

### 5. TEST RESULTS (Bluetooth)

#### 5.1 FHSS Maximum Peak Output Power

##### 5.1.1 Test Procedure

The Transmitter output of EUT was connected to the peak power analyzer.

##### 5.1.2 Test Setup



##### 5.1.3 Test Data

#### Maximum Peak Output Power

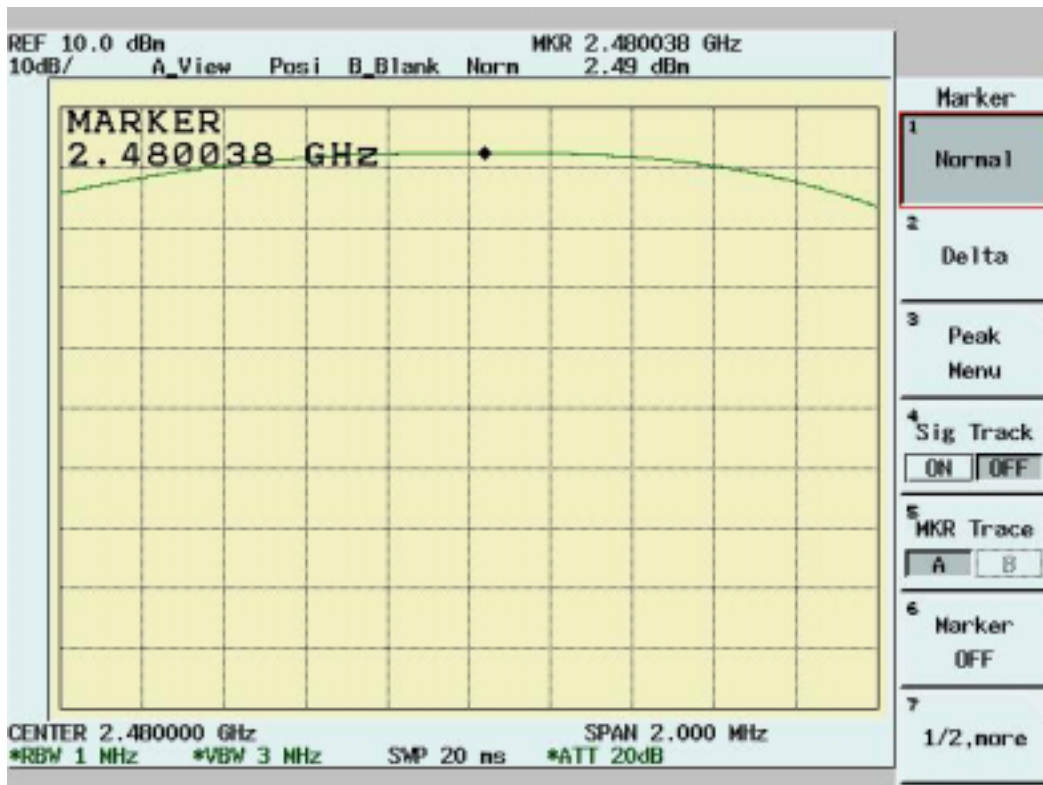
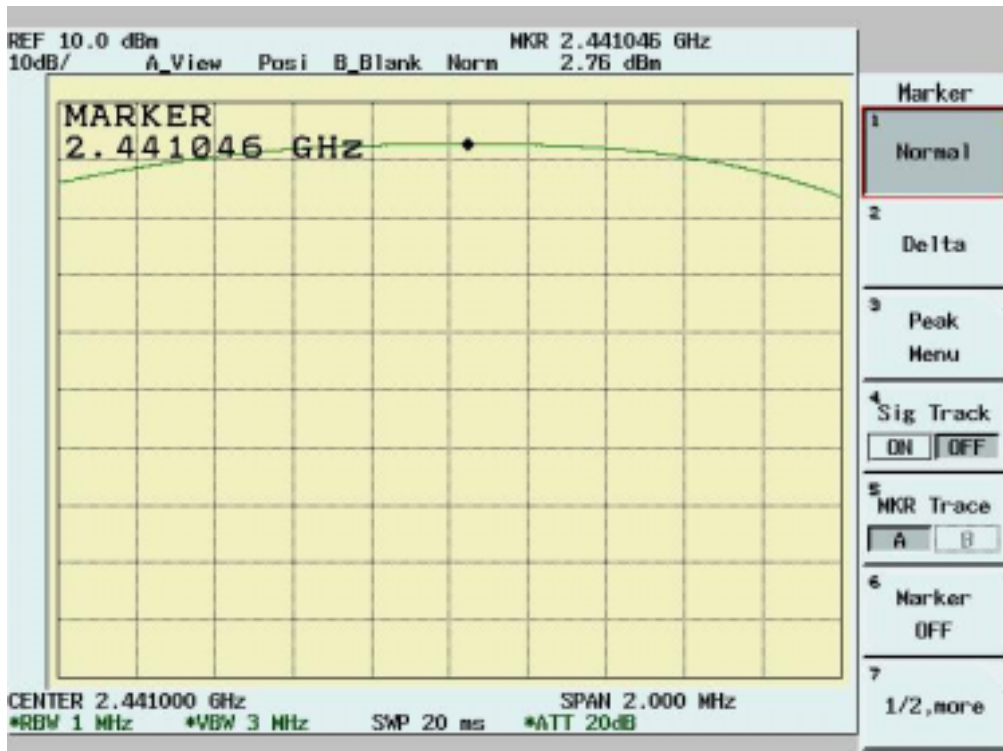
Temperature ( ):25

Test Engineer:Jerry Chiou

Humidity (%):55

Channel	Frequency (Mhz)	Analyzer Reading (dBm)	Cable Loss (dB)	Peak Power Output (mW)	Peak Power Output (dBm)	Limit (dBm)	Pass/Fail
00	2412	3.29	1.10	2.75	4.39	30	Pass
39	2437	2.76	1.10	2.43	3.86	30	Pass
78	2462	2.49	1.10	2.29	3.59	30	Pass





## 5.2 Radiated Emission Measurement

### 5.2.1 EUT Configuration

The equipment under test was set up on the 10 meter chamber with measurement distance of 3 meters. The EUT was placed on a non-conductive table 80cm above ground.

Any changes made to the configuration, or modifications made to the EUT, during testing are noted in the following test record.

### 5.2.2 Test Procedure

The system was set up as described above, with the EMI diagnostic software running. We found the maximum readings by varying the height of antenna and then rotating the turntable. Both polarization of antenna, horizontal and vertical, are measured.

30M to 1GHz: The highest emissions between 30 MHz to 1000 MHz were also analyzed in details by operating the spectrum analyzer and/or EMI receiver in quasi-peak mode to determine the precise amplitude of the emissions. While doing so, the interconnecting cables and major parts of the system were moved around, the antenna height was varied between one and four meters, its polarization was varied between vertical and horizontal, and the turntable was slowly rotated, to maximize the emission.

1GHz – 25GHz: The highest emissions were also analyzed in details by operating the spectrum analyzer and/or EMI receiver in peak mode to determine the precise amplitude of the emission. While doing so, the interconnecting cables and major parts of the system were moved around, the antenna height was varied between one and four meters, its polarization was varied between vertical and horizontal, and the turntable was slowly rotated, to maximize the emission. During test the EMI receiver and spectrum was setup *according to EMI Receiver/Spectrum Analyzer Configuration*.

For the test of 2<sup>nd</sup> to 10<sup>th</sup> harmonics frequencies , the equipment setup was also refer to *EMI Receiver/Spectrum Analyzer Configuration*. The frequencies were tested using Peak mode first, if the test data is higher than the emissions limit, an additional measurement using Average mode will be performed and the average reading will be compared to the limit and record in test report.

### 5.2.3 EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested)

Frequency Range Tested:	30MHz~1000MHz
Detector Function:	Quasi-Peak Mode
Resolution Bandwidth (RBW):	120KHz
Video Bandwidth (VBW)	1MHz

Frequency Range Tested:	1GHz – 25 GHz
Detector Function:	Peak Mode
Resolution Bandwidth (RBW):	1MHz
Video Bandwidth (VBW)	3MHz

Frequency Range Tested:	1GHz – 25 GHz
Detector Function:	Average Mode
Resolution Bandwidth (RBW):	1MHz
Video Bandwidth (VBW)	10 Hz

5.2.4 Test Data (30MHz – 1GHz):

30M – 1GHz Open Field Radiated Emissions (Horizontal) Channel 00, 39, 78

Operator: Jerry Chiou  
Temperature (C): 23  
Humidity (%): 54

07:07:21 PM, Friday, August 12, 2005

Frequency	Rx Amp.	Ant Fact	CableLoss	PreAmpGain	Corrct. Emi.	Limit	Margin	Ant. Pos.	Table Pos.
MHz	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)
332.64	8.83	16.10	3.95	0.00	28.87	46.00	-17.13	103.00	288.00
599.39	5.21	18.70	5.85	0.00	29.76	46.00	-16.24	103.00	353.00
666.32	17.34	19.00	6.41	0.00	42.75	46.00	-3.25	196.00	203.00
699.3	3.89	19.00	6.62	0.00	29.51	46.00	-16.49	196.00	334.00
733.25	12.29	19.80	6.89	0.00	38.98	46.00	-7.02	196.00	302.00
766.23	0.78	20.17	7.07	0.00	28.02	46.00	-17.98	103.00	75.00
833.16	2.58	20.43	7.71	0.00	30.72	46.00	-15.28	196.00	236.00
866.14	2.73	20.60	7.97	0.00	31.30	46.00	-14.70	196.00	318.00
933.07	2.27	21.06	8.31	0.00	31.64	46.00	-14.36	196.00	302.00

30M – 1GHz Open Field Radiated Emissions (Vertical) Channel 00, 39, 78

Operator: Jerry Chiou  
Temperature (C): 23  
Humidity (%): 54

07:07:21 PM, Friday, August 12, 2005

Frequency	Rx Amp.	Ant Fact	CableLoss	PreAmpGain	Corrct. Emi.	Limit	Margin	Ant. Pos.	Table Pos.
MHz	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)
132.82	17.41	11.02	2.18	0.00	30.61	43.50	-12.89	103.00	59.00
332.64	12.44	16.10	3.95	0.00	32.48	46.00	-13.52	103.00	288.00
366.59	13.77	16.10	4.22	0.00	34.09	46.00	-11.91	103.00	337.00
455.83	10.15	16.34	4.90	0.00	31.39	46.00	-14.61	103.00	337.00
534.4	10.05	18.23	5.41	0.00	33.68	46.00	-12.32	103.00	272.00
666.32	16.94	19.00	6.41	0.00	42.35	46.00	-3.65	196.00	203.00
733.25	11.73	19.80	6.89	0.00	38.42	46.00	-7.58	196.00	302.00
833.16	4.45	20.43	7.71	0.00	32.59	46.00	-13.41	196.00	236.00
866.14	4.55	20.60	7.97	0.00	33.12	46.00	-12.88	196.00	318.00
933.07	3.82	21.06	8.31	0.00	33.19	46.00	-12.81	196.00	302.00

NOTE:

- During the Pre-test, the EUT has been tested for Channel 00, 39, 78 transmit from Main and Aux antenna respectively to get all the critical emission frequencies. In the final test all the critical emission frequencies has been tested and the test data are listed above.
- Margin = Corrected Amplitude – Limit  
Corrected Amplitude = Radiated Amplitude + Antenna Correction Factor + Cable Loss - Pre-Amplifier Gain  
A margin of -8dB means that the emission is 8dB below the limit

**All frequencies from 30MHz to 1GHz have been tested**

5.2.5 Test Data ( 1GHz – 25 GHz) .

1GHz~ 25 GHz (Horizontal), Channel 00: 2402 MHz

Operator: Jerry Chiou

RBW: 1MHz  
Humidity (%): 41  
Temperature (C): 27

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission	Limit	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
1132.37	47.19 pk	25.11	2.19	34.00	40.48 pk	54.00 av	-13.52	102	103
1264.74	45.28 pk	25.72	2.20	34.07	39.13 pk	54.00 av	-14.87	101	94
1332.17	48.11 pk	26.03	2.21	34.11	42.24 pk	54.00 av	-11.76	101	89
1806.69	42.20 pk	29.38	2.46	34.80	39.23 pk	54.00 av	-14.77	100	56
1824.18	42.10 pk	29.52	2.47	34.84	39.26 pk	54.00 av	-14.74	100	55
1839.16	44.93 pk	29.65	2.48	34.86	42.19 pk	54.00 av	-11.81	100	54
1999	41.26 pk	30.99	2.60	35.18	39.67 pk	54.00 av	-14.33	100	43
2151.35	41.37 pk	30.97	2.14	35.19	39.29 pk	54.00 av	-14.71	100	91
4804.09	48.45 pk	34.86	2.12	37.69	47.73 pk	54.00 av	-6.27	100.00	243.00
9608.83	43.10 pk	40.66	3.23	34.32	52.67 pk	54.00 av	-1.33	100.00	125.00

1GHz~ 25 GHz (Vertical), Channel 00: 2402 MHz

Operator: Jerry Chiou

RBW: 1MHz  
Humidity (%): 41  
Temperature (C): 27

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission	Limit	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
1099.9	50.58 pk	24.96	2.18	33.98	43.74 pk	54.00 av	-10.26	102	105
1332.17	48.92 pk	26.03	2.21	34.11	43.05 pk	54.00 av	-10.95	101	89
1626.87	46.61 pk	27.87	2.32	34.45	42.35 pk	54.00 av	-11.65	101	69
1664.34	45.90 pk	28.18	2.35	34.52	41.91 pk	54.00 av	-12.09	101	66
1731.77	45.72 pk	28.75	2.40	34.65	42.21 pk	54.00 av	-11.79	101	62
1799.2	46.60 pk	29.31	2.45	34.79	43.58 pk	54.00 av	-10.42	100	57
1999	44.81 pk	30.99	2.60	35.18	43.23 pk	54.00 av	-10.77	100	43
2798.2	45.22 pk	31.02	1.41	34.93	42.72 pk	54.00 av	-11.28	102	294
4803.58	49.52 pk	34.85	2.12	37.69	48.80 pk	54.00 av	-5.20	100.00	202.00
9606.17	43.35 pk	40.67	3.23	34.32	52.92 pk	54.00 av	-1.08	100.00	120.00

Note:

- According to the standards used, Where limits are specified by agencies for both average and peak (or quasi-peak) detection , if the peak (or quasi-peak) measured value complies with the average limit , it is unnecessary to perform an average measurement.
- “ \* ”: Fundamental Frequency
- “\*\*\*”: Not in the restricted band, Limit level=Fundamental Emission-20dB
- “ pk” : peak mode
- “av”: average mode
- “---“: No meter reading data due to the emission level is smaller than spectrum noise level.
- The Spectrum noise level+Correction Factor < Limit - 6 dB
- Margin=Corrected Amplitude – Limit
- Corrected Amplitude=Radiated Amplitude+Antenna Correction Factor+Cable Loss-Pre-Amplifier Gain
- A margin of -8dB means that the emission is 8dB below the limit.

**All frequencies from 1GHz to 25 GHz have been tested.**

1GHz~ 25 GHz (Horizontal) , Channel 39 : 2441 MHz

Operator: Jerry Chiou

RBW: 1MHz  
Humidity (%): 41  
Temperature (C): 27

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission	Limit	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
1132.37	46.91 pk	25.11	2.19	34.00	40.21 pk	54.00 av	-13.79	102	103
1164.84	46.73 pk	25.26	2.19	34.02	40.16 pk	54.00 av	-13.84	102	101
1332.17	49.04 pk	26.03	2.21	34.11	43.17 pk	54.00 av	-10.83	101	89
1799.2	42.43 pk	29.31	2.45	34.79	39.41 pk	54.00 av	-14.59	100	57
1826.67	42.66 pk	29.54	2.47	34.84	39.84 pk	54.00 av	-14.16	100	55
1841.66	45.61 pk	29.67	2.48	34.87	42.89 pk	54.00 av	-11.11	100	54
1999	42.11 pk	30.99	2.60	35.18	40.52 pk	54.00 av	-13.48	100	43
2408.59	46.97 pk	30.92	1.53	35.20	44.22 pk	54.00 av	-9.78	101	171
4882.35	50.54 pk	35.15	2.14	37.78	50.05 pk	54.00 av	-3.95	100.00	233.00
9764.84	43.41 pk	40.32	3.31	34.38	52.66 pk	54.00 av	-1.34	100.00	203.00

1GHz~ 25 GHz (Vertical), Channel 39 : 2441 MHz

Operator: Jerry Chiou

RBW: 1MHz  
Humidity (%): 41  
Temperature (C): 27

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission	Limit	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
1067.43	48.55 pk	24.81	2.18	33.97	41.57 pk	54.00 av	-12.43	102	107
1099.9	47.15 pk	24.96	2.18	33.98	40.31 pk	54.00 av	-13.69	102	105
1264.74	47.52 pk	25.72	2.20	34.07	41.37 pk	54.00 av	-12.63	101	94
1299.7	45.69 pk	25.88	2.21	34.09	39.68 pk	54.00 av	-14.32	101	91
1332.17	48.05 pk	26.03	2.21	34.11	42.18 pk	54.00 av	-11.82	101	89
1799.2	43.16 pk	29.31	2.45	34.79	40.14 pk	54.00 av	-13.86	100	57
2798.2	44.43 pk	31.02	1.41	34.93	41.93 pk	54.00 av	-12.07	102	294
4882.17	51.30 pk	35.15	2.14	37.78	50.81 pk	54.00 av	-3.19	100.00	206.00
9763.59	43.22 pk	40.32	3.31	34.37	52.47 pk	54.00 av	-1.53	100.00	225.00

Note:

- According to the standards used:Where limits are specified by agencies for both average and peak (or quasi-peak) detection , if the peak (or quasi-peak) measured value complies with the average limit , it is unnecessary to perform an average measurement.
- “ \* ”: Fundamental Frequency
- “\*\*”: Not in the restricted band, Limit level=Fundamental Emission-20dB
- “ pk”: peak mode
- “av”: average mode
- “---“: No meter reading data due to the emission level is smaller than spectrum noise level.
- The Spectrum noise level+Correction Factor < Limit - 6 dB
- Margin=Corrected Amplitude – Limit
- Corrected Amplitude=Radiated Amplitude+Antenna Correction Factor+Cable Loss-Pre-Amplifier Gain
- A margin of -8dB means that the emission is 8dB below the limit.

All frequencies from 1GHz to 25 GHz have been tested.

1GHz~ 25 GHz (Horizontal), Channel 78: 2480 MHz

Operator: Jerry Chiou

RBW: 1MHz  
Humidity (%): 41  
Temperature (C): 27

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission	Limit	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
1099.9	45.77 pk	24.96	2.18	33.98	38.92 pk	54.00 av	-15.08	102	105
1132.37	46.78 pk	25.11	2.19	34.00	40.07 pk	54.00 av	-13.93	102	103
1167.33	46.19 pk	25.27	2.19	34.02	39.63 pk	54.00 av	-14.37	102	100
1332.17	48.55 pk	26.03	2.21	34.11	42.68 pk	54.00 av	-11.32	101	89
1799.2	42.37 pk	29.31	2.45	34.79	39.35 pk	54.00 av	-14.65	100	57
1841.66	45.53 pk	29.67	2.48	34.87	42.81 pk	54.00 av	-11.19	100	54
1999	42.85 pk	30.99	2.60	35.18	41.26 pk	54.00 av	-12.74	100	43
2510.99	44.34 pk	30.90	1.36	35.19	41.42 pk	54.00 av	-12.58	102	203
3170.33	41.28 pk	31.24	1.54	35.12	38.93 pk	54.00 av	-15.07	103	313
4959.48	50.71 pk	35.45	2.16	37.87	50.45 pk	54.00 av	-3.55	100.00	237.00
9920.48	42.84 pk	39.97	3.39	34.43	51.77 pk	54.00 av	-2.23	100.00	259.00

1GHz~ 25 GHz (Vertical), Channel 78 : 2480 MHz

Operator: Jerry Chiou

RBW: 1MHz  
Humidity (%): 41  
Temperature (C): 27

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission	Limit	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
1064.94	49.01 pk	24.80	2.18	33.97	42.02 pk	54.00 av	-11.98	102	108
1099.9	47.32 pk	24.96	2.18	33.98	40.48 pk	54.00 av	-13.52	102	105
1232.27	45.87 pk	25.57	2.20	34.06	39.58 pk	54.00 av	-14.42	102	96
1264.74	46.43 pk	25.72	2.20	34.07	40.28 pk	54.00 av	-13.72	101	94
1332.17	47.60 pk	26.03	2.21	34.11	41.73 pk	54.00 av	-12.27	101	89
1626.87	44.16 pk	27.87	2.32	34.45	39.90 pk	54.00 av	-14.10	101	69
1799.2	43.20 pk	29.31	2.45	34.79	40.17 pk	54.00 av	-13.83	100	57
2510.99	43.77 pk	30.90	1.36	35.19	40.84 pk	54.00 av	-13.16	102	203
2798.2	43.77 pk	31.02	1.41	34.93	41.27 pk	54.00 av	-12.73	102	294
4959.48	50.84 pk	35.45	2.16	37.87	50.58 pk	54.00 av	-3.42	100.00	218.00
9920.18	43.03 pk	39.98	3.39	34.43	51.96 pk	54.00 av	-2.04	100.00	321.00

Note:

- According to the standards used, Where limits are specified by agencies for both average and peak (or quasi-peak) detection , if the peak (or quasi-peak) measured value complies with the average limit , it is unnecessary to perform an average measurement.
- “ \* ”: Fundamental Frequency
- “\*\*\*”: Not in the restricted band, Limit level=Fundamental Emission-20dB
- “ pk” : peak mode
- “ av” : average mode
- “ --- ”: No meter reading data due to the emission level is smaller than spectrum noise level.
- The Spectrum noise level+Correction Factor < Limit - 6 dB
- Margin=Corrected Amplitude – Limit
- Corrected Amplitude=Radiated Amplitude+Antenna Correction Factor+Cable Loss-Pre-Amplifier Gain
- A margin of -8dB means that the emission is 8dB below the limit.

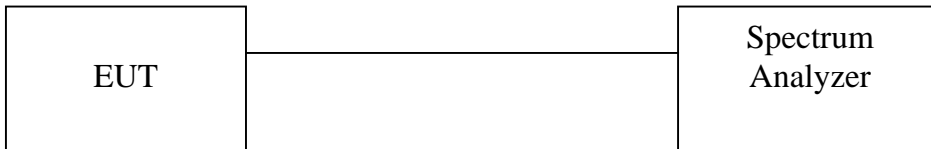
All frequencies from 1GHz to 25 GHz have been tested.

### 5.3 Band Edge Measurement

#### 5.3.1 Test Procedure (Conducted)

1. The transmitter output of EUT was connected to the spectrum analyzer.  
 Equipment mode: Spectrum analyzer  
 Detector function: Peak mode  
 SPAN: 100MHz  
 RBW: 100KHz  
 VBW: 100KHz  
 Center frequency: 2.4GHz, 2.4835GHz.
2. Using Peak Search to read the peak power of Carrier frequencies after Maximum Hold function is completed
3. Find the next peak frequency outside the operation frequency band

#### 5.3.2 Test Setup (Conducted)



#### 5.3.3 Test Data:

**Table: Band Edge measurement (Conducted)**

Temperature ( ):25

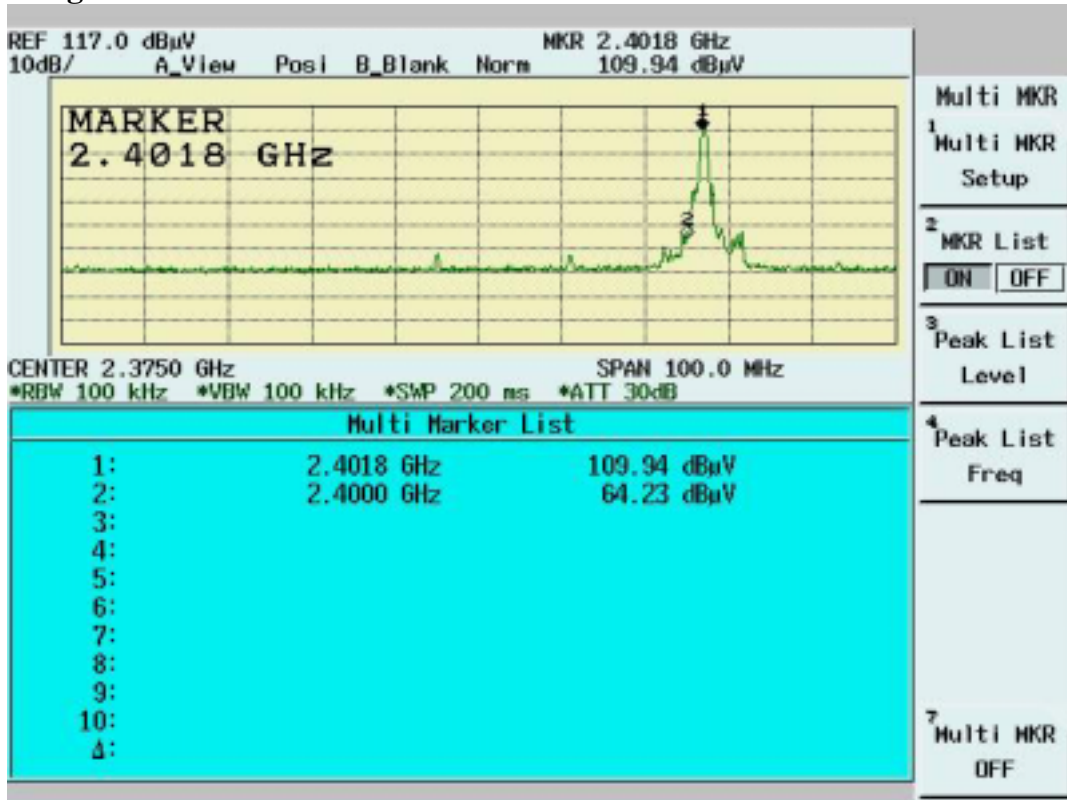
Test Engineer:Jerry Chiou

Humidity (%):55

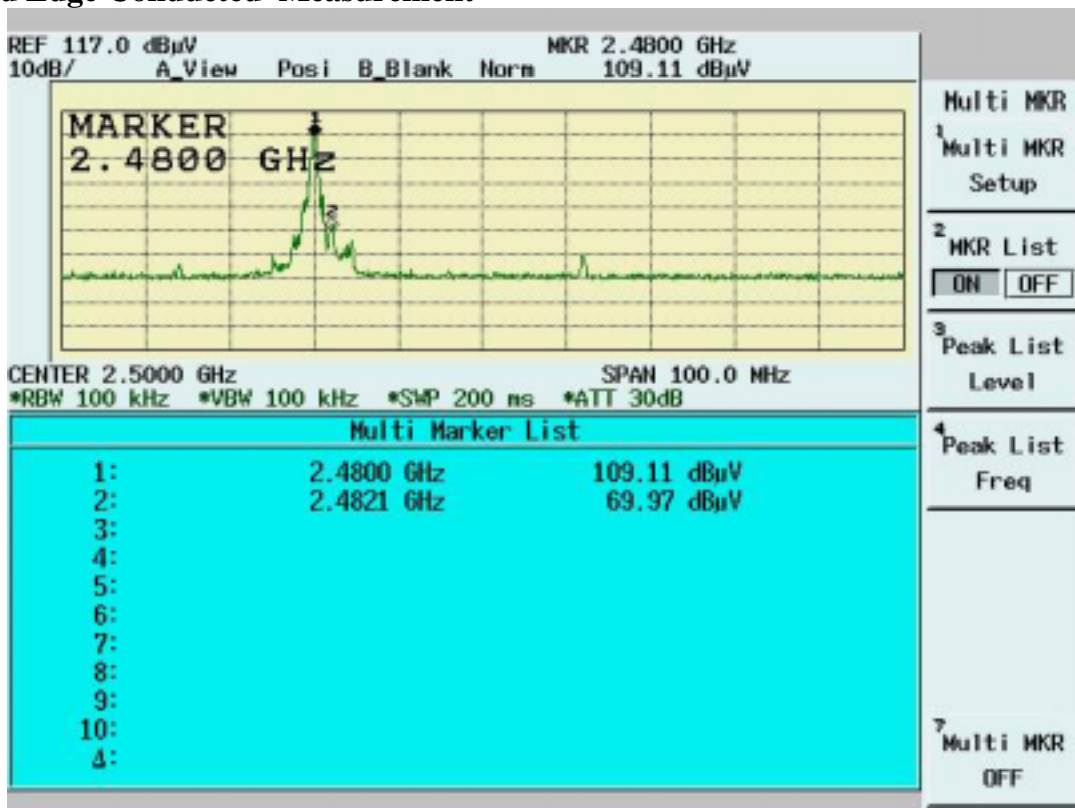
Channel	Frequency (MHz)	Spectrum Reading (dBuV)	Carrier - Outsideband Limit: >20dB (dB)	Pass/Fail
00	2401.8	109.9	---	---
Outside band	2400.0	64.2	45.7	Pass
78	2480.0	109.1	---	---
Outside band	2482.1	70.0	39.1	Pass



### Band Edge Conducted measurement



### Band Edge Conducted Measurement



### 5.3.4 Test Procedure (Radiated)

1. Antenna and Turntable test procedure same as Radiated Emission Measurement.  
Equipment mode: Spectrum analyzer  
Detector function: Peak mode  
SPAN: 100MHz  
RBW: 1MHz  
VBW: 3MHz  
Center frequency: 2.375GHz, 2.500GHz.
2. Using Peak Search to read the peak power of Carrier frequencies after Maximum Hold function is completed.
3. Find the next peak frequency outside the operation frequency band
4. For peak frequency emission level measurement in Restricted Band ,  
Change RBW: 1MHz  
VBW: 10Hz  
Span: 100MHz.
5. Get the spectrum reading after Maximum Hold function is completed.

### 5.3.5 Test Setup (Radiated)

Same as *Radiated Emission Measurement*

5.3.6 Test Data

Table Band Edge measurement (Radiated)

Test Engineer: Jerry Chiou

Temperature ( ): 27

Data Rate

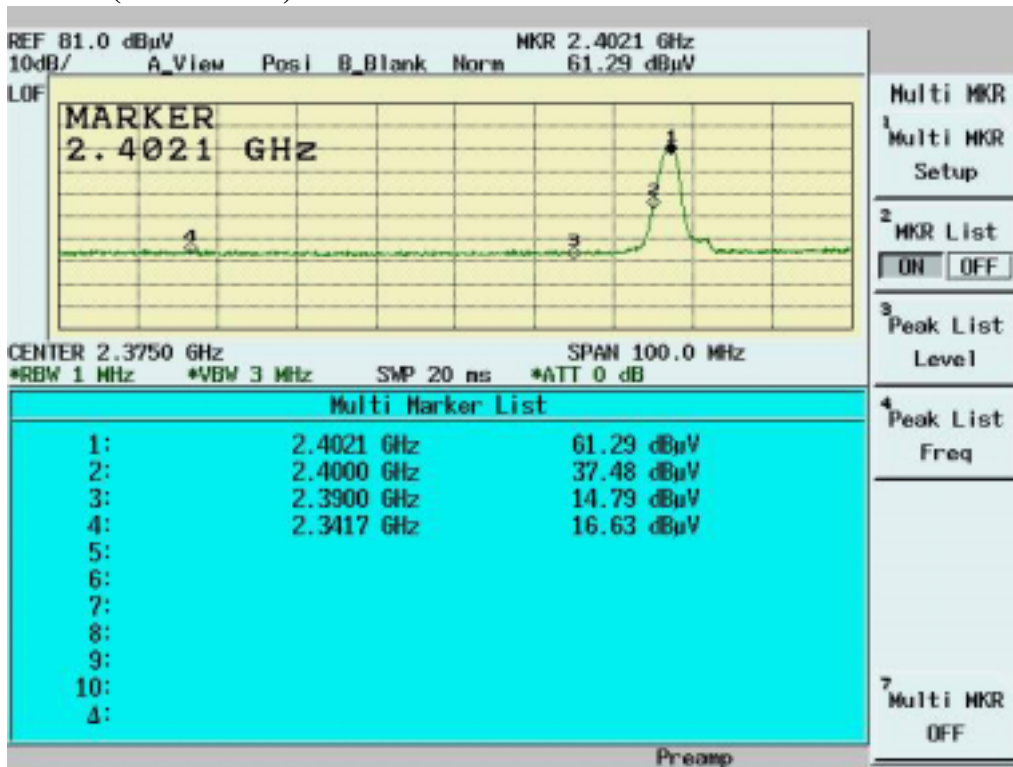
Humidity (%): 40

Description	Frequency (MHz)	Spectrum Reading (dBuV)	Correction Factor (dB/m)	Emission Level (dBuV/m)	dBc ( Limit: > 20dBc)	Limit (dBuV/m)	Equip. Setup VBW	Pass or Fail
Channel_00 (average mode)	2402.30	26.02	35.48	61.50	---	---	10Hz	---
Channel_00 (peak mode)	2402.10	61.29	35.48	96.77	---	---	3MHz	---
Outside band (peak mode)	2400.00	37.48	35.48	72.96	23.81	---	3MHz	Pass
Channel_78 (average mode)	2480.10	25.66	35.51	61.17	---	---	10Hz	---
Channel_78 (peak mode)	2480.10	59.75	35.51	95.26	---	---	3MHz	---
Outside band (peak mode)	2482.00	29.11	35.51	64.62	30.64	---	3MHz	Pass
Channel_00 Restricted band (peak mode)	2341.70	16.63	35.47	52.10	---	74	3MHz	Pass
Restricted band (average mode)	2326.80	5.00	35.47	40.47	---	54	10Hz	Pass
Channel_78 Restricted band (peak mode)	2484.50	19.30	35.51	54.81	---	74	3MHz	Pass
Restricted band (average mode)	2484.00	6.81	35.51	42.32	---	54	10Hz	Pass

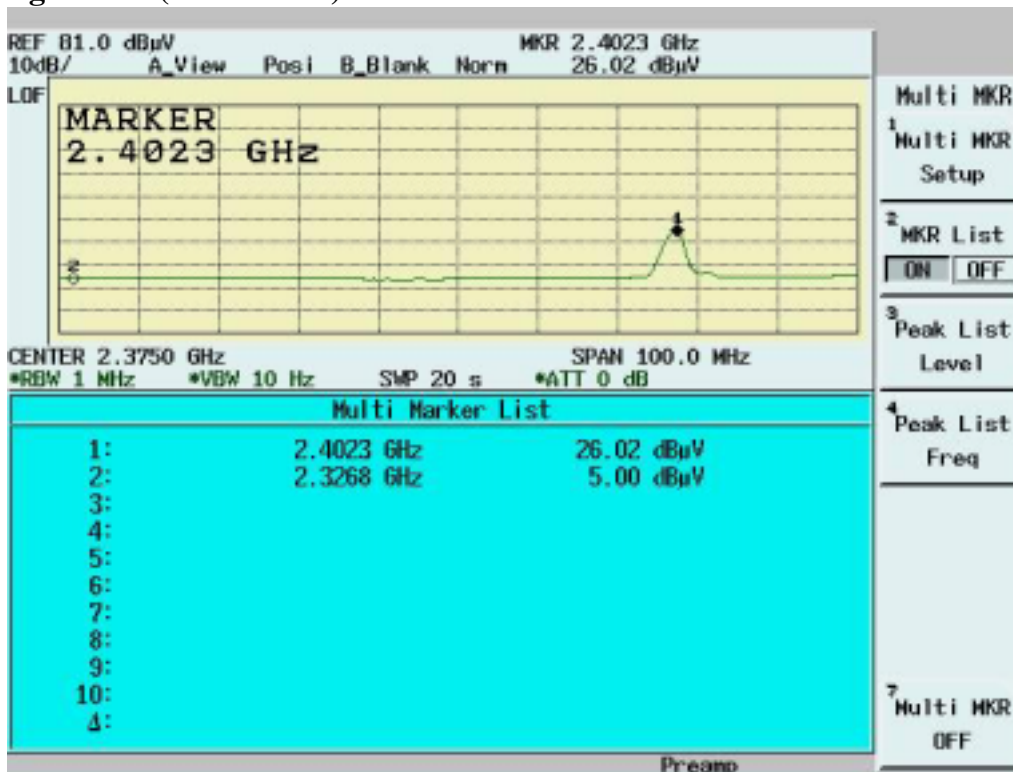
Note:

- The Spectrum plot of emission level measurement in Restricted band is attached.
- Emission Level=Spectrum Reading+Correction Factor
- Correction Factor=Antenna Factor+cable loss–amplifier gain
- Both Horizontal and Vertical polarizaion have been tested and the worst data is listed above.

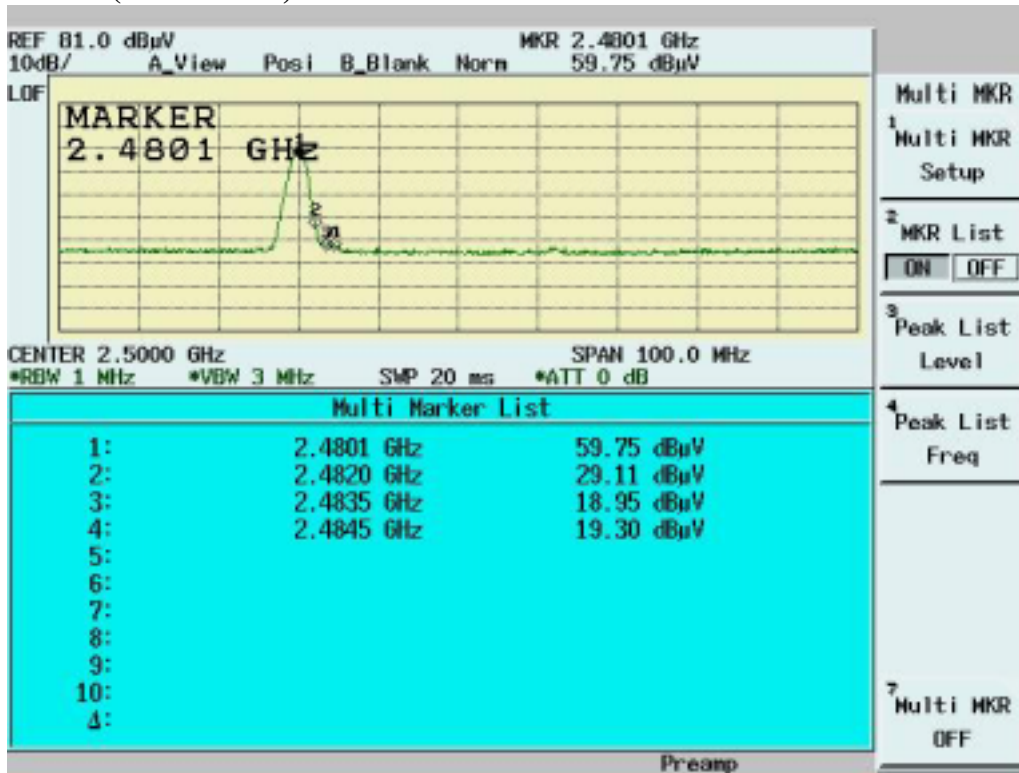
**Band Edge measurement for radiated emission in Restricted Band(Radiated) Peak Mode (Channel 00)**



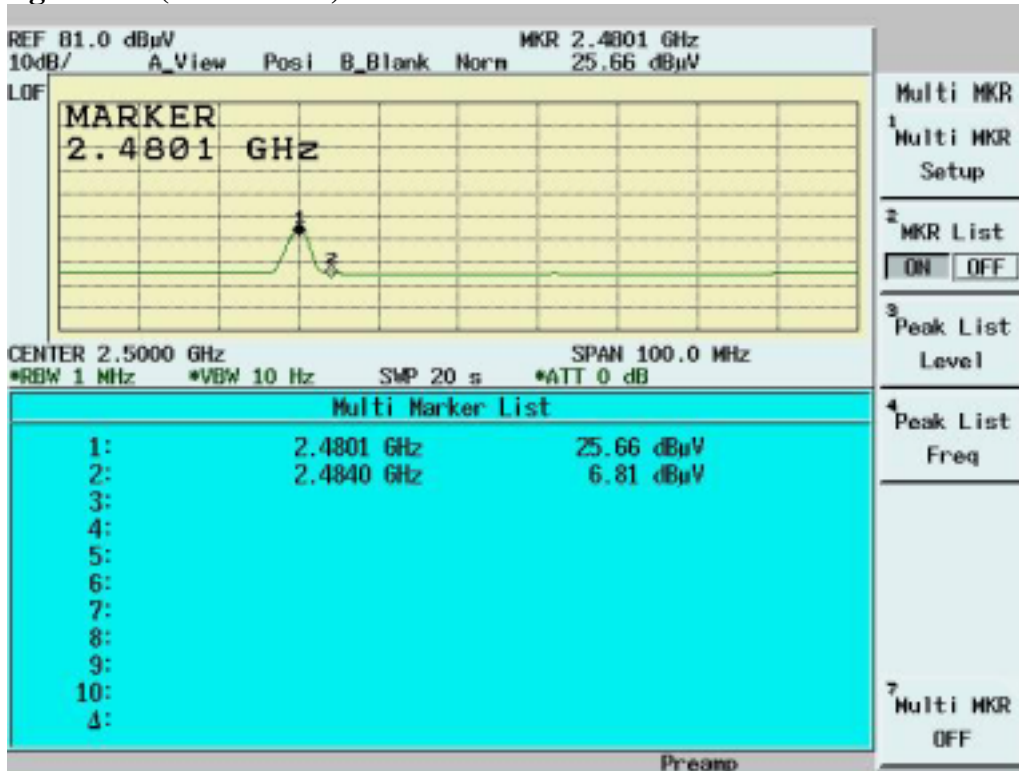
**Band Edge measurement for radiated emission in Restricted Band(Radiated) Average Mode (Channel 00)**



**Band Edge measurement for radiated emission in Restricted Band(Radiated) Peak Mode (Channel 78)**



**Band Edge measurement for radiated emission in Restricted Band(Radiated) Average Mode (Channel 78)**



### 5.4 Bandwidth & Hopping Channel Separation

#### 5.4.1 Standard Applicable

According to §15.247(a)(1), frequency hopping system shall have, hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudorandomly ordered list of hopping frequencies.

#### 5.4.2 Test Procedure

■ Bandwidth Test Procedure

The Transmitter output of EUT was connected to the spectrum analyzer. The 20 dB bandwidth of the fundamental frequency was measured. The setting of spectrum analyzer is as follows

Equipment mode	Spectrum analyzer
Detector function	Peak mode
RBW	30KHz
VBW	100KHz

■ Hopping Channel Separation Test Procedure

1. Connect EUT antenna terminal to the spectrum analyzer with a low loss cable.  
Equipment mode: Spectrum analyzer  
RBW: 100KHz  
VBW: 300KHz  
SPAN:3MHz
2. By using the Max-Hold function record the separation of two adjacent channels.
3. Measure the frequency difference of these two adjacent channels by spectrum analyzer Marker function.
4. Repeat above procedures until all frequencies measured were complete.

#### 5.4.3 Test Setup



5.4.4 Test Data

20dB Bandwidth

Temperature ( ):25

Test Engineer:Jerry Chiou

Humidity (%):55

Channel	Frequency (MHz)	20dB Bandwidth (KHz)	Limit (KHz)	Pass/Fail
00	2402	844	1000	Pass
39	2441	844	1000	Pass
78	2480	836	1000	Pass

Hopping Channel Separation

Temperature ( ):22

Test Engineer:Mailes Hsieh

Humidity (%):25

Channel	Frequency (MHz)	Separation (KHz)	Limit (KHz)	Pass/Fail
00	2402	1002	844	Pass
39	2441	1002	844	Pass
78	2480	999	836	Pass

20dB Bandwidth Channel 00:



20dB Bandwidth Channel 39:





20dB Bandwidth Channel 78:



Hopping Channel Separation Channel 00



Hopping Channel Separation Channel 39



Hopping Channel Separation Channel 78



### 5.5 Number of Hopping Frequency Used

#### 5.5.1 Test Procedure

1. Connect EUT antenna terminal to the spectrum analyzer with a low loss cable.  
Equipment mode: Spectrum analyzer  
RBW: 300KHz  
VBW: 1MHz
2. Set the spectrum analyzer on Max-Hold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
3. Repeat above procedures until all frequencies measured were complete.

#### 5.5.2 Test Setup

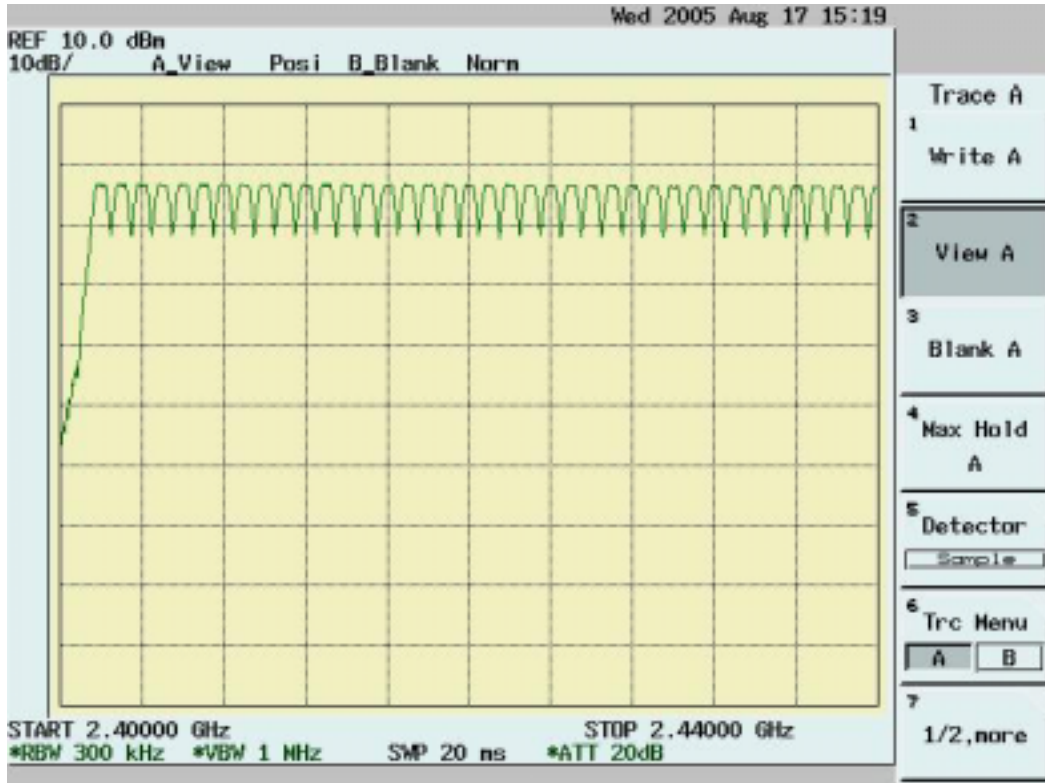


#### 5.5.3 Test Data

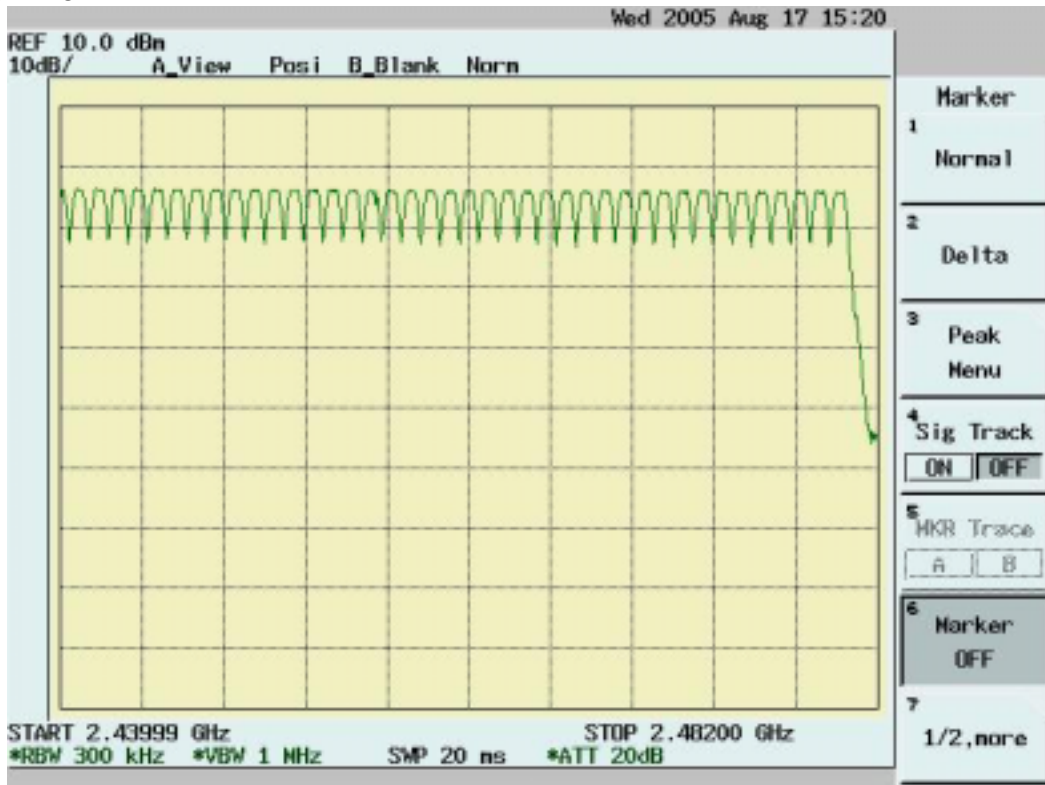
Number of Hopping Frequency Used

Test result	Limit (KHz)	Pass/Fail
79	>75	Pass

2400~2405MHz



2405~2482MHz

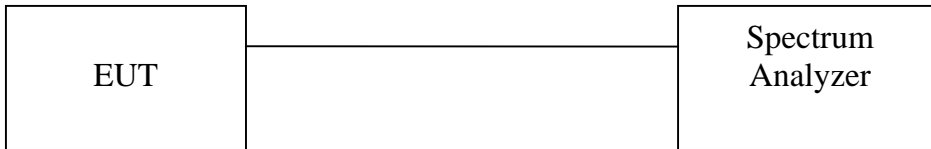


### 5.6 Dwell Time

#### 5.6.1 Test Procedure

1. Connect EUT antenna terminal to the spectrum analyzer with a low loss cable.  
Equipment mode: Spectrum analyzer  
RBW: 1MHz  
VBW: 1MHz  
SPAN: Zero Span
2. Adjust the center frequency of spectrum analyzer on any frequency be measured.
3. Measure the Dwell Time by spectrum analyzer Marker function.
4. Repeat above procedures until all frequencies measured were complete.

#### 5.6.2 Test Setup



#### 5.6.3 Test Data

##### Dwell Time

Temperature ( ):25

Test Engineer:Jerry  
Chiou

Humidity (%):55

Mode	Frequency (MHz)	Spectrum Reading (µs)	Test Result (ms)	Limit (ms)	Pass/Fail
DH1	2402	416	266.24	< 400	Pass
DH3	2402	1672	356.69	< 400	Pass
DH5	2402	2912	372.74	< 400	Pass

Mode	Frequency (MHz)	Spectrum Reading (µs)	Test Result (ms)	Limit (ms)	Pass/Fail
DH1	2441	416	266.24	< 400	Pass
DH3	2441	1668	355.84	< 400	Pass
DH5	2441	2904	371.71	< 400	Pass

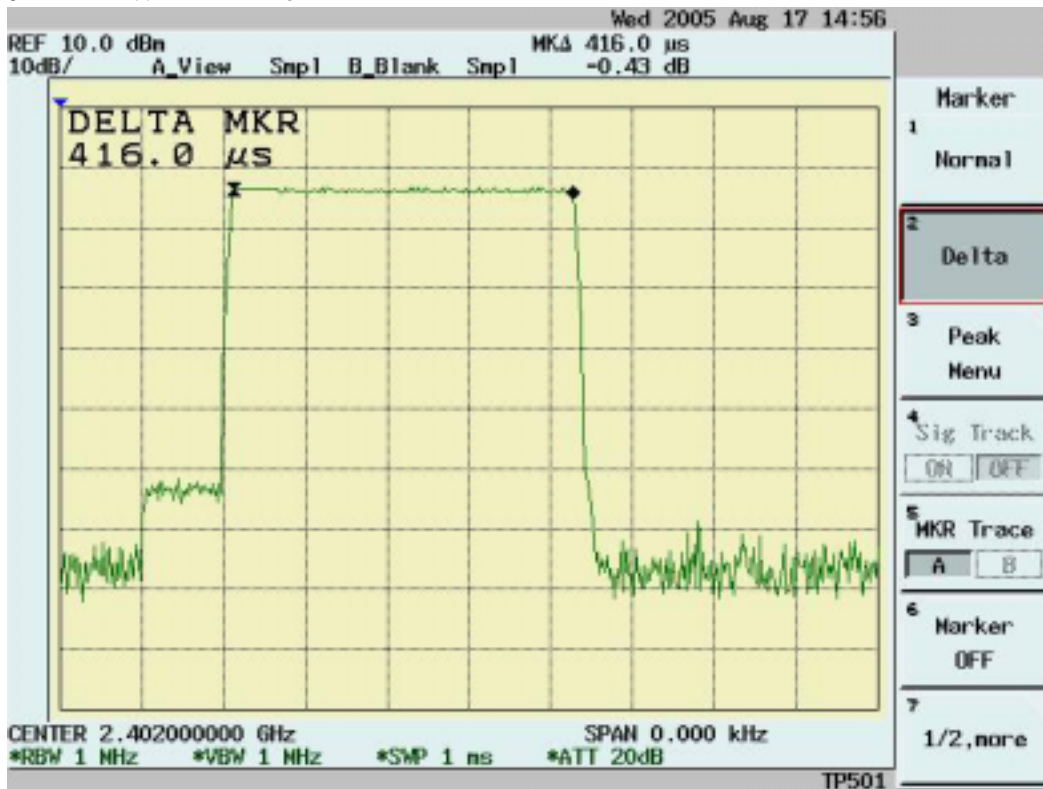
Mode	Frequency (MHz)	Spectrum	Test	Limit		Pass/Fail
		Reading (µs)	Result (ms)	(ms)		
DH1	2480	414	264.96	<	400	Pass
DH3	2480	1668	355.84	<	400	Pass
DH5	2480	2912	372.74	<	400	Pass

Note:

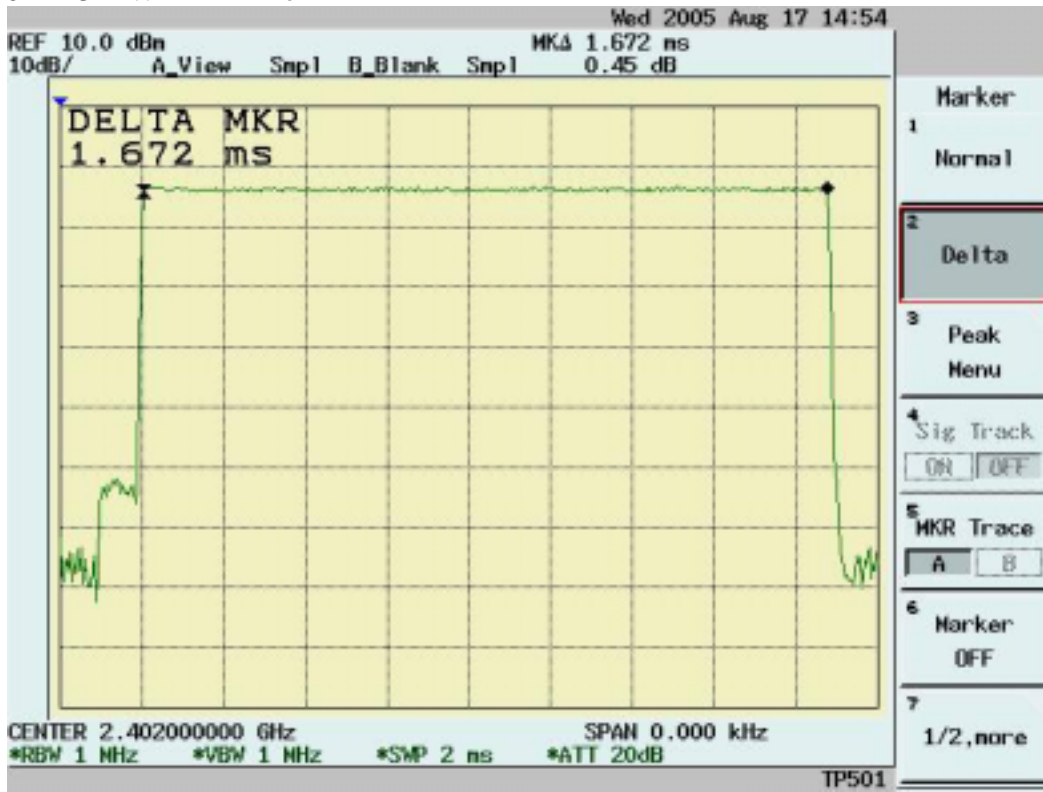
A period time=79x0.4(s)=31.6(s)

CH00	DH1 time slot=	416 (µs)*(1600/(1*79))*31.6=	266.24 (ms)
	DH3 time slot=	1672 (µs)*(1600/(3*79))*31.6=	356.69 (ms)
	DH5 time slot=	2912 (µs)*(1600/(5*79))*31.6=	372.74 (ms)
CH39	DH1 time slot=	416 (µs)*(1600/(1*79))*31.6=	266.24 (ms)
	DH3 time slot=	1668 (µs)*(1600/(3*79))*31.6=	355.84 (ms)
	DH5 time slot=	2904 (µs)*(1600/(5*79))*31.6=	371.71 (ms)
CH78	DH1 time slot=	414 (µs)*(1600/(1*79))*31.6=	264.96 (ms)
	DH3 time slot=	1668 (µs)*(1600/(3*79))*31.6=	355.84 (ms)
	DH5 time slot=	2912 (µs)*(1600/(5*79))*31.6=	372.74 (ms)

CH00 DH1 DWELL Time



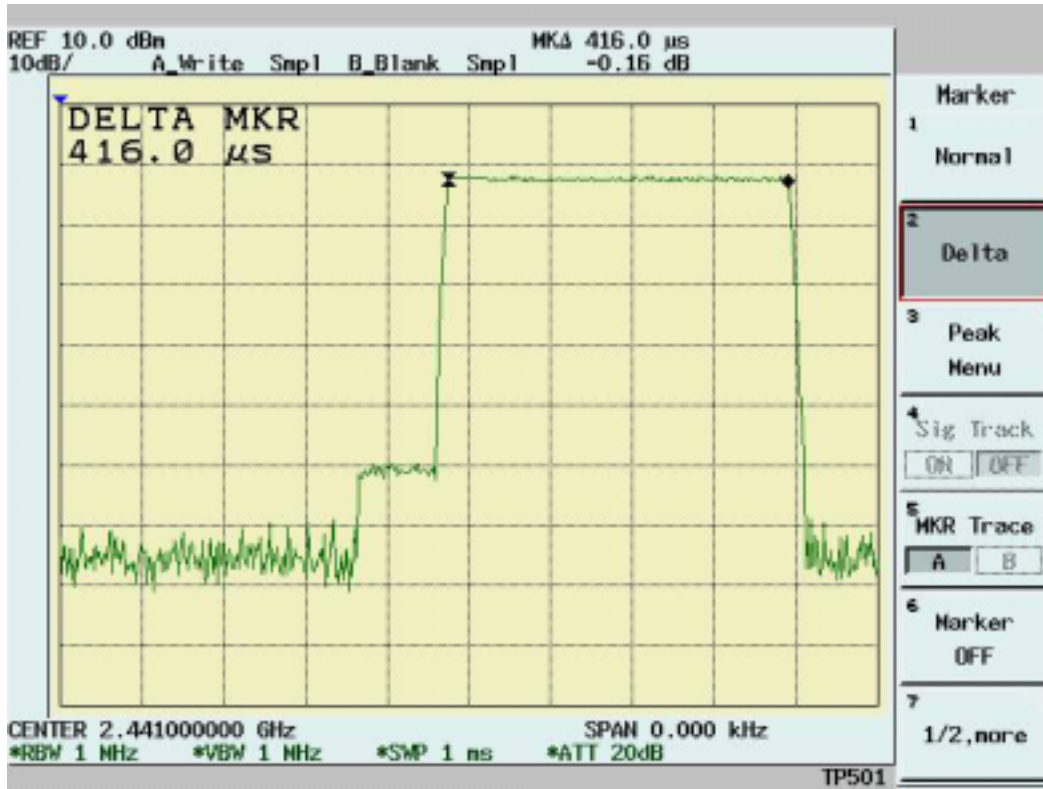
CH00 DH3 DWELL Time



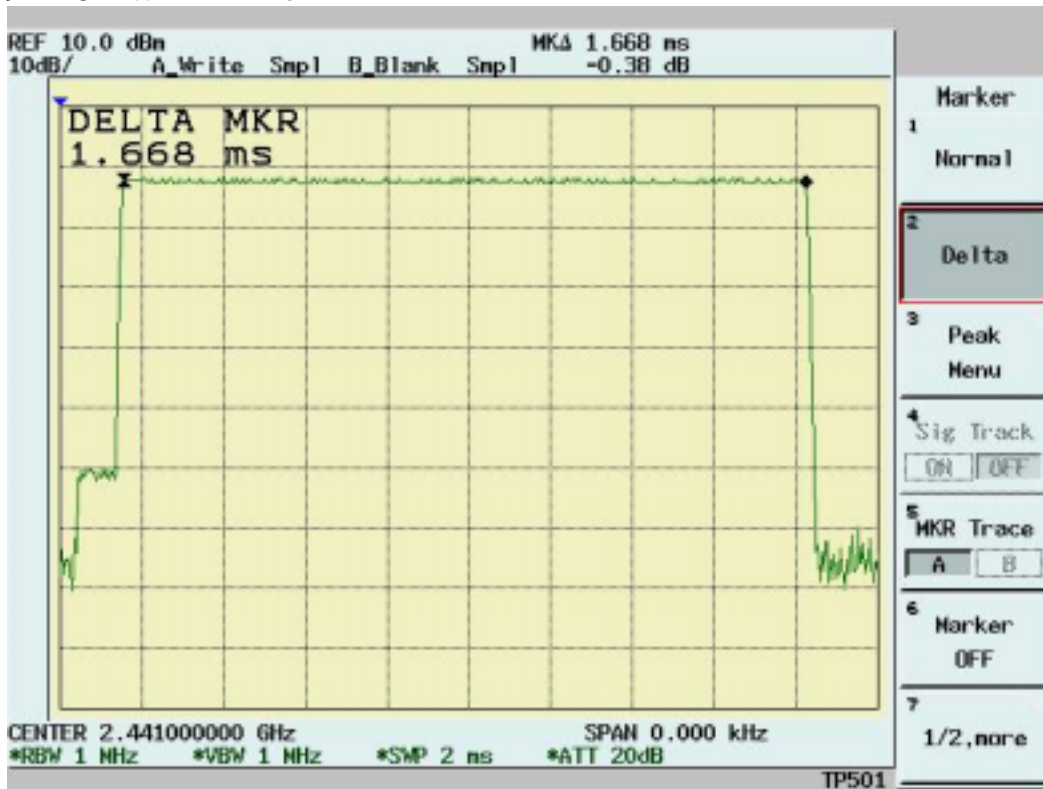
CH00 DH5 DWELL Time



CH39 DH1 DWELL Time

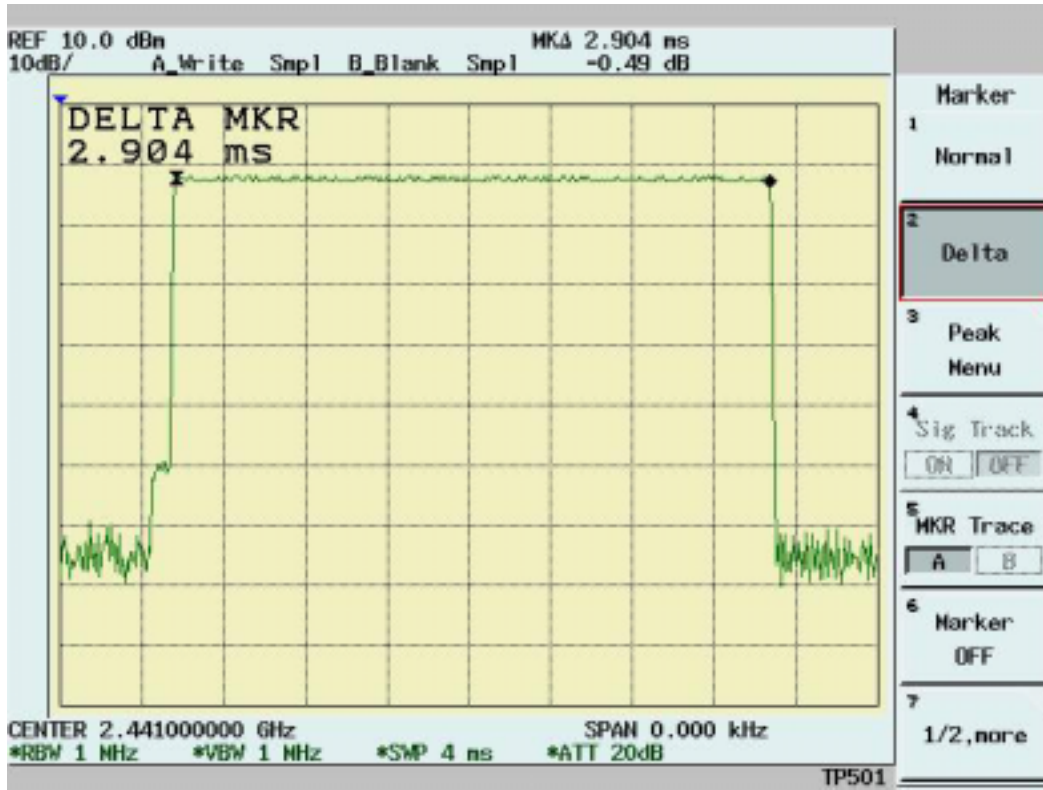


CH39 DH3 DWELL Time

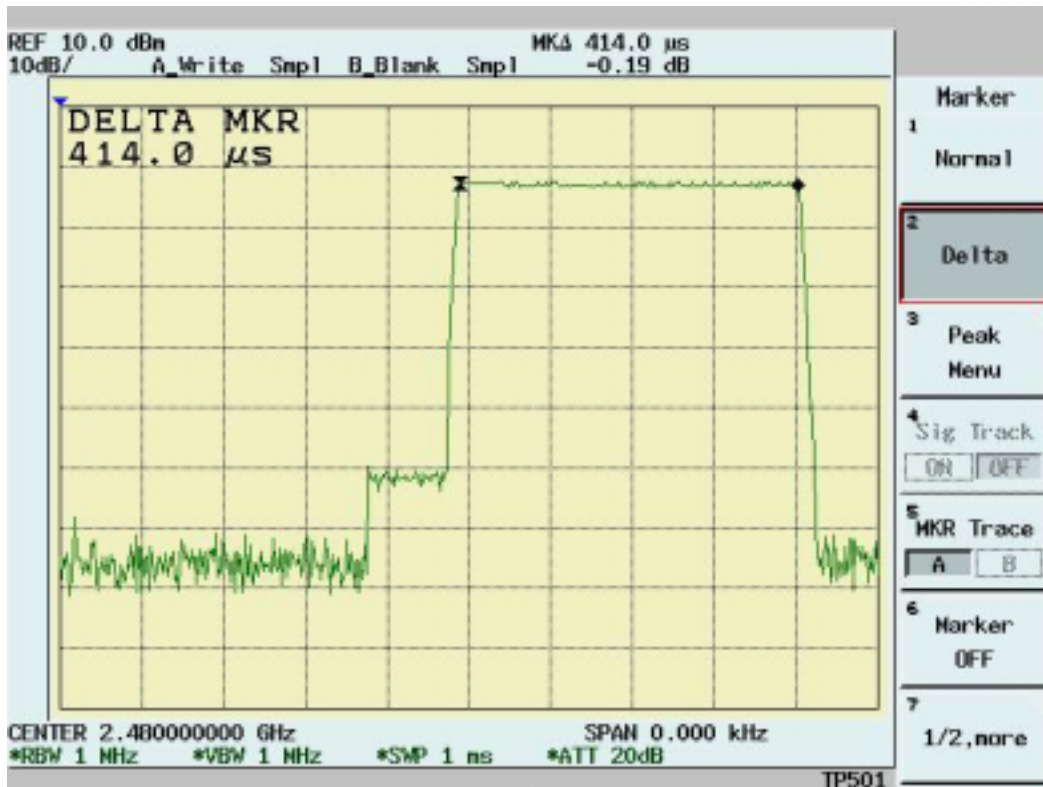




CH39 DH5 DWELL Time



CH78 DH1 DWELL Time



CH78 DH3 DWELL Time



CH78 DH5 DWELL Time



### 5.7 Appendix G: Photographs of EUT Configuration Test Set Up

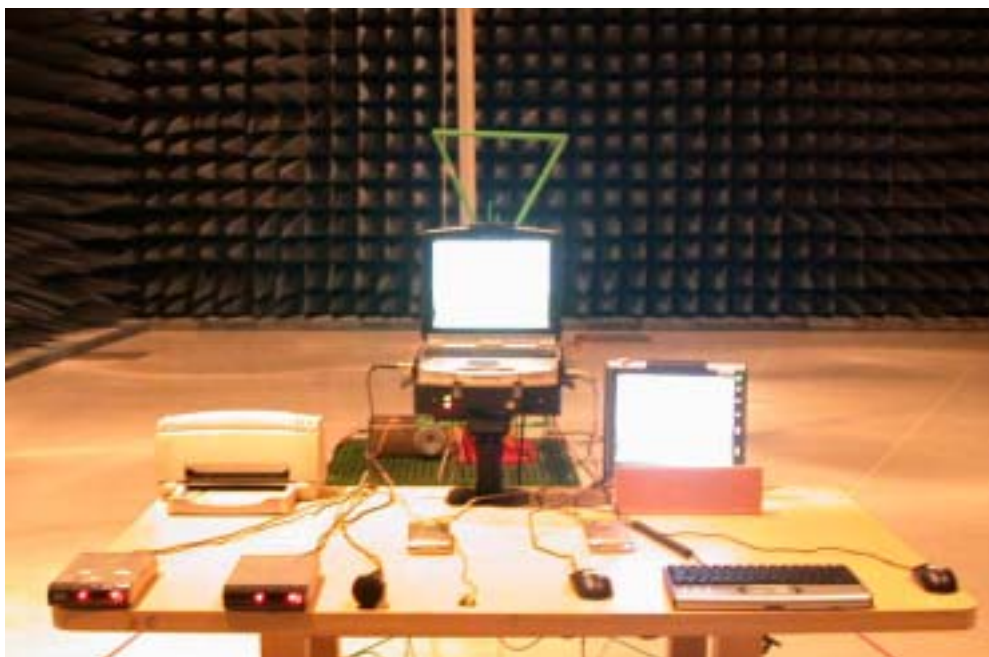


The Front View of Highest Conducted Set-up For EUT

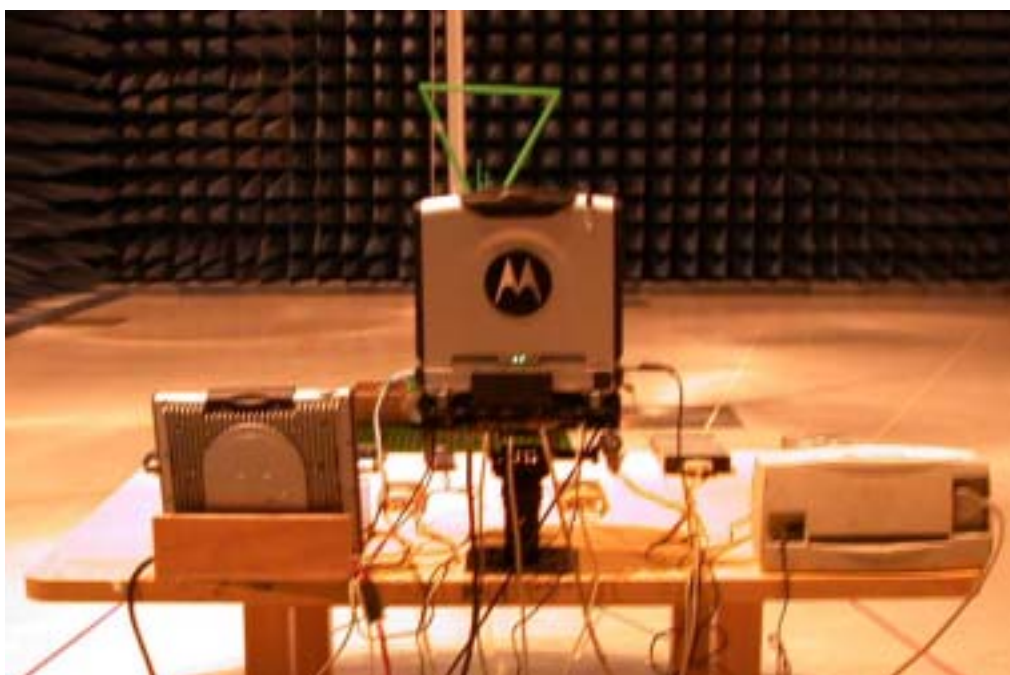
The Back View of Highest Conducted Set-up For EUT



The Front View of Highest Radiated Set-up For EUT



The Back View of Highest Radiated Set-up For EUT



## 5.8 Appendix H: Antenna Spec.

Please refer to the attached file.