

4.6. Radiated Emissions Measurement

4.6.1. Limit

For transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). For transmitters operating in the 5.470-5.725 GHz band: all emissions outside of the 5.470-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz (78.3dBuV/m at 3m); for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). In addition, in case the emission falls 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 (microrvolts/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 spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	40 GHz
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1000KHz / 1000KHz for peak

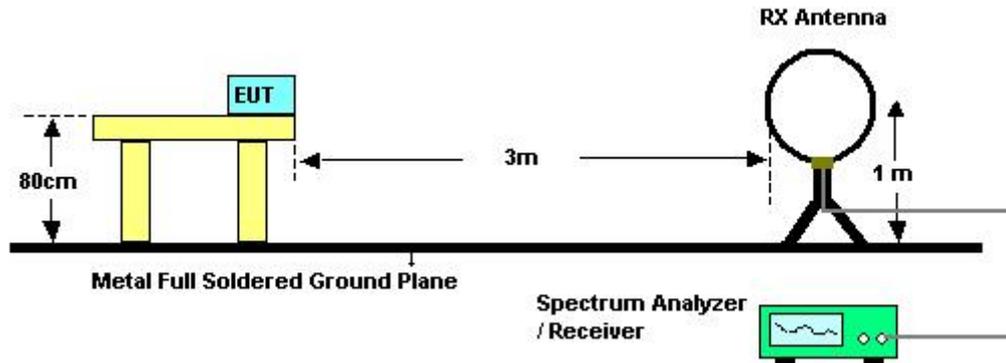
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.6.3. Test Procedures

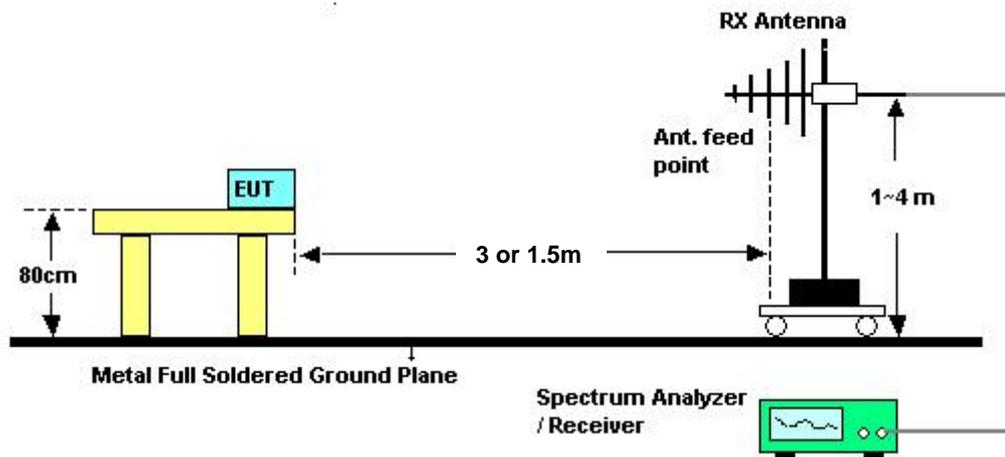
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting 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.

4.6.4. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



Above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

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

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

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

Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Normal Link

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

Note:

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

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

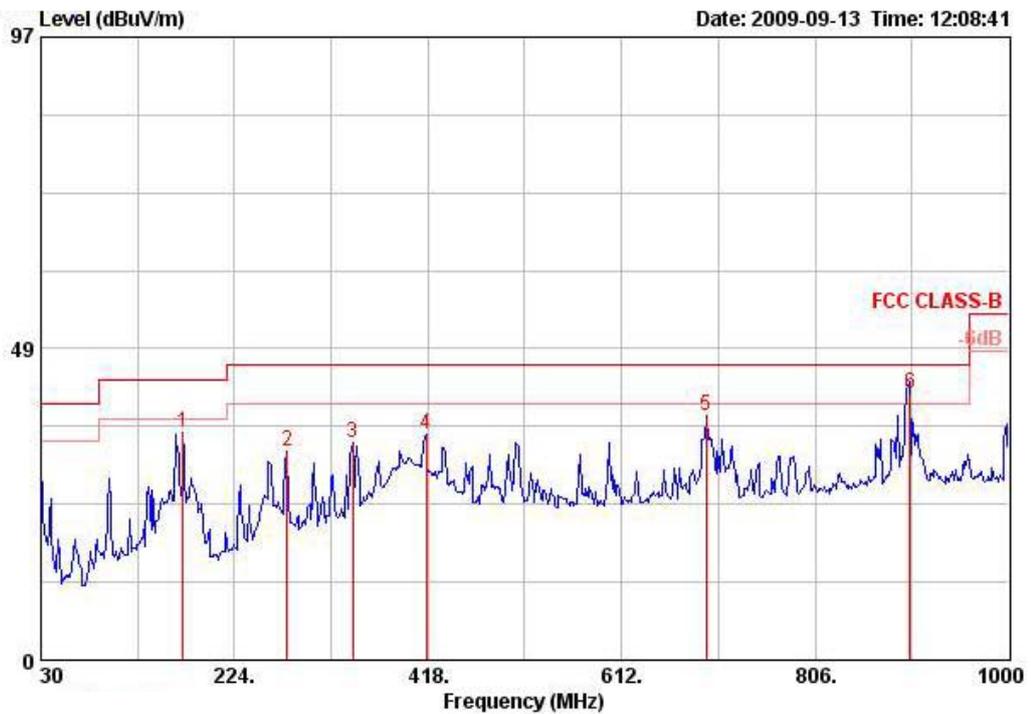
Limit line = specific limits (dBuV) + distance extrapolation factor.

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

<For Test Mode 1 >:

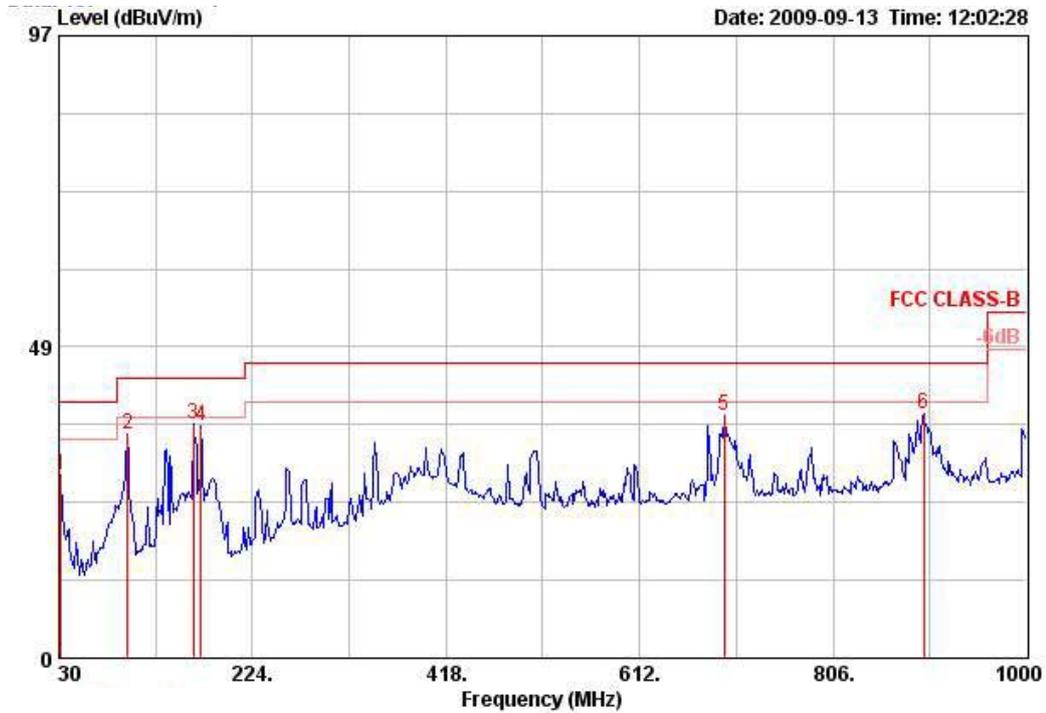
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Normal Link / Mode 1

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna	Cable	Preamp	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	172.590	35.44	-8.06	43.50	48.14	12.97	1.56	27.23 Peak	100	0	HORIZONTAL
2 @	276.380	32.59	-13.41	46.00	44.45	13.08	2.01	26.95 Peak	100	0	HORIZONTAL
3 @	342.340	33.89	-12.11	46.00	44.39	14.51	2.18	27.20 Peak	100	0	HORIZONTAL
4 @	416.060	35.27	-10.73	46.00	44.24	16.32	2.40	27.68 Peak	100	0	HORIZONTAL
5 @	696.390	37.93	-8.07	46.00	43.54	19.08	3.32	28.00 Peak	100	0	HORIZONTAL
6 @	901.060	41.42	-4.58	46.00	44.68	20.54	3.60	27.39 QP	100	236	HORIZONTAL

Vertical



	Over	Limit	Read	Antenna	Cable	Preamp		Ant	Table						
1 @	2 @	3 @	4 @	5 @	6 @	Limit	Line	Level	Factor	Loss	Factor	Remark	Pos	Pos	Pol/Phase
						dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 @	31.940	28.50	-11.50	40.00	38.11	17.69	0.50	27.80	Peak	400	0	VERTICAL			
2 @	98.870	34.96	-8.54	43.50	50.59	10.79	1.18	27.61	Peak	400	0	VERTICAL			
3 @	164.830	36.41	-7.09	43.50	49.77	12.39	1.52	27.27	Peak	400	0	VERTICAL			
4 @	172.590	36.33	-7.17	43.50	49.03	12.97	1.56	27.23	Peak	100	124	VERTICAL			
5 @	696.390	37.72	-8.28	46.00	43.33	19.08	3.32	28.00	Peak	400	0	VERTICAL			
6 @	897.180	38.15	-7.85	46.00	41.46	20.51	3.59	27.41	Peak	400	0	VERTICAL			

Note:

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

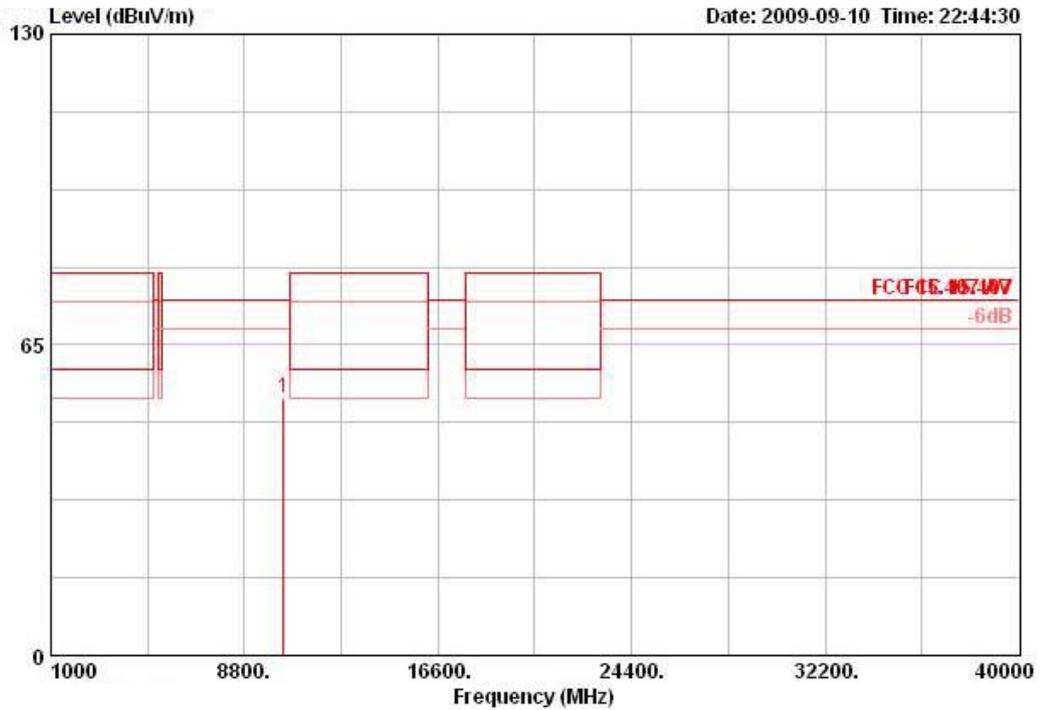
Emission level (dBuV/m) = 20 log Emission level (uV/m).

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

4.6.9. Results for Radiated Emissions (1GHz~40GHz)

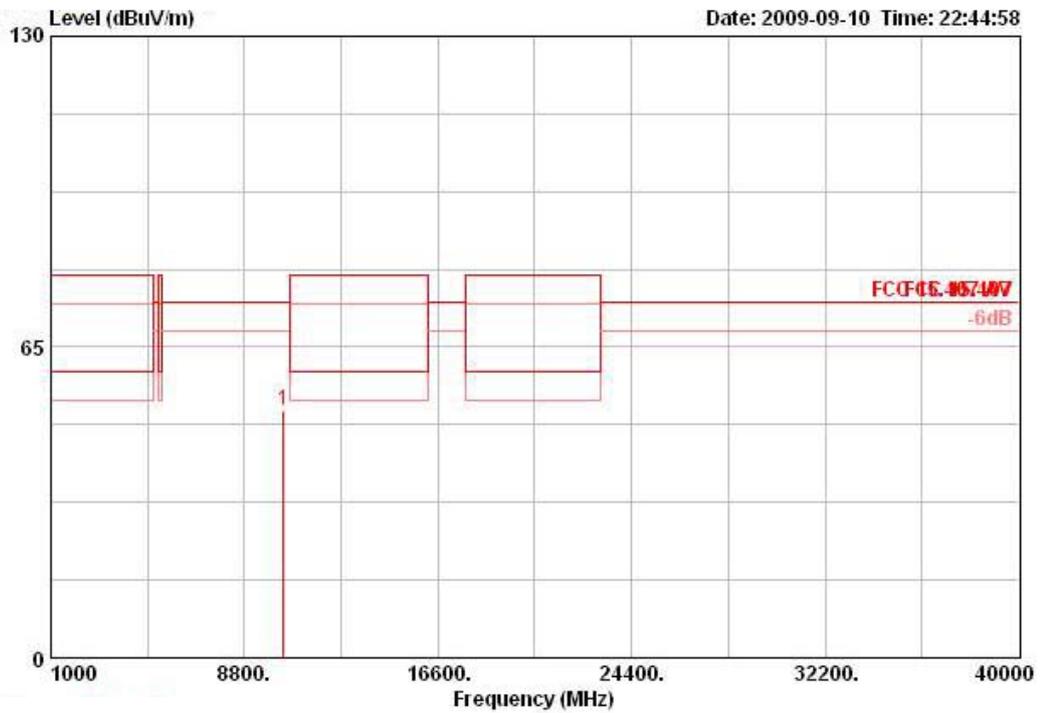
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 20MHz Ch 36 / Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna	Cable	Preamp	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		cm	deg	
1	10359.990	53.92	-20.38	74.30	46.11	38.52	4.65	35.36 PEAK	100	52	HORIZONTAL

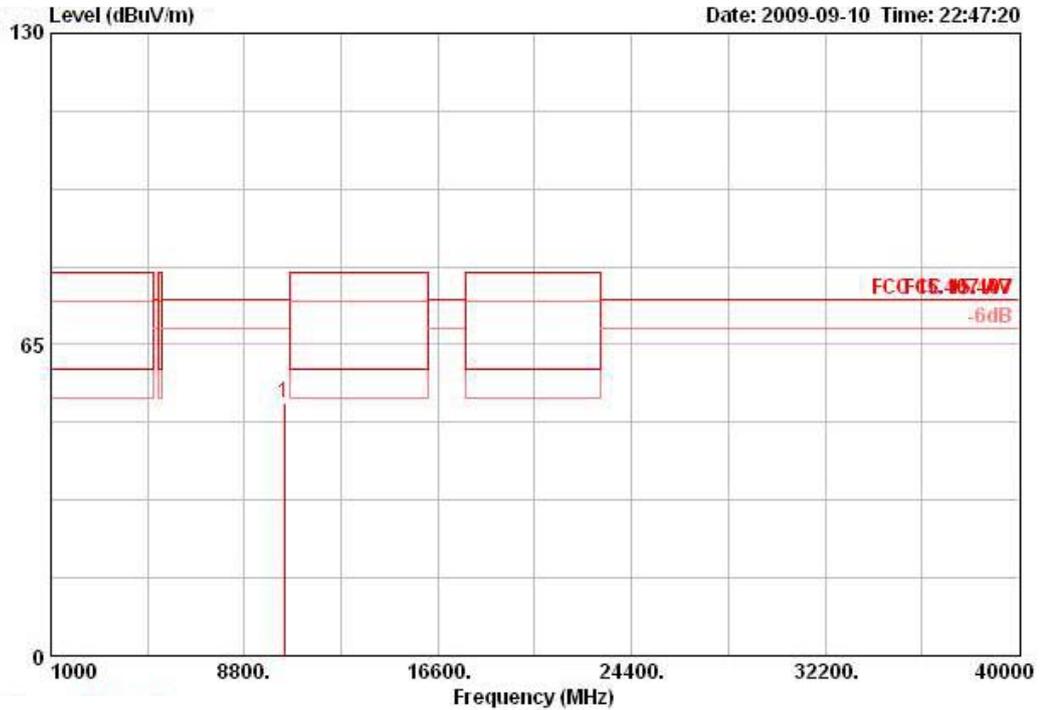
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna	Cable	Preamp	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		cm	deg	
1	10359.980	51.67	-22.63	74.30	43.86	38.52	4.65	35.36 PEAK	100	180	VERTICAL

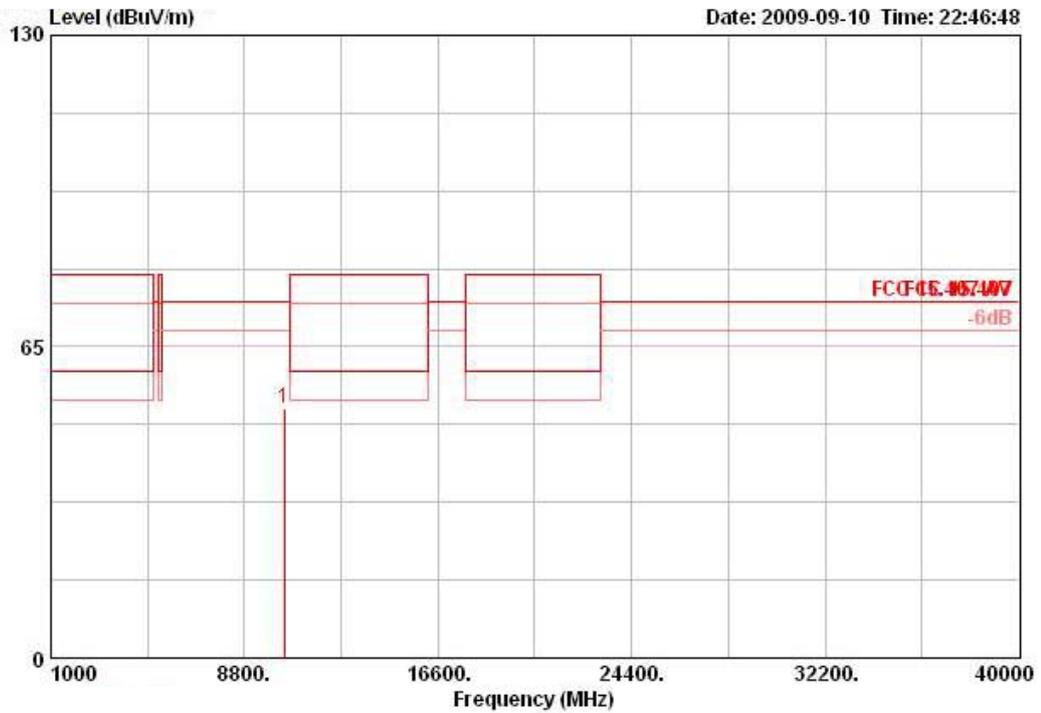
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 20MHz Ch 40 / Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10400.000	52.75	-21.55	74.30	44.82	38.54	4.70	35.30	PEAK	100	176	HORIZONTAL

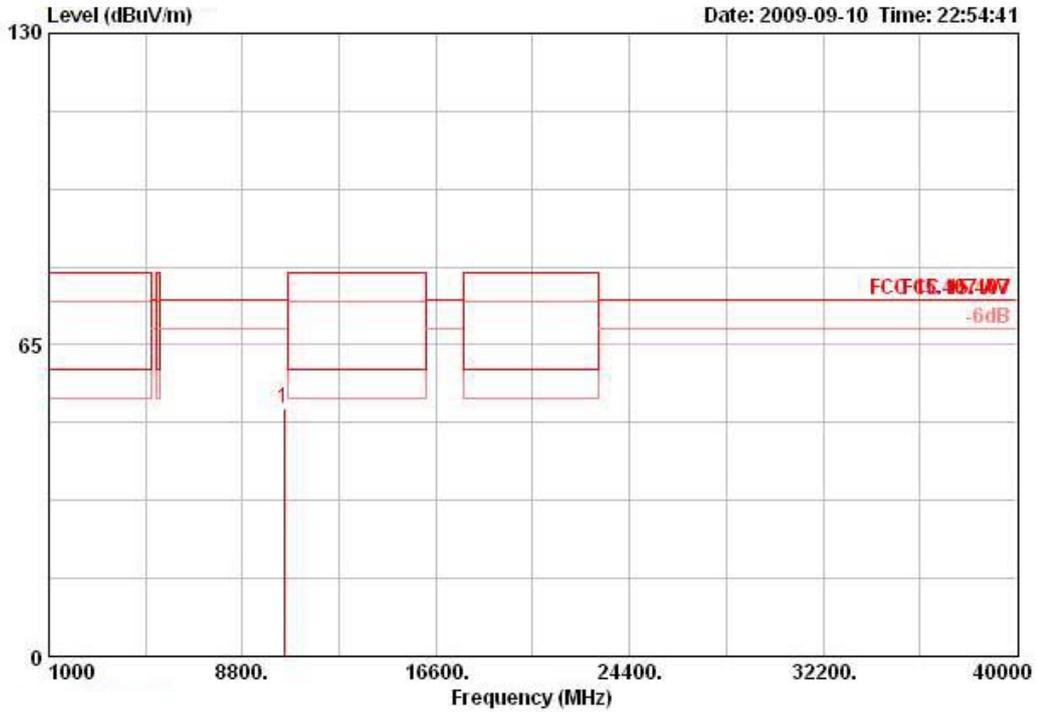
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10399.980	51.96	-22.34	74.30	44.03	38.54	4.70	35.30	PEAK	100	358	VERTICAL

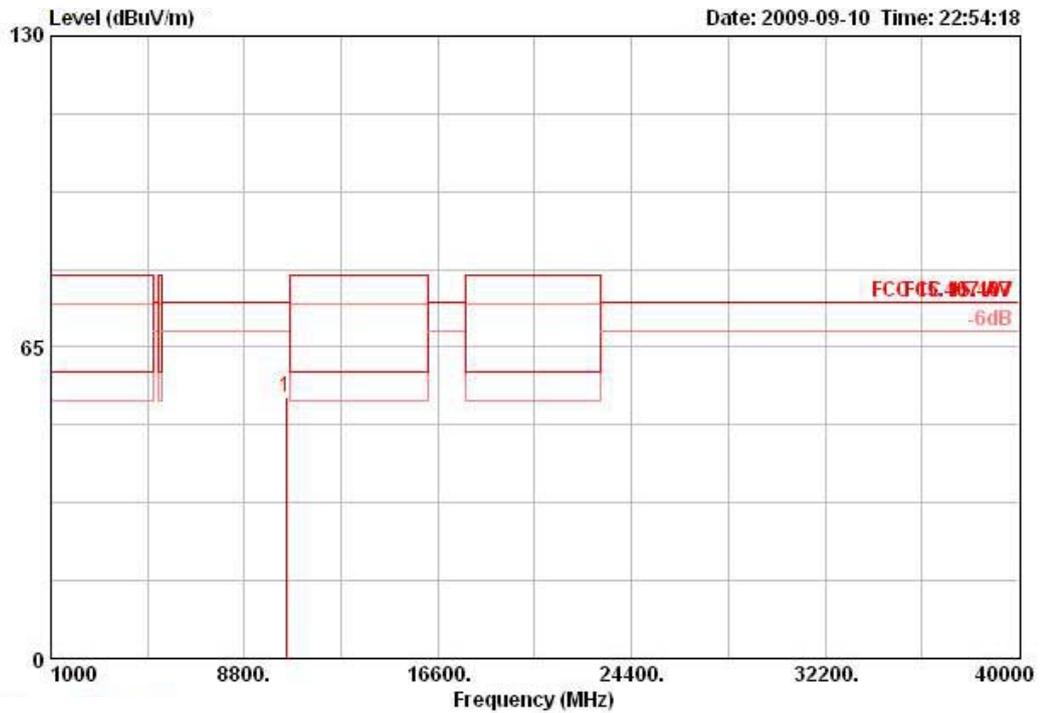
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 20MHz Ch 48 / Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10479.990	51.85	-22.45	74.30	43.71	38.59	4.76	35.21	PEAK	100	169	HORIZONTAL

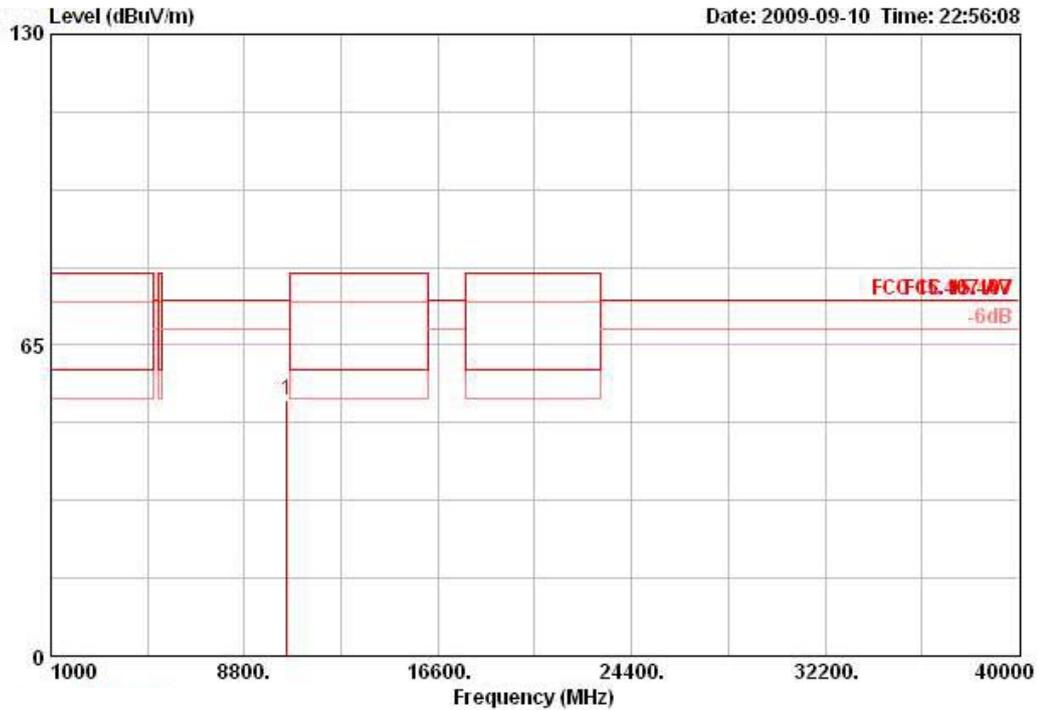
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10480.020	54.66	-19.64	74.30	46.52	38.59	4.76	35.21	PEAK	100	254	VERTICAL

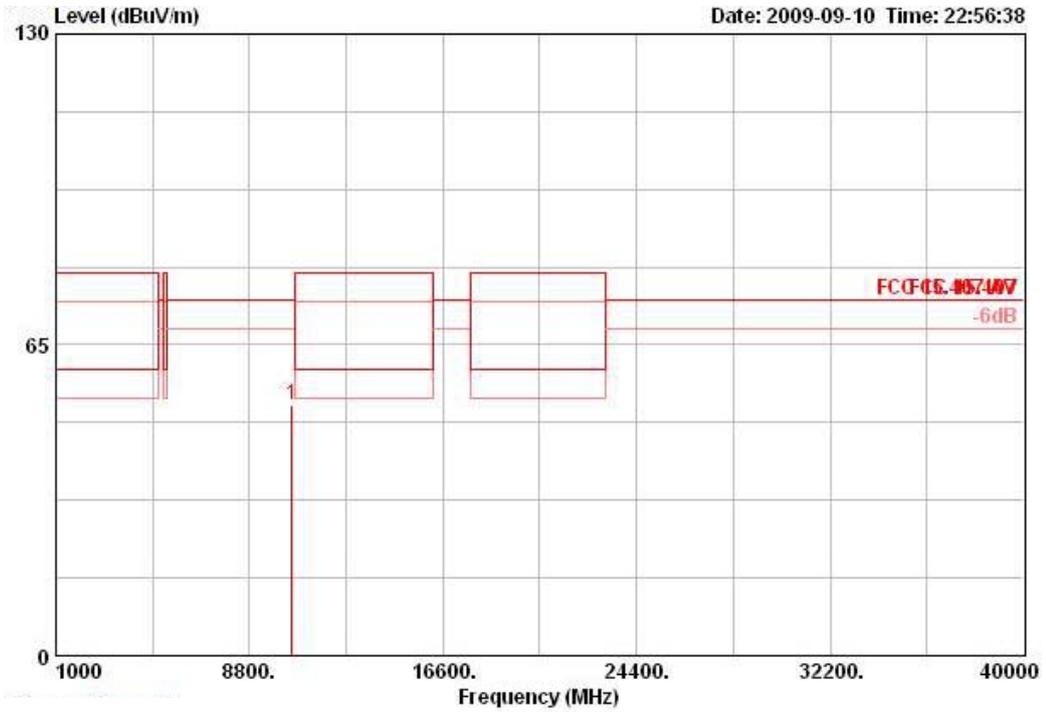
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 20MHz Ch 52 / Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10519.980	53.60	-20.70	74.30	45.40	38.59	4.78	35.18	PEAK	100	81	HORIZONTAL

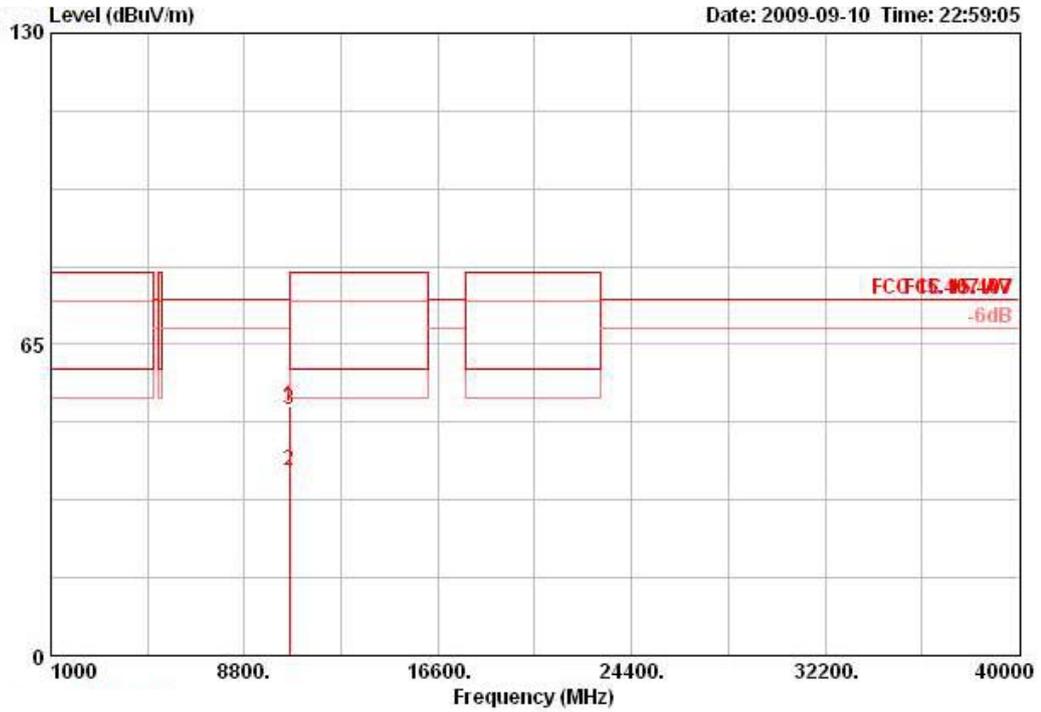
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10520.020	52.44	-21.86	74.30	44.24	38.59	4.78	35.18	PEAK	100	236	VERTICAL

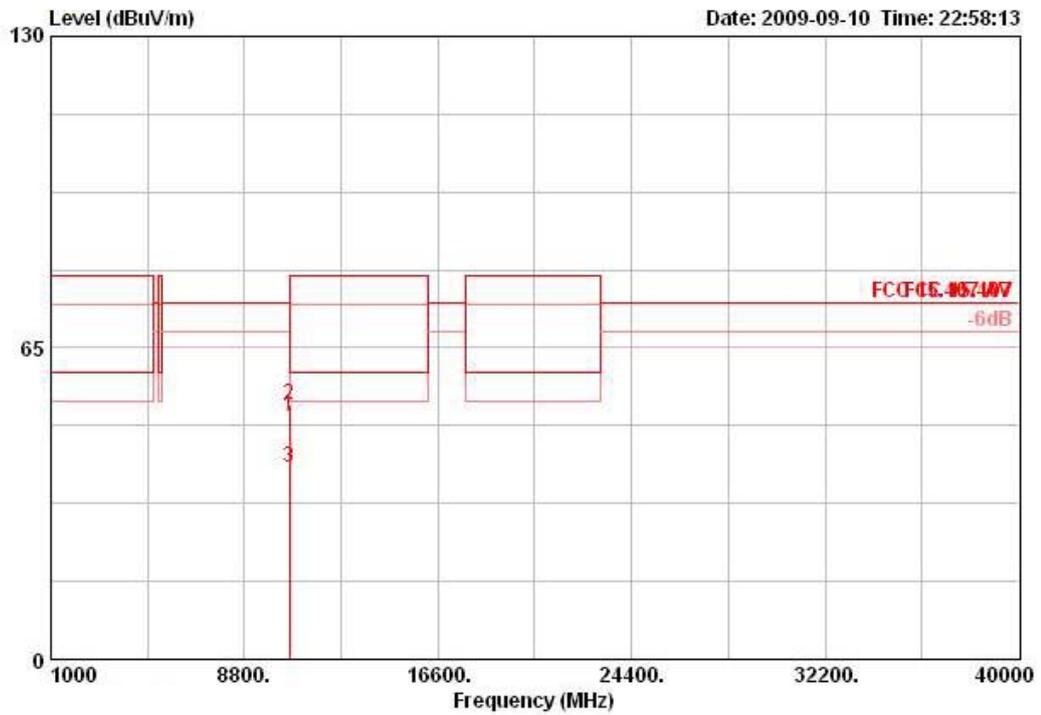
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draff n MCS8 20MHz Ch 60 / Ant. A + Ant. B

Horizontal



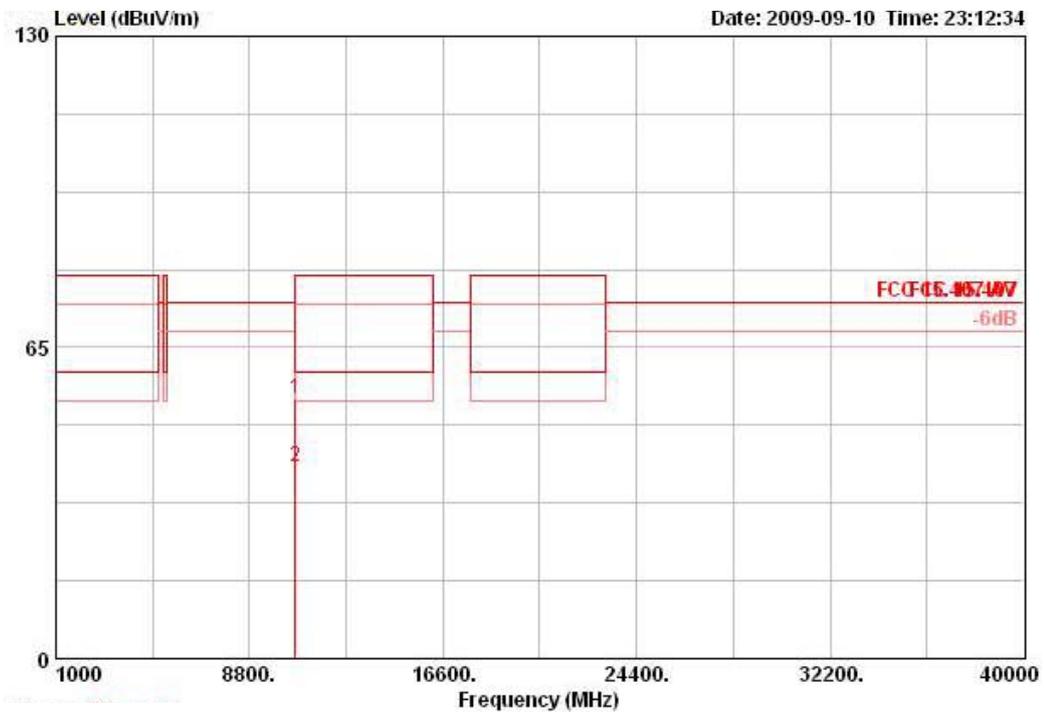
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10599.990	52.09	-22.21	74.30	43.90	38.56	4.73	35.10	PEAK	100	162	HORIZONTAL
2	10600.010	38.72	-21.28	60.00	30.53	38.56	4.73	35.10	AVERAGE	100	162	HORIZONTAL
3	10600.010	51.25	-28.75	80.00	43.07	38.56	4.73	35.10	PEAK	100	162	HORIZONTAL

Vertical



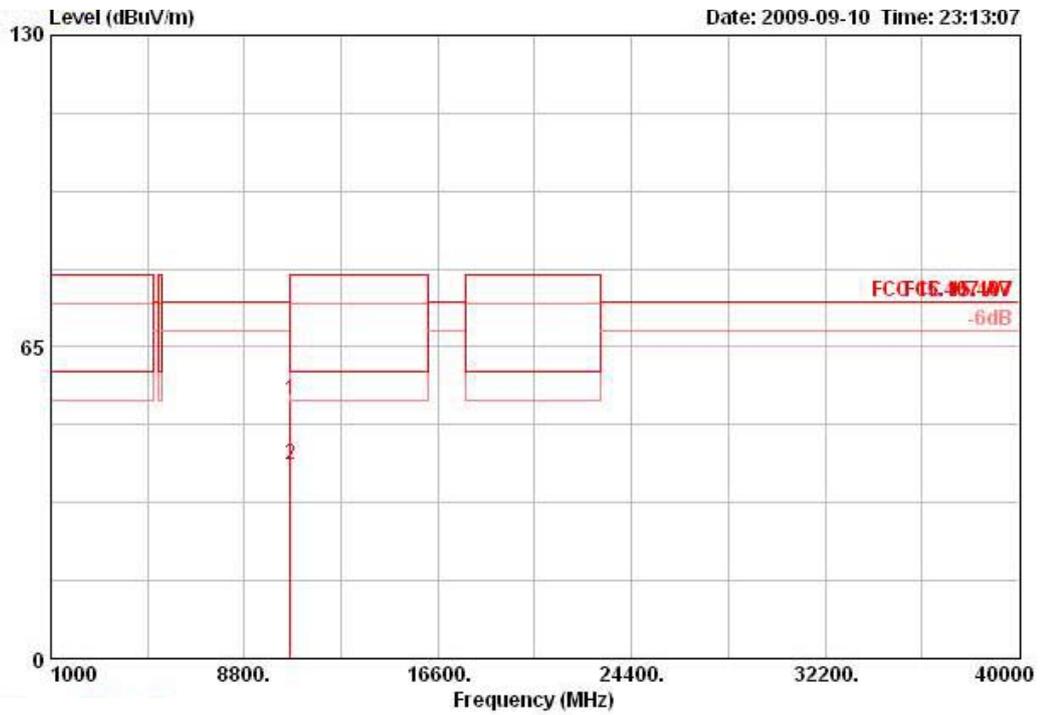
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10599.980	50.51	-23.79	74.30	42.32	38.56	4.73	35.10	PEAK	100	276	VERTICAL
2	10600.020	53.10	-26.90	80.00	44.91	38.56	4.73	35.10	PEAK	100	276	VERTICAL
3	10600.030	40.14	-19.86	60.00	31.96	38.56	4.73	35.10	AVERAGE	100	276	VERTICAL

Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 20MHz Ch 64 / Ant. A + Ant. B

Horizontal


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10640.020	54.30	-25.70	80.00	46.11	38.54	4.70	35.05	PEAK	100	1	HORIZONTAL
2	10640.030	40.05	-19.95	60.00	31.86	38.54	4.70	35.05	AVERAGE	100	1	HORIZONTAL

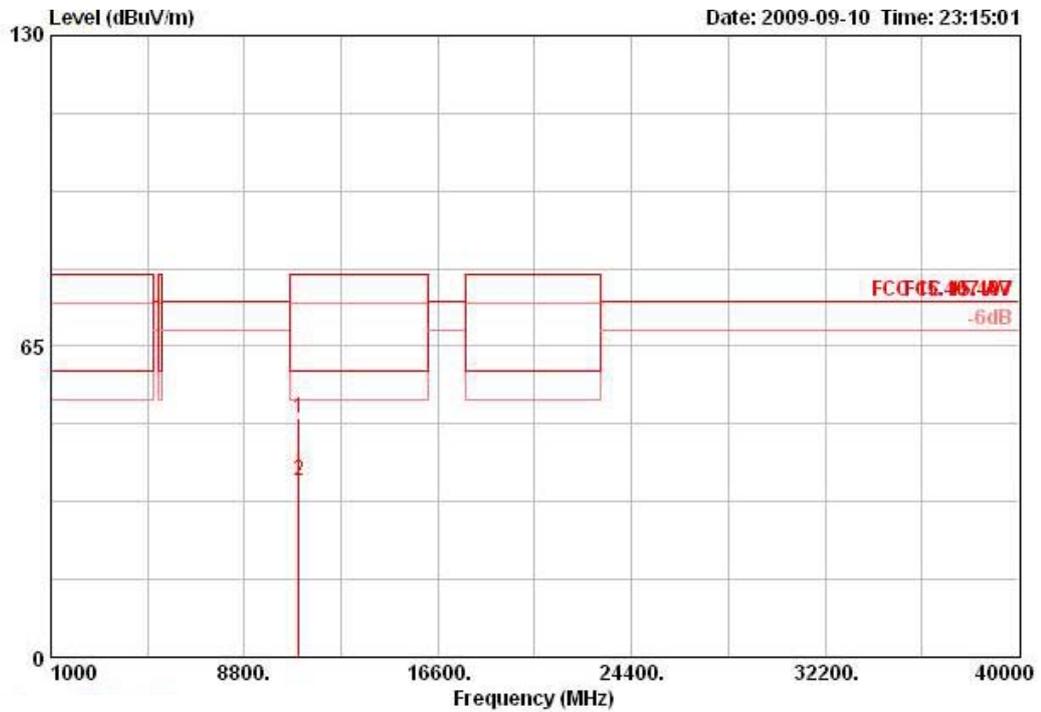
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10640.010	53.78	-26.22	80.00	45.59	38.54	4.70	35.05	PEAK	100	131	VERTICAL
2	10640.030	40.24	-19.76	60.00	32.05	38.54	4.70	35.05	AVERAGE	100	131	VERTICAL

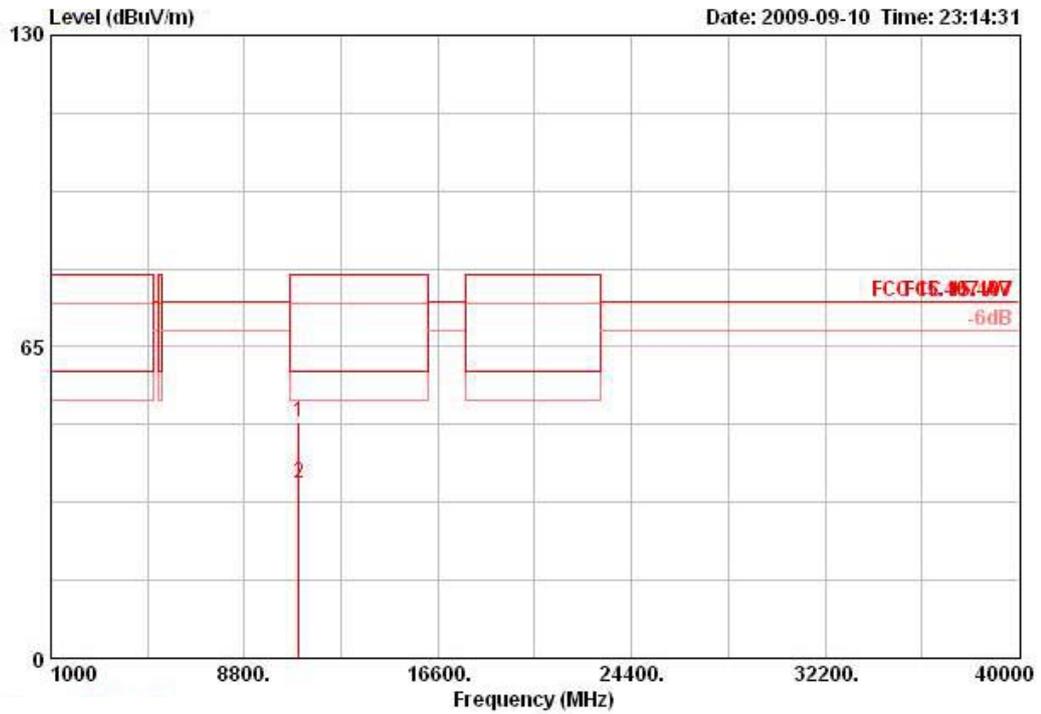
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 20MHz Ch 100 / Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10999.980	50.02	-29.98	80.00	41.84	38.40	4.47	34.69	PEAK	100	137	HORIZONTAL
2	11000.030	36.71	-23.29	60.00	28.53	38.40	4.47	34.69	AVERAGE	100	137	HORIZONTAL

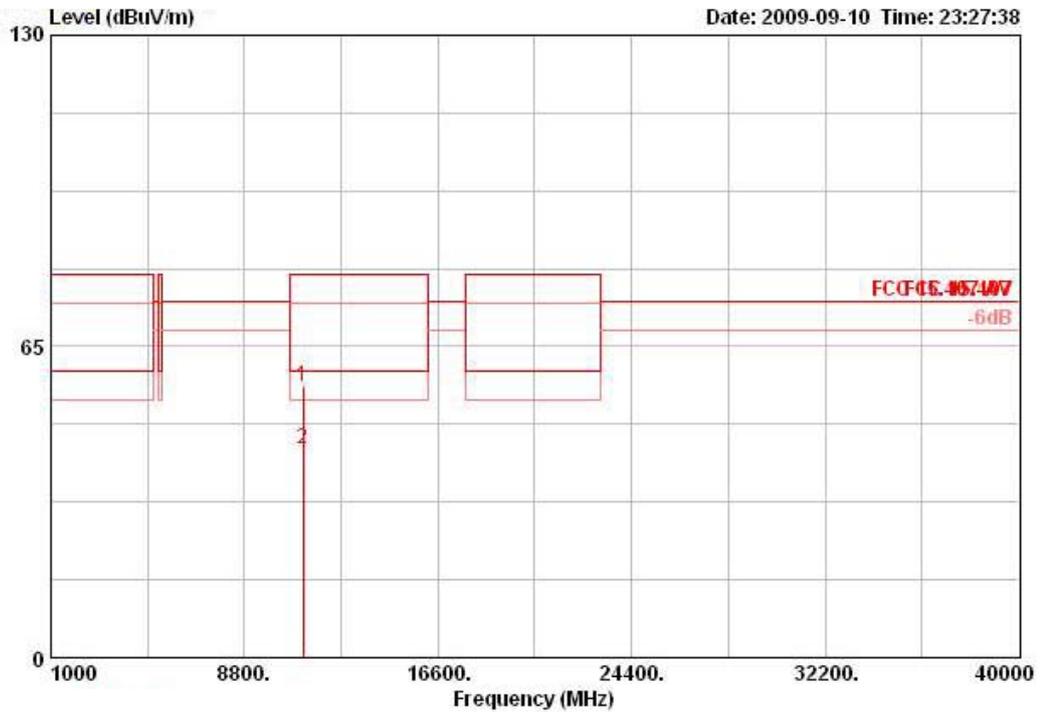
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10999.980	49.38	-30.62	80.00	41.20	38.40	4.47	34.69	PEAK	100	228	VERTICAL
2	11000.010	36.58	-23.42	60.00	28.40	38.40	4.47	34.69	AVERAGE	100	228	VERTICAL

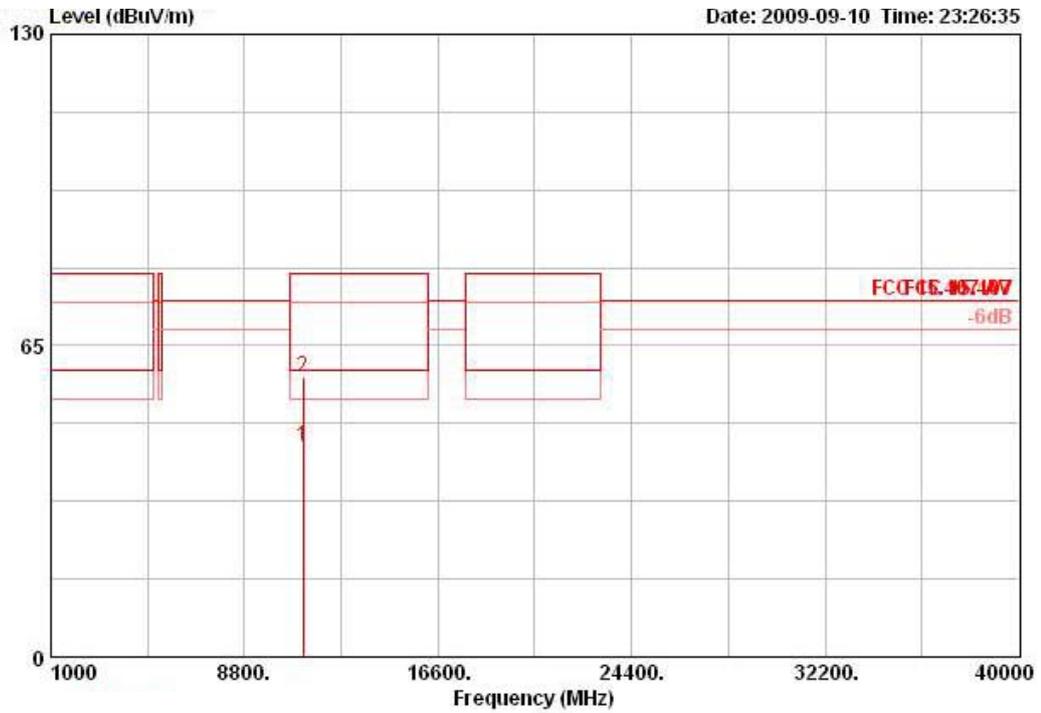
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 20MHz Ch 116 / Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBUV/m	dB	dBUV/m	dBuV	dB/m	dB	dB		cm	deg	
1	11160.000	56.77	-23.23	80.00	48.48	38.43	4.56	34.71	PEAK	100	0	HORIZONTAL
2	11160.010	43.44	-16.56	60.00	35.15	38.43	4.56	34.71	AVERAGE	100	0	HORIZONTAL

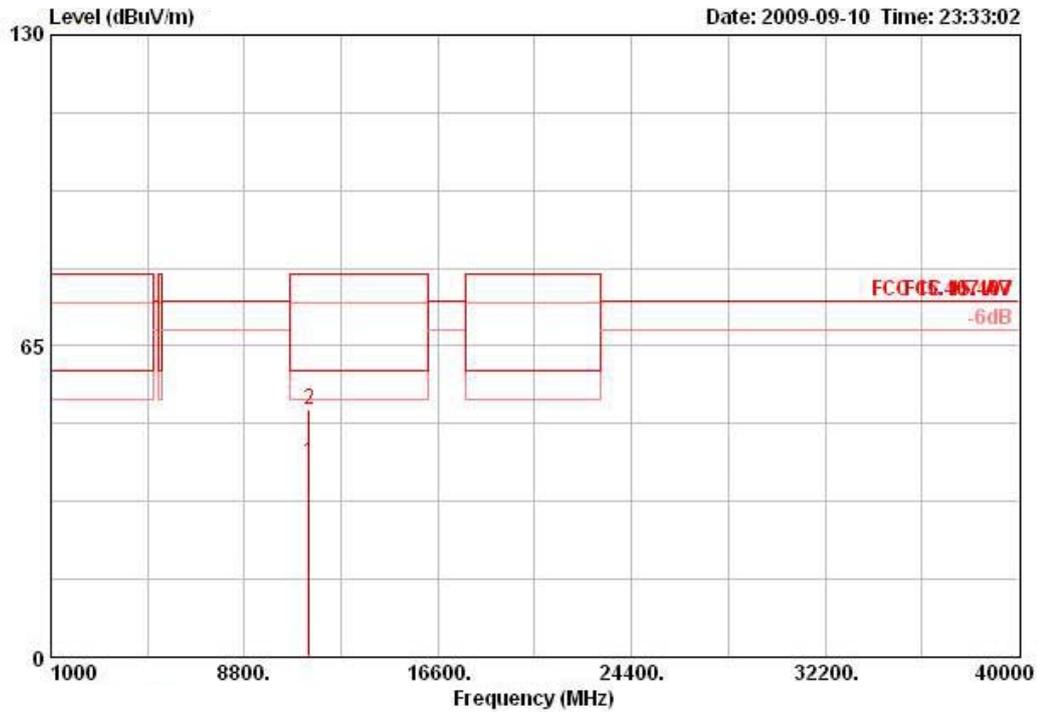
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	11159.970	43.87	-16.13	60.00	35.58	38.43	4.56	34.71	AVERAGE	100	336	VERTICAL
2	11159.990	58.36	-21.64	80.00	50.07	38.43	4.56	34.71	PEAK	100	336	VERTICAL

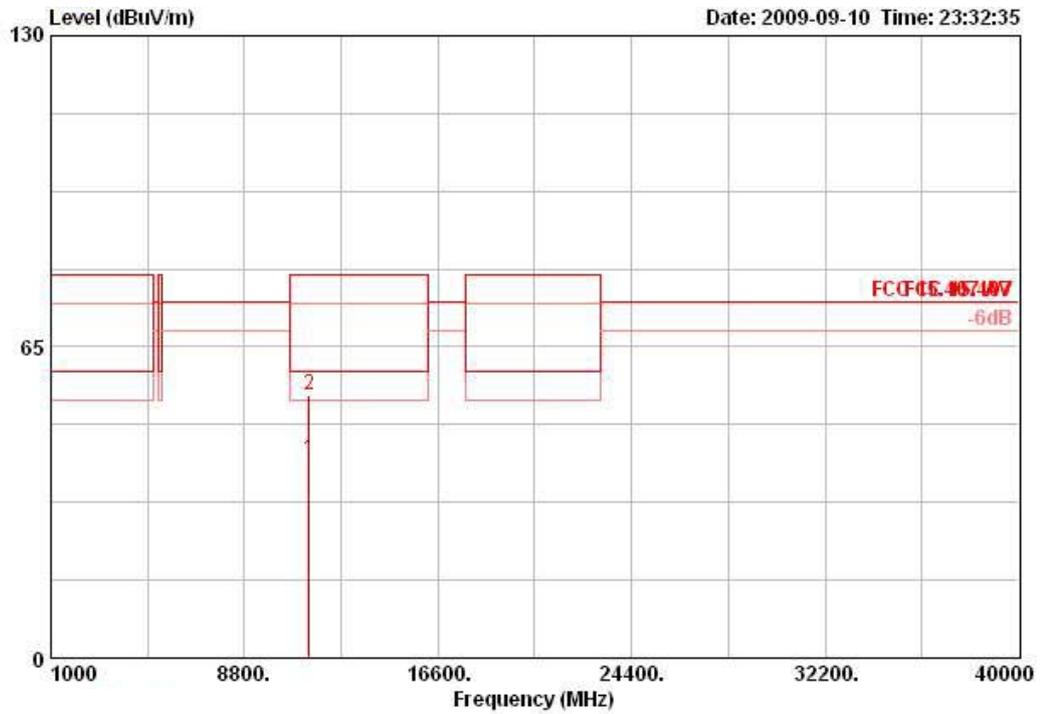
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 20MHz Ch 140 / Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	11399.990	40.63	-19.37	60.00	32.17	38.48	4.72	34.74	AVERAGE	100	187	HORIZONTAL
2	11400.000	51.78	-28.22	80.00	43.32	38.48	4.72	34.74	PEAK	100	187	HORIZONTAL

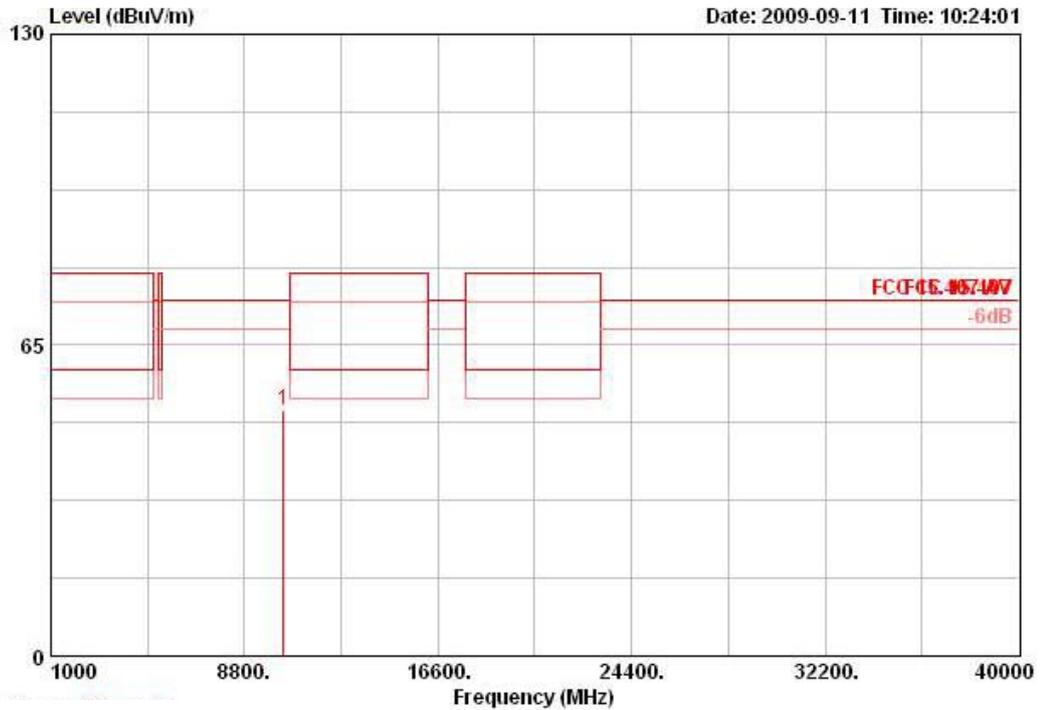
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	11400.010	41.58	-18.42	60.00	33.12	38.48	4.72	34.74	AVERAGE	100	253	VERTICAL
2	11400.020	54.77	-25.23	80.00	46.31	38.48	4.72	34.74	PEAK	100	253	VERTICAL

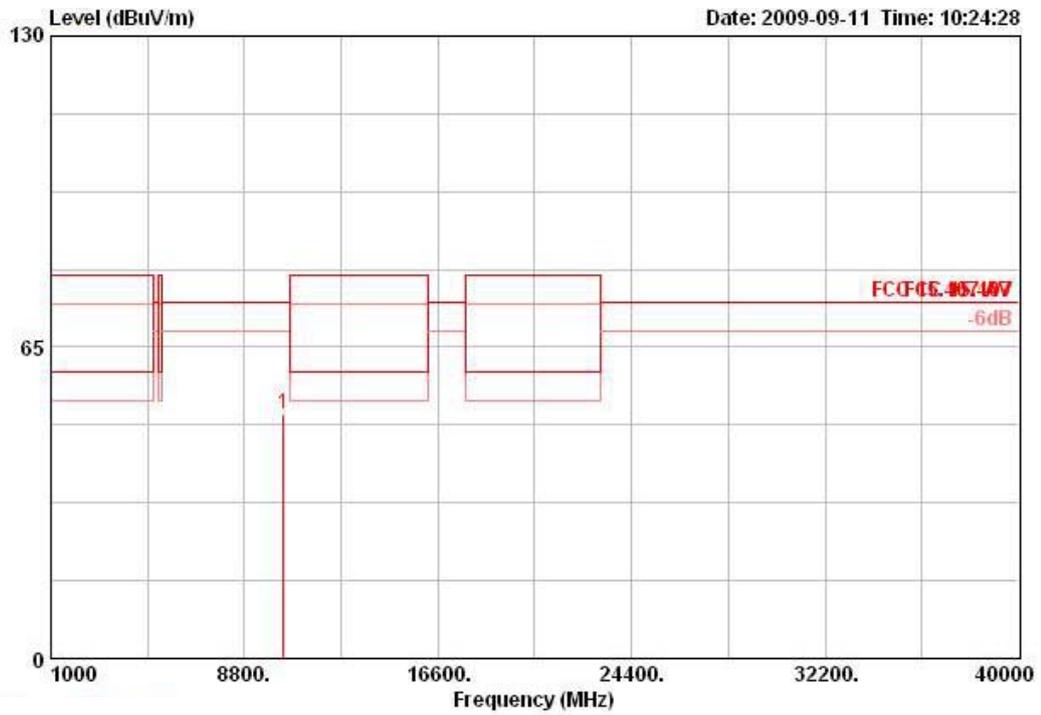
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 40MHz Ch 38 / Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10379.990	51.37	-22.93	74.30	43.50	38.53	4.68	35.33	PEAK	100	206	HORIZONTAL

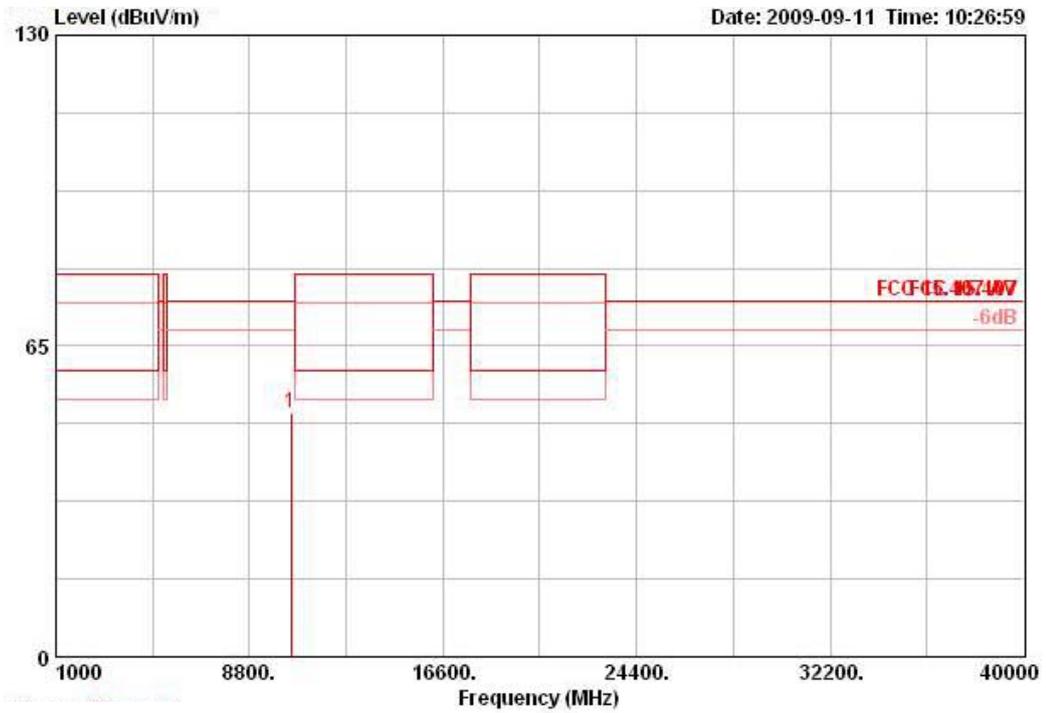
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10380.000	50.90	-23.40	74.30	43.03	38.53	4.68	35.33	PEAK	100	79	VERTICAL

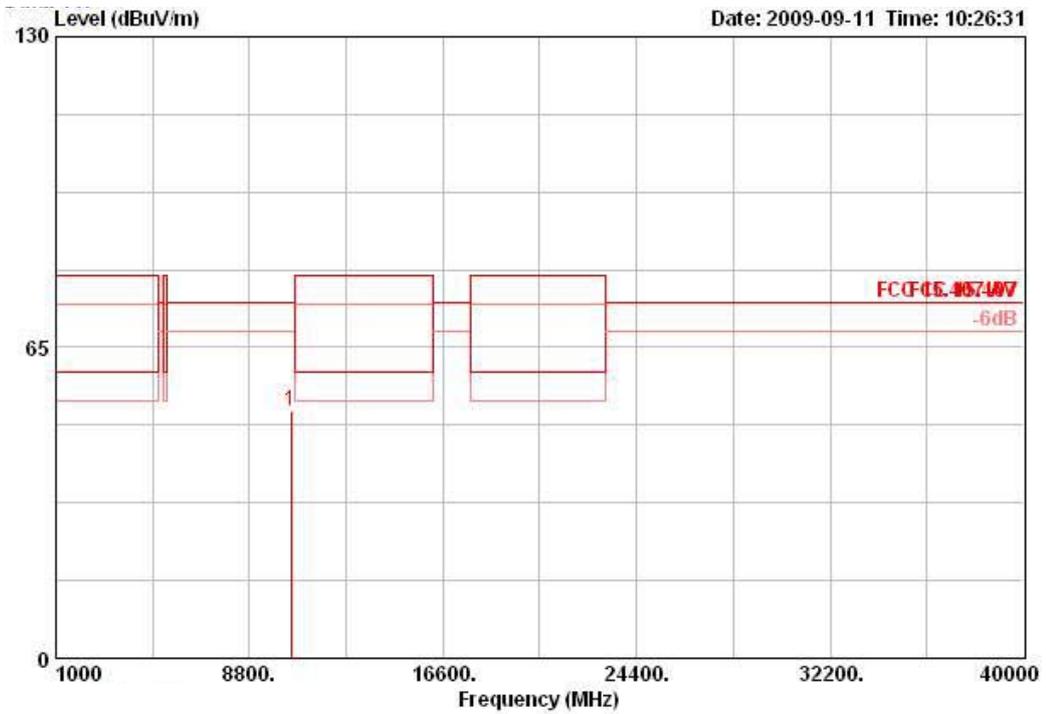
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 40MHz Ch 46 / Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10460.010	51.08	-23.22	74.30	43.02	38.57	4.74	35.24	PEAK	100	261	HORIZONTAL

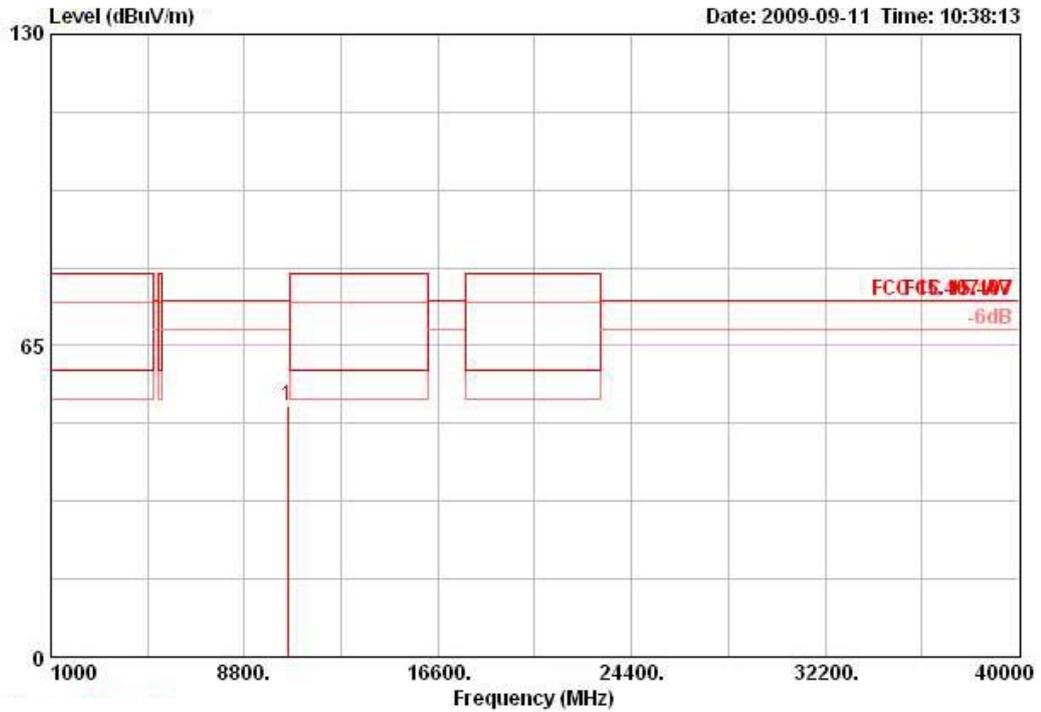
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10459.990	51.64	-22.66	74.30	43.58	38.57	4.74	35.24	PEAK	100	118	VERTICAL

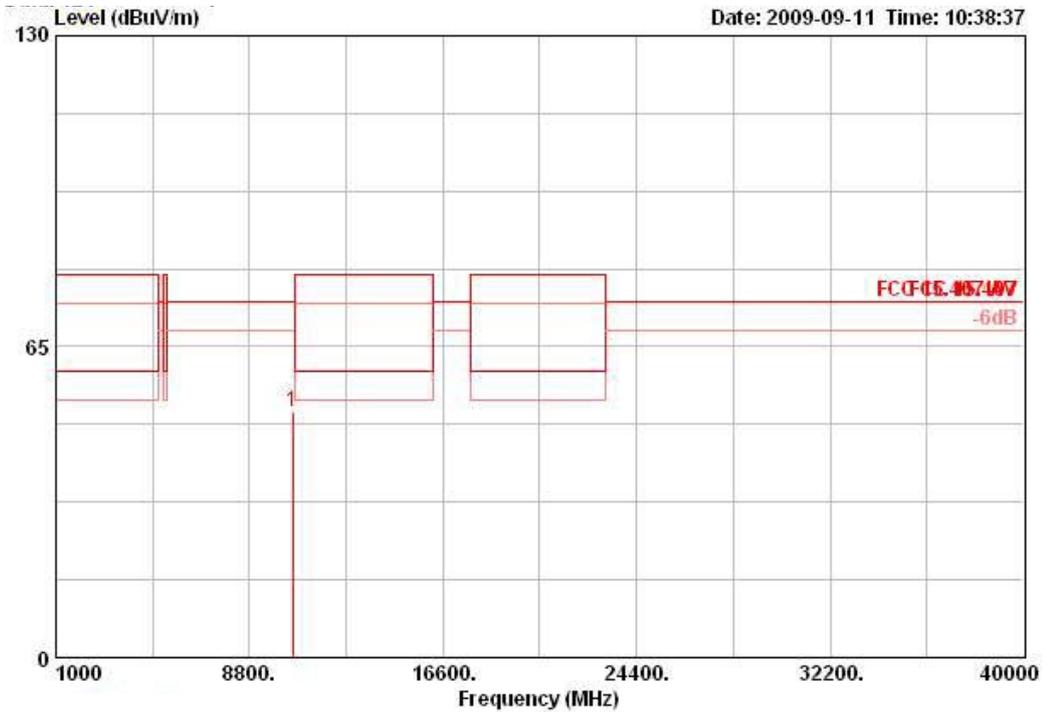
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 40MHz Ch 54 / Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10540.010	52.32	-21.98	74.30	44.12	38.59	4.76	35.15	PEAK	100	132	HORIZONTAL

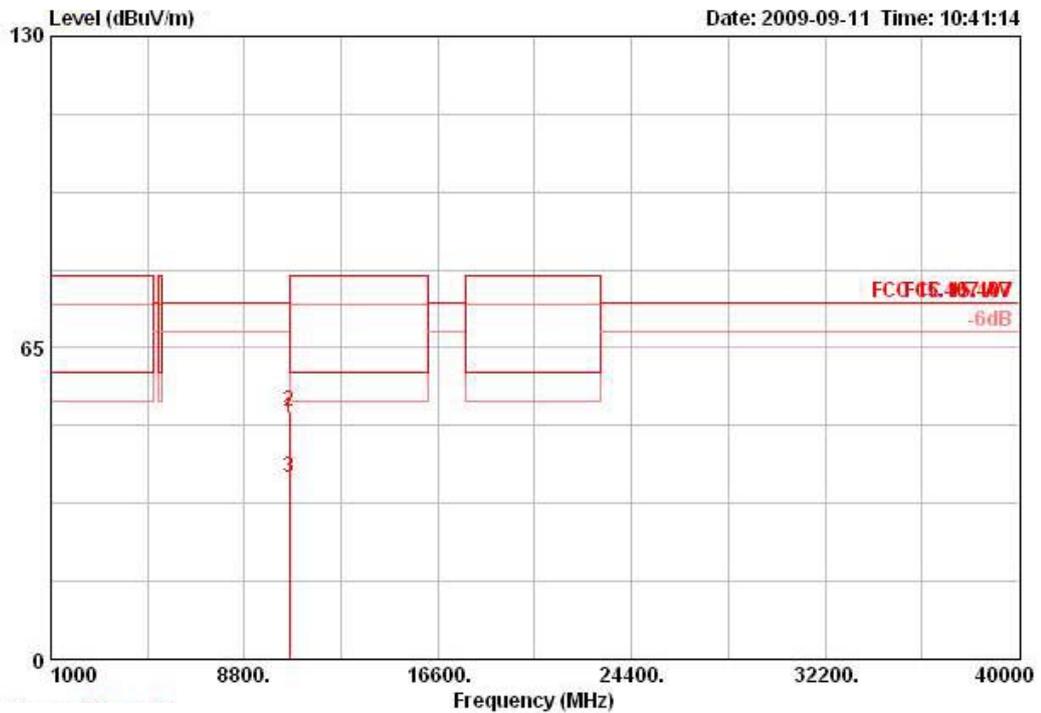
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10540.020	51.37	-22.93	74.30	43.17	38.59	4.76	35.15	PEAK	100	235	VERTICAL

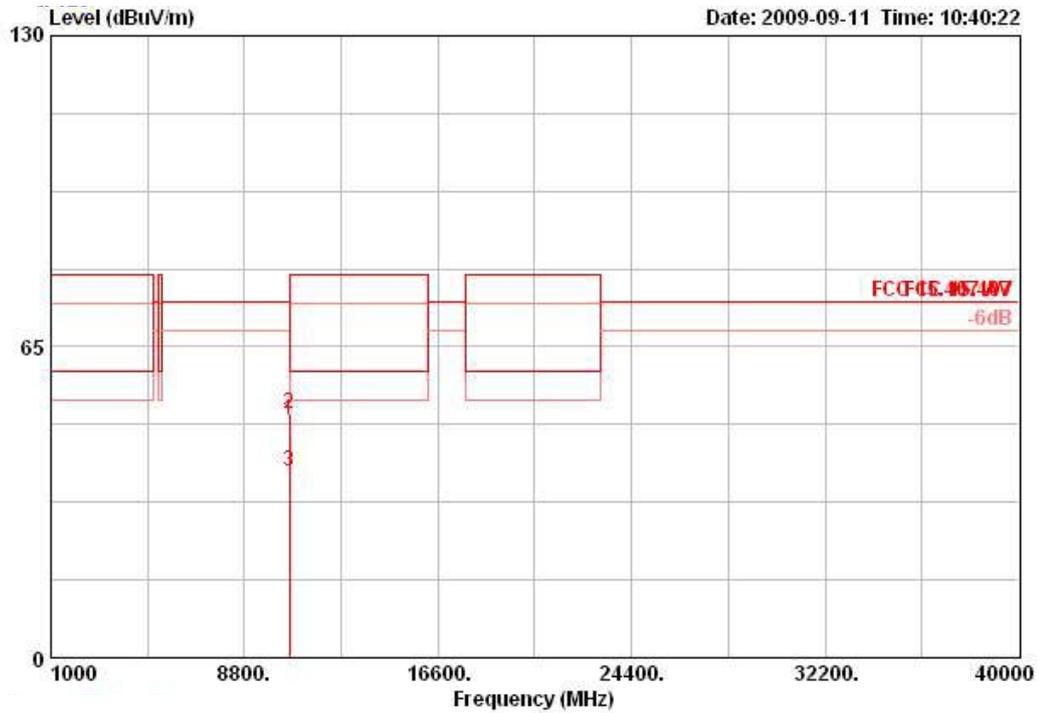
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 40MHz Ch 62 / Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10599.000	50.19	-24.11	74.30	42.00	38.56	4.73	35.10	PEAK	100	140	HORIZONTAL
2	10620.020	51.64	-28.36	80.00	43.45	38.55	4.71	35.08	PEAK	100	140	HORIZONTAL
3	10620.030	38.01	-21.99	60.00	29.82	38.55	4.71	35.08	AVERAGE	100	140	HORIZONTAL

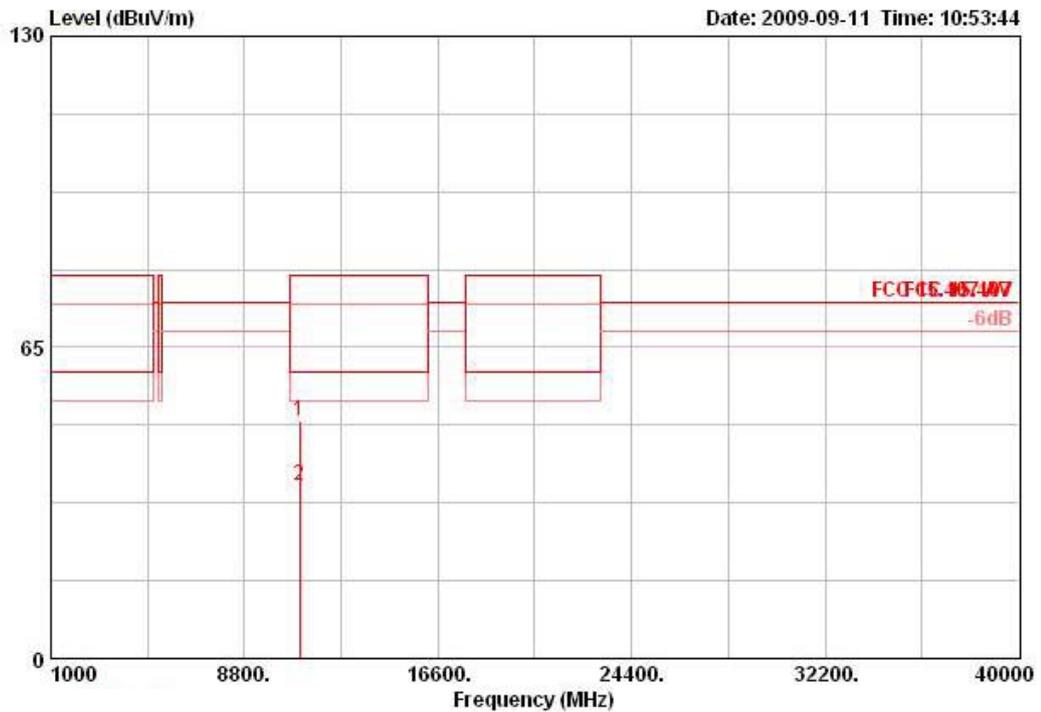
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna	Cable	Preamp	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	10599.510	49.63	-24.67	74.30	41.44	38.56	4.73	35.10 PEAK	100	228	VERTICAL
2	10620.010	51.06	-28.94	80.00	42.87	38.55	4.71	35.08 PEAK	100	228	VERTICAL
3	10620.030	38.99	-21.01	60.00	30.80	38.55	4.71	35.08 AVERAGE	100	228	VERTICAL

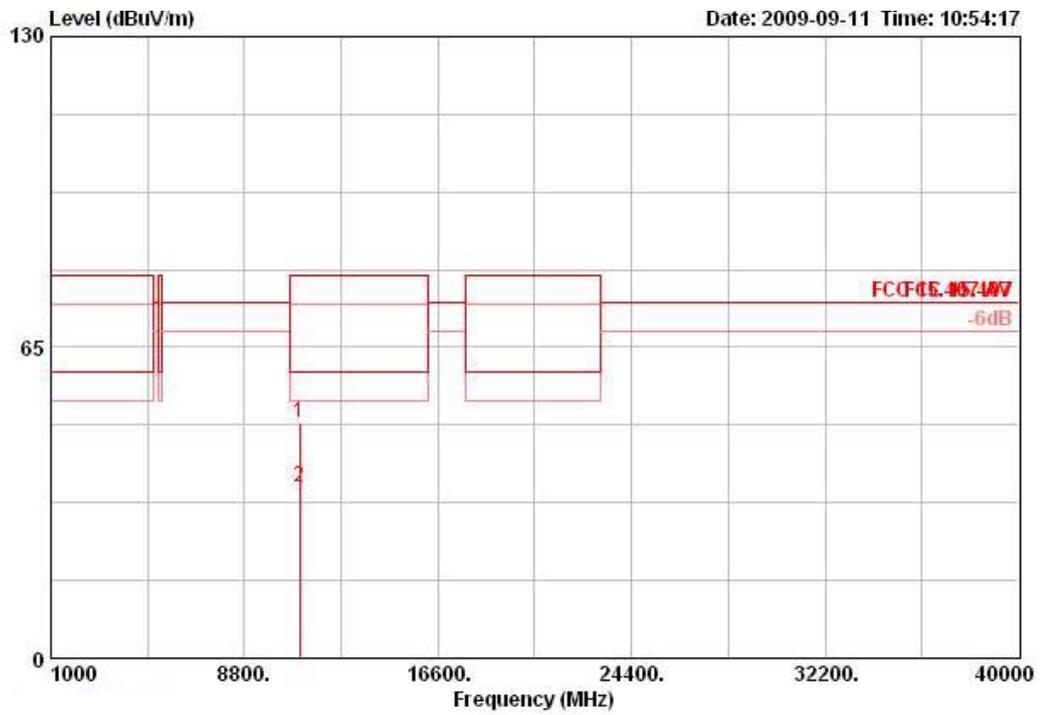
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 40MHz Ch 102 / Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	11020.010	49.75	-30.25	80.00	41.55	38.40	4.49	34.69	PEAK	100	144	HORIZONTAL
2	11020.030	36.09	-23.91	60.00	27.89	38.40	4.49	34.69	AVERAGE	100	144	HORIZONTAL

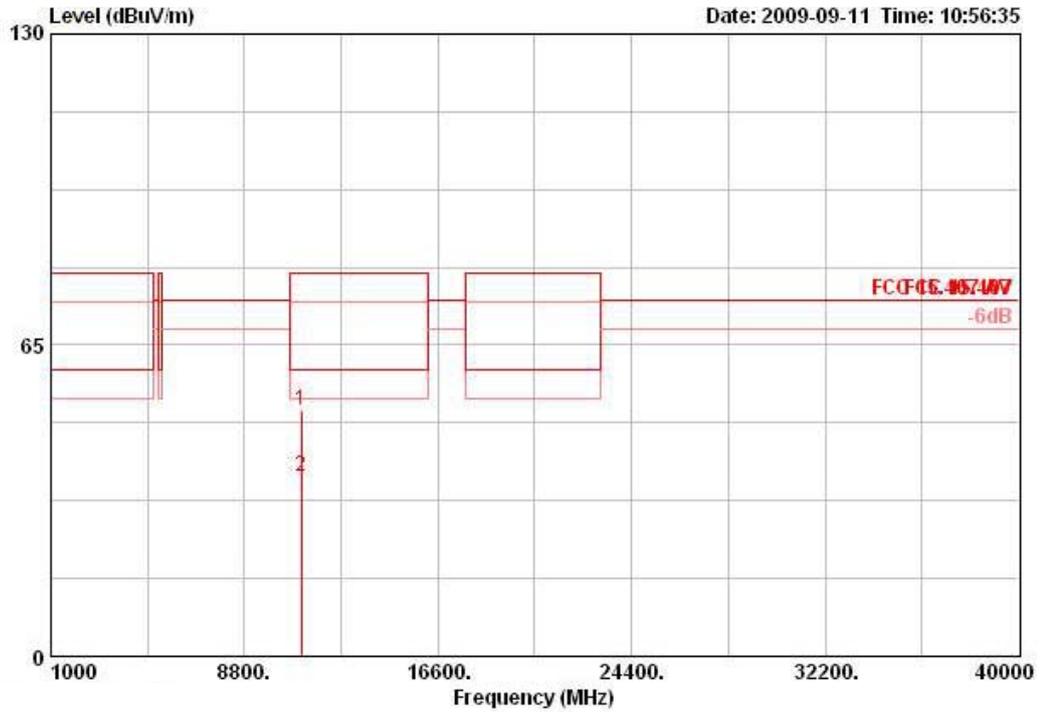
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	11020.000	49.31	-30.69	80.00	41.12	38.40	4.49	34.69	PEAK	100	279	VERTICAL
2	11020.030	35.69	-24.31	60.00	27.50	38.40	4.49	34.69	AVERAGE	100	279	VERTICAL

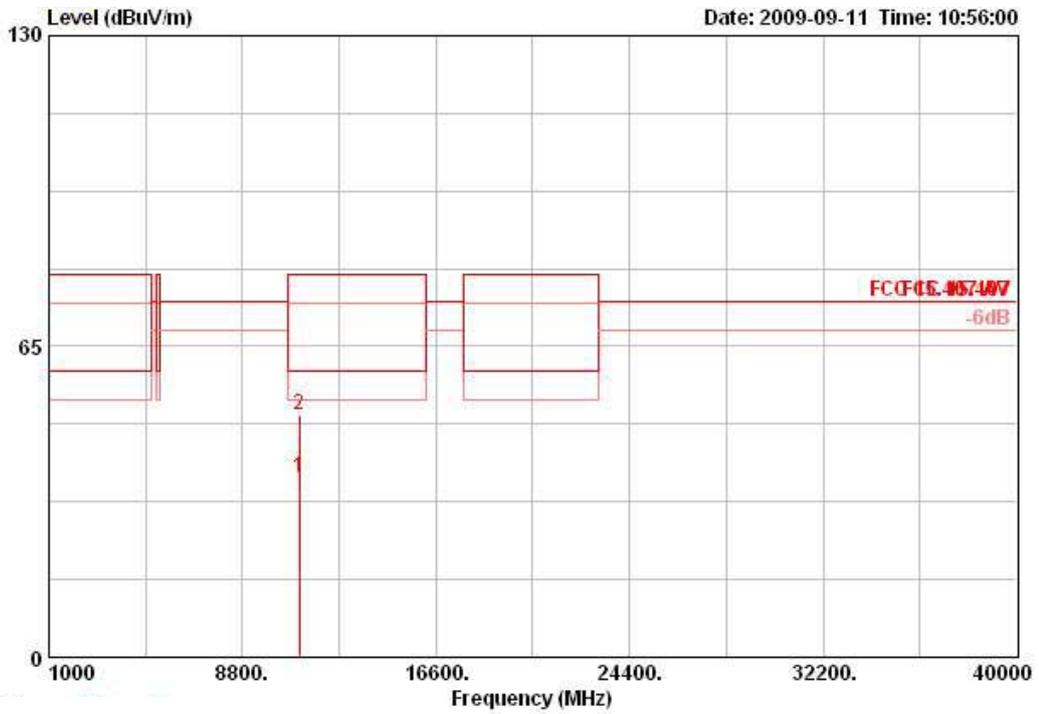
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 40MHz Ch 110 / Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	11100.020	51.23	-28.77	80.00	42.98	38.42	4.53	34.70	PEAK	100	280	HORIZONTAL
2	11100.030	37.45	-22.55	60.00	29.20	38.42	4.53	34.70	AVERAGE	100	280	HORIZONTAL

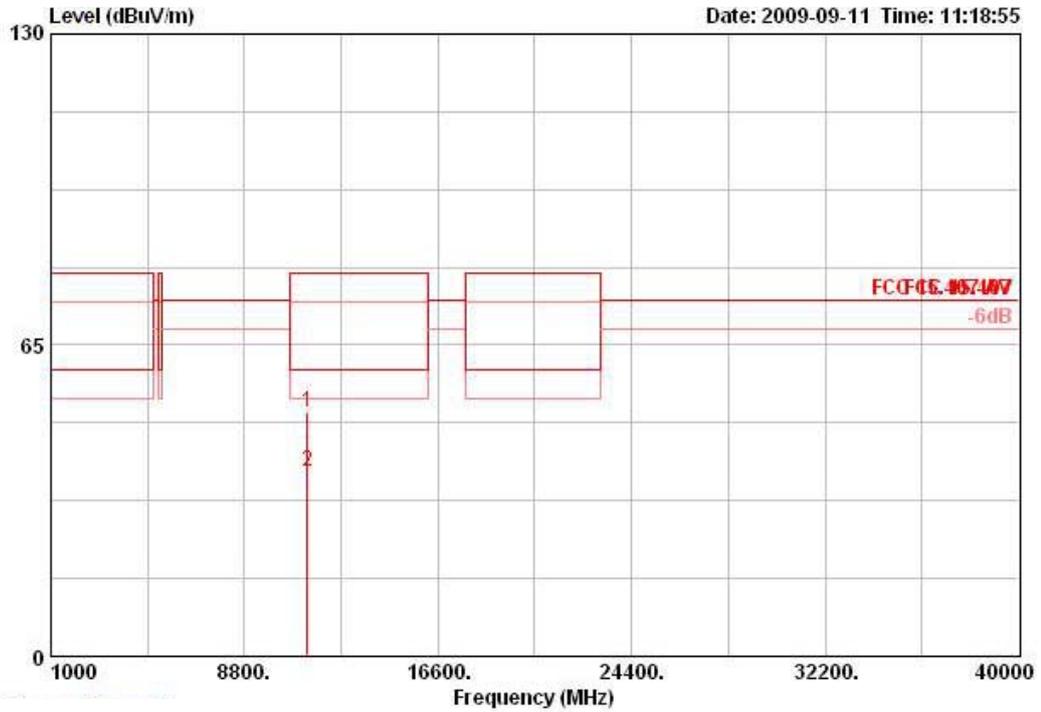
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	11099.990	37.41	-22.59	60.00	29.16	38.42	4.53	34.70	AVERAGE	100	146	VERTICAL
2	11100.020	50.69	-29.31	80.00	42.44	38.42	4.53	34.70	PEAK	100	146	VERTICAL

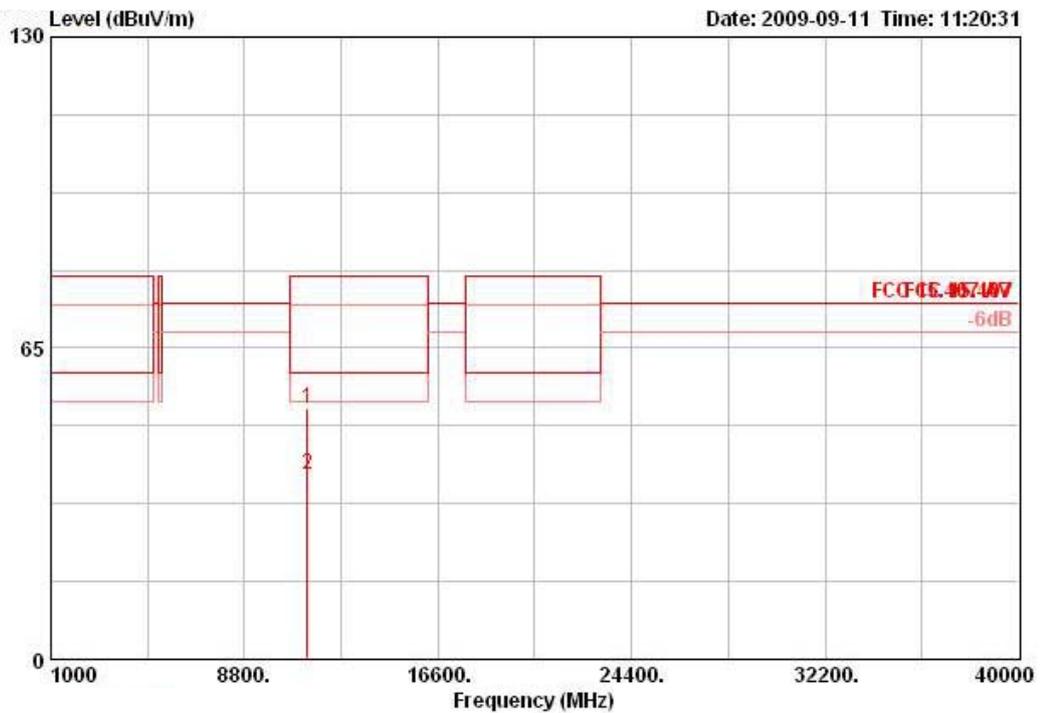
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 40MHz Ch 134 / Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	11340.000	51.13	-28.87	80.00	42.72	38.47	4.67	34.73	PEAK	100	164	HORIZONTAL
2	11340.030	38.50	-21.50	60.00	30.10	38.47	4.67	34.73	AVERAGE	100	164	HORIZONTAL

Vertical



	Over	Limit	Read	Antenna	Cable	Preamp		Ant	Table			
1	2	Limit	Line	Level	Factor	Loss	Factor	Remark	Pos	Pos	Pol/Phase	
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg		
1	11339.990	52.31	-27.69	80.00	43.90	38.47	4.67	34.73	PEAK	100	333	VERTICAL
2	11339.990	38.67	-21.33	60.00	30.26	38.47	4.67	34.73	AVERAGE	100	333	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.

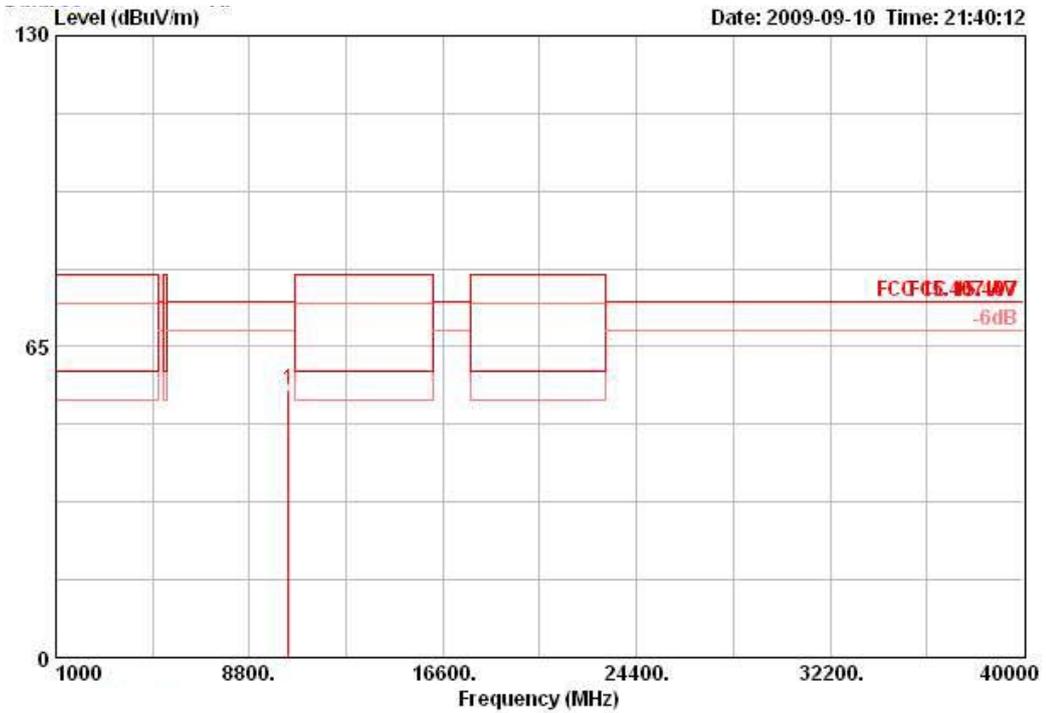
The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

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

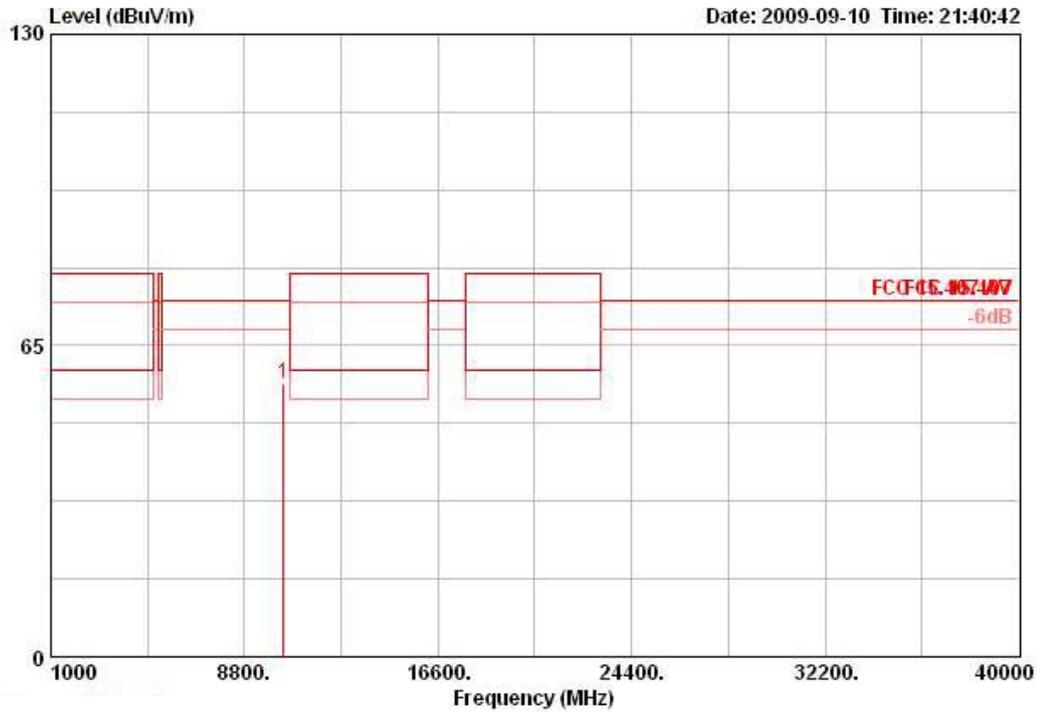
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	802.11a Ch 36 / Ant. A

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10359.990	56.02	-18.28	74.30	48.21	38.52	4.65	35.36	PEAK	100	318	HORIZONTAL

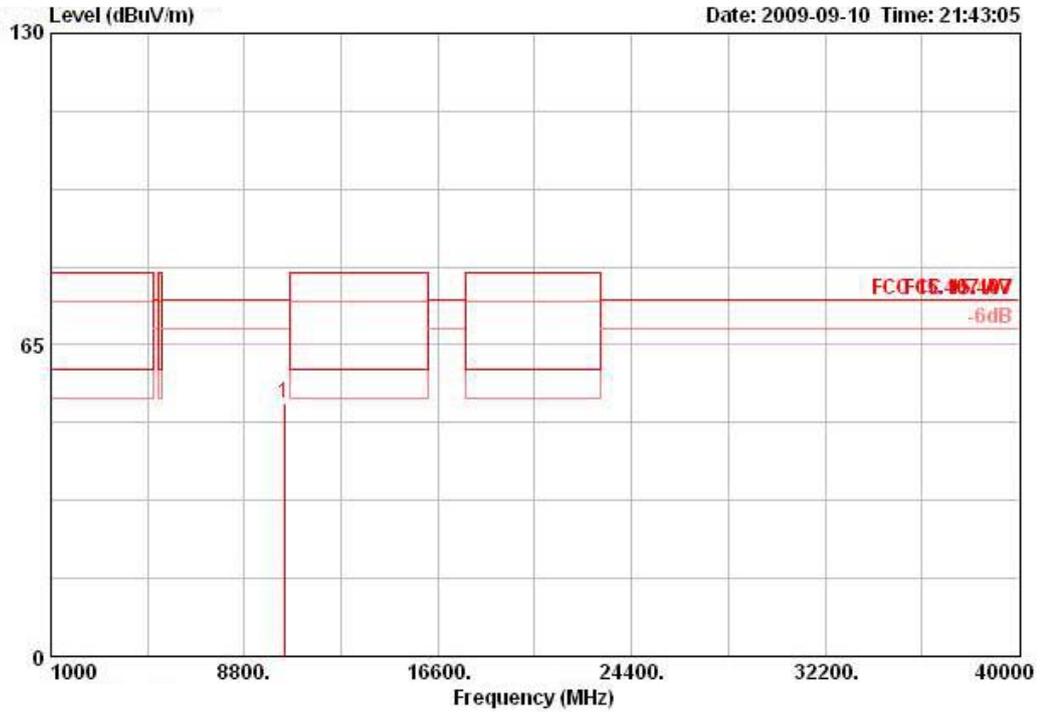
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10360.020	57.15	-17.15	74.30	49.34	38.52	4.65	35.36	PEAK	100	204	VERTICAL

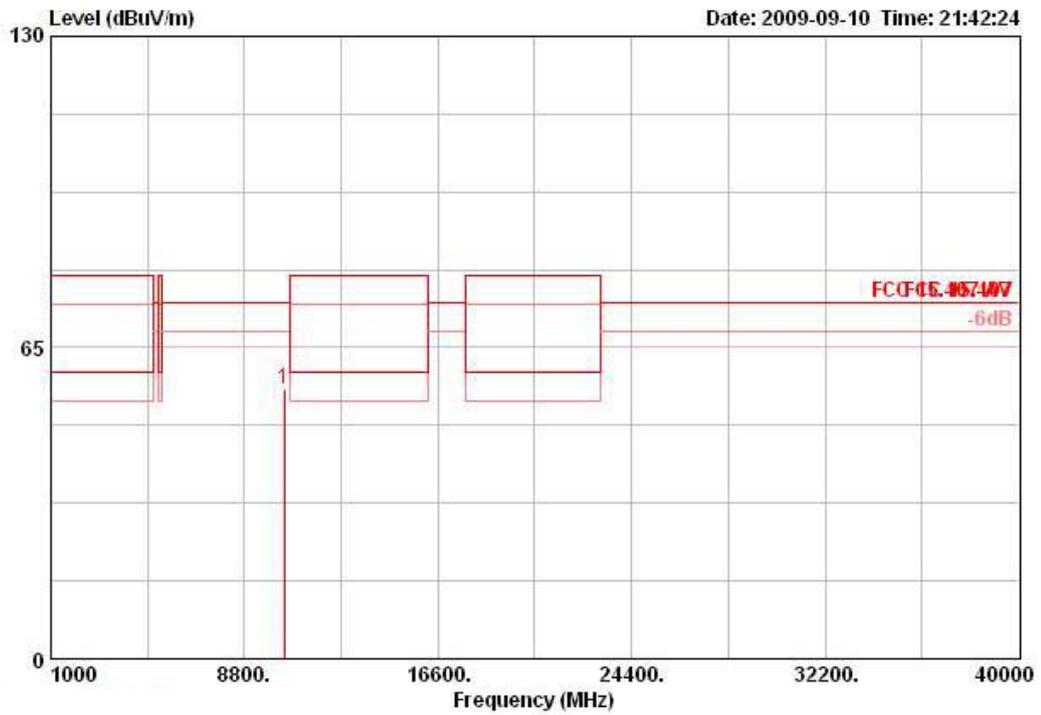
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	802.11a Ch 40 / Ant. A

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10400.010	52.79	-21.51	74.30	44.86	38.54	4.70	35.30	PEAK	100	114	HORIZONTAL

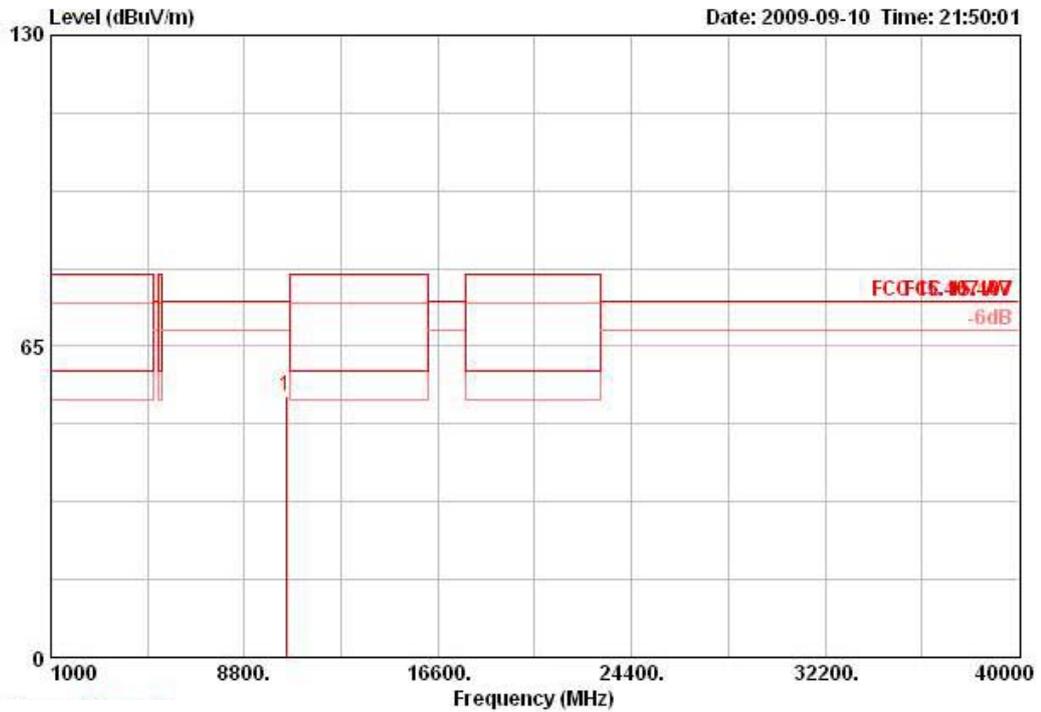
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna	Cable	Preamp	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		cm	deg	
1	10399.980	56.20	-18.10	74.30	48.27	38.54	4.70	35.30 PEAK	100	224	VERTICAL

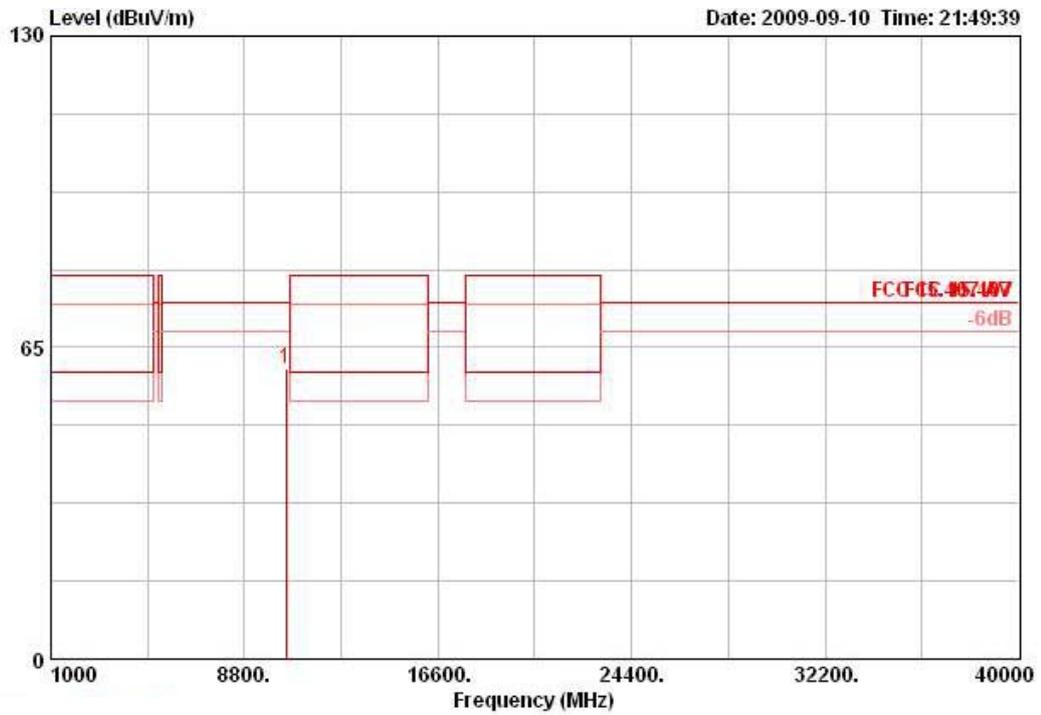
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	802.11a Ch 48 / Ant. A

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10480.020	54.60	-19.70	74.30	46.47	38.59	4.76	35.21	PEAK	100	133	HORIZONTAL

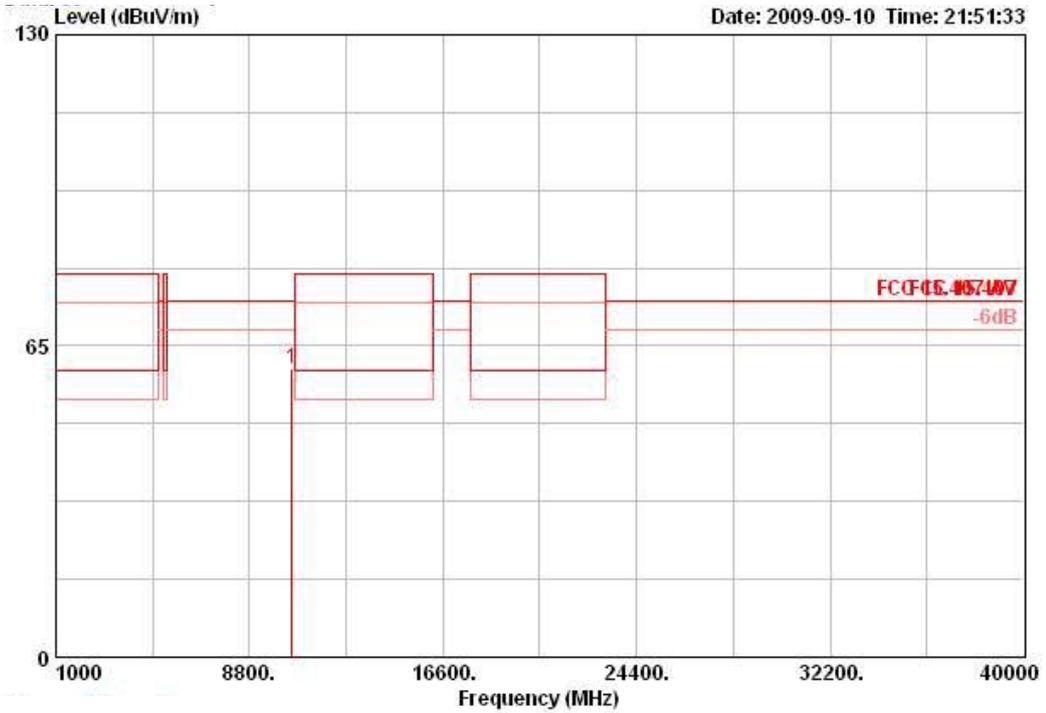
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10480.010	60.47	-13.83	74.30	52.33	38.59	4.76	35.21	PEAK	100	175	VERTICAL

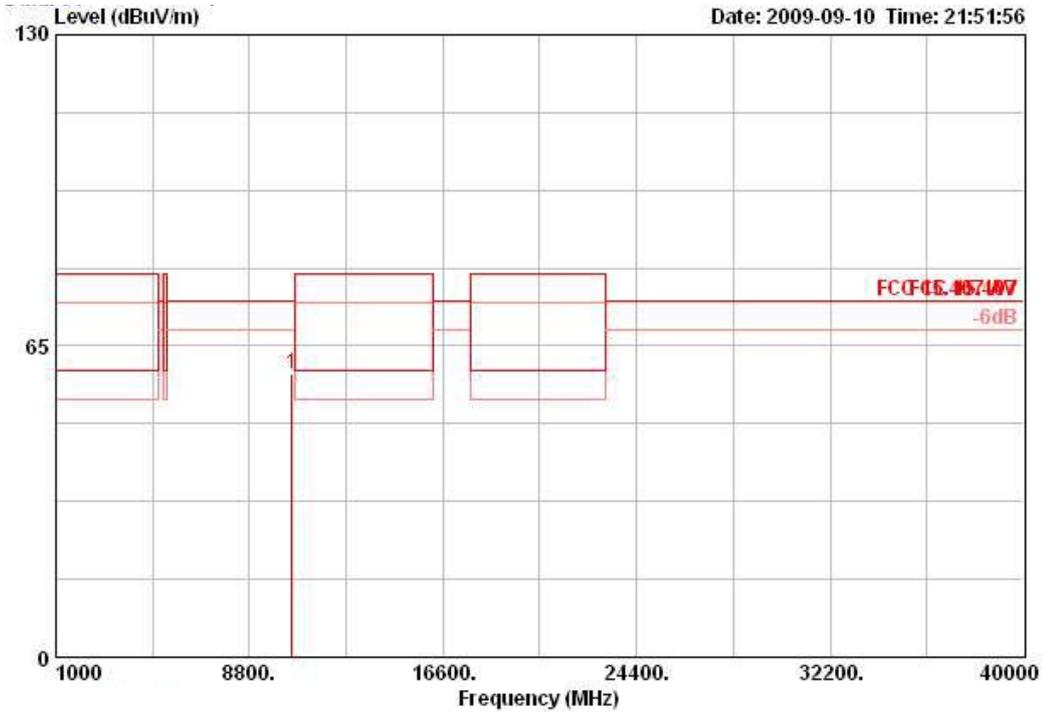
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	802.11a Ch 52 / Ant. A

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Antenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10520.030	60.16	-14.14	74.30	51.96	38.59	4.78	35.18	PEAK	0	228	HORIZONTAL

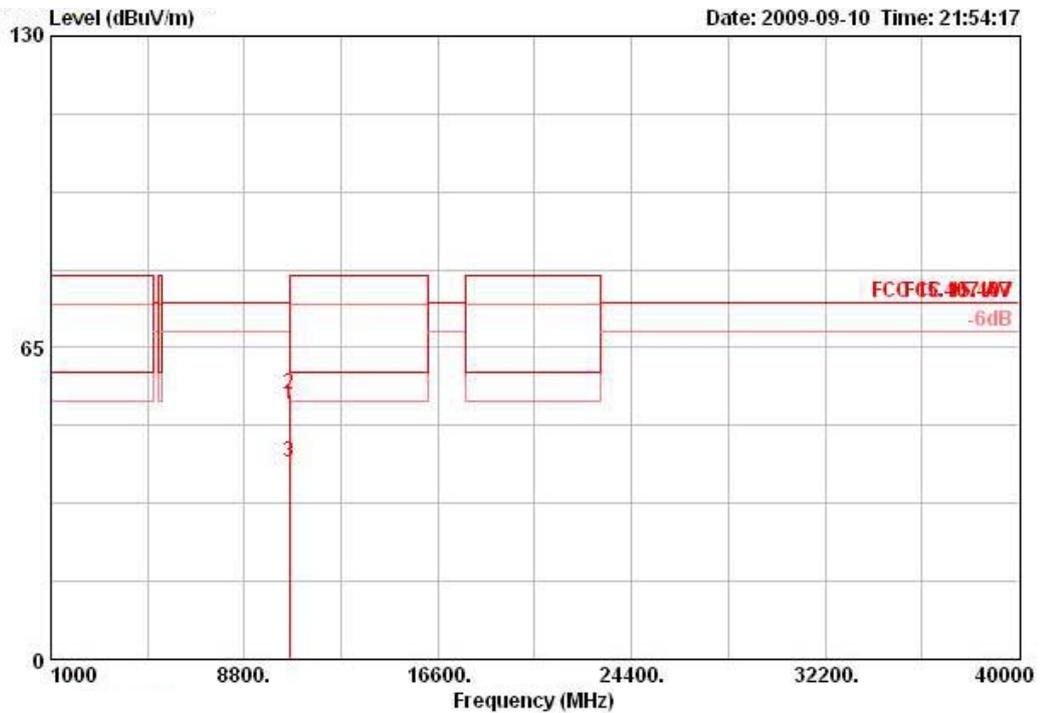
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10519.980	59.12	-15.18	74.30	50.93	38.59	4.78	35.18	PEAK	100	321	VERTICAL

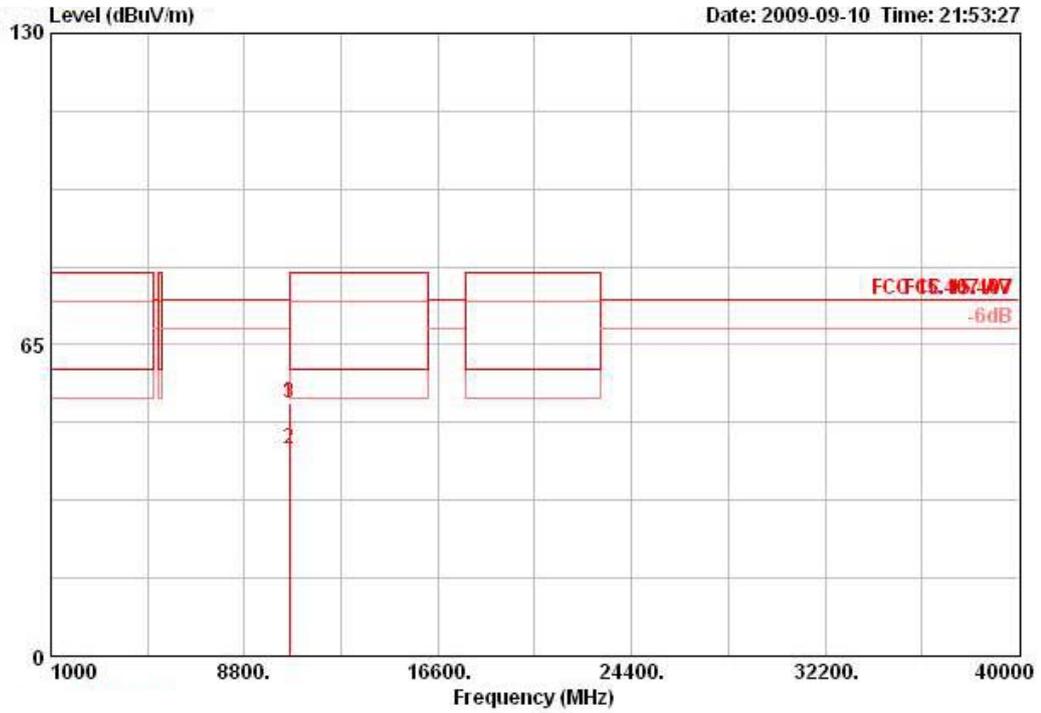
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	802.11a Ch 60 / Ant. A

Horizontal



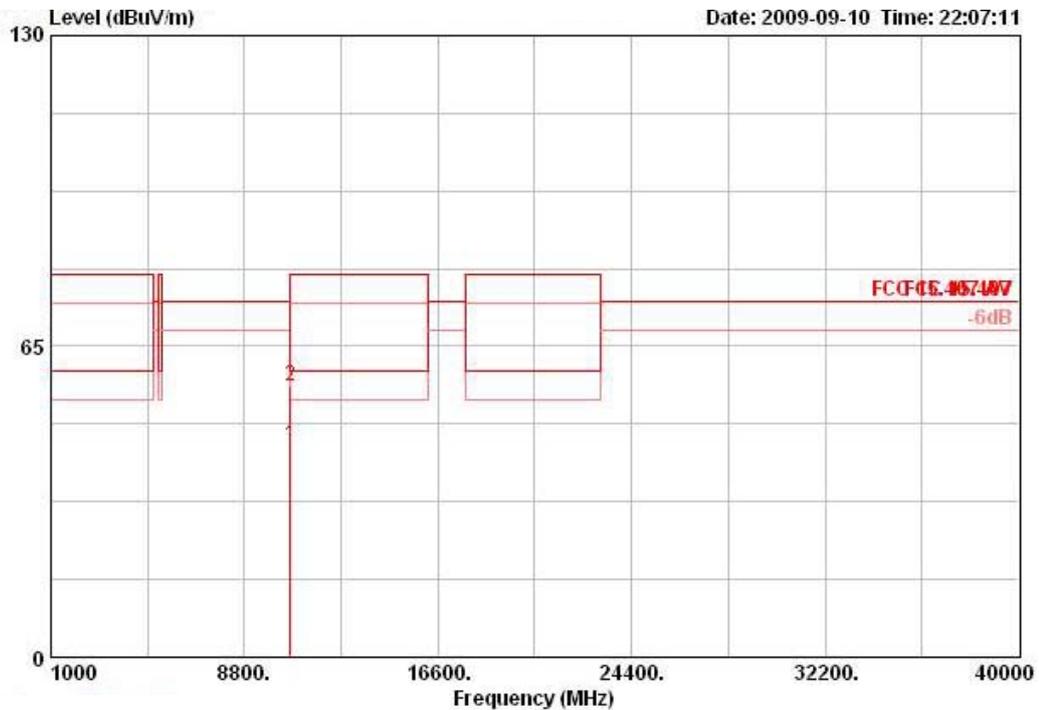
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10599.990	53.28	-21.02	74.30	45.09	38.56	4.73	35.10	PEAK	100	253	HORIZONTAL
2	10600.000	55.37	-24.63	80.00	47.19	38.56	4.73	35.10	PEAK	100	253	HORIZONTAL
3	10600.030	41.13	-18.87	60.00	32.94	38.56	4.73	35.10	AVERAGE	100	253	HORIZONTAL

Vertical



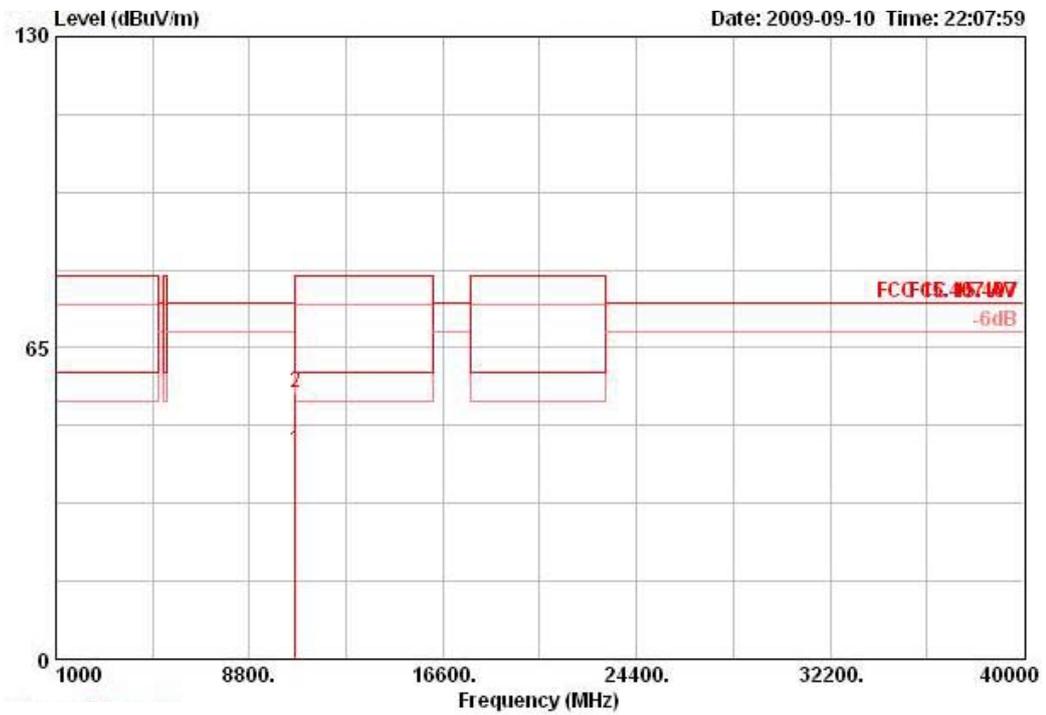
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10599.980	52.82	-21.48	74.30	44.63	38.56	4.73	35.10	PEAK	100	178	VERTICAL
2	10600.010	43.08	-16.92	60.00	34.90	38.56	4.73	35.10	AVERAGE	100	178	VERTICAL
3	10600.010	52.72	-27.28	80.00	44.53	38.56	4.73	35.10	PEAK	100	178	VERTICAL

Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	802.11a Ch 64 / Ant. A

Horizontal


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10640.010	44.41	-15.59	60.00	36.22	38.54	4.70	35.05	AVERAGE	0	110	HORIZONTAL
2	10640.010	56.56	-23.44	80.00	48.36	38.54	4.70	35.05	PEAK	100	110	HORIZONTAL

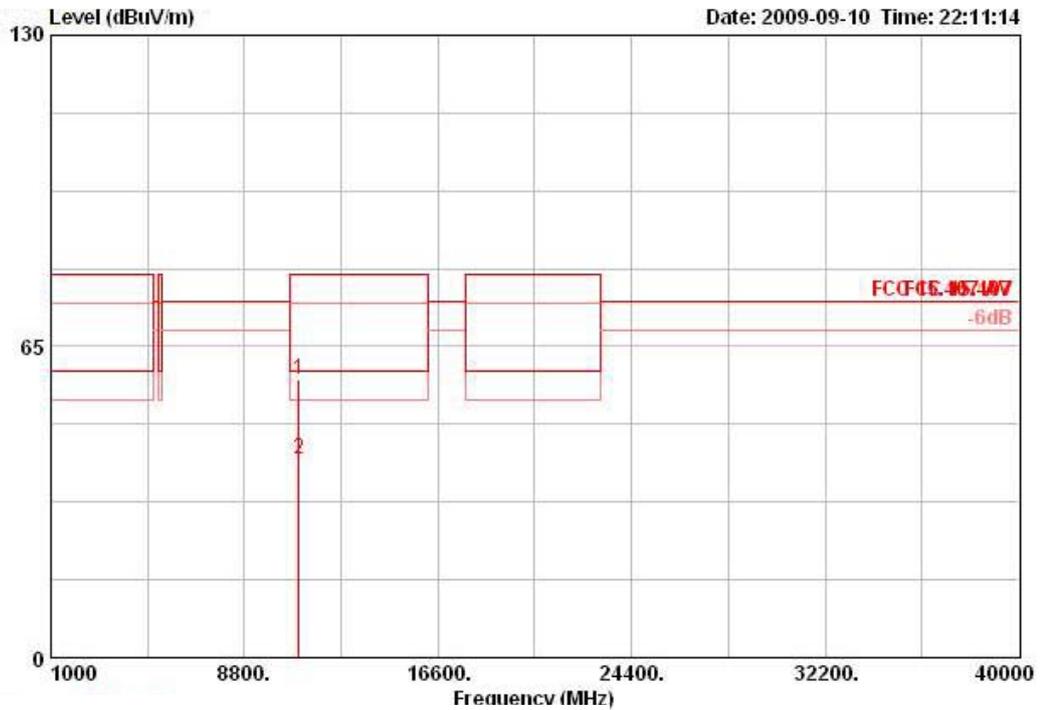
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10639.990	43.46	-16.54	60.00	35.26	38.54	4.70	35.05	AVERAGE	100	267	VERTICAL
2	10640.000	55.70	-24.30	80.00	47.51	38.54	4.70	35.05	PEAK	100	267	VERTICAL

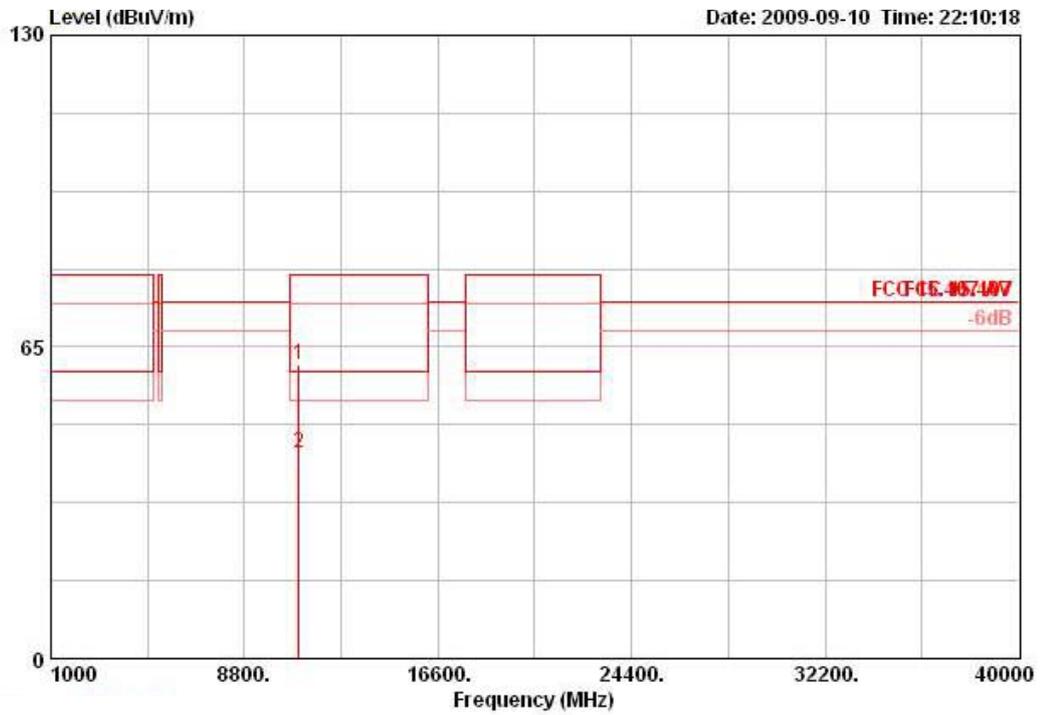
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	802.11a Ch 100 / Ant. A

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10999.980	57.98	-22.02	80.00	49.80	38.40	4.47	34.69	PEAK	100	249	HORIZONTAL
2	10999.990	41.38	-18.62	60.00	33.20	38.40	4.47	34.69	AVERAGE	100	249	HORIZONTAL

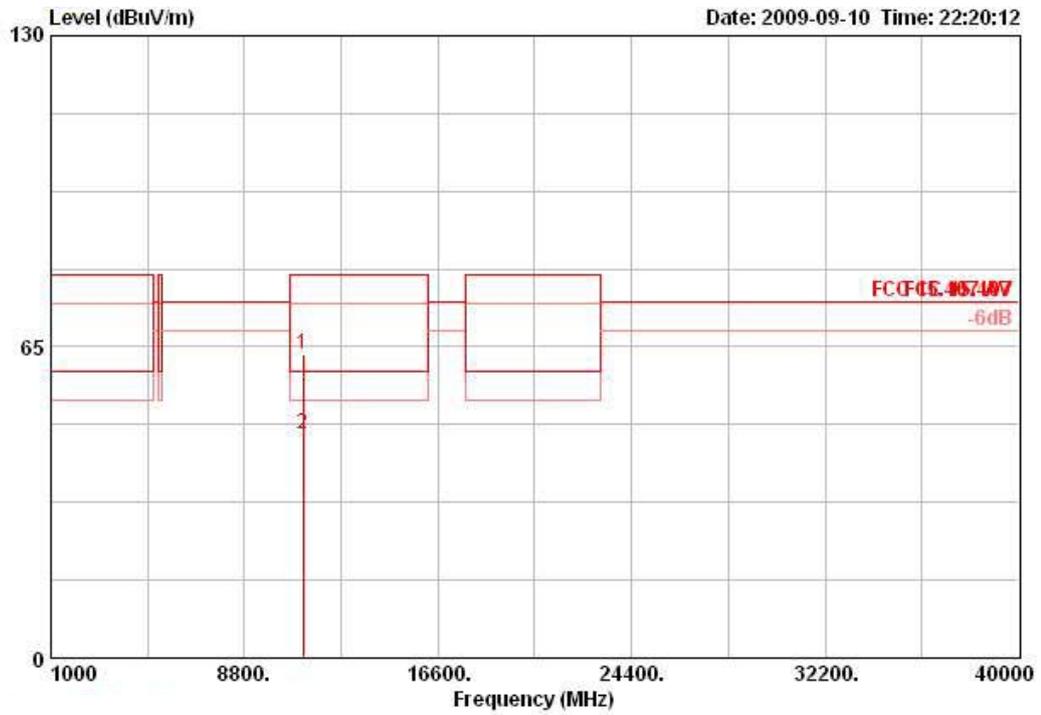
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	10999.980	61.38	-18.62	80.00	53.20	38.40	4.47	34.69	PEAK	100	39	VERTICAL
2	11000.010	42.96	-17.04	60.00	34.78	38.40	4.47	34.69	AVERAGE	100	39	VERTICAL

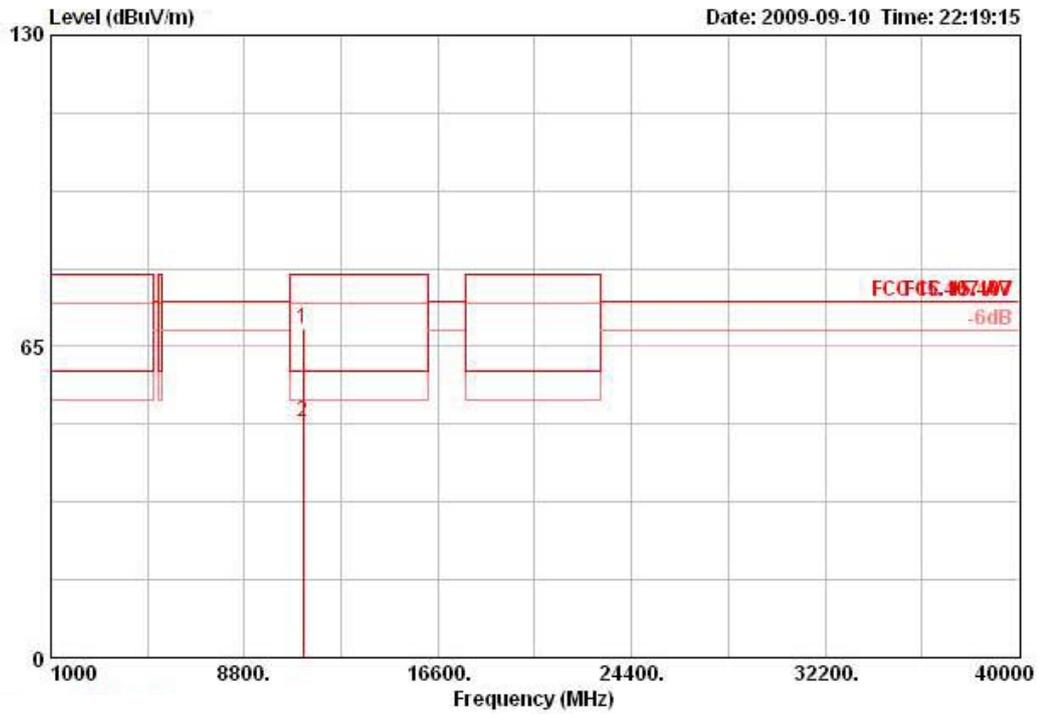
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	802.11a Ch 116 / Ant. A

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	11160.000	63.41	-16.59	80.00	55.12	38.43	4.56	34.71	PEAK	100	243	HORIZONTAL
2	11160.030	46.62	-13.38	60.00	38.33	38.43	4.56	34.71	AVERAGE	4100	243	HORIZONTAL

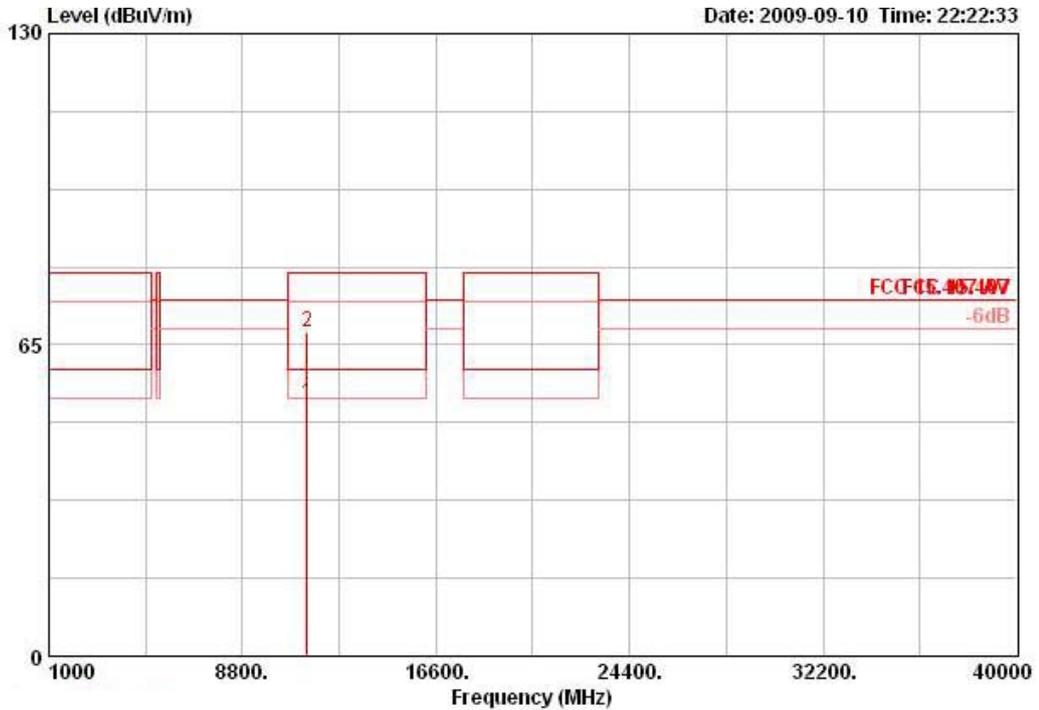
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	11159.980	68.64	-11.36	80.00	60.35	38.43	4.56	34.71	PEAK	100	40	VERTICAL
2	11160.010	49.38	-10.62	60.00	41.10	38.43	4.56	34.71	AVERAGE	100	40	VERTICAL

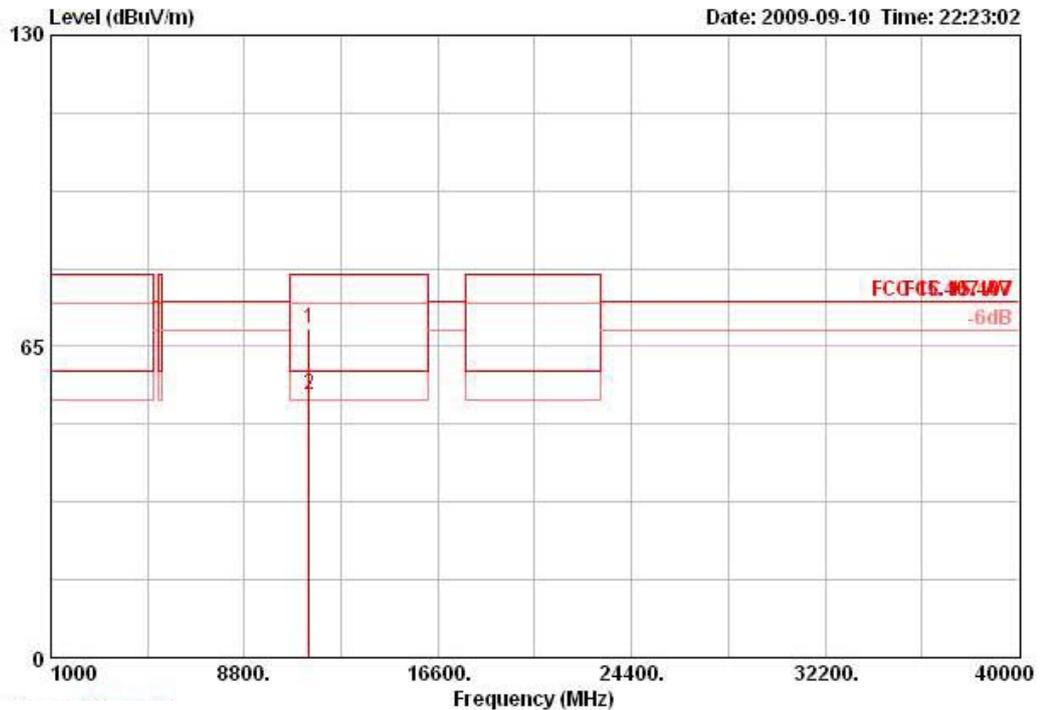
Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	802.11a Ch 140 / Ant. A

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 @	11399.970	52.88	-7.12	60.00	44.42	38.48	4.72	34.74	AVERAGE	100	10	HORIZONTAL
2	11400.010	67.70	-12.30	80.00	59.24	38.48	4.72	34.74	PEAK	100	10	HORIZONTAL

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	11400.000	68.79	-11.21	80.00	60.33	38.48	4.72	34.74	PEAK	100	43	VERTICAL
2 @	11400.030	54.79	-5.21	60.00	46.33	38.48	4.72	34.74	AVERAGE	100	43	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.

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

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

4.7. Band Edge Emissions Measurement

4.7.1. Limit

For transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). For transmitters operating in the 5.470-5.725 GHz band: all emissions outside of the 5.470-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz (78.3dBuV/m at 3m); for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). In addition, 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 (micovolts/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

4.7.2. 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)	1 MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1 MHz / 1 MHz for Peak

4.7.3. Test Procedures

1. The test procedure is the same as section 4.6.3, 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.

4.7.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.6.4.

4.7.5. Test Deviation

There is no deviation with the original standard.

4.7.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.7.7. Test Result of Band Edge and Fundamental Emissions

Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 20MHz Ch 36, 40 / Ant. A + Ant. B
Test Date	Sep. 10, 2009		

Channel 36

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	5142.200	66.58	-13.42	80.00	30.43	33.07	3.08	0.00	PEAK	100	219	VERTICAL
2 @	5150.000	53.93	-6.07	60.00	17.77	33.07	3.09	0.00	AVERAGE	100	219	VERTICAL
3 @	5175.200	96.85			60.62	33.13	3.10	0.00	AVERAGE	100	219	VERTICAL
4	5185.000	112.00			75.77	33.13	3.10	0.00	PEAK	100	219	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	5149.600	65.63	-14.37	80.00	29.47	33.07	3.09	0.00	PEAK	100	220	VERTICAL
2 @	5150.000	53.63	-6.37	60.00	17.47	33.07	3.09	0.00	AVERAGE	8995	220	VERTICAL
3 @	5197.200	97.59			61.32	33.16	3.11	0.00	AVERAGE	100	220	VERTICAL
4 @	5204.800	110.46			74.19	33.16	3.11	0.00	PEAK	100	220	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 20MHz Ch 60, 64 / Ant. A + Ant. B
Test Date	Sep. 10, 2009		

Channel 60

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 @	5294.800	111.04			74.56	33.34	3.13	0.00	PEAK	100	110	VERTICAL
2 @	5296.400	98.58			62.11	33.34	3.13	0.00	AVERAGE	100	110	VERTICAL
3 @	5350.000	54.62	-5.38	60.00	18.03	33.43	3.16	0.00	AVERAGE	100	110	VERTICAL
4	5358.000	66.98	-13.02	80.00	30.39	33.43	3.16	0.00	PEAK	100	110	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 @	5318.200	112.25			75.74	33.37	3.14	0.00	PEAK	100	111	VERTICAL
2	5323.400	99.03			62.52	33.37	3.15	0.00	AVERAGE	100	111	VERTICAL
3 @	5350.000	54.91	-5.09	60.00	18.32	33.43	3.16	0.00	AVERAGE	100	111	VERTICAL
4	5350.600	66.68	-13.32	80.00	30.09	33.43	3.16	0.00	PEAK	100	111	VERTICAL

Item 1, 2 are the fundamental frequency at 5320 MHz.

Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 20MHz Ch 100, 120, 140 / Ant. A + Ant. B
Test Date	Sep. 10, 2009		

Channel 100

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	5457.200	66.13	-13.87	80.00	29.33	33.61	3.19	0.00	PEAK	100	283	VERTICAL
2 @	5460.000	54.32	-5.68	60.00	17.52	33.61	3.19	0.00	AVERAGE	100	283	VERTICAL
3 @	5469.200	68.53	-5.77	74.30	31.70	33.64	3.19	0.00	PEAK	100	283	VERTICAL
4 @	5497.800	99.38			62.48	33.70	3.20	0.00	AVERAGE	100	283	VERTICAL
5	5505.600	114.41			77.50	33.70	3.20	0.00	PEAK	100	283	VERTICAL

Item 4, 5 are the fundamental frequency at 5500 MHz.

Channel 140

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 @	5696.400	101.80			64.31	34.27	3.22	0.00	AVERAGE	100	108	VERTICAL
2	5703.400	116.08			78.54	34.32	3.22	0.00	PEAK	100	108	VERTICAL
3 @	5726.200	73.43	-0.87	74.30	35.83	34.37	3.23	0.00	PEAK	100	108	VERTICAL

Item 1, 2 are the fundamental frequency at 5700 MHz.



Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 40MHz Ch 38, 46 / Ant. A + Ant. B
Test Date	Sep. 11, 2009		

Channel 38

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	5148.000	65.60	-14.40	80.00	29.44	33.07	3.09	0.00	PEAK	100	280	VERTICAL
2 @	5150.000	54.53	-5.47	60.00	18.37	33.07	3.09	0.00	AVERAGE	100	280	VERTICAL
3 @	5195.200	90.42			54.15	33.16	3.11	0.00	AVERAGE	100	280	VERTICAL
4	5196.000	106.26			70.00	33.16	3.11	0.00	PEAK	100	280	VERTICAL

Item 3, 4 are the fundamental frequency at 5190 MHz.

Channel 46

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	5144.800	66.30	-13.70	80.00	30.14	33.07	3.09	0.00	PEAK	100	289	VERTICAL
2 @	5150.000	53.49	-6.51	60.00	17.33	33.07	3.09	0.00	AVERAGE	100	289	VERTICAL
3 @	5224.400	106.88			70.57	33.19	3.12	0.00	PEAK	100	289	VERTICAL
4 @	5224.400	90.08			53.78	33.19	3.12	0.00	AVERAGE	100	289	VERTICAL

Item 3, 4 are the fundamental frequency at 5230 MHz.



Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 40MHz Ch 54, 62 / Ant. A + Ant. B
Test Date	Sep. 11, 2009		

Channel 54

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 @	5266.800	105.17			68.77	33.28	3.12	0.00	PEAK	100	70	VERTICAL
2 @	5281.200	89.86			53.42	33.31	3.13	0.00	AVERAGE	100	70	VERTICAL
3 @	5350.000	54.39	-5.61	60.00	17.80	33.43	3.16	0.00	AVERAGE	100	70	VERTICAL
4	5353.600	66.64	-13.36	80.00	30.05	33.43	3.16	0.00	PEAK	100	70	VERTICAL

Item 1, 2 are the fundamental frequency at 5270 MHz.

Channel 62

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 @	5293.200	106.49			70.01	33.34	3.13	0.00	PEAK	100	321	VERTICAL
2 @	5319.600	90.17			53.66	33.37	3.14	0.00	AVERAGE	100	321	VERTICAL
3 @	5350.000	54.84	-5.16	60.00	18.26	33.43	3.16	0.00	AVERAGE	100	321	VERTICAL
4	5352.000	66.21	-13.79	80.00	29.63	33.43	3.16	0.00	PEAK	100	321	VERTICAL

Item 1, 2 are the fundamental frequency at 5310 MHz.

Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	Draft n MCS8 40MHz Ch 102, 110, 134 / Ant. A + Ant. B
Test Date	Sep. 11, 2009		

Channel 102

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	5458.400	65.85	-14.15	80.00	29.05	33.61	3.19	0.00	PEAK	100	119	VERTICAL
2 @	5460.000	54.51	-5.49	60.00	17.71	33.61	3.19	0.00	AVERAGE	100	119	VERTICAL
3 @	5466.000	67.99	-6.31	74.30	31.15	33.64	3.19	0.00	PEAK	100	119	VERTICAL
4	5515.200	92.51			55.56	33.75	3.20	0.00	AVERAGE	100	119	VERTICAL
5	5526.800	111.16			74.20	33.75	3.21	0.00	PEAK	100	119	VERTICAL

Item 4, 5 are the fundamental frequency at 5510MHz.

Channel 110

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	5457.600	65.45	-14.55	80.00	28.65	33.61	3.19	0.00	PEAK	100	118	VERTICAL
2 @	5460.000	54.14	-5.86	60.00	17.33	33.61	3.19	0.00	AVERAGE	100	118	VERTICAL
3 @	5468.400	67.10	-7.20	74.30	30.27	33.64	3.19	0.00	PEAK	100	118	VERTICAL
4 @	5544.000	107.41			70.40	33.80	3.21	0.00	PEAK	100	118	VERTICAL
5 @	5556.000	91.47			54.41	33.86	3.21	0.00	AVERAGE	100	118	VERTICAL

Item 4, 5 are the fundamental frequency at 5550 MHz.

Channel 134

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 @	5662.800	94.23			56.84	34.17	3.22	0.00	AVERAGE	100	120	VERTICAL
2	5677.200	114.61			77.18	34.22	3.22	0.00	PEAK	100	120	VERTICAL
3 @	5736.600	68.61	-5.69	74.30	30.96	34.42	3.23	0.00	PEAK	100	120	VERTICAL

Item 1, 2 are the fundamental frequency at 5670 MHz.

Note:

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

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

The limits above 5GHz 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 (specific distance [3m] / test distance [1.5m]) (dB);

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



Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	802.11a Ch 36, 40 / Ant. A
Test Date	Sep. 10, 2009		

Channel 36

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 @	5150.000	56.02	-3.98	60.00	19.86	33.07	3.09	0.00	AVERAGE	100	163	VERTICAL
2 @	5150.000	72.80	-7.20	80.00	36.63	33.07	3.09	0.00	PEAK	100	163	VERTICAL
3 @	5174.600	101.75			65.52	33.13	3.10	0.00	AVERAGE	100	163	VERTICAL
4	5184.800	114.18			77.95	33.13	3.10	0.00	PEAK	100	163	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	5146.800	65.62	-14.38	80.00	29.46	33.07	3.09	0.00	PEAK	100	200	VERTICAL
2 @	5150.000	53.87	-6.13	60.00	17.71	33.07	3.09	0.00	AVERAGE	100	200	VERTICAL
3 @	5197.600	115.06			78.79	33.16	3.11	0.00	PEAK	100	200	VERTICAL
4 @	5202.000	101.53			65.26	33.16	3.11	0.00	AVERAGE	100	200	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	802.11a Ch 60, 64 / Ant. A
Test Date	Sep. 11, 2009		

Channel 60

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 @	5293.200	100.81			64.33	33.34	3.13	0.00	AVERAGE	100	218	VERTICAL
2 @	5296.000	113.34			76.87	33.34	3.13	0.00	PEAK	100	218	VERTICAL
3 @	5350.000	54.59	-5.41	60.00	18.00	33.43	3.16	0.00	AVERAGE	100	218	VERTICAL
4	5350.000	66.47	-13.53	80.00	29.88	33.43	3.16	0.00	PEAK	100	218	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 @	5322.800	101.19			64.67	33.37	3.15	0.00	AVERAGE	100	280	VERTICAL
2	5324.400	113.84			77.32	33.37	3.15	0.00	PEAK	100	280	VERTICAL
3 @	5350.000	56.59	-3.41	60.00	20.00	33.43	3.16	0.00	AVERAGE	100	280	VERTICAL
4 @	5350.400	72.81	-7.19	80.00	36.22	33.43	3.16	0.00	PEAK	100	280	VERTICAL

Item 1, 2 are the fundamental frequency at 5320 MHz.



Temperature	24°C	Humidity	54%
Test Engineer	Allen Liu	Configurations	802.11a Ch 100, 140 / Ant. A
Test Date	Sep. 11, 2009		

Channel 100

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 @	5460.000	54.89	-5.11	60.00	18.09	33.61	3.19	0.00	AVERAGE	100	270	VERTICAL
2	5460.000	70.28	-9.72	80.00	33.48	33.61	3.19	0.00	PEAK	100	270	VERTICAL
3 @	5469.800	74.13	-0.17	74.30	37.30	33.64	3.19	0.00	PEAK	100	270	VERTICAL
4 @	5495.800	115.45			78.58	33.67	3.20	0.00	PEAK	100	270	VERTICAL
5	5502.000	101.68			64.77	33.70	3.20	0.00	AVERAGE	100	270	VERTICAL

Item 4, 5 are the fundamental frequency at 5500 MHz.

Channel 140

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 @	5699.800	104.12			66.62	34.27	3.22	0.00	AVERAGE	100	110	VERTICAL
2 -	5700.200	116.29			78.79	34.27	3.22	0.00	PEAK	100	110	VERTICAL
3 @	5726.000	73.31	-0.99	74.30	35.71	34.37	3.23	0.00	PEAK	100	110	VERTICAL

Item 1, 2 are the fundamental frequency at 5700 MHz.

Note:

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

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

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

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

4.8. Frequency Stability Measurement

4.8.1. Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emissions is maintained within the band of operation under all conditions of normal operation as specified in the user's manual or $\pm 20\text{ppm}$ (Draft n specification).

4.8.2. Measuring Instruments and Setting

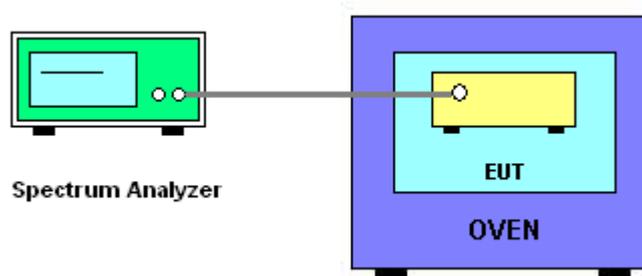
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Entire absence of modulation emissions bandwidth
RB	10 kHz
VB	10 kHz
Sweep Time	Auto

4.8.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. f_c is declaring of channel frequency. Then the frequency error formula is $(f_c - f) / f_c \times 10^6$ ppm and the limit is less than $\pm 20\text{ppm}$ (Draft n specification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature rule is $-30^\circ\text{C} \sim 50^\circ\text{C}$.
8. Measuring multiple antennas, the connector is required to link with spectrum analyser through a combiner.

4.8.4. Test Setup Layout



4.8.5. Test Deviation

There is no deviation with the original standard.

4.8.6. EUT Operation during Test

The EUT was programmed to be in continuously un-modulation transmitting mode.

4.8.7. Test Result of Frequency Stability

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
(V)	5300
126.50	5300.006700
110.00	5300.002800
93.50	5299.997800
Max. Deviation (MHz)	0.006700
Max. Deviation (ppm)	1.26

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
(°C)	5300
-30	5300.056400
-20	5300.041600
-10	5300.032900
0	5300.029400
10	5300.012200
20	5300.002900
30	5299.999700
40	5299.997800
50	5299.996400
Max. Deviation (MHz)	0.056400
Max. Deviation (ppm)	10.64

4.9. Antenna Requirements

4.9.1. 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.

4.9.2. Antenna Connector Construction

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

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Apr. 15, 2009	Conduction (CO04-HY)
LISN	MessTec	NNB-2/16Z	99079	9kHz – 30MHz	Mar. 23, 2009	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9703-1839	9kHz – 30MHz	Mar. 22, 2009	Conduction (CO04-HY)
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9kHz – 30MHz	Apr. 20, 2009	Conduction (CO04-HY)
ISN	SCHAFFNER	ISN T400	21653	9kHz – 30MHz	Jun. 11, 2009	Conduction (CO04-HY)
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	Conduction (CO04-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30 MHz - 1 GHz 3m	Jun. 07, 2009	Radiation (03CH03-HY)
Amplifier	SCHAFFNER	COA9231A	18667	9 kHz - 2 GHz	Jan. 23, 2009	Radiation (03CH03-HY)
Amplifier	Agilent	8449B	3008A02120	1 GHz - 26.5 GHz	Jul. 21, 2009	Radiation (03CH03-HY)
Amplifier	MITEQ	AMF-6F-260400	9121372	26.5 GHz - 40 GHz	Apr. 06, 2009*	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP30	100305	9 kHz - 40 GHz	Feb. 03, 2009	Radiation (03CH03-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz - 30 MHz	Jul. 28, 2008*	Radiation (03CH03-HY)
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30 MHz – 1 GHz	Sep. 26, 2009	Radiation (03CH03-HY)
Horn Antenna	EMCO	3115	6741	1GHz ~ 18GHz	Apr. 28, 2009	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15 GHz - 40 GHz	Jan.16, 2009	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30 MHz - 1 GHz	Jan. 05, 2009	Radiation (03CH03-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1 GHz - 40 GHz	Jan. 05, 2009	Radiation (03CH03-HY)
Turn Table	HD	DS 420	420/650/00	0 – 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSU26.5	100015	20Hz ~ 26.5GHz	Oct. 28, 2008	Conducted (TH01-HY)
Power Meter	R&S	NRVS	100444	DC ~ 40GHz	Jul. 31, 2009	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z51	100666	DC ~ 30GHz	Aug. 05, 2009	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z32	100057	30MHz ~ 6GHz	Jul. 31, 2009	Conducted (TH01-HY)
AC Power Source	HPC	HPA-500W	HPA-9100024	AC 0 ~ 300V	Jul. 12, 2009*	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Mar. 13, 2009	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-S	MAB0103-001	N/A	Aug. 06, 2009	Conducted (TH01-HY)
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 01, 2008	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 01, 2008	Conducted (TH01-HY)
Vector Signal Generator	R&S	SMU200A	102098	100kHz ~ 6GHz	Feb. 13, 2009	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Mar. 25, 2009	Conducted (TH01-HY)

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

* Calibration Interval of instruments listed above is two year.

NCR means Non-Calibration required.

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 nd 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. : L1190-070110

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 Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien,
Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria	: ISO/IEC 17025:2005
Accreditation Number	: 1190
Originally Accredited	: December 15, 2003
Effective Period	: January 10, 2007 to January 09, 2010
Accredited Scope	: Testing Field, see described in the Appendix
Specific Accreditation Program	: Accreditation Program for Designated Testing Laboratory for Commodities Inspection : Accreditation Program for Telecommunication Equipment Testing Laboratory



Jay-San Chen
President, Taiwan Accreditation Foundation
Date : January 10, 2007

PI, total 9 pages

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