

## 4.5. Radiated Emissions Measurement

### 4.5.1. Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

### 4.5.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for peak

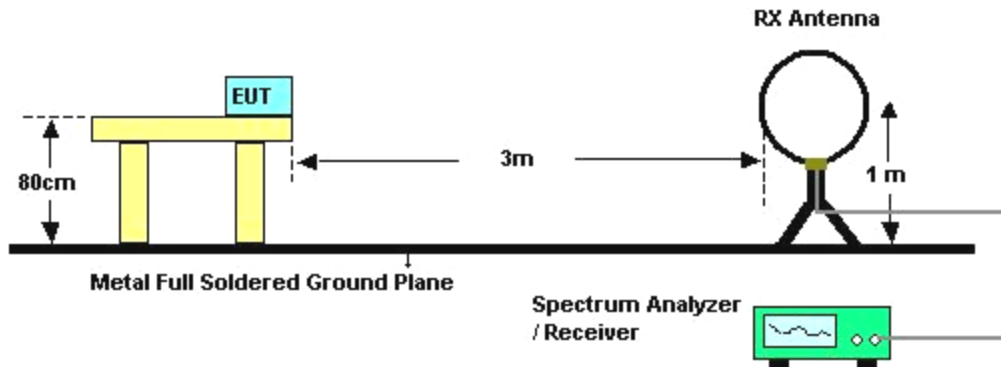
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

#### 4.5.3. Test Procedures

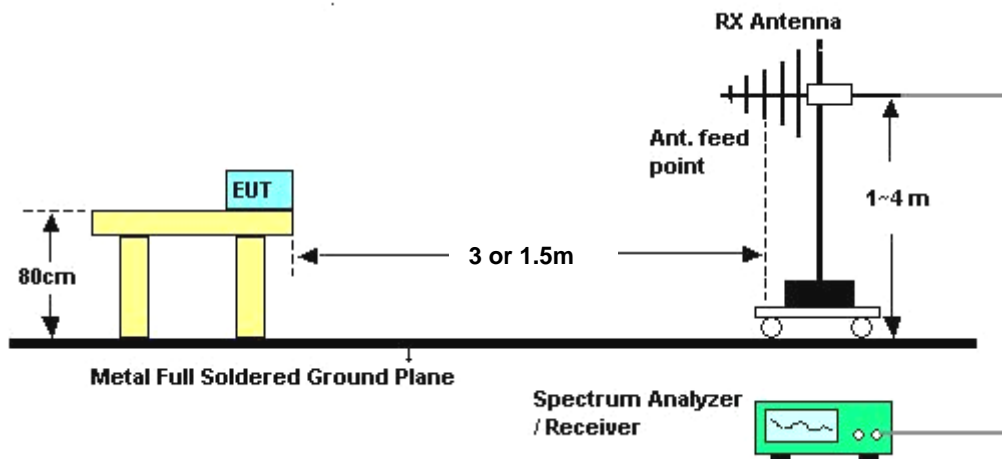
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

#### 4.5.4. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



Above 10 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor =  $20 \log (\text{specific distanc [3m]} / \text{test distance [1.5m]})$  (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

#### 4.5.5. Test Deviation

There is no deviation with the original standard.

#### 4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

## 4.5.7. Results of Radiated Emissions (9kHz~30MHz)

Temperature	26°C	Humidity	60%
Test Engineer	Alan Huang	Configurations	Normal Link

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

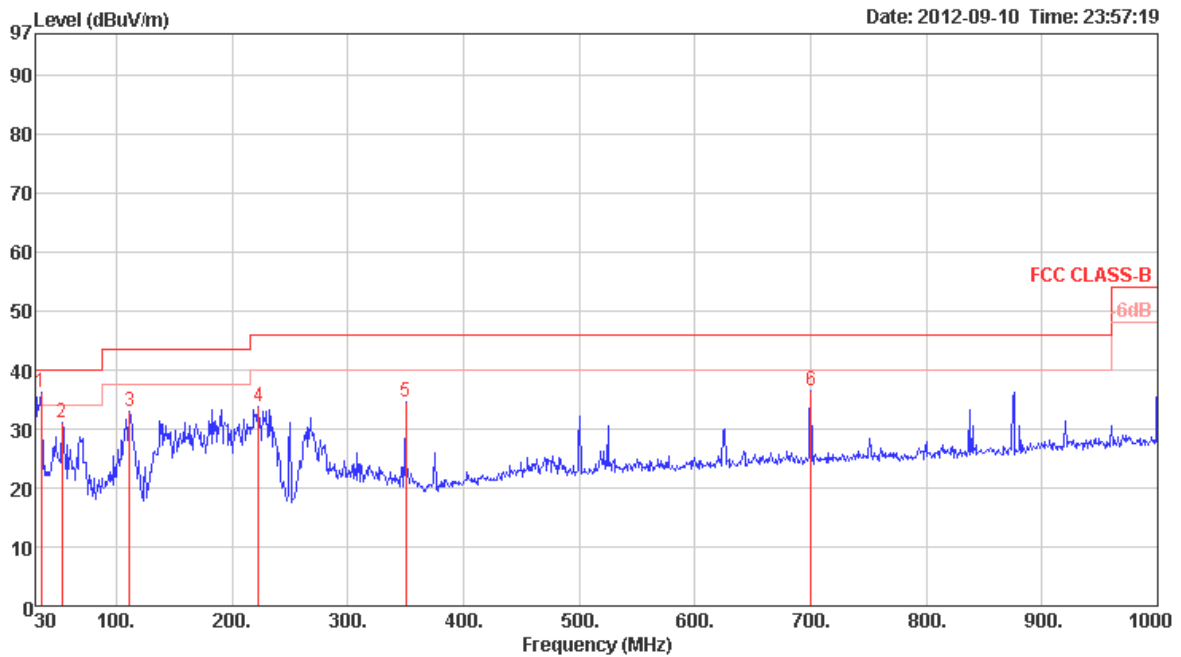
Distance extrapolation factor =  $40 \log(\text{specific distance} / \text{test distance})$  (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

4.5.8. Results of Radiated Emissions (30MHz~1GHz)

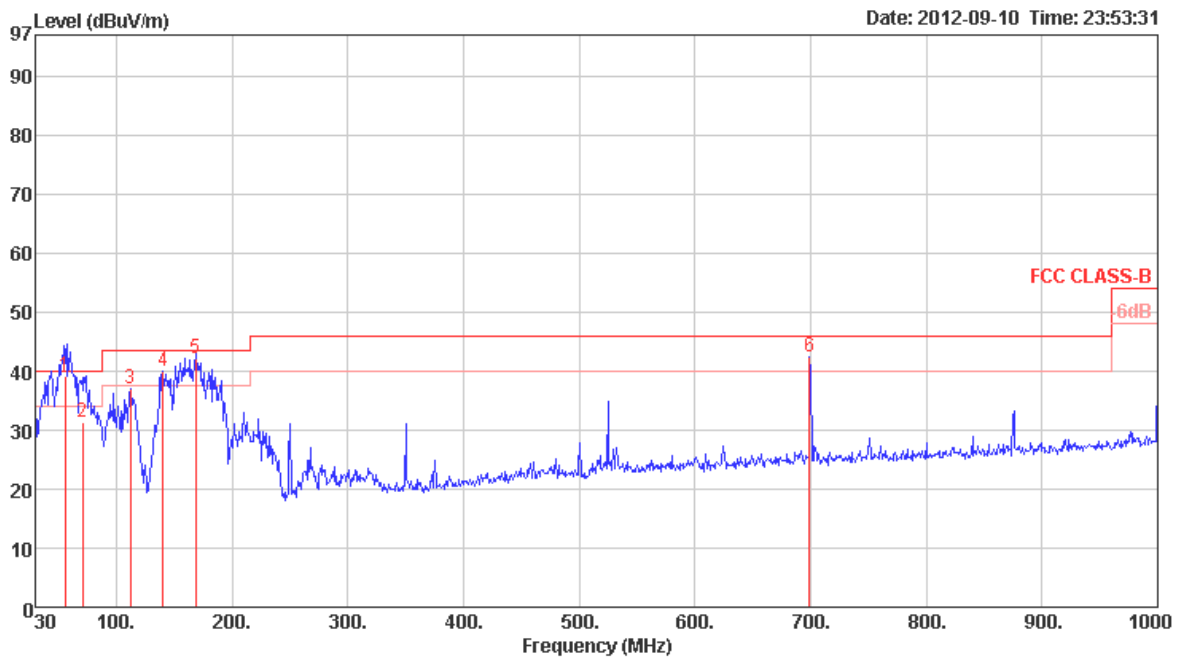
Temperature	26°C	Humidity	60%
Test Engineer	Alan Huang	Configurations	Normal Link / Mode 3

Horizontal



	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	34.85	36.19	40.00	-3.81	47.41	0.50	16.08	27.80	Peak	100	0	HORIZONTAL
2	53.28	30.97	40.00	-9.03	50.00	0.76	8.00	27.79	Peak	100	0	HORIZONTAL
3	111.48	32.98	43.50	-10.52	47.45	1.20	11.87	27.54	Peak	100	0	HORIZONTAL
4	223.03	33.87	46.00	-12.13	48.36	1.79	10.77	27.05	Peak	100	0	HORIZONTAL
5	350.10	34.63	46.00	-11.37	44.96	2.20	14.72	27.25	Peak	100	0	HORIZONTAL
6	700.27	36.60	46.00	-9.40	42.20	3.30	19.09	27.99	Peak	100	0	HORIZONTAL

*Vertical*



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp		A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	55.89	39.29	40.00	-0.71	58.80	0.80	7.47	27.78	QP	100	0 VERTICAL
2	70.85	31.29	40.00	-8.71	51.50	0.82	6.69	27.72	QP	132	31 VERTICAL
3	112.45	37.05	43.50	-6.45	51.45	1.20	11.94	27.54	Peak	400	0 VERTICAL
4	140.58	39.93	43.50	-3.57	53.62	1.40	12.30	27.39	Peak	400	0 VERTICAL
5	168.76	42.07	43.50	-1.43	55.10	1.54	12.68	27.25	QP	100	354 VERTICAL
6	699.30	42.36	46.00	-3.64	47.97	3.30	19.09	28.00	Peak	400	0 VERTICAL

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Emission level (dBUV/m) = 20 log Emission level (uV/m).

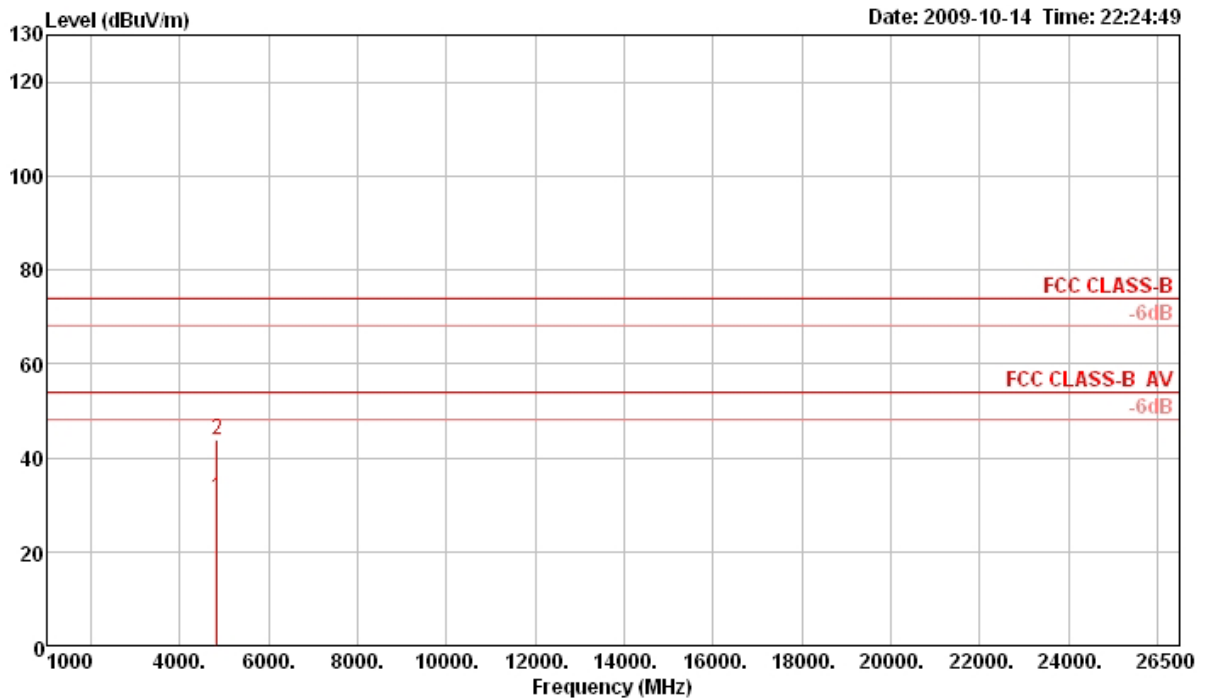
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.5.9. Results for Radiated Emissions (1GHz~10<sup>th</sup> Harmonic)

<For Ant. A – Dipole Antenna>

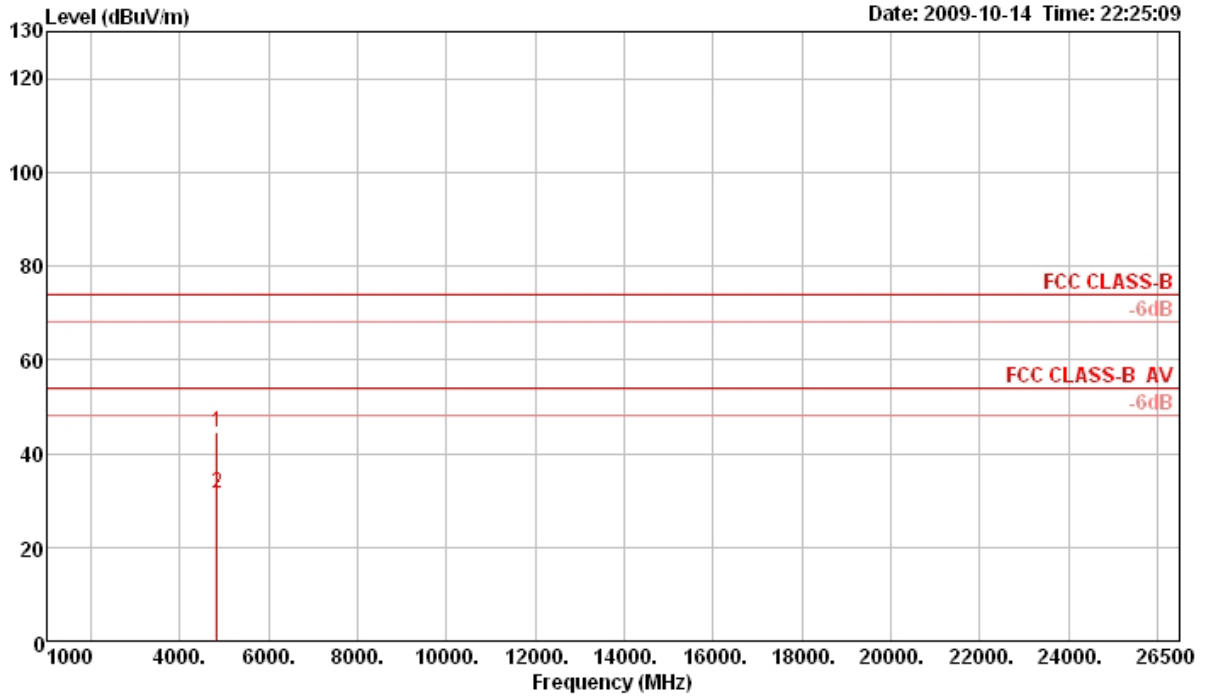
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11n MCS0 20MHz Ch 1 / Mode 1 with Ant. A

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	PoI/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4824.47	31.47	54.00	-22.53	29.48	3.96	35.03	33.06	187	100	Average	HORIZONTAL
2 p	4824.47	43.75	74.00	-30.25	41.76	3.96	35.03	33.06	187	100	Peak	HORIZONTAL

Vertical

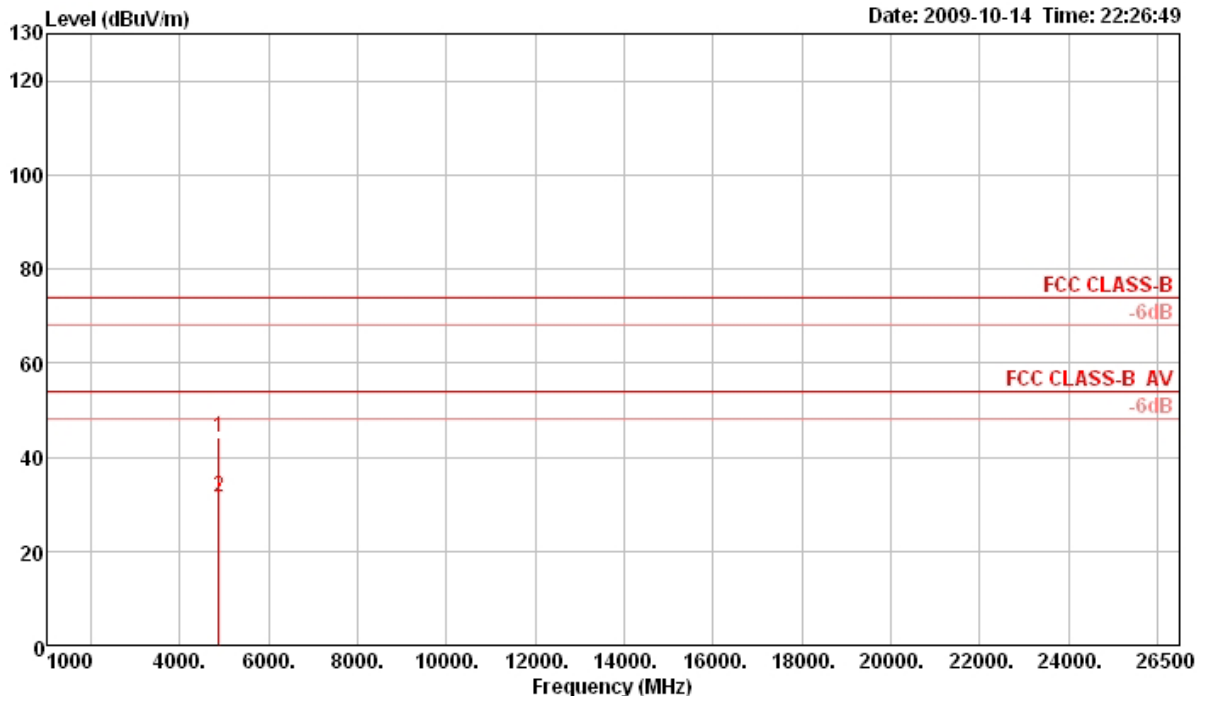


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4824.37	44.45	74.00	-29.55	42.46	3.96	35.03	33.06	296	100	Peak	VERTICAL
2 a	4824.49	31.45	54.00	-22.55	29.46	3.96	35.03	33.06	296	100	Average	VERTICAL



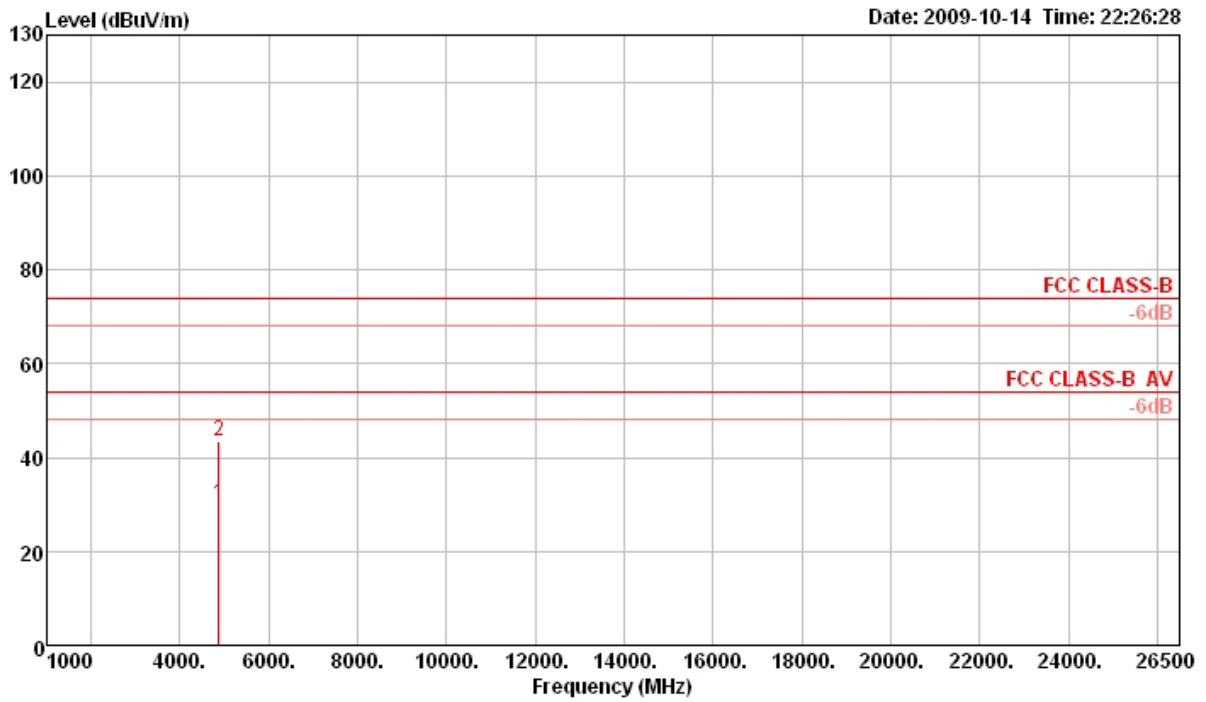
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11n MCS0 20MHz Ch 6 / Mode 1 with Ant. A

Horizontal



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4873.88	44.13	74.00	-29.87	42.03	3.97	35.03	33.16	314	100	Peak	HORIZONTAL
2 a	4874.11	31.33	54.00	-22.67	29.23	3.97	35.03	33.16	314	100	Average	HORIZONTAL

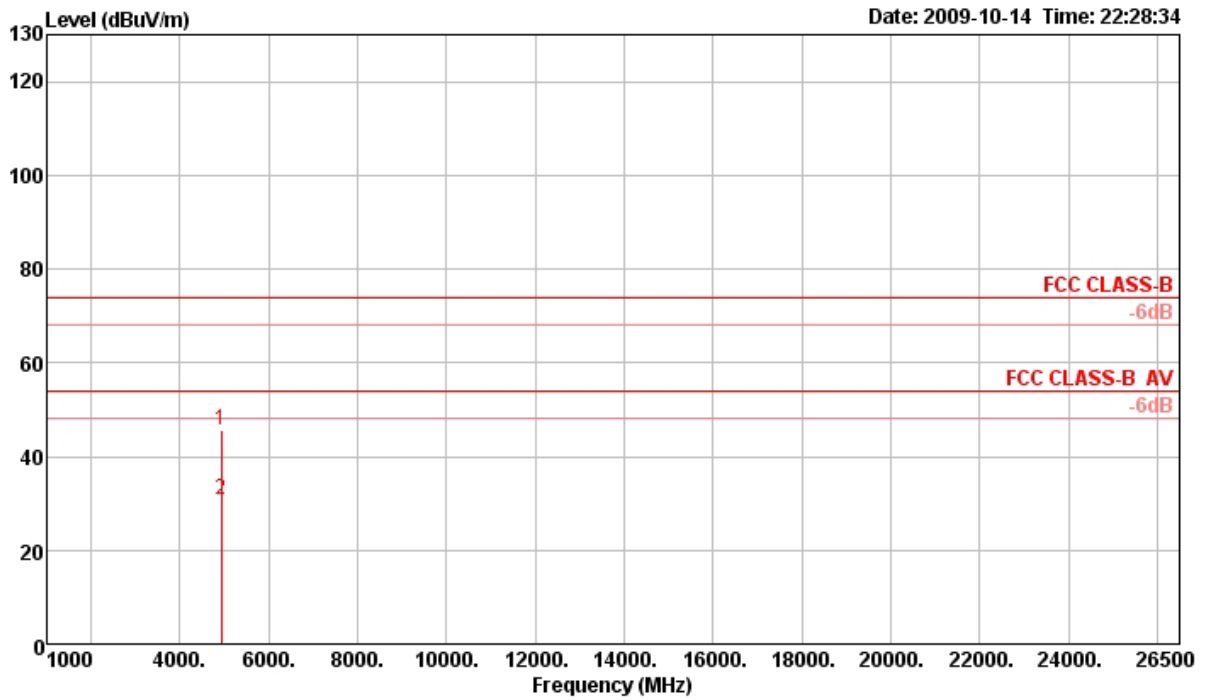
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4873.73	30.18	54.00	-23.82	28.08	3.97	35.03	33.16	193	100	Average	VERTICAL
2 p	4874.13	43.49	74.00	-30.51	41.39	3.97	35.03	33.16	193	100	Peak	VERTICAL

