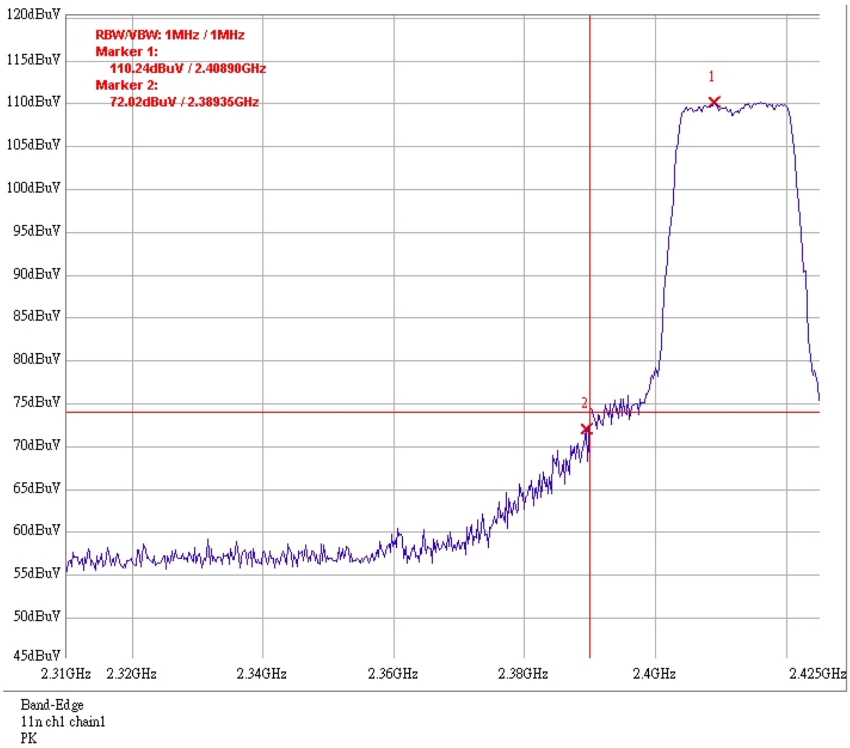
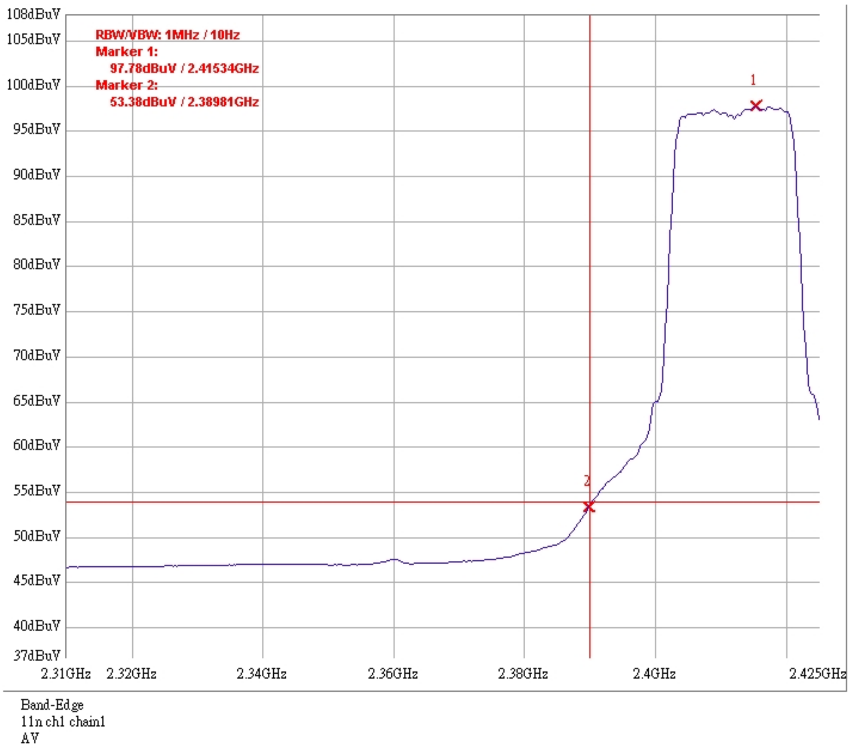
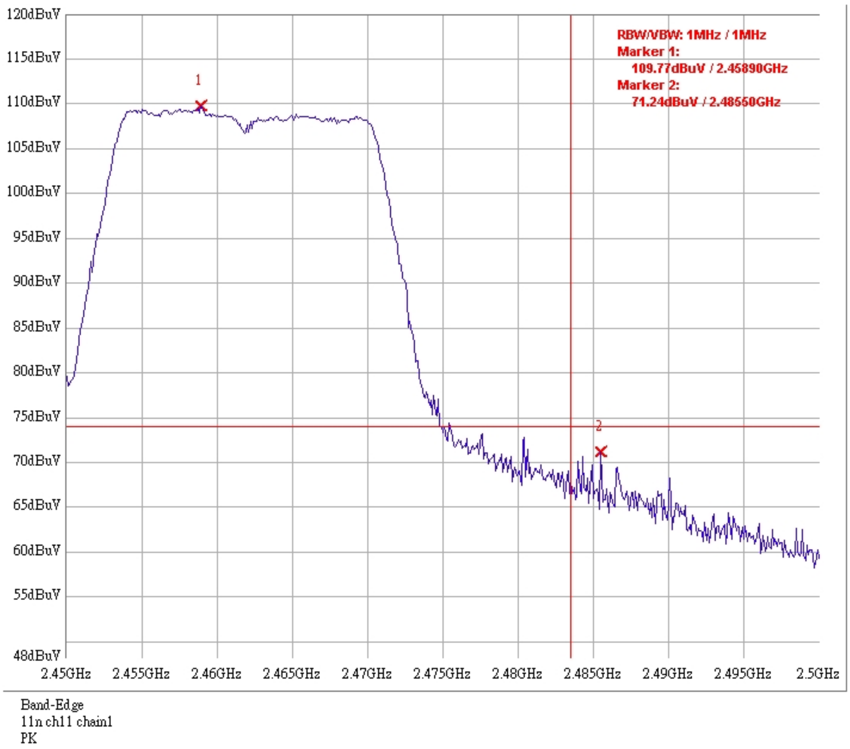
DAC1: Bandage @ Draft 802.11n 20MHz mode channel 1 (PK)



