# 5. Test of Radiated Emission

### 5.1. Test Limit

Radiated emissions from 30 MHz to 25 GHz were measured according to the methods defines in ANSI C63.4-2001. The EUT was placed, 0.8 meter above the ground plane, as shown in section 5.6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency Distance		Radiated	Radiated		
(MHz)	Meters	(µ V / M)	(dB µ V/M)		
30-88	3	100	40.0		
88-216	3	150	43.5		
216-960	3	200	46.0		
Above 960	3	500	54.0		

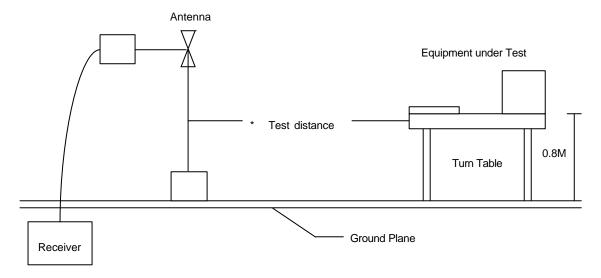
For unintentional device, according to CISPR PUB.22, for Class B digital devices, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 10 meters shall not exceed the above table.

Frequency (MHz)	Distance Meters	Radiated (dB µ V/ M )		
30-230	10	30		
230-1000	10	37		

#### 5.2. 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 both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- 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 turn table (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. 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 which do not have 3 dB margin 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 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.

## 5.3. Typical Test Setup

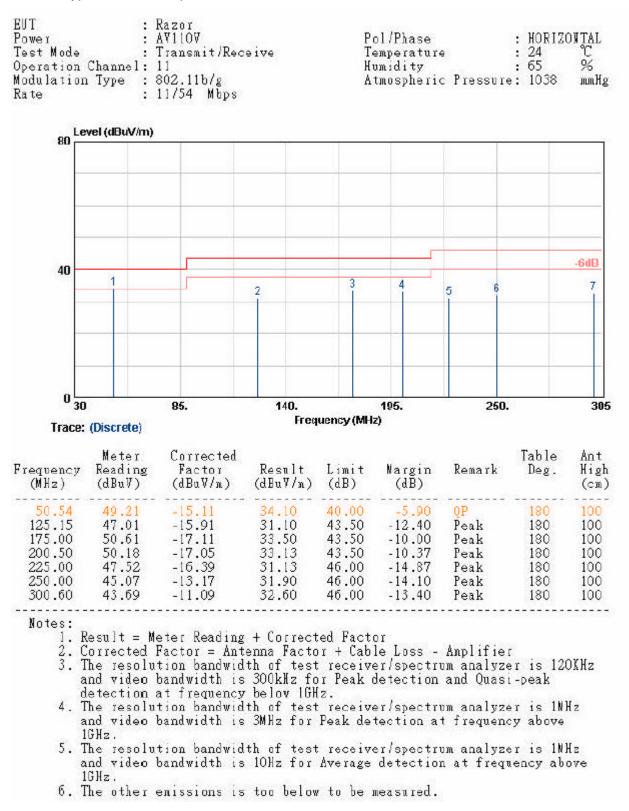


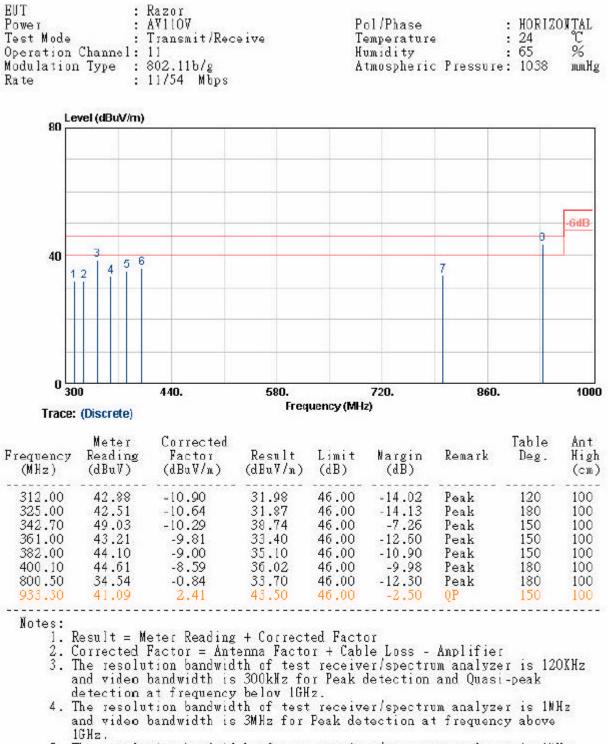
### 5.4. Measurement equipment

Instrument/Ancillary	Туре	Manufacturer	Valid Date	
EMI Receiver	8546A	HP	2006/0413	
Spectrum Analyzer	FSP40	R&S	2005/12/28	
Horn Antenna	3115	EMCO	2006/02/21	
Horn Antenna	3116	EMCO	2006/02/21	
Bilog Antenna	CBL6112B	Schaffner	2006/04/12	
Amplifier	8447D	Agilent	2005/06/30	
Amplifier	8449B	Agilent	2005/12/27	

### 5.5. Test Result and Data

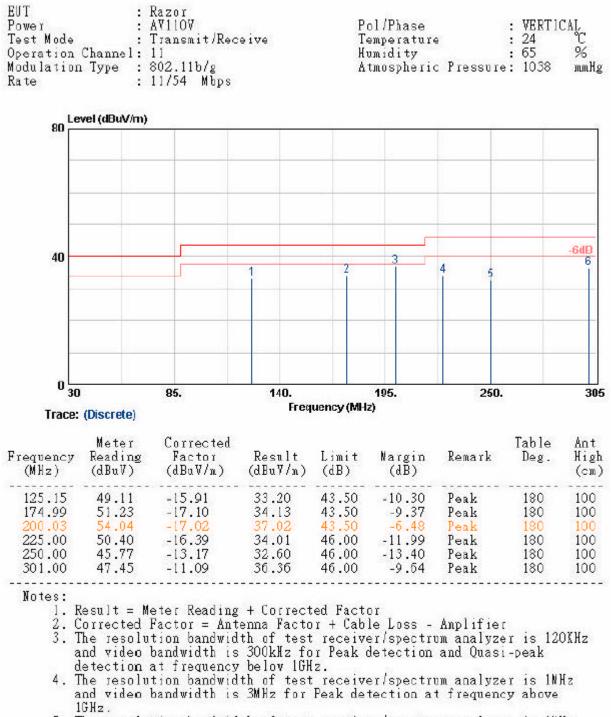
Antenna type 1: external Dipole Antenna.





 The resolution bandwidth of test receiver/spectrum analyzer is 1NHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.

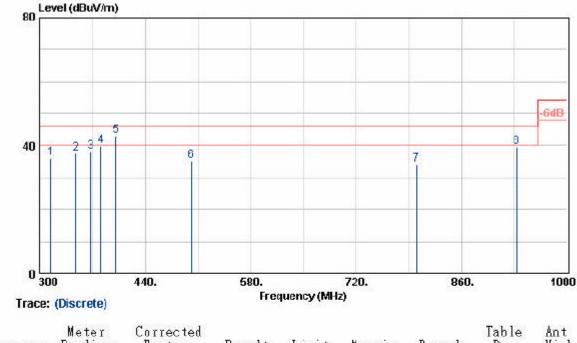
6. The other emissions is too below to be measured.



- 5. The resolution bandwidth of test receiver/spectrum analyzer is 1NHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
- 6. The other emissions is too below to be measured.

EUT	•	Razor
Power		AVIIOV
Test Mode	:	Transmit/Receive
Operation Channel	:	11
Modulation Type	:	802.11b/g
Rate	:	11/54 Mbps

Pol/Phase	:	VERT10	CAL
Temperature	:	24	°C
Humidity	:	65	%
Atmospheric	Pressure:	1038	mmHg



Frequency (MHz)	Reading (dBuV)	Factor (dBuV/m)	Result (dBuV/n)	Limit (dB)	Nargin (dB)	Remark	Deg.	High (cm)
315.40	46.81	-10.81	36.00	46.00	-10.00	Peak	150	100
348.30	47.81	-10.21	37.60	46.00	-8.40	Peak	150	100
368.00	47.70	-9.60	38.10	46.00	-7.90	Peak	150	100
382.00	48.96	-9.00	39.96	46.00	-6.04	Peak	150	100
400.00	51.74	-8.59	43.15	46.00	-2.85	QP	180	100
500.90	41.91	-6.71	35.20	46.00	-10.80	Peak	180	100
800.00	34.91	-0.85	34.05	46.00	-11.95	Peak	180	100
933.33	37.04	2.41	39.45	46.00	-6.55	Peak	150	100

Notes:

Result = Meter Reading + Corrected Factor
Corrected Factor = Antenna Factor + Cable Loss - Anplifier
The resolution bandwidth of test receiver/spectrum analyzer is 120KHz and video bandwidth is 300kHz for Peak detection and Quasi-peak detection at frequency below 1GHz.

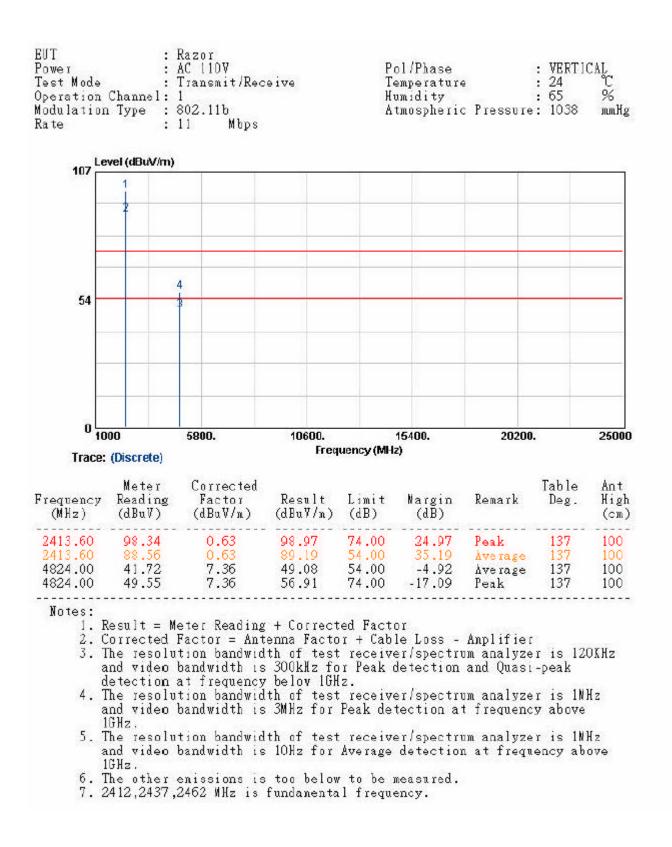
4. The resolution bandwidth of test receiver/spectrum analyzer is 1NHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.

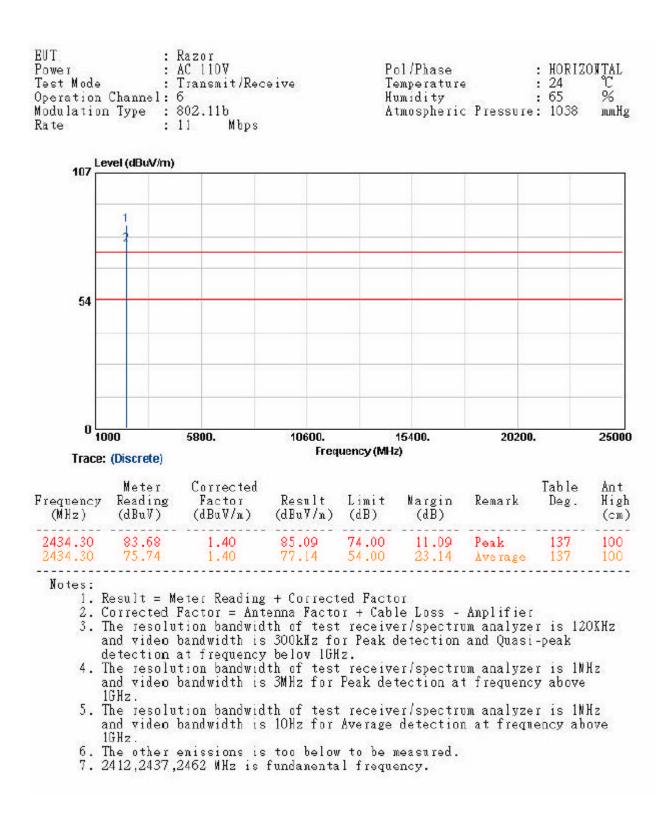
5. The resolution bandwidth of test receiver/spectrum analyzer is 1NHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.

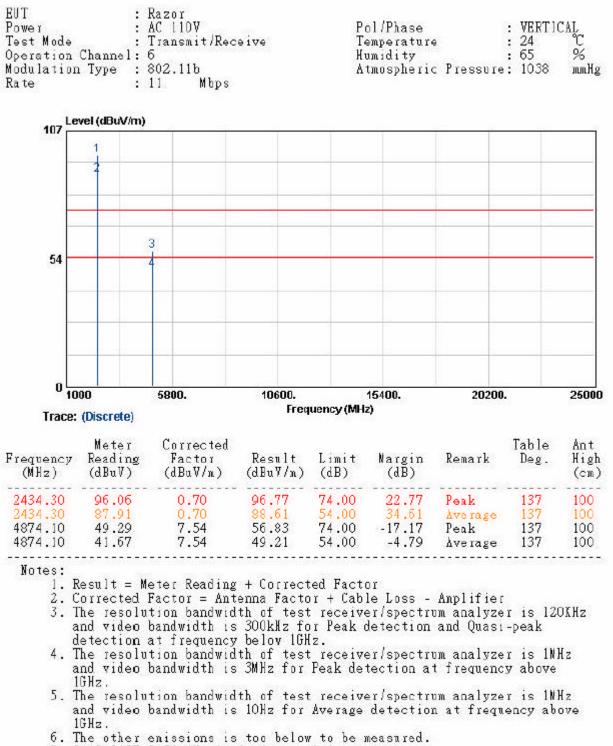
6. The other emissions is too below to be measured.

EUT Power Test Mode Operation Modulation Rate	Channel:	302.11b	əive	Te Hu	ol/Phase emperatura umidity tmospheria		: 65	ະ %
107 <mark>Le</mark>	vel (dBuV/m)							
_	1							
54								
0								
1923	00 (Discrete)	5800.	10600. Freq	uency (MH:	15400. z)	2020	0.	25000
		Corrected Factor (dBuV/m)				Remark	Table Deg.	Ant High (cm)
2414.70 2414.70		1.33 1.33	<b>84.84</b> 76.08	74.00 54.00	10.84 22.08	Peak Average	137 137	100 100
2. C 3. T d 4. T 5. T 5. T 1 6. T	orrected I he resolu- nd video N etection a he resolu- nd video N GHz. he resolu- GHz. he other a	eter Reading Factor = Ant tion bandwid bandwidth is t frequency tion bandwid bandwidth is tion bandwid bandwidth is enissions is 2462 MHz is	enna Facto th of test 300kHz fo belov 1GH th of test 3MHz for th of test 10Hz for too below	r + Cab receive z. receive Feak de receive Average to be n	le Loss - er/spectru detection er/spectru tection a <sup>-</sup> er/spectru detection measured.	om analyza and Quas om analyza t frequena om analyza	er is 12 i-peak er is 1N cy above er is 1N	H z H z

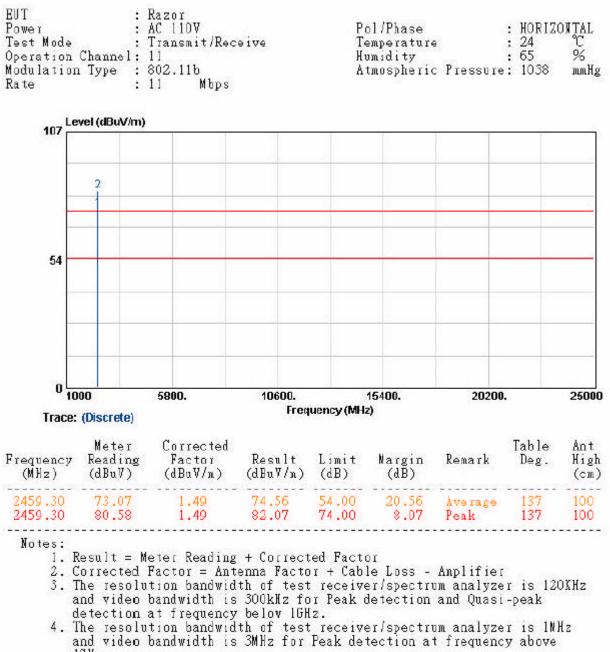
7. 2412,2437,2462 WHz is fundamental frequency.







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- 1GHz.
- 5. The resolution bandwidth of test receiver/spectrum analyzer is 1NHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
- 6. The other enissions is too below to be measured.
- 7. 2412,2437,2462 WHz is fundamental frequency.