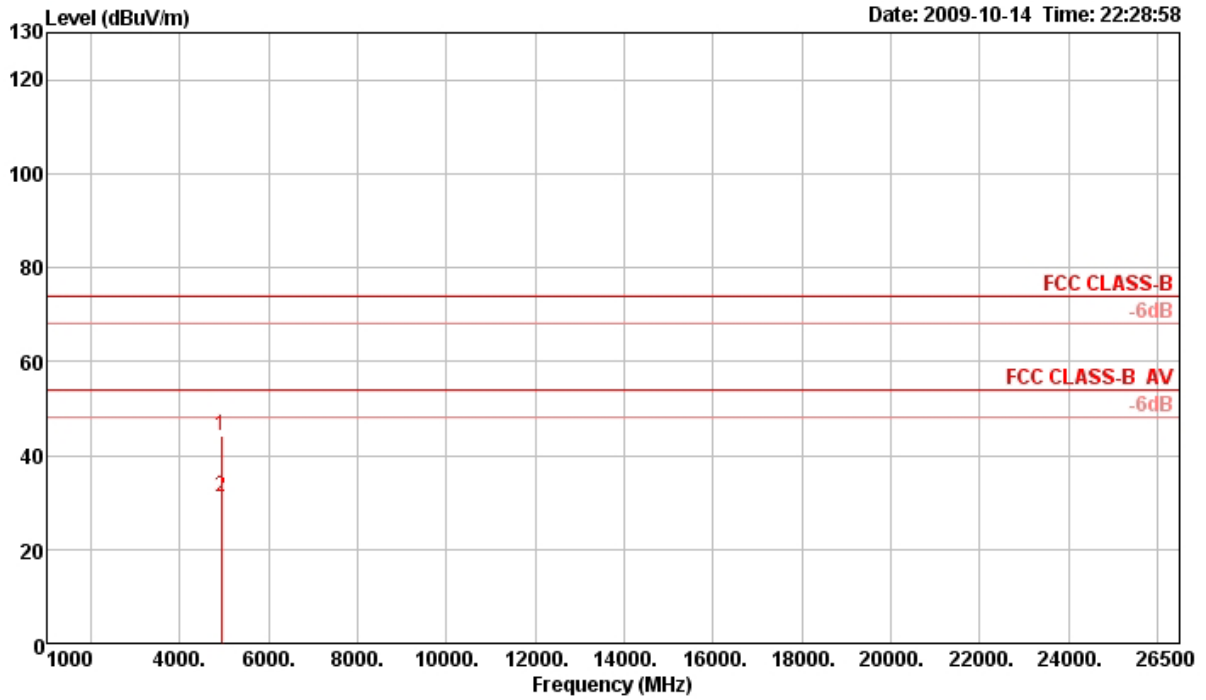
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11n MCS0 20MHz Ch11 / Mode 1 with Ant. A

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	PoI/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1 p	4924.08	45.55	74.00	-28.45	43.33	3.97	33.26	35.01	253	100	Peak	HORIZONTAL
2 a	4924.49	30.85	54.00	-23.15	28.63	3.97	33.26	35.01	253	100	Average	HORIZONTAL

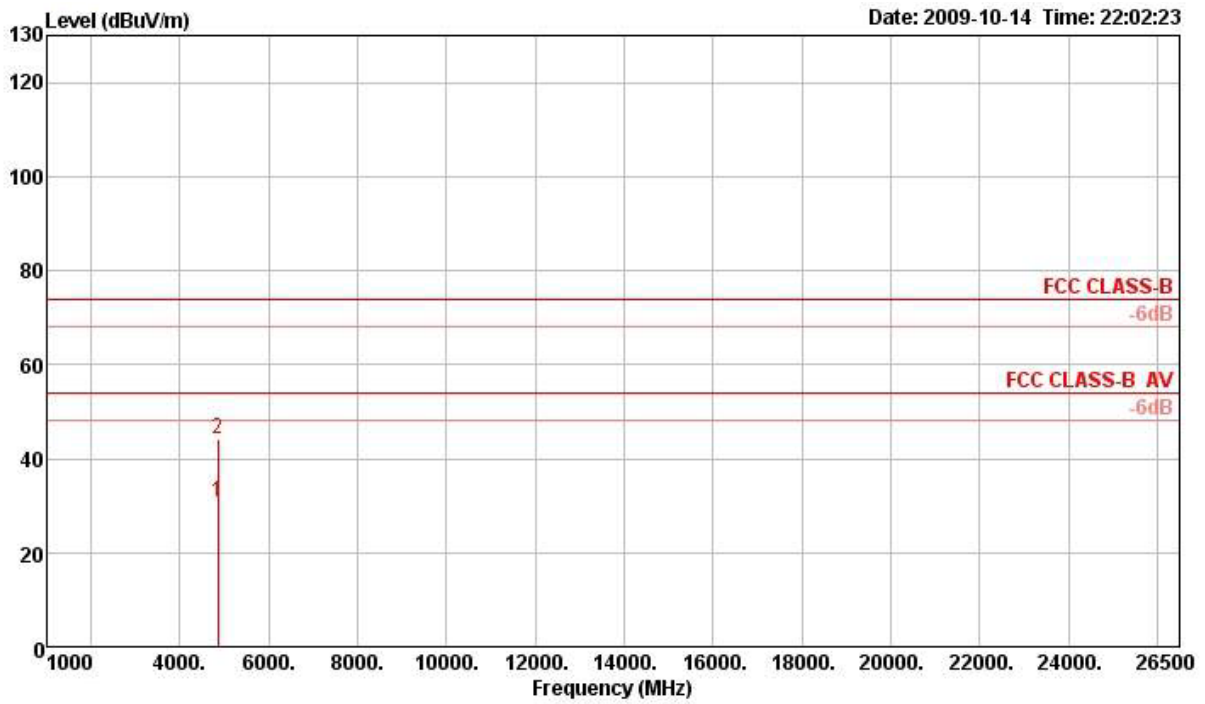
Vertical



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1 p	4923.52	44.18	74.00	-29.82	41.96	3.97	33.26	35.01	126	100 Peak	VERTICAL
2 a	4924.36	31.31	54.00	-22.69	29.09	3.97	33.26	35.01	126	100 Average	VERTICAL

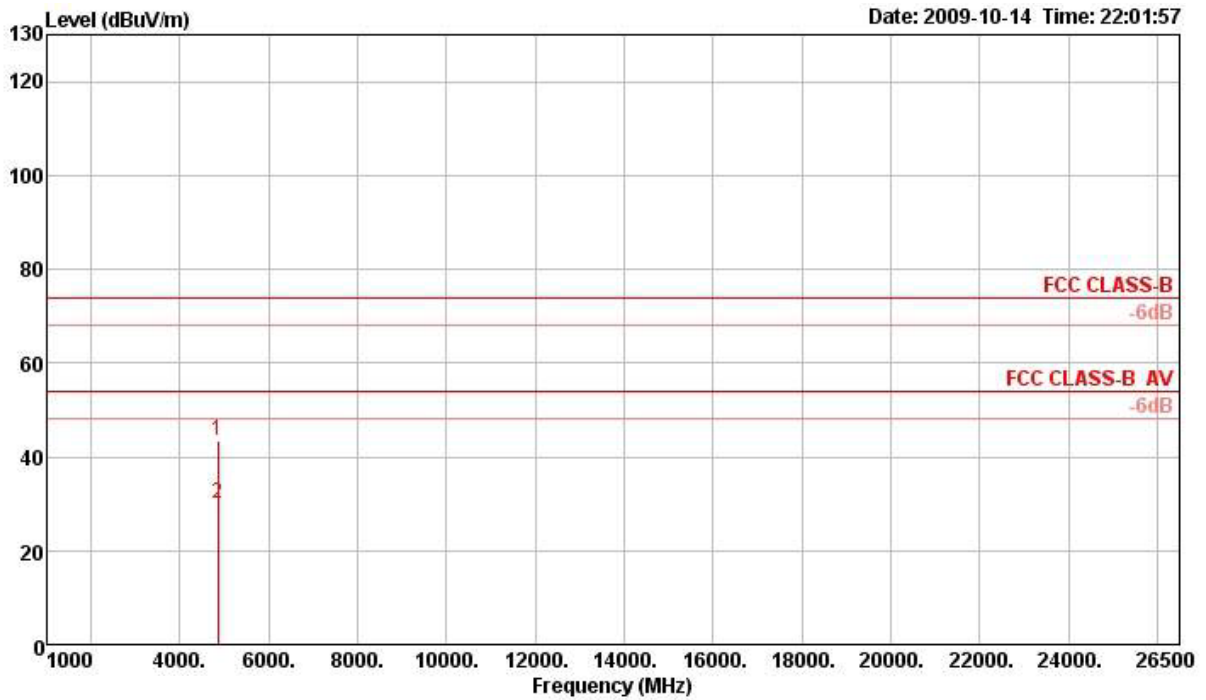
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11n MCS0 40MHz Ch 3 / Mode 1 with Ant. A

Horizontal



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1 a	4843.84	30.84	54.00	-23.16	28.82	3.96	33.09	35.03	89	100 Average	HORIZONTAL
2 p	4843.92	44.00	74.00	-30.00	41.98	3.96	33.09	35.03	89	100 Peak	HORIZONTAL

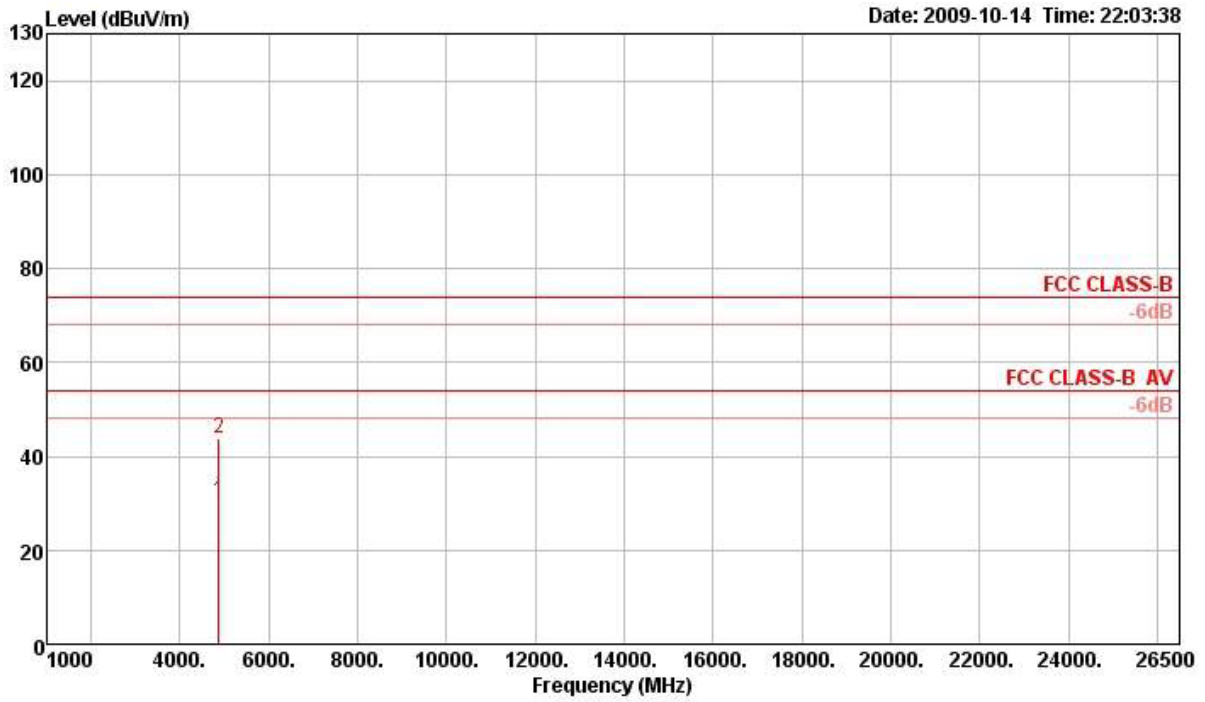
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	deg	cm		
1 p	4843.68	43.33	74.00	-30.67	41.31	3.96	33.09	35.03	252	100 Peak	VERTICAL
2 a	4844.05	30.01	54.00	-23.99	27.99	3.96	33.09	35.03	252	100 Average	VERTICAL

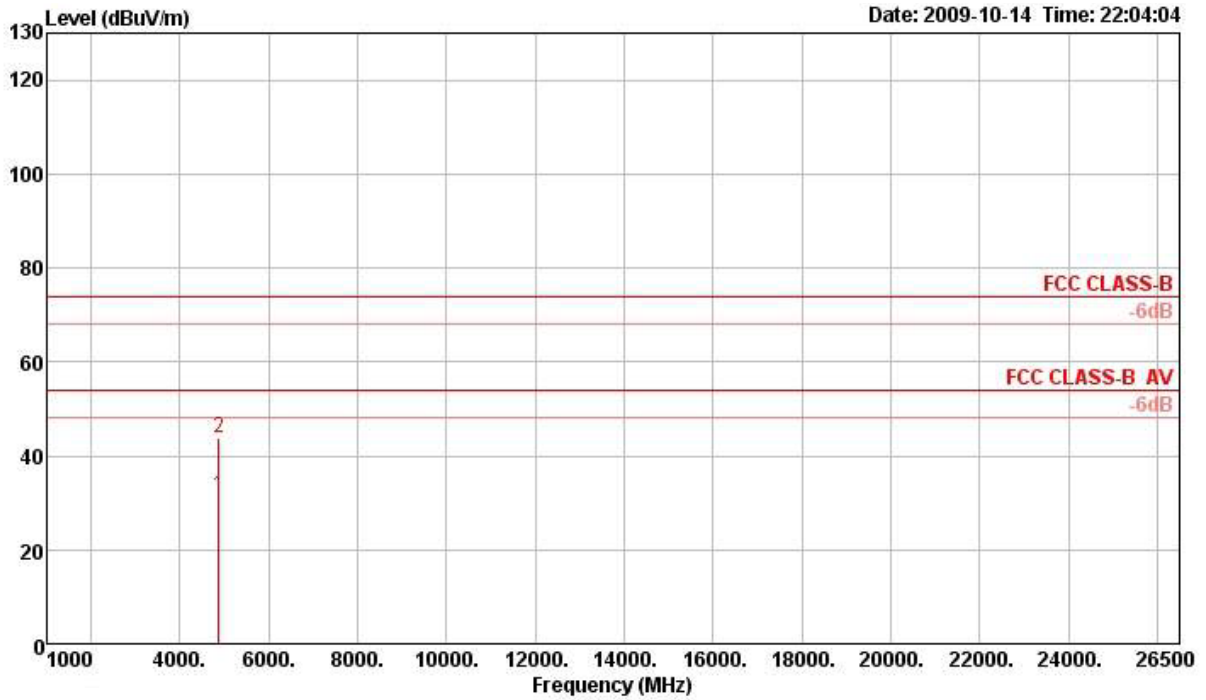
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11n MCS0 40MHz Ch 6 / Mode 1 with Ant. A

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	PoI/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1 a	4873.52	30.47	54.00	-23.53	28.37	3.97	33.16	35.03	252	100	Average	HORIZONTAL
2 p	4874.02	43.69	74.00	-30.31	41.59	3.97	33.16	35.03	252	100	Peak	HORIZONTAL

Vertical

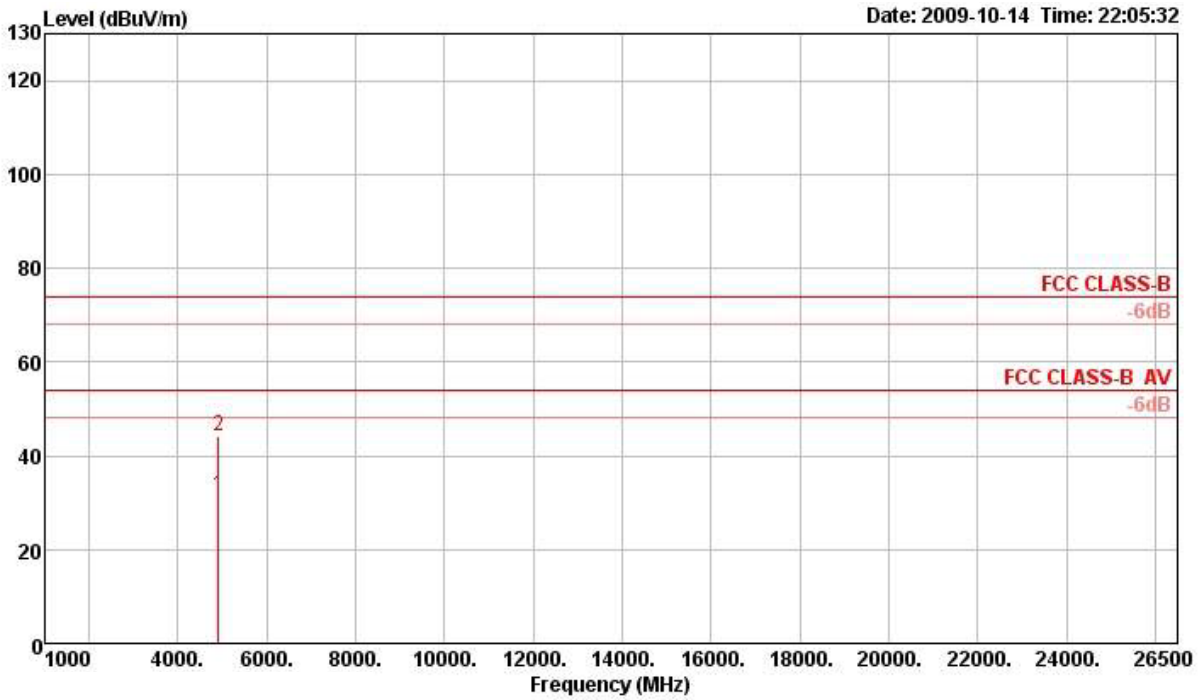


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1 a	4873.76	31.40	54.00	-22.60	29.30	3.97	33.16	35.03	167	100 Average	VERTICAL
2 p	4874.09	43.94	74.00	-30.06	41.84	3.97	33.16	35.03	167	100 Peak	VERTICAL



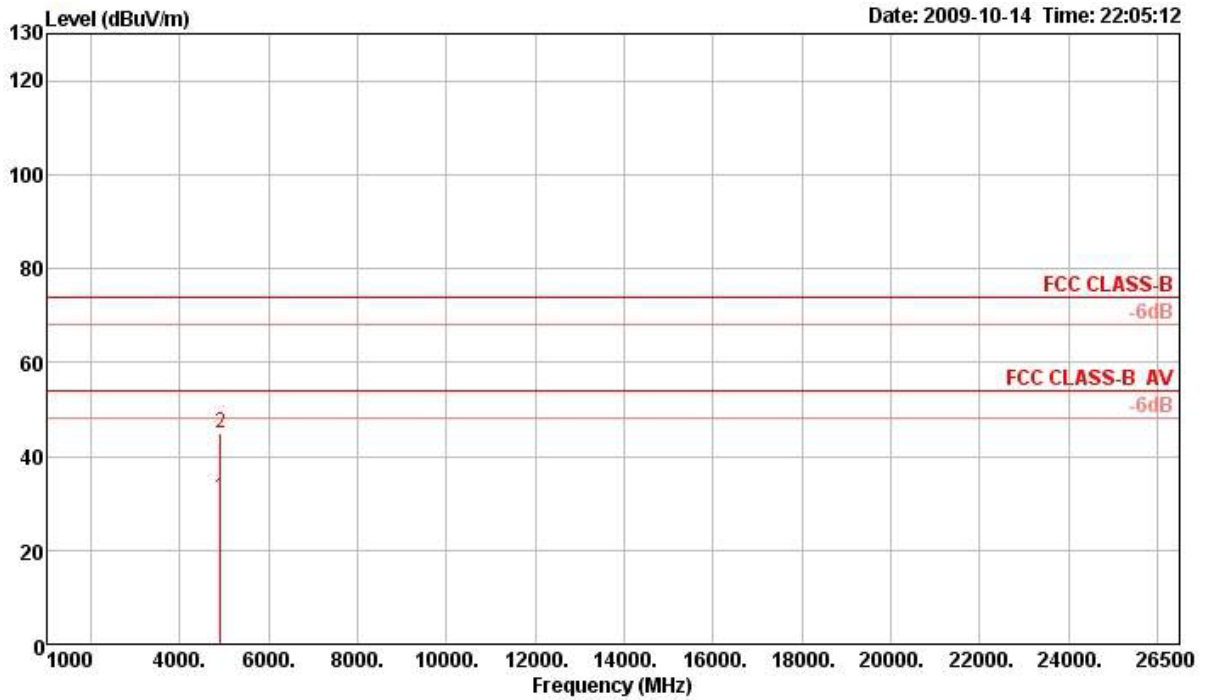
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11n MCS0 40MHz Ch 9 / Mode 1 with Ant. A

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	PoI/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1 a	4903.80	31.68	54.00	-22.32	29.54	3.97	33.19	35.02	107	100	Average	HORIZONTAL
2 p	4904.48	44.03	74.00	-29.97	41.89	3.97	33.19	35.02	107	100	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1 a	4903.80	31.06	54.00	-22.94	28.92	3.97	33.19	35.02	236	100 Average	VERTICAL
2 p	4903.89	44.76	74.00	-29.24	42.62	3.97	33.19	35.02	236	100 Peak	VERTICAL

Note:

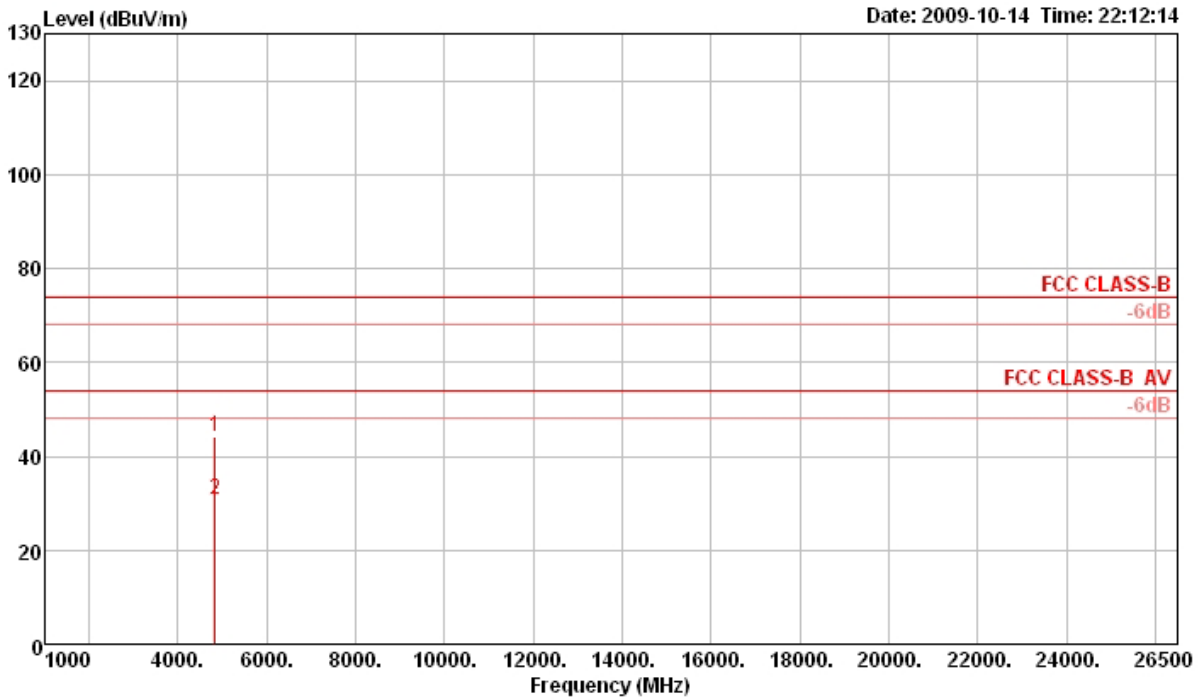
The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

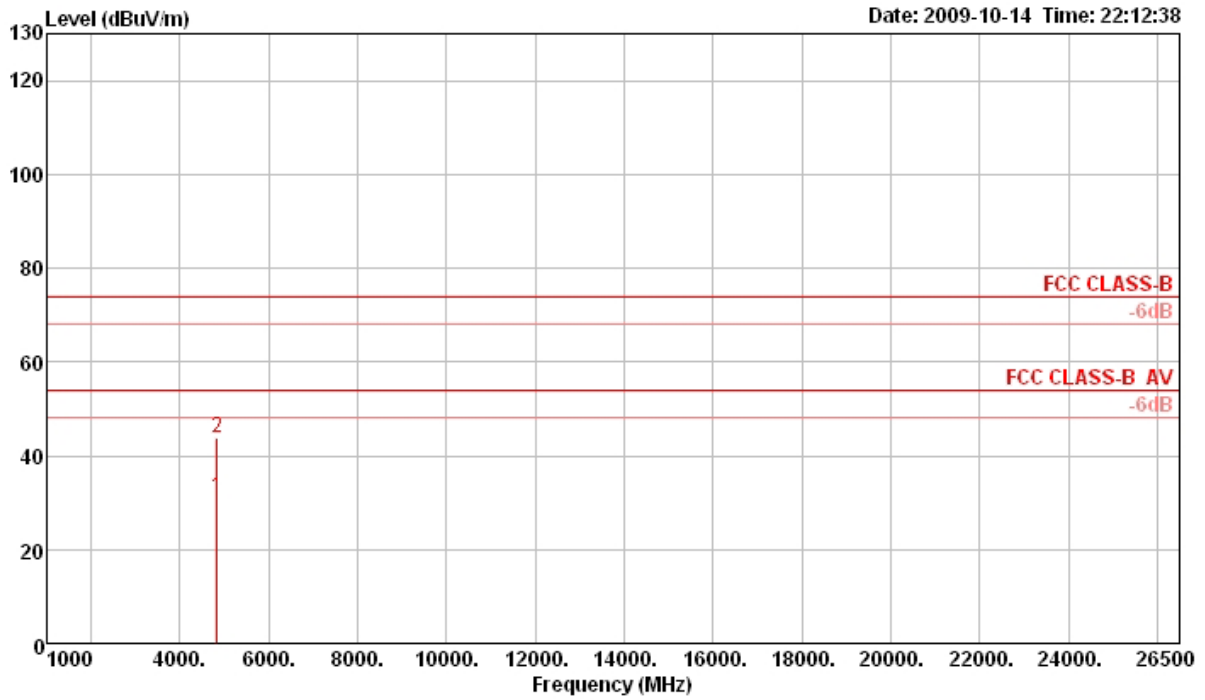
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11b CH 1 / Mode 1 with Ant. A

Horizontal



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	PoI/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4824.27	44.06	74.00	-29.94	42.07	3.96	35.03	33.06	120	100	Peak	HORIZONTAL
2 a	4824.44	30.75	54.00	-23.25	28.76	3.96	35.03	33.06	120	100	Average	HORIZONTAL

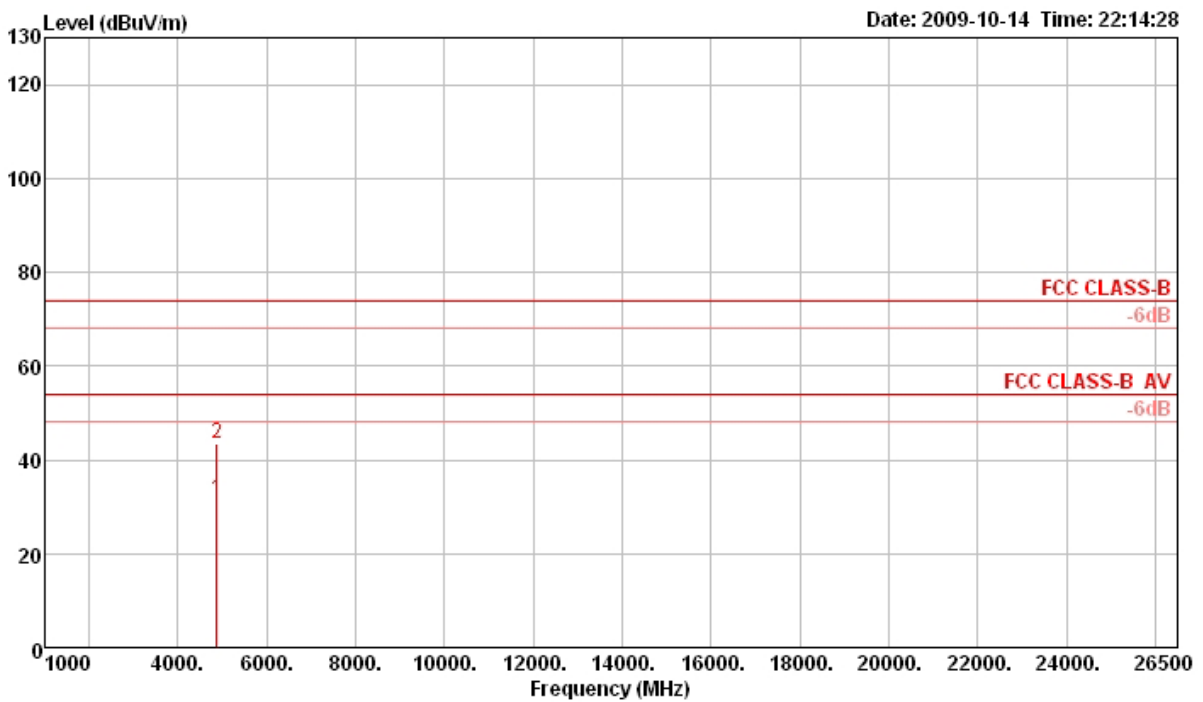
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4824.45	31.31	54.00	-22.69	29.32	3.96	35.03	33.06	237	100	Average	VERTICAL
2 p	4824.49	43.96	74.00	-30.04	41.97	3.96	35.03	33.06	237	100	Peak	VERTICAL

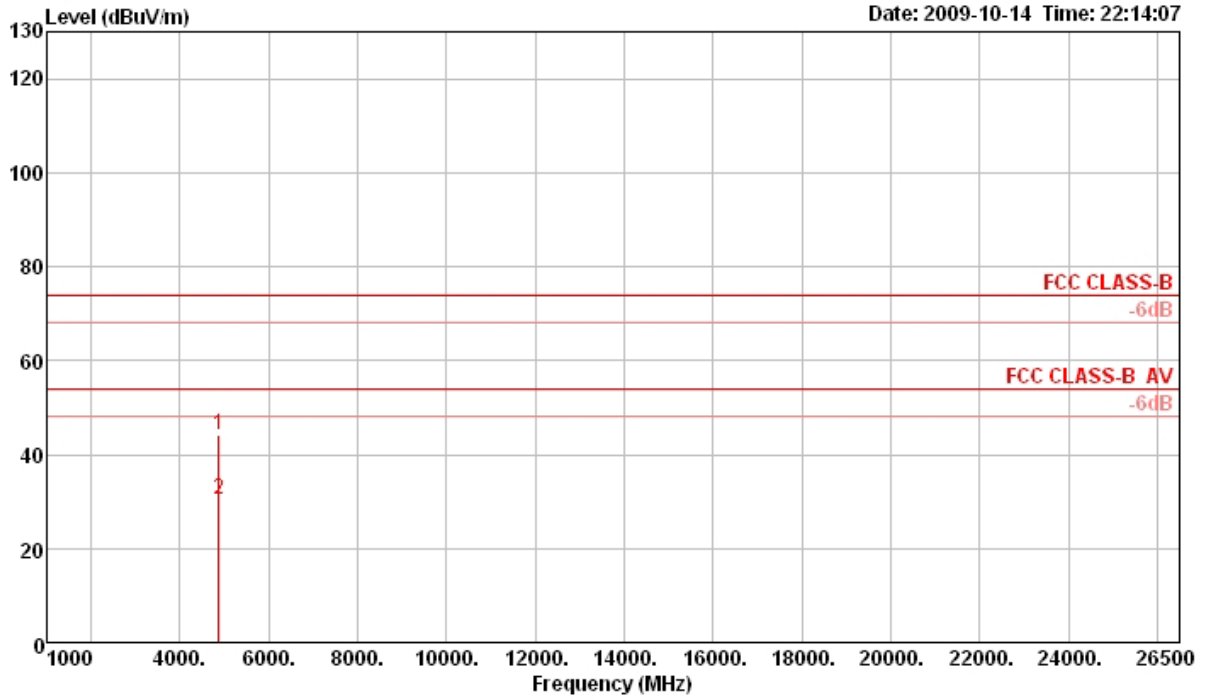
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11b CH 6 / Mode 1 with Ant. A

*Horizontal*



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	PoI/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4873.54	31.49	54.00	-22.51	29.39	3.97	35.03	33.16	259	100	Average	HORIZONTAL
2 p	4874.37	43.52	74.00	-30.48	41.42	3.97	35.03	33.16	259	100	Peak	HORIZONTAL

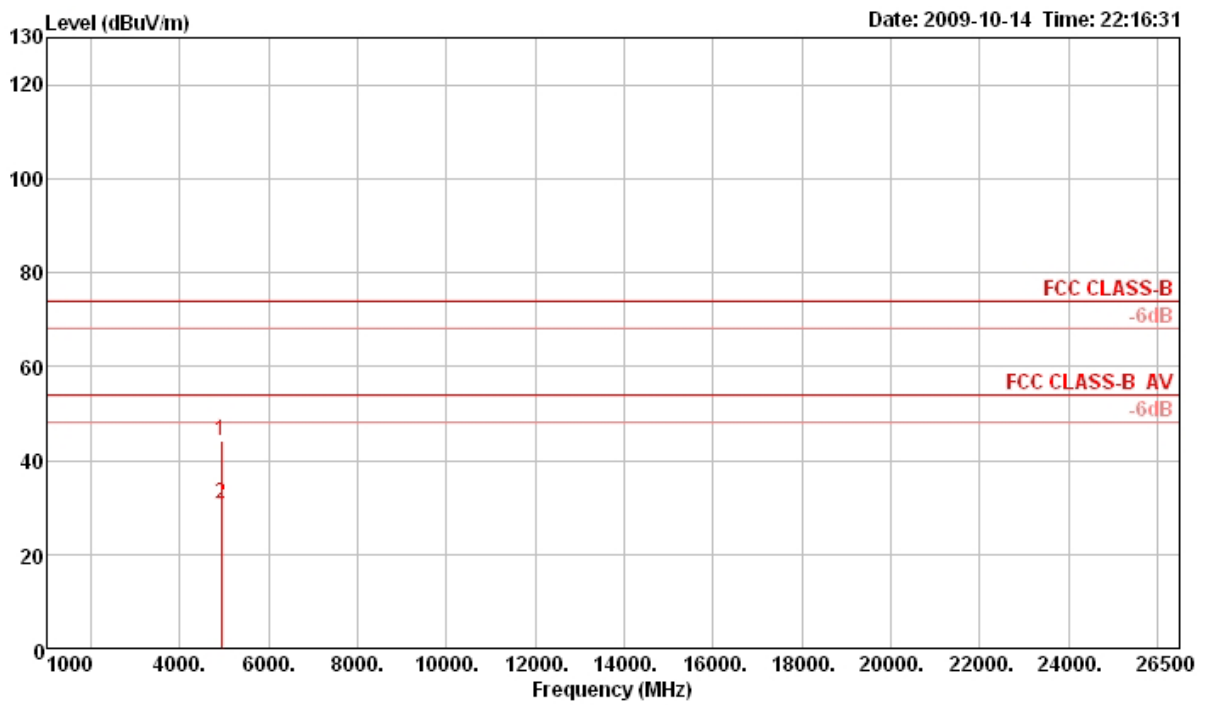
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4873.58	44.30	74.00	-29.70	42.20	3.97	35.03	33.16	111	100	Peak	VERTICAL
2 a	4873.95	30.40	54.00	-23.60	28.30	3.97	35.03	33.16	111	100	Average	VERTICAL

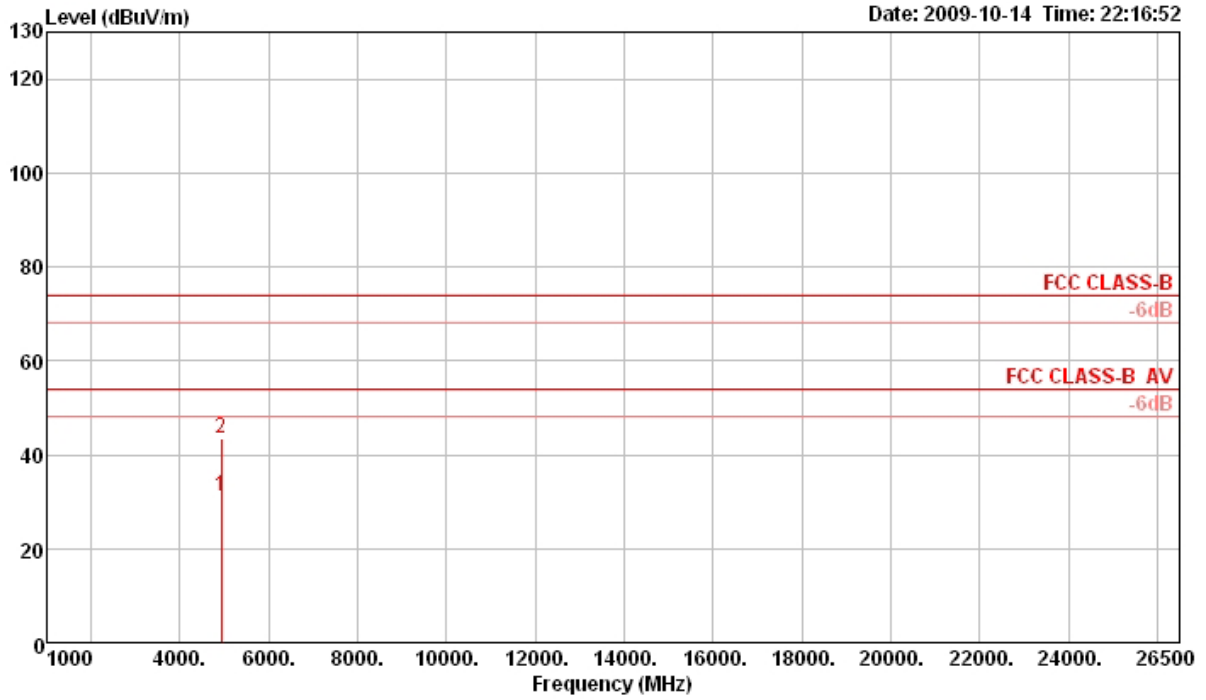
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11b CH 11 / Mode 1 with Ant. A

Horizontal



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	PoI/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4924.27	44.33	74.00	-29.67	42.11	3.97	35.01	33.26	173	100	Peak	HORIZONTAL
2 a	4924.40	30.78	54.00	-23.22	28.56	3.97	35.01	33.26	173	100	Average	HORIZONTAL

Vertical

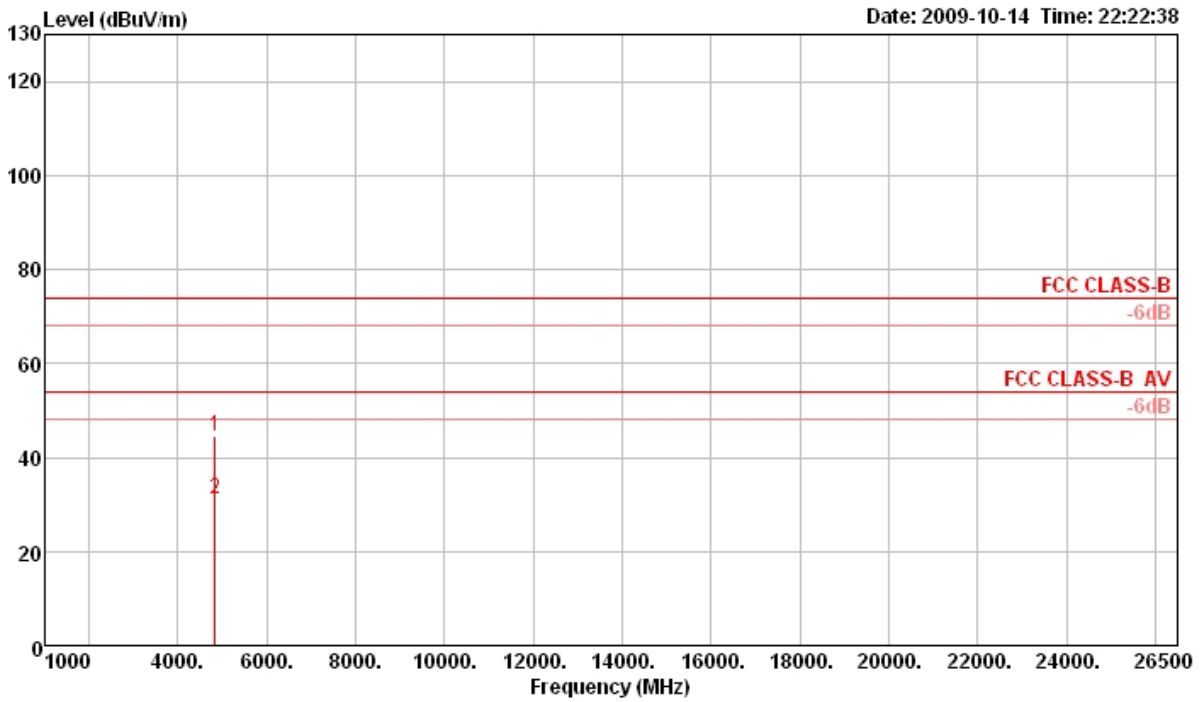


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4924.40	31.23	54.00	-22.77	29.01	3.97	35.01	33.26	31	100	Average	VERTICAL
2 p	4924.50	43.37	74.00	-30.63	41.15	3.97	35.01	33.26	31	100	Peak	VERTICAL



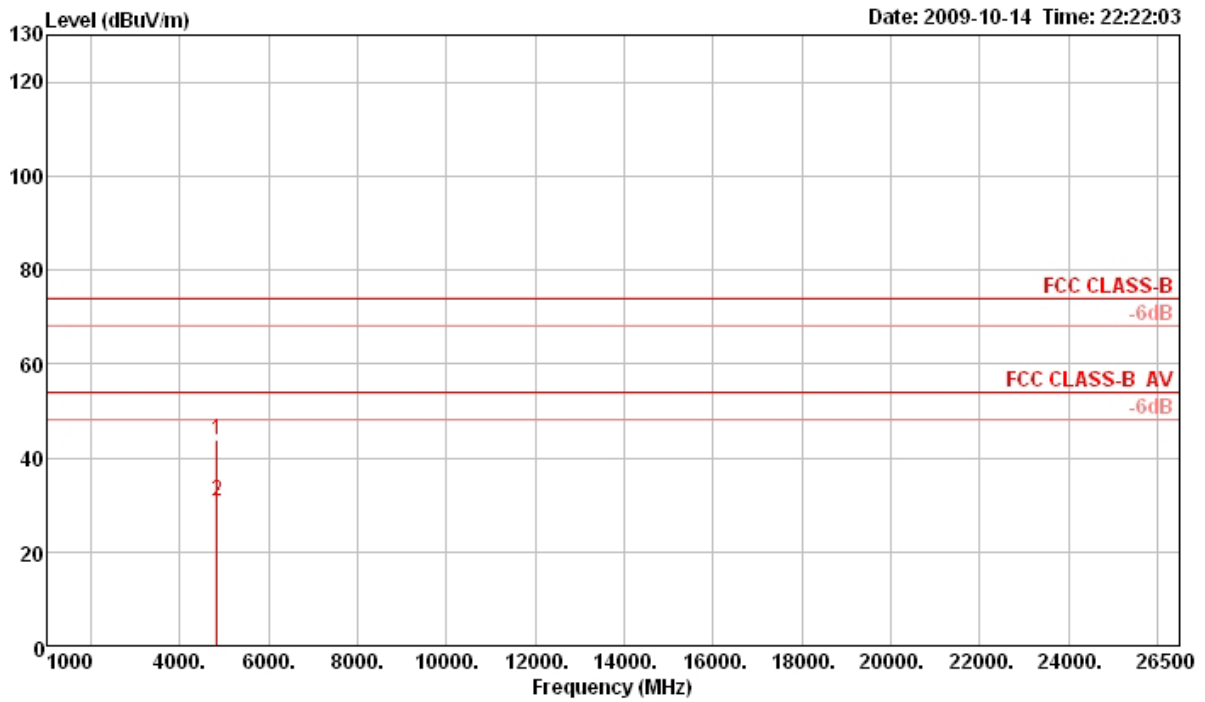
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11g CH 1 / Mode 1 with Ant. A

Horizontal



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	PoI/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4824.29	44.45	74.00	-29.55	42.46	3.96	35.03	33.06	139	100	Peak	HORIZONTAL
2 a	4824.38	31.30	54.00	-22.70	29.31	3.96	35.03	33.06	139	100	Average	HORIZONTAL

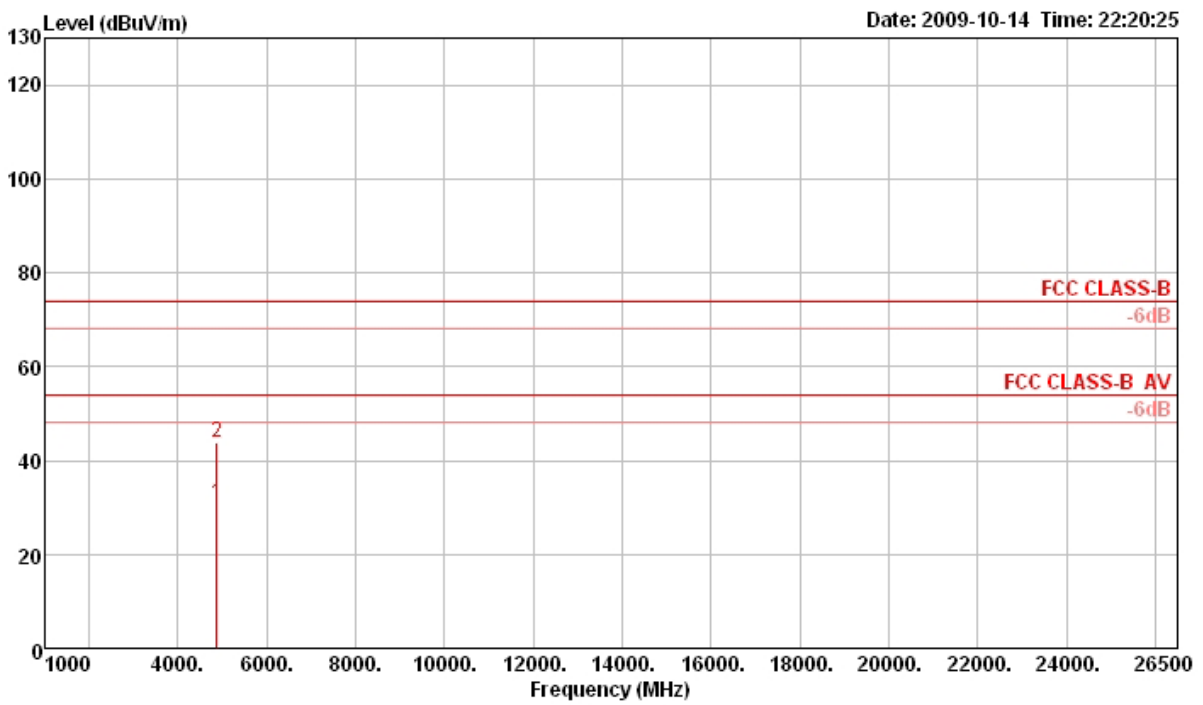
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4823.67	43.80	74.00	-30.20	41.81	3.96	35.03	33.06	237	100	Peak	VERTICAL
2 a	4824.47	30.64	54.00	-23.36	28.65	3.96	35.03	33.06	237	100	Average	VERTICAL

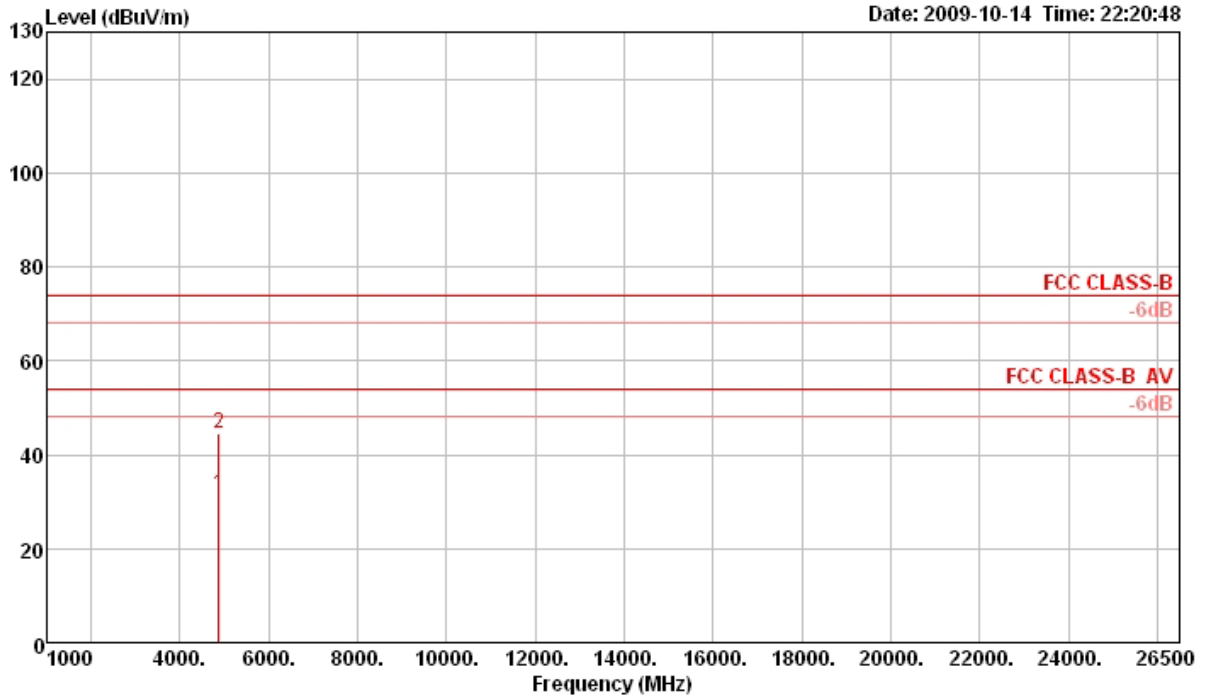
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11g CH 6 / Mode 1 with Ant. A

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	PoI/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4873.65	30.85	54.00	-23.15	28.75	3.97	35.03	33.16	122	100	Average	HORIZONTAL
2 p	4873.82	43.72	74.00	-30.28	41.62	3.97	35.03	33.16	122	100	Peak	HORIZONTAL