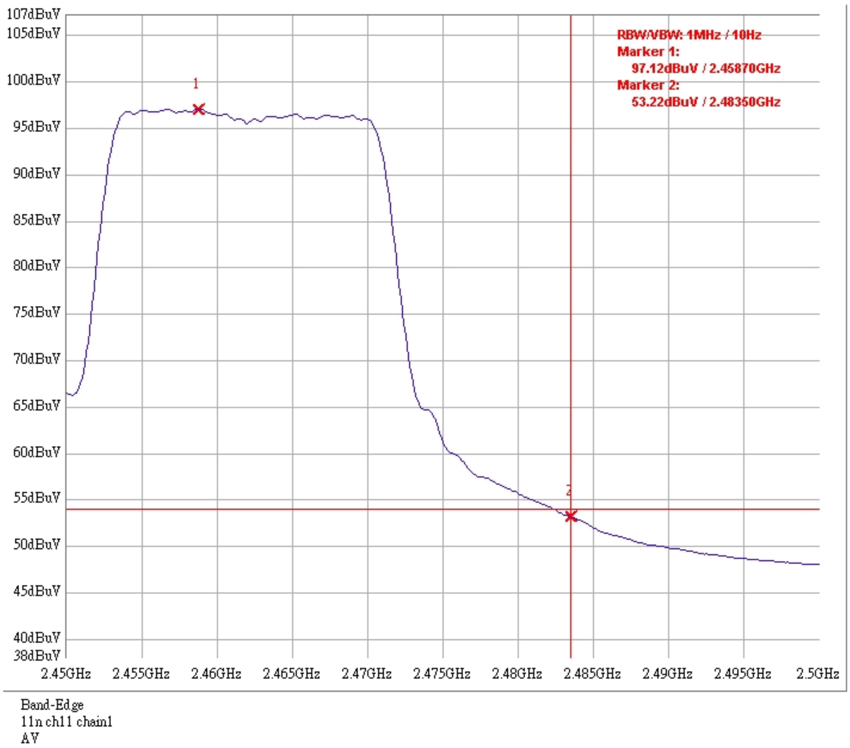
DAC1: Bandage @ Draft 802.11n 20MHz mode channel 1 (AV)



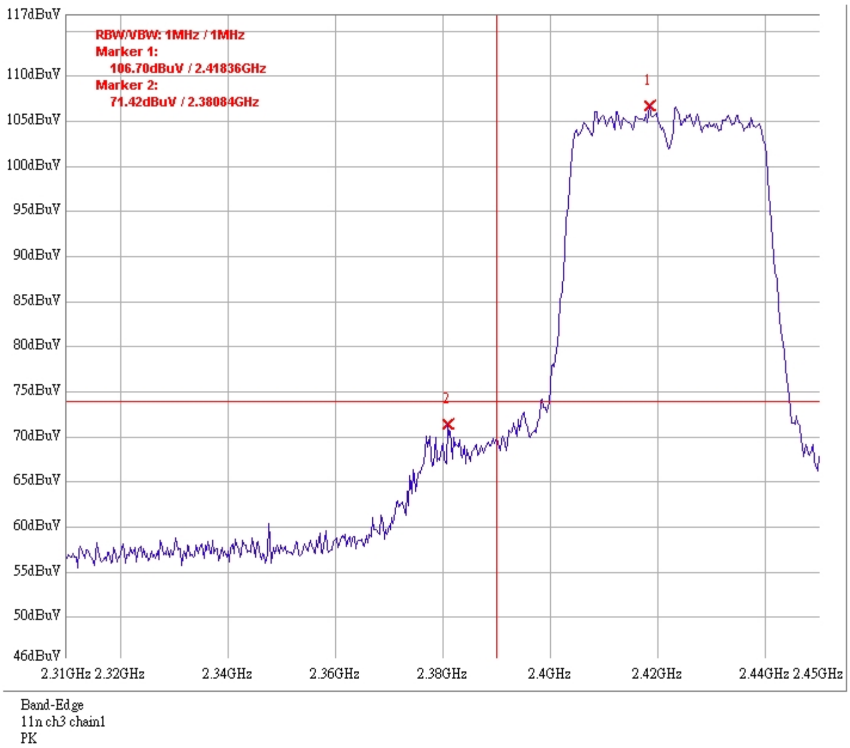
DAC1: Bandage @ Draft 802.11n 20MHz mode channel 11 (PK)



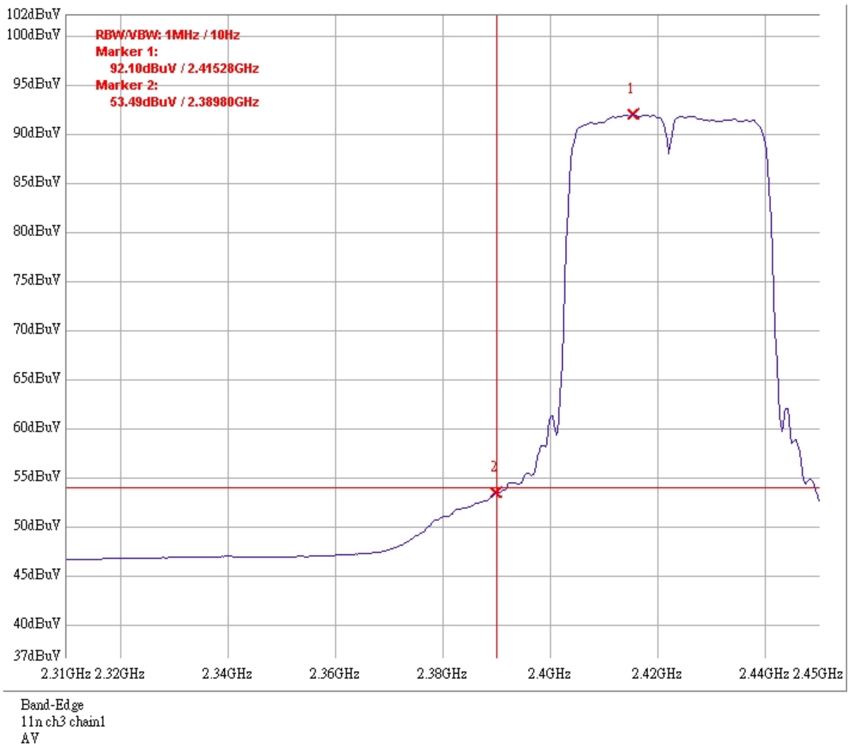
DAC1: Bandage @ Draft 802.11n 20MHz mode channel 11 (AV)



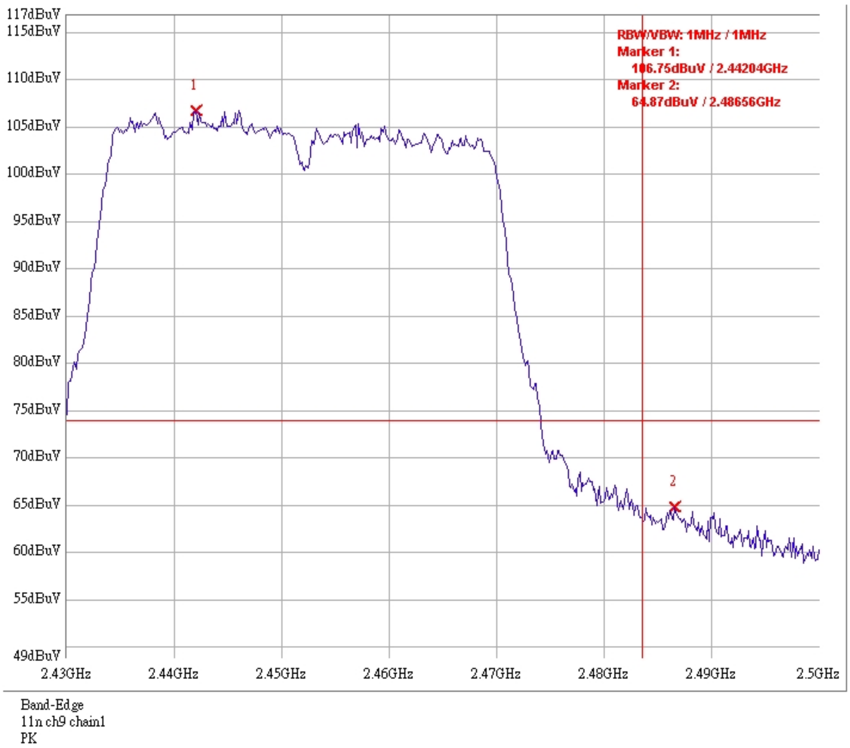
DAC1: Bandage @ Draft 802.11n 40MHz mode channel 3 (PK)



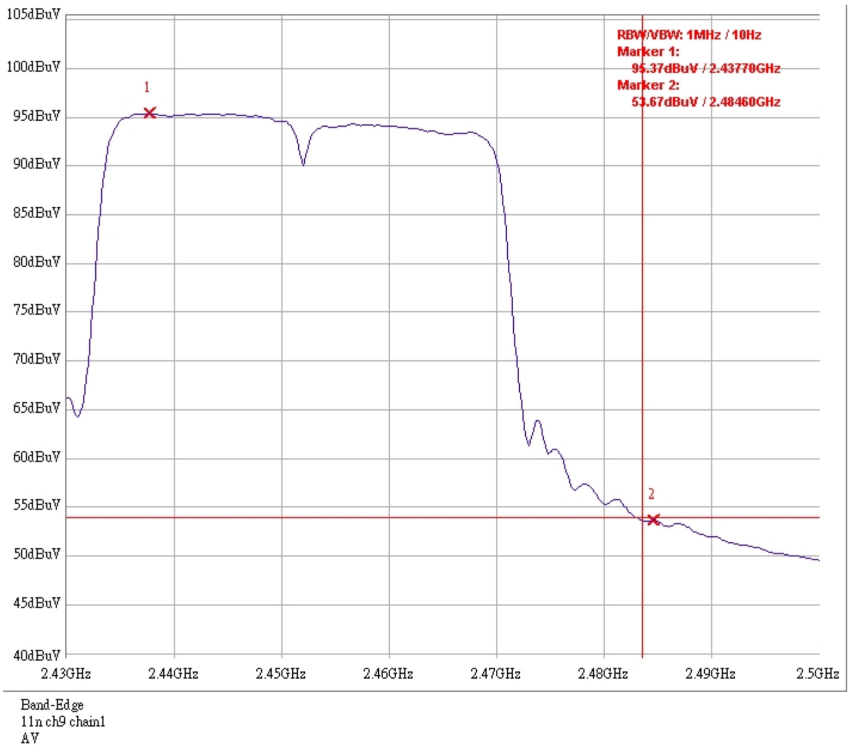
DAC1: Bandage @ Draft 802.11n 40MHz mode channel 3 (AV)



DAC1: Bandage @ Draft 802.11n 40MHz mode channel 9 (PK)

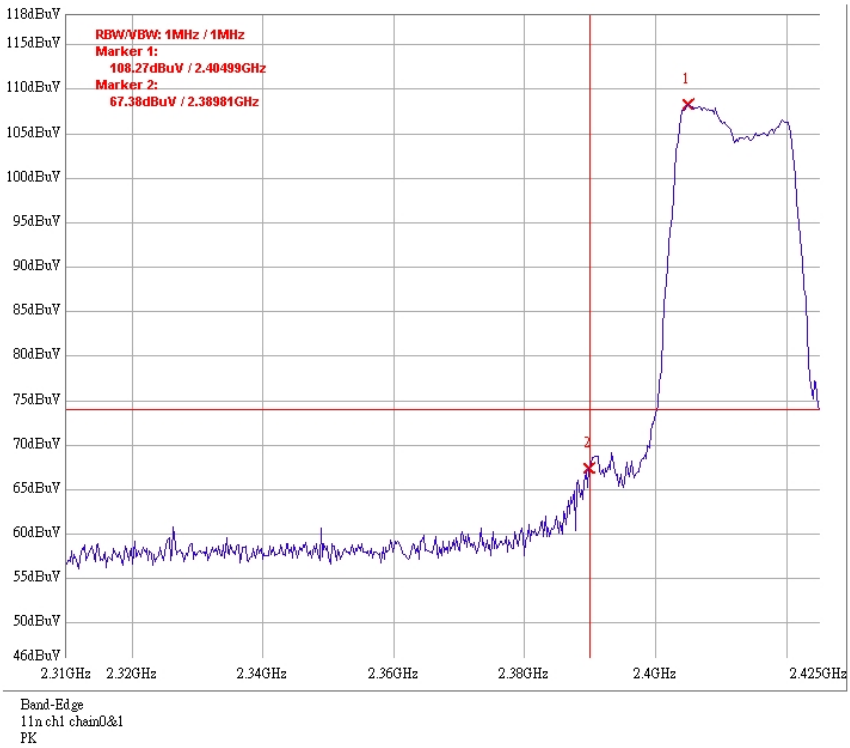


DAC1: Bandage @ Draft 802.11n 40MHz mode channel 9 (AV)

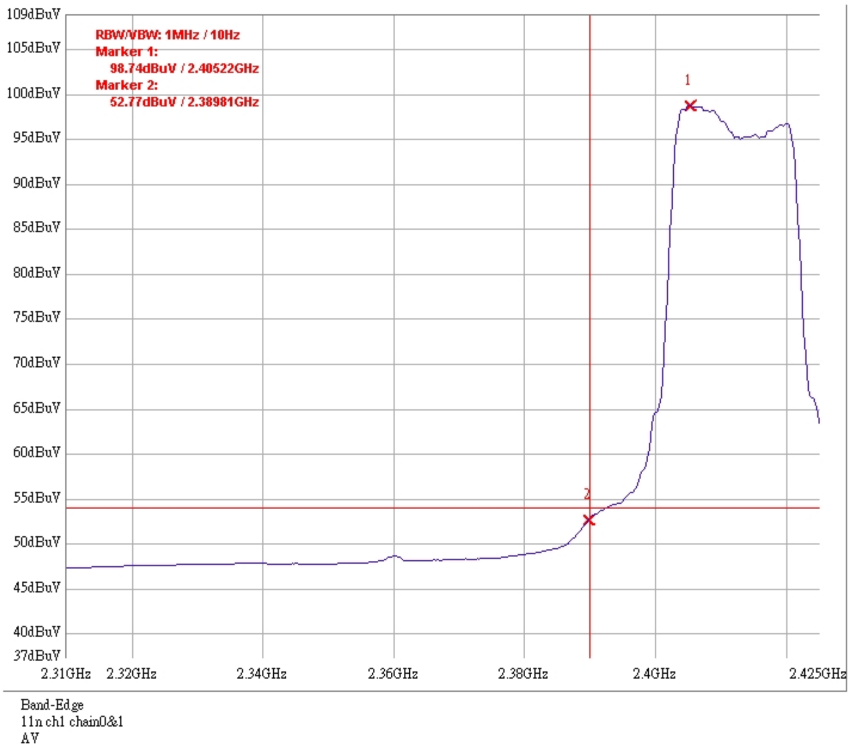


Dual Tx

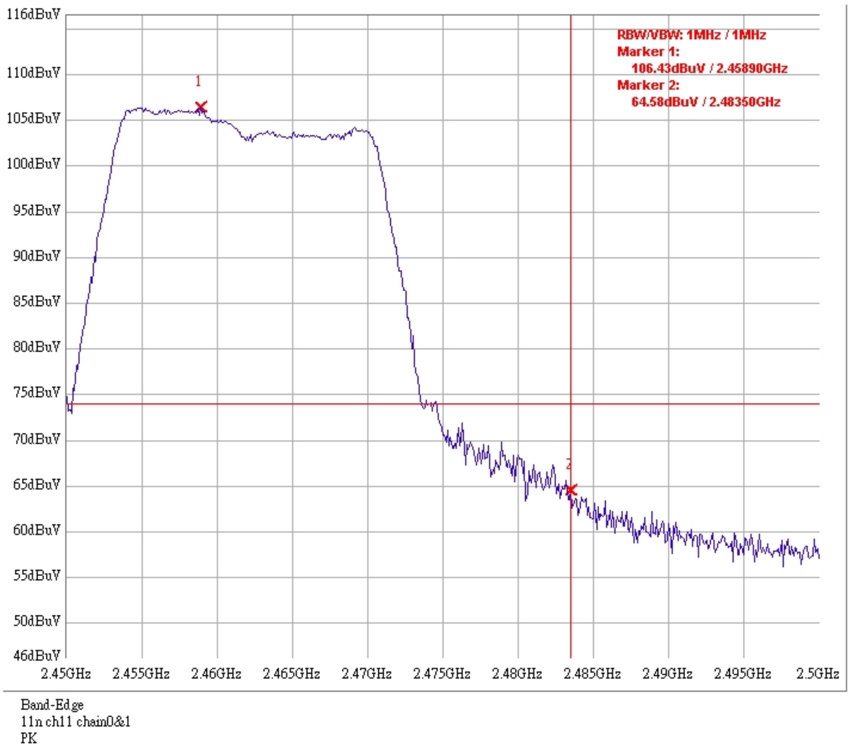
DAC0 & DAC1: Bandage @ Draft 802.11n 20MHz mode channel 1 (PK)



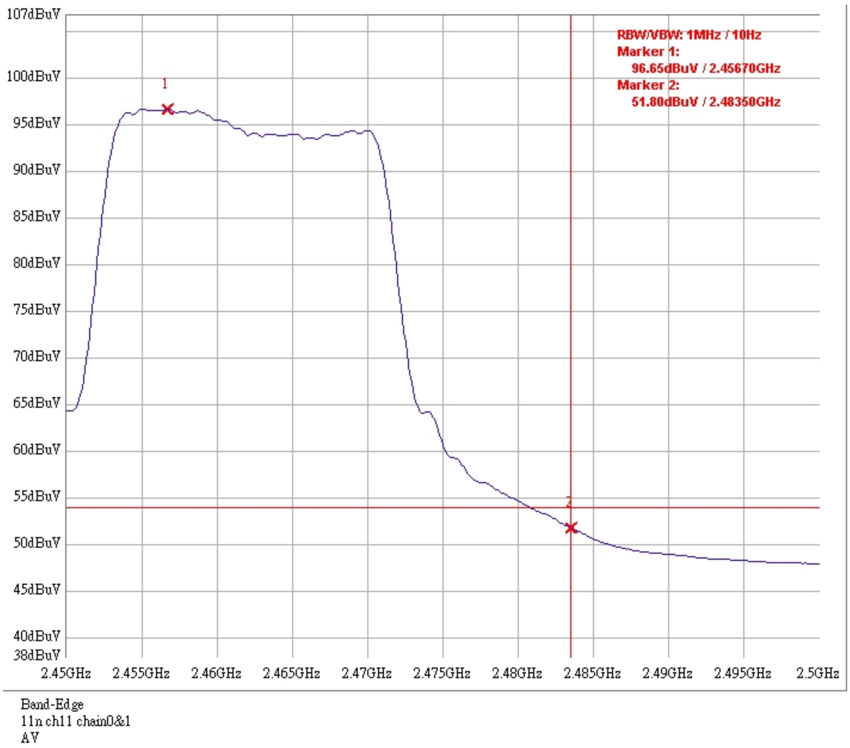
DAC0 & DAC1: Bandage @ Draft 802.11n 20MHz mode channel 1 (AV)



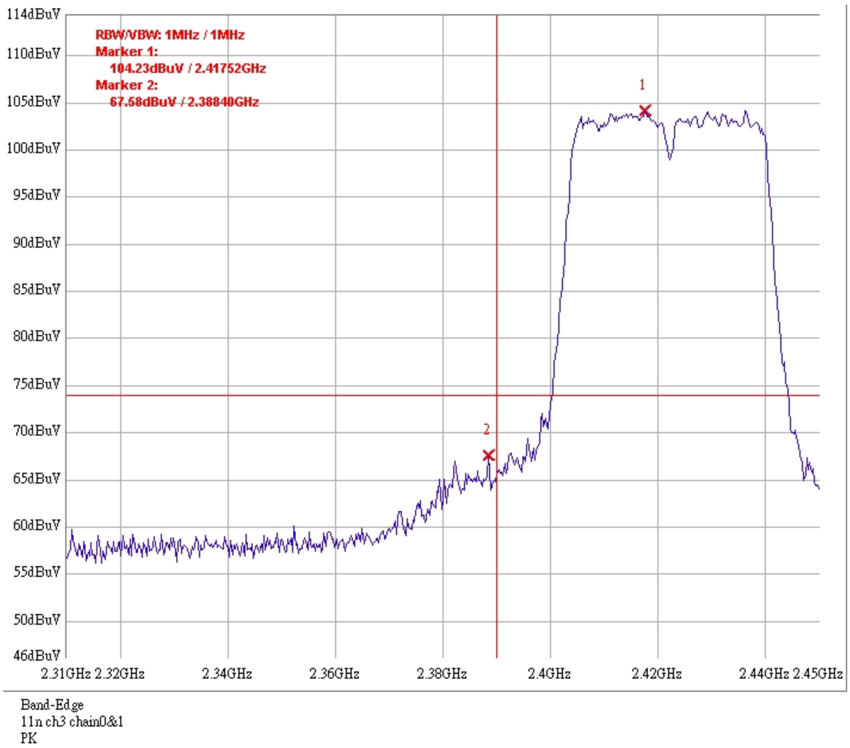
DAC0 & DAC1: Bandage @ Draft 802.11n 20MHz mode channel 11 (PK)



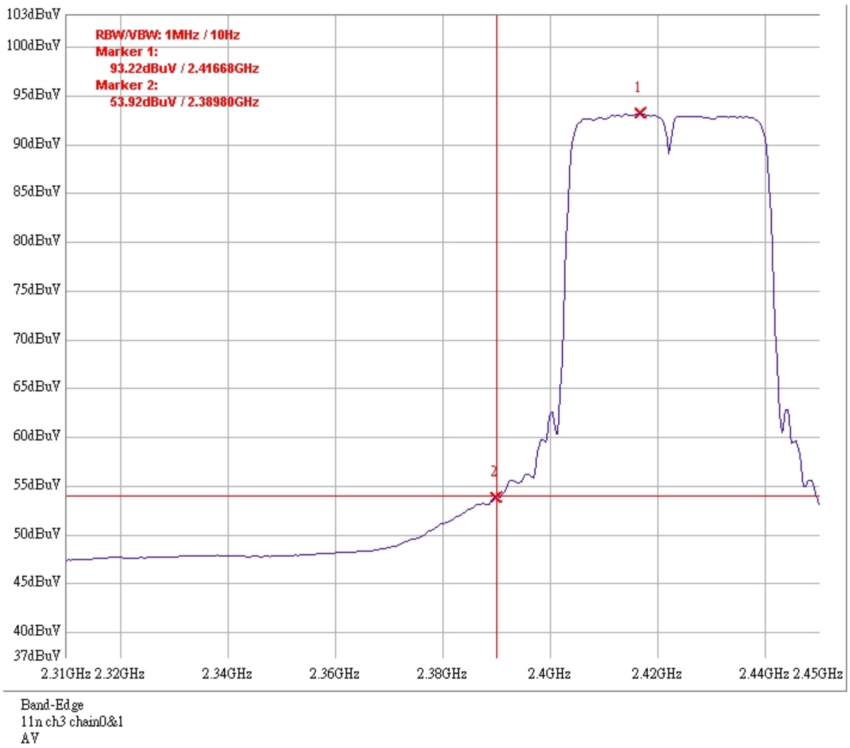
DAC0 & DAC1: Bandage @ Draft 802.11n 20MHz mode channel 11 (AV)



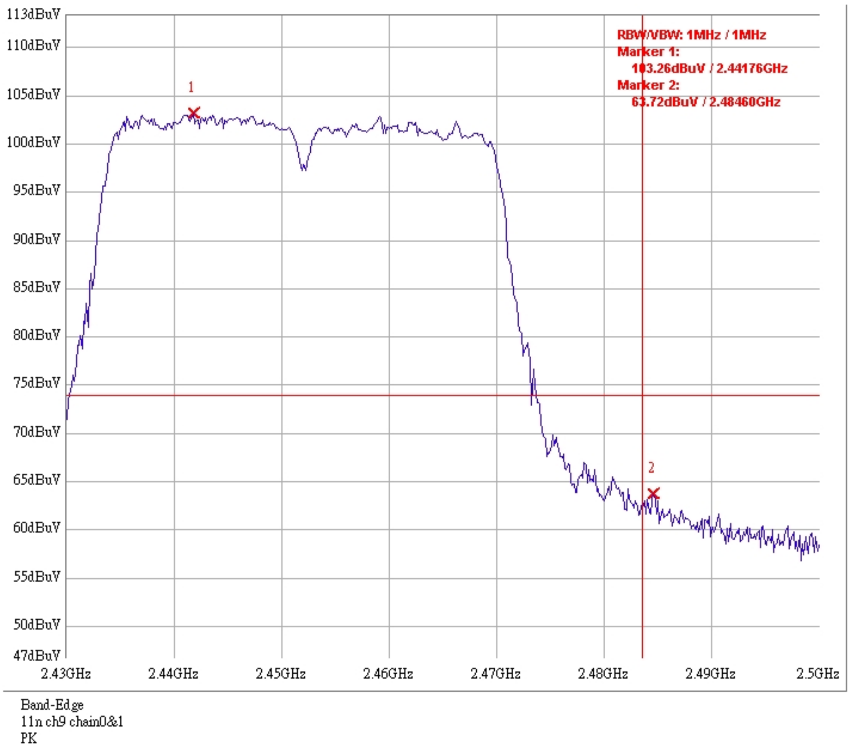
DAC0 & DAC1: Bandage @ Draft 802.11n 40MHz mode channel 3 (PK)



