



# FCC TEST REPORT (PART 24)

**REPORT NO.:** RF110705C18C-4 R1

**MODEL NO.:** PH98100

**FCC ID:** NM8PH98100

**RECEIVED:** Aug. 23, 2011

**TESTED:** Sep. 05 ~ Oct. 12, 2011

**ISSUED:** Oct. 12, 2011

**APPLICANT:** HTC Corporation

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

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**TEST LOCATION:** No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei  
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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	N/A	Sep. 15, 2011
RF110705C18C-4 R1	Add wireless charging mode	Oct. 12, 2011



## 1 CERTIFICATION

**PRODUCT:** Smartphone

**Model No.:** PH98100

**BRAND:** HTC


**APPLICANT:** HTC Corporation

**TEST SAMPLE:** Production Unit

**TESTED:** Sep. 05 ~ Oct. 12, 2011

**TEST STANDARDS:** **FCC Part 24, Subpart E**  
ANSI C63.4-2003

This report is issued as a supplementary report of **RF110705C18-5** for a new inductive cover. This report shall be used combining with its original report.

**PREPARED BY :**  , **DATE :** Oct. 12, 2011  
Pettie Chen / Specialist

**APPROVED BY :**  , **DATE :** Oct. 12, 2011  
Gary Chang / Technical Manager

**NOTE:** The emission tests and e.i.r.p peak power were performed for the addendum. Refer to original report for the other test data.

## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 24 & Part 2 / IC RSS-133			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
2.1046 24.232	Maximum Peak Output Power Limit: max. 2 watts e.i.r.p peak power	PASS	Meet the requirement of limit. Minimum passing margin is 24.1dBm at 1880.0MHz.
2.1055 24.235	Frequency Stability AFC Freq. Error vs. Voltage AFC Freq. Error vs. Temperature Limit: max. $\pm 2.5$ ppm	NA	Refer to Note
2.1049 24.238(b)	Occupied Bandwidth	NA	Refer to Note
24.238(b)	Band Edge Measurements	NA	Refer to Note
2.1051 24.238	Conducted Spurious Emissions	NA	Refer to Note
2.1053 24.238	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is $-10.0$ dB at 61.10MHz.

**NOTE:** The emission tests and e.i.r.p peak power were performed for the addendum. Refer to original report for the other test data.

### 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:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.34 dB
	200MHz ~1000MHz	3.35 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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



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### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Smartphone
<b>MODEL NO.</b>	PH98100
<b>FCC ID</b>	NM8PH98100
<b>NOMINAL VOLTAGE</b>	3.8Vdc (Li-ion battery) 3.7Vdc (Li-ion battery) 5Vdc (Adapter & host equipment)
<b>OPERATION TEMPERATURE RANGE</b>	-30°C ~ 50°C
<b>MODULATION TYPE</b>	QPSK, OQPSK, HPSK
<b>FREQUENCY RANGE</b>	1851.25MHz ~ 1908.75MHz
<b>NUMBER OF CHANNEL</b>	1151
<b>MAX. EIRP POWER</b>	EV-DO mode: 23.9dBm 1xRTT mode: 24.1dBm
<b>ANTENNA TYPE</b>	Fixed internal antenna with -1dBi gain
<b>I/O PORTS</b>	Refer to user's manual
<b>DATA CABLE</b>	Refer to note as below
<b>ACCESSORY DEVICES</b>	Refer to note as below

**NOTE:**

1. This is a supplementary report of RF110705C18-5. This report shall be combined together with its original report.
2. This report is prepared for FCC class II permissive change. Difference compared with the original report is adding inductive cover, BR C700; therefore, re-tested emission tests and e.i.r.p peak power and presented in the test report.
3. The Test Mode C & D of The section 4.2.7 & 4.3.7 are tested under wireless charging mode, which is compliant to WPC v1.0 standard. Because technologic confidential issue, please see the wireless charging back cover operational description.
4. The EUT's accessories list refers to Ext Pho\_ NM8PH98100.pdf.  
\*Item 1, 3, 5, 6, 8 were used for the test.
5. MEID Code: 99000033xxxxxx.
6. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

### 3.2 DESCRIPTION OF TEST MODES

The device includes CDMA and EV-DO transmitter. CDMA transmitter only supports 1x RTT without EV-DO mode. EV-DO transmitter only supports EV-DO without 1x RTT mode. 2 transmitters are tested separately for all test items.

For EV-DO, the low, middle and high channels are chosen for testing.