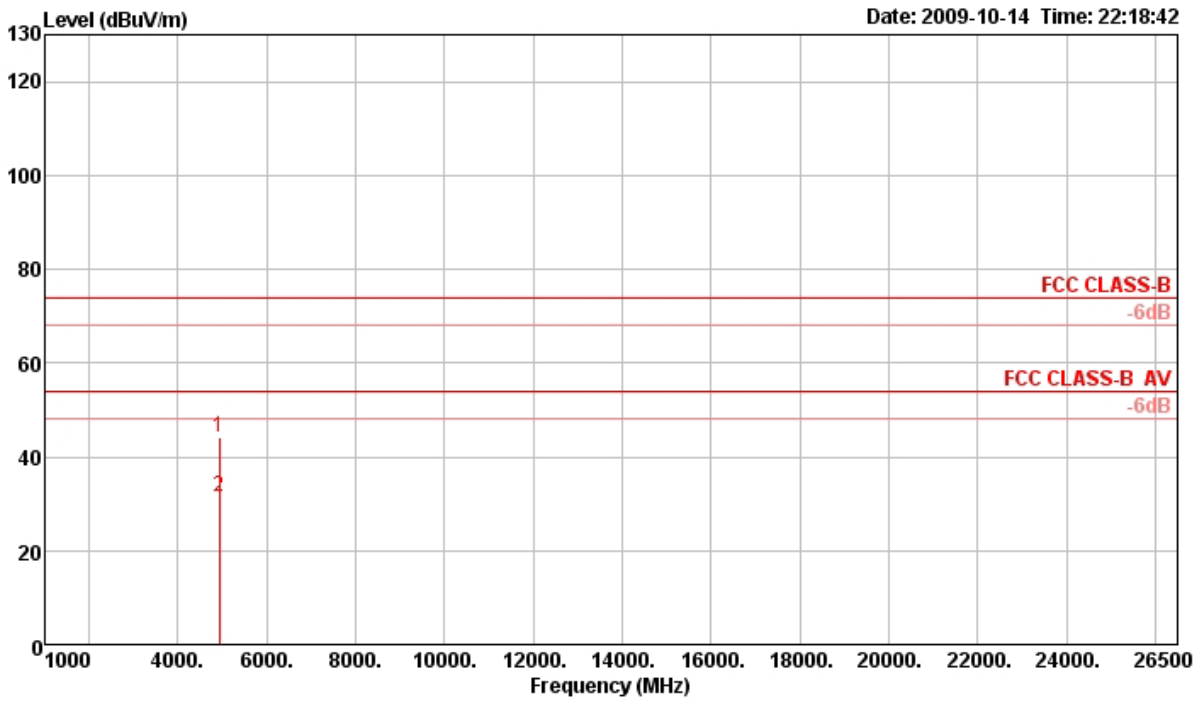
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4873.60	31.52	54.00	-22.48	29.42	3.97	35.03	33.16	266	100	Average	VERTICAL
2 p	4873.70	44.49	74.00	-29.51	42.39	3.97	35.03	33.16	266	100	Peak	VERTICAL

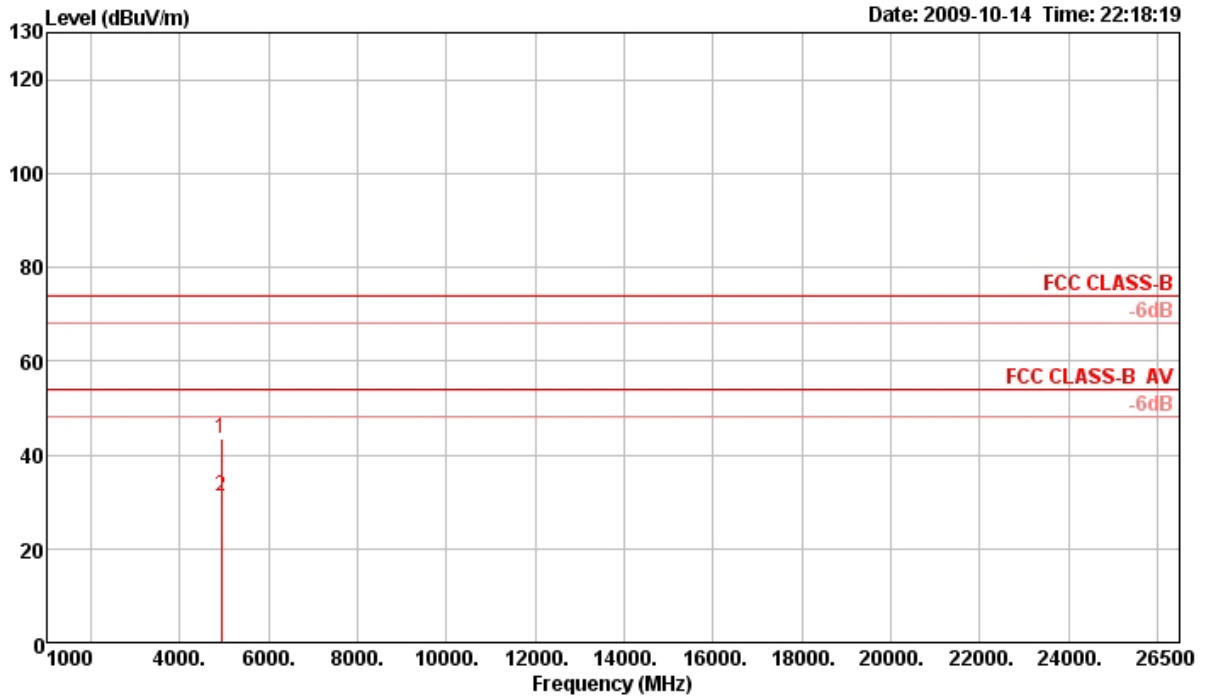
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11g CH 11 / Mode 1 with Ant. A

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	T/Pos	A/Pos	Remark	Po1/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1 p	4924.24	44.12	74.00	-29.88	41.90	3.97	33.26	35.01	331	100 Peak	HORIZONTAL
2 a	4924.43	31.33	54.00	-22.67	29.11	3.97	33.26	35.01	331	100 Average	HORIZONTAL

*Vertical*



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1 p	4924.15	43.35	74.00	-30.65	41.13	3.97	33.26	35.01	216	100 Peak	VERTICAL
2 a	4924.37	31.28	54.00	-22.72	29.06	3.97	33.26	35.01	216	100 Average	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

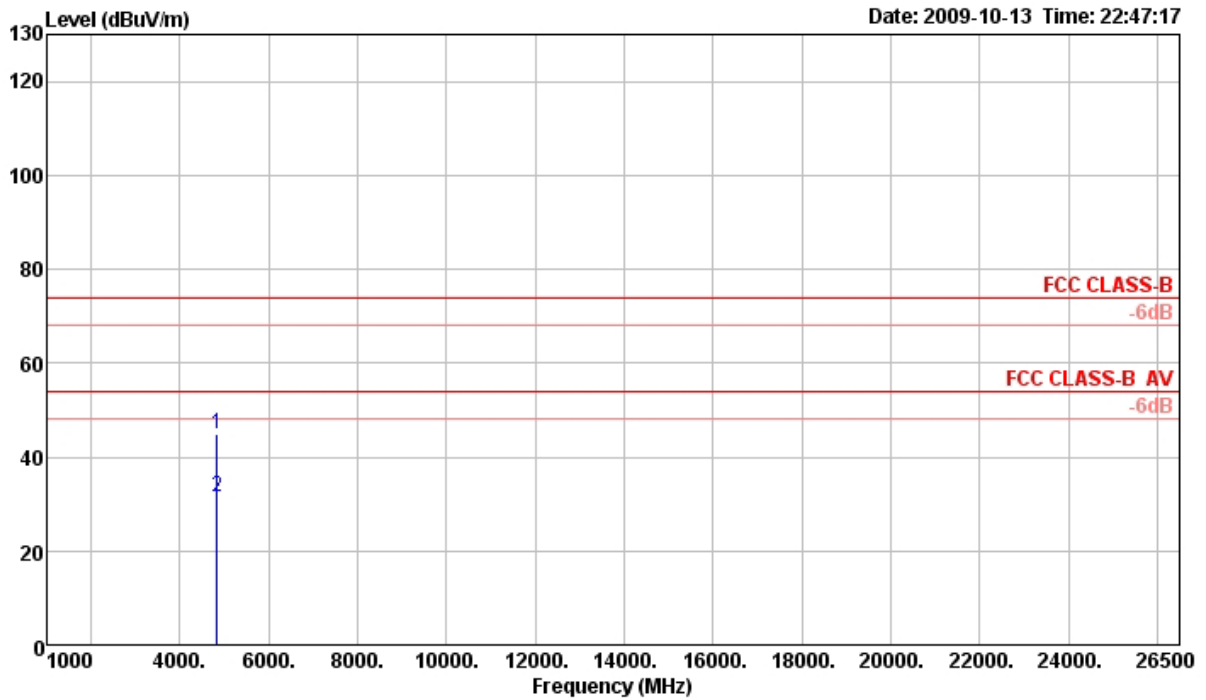
Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

<For Ant. B- PCB Antenna>:

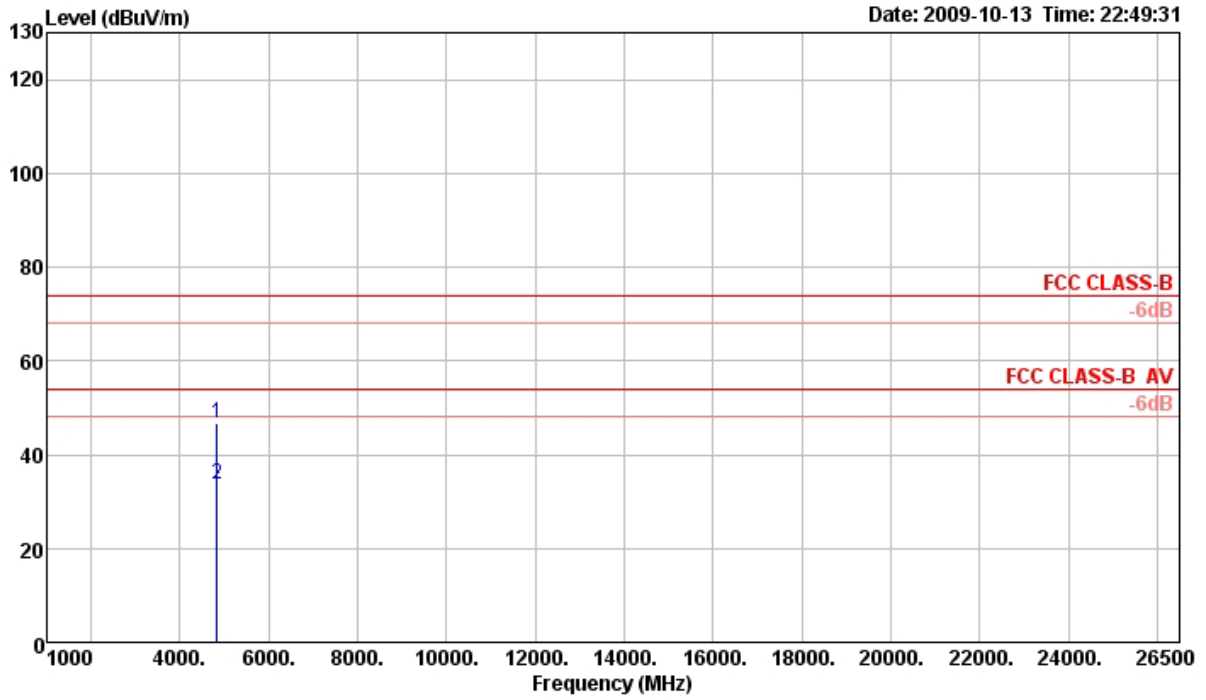
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11n MCS0 20MHz Ch 1 / Mode 4 with Ant. B

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4824.02	45.08	74.00	-28.92	43.09	3.96	35.03	33.06	16	102	Peak	HORIZONTAL
2 a	4824.73	31.63	54.00	-22.37	29.64	3.96	35.03	33.06	16	102	Average	HORIZONTAL

Vertical

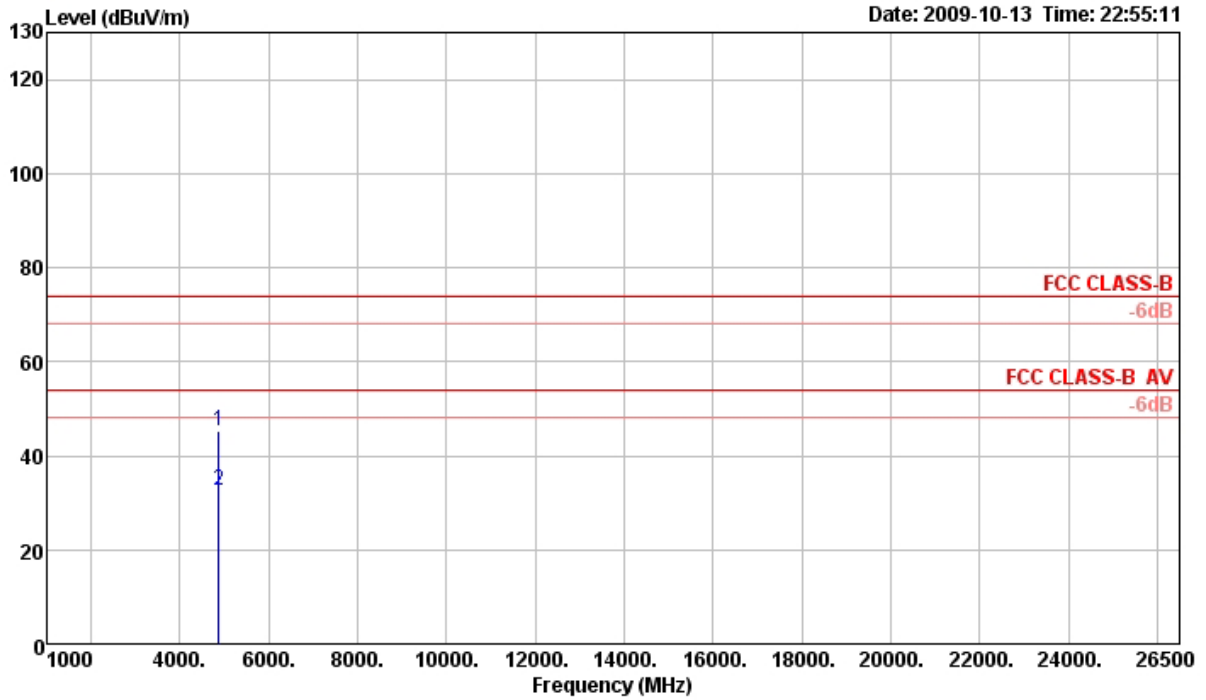


	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4824.85	46.76	74.00	-27.24	44.77	3.96	35.03	33.06	194	126	Peak	VERTICAL
2 a	4824.91	33.61	54.00	-20.39	31.62	3.96	35.03	33.06	194	126	Average	VERTICAL



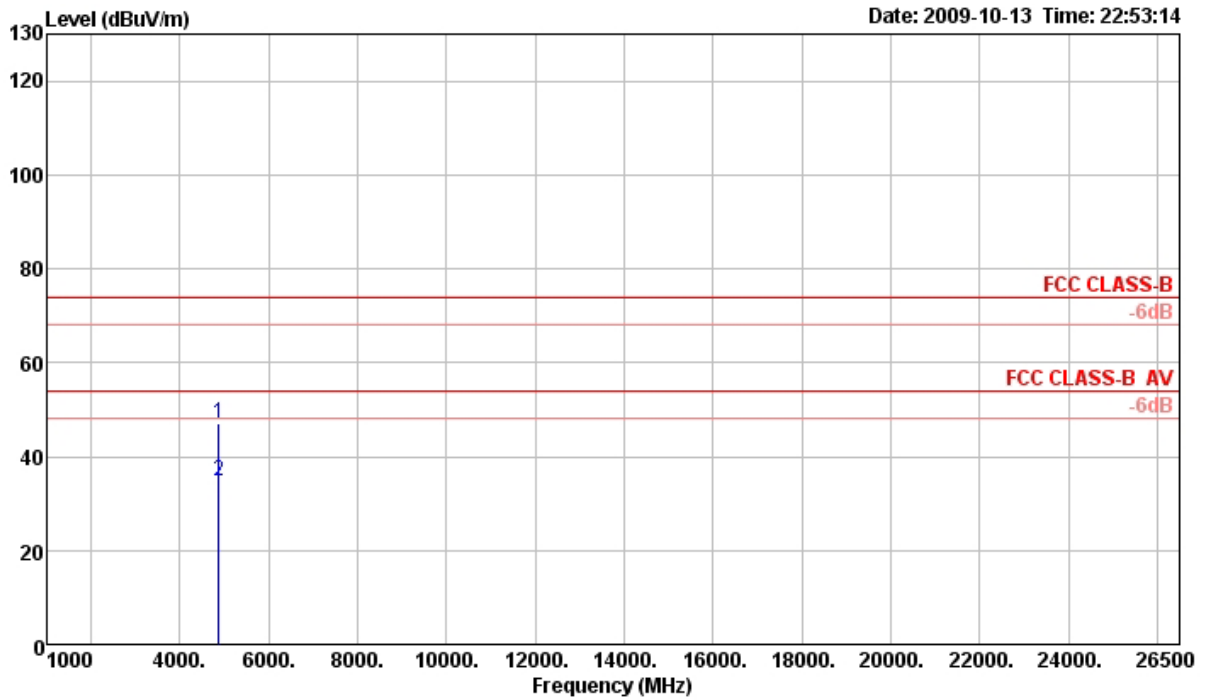
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11n MCS0 20MHz Ch 6 / Mode 4 with Ant. B

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4873.63	45.26	74.00	-28.74	43.16	3.97	35.03	33.16	11	102	Peak	HORIZONTAL
2 a	4873.76	32.71	54.00	-21.29	30.61	3.97	35.03	33.16	11	102	Average	HORIZONTAL

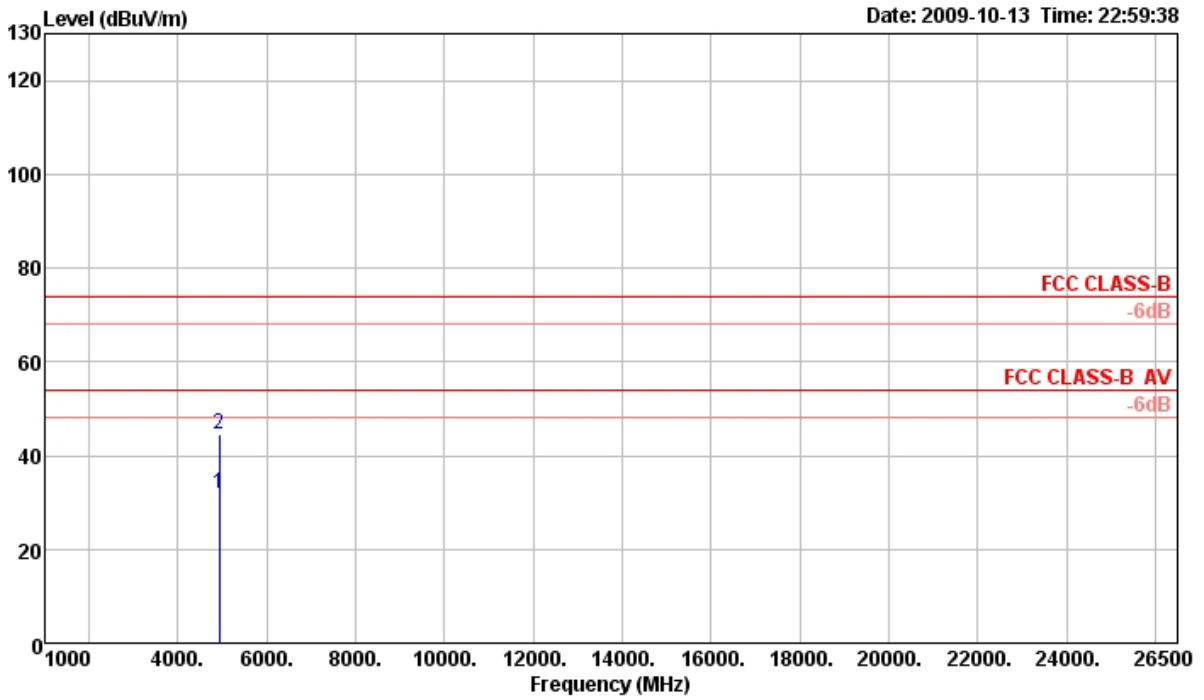
Vertical



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4873.76	47.24	74.00	-26.76	45.14	3.97	35.03	33.16	202	122	Peak	VERTICAL
2 a	4873.89	34.67	54.00	-19.33	32.57	3.97	35.03	33.16	202	122	Average	VERTICAL

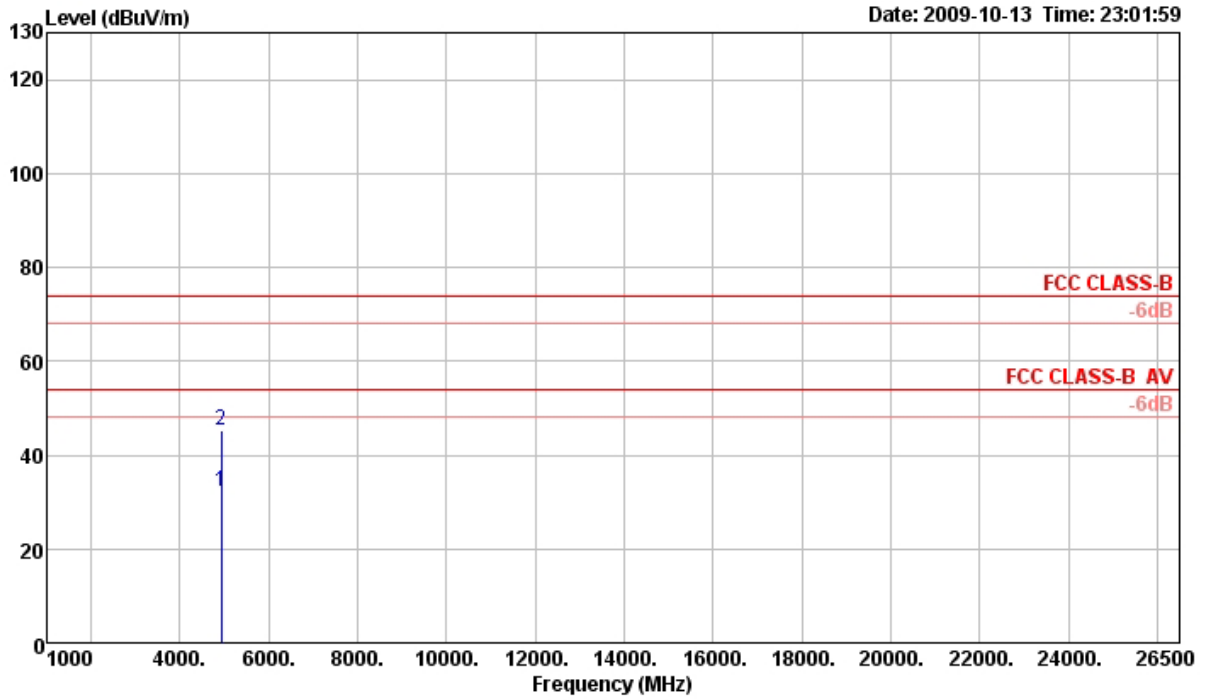
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11n MCS0 20MHz Ch11 / Mode 4 with Ant. B

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4923.31	31.79	54.00	-22.21	29.57	3.97	35.01	33.26	22	108	Average	HORIZONTAL
2 p	4924.53	44.67	74.00	-29.33	42.45	3.97	35.01	33.26	22	108	Peak	HORIZONTAL

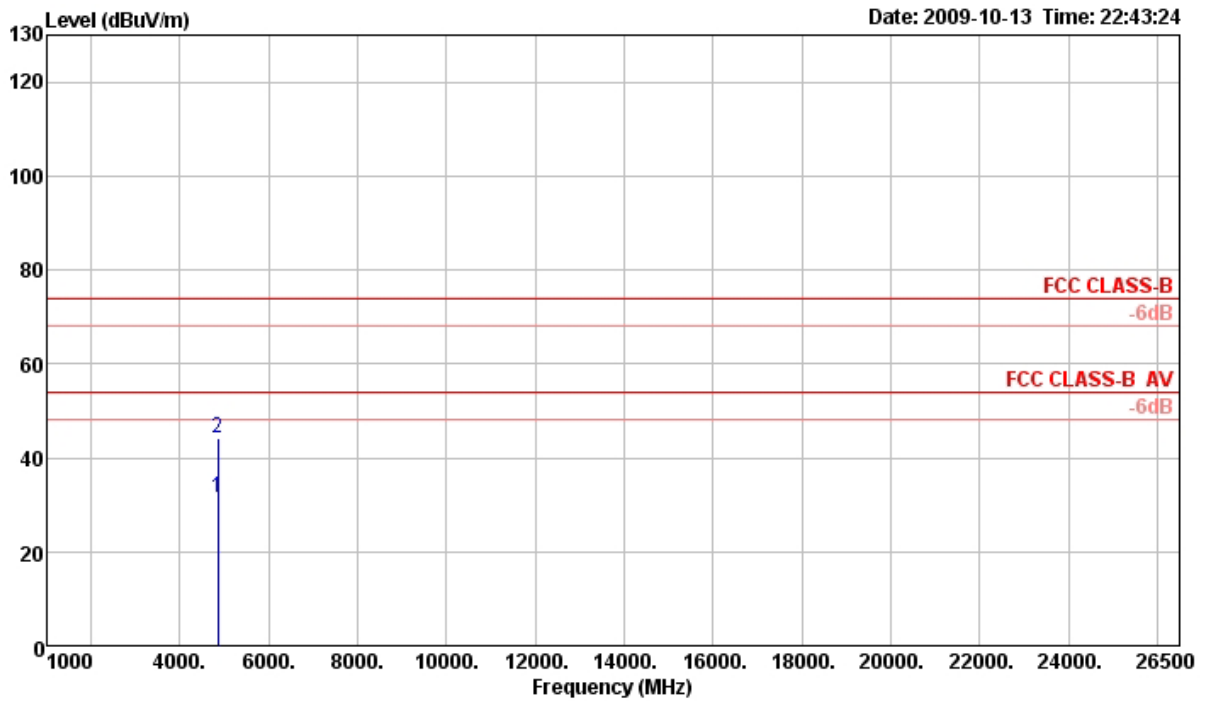
Vertical



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4923.91	32.27	54.00	-21.73	30.05	3.97	35.01	33.26	196	120	Average	VERTICAL
2 p	4924.41	45.21	74.00	-28.79	42.99	3.97	35.01	33.26	196	120	Peak	VERTICAL

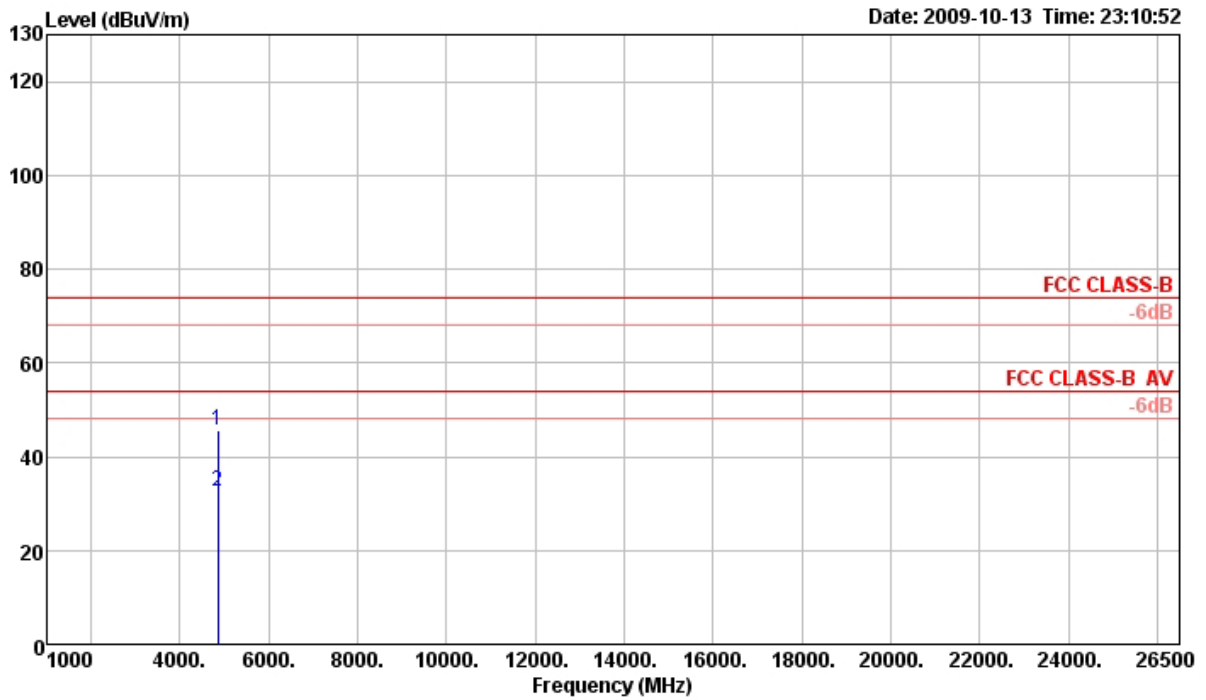
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11n MCS0 40MHz Ch 3 / Mode 4 with Ant. B

Horizontal



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4844.43	31.67	54.00	-22.33	29.65	3.96	35.03	33.09	360	100	Average	HORIZONTAL
2 p	4844.55	44.06	74.00	-29.94	42.04	3.96	35.03	33.09	360	100	Peak	HORIZONTAL

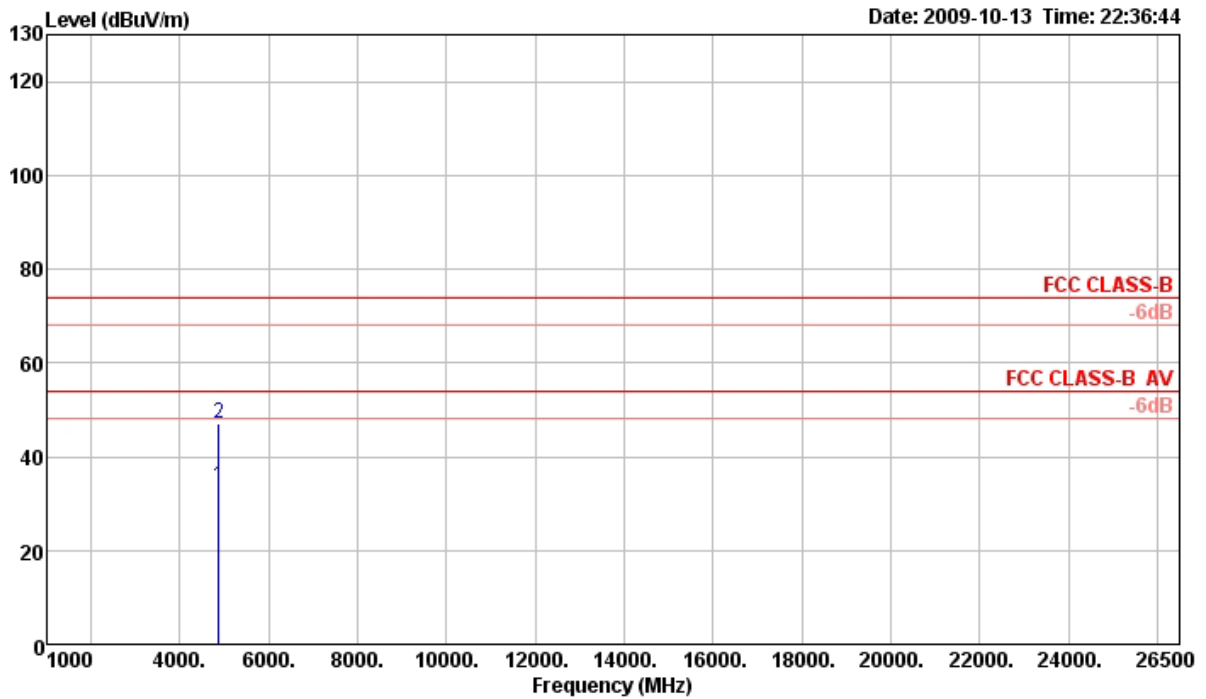
Vertical



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4843.18	45.75	74.00	-28.25	43.73	3.96	35.03	33.09	186	124	Peak	VERTICAL
2 a	4843.93	32.61	54.00	-21.39	30.59	3.96	35.03	33.09	186	124	Average	VERTICAL

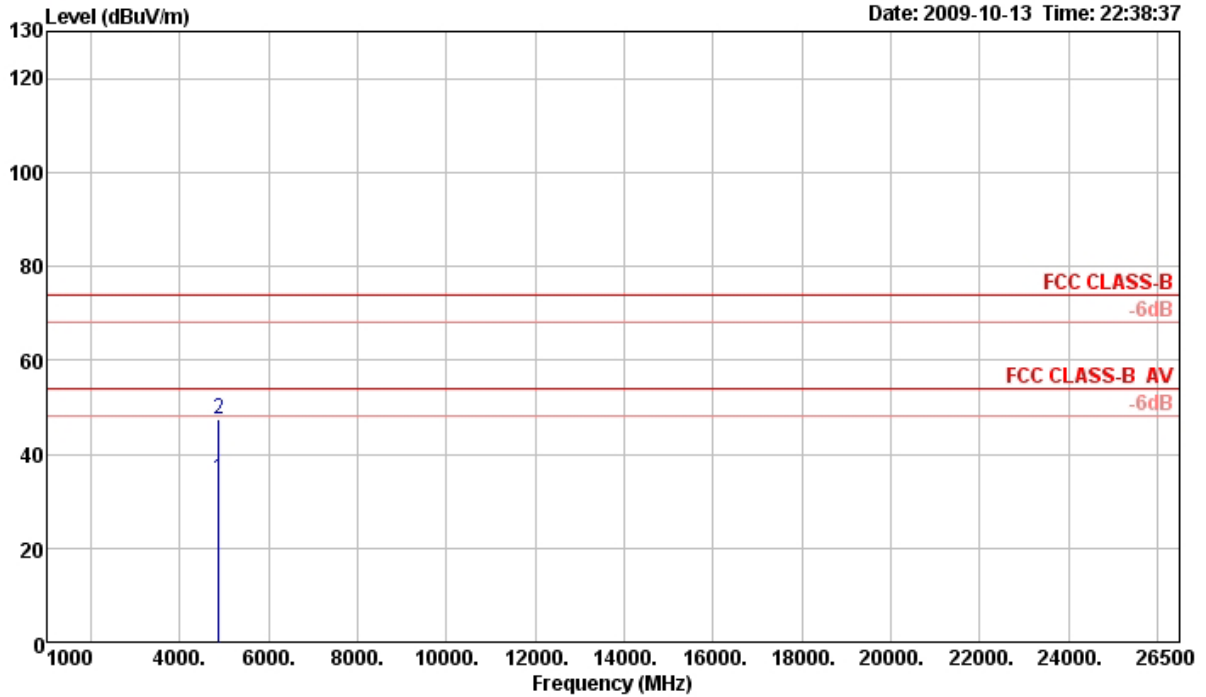
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11n MCS0 40MHz Ch 6 / Mode 4 with Ant. B

Horizontal



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4874.09	33.80	54.00	-20.20	31.70	3.97	35.03	33.16	0	100	Average	HORIZONTAL
2 p	4874.72	47.04	74.00	-26.96	44.94	3.97	35.03	33.16	0	100	Peak	HORIZONTAL

Vertical

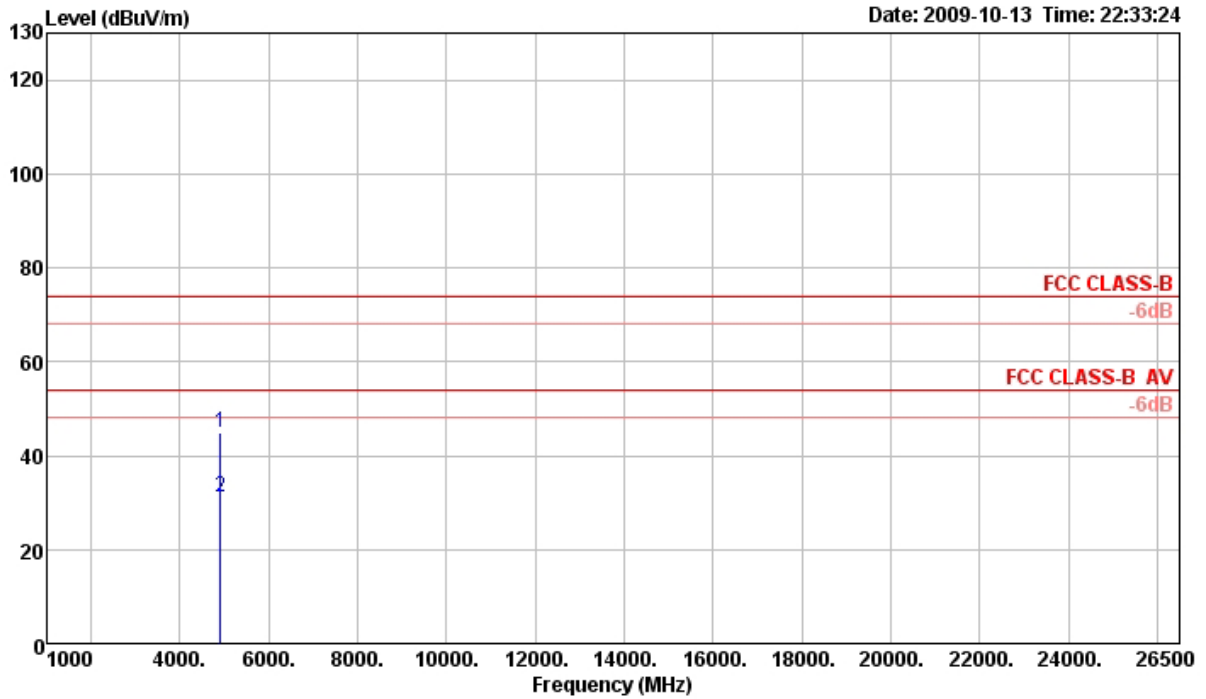


	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4873.92	34.79	54.00	-19.21	32.69	3.97	35.03	33.16	179	121	Average	VERTICAL
2 p	4873.94	47.50	74.00	-26.50	45.40	3.97	35.03	33.16	179	121	Peak	VERTICAL



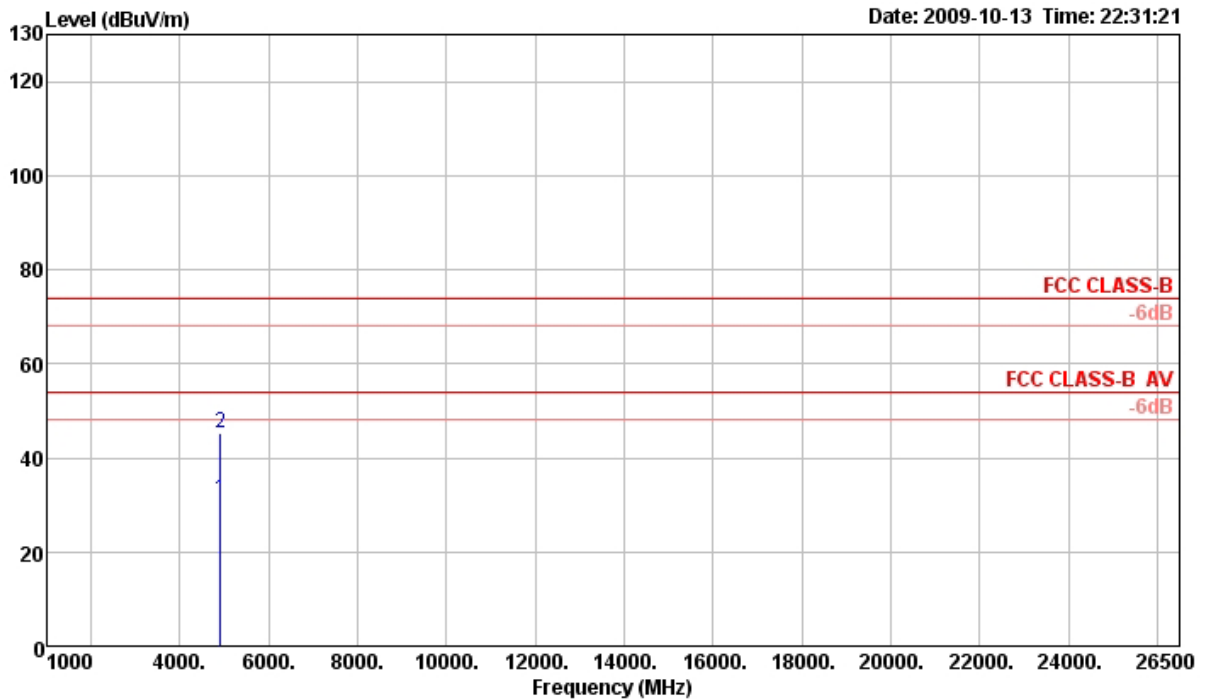
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11n MCS0 40MHz Ch 9 / Mode 4 with Ant. B

Horizontal



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4903.18	44.94	74.00	-29.06	42.80	3.97	35.02	33.19	360	100	Peak	HORIZONTAL
2 a	4903.22	31.28	54.00	-22.72	29.14	3.97	35.02	33.19	360	100	Average	HORIZONTAL

*Vertical*



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	PoI/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4904.82	31.27	54.00	-22.73	29.09	3.97	35.02	33.23	196	126	Average	VERTICAL
2 p	4904.82	45.23	74.00	-28.77	43.05	3.97	35.02	33.23	196	126	Peak	VERTICAL

Note:

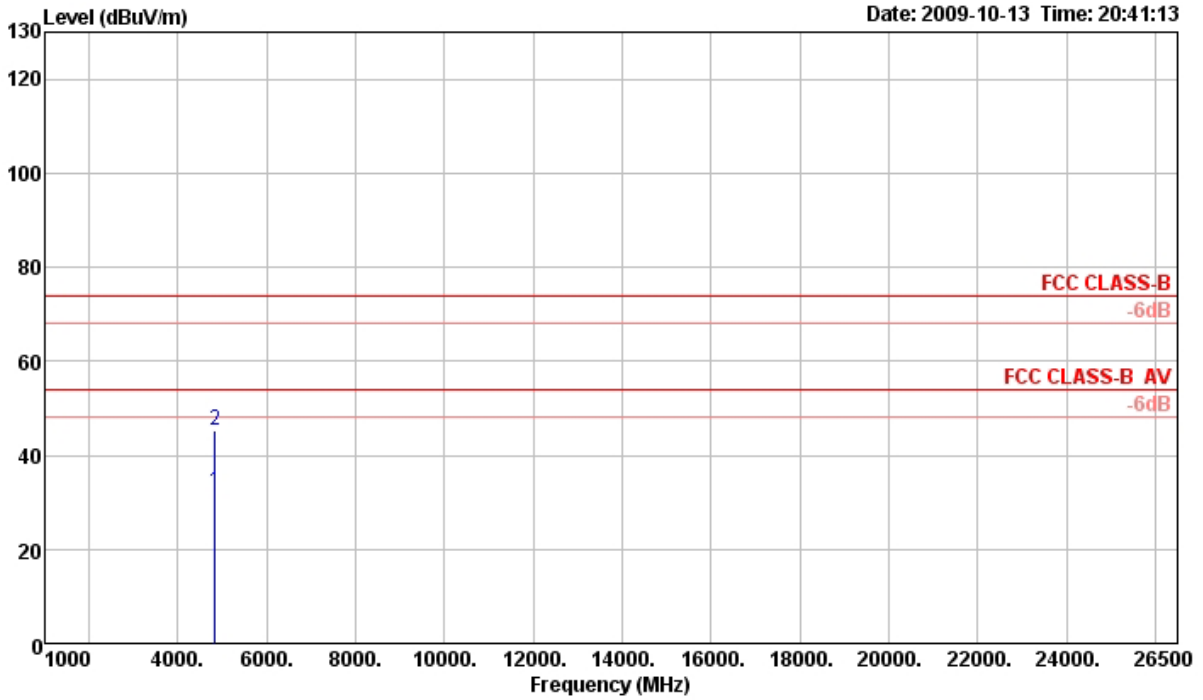
The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

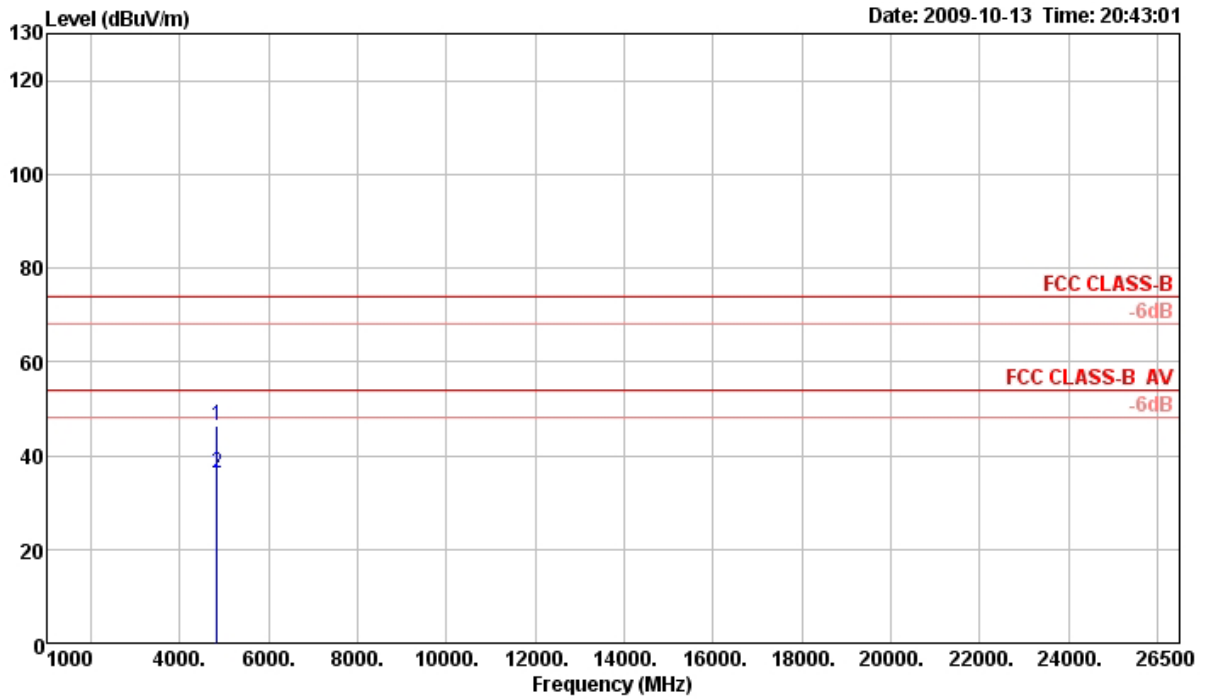
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11b CH 1 / Mode 4 with Ant. B

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4824.06	32.21	54.00	-21.79	30.22	3.96	35.03	33.06	360	100	Average	HORIZONTAL
2 b	4824.56	45.44	74.00	-28.56	43.45	3.96	35.03	33.06	360	100	Peak	HORIZONTAL

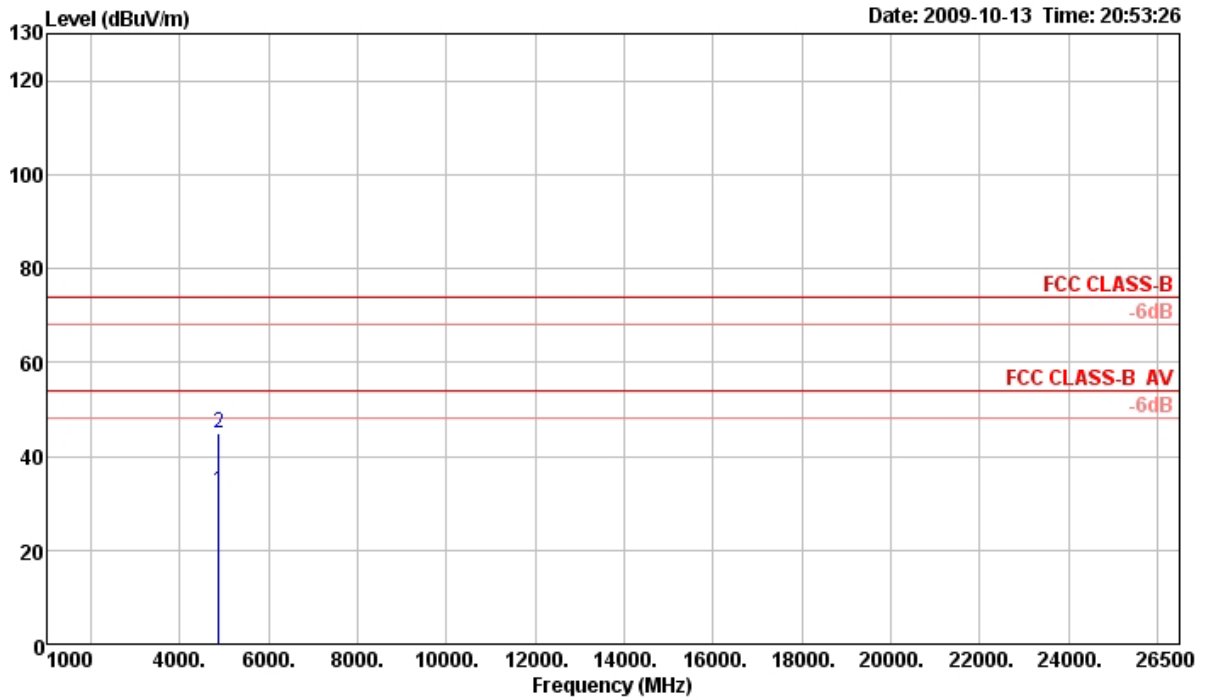
Vertical



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4823.88	46.34	74.00	-27.66	44.35	3.96	35.03	33.06	152	101	Peak	VERTICAL
2 a	4824.08	36.31	54.00	-17.69	34.32	3.96	35.03	33.06	152	101	Average	VERTICAL

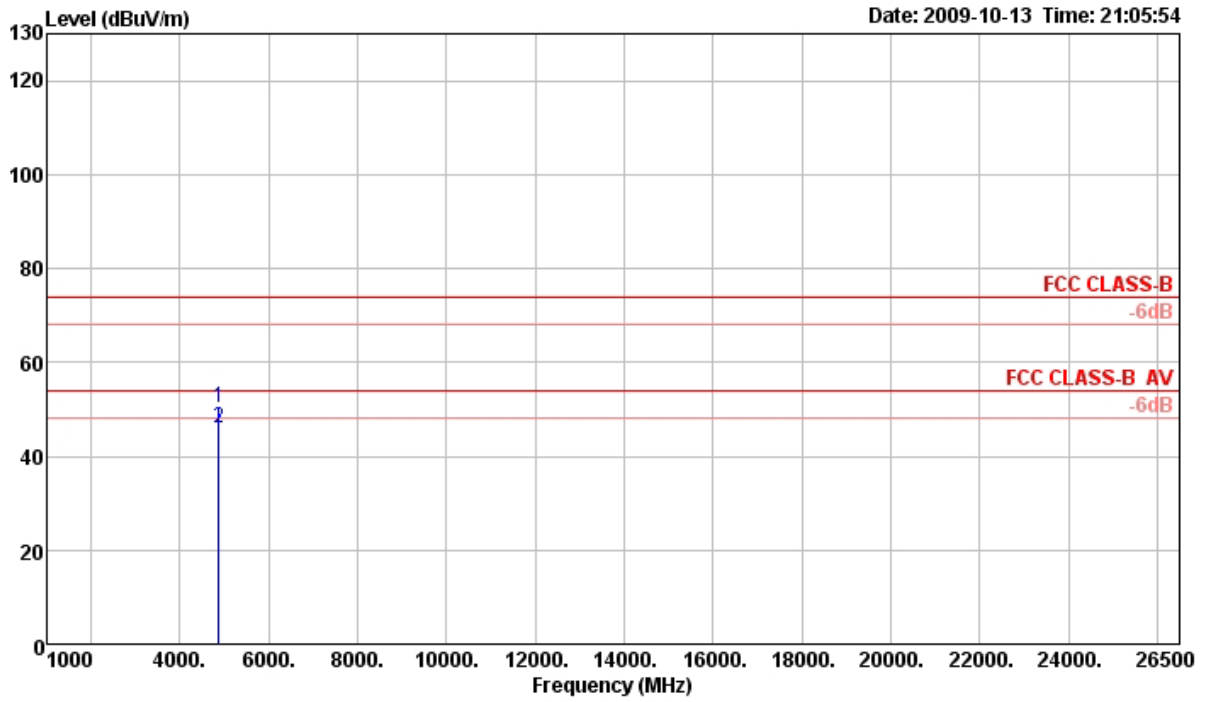
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11b CH 6 / Mode 4 with Ant. B

Horizontal



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4873.99	32.59	54.00	-21.41	30.49	3.97	35.03	33.16	360	115	Average	HORIZONTAL
2 b	4874.61	44.79	74.00	-29.21	42.69	3.97	35.03	33.16	360	115	Peak	HORIZONTAL

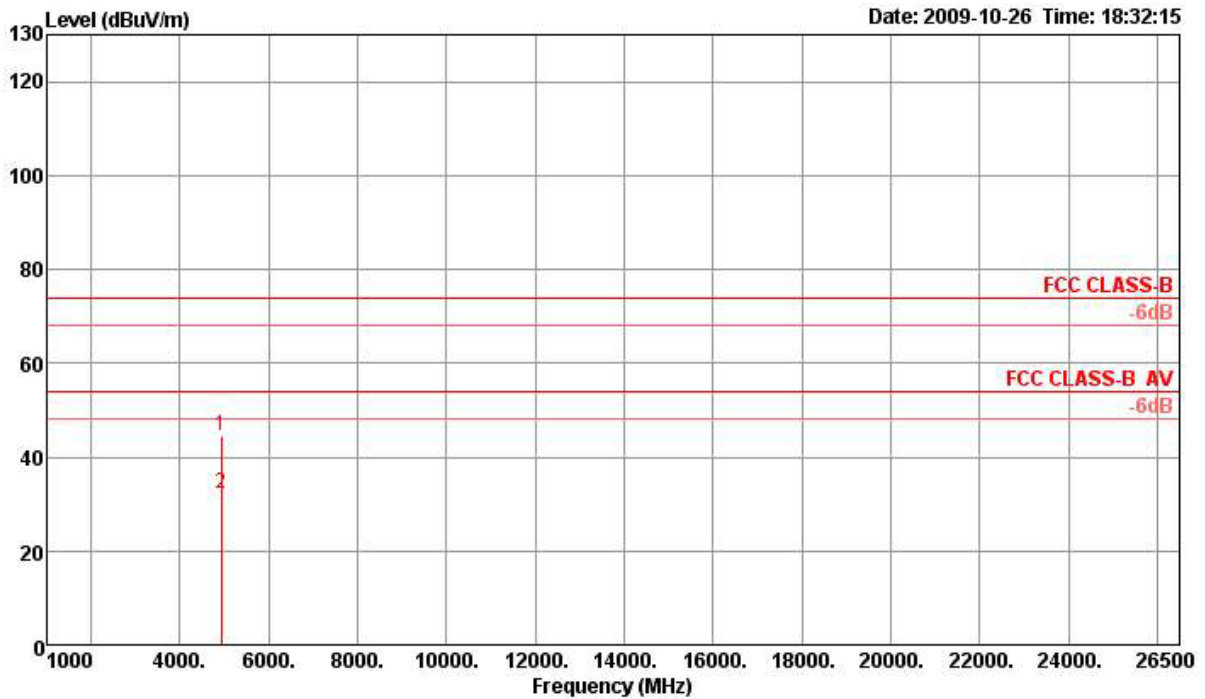
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4874.10	50.25	74.00	-23.75	48.15	3.97	35.03	33.16	168	102	Peak	VERTICAL
2 a	4874.13	45.87	54.00	-8.13	43.77	3.97	35.03	33.16	168	102	Average	VERTICAL

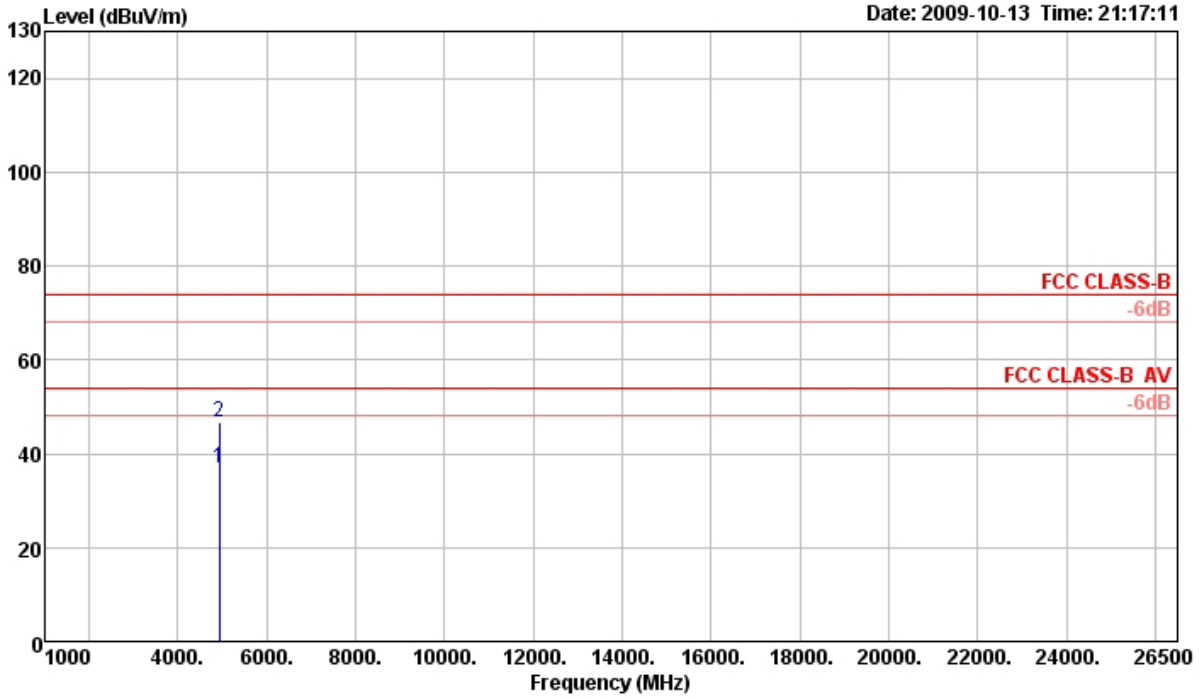
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11b CH 11 / Mode 4 with Ant. B

Horizontal



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	deg	cm		
1 p	4923.24	44.66	74.00	-29.34	42.44	3.97	33.26	35.01	360	100 Peak	HORIZONTAL
2 a	4923.36	32.13	54.00	-21.87	29.91	3.97	33.26	35.01	360	100 Average	HORIZONTAL

Vertical

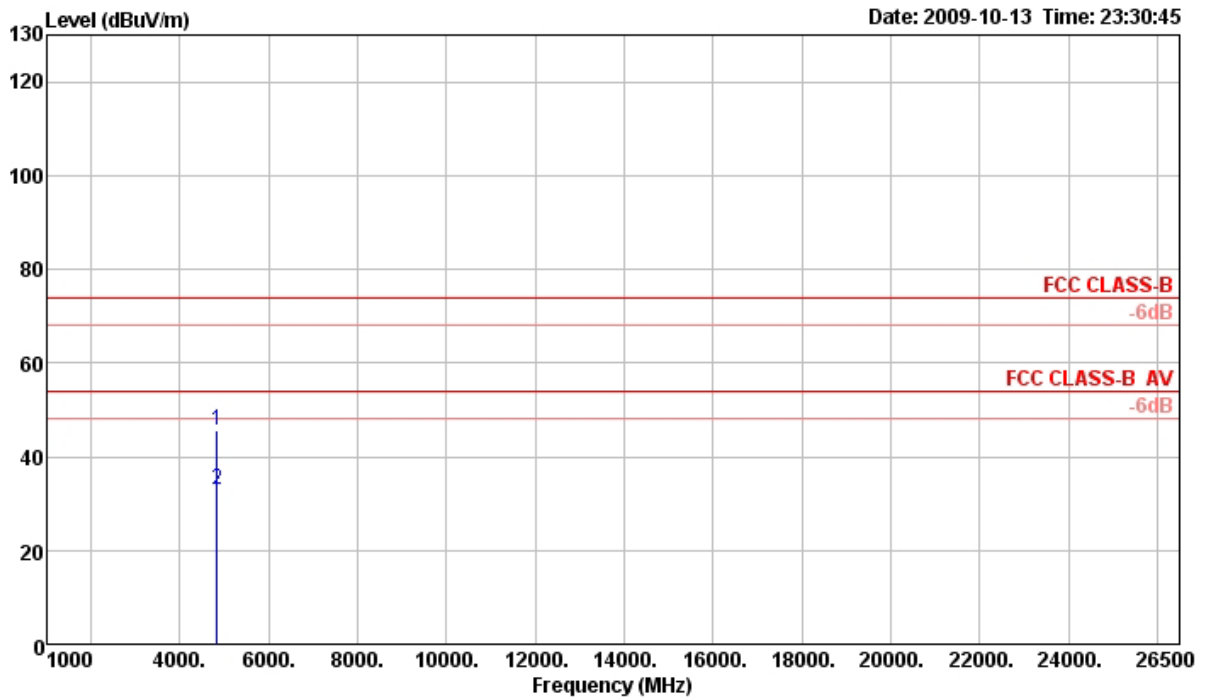


	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4924.04	36.80	54.00	-17.20	34.58	3.97	35.01	33.26	171	100	Average	VERTICAL
2 p	4924.22	46.88	74.00	-27.12	44.66	3.97	35.01	33.26	171	100	Peak	VERTICAL



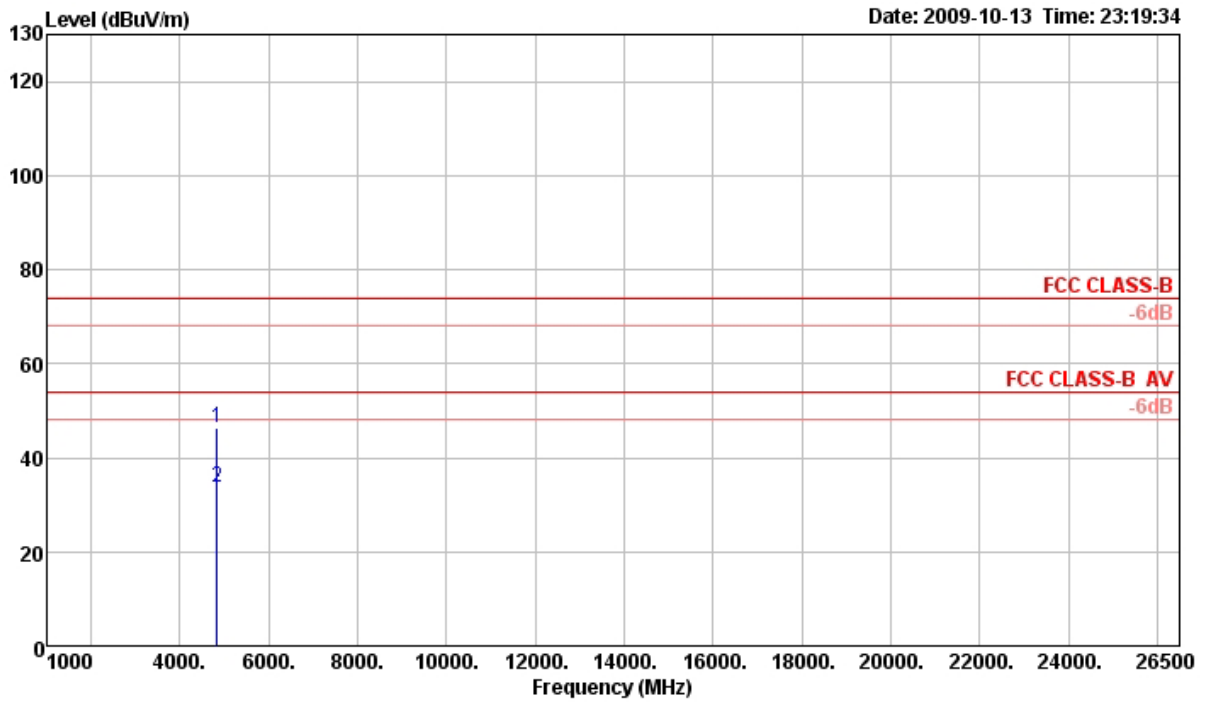
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11g CH 1 / Mode 4 with Ant. B

Horizontal



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4824.07	45.79	74.00	-28.21	43.80	3.96	35.03	33.06	12	100	Peak	HORIZONTAL
2 a	4824.31	32.82	54.00	-21.18	30.83	3.96	35.03	33.06	12	100	Average	HORIZONTAL

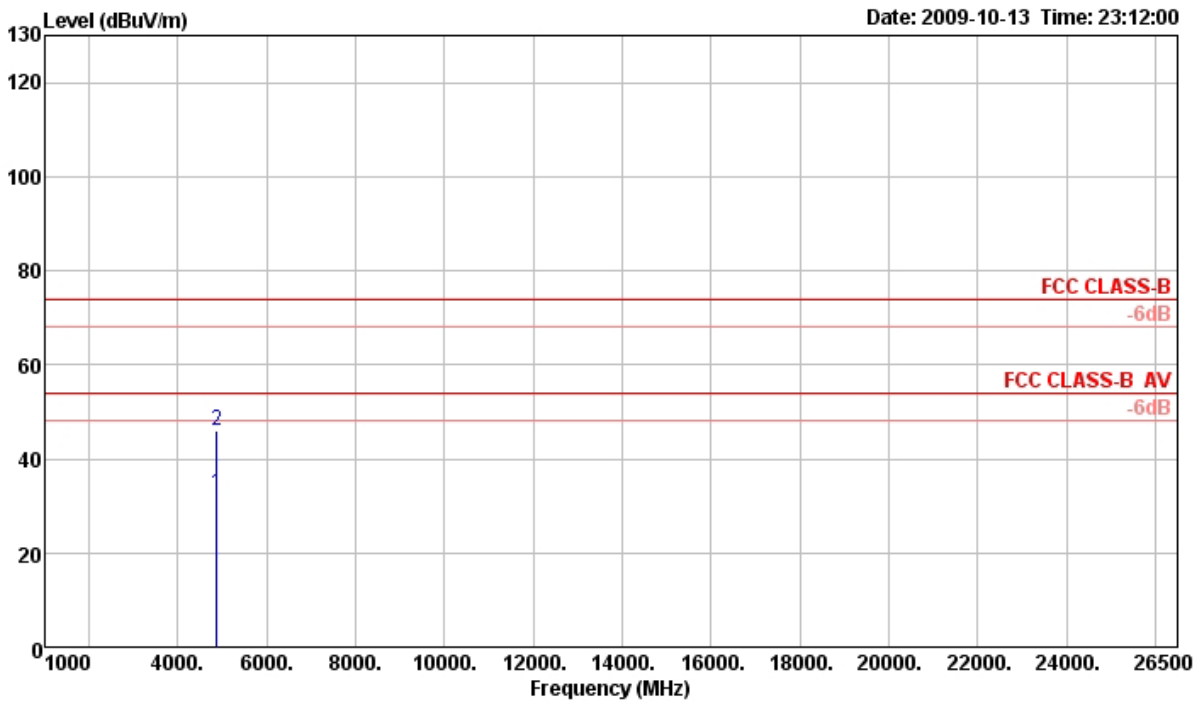
Vertical



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4823.66	46.36	74.00	-27.64	44.37	3.96	35.03	33.06	185	123	Peak	VERTICAL
2 a	4824.83	33.64	54.00	-20.36	31.65	3.96	35.03	33.06	185	123	Average	VERTICAL

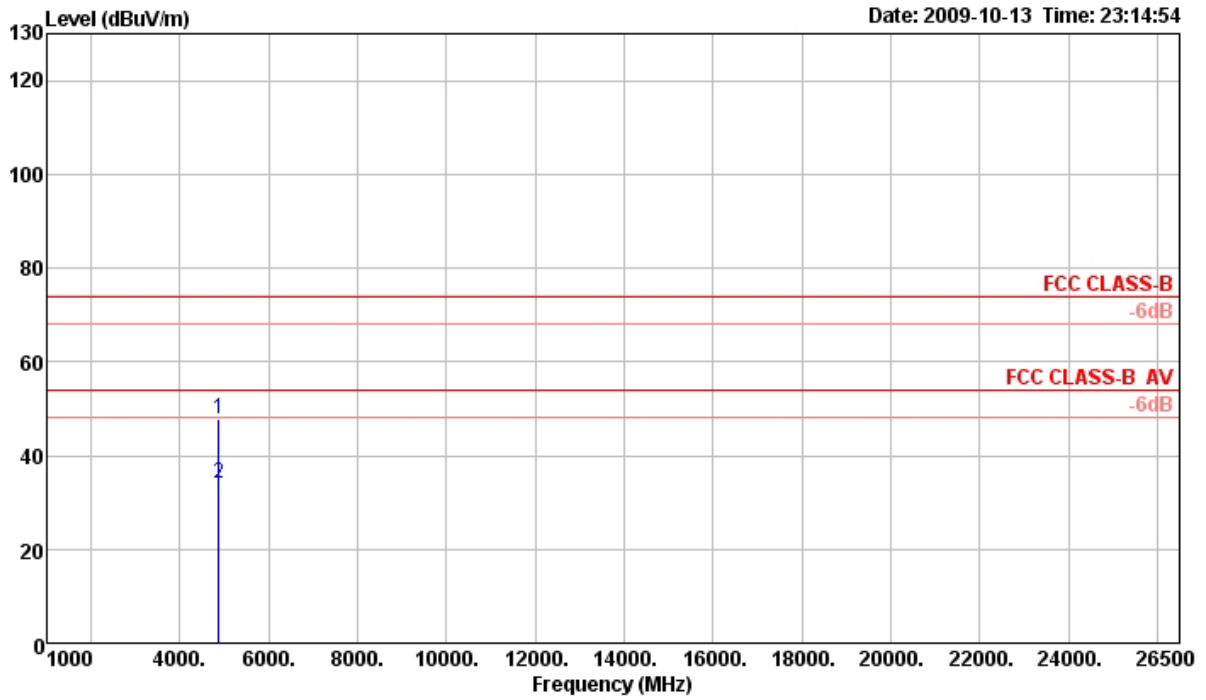
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11g CH 6 / Mode 4 with Ant. B

Horizontal



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4873.23	32.69	54.00	-21.31	30.59	3.97	35.03	33.16	10	100	Average	HORIZONTAL
2 p	4873.75	46.00	74.00	-28.00	43.90	3.97	35.03	33.16	10	100	Peak	HORIZONTAL

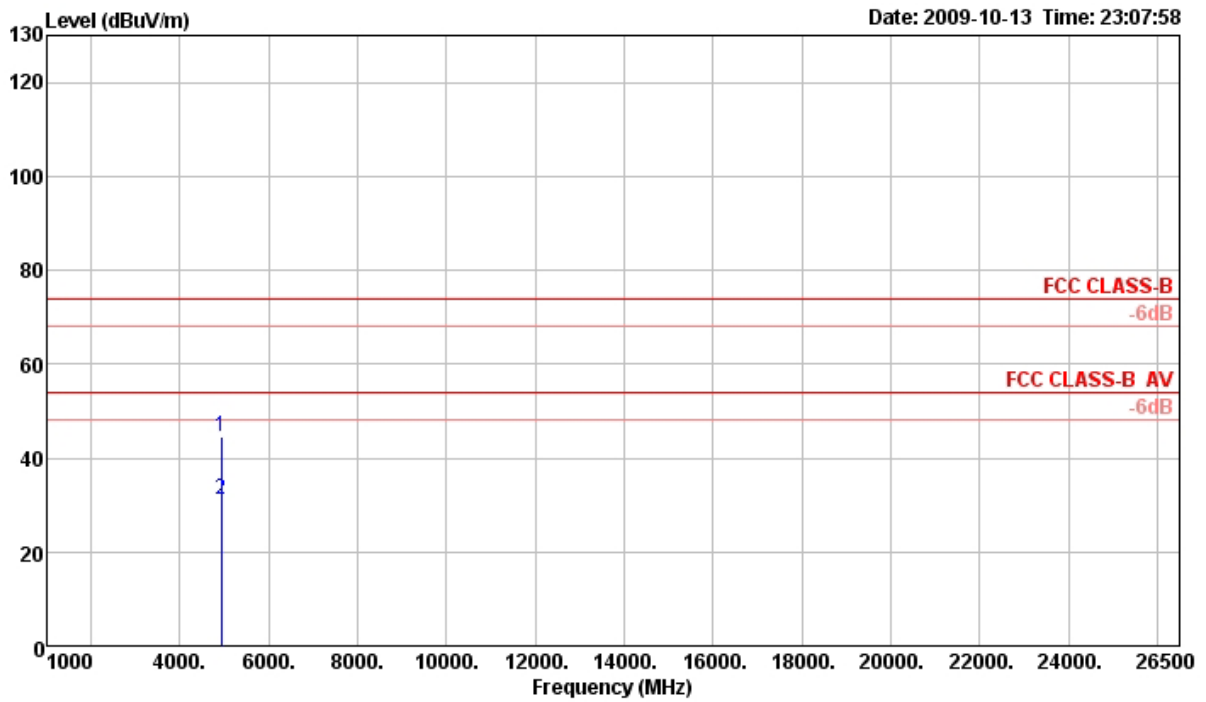
Vertical



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4874.25	47.68	74.00	-26.32	45.58	3.97	35.03	33.16	187	121	Peak	VERTICAL
2 a	4874.43	34.21	54.00	-19.79	32.11	3.97	35.03	33.16	187	121	Average	VERTICAL

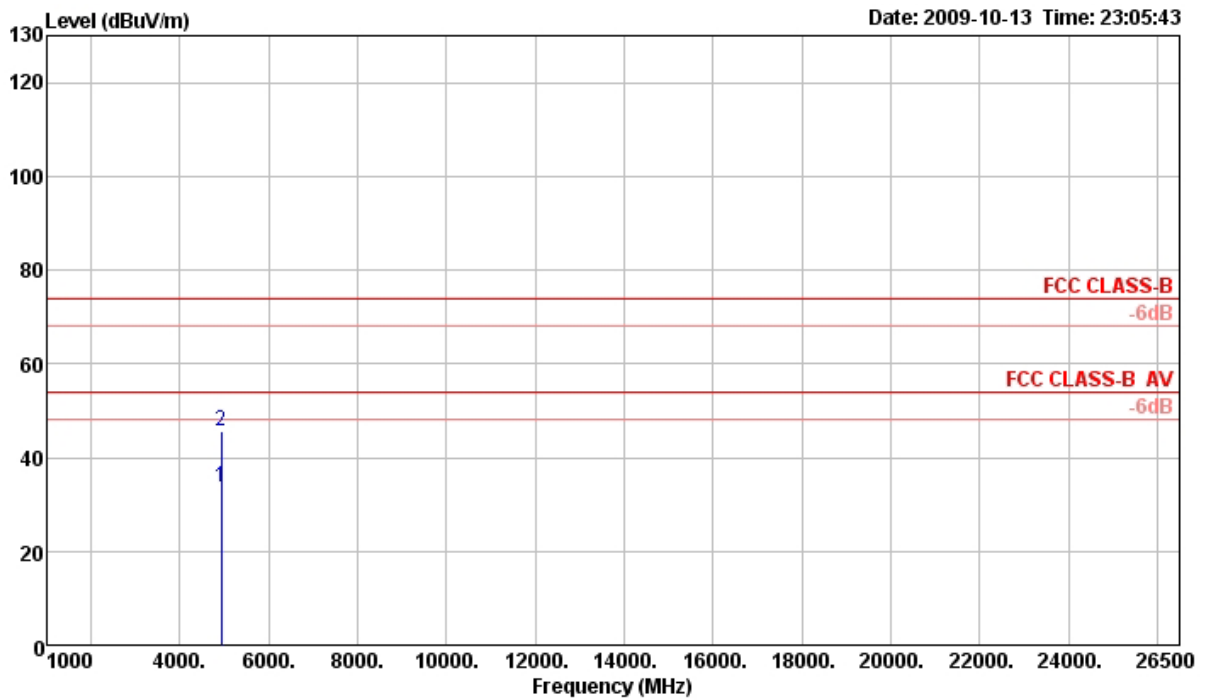
Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11g CH 11 / Mode 4 with Ant. B

Horizontal



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	4923.42	44.46	74.00	-29.54	42.24	3.97	35.01	33.26	353	107	Peak	HORIZONTAL
2 a	4923.74	31.31	54.00	-22.69	29.09	3.97	35.01	33.26	353	107	Average	HORIZONTAL

Vertical



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	4923.47	33.65	54.00	-20.35	31.43	3.97	35.01	33.26	198	119	Average	VERTICAL
2 p	4924.57	45.62	74.00	-28.38	43.40	3.97	35.01	33.26	198	119	Peak	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

## 4.6. Band Edge Emissions Measurement

### 4.6.1. Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

### 4.6.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	100 KHz /100 KHz for Peak

### 4.6.3. Test Procedures

1. The test procedure is the same as section 4.5.3, only the frequency range investigated is limited to 100MHz around bandedges.
2. In case the emission is fail due to the used RB/VB is too wide, marker-delta method of FCC Public Notice DA00-705 will be followed.

### 4.6.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.5.4.

### 4.6.5. Test Deviation

There is no deviation with the original standard.

### 4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

#### 4.6.7. Test Result of Band Edge and Fundamental Emissions

<For Ant. A – Dipole Antenna>:

Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configuration	IEEE 802.11n MCS0 20MHz Ch 1, 6, 11 / Mode 1 with Ant. A
Test Date	Oct. 14, 2009		

##### Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 !	2390.00	53.86	54.00	-0.14	22.93	2.76	0.00	28.17	339	100	Average	HORIZONTAL
2 !	2390.00	71.24	74.00	-2.76	40.31	2.76	0.00	28.17	339	100	Peak	HORIZONTAL
3 p	2410.20	114.15			83.17	2.77	0.00	28.21	339	100	Peak	HORIZONTAL
4 a	2413.20	103.84			72.86	2.77	0.00	28.21	339	100	Average	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2412 MHz

##### Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 !	2389.60	53.80	54.00	-0.20	22.87	2.76	0.00	28.17	339	100	Average	HORIZONTAL
2	2389.80	66.66	74.00	-7.34	35.73	2.76	0.00	28.17	339	100	Peak	HORIZONTAL
3 p	2443.00	116.99			85.92	2.78	0.00	28.29	339	100	Peak	HORIZONTAL
4 a	2444.40	105.97			74.90	2.78	0.00	28.29	339	100	Average	HORIZONTAL
5 !	2483.50	51.12	54.00	-2.88	19.93	2.81	0.00	28.38	339	100	Average	HORIZONTAL
6	2484.10	63.34	74.00	-10.66	32.15	2.81	0.00	28.38	339	100	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2437MHz.

##### Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1 p	2466.20	113.10			81.97	2.80	28.33	0.00	191	122	Peak	HORIZONTAL
2 a	2468.60	103.52			72.34	2.80	28.38	0.00	191	122	Average	HORIZONTAL
3 !	2483.50	53.37	54.00	-0.63	22.18	2.81	28.38	0.00	191	122	Average	HORIZONTAL
4 !	2484.50	73.26	74.00	-0.74	42.07	2.81	28.38	0.00	191	122	Peak	HORIZONTAL

Item 1, 2 are the fundamental frequency at 2462 MHz.



Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11n MCS0 40MHz Ch 3, 6, 9 / Mode 1 with Ant. A
Test Date	Oct. 19, 2009		

### Channel 3

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	Line	Limit	Level	Loss	Factor	Factor			
			dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1 !	2390.00	53.16	54.00	-0.84	22.23	2.76	28.17	0.00	0	100 Average	HORIZONTAL
2 !	2390.00	71.53	74.00	-2.47	40.60	2.76	28.17	0.00	0	100 Peak	HORIZONTAL
3 a	2406.80	96.48			65.50	2.77	28.21	0.00	0	100 Average	HORIZONTAL
4 p	2410.00	107.14			76.16	2.77	28.21	0.00	0	100 Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2422 MHz.

### Channel 6

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	Line	Limit	Level	Loss	Factor	Factor			
			dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1 !	2387.60	70.76	74.00	-3.24	39.83	2.76	28.17	0.00	0	100 Peak	HORIZONTAL
2 !	2390.00	53.64	54.00	-0.36	22.71	2.76	28.17	0.00	0	100 Average	HORIZONTAL
3 a	2434.60	100.63			69.56	2.78	28.29	0.00	0	100 Average	HORIZONTAL
4 p	2434.60	111.61			80.54	2.78	28.29	0.00	0	100 Peak	HORIZONTAL
5	2483.50	46.87	54.00	-7.13	15.68	2.81	28.38	0.00	0	100 Average	HORIZONTAL
6	2483.50	59.45	74.00	-14.55	28.26	2.81	28.38	0.00	0	100 Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2437MHz.

### Channel 9

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	Line	Limit	Level	Loss	Factor	Factor			
			dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1 a	2454.40	97.04			65.91	2.80	28.33	0.00	193	126 Average	HORIZONTAL
2 p	2458.00	107.31			76.18	2.80	28.33	0.00	193	126 Peak	HORIZONTAL
3 !	2483.50	53.19	54.00	-0.81	22.00	2.81	28.38	0.00	193	126 Average	HORIZONTAL
4 !	2483.50	72.87	74.00	-1.13	41.68	2.81	28.38	0.00	193	126 Peak	HORIZONTAL

Item 1, 2 are the fundamental frequency at 2452 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.



Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11b CH 1, 6, 11 / Mode 1 with Ant. A
Test Date	Oct. 14, 2009		

**Channel 1**

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 !	2390.00	53.64	54.00	-0.36	22.71	2.76	0.00	28.17	176	100	Average	HORIZONTAL
2	2390.00	64.86	74.00	-9.14	33.93	2.76	0.00	28.17	176	100	Peak	HORIZONTAL
3 a	2409.40	111.25			80.27	2.77	0.00	28.21	176	100	Average	HORIZONTAL
4 p	2411.20	114.90			83.92	2.77	0.00	28.21	176	100	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

**Channel 6**

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	2389.80	64.04	74.00	-9.96	33.11	2.76	0.00	28.17	338	100	Peak	HORIZONTAL
2 !	2390.00	53.05	54.00	-0.95	22.12	2.76	0.00	28.17	338	100	Average	HORIZONTAL
3 p	2438.60	115.38			84.31	2.78	0.00	28.29	338	100	Peak	HORIZONTAL
4 a	2439.80	111.98			80.91	2.78	0.00	28.29	338	100	Average	HORIZONTAL
5 !	2483.50	49.90	54.00	-4.10	18.71	2.81	0.00	28.38	338	100	Average	HORIZONTAL
6	2483.70	60.33	74.00	-13.67	29.14	2.81	0.00	28.38	338	100	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2437MHz.

**Channel 11**

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	2463.60	115.81			84.68	2.80	0.00	28.33	341	191	Peak	HORIZONTAL
2 a	2464.80	112.25			81.12	2.80	0.00	28.33	341	191	Average	HORIZONTAL
3	2487.10	63.94	74.00	-10.06	32.71	2.81	0.00	28.42	341	191	Peak	HORIZONTAL
4 !	2488.00	53.29	54.00	-0.71	22.06	2.81	0.00	28.42	341	191	Average	HORIZONTAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11g CH 1, 6, 11 / Mode 1 with Ant. A
Test Date	Oct. 19, 2009		

**Channel 1**

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 !	2389.80	68.38	74.00	-5.62	37.45	2.76	0.00	28.17	338	100	Peak	HORIZONTAL
2 !	2390.00	53.77	54.00	-0.23	22.84	2.76	0.00	28.17	338	100	Average	HORIZONTAL
3 a	2413.60	104.67			73.69	2.77	0.00	28.21	338	100	Average	HORIZONTAL
4 p	2414.60	115.01			84.03	2.77	0.00	28.21	338	100	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

**Channel 6**

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	2388.60	67.10	74.00	-6.90	36.17	2.76	0.00	28.17	337	100	Peak	HORIZONTAL
2 !	2390.00	53.65	54.00	-0.35	22.72	2.76	0.00	28.17	337	100	Average	HORIZONTAL
3 p	2442.80	118.60			87.53	2.78	0.00	28.29	337	100	Peak	HORIZONTAL
4 a	2443.40	106.90			75.83	2.78	0.00	28.29	337	100	Average	HORIZONTAL
5 !	2483.50	49.79	54.00	-4.21	18.60	2.81	0.00	28.38	337	100	Average	HORIZONTAL
6	2485.70	62.12	74.00	-11.88	30.89	2.81	0.00	28.42	337	100	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

**Channel 11**

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1 p	2469.00	114.76			83.58	2.80	28.38	0.00	193	125	Peak	HORIZONTAL
2 a	2469.20	104.74			73.56	2.80	28.38	0.00	193	125	Average	HORIZONTAL
3 !	2483.50	53.66	54.00	-0.34	22.47	2.81	28.38	0.00	193	125	Average	HORIZONTAL
4 !	2484.70	69.45	74.00	-4.55	38.26	2.81	28.38	0.00	193	125	Peak	HORIZONTAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

## &lt;For Ant. B – PCB Antenna&gt;:

Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configuration	IEEE 802.11n MCS0 20MHz Ch 1, 6, 11 / Mode 4 with Ant. B
Test Date	Oct. 13, 2009		

## Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 !	2389.20	71.10	74.00	-2.90	40.17	2.76	0.00	28.17	164	130	Peak	VERTICAL
2 !	2390.00	53.71	54.00	-0.29	22.78	2.76	0.00	28.17	164	130	Average	VERTICAL
3 a	2409.60	104.44			73.46	2.77	0.00	28.21	164	130	Average	VERTICAL
4 p	2414.40	114.99			84.01	2.77	0.00	28.21	164	130	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz

## Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 !	2390.00	51.71	54.00	-2.29	20.78	2.76	0.00	28.17	196	125	Average	VERTICAL
2	2390.00	62.78	74.00	-11.22	31.85	2.76	0.00	28.17	196	125	Peak	VERTICAL
3 a	2431.90	105.96			74.93	2.78	0.00	28.25	196	125	Average	VERTICAL
4 p	2440.50	117.00			85.93	2.78	0.00	28.29	196	125	Peak	VERTICAL
5 !	2483.50	53.60	54.00	-0.40	22.42	2.81	0.00	28.37	196	125	Average	VERTICAL
6	2484.50	66.33	74.00	-7.67	35.15	2.81	0.00	28.37	196	125	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2437MHz.

## Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	2466.00	114.85			83.72	2.80	0.00	28.33	197	128	Peak	VERTICAL
2 a	2466.60	103.96			72.83	2.80	0.00	28.33	197	128	Average	VERTICAL
3 !	2483.50	53.54	54.00	-0.46	22.36	2.81	0.00	28.37	197	128	Average	VERTICAL
4 !	2483.90	71.45	74.00	-2.55	40.27	2.81	0.00	28.37	197	128	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11n MCS0 40MHz Ch 3, 6, 9 / Mode 4 with Ant. B
Test Date	Oct. 13, 2009		

### Channel 3

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 !	2390.00	53.69	54.00	-0.31	22.76	2.76	0.00	28.17	195	130	Average	VERTICAL
2 !	2390.00	71.11	74.00	-2.89	40.18	2.76	0.00	28.17	195	130	Peak	VERTICAL
3 p	2431.40	109.03			78.00	2.78	0.00	28.25	195	130	Peak	VERTICAL
4 a	2433.20	98.43			67.40	2.78	0.00	28.25	195	130	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 2422 MHz.

### Channel 6

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 !	2389.60	69.23	74.00	-4.77	38.30	2.76	0.00	28.17	184	132	Peak	VERTICAL
2 !	2390.00	53.97	54.00	-0.03	23.04	2.76	0.00	28.17	184	132	Average	VERTICAL
3 p	2446.40	114.04			82.97	2.78	0.00	28.29	184	132	Peak	VERTICAL
4 a	2452.20	103.30			72.19	2.78	0.00	28.33	184	132	Average	VERTICAL
5 !	2483.50	53.40	54.00	-0.60	22.22	2.81	0.00	28.37	184	132	Average	VERTICAL
6	2485.10	66.31	74.00	-7.69	35.09	2.81	0.00	28.41	184	132	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2437MHz.

### Channel 9

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	2447.80	108.54			77.47	2.78	0.00	28.29	196	126	Peak	VERTICAL
2 a	2465.60	97.42			66.29	2.80	0.00	28.33	196	126	Average	VERTICAL
3 !	2483.50	53.54	54.00	-0.46	22.36	2.81	0.00	28.37	196	126	Average	VERTICAL
4 !	2483.50	72.90	74.00	-1.10	41.72	2.81	0.00	28.37	196	126	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 2452 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11b CH 1, 6, 11 / Mode 4 with Ant. B
Test Date	Oct. 13, 2009		

**Channel 1**

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	PoI/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 !	2390.00	51.96	54.00	-2.04	21.03	2.76	0.00	28.17	164	129	Average	VERTICAL
2 !	2390.00	68.06	74.00	-5.94	37.13	2.76	0.00	28.17	164	129	Peak	VERTICAL
3 p	2411.20	118.78			87.80	2.77	0.00	28.21	164	129	Peak	VERTICAL
4 a	2411.40	114.59			83.61	2.77	0.00	28.21	164	129	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

**Channel 6**

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	PoI/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	2389.80	65.79	74.00	-8.21	34.86	2.76	0.00	28.17	163	125	Peak	VERTICAL
2 !	2390.00	53.96	54.00	-0.04	23.03	2.76	0.00	28.17	163	125	Average	VERTICAL
3 a	2434.40	114.98			83.91	2.78	0.00	28.29	163	125	Average	VERTICAL
4 p	2436.20	118.70			87.63	2.78	0.00	28.29	163	125	Peak	VERTICAL
5 !	2483.50	53.90	54.00	-0.10	22.72	2.81	0.00	28.37	163	125	Average	VERTICAL
6	2483.50	64.64	74.00	-9.36	33.46	2.81	0.00	28.37	163	125	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2437MHz.

**Channel 11**

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	PoI/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	2463.60	118.92			87.79	2.80	0.00	28.33	170	125	Peak	VERTICAL
2 a	2464.80	115.45			84.32	2.80	0.00	28.33	170	125	Average	VERTICAL
3 !	2483.48	51.79	54.00	-2.21	20.61	2.81	0.00	28.37	170	125	Average	VERTICAL
4	2485.70	62.25	74.00	-11.75	31.03	2.81	0.00	28.41	170	125	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	23°C	Humidity	54%
Test Engineer	Alan Huang	Configurations	IEEE 802.11g CH 1, 6, 11 / Mode 4 with Ant. B
Test Date	Oct. 13, 2009		

**Channel 1**

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 !	2390.00	53.26	54.00	-0.74	22.33	2.76	0.00	28.17	170	128	Average	VERTICAL
2 !	2390.00	71.09	74.00	-2.91	40.16	2.76	0.00	28.17	170	128	Peak	VERTICAL
3 p	2407.00	116.83			85.85	2.77	0.00	28.21	170	128	Peak	VERTICAL
4 a	2410.80	106.19			75.21	2.77	0.00	28.21	170	128	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

**Channel 6**

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	2389.80	64.31	74.00	-9.69	33.38	2.76	0.00	28.17	198	127	Peak	VERTICAL
2 !	2390.00	51.72	54.00	-2.28	20.79	2.76	0.00	28.17	198	127	Average	VERTICAL
3 p	2442.40	117.46			86.39	2.78	0.00	28.29	198	127	Peak	VERTICAL
4 a	2443.90	106.73			75.66	2.78	0.00	28.29	198	127	Average	VERTICAL
5 !	2483.50	53.76	54.00	-0.24	22.58	2.81	0.00	28.37	198	127	Average	VERTICAL
6	2483.70	66.18	74.00	-7.82	35.00	2.81	0.00	28.37	198	127	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

**Channel 11**

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	2467.60	104.86			73.73	2.80	0.00	28.33	196	127	Average	VERTICAL
2 p	2468.70	115.93			84.76	2.80	0.00	28.37	196	127	Peak	VERTICAL
3 !	2483.50	53.24	54.00	-0.76	22.06	2.81	0.00	28.37	196	127	Average	VERTICAL
4 !	2483.50	71.37	74.00	-2.63	40.19	2.81	0.00	28.37	196	127	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Note:

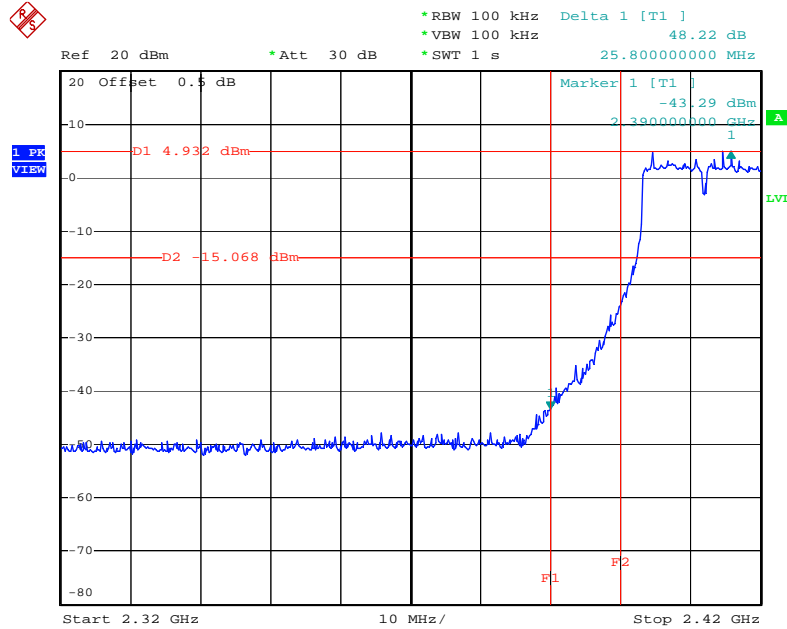
Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

For Emission not in Restricted Band

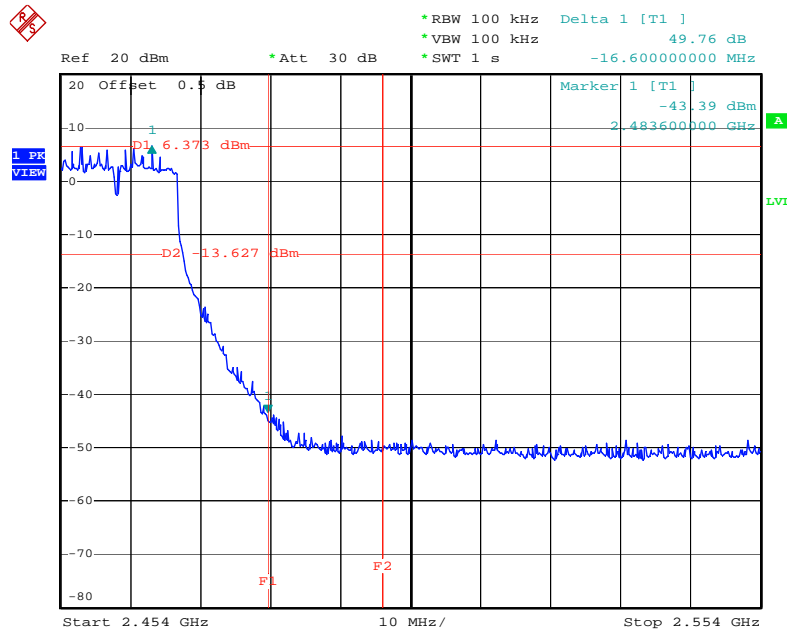
<For Ant. A – Dipole Antenna>:

Low Band Edge Plot on Configuration IEEE 802.11n MCS0 20MHz Ant. A / 2412 MHz



Date: 15.OCT.2009 22:42:25

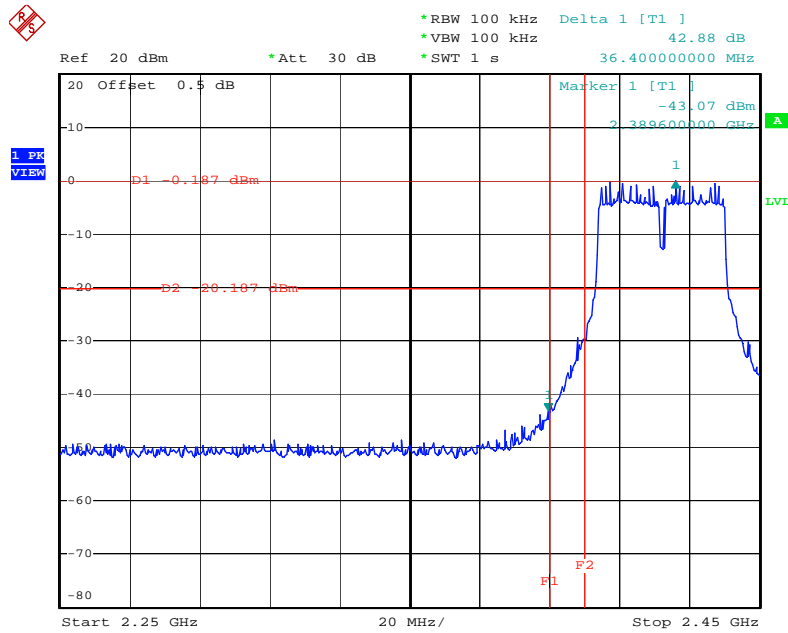
High Band Edge Plot on Configuration IEEE 802.11n MCS0 20MHz Ant. A / 2462 MHz



