

8. Radiated Spurious Emission

Name of Test	Radiated Spurious Emission
Base Standard	FCC 15.247(d), 15.209, 15.205

Test Result: Complies
Measurement Data: See Tables below

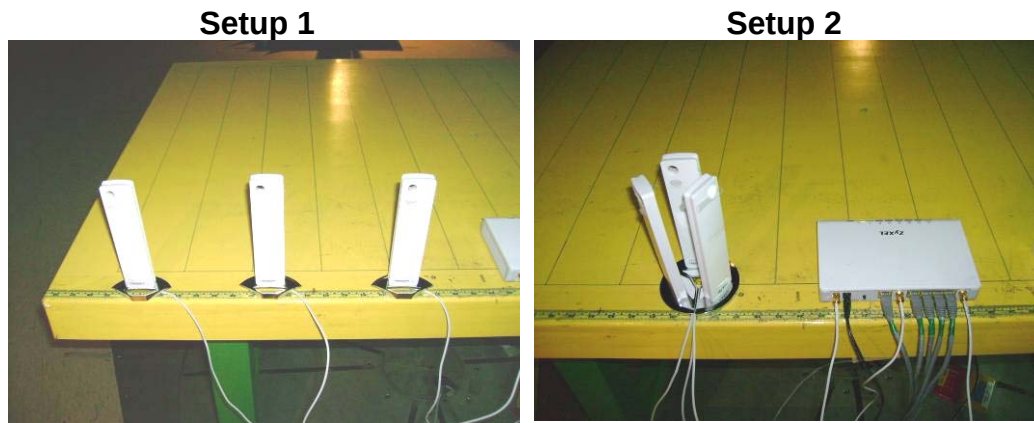
Method of Measurement:

Reference FCC document: KDB558074, ANSI C63.4

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

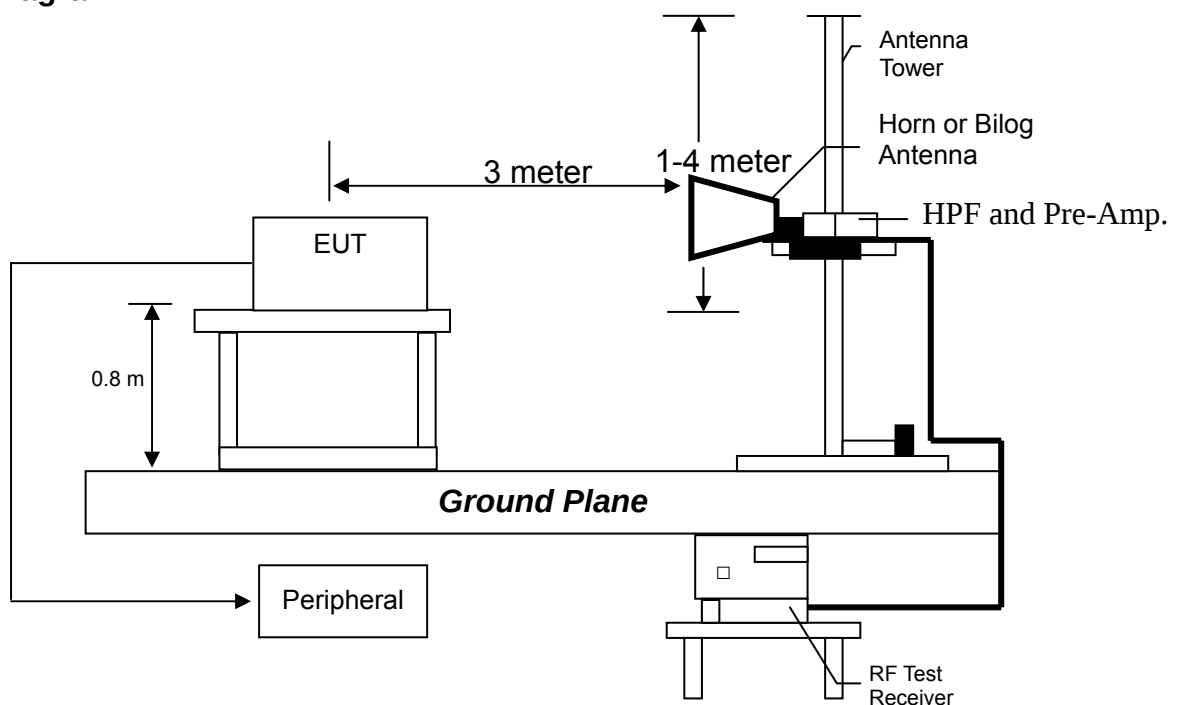
Radiated emissions were investigated cover the frequency range from 30 MHz to 1000 MHz using a receiver RBW of 120 kHz record QP reading, and the frequency over 1 GHz using a spectrum analyzer RBW of 1 MHz and 10 Hz VBW record Average reading. (15.209 paragraph), the Peak reading (1 MHz RBW/VBW) recorded 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 meters reading using inverse scaling with distance.

The signal is maximized through rotation and placement in the two setups.(NBG-460NH)
After verifying two setups, we found the maximum electromagnetic field was occurred at setup 1 configuration. The final test data was executed under this configuration.



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

Test Diagram:



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 (dB μ V/m@ 3 meter)
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

- Note:** (1) The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13.5 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.
- (1) The EUT operating at 2.4 GHz ISM band. Frequency Range scanned from 30 MHz to 25 GHz.

Measurement results: frequencies equal to or less than 1 GHz

The test was performed on EUT under 802.11b/g/n continuously triple transmitting mode. Channel 1, 6, 11 were verified. The worst case occurred at 802.11b Tx channel 1.

EUT : NBG-460NH
Worst Case : 802.11b Tx at channel 1

Antenna Polariz. (V/H)	Freq. (MHz)	Receiver Detector	Corr. Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
V	374.350	QP	15.06	19.34	34.40	46.00	-11.60
V	499.480	QP	18.43	21.25	39.67	46.00	-6.33
V	599.390	QP	20.71	14.34	35.05	46.00	-10.95
V	624.610	QP	20.75	17.76	38.51	46.00	-7.49
V	749.740	QP	22.74	15.39	38.13	46.00	-7.87
V	874.870	QP	23.70	11.86	35.56	46.00	-10.44
H	249.220	QP	12.36	22.78	35.14	46.00	-10.86
H	374.350	QP	15.48	20.80	36.27	46.00	-9.73
H	499.480	QP	18.64	16.71	35.35	46.00	-10.65
H	624.610	QP	20.88	15.26	36.13	46.00	-9.87
H	749.740	QP	22.95	19.01	41.96	46.00	-4.04
H	874.870	QP	24.12	16.34	40.45	46.00	-5.55

Remark:

1. Corr. Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Corr. Factor

EUT : NBG-460N
Worst Case : 802.11b Tx at channel 1

Antenna Polariz. (V/H)	Freq. (MHz)	Receiver Detector	Corr. Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
V	57.160	QP	12.90	26.35	39.24	40.00	-0.76
V	374.350	QP	15.06	19.15	34.21	46.00	-11.79
V	499.480	QP	18.43	20.56	38.98	46.00	-7.02
V	624.610	QP	20.75	19.46	40.21	46.00	-5.79
V	749.740	QP	22.74	19.70	42.44	46.00	-3.56
V	874.870	QP	23.70	13.03	36.73	46.00	-9.27
H	374.350	QP	15.48	21.45	36.92	46.00	-9.08
H	424.790	QP	16.81	11.92	28.73	46.00	-17.27
H	499.480	QP	18.64	18.12	36.76	46.00	-9.24
H	624.610	QP	20.88	13.30	34.17	46.00	-11.83
H	749.740	QP	22.95	17.95	40.90	46.00	-5.10
H	874.870	QP	24.12	15.09	39.20	46.00	-6.80

Remark:

1. Corr. Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Corr. Factor

Measurement results: frequency above 1GHz

EUT : NBG-460NH
Test : 802.11b Tx at channel 1(Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3210.00	PK	V	35.54	34.62	52.24	51.32	54	-2.68
4824.00	PK	V	36.07	37.77	50.00	51.70	54	-2.30
4824.00	PK	H	36.07	37.77	42.71	44.41	54	-9.59

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460NH
Test : 802.11b Tx at channel 6 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3240.00	PK	V	35.54	34.62	48.03	47.11	54	-6.89
4874.00	PK	V	36.07	37.77	48.47	50.17	54	-3.83
4874.00	PK	H	36.07	37.77	42.70	44.40	54	-9.60

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460NH
Test : 802.11b Tx at channel 11 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3270.00	PK	V	35.54	34.62	47.79	46.87	54	-7.13
4924.00	PK	V	36.07	37.77	49.46	51.16	54	-2.84
4924.00	PK	H	36.07	37.77	41.75	43.45	54	-10.55

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460NH
Test : 802.11g Tx at channel 1(Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3210.00	PK	V	35.54	34.62	52.43	51.51	54	-2.49
4824.00	PK	V	36.07	37.77	44.19	45.89	54	-8.11
6420.00	PK	V	36.65	40.87	42.83	47.05	54	-6.95
3210.00	PK	H	35.54	34.62	42.91	41.99	54	-12.01
4824.00	PK	H	36.07	37.77	38.08	39.78	54	-14.22

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460NH
Test : 802.11g Tx at channel 6 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3240.00	PK	V	35.54	34.62	51.74	50.82	54	-3.18
4874.00	PK	V	36.07	37.77	46.80	48.50	54	-5.50
4874.00	PK	H	36.07	37.77	38.93	40.63	54	-13.37

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460NH
Test : 802.11g Tx at channel 11 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3270.00	PK	V	35.54	34.62	49.81	48.89	54	-5.11
4924.00	PK	V	36.07	37.77	44.40	46.10	54	-7.90
4924.00	PK	H	36.07	37.77	37.56	39.26	54	-14.74

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460NH
Test : 802.11n HT20 Tx at channel 1 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3210.00	PK	V	35.54	34.62	51.99	51.07	54	-2.93
4824.00	PK	V	36.07	37.77	42.13	43.83	54	-10.17
4824.00	PK	H	36.07	37.77	37.92	39.62	54	-14.38

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460NH
Test : 802.11n HT20 Tx at channel 6 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3240.00	PK	V	35.54	34.62	51.33	50.41	54	-3.59
4874.00	PK	V	36.07	37.77	46.36	48.06	54	-5.94
4874.00	PK	H	36.07	37.77	38.71	40.41	54	-13.59

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460NH
Test : 802.11n HT20 Tx at channel 11 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3270.00	PK	V	35.54	34.62	50.07	49.15	54	-4.85
4924.00	PK	V	36.07	37.77	43.91	45.61	54	-8.39
4924.00	PK	H	36.07	37.77	38.62	40.32	54	-13.68

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460NH
Test : 802.11n HT40 Tx at channel 3 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3210.00	PK	V	35.54	34.62	51.02	50.10	54	-3.90
4844.00	PK	V	36.07	37.77	37.80	39.50	54	-14.50
4844.00	PK	H	36.07	37.77	37.42	39.12	54	-14.88

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460NH
Test : 802.11n HT40 Tx at channel 6 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3240.00	PK	V	35.54	34.62	50.97	50.05	54	-3.95
4874.00	PK	V	36.07	37.77	43.78	45.48	54	-8.52
4874.00	PK	H	36.07	37.77	37.53	39.23	54	-14.77

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460NH
Test : 802.11n HT40 Tx at channel 9 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3270.00	PK	V	35.54	34.62	48.77	47.85	54	-6.15
4904.00	PK	V	36.07	37.77	39.64	41.34	54	-12.66
4904.00	PK	H	36.07	37.77	37.67	39.37	54	-14.63

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460N
Test : 802.11b Tx at channel 1(Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3210.00	PK	V	35.54	34.62	49.22	48.30	54	-5.70
4824.00	PK	V	36.07	37.77	45.95	47.65	54	-6.35
7236.00	PK	V	36.18	43.97	41.38	49.17	54	-4.83
3210.00	PK	H	35.54	34.62	43.76	42.84	54	-11.16
4824.00	PK	H	36.07	37.77	41.75	43.45	54	-10.55

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460N
Test : 802.11b Tx at channel 6 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3240.00	PK	V	35.54	34.62	48.14	47.22	54	-6.78
4874.00	PK	V	36.07	37.77	46.95	48.65	54	-5.35
3240.00	PK	H	35.54	34.62	44.18	43.26	54	-10.74
4874.00	PK	H	36.07	37.77	41.15	42.85	54	-11.15

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460N
Test : 802.11b Tx at channel 11 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3270.00	PK	V	35.54	34.62	47.51	46.59	54	-7.41
4924.00	PK	V	36.07	37.77	47.4	49.10	54	-4.90
3270.00	PK	H	35.54	34.62	41.2	40.28	54	-13.72
4924.00	PK	H	36.07	37.77	41.48	43.18	54	-10.82

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460N
Test : 802.11g Tx at channel 1 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3210.00	PK	V	35.54	34.62	49.56	48.64	54	-5.36
4824.00	PK	V	36.07	37.77	43.43	45.13	54	-8.87
6420.00	PK	V	36.65	40.87	43.33	47.55	54	-6.45
3210.00	PK	H	35.54	34.62	47.86	46.94	54	-7.06
4824.00	PK	H	36.07	37.77	38.39	40.09	54	-13.91

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460N
Test : 802.11g Tx at channel 6 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3240.00	PK	V	35.54	34.62	50.20	49.28	54	-4.72
4874.00	PK	V	36.07	37.77	43.10	44.80	54	-9.20
6480.00	PK	V	36.65	40.87	42.26	46.48	54	-7.52
4876.00	PK	H	36.07	37.77	43.53	45.23	54	-8.77
4874.00	PK	H	36.07	37.77	39.14	40.84	54	-13.16

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460N
Test : 802.11g Tx at channel 11 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3270.00	PK	V	35.54	34.62	50.15	49.23	54	-4.77
4924.00	PK	V	36.07	37.77	42.97	44.67	54	-9.33
3270.00	PK	H	35.54	34.62	44.23	43.31	54	-10.69
4924.00	PK	H	36.07	37.77	38.27	39.97	54	-14.03

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460N
Test : 802.11n HT20 Tx at channel 1 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3210.00	PK	V	35.54	34.62	50.02	49.10	54	-4.90
4824.00	PK	V	36.07	37.77	42.07	43.77	54	-10.23
6420.00	PK	V	36.65	40.87	42.41	46.63	54	-7.37
3210.00	PK	H	35.54	34.62	45.03	44.11	54	-9.89
4824.00	PK	H	36.07	37.77	37.82	39.52	54	-14.48

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460N
Test : 802.11n HT20 Tx at channel 6 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3240.00	PK	V	35.54	34.62	51.15	50.23	54	-3.77
4874.00	PK	V	36.07	37.77	44.25	45.95	54	-8.05
3240.00	PK	H	35.54	34.62	45.72	44.80	54	-9.20
4874.00	PK	H	36.07	37.77	39.59	41.29	54	-12.71

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460N
Test : 802.11n HT20 Tx at channel 11 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3270.00	PK	V	35.54	34.62	50.26	49.34	54	-4.66
4924.00	PK	V	36.07	37.77	42.71	44.41	54	-9.59
6570.00	PK	V	36.58	42.96	40.10	46.48	54	-7.52
4924.00	PK	H	36.07	37.77	38.63	40.33	54	-13.67

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460N
Test : 802.11n HT40 Tx at channel 3 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3210.00	PK	V	35.54	34.62	49.10	48.18	54	-5.82
4844.00	PK	V	36.07	37.77	37.86	39.56	54	-14.44
3210.00	PK	H	35.54	34.62	45.90	44.98	55	-10.02
4844.00	PK	H	36.07	37.77	37.71	39.41	54	-14.59

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460N
Test : 802.11n HT40 Tx at channel 6 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3240.00	PK	V	35.54	34.62	49.69	48.77	54	-5.23
4874.00	PK	V	36.07	37.77	39.24	40.94	54	-13.06
3240.00	PK	H	35.54	34.62	45.33	44.41	54	-9.59
4874.00	PK	H	36.07	37.77	38.49	40.19	54	-13.81

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : NBG-460N
Test : 802.11n HT40 Tx at channel 9 (Triple)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3270.00	PK	V	35.54	34.62	48.14	47.22	54	-6.78
4904.00	PK	V	36.07	37.77	38.79	40.49	54	-13.51
3270.00	PK	H	35.54	34.62	42.94	42.02	54	-11.98
4904.00	PK	H	36.07	37.77	37.46	39.16	54	-14.84

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

9. Emission on Band Edge

Name of Test	Emission Band Edge
Base Standard	FCC 15.247(d)

Test Result: Complies
Measurement Data: See Tables & plots below

Method of Measurement:

Reference FCC document: KDB558074, ANSI C63.4

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

Radiated emissions were investigated cover the frequency range from 30 MHz to 1000 MHz using a receiver RBW of 120 kHz record QP reading, and the frequency over 1 GHz using a spectrum analyzer RBW of 1 MHz and 10 Hz VBW record Average reading. (15.209 paragraph), the Peak reading (1 MHz RBW/VBW) recorded also on the report.

- Note:**
1. The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13.5 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.
 2. Sweep time setting: Low freq. range (PK: 5ms, AV:29s) High freq. range (PK: 2.5ms, AV:12.5s)

NBG-460NH

Test Mode: 802.11b operating mode

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
1 (lowest)	2310-2390	PK	58.31	74	-15.69
		AV	47.82	54	-6.18
11 (highest)	2483.5-2500	PK	60.92	74	-13.08
		AV	48.39	54	-5.61

NBG-460NH

Test Mode: 802.11g operating mode

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
1 (lowest)	2310-2390	PK	68.08	74	-5.92
		AV	52.85	54	-1.15
11 (highest)	2483.5-2500	PK	73.42	74	-0.58
		AV	53.58	54	-0.42

NBG-460NH

Test Mode: 802.11n HT20 operating mode

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
1 (lowest)	2310-2390	PK	70.44	74	-3.56
		AV	53.22	54	-0.78
11 (highest)	2483.5-2500	PK	71.20	74	-2.8
		AV	53.02	54	-0.98

NBG-460NH

Test Mode: 802.11n HT40 operating mode

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3 (lowest)	2310-2390	PK	72.85	74	-1.15
		AV	52.88	54	-1.12
9 (highest)	2483.5-2500	PK	71.21	74	-2.79
		AV	53.45	54	-0.55

NBG-460N

Test Mode: 802.11b operating mode

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
1 (lowest)	2310-2390	PK	59.01	74	-14.99
		AV	47.61	54	-6.39
11 (highest)	2483.5-2500	PK	58.33	74	-15.67
		AV	46.85	54	-7.15

NBG-460N

Test Mode: 802.11g operating mode

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
1 (lowest)	2310-2390	PK	69.49	74	-4.51
		AV	52.97	54	-1.03
11 (highest)	2483.5-2500	PK	66.84	74	-7.16
		AV	50.12	54	-3.88

NBG-460N
Test Mode: 802.11n HT20 operating mode

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
1 (lowest)	2310-2390	PK	68.17	74	-5.83
		AV	52.19	54	-1.81
11 (highest)	2483.5-2500	PK	62.81	74	-11.19
		AV	49.68	54	-4.32

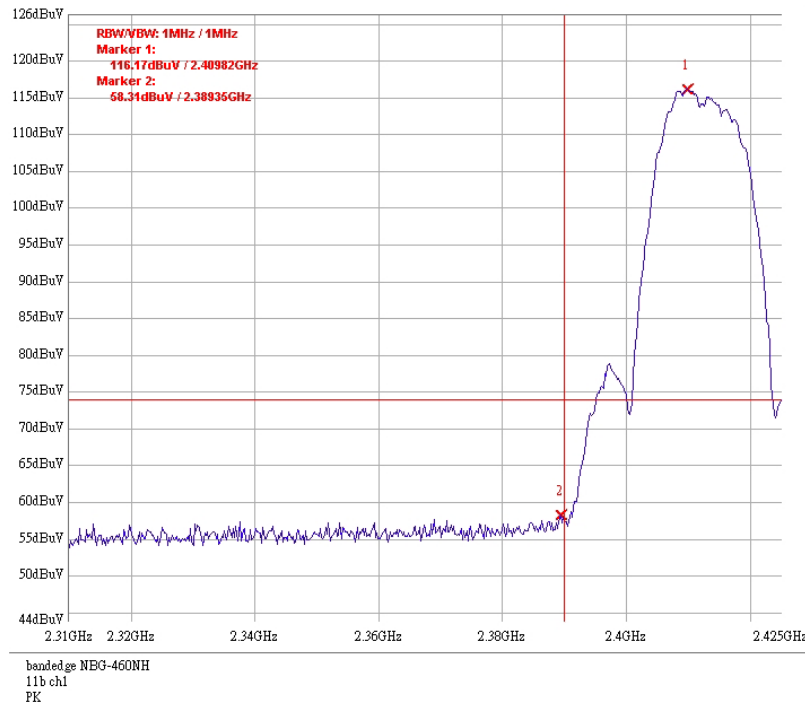
NBG-460N
Test Mode: 802.11n HT40 operating mode

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3 (lowest)	2310-2390	PK	72.75	74	-1.25
		AV	52.19	54	-1.81
9 (highest)	2483.5-2500	PK	67.56	74	-6.44
		AV	49.92	54	-4.08

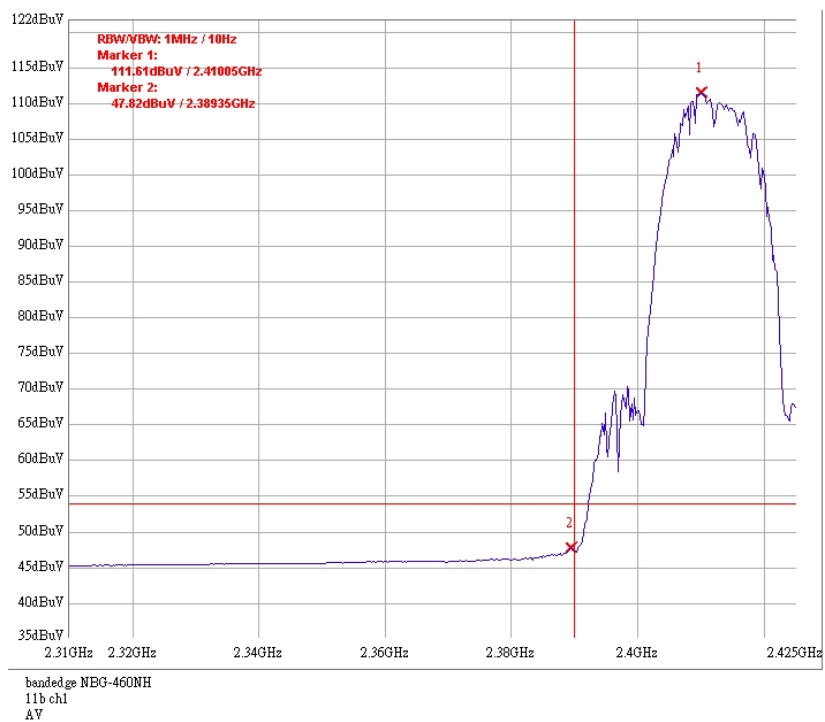
Please see the plot below.

(1) EUT: NBG-460NH

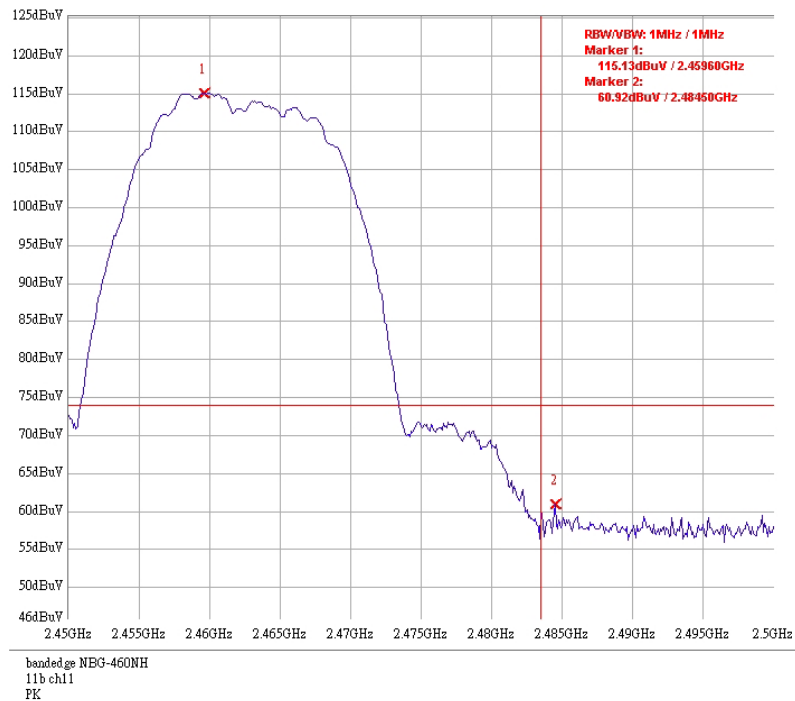
Band edge @ 802.11b mode channel 1 PK



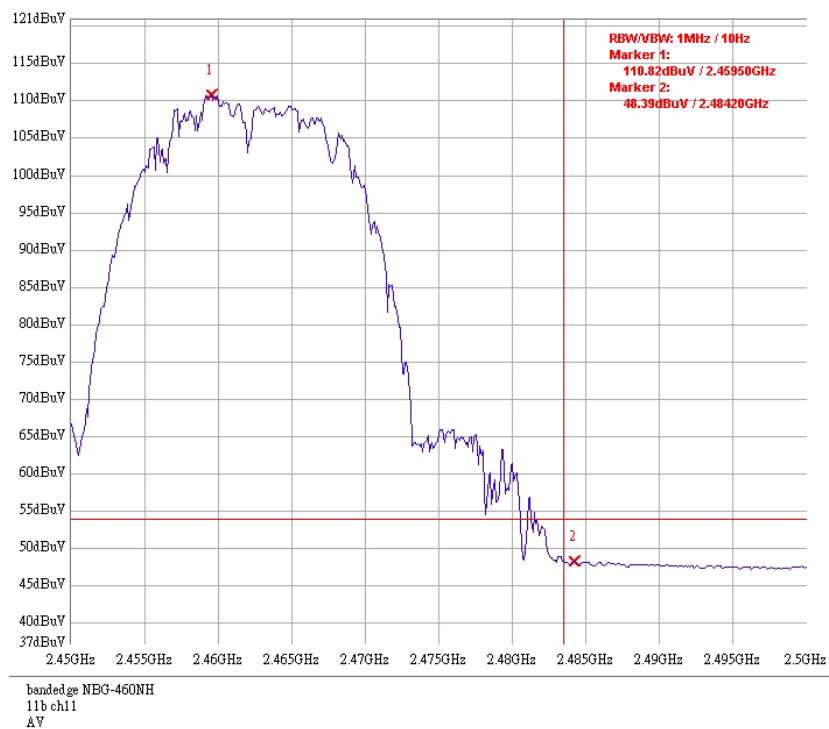
Band edge @ 802.11b mode channel 1 AV



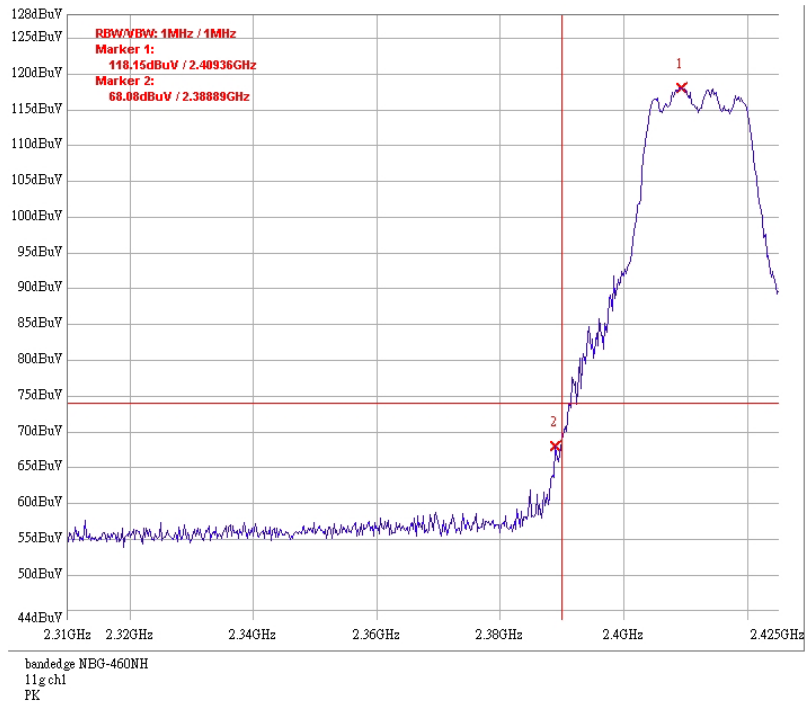
Band edge @ 802.11b mode channel 11 PK



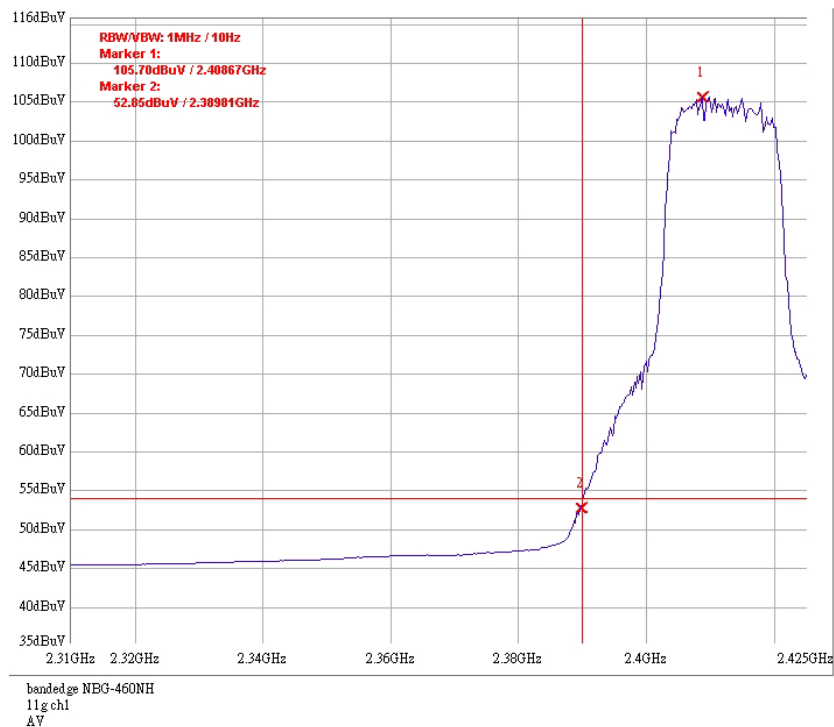
Band edge @ 802.11b mode channel 11 AV



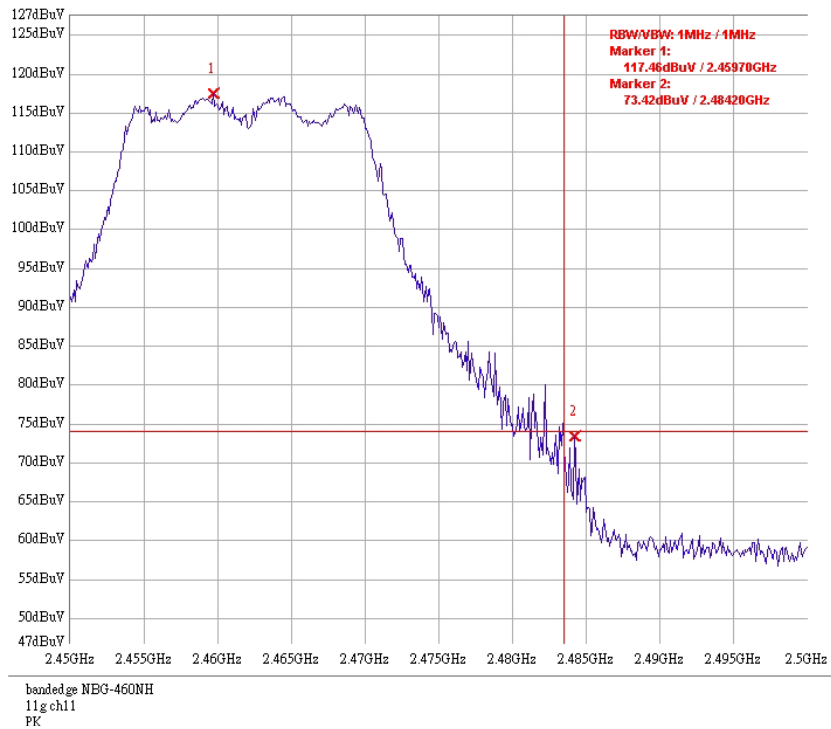
Band edge @ 802.11g mode channel 1 PK



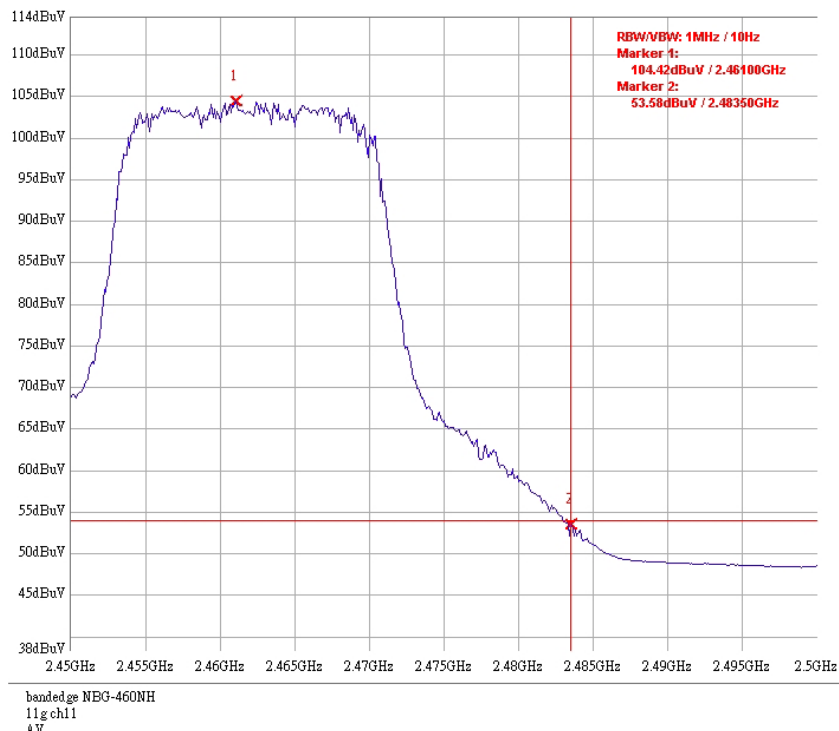
Band edge @ 802.11g mode channel 1 AV