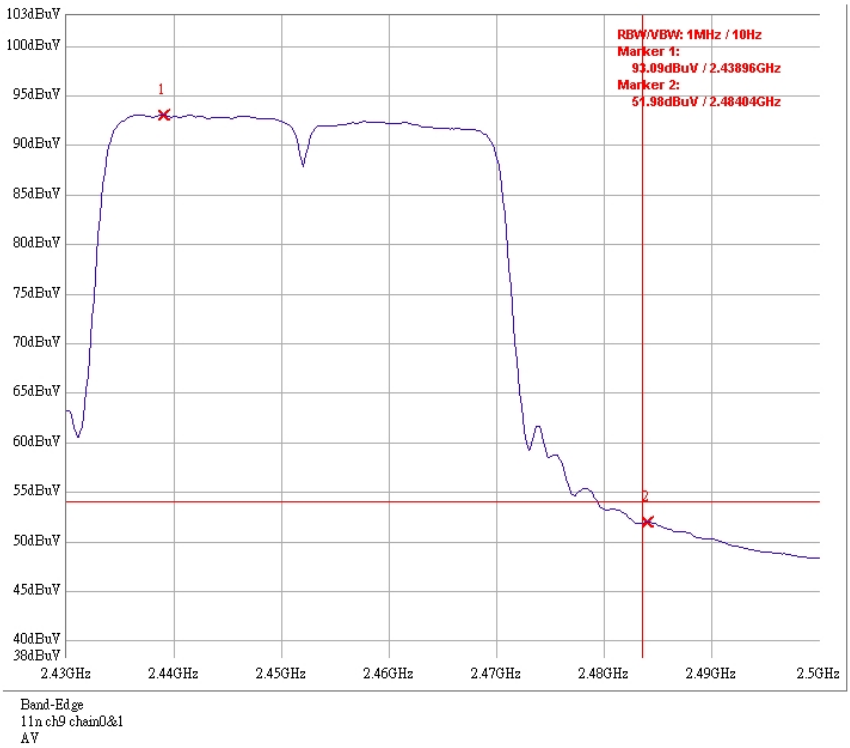
DAC0 & DAC1: Bandage @ Draft 802.11n 40MHz mode channel 3 (AV)



DAC0 & DAC1: Bandage @ Draft 802.11n 40MHz mode channel 9 (PK)



DAC0 & DAC1: Bandage @ Draft 802.11n 40MHz mode channel 9 (AV)



10. AC power line conducted emission

Name of Test	AC power line conducted emission
Base Standard	FCC 15.207

Tested By: Jimmie Liu
Test Date: Jul. 18, 2007

Test Equipment: EC365

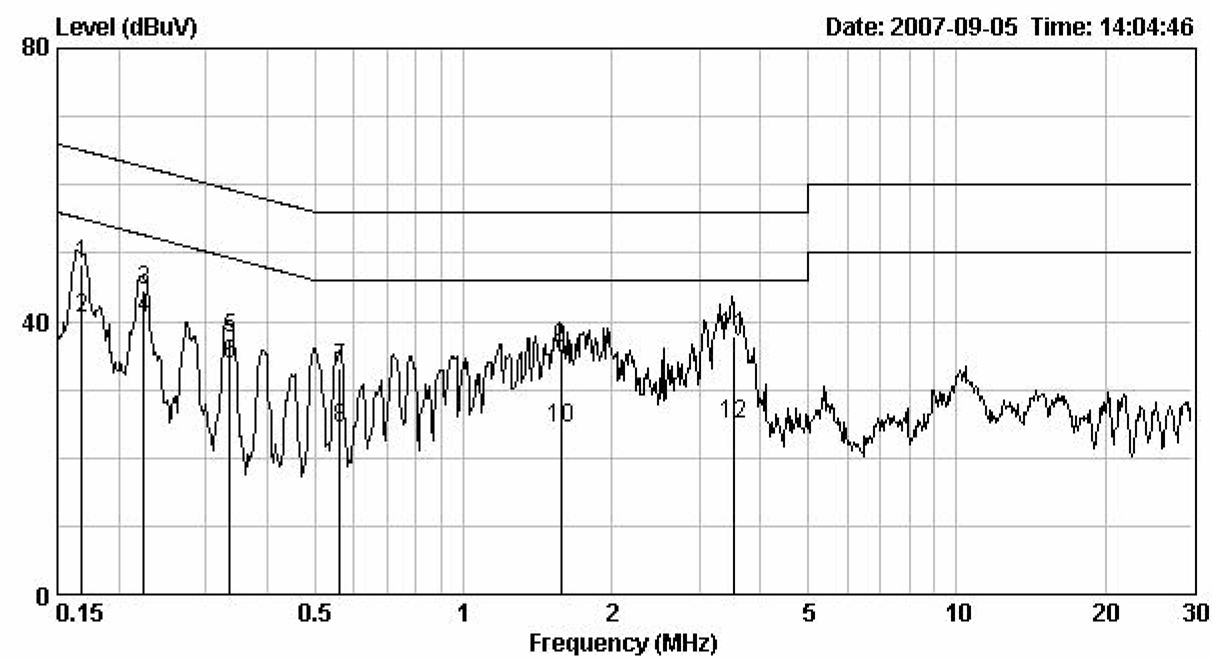
Test Result: Complies
Test Method: See Appendix E
Measurement Data: See Tables & plots below

Note: The EUT was tested while in normal communication mode.