	CHANNEL	FREQUENCY	TX MODE
LOW	25	1851.25 MHz	1xEVDO Rev. 0
MIDDLE	600	1880.00 MHz	1xEVDO Rev. 0
HIGH	1175	1908.75 MHz	1xEVDO Rev. 0

**NOTE:**

1. Below 1 GHz, the channel 25, 600 and 1175 were pre-tested in chamber. The channel 1175 was the worst case and chosen for final test.
2. Above 1 GHz, the channel 1175 was tested individually.
3. The channel space is 0.05MHz.
4. For EV-DO after pretest of output power and spurious emission under 1xEVDO Rev. 0 & 1xEVDO Rev. A mode, find the worst mode is 1xEVDO Rev. 0. Therefore, select 1xEVDO Rev. 0 mode to do final test

For 1xRTT the low, middle and high channels are chosen for testing.

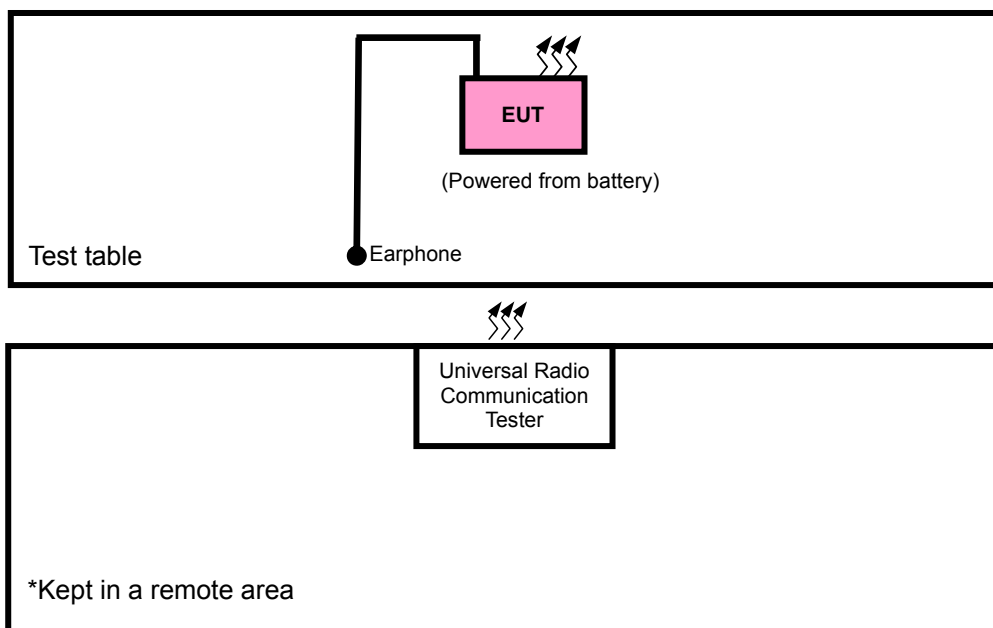
	CHANNEL	FREQUENCY	TX MODE
LOW	25	1851.25 MHz	CDMA2000(SO55)
MIDDLE	600	1880.00 MHz	CDMA2000(SO55)
HIGH	1175	1908.75 MHz	CDMA2000(SO55)

**NOTE:**

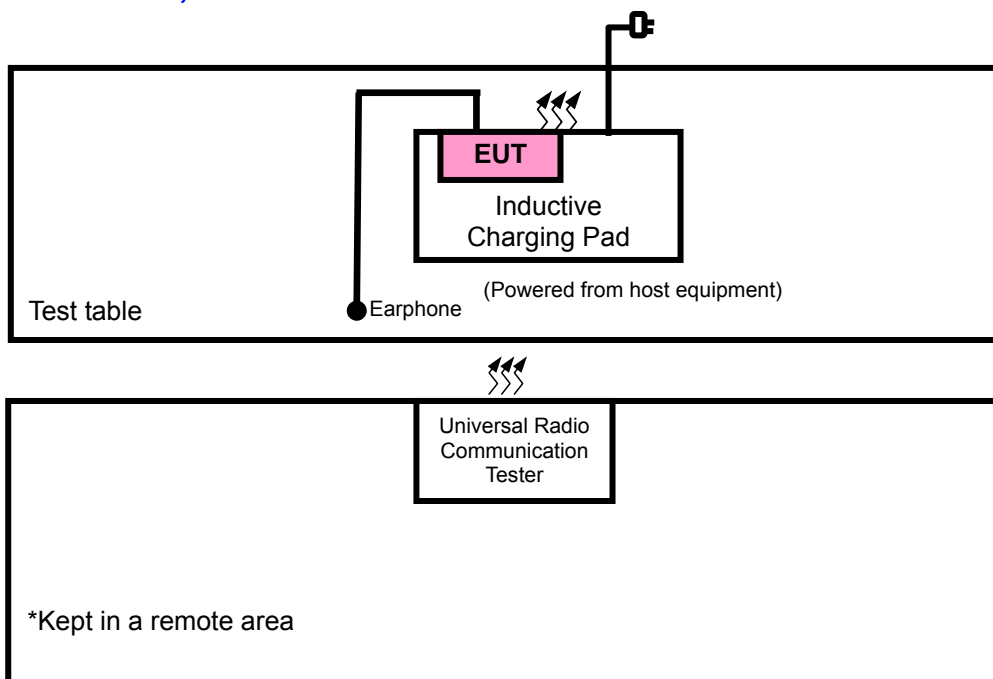
1. Below 1 GHz, the channel 25, 600 and 1175 were pre-tested in chamber. The channel 600 was the worst case and chosen for final test.
2. Above 1 GHz, the channel 600 was tested individually.
3. The channel space is 0.05MHz.
4. After pretest of output power and spurious emission under CDMA2000(SO32), CDMA2000(SO2) & CDMA2000(SO55) mode, find the worst mode is CDMA2000(SO55). Therefore, select CDMA2000(SO55) mode to do final test

### 3.2.1 CONFIGURATION OF SYSTEM UNDER TEST

#### TEST MODE A, B



#### TEST MODE C, D







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### 3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION	
	OP	RE<1G	RE≥1G		
A	√	√	√	EUT Standalone	For EVDO
B	√	√	√		For 1x RTT
C	-	√	√	Wireless charging mode	For EVDO
D	-	√	√		For 1x RTT

Where **OP**: Output power **RE<1G**: Radiated emission below 1GHz **RE≥1G**: Radiated emission above 1GHz **NOTE**: "-": Means no effect.

#### OUTPUT POWER MEASUREMENT:

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

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL
A & B	25 to 1175	25, 600, 1175

#### RADIATED EMISSION MEASUREMENT (BELOW 1 GHz):

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

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	AXIS
A	25 to 1175	1175	Y
B	25 to 1175	600	Y
C	25 to 1175	1175	-
D	25 to 1175	600	-

#### RADIATED EMISSION MEASUREMENT (ABOVE 1 GHz):

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

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	AXIS
A	25 to 1175	1175	Y
B	25 to 1175	600	Y
C	25 to 1175	1175	-
D	25 to 1175	600	-

**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
OP	25deg. C, 65%RH	120Vac, 60Hz	Sam Chen
RE < 1G (Test Mode A,B)	25deg. C, 65%RH	120Vac, 60Hz	Sam Chen
RE < 1G (Test Mode C,D)	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
RE ≥ 1G (Test Mode A,B)	25deg. C, 65%RH	120Vac, 60Hz	Sam Chen
RE ≥ 1G (Test Mode C,D)	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu

**3.3 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:

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 24**

**IC RSS-133**

**ANSI C63.4-2003**

**ANSI/TIA/EIA-603-C 2004**

**NOTE:** All test items have been performed and recorded as per the above standards.

### 3.4 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.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	UNIVERSAL RADIO COMMUNICATION TESTER	R&S	CMU200	104484	NA
2	NJZ-2000 (GPRS+WCDMA SIMULATOR)	JRC	NJZ-2000	ET00054	NA
3	Inductive Charging Pad	Energizer	IC2B	NA	NA
4	Inductive Charging Pad Adapter	Energizer	APS-A024090 23W-G	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	NA
3	NA
4	NA

**NOTE 1:** All power cords of the above support units are non shielded (1.8m).

**NOTE 2:** Item 1, 2 acted as a communication partners to transfer data.

**NOTE 3:** Item 3, 4 were provided by client.

## 4 TEST TYPES AND RESULTS

### 4.1 OUTPUT POWER MEASUREMENT

#### 4.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

The radiated peak output power shall be according to the specific rule Part 24.232(b) that “Mobile / Portable station are limited to 2 watts e.i.r.p” and 24.232(c) specific that “Peak transmit power must be measure over any interval of continuous transmission using instrumentation calibration in terms of rms-equivalent voltage.”



#### 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	Aug. 02, 2011	Aug. 01, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP 40	100041	Jul. 21, 2011	Jul. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 13, 2011	Apr. 12, 2012
HORN Antenna SCHWARZBECK	9120D	209	Aug. 25, 2011	Aug. 24, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8447D	2944A10633	Nov. 02, 2010	Nov. 01, 2011
Preamplifier Agilent	8449B	3008A01964	Nov. 02, 2010	Nov. 01, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295014/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	Aug. 19, 2011	Aug. 18, 2012
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA

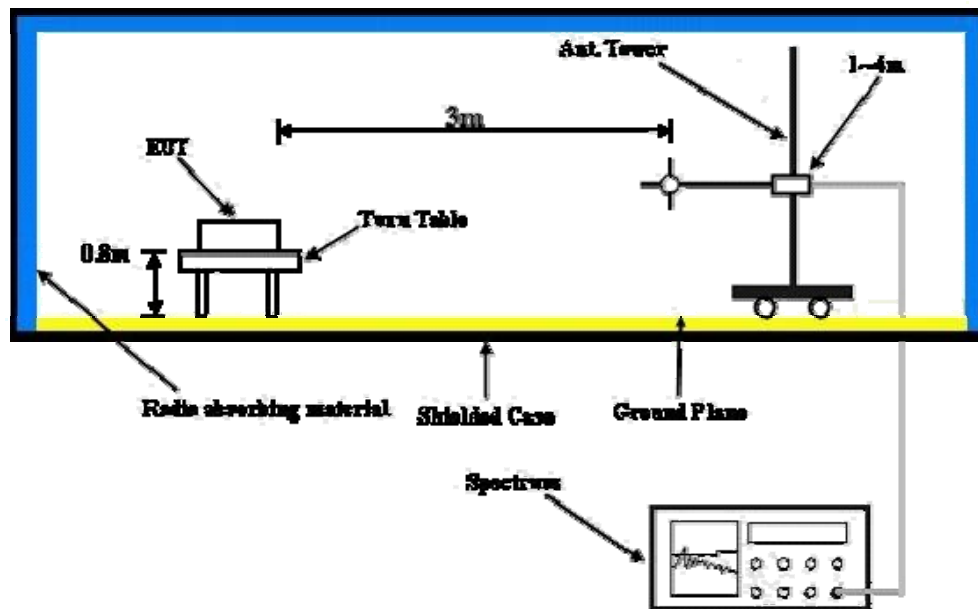
- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  2. The test was performed in HwaYa Chamber 3.
  3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
  4. The FCC Site Registration No. is 988962.
  5. The IC Site Registration No. is IC 7450F-3.

#### 4.1.3 TEST PROCEDURES

- a. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels 25, 600 and 1175 (low, middle and high operational frequency range.)
- b. The conducted peak output power used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer. The path loss included the splitter loss, cable loss and 20dB pad loss. The spectrum set RB/VB 3MHz (CDMA) then read peak power value and record to the test. (All transmitted path loss shall be considered in the test report data.)
- c. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- d. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step c. Record the power level of S.G
- e.  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn.}$

#### 4.1.4 TEST SETUP

##### EIRP POWER MEASUREMENT:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.1.5 EUT OPERATING CONDITIONS

- a. The EUT makes a call to the communication simulator.
- b. The communication simulator station system controlled an EUT to export maximum output power under transmission mode and specific channel frequency.



### 4.1.6 TEST RESULTS

#### TEST MODE A:

EIRP POWER (1x EV-DO)								
CHANNEL	FREQ. (MHz)	S.G. VALUE (dBm)		CORR. FACTOR (dB)	OUTPUT POWER			
					Revision A		Release 0	
		Revision A	Release 0		dBm	Watt	dBm	Watt
25	1851.25	14.8	14.8	8.4	23.2	0.2089	23.2	0.2089
60	1880.00	14.1	14.3	8.6	22.7	0.1862	22.9	0.1950
1175	1908.75	15.3	15.4	8.5	23.8	0.2399	<b>23.9</b>	<b>0.2455</b>

#### TEST MODE B:

EIRP POWER (SO55)					
CHANNEL NO.	FREQUENCY (MHz)	S.G. VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
25	1851.25	15.4	8.4	23.8	0.2399
600	1880.00	15.5	8.6	<b>24.1</b>	<b>0.2570</b>
1175	1908.75	14.2	8.5	22.7	0.1862

- REMARKS:** 1. Peak Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).  
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).





