



# Supplemental “Transmit Simultaneously” Test Report

**REPORT NO.:** RF990928E12-1

**MODEL NO.:** MR868, SMCWPBR-3G, NR413-SA, OZ – 868,  
AP-PR1000

**FCC ID:** YUNAICONNMR868-00

**RECEIVED:** Sep. 24, 2010

**TESTED:** Oct. 06 to 27, 2010

**ISSUED:** Nov. 18, 2010

**APPLICANT:** Aiconn Technology Corporation

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**ISSUED BY:** Bureau Veritas Consumer Products Services (H.K.)  
Ltd., Taoyuan Branch Hsin Chu Laboratory

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## 1 CERTIFICATION

**PRODUCT:** Portable Router, Mobile Router, OZ Portable Router

**BRAND NAME:** Mobile Air, SMC, BOINTEC, OZ Air,  
AP Comtel Private Limited, India

**MODEL NO.:** MR868, SMCWPBR-3G, NR413-SA, OZ – 868,  
AP-PR1000

**TESTED :** Oct. 06 to 27, 2010

**TEST SAMPLE :** ENGINEERING SAMPLE

**APPLICANT :** Aiconn Technology Corporation

**STANDARDS :** FCC Part 15, Subpart C (Section 15.247)  
ANSI C63.4-2003

The above equipment (Model: MR868) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY :** Midoli Peng , **DATE:** Nov. 18, 2010  
( Midoli Peng, Specialist )

**TECHNICAL  
ACCEPTANCE** : Hank Chung , **DATE:** Nov.18, 2010  
( Hank Chung, Deputy Manager )

**APPROVED BY** : May Chen , **DATE:** Nov. 18, 2010  
(May Chen, Deputy Manager )



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## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
Standard Section	Test Type and Limit	Result	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -10.10dB at 3.801MHz
15.247(d)	Transmitter Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is -3.49 dB at 144.04 MHz

### 2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Conducted emissions	2.45 dB
Radiated emissions (30MHz-1GHz)	3.3 dB
Radiated emissions (1GHz -18GHz)	2.19 dB
Radiated emissions (18GHz -40GHz)	2.56 dB



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### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Portable Router, Mobile Router, OZ Portable Router
<b>MODEL NO.</b>	MR868, SMCWPBR-3G, NR413-SA, OZ – 868, AP-PR1000
<b>FCC ID</b>	YUNAICONNMR868-00
<b>POWER SUPPLY</b>	DC 3.7V from battery
<b>MODULATION TYPE</b>	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
<b>MODULATION TECHNOLOGY</b>	DSSS, OFDM
<b>TRANSFER RATE</b>	802.11b:11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps
<b>OPERATING FREQUENCY</b>	2412 ~ 2462MHz
<b>NUMBER OF CHANNEL</b>	11
<b>MAXIMUM OUTPUT POWER</b>	802.11b: 12.6mW 802.11g: 12.6mW
<b>ANTENNA TYPE</b>	Printed PIFA antenna without connector(Gain: 2.5dBi)
<b>DATA CABLE</b>	USB cable(shielded, 0.2m)
<b>I/O PORTS</b>	USB port x 1 (For 3G card) USB port x 1 (For battery recharge)
<b>ASSOCIATED DEVICES</b>	Battery x1 Adapter x1 (For battery recharge )



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**NOTE:**

1. The EUT has below product / brand / model names which are identical to each other in all aspects except for the following table :

Product name	Brand name	Model name	Different
Portable Router	Mobile Air	MR868	EUT Color: White/Orange
Portable Router	SMC	SMCWPBR-3G	EUT Color: Black
Mobile Router	BOINTEC	NR413-SA	EUT Color: White/Orange, White/Apple Green with Trademark print on the top cover
OZ Portable Router	OZ Air	OZ - 868	EUT Color: red with black belt
Portable Router	AP Comtel Private Limited, India	AP-PR1000	EUT Color: White/Orange with mark on the top.

From the above models, model: MR868 was selected as representative model for the test and its data was recorded in this report.

2. The EUT has two different types could be chosen and please refer the below table:

Sample	Different
Main source	Different with color of LED & manufacturer of 48MHz crystal.
Second source	

From the above samples, the worst Radiated Emissions (below 1GHz) was found in **Main source**. Therefore only the test data of the modes were recorded in this report.

3. The EUT could be supplied with 3.7V battery or power adapter as below table:

Power adapter			Note
Brand	Model Name	Specification	for battery recharge (through USB cable /1.6m / unshielded / without core)
DVE	DSC-6PFA-05 FUS 050100	Input: 100-240Vac, 0.2A, 50-60Hz Output: DC 5V, 1A	
Battery			Note
Brand	Model Name	Specification	
WANSGLORY	H604070	3.7V, 2000mAh	



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4. The EUT was pre-tested under the following test modes:

Test Mode	Description
Mode A	X-Y plane + Battery
Mode B	Y-Z plane + Battery
Mode C	X-Z plane + Battery
Mode D	X-Y plane + Battery + Adapter(For battery recharge)
Mode E	Y-Z plane + Battery + Adapter(For battery recharge)
Mode F	X-Z plane + Battery + Adapter(For battery recharge)
<b>Mode D</b>	<b>X-Y plane + Battery +USB cable(NB)</b>
Mode E	Y-Z plane + Battery +USB cable(NB)
<b>Mode F</b>	<b>X-Z plane + Battery +USB cable(NB)</b>

For Radiated Emissions, the worst Radiated Emissions (below 1GHz) was found in **Mode D**. the worst Radiated Emissions (above 1GHz) was found in **Mode F**. Therefore only the test data of the modes were recorded in this report individually.

5. The EUT could be applied with one 3G card, therefore emission tests are added for simultaneously transmit between wireless LAN and 3G function. The emission tests have been performed at the worst channel of both WLAN and 3G, and recorded in this report. <only for test, not for sale>

Brand name	Model name	FCC ID
HUAWEI	E169u	QISE169
ZTE	K3765-Z	Q87-K3765-Z
eMobile	D12LC	VV6D12LC

The EUT was pre-tested in chamber with above 3G cards, the worst case was found in mode: **E169u**. Therefore only the test data of the mode was recorded in this report.

6. The EUT, operates in the 2.4GHz frequency range, lets you connect IEEE 802.11g or IEEE 802.11b devices to the network. With its high-speed data transmissions of up to 54Mbps.
7. The above EUT information was declared by manufacturer and for more detailed feature descriptions, please refer to the manufacturer's specifications or user's manual.



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### 3.2 DESCRIPTION OF TEST MODES

Operated in 2400 ~ 2483.5MHz band:

Eleven channels are provided for 802.11b, 802.11g:

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

Seven channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2422MHz	5	2442MHz
2	2427MHz	6	2447MHz
3	2432MHz	7	2452MHz
4	2437MHz		



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### 3.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT configure mode	Applicable to			Description
	PLC	RE<1G	RE≥1G	
1	√	-	-	Co-located mode Main source + Power source ( Adapter mode )
2	√	-	-	Co-located mode Second source + Power source ( Adapter mode )
3	√	√	√	Co-located mode Main source + Power source ( USB mode )
4	√	-	-	Co-located mode Second source + Power source (USB mode )

Where

PLC: Power Line Conducted Emission

RE&lt;1G RE: Radiated Emission below 1GHz

RE≥1G: Radiated Emission above 1GHz

#### POWER LINE CONDUCTED EMISSION TEST:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	EUT CONFIGURE MODE
802.11g / 3G	1 to 11 / -	1 / 190	OFDM / CDMA	BPSK / -	6 / -	1, 2, 3 & 4

#### Radiated Emission Test (Below 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	EUT CONFIGURE MODE
802.11g / 3G	1 to 11 / -	1 / 190	OFDM / CDMA	BPSK / -	6 / -	3

#### Radiated Emission Test (Above 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	EUT CONFIGURE MODE
802.11g / 3G	1 to 11 / -	1 / 190	OFDM / CDMA	BPSK / -	6 / -	3



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**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	26deg. C, 75%RH, 1014 hPa	120Vac, 60Hz	Eric Lee
RE<1G	26deg. C, 75%RH, 1014 hPa	120Vac, 60Hz	Eric Lee
PLC	20deg. C, 69%RH, 1014 hPa	120Vac, 60Hz	Moris Lin

**3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS**

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**47 CFR Part 15, Subpart C. (15.247)**  
**ANSI C63.4 : 2003**

All tests have been performed and recorded as per the above standards.

**NOTE:** The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



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### 3.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

<b>For Conducted test:</b>					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP17L	CN-ONF743-48643-7A V-0124	FCC DoC
2	iPod	Apple	A1137	6U6078FMUPR	FCC DoC
3	NOTEBOOK COMPUTER	DELL	D531	CN-0XM006-48643-86 L-4472	QDS-BRCM1019
4	Universal Radio Communication Tester	R&S	CMU200	1100.0008.02	NA
5	3G CARD	HUAWEI	E169u	Q54CAB1042404880	QISE169

<b>For Radiated test:</b>					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP19L	CN-OHC416-70166-5C A-0448	PIW632500516610
2	3G CARD	HUAWEI	E169u	Q54CAB1042404880	QISE169
3	Access Point	Cisco	AIR-AP1252 AG-A-K9	FTX121190XF	LDK102062
4	Universal Radio Communication Tester	R&S	CMU200	104484	NA



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**For Conducted test:**

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	USB cable(0.2m)
2	USB cable(1.2m)
3	NA
4	NA
5	NA

