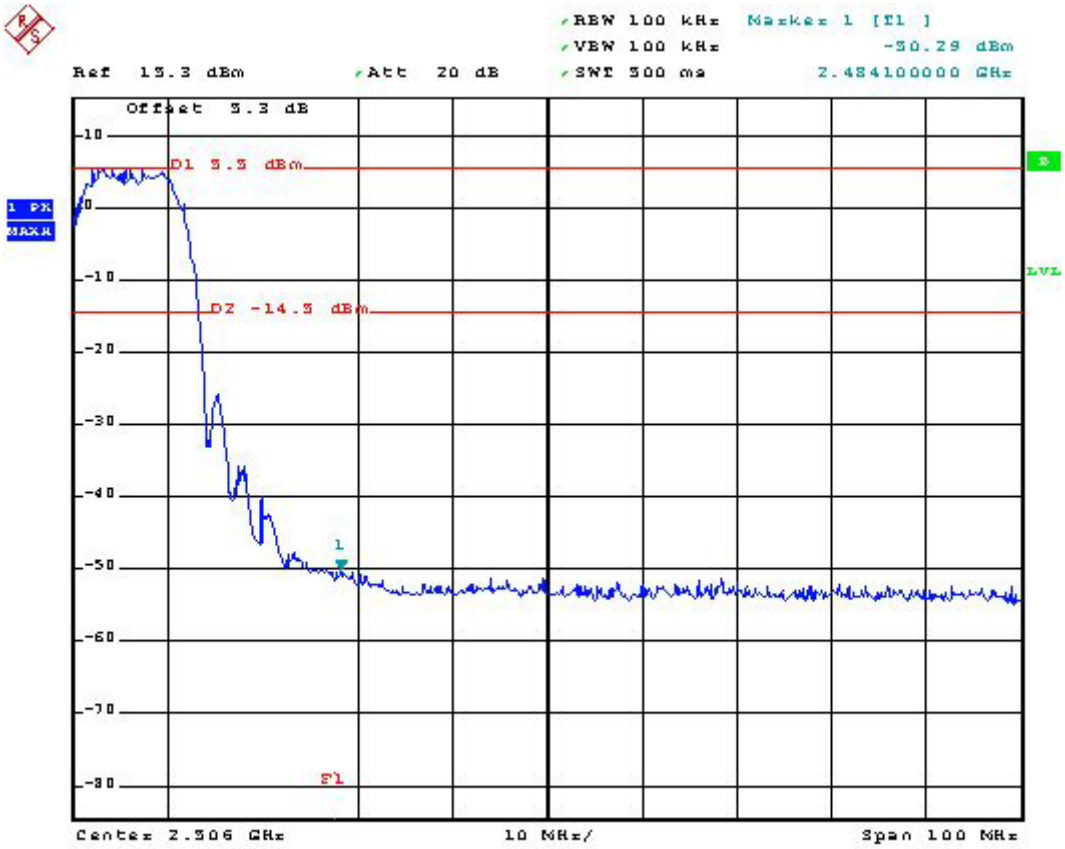
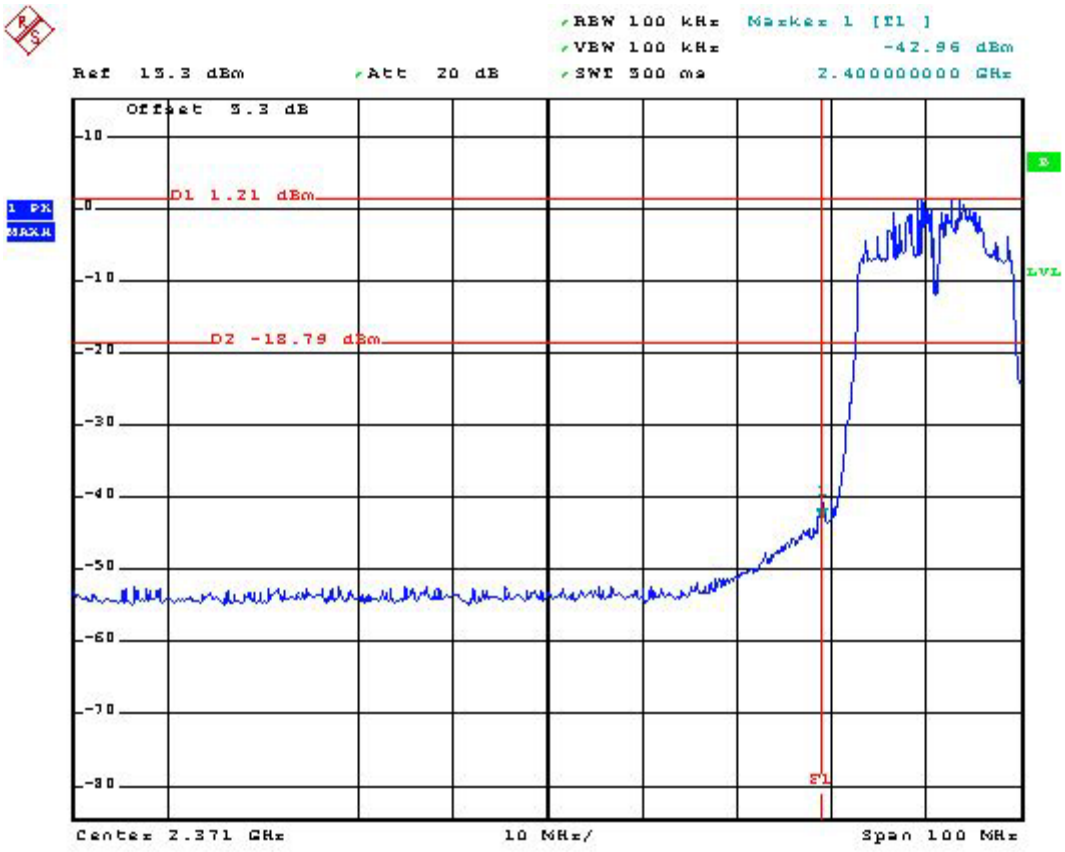
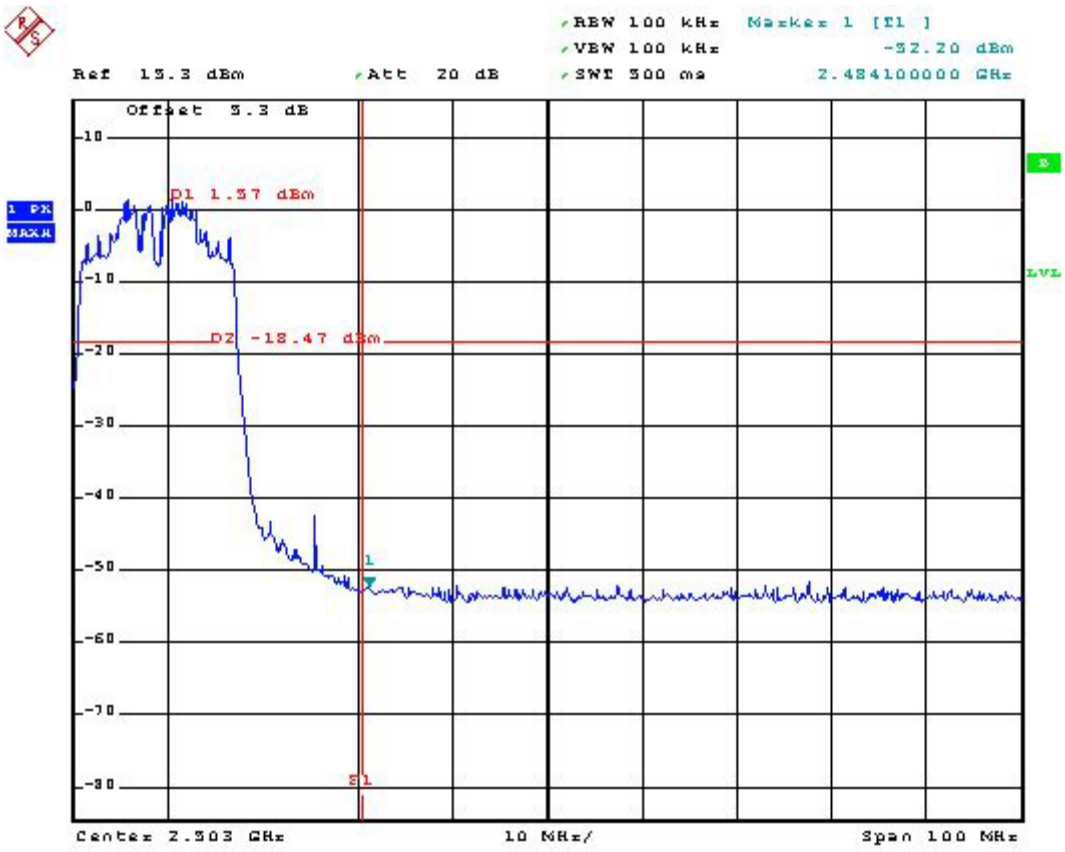
802.11b Tx CH11 (2462MHz)



802.11g Tx CH01 (2412MHz)



802.11g Tx CH11 (2462MHz)



5.5 Peak Output Power Measurement

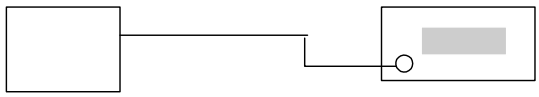
5.5.1 Measuring Instruments：

As described in chapter 6 of this test report.

5.5.2 Test Procedure：

The antenna port（RF output）of the EUT was connected to the input（RF input）of a power meter. The power is equal to the reading level on power meter plus cable loss at the EUT antenna terminal.

5.5.3 Test Setup Layout：



5.5.4 Test Result：

- Application Type : 802.11b
- Temperature : 24°C
- Relative Humidity : 47 %
- Test Enginner : Jay

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
01	2412	18.99	1W/30 dBm
06	2437	19.14	1W/30 dBm
11	2462	19.57	1W/30 dBm

- Application Type : 802.11g
- Temperature : 24°C
- Relative Humidity : 47 %
- Test Enginner : Jay

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
01	2412	17.18	1W/30 dBm
06	2437	17.04	1W/30 dBm
11	2462	17.23	1W/30 dBm

5.6 Conducted Emission Measurement

5.6.1 Measuring Instruments

As described in chapter 6 of this test Report.

5.6.2 Test Procedures

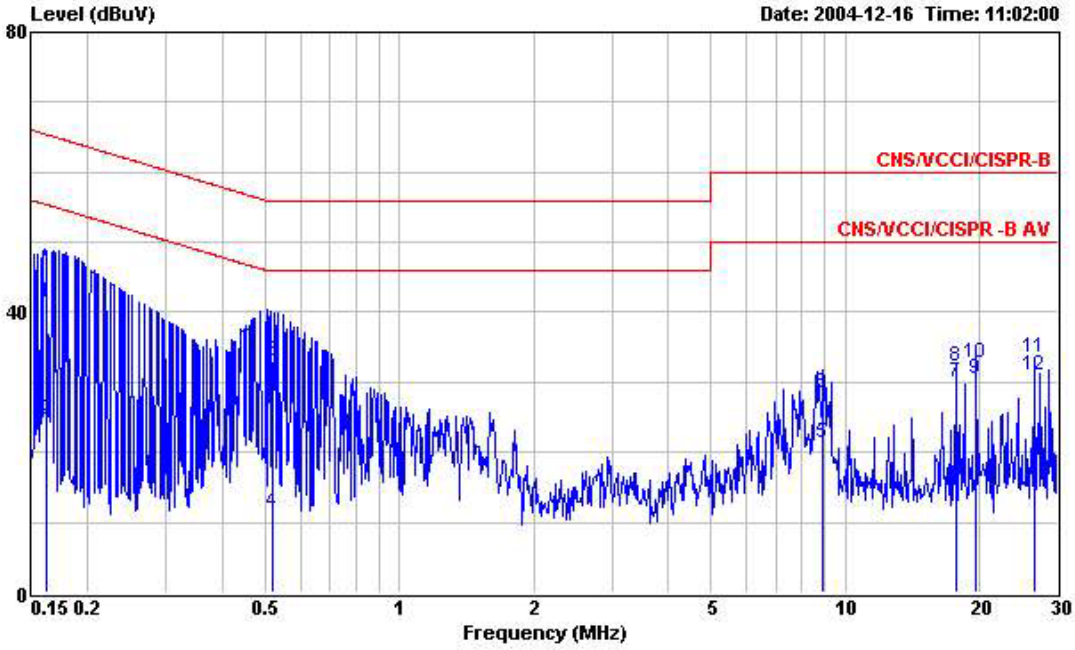
a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power port of the line impedance stabilization network (LISN).
c. All the support units are connect to the other LISN.
d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
e. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
f. Both sides of AC line were checked for maximum conducted interference.
g. The frequency range from 150 kHz to 30 MHz was searched.
h. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

5.6.3 Test Data

5.4.1 Frequency Range of Test : 150kHz to 30 MHz

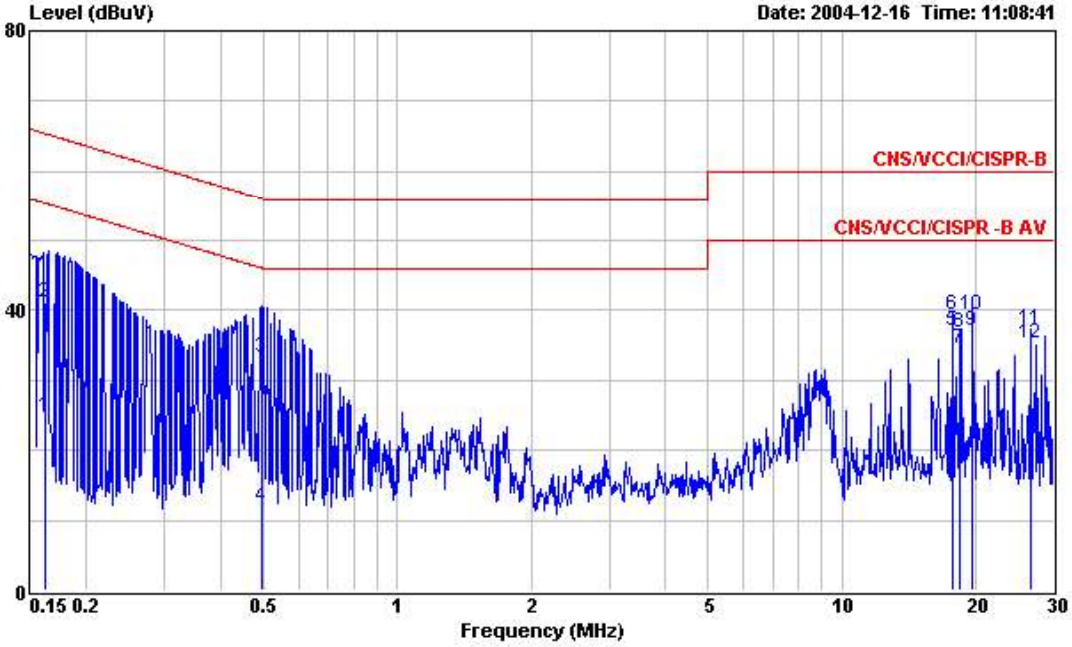
- Test Mode : Mode 1
- Temperature : 26°C
- Relative Humidity : 47%

The test that passed at minimum margin was marked by the frame in the following table.



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2003 2001/008 LINE
EUT : AP product
Power : 120V/60Hz
Model : USR5451 and USR5461
Memo : AD-051A
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.162	41.41	-23.95	65.36	41.30	0.10	0.01	QP
2	0.162	24.66	-30.70	55.36	24.55	0.10	0.01	Average
3	0.518	32.94	-23.06	56.00	32.81	0.10	0.03	QP
4	0.518	11.36	-34.64	46.00	11.23	0.10	0.03	Average
5	8.924	21.22	-28.78	50.00	20.86	0.19	0.17	Average
6	8.924	28.38	-31.62	60.00	28.02	0.19	0.17	QP
7	17.694	29.93	-20.07	50.00	29.43	0.26	0.24	Average
8	17.694	32.29	-27.71	60.00	31.79	0.26	0.24	QP
9	19.709	30.36	-19.64	50.00	29.80	0.30	0.26	Average
10	19.709	32.75	-27.25	60.00	32.19	0.30	0.26	QP
11	26.609	33.44	-26.56	60.00	32.56	0.60	0.28	QP
12	26.609	31.05	-18.95	50.00	30.17	0.60	0.28	Average



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
EUT : AP product
Power : 120V/60Hz
Model : USR5451 and USR5461
Memo : AD-051A
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.161	24.80	-30.61	55.41	24.69	0.10	0.01	Average
2	0.161	41.18	-24.23	65.41	41.07	0.10	0.01	QP
3	0.494	33.18	-22.92	56.10	33.06	0.10	0.02	QP
4	0.494	12.02	-34.08	46.10	11.90	0.10	0.02	Average
5	17.693	37.07	-12.93	50.00	36.53	0.30	0.24	Average
6	17.693	39.40	-20.60	60.00	38.86	0.30	0.24	QP
7	18.488	34.55	-15.45	50.00	34.00	0.30	0.25	Average
8	18.488	36.82	-23.18	60.00	36.27	0.30	0.25	QP
9	19.709	37.10	-12.90	50.00	36.54	0.30	0.26	Average
10	19.709	39.25	-20.75	60.00	38.69	0.30	0.26	QP
11	26.607	37.41	-22.59	60.00	36.60	0.53	0.28	QP
12	26.607	35.32	-14.68	50.00	34.51	0.53	0.28	Average

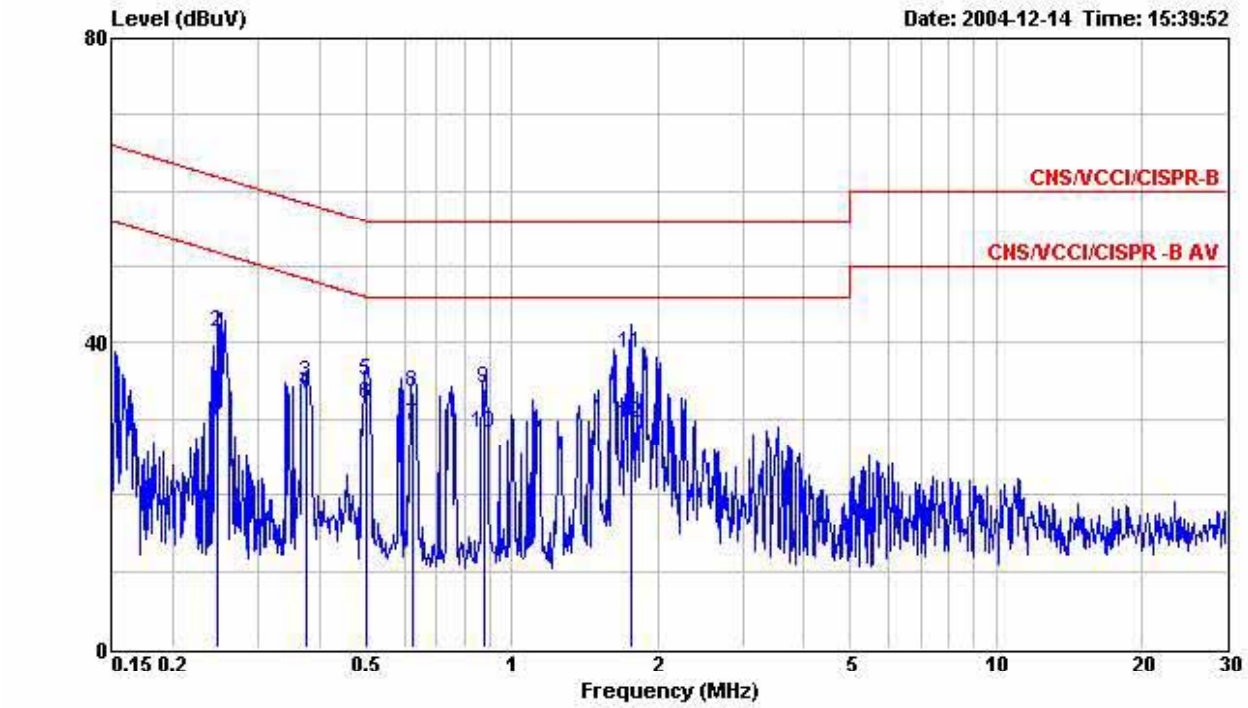
Test Engineer : _____

Jay

5.4.2 Frequency Range of Test : 150kHz to 30 MHz

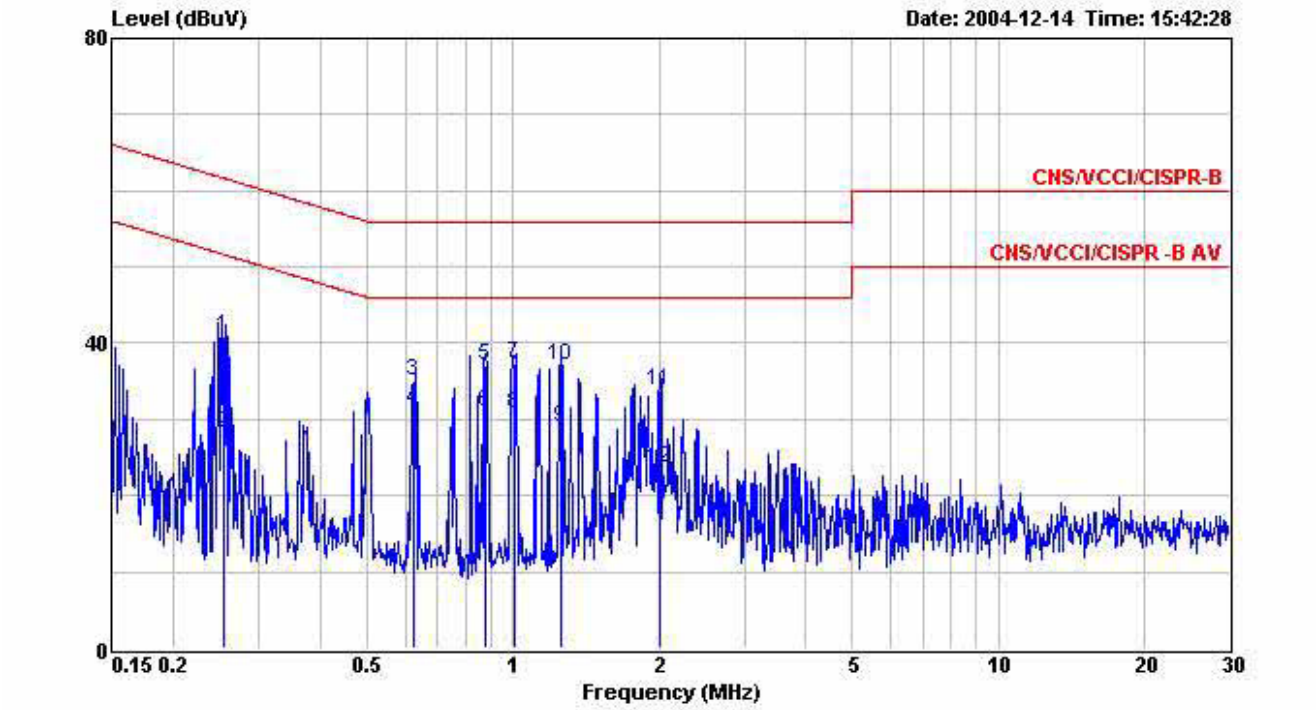
- Test Mode : Mode 2
- Temperature : 26°C
- Relative Humidity : 47%

The test that passed at minimum margin was marked by the frame in the following table.



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2003 2001/008 LINE
EUT : Router product
Power : 120V/60Hz
Model : USR5451 and USR5461
Memo : AMDD-20050-1500
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.247	30.92	-20.94	51.86	30.80	0.10	0.02	Average
2	0.247	41.30	-20.56	61.86	41.18	0.10	0.02	QP
3	0.376	34.91	-23.46	58.37	34.79	0.10	0.02	QP
4	0.376	33.56	-14.81	48.37	33.44	0.10	0.02	Average
5	0.499	35.02	-21.00	56.02	34.90	0.10	0.02	QP
6	0.499	32.11	-13.91	46.02	31.99	0.10	0.02	Average
7	0.624	29.19	-16.81	46.00	29.06	0.10	0.03	Average
8	0.624	33.49	-22.51	56.00	33.36	0.10	0.03	QP
9	0.876	34.03	-21.97	56.00	33.89	0.10	0.04	QP
10	0.876	28.26	-17.74	46.00	28.12	0.10	0.04	Average
11	1.765	38.69	-17.31	56.00	38.53	0.10	0.06	QP
12	1.765	29.47	-16.53	46.00	29.31	0.10	0.06	Average



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
EUT : Router product
Power : 120V/60Hz
Model : USR5451 and USR5461
Memo : AMDD-20050-1500
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.254	40.92	-20.71	61.63	40.80	0.10	0.02	QP
2	0.254	28.28	-23.35	51.63	28.16	0.10	0.02	Average
3	0.626	34.96	-21.04	56.00	34.83	0.10	0.03	QP
4	0.626	31.22	-14.78	46.00	31.09	0.10	0.03	Average
5	0.876	37.16	-18.84	56.00	37.02	0.10	0.04	QP
6	0.876	30.90	-15.10	46.00	30.76	0.10	0.04	Average
7	1.005	37.22	-18.78	56.00	37.08	0.10	0.04	QP
8	1.005	30.68	-15.32	46.00	30.54	0.10	0.04	Average
9	1.256	28.96	-17.04	46.00	28.81	0.10	0.05	Average
10	1.256	37.01	-18.99	56.00	36.86	0.10	0.05	QP
11	2.000	33.79	-22.21	56.00	33.63	0.10	0.06	QP
12	2.000	23.61	-22.39	46.00	23.45	0.10	0.06	Average

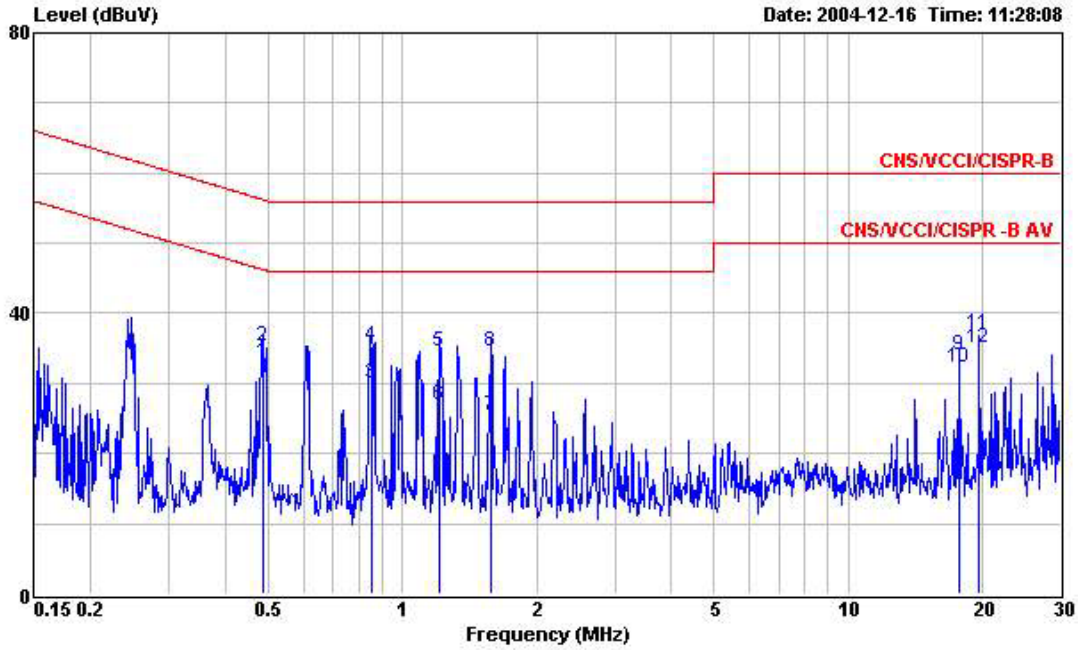
Test Engineer : _____

Jay

5.4.3 Frequency Range of Test : 150kHz to 30 MHz

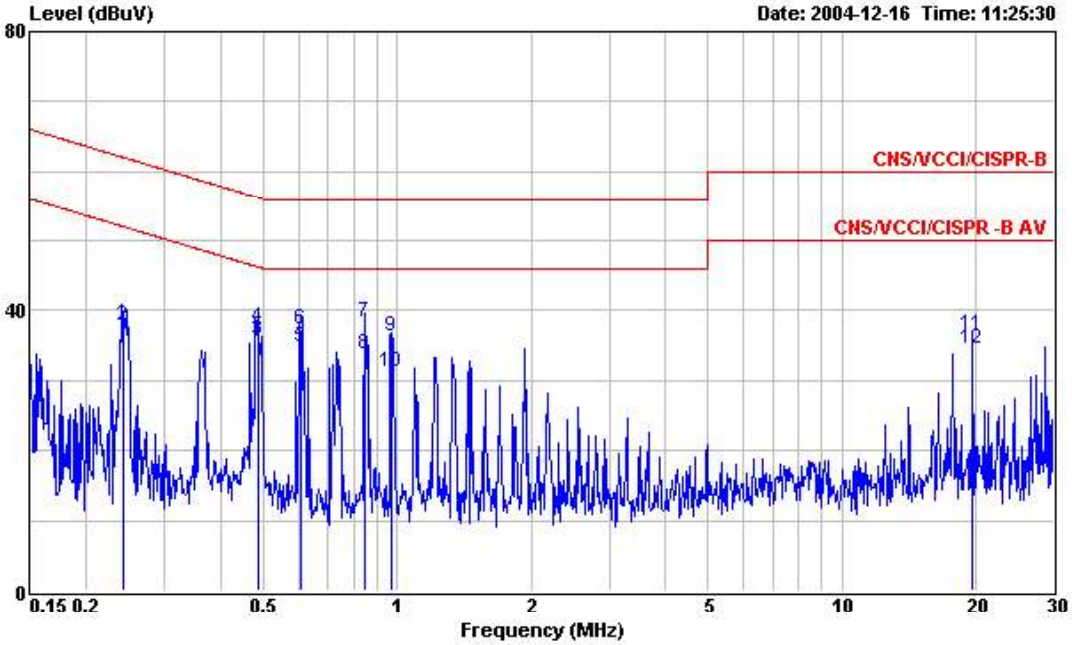
- Test Mode : Mode 3
- Temperature : 26°C
- Relative Humidity : 47%

The test that passed at minimum margin was marked by the frame in the following table.



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2003 2001/008 LINE
EUT : Router/AP product
Power : 120V/60Hz
Model : USR5451 and USR5461
Memo : TC10A-050
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.487	33.08	-13.13	46.21	32.96	0.10	0.02	Average
2	0.487	35.41	-20.80	56.21	35.29	0.10	0.02	QP
3	0.851	29.92	-16.08	46.00	29.78	0.10	0.04	Average
4	0.851	35.34	-20.66	56.00	35.20	0.10	0.04	QP
5	1.213	34.59	-21.41	56.00	34.44	0.10	0.05	QP
6	1.213	26.92	-19.08	46.00	26.77	0.10	0.05	Average
7	1.584	25.45	-20.55	46.00	25.30	0.10	0.05	Average
8	1.584	34.49	-21.51	56.00	34.34	0.10	0.05	QP
9	17.692	34.14	-25.86	60.00	33.64	0.26	0.24	QP
10	17.692	32.20	-17.80	50.00	31.70	0.26	0.24	Average
11	19.709	37.20	-22.80	60.00	36.64	0.30	0.26	QP
12	19.709	35.05	-14.95	50.00	34.49	0.30	0.26	Average



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
EUT : Router/AP product
Power : 120V/60Hz
Model : USR5451 and USR5461
Memo : TC10A-050
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.242	38.18	-23.84	62.02	38.06	0.10	0.02	QP
2	0.242	37.89	-14.13	52.02	37.77	0.10	0.02	Average
3	0.486	35.74	-10.50	46.24	35.62	0.10	0.02	Average
4	0.486	37.59	-18.65	56.24	37.47	0.10	0.02	QP
5	0.607	34.70	-11.30	46.00	34.57	0.10	0.03	Average
6	0.607	37.42	-18.58	56.00	37.29	0.10	0.03	QP
7	0.849	38.31	-17.69	56.00	38.17	0.10	0.04	QP
8	0.849	33.90	-12.10	46.00	33.76	0.10	0.04	Average
9	0.973	36.24	-19.76	56.00	36.10	0.10	0.04	QP
10	0.973	31.27	-14.73	46.00	31.13	0.10	0.04	Average
11	19.709	36.53	-23.47	60.00	35.97	0.30	0.26	QP
12	19.709	34.58	-15.42	50.00	34.02	0.30	0.26	Average

Test Engineer : _____

Jay

5.7 Radiated Emission Measurement

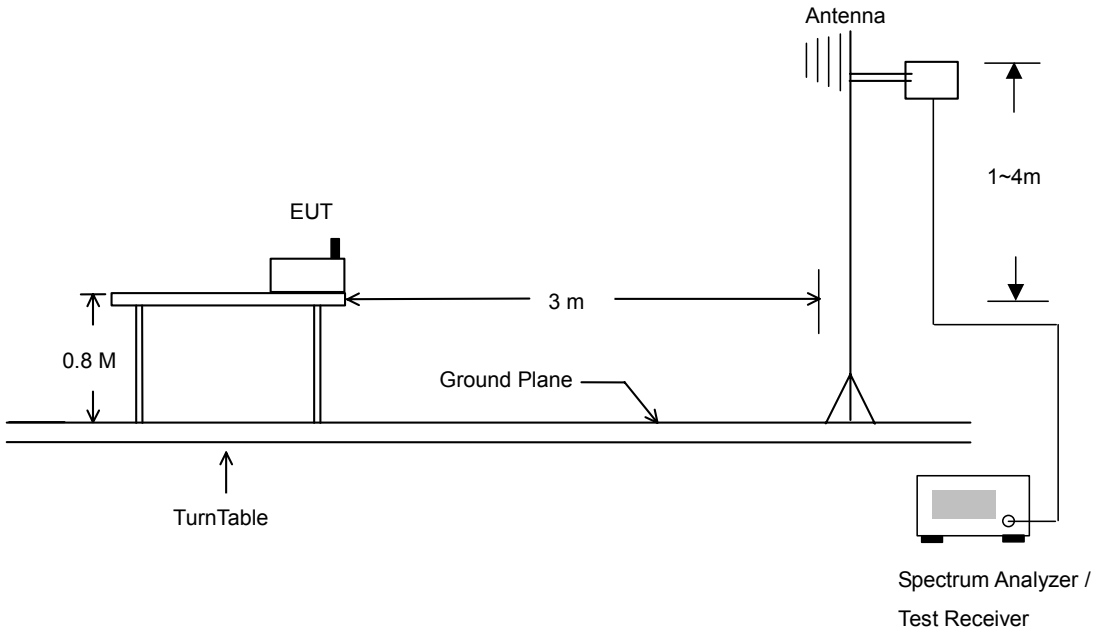
5.7.1 Measuring Instruments

As described in chapter 6 of this Report.

5.7.2 Test Procedures

1. The EUT was placed on a rotatable table top 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. For testing below 1GHz, If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported.
8. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average 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.

5.7.3 Typical Test Setup Layout of Radiated Emission



5.7.4 Test Data

- Temperature : 24 °C
- Relating Humidity : 47 %
- Test Enginner : Jay
- Test Mode : Mode 1
- Polarization : Horizontal

The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 !	30.00	35.00	-5.00	40.00	47.70	18.73	32.12	0.70	Peak	---	---
2 !	34.59	35.10	-4.90	40.00	49.48	17.07	32.14	0.69	Peak	---	---
3 !	42.69	34.17	-5.83	40.00	52.47	13.19	32.25	0.75	Peak	---	---
4	249.78	39.57	-6.43	46.00	57.67	11.73	31.83	1.99	Peak	---	---

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 !	498.80	40.33	-5.67	46.00	51.48	17.10	31.41	3.16	Peak	---	---
2	700.40	39.69	-6.31	46.00	48.04	19.04	31.45	4.06	Peak	---	---
3	799.80	39.66	-6.34	46.00	44.74	21.90	31.46	4.48	Peak	---	---
4 @	899.90	41.64	-4.36	46.00	47.66	19.94	30.78	4.82	Peak	---	---
5	1000.00	42.45	-11.55	54.00	45.54	22.97	31.07	5.00	Peak	---	---

- Polarization : Vertical

The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	35.94	35.91	-4.09	40.00	50.74	16.62	32.15	0.69	Peak	100	312
2 !	42.69	34.86	-5.14	40.00	53.16	13.19	32.25	0.75	Peak	---	---
3	249.78	38.28	-7.72	46.00	56.38	11.73	31.83	1.99	Peak	---	---

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 !	498.80	40.95	-5.05	46.00	52.10	17.10	31.41	3.16	Peak	---	---
2	700.40	39.93	-6.07	46.00	48.28	19.04	31.45	4.06	Peak	---	---
3 @	899.90	41.76	-4.24	46.00	47.79	19.94	30.78	4.82	Peak	---	---
4	1000.00	43.21	-10.79	54.00	46.31	22.97	31.07	5.00	Peak	---	---

- Test Mode : Mode 2
- Polarization : Horizontal

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	1198.00	48.18	-25.82	74.00	57.53	24.62	36.27	2.30	Peak	---	---
2 @	2390.00	62.94	-11.06	74.00	66.47	28.40	35.25	3.32	Peak	---	---
3 @	2390.00	40.40	-13.60	54.00	43.93	28.40	35.25	3.32	Average	---	---
4 @	2414.00	103.64			107.15	28.41	35.25	3.32	Peak	---	---
5 @	2414.00	97.89			101.40	28.41	35.25	3.32	Average	126	92
6 @	2494.00	49.88	-24.12	74.00	53.24	28.50	35.26	3.39	Peak	---	---
7 @	2494.00	37.84	-16.16	54.00	41.20	28.50	35.26	3.39	Average	---	---

Remark: #4 and 5 Fundamental Signal

- Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	1658.00	51.09	-22.91	74.00	57.43	26.33	35.43	2.76	Peak	---	---
2 @	2390.00	42.22	-11.78	54.00	45.75	28.40	35.25	3.32	Average	---	---
3 @	2390.00	61.65	-12.35	74.00	65.18	28.40	35.25	3.32	Peak	---	---
4 @	2414.00	108.30		00	111.81	28.41	35.25	3.32	Peak	---	---
5 @	2414.00	99.59		00	103.10	28.41	35.25	3.32	Average	100	48
6 @	2494.00	51.64	-22.36	74.00	55.01	28.50	35.26	3.39	Peak	---	---
7 @	2494.00	38.81	-15.19	54.00	42.17	28.50	35.26	3.39	Average	---	---

Remark: #4 and 5 Fundamental Signal

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	4824.00	51.66	-22.34	74.00	49.80	32.36	35.27	4.77	Peak	---	---

- Test Mode : Mode 3
- Polarization : Horizontal

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	1194.00	49.04	-24.96	74.00	58.45	24.57	36.27	2.30	Peak	---	---
2 @	2334.00	38.62	-15.38	54.00	42.26	28.33	35.24	3.27	Average	---	---
3 @	2334.00	50.49	-23.51	74.00	54.13	28.33	35.24	3.27	Peak	---	---
4 @	2438.00	104.89			108.35	28.45	35.25	3.34	Peak	---	---
5 @	2438.00	96.84			100.30	28.45	35.25	3.34	Average	100	97
6 @	2498.00	49.72	-24.28	74.00	53.08	28.50	35.26	3.39	Peak	---	---
7 @	2498.00	37.85	-16.15	54.00	41.21	28.50	35.26	3.39	Average	---	---

Remark: #4 and #5 Fundamental Signal.

- Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	1204.00	50.34	-23.66	74.00	59.69	24.62	36.27	2.30	Peak	---	---
2 @	1664.00	50.77	-23.23	74.00	57.10	26.33	35.43	2.76	Peak	---	---
3 @	2390.00	52.85	-21.15	74.00	56.37	28.40	35.25	3.32	Peak	---	---
4 @	2390.00	40.81	-13.19	54.00	44.34	28.40	35.25	3.32	Average	---	---
5 @	2434.00	111.08			114.55	28.43	35.25	3.34	Peak	---	---
6 @	2434.00	101.12			104.60	28.43	35.25	3.34	Average	100	322
7 @	2494.00	52.03	-21.97	74.00	55.39	28.50	35.26	3.39	Peak	---	---
8 @	2494.00	39.56	-14.44	54.00	42.92	28.50	35.26	3.39	Average	---	---

Remark: #5 and 6 Fundamental Signal

- Test Mode : Mode 4
- Polarization : Horizontal

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	1098.00	47.52	-26.48	74.00	57.56	24.31	36.54	2.19	Peak	---	---
2 @	2334.00	49.66	-24.34	74.00	53.30	28.33	35.24	3.27	Peak	---	---
3 @	2334.00	36.85	-17.15	54.00	40.49	28.33	35.24	3.27	Average	---	---
4 @	2458.00	93.92			97.35	28.47	35.25	3.36	Average	127	99
5 @	2458.00	102.18			105.61	28.47	35.25	3.36	Peak	---	---
6 @	2483.50	51.54	-22.46	74.00	54.94	28.48	35.26	3.38	Peak	---	---
7 @	2483.50	39.88	-14.12	54.00	43.28	28.48	35.26	3.38	Average	---	---

Remark: #4 and #5 Fundamental Signal.

- Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	1848.00	50.61	-23.39	74.00	55.75	27.25	35.30	2.91	Peak	---	---
2 @	2358.00	38.69	-15.31	54.00	42.28	28.36	35.24	3.29	Average	---	---
3 @	2358.00	51.71	-22.29	74.00	55.30	28.36	35.24	3.29	Peak	---	---
4 @	2464.00	109.07			112.50	28.47	35.25	3.36	Peak	---	---
5 @	2464.00	99.27			102.70	28.47	35.25	3.36	Average	100	50
6 @	2484.00	43.78	-10.22	54.00	47.18	28.48	35.26	3.38	Average	---	---
7 @	2484.00	55.64	-18.36	74.00	59.04	28.48	35.26	3.38	Peak	---	---

Remark: #4 and 5 Fundamental Signal

- Test Mode : Mode 5
- Polarization : Horizontal

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	1098.00	46.02	-27.98	74.00	56.05	24.31	36.54	2.19	Peak	---	---
2 @	2390.00	62.96	-11.04	74.00	66.48	28.40	35.25	3.32	Peak	---	---
3 @	2390.00	40.32	-13.68	54.00	43.85	28.40	35.25	3.32	Average	---	---
4 @	2408.00	97.21			100.72	28.41	35.25	3.32	Peak	---	---
5 @	2408.00	94.52			98.03	28.41	35.25	3.32	Average	101	98
6 @	2488.00	49.40	-24.60	74.00	52.78	28.50	35.26	3.38	Peak	---	---
7 @	2488.00	37.37	-16.63	54.00	40.75	28.50	35.26	3.38	Average	---	---

Remark: #4 and #5 Fundamental Signal.

- Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	1668.00	50.68	-23.32	74.00	57.01	26.33	35.43	2.76	Peak	---	---
2 @	2390.00	67.66	-6.34	74.00	71.18	28.40	35.25	3.32	Peak	---	---
3 @	2390.00	43.68	-10.32	54.00	47.21	28.40	35.25	3.32	Average	---	---
4 @	2414.00	102.71			106.22	28.41	35.25	3.32	Peak	---	---
5 @	2414.00	97.89			101.40	28.41	35.25	3.32	Average	103	314
6 @	2500.00	49.44	-24.56	74.00	52.80	28.50	35.26	3.39	Peak	---	---
7 @	2500.00	37.49	-16.51	54.00	40.85	28.50	35.26	3.39	Average	---	---

Remark: #4 and 5 Fundamental Signal

- Test Mode : Mode 6
- Polarization : Horizontal

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	1098.00	46.57	-27.43	74.00	56.60	24.31	36.54	2.19	Peak	---	---
2 @	2334.00	37.73	-16.27	54.00	41.37	28.33	35.24	3.27	Average	---	---
3 @	2334.00	49.43	-24.57	74.00	53.07	28.33	35.24	3.27	Peak	---	---
4 @	2438.00	97.58			101.04	28.45	35.25	3.34	Peak	---	---
5 @	2438.00	93.98			97.44	28.45	35.25	3.34	Average	100	99
6 @	2494.00	49.25	-24.75	74.00	52.62	28.50	35.26	3.39	Peak	---	---
7 @	2494.00	37.44	-16.56	54.00	40.80	28.50	35.26	3.39	Average	---	---

Remark: #4 and #5 Fundamental Signal.

- Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	1668.00	50.22	-23.78	74.00	56.56	26.33	35.43	2.76	Peak	---	---
2 @	2390.00	50.05	-23.95	74.00	53.57	28.40	35.25	3.32	Peak	---	---
3 @	2390.00	38.56	-15.44	54.00	42.09	28.40	35.25	3.32	Average	---	---
4 @	2436.00	98.02			101.50	28.43	35.25	3.34	Average	100	306
5 @	2436.00	102.18			105.66	28.43	35.25	3.34	Peak	100	306
6 @	2484.00	50.90	-23.10	74.00	54.30	28.48	35.26	3.38	Peak	---	---
7 @	2484.00	38.91	-15.09	54.00	42.31	28.48	35.26	3.38	Average	---	---

Remark: #4 and 5 Fundamental Signal

- Test Mode : Mode 7
- Polarization : Horizontal

■ The test that passed at minimum margin was marked by the frame in the following table.

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1		1098.00	47.73	-26.27	74.00	57.76	24.31	36.54	2.19	Peak	---	---
2		2328.00	49.48	-24.52	74.00	53.12	28.33	35.24	3.27	Peak	---	---
3		2328.00	37.65	-16.35	54.00	41.29	28.33	35.24	3.27	Average	---	---
4	X	2454.00	96.15			99.57	28.47	35.25	3.36	Peak	---	---
5	@	2454.00	92.59			96.02	28.47	35.25	3.36	Average	130	98
6		2483.50	39.71	-14.29	54.00	43.11	28.48	35.26	3.38	Average	---	---
7		2483.50	63.59	-10.41	74.00	66.98	28.48	35.26	3.38	Peak	---	---

Remark: #4 and #5 Fundamental Signal.

- Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1		1658.00	51.17	-22.83	74.00	57.50	26.33	35.43	2.76	Peak	---	---
2		2334.00	38.20	-15.80	54.00	41.84	28.33	35.24	3.27	Average	---	---
3		2334.00	49.60	-24.40	74.00	53.24	28.33	35.24	3.27	Peak	---	---
4	X	2458.00	101.33			104.76	28.47	35.25	3.36	Peak	---	---
5	@	2458.00	97.57			101.00	28.47	35.25	3.36	Average	100	312
6		2483.50	45.93	-8.07	54.00	49.33	28.48	35.26	3.38	Average	---	---
7	!	2483.50	70.62	-3.38	74.00	74.02	28.48	35.26	3.38	Peak	---	---

Remark: #4 and #5 Fundamental Signal.

- Test Mode : Mode 8
- Polarization : Horizontal

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	249.78	39.35	-6.65	46.00	57.45	11.73	31.83	1.99	Peak	---	---
2	261.93	36.71	-9.29	46.00	53.51	12.90	31.90	2.19	Peak	---	---
3 @	300.00	43.51	-2.49	46.00	60.06	12.94	31.91	2.42	QP	131	127

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	300.00	42.45	-3.55	46.00	59.00	12.94	31.91	2.42	QP	102	50
2 @	498.80	42.51	-3.49	46.00	53.66	17.10	31.41	3.16	Peak	---	---
3 @	700.40	41.46	-4.54	46.00	49.81	19.04	31.45	4.06	Peak	---	---
4 @	799.80	41.52	-4.48	46.00	46.59	21.90	31.46	4.48	Peak	---	---
5 @	899.90	45.58	-0.42	46.00	51.60	19.94	30.78	4.82	QP	100	354

- Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	52.14	32.00	-8.00	40.00	54.30	9.24	32.44	0.90	QP	100	348
2	249.78	34.07	-11.93	46.00	52.17	11.73	31.83	1.99	Peak	---	---
3	300.00	37.69	-8.31	46.00	54.25	12.94	31.91	2.42	Peak	---	---

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	498.80	39.76	-6.24	46.00	50.91	17.10	31.41	3.16	Peak	---	---
2	700.40	38.19	-7.81	46.00	46.54	19.04	31.45	4.06	Peak	---	---
3	899.90	39.03	-6.97	46.00	45.06	19.94	30.78	4.82	Peak	---	---

- Test Mode : Mode 9
- Polarization : Horizontal

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	2344.00	46.54	-27.46	74.00	50.15	28.34	35.24	3.29	Peak	---	---
2 @	2344.00	34.10	-19.90	54.00	37.71	28.34	35.24	3.29	Average	---	---
3 @	2434.00	80.48			83.96	28.43	35.25	3.34	Average	100	119
4 @	2434.00	93.52			97.00	28.43	35.25	3.34	Peak	---	---
5 @	2484.00	46.96	-27.04	74.00	50.35	28.48	35.26	3.38	Peak	---	---
6 @	2484.00	34.52	-19.48	54.00	37.92	28.48	35.26	3.38	Average	---	---

Remark: #4 and #5 Fundamental Signal.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	4874.00	48.63	-25.37	74.00	46.37	32.70	35.25	4.81	Peak	---	---

- Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	1664.00	50.42	-23.58	74.00	56.75	26.33	35.43	2.76	Peak	---	---
2 @	2374.00	46.76	-27.24	74.00	50.32	28.38	35.24	3.31	Peak	---	---
3 @	2374.00	33.91	-20.09	54.00	37.47	28.38	35.24	3.31	Average	---	---
4 @	2438.00	92.62			96.08	28.45	35.25	3.34	Peak	---	---
5 @	2438.00	79.26			82.72	28.45	35.25	3.34	Average	100	354
6 @	2494.00	46.92	-27.08	74.00	50.29	28.50	35.26	3.39	Peak	---	---
7 @	2494.00	34.39	-19.61	54.00	37.75	28.50	35.26	3.39	Average	---	---

Remark: #4 and #5 Fundamental Signal.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	4874.00	50.97	-23.03	74.00	48.71	32.70	35.25	4.81	Peak	---	---

5.8 Antenna Requirements

5.8.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no other antenna except assembled by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

5.8.2 Antenna Connected Construction

The antennas used in this product are PCB antenna without conntector and Dipole antenna with Revserse SMA connector and it is considered to meet antenna requirement of FCC.

6. List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
EMC Receiver	R&S	ESCS 30	100132	9 KHz – 2.75 GHz	Jun. 23, 2004	Jun. 23, 2005	Conduction (CO01-HY)
LISN	MessTec	NNB-2/16Z	2001/008	9 KHz – 30 MHz	May 03, 2004	May 03, 2005	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001/009	9 KHz – 30 MHz	Apr. 19, 2004	Apr. 19, 2005	Conduction (CO01-HY)
EMI Filter	LINDGREN	LRE-2060	1004	< 450 Hz	N/A	N/A	Conduction (CO01-HY)
EMI Filter	LINDGREN	N6006	201052	0 ~ 60 Hz	N/A	N/A	Conduction (CO01-HY)
RF Cable-CON	Suhner Switzerland	RG223/U	CB029	9KHz~30MHz	Dec. 24, 2003	Dec. 24, 2004	Conduction (CO01-HY)
Spectrum analyzer	R&S	FSP40	100057	9KHz-40GHz	Feb. 26, 2004	Feb. 26, 2005	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Dec. 18, 2003	Dec. 18, 2004	Radiation (03CH06-HY)
Horn Antenna	Com-Power	AH118	071025	1G-18G	Feb. 11, 2004	Feb. 11, 2005	Radiation (03CH06-HY)
PreAmplifier	Com-Power	PA-103	161055	1MHz - 1000MHz	Apr. 26, 2004	Apr. 26, 2005	Radiation (03CH06-HY)
HF Amplifier	MITEQ	AFS44	973248	0.1G - 26.5G	May 20, 2004	May 20, 2005	Radiation (03CH06-HY)

7. Uncertainty Evaluation

Uncertainty of Conducted Emission Evaluation (150kHz ~ 30MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.10	Normal(k=2)	0.05
Cable loss	0.10	Normal(k=2)	0.05
AMN insertion loss	2.50	Rectangular	0.63
Receiver Spec	1.50	Rectangular	0.43
Site imperfection	1.39	Rectangular	0.80
Mismatch **Receiver VSWR Γ1=** **LISN VSWR Γ2=** **Uncertainty=20log(1-Γ1*Γ2)**	+0.34/-0.35	U-shape	0.24
combined standard uncertainty Uc(y)	**1.13**		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	**2.26**		

Uncertainty of Radiated Emission Evaluation (30MHz ~ 1000MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.41	Normal(k=2)	0.21
Antenna factor calibration	0.83	Normal(k=2)	0.42
Cable loss calibration	0.25	Normal(k=2)	0.13
Pre Amplifier Gain calibration	0.27	Normal(k=2)	0.14
RCV/SPA specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site imperfection	1.43	Rectangular	0.83
Mismatch Receiver VSWR Γ1= 0.20 Antenna VSWR Γ2= 0.23 Uncertainty=20log(1-Γ1*Γ2)	+0.39/-0.41	U-shaped	0.28
combined standard uncertainty Uc(y)	**1.27**		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	**2.54**		

Uncertainty of Radiated Emission Evaluation (1GHz ~ 40GHz)

Contribution	Uncertainty of x_i		$u(x_i)$	Ci	$Ci*u(x_i)$
	dB	Probability Distribution			
Receiver reading	±0.10	Normal(k=1)	0.10	1	0.10
Antenna factor calibration	±1.70	Normal(k=2)	0.85	1	0.85
Cable loss calibration	±0.50	Normal(k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1= 0.197 Antenna VSWR Γ2= 0.194 Uncertainty=20log(1-Γ1*Γ2*Γ3)	+0.34/-0.35	U-shaped	0.244	1	0.244
Combined standard uncertainty Uc(y)	**2.36**				
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	**4.72**				

U=$\sqrt{}${(0.3/2)² +(2²+1.5²+0.2²)/3+(0.2)²/2}=1.66