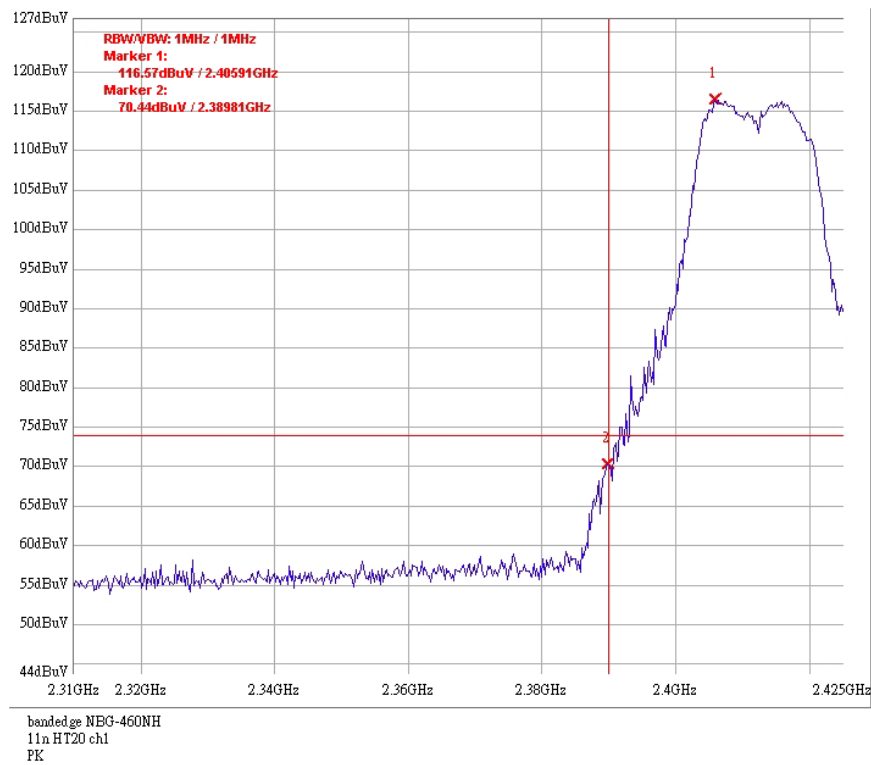
Band edge @ 802.11g mode channel 11 PK



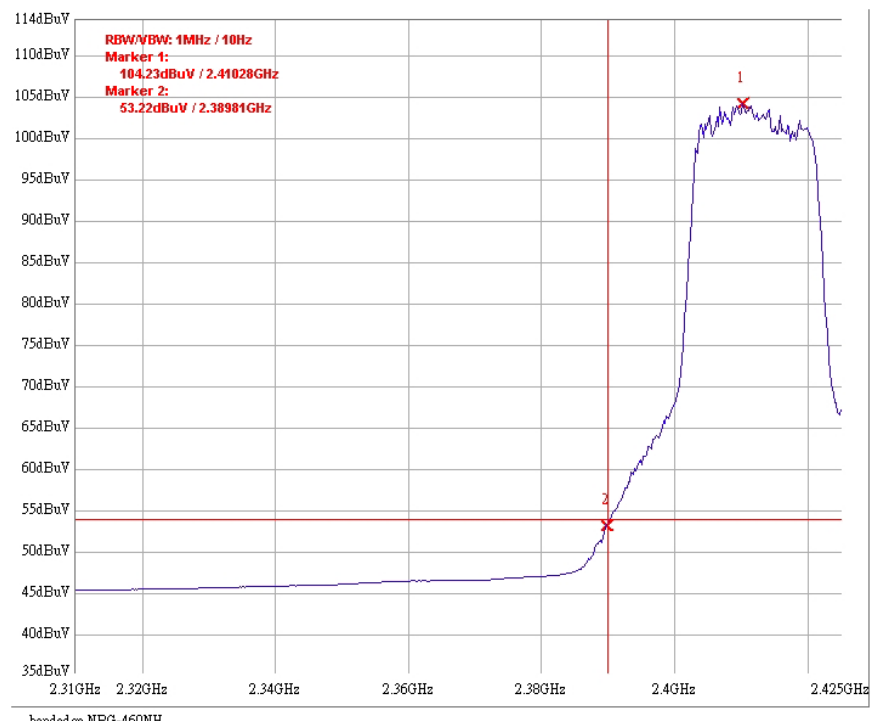
Band edge @ 802.11g mode channel 11 AV



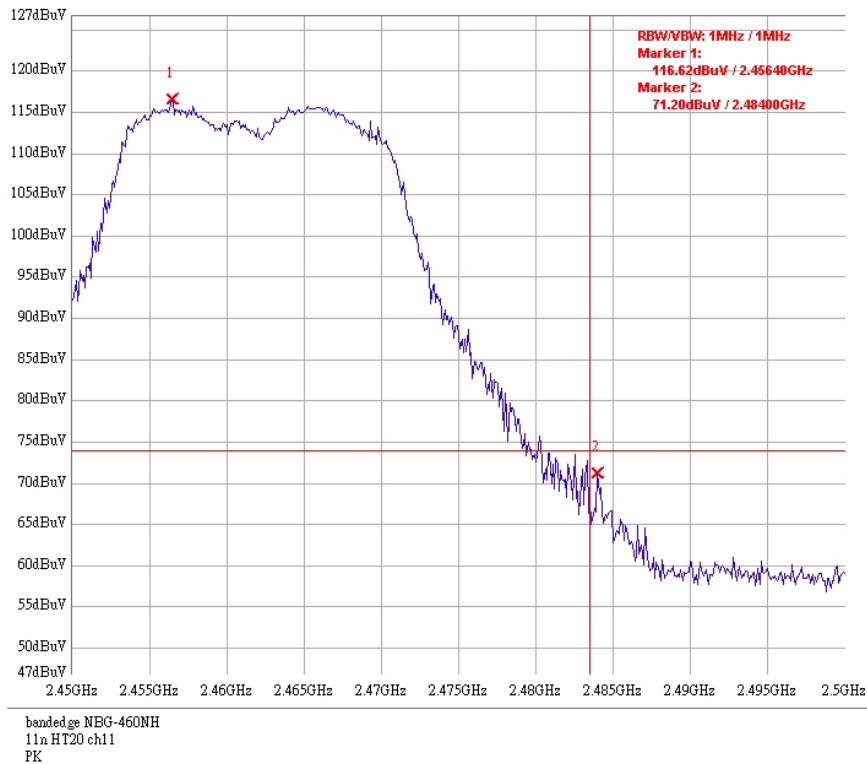
Band edge @802.11n HT20 mode channel 1 PK



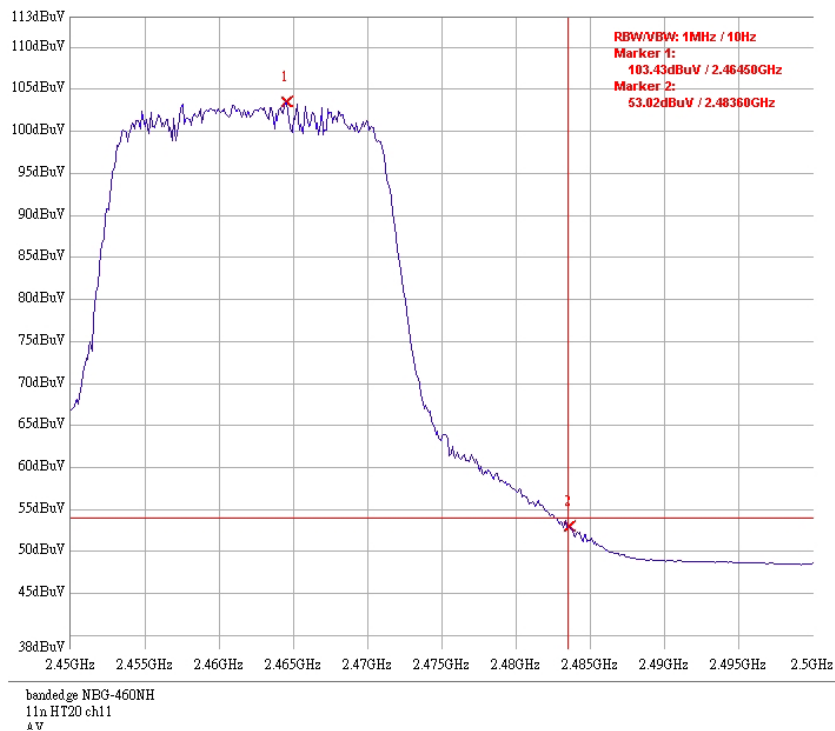
Band edge @802.11n HT20 mode channel 1 AV



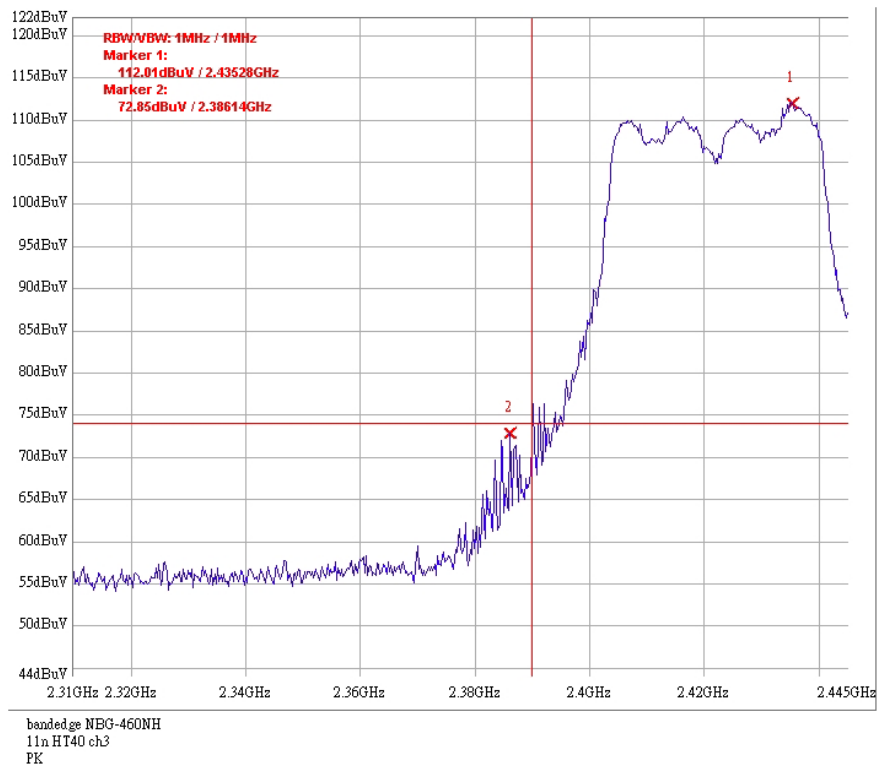
Band edge @802.11n HT20 mode channel 11 PK



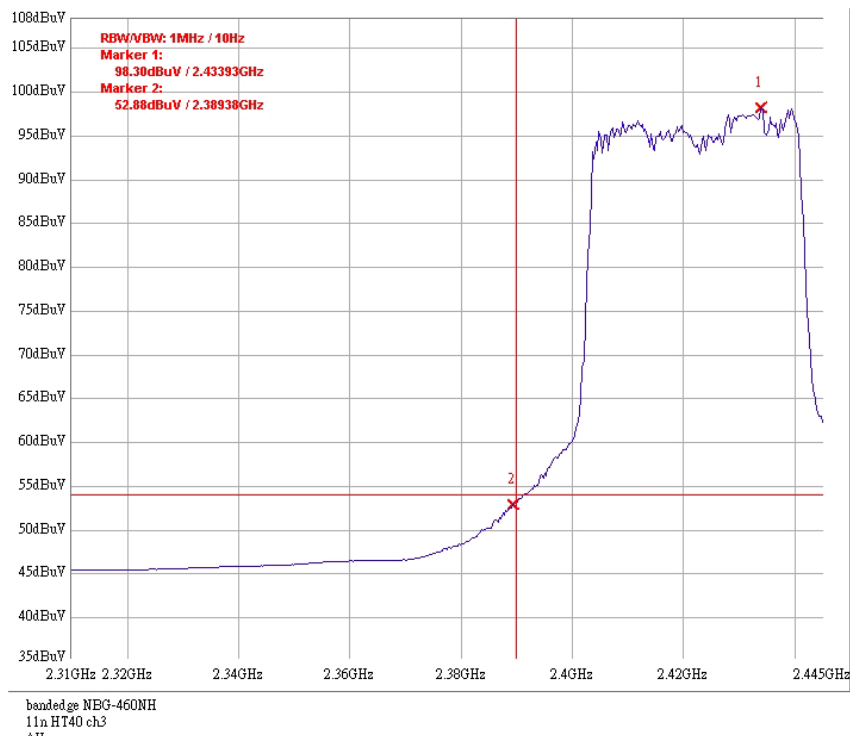
Band edge @802.11n HT20 mode channel 11 AV



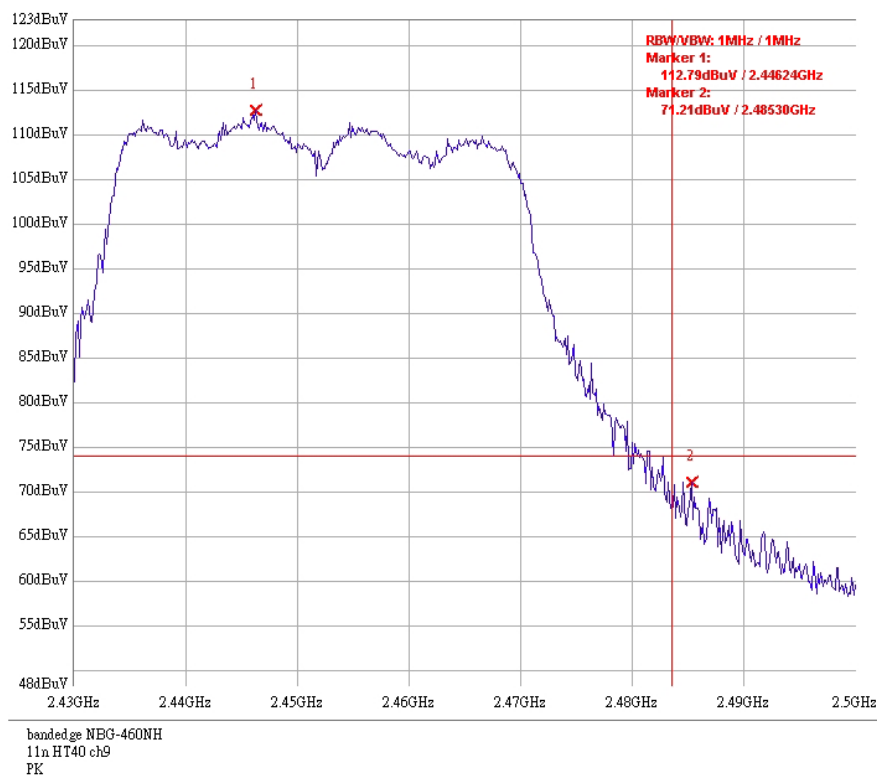
Band edge @802.11n HT40 mode channel 3 PK



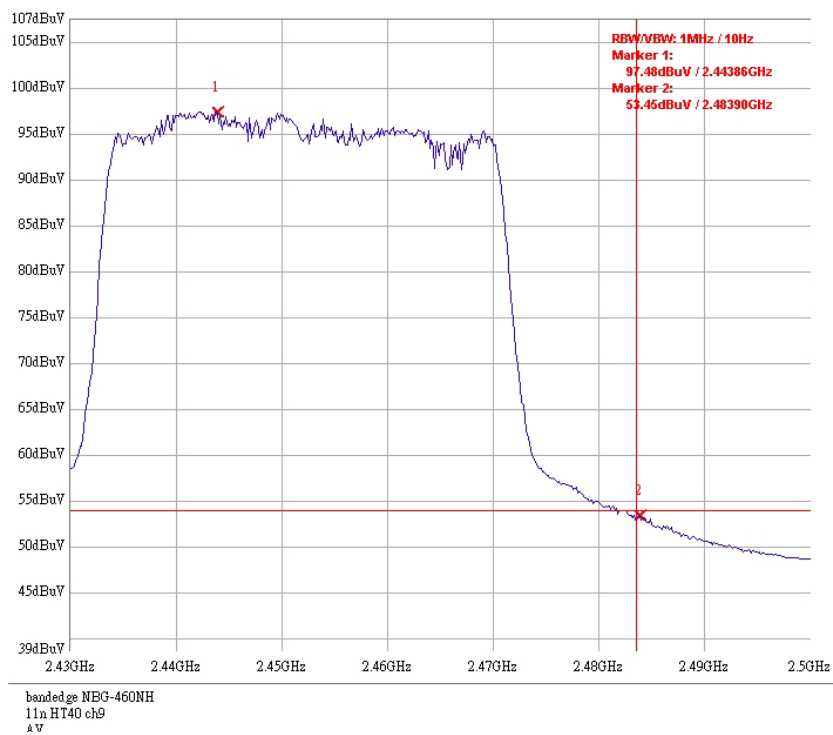
Band edge @802.11n HT40 mode channel 3 AV



Band edge @802.11n HT40 mode channel 9 PK

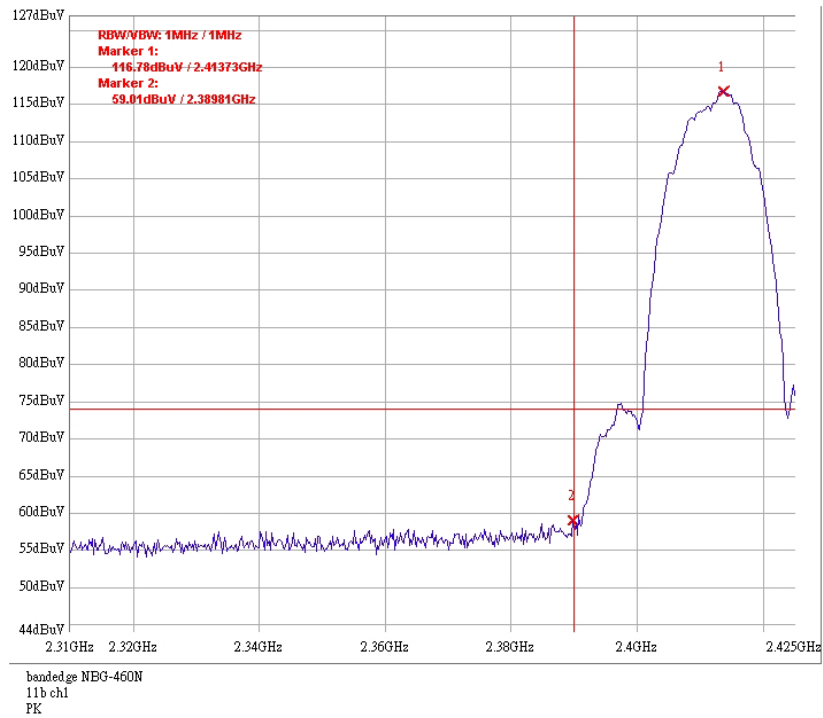


Band edge @802.11n HT40 mode channel 9 AV

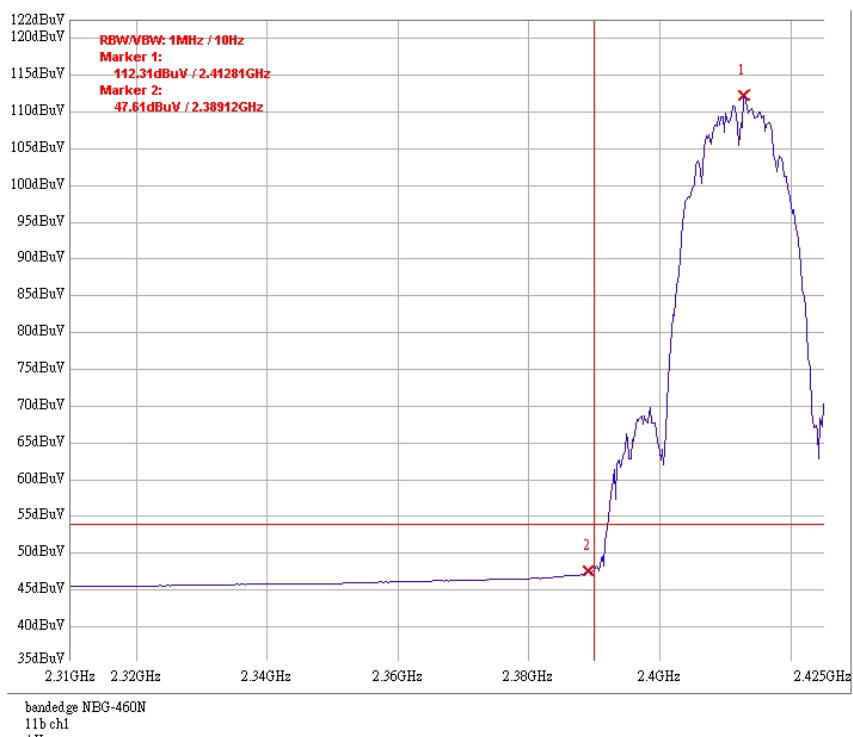


(2) EUT: NBG-460N

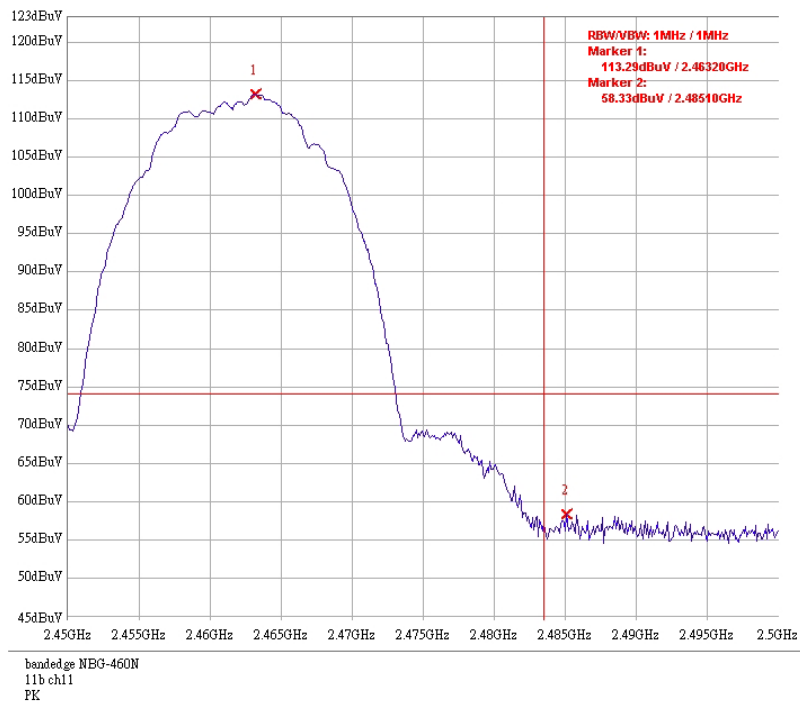
Band edge @ 802.11b mode channel 1 PK



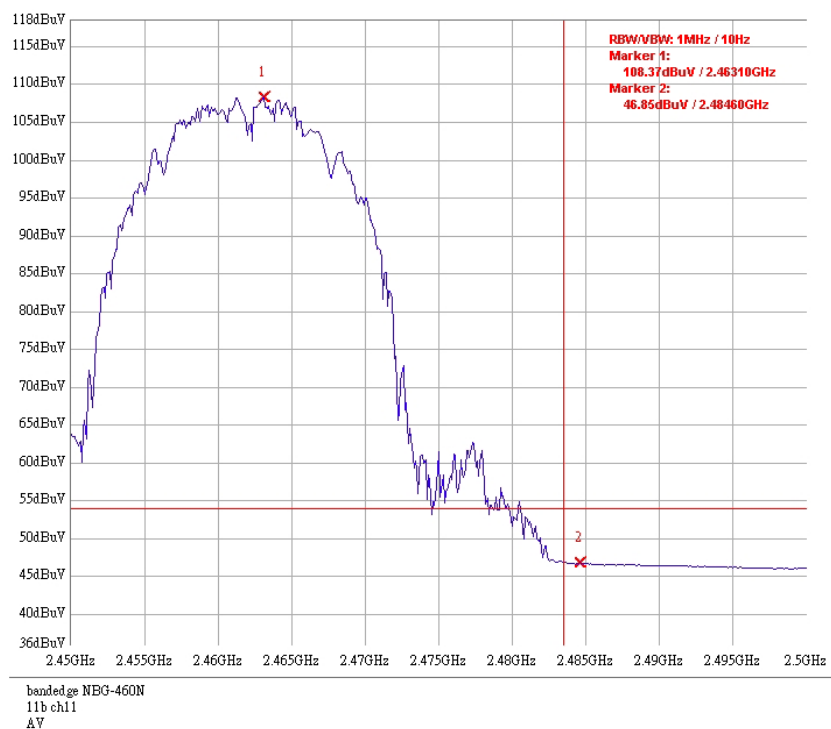
Band edge @ 802.11b mode channel 1 AV



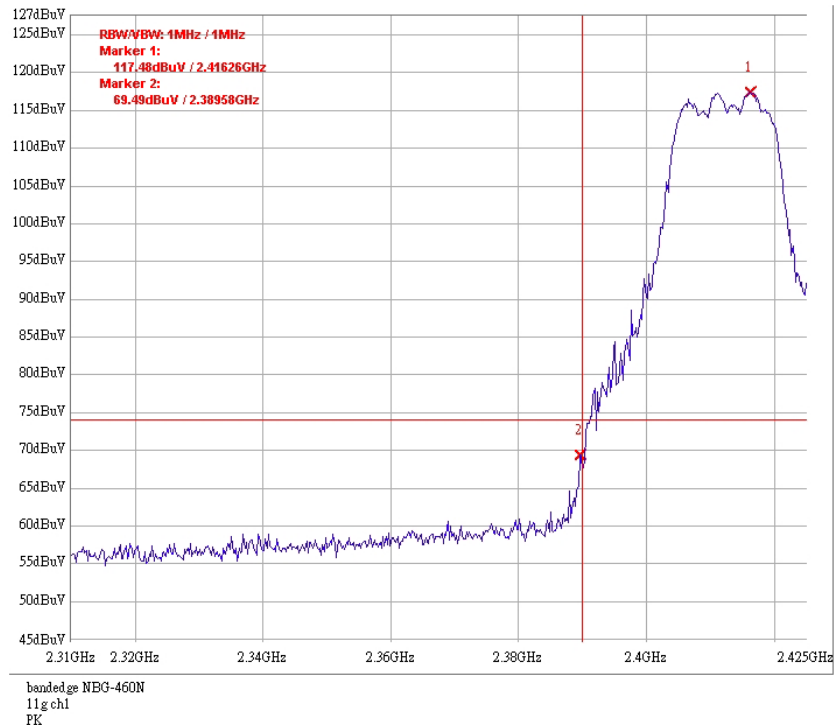
Band edge @ 802.11b mode channel 11 PK



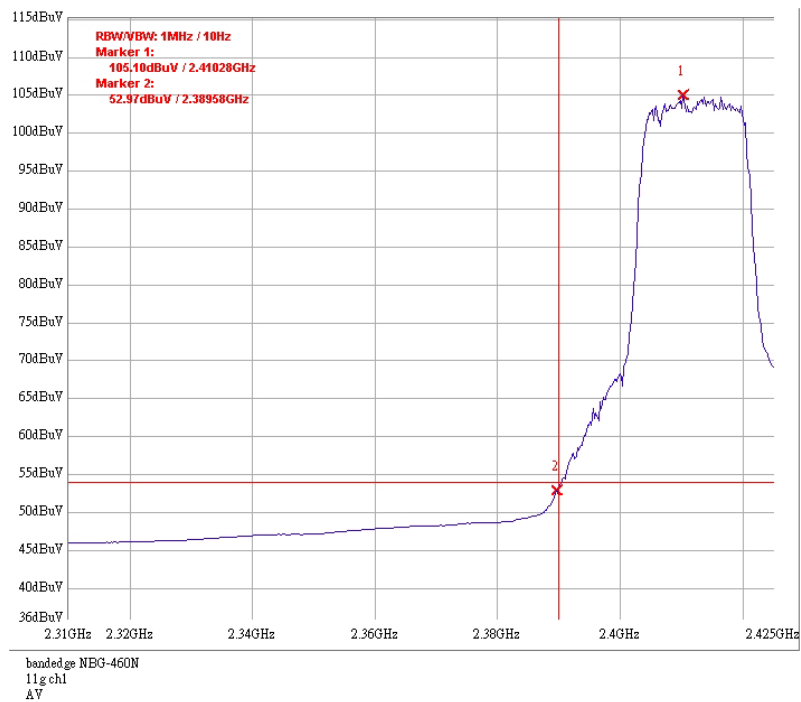
Band edge @ 802.11b mode channel 11 AV



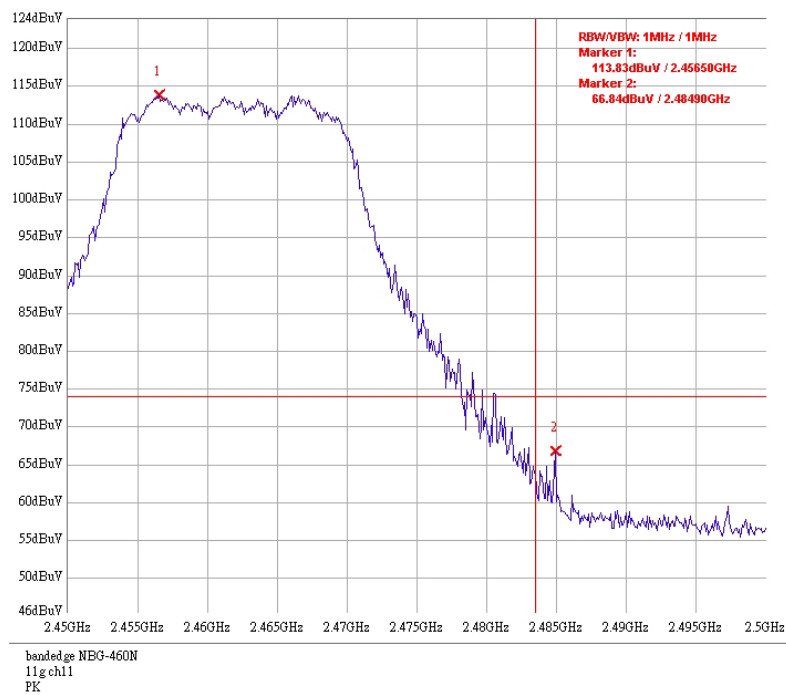
Band edge @ 802.11g mode channel 1 PK



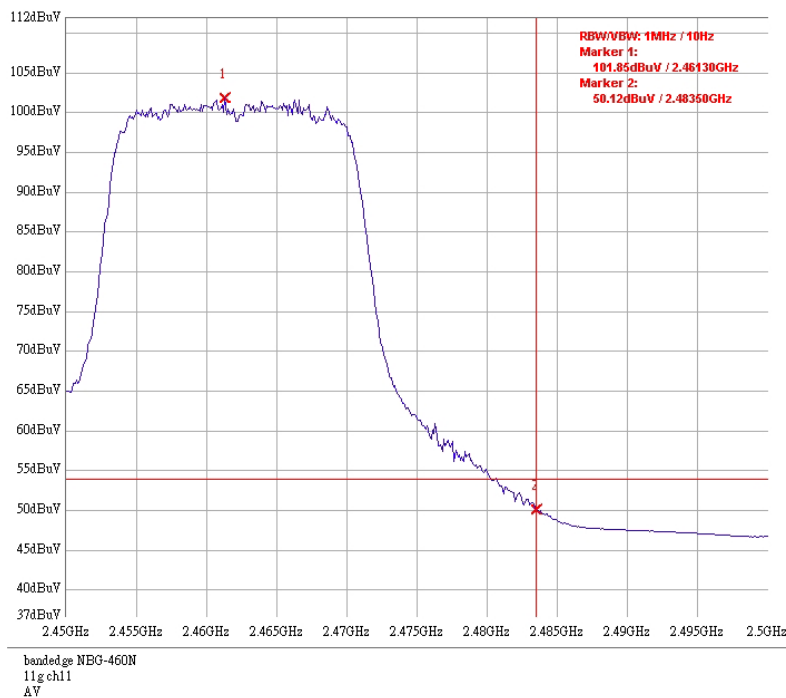
Bandedge @ 802.11g mode channel 1 AV



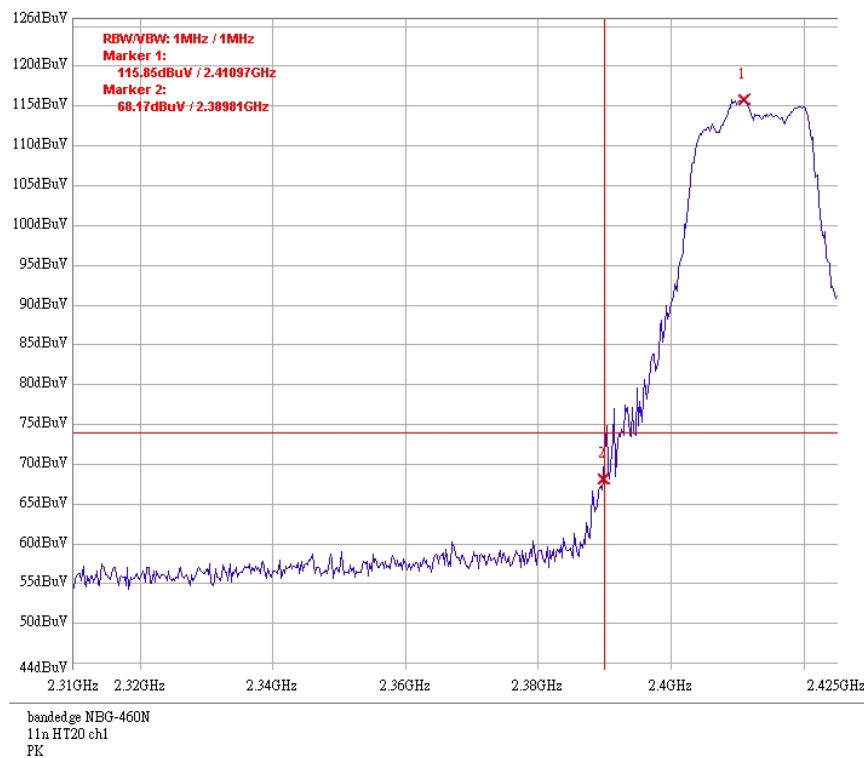
Band edge @ 802.11g mode channel 11 PK



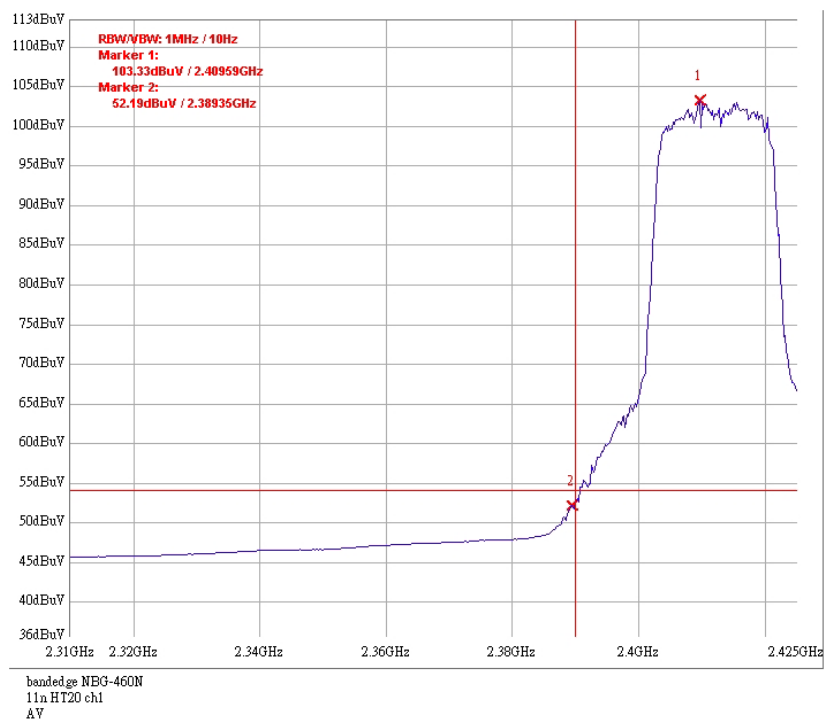
Band edge @ 802.11g mode channel 11 AV



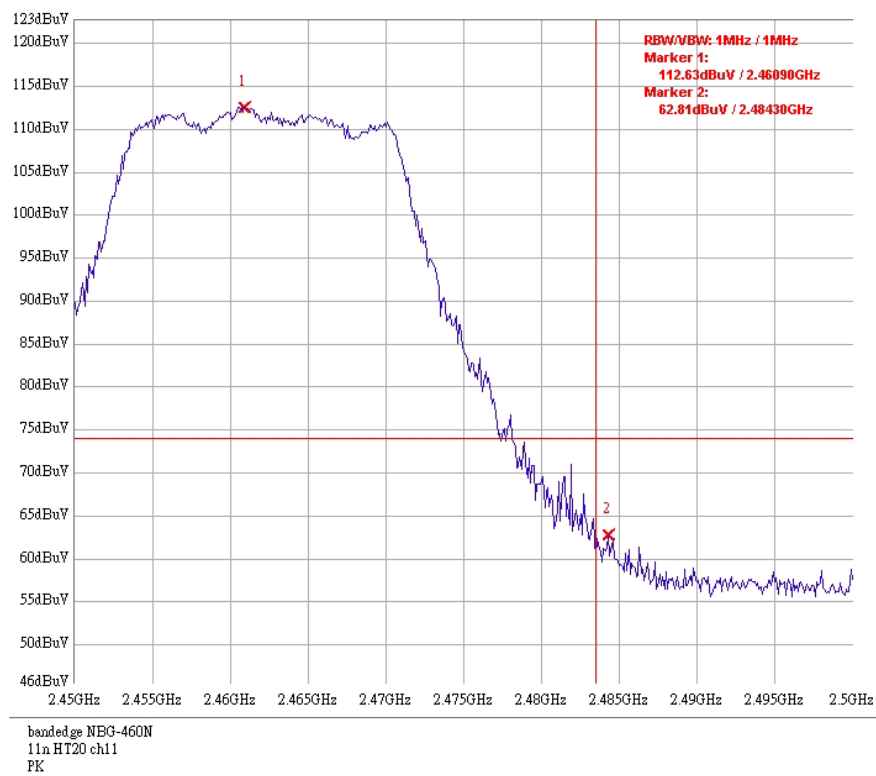
Band edge @802.11n HT20 mode channel 1 PK



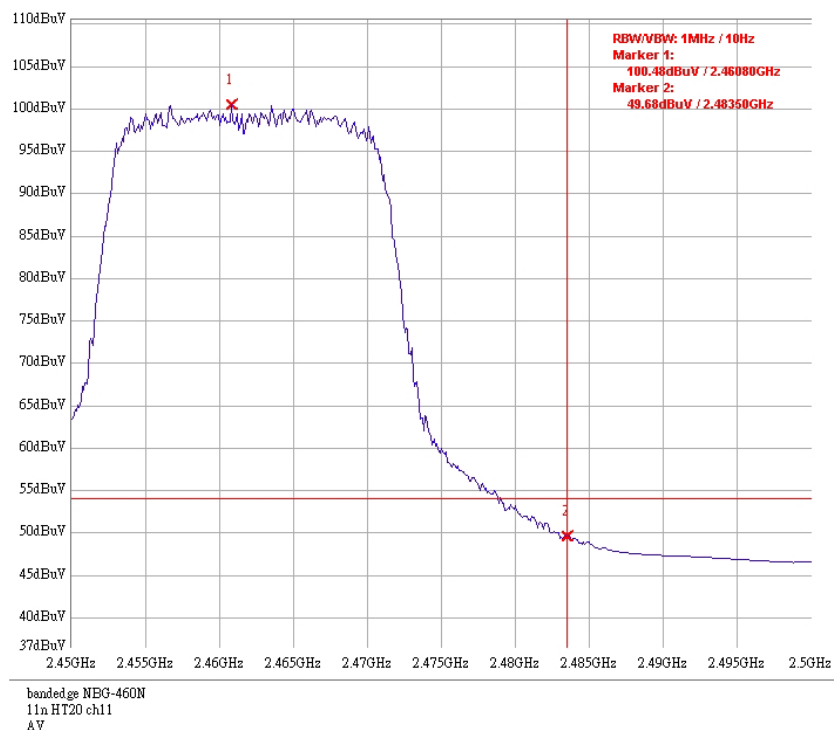
Band edge @802.11n HT20 mode channel 1 AV



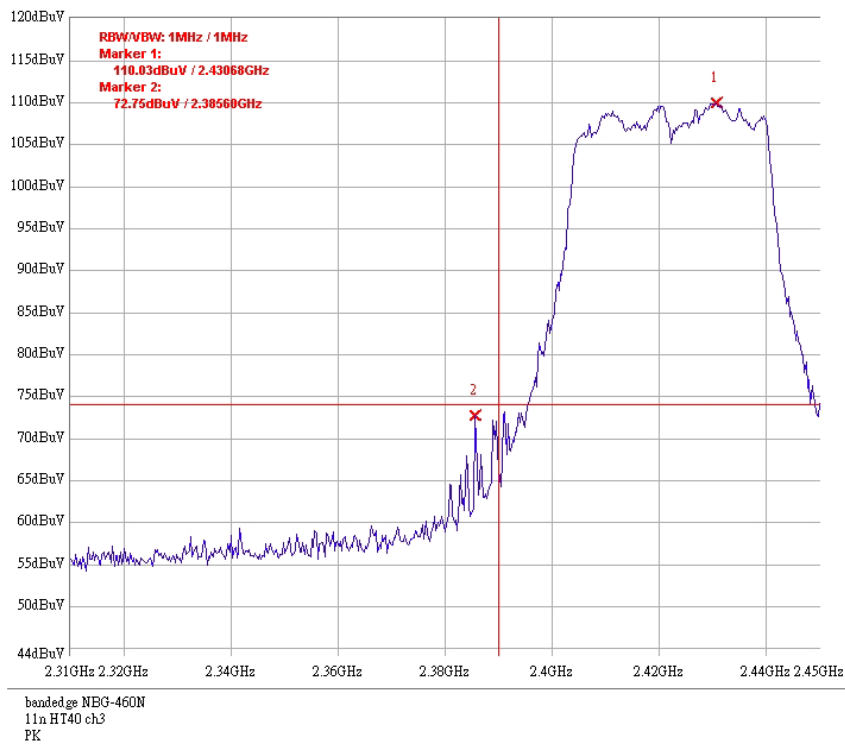
Band edge @802.11n HT20 mode channel 11 PK



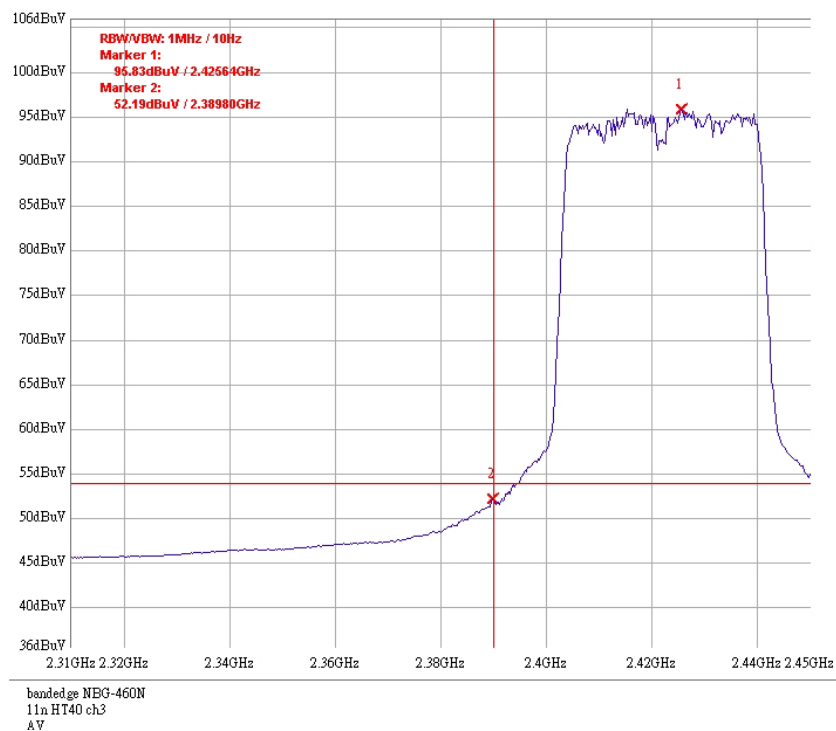
Band edge @802.11n HT20 mode channel 11 AV



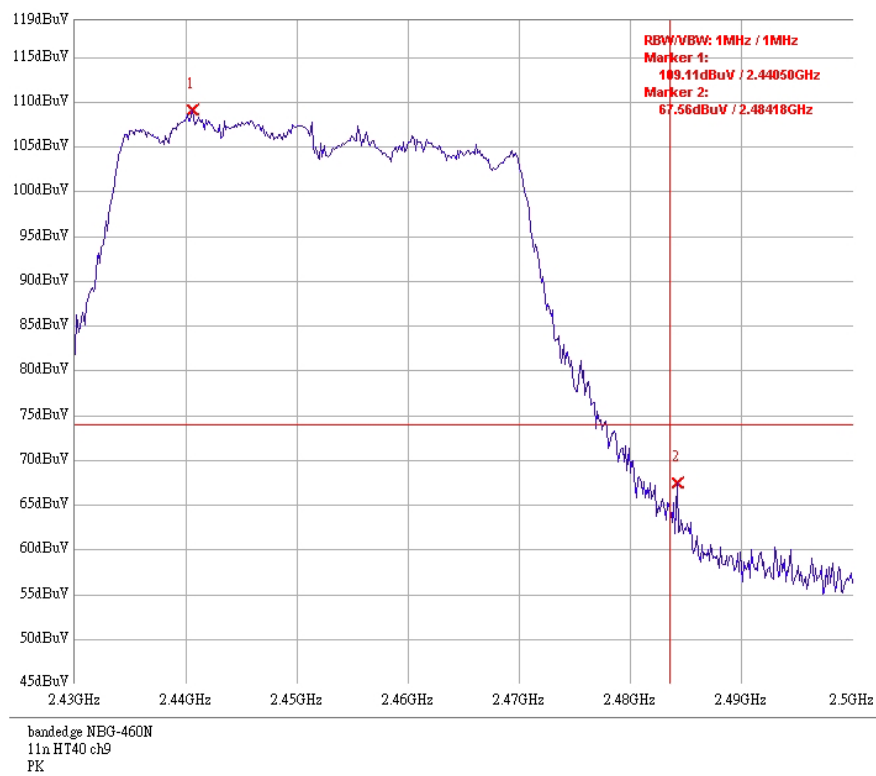
Band edge @802.11n HT40 mode channel 3 PK



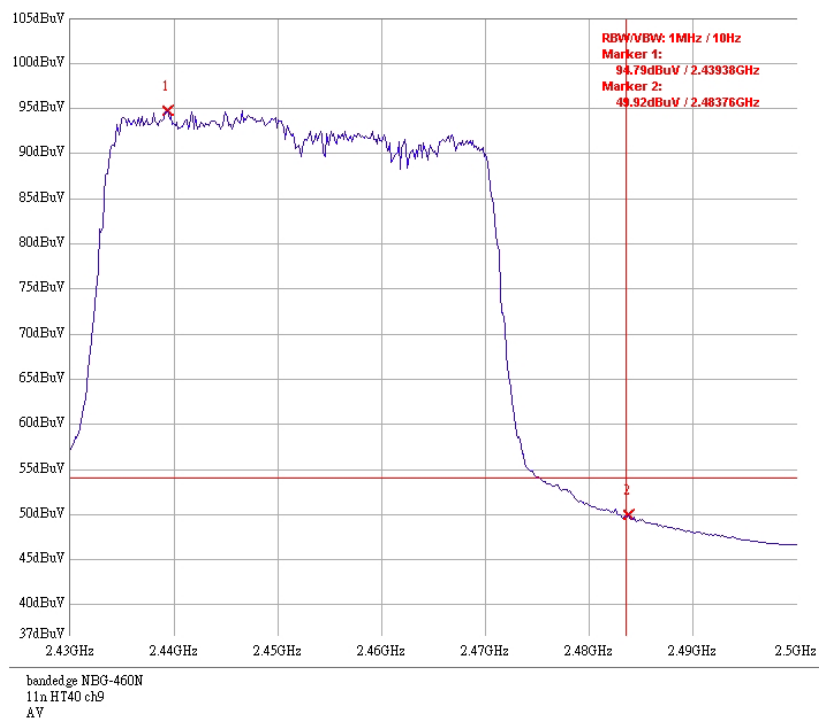
Band edge @802.11n HT40 mode channel 3 AV



Band edge @802.11n HT40 mode channel 9 PK



Band edge @802.11n HT40 mode channel 9 AV



10. AC power line conducted emission

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

Test Result: Complies
Measurement Data: See Tables & plots below
Method of Measurement:
Reference FCC document: KDB558074, ANSI C63.4

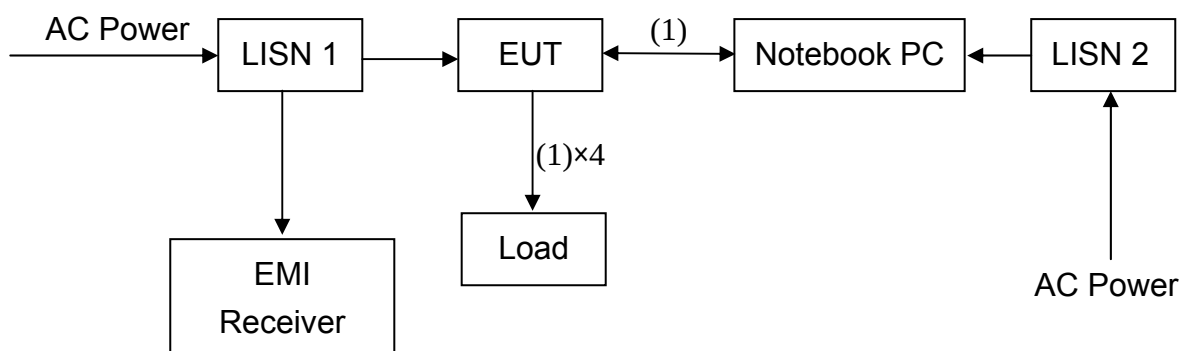
The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50 ohm/50 uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm/ 50 uH coupling impedance with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

Test Diagram:



(1) RJ-45 UTP Cat.5 10meter

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.

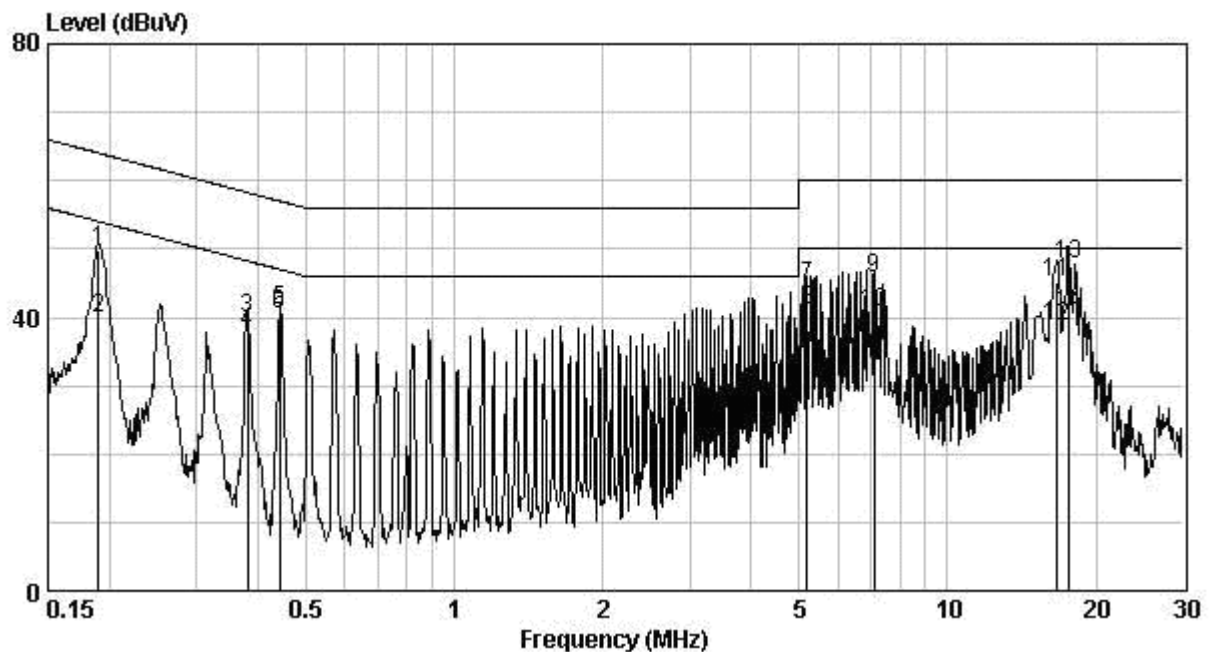
Note: The EUT was tested while in normal communication mode.

Phase : Line
EUT : NBG-460NH
Test Condition : Tx operating mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB)	
						Qp	Av
0.190	0.80	49.79	64.04	40.00	54.04	-14.25	-14.04
0.380	0.16	39.94	58.27	37.85	48.27	-18.34	-10.43
0.443	0.10	41.11	57.01	40.38	47.01	-15.90	-6.63
5.196	0.36	44.65	60.00	41.08	50.00	-15.35	-8.92
7.098	0.43	45.70	60.00	40.88	50.00	-14.30	-9.12
16.668	0.84	45.13	60.00	38.70	50.00	-14.87	-11.30
17.555	0.86	47.83	60.00	40.56	50.00	-12.17	-9.44

Remark:

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

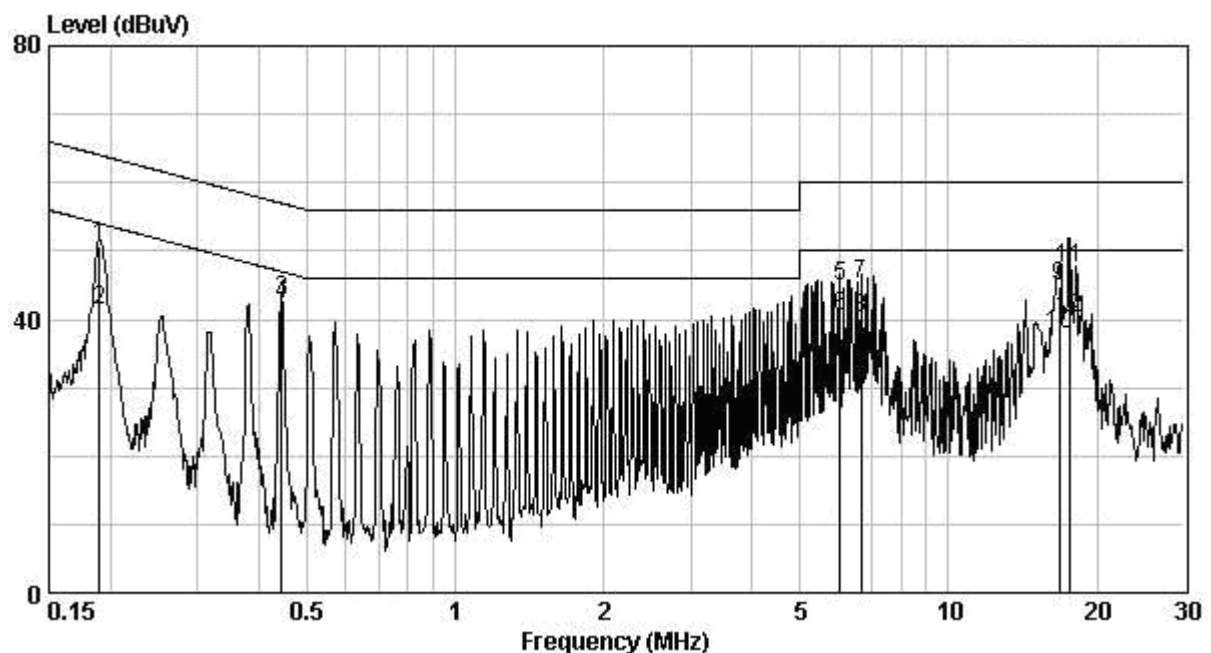


Phase : Neutral
EUT : NBG-460NH
Test Condition : Tx operating mode

Frequency (MHz)	Corr. Factor (dB)	Level	Limit	Level	Limit	Margin	
		Qp (dBuV)	Qp (dBuV)	AV (dBuV)	Av (dBuV)	Qp	Av
0.190	0.10	50.66	64.04	41.38	54.04	-13.38	-12.66
0.444	0.10	42.87	56.99	42.06	46.99	-14.12	-4.93
6.020	0.34	44.73	60.00	40.43	50.00	-15.27	-9.57
6.656	0.36	45.01	60.00	40.28	50.00	-14.99	-9.72
16.734	0.50	44.85	60.00	37.71	50.00	-15.15	-12.29
17.555	0.50	47.57	60.00	40.20	50.00	-12.43	-9.80

Remark:

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



Appendix A: Test Equipment List

Equipment	Brand	Model No.
EMI Test Receiver	Rohde & Schwarz	ESCS 30
Spectrum Analyzer	Rohde & Schwarz	FSP 30
Spectrum Analyzer	Rohde & Schwarz	FSEK 30
Signal Generator	Rohde & Schwarz	SMR27
Horn Antenna	SCHWARZBECK	BBHA 9120 D
Horn Antenna	SCHWARZBECK	BBHA 9170
Bilog Antenna	SCHWARZBECK	VULB 9168
Pre-Amplifier	MITEQ	919981
Pre-Amplifier	MITEQ	828825
Controller	HDGmbH	CM 100
Antenna Tower	HDGmbH	MA 2400
LISN	Rohde & Schwarz	ESH3-Z5
Wideband Peak Power Meter/ Sensor	Anritsu	ML2487A/ MA2491A
Temperature Humidity Test Chamber	Juror	TR-4010

- 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.