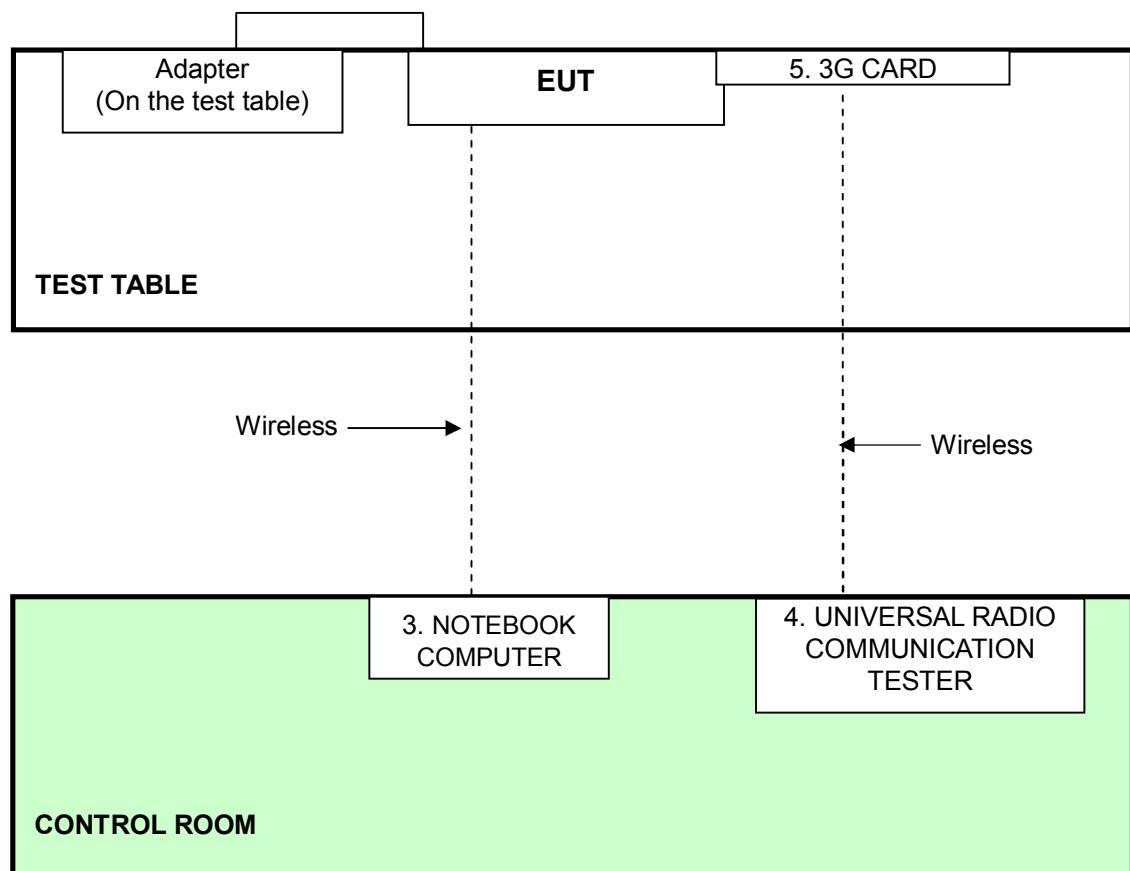
**For Radiated test:**

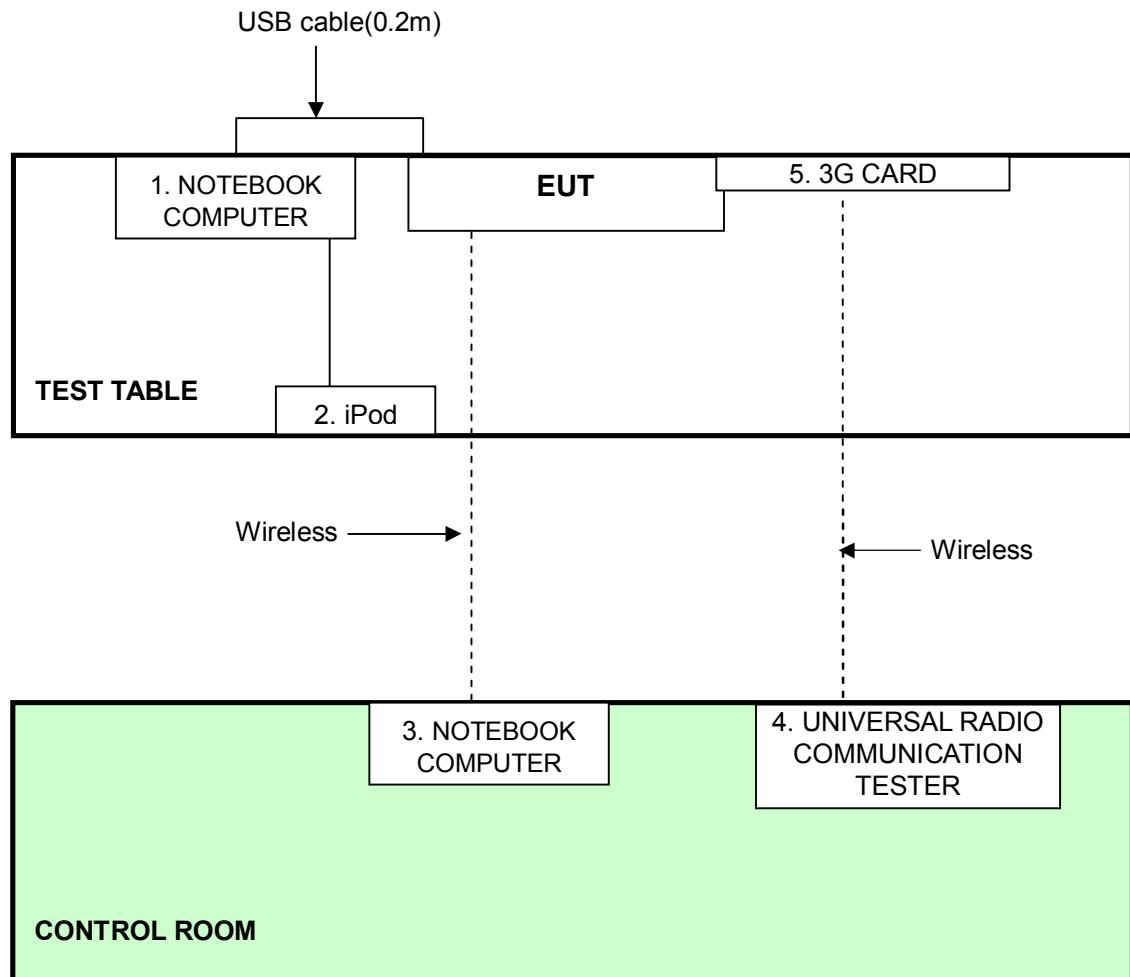
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	USB cable(0.2m)
2	NA
3	NA
4	NA

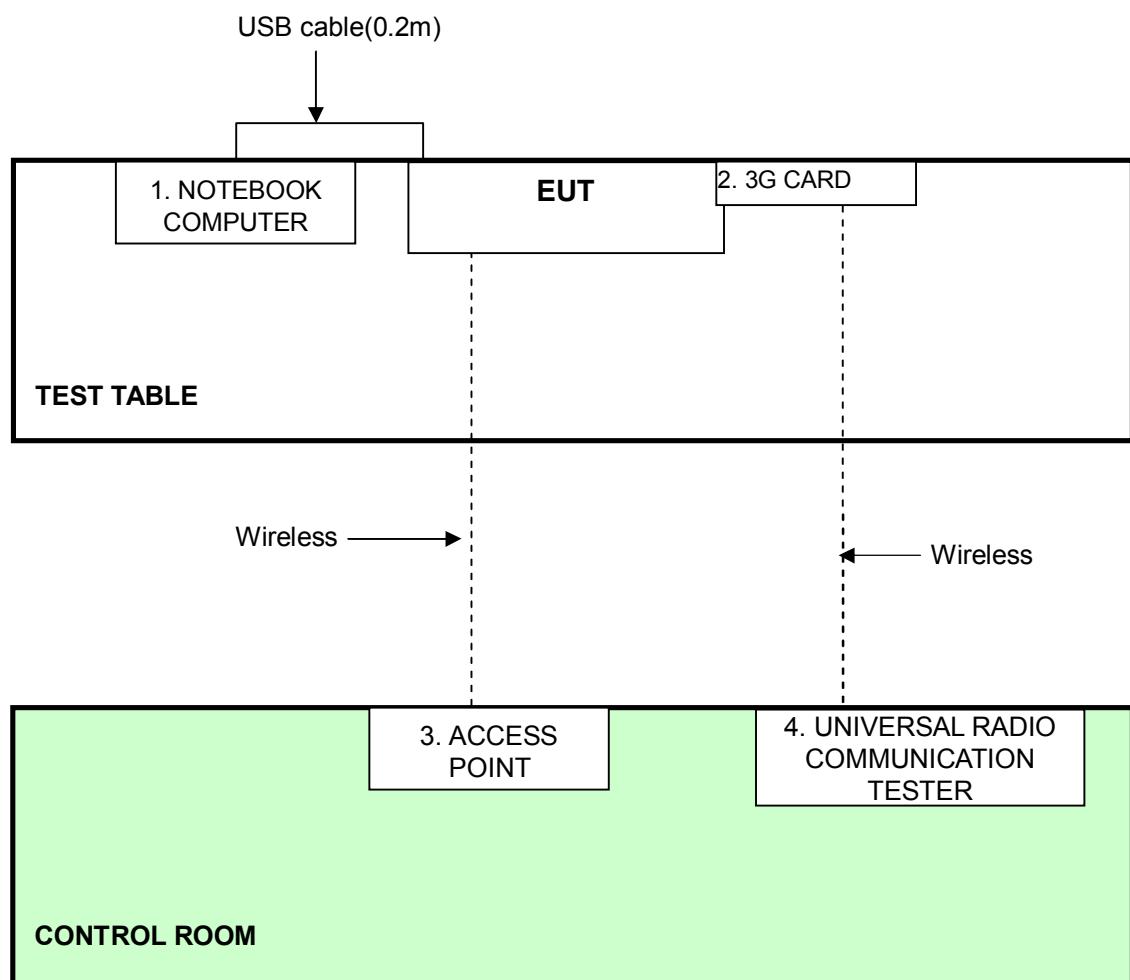
Note: The power cords of the above support units were unshielded (1.8m).

### 3.6 CONFIGURATION OF SYSTEM UNDER TEST

Conducted test – mode 1 & 2:



**Conducted test – mode 3 & 4:**

**For Radiated test:**



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## 4 TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 4.1.2 TEST INSTRUMENTS

Test date: Oct. 27, 2010

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Mar. 01, 2010	Feb. 28, 2011
Line-Impedance Stabilization Network (for EUT)	NSLK 8127	8127-523	Oct. 07, 2010	Oct. 06, 2011
Line-Impedance Stabilization Network (for Peripheral)	ENV-216	100072	June 11, 2010	June 10, 2011
RF Cable (JYEBAO)	5DFB	COACAB-001	Dec. 14, 2009	Dec. 13, 2010
50 ohms Terminator	50	3	Oct. 28, 2009	Oct. 27, 2010
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. A.
3. The VCCI Con A Registration No. is C-817.

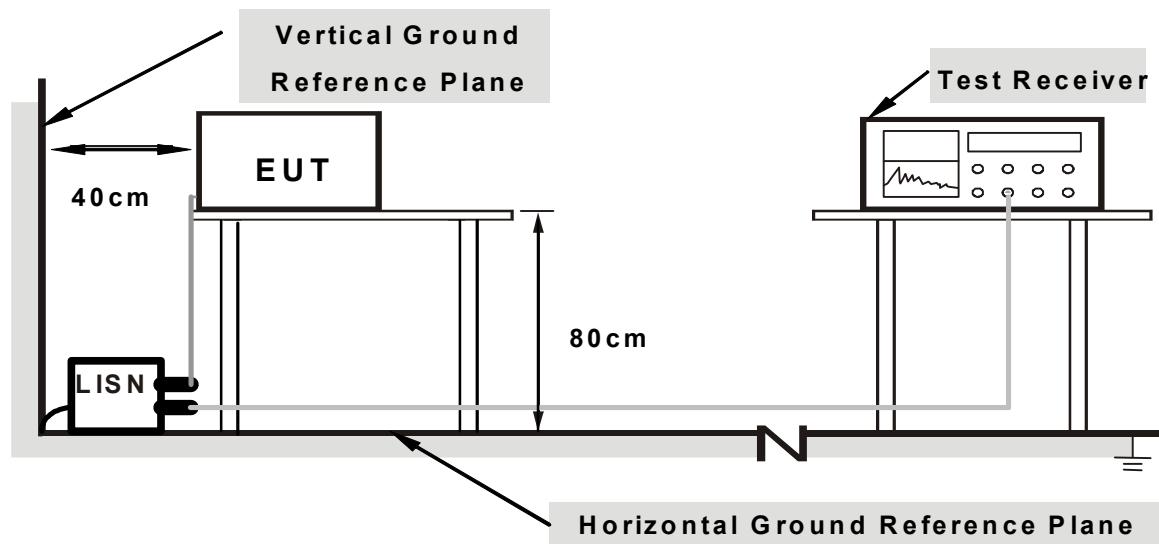
#### 4.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.5 TEST SETUP



**Note: 1. Support units were connected to second LISN.**

**2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes**

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.



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#### 4.1.6 EUT OPERATING CONDITIONS

##### Mode 1~2

1. Place the EUT on testing table.
2. Prepare other computer system support unit 3 (Notebook computer) to act as communication partners and place them outside of testing area.
3. The communication partners run test program “Ping.exe” to enable EUT under transmission/receiving condition continuously via wireless transmission.
4. The support unit 5 (3G card) links support unit 4 (Universal Radio Communication Tester) via wireless.

##### Mode 3~4

1. Connect the EUT with the support unit 1 (Notebook computer) which placed on a testing table via one USB cable.
2. Prepare other computer system support unit 3 (Notebook computer) to act as communication partners and place them outside of testing area.
3. The communication partners run test program “Ping.exe” to enable EUT under transmission/receiving condition continuously via wireless transmission.
4. The support unit 5 (3G card) links support unit 4 (Universal Radio Communication Tester) via wireless.

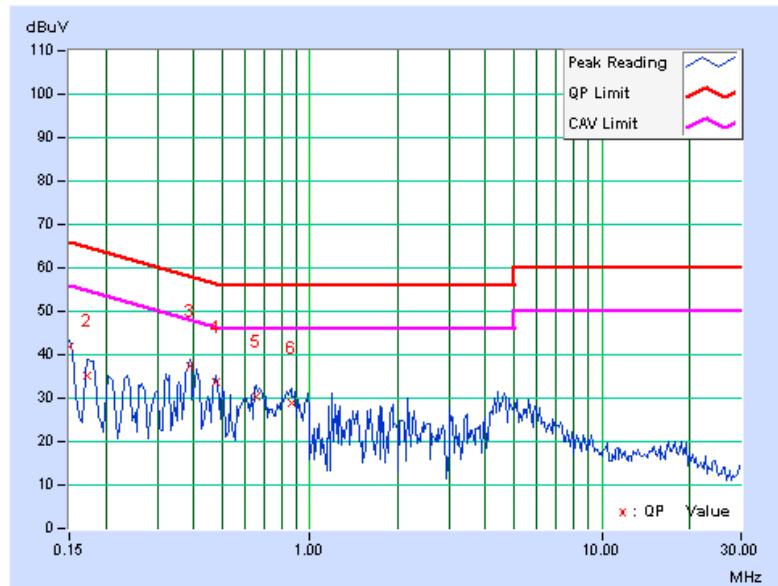
#### 4.1.7 TEST RESULTS (MODE 1)

CHANNEL	Channel 1 / 190	PHASE	Line (L)
---------	-----------------	-------	----------

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.37	41.59	-	41.96	-	66.00	56.00	-24.04	-
2	0.173	0.36	34.84	-	35.20	-	64.79	54.79	-29.59	-
3	0.388	0.36	36.89	-	37.25	-	58.10	48.10	-20.85	-
4	0.474	0.37	33.27	-	33.64	-	56.44	46.44	-22.80	-
5	0.658	0.38	30.17	-	30.55	-	56.00	46.00	-25.45	-
6	0.861	0.40	28.50	-	28.90	-	56.00	46.00	-27.10	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.

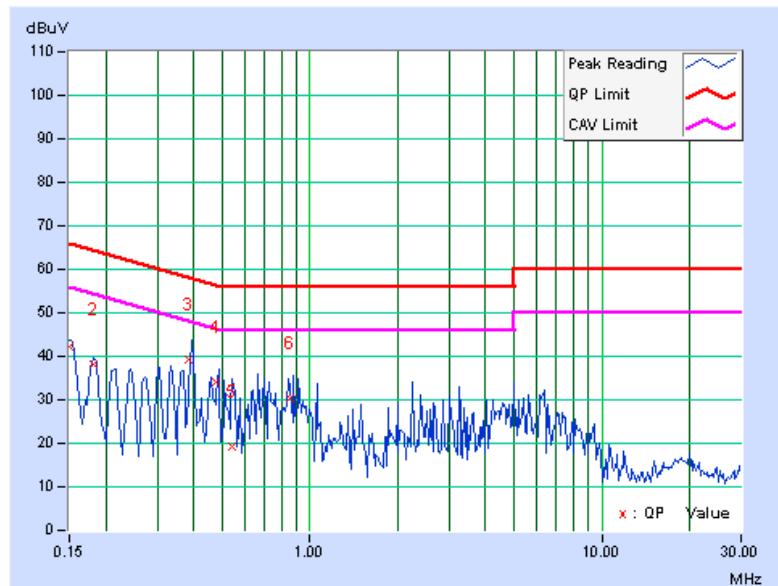


<b>CHANNEL</b>	Channel 1 / 190	<b>PHASE</b>	Neutral (N)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]	[dB (uV)]	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	42.11	-	42.21	-	66.00	56.00	-23.79	-
2	0.181	0.10	38.08	-	38.18	-	64.43	54.43	-26.25	-
3	0.385	0.11	39.11	-	39.22	-	58.16	48.16	-18.94	-
4	0.477	0.12	34.04	-	34.16	-	56.40	46.40	-22.24	-
5	0.545	0.12	19.11	-	19.23	-	56.00	46.00	-36.77	-
6	0.858	0.15	30.29	-	30.44	-	56.00	46.00	-25.56	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



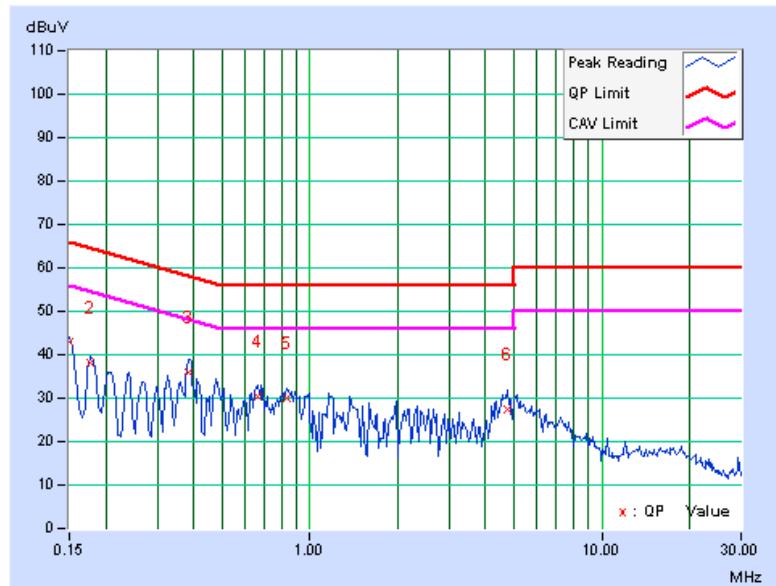
#### 4.1.8 TEST RESULTS (MODE 2)

CHANNEL	Channel 1 / 190		PHASE	Line (L)	
---------	-----------------	--	-------	----------	--

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.37	42.49	-	42.86	-	66.00	56.00	-23.14	-
2	0.177	0.36	37.80	-	38.16	-	64.61	54.61	-26.45	-
3	0.384	0.36	35.41	-	35.77	-	58.18	48.18	-22.41	-
4	0.662	0.38	30.07	-	30.45	-	56.00	46.00	-25.55	-
5	0.838	0.40	29.65	-	30.05	-	56.00	46.00	-25.95	-
6	4.746	0.53	26.70	-	27.23	-	56.00	46.00	-28.77	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.

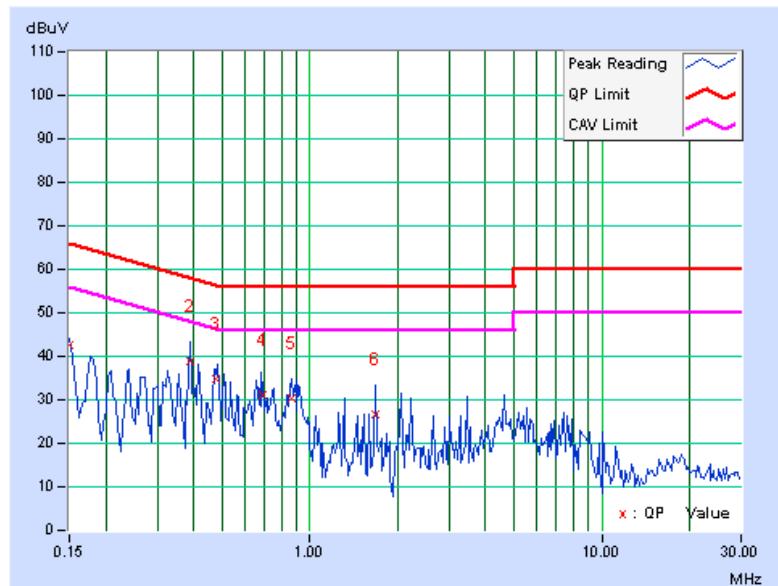


<b>CHANNEL</b>	Channel 1 / 190	<b>PHASE</b>	Neutral (N)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	42.47	-	42.57	-	66.00	56.00	-23.43	-
2	0.388	0.11	38.91	-	39.02	-	58.10	48.10	-19.08	-
3	0.476	0.12	34.59	-	34.71	-	56.40	46.40	-21.70	-
4	0.687	0.13	31.09	-	31.22	-	56.00	46.00	-24.78	-
5	0.865	0.15	30.38	-	30.53	-	56.00	46.00	-25.47	-
6	1.676	0.19	26.31	-	26.50	-	56.00	46.00	-29.50	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



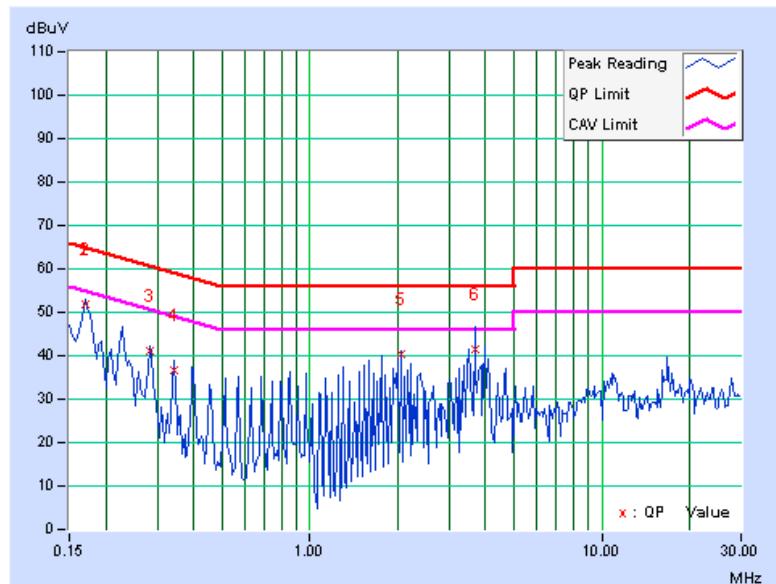
#### 4.1.9 TEST RESULTS (MODE 3)

CHANNEL	Channel 1 / 190	PHASE	Line (L)
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No	Freq. [MHz]	Corr. (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.170	0.36	51.59	-	51.95	-	64.98	54.98	-13.03	-
2	0.170	0.36	51.55	-	51.91	-	64.98	54.98	-13.07	-
3	0.283	0.36	40.73	-	41.09	-	60.73	50.73	-19.64	-
4	0.341	0.36	36.32	-	36.68	-	59.17	49.17	-22.49	-
5	2.047	0.46	39.73	-	40.19	-	56.00	46.00	-15.81	-
6	3.699	0.50	40.84	-	41.34	-	56.00	46.00	-14.66	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.

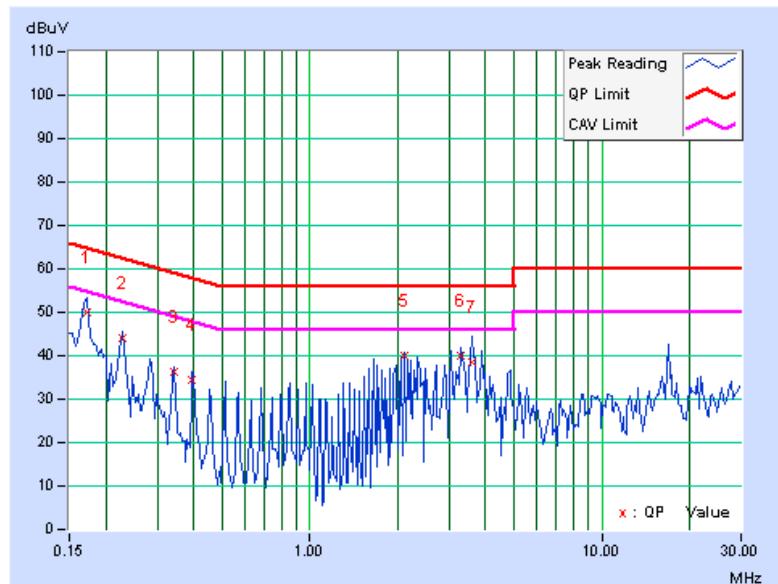


<b>CHANNEL</b>	Channel 1 / 190	<b>PHASE</b>	Neutral (N)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.173	0.10	50.00	-	50.10	-	64.79	54.79	-14.70	-
2	0.228	0.10	43.87	-	43.97	-	62.52	52.52	-18.55	-
3	0.341	0.11	36.14	-	36.25	-	59.17	49.17	-22.92	-
4	0.396	0.11	34.43	-	34.54	-	57.93	47.93	-23.40	-
5	2.102	0.20	39.92	-	40.12	-	56.00	46.00	-15.88	-
6	3.297	0.23	39.89	-	40.12	-	56.00	46.00	-15.88	-
7	3.582	0.23	38.23	-	38.46	-	56.00	46.00	-17.54	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



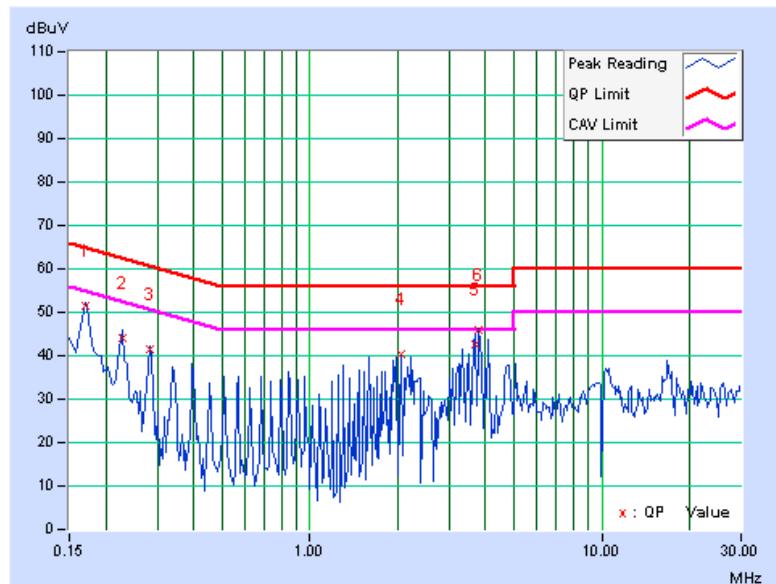
## 4.1.10 TEST RESULTS (MODE 4)

CHANNEL	Channel 1 / 190	PHASE	Line (L)
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No	Freq. [MHz]	Corr. (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.170	0.36	51.01	-	51.37	-	64.98	54.98	-13.61	-
2	0.228	0.36	43.87	-	44.23	-	62.52	52.52	-18.29	-
3	0.283	0.36	41.04	-	41.40	-	60.73	50.73	-19.33	-
4	2.043	0.46	39.85	-	40.31	-	56.00	46.00	-15.69	-
5	3.691	0.50	42.18	-	42.68	-	56.00	46.00	-13.32	-
6	<b>3.801</b>	<b>0.51</b>	<b>45.39</b>	-	<b>45.90</b>	-	<b>56.00</b>	<b>46.00</b>	<b>-10.10</b>	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.

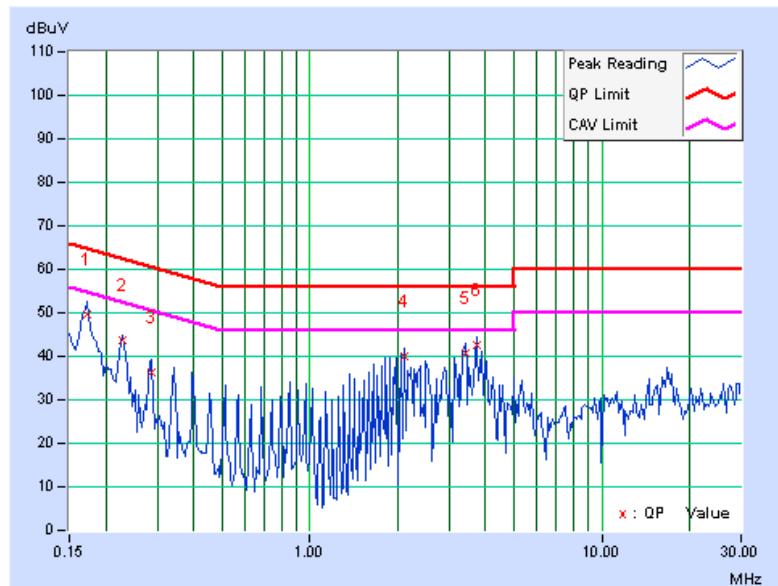


<b>CHANNEL</b>	Channel 1 / 190	<b>PHASE</b>	Neutral (N)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.173	0.10	49.47	-	49.57	-	64.79	54.79	-15.23	-
2	0.228	0.10	43.55	-	43.65	-	62.52	52.52	-18.87	-
3	0.287	0.10	36.20	-	36.30	-	60.62	50.62	-24.31	-
4	2.102	0.20	39.63	-	39.83	-	56.00	46.00	-16.17	-
5	3.406	0.23	40.60	-	40.83	-	56.00	46.00	-15.17	-
6	3.746	0.23	42.33	-	42.56	-	56.00	46.00	-13.44	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.





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## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength (microvolts/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

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dB<sub>u</sub>V/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
4. For 3G device the out of band emission shall comply with the FCC 22.917(a).  
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. The limit of emission equal to -13dBm( 82.2dB<sub>u</sub>V/m at 3m).



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#### 4.2.2 TEST INSTRUMENTS

Test date: Oct. 06, 2010

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250254	July 14, 2010	July 13, 2011
Agilent Pre-Selector	N9039A	MY46520311	July 14, 2010	July 13, 2011
Agilent Signal Generator	N5181A	MY49060517	July 14, 2010	July 13, 2011
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 18, 2009	Nov. 17, 2010
Agilent Pre-Amplifier	8449B	3008A02578	July 05, 2010	July 04, 2011
Miteq Pre-Amplifier	AFS33-1800265 0-30-8P-44	881786	NA	NA
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Apr. 29, 2010	Apr. 28, 2011
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 16, 2009	Nov. 15, 2010
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 08, 2009	Oct. 07, 2010
RF CABLE	NA	RF104-201 RF104-203 RF104-204	Dec. 24, 2009	Dec. 23, 2010
RF Cable	NA	CHGCAB_001	NA	NA
Software	ADT_Radiated_V8.7.05	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.  
3. The test was performed in 966 Chamber No. G.  
4. The FCC Site Registration No. is 966073.  
5. The VCCI Site Registration No. is G-137.  
6. The CANADA Site Registration No. is IC 7450H-2.



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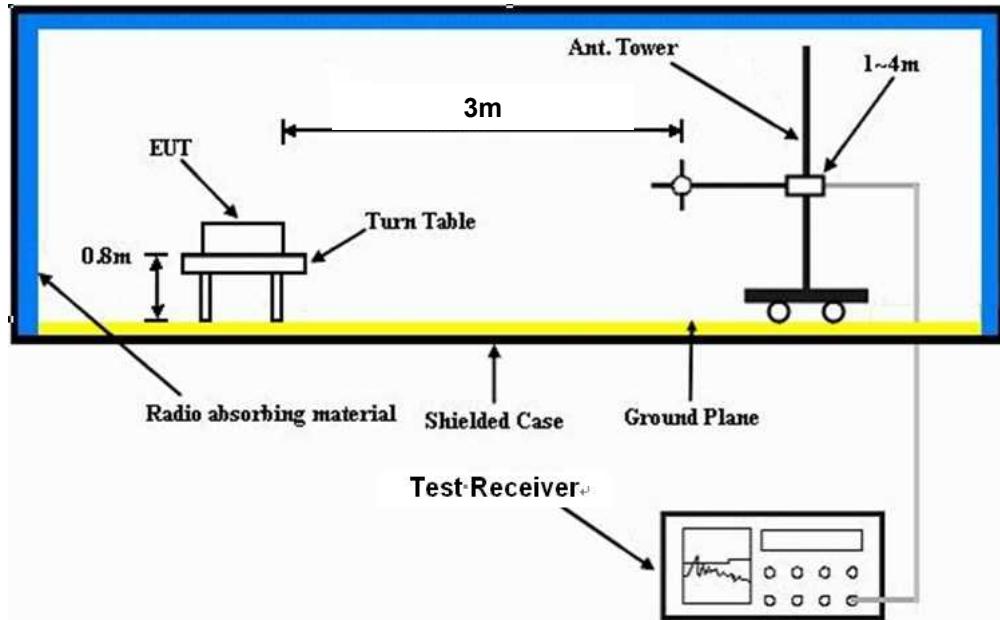
#### 4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna can be varied from one meter-to four meters, the height of adjustment depends on the EUT height and the antenna 3dB beamwidth both, to detect the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

#### NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

#### 4.2.4 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### 4.2.5 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit 1 (Notebook Computer) which placed on a testing table via one USB cable.
2. The EUT links support unit 3 (Access Point) via wireless.
3. The support unit 2 (3G card) links support unit 4 (Universal Radio Communication Tester) via wireless.



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#### 4.2.6 TEST RESULTS

##### BELOW 1GHz WORST-CASE DATA :

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL		Channel 1 / 190		FREQUENCY RANGE
INPUT POWER (SYSTEM)		120Vac, 60 Hz		DETECTOR FUNCTION
ENVIRONMENTAL CONDITIONS		26deg. C, 75%RH 1013 hPa		TESTED BY
				Eric Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	136.94	33.58 QP	43.50	-9.92	2.00 H	0	19.98	13.60
2	<b>144.04</b>	<b>40.01 QP</b>	<b>43.50</b>	<b>-3.49</b>	<b>2.00 H</b>	<b>338</b>	<b>26.22</b>	<b>13.79</b>
3	157.54	33.09 QP	43.50	-10.41	1.50 H	0	18.76	14.33
4	192.00	34.12 QP	43.50	-9.38	1.75 H	360	23.07	11.05
5	204.08	31.08 QP	43.50	-12.42	1.50 H	0	20.28	10.80
6	266.73	33.90 QP	46.00	-12.10	1.00 H	220	20.04	13.86
7	533.30	36.50 QP	46.00	-9.50	1.50 H	227	16.05	20.45
8	599.97	33.59 QP	46.00	-12.41	1.25 H	302	11.62	21.97
9	699.44	35.44 QP	46.00	-10.56	1.00 H	327	12.30	23.14
10	733.31	34.51 QP	46.00	-11.49	1.00 H	240	10.90	23.61

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	133.26	27.41 QP	43.50	-16.09	1.25 V	80	14.06	13.35
2	144.04	29.66 QP	43.50	-13.84	2.00 V	293	15.87	13.79
3	166.07	24.54 QP	43.50	-18.96	1.00 V	132	10.85	13.69
4	302.85	31.07 QP	46.00	-14.93	2.00 V	1	15.81	15.26
5	310.19	31.99 QP	46.00	-14.01	1.75 V	0	16.57	15.42
6	533.41	35.23 QP	46.00	-10.77	1.25 V	286	14.78	20.45
7	599.97	32.04 QP	46.00	-13.96	1.50 V	250	10.07	21.97
8	666.64	30.31 QP	46.00	-15.69	1.00 V	360	7.58	22.73
9	696.96	27.62 QP	46.00	-18.38	1.75 V	328	4.51	23.11
10	895.67	29.58 QP	46.00	-16.42	1.25 V	210	3.41	26.17

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



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**Above 1GHz WORST-CASE DATA:**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1 / 190	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 75%RH 1013 hPa	TESTED BY	Eric Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1560.00	42.35 PK	74.00	-31.65	1.47 H	54	14.21	28.14
2	1560.00	31.90 AV	54.00	-22.10	1.47 H	54	3.76	28.14
3	4824.00	45.60 PK	74.00	-28.40	1.54 H	24	6.63	38.97
4	4824.00	33.90 AV	54.00	-20.10	1.54 H	24	-5.07	38.97

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1560.00	41.32 PK	74.00	-32.68	1.24 V	51	13.18	28.14
2	1560.00	30.24 AV	54.00	-23.76	1.24 V	51	2.10	28.14
3	4824.00	45.30 PK	74.00	-28.70	1.38 V	77	6.33	38.97
4	4824.00	33.60 AV	54.00	-20.40	1.38 V	77	-5.37	38.97

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



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## 5 INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: [www.adt.com.tw/index.5/phtml](http://www.adt.com.tw/index.5/phtml). If you have any comments, please feel free to contact us at the following:

**Linko EMC/RF Lab:**

Tel: 886-2-26052180

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**Web Site:** [www.adt.com.tw](http://www.adt.com.tw)

The address and road map of all our labs can be found in our web site also.



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## 6 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

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