

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

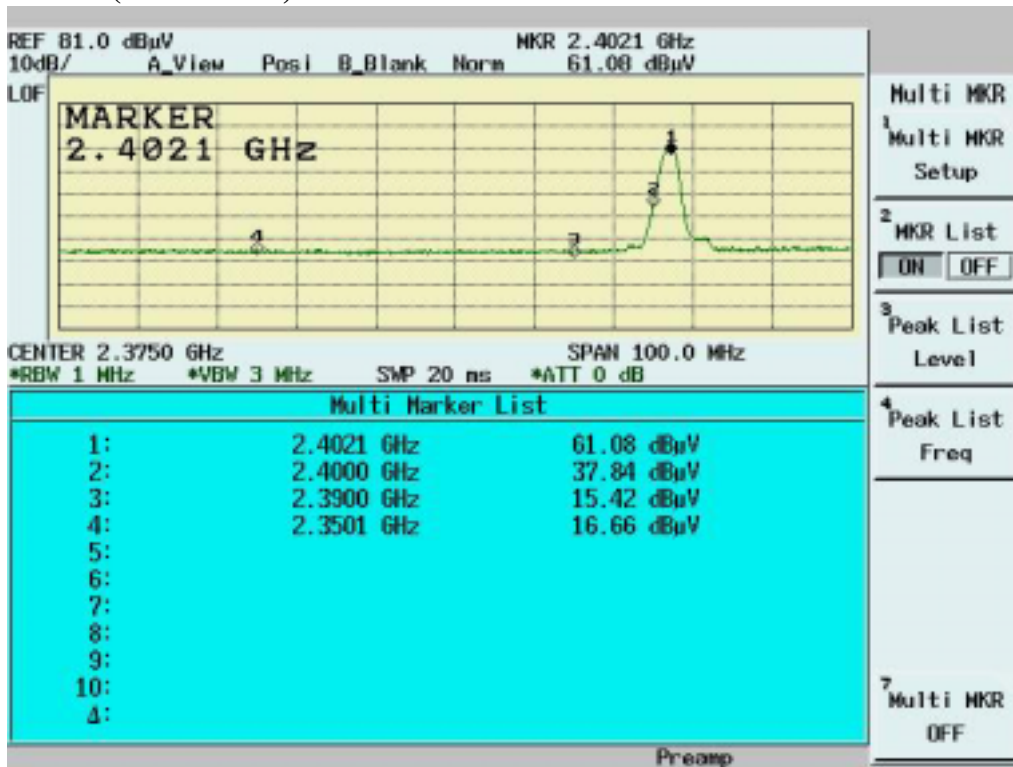
Humidity (%): 40

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	25.96	35.48	61.44	---	---	10Hz	---
Channel_00 (peak mode)	2402.10	61.08	35.48	96.56	---	---	3MHz	---
Outside band (peak mode)	2400.00	37.84	35.48	73.32	23.24	---	3MHz	Pass
Channel_78 (average mode)	2480.10	25.57	35.51	61.08	---	---	10Hz	---
Channel_78 (peak mode)	2480.10	59.54	35.51	95.05	---	---	3MHz	---
Outside band (peak mode)	2482.00	29.99	35.51	65.50	29.55	---	3MHz	Pass
Channel_00 Restricted band (peak mode)	2350.10	16.66	35.47	52.13	---	74	3MHz	Pass
Restricted band (average mode)	2326.60	5.00	35.47	40.47	---	54	10Hz	Pass
Channel_78 Restricted band (peak mode)	2485.00	19.10	35.51	54.61	---	74	3MHz	Pass
Restricted band (average mode)	2484.00	6.80	35.51	42.31	---	54	10Hz	Pass

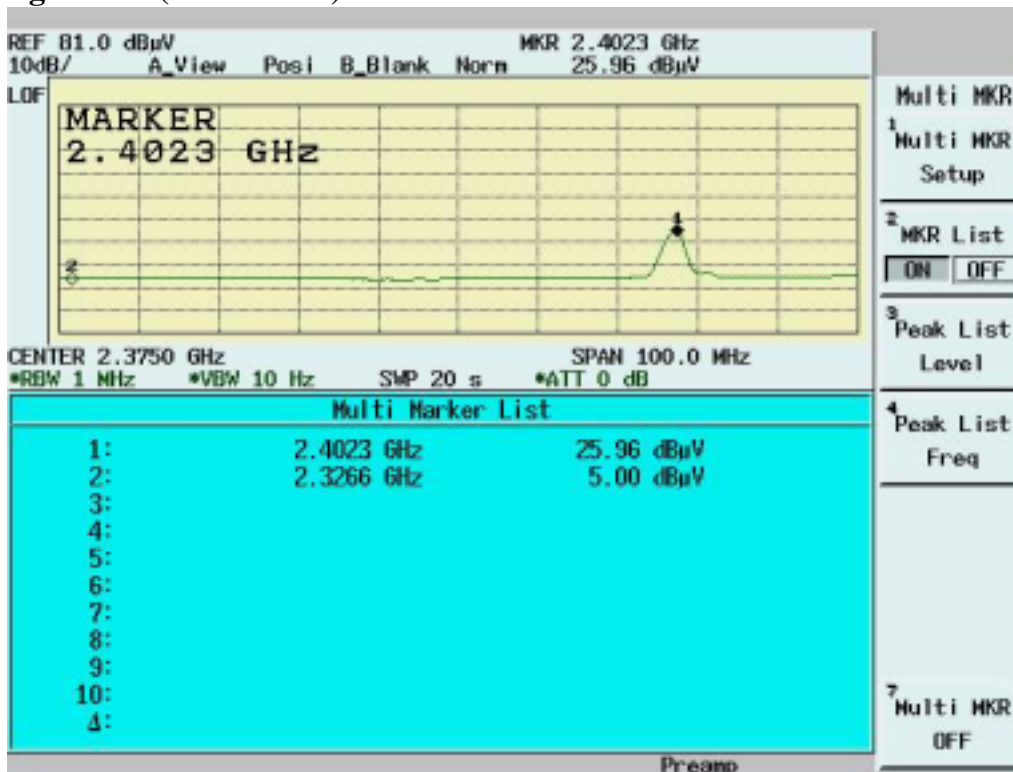
Note:

- 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.

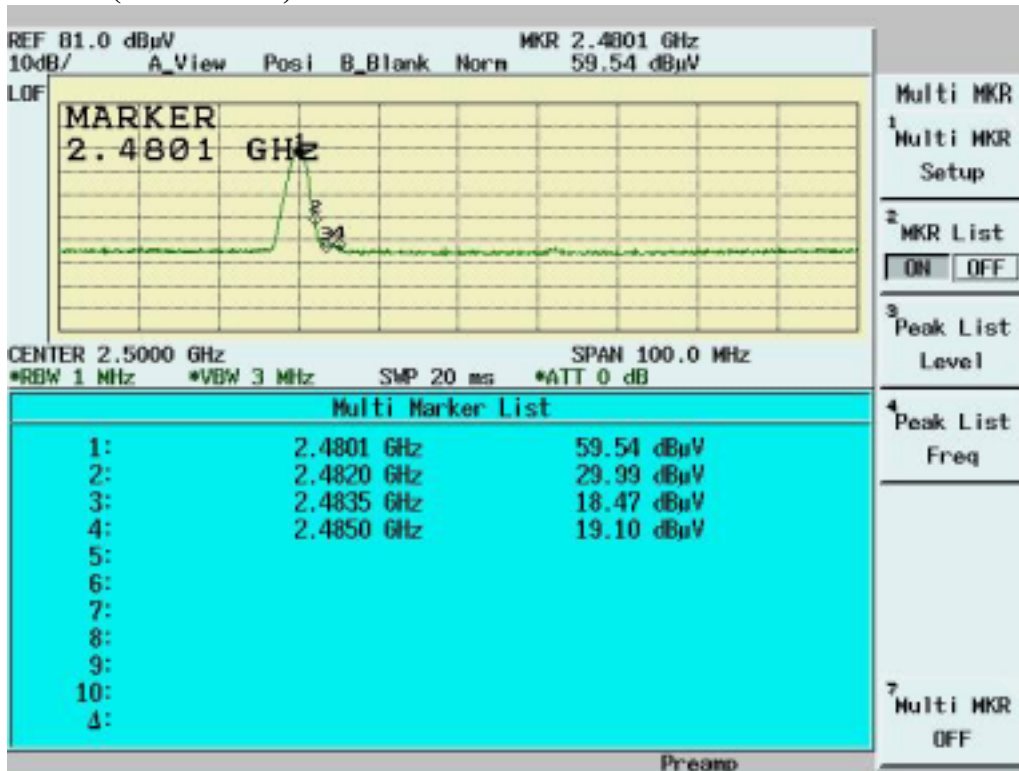
Band Edge measurement for radiated emission in Restricted Band(Radiated) Peak Mode (Channel 00)



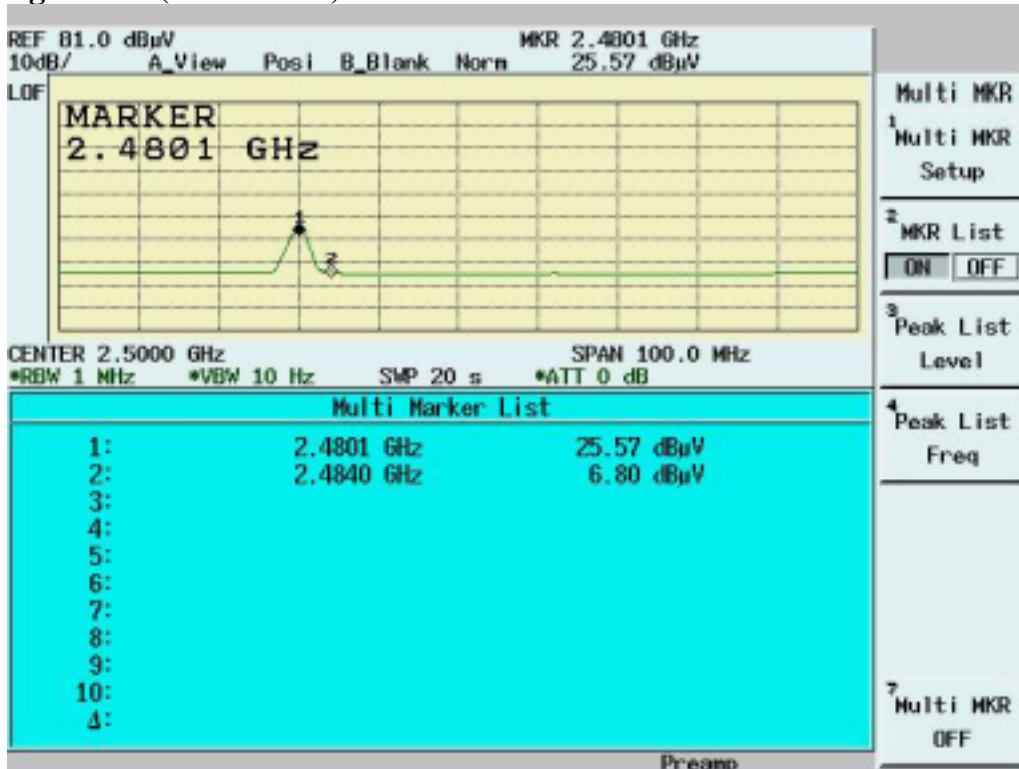
Band Edge measurement for radiated emission in Restricted Band(Radiated) Average Mode (Channel 00)



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

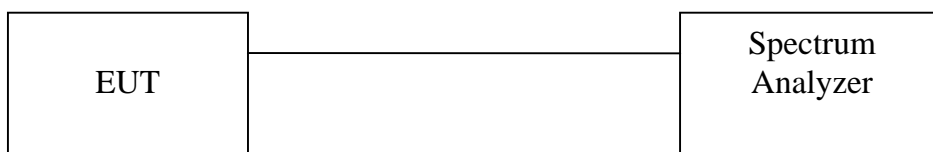
The Transmitter output of EUT was connected to the spectrum analyzer. The 20 dB bandwidth of the fundamental frequency was measured. The setting of spectrum analyzer is as follows

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

Humidity (%):55

Test Engineer:Jerry Chiou

Channel	Frequency (MHz)	20dB Bandwidth (KHz)	Limit (KHz)	Pass/Fail
00	2402	848	1000	Pass
39	2441	848	1000	Pass
78	2480	848	1000	Pass

Hopping Channel Separation

Temperature ():22

Humidity (%):25

Test Engineer:Mailes Hsieh

Channel	Frequency (MHz)	Separation (KHz)	Limit (KHz)	Pass/Fail
00	2402	987	848	Pass
39	2441	1002	848	Pass
78	2480	993	848	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

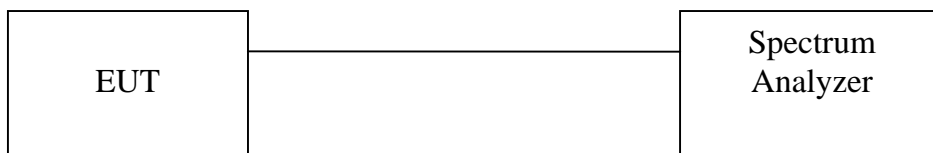


5.5 Number of Hopping Frequency Used

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

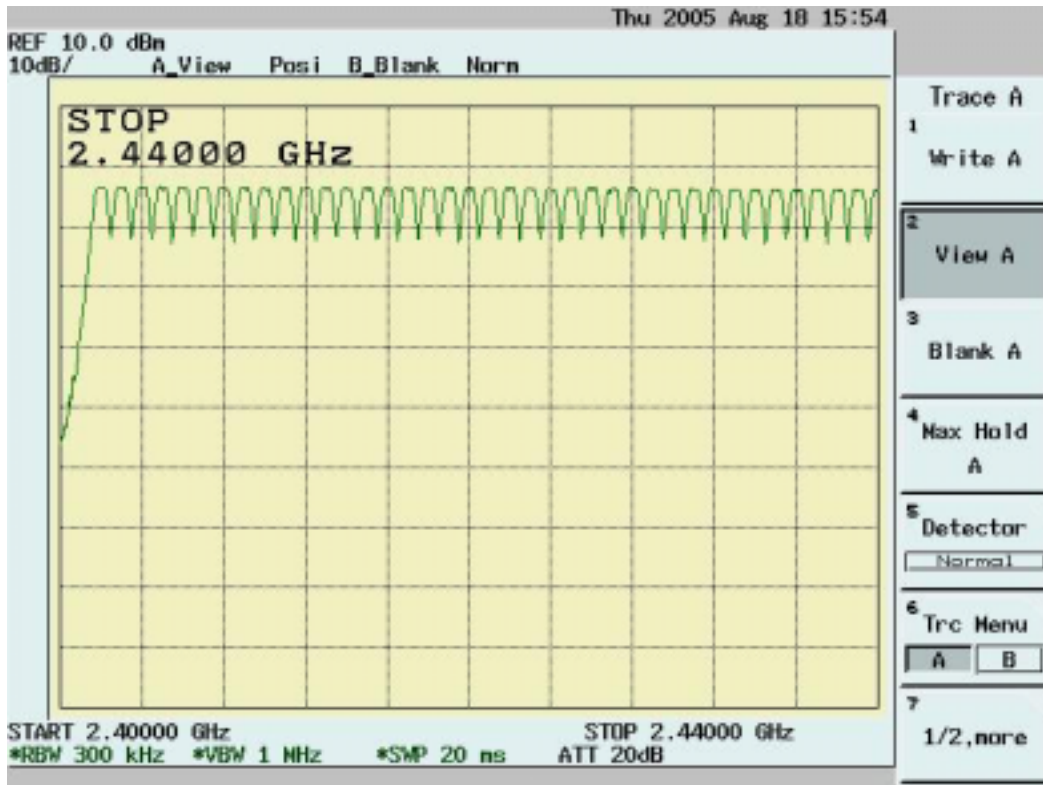


5.5.3 Test Data

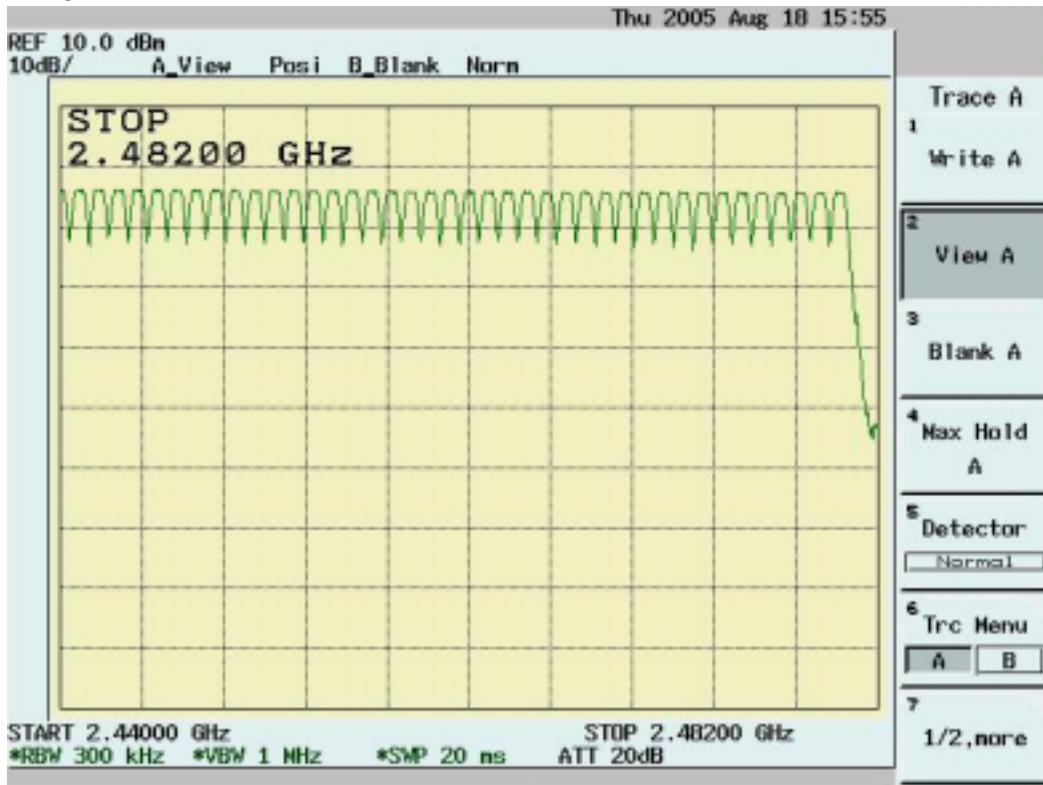
Number of Hopping Frequency Used

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

2400~2405MHz



2405~2482MHz

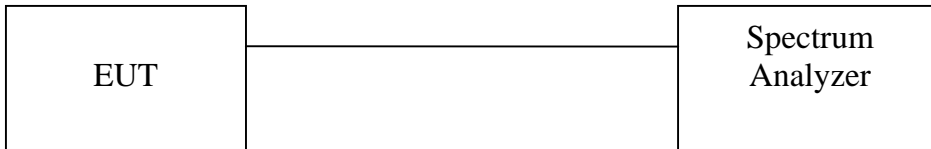


5.6 Dwell Time

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	418	267.52	< 400	Pass
DH3	2402	1668	355.84	< 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	1672	356.69	< 400	Pass
DH5	2441	2912	372.74	< 400	Pass

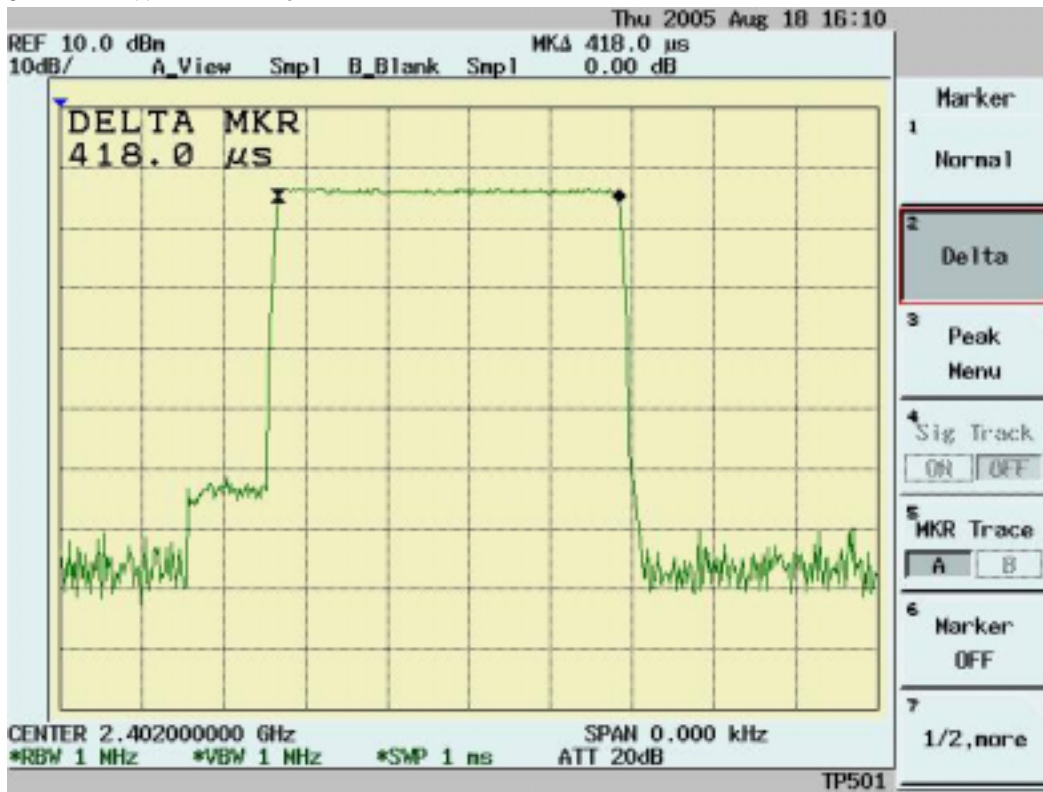
Mode	Frequency (MHz)	Spectrum	Test	Limit		Pass/Fail
		Reading (µs)	Result (ms)	(ms)		
DH1	2480	416	266.24	<	400	Pass
DH3	2480	1672	356.69	<	400	Pass
DH5	2480	2904	371.71	<	400	Pass

Note:

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

CH00	DH1 time slot=	418 (µs)*(1600/(1*79))*31.6=	267.52 (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)
CH39	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)
CH78	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=	2904 (µs)*(1600/(5*79))*31.6=	371.71 (ms)

CH00 DH1 DWELL Time



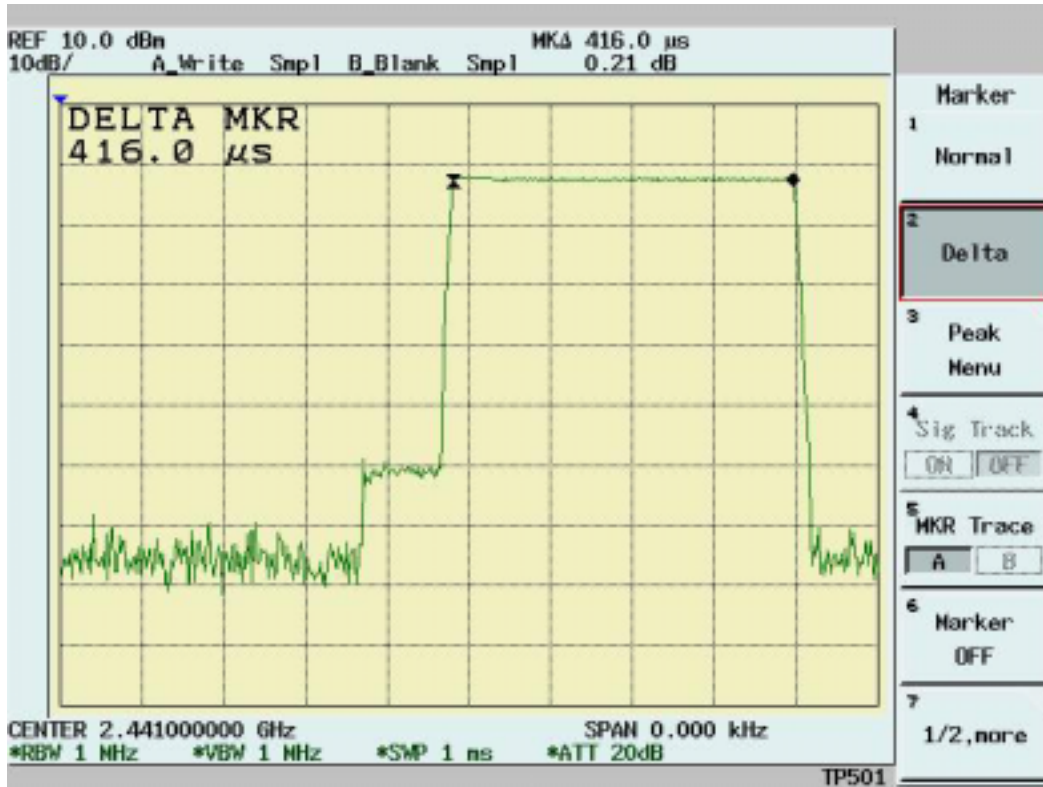
CH00 DH3 DWELL Time



CH00 DH5 DWELL Time



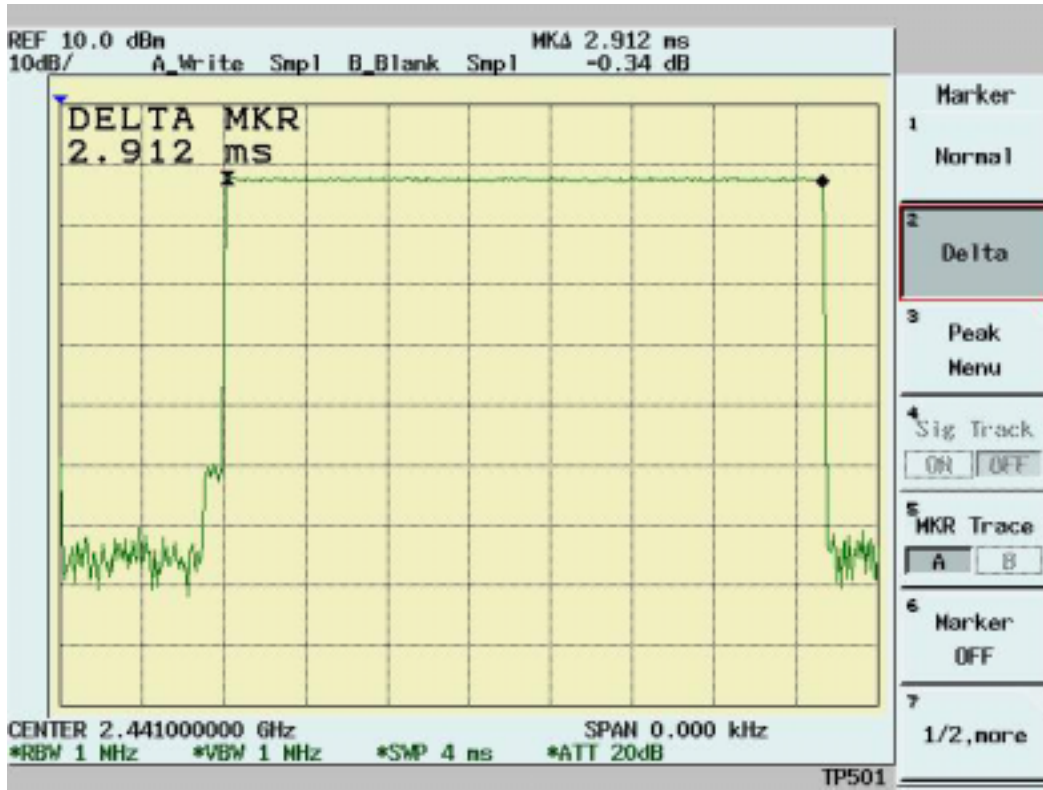
CH39 DH1 DWELL Time



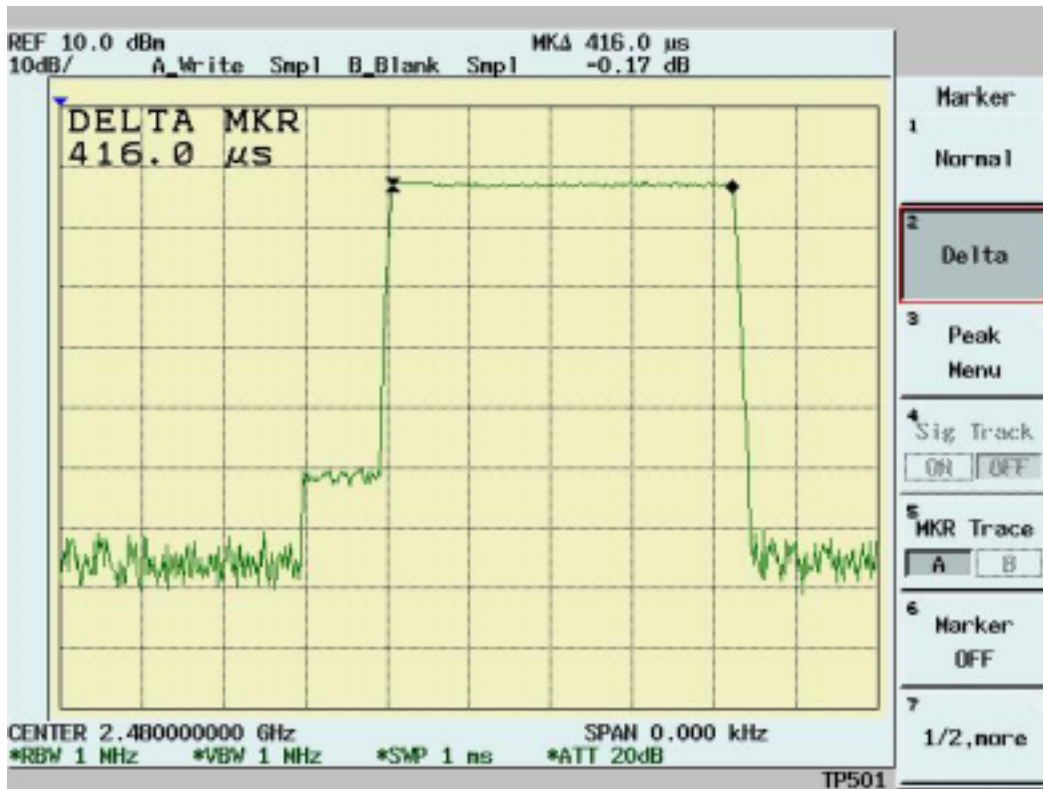
CH39 DH3 DWELL Time



CH39 DH5 DWELL Time



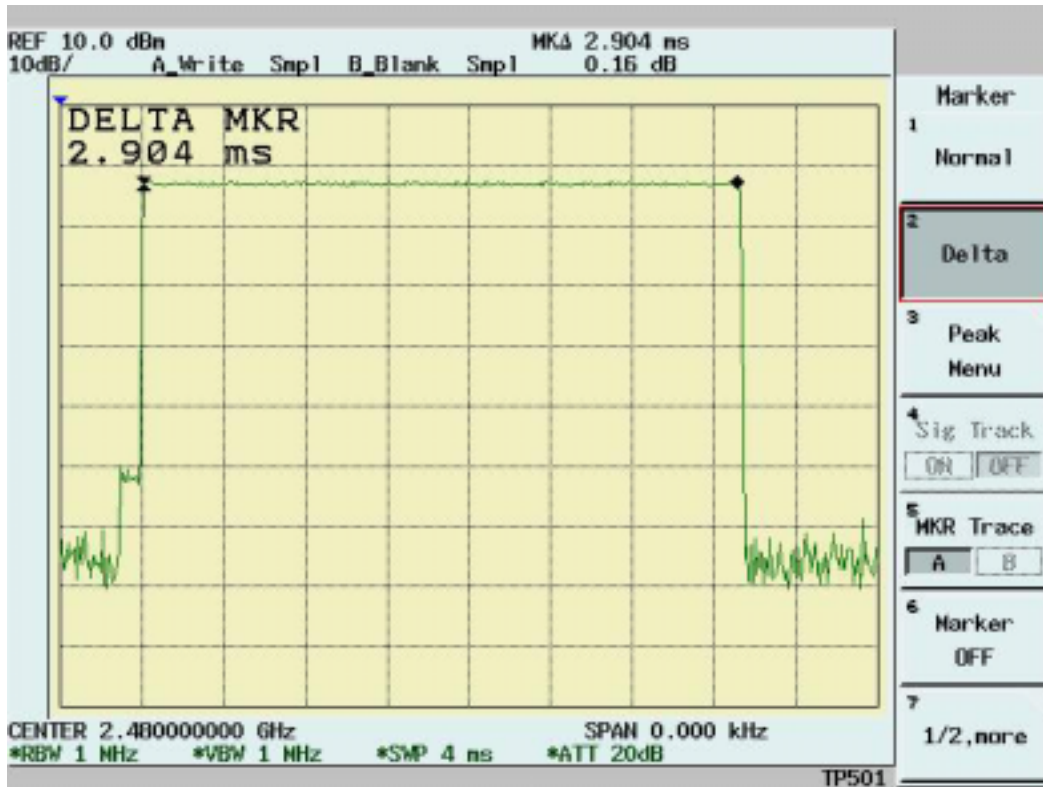
CH78 DH1 DWELL Time



CH78 DH3 DWELL Time

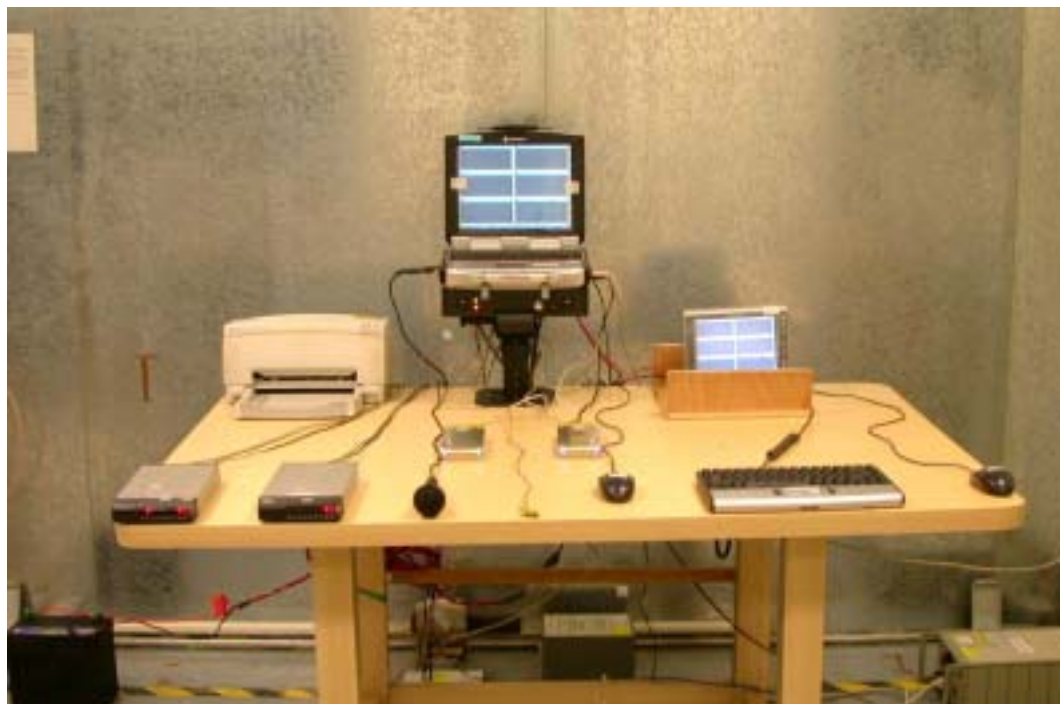


CH78 DH5 DWELL Time



5.7 Appendix G: Photographs of EUT Configuration Test Set Up

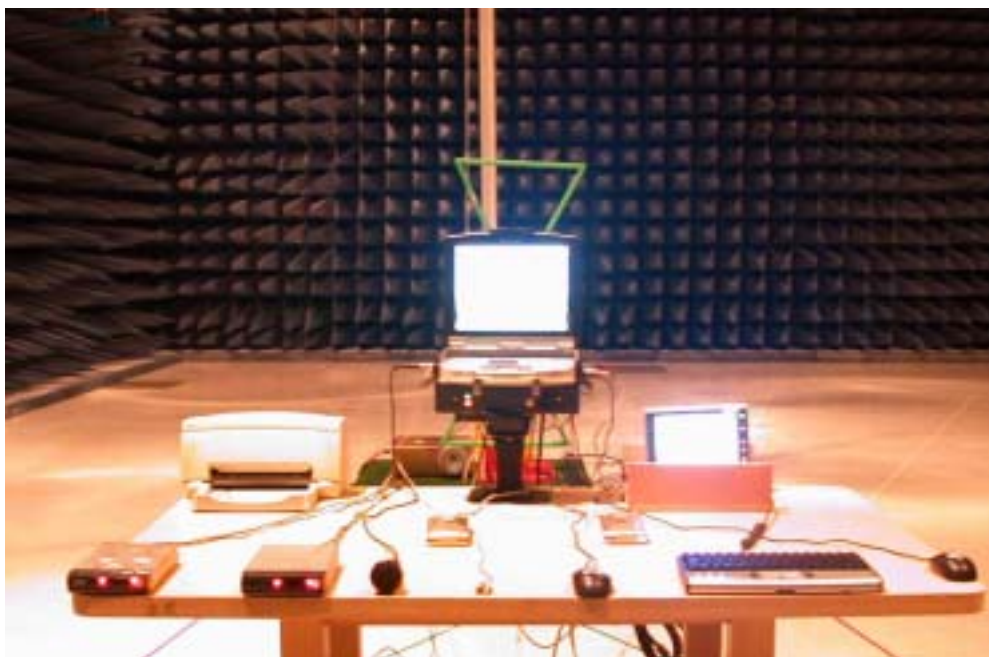
The Front View of Highest Conducted Set-up For EUT



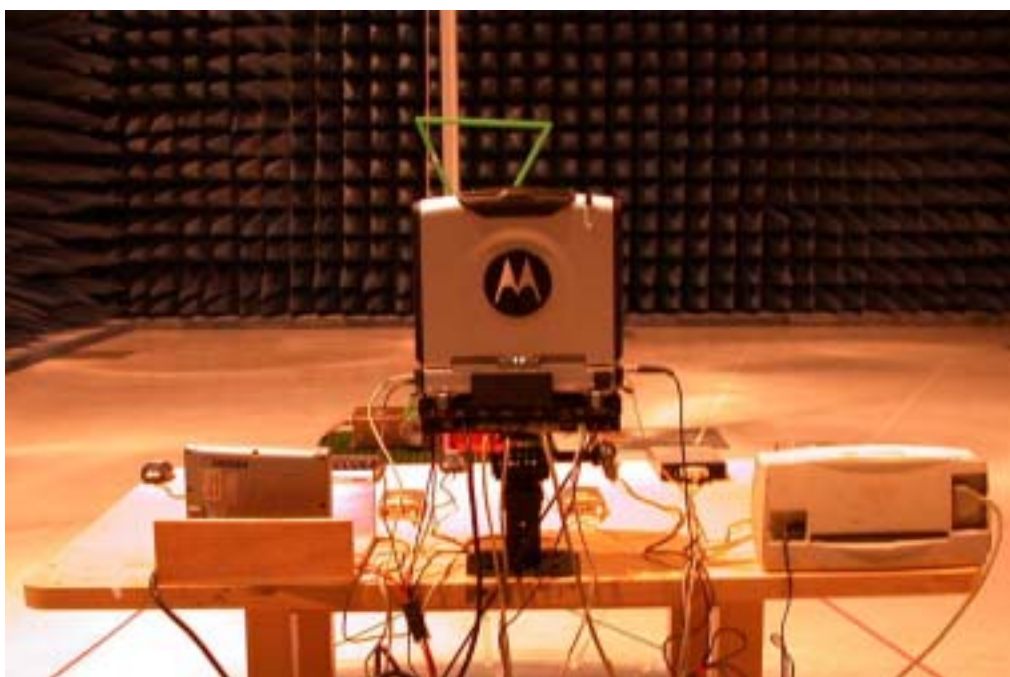
The Back View of Highest Conducted Set-up For EUT



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.