Phase : Line
EUT : NWD210N
Worst Case : 802.11b normal operating mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Margin (dB) Av
0.168	0.80	48.49	65.05	40.55	55.05	-16.56	-14.50
0.225	0.68	44.66	62.64	40.50	52.64	-17.98	-12.14
0.337	0.28	37.39	59.29	33.60	49.29	-21.90	-15.69
0.562	0.10	33.07	56.00	24.28	46.00	-22.93	-21.72
1.574	0.13	35.93	56.00	24.31	46.00	-20.07	-21.69
3.519	0.26	37.77	56.00	24.87	46.00	-18.23	-21.13

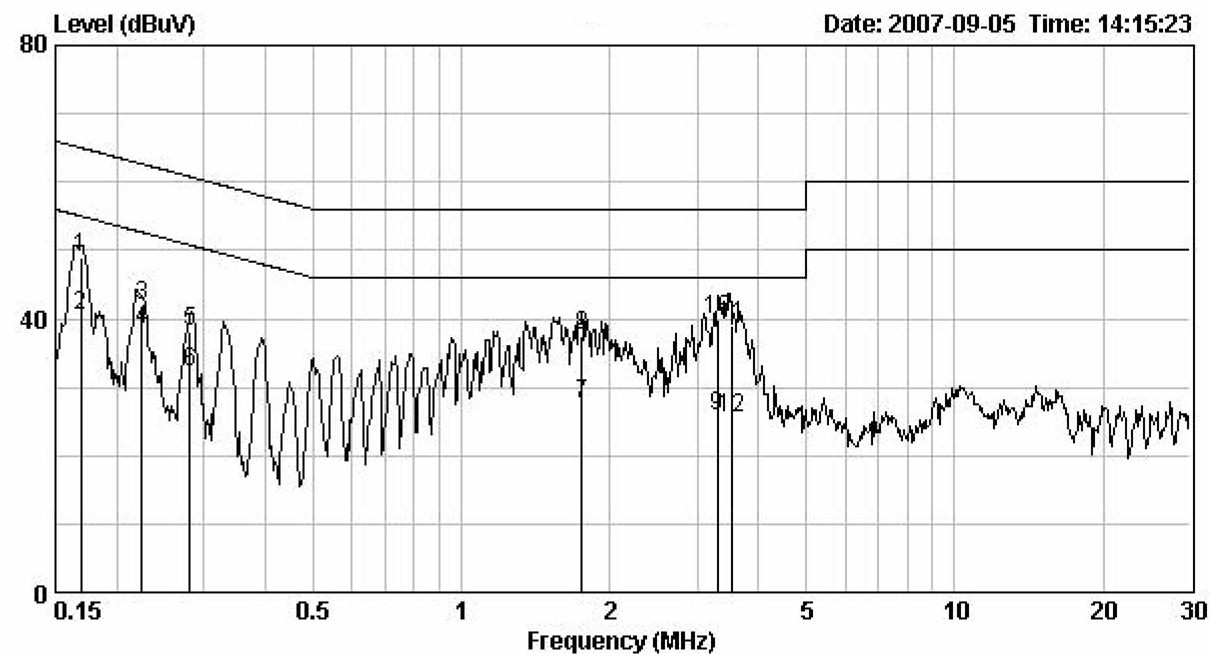
Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)



Phase : Neutral
EUT : NWD210N
Worst Case : 802.11b normal operating mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Margin (dB) Av
0.169	0.10	49.02	65.01	40.47	55.01	-15.99	-14.54
0.225	0.10	42.02	62.65	38.27	52.65	-20.63	-14.38
0.281	0.10	38.23	60.78	32.38	50.78	-22.55	-18.40
1.760	0.14	37.54	56.00	27.47	46.00	-18.46	-18.53
3.302	0.25	39.87	56.00	25.78	46.00	-16.13	-20.22
3.519	0.26	38.84	56.00	25.37	46.00	-17.16	-20.63

Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)



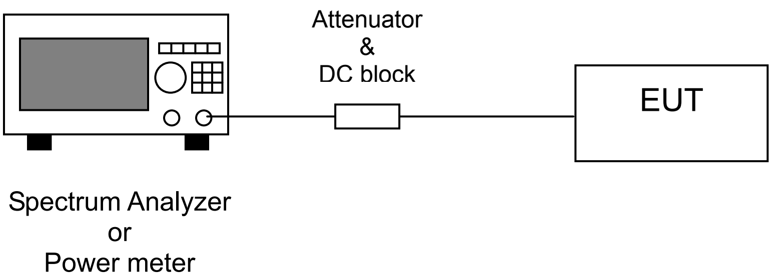
APPENDICES

Appendix A: 2.1046 - RF Power Output

A1. Method of Measurement:

The peak power at antenna terminals is measured using a Power Meter. Power output is measured with the maximum rated input level.

A2. Test Diagram:

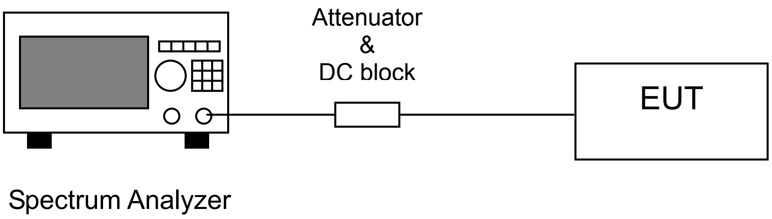


Appendix B: 2.1049 - Occupied Bandwidth

B1. Method of Measurement:

A portion of the transmitted signal is coupled to a Spectrum Analyzer with a resolution bandwidth of at least 1% of the bandwidth of the transmitted signal. The resolution bandwidth is chosen so as not to reduce the peak level of the measured waveform. The appropriate bandwidth mask is applied to the output waveform to verify compliance.

B1. Test Diagram:

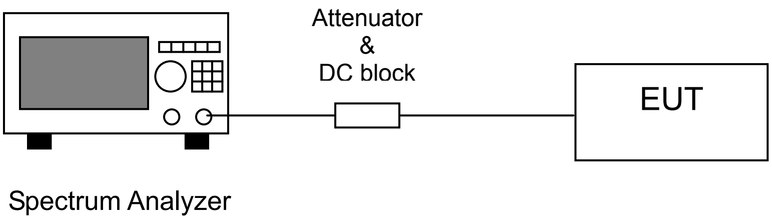


Appendix C: 2.1051 - Spurious Emission at Antenna Terminal

C1. Method of Measurement:

The measurements were performed from 30MHz to 25GHz RF antenna conducted per FCC 15.247 (d) was measured from the EUT antenna port using a 50ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 100 kHz. Harmonics and spurious noise must be at least 20dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. The table below is the results from the highest emission for each channel within the authorized band. This table was used to determine the spurious limits for each channel.

C2. Test Diagram:



Appendix D: 2.1053 – Field Strength of Spurious Radiation

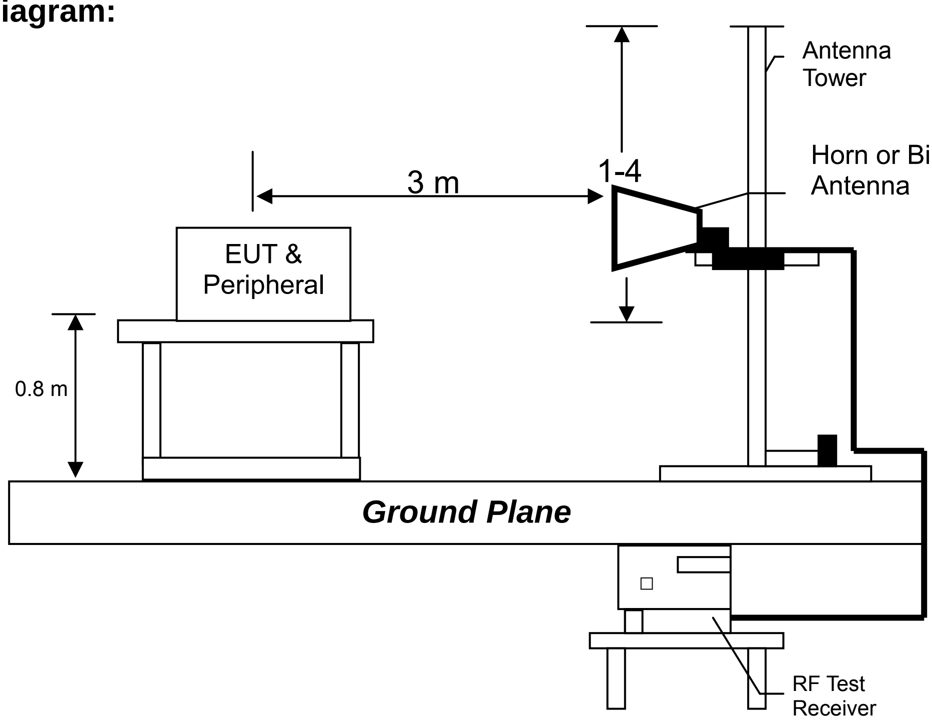
D1. Method of Measurement:

The frequency range from 30MHz to 1000MHz using Bilog Antenna.
The frequency range over 1GHz using Horn Antenna.

Radiated emissions were invested cover the frequency range from 30MHz to 1000MHz using a receiver RBW of 120kHz record QP reading, and the frequency over 1GHz using a spectrum analyzer RBW of 1MHz and 10Hz VBW record Average reading. (15.209 paragraph), the Peak reading (1MHz RBW/VBW) recorded also on the report.
The EUT for testing is arranged on a wooden turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter. The measurement for radiated emission will be done at the distance of three meters unless the signal level is too low to measure at that distance. In the case of the reading under noise floor, a pre-amplifier is used and/or the test is conducted at a closer distance. And then all readings are extrapolated back to the equivalent 3 meter reading using inverse scaling with distance.

The EUT configuration please refer to the “Spurious set-up photo.pdf”.

D2. Test Diagram:



D3. Emission Limit:

The spurious Emission shall test through the 10th harmonic. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

Frequency (MHz)	Limits (dBμV/m@3m)
30-88	40
88-216	43.5
216-960	46
Above 960	54

Remark:
1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

Appendix E: 15.207 – AC power line conducted emission

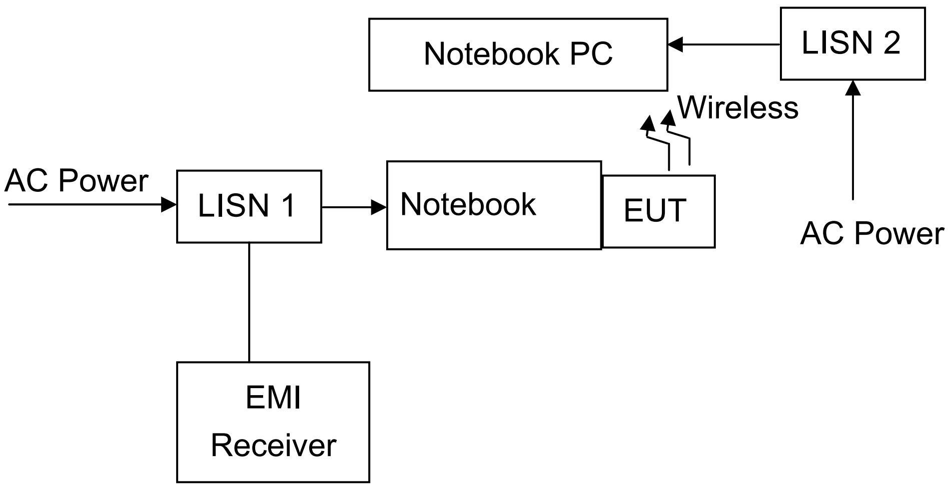
E1. Method of Measurement:

The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50 ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.

Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4/2003 on conducted measurement.
The bandwidth of the field strength meter (R & S Test Receiver ESCS 30) is set at 9kHz.

The EUT configuration please refer to the “Conducted set-up photo.pdf”.

E2. Test Diagram:



E3. Emission Limit:

Freq. (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56*	56 – 46*
0.50~5.00	56	46
5.00~30.0	60	50

*Decreases with the logarithm of the frequency.

Appendix F: Test Equipment List

Intertek ID No.	Equipment	Brand	Model No.	Calculation Due
EC303	EMI Test Receiver	Rohde & Schwarz	ESCS 30	04/26/2008
EC353	Spectrum Analyzer	Rohde & Schwarz	FSP 30	08/05/2008
EC365	Spectrum Analyzer	Rohde & Schwarz	FSEK 30	11/12/2007
EC354	Signal Generator	Rohde & Schwarz	SMR27	11/14/2007
EC371	Horn Antenna	SCHWARZBECK	BBHA 9120 D	12/22/2007
EC351	Horn Antenna	SCHWARZBECK	BBHA 9170	03/04/2008
EC347	Bilog Antenna	SCHWARZBECK	VULB 9168	12/23/2007
EC373	Pre-Amplifier	MITEQ	919981	03/07/2008
EC374	Pre-Amplifier	MITEQ	828825	01/15/2008
EP346	Controller	HDGmbH	CM 100	N/A
EP347	Antenna Tower	HDGmbH	MA 2400	N/A
EC344	LISN	Rohde & Schwarz	ESH3-Z5	03/29/2008
EC396	Wideband Peak Power Meter/ Sensor	Anritsu	ML2497A/ MA2491A	11/12/2007
EC363	Temperature Humidity Test Chamber	Juror	TR-4010	09/17/2008

Note: 1. The above equipments are within the valid calibration period.
2. The test antennas (receiving antenna) are calibration per 3 years.

Measurement Uncertainty:

Measurement uncertainty was calculated in accordance with NAMAS NIS 81.

Parameter	Uncertainty
Radiated Emission	±4.98 dB
Conducted Emission	±2.6 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.