

FCC Part 15

EMI TEST REPORT

of

E.U.T. : TABLET PC

FCC ID. : Z4F2GOSML721

Model No. : BP721

for

APPLICANT : 2OPTOP CO., LTD

ADDRESS : No.37, Mingxing St., Guishan Township,
Taoyuan County 333, Taiwan

Test Performed by

ELECTRONICS TESTING CENTER, TAIWAN

NO. 34. LIN 5. DINGFU, LINKOU DIST.,
NEW TAIPEI CITY, TAIWAN, 24442, R.O.C.

Tel : (02)26023052 Fax : (02)26010910

<http://www/etc.org.tw> ; e-mail: emc@etc.org.tw

Report Number : 11-09-RBF-088-05

TEST REPORT CERTIFICATION

Applicant : 2OPTOP CO., LTD
No.37, Mingxing St., Guishan Township, Taoyuan County 333, Taiwan

Manufacturer : 2OPTOP CO., LTD
No.37, Mingxing St., Guishan Township, Taoyuan County 333, Taiwan

Description of EUT

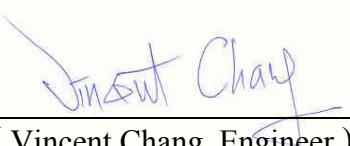
- a) Type of EUT : TABLET PC
- b) Trade Name : 2OPTOP
- c) Model No. : BP721
- d) Power Supply : Adapter Model: ADS-12G-06 05011GPCU
Input: 100-240Vac, 50/60Hz, Max. 0.3A
Output: 5Vdc, 2.1A

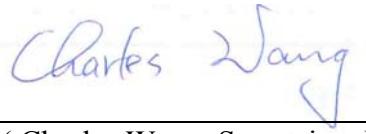
Regulation Applied : FCC Rules and Regulations Part 15 Subpart C

I HEREBY CERTIFY THAT: The data shown in this report were made in accordance with the procedures given in ANSI C63.4, and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

Note: 1. The result of the testing report relate only to the item tested.
2. The testing report shall not be reproduced expect in full, without the written approval of ETC.

Date Test Item Received : Sep. 19, 2011
Date Test Campaign Completed : Nov. 14, 2011
Date of Issue : Nov. 23, 2011

Test Engineer : 
(Vincent Chang, Engineer)

Check By : 
(Charles Wang, Supervisor)

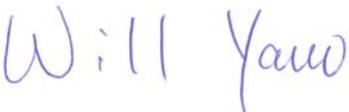
Approve & Authorized Signer : 
Will Yauo, Manager
EMC Dept. II of ELECTRONICS
TESTING CENTER, TAIWAN

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1 GENERAL INFORMATION

1.1 Product Description

- a) Type of EUT : TABLET PC
- b) Trade Name : 2OPTOP
- c) Model No. : BP721
- d) Power Supply : Adapter Model: ADS-12G-06 05011GPCU
Input: 100-240Vac, 50/60Hz, Max. 0.3A
Output: 5Vdc, 2.1A

1.2 Characteristics of Device

TABLET PC with IEEE 802.11b/g/n WiFi function.

1.3 Test Methodology

Both conducted and radiated emissions were performed according to the procedures illustrated in ANSI C63.4 (2003). Other required measurements were illustrated in separate sections of this test report for details.

For radiated emission test, the antenna of EUT was swiveled to 180 degree horizontal and 90 degree of up, down, right and left respectively for pretesting. The worst case, antenna 90 degree up, was chosen to perform the final test and the data was reported.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the roof top of Building at NO.34, LIN 5, DINGFU TSUEN, LINKOU SHIANG TAIPEI COUNTY, TAIWAN, 24442, R.O.C.

This site has been fully described in a report submitted to your office, and accepted in a letter dated Jan. 11, 2011

2 PROVISIONS APPLICABLE

2.1 Definition

Unintentional radiator:

A device that intentionally generates and radio frequency energy for use within the device, or that sends radio frequency signals by conduction to associated equipment via connecting wiring, but which is not intended to emit RF energy by radiation or induction.

Class A Digital Device:

A digital device which is marketed for use in commercial or business environment; exclusive of a device which is market for use by the general public, or which is intended to be used in the home.

Class B Digital Device :

A digital device which is marketed for use in a residential environment notwithstanding use in a commercial, business or industrial environment. Example of such devices that are marketed for the general public.

Note : A manufacturer may also qualify a device intended to be marketed in a commercial, business, or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

Intentional radiator:

A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Requirement for Compliance

(1) Conducted Emission Requirement

Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency MHz	Quasi Peak dB μ V	Average dB μ V
0.15 - 0.5	66-56*	56-46*
0.5 - 5.0	56	46
5.0 - 30.0	60	50

* Decreases with the logarithm of the frequency

(2) Radiated Emission Requirement

For unintentional device, according to §15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency MHz	Distance Meters	Radiated dB μ V/m	Radiated μ V/m
30 - 88	3	40.0	100
88 - 216	3	43.5	150
216 - 960	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to §15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

(3) Antenna Requirement

For intentional device, according to §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.

(4) Bandwidth Requirement

For direct sequence system, according to 15.247(a)(2), the minimum 6dB bandwidth shall be at least 500 kHz.

(5) Output Power Requirement

For direct sequence system, according to 15.247(b), the maximum peak output power of the transmitter shall not exceed 1 Watt. If transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(6) 100 kHz Bandwidth of Frequency Band Edges Requirement

According to 15.247(c), if any 100 kHz bandwidth outside these frequency bands, the radio frequency power that is produced by the modulation products of the spreading sequence, the information sequence and the carrier frequency shall be either at least 20 dB below that in any 100 kHz bandwidth within the band that contains the highest level of the desired power or shall not exceed the general levels specified in §15.209(a), whichever results in the lesser attenuation.

(7) Power Density Requirement

According to 15.247(d), for direct sequence systems, the transmitted power density averaged over any 1 second interval shall not be greater than 8 dBm in any 3 kHz bandwidth within these bands.

2.3 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below :

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	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3360-4400	Above 38.6
13.36-13.41			

** : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

2.4 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device :

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.5 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual.

The Federal Communications Commission Radio Frequency Interference Statement includes the following paragraph.

This equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.

3. SYSTEM TEST CONFIGURATION

3.1 Justification

For both radiated and conducted emissions below 1 GHz, the system was configured for testing in a typical fashion as a customer would normally use it. The peripherals other than EUT were connected in normally standing by situation. Measurement was performed under the condition that a computer program was exercised to simulate data communication of EUT, and the transmission rate was set to maximum allowed by EUT. Three highest emissions were verified with varying placement of the cables connected to EUT to maximize the emission from EUT.

For conducted and radiated spurious emissions, whichever RF channel is operated, the digital circuits function identically. As the reason, measurement of radiated emissions from digital circuits is only performed with channel 7 by transmitting mode.

3.2 Devices for Tested System

Device	Manufacture	Model	Cable Description
TABLET PC *	2OPTOP CO., LTD	BP721	----

Remark “*” means equipment under test.

4 RADIATED EMISSION MEASUREMENT

4.1 Applicable Standard

For unintentional radiator, the radiated emission shall comply with §15.109(a).

For intentional radiators, according to §15.247 (a), operation under this provision is limited to frequency hopping and direct sequence spread spectrum, and the out band emission shall be comply with §15.247 (c)

4.2 Measurement Procedure

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively.
2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.
3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 100 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.
5. Repeat step 4 until all frequencies need to be measured were complete.
6. Repeat step 5 with search antenna in vertical polarized orientations.
7. Check the three frequencies of highest emission with varying the placement of cables associated with EUT to obtain the worse case and record the result.

Figure 1 : Frequencies measured below 1 GHz configuration

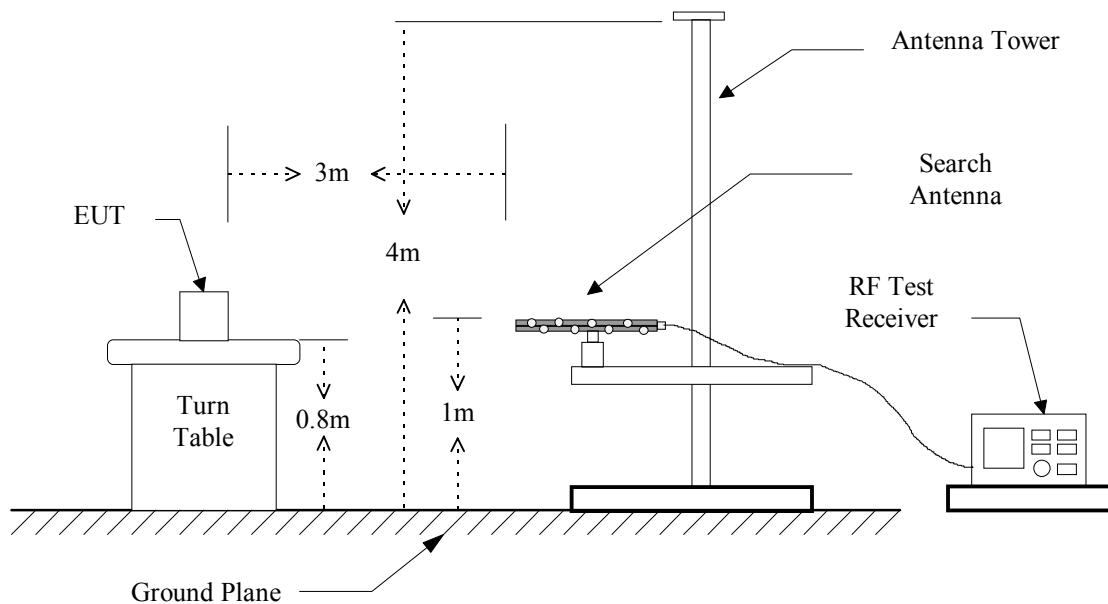
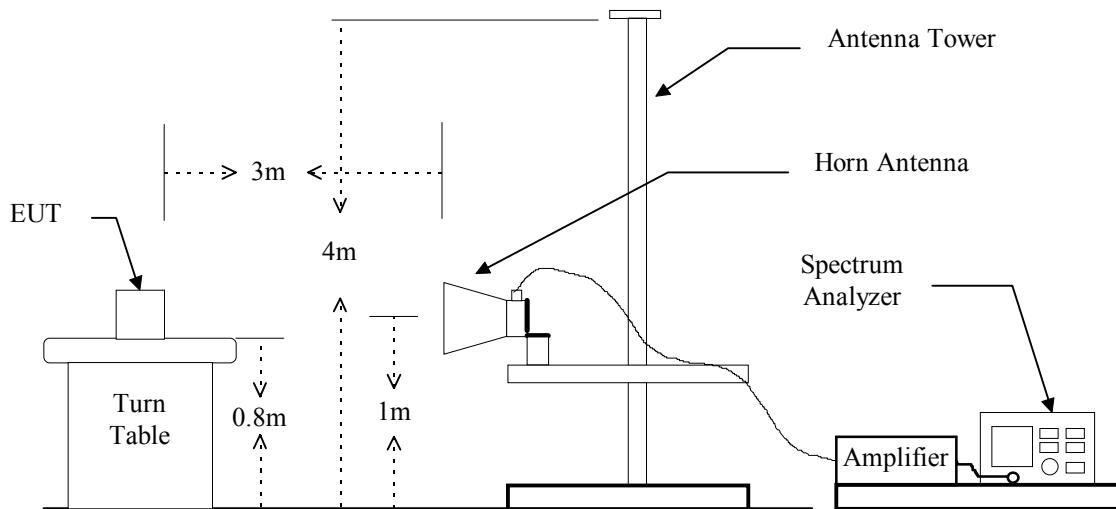


Figure 2 : Frequencies measured above 1 GHz configuration



4.3 Measuring Instrument

The following instrument are used for radiated emissions measurement:

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Spectrum	Rohde & Schwarz	FSP40	2011/09/21	2012/09/19
EMI Test Receiver	Rohde & Schwarz	ESCI	2011/05/09	2012/05/07
Double Ridged Antenna	EMCO	3115	2011/05/30	2012/05/28
Double Ridged Antenna	EMCO	3116	2011/10/24	2012/10/23
Double Ridged Antenna	EMCO	3116	2011/10/24	2012/10/23
Log-periodic Antenna	EMCO	3146	2011/10/11	2012/10/10
Biconical Antenna	EMCO	3110B	2011/10/11	2012/10/10
Amplifier	HP	8449B	2010/12/29	2011/12/28
Amplifier	HP	8447D	2011/05/27	2012/05/25
Amplifier	HP	83051A	2011/05/31	2012/05/29

Measuring instrument setup in measured frequency band when specified detector function is used :

Frequency Band (MHz)	Instrument	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	N/A
	Spectrum Analyzer	Peak	100 kHz	100 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
	Spectrum Analyzer	Average	1 MHz	10 Hz

4.4 Radiated Emission Data

4.4.1 RF Portion

A. Channel Low(802.11b@1 MHz (Worst Case))

Operation Mode : Transmitting EUT vertically stands

Fundamental Frequency : 2412.000 MHz

Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 56 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
4824.000	43.2	40.1	44.5	41.5	2.6	47.1	44.1	74.0	54.0	-9.9	175	1.00
7236.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
9648.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
12060.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
14472.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
16884.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
19296.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
21708.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
24120.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Operation Mode : Receiving EUT vertically stands

Fundamental Frequency : Local Frequency : 2412.000 MHz

Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
* 2412.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 4824.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 7236.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 9648.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 12060.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Note :

1. Item of margin shown in above table refer to average limit.
2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark “***” means that Peak result is meet average limit.
3. Remark “---” means that the emissions level is too low to be measured.
4. Remark “*” means the local oscillator frequency and its harmonics.
5. Item “Margin” referred to Average limit while there is only peak result.
6. The expanded uncertainty of the radiated emission tests is 3.53 dB.

B. Channel Middle(802.11b@1 MHz (Worst Case))Operation Mode : Transmitting EUT vertically standsFundamental Frequency : 2437.000 MHzTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
4874.000	43.8	40.5	44.7	41.6	2.7	47.4	44.3	74.0	54.0	-9.7	175	1.00
7311.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
9748.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
12185.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
14622.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
17059.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
19496.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
21933.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
24370.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Operation Mode : Receiving EUT vertically standsFundamental Frequency : Local Frequency : 2437.000 MHzTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
* 2437.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 4874.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 7311.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 9748.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 12185.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Note :

1. Item of margin shown in above table refer to average limit.
2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
3. Remark "---" means that the emissions level is too low to be measured.
4. Remark "*" means the local oscillator frequency and its harmonics.
5. Item "Margin" referred to Average limit while there is only peak result.
6. The expanded uncertainty of the radiated emission tests is 3.53 dB.

C. Channel High(802.11b@1 MHz (Worst Case))Operation Mode : Transmitting EUT vertically standsFundamental Frequency : 2462.000 MHzTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
4924.000	43.8	41.1	44.8	41.5	2.8	47.6	44.3	74.0	54.0	-9.7	175	1.00
7386.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
9848.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
12310.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
14772.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
17234.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
19696.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
22158.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
24620.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Operation Mode : Receiving EUT vertically standsFundamental Frequency : Local Frequency : 2462.000 MHzTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
* 2462.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 4924.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 7386.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 9848.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 12310.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Note :

1. Item of margin shown in above table refer to average limit.
2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark “***” means that Peak result is meet average limit.
3. Remark “---” means that the emissions level is too low to be measured.
4. Remark “*” means the local oscillator frequency and its harmonics.
5. Item “Margin” referred to Average limit while there is only peak result.
6. The expanded uncertainty of the radiated emission tests is 3.53 dB.

D. Channel Low(802.11g@6 MHz (Worst Case))Operation Mode : Transmitting EUT vertically standsFundamental Frequency : 2412.000 MHzTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
4824.000	43.2	40.1	44.2	41.2	2.6	46.8	43.8	74.0	54.0	-10.2	175	1.00
7236.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
9648.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
12060.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
14472.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
16884.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
19296.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
21708.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
24120.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Operation Mode : Receiving EUT vertically standsFundamental Frequency : Local Frequency : 2412.000 MHzTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
* 2412.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 4824.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 7236.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 9648.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 12060.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Note :

1. Item of margin shown in above table refer to average limit.
2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
3. Remark "---" means that the emissions level is too low to be measured.
4. Remark "*" means the local oscillator frequency and its harmonics.
5. Item "Margin" referred to Average limit while there is only peak result.
6. The expanded uncertainty of the radiated emission tests is 3.53 dB.

E. Channel Middle(802.11g@6 MHz (Worst Case))Operation Mode : Transmitting EUT vertically standsFundamental Frequency : 2437.000 MHzTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
4874.000	43.8	40.5	44.5	41.3	2.7	47.2	44.0	74.0	54.0	-10.0	179	1.00
7311.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
9748.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
12185.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
14622.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
17059.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
19496.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
21933.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
24370.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Operation Mode : Receiving EUT vertically standsFundamental Frequency : Local Frequency : 2437.000 MHzTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
* 2437.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 4874.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 7311.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 9748.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 12185.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Note :

1. Item of margin shown in above table refer to average limit.
2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark “***” means that Peak result is meet average limit.
3. Remark “---” means that the emissions level is too low to be measured.
4. Remark “*” means the local oscillator frequency and its harmonics.
5. Item “Margin” referred to Average limit while there is only peak result.
6. The expanded uncertainty of the radiated emission tests is 3.53 dB.

F. Channel High(802.11g@6 MHz (Worst Case))Operation Mode : Transmitting EUT vertically standsFundamental Frequency : 2462.000 MHzTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
4924.000	43.3	40.2	44.8	41.5	2.8	47.6	44.3	74.0	54.0	-9.7	175	1.00
7386.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
9848.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
12310.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
14772.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
17234.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
19696.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
22158.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
24620.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Operation Mode : Receiving EUT vertically standsFundamental Frequency : Local Frequency : 2462.000 MHzTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
* 2462.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 4924.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 7386.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 9848.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 12310.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Note :

1. Item of margin shown in above table refer to average limit.
2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark “***” means that Peak result is meet average limit.
3. Remark “---” means that the emissions level is too low to be measured.
4. Remark “*” means the local oscillator frequency and its harmonics.
5. Item “Margin” referred to Average limit while there is only peak result.
6. The expanded uncertainty of the radiated emission tests is 3.53 dB.

G. Channel Low(802.11n HT-20@MCS0 (Worst Case))Operation Mode : Transmitting EUT vertically standsFundamental Frequency : 2412.000 MHzTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
4824.000	43.3	40.0	44.5	41.1	2.6	47.1	43.7	74.0	54.0	-10.3	169	1.00
7236.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
9648.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
12060.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
14472.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
16884.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
19296.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
21708.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
24120.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Operation Mode : Receiving EUT vertically standsFundamental Frequency : Local Frequency : 2412.000 MHzTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
* 2412.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 4824.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 7236.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 9648.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 12060.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Note :

1. Item of margin shown in above table refer to average limit.
2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
3. Remark "---" means that the emissions level is too low to be measured.
4. Remark "*" means the local oscillator frequency and its harmonics.
5. Item "Margin" referred to Average limit while there is only peak result.
6. The expanded uncertainty of the radiated emission tests is 3.53 dB.

H. Channel Middle(802.11n HT-20@MCS0 (Worst Case))Operation Mode : Transmitting EUT vertically standsFundamental Frequency : 2437.000 MHzTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
4874.000	43.8	40.2	44.7	41.3	2.7	47.4	44.0	74.0	54.0	-1.6	57	1.20
7311.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
9748.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
12185.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
14622.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
17059.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
19496.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
21933.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
24370.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Operation Mode : Receiving EUT vertically standsFundamental Frequency : Local Frequency : 2437.000 MHzTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
* 2437.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 4874.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 7311.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 9748.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 12185.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Note :

1. Item of margin shown in above table refer to average limit.
2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark “***” means that Peak result is meet average limit.
3. Remark “---” means that the emissions level is too low to be measured.
4. Remark “*” means the local oscillator frequency and its harmonics.
5. Item “Margin” referred to Average limit while there is only peak result.
6. The expanded uncertainty of the radiated emission tests is 3.53 dB.

I. Channel High(802.11n HT-20@MCS0 (Worst Case))Operation Mode : Transmitting EUT vertically standsFundamental Frequency : 2462.000 MHzTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
4924.000	43.3	40.1	44.5	41.2	2.8	47.3	44.0	74.0	54.0	-10.0	189	1.00
7386.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
9848.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
12310.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
14772.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
17234.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
19696.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
22158.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
24620.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Operation Mode : Receiving EUT vertically standsFundamental Frequency : Local Frequency : 2462.000 MHzTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
* 2462.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 4924.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 7386.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 9848.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
* 12310.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Note :

1. Item of margin shown in above table refer to average limit.
2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark “***” means that Peak result is meet average limit.
3. Remark “---” means that the emissions level is too low to be measured.
4. Remark “*” means the local oscillator frequency and its harmonics.
5. Item “Margin” referred to Average limit while there is only peak result.
6. The expanded uncertainty of the radiated emission tests is 3.53 dB.

4.4.2 Radiated Emission of Restricted bands

Mode: 802.11b@1 MHz (Worst Case)

Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Operation Mode : CH 01		Restricted Frequency band: 2310MHz – 2390MHz											
Frequency (MHz)		Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
		H		V			Peak	Ave	Peak	Ave			
2384.110		43.1	40.2	44.2	41.2	-3.1	41.1	38.1	74.0	54.0	-15.9	175	1.00
2388.240		43.5	40.3	44.7	41.3	-3.1	41.6	38.2	74.0	54.0	-15.8	182	1.00

Operation Mode : CH 11 Restricted Frequency band: 2483.5MHz – 2500MHz

Frequency (MHz)		Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
		H		V			Peak	Ave	Peak	Ave			
2485.510		43.4	40.5	44.8	41.1	-2.8	42.0	38.3	74.0	54.0	-15.7	194	1.00
2489.110		43.8	40.8	44.5	41.5	-2.7	41.8	38.8	74.0	54.0	-15.2	182	1.00

Note :

1. Item of margin shown in above table refer to average limit.
2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark “***” means that Peak result is meet average limit.
3. Remark “---” means that the emissions level is too low to be measured.
4. Item “Margin” referred to Average limit while there is only peak result.
5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

Mode: 802.11g@6 MHz (Worst Case)Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %**Operation Mode****: CH 01****Restricted Frequency band: 2310MHz – 2390MHz**

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
2334.110	43.2	40.1	44.2	41.2	-3.3	40.9	37.9	74.0	54.0	-16.1	175	1.00
2358.620	43.4	40.2	44.5	41.3	-3.2	41.3	38.1	74.0	54.0	-15.9	182	1.00

Operation Mode**: CH 11****Restricted Frequency band: 2483.5MHz – 2500MHz**

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
2483.910	43.8	40.4	44.7	41.4	-2.8	41.9	38.6	74.0	54.0	-15.4	194	1.00
2489.990	44.0	40.8	44.8	41.5	-2.7	42.1	38.8	74.0	54.0	-15.2	188	1.00

Note :

1. Item of margin shown in above table refer to average limit.
2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark “***” means that Peak result is meet average limit.
3. Remark “---” means that the emissions level is too low to be measured.
4. Item “Margin” referred to Average limit while there is only peak result.
5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

Mode: 802.11n HT-20@MCS0 (Worst Case)Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %**Operation Mode****: CH 01****Restricted Frequency band: 2310MHz – 2390MHz**

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
2339.710	43.2	40.1	44.2	40.9	-3.3	40.9	37.6	74.0	54.0	-16.4	178	1.00
2382.910	43.4	40.3	44.7	41.0	-3.1	41.6	37.9	74.0	54.0	-16.1	192	1.00

Operation Mode**: CH 11****Restricted Frequency band: 2483.5MHz – 2500MHz**

Frequency (MHz)	Reading (dBuV)				Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave			
2485.150	43.8	40.5	44.8	41.1	-2.8	42.0	38.3	74.0	54.0	-15.7	184	1.00
2491.110	44.0	40.9	44.9	41.2	-2.7	42.2	38.5	74.0	54.0	-15.5	185	1.00

Note :

1. Item of margin shown in above table refer to average limit.
2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark “***” means that Peak result is meet average limit.
3. Remark “---” means that the emissions level is too low to be measured.
4. Item “Margin” referred to Average limit while there is only peak result.
5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

4.4.3 Other Emission

a) Emission frequencies below 1 GHz

Operation Mode : Charge & Camera

Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (m)
148.7	H	20.9	14.7	35.6	43.5	-7.9	26	1.5
174.71	H	17.8	15.4	33.2	43.5	-10.3	25	1.5
297.21	H	19.9	19.3	39.2	46.0	-6.8	37	1.5
444.9	H	23.2	20.0	43.2	46.0	-2.8	25	1.5
593.3	H	20.4	22.7	43.1	46.0	-2.9	15	1.5
741.7	H	17.4	25.4	42.8	46.0	-3.2	35	1.5

Operation Mode : Charge & Record

Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (m)
148.7	H	20.5	14.7	35.2	43.5	-8.3	46	1.5
160.89	H	18.8	14.7	33.5	43.5	-10.0	35	1.5
297.21	H	19.9	19.3	39.2	46.0	-6.8	17	1.5
444.9	V	23.2	20.0	43.2	46.0	-2.8	25	1.5
593.3	V	20.8	22.7	43.5	46.0	-2.5	35	1.5
741.7	H	17.8	25.4	43.2	46.0	-2.8	25	1.5

Note :

1. Remark “---” means that the emissions level is too low to be measured.
2. The expanded uncertainty of the radiated emission tests is 3.53 dB.

Operation Mode : Charge & Video (EUT Hard) With HDMI OUT 1080PTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (m)
148.7	H	22.2	14.7	36.9	43.5	-6.6	46	1.5
228.1	V	19.2	19.3	38.5	46.0	-7.5	15	1.5
297.21	V	22.8	19.3	42.1	46.0	-3.9	37	1.5
444.9	H	24.0	20.0	44	46.0	-2.0	35	1.5
593.3	V	21.0	22.7	43.7	46.0	-2.3	45	1.5
741.7	H	17.8	25.4	43.2	46.0	-2.8	25	1.5

Operation Mode : Charge & Video (SD Card) With HDMI OUT 1080PTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (m)
148.7	H	21.5	14.7	36.2	43.5	-7.3	16	1.5
160.89	V	20.5	14.7	35.2	43.5	-8.3	15	1.5
297.21	V	14.1	19.3	33.4	46.0	-12.6	17	1.5
444.9	V	23.4	20.0	43.4	46.0	-2.6	35	1.5
624.1	V	19.3	23.5	42.8	46.0	-3.2	35	1.5
741.7	H	17.1	25.4	42.5	46.0	-3.5	33	1.5

Note :

1. Remark “---” means that the emissions level is too low to be measured.
2. The expanded uncertainty of the radiated emission tests is 3.53 dB.

Operation Mode : Charge & USB Read Write (With USB Cable)Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (m)
134.49	V	22.3	14.1	36.4	43.5	-7.1	28	1.5
165.81	H	22.3	14.9	37.2	43.5	-6.3	33	1.5
240.06	H	18.5	19.9	38.4	46.0	-7.6	37	1.5
439.3	H	22.6	19.9	42.5	46.0	-3.5	45	1.5
478.5	V	20.6	20.9	41.5	46.0	-4.5	17	1.5
696.9	H	16.7	24.8	41.5	46.0	-4.5	25	1.5

Operation Mode : Charge & WiFi Link & FULL SYSTEMTest Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (m)
148.7	H	20.5	14.7	35.2	43.5	-8.3	27	1.5
174.71	V	18.0	15.4	33.4	43.5	-10.1	35	1.5
297.21	H	19.1	19.3	38.4	46.0	-7.6	41	1.5
444.9	V	22.9	20.0	42.9	46.0	-3.1	32	1.5
593.3	V	18.8	22.7	41.5	46.0	-4.5	33	1.5
741.7	V	16.4	25.4	41.8	46.0	-4.2	24	1.5

Note :

1. Remark “---” means that the emissions level is too low to be measured.
2. The expanded uncertainty of the radiated emission tests is 3.53 dB.

4.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor, High Pass Filter Loss(if used) and Cable Loss, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation calculation is as follows:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

where

Corrected Factor = Antenna FACTOR + Cable Loss + High Pass Filter Loss - Amplifier Gain

4.6 Photos of Radiation Measuring Setup



5 CONDUCTED EMISSION MEASUREMENT

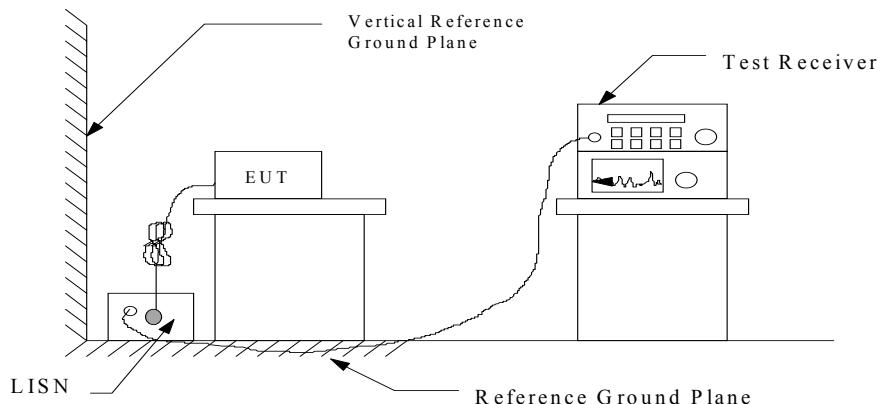
5.1 Standard Applicable

For unintentional and intentional device, Line Conducted Emission Limits are in accordance to §15.107(a) and §15.207(a) respectively. Both Limits are identical specification.

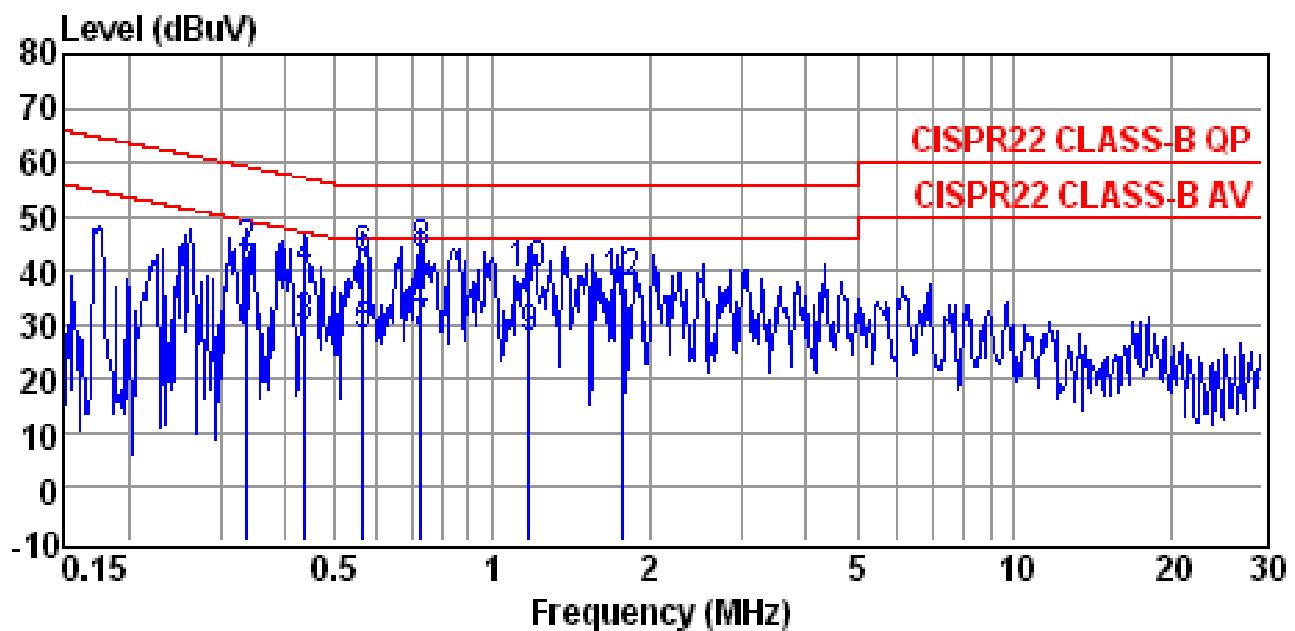
5.2 Measurement Procedure

1. Setup the configuration per figure 3.
2. A preliminary scan with a spectrum monitor is performed to identify the frequency of emission that has the highest amplitude relative to the limit by operating the EUT in selected modes of operation, typical cable positions, and with a typical system configuration.
3. Record the 6 or 8 highest emissions relative to the limit.
4. Measure each frequency obtained from step 3 by a test receiver set on quasi peak detector function, and then record the accuracy frequency and emission level. If all emissions measured in the specified band are attenuated more than 20 dB from the limit, this step would be ignored, and the peak detector function would be used.
5. Confirm the highest three emissions with variation of the EUT cable configuration and record the final data.
6. Repeat all above procedures on measuring each operation mode of EUT.

Figure 3 : Conducted emissions measurement configuration



5.3 Conducted Emission Data

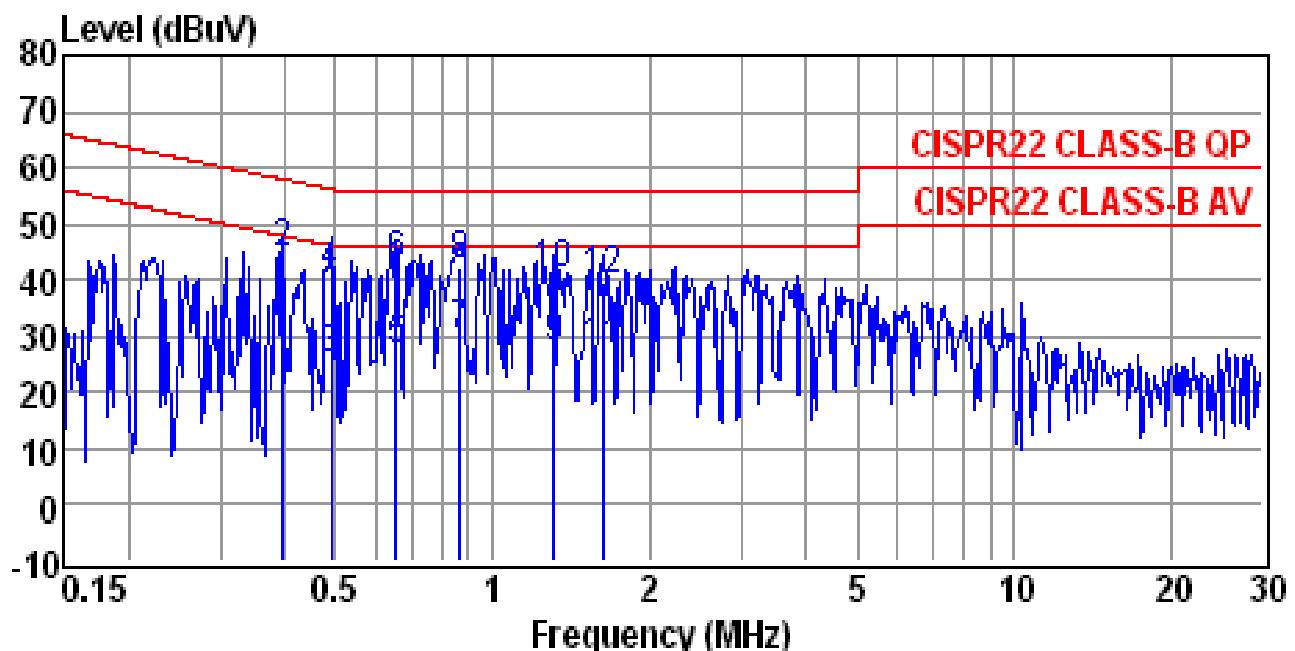


Site : conducted #1 Date : 10-14-2011
 Condition : CISPR22 CLASS-B QP LISN : NEUTRAL
 Tem / Hum : 25 °C / 65%
 Test Mode : CHARGE & CAMERA MODE
 EUT : TOUCH PAD PC Power Rating : 110-120V
 Memo : Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.3374	25.5	0.0	25.5	49.3	-23.8	Average
0.3374	42.7	0.0	42.7	59.3	-16.6	QP
0.4374	29.1	0.1	29.2	47.1	-17.9	Average
0.4374	39.4	0.1	39.5	57.1	-17.6	QP
0.5641	27.4	0.1	27.5	46.0	-18.5	Average
0.5641	41.4	0.1	41.5	56.0	-14.5	QP
0.7313	28.4	0.1	28.5	46.0	-17.5	Average
0.7313	42.5	0.1	42.6	56.0	-13.4	QP
1.1780	27.2	0.1	27.3	46.0	-18.7	Average
1.1780	39.1	0.1	39.2	56.0	-16.8	QP
1.7720	25.4	0.1	25.5	46.0	-20.5	Average
1.7720	37.1	0.1	37.2	56.0	-18.8	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss

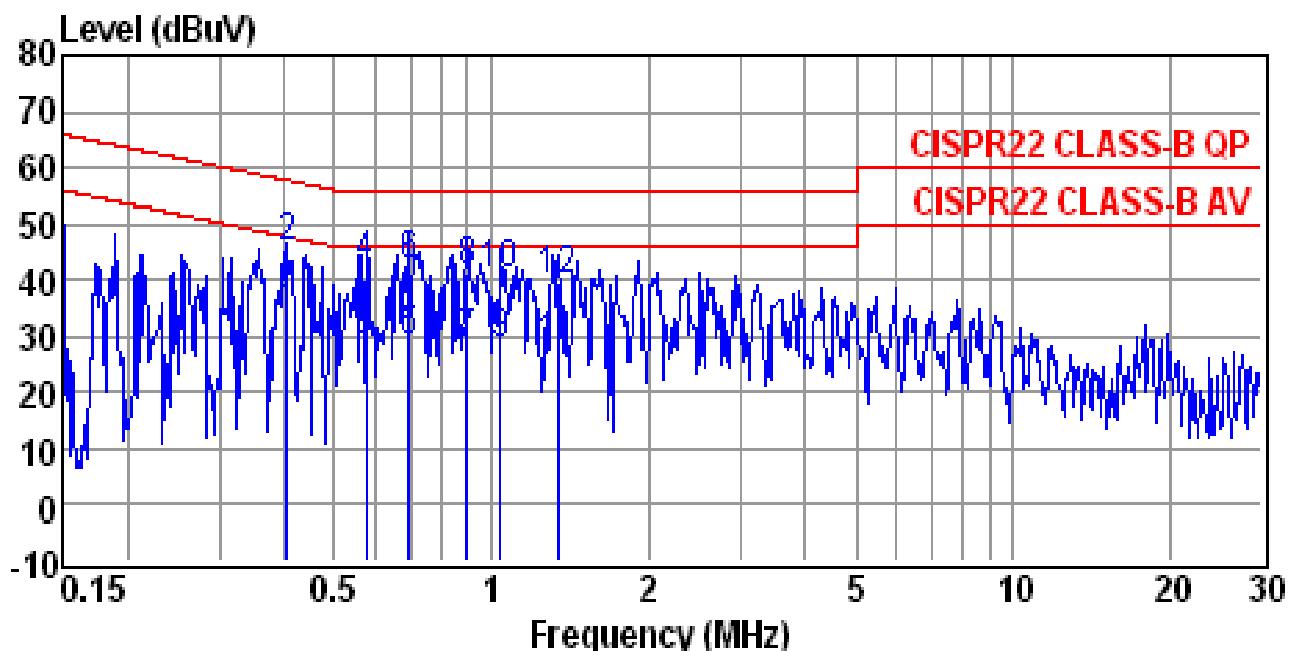


Site : conducted #1 Date : 10-14-2011
 Condition : CISPR22 CLASS-B QP LISN : LINE
 Tem / Hum : 25 °C / 65%
 Test Mode : CHARGE & CAMERA MODE
 EUT : TOUCH PAD PC Power Rating : 110-120V
 Memo : Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.3955	32.2	0.0	32.2	47.9	-15.7	Average
0.3955	44.3	0.0	44.3	57.9	-13.6	QP
0.4889	25.4	0.1	25.5	46.2	-20.7	Average
0.4889	40.3	0.1	40.4	56.2	-15.8	QP
0.6543	27.3	0.1	27.4	46.0	-18.6	Average
0.6543	42.2	0.1	42.3	56.0	-13.7	QP
0.8664	29.7	0.1	29.8	46.0	-16.2	Average
0.8664	42.3	0.1	42.4	56.0	-13.6	QP
1.3100	27.9	0.1	28.0	46.0	-18.0	Average
1.3100	40.5	0.1	40.6	56.0	-15.4	QP
1.6280	27.1	0.1	27.2	46.0	-18.8	Average
1.6280	39.6	0.1	39.7	56.0	-16.3	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss

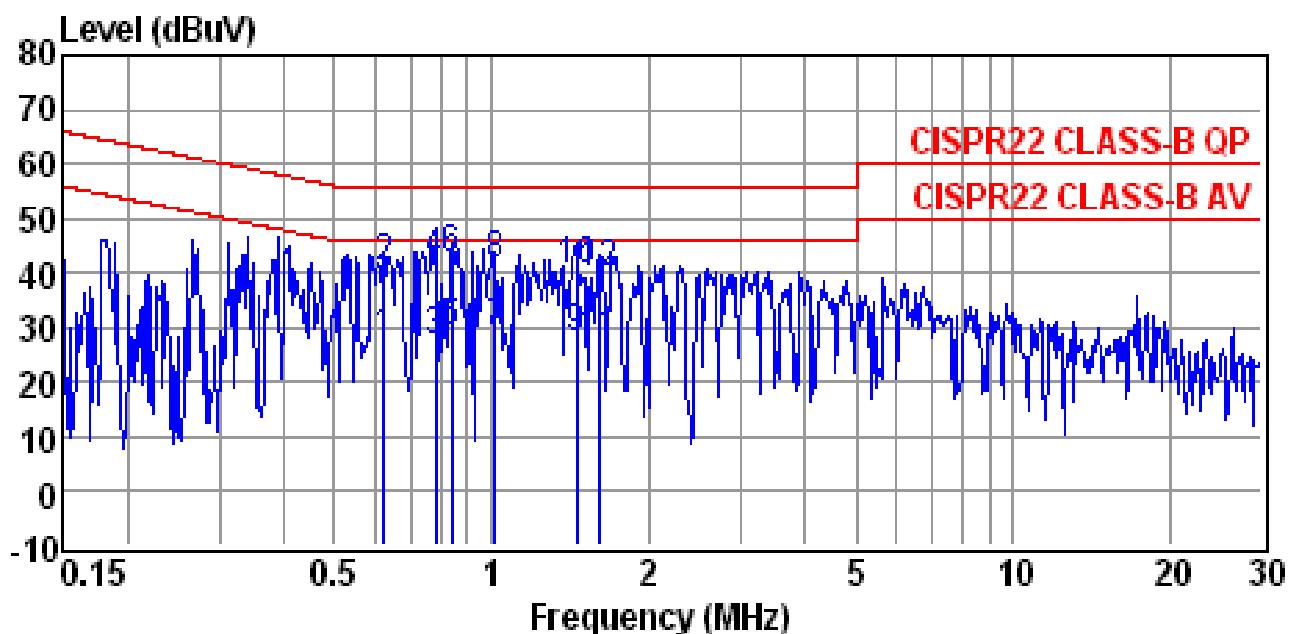


Site : conducted #1 Date : 10-14-2011
 Condition : CISPR22 CLASS-B QP LISN : NEUTRAL
 Tem / Hum : 25 °C / 65%
 Test Mode : CHARGE & RECORD MODE
 EUT : TOUCH PAD PC Power Rating : 110-120V
 Memo : Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.4062	33.3	0.1	33.4	47.7	-14.3	Average
0.4062	45.3	0.1	45.4	57.7	-12.3	QP
0.5731	29.0	0.1	29.1	46.0	-16.9	Average
0.5731	42.3	0.1	42.4	56.0	-13.6	QP
0.6936	28.8	0.1	28.9	46.0	-17.1	Average
0.6936	42.1	0.1	42.2	56.0	-13.8	QP
0.8992	28.3	0.1	28.4	46.0	-17.6	Average
0.8992	41.1	0.1	41.2	56.0	-14.8	QP
1.0370	28.3	0.1	28.4	46.0	-17.6	Average
1.0370	40.5	0.1	40.6	56.0	-15.4	QP
1.3450	27.7	0.1	27.8	46.0	-18.2	Average
1.3450	39.6	0.1	39.7	56.0	-16.3	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss

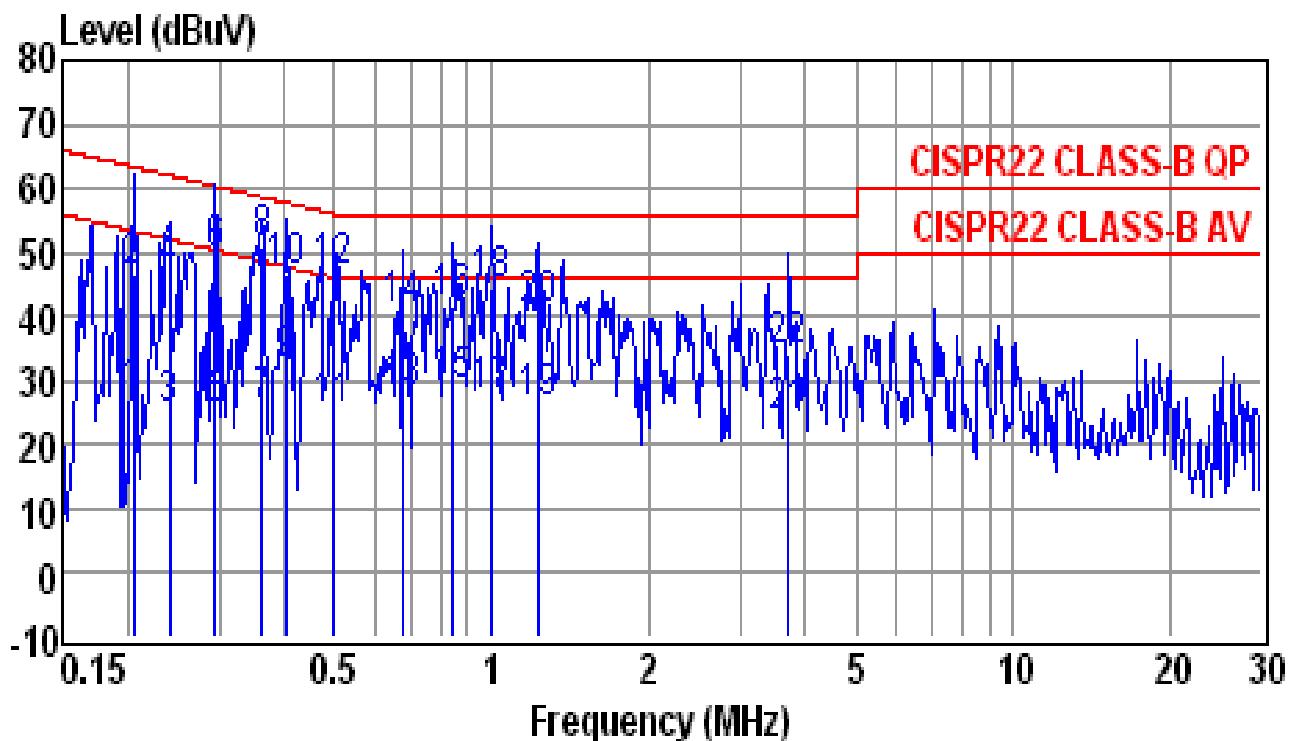


Site : conducted #1 Date : 10-14-2011
 Condition : CISPR22 CLASS-B QP LISN : LINE
 Tem / Hum : 25 °C / 65%
 Test Mode : CHARGE & RECORD MODE
 EUT : TOUCH PAD PC Power Rating : 110-120V
 Memo : Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.6238	27.2	0.1	27.3	46.0	-18.7	Average
0.6238	40.7	0.1	40.8	56.0	-15.2	QP
0.7793	27.2	0.1	27.3	46.0	-18.7	Average
0.7793	41.8	0.1	41.9	56.0	-14.1	QP
0.8393	28.7	0.1	28.8	46.0	-17.2	Average
0.8393	42.3	0.1	42.4	56.0	-13.6	QP
1.0160	28.5	0.1	28.6	46.0	-17.4	Average
1.0160	41.2	0.1	41.3	56.0	-14.7	QP
1.4560	27.4	0.1	27.5	46.0	-18.5	Average
1.4560	40.2	0.1	40.3	56.0	-15.7	QP
1.6020	27.2	0.1	27.3	46.0	-18.7	Average
1.6020	39.3	0.1	39.4	56.0	-16.6	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss



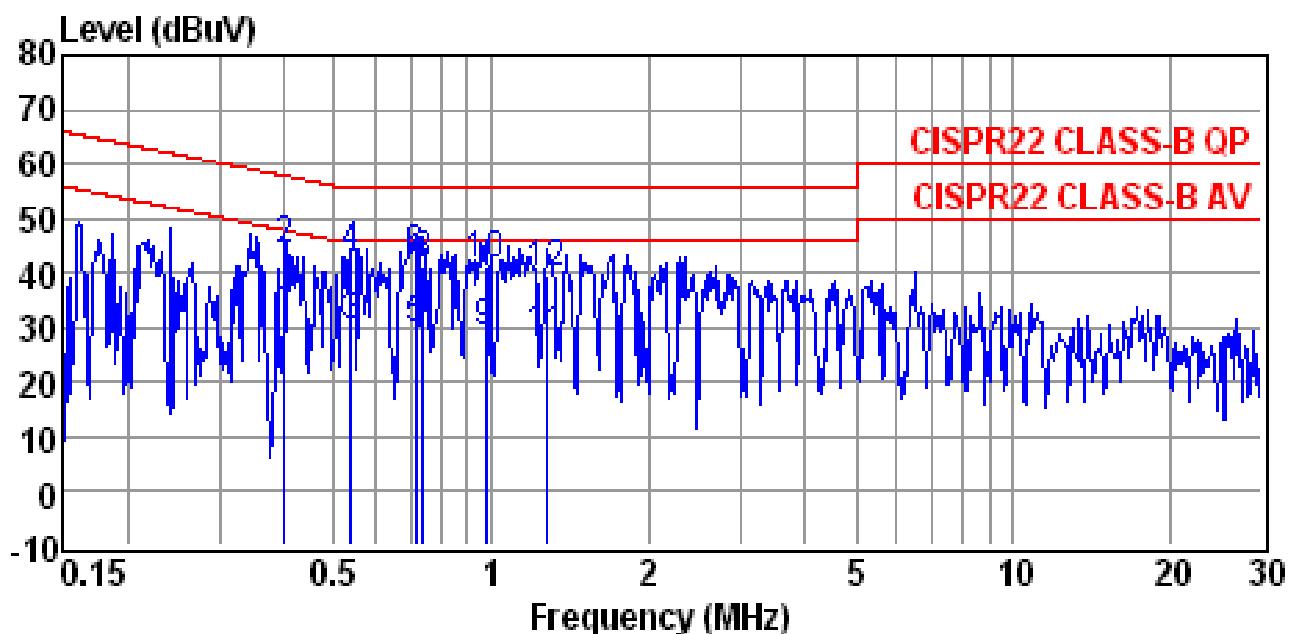
Site : conducted #1 Date : 10-14-2011
 Condition : CISPR22 CLASS-B QP LISN : NEUTRAL
 Tem / Hum : 25 °C / 65%
 Test Mode : CHARGE & VIDEO PLAY(EUT HARD) & HDMI OUT 1080P
 EUT : TOUCH PAD PC Power Rating : 110-120V
 Memo : Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.2051	27.1	0.0	27.1	53.4	-26.3	Average
0.2051	46.4	0.0	46.4	63.4	-17.0	QP
0.2404	25.2	0.0	25.2	52.1	-26.9	Average
0.2404	46.7	0.0	46.7	62.1	-15.4	QP
0.2956	25.0	0.0	25.0	50.4	-25.4	Average
0.2956	49.5	0.0	49.5	60.4	-10.9	QP
0.3634	25.6	0.0	25.6	48.7	-23.1	Average
0.3634	50.8	0.0	50.8	58.7	-7.9	QP
0.4019	32.1	0.1	32.2	47.8	-15.6	Average
0.4019	46.4	0.1	46.5	57.8	-11.3	QP

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.4994	24.8	0.1	24.9	46.0	-21.1	Average
0.4994	46.4	0.1	46.5	56.0	-9.5	QP
0.6754	27.9	0.1	28.0	46.0	-18.0	Average
0.6754	40.6	0.1	40.7	56.0	-15.3	QP
0.8438	28.9	0.1	29.0	46.0	-17.0	Average
0.8438	41.5	0.1	41.6	56.0	-14.4	QP
0.9997	27.3	0.1	27.4	46.0	-18.6	Average
0.9997	44.2	0.1	44.3	56.0	-11.7	QP
1.2290	26.1	0.1	26.2	46.0	-19.8	Average
1.2290	40.7	0.1	40.8	56.0	-15.2	QP
3.7200	23.6	0.3	23.9	46.0	-22.1	Average
3.7200	34.1	0.3	34.4	56.0	-21.6	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss

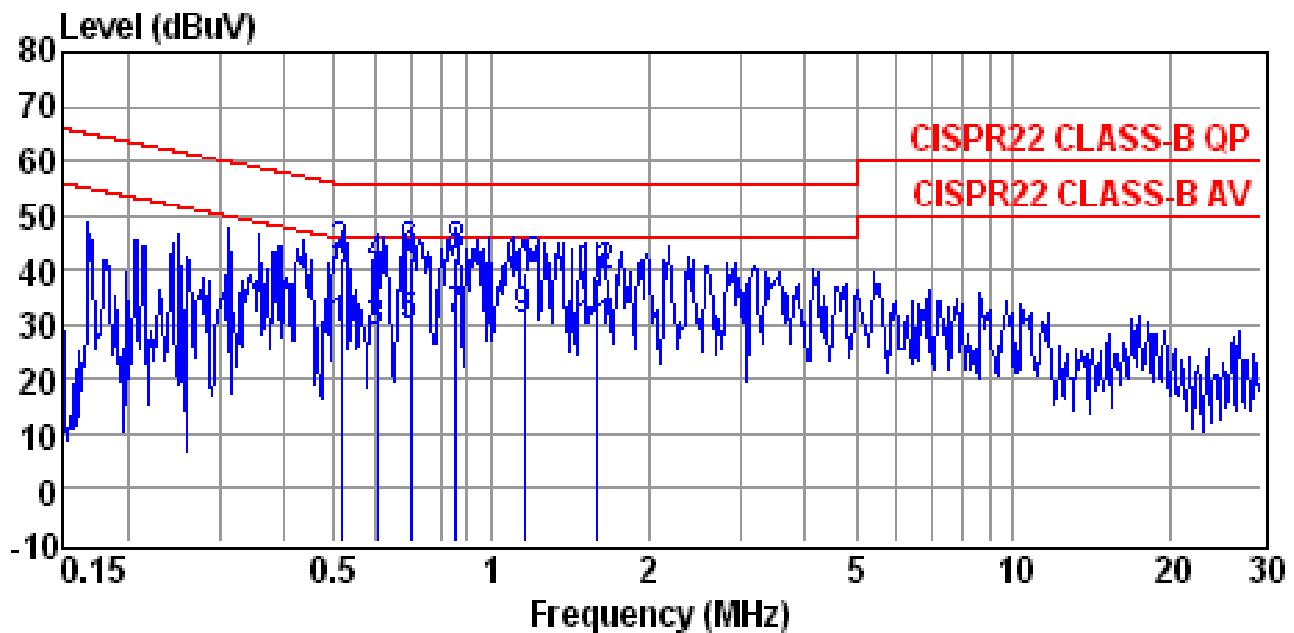


Site : conducted #1 Date : 10-14-2011
 Condition : CISPR22 CLASS-B QP LISN : LINE
 Tem / Hum : 25 °C / 65%
 Test Mode : CHARGE & VIDEO PLAY(EUT HARD) & HDMI OUT 1080P
 EUT : TOUCH PAD PC Power Rating : 110-120V
 Memo : Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.3997	31.2	0.1	31.3	47.9	-16.6	Average
0.3997	43.6	0.1	43.7	57.9	-14.2	QP
0.5378	29.7	0.1	29.8	46.0	-16.2	Average
0.5378	42.5	0.1	42.6	56.0	-13.4	QP
0.7160	29.2	0.1	29.3	46.0	-16.7	Average
0.7160	42.2	0.1	42.3	56.0	-13.7	QP
0.7391	28.4	0.1	28.5	46.0	-17.5	Average
0.7391	41.1	0.1	41.2	56.0	-14.8	QP
0.9735	28.7	0.1	28.8	46.0	-17.2	Average
0.9735	41.1	0.1	41.2	56.0	-14.8	QP
1.2820	27.8	0.1	27.9	46.0	-18.1	Average
1.2820	39.7	0.1	39.8	56.0	-16.2	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss

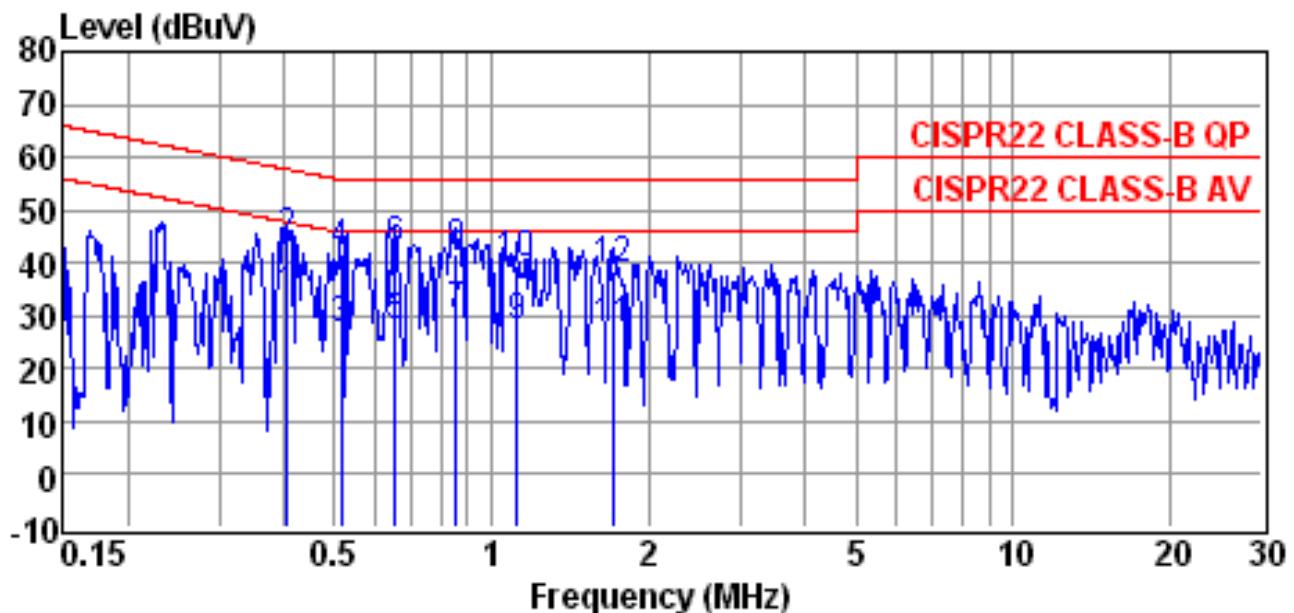


Site : conducted #1 Date : 10-14-2011
 Condition : CISPR22 CLASS-B QP LISN : NEUTRAL
 Tem / Hum : 25 °C / 65%
 Test Mode : CHARGE & VIDEO PLAY (SD CARD) & HDMI OUT 1080P
 EUT : TOUCH PAD PC Power Rating : 110-120V
 Memo : Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.5155	28.8	0.1	28.9	46.0	-17.1	Average
0.5155	42.4	0.1	42.5	56.0	-13.5	QP
0.6043	28.0	0.1	28.1	46.0	-17.9	Average
0.6043	40.2	0.1	40.3	56.0	-15.7	QP
0.6973	29.5	0.1	29.6	46.0	-16.4	Average
0.6973	42.3	0.1	42.4	56.0	-13.6	QP
0.8528	30.3	0.1	30.4	46.0	-15.6	Average
0.8528	42.3	0.1	42.4	56.0	-13.6	QP
1.1530	30.3	0.1	30.4	46.0	-15.6	Average
1.1530	39.7	0.1	39.8	56.0	-16.2	QP
1.5850	28.0	0.1	28.1	46.0	-17.9	Average
1.5850	38.6	0.1	38.7	56.0	-17.3	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss

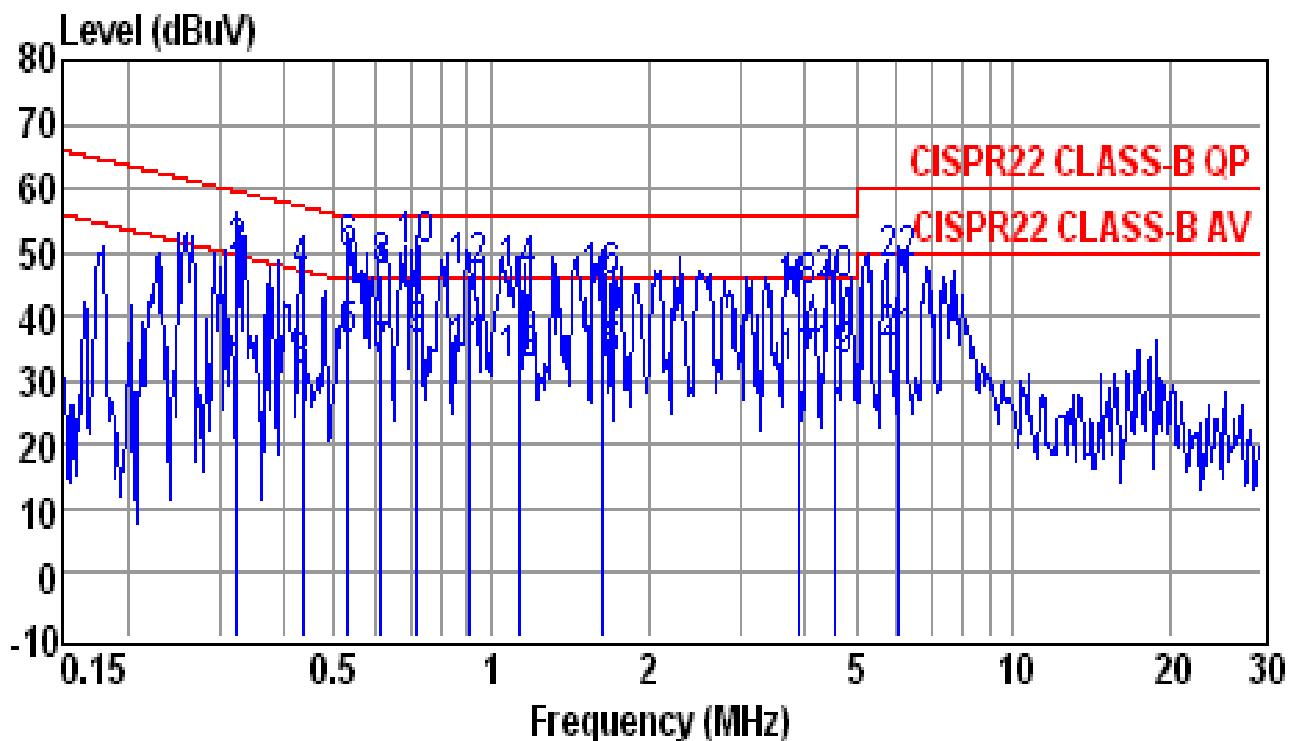


Site : conducted #1 Date : 10-14-2011
 Condition : CISPR22 CLASS-B QP LISN : LINE
 Tem / Hum : 25 °C / 65%
 Test Mode : CHARGE & VIDEO PLAY (SD CARD) & HDMI OUT 1080P
 EUT : TOUCH PAD PC Power Rating : 110-120V
 Memo : Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.4062	33.0	0.1	33.1	47.7	-14.6	Average
0.4062	43.6	0.1	43.7	57.7	-14.0	QP
0.5155	26.9	0.1	27.0	46.0	-19.0	Average
0.5155	41.6	0.1	41.7	56.0	-14.3	QP
0.6543	27.8	0.1	27.9	46.0	-18.1	Average
0.6543	42.0	0.1	42.1	56.0	-13.9	QP
0.8528	30.0	0.1	30.1	46.0	-15.9	Average
0.8528	41.6	0.1	41.7	56.0	-14.3	QP
1.1170	27.5	0.1	27.6	46.0	-18.4	Average
1.1170	39.7	0.1	39.8	56.0	-16.2	QP
1.7070	26.8	0.1	26.9	46.0	-19.1	Average
1.7070	38.3	0.1	38.4	56.0	-17.6	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss



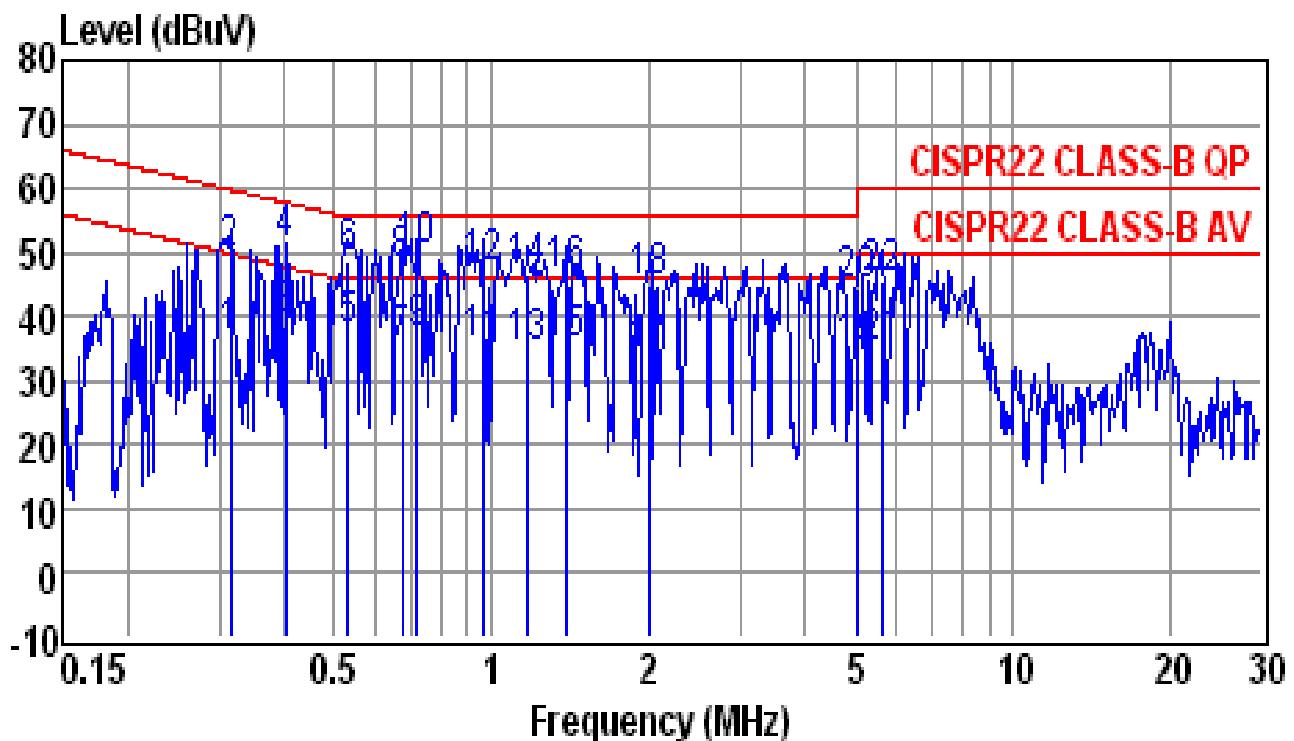
Site : conducted #1 Date : 10-14-2011
 Condition : CISPR22 CLASS-B QP LISN : NEUTRAL
 Tem / Hum : 25 °C / 65%
 Test Mode : CHARGE & USB R/W MODE
 EUT : TOUCH PAD PC Power Rating : 110-120V
 Memo : Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.3251	29.8	0.0	29.8	49.6	-19.8	Average
0.3251	48.9	0.0	48.9	59.6	-10.7	QP
0.4328	30.9	0.1	31.0	47.2	-16.2	Average
0.4328	46.0	0.1	46.1	57.2	-11.1	QP
0.5322	35.6	0.1	35.7	46.0	-10.3	Average
0.5322	49.2	0.1	49.3	56.0	-6.7	QP
0.6140	32.7	0.1	32.8	46.0	-13.2	Average
0.6140	46.4	0.1	46.5	56.0	-9.5	QP
0.7198	35.7	0.1	35.8	46.0	-10.2	Average
0.7198	49.5	0.1	49.6	56.0	-6.4	QP

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.9087	33.8	0.1	33.9	46.0	-12.1	Average
0.9087	46.5	0.1	46.6	56.0	-9.4	QP
1.1350	32.1	0.1	32.2	46.0	-13.8	Average
1.1350	46.0	0.1	46.1	56.0	-9.9	QP
1.6360	32.3	0.1	32.4	46.0	-13.6	Average
1.6360	44.9	0.1	45.0	56.0	-11.0	QP
3.8810	31.0	0.3	31.3	46.0	-14.7	Average
3.8810	42.8	0.3	43.1	56.0	-12.9	QP
4.5490	32.2	0.3	32.5	46.0	-13.5	Average
4.5490	43.9	0.3	44.2	56.0	-11.8	QP
6.0560	34.9	0.3	35.2	50.0	-14.8	Average
6.0560	47.5	0.3	47.8	60.0	-12.2	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss



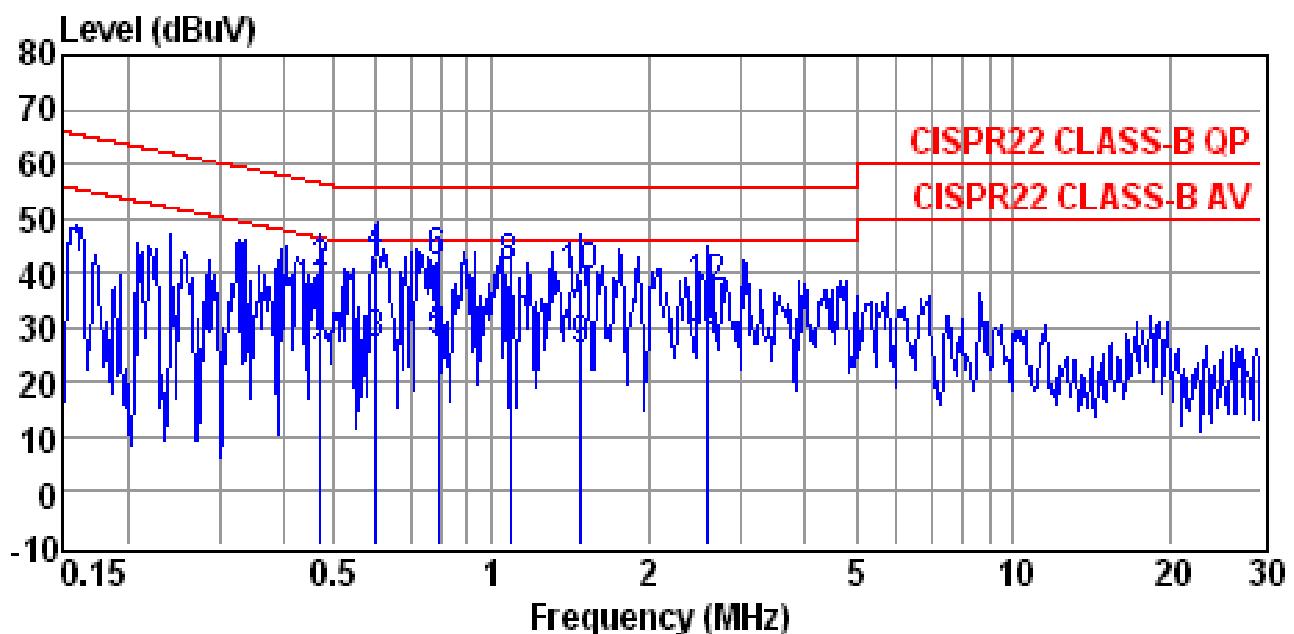
Site : conducted #1 Date : 10-14-2011
 Condition : CISPR22 CLASS-B QP LISN : LINE
 Tem / Hum : 25 °C / 65%
 Test Mode : CHARGE & USB R/W MODE
 EUT : TOUCH PAD PC Power Rating : 110-120V
 Memo : Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.3150	36.3	0.0	36.3	49.8	-13.5	Average
0.3150	49.4	0.0	49.4	59.8	-10.4	QP
0.4019	38.9	0.1	39.0	47.8	-8.8	Average
0.4019	50.9	0.1	51.0	57.8	-6.8	QP
0.5293	37.1	0.1	37.2	46.0	-8.8	Average
0.5293	48.9	0.1	49.0	56.0	-7.0	QP
0.6719	35.1	0.1	35.2	46.0	-10.8	Average
0.6719	47.6	0.1	47.7	56.0	-8.3	QP
0.7198	36.5	0.1	36.6	46.0	-9.4	Average
0.7198	49.7	0.1	49.8	56.0	-6.2	QP
0.9684	35.4	0.1	35.5	46.0	-10.5	Average
0.9684	47.2	0.1	47.3	56.0	-8.7	QP

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
1.1720	34.7	0.1	34.8	46.0	-11.2	Average
1.1720	46.6	0.1	46.7	56.0	-9.3	QP
1.3960	35.0	0.1	35.1	46.0	-10.9	Average
1.3960	46.1	0.1	46.2	56.0	-9.8	QP
2.0120	33.3	0.2	33.5	46.0	-12.5	Average
2.0120	44.7	0.2	44.9	56.0	-11.1	QP
5.0310	34.0	0.3	34.3	50.0	-15.7	Average
5.0310	44.2	0.3	44.5	60.0	-15.5	QP
5.5940	34.7	0.3	35.0	50.0	-15.0	Average
5.5940	45.1	0.3	45.4	60.0	-14.6	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss

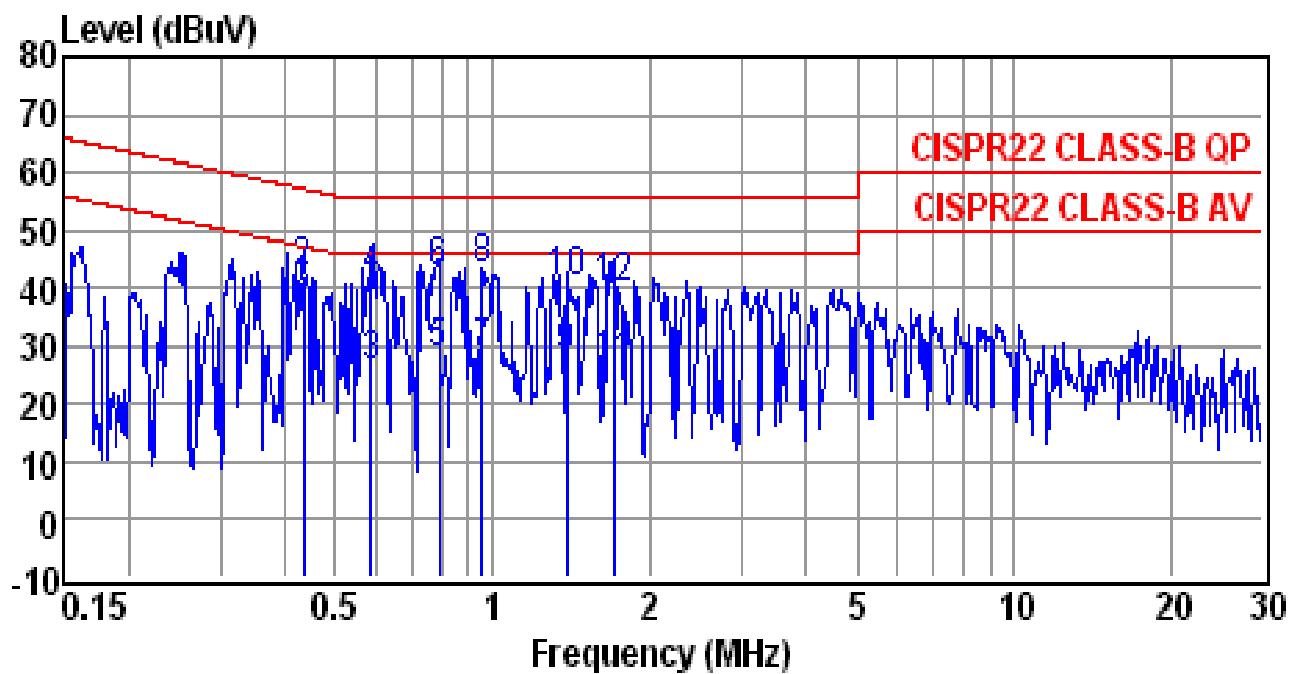


Site : conducted #1 Date : 10-14-2011
 Condition : CISPR22 CLASS-B QP LISN : NEUTRAL
 Tem / Hum : 25 °C / 65%
 Test Mode : CHARGE & 802.11N MODE
 EUT : TOUCH PAD PC Power Rating : 110-120V
 Memo : Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.4686	23.0	0.1	23.1	46.5	-23.4	Average
0.4686	39.6	0.1	39.7	56.5	-16.8	QP
0.6011	26.5	0.1	26.6	46.0	-19.4	Average
0.6011	42.5	0.1	42.6	56.0	-13.4	QP
0.7876	26.8	0.1	26.9	46.0	-19.1	Average
0.7876	41.7	0.1	41.8	56.0	-14.2	QP
1.0820	27.6	0.1	27.7	46.0	-18.3	Average
1.0820	40.7	0.1	40.8	56.0	-15.2	QP
1.4800	25.4	0.1	25.5	46.0	-20.5	Average
1.4800	38.9	0.1	39.0	56.0	-17.0	QP
2.5940	25.6	0.2	25.8	46.0	-20.2	Average
2.5940	36.6	0.2	36.8	56.0	-19.2	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss



Site : conducted #1 Date : 10-14-2011
 Condition : CISPR22 CLASS-B QP LISN : LINE
 Tem / Hum : 25 °C / 65%
 Test Mode : CHARGE & 802.11N MODE
 EUT : TOUCH PAD PC Power Rating : 110-120V
 Memo : Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.4328	34.1	0.1	34.2	47.2	-13.0	Average
0.4328	42.4	0.1	42.5	57.2	-14.7	QP
0.5854	25.8	0.1	25.9	46.0	-20.1	Average
0.5854	41.3	0.1	41.4	56.0	-14.6	QP
0.7876	28.2	0.1	28.3	46.0	-17.7	Average
0.7876	42.2	0.1	42.3	56.0	-13.7	QP
0.9531	28.3	0.1	28.4	46.0	-17.6	Average
0.9531	42.5	0.1	42.6	56.0	-13.4	QP
1.3880	27.5	0.1	27.6	46.0	-18.4	Average
1.3880	40.7	0.1	40.8	56.0	-15.2	QP
1.7070	26.1	0.1	26.2	46.0	-19.8	Average
1.7070	39.5	0.1	39.6	56.0	-16.4	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss

5.4 Result Data Calculation

The result data is calculated by adding the LISN Factor to the measured reading. The basic equation with a sample calculation is as follows:

$$\text{RESULT} = \text{READING} + \text{LISN FACTOR}$$

Assume a receiver reading of 22.5 dB μ V is obtained, and LISN Factor is 0.1 dB, then the total of disturbance voltage is 22.6 dB μ V.

$$\text{RESULT} = 22.5 + 0.1 = 22.6 \text{ dB } \mu \text{ V}$$

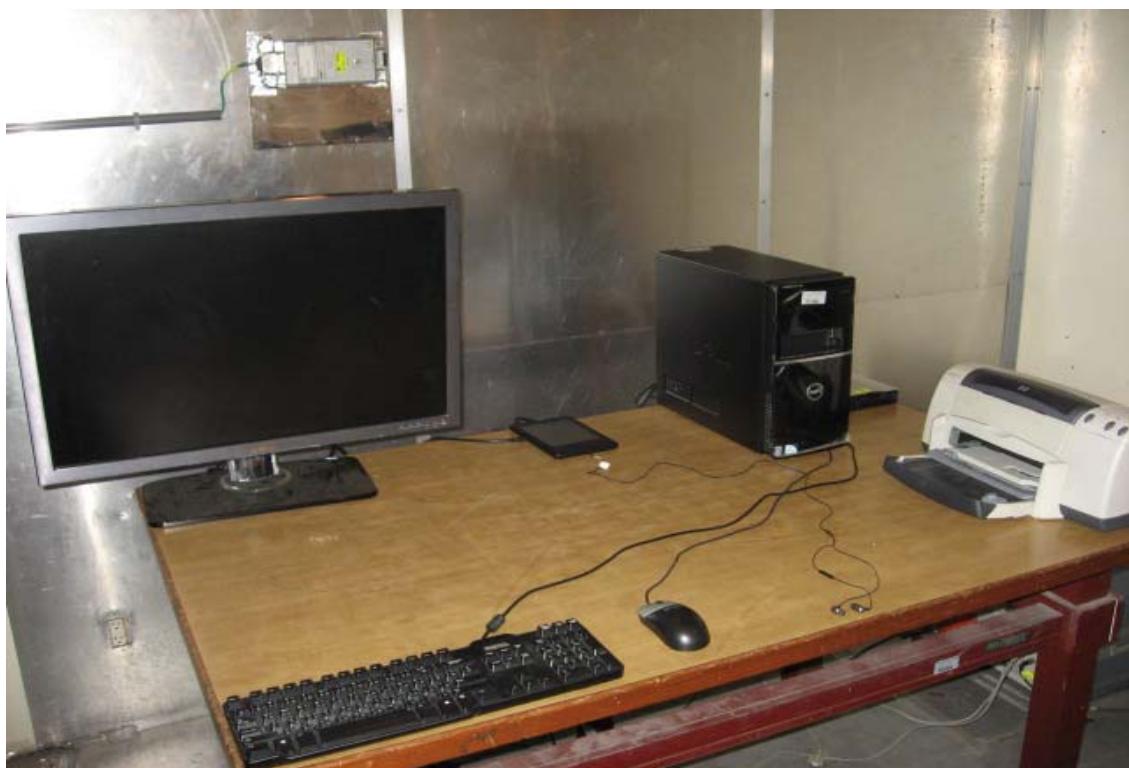
$$\begin{aligned} \text{Level in } \mu \text{ V} &= \text{Common Antilogarithm}[(22.6 \text{ dB } \mu \text{ V})/20] \\ &= 13.48 \text{ } \mu \text{ V} \end{aligned}$$

5.5 Conducted Measurement Equipment

The following test equipment are used during the conducted test .

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	ESCI	2011/05/09	2012/05/07
LISN	EMCO	3625/2	2011/03/01	2012/02/28
LISN	Rohde & Schwarz	ESH2-Z5	2011/08/24	2012/08/22

5.6 Photos of Conduction Measuring Setup



6 ANTENNA REQUIREMENT

6.1 Standard Applicable

For intentional device, according to §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 §15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

6.2 Antenna Construction and Directional Gain

Please see photos submitted in Exhibit B.

The antenna was integrated on the PCB. The antenna gain is less than 6dBi. No need to reduce the peak output power.

7 EMISSION BANDWIDTH MEASUREMENT

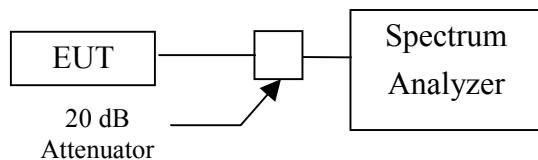
7.1 Standard Applicable

According to 15.247(a)(2), for direct sequence system, the minimum 6dB bandwidth shall be at least 500 kHz.

7.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in figure 4 without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

Figure 4: Emission bandwidth measurement configuration.



7.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Spectrum Analyzer	Rohde & Schwarz	FSP40	2011/09/21	2012/09/19

7.4 Measurement Data

Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

A 802.11b@1 MHz (Worst Case)

- a) Channel Low: 6 dB Emission Bandwidth is 10.2 MHz
- b) Channel Mid: 6 dB Emission Bandwidth is 10.0 MHz
- c) Channel High: 6 dB Emission Bandwidth is 10.2 MHz

B 802.11g@6 MHz (Worst Case)

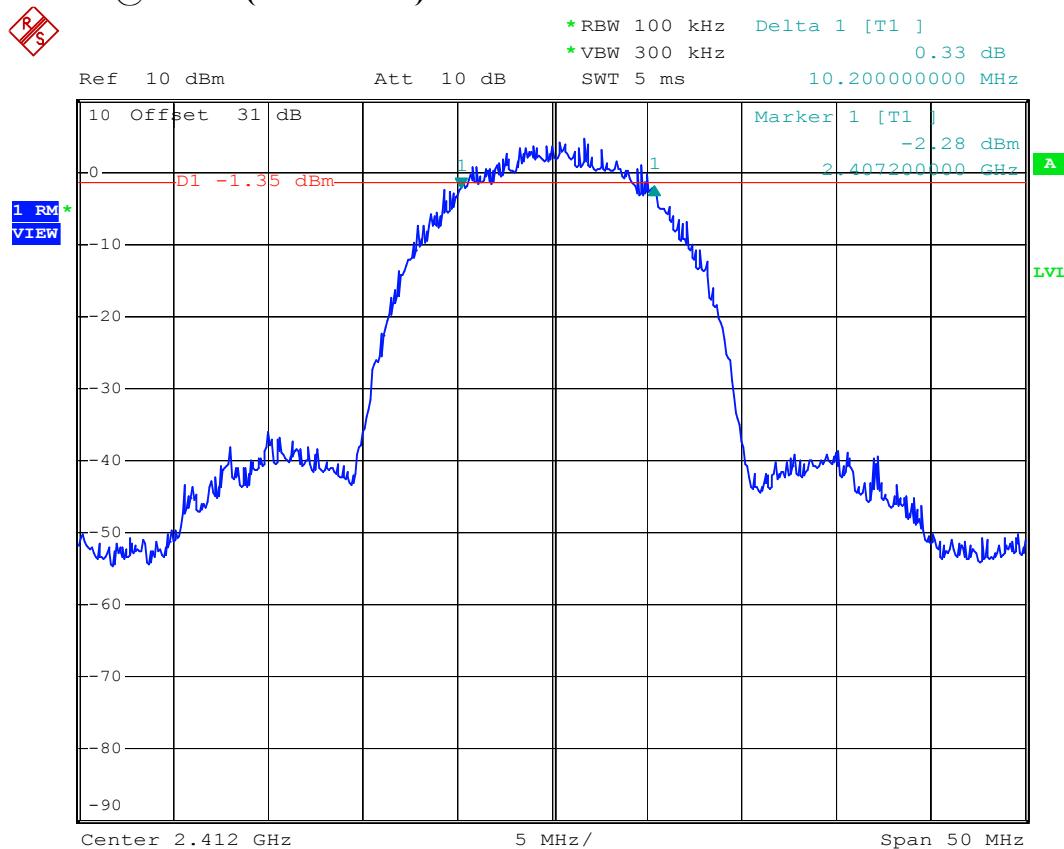
- a) Channel Low: 6 dB Emission Bandwidth is 16.2 MHz
- b) Channel Mid: 6 dB Emission Bandwidth is 16.4 MHz
- c) Channel High: 6 dB Emission Bandwidth is 16.3 MHz

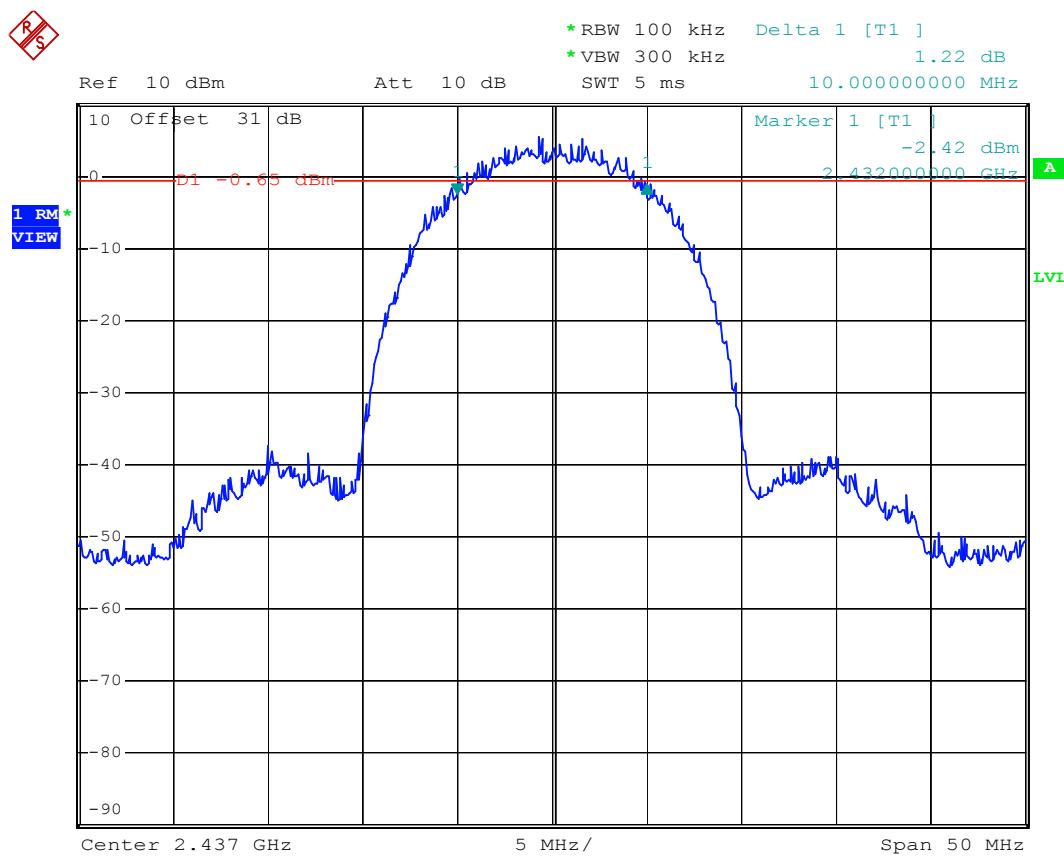
C 802.11n HT-20@MCS0 (Worst Case)

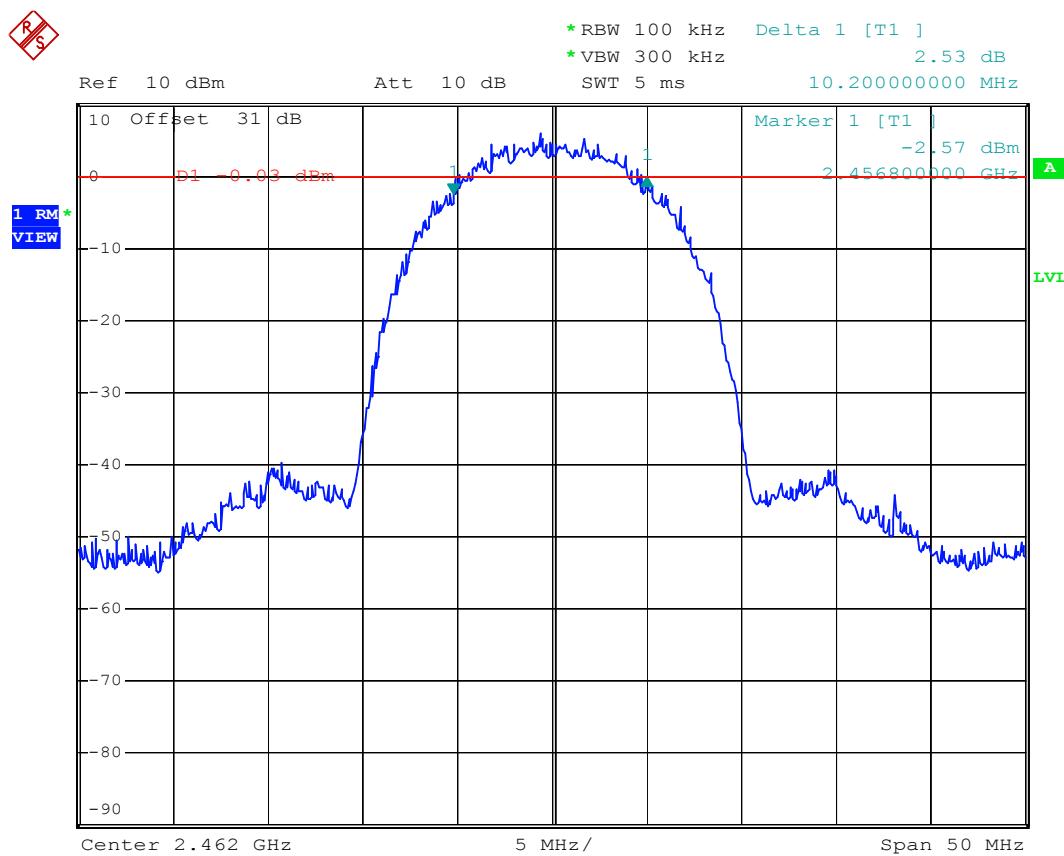
- a) Channel Low: 6 dB Emission Bandwidth is 17.8 MHz
- b) Channel Mid: 6 dB Emission Bandwidth is 17.7 MHz
- c) Channel High: 6 dB Emission Bandwidth is 17.2 MHz

Note : The expanded uncertainty of the emission bandwidth tests is 1500Hz.

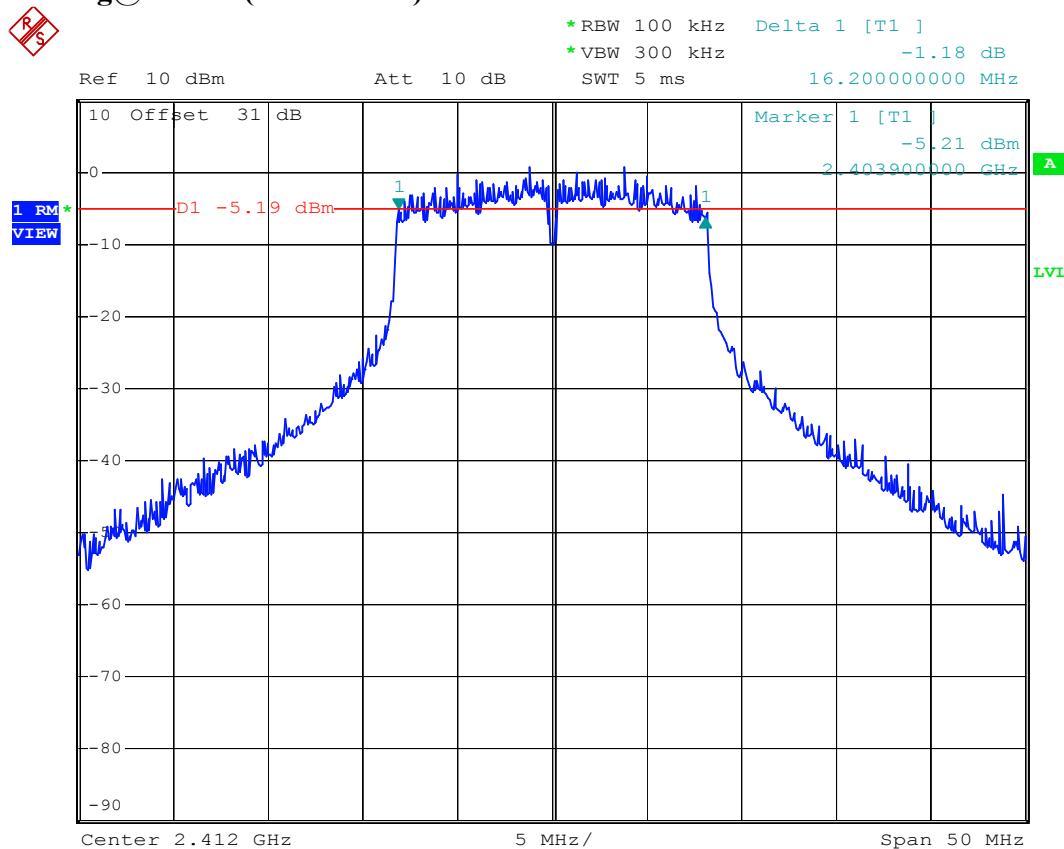
802.11b@1 MHz (Worst Case)

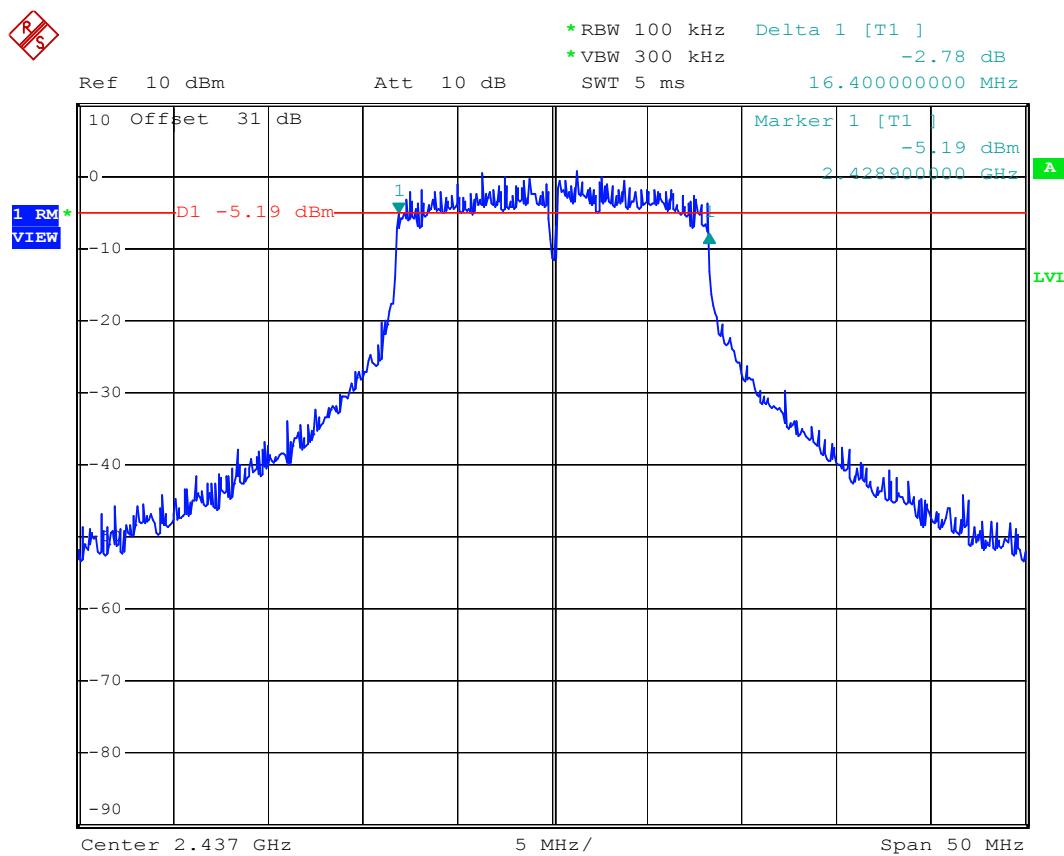


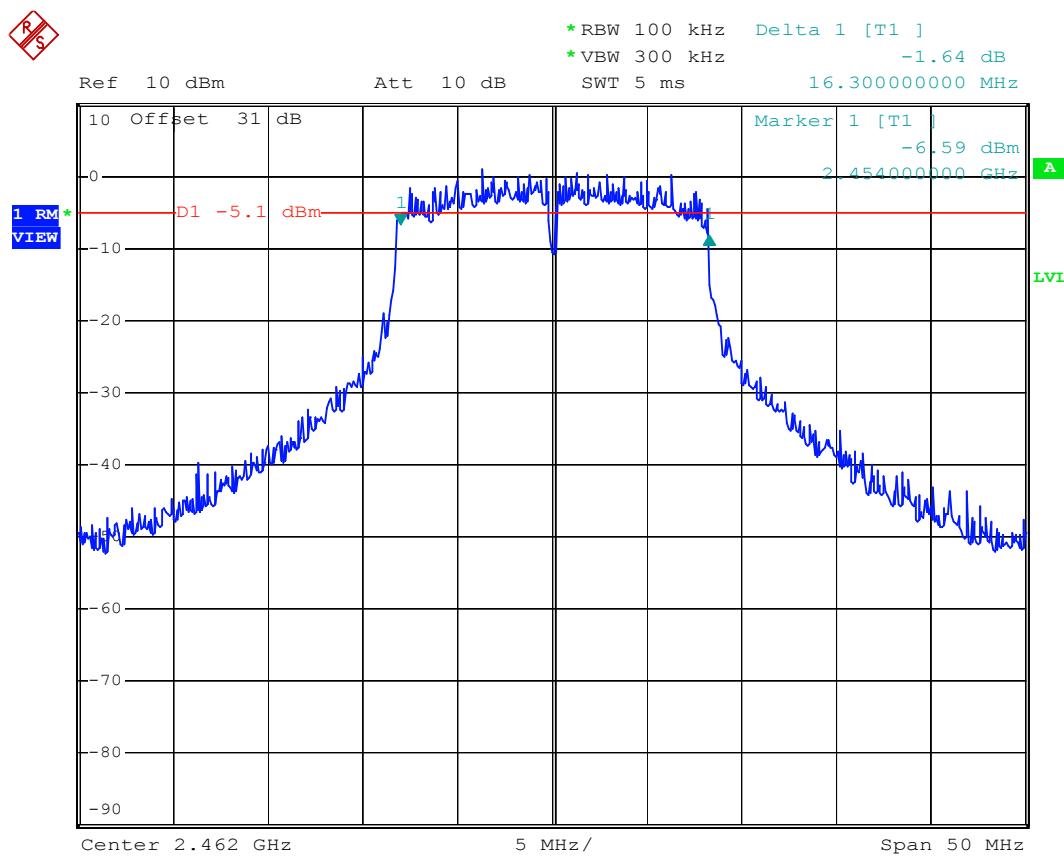




802.11g@6 MHz (Worst Case)

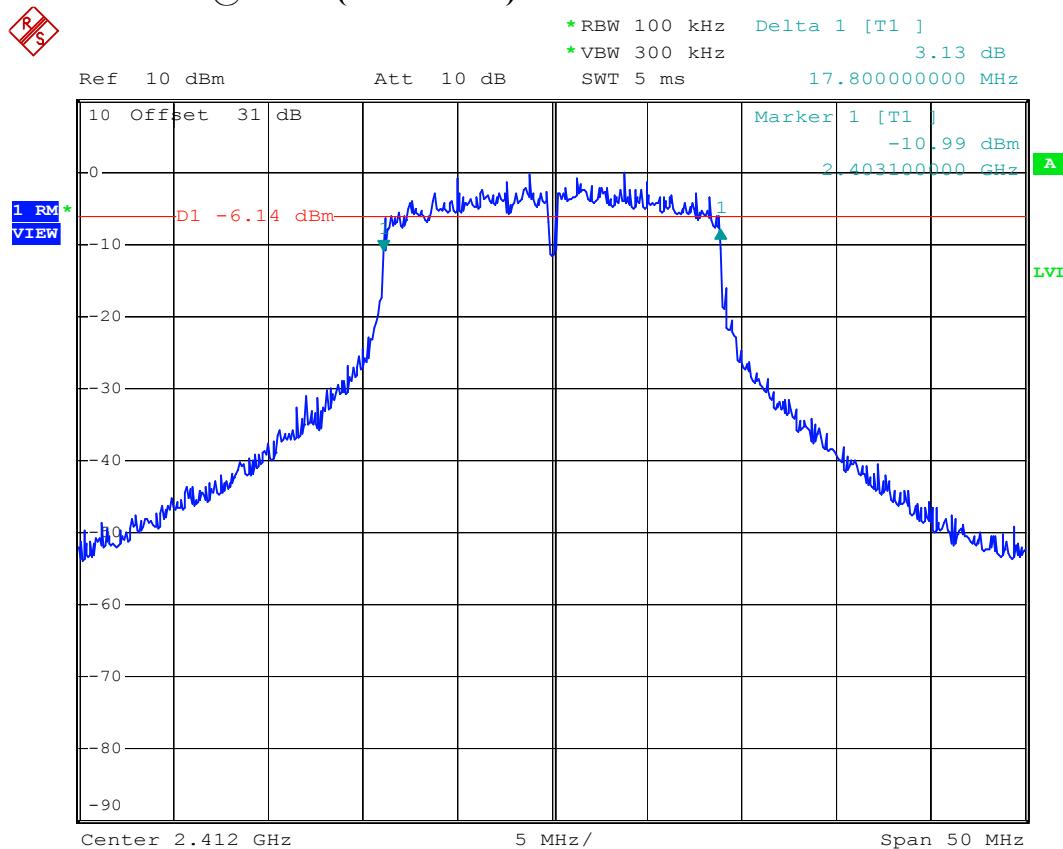


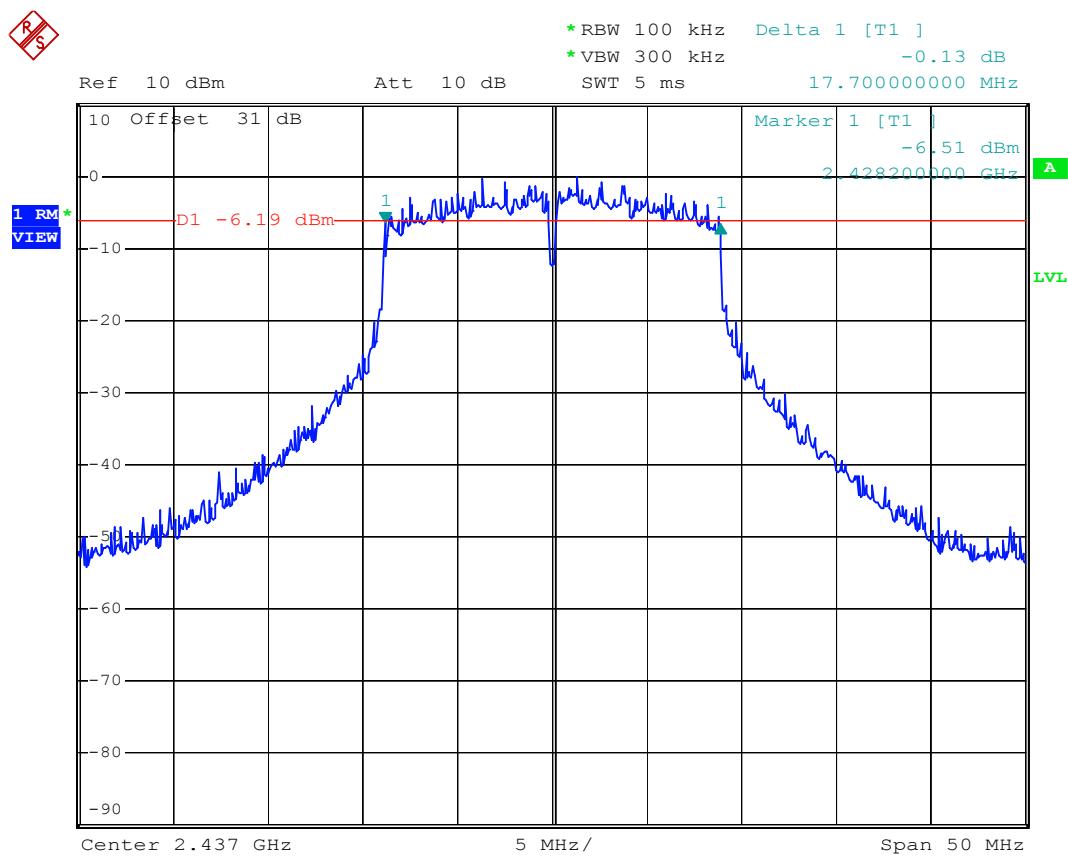




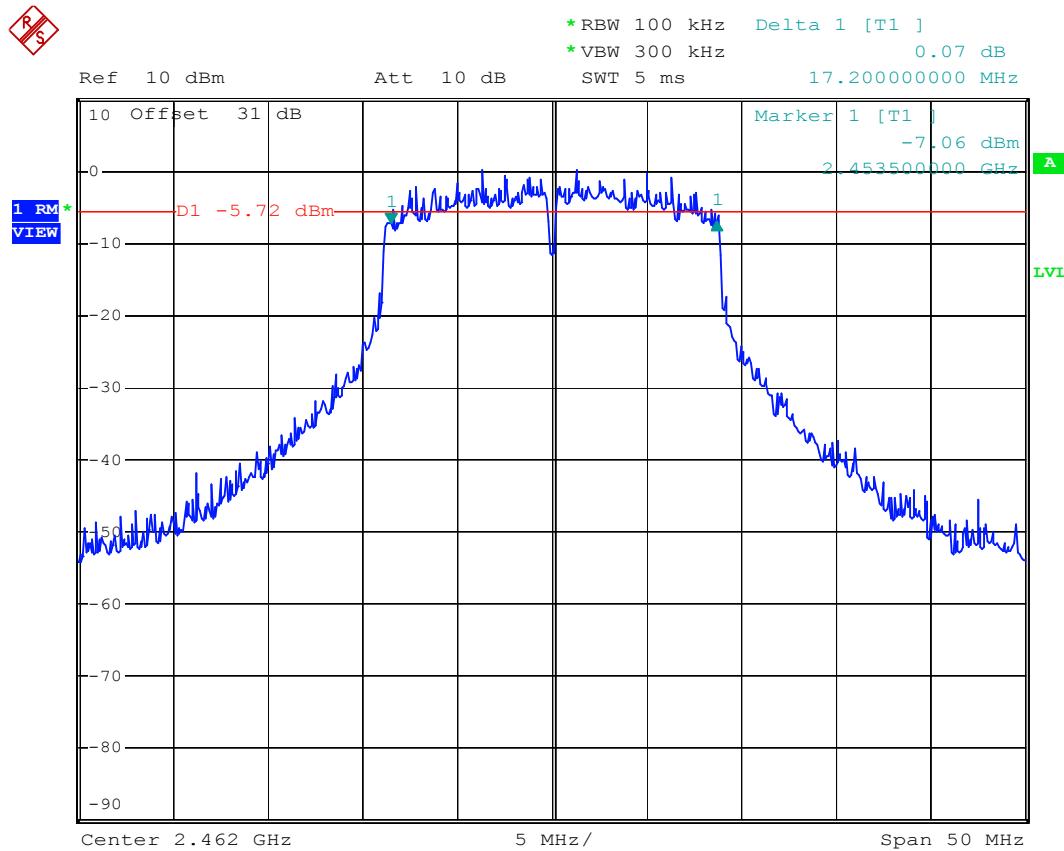
802.11n HT-20@MCS0 (Worst Case)

RS





RS



8 OUTPUT POWER MEASUREMENT

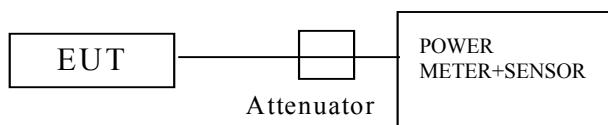
8.1 Standard Applicable

For direct sequence system, according to 15.247(b), the maximum peak output power of the transmitter shall not exceed 1 Watt. If transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in figure 5 without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable.
3. Record the level displayed.
4. Repeat above procedures until all frequencies measured were complete.

Figure 5: Output power and measurement configuration.



8.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
POWER METER+SENSOR	ANRITSU	ML2487A+MA2491A	2010/12/22	2011/12/21

8.4 Measurement Data

Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %
A 802.11b@1 MHz (Worst Case)

- a) Channel Low: Output Peak Power is 12.20 dBm **16.596** mW
- b) Channel Mid: Output Peak Power is 12.33 dBm **17.100** mW
- c) Channel High: Output Peak Power is 12.84 dBm **19.231** mW

Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

B 802.11g@6 MHz (Worst Case)

- a) Channel Low: Output Peak Power is 10.51 dBm **11.246** mW
- b) Channel Mid: Output Peak Power is 10.9 dBm **12.303** mW
- c) Channel High: Output Peak Power is 11.31 dBm **13.521** mW

C 802.11n HT-20@MCS0 (Worst Case)

- a) Channel Low: Output Peak Power is 9.4 dBm **8.710** mW
- b) Channel Mid: Output Peak Power is 10.21 dBm **10.495** mW
- c) Channel High: Output Peak Power is 10.01 dBm **10.023** mW

Note : The expanded uncertainty of the output power tests is 2dB.

9 100 kHz BANDWIDTH OF BAND EDGES MEASUREMENT

9.1 Standard Applicable

According to 15.247(c), if any 100 kHz bandwidth outside these frequency bands, the radio frequency power that is produced by the modulation products of the spreading sequence, the information sequence and the carrier frequency shall be either at least 20 dB below that in any 100 kHz bandwidth within the band that contains the highest level of the desired power or shall not exceed the general levels specified in §15.209(a), whichever results in the lesser attenuation.

9.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in figure 5 without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Set both RBW of spectrum analyzer to 100kHz and VBW to 1 MHz with a convenient frequency span including 100kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

9.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Spectrum Analyzer	Rohde & Schwarz	FSP40	2011/09/21	2012/09/19

9.4 Measurement Data

Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

A 802.11b@1 MHz (Worst Case)

- a) Lower Band Edge : All emissions in this 100kHz bandwidth are attenuated more than 20dB from the carrier.
- b) Upper Band Edge : All emissions in this 100kHz bandwidth are attenuated more than 20dB from the carrier.

Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

B 802.11g@6 MHz (Worst Case)

- a) Lower Band Edge : All emissions in this 100kHz bandwidth are attenuated more than 20dB from the carrier.
- b) Upper Band Edge : All emissions in this 100kHz bandwidth are attenuated more than 20dB from the carrier.

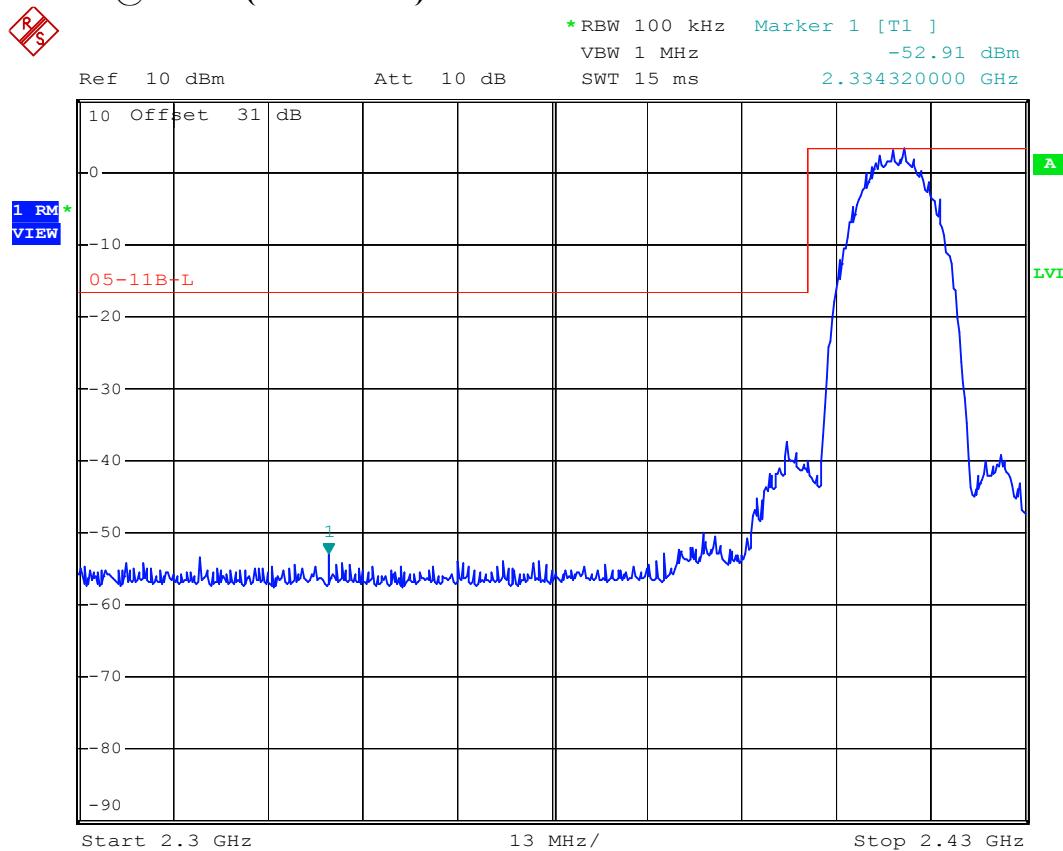
C 802.11n HT-20@MCS0 (Worst Case)

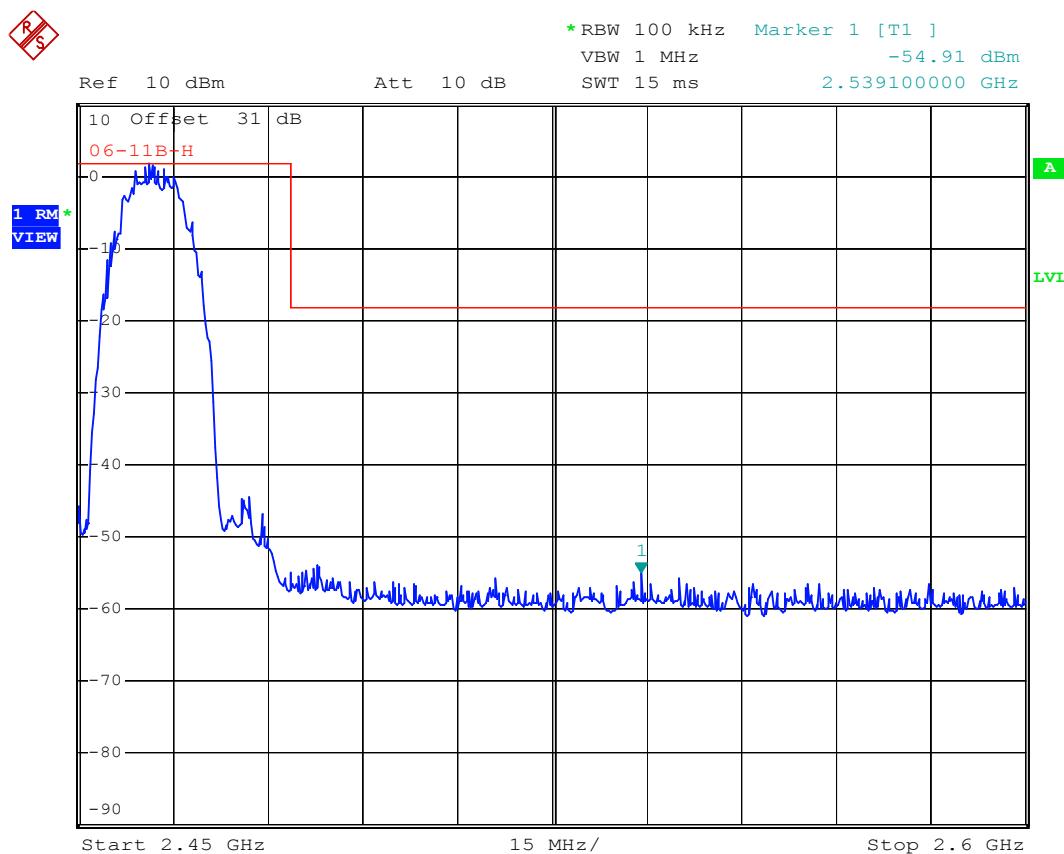
- a) Lower Band Edge : All emissions in this 100kHz bandwidth are attenuated more than 20dB from the carrier.
- b) Upper Band Edge : All emissions in this 100kHz bandwidth are attenuated more than 20dB from the carrier.

D 802.11n HT-40@MCS0 (Worst Case)

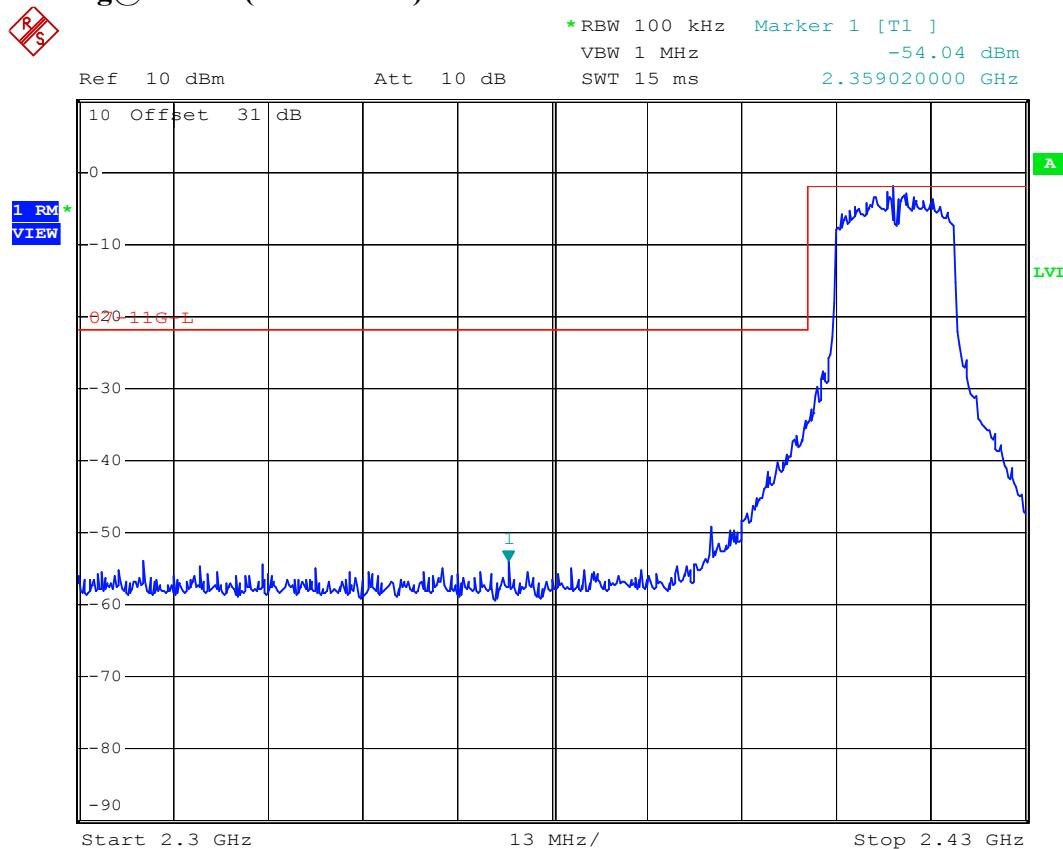
- a) Lower Band Edge : All emissions in this 100kHz bandwidth are attenuated more than 20dB from the carrier.
- b) Upper Band Edge : All emissions in this 100kHz bandwidth are attenuated more than 20dB from the carrier.

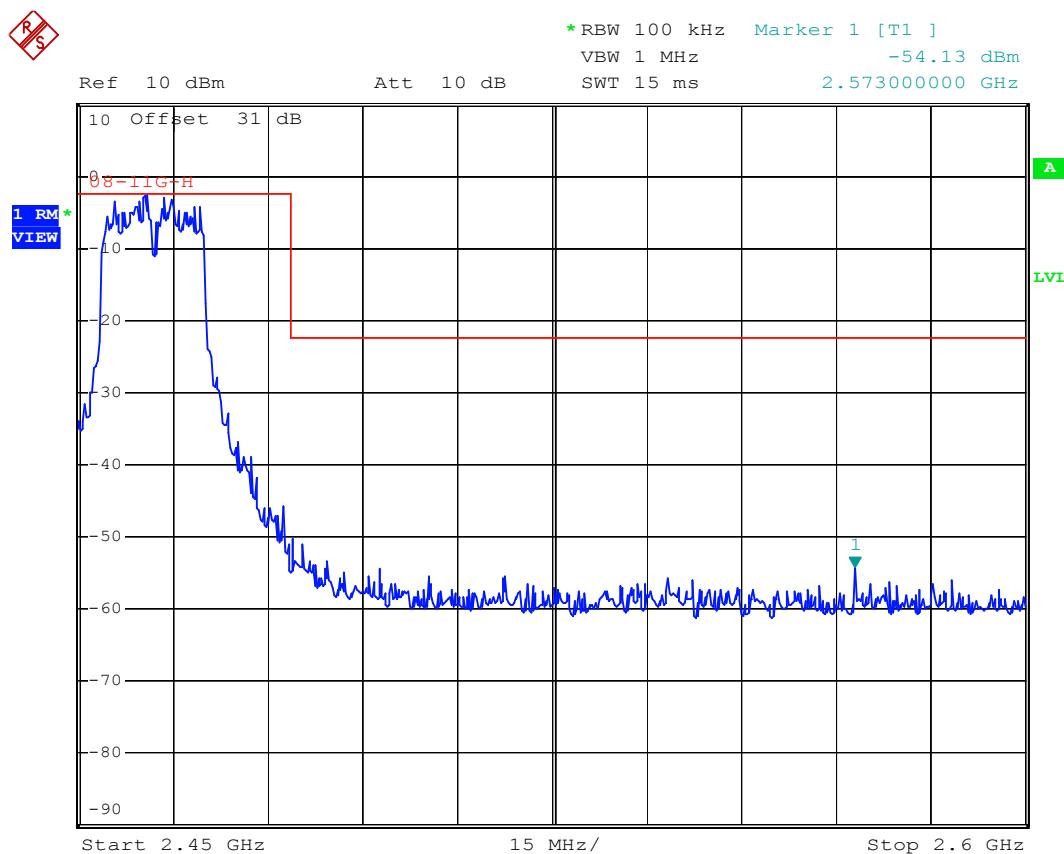
Note : The expanded uncertainty of the 100 khz bandwidth of band edges tests is 2dB.

802.11b@1 MHz (Worst Case)

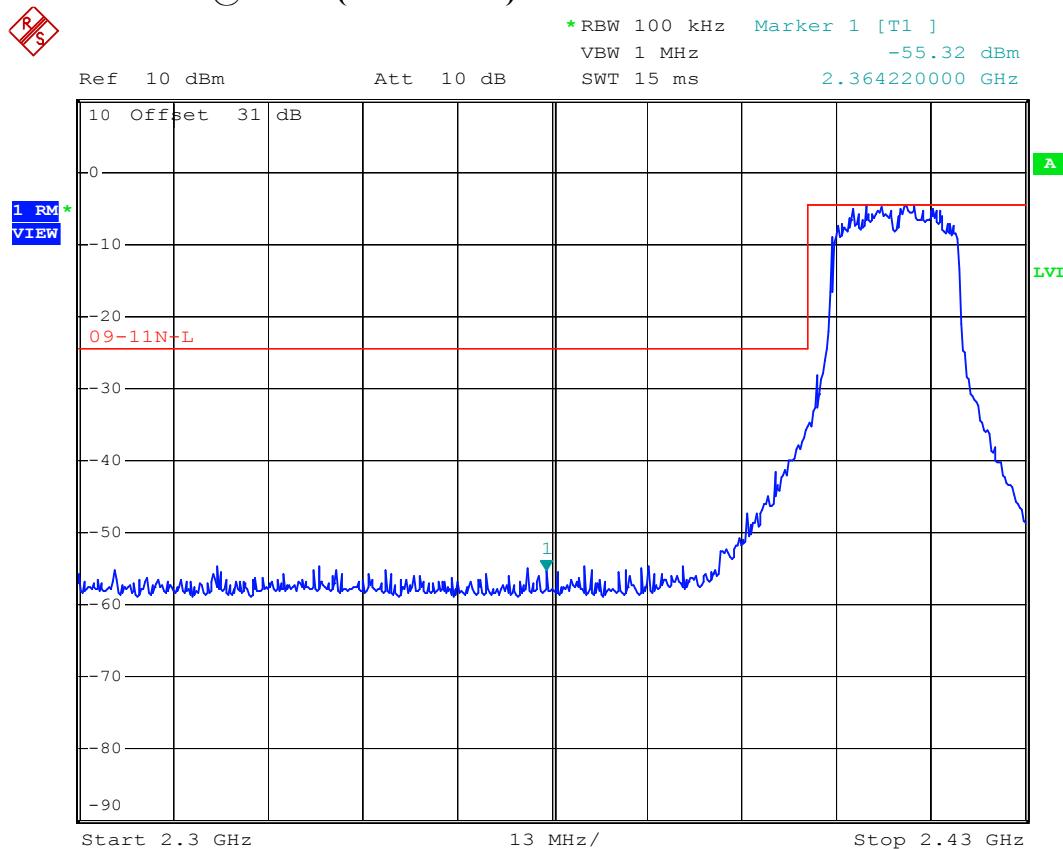


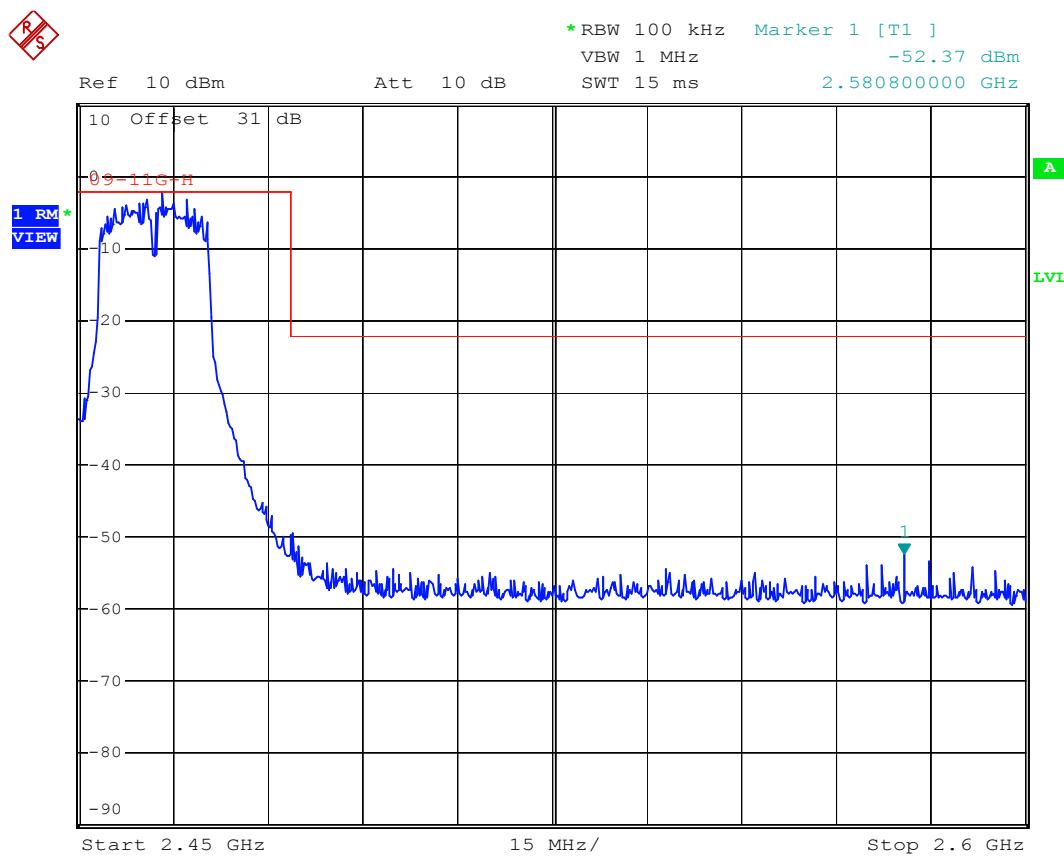
802.11g@6 MHz (Worst Case)





802.11n HT-20@MCS0 (Worst Case)





10 POWER DENSITY MEASUREMENT

10.1 Standard Applicable

According to 15.247(d), for direct sequence systems, the transmitted power density averaged over any 1 second interval shall not be greater than 8 dBm in any 3 kHz bandwidth within these bands.

10.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in figure 4 without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set EUT to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Adjust the center frequency of spectrum analyzer on highest level appearing on spectral display within a 300 kHz frequency span.
4. Set the spectrum analyzer on a 3 kHz resolution bandwidth and 300 kHz video bandwidth as well as max hold function.
5. Repeat above procedures until all measured frequencies were complete.

10.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Spectrum Analyzer	Rohde & Schwarz	FSP40	2011/09/21	2012/09/19

10.4 Measurement Data

Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

A 802.11b@1 MHz (Worst Case)

- a) Channel Low: Maximum Power Density of 3 kHz Bandwidth is -8.57 dBm
- b) Channel Mid: Maximum Power Density of 3 kHz Bandwidth is -7.56 dBm
- c) Channel High: Maximum Power Density of 3 kHz Bandwidth is -7.65 dBm

Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

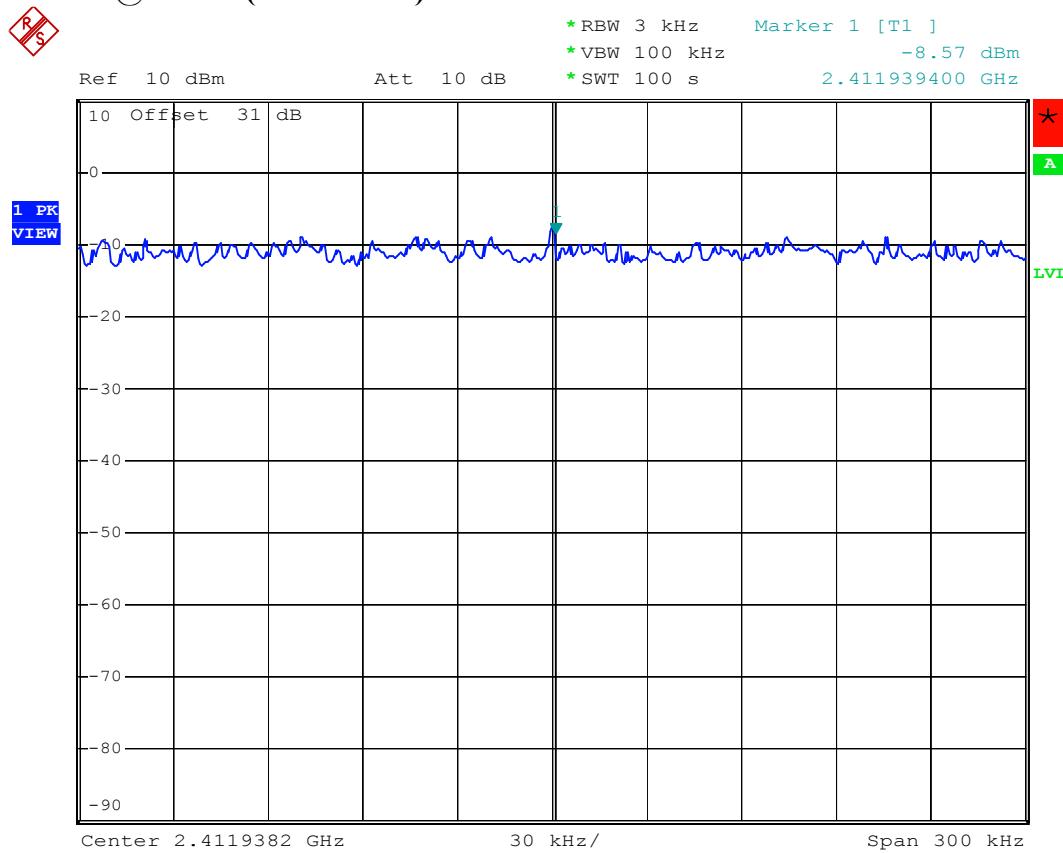
B 802.11g@6 MHz (Worst Case)

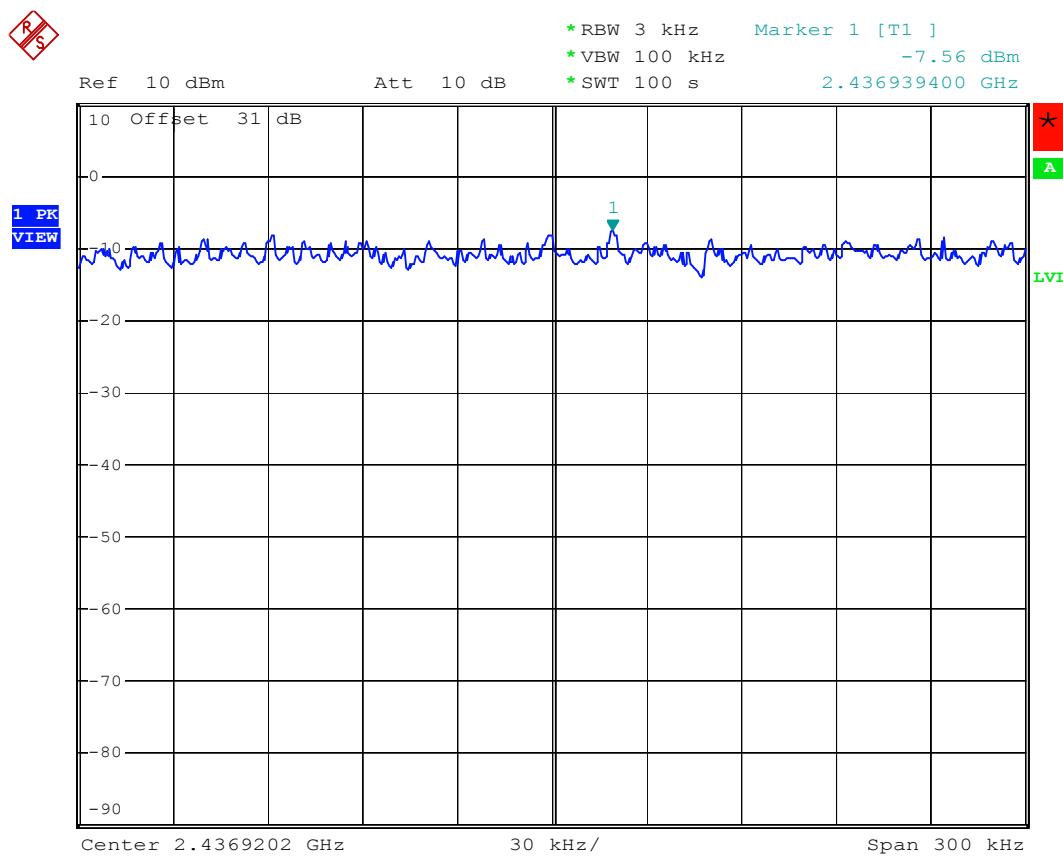
- a) Channel Low: Maximum Power Density of 3 kHz Bandwidth is -11.69 dBm
- b) Channel Mid: Maximum Power Density of 3 kHz Bandwidth is -11.36 dBm
- c) Channel High: Maximum Power Density of 3 kHz Bandwidth is -11.06 dBm

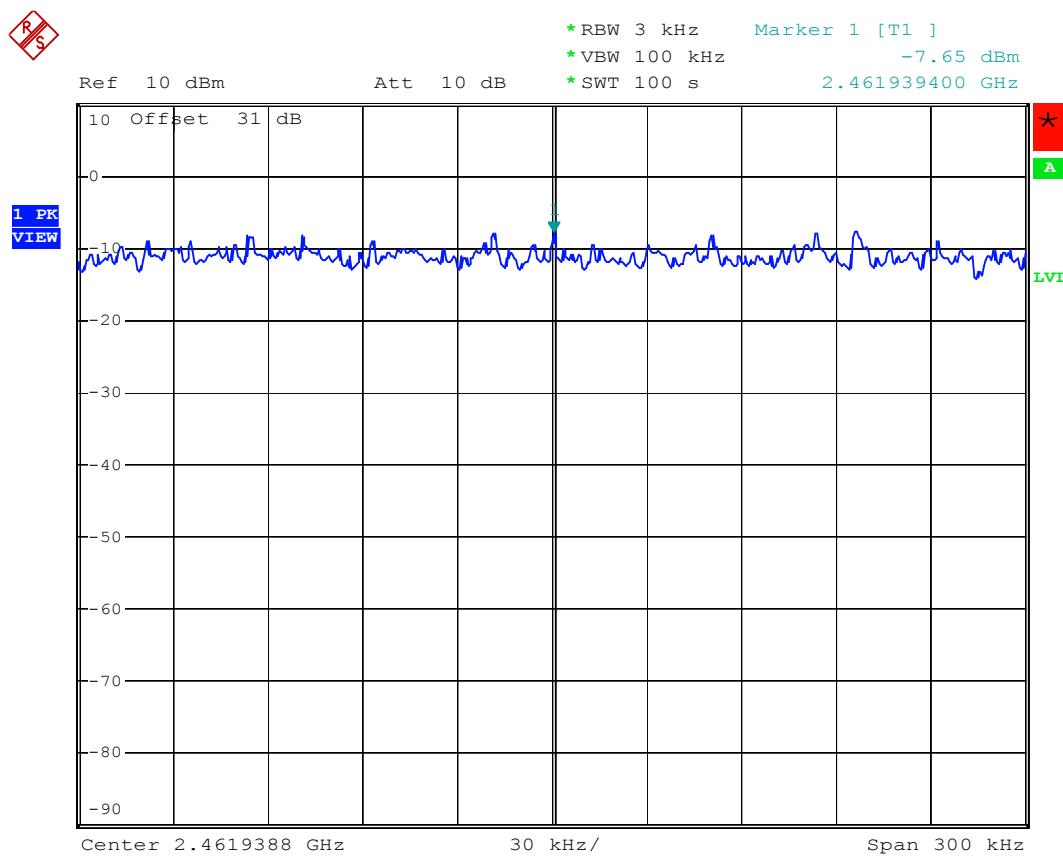
C 802.11n HT-20@MCS0 (Worst Case)

- a) Channel Low: Maximum Power Density of 3 kHz Bandwidth is -12.45 dBm
- b) Channel Mid: Maximum Power Density of 3 kHz Bandwidth is -12.33 dBm
- c) Channel High: Maximum Power Density of 3 kHz Bandwidth is -11.94 dBm

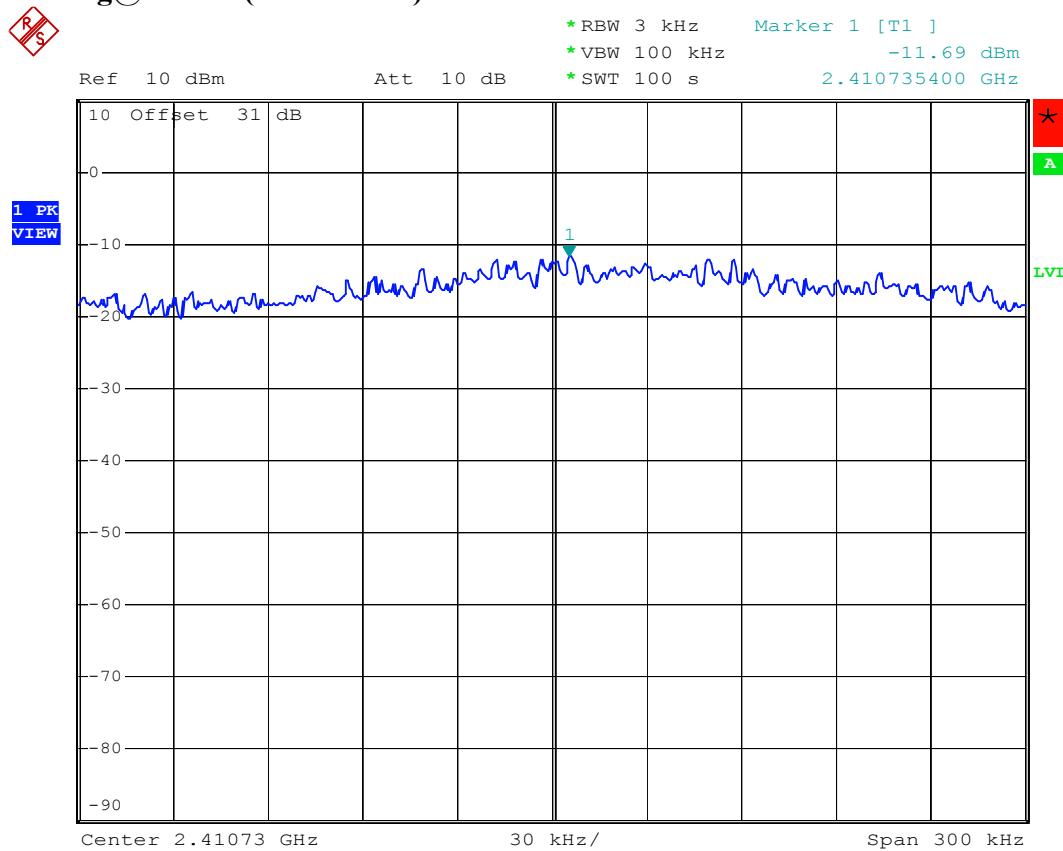
Note : The expanded uncertainty of the power density tests is 2dB.

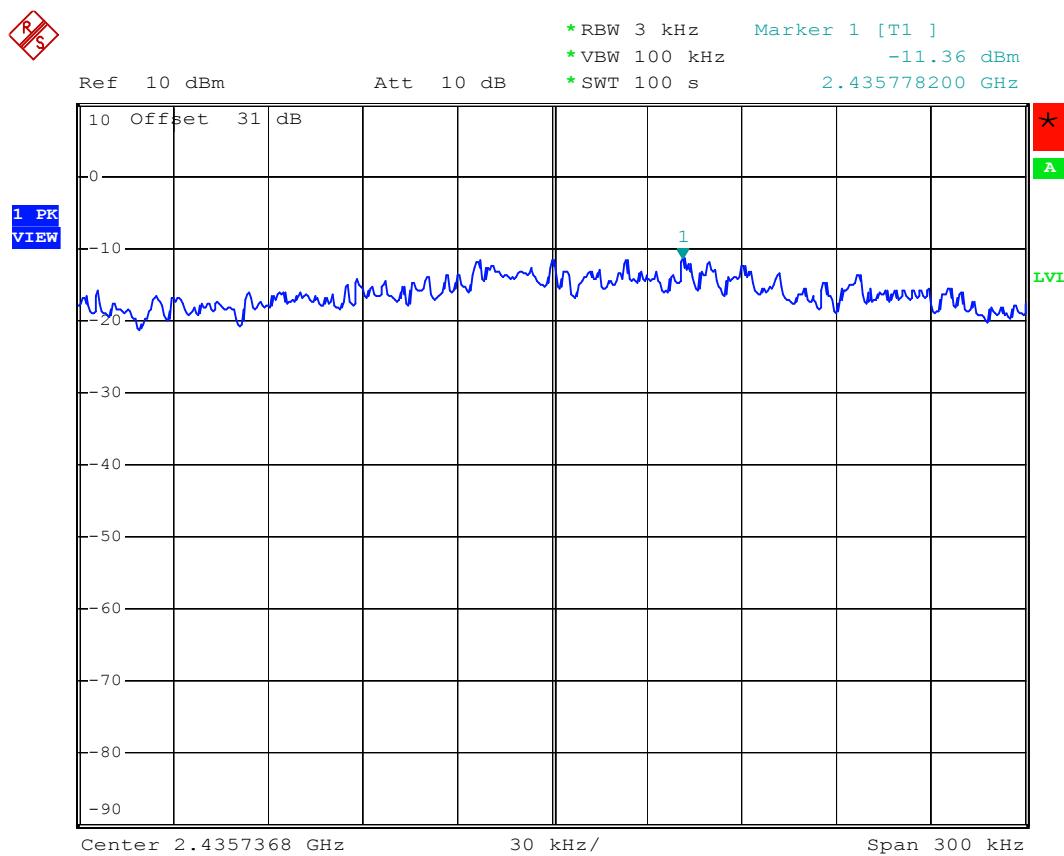
802.11b@1 MHz (Worst Case)

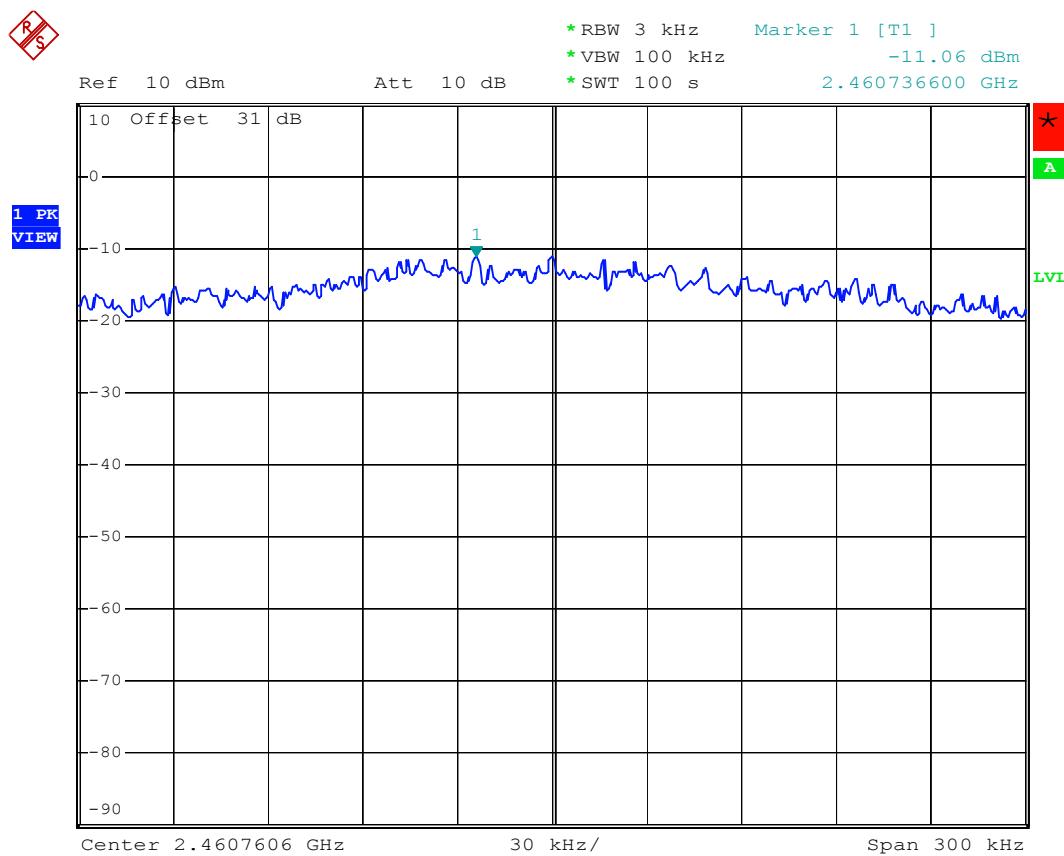




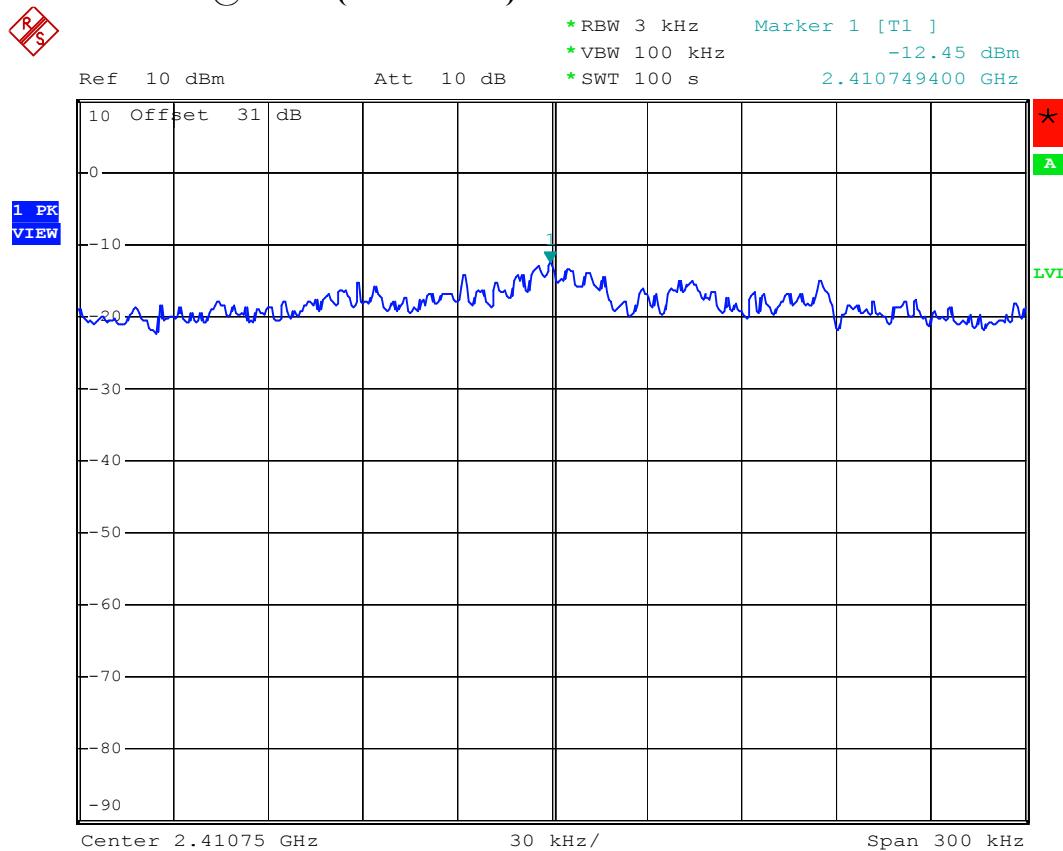
802.11g@6 MHz (Worst Case)

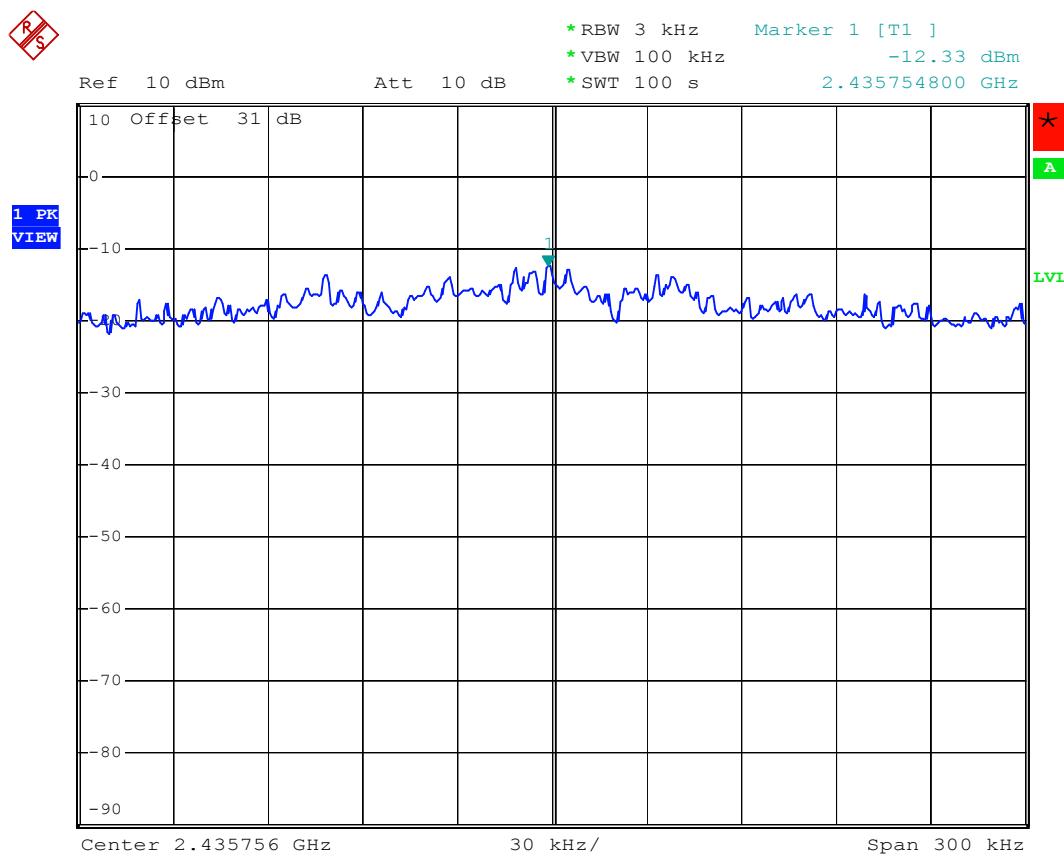


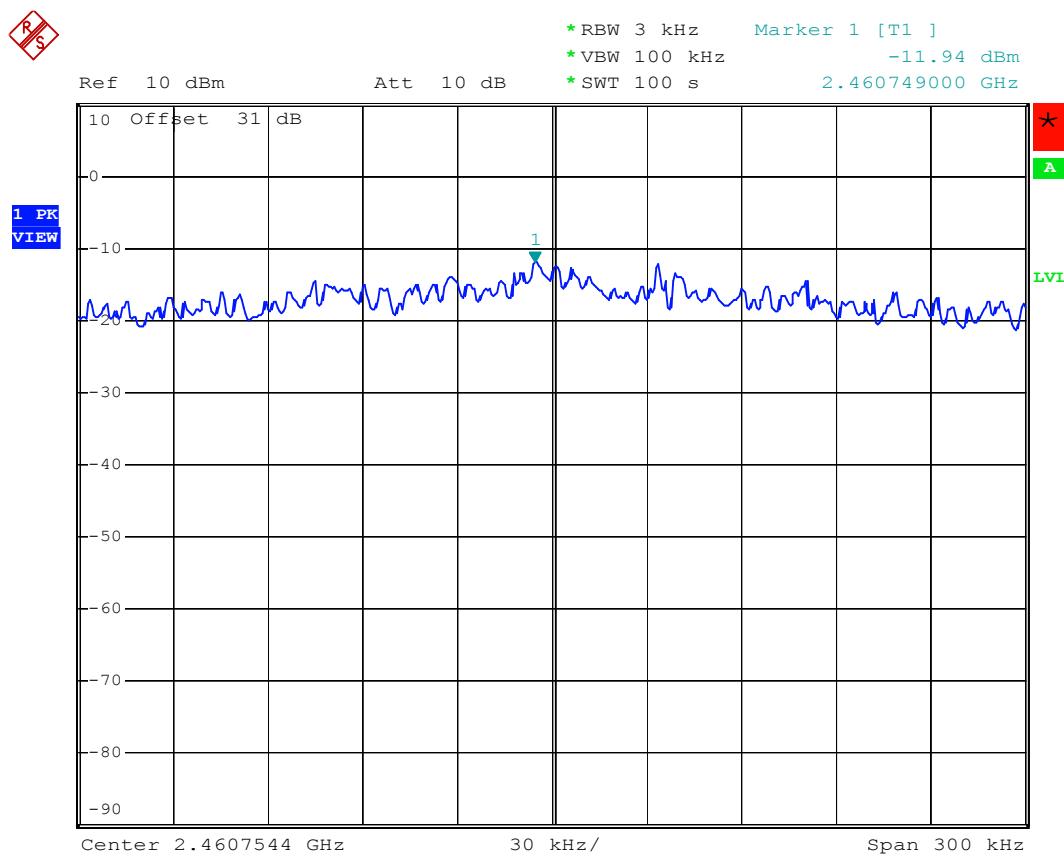




802.11n HT-20@MCS0 (Worst Case)







11. OUT-OF-BAND CONDUCTED EMISSION MEASUREMENT

11.1 Standard Applicable

According to 15.247(c), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required.

11.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

2. Position the EUT as shown in figure 4 without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.

3. Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

RBW = 100 kHz

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold.

4. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.

Plot the result on the screen of spectrum analyzer.

5. Repeat above procedures until all measured frequencies were complete.

11.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Spectrum Analyzer	Rohde & Schwarz	FSP40	2011/09/21	2012/09/19

11.4 Measurement Data

Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

A 802.11b@1 MHz (Worst Case)

Model : Channel Low

- a) 1 GHz to 3 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.
- b) 3 GHz to 25 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.

Model : Channel Mid

- a) 1 GHz to 3 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.
- b) 3 GHz to 25 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.

Model : Channel High

- a) 1 GHz to 3 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.
- b) 3 GHz to 25 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.

Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

B 802.11g@6 MHz (Worst Case)

Model : Channel Low

- a) 1 GHz to 3 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.
- b) 3 GHz to 25 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.

Model : Channel Mid

- a) 1 GHz to 3 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.
- b) 3 GHz to 25 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.

Model : Channel High

- a) 1 GHz to 3 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.
- b) 3 GHz to 25 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.

Test Date : Nov. 09, 2011 Temperature : 20 °C Humidity : 65 %

C 802.11n HT-20@MCS0 (Worst Case)**Model : Channel Low**

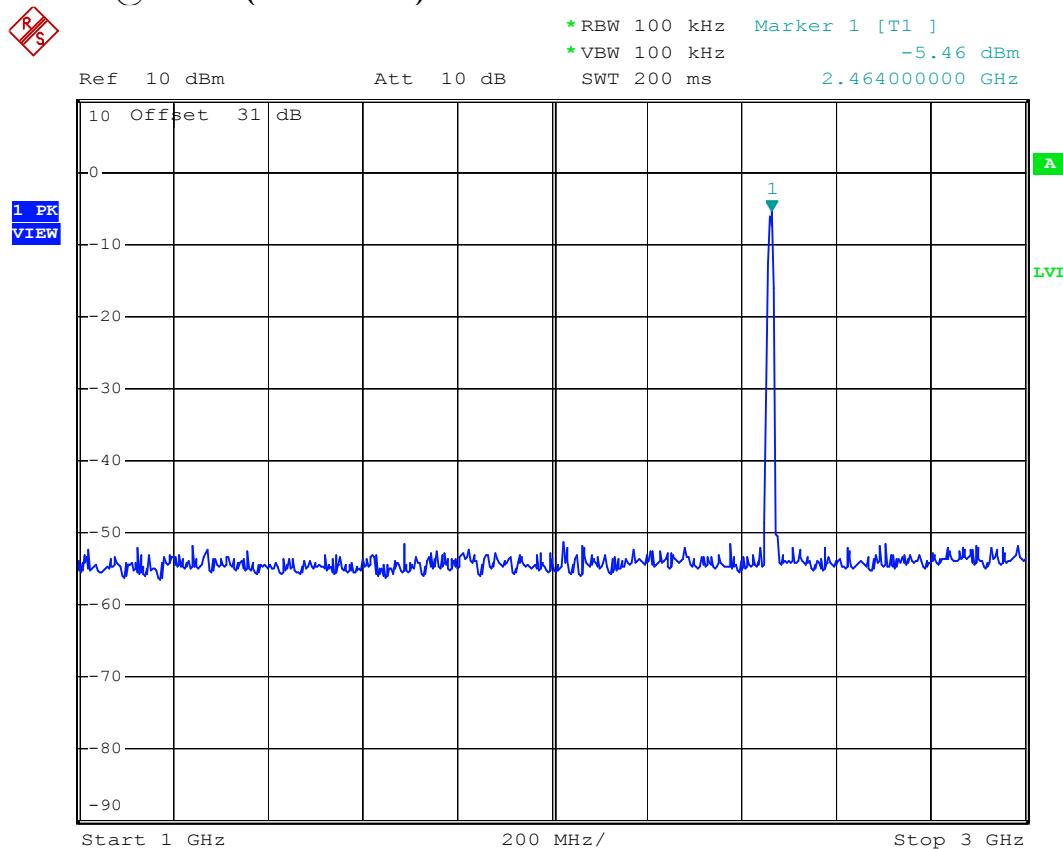
- a) 1 GHz to 3 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.
- b) 3 GHz to 25 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.

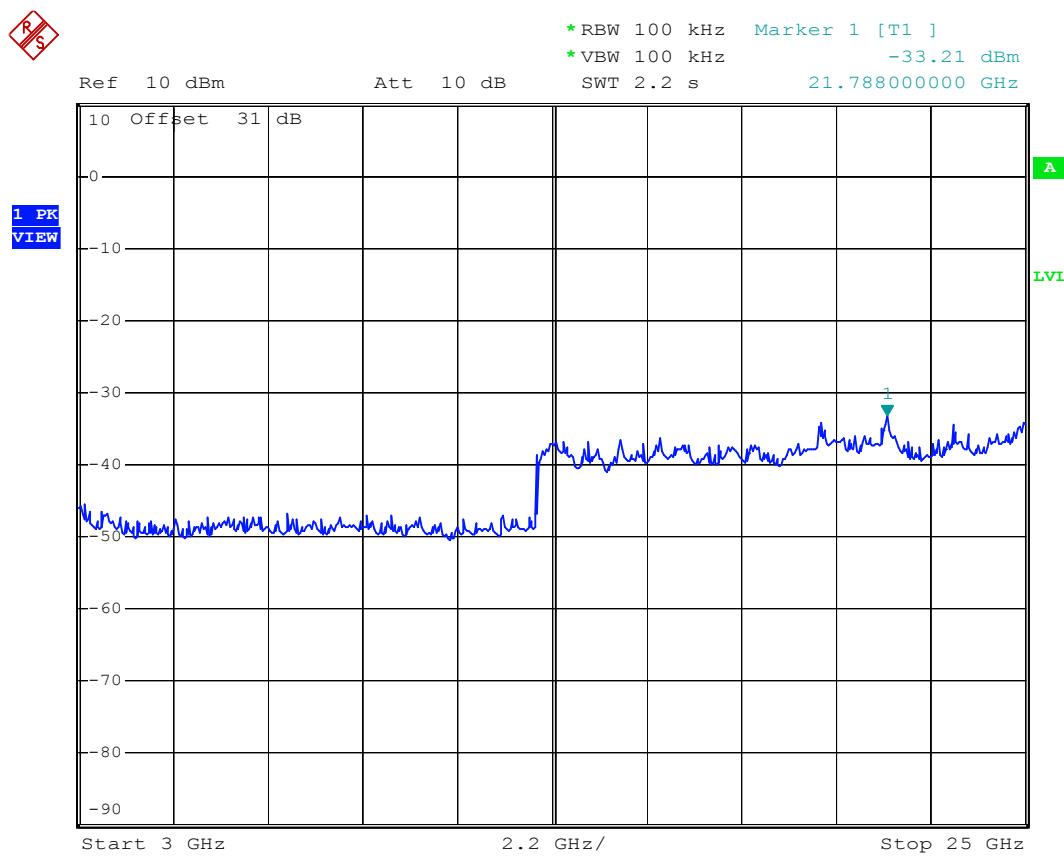
Model : Channel Mid

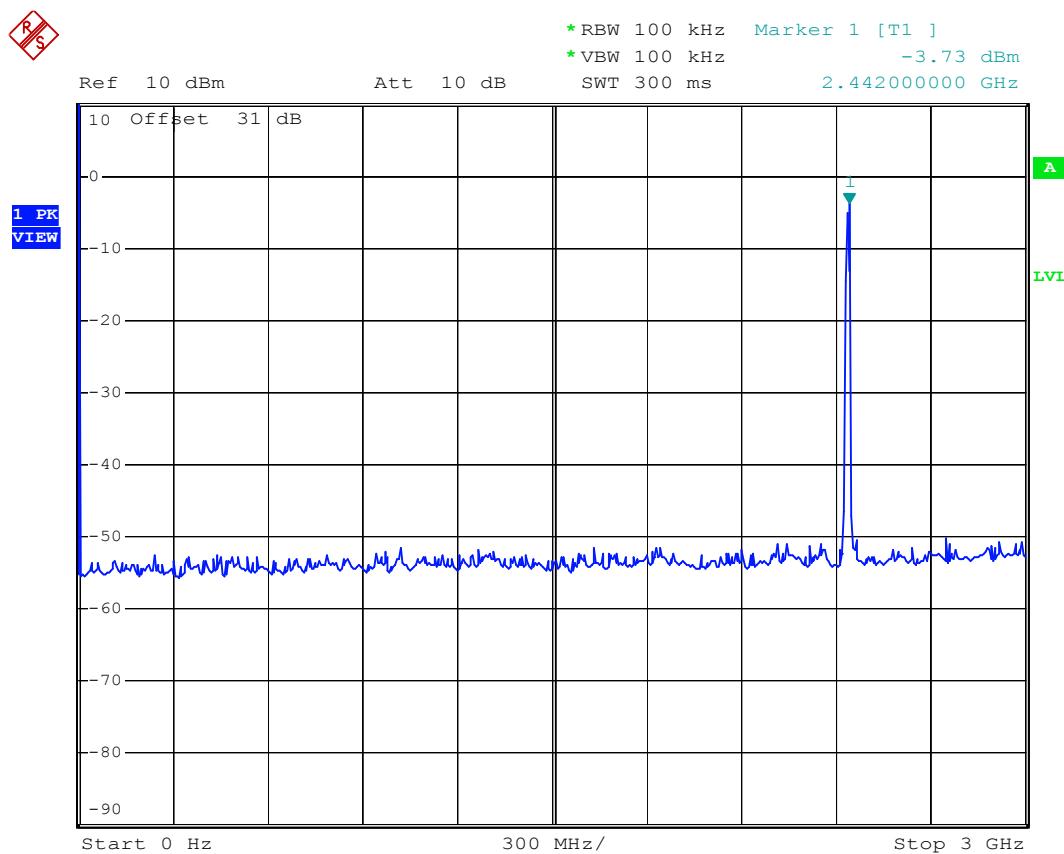
- a) 1 GHz to 3 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.
- b) 3 GHz to 25 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.

Model : Channel High

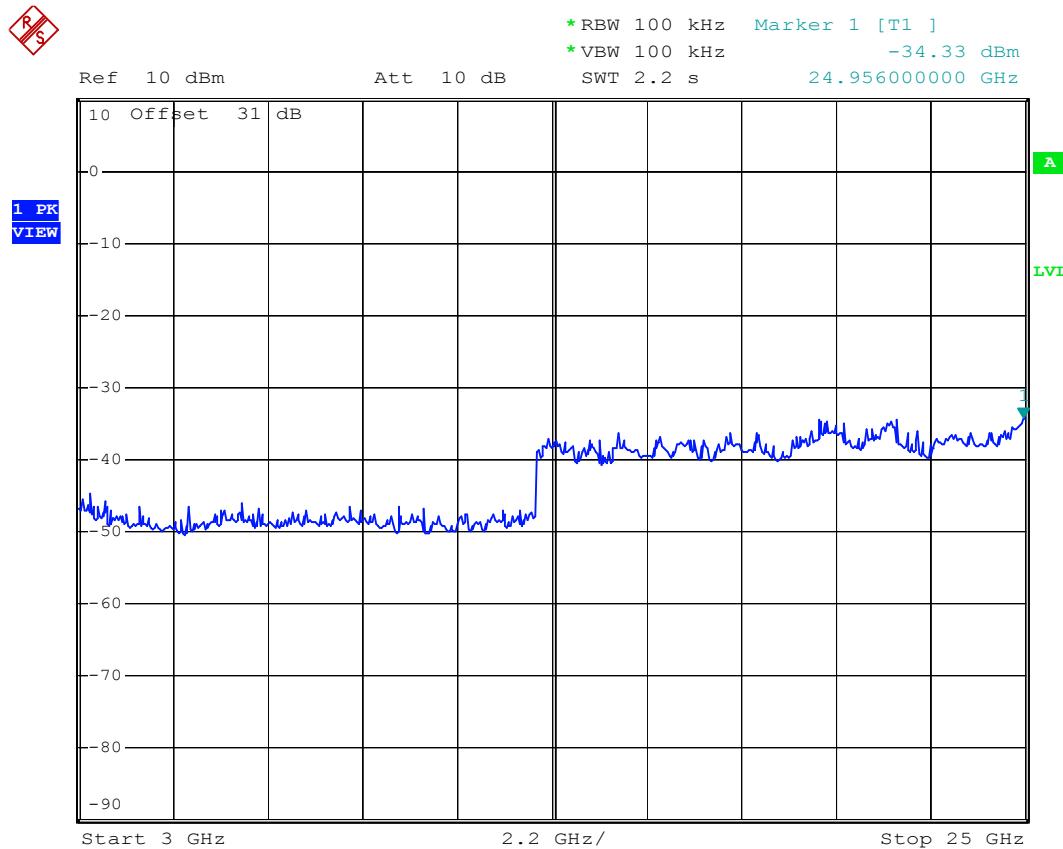
- a) 1 GHz to 3 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.
- b) 3 GHz to 25 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.

802.11b@1 MHz (Worst Case)

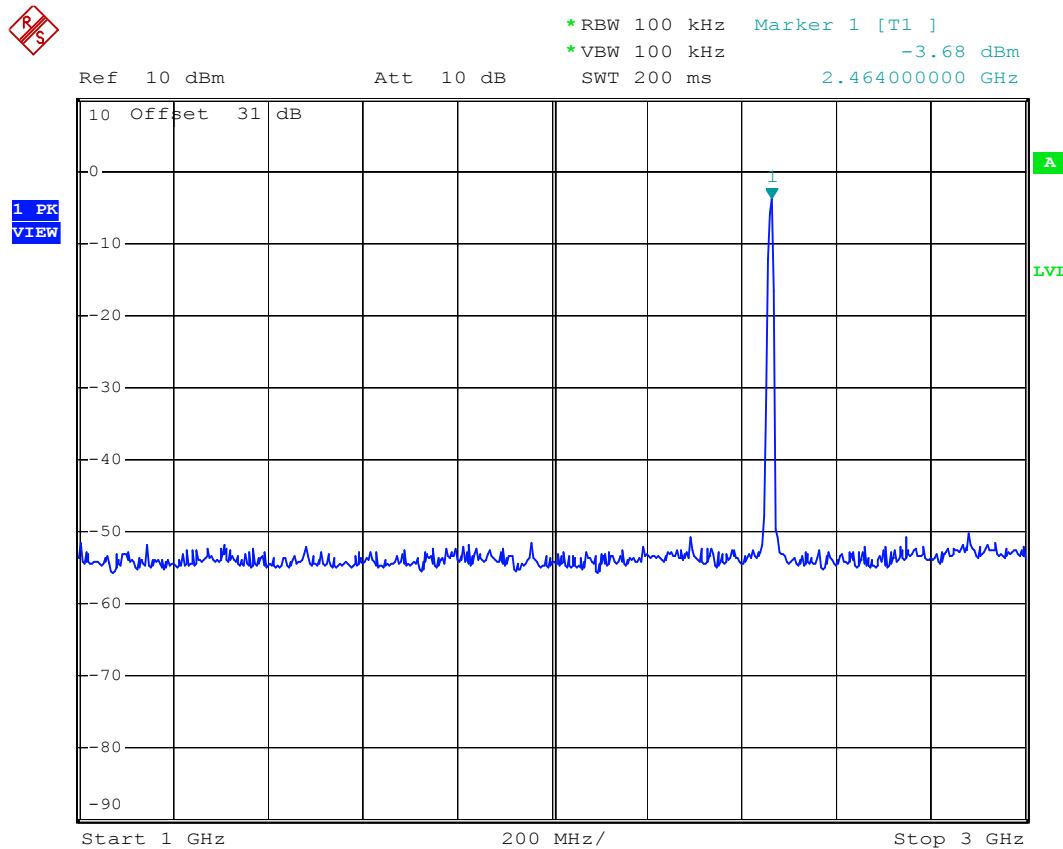




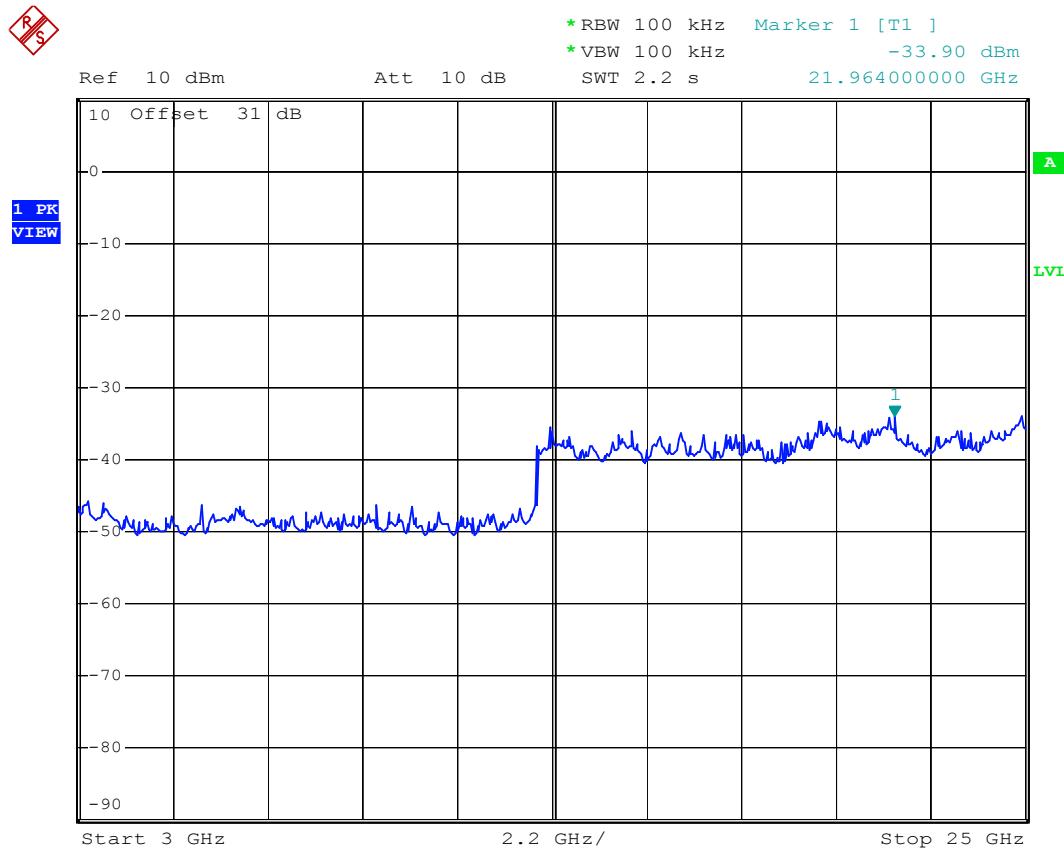
RS



RS

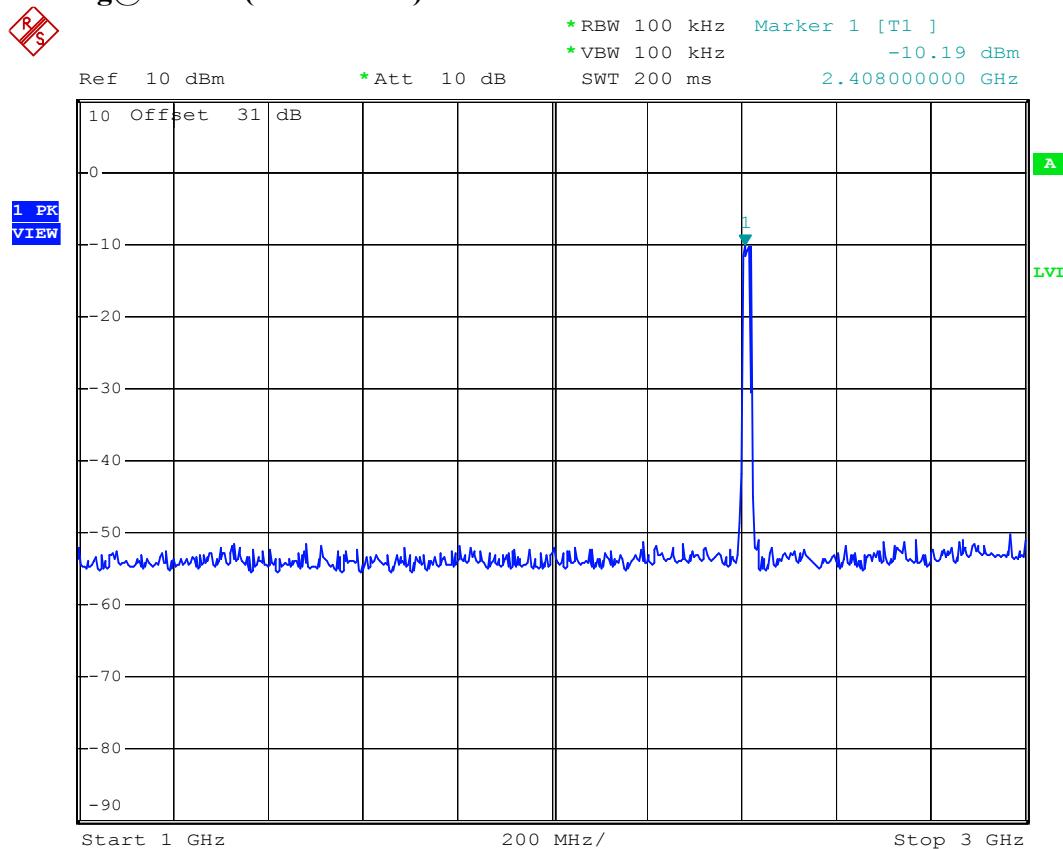


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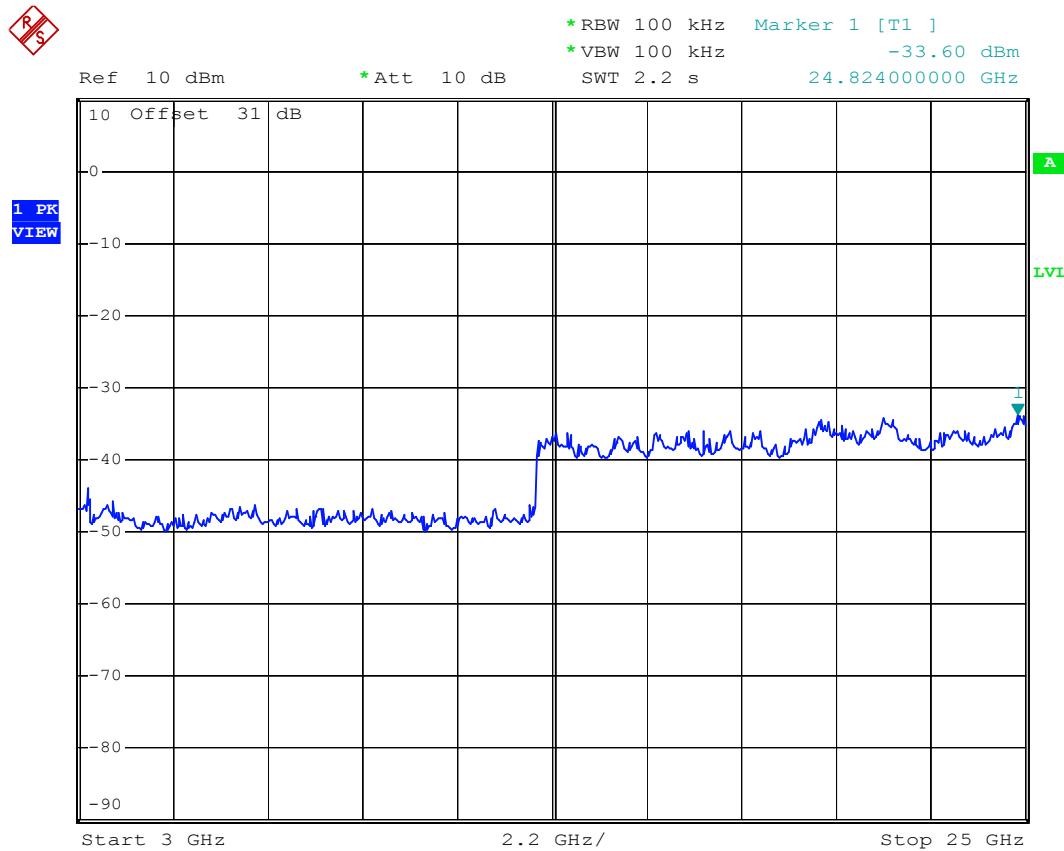


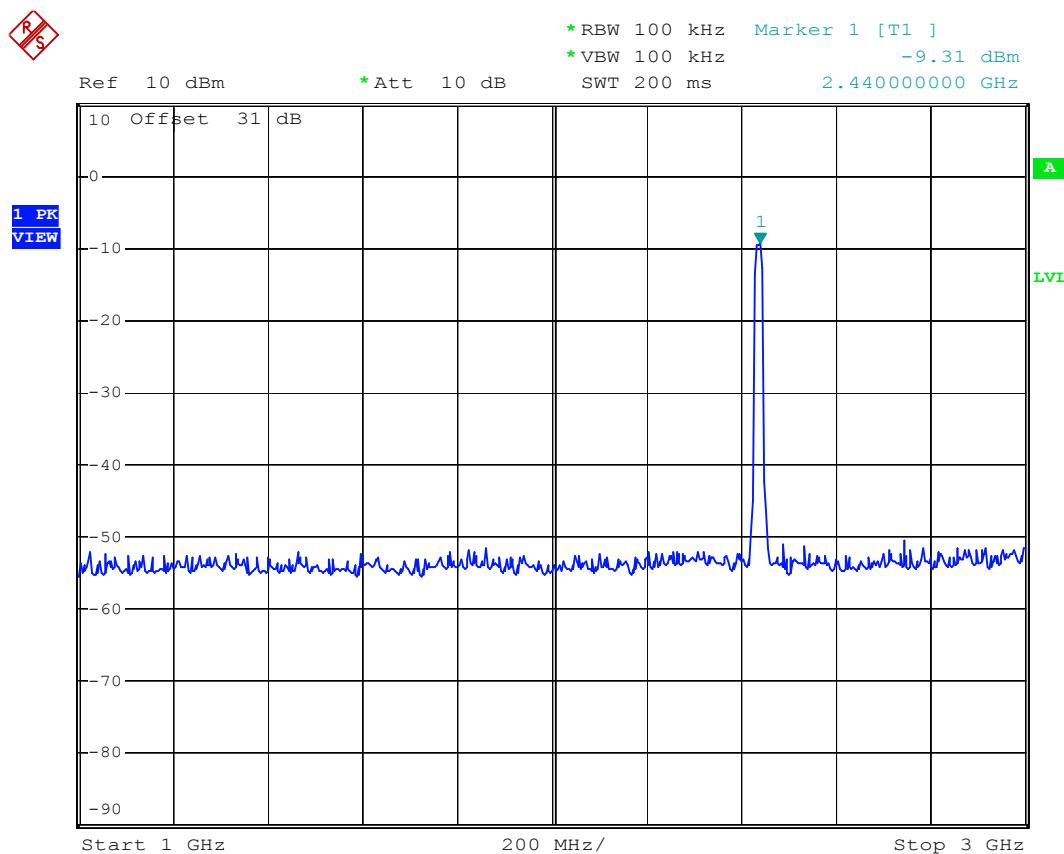
802.11g@6 MHz (Worst Case)

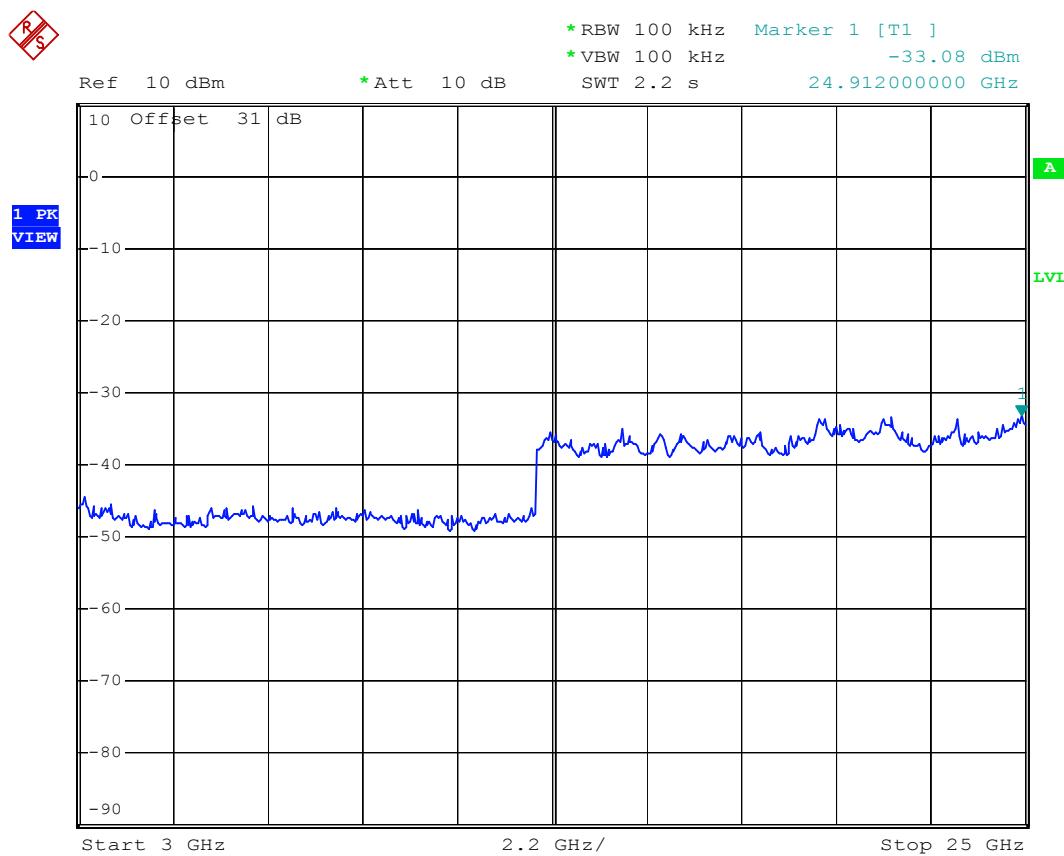
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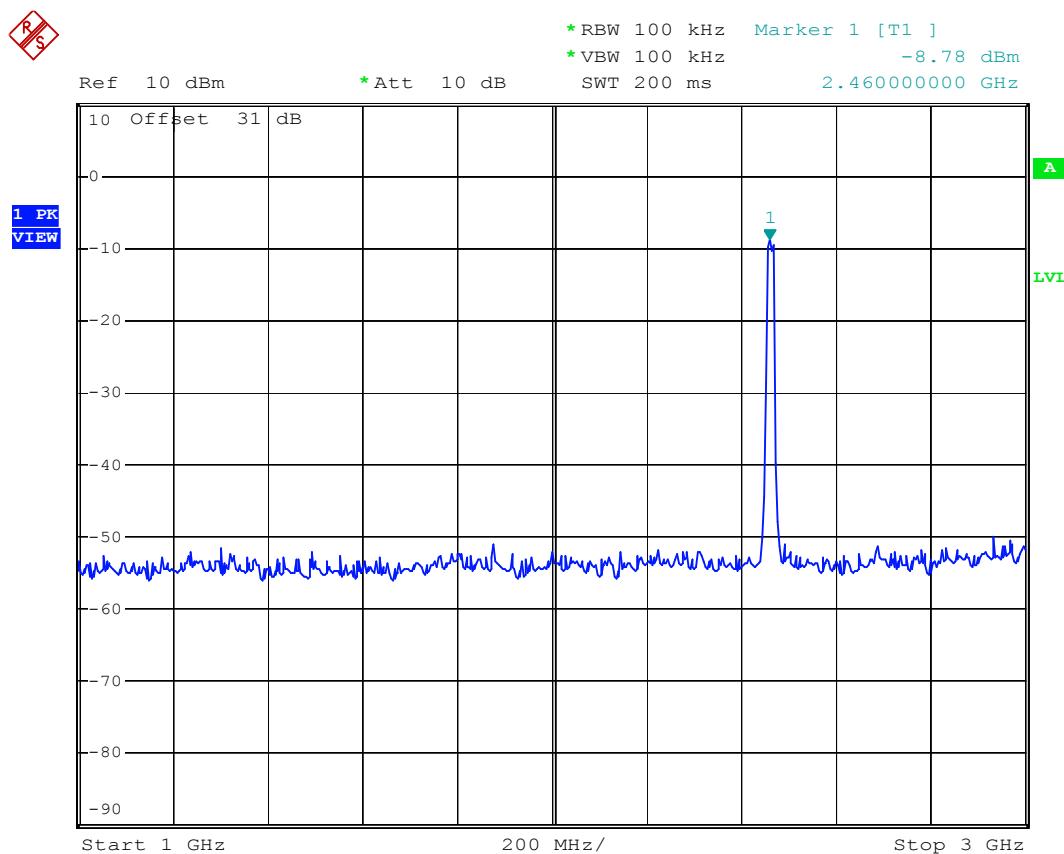


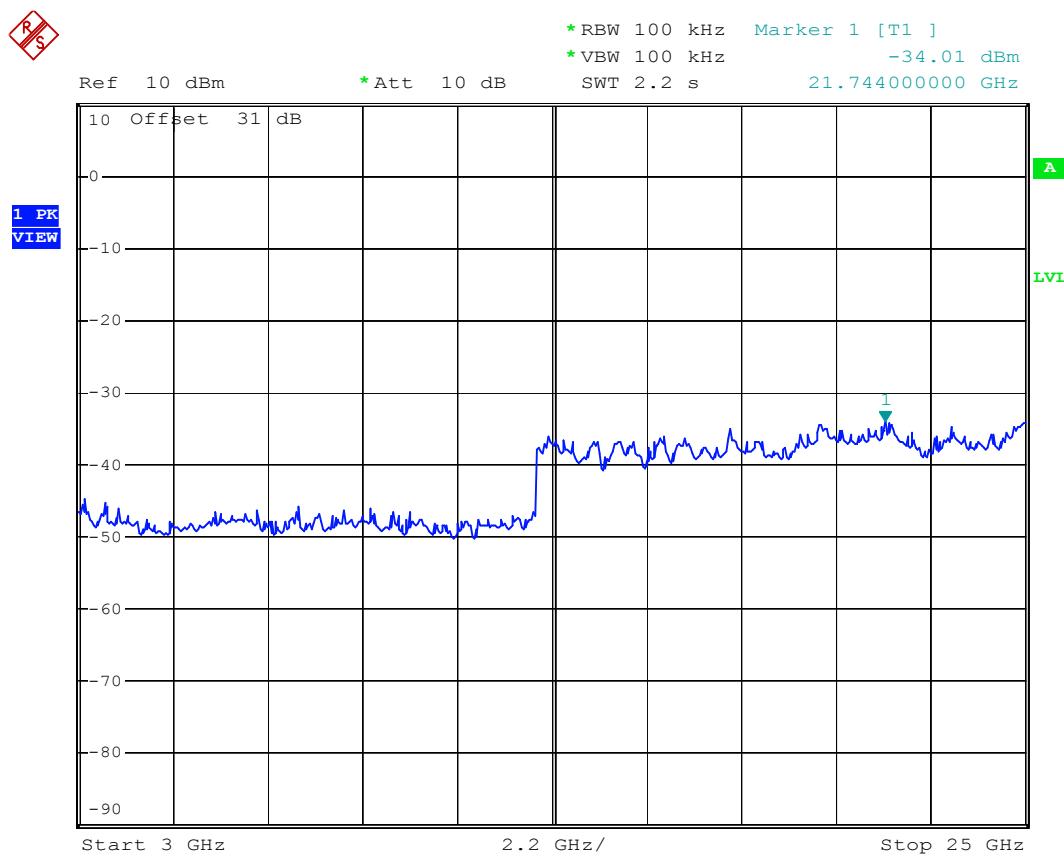
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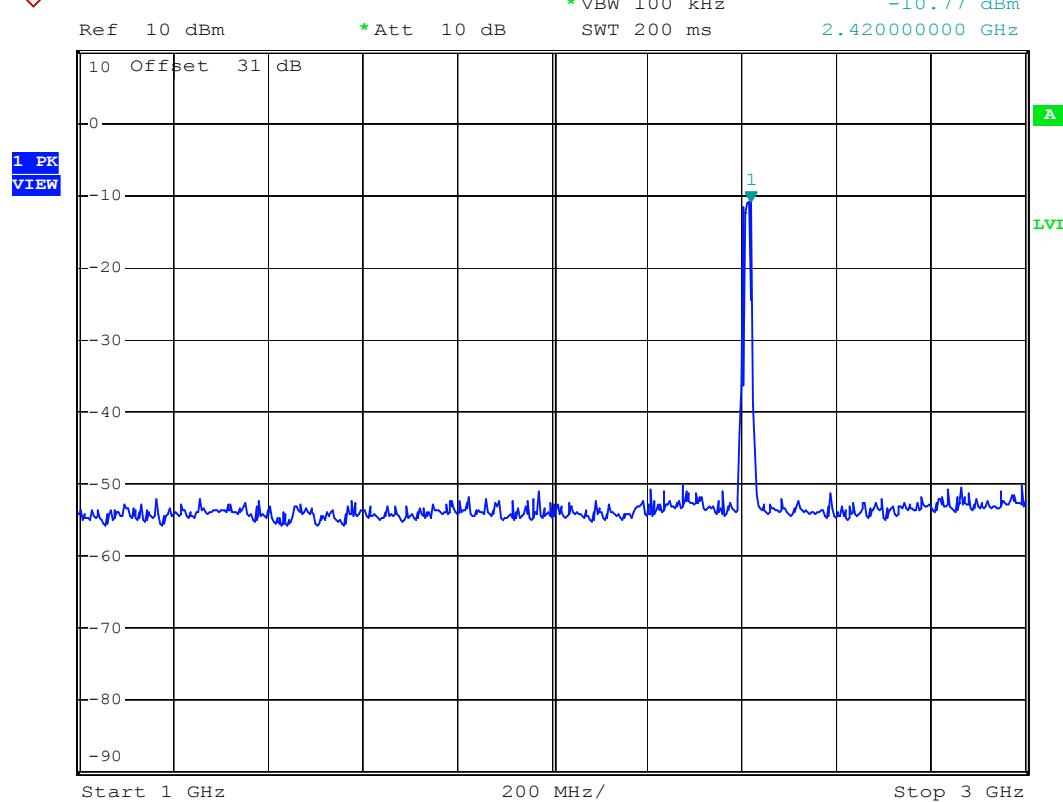




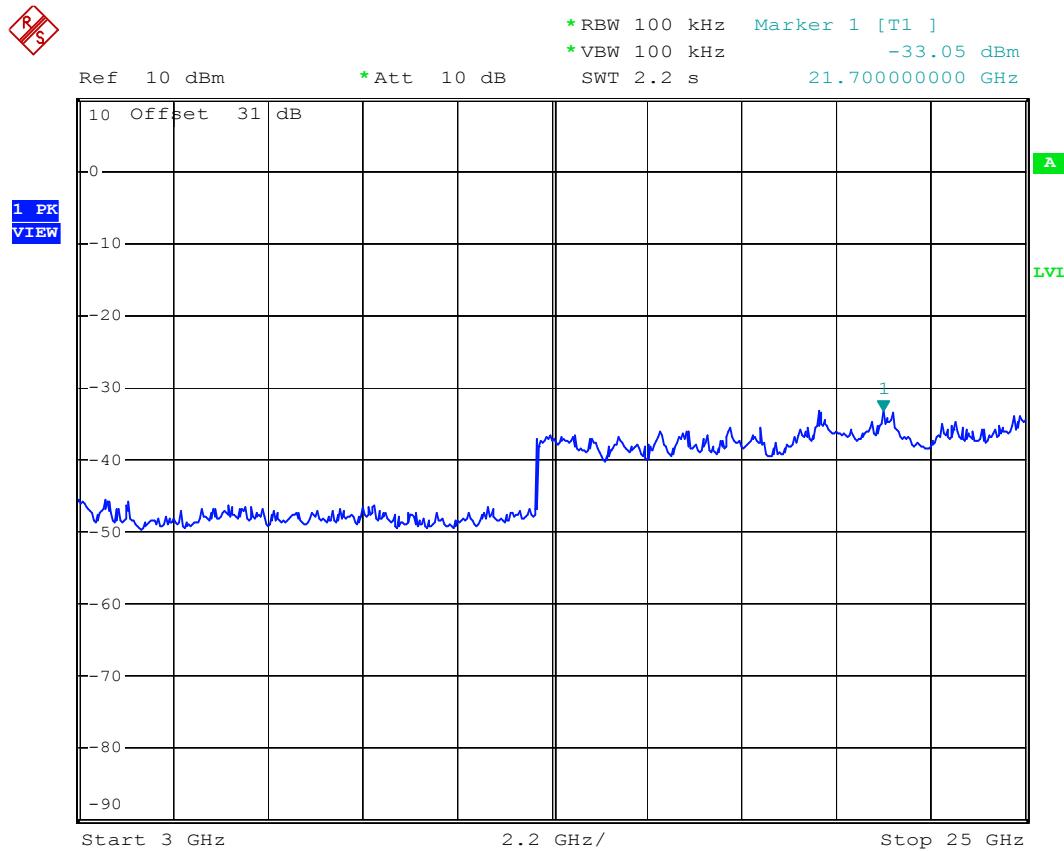


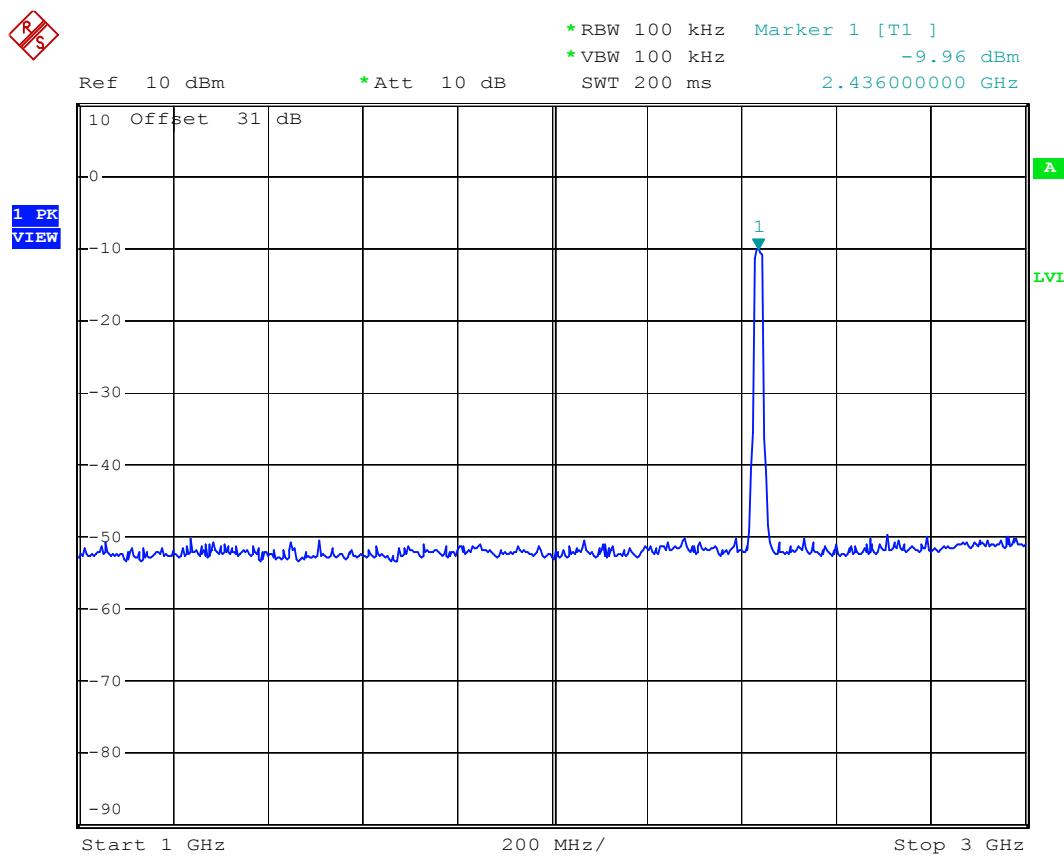
802.11n HT-20@MCS0 (Worst Case)

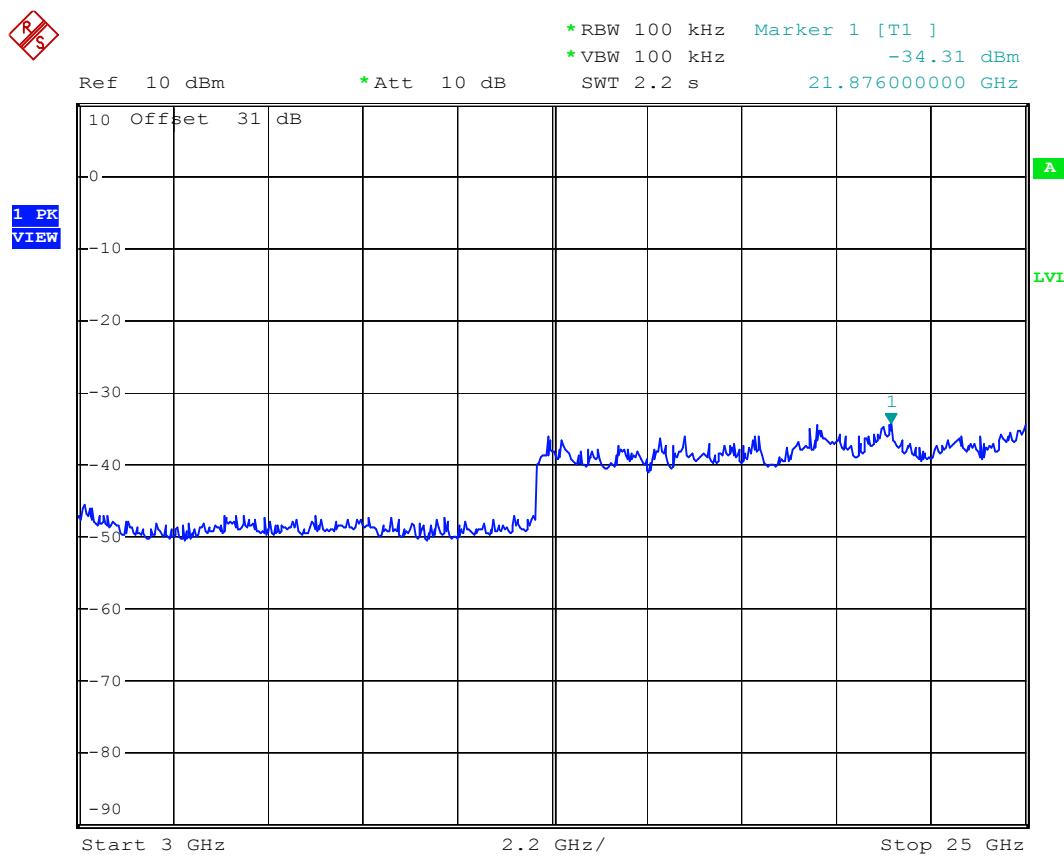
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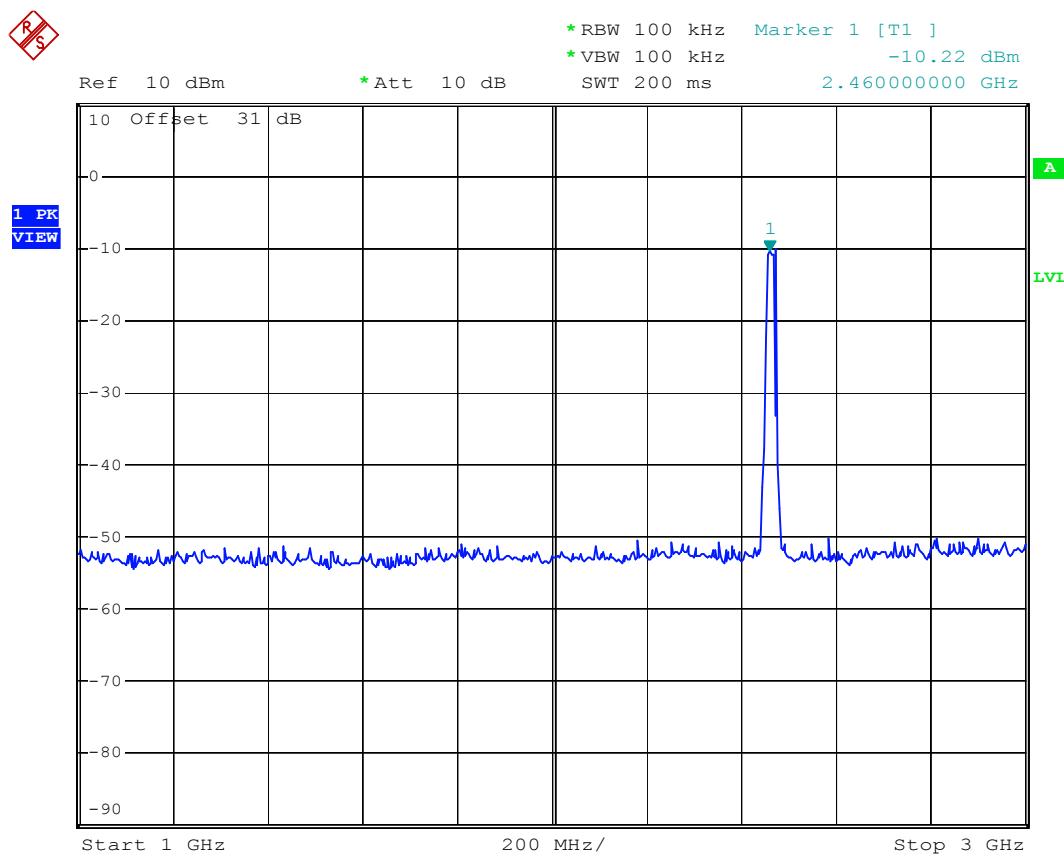


RS

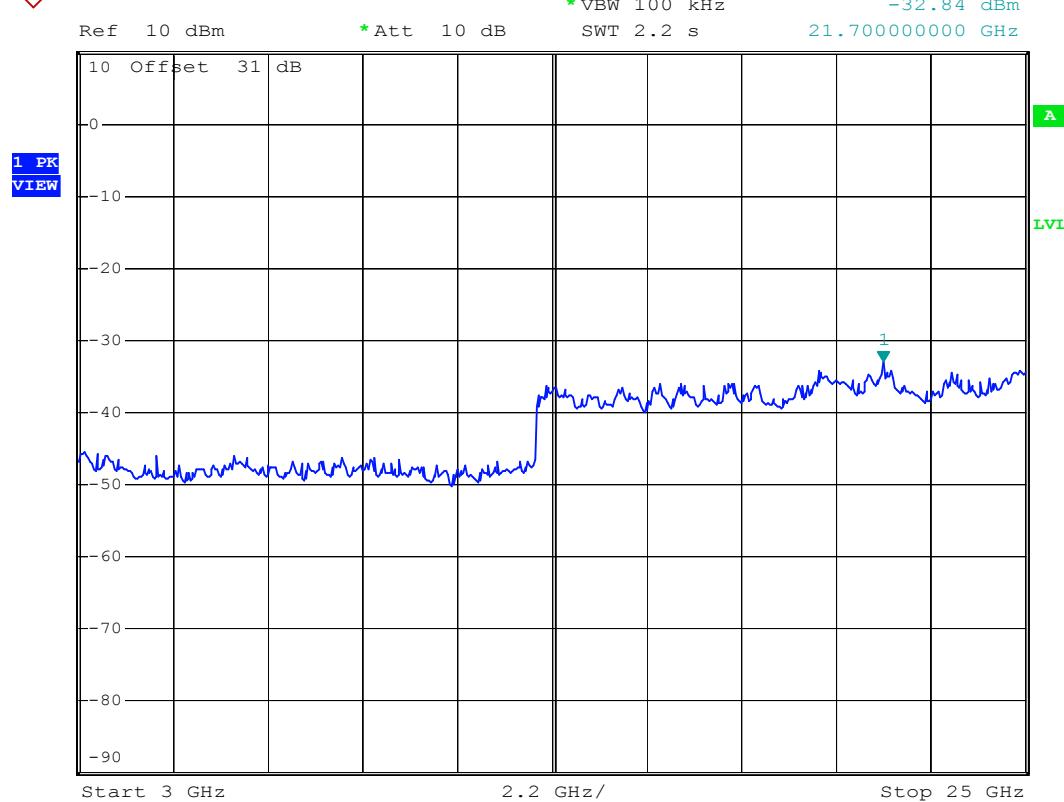








RS



CONSTRUCTION PHOTOS OF EUT

1. Top View of EUT



2. Side View of EUT



CONSTRUCTION PHOTOS OF EUT

3. Rear View of EUT



4. Side View of EUT



CONSTRUCTION PHOTOS OF EUT

5. Front View of EUT



6. Bottom View of EUT



CONSTRUCTION PHOTOS OF EUT

7. Internail View of EUT



8. Bottom View of EUT

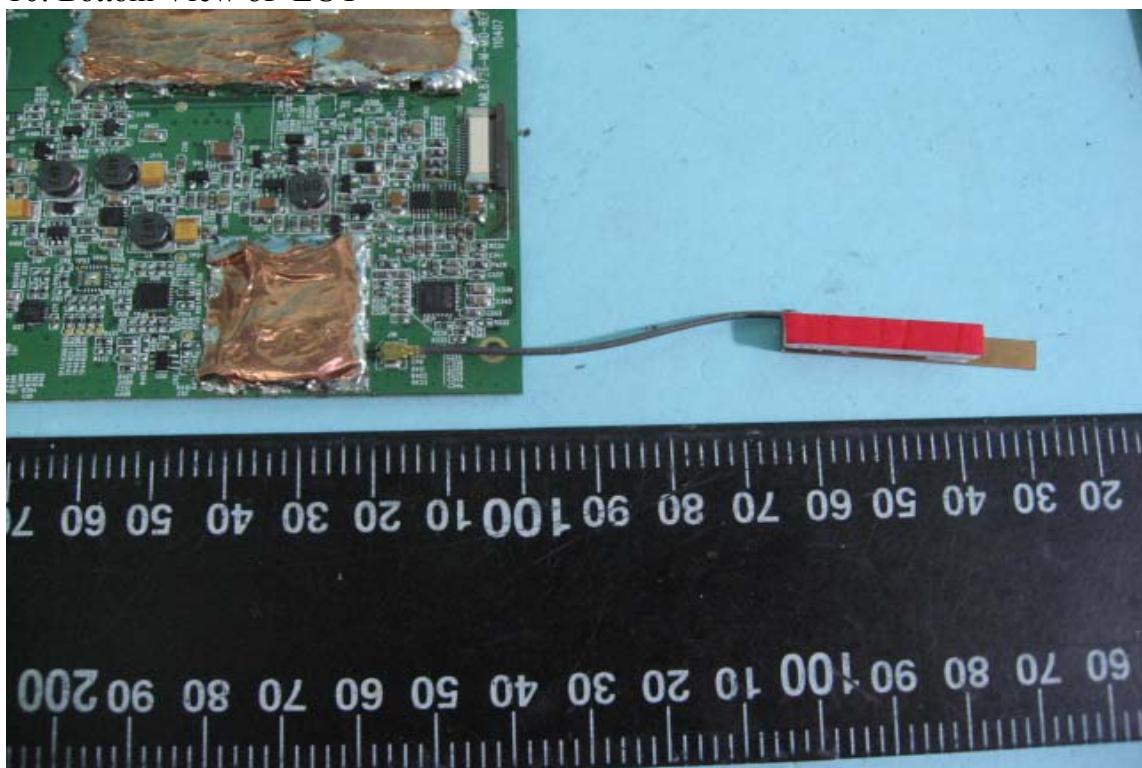


CONSTRUCTION PHOTOS OF EUT

9. Internail View of EUT

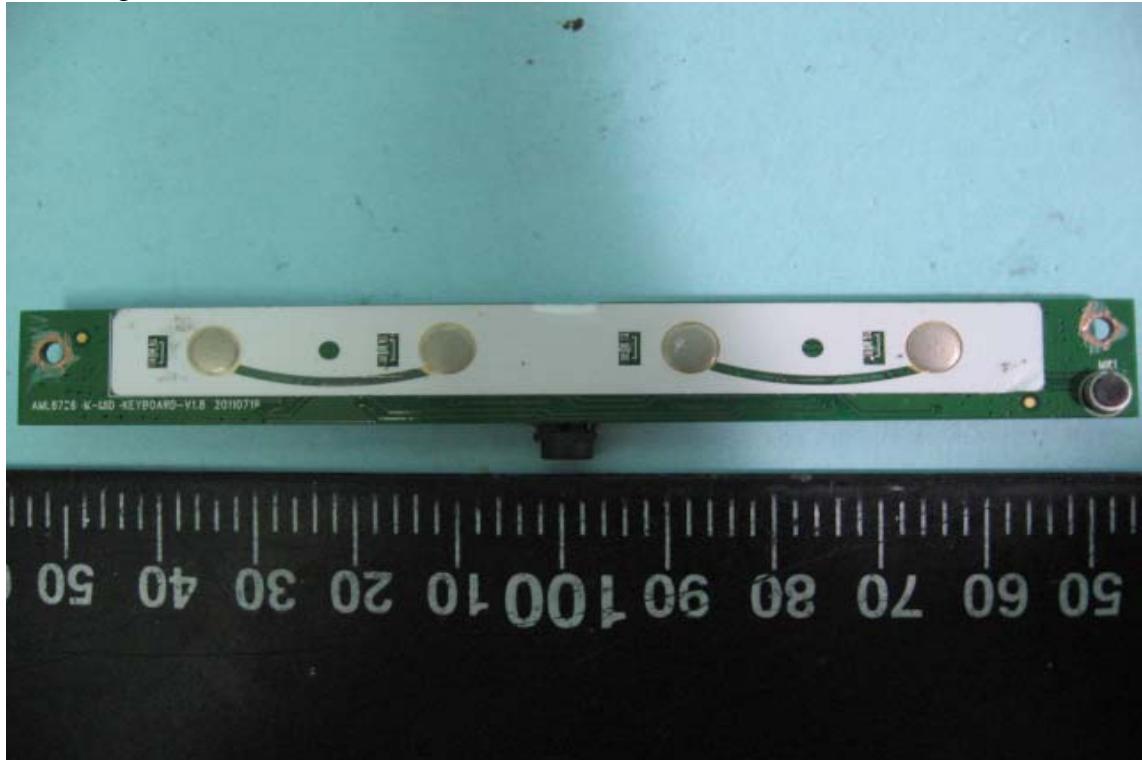


10. Bottom View of EUT

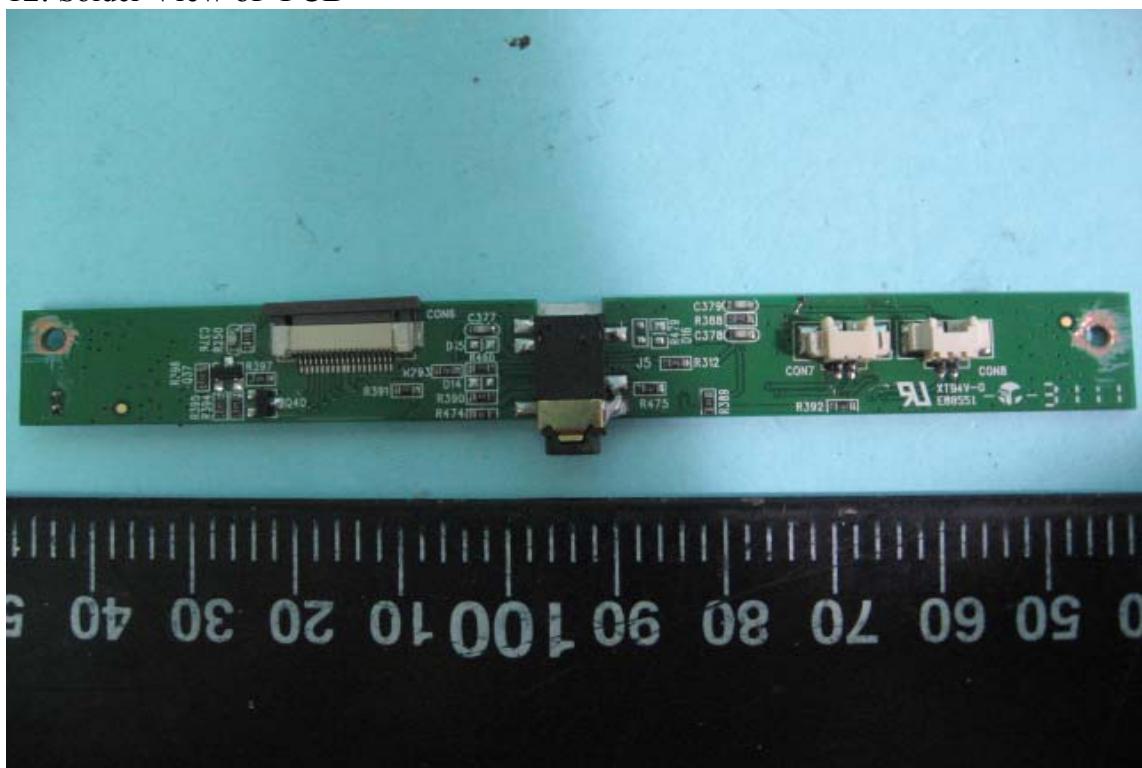


CONSTRUCTION PHOTOS OF EUT

11. Component View of PCB



12. Solder View of PCB

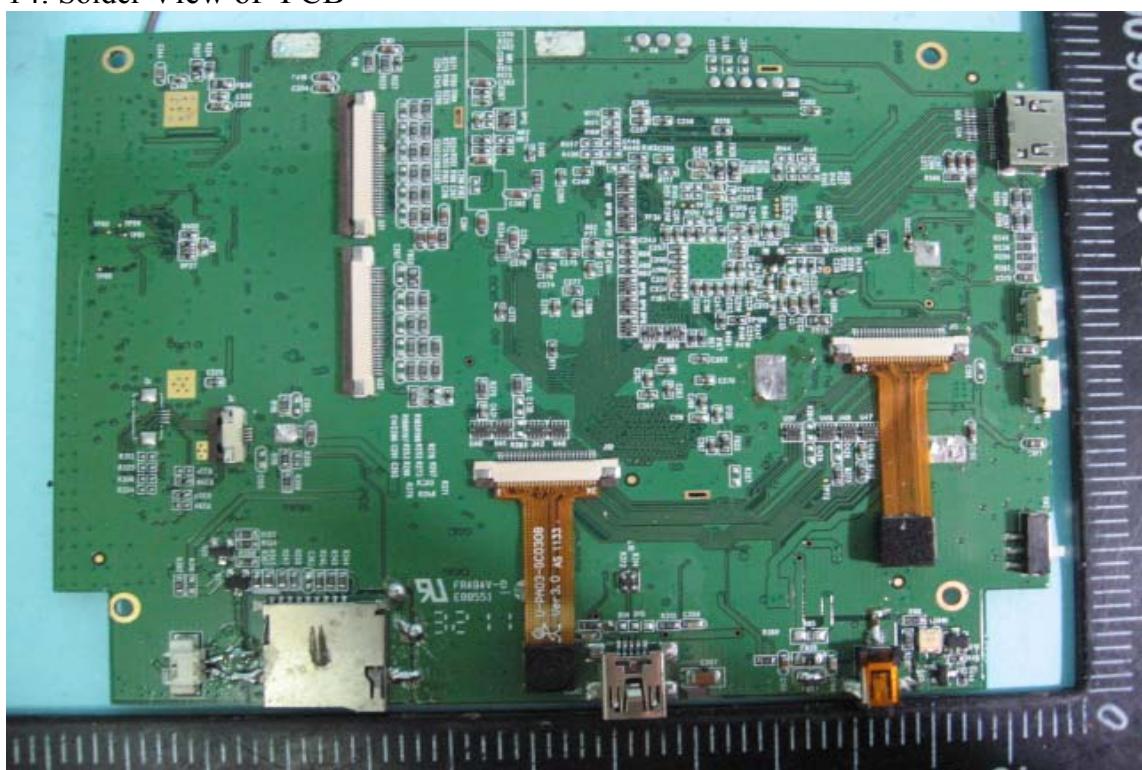


CONSTRUCTION PHOTOS OF EUT

13. Component View of PCB



14. Solder View of PCB



CONSTRUCTION PHOTOS OF EUT

B. Adapter

1. Top View of Adapter



2. Side View of Adapter



CONSTRUCTION PHOTOS OF EUT

3. Top View of Adapter



4. Label View of Adapter

