

EMC TEST REPORT

For

Single-port ADSL 2+ Wireless Router

Model Number: W3100

FCC ID: WXB-W3100

Report Number : WT088002257

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TEST REPORT DECLARATION

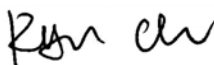
Applicant : Innatech Communication Sdn Bhd
Address : 26B (2nd Floor) Jalan SS15/4, 47500 Subang Jaya, Selangor Darul Ehsan, Malaysia
Manufacturer : Innatech Communication Sdn Bhd
Address : 26B (2nd Floor) Jalan SS15/4, 47500 Subang Jaya, Selangor Darul Ehsan, Malaysia
Factory : Innatech Communication Sdn Bhd
Address : 26B (2nd Floor) Jalan SS15/4, 47500 Subang Jaya, Selangor Darul Ehsan, Malaysia
EUT Description : Single-port ADSL 2+ Wireless Router
Model Number : W3100
FCC ID : WXB-W3100
Test Standards:

FCC Part 15 15.207, 15.209, 15.247

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with FCC Rules Part 15.207, 15.209 and 15.247.

The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

Tested by:



(Ryan Chen)

Date:

Nov.13, 2008

Checked by:



(Dewelly Yang)

Date:

Nov.13, 2008

Approved by:



(Peter Lin)

Date:

Nov.13, 2008

1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

Test Items	FCC Rules	Test Results
Conducted Disturbance	15.207	Pass
Radiated disturbance	15.209	Pass
6dB Bandwidth	15.247(a)(2)	Pass
Maximum Peak Output Power	15.247(b)	Pass
Band Edge Measurement	15.247(d)	Pass
Power Spectral Density	15.247(e)	Pass
Conducted spurious	15.247(d)	Pass
Antenna Requirement	15.203	Pass

2. GENERAL INFORMATION

2.1. Report information

- 2.1.1. This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.
- 2.1.2. The sample/s mentioned in this report is/are supplied by Applicant, SMQ therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.
- 2.1.3. Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through SMQ, unless the applicant has authorized SMQ in writing to do so.

2.2. Laboratory Accreditation and Relationship to Customer

The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at Bldg. of Metrology & Quality Inspection, Longzhu Road, Nanshan District, Shenzhen, Guangdong, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Committee for Laboratories (**CNAL**) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is L0579.

The Laboratory is listed in the United States of American Federal Communications Commission (**FCC**), and the registration number are **97379**(open area test site) and **274801**(semi anechoic chamber).

The Laboratory is listed in Voluntary Control Council for Interference by Information Technology Equipment (**VCCI**), and the registration number are **R-1974**(open area test site), **R-1966**(semi anechoic chamber), **C-2117**(mains ports conducted interference measurement) and **T-180**(telecommunication ports conducted interference measurement).

The Laboratory is registered to perform emission tests with Industry Canada (**IC**), and the registration number is **IC4174**.

TUV Rhineland accredits the Laboratory for conformance to IEC and EN standards, the registration number is **E2024086Z02**.

Measurement Uncertainty

2.3. Measurement Uncertainty

Conducted Disturbance: 9kHz~30MHz 3.5dB

Radiated Disturbance: 30MHz~1000MHz 4.5dB
1GHz~18GHz 4.6dB

3. PRODUCT DESCRIPTION

3.1. EUT Description

Description	: Single-port ADSL 2+ Wireless Router
Manufacturer	: Innatech Communication Sdn Bhd
Model Number	: W3100
Adaptor	: Model: ADS-18E-12 1212GPCU Input : 100-240V~, 50/60Hz, Max. 0.60A Output: 12VDC, 1.0A
Operate Frequency	: 2.412GHz~2.462GHz
Antenna Designation	: Replaceable antenna with Non-standard jack
Antenna Gain	: 2.0 ± 0.7 dBi

Table 2 The working Frequency List

Channel	Frequency	Channel	Frequency
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

3.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: WXB-W3100 filing to comply with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C Rules.

3.3. Block Diagram of EUT Configuration

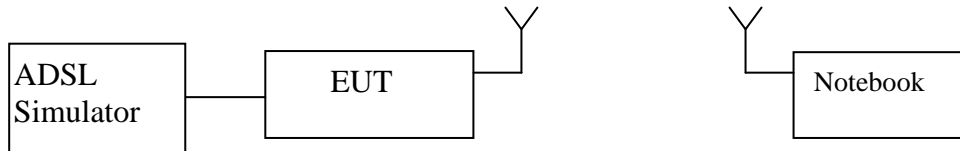


Figure 1 EUT setup 1

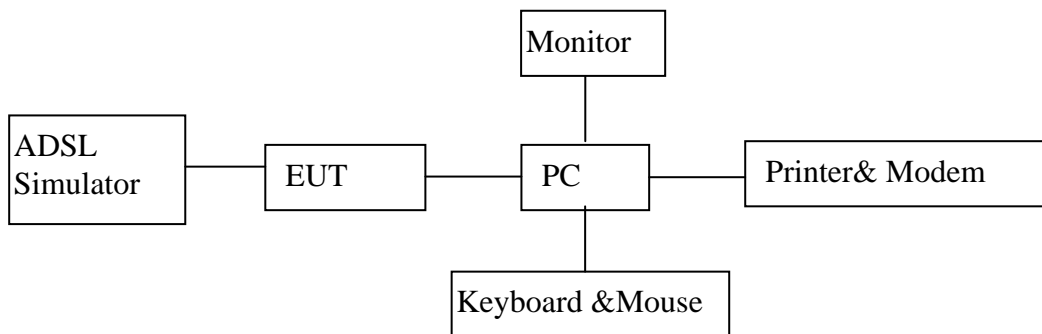


Figure 2 EUT setup 2

3.4. Operating Condition of EUT

- Mode1: Transmitting at 2412MHz
- Mode2: Transmitting at 2437MHz
- Mode3: Transmitting at 2462MHz
- Mode4: Communication (wire network)

3.5. Special Accessories

Not available for this EUT intended for grant.

3.6. Equipment Modifications

Not available for this EUT intended for grant.

3.7. Support Equipment List

Table 3 Support Equipment

Name	Model Number	S/N	Manufacture
Notebook	R51	--	IBM
Adaptor for notebook	02K6654	--	IBM
PC	P9111A #AB2	CN31104346	COMPAQ
Monitor	P4825	CN3087A02 6	COMPAQ
Adaptor of monitor	PA-1400-02	3101571101 LN	LITEON
Keyboard (PS/2)	KB-0133	CT:B55930DGANN3NU	COMPAQ
Mouse (PS/2)	M-S69	CT:F466BOMMSNS05J2	COMPAQ
Printer	BJC-265SP	EVX81604	CANON
Adaptor for printer	AD-300	--	CANON
Modem (COM)	56000BPS	200060057	KPT
Adaptor for modem	AM-1280AV	--	KPT
ADSL Simulator	IES-1000	3912A165-100	ZyXEL

3.8. Test Conditions

Date of test: Sep.16-Sep.19, 2008
Date of EUT Receive: Sep.08, 2008
Temperature: 25 °C
Relative Humidity: 50-70%

4. TEST EQUIPMENT USED

Table 4 Test Equipment

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
SB2603	EMI Test Receiver	Rohde & Schwarz	ESCS30	Jan.25, 2008	1 Year
SB3321	AMN	Rohde & Schwarz	ESH2-Z5	Jan.25, 2008	1 Year
SB2604	AMN	Rohde & Schwarz	ESH3-Z5	Jan.25, 2008	1 Year
SB3436	EMI Test Receiver	Rohde & Schwarz	ESI26	Jan.25, 2008	1 Year
SB3440	Bilog Antenna	Chase	CBL6112B	Jan.25, 2008	1 Year
SB3435	Horn Antenna	Rohde & Schwarz	HF906	Jan.25, 2008	1 Year
SB3435/01	Amplifier(1-18GHz)	Rohde & Schwarz	---	Jan.25, 2008	1 Year
SB3435/02	Amplifier(18-40GHz)	Rohde & Schwarz	---	May.04, 2008	1 Year
SB3435/03	Horn Antenna	Rohde & Schwarz	AT4560	May.04, 2008	1 Year
SB3450/01	3m Semi-anechoic chamber	Albatross Projects	9X6X6	Jan.25, 2008	1 Year

5. CONDUCTED DISTURBANCE TEST

5.1. Test Standard and Limit

5.1.1. Test Standard

FCC Part 15 15.207

5.1.2. Test Limit

Table 5 Conducted Disturbance Test Limit (Class B)

Frequency	Maximum RF Line Voltage (dB μ V)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

- Decreasing linearly with logarithm of the frequency
- The lower limit shall apply at the transition frequency.

5.2. Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver (R&S Test Receiver ESCS30) is used to test the emissions form both sides of AC line. According to the requirements in Section 7 and 13 of ANSI C63.4-2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

The bandwidth of EMI test receiver is set at 9kHz.

5.3. Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

5.4. Test Data

The emissions don't show in below are too low against the limits. Refer to the test curves.

Test mode: Communication (wire network) (the worst case)

Table 6 Conducted Disturbance Test Data

Model: W3100							
Mode: 4							
Line							
Frequency (MHz)	Correction Factor (dB)	Quasi-Peak			Average		
		Reading (dB μ V)	Emission Level (dB μ V)	Limits (dB μ V)	Reading (dB μ V)	Emission Level (dB μ V)	Limits (dB μ V)
0.158	10.0	45.8	55.8	65.5	32.8	42.8	55.5
0.214	10.0	38.4	48.4	63.0	26.3	36.3	53.0
23.130	10.3	33.6	43.9	60	29.1	39.4	50

REMARKS: 1. Emission level(dBuV)=Read Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB) =LISN Factor (dB) + Cable Factor (dB)+Limiter Factor(dB)
 3. The other emission levels were very low against the limit.

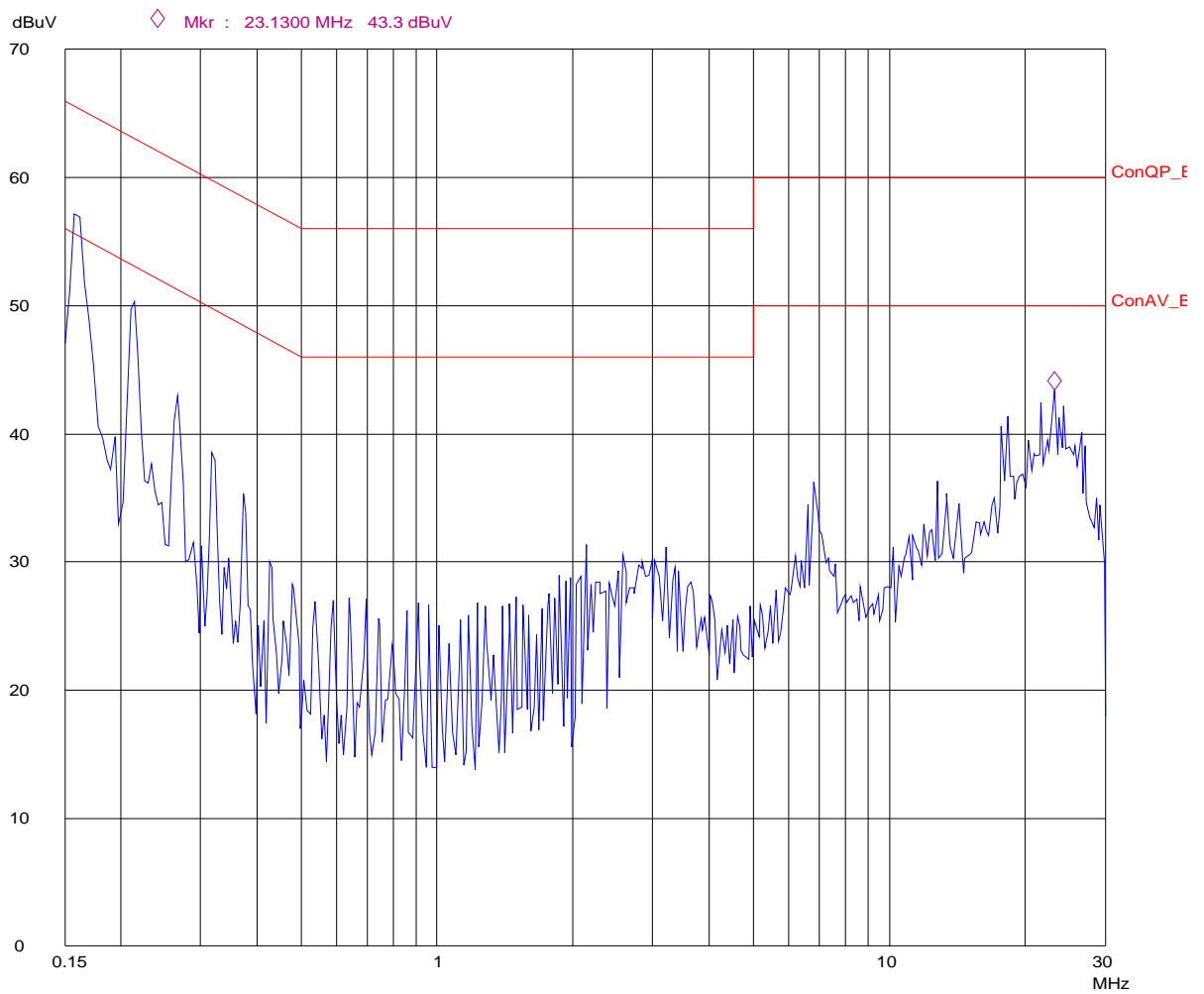
Table 7 Conducted Disturbance Test Data

Model: W3100							
Mode: 4							
Neutral							
Frequency (MHz)	Correction Factor (dB)	Quasi-Peak			Average		
		Reading (dB μ V)	Emission Level (dB μ V)	Limits (dB μ V)	Reading (dB μ V)	Emission Level (dB μ V)	Limits (dB μ V)
0.158	10.0	46.8	56.8	65.5	33.7	43.7	55.5
0.214	10.0	39.6	49.6	63.0	27.5	37.5	53.0
23.130	10.3	35.2	45.2	60	30.8	40.8	50

REMARKS: 1. Emission level(dBuV)=Read Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB) =LISN Factor (dB) + Cable Factor (dB)+Limiter Factor(dB)
 3. The other emission levels were very low against the limit.

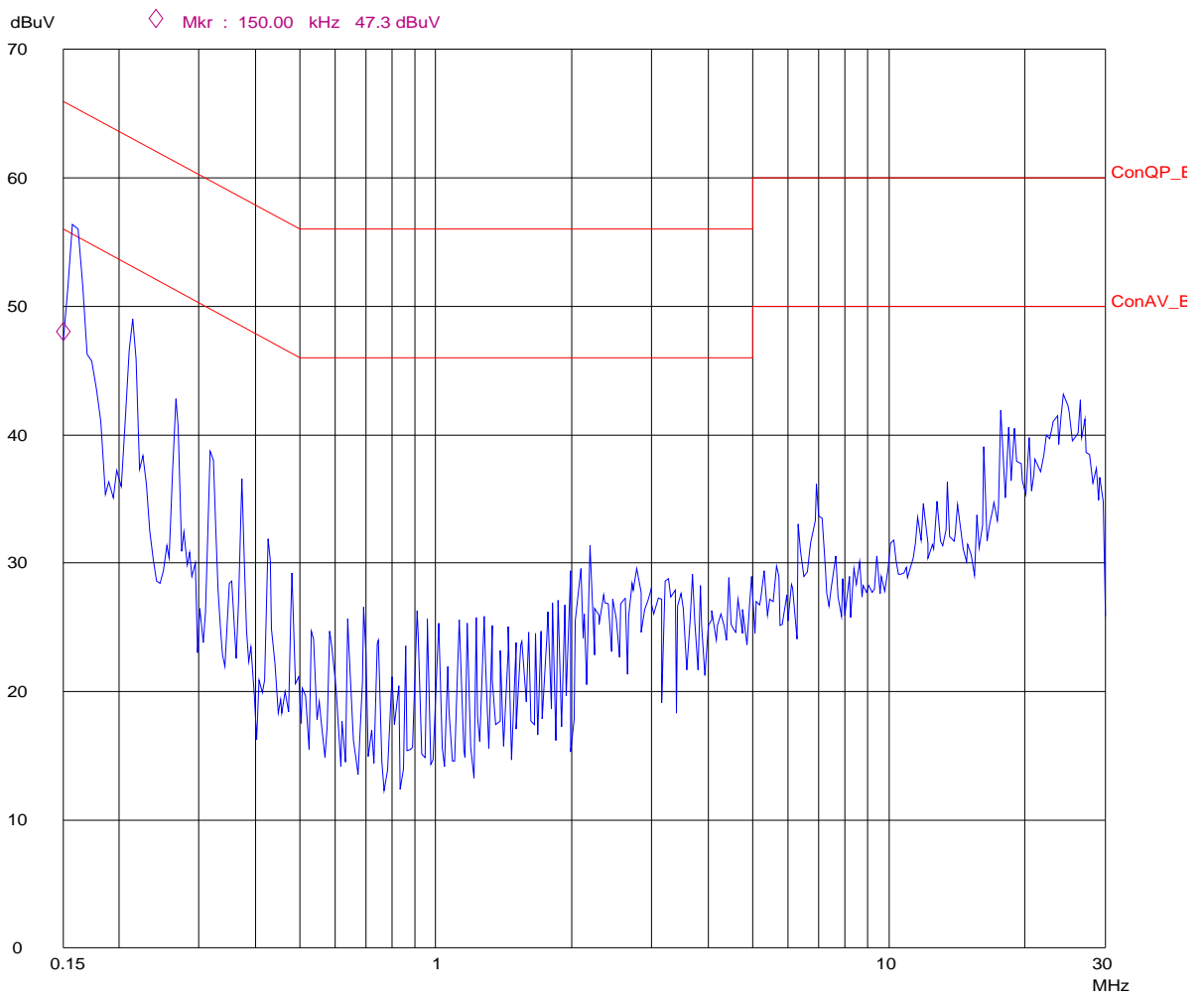
Conducted Disturbance

EUT: W3100
Op Cond: Communication
Test Spec: L
Comment: AC 120V/60Hz
ADS18B-W120100



Conducted Disturbance

EUT: W3100
Op Cond: Communication
Test Spec: N
Comment: AC 120V/60Hz
ADS18B-W120100



6. RADIATED DISTURBANCE TEST

6.1. Test Standard and Limit

6.1.1. Test Standard

FCC Part 15 15.209

6.1.2. Test Limit

Table 8 Radiated Disturbance Test Limit

FREQUENCY MHz	FIELD STRENGTHS LIMITS ($\mu\text{V/m}$)	FIELD STRENGTHS LIMITS dB ($\mu\text{V/m}$)
Fundamental	50000	94.0
Harmonics	500	54.0
30 ~ 88	100	40.0
88 ~ 216	150	43.5
216 ~ 960	200	46.0
960 ~	500	54.0

* The lower limit shall apply at the transition frequency.

* The test distance is 3m.

6.2. Test Procedure

The EUT is placed on a turntable, which is 0.8 meter above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 8 and 13 of ANSI C63.4-2003.

Radiated measurements were performed on the frequency range from 30MHz to 25GHz. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz, $\text{VBW} \geq \text{RBW}$. All readings above 1 GHz are AV and PK values. $\text{RBW}=1\text{MHz}$ and $\text{VBW}=10\text{Hz}$ for AV value, $\text{RBW}=1\text{MHz}$ and $\text{VBW} \geq \text{RBW}$ for peak value.

Measurements were made at 3 meters

6.3. Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

6.4. Test Data

The emissions don't show in below are too low against the limits.
The data was shown the worst case 802.11b 1 Mbit/s.

Table 9 General Radiated Emission Data

Model: W3100							
mode: 1							
Frequency MHz	Emission (dBuV/m)	Read Value (dBuV)	Cable loss (dB)	Antenna factor (dB/m)	Polarization	Limits (dBuV/m)	Note
30.010	38.5	18.8	18.8	0.9	Vertical	40.0	QP Value
500.010	44.7	23.4	17.6	3.7	Vertical	46.0	QP Value
875.010	46.7	21.0	20.7	5.0	Vertical	46.0	QP Value
250.010	45.0	29.1	13.2	2.7	Horizontal	46.0	QP Value
500.010	44.1	22.8	17.6	3.7	Horizontal	46.0	QP Value
875.010	43.9	18.2	20.7	5.0	Horizontal	46.0	QP Value
2412.070	80.3	84.0	-32.2	28.5	Horizontal	---	PK Value
2412.070	47.5	51.2	-32.2	28.5	Horizontal	---	AV Value
2412.070	93.2	96.9	-32.2	28.5	Vertical	---	PK Value
2412.070	50.2	53.9	-32.2	28.5	Vertical	---	AV Value
4824.102	65.1	62.8	-31.0	33.3	Vertical	74.0	PK Value
4824.102	36.1	33.8	-31.0	33.3	Vertical	54.0	AV Value
7242.112	75.2	67.1	-28.3	36.4	Vertical	74.0	PK Value
7242.112	39.1	31.0	-28.3	36.4	Vertical	54.0	AV Value

REMARKS: 1. Emission level(dBuV/m)=Read Value(dBuV) + Antenna Factor (dB/m) + Cable Factor (dB)
2. The other emission levels were very low against the limit.

Table 10 General Radiated Emission Data

Model: W3100							
mode: 2							
Frequency MHz	Emission (dBuV/m)	Read Value (dBuV)	Cable loss (dB)	Antenna factor (dB/m)	Polarization	Limits (dBuV/m)	Note
30.010	38.9	19.2	0.9	18.8	Vertical	40.0	QP Value
125.010	38.3	23.9	1.9	12.6	Vertical	46.0	QP Value
250.074	43.6	27.7	2.7	13.2	Vertical	46.0	QP Value
250.074	45.0	29.1	2.7	13.2	Horizontal	46.0	QP Value
500.010	44.1	22.8	3.7	17.6	Horizontal	46.0	QP Value
875.010	44.5	18.8	5.0	20.7	Horizontal	46.0	QP Value
2440.030	84.9	88.6	-32.2	28.5	Horizontal	---	PK Value
2440.030	48.5	52.2	-32.2	28.5	Horizontal	---	AV Value
2440.030	90.1	93.8	-32.2	28.5	Vertical	---	PK Value
2440.030	51.9	55.6	-32.2	28.5	Vertical	---	AV Value
4877.025	81.7	79.4	-31.0	33.3	Vertical	74.0	PK Value
4877.025	44.3	42.0	-31.0	33.3	Vertical	54.0	AV Value
7236.090	78.3	70.2	-28.3	36.4	Vertical	74.0	PK Value
7236.090	43.6	35.5	-28.3	36.4	Vertical	54.0	AV Value
9760.071	60.9	51.6	-28.2	37.5	Vertical	74.0	PK Value
9760.071	39.8	30.5	-28.2	37.5	Vertical	54.0	AV Value

REMARKS: 1. Emission level(dBuV/m)=Read Value(dBuV) + Antenna Factor (dB/m) + Cable Factor (dB)
 2. The other emission levels were very low against the limit.

Table 11 General Radiated Emission Data

Model: W3100

mode:3

Frequency MHz	Emission (dBuV/m)	Read Value (dBuV)	Cable loss (dB)	Antenna factor (dB/m)	Polarization	Limits (dBuV/m)	Note
30.010	38.9	19.2	0.9	18.8	Vertical	40.0	QP Value
125.009	38.2	23.8	1.9	12.6	Vertical	46.0	QP Value
875.010	43.7	18.0	5.0	20.7	Vertical	46.0	QP Value
250.010	44.8	28.9	2.7	13.2	Horizontal	46.0	QP Value
875.010	44.1	18.4	5.0	20.7	Horizontal	46.0	QP Value
2461.182	75.5	79.2	-32.2	28.5	Horizontal	46.0	PK Value
2461.182	50.2	53.9	-32.2	28.5	Horizontal	---	AV Value
2461.182	97.4	101.1	-32.2	28.5	Vertical	---	PK Value
2461.182	58.5	62.2	-32.2	28.5	Vertical	---	AV Value
7384.994	61.1	53.0	-28.3	36.4	Vertical	74.0	PK Value
7384.994	38.7	30.6	-28.3	36.4	Vertical	54.0	AV Value

REMARKS: 1. Emission level(dBuV/m)=Read Value(dBuV) + Antenna Factor (dB/m) + Cable Factor (dB)
 2. The other emission levels were very low against the limit.

Table 12 General Radiated Emission Data

Model: W3100							
mode: 4							
Frequency MHz	Emission (dBuV/m)	Read Value (dBuV)	Cable loss (dB)	Antenna factor (dB/m)	Polarization	Limits (dBuV/m)	Note
30.000	38.5	18.8	0.9	18.8	Vertical	40.0	QP Value
143.242	38.5	24.7	2.1	11.7	Vertical	46.0	QP Value
500.030	44.5	23.2	3.7	17.6	Vertical	46.0	QP Value
875.010	44.6	18.9	5.0	20.7	Horizontal	46.0	QP Value
30.000	37.1	17.4	0.9	18.8	Horizontal	46.0	QP Value
55.300	38.1	30.6	1.2	6.3	Horizontal	46.0	PK Value
143.302	38.1	24.3	2.1	11.7	Horizontal	---	AV Value
875.008	44.1	18.4	5.0	20.7	Vertical	54.0	AV Value

REMARKS: 1. Emission level(dBuV/m)=Read Value(dBuV) + Antenna Factor (dB/m) + Cable Factor (dB)
 2. The other emission levels were very low against the limit.

Table 13 Restricted Band Radiated Emission Data

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	
12.51975 -	240 - 285	3345.8 - 3358	
12.52025	322 - 335.4	3600 - 4400	
12.57675 -			
12.57725			
13.36 - 13.41			

All the emission of the above band were less than the limit.

7. 6DB BANDWIDTH MEASUREMENT

7.1. LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

7.2. TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and $VBW \geq RBW$. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

7.3. TEST SETUP



7.4. EUT OPERATING CONDITIONS

mode 1
mode 2
mode 3

7.5. Test Data

Table 14 6dB Bandwidth Test Data

CHANNEL	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	results
Ch1	15.9	0.5	Pass
Ch7	16.0	0.5	Pass
Ch11	15.9	0.5	Pass

OFDM modulation

The test was performed with the speed of 6 Mbit/s,9 Mbit/s,12 Mbit/s,18Mbit/s,24 Mbit/s,36 Mbit/s,48 Mbit/s,54 Mbit/s. the worst is 36 Mbit/s

mode 1

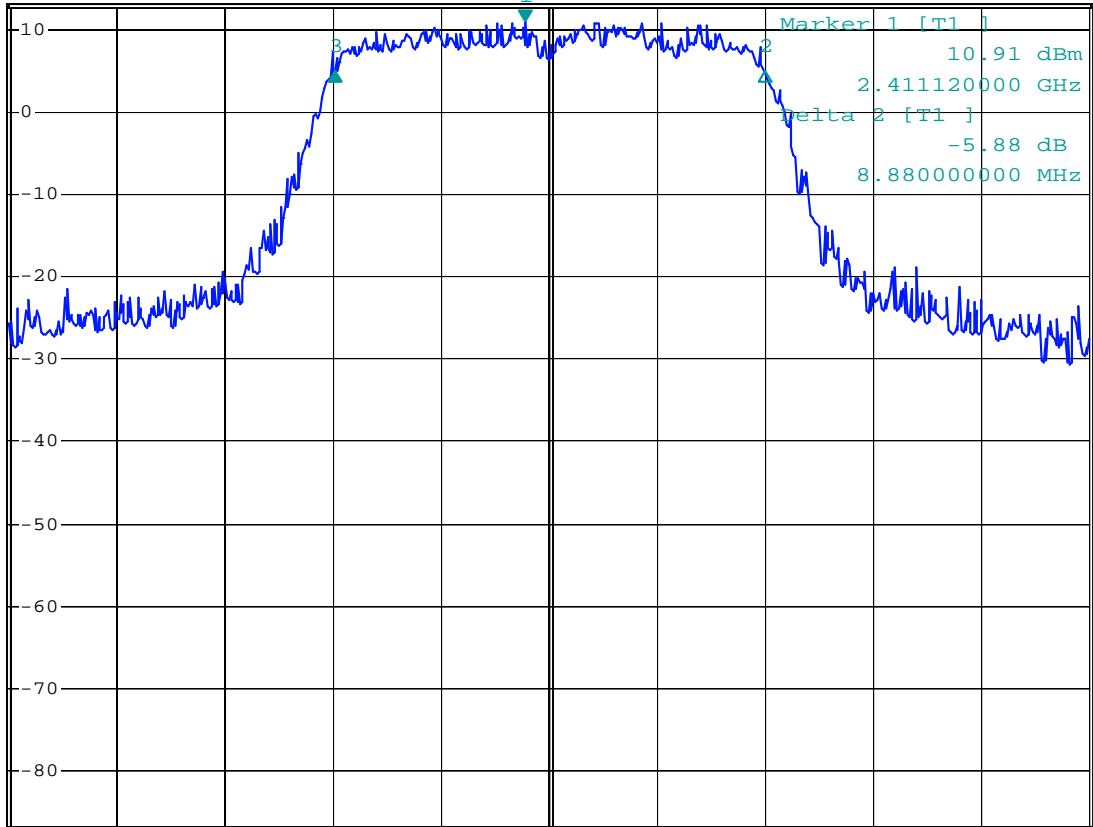


*RBW 1 MHz Delta 3 [T1]
VBW 3 MHz -5.96 dB
SWT 2.5 ms -7.040000000 MHz

Ref 13 dBm

Att 50 dB

1 PK
VIEW



3DB

Center 2.412 GHz

4 MHz/

Span 40 MHz

Date: 5.NOV.2008 01:24:13

mode 2



*RBW 1 MHz Delta 3 [T1]
VBW 3 MHz -5.54 dB
SWT 2.5 ms -12.08000000 MHz

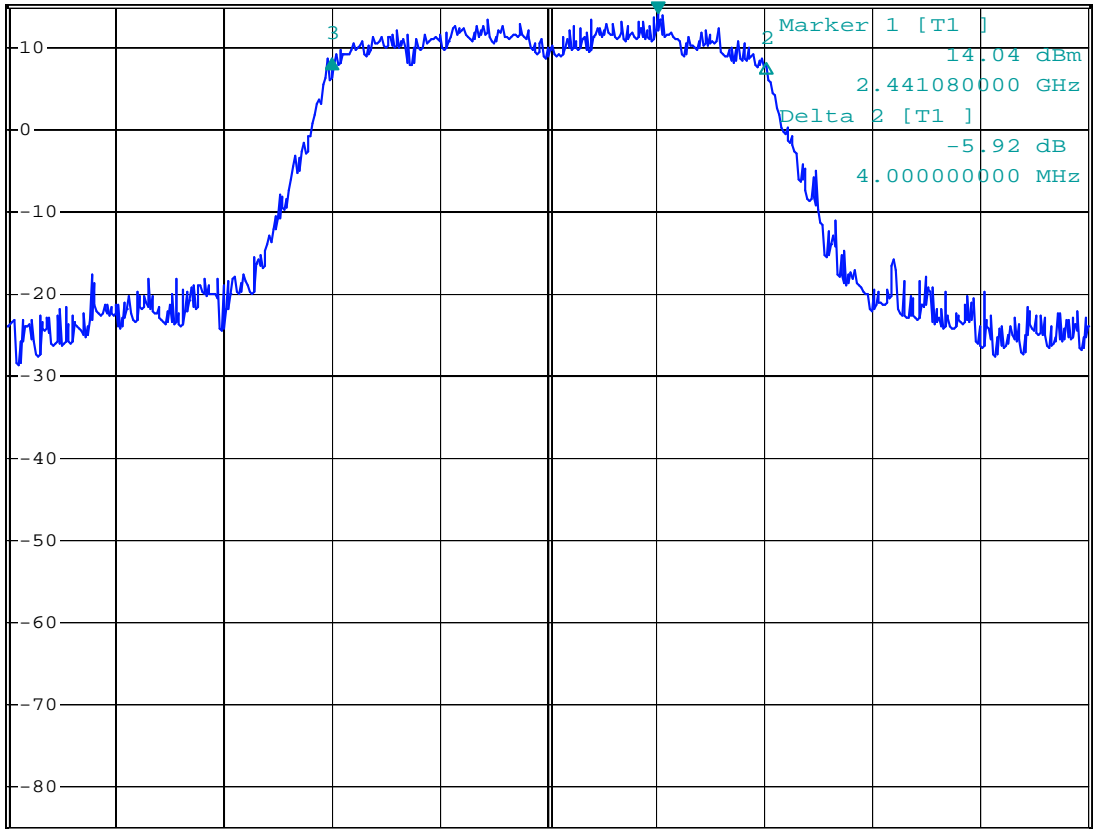
Ref 15 dBm

Att 50 dB

SWT 2.5 ms

-12.08000000 MHz

1 PK
VIEW



A

TDF

3DB

Center 2.437 GHz

4 MHz/

Span 40 MHz

Date: 5.NOV.2008 01:38:17

mode 3

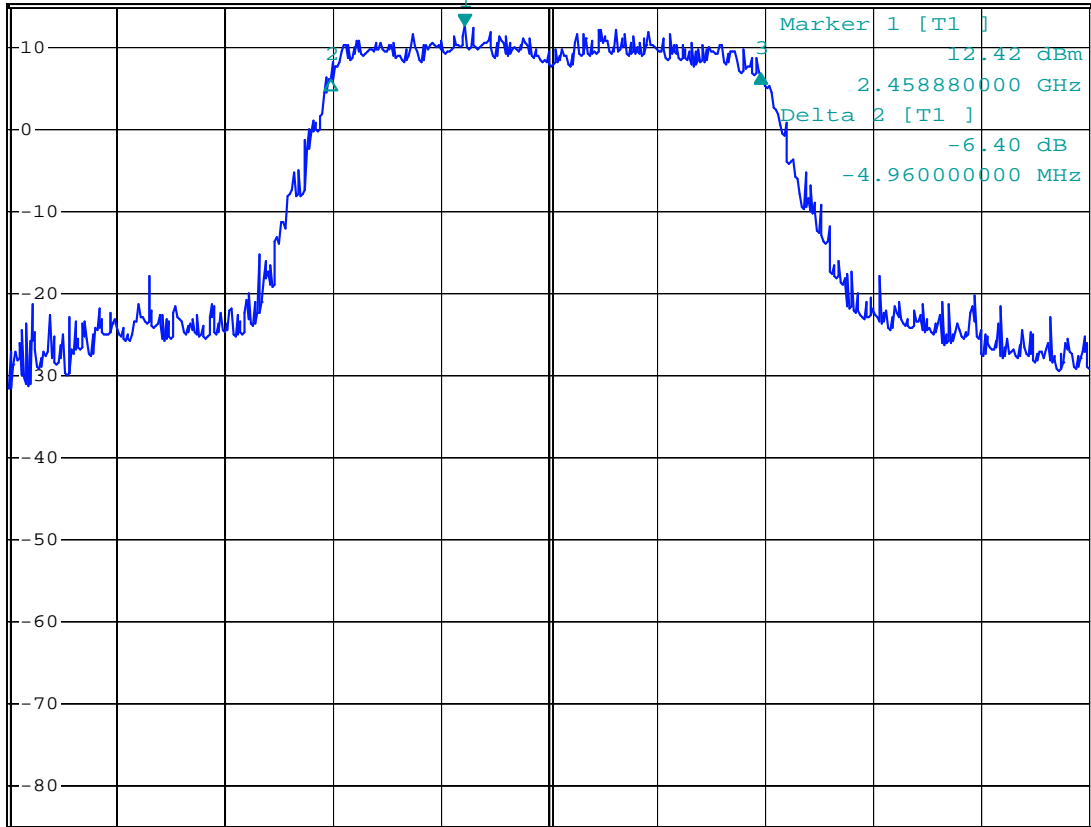


*RBW 1 MHz Delta 3 [T1]
VBW 3 MHz -5.77 dB
SWT 2.5 ms 10.960000000 MHz

Ref 15 dBm

Att 50 dB

1 PK
VIEW



A

TDF

3DB

Center 2.462 GHz

4 MHz/

Span 40 MHz

Date: 5.NOV.2008 01:45:37

Table 13 Test Data

CHANNEL	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	results
Ch1	9.9	0.5	Pass
Ch7	10.6	0.5	Pass
Ch11	10.0	0.5	Pass

DSSS modulation

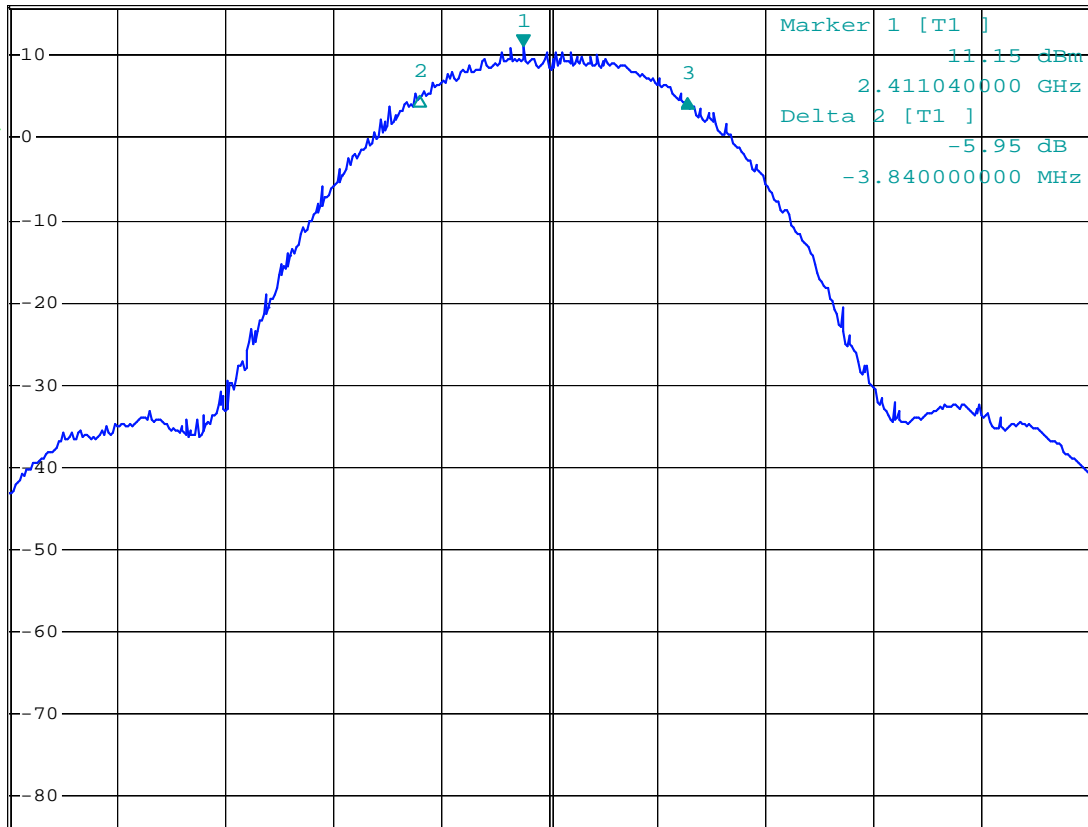
The test was performed with the speed of 1 Mbit/s, 2 Mbit/s, 5.5 Mbit/s, 11 Mbit/s. the worst is 1 Mbit/s

Ch1 2412MHz



Ref 16 dBm Att 50 dB *RBW 1 MHz Delta 3 [T1] *VBW 3 MHz -6.26 dB SWT 2.5 ms 6.080000000 MHz

1 RM VIEW



Center 2.412 GHz 4 MHz/ Span 40 MHz

Date: 4.NOV.2008 03:10:56

Ch 7 (2442MHz)

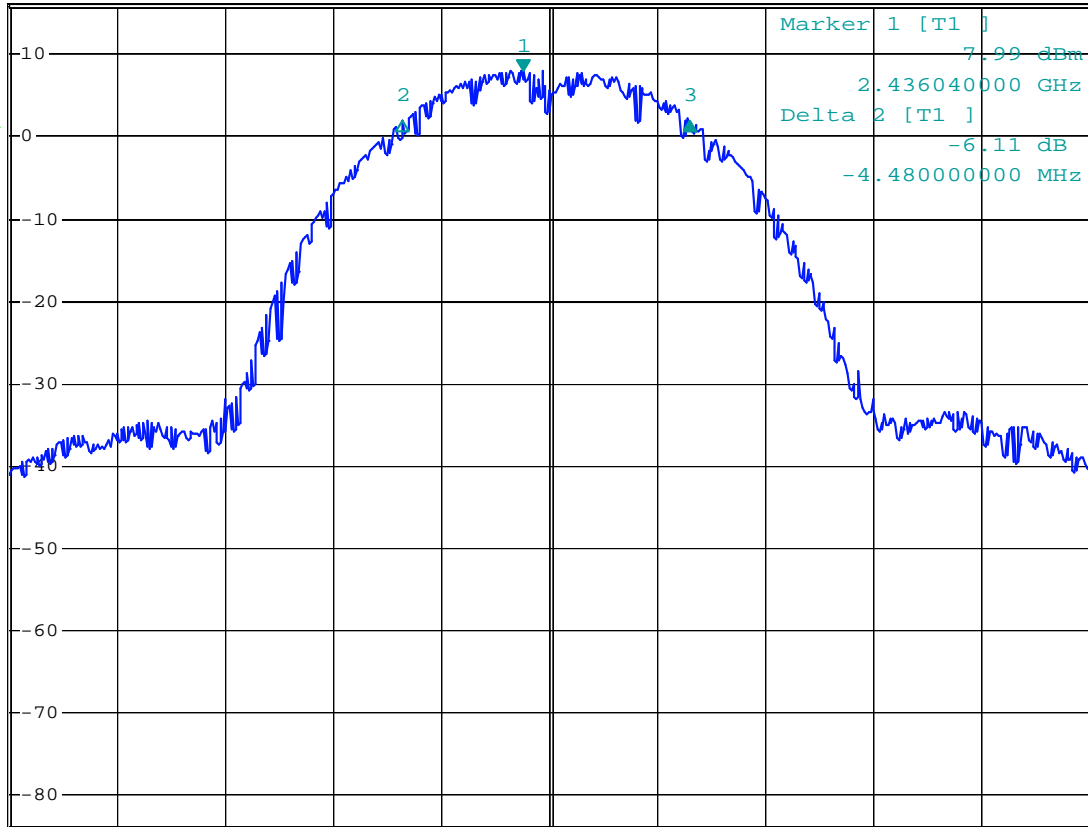


*RBW 1 MHz Delta 3 [T1]
 *VBW 3 MHz -5.95 dB
 *SWT 300 ms 6.160000000 MHz

Ref 16 dBm

Att 50 dB

1 RM*
 VIEW



A

TDF

3DB

Center 2.437 GHz

4 MHz/

Span 40 MHz

Date: 4.NOV.2008 03:41:57

Ch11 (2462MHz)

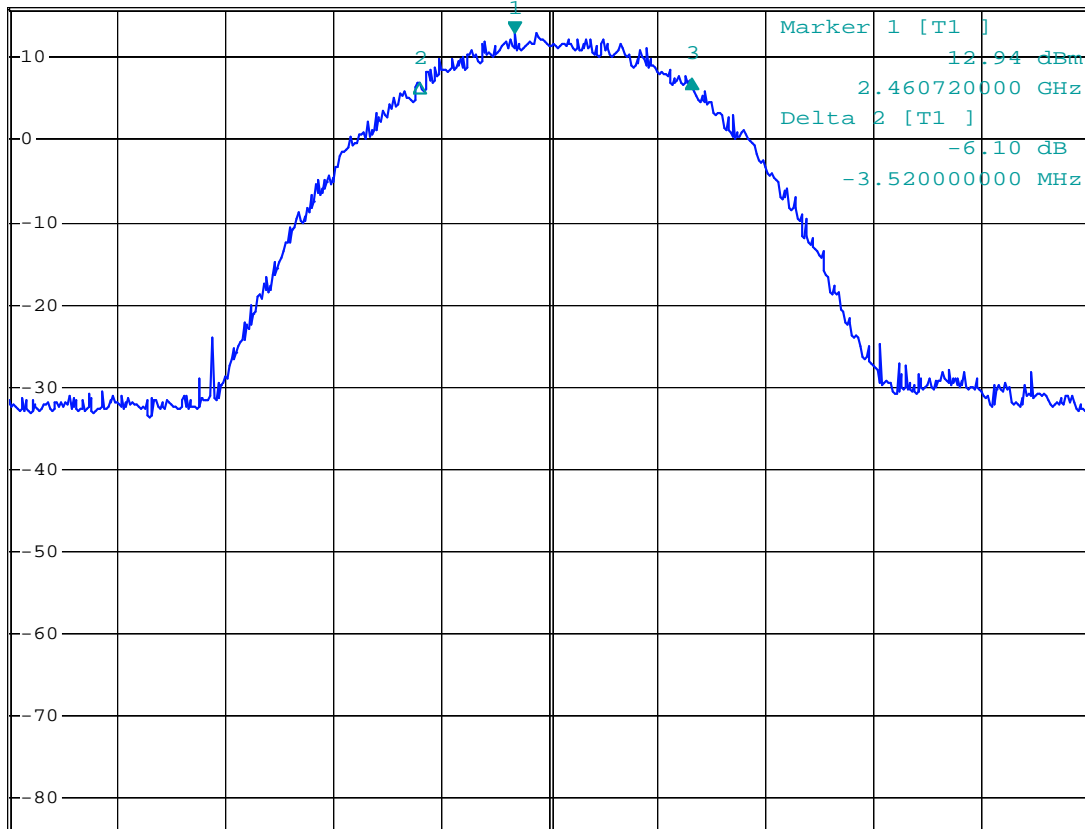


*RBW 1 MHz Delta 3 [T1]
VBW 3 MHz -5.54 dB
SWT 2.5 ms 6.560000000 MHz

Ref 16 dBm

Att 50 dB

1 PK
VIEW



A

TDF

3DB

Center 2.462 GHz

4 MHz/

Span 40 MHz

Date: 4.NOV.2008 03:49:08

8. MAXIMUM PEAK OUTPUT POWER

8.1. LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

8.2. TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator. The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. Record the power level.

8.3. TEST SETUP



8.4. EUT OPERATING CONDITIONS

mode 1
mode 2
mode 3

8.5. Test Data

Table 15 Maximum Peak Output Power Test Data

Supply voltage	Peak Power Output (dBm)			LIMIT (dBm)	results
	Ch1	Ch6	Ch11		
AC 120V	17.2	16.9	15.8	30dBm	Pass
AC 108V	16.8	16.0	15.1	30dBm	Pass
AC 132V	17.0	16.3	15.4	30dBm	Pass

OFDM modulation (802.11g)

The test was performed with the speed of 6 Mbit/s,9 Mbit/s,12 Mbit/s,18Mbit/s,24 Mbit/s,36 Mbit/s,48 Mbit/s,54 Mbit/s. the worst is 36 Mbit/s

Table 16 Maximum Peak Output Power Test Data

Supply voltage	Peak Power Output (dBm)			LIMIT (dBm)	results
	Ch1	Ch6	Ch11		
AC 120V	18.3	15.6	14.9	30dBm	Pass
AC 108V	17.5	14.8	14.2	30dBm	Pass
AC 132V	17.6	15.2	14.8	30dBm	Pass

DSSS modulation

The test was performed with the speed of 1 Mbit/s,2 Mbit/s,5.5 Mbit/s,11 Mbit/s. the worst is 1 Mbit/s

9. POWER SPECTRAL DENSITY MEASUREMENT

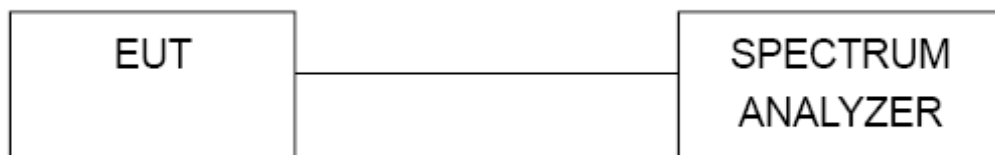
9.1. LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

9.2. TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator(10.0dB), the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and $VBW \geq RBW$, set sweep time = span/3kHz. The power spectral density was measured and recorded. The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

9.3. 4.5.5 TEST SETUP



9.4. 4.5.6 EUT OPERATING CONDITION

mode 1
mode 2
mode 3

9.5. Test Data

Table 17 Test Data

CHANNEL	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	results
Ch1	-10.9	8	Pass
Ch6	-11.2	8	Pass
Ch11	-13.2	8	Pass

OFDM modulation

The test was performed with the speed of 6 Mbit/s,9 Mbit/s,12 Mbit/s,18Mbit/s,24 Mbit/s,36 Mbit/s,48 Mbit/s,54 Mbit/s. the worst is 36 Mbit/s

mode 1

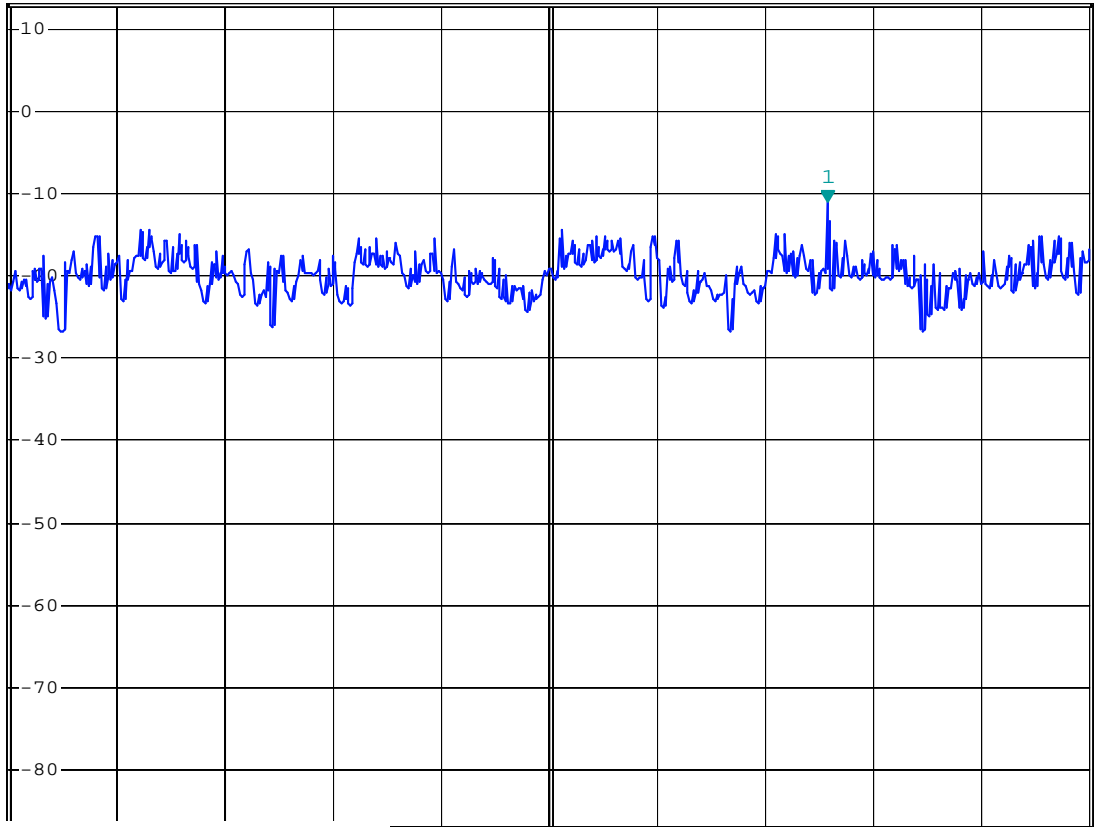


*RBW 3 kHz Marker 1 [T1]
VBW 10 kHz -10.97 dBm
*SWT 500 s 2.411056323 GHz

Ref 13 dBm

Att 50 dB

1 PK
VIEW



150 kHz/

Span 1.5 MHz



3DB

)

mode 2



• REW 3 kHz Marker 1 [T1]
VBW 10 kHz -11.24 dBm
SWT 500 ms 2.441635000 GHz

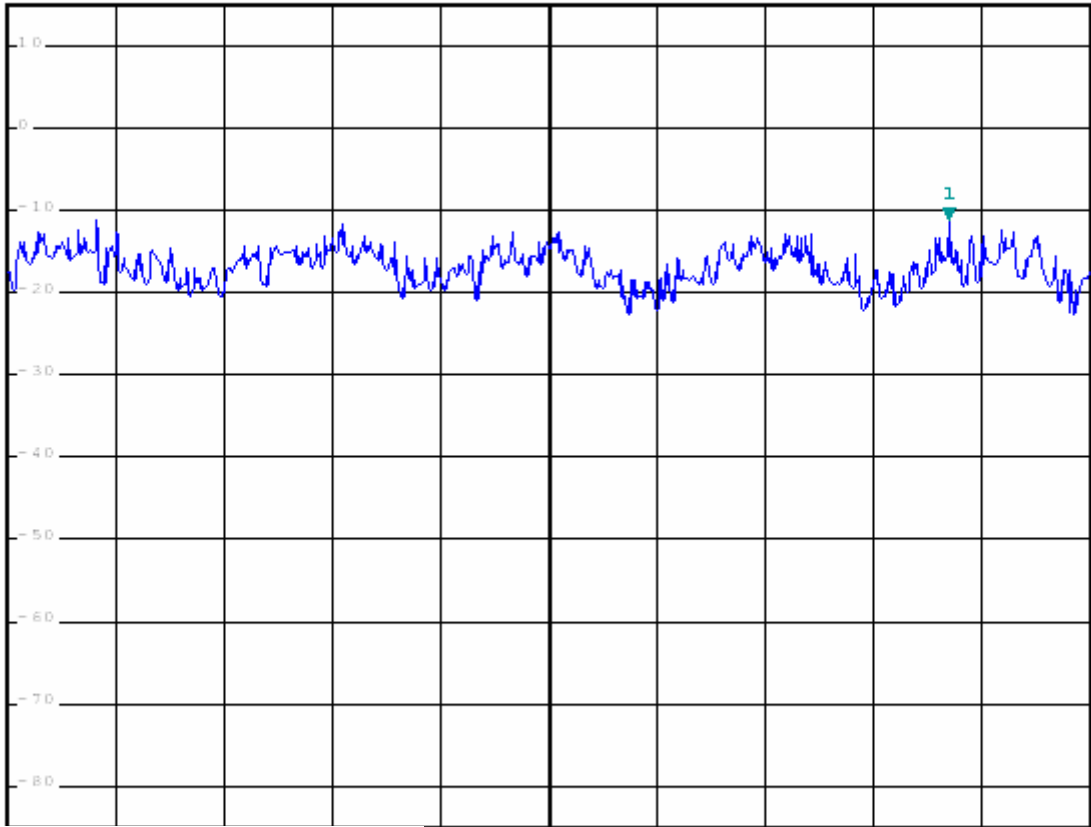
Ref 15 dBm

Att 50 dB

SWT 500 ms

2.441635000 GHz

1 PK
VIEW



150 kHz/

Span 1.5 MHz

D

mode 3

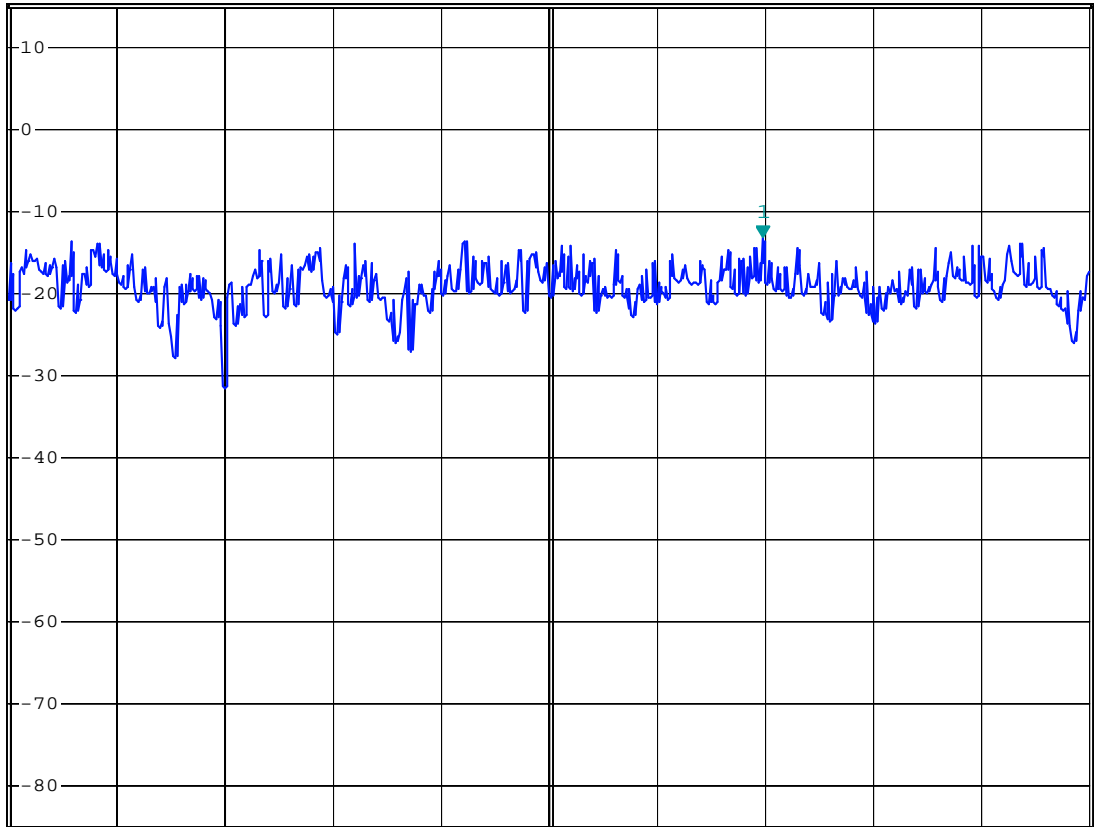


*RBW 3 kHz Marker 1 [T1]
VBW 10 kHz -13.22 dBm
*SWT 500 s 2.460457000 GHz

Ref 15 dBm

Att 50 dB

1 PK
VIEW



Center 2.46016 GHz

150 kHz/

Span 1.5 MHz

Date: 5.NOV.2008 01:48:39

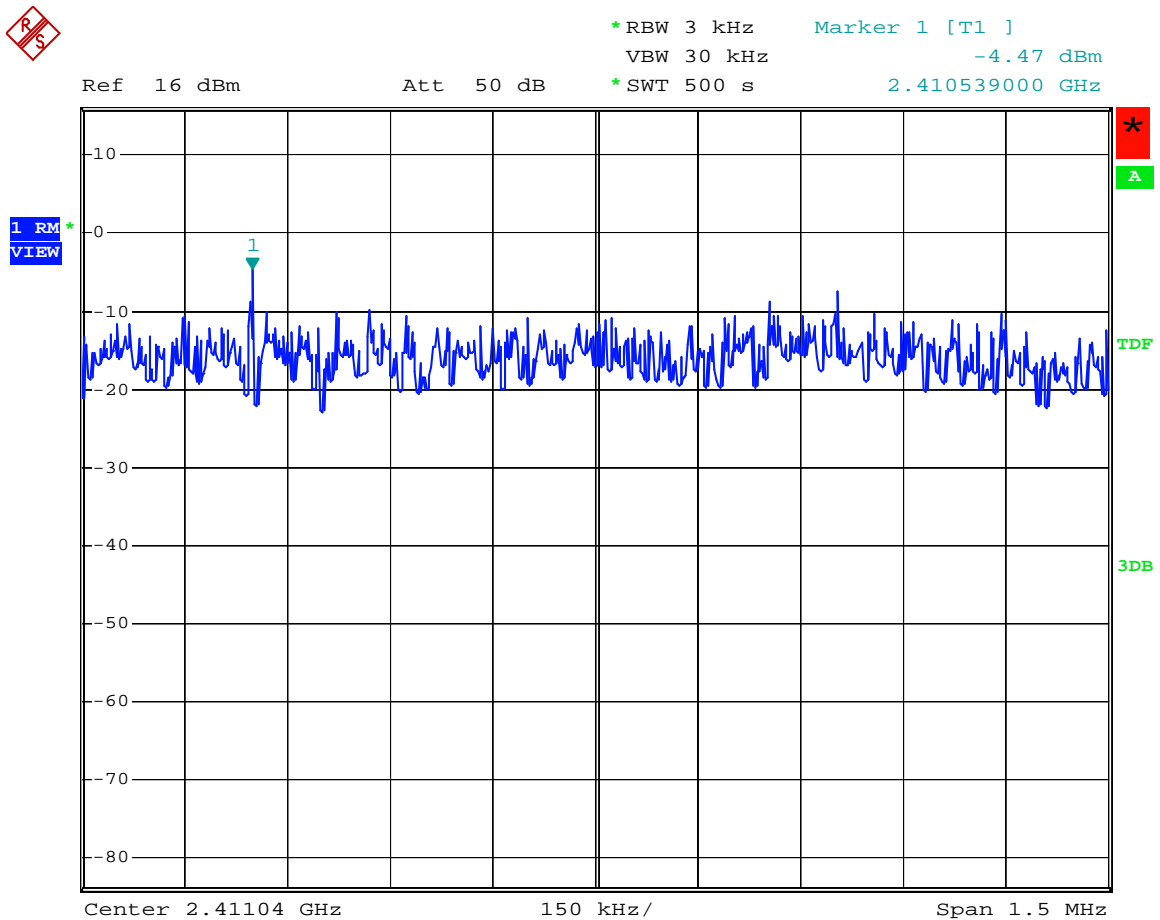
Table 18 Test Data

CHANNEL	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	results
Ch1	-4.4	8	Pass
Ch7	-4.7	8	Pass
Ch11	-6.1	8	Pass

DSSS modulation

The test was performed with the speed of 1 Mbit/s, 2 Mbit/s, 5.5 Mbit/s, 11 Mbit/s. the worst is 1 Mbit/s

mode 1



Date: 4.NOV.2008 03:20:51

mode 2

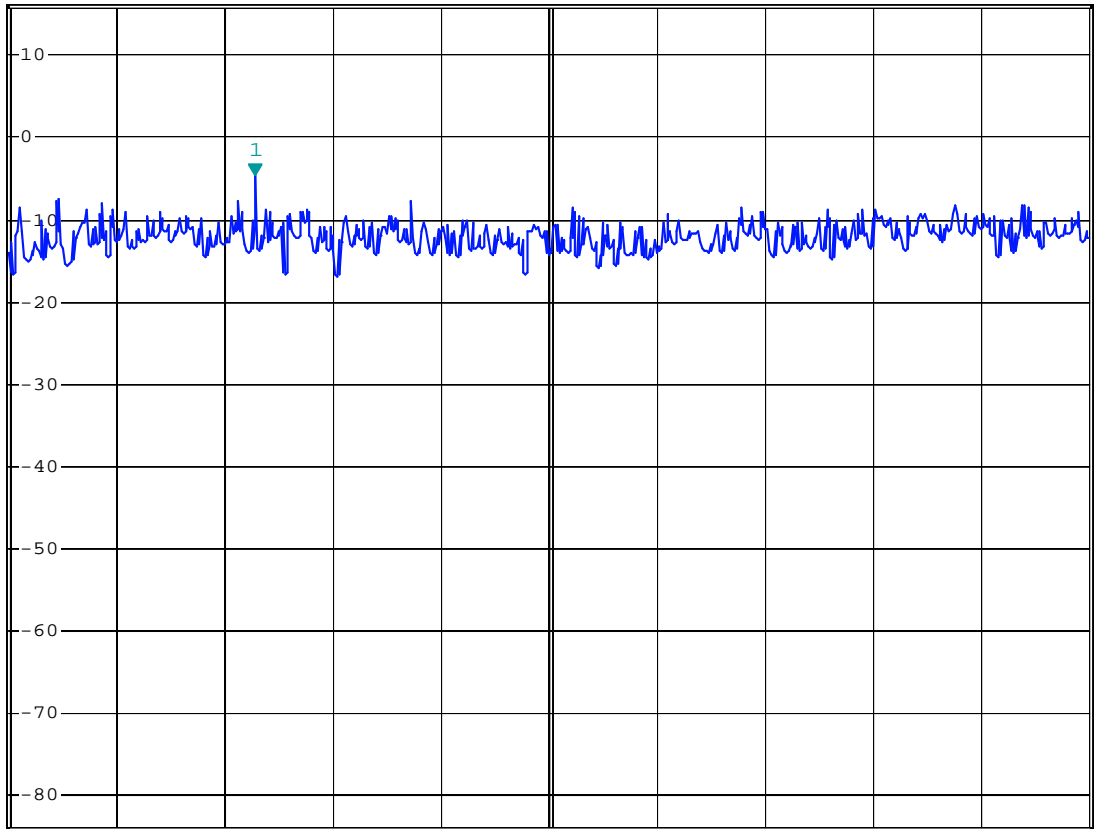


*RBW 3 kHz Marker 1 [T1]
VBW 10 kHz -4.71 dBm
*SWT 500 s 2.435372000 GHz

Ref 16 dBm

Att 50 dB

1 PK
VIEW



Center 2.43578 GHz

150 kHz/

Span 1.5 MHz

Date: 4.NOV.2008 03:46:40

mode 3

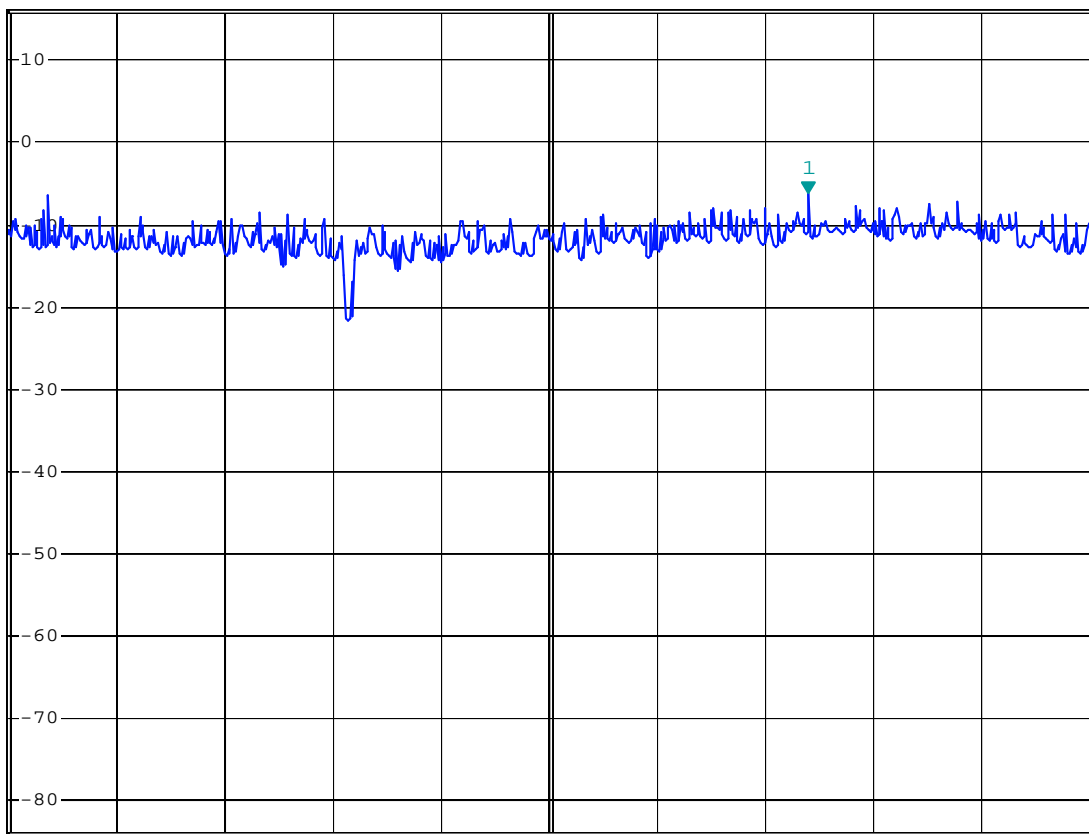


*RBW 3 kHz Marker 1 [T1]
VBW 10 kHz -6.14 dBm
*SWT 500 s 2.462640000 GHz

Ref 16 dBm

Att 50 dB

1 PK
MAXH



A

TDF

3DB

Center 2.46228 GHz

150 kHz/

Span 1.5 MHz

Date: 4.NOV.2008 04:08:10

10. BAND EDGES MEASUREMENT

10.1.LIMITS OF BAND EDGES MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

10.2.TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

10.3.EUT OPERATING CONDITION

mode 1
mode 2
mode 3

10.4.TEST RESULTS

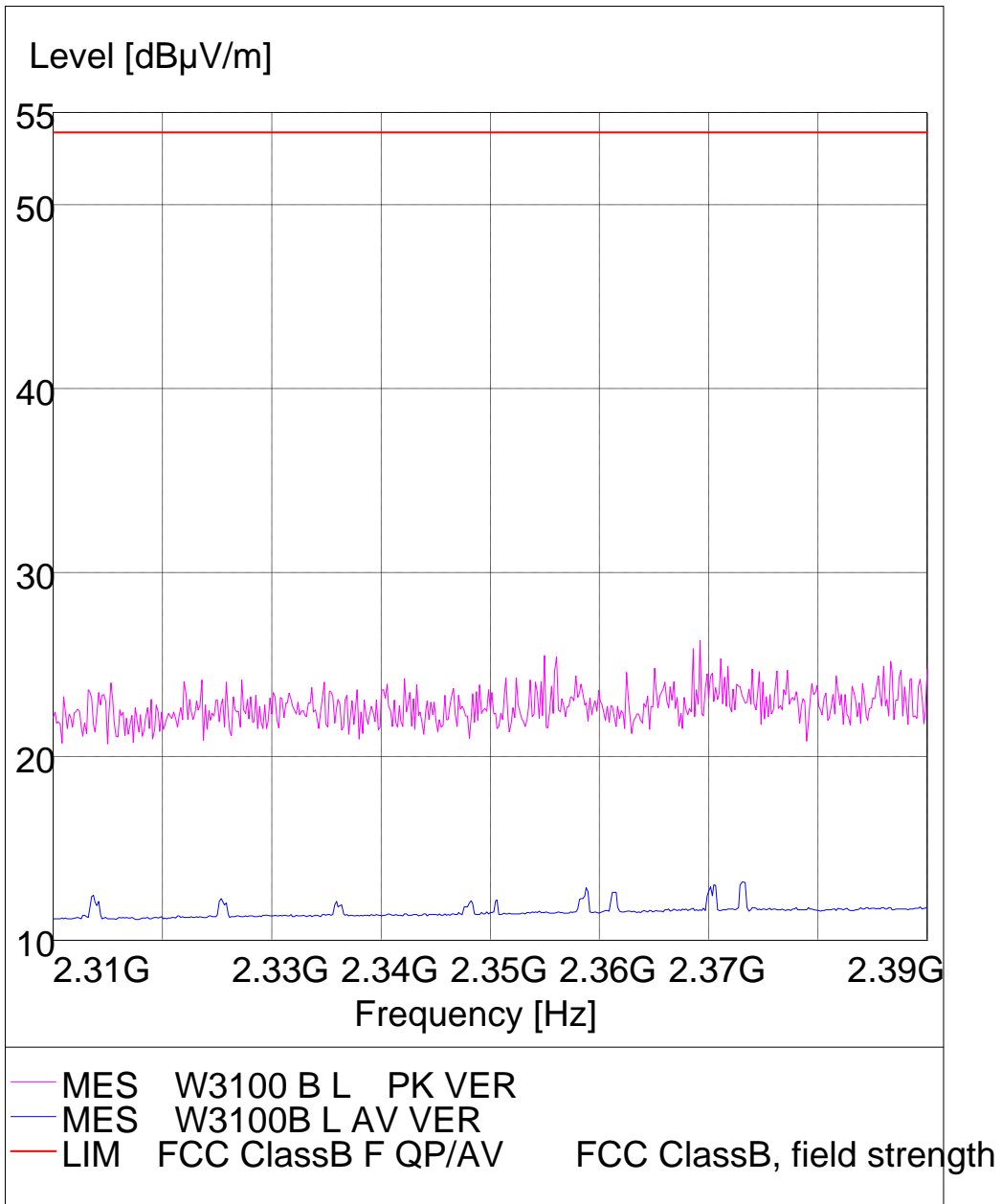
The spectrum plots are attached on the following. Test data shows compliance with the band edge requirement in part 15.247(d).

The worst case is 802.11g 36Mbit/s

The setting of the spectrum analyzer is
Detector=Peak RBW=1MHz RBW=3MHz
Detector=AV RBW=1MHz RBW=10Hz

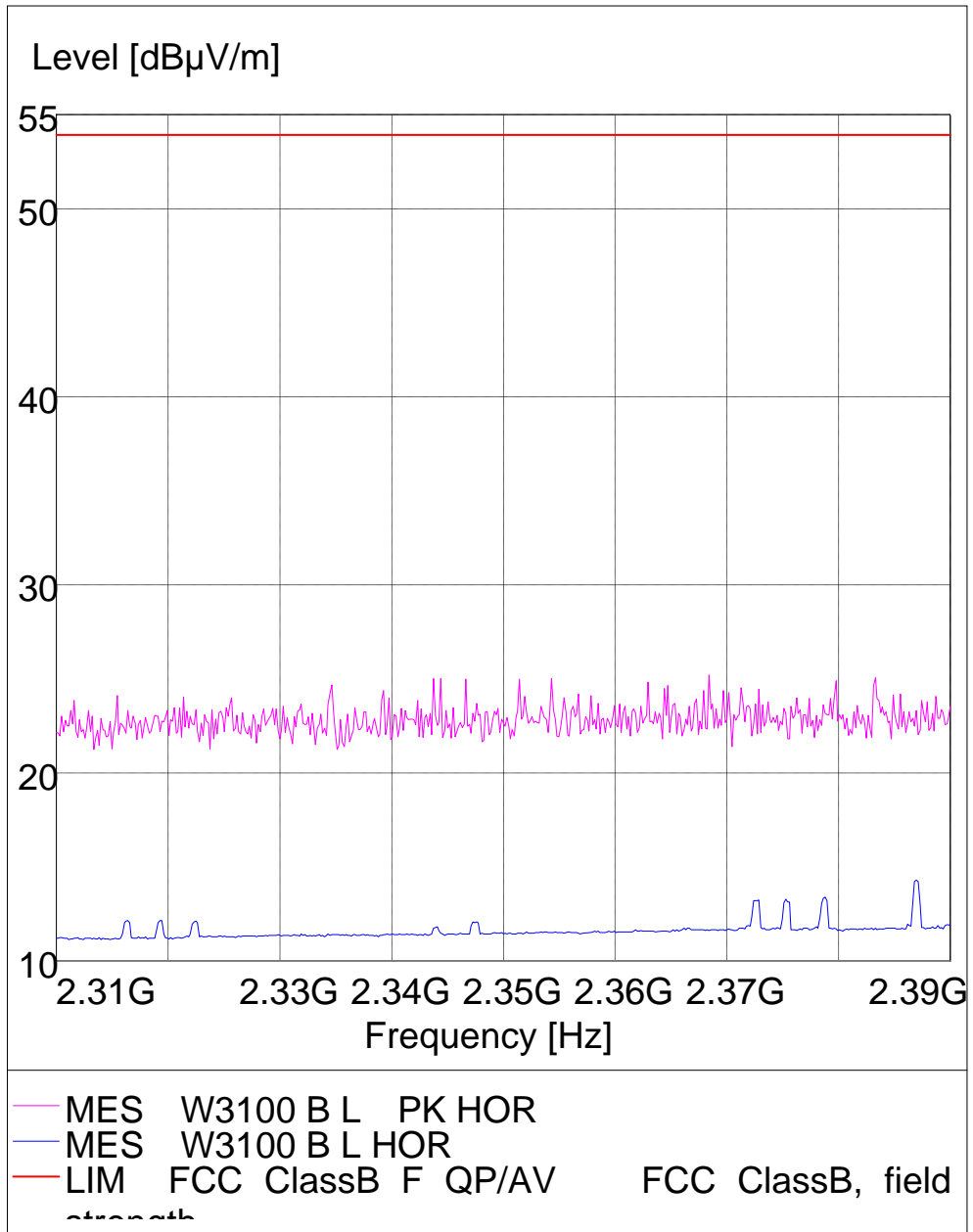
RADIATED EMISSION

EUT: W3100
Operating Condition: Ch1
Test Specification: Vertical



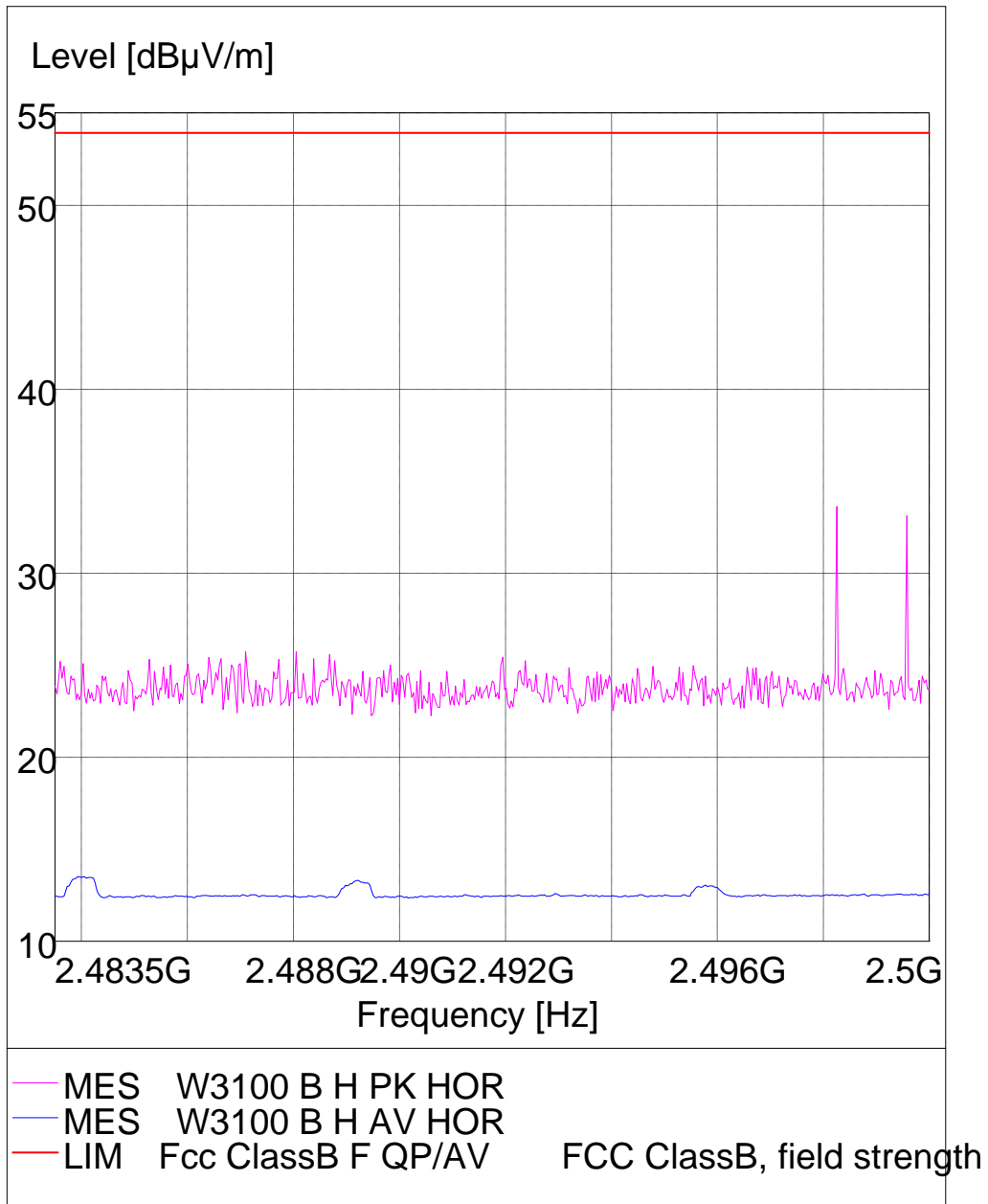
RADIATED EMISSION

EUT: W3100
Operating Condition: Ch1
Test Specification: Horizontal



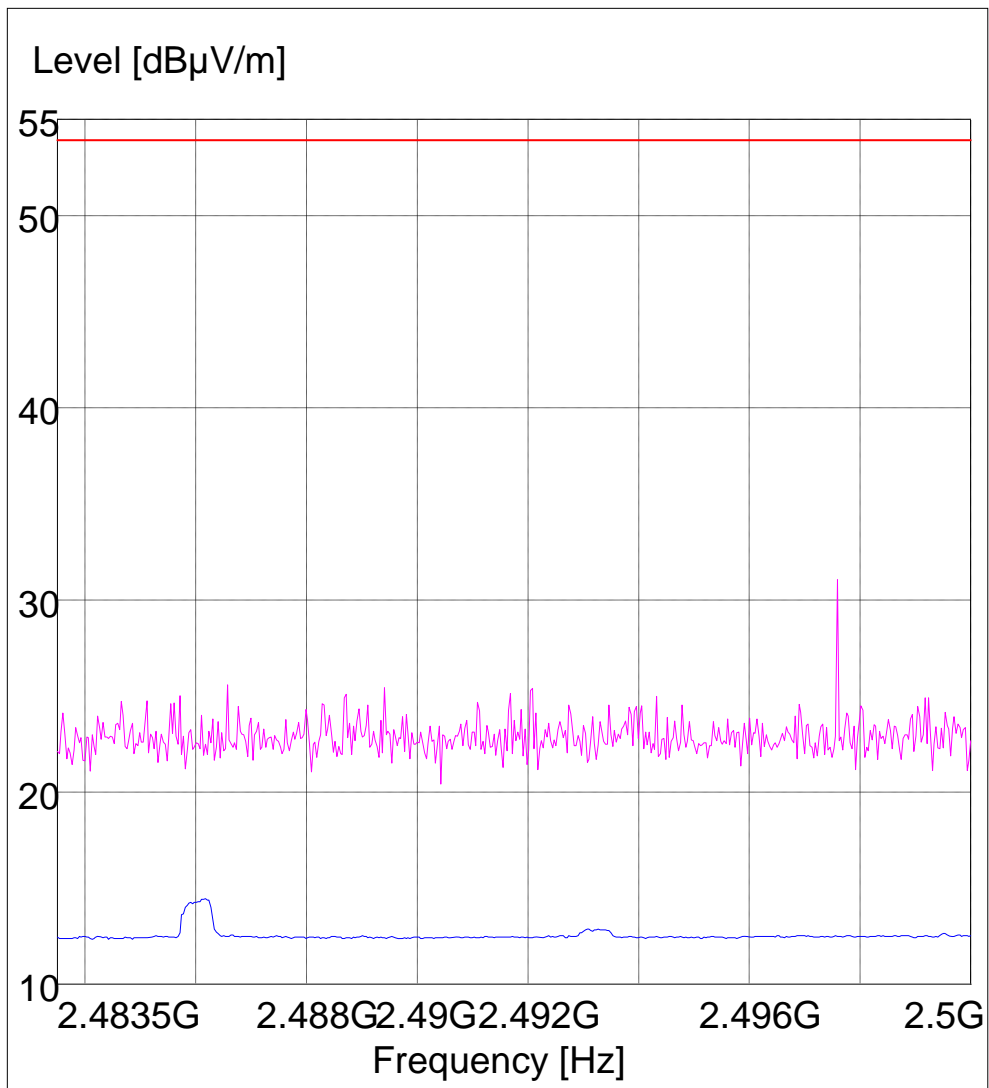
RADIATED EMISSION

EUT: W3100
Operating Condition: Ch11
Test Specification: Horizontal



RADIATED EMISSION

EUT: W3100
Manufacturer:
Operating Condition: Ch11
Test Specification: Vertical



— MES W3100 B H PK VER
— MES W3100 B H AV VER
— LIM FCC ClassB F QP/AV FCC ClassB, field strength

11. CONDUCTED SPURIOUS MEASUREMENT

11.1.LIMITS OF conducted spurious MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

11.2.TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span. The conducted spurious was measured and recorded.

11.3.EUT OPERATING CONDITION

mode 1
mode 2
mode 3

11.4.TEST RESULTS

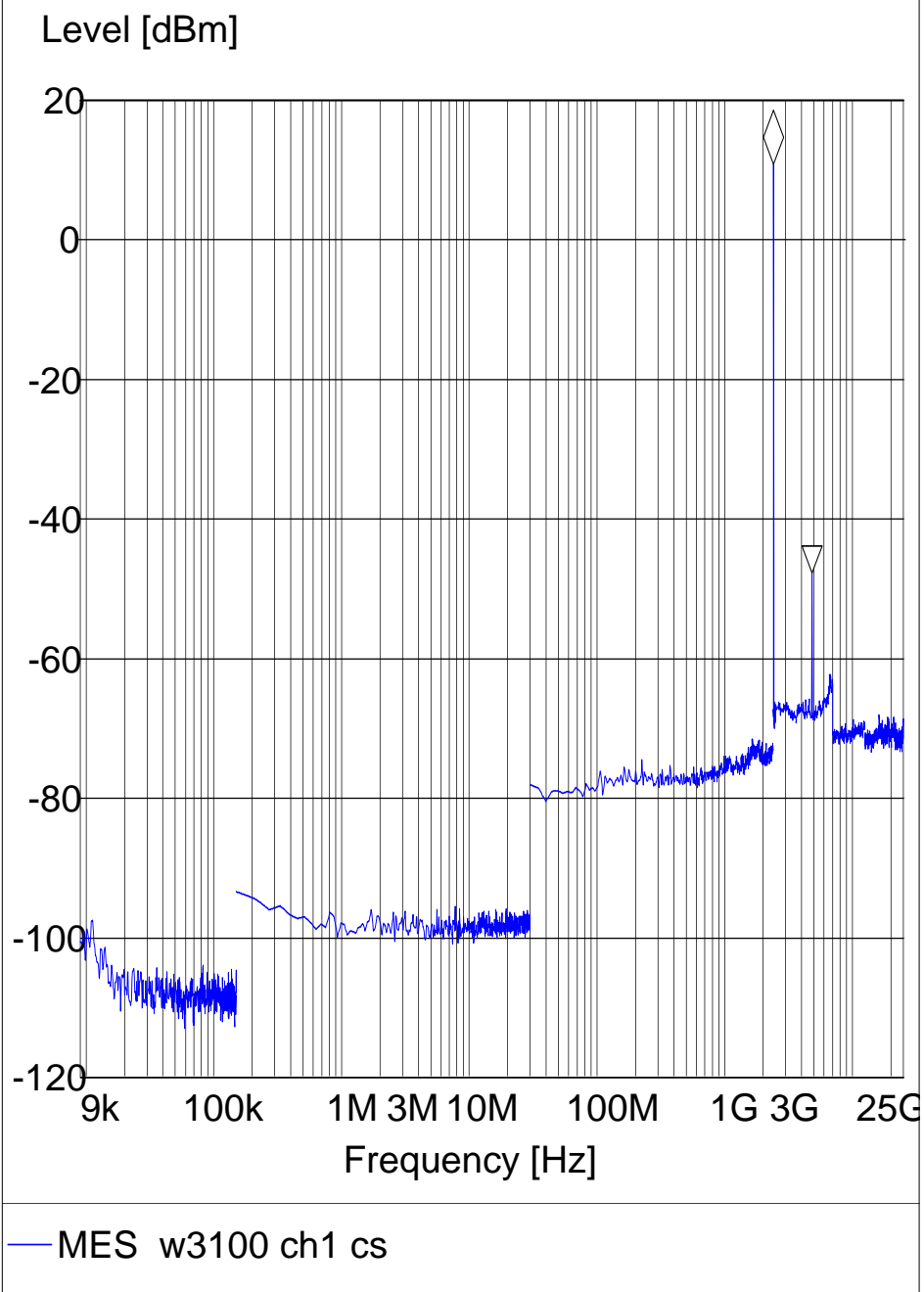
The spectrum plots are attached on the following. Test data shows compliance with the requirement in part 15.247(d).

The worst case is 802.11g 36Mbit/s

Conducted Spurious

EUT: W3100
Manufacturer:
Operating Condition: Ch1

Marker: 2.405811623 GHz 10.87 dBm
Delta Mk: 2.438877756 GHz -58.53 dB



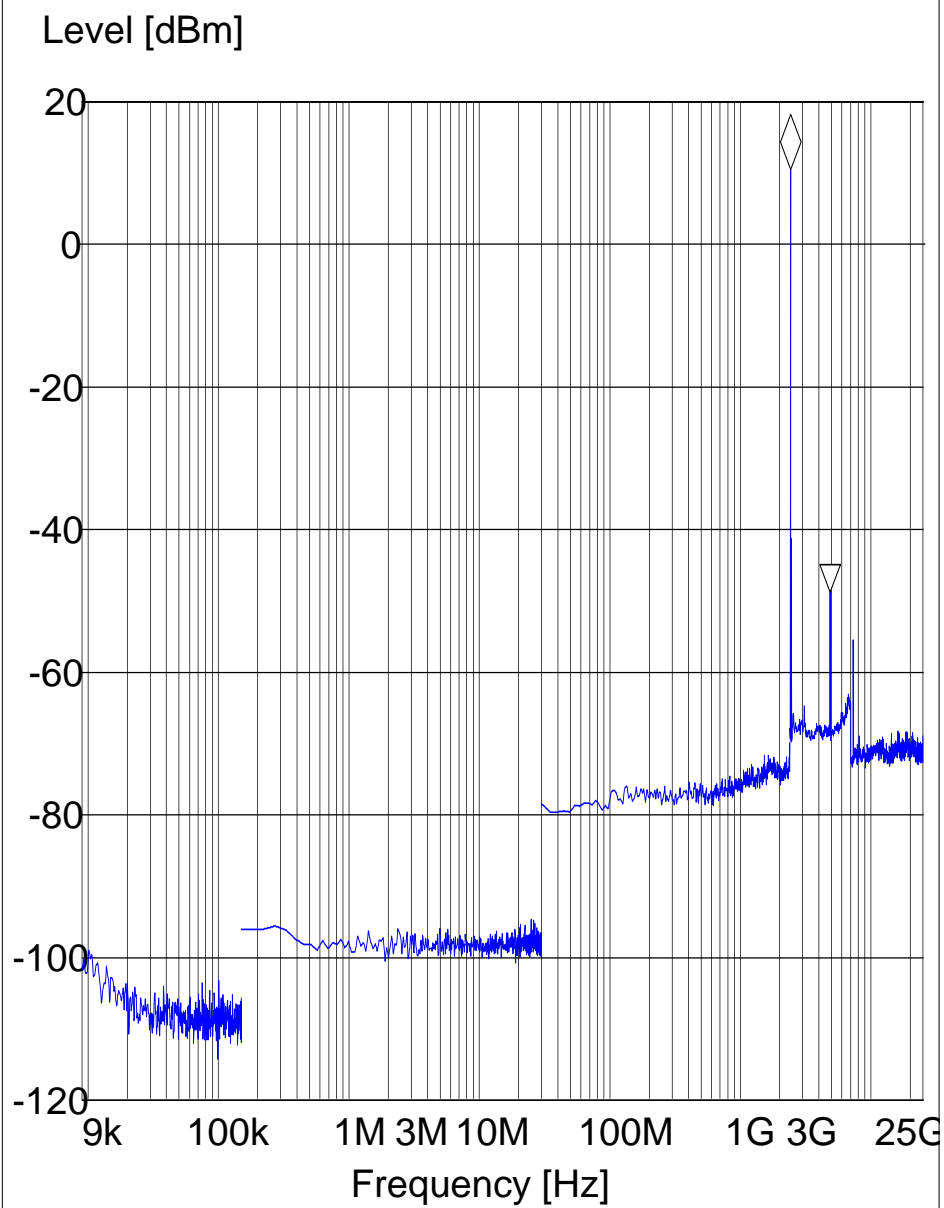
Conducted Spurious

EUT: W3100

Manufacturer:

Operating Condition: Ch6

Marker: 2.437074148 GHz 10.5 dBm
Delta Mk: 2.447695391 GHz -59.23 dB



—MES w3100 ch6 cs

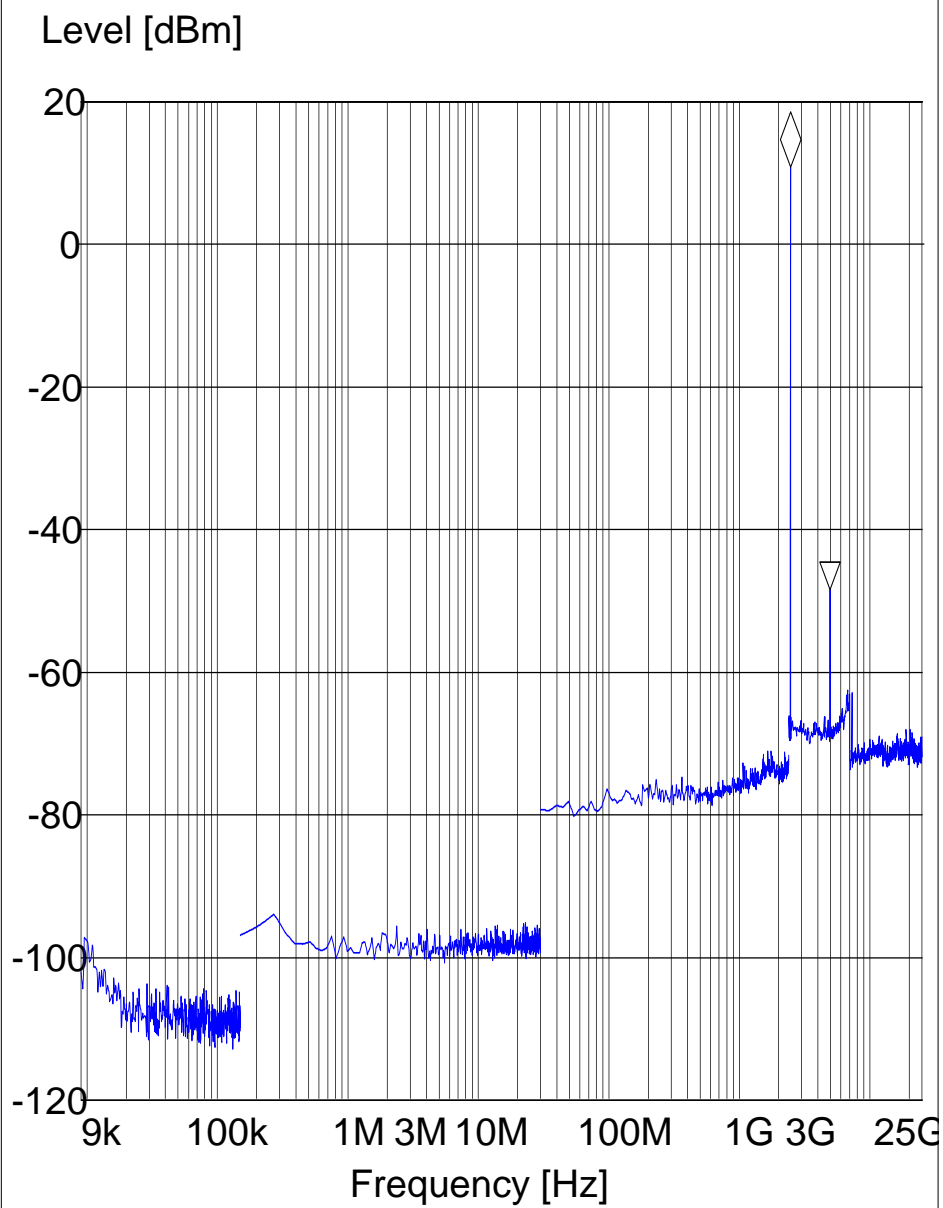
Conducted Spurious

EUT: W3100

Manufacturer:

Operating Condition: Ch11

Marker: 2.472144289 GHz 10.88 dBm
Delta Mk: 2.472745491 GHz -59.24 dB



—MES w3100 ch11 cs

12. ANTENNA REQUIREMENT

12.1. STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

12.2. ANTENNA CONNECTED CONSTRUCTION

The EUT has a replaceable antenna ,the antenna was soldered to PCB. the antenna gain is 2.0 ± 0.7 dBi which is less than 6dBi. Therefore it complies with the antenna requirement.

APPENDIX I TEST PHOTO

Photo 1 Conducted Emission Test



Photo 2 Radiated Emission Test



APPENDIX II EUT PHOTO

Photo 1 Appearance of EUT



Photo 2 Appearance of EUT



Photo 3 Inside of EUT

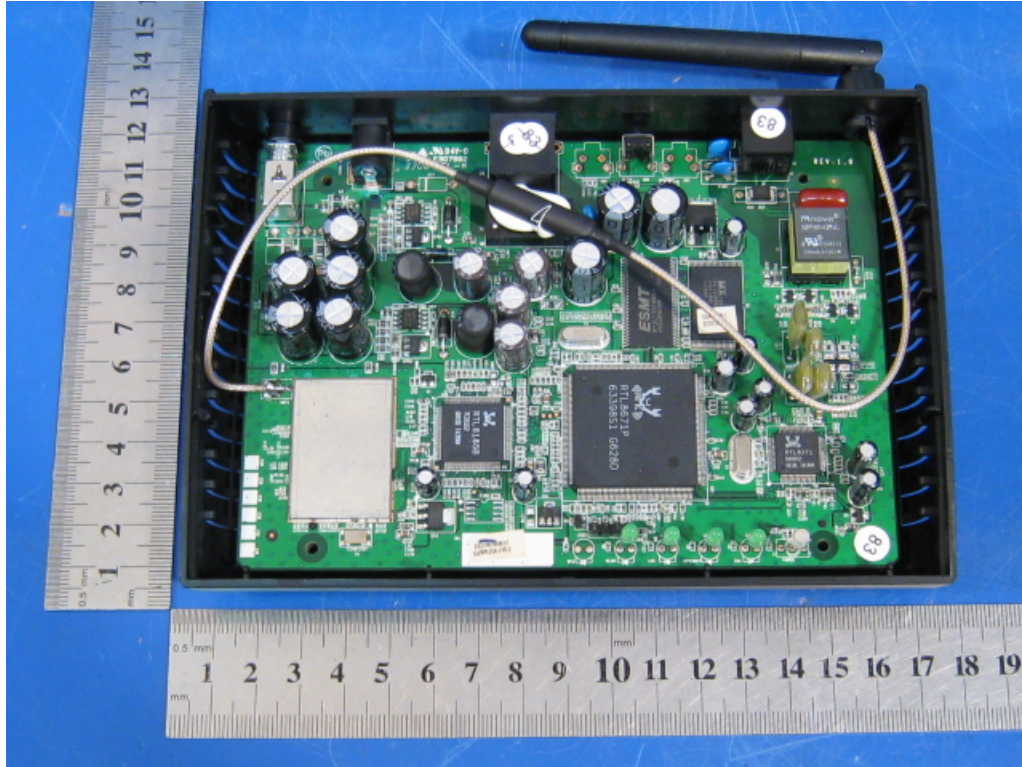


Photo 4 Inside of EUT

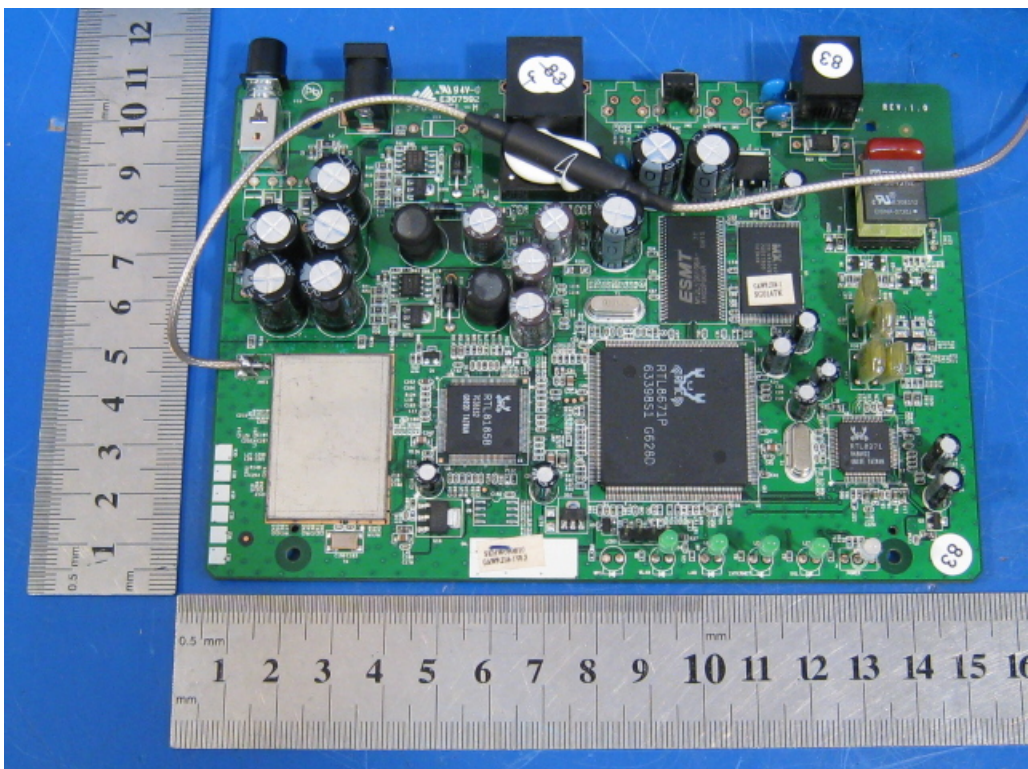


Photo 5 Inside of EUT

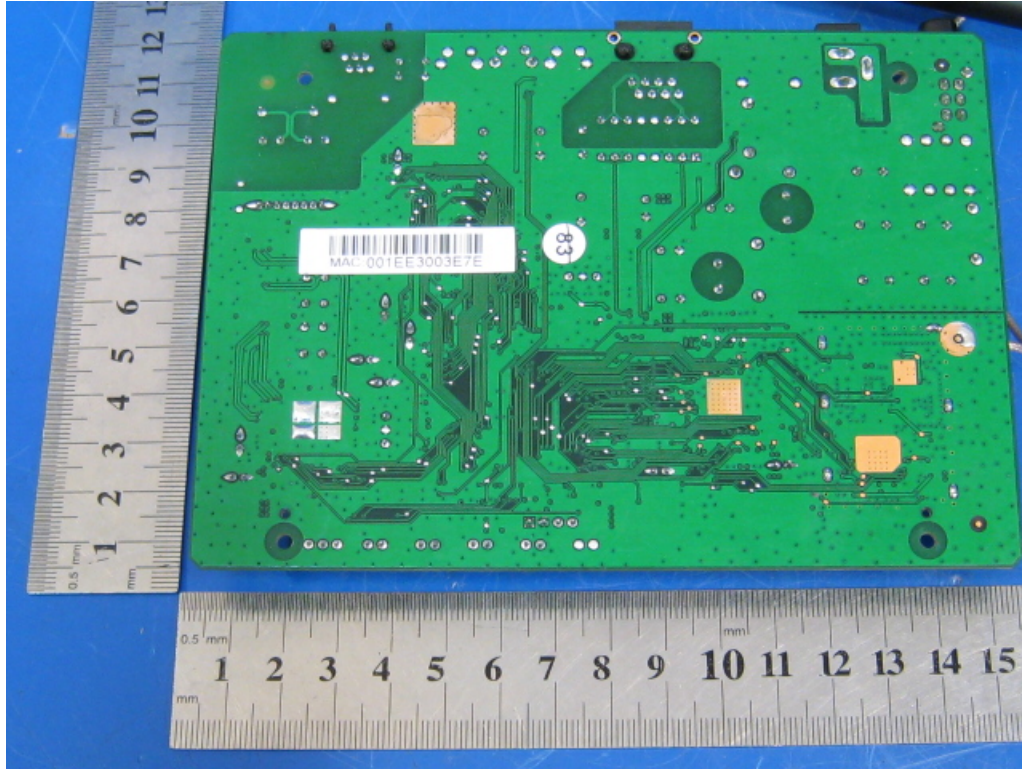


Photo 6 Inside of EUT

