

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 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 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

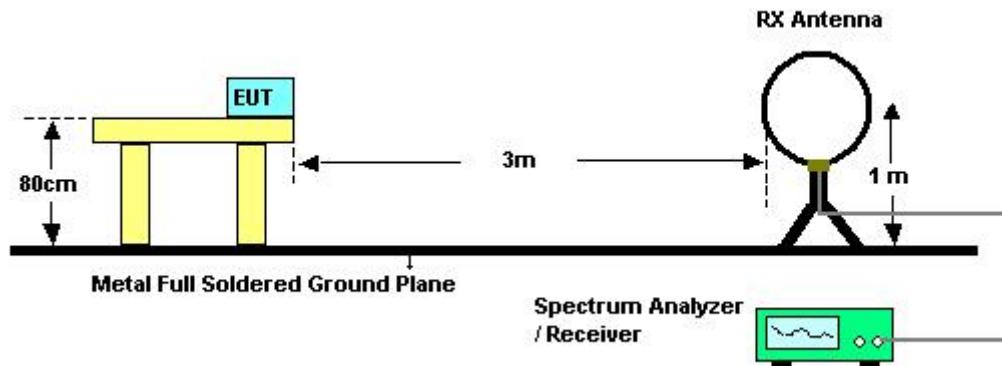
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.6.3. Test Procedures

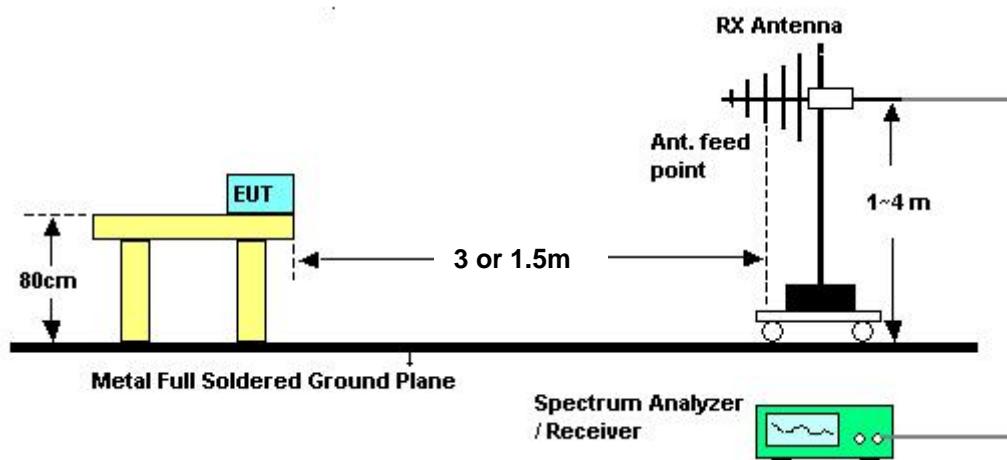
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting 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	26°C	Humidity	56%
Test Engineer	Jax Chen	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.

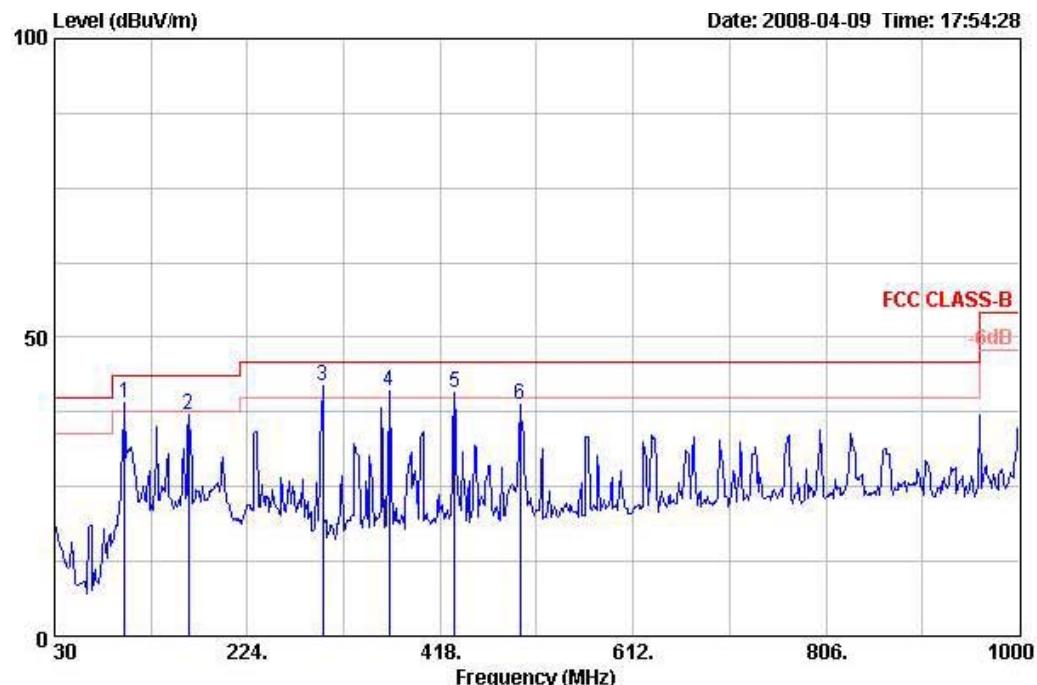
Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);

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

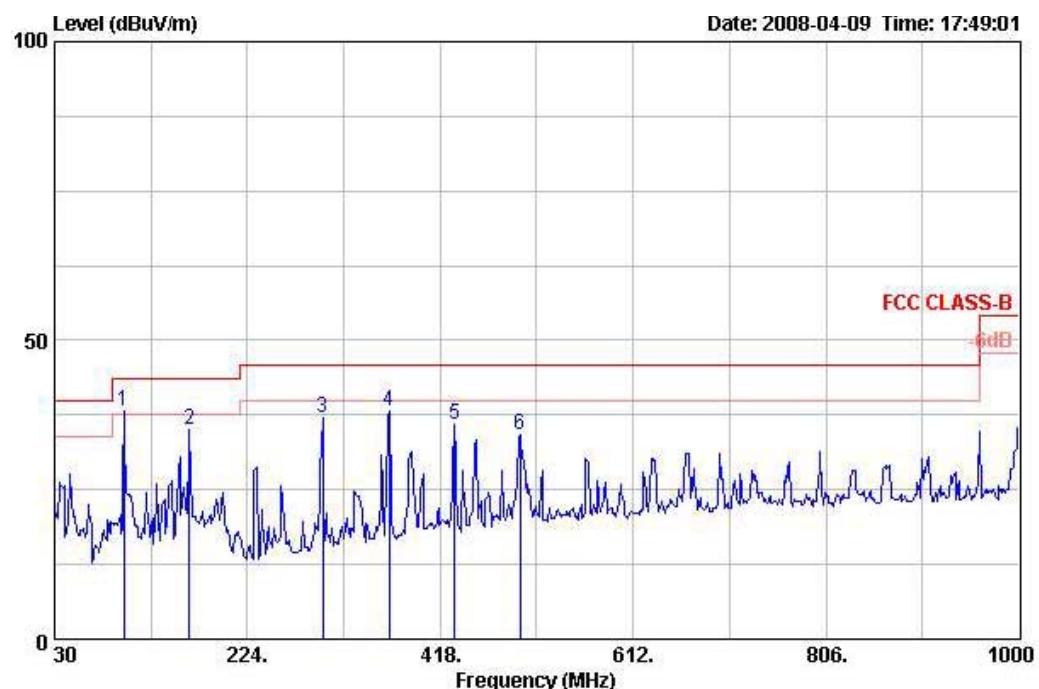
4.6.8. Results of Radiated Emissions (30MHz~1GHz)

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Normal Link

Horizontal



Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant		
		Line	Limit	Level	Factor	Factor	Loss			Pos	Pol/Phase
		MHz	dBuV/m		dB	dBuV/m	dB/m			deg	cm
1 @	100.810	38.91	-4.59	43.50	54.94	10.37	27.60	1.20	Peak	0	100 HORIZONTAL
2 @	164.830	37.14	-6.36	43.50	54.04	8.85	27.27	1.52	Peak	0	100 HORIZONTAL
3 @	299.660	41.86	-4.14	46.00	53.76	12.90	26.90	2.10	Peak	0	100 HORIZONTAL
4 @	366.590	40.98	-5.02	46.00	51.52	14.60	27.37	2.23	Peak	0	100 HORIZONTAL
5 @	432.550	40.79	-5.21	46.00	49.68	16.37	27.76	2.50	Peak	0	100 HORIZONTAL
6 @	498.510	38.72	-7.28	46.00	46.87	17.24	28.09	2.70	Peak	0	100 HORIZONTAL

Vertical


Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	
		Limit	Line	Level	Factor	Factor	Loss			Pos
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm	Pol/Phase
1 @	99.840	38.30	-5.20	43.50	54.45	10.25	27.60	1.20 Peak	0	400 VERTICAL
2 @	165.800	35.17	-8.33	43.50	52.10	8.82	27.27	1.53 Peak	0	400 VERTICAL
3 @	299.660	37.03	-8.97	46.00	48.93	12.90	26.90	2.10 Peak	0	400 VERTICAL
4 @	366.590	38.17	-7.83	46.00	48.70	14.60	27.37	2.23 Peak	0	400 VERTICAL
5 @	432.550	35.79	-10.21	46.00	44.68	16.37	27.76	2.50 Peak	0	400 VERTICAL
6 @	498.510	34.13	-11.87	46.00	42.28	17.24	28.09	2.70 Peak	0	400 VERTICAL

Note:

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

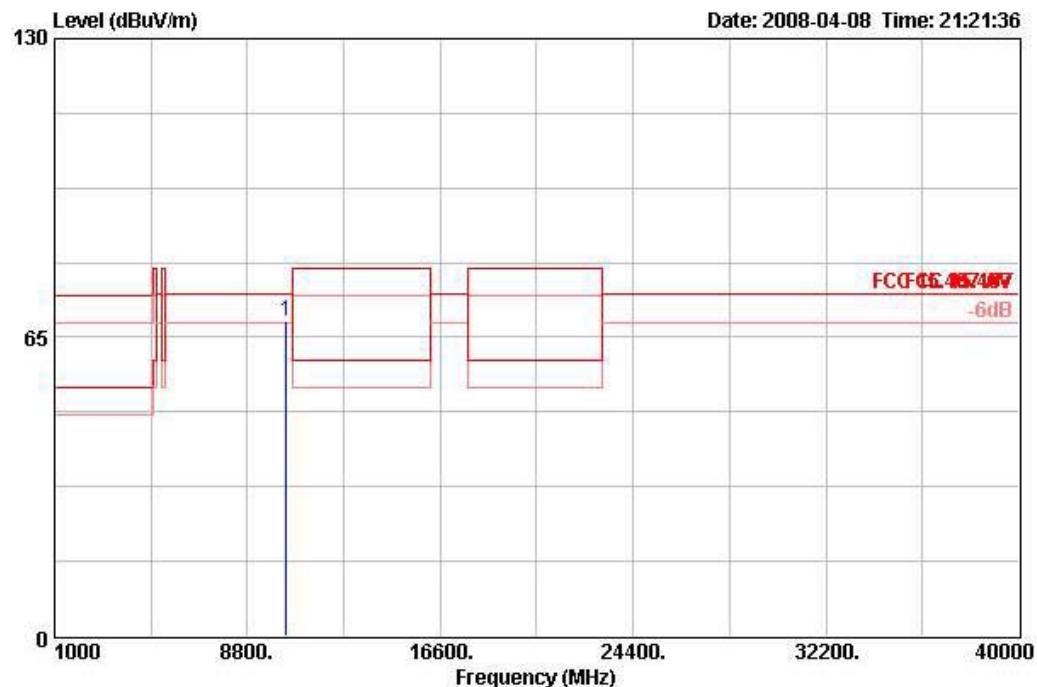
Emission level (dBuV/m) = 20 log Emission level (uV/m).

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

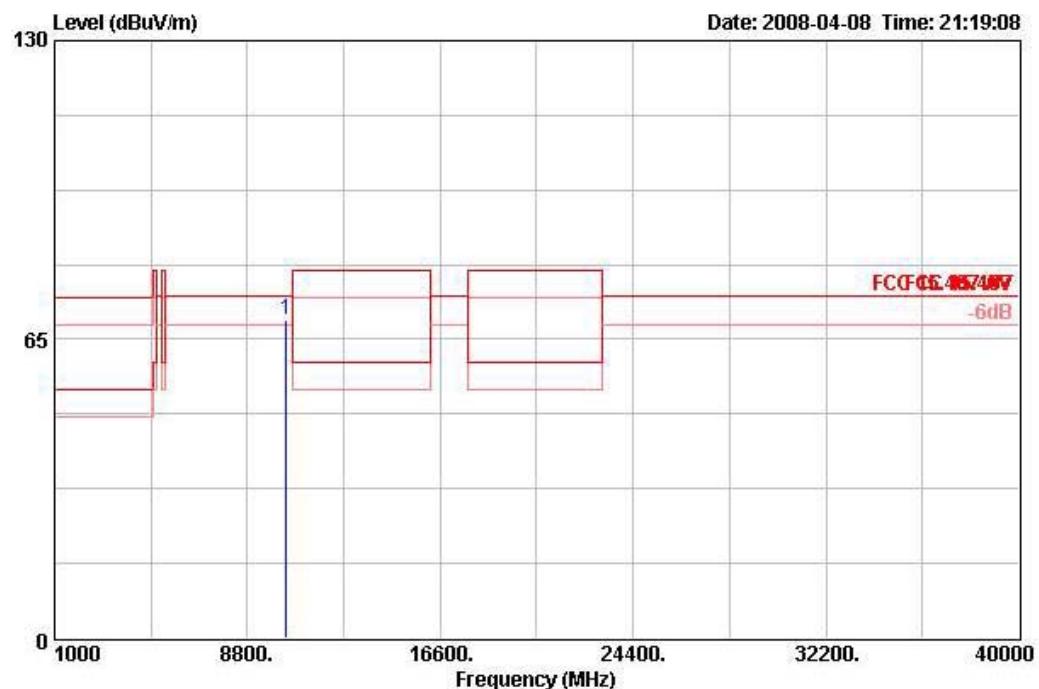
4.6.9. Results for Radiated Emissions (1GHz~40GHz)

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 20MHz Ch 36 Ant. A + Ant. C

Horizontal

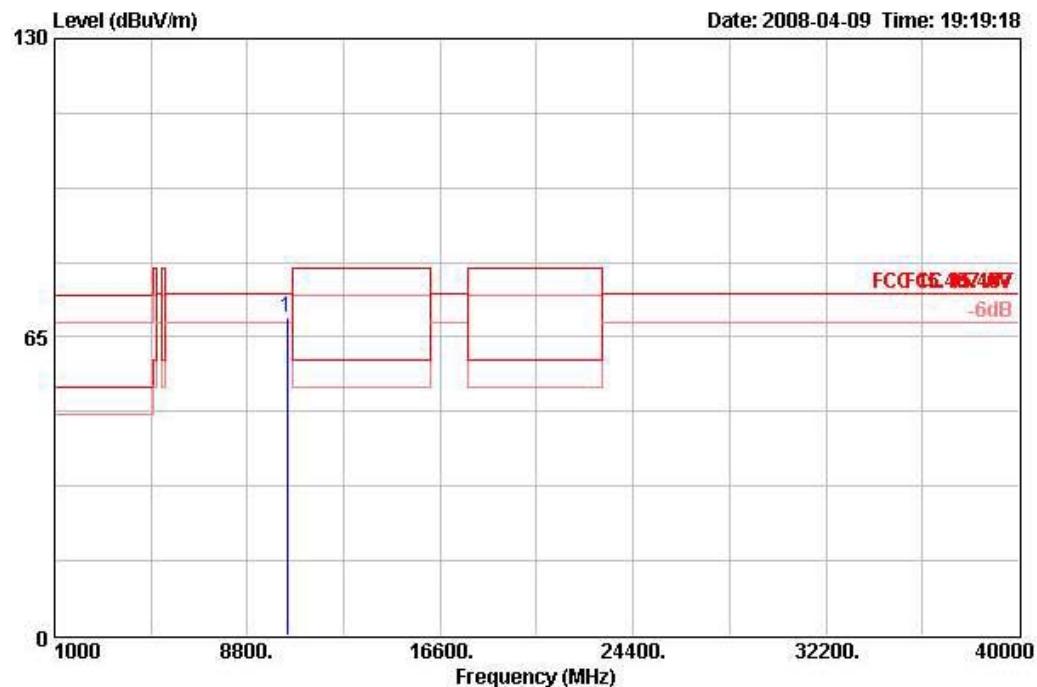


Freq MHz	Level dBuV/m	Over	Limit	Read	Antenna	Preamp	Cable	Table Pos	Ant Pos Pol/Phase
		Limit	Line	Level	Factor	Factor	Loss		
10360.600	68.57	-5.73	74.30	55.22	38.49	35.36	10.22	67	113 HORIZONTAL

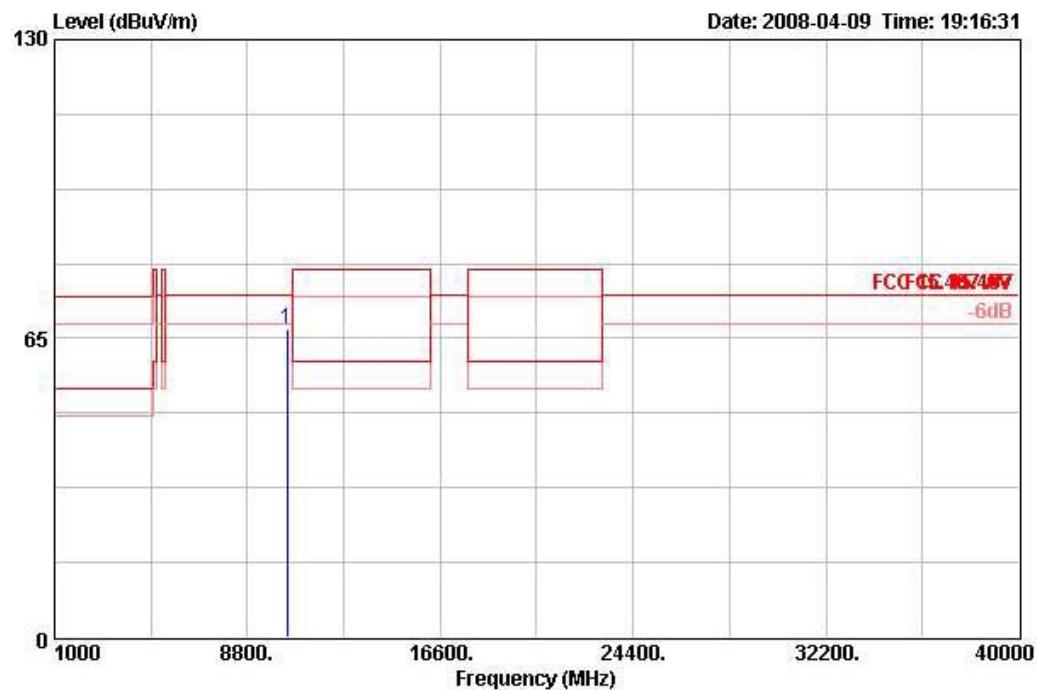
Vertical


Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	
		Limit	Line	Level	Factor	Factor	Loss			Pol/Phase
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm	
10360.700	69.17	-5.13	74.30	55.82	38.49	35.36	10.22	PERK	22	110 VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 20MHz Ch 40 Ant. A + Ant. C

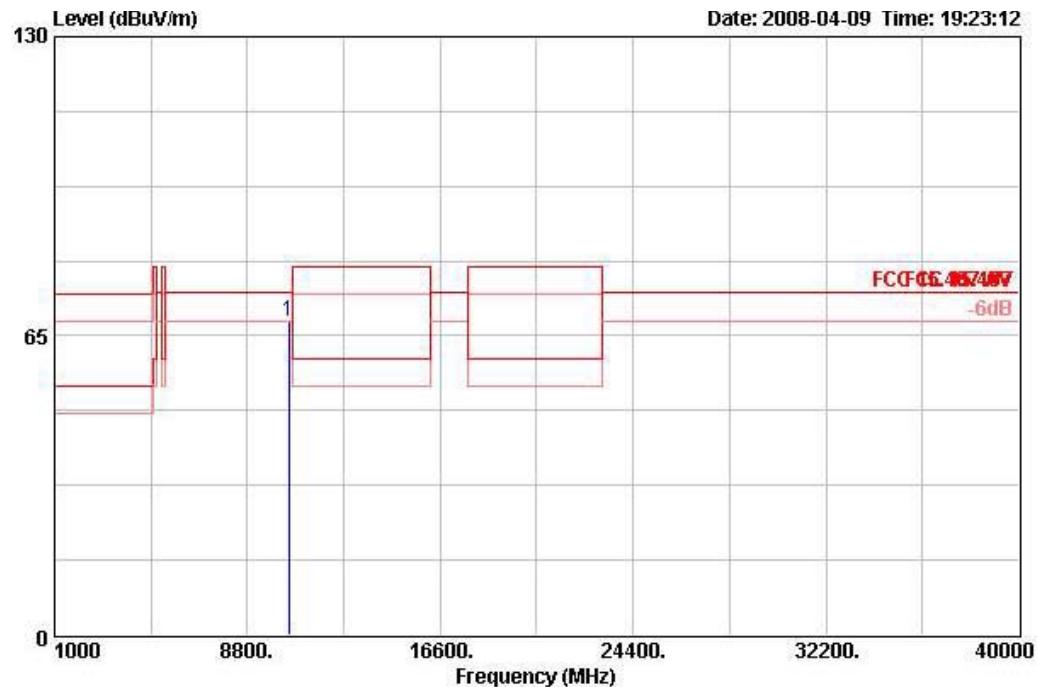
Horizontal


Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	
		Limit	Line	Level	Factor	Factor	Loss			Pos
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm	Pol/Phase
10393.000	69.38	-4.92	74.30	55.95	38.52	35.33	10.25	PERK	17	113 HORIZONTAL

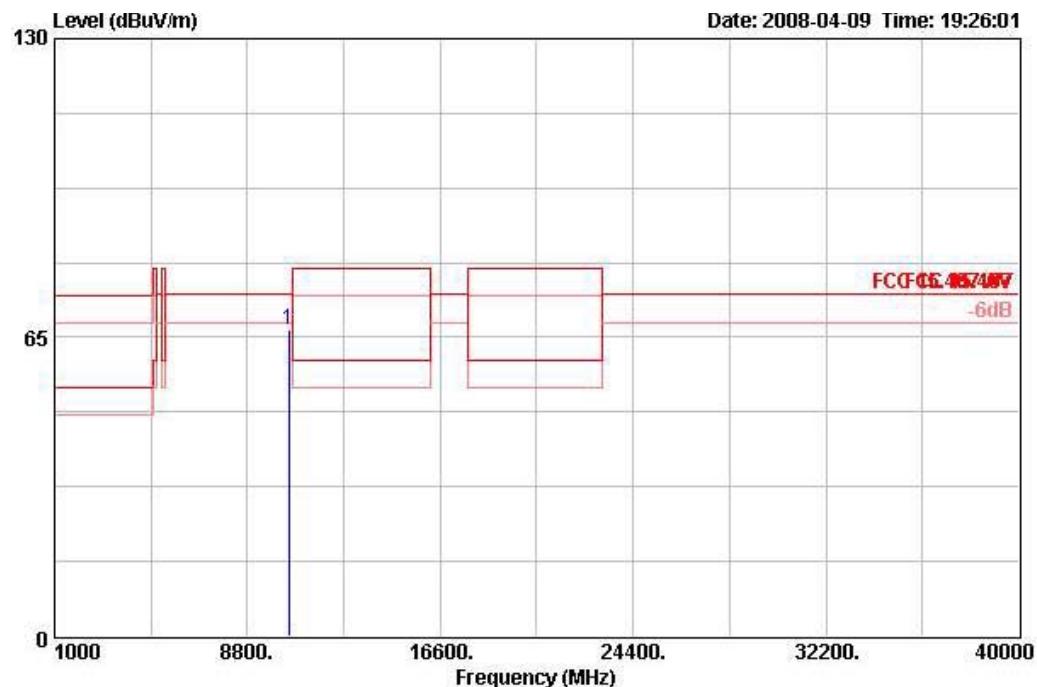
Vertical


Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m			Pos Pol/Phase
10400.640	66.95	-7.35	74.30	53.47	38.52	35.30	10.27	PEAK	29	112 VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 20MHz Ch 48 Ant. A + Ant. C

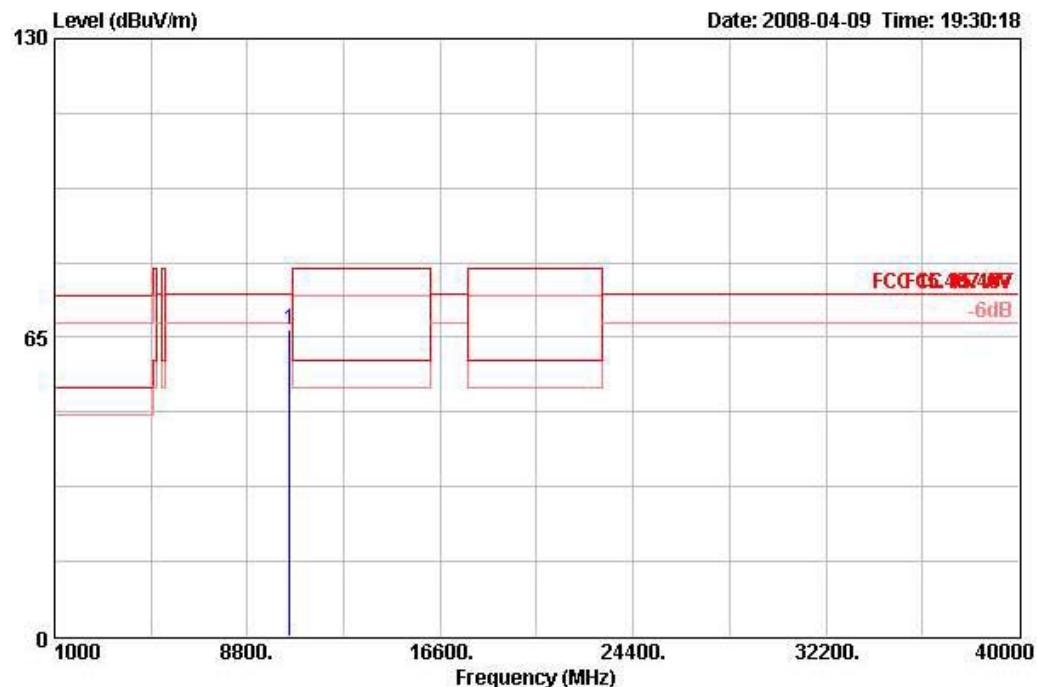
Horizontal


Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	
		Limit	Line	Level	Factor	Factor	Loss			Pos
10480.080	68.20	-6.10	74.30	54.48	38.59	35.21	10.35	PERK	113	HORIZONTAL

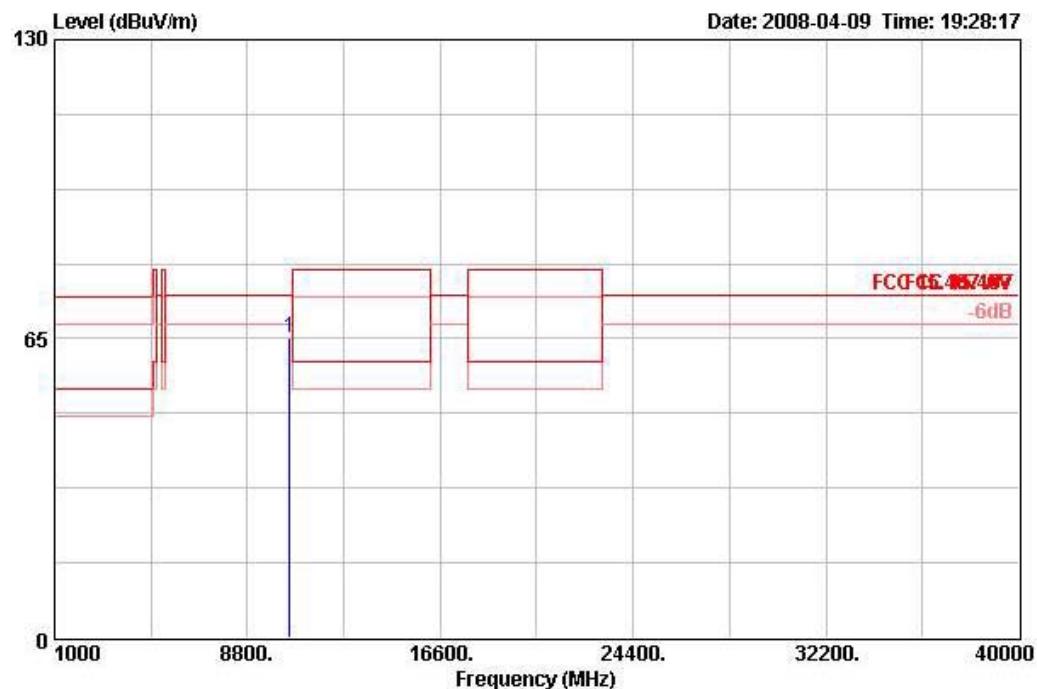
Vertical


Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	
		Limit	Line	Level	Factor	Factor	Loss			Pos
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm	Pol/Phase
10480.560	66.65	-7.65	74.30	52.93	38.59	35.21	10.35	PEAK	30	119 VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 20MHz Ch 52 Ant. A + Ant. C

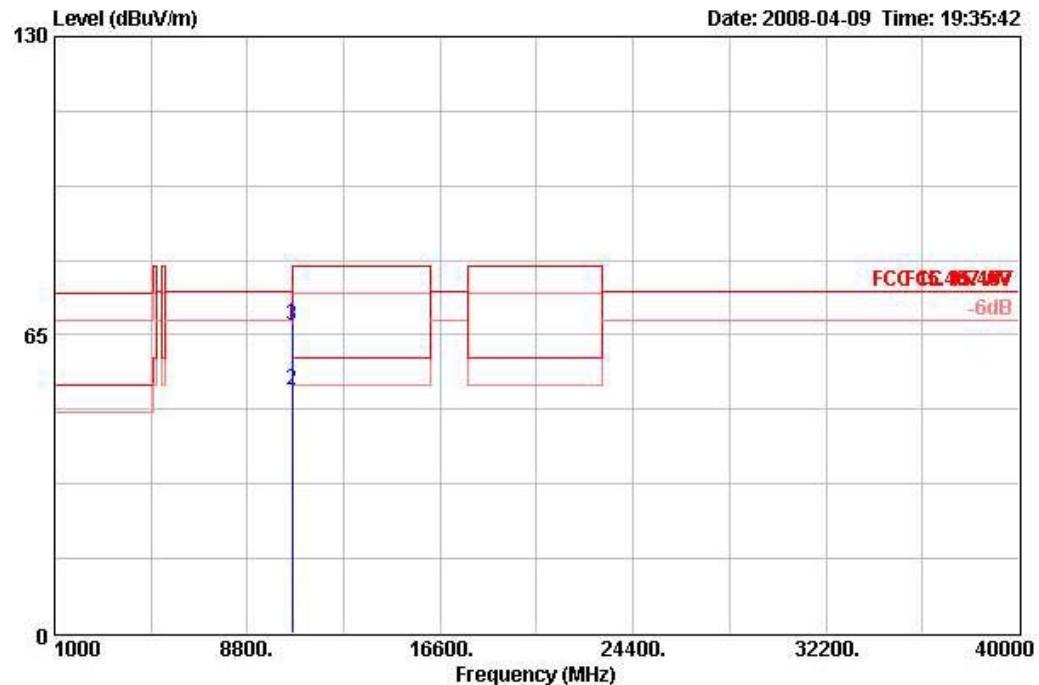
Horizontal


Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	
		Limit	Line	Level	Factor	Factor	Loss			Pos
10519.920	66.53	-7.77	74.30	52.75	38.59	35.18	10.37	PERK	31	45 HORIZONTAL

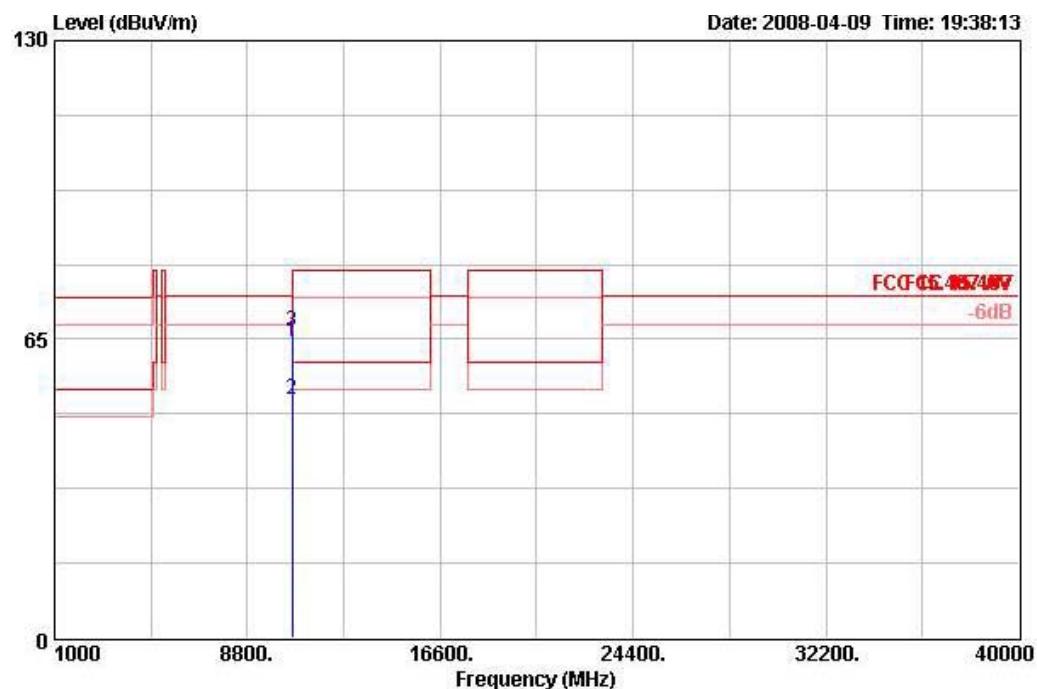
Vertical


Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	
		Limit	Line	Level	Factor	Factor	Loss			Pol/Phase
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm	
10517.360	65.03	-9.27	74.30	51.25	38.59	35.18	10.37	PERK	30	120 VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 20MHz Ch 60 Ant. A + Ant. C

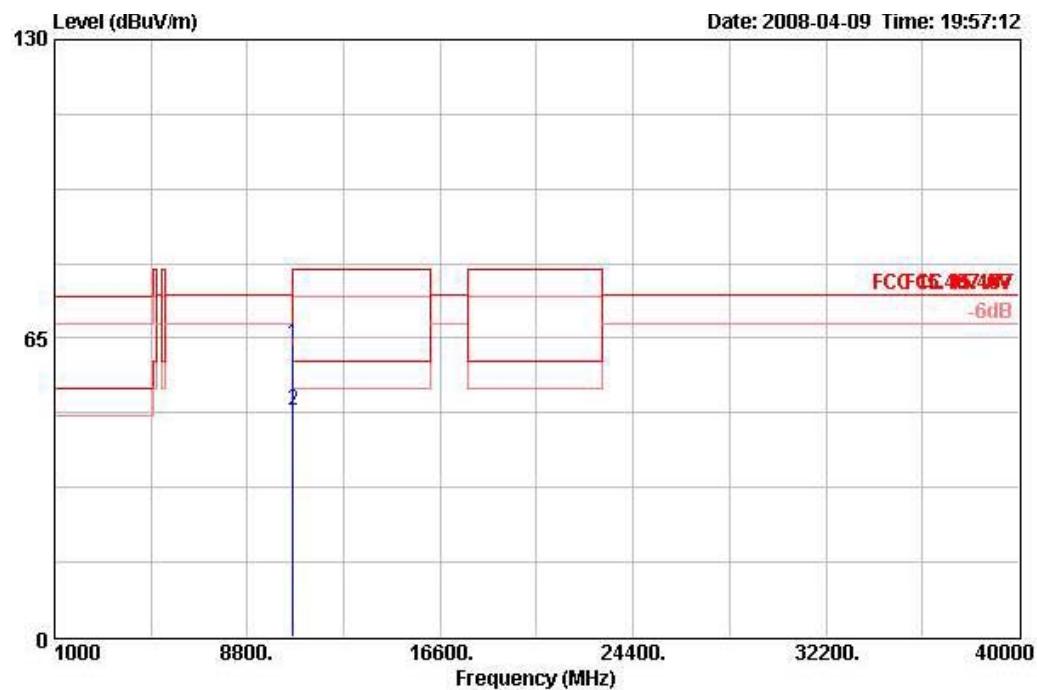
Horizontal


Freq	Level	Over Limit		Read Line		Antenna Factor	Preamp Factor	Cable Loss		Remark	Table Pos	Ant Pos	Pol/Phase
		MHz	dBuV/m	dB	dBuV/m			dBuV	dB/m	dB			
1 @	10599.840	67.56	-6.74	74.30	53.75	38.56	35.10	10.36	PERK		29	109	HORIZONTAL
2 @	10600.000	52.98	-7.02	60.00	39.16	38.56	35.10	10.36	AVERAGE		29	109	HORIZONTAL
3 @	10600.000	66.95	-13.05	80.00	53.14	38.56	35.10	10.36	PERK		29	109	HORIZONTAL

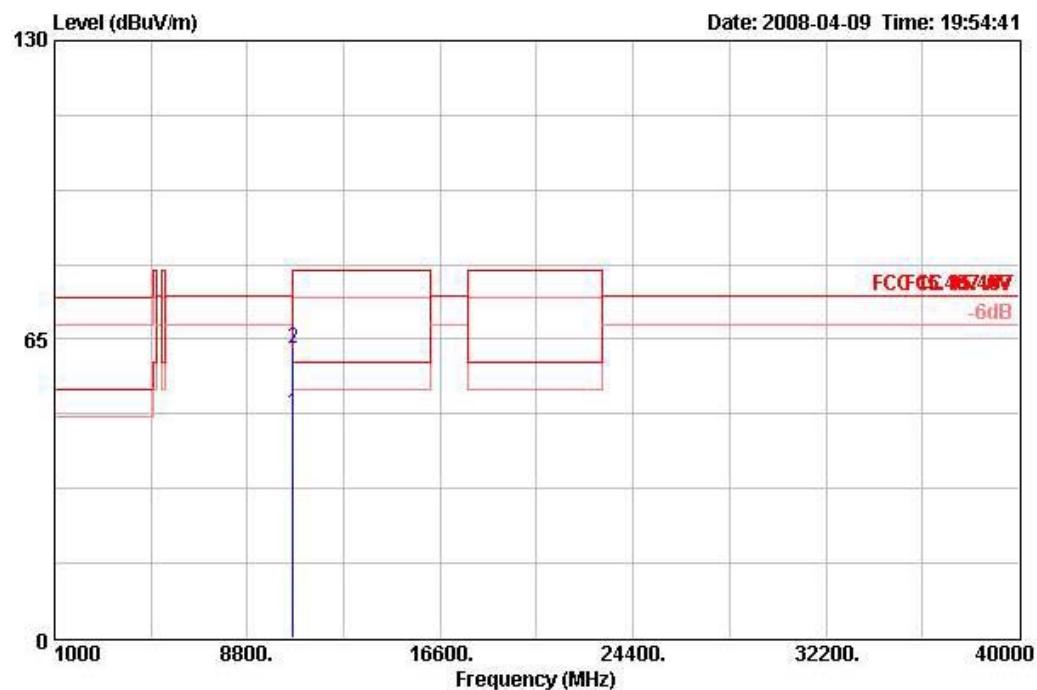
Vertical


Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	
		Limit	Line	Level	Factor	Factor	Loss			Pos
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm	Pol/Phase
1 @	10599.960	64.27	-10.03	74.30	50.46	38.56	35.10	10.36	PERK	7 111 VERTICAL
2 @	10600.000	51.93	-8.07	60.00	38.12	38.56	35.10	10.36	AVERAGE	7 111 VERTICAL
3 @	10600.640	66.79	-13.21	80.00	52.98	38.56	35.10	10.36	PERK	7 111 VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 20MHz Ch 64 Ant. A + Ant. C

Horizontal


Freq	Level	Over Limit	Limit	Read		Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
				MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	deg	cm
1 @	10637.610	63.80	-16.20	80.00	53.45	38.54	35.05	6.86	PERK	27	108	HORIZONTAL
2 @	10640.150	49.31	-10.69	60.00	38.96	38.54	35.05	6.86	AVERAGE	27	108	HORIZONTAL

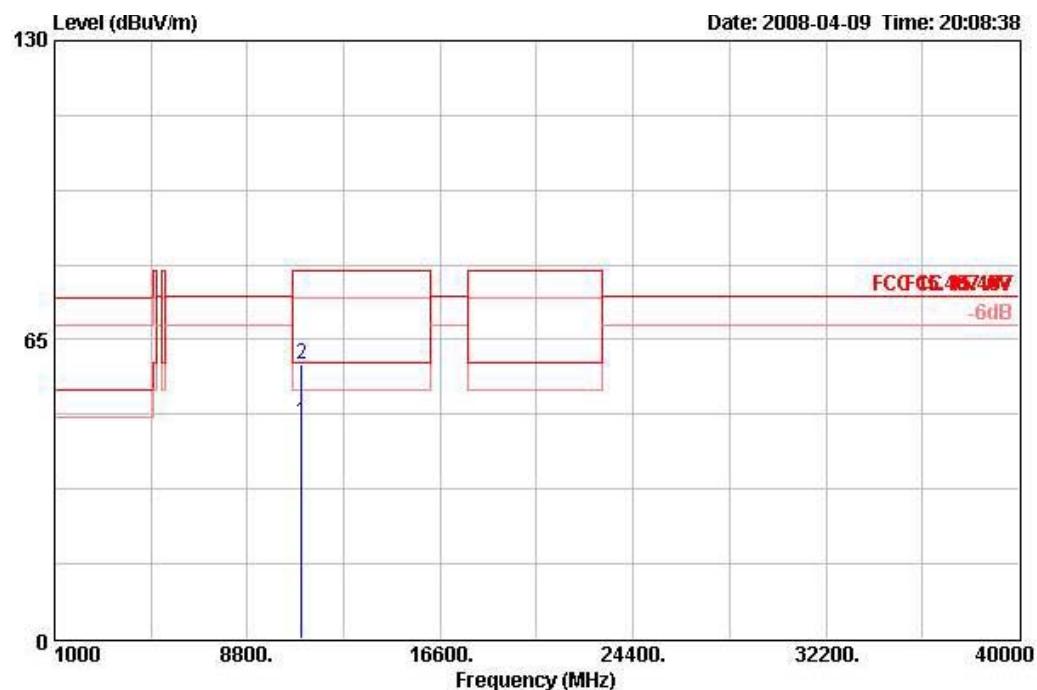
Vertical


Freq	Level	Over Limit	Limit	Read		Antenna	Preamp	Cable	Table	Ant	
				Line	Level						
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm		
1 @	10638.850	48.96	-11.04	60.00	38.61	38.54	35.05	6.86	AVERAGE	191	111 VERTICAL
2 @	10640.640	62.89	-17.11	80.00	52.54	38.54	35.05	6.86	PEAK	191	111 VERTICAL

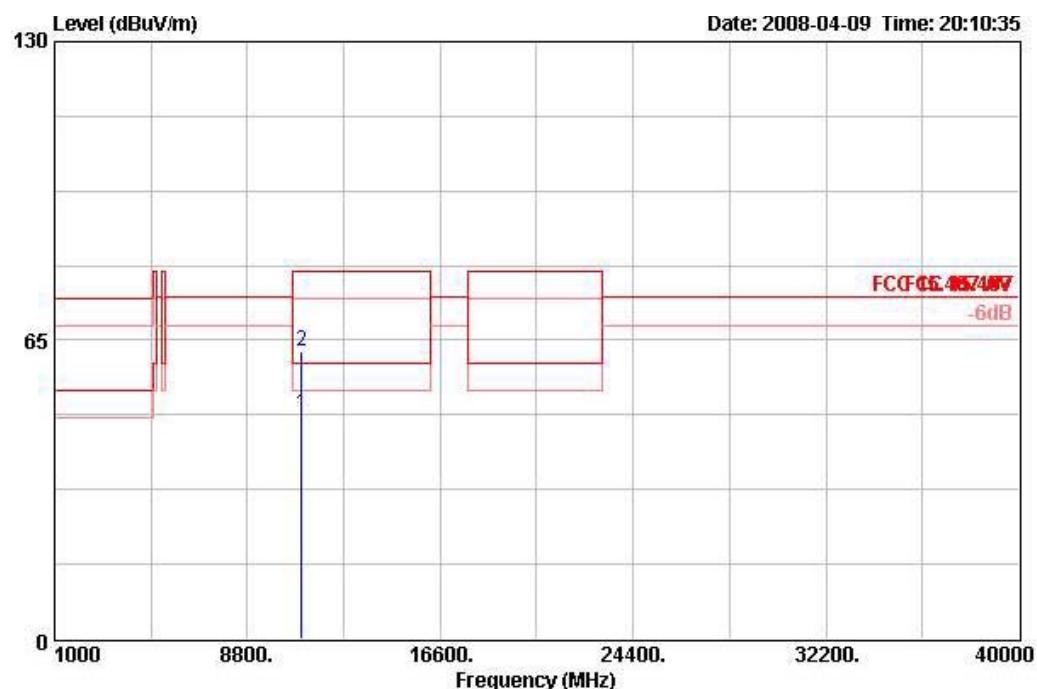


Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 20MHz Ch 100 Ant. A + Ant. C

Horizontal

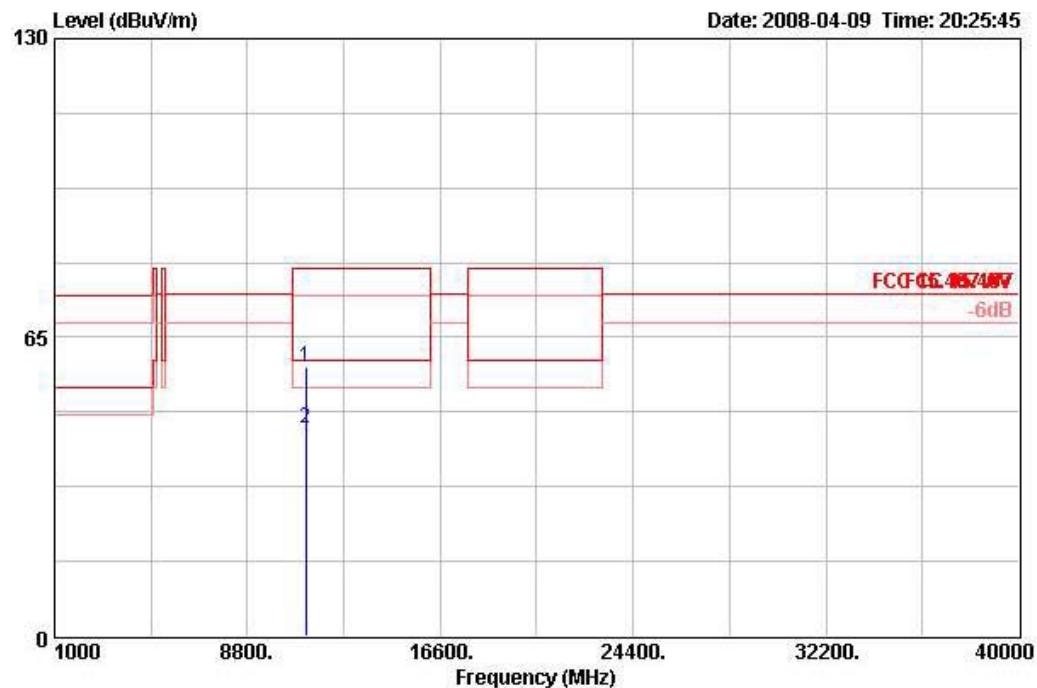


Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Int		
		Limit	Line	Level	Factor	Factor	Loss			Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm	
1 @	10999.150	46.92	-13.08	60.00	36.28	38.40	34.69	6.93	AVERAGE	5	107 HORIZONTAL
2 @	11000.880	59.69	-20.31	80.00	49.05	38.40	34.69	6.93	PERK	5	107 HORIZONTAL

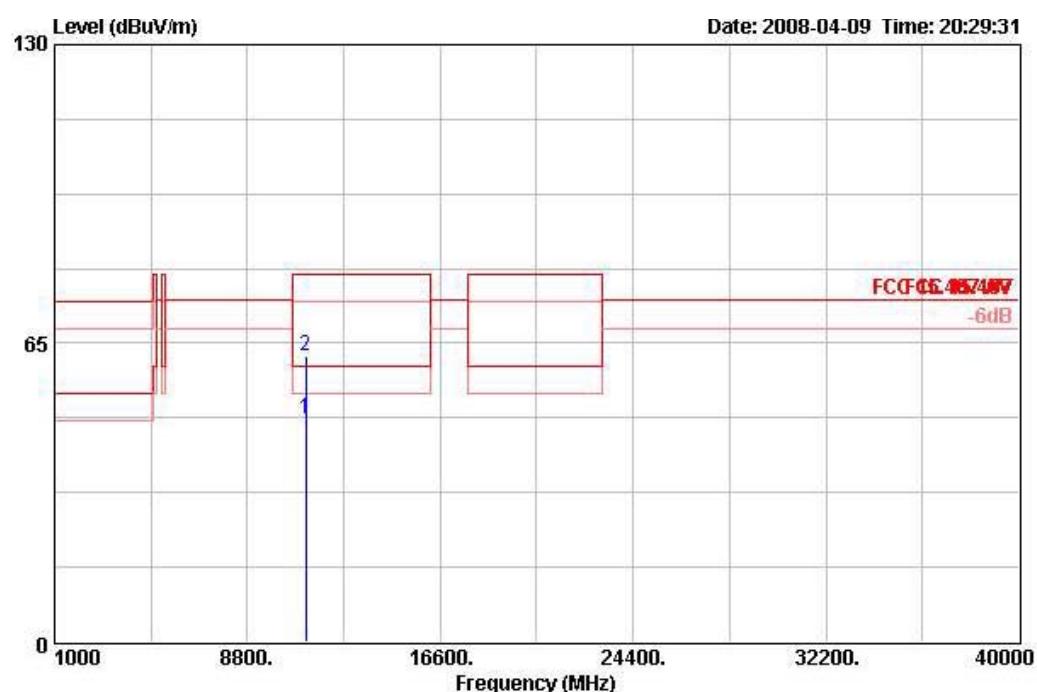
Vertical


Freq	Level	Over Limit		Read		Antenna Factor	Preamp Factor	Cable Loss		Remark	Table Pos	Ant Pos	Pol/Phase
		MHz	dBuV/m	dB	dBuV/m			dBuV	dB/m	dB			
1 @	10998.920	48.80	-11.20	60.00	38.16	38.40	34.69	6.93	AVERAGE		17	100	VERTICAL
2 @	11000.610	62.55	-17.45	80.00	51.91	38.40	34.69	6.93	PEAK		17	100	VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 20MHz Ch 116 Ant. A + Ant. C

Horizontal


Freq	Level	Over	Limit	Read		Antenna	Preamp	Cable	Table	Ant	
		Limit	Line	Level	Factor	Factor	Loss	Remark			Pos
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm		
1	11158.900	58.45	-21.55	80.00	47.66	38.43	34.71	7.06 PERK	126	104	HORIZONTAL
2 @	11159.830	45.16	-14.84	60.00	34.38	38.43	34.71	7.06 AVERAGE	126	104	HORIZONTAL

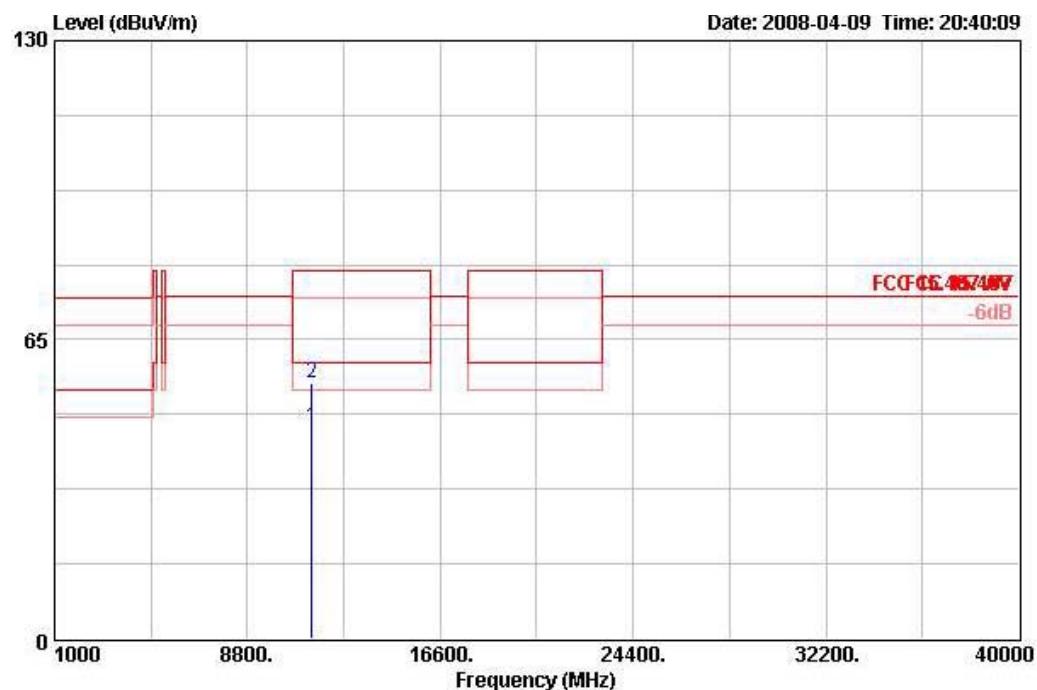
Vertical


Freq	Level	Over Limit		Read		Antenna Factor	Preamp Factor	Cable Loss		Remark	Table Pos	Ant Pos	Pol/Phase
		MHz	dBuV/m	dB	dBuV/m			dBuV	dB/m	dB			
1 @	11159.690	48.69	-11.31	60.00	37.91	38.43	34.71	7.06	AVERAGE		38	100	VERTICAL
2 @	11160.640	62.17	-17.83	80.00	51.39	38.43	34.71	7.06	PEAK		38	100	VERTICAL

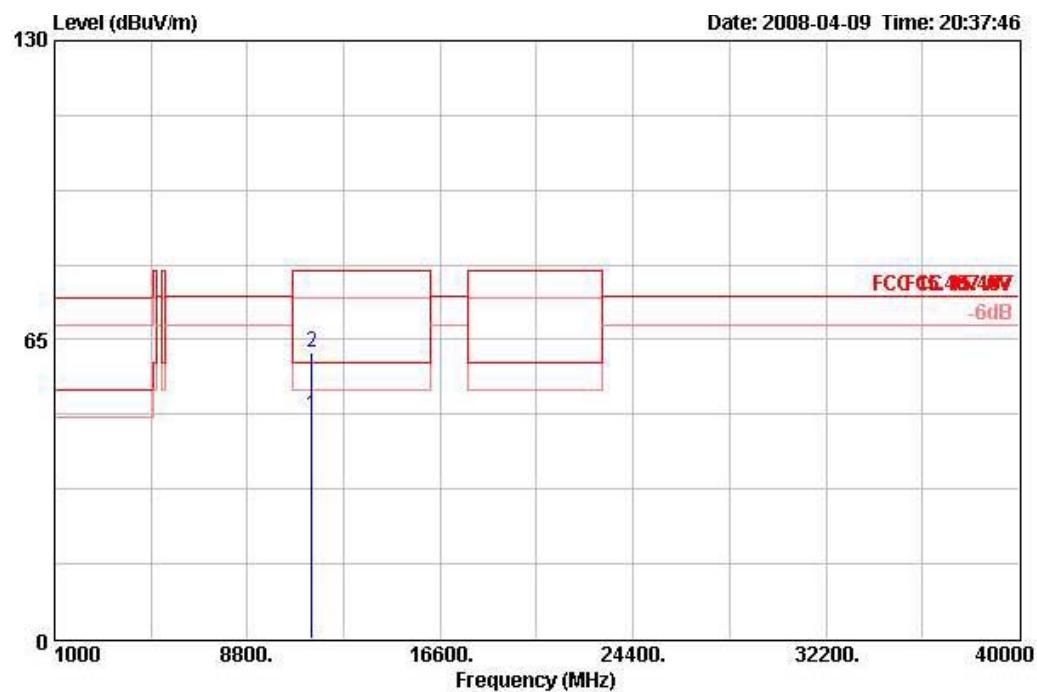


Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 20MHz Ch 140 Ant. A + Ant. C

Horizontal

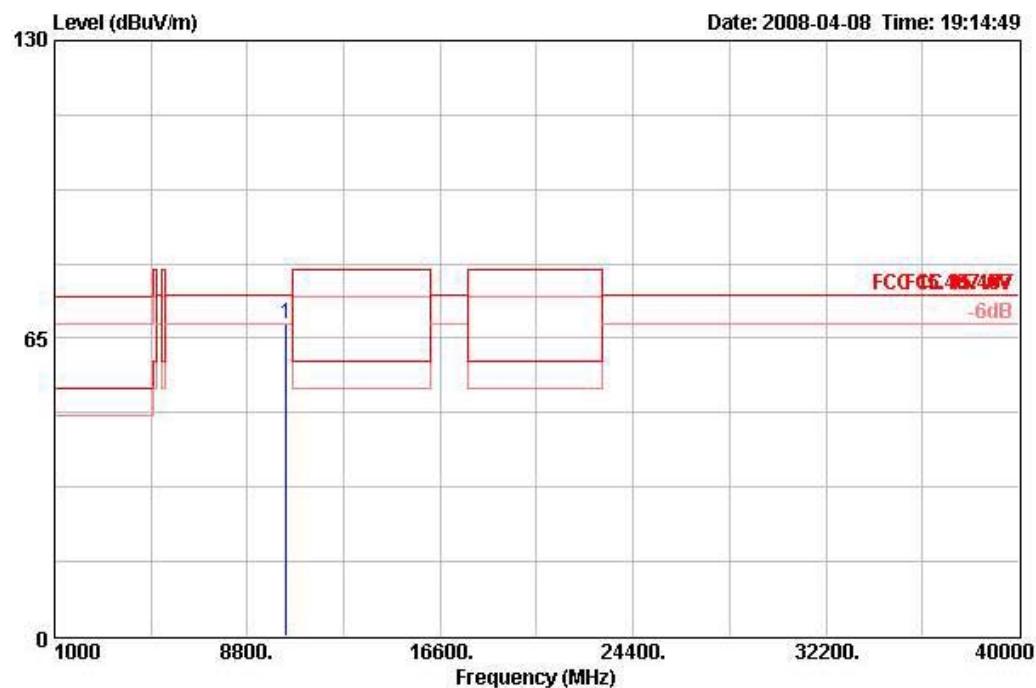


Freq	Level	Over Limit		Read		Antenna		Preamp		Cable		Table Pos	Ant Pos	Int Pol/Phase
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm			
1 @	11400.250	46.03	-13.97	60.00	35.02	38.48	34.74	7.27	AVERAGE	318	100	HORIZONTAL		
2	11400.250	55.40	-24.60	80.00	44.40	38.48	34.74	7.27	PEAK	318	100	HORIZONTAL		

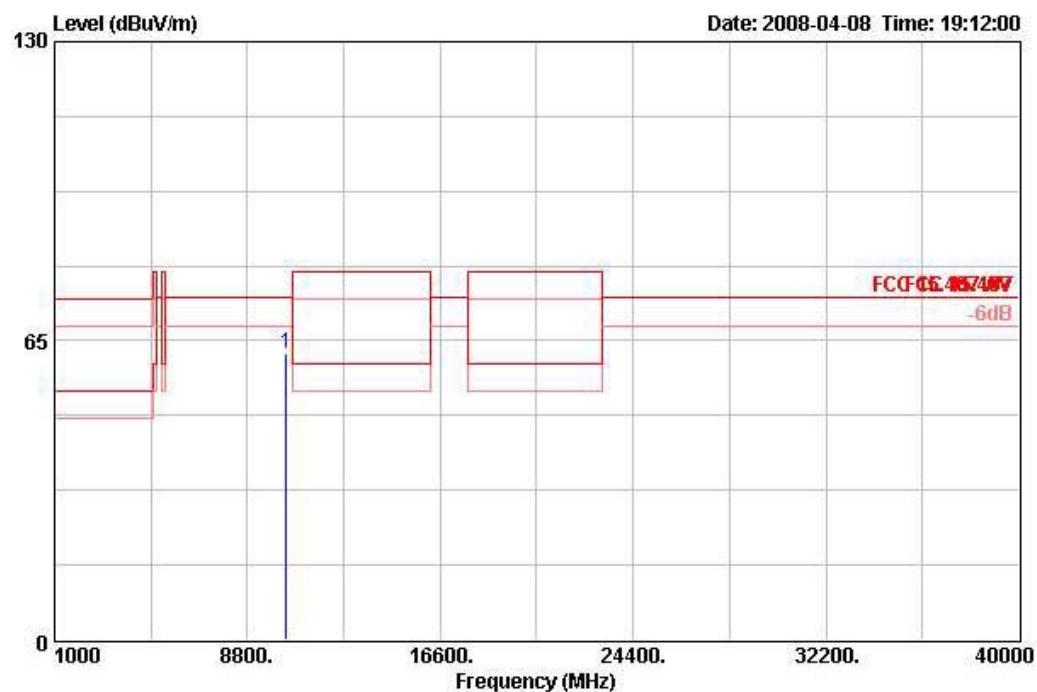
Vertical


Freq	Level	Over Limit		Read Line		Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
		MHz	dBuV/m	dB	dBuV/m							
1 @	11398.950	48.35	-11.65	60.00	37.34	38.48	34.74	7.27	AVERAGE	297	100	VERTICAL
2 @	11400.800	62.28	-17.72	80.00	51.27	38.48	34.74	7.27	PEAK	297	100	VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 40MHz Ch 38 Ant. A + Ant. C

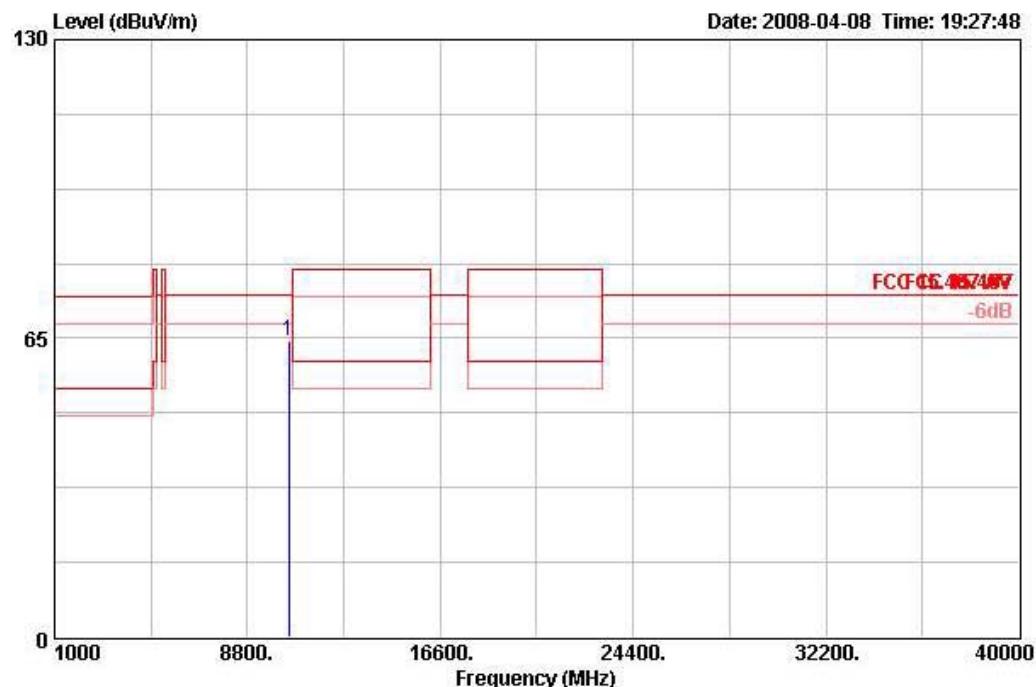
Horizontal


Freq MHz	Level dBuV/m	Over Limit	Limit dB	Read Line dBuV	Antenna Level dBuV	Preamp Factor	Cable Loss dB	Table Pos	Ant Pos deg	Ant Pos cm	Pol/Phase
		Limit	dB	Line dBuV/m	dB/m	dB	dB	deg	cm		
10380.600	68.05	-6.25	74.30	54.63	38.51	35.33	10.25	PERK	30	112	HORIZONTAL

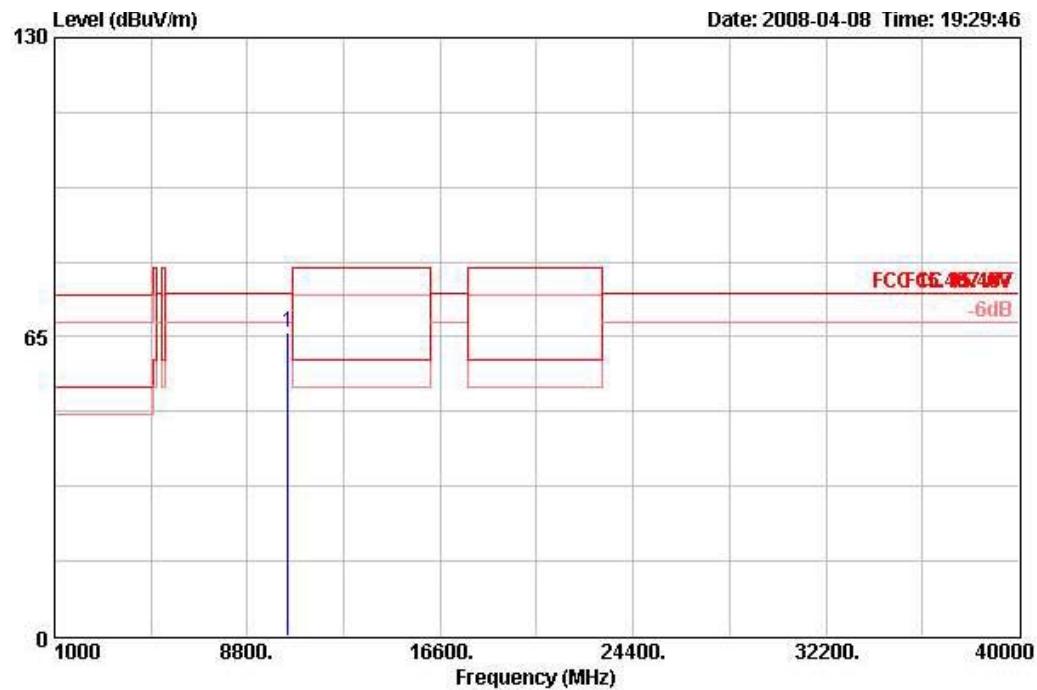
Vertical


Freq	Level	Over Limit		Read		Ant	Table	Pos	Pos	Pol/Phase
		MHz	dBuV/m	dB	Line	Antenna	Preamp	Cable	Pos	Pol/Phase
									deg	cm
10378.670	62.25	-12.05	74.30	48.83	38.51	35.33	10.25	PERK	26	160 VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 40MHz Ch 46 Ant. A + Ant. C

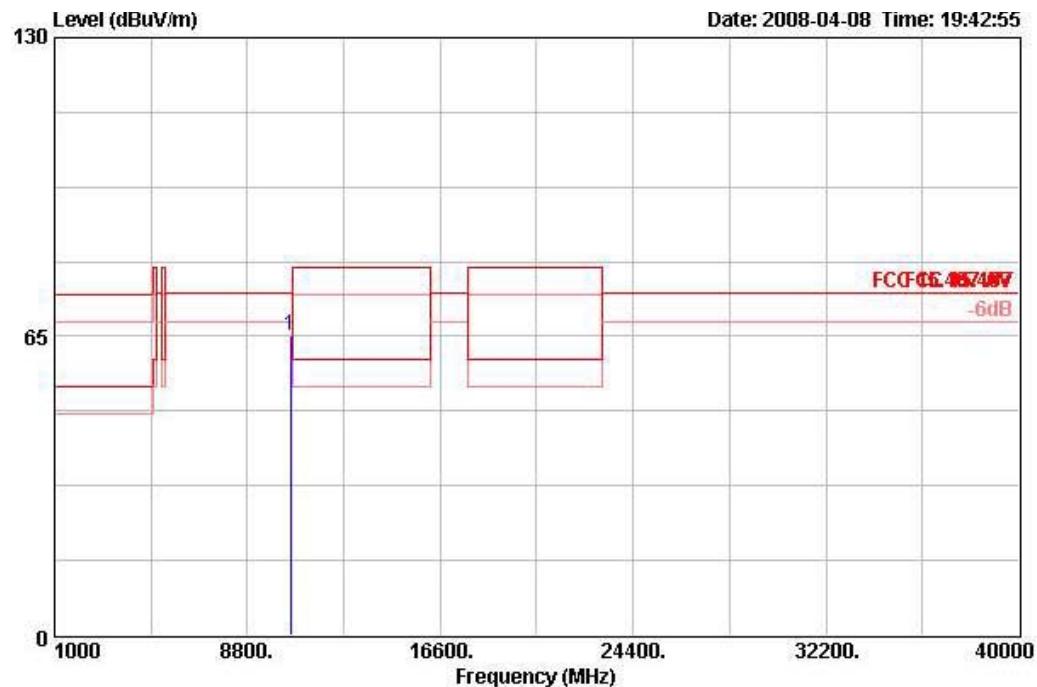
Horizontal


Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	
		Limit	Line	Level	Factor	Factor	Loss			Pos
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm	Pol/Phase
10462.900	64.44	-9.86	74.30	50.79	38.57	35.24	10.32	PERK	66	116 HORIZONTAL

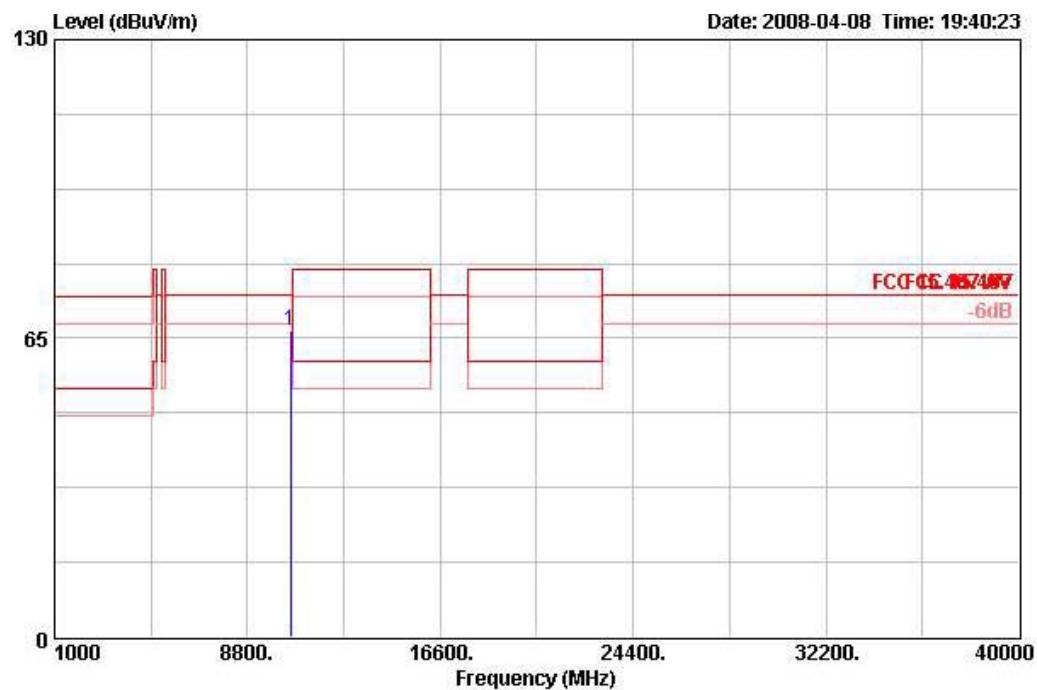
Vertical


Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant		
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m			Pos	Pol/Phase
10452.600	66.02	-8.28	74.30	52.38	38.56	35.24	10.32	PEAK	20	115	VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Wayne	Configurations	Draft n MCS8 40MHz Ch 54 Ant. A + Ant. C

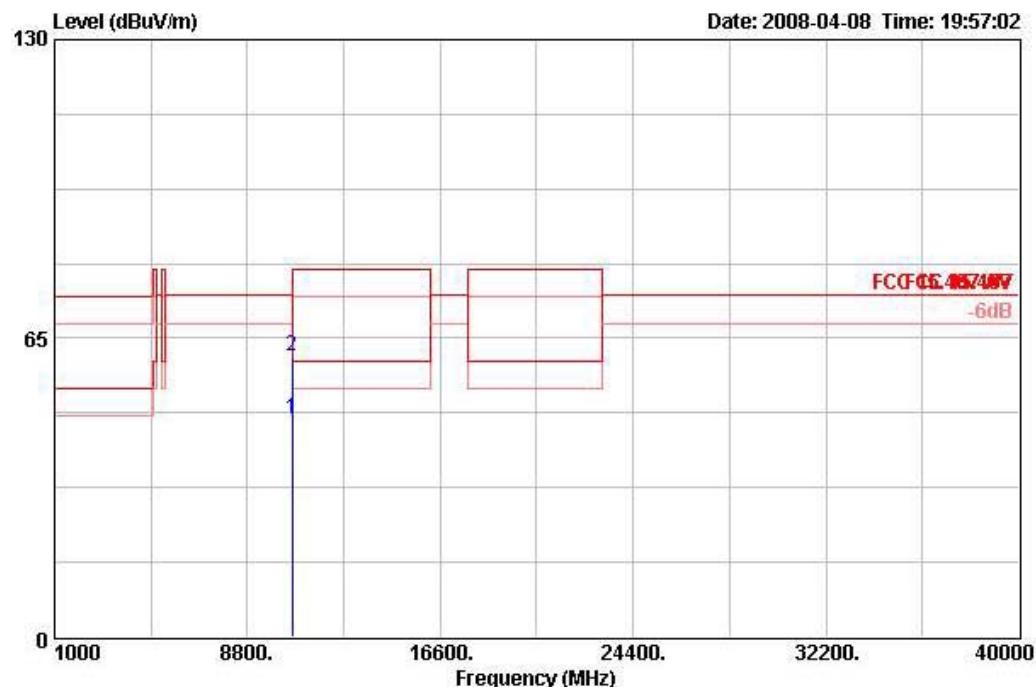
Horizontal


Freq MHz	Level dBuV/m	Over	Limit	Read	Antenna	Preamp	Cable	Table Pos	Ant Pos Pol/Phase
		Limit	Line	Level	Factor	Factor	Loss		
10540.840	65.24	-9.06	74.30	51.45	38.59	35.15	10.37	7	120 HORIZONTAL

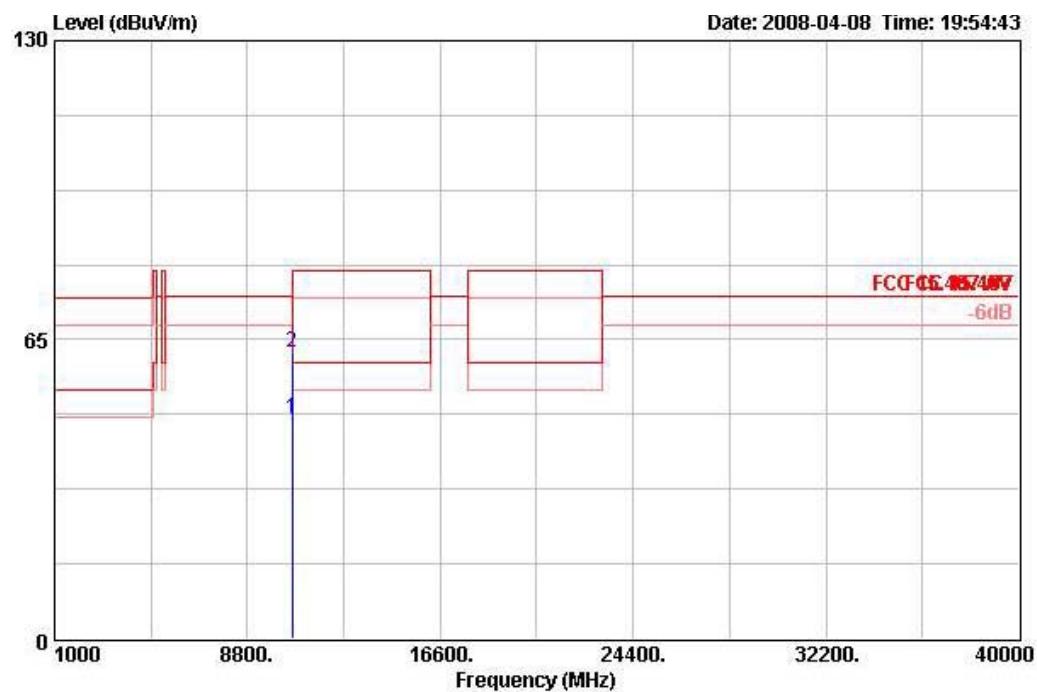
Vertical


Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Int		
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m			Pos	Pol/Phase
10544.080	66.57	-7.73	74.30	52.77	38.59	35.15	10.37	PEAK	20	115	VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 40MHz Ch 62 Ant. A + Ant. C

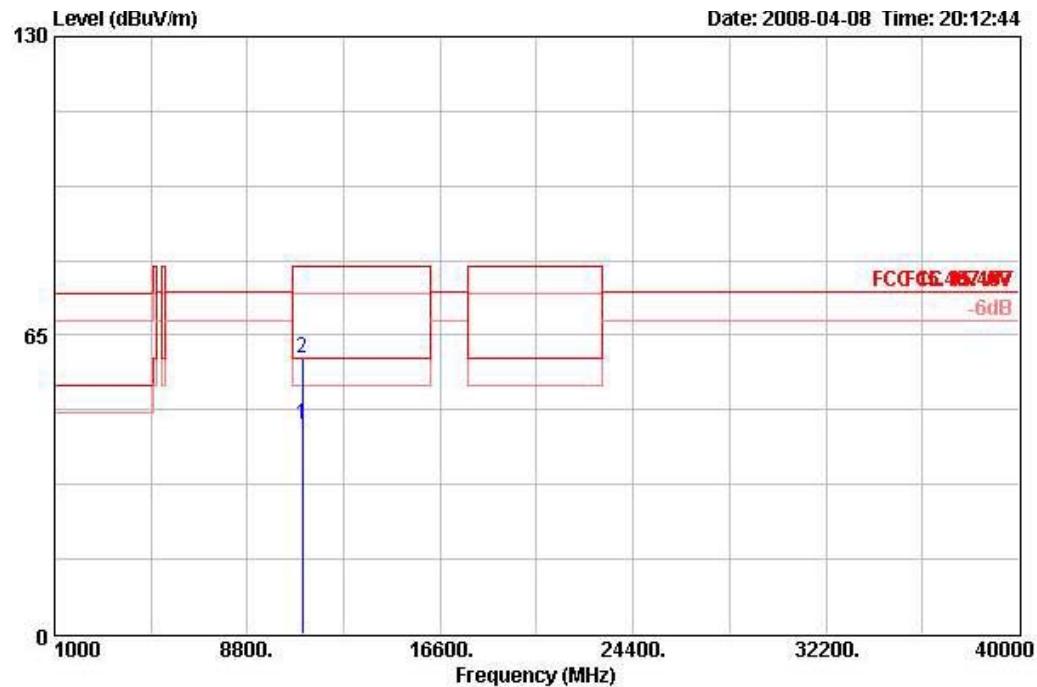
Horizontal


Freq	Level	Over Limit	Limit Line	Read		Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
				dB	dBuV/m							
1 @	10614.600	47.40	-12.60	60.00	33.57	38.55	35.08	10.35	AVERAGE	150	110	HORIZONTAL
2 @	10621.920	61.24	-18.76	80.00	47.41	38.55	35.08	10.35	PERK	150	110	HORIZONTAL

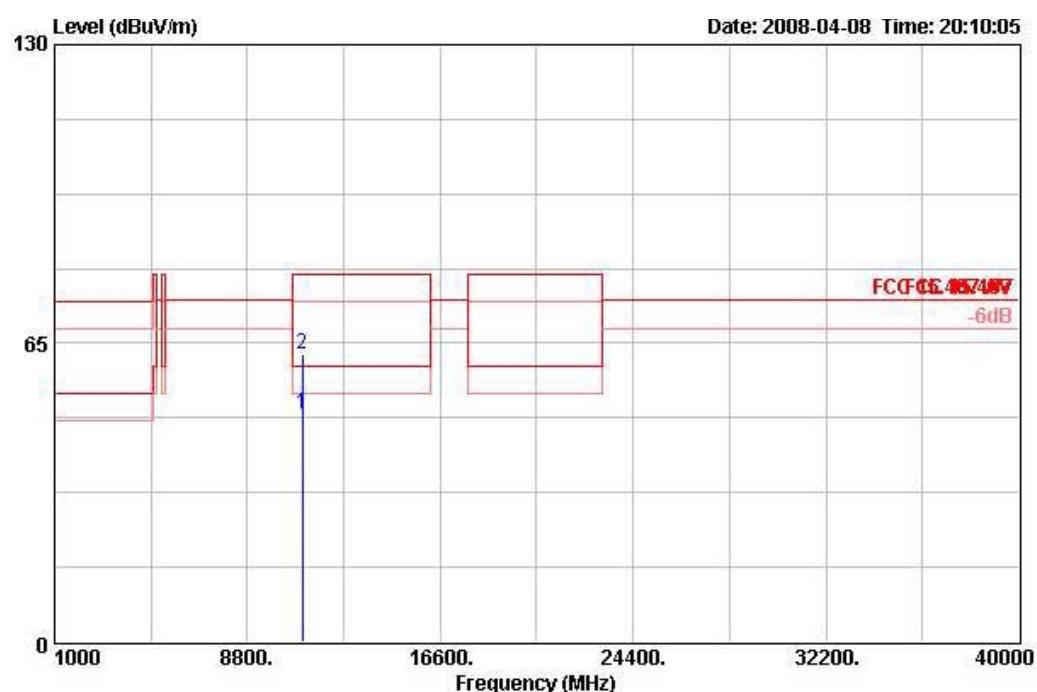
Vertical


Freq	Level	Over Limit		Read		Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
		MHz	dBuV/m	dB	dBuV/m							
1 @	10612.520	47.88	-12.12	60.00	34.05	38.56	35.08	10.35	AVERAGE	197	132	VERTICAL
2 @	10622.160	62.05	-17.95	80.00	48.22	38.55	35.08	10.35	PEAK	197	132	VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 40MHz Ch 102 Ant. A + Ant. C

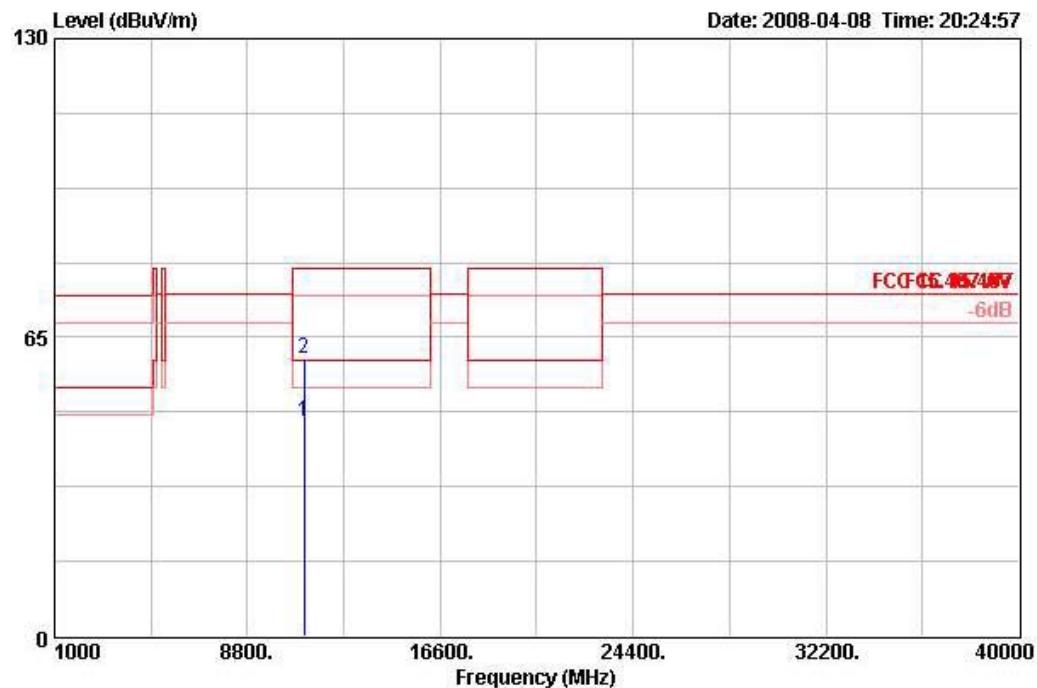
Horizontal


Freq	Level	Over Limit	Limit	Read		Antenna	Preamp	Cable	Table	Ant	
				Line	Level						
MHz		dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm	
1 @	11025.300	45.73	-14.27	60.00	31.70	38.41	34.69	10.31	AVERAGE	58	109 HORIZONTAL
2 @	11027.300	59.88	-20.12	80.00	45.85	38.41	34.69	10.31	PEAK	58	109 HORIZONTAL

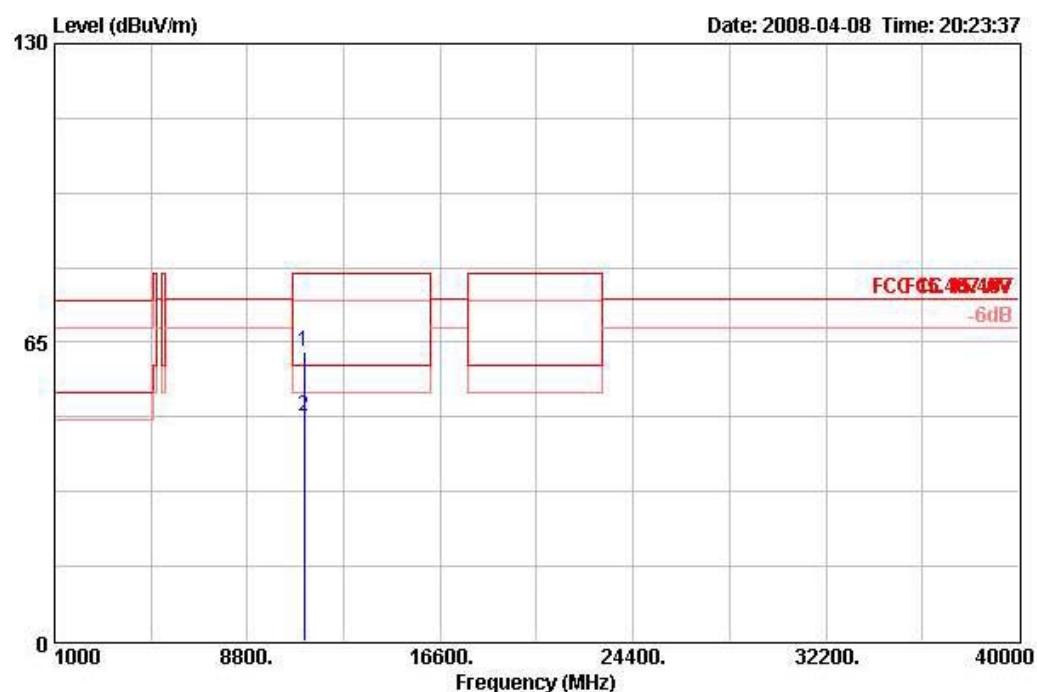
Vertical


Freq	Level	Over Limit		Read		Antenna Factor	Preamp Factor	Cable Loss		Remark	Table Pos	Ant Pos	Pol/Phase
		MHz	dBuV/m	dB	dBuV/m			dBuV	dB/m	dB			
1 @	11012.900	49.59	-10.41	60.00	35.56	38.40	34.69	10.31	AVERAGE		0	108	VERTICAL
2 @	11023.900	62.55	-17.45	80.00	48.53	38.41	34.69	10.31	PEAK		0	108	VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 40MHz Ch 110 Ant. A + Ant. C

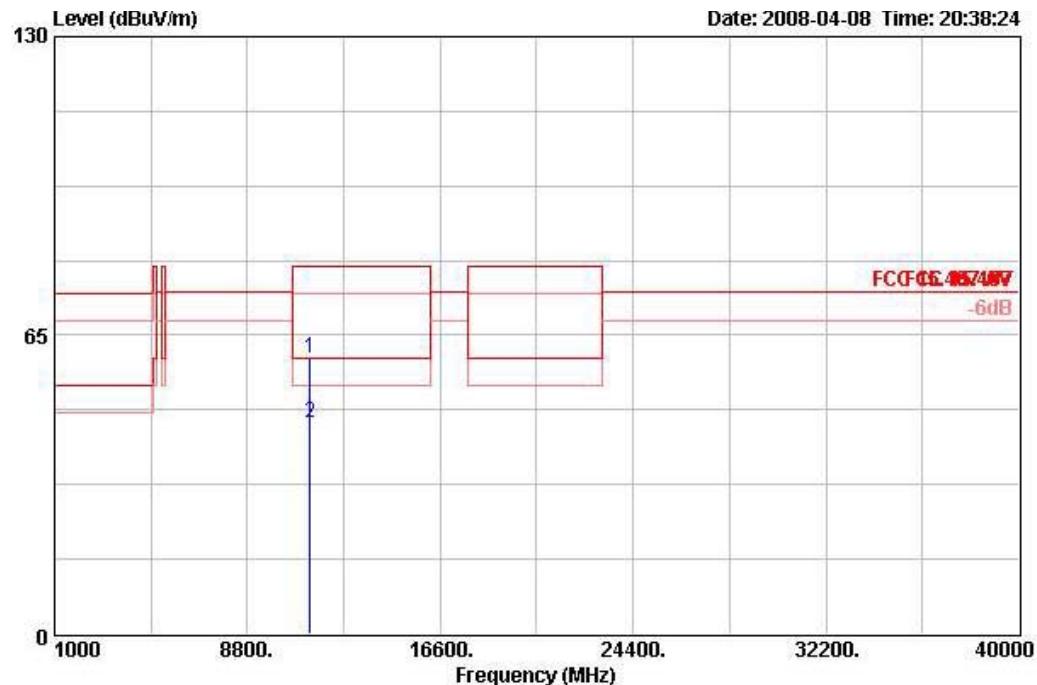
Horizontal


Freq	Level	Over Limit		Read		Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
		MHz	dBuV/m	dB	dBuV/m							
1 @	11096.600	46.72	-13.28	60.00	32.59	38.42	34.70	10.41	AVERAGE	210	110	HORIZONTAL
2 @	11104.360	60.41	-19.59	80.00	46.28	38.42	34.70	10.41	PEAK	210	110	HORIZONTAL

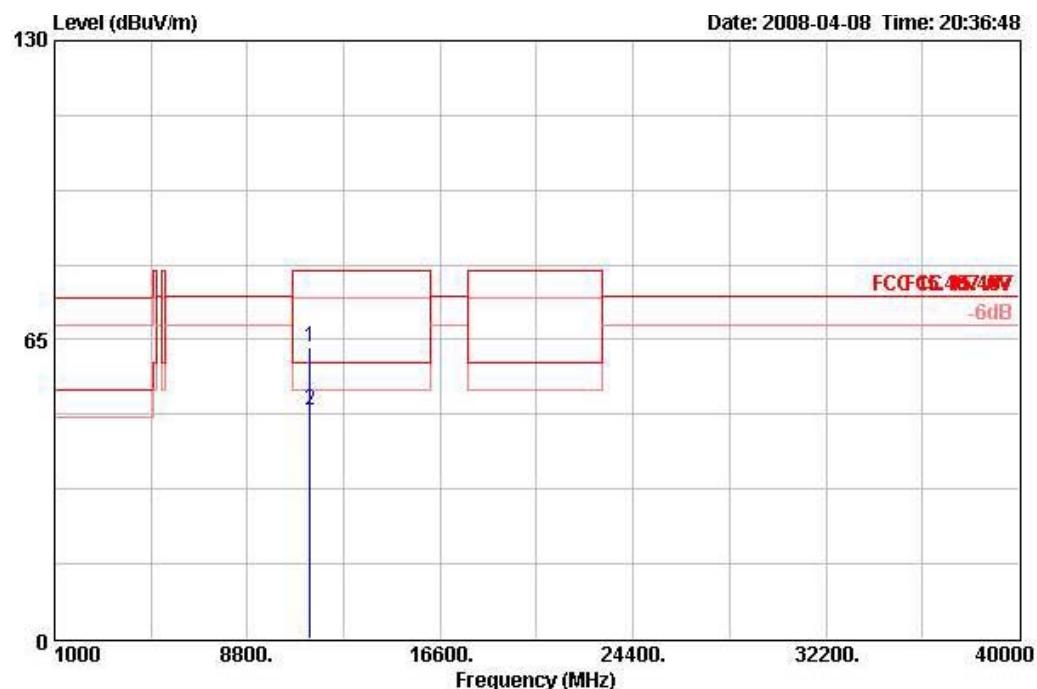
Vertical


Freq	Level	Over Limit		Read Line	Antenna	Preamp	Cable		Table	Ant	
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	deg	Pos	Pos Pol/Phase
1 @	11096.000	63.11	-16.89	80.00	48.98	38.42	34.70	10.41	PEAK	38	132 VERTICAL
2 @	11107.160	49.06	-10.94	60.00	34.93	38.42	34.70	10.41	AVERAGE	38	132 VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 40MHz Ch 134 Ant. A + Ant. C

Horizontal


Freq	Level	Over Limit	Limit Line	Read		Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
				MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg
1 @	11335.400	59.93	-20.07	80.00	45.49	38.47	34.73	10.70	PERK	187	106	HORIZONTAL
2 @	11337.280	46.04	-13.96	60.00	31.60	38.47	34.73	10.70	AVERAGE	187	106	HORIZONTAL

Vertical


Freq	Level	Over Limit	Limit Line	Read		Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
				MHz	dBuV/m	dB	dBuV/m	dB	dB/m	dB	dB	deg
1 @	11336.520	63.23	-16.77	80.00	48.79	38.47	34.73	10.70	PERK	311	101	VERTICAL
2 @	11336.560	49.53	-10.47	60.00	35.09	38.47	34.73	10.70	AVERAGE	311	101	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].

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 (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

4.7.2. 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)	1MHz / 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	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 20MHz Ch 36 Ant. A + Ant. C
Test date	Apr. 08, 2008		

Channel 36

Freq	Level	Over Limit	Limit Line	Read		Antenna Preamp	Cable Loss	Table	Ant Pos	Ant Pol/Phase
				Level	Factor					
1 @	5149.800	67.42	-12.58	80.00	29.94	33.04	0.00	4.44	PERK	3
2 @	5150.000	55.83	-4.17	60.00	18.34	33.04	0.00	4.44	AVERAGE	3
3 @	5182.400	110.28			72.75	33.09	0.00	4.43	PERK	3
4 @	5183.200	99.18			61.65	33.09	0.00	4.43	AVERAGE	3

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

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 20MHz Ch 40 Ant. A + Ant. C
Test date	Apr. 09, 2008		

Channel 40

Freq	Level	Over Limit	Limit Line	Read		Antenna Preamp	Cable Loss	Table	Ant Pos	Ant Pol/Phase
				Level	Factor					
1 @	5145.600	67.78	-12.22	80.00	30.30	33.04	0.00	4.44	PERK	0
2 @	5150.000	55.10	-4.90	60.00	17.61	33.04	0.00	4.44	AVERAGE	0
3 @	5197.200	109.56			72.02	33.12	0.00	4.43	PERK	0
4 @	5198.000	99.93			62.39	33.12	0.00	4.43	AVERAGE	0

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

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 20MHz Ch 60 Ant. A + Ant. C
Test date	Apr. 09, 2008		

Channel 60

Freq	Level	Over Limit		Read	Antenna	Preamp	Cable		Table Pos	Ant Pos	Ant Pol/Phase
		Limit	Line	Level	Factor	Factor	Loss	Remark			
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm		
1 @	5302.000	112.02		74.34	33.28	0.00	4.40	PEAK	346	130	HORIZONTAL
2 @	5304.400	101.19		63.51	33.28	0.00	4.40	AVERAGE	346	130	HORIZONTAL
3 @	5350.000	55.13	-4.87	60.00	17.39	33.36	0.00	4.38 AVERAGE	346	130	HORIZONTAL
4 @	5353.200	67.71	-12.29	80.00	29.97	33.36	0.00	4.38 PEAK	346	130	HORIZONTAL

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

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 20MHz Ch 64 Ant. A + Ant. C
Test date	Apr. 09, 2008		

Channel 64

Freq	Level	Over Limit		Read	Antenna	Preamp	Cable		Table Pos	Ant Pos	Ant Pol/Phase
		Limit	Line	Level	Factor	Factor	Loss	Remark			
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm		
1 @	5317.400	112.33		74.62	33.31	0.00	4.40	PEAK	360	129	HORIZONTAL
2 @	5317.400	100.95		63.25	33.31	0.00	4.40	AVERAGE	360	129	HORIZONTAL
3 @	5350.000	55.65	-4.35	60.00	17.91	33.36	0.00	4.38 AVERAGE	360	129	HORIZONTAL
4 @	5350.200	68.84	-11.16	80.00	31.10	33.36	0.00	4.38 PEAK	360	129	HORIZONTAL

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

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 20MHz Ch 100 Ant. A + Ant. C
Test date	Apr. 09, 2008		

Channel 100

Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	Pos	Pol/Phase
		Limit	Line	Level	Factor	Factor	Loss				
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm		
1 @	5460.000	55.39	-4.61	60.00	17.52	33.52	0.00	4.35	AVERAGE	0	126 HORIZONTAL
2 @	5460.000	67.13	-12.87	80.00	29.26	33.52	0.00	4.35	PERK	0	126 HORIZONTAL
3 @	5469.800	68.86	-5.44	74.30	30.97	33.55	0.00	4.35	PERK	0	126 HORIZONTAL
4 @	5498.200	110.75			72.81	33.60	0.00	4.34	PERK	0	126 HORIZONTAL
5 @	5505.600	100.17			62.22	33.60	0.00	4.35	AVERAGE	0	126 HORIZONTAL

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

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 20MHz Ch 140 Ant. A + Ant. C
Test date	Apr. 09, 2008		

Channel 140

Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	Pos	Pol/Phase
		Limit	Line	Level	Factor	Factor	Loss				
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm		
1 @	5695.800	110.43			71.87	34.17	0.00	4.39	PERK	196	126 HORIZONTAL
2 @	5698.000	99.80			61.24	34.17	0.00	4.39	AVERAGE	196	126 HORIZONTAL
3 @	5725.000	72.21	-2.09	74.30	33.54	34.27	0.00	4.40	PERK	196	126 HORIZONTAL

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

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 40MHz Ch 38 Ant. A + Ant. C
Test date	Apr. 08, 2008		

Channel 38

Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant		
		Line	Limit	Level	Factor	Factor	Loss			Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB		deg	cm	
1 @	5146.400	70.24	-9.76	80.00	32.75	33.04	0.00	4.44 PEAK	334	135	HORIZONTAL
2 @	5150.000	57.93	-2.07	60.00	20.45	33.04	0.00	4.44 AVERAGE	334	135	HORIZONTAL
3 @	5191.600	107.29			69.74	33.12	0.00	4.43 PEAK	334	135	HORIZONTAL
4 @	5192.000	96.39			58.83	33.12	0.00	4.43 AVERAGE	334	135	HORIZONTAL

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

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 40MHz Ch 46 Ant. A + Ant. C
Test date	Apr. 08, 2008		

Channel 46

Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant		
		Line	Limit	Level	Factor	Factor	Loss			Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB		deg	cm	
1 @	5150.000	55.49	-4.51	60.00	18.01	33.04	0.00	4.44 AVERAGE	354	134	HORIZONTAL
2 @	5150.000	68.71	-11.29	80.00	31.23	33.04	0.00	4.44 PEAK	354	134	HORIZONTAL
3 @	5226.400	109.63			72.03	33.17	0.00	4.42 PEAK	354	134	HORIZONTAL
4 @	5238.400	97.48			59.89	33.17	0.00	4.42 AVERAGE	354	134	HORIZONTAL

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

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 40MHz Ch 54 Ant. A + Ant. C
Test date	Apr. 08, 2008		

Channel 54

Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	
		Line	Limit	Level	Factor	Factor	Loss			Pos
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	deg	cm
1 @		5267.200	99.09			61.46	33.23	0.00	4.41	AVERAGE
2 @		5274.800	110.32			72.69	33.23	0.00	4.40	PEAK
3 @		5350.000	55.81	-4.19	60.00	18.07	33.36	0.00	4.38	AVERAGE
4 @		5350.000	68.62	-11.38	80.00	30.88	33.36	0.00	4.38	PEAK

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

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 40MHz Ch 62 Ant. A + Ant. C
Test date	Apr. 08,2008		

Channel 62

Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	
		Line	Limit	Level	Factor	Factor	Loss			Pos
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	deg	cm
1 @		5304.800	98.46			60.79	33.28	0.00	4.40	AVERAGE
2 @		5313.200	107.86			70.15	33.31	0.00	4.40	PEAK
3 @		5350.000	58.98	-1.02	60.00	21.24	33.36	0.00	4.38	AVERAGE
4 @		5351.200	70.90	-9.10	80.00	33.16	33.36	0.00	4.38	PEAK

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

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 40MHz Ch 102 Ant. A + Ant. C
Test date	Apr. 08, 2008		

Channel 102

	Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	Pos	Pos	Pol/Phase
			Limit	Line	Level	Factor	Factor	Loss					
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm		
1 @	5457.600	70.26	-9.74	80.00	32.40	33.52	0.00	4.35	PERK	356	133	HORIZONTAL	
2 @	5460.000	57.55	-2.45	60.00	19.68	33.52	0.00	4.35	AVERAGE	356	133	HORIZONTAL	
3 @	5468.000	72.62	-1.68	74.30	34.73	33.55	0.00	4.35	PERK	356	133	HORIZONTAL	
4 @	5506.400	109.93			71.99	33.60	0.00	4.35	PERK	356	133	HORIZONTAL	
5 @	5507.200	98.50			60.55	33.60	0.00	4.35	AVERAGE	356	133	HORIZONTAL	

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

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 40MHz Ch 110 Ant. A + Ant. C
Test date	Apr. 08, 2008		

Channel 110

	Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	Pos	Pos	Pol/Phase
			Limit	Line	Level	Factor	Factor	Loss					
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm		
1 @	5459.600	68.03	-11.97	80.00	30.16	33.52	0.00	4.35	PERK	353	136	HORIZONTAL	
2 @	5460.000	56.01	-3.99	60.00	18.14	33.52	0.00	4.35	AVERAGE	353	136	HORIZONTAL	
3 @	5468.000	68.53	-5.77	74.30	30.63	33.55	0.00	4.35	PERK	353	136	HORIZONTAL	
4 @	5543.600	97.81			59.75	33.70	0.00	4.35	AVERAGE	353	136	HORIZONTAL	
5 @	5555.200	109.10			70.99	33.76	0.00	4.36	PERK	353	136	HORIZONTAL	

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

Temperature	26°C	Humidity	56%
Test Engineer	Jax Chen	Configurations	Draft n MCS8 40MHz Ch 134 Ant. A + Ant. C
Test date	Apr.		

Channel 134

Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Table	Ant	Pos	Pos	Pol/Phase
		Limit	Line	Level	Factor	Factor	Loss					
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB					
1 @	5663.700	109.91		71.46	34.07	0.00	4.39	PERK	0	126	HORIZONTAL	
2 @	5672.100	98.54		60.04	34.12	0.00	4.39	AVERAGE	35	126	HORIZONTAL	
3 @	5727.940	70.41	-3.89	74.30	31.74	34.27	0.00	4.40	PERK	0	126	HORIZONTAL

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].

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

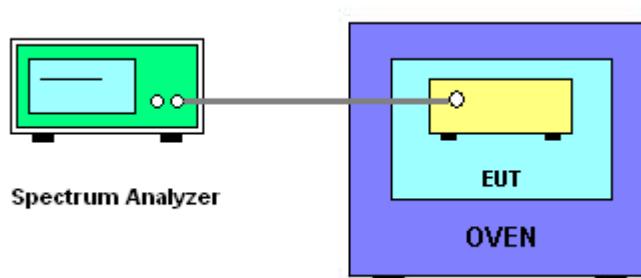
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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. fc is declaring of channel frequency. Then the frequency error formula is $(fc-f)/fc \times 10^6 \text{ ppm}$ 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 $-30^\circ\text{C} \sim 50^\circ\text{C}$.

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)	5200	5320
126.50	5200.025850	5320.017800
110.00	5199.999700	5319.998700
93.50	5199.996200	5319.997820
Max. Deviation (MHz)	0.025850	0.017800
Max. Deviation (ppm)	4.97	3.35

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)	
(°C)	5200	5320
-30	5200.013400	5320.016000
-20	5200.018400	5320.022400
-10	5200.017600	5320.020000
0	5200.006800	5320.068200
10	5199.996800	5319.997300
20	5199.991600	5319.993600
30	5199.991026	5319.992800
40	5199.990470	5319.994800
50	5199.984400	5319.988000
Max. Deviation (MHz)	0.018400	0.068200
Max. Deviation (ppm)	3.54	12.8195

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	Mar. 03, 2008	Conduction (CO04-HY)
LISN	MessTec	NNB-2/16Z	99079	9kHz – 30MHz	Mar. 31, 2008	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9703-1839	9kHz – 30MHz	Mar. 22, 2008	Conduction (CO04-HY)
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9kHz – 30MHz	Apr. 20, 2007	Conduction (CO04-HY)
ISN	SCHAFFNER	ISN T400	21653	9kHz – 30MHz	Mar. 27, 2008	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. 14, 2007	Radiation (03CH03-HY)
Amplifier	SCHAFFNER	COA9231A	18667	9 kHz - 2 GHz	Jan. 14, 2008	Radiation (03CH03-HY)
Amplifier	Agilent	8449B	3008A02120	1 GHz - 26.5 GHz	Jun. 07, 2007	Radiation (03CH03-HY)
Amplifier	MITEQ	AMF-6F-260400	9121372	26.5 GHz - 40 GHz	Jan. 22, 2007*	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP40	100305	9 kHz - 40 GHz	Sep. 27, 2007	Radiation (03CH03-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz - 30 MHz	May 23, 2006*	Radiation (03CH03-HY)
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30 MHz – 1 GHz	Jul. 21, 2007	Radiation (03CH03-HY)
Horn Antenna	EMCO	3115	6741	1GHz ~ 18GHz	May 04, 2007	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15 GHz - 40 GHz	Jan. 18, 2008	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30 MHz - 1 GHz	Dec. 03, 2007	Radiation (03CH03-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1 GHz - 40 GHz	Dec. 03, 2007	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	FSP30	100023	9kHz ~ 30GHz	Jan. 10, 2008	Conducted (TH01-HY)
Power Meter	R&S	NRVS	100444	DC ~ 40GHz	Jun. 27, 2007	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z51	100458	DC ~ 30GHz	Jun. 27, 2007	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z32	100057	30MHz ~ 6GHz	Jun. 27, 2007	Conducted (TH01-HY)
AC Power Source	HPC	HPA-500W	HPA-9100024	AC 0 ~ 300V	May 04, 2007*	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Mar. 13, 2008	Conducted (TH01-HY)
Temp. and Humidity Chamber	KSON	THS-C3L	612	N/A	Oct. 01, 2007	Conducted (TH01-HY)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 01, 2007	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 01, 2007	Conducted (TH01-HY)
Vector Signal Generator	R&S	SMU200A	102098	100kHz ~ 6GHz	Nov. 14, 2007	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Mar. 10, 2008	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

Sportun 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

P1, total 9 pages

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