Date: 19.OCT.2009 23:23:20

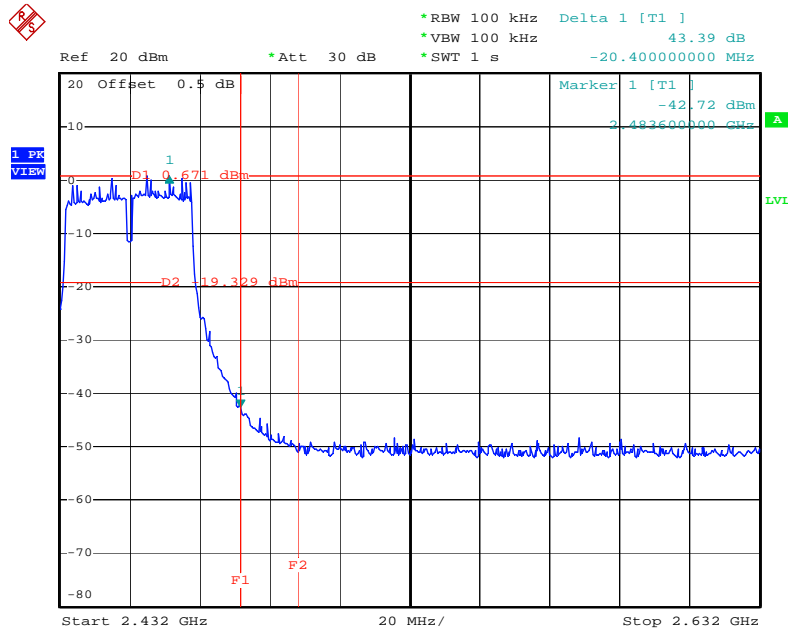


Low Band Edge Plot on Configuration IEEE 802.11n MCS0 40MHz Ant. A / 2422 MHz



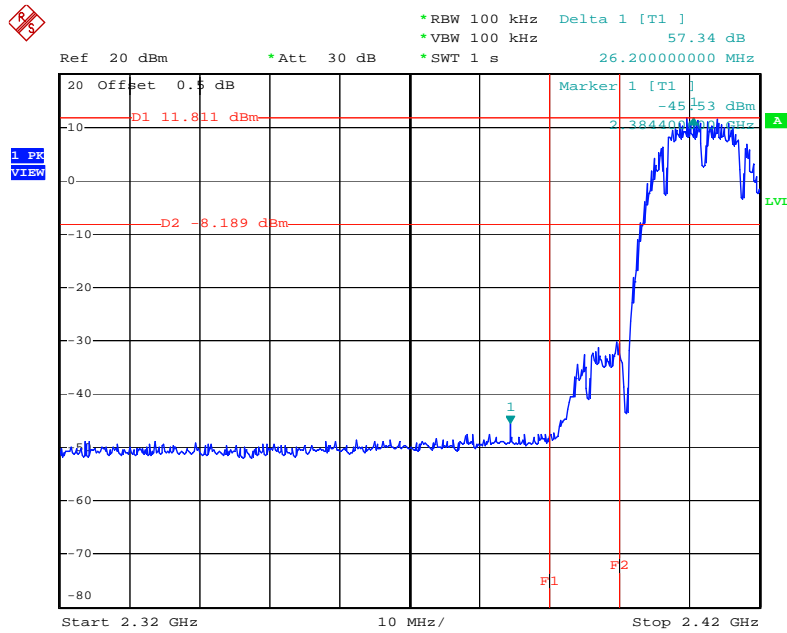
Date: 19.OCT.2009 23:01:34

High Band Edge Plot on Configuration IEEE 802.11n MCS0 40MHz Ant. A / 2452 MHz



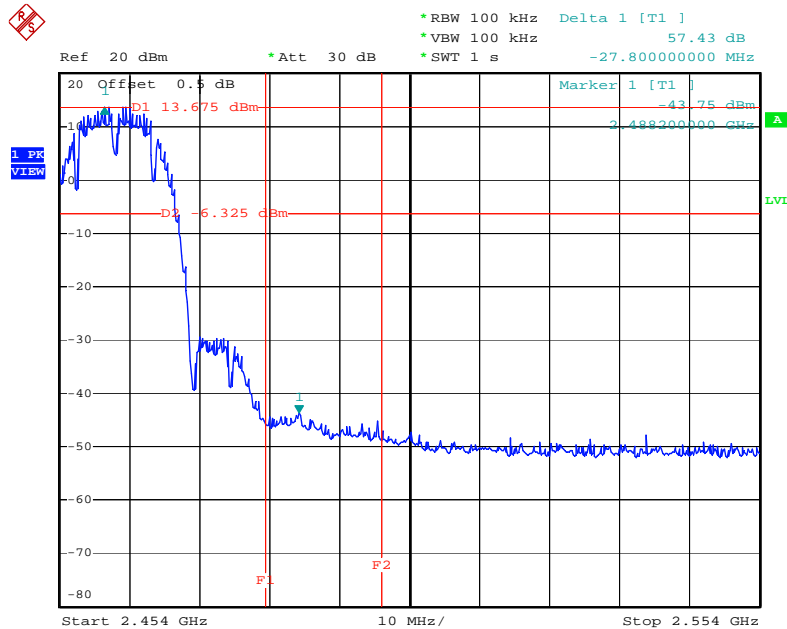
Date: 19.OCT.2009 22:58:26

### Low Band Edge Plot on Configuration IEEE 802.11b Ant. A / 2412 MHz



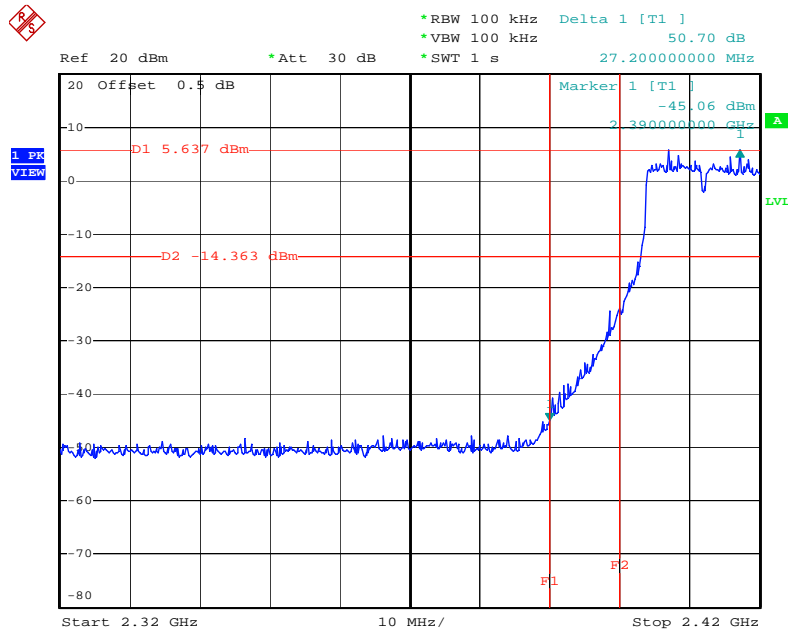
Date: 15.OCT.2009 23:01:51

### High Band Edge Plot on Configuration IEEE 802.11b Ant. A / 2462 MHz



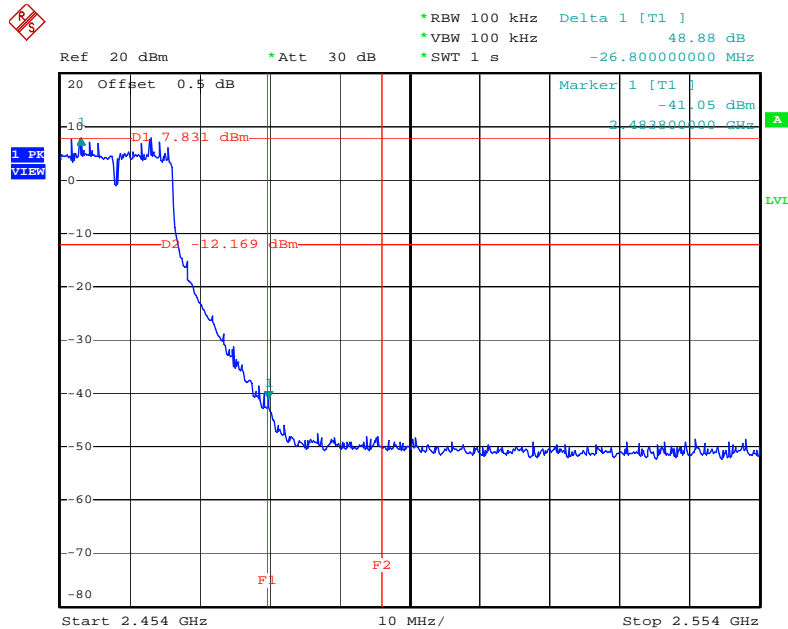
Date: 15.OCT.2009 23:07:49

### Low Band Edge Plot on Configuration IEEE 802.11g Ant. A / 2412 MHz



Date: 15.OCT.2009 22:57:26

### High Band Edge Plot on Configuration IEEE 802.11g Ant. A / 2462 MHz

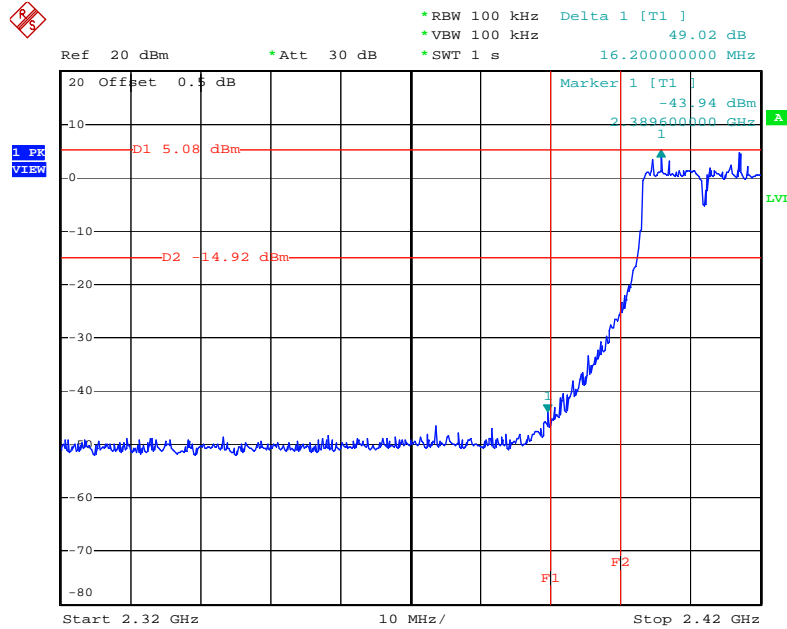


Date: 19.OCT.2009 23:27:10

For Emission not in Restricted Band

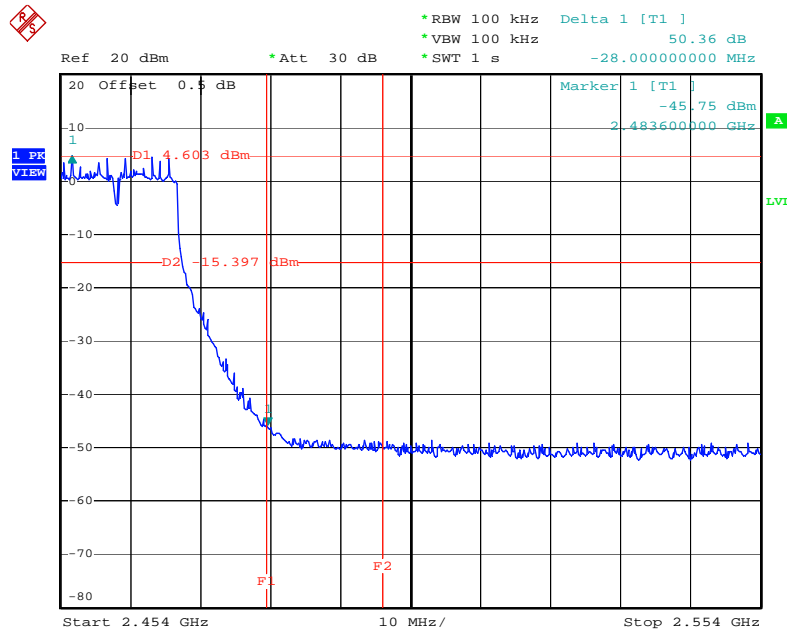
<For Ant. B – PCB Antenna>

Low Band Edge Plot on Configuration IEEE 802.11n MCS0 20MHz Ant. B / 2412 MHz



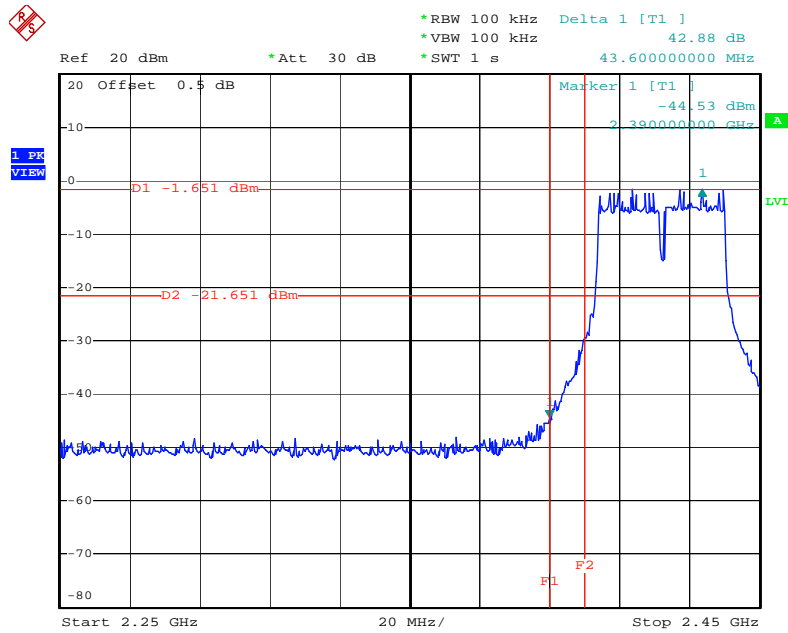
Date: 15.OCT.2009 22:01:44

High Band Edge Plot on Configuration IEEE 802.11n MCS0 20MHz Ant. B / 2462 MHz



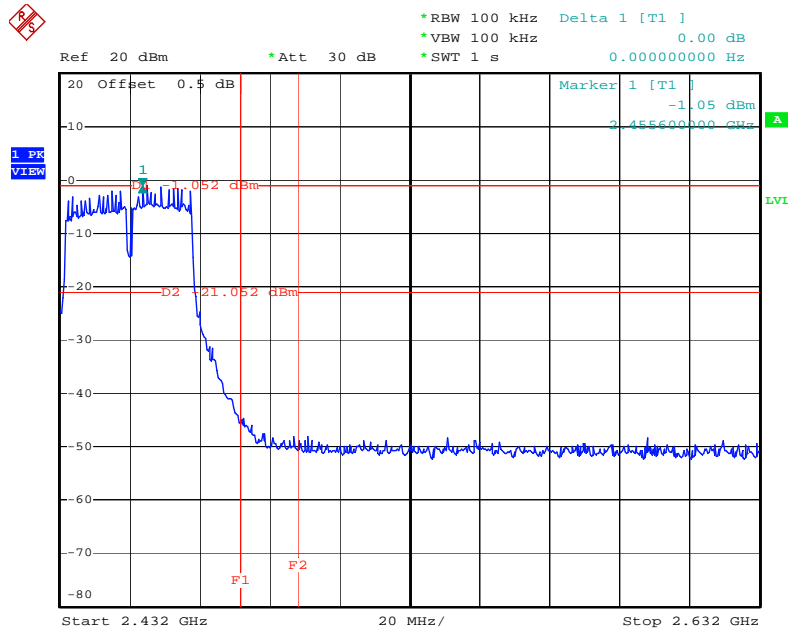
Date: 15.OCT.2009 21:57:18

Low Band Edge Plot on Configuration IEEE 802.11n MCS0 40MHz Ant. B / 2422 MHz



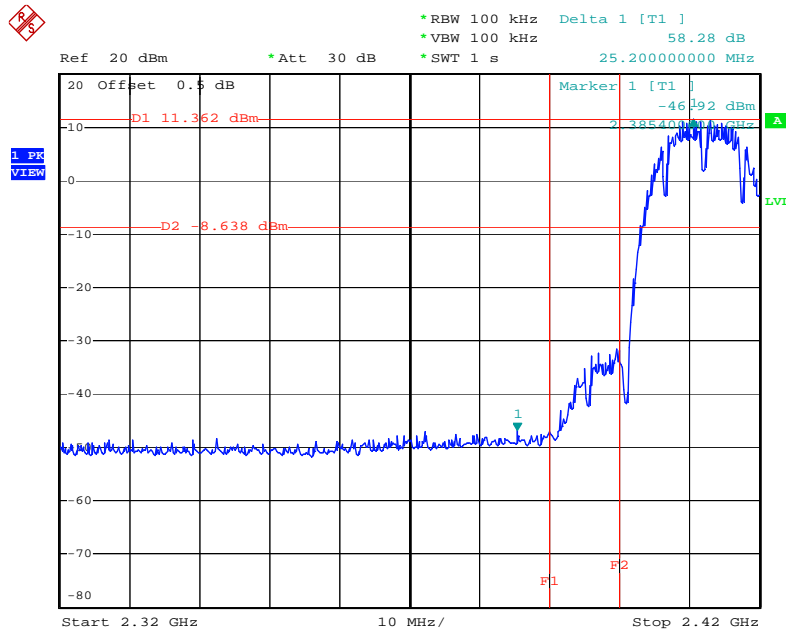
Date: 15.OCT.2009 22:16:28

High Band Edge Plot on Configuration IEEE 802.11n MCS0 40MHz Ant. B / 2452 MHz



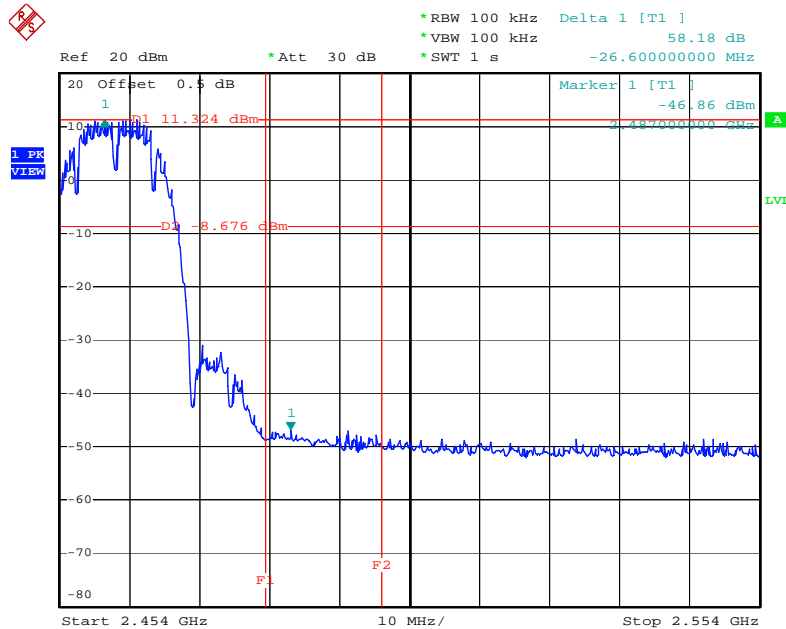
Date: 15.OCT.2009 22:14:15

### Low Band Edge Plot on Configuration IEEE 802.11b Ant. B / 2412 MHz



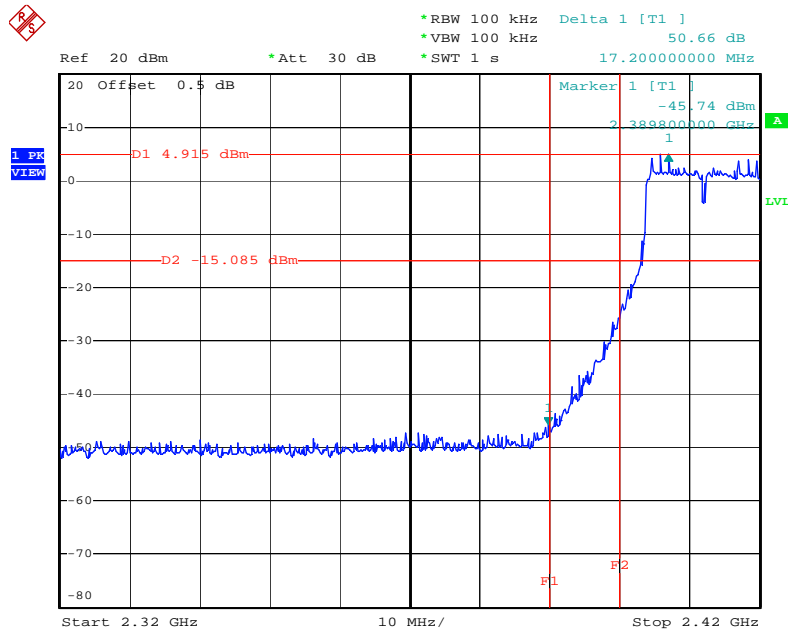
Date: 15.OCT.2009 22:05:30

### High Band Edge Plot on Configuration IEEE 802.11b Ant. B / 2462 MHz



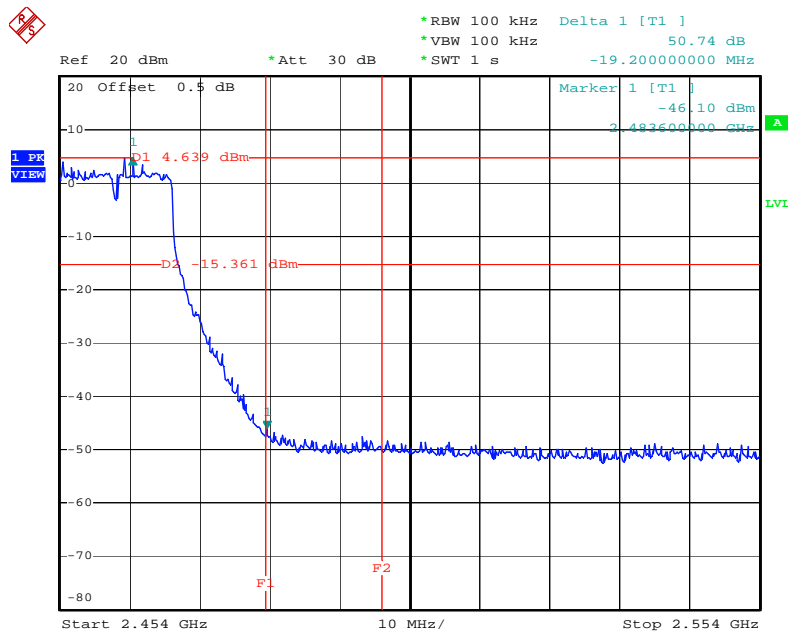
Date: 15.OCT.2009 22:10:22

### Low Band Edge Plot on Configuration IEEE 802.11g Ant. B / 2412 MHz



Date: 15.OCT.2009 21:49:38

### High Band Edge Plot on Configuration IEEE 802.11g Ant. B / 2462 MHz



Date: 15.OCT.2009 21:54:02

## 4.7. Antenna Requirements

### 4.7.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

### 4.7.2. Antenna Connector Construction

Please refer to section 3.3 in this test report; antenna connector complied with the requirements.



## 5. LIST OF MEASURING EQUIPMENTS

<For Original Mode>

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100377	9kHz ~ 2.75GHz	Nov. 14, 2011	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Nov. 14, 2011	Conduction (CO01-CB)
V- LISN	Schwarzbeck	NSLK 8127	8127-478	9K ~ 30MHz	Jun. 22, 2012	Conduction (CO01-CB)
Capacitive Voltage Probe	SCHAFFNER	CVP2200A	18697	150K ~ 30MHz	Jun. 22, 2012	Conduction (CO01-CB)
RF Current Probe	SOLAR.	ESH2-Z1	041039	9K ~ 30MHz	Feb. 03, 2012	Conduction (CO01-CB)
PULSE LIMITER	R&S	ESH3-Z2	100430	9K~30MHz	Feb. 03, 2012	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Jan. 11, 2012	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 25, 2011	Radiation (03CH01-CB)
Horn Antenna	SCHWARZBEAK	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Nov. 22, 2011	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 17, 2010	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100056	9KHz~40GHz	Nov. 17, 2010	Radiation (05CH01-CB)
EMI Test Receiver	R&S	ESCS 30	100355	9KHz ~ 2.75GHz	Mar. 20, 2012	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Sep. 09, 2010*	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N/A	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO2000	N/A	1 m - 4 m	N/A	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Nov. 29, 2009	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26.5GHz ~ 40GHz	Nov. 29, 2009	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-1	N/A	1 GHz – 26.5 GHz	Nov. 29, 2009	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-2	N/A	1 GHz – 26.5 GHz	Nov. 29, 2009	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 29, 2009	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 29, 2009	Radiation (03CH01-CB)
Signal analyzer	R&S	FSV40	100979	9KHz~40GHz	Oct. 08, 2009	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 05, 2009	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Thermo-Hygro Meter	N/A	HC 520	#1	15-70 degree	Nov. 02, 2009	Conducted (TH01-CB)
Signal Generator	R&S	SMR40	100302	10MHz-40GHz	Nov. 22, 2009	Conducted (TH01-CB)
RF Power Divider	HP	11636A	00306	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
RF Power Splitter	Anaren	44100	1839	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
RF Power Splitter	Anaren	42100	17930	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
Signal generator	R&S	SMU200A	102782	10MHz-40GHz	Sep. 26, 2009	Conducted (TH01-CB)
Horn Antenna	COM-POWER	AH-118	071187	1GHz – 18GHz	May. 09, 2009	Conducted (TH01-CB)
Horn Antenna	COM-POWER	AH-118	071042	1GHz – 18GHz	Nov. 01, 2009	Radiation (05CH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 17, 2009	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 17, 2009	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 17, 2009	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 17, 2009	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 17, 2009	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-12	-	1 GHz – 26.5 GHz	Nov. 17, 2009	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-13	-	1 GHz – 26.5 GHz	Nov. 17, 2009	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	0917223	300MHz~40GHz	Nov. 01, 2009	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Nov. 01, 2009	Conducted (TH01-CB)
Mixer	OML	M19HW/A	U91113-1	40 ~ 60 GHz	Mar. 23, 2009	Radiation (03CH01-CB)
Mixer	OML	M15HW/A	V91113-1	50 ~ 75 GHz	Mar. 23, 2009	Radiation (03CH01-CB)
Diplexer	OML	DPL313B	N/A	40~200GHz	N.C.R	Radiation (03CH01-CB)
Mixer	OML	M12HW/A	E91113-1	60 ~ 90 GHz	Mar. 23, 2009	Radiation (03CH01-CB)
Mixer	OML	M08HW/A	F91113-1	90 ~ 140 GHz	Mar. 23, 2009	Radiation (03CH01-CB)
Mixer	OML	M05HW/A	G91113-1	140 ~ 220 GHz	Nov. 16, 2009	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	HO19R	U91113-A	40 ~ 60 GHz	N.C.R	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	HO15R	V91113-A	50 ~ 75 GHz	N.C.R	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	HO12R	E91113-A	60 ~ 90 GHz	N.C.R	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	HO08R	F91113-A	90 ~ 140 GHz	N.C.R	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	HO05R	G91113-A	140 ~ 220 GHz	N.C.R	Radiation (03CH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Signal analyzer	R&S	FSV40	100979	9KHz~40GHz	Oct. 08, 2012	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 05, 2012	Conducted (TH01-CB)
Thermo-Hygro Meter	N/A	HC 520	#1	15~70 degree	Nov. 02, 2011	Conducted (TH01-CB)
Signal Generator	R&S	SMR40	100302	10MHz-40GHz	Nov. 22, 2011	Conducted (TH01-CB)
RF Power Divider	HP	11636A	00306	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
RF Power Splitter	Anaren	44100	1839	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
RF Power Splitter	Anaren	42100	17930	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
Signal generator	R&S	SMU200A	102782	10MHz-40GHz	Sep. 26, 2012	Conducted (TH01-CB)
Horn Antenna	COM-POWER	AH-118	071187	1GHz – 18GHz	May. 09, 2012	Conducted (TH01-CB)
Horn Antenna	COM-POWER	AH-118	071042	1GHz – 18GHz	Nov. 01, 2011	Radiation (05CH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-12	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-13	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	0917223	300MHz~40GHz	Nov. 01, 2011	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Nov. 01, 2011	Conducted (TH01-CB)
Mixer	OML	M19HW/A	U91113-1	40 ~ 60 GHz	Mar. 23, 2012	Radiation (03CH01-CB)
Mixer	OML	M15HW/A	V91113-1	50 ~ 75 GHz	Mar. 23, 2012	Radiation (03CH01-CB)
Diplexer	OML	DPL313B	N/A	40~200GHz	N.C.R	Radiation (03CH01-CB)
Mixer	OML	M12HW/A	E91113-1	60 ~ 90 GHz	Mar. 23, 2012	Radiation (03CH01-CB)
Mixer	OML	M08HW/A	F91113-1	90 ~ 140 GHz	Mar. 23, 2012	Radiation (03CH01-CB)
Mixer	OML	M05HW/A	G91113-1	140 ~ 220 GHz	Nov. 16, 20011	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	HO19R	U91113-A	40 ~ 60 GHz	N.C.R	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	HO15R	V91113-A	50 ~ 75 GHz	N.C.R	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	HO12R	E91113-A	60 ~ 90 GHz	N.C.R	Radiation (03CH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Standard Horn Antenna	Custom Microwave	HO08R	F91113-A	90 ~ 140 GHz	N.C.R	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	HO05R	G91113-A	140 ~ 220 GHz	N.C.R	Radiation (03CH01-CB)

Note: Calibration Interval of instruments listed above is one year.

## 6. TEST LOCATION

SHIJR	ADD : 6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C. TEL : 886-2-2696-2468 FAX : 886-2-2696-2255
HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-318-0055
LINKOU	ADD : No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C TEL : 886-2-2601-1640 FAX : 886-2-2601-1695
DUNGHU	ADD : No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C. TEL : 886-2-2631-4739 FAX : 886-2-2631-9740
JUNGHE	ADD : 7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C. TEL : 886-2-8227-2020 FAX : 886-2-8227-2626
NEIHU	ADD : 4Fl., No. 339, Hsin Hu 2 <sup>nd</sup> Rd., Taipei 114, Taiwan, R.O.C. TEL : 886-2-2794-8886 FAX : 886-2-2794-9777
JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085

## 7. TAF CERTIFICATE OF ACCREDITATION



Certificate No. : L1190-110702

財團法人全國認證基金會  
Taiwan Accreditation Foundation

### Certificate of Accreditation

This is to certify that

**Sporton International Inc.**  
**EMC & Wireless Communications Laboratory**  
No.52, Hwa Ya 1st Road, Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien,  
Taiwan, R.O.C.

**is accredited in respect of laboratory**

<b>Accreditation Criteria</b>	: ISO/IEC 17025:2005
<b>Accreditation Number</b>	: 1190
<b>Originally Accredited</b>	: December 15, 2003
<b>Effective Period</b>	: January 10, 2010 to January 09, 2013
<b>Accredited Scope</b>	: Testing Field, see described in the Appendix
<b>Specific Accreditation Program</b>	: Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Telecommunication Equipment Testing Laboratory Accreditation Program for BSMI Mutual Recognition Arrangement with Foreign Authorities

  
Jay-San Chen  
President, Taiwan Accreditation Foundation  
Date : July 02, 2011

P1, total 22 pages

The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix