing, the EUT was exercised as described in the following tables :

Test	Description of Operating Mode
All Transmitter tests detailed in this report	EUT active transmitting, operating at 1Mbps, 2Mbps and 3Mbps data rates and on highest middle and lowest operating frequencies at each data rate.

Test	Description of Operating Mode:
Receiver conducted and radiated spurious emissions	EUT active but non-transmitting on highest middle and lowest operating frequencies.

C3) EUT Configuration Information.

The EUT was submitted for testing in one single possible configuration.

C4) List of EUT Ports

The tables below describe the termination of EUT ports:

Sample : S95
Tests : Conducted

Port	Description of Cable Attached	Cable length	Equipment Connected
Input	Multicore unscreened	<0.1m	S35
Antenna Port	10 dB attenuator	N/A	TRLUH281

Sample : S56
Tests : Radiated Emissions

Port	Description of Cable Attached	Cable length	Equipment Connected
Input	Multicore unscreened	<0.1m	S35

* Only connected during setup.

C5 Details of Equipment Used

For Radiated Measurements:

TRAC Ref	Type	Description	Manufacturer	Date Calibrated.
TRLUH281	FSU46	Spectrum Analyser	Rhode & Schwarz	28/10/2008
TRL138	3115	1-18GHz Horn Antenna	EMCO	23/05/2007
TRL139	3115	1-18GHz Horn Antenna	EMCO	23/05/2007
TRL572	8499B	1 – 26.5 GHz Pre Amplifier	Agilent	04/07/2008
TRLUH186	ESHS10	Receiver	Rhode & Schwarz	03/04/2009
TRLUH191	CBL611/A	BiLog Periodic Antenna	York	01/10/2008
TRLUH372	6201-69	30MHz – 1 GHz Pre Amplifier	Watkins Johnson	27/11/2008

For Conducted Measurements

TRAC Ref	Type	Description	Manufacturer	Date Calibrated.
TRLUH281	FSU46	Spectrum Analyser	Rhode & Schwarz	28/10/2008

Appendix D: Additional Information

No additional information is included within this test report.

Appendix E: Calculation of the duty cycle correction factor

Using a spectrum analyser in zero span mode, centred on the fundamental carrier frequency with a RBW of 1MHz and a video Bandwidth of 1MHz the sweep time was set accordingly to capture the pulse train. The transmit pulsewidths and period was measured. A plots of the pulse train is contained in Appendix B of this test report.

If the pulse train was less than 100 ms, including blanking intervals, the duty cycle was calculated by averaging the sum of the pulsewidths over one complete pulse train. However if the pulse train exceeds 100ms then the duty cycle was calculated by averaging the sum of the pulsewidths over the 100ms width with the highest average value. (The duty cycle is the value of the sum of the pulse widths in one period (or 100ms), divided by the length of the period (or 100ms). The duty cycle correction factor was then expressed in dB and the peak emissions adjusted accordingly to give an average value of the emission.

Correction factor dB = 20 x (Log_{10} Calculated Duty Cycle)

Therefore the calculated duty cycle was determined:

The pulse train period was greater than >100ms and in as shown from the plots in contained in appendix B of this test report.

Duty cycle = $\frac{\text{the sum of the highest average value pulsewidths over 100ms}}{\text{100ms}}$

e.g

$$= \frac{7.459ms}{100ms} = 0.07459$$

0.07459 or 7.459%

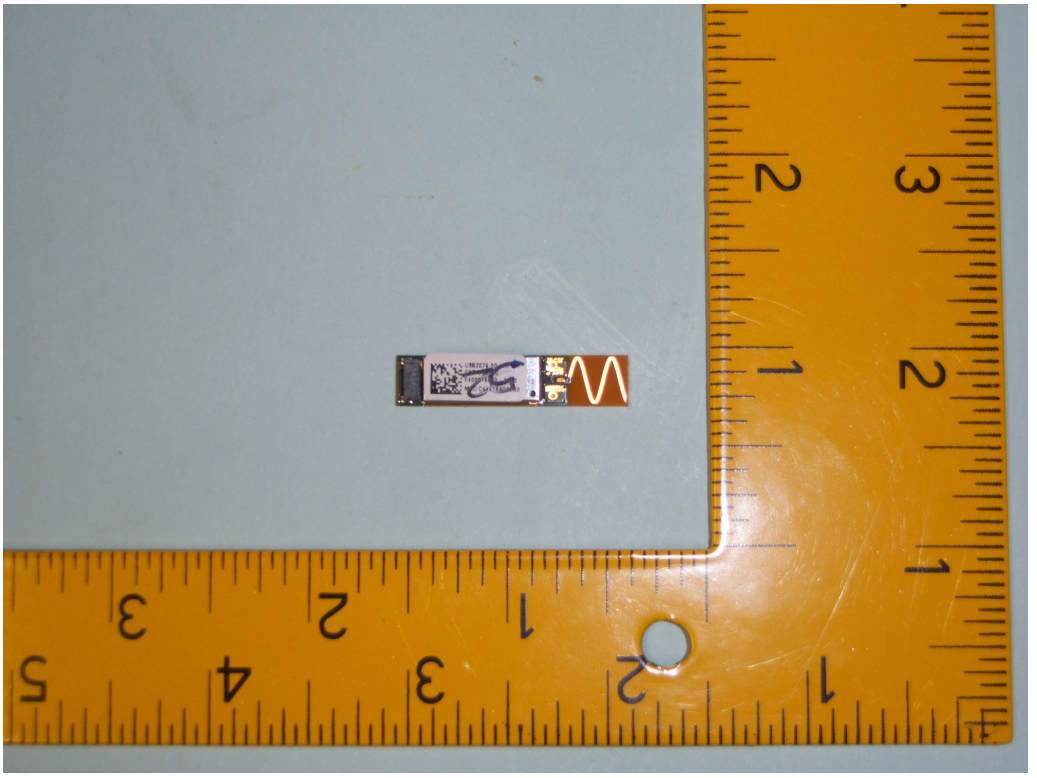
Correction factor (dB) = 20 x (Log_{10} 0.07459) = -22.54dB

Appendix F: Photographs and Figures

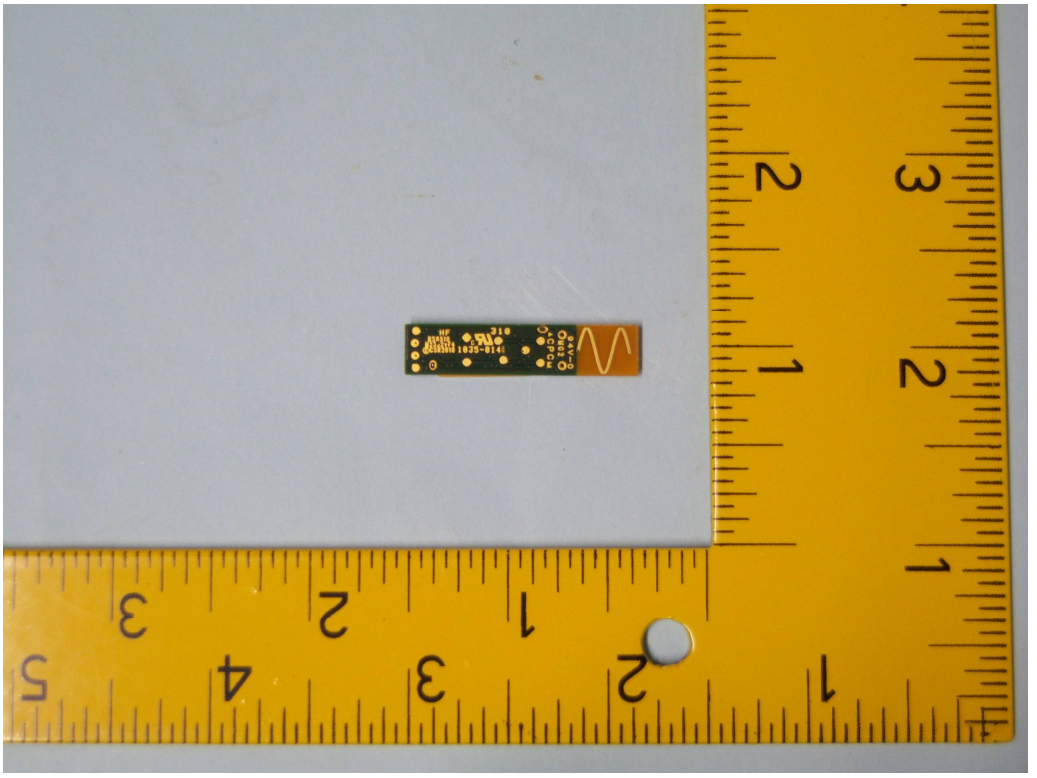
The following photographs were taken of the test samples:

1. Radiated emissions Overview
2. Photo of the Blueslim2 top overview
3. Photo of the Blueslim2 bottom overview

Photograph 1



Photograph 2



Photograph 3

Appendix G: MPE Calculation

OET Bulletin No. 65, Supplement C 01-01

47 CFR §§1.1307 and 2.1091

2.1091 Radio frequency radiation exposure evaluation: mobile devices.

For purposes of these requirements mobile devices are defined by the FCC as transmitters designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimetres is normally maintained between radiating structures and the body of the user or nearby persons. These devices are normally evaluated for exposure potential with relation to the MPE limits. As the 20cm separation specified under FCC rules may not be achievable under normal operation of the EUT, an RF exposure calculation is needed to show the minimum distance required to be less than 1mW/cm^2 power density limit, as required under FCC rules.

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{EIRP}{4\pi R^2} \quad \text{re - arranged} \quad R = \sqrt{\frac{EIRP}{S\ 4\pi}}$$

where:

S = power density
R = distance to the centre of radiation of the antenna
EIRP = EUT Maximum power

Note:

The EIRP measurement was performed using a signal substitution method.

Result

Prediction Frequency (MHz)	Maximum EIRP (mW)	Power density limit (S) (mW/cm^2)	Distance (R) cm required to be less than 1mW/cm^2
2441 MHZ	3.81	1	0.6 cm