## **4.2 RADIATED EMISSION MEASUREMENT (BELOW 1GHz)**

### **4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT**

In the FCC 24.238(a), On any frequency outside a licensee's frequency block within USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB. The emission of limit equal to  $-13\text{dBm}$ .

### **4.2.2 TEST INSTRUMENTS**

Same as 4.1.2

#### 4.2.3 TEST PROCEDURES

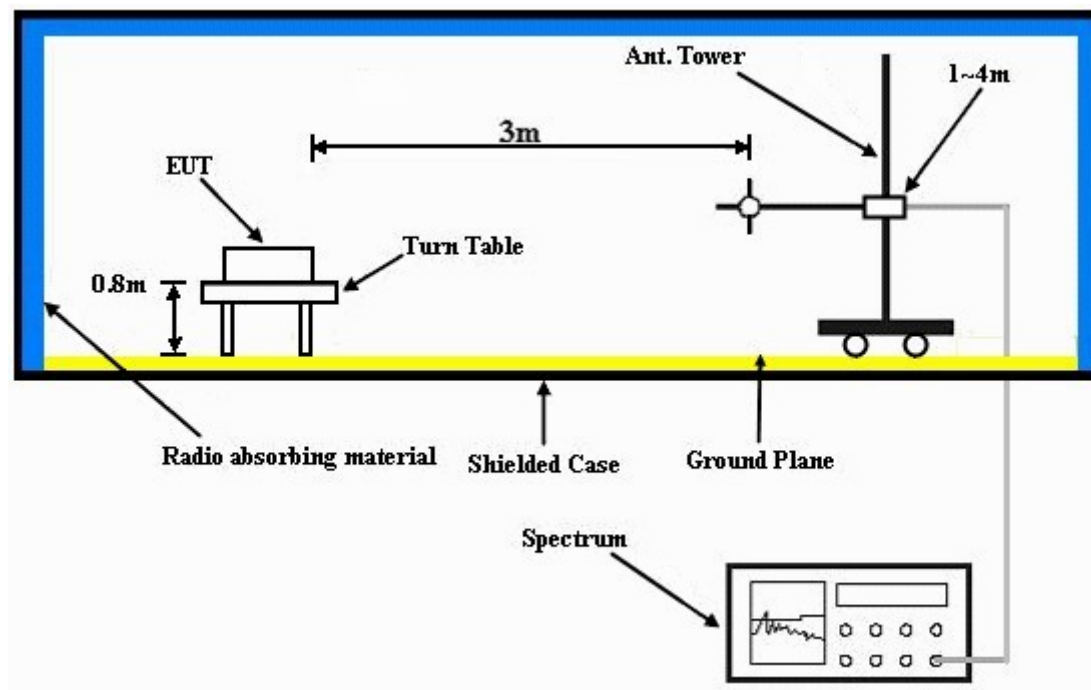
- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step a. Record the power level of S.G
- c.  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$

**NOTE:** The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.2.5 TEST SETUP



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.2.6 EUT OPERATING CONDITIONS

- a. The EUT makes a call to the communication simulator.
- b. The communication simulator station system controlled an EUT to export maximum output power under transmission mode and specific channel frequency.



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#### 4.2.7 TEST RESULTS

<b>MODE</b>	TX channel 1175	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 65%RH	<b>INPUT POWER</b>	120Vac, 60 Hz
<b>TEST MODE</b>	A	<b>TESTED BY</b>	Sam Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 m						
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	POWER VALUE (dBm)
1	41.66	50.5	-13.0	-51.5	-7.7	-59.2
2	86.37	51.3	-13.0	-41.8	-7.7	-49.5
3	119.42	49.3	-13.0	-47.9	-7.7	-55.6
4	140.80	49.5	-13.0	-43.8	-7.7	-51.5
5	177.74	47.2	-13.0	-43.5	-7.7	-51.2
6	311.86	37.9	-13.0	-45.1	-7.8	-52.9

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 m						
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	POWER VALUE (dBm)
1	41.66	56.8	-13.0	-40.3	-7.7	-48.0
2	88.32	46.8	-13.0	-43.9	-7.7	-51.6
3	142.75	41.3	-13.0	-43.2	-7.7	-50.9
4	177.74	40.5	-13.0	-41.4	-7.7	-49.1
5	356.57	38.1	-13.0	-38.5	-7.8	-46.3
6	543.19	36.9	-13.0	-45.5	-7.8	-53.3

**NOTE:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB).
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.
5. This is valid for all 3 channels.



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<b>MODE</b>	TX channel 600	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 65%RH	<b>INPUT POWER</b>	120Vac, 60 Hz
<b>TEST MODE</b>	B	<b>TESTED BY</b>	Sam Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 m</b>						
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	POWER VALUE (dBm)
1	41.66	51.1	-13.0	-36.1	-7.7	-43.8
2	86.37	51.1	-13.0	-35.8	-7.7	-43.5
3	123.31	52.3	-13.0	-37.9	-7.7	-45.6
4	181.62	47.7	-13.0	-37.5	-7.7	-45.2
5	300.20	39.7	-13.0	-39.2	-7.8	-47.0
6	556.79	35.8	-13.0	-48.7	-7.8	-56.5
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 m</b>						
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	POWER VALUE (dBm)
1	45.55	56.3	-13.0	-40.3	-7.7	-48.0
2	86.37	47.8	-13.0	-43.1	-7.7	-50.8
3	158.30	40.5	-13.0	-45.6	-7.7	-53.3
4	354.63	38.3	-13.0	-44.2	-7.8	-52.0
5	558.74	37.5	-13.0	-40.1	-7.8	-47.9
6	996.11	38.4	-13.0	-42.4	-7.9	-50.3

**NOTE:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB).
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.
5. This is valid for all 3 channels.



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<b>MODE</b>	TX channel 1175	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 65%RH	<b>INPUT POWER</b>	120Vac, 60 Hz
<b>TEST MODE</b>	C	<b>TESTED BY</b>	Kay Wu

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 m</b>						
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	POWER VALUE (dBm)
1	39.72	58.1	-13.0	-28.9	-7.7	-36.6
2	72.77	59.9	-13.0	-27.0	-7.7	-34.7
3	160.24	48.5	-13.0	-38.6	-7.7	-46.3
4	247.72	45.4	-13.0	-40.9	-7.7	-48.6
5	362.40	46.0	-13.0	-40.4	-7.8	-48.2
6	490.70	42.6	-13.0	-43.5	-7.8	-51.3
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 m</b>						
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	POWER VALUE (dBm)
1	47.49	66.7	-13.0	-19.9	-7.7	-27.6
2	61.10	71.8	-13.0	-15.3	-7.7	-23.0
3	111.64	53.4	-13.0	-33.2	-7.7	-40.9
4	168.02	43.1	-13.0	-44.0	-7.7	-51.7
5	243.83	42.1	-13.0	-44.5	-7.7	-52.2
6	352.69	40.5	-13.0	-46.1	-7.8	-53.9

**NOTE:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB).
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.
5. This is valid for all 3 channels.



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<b>MODE</b>	TX channel 600	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 65%RH	<b>INPUT POWER</b>	120Vac, 60 Hz
<b>TEST MODE</b>	D	<b>TESTED BY</b>	Kay Wu

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 m</b>						
<b>NO.</b>	<b>FREQ. (MHz)</b>	<b>EMISSION LEVEL (dBuV)</b>	<b>LIMIT (dBm)</b>	<b>S.G POWER VALUE (dBm)</b>	<b>CORRECTION FACTOR (dB)</b>	<b>POWER VALUE (dBm)</b>
1	45.55	57.9	-13.0	-29.5	-7.7	-37.2
2	64.99	60.9	-13.0	-25.6	-7.7	-33.3
3	162.18	49.7	-13.0	-37.2	-7.7	-44.9
4	321.58	41.6	-13.0	-45.0	-7.8	-52.8
5	467.37	43.0	-13.0	-43.9	-7.8	-51.7
6	622.89	41.6	-13.0	-44.5	-7.8	-52.3

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 m</b>						
<b>NO.</b>	<b>FREQ. (MHz)</b>	<b>EMISSION LEVEL (dBuV)</b>	<b>LIMIT (dBm)</b>	<b>S.G POWER VALUE (dBm)</b>	<b>CORRECTION FACTOR (dB)</b>	<b>POWER VALUE (dBm)</b>
1	43.61	66.5	-13.0	-20.2	-7.7	-27.9
2	61.10	69.6	-13.0	-17.4	-7.7	-25.1
3	243.83	43.3	-13.0	-43.3	-7.7	-51.0
4	356.57	42.3	-13.0	-44.4	-7.8	-52.2
5	473.21	39.7	-13.0	-47.2	-7.8	-55.0
6	694.81	36.7	-13.0	-50.1	-7.8	-57.9

**NOTE:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB).
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.
5. This is valid for all 3 channels.

### 4.3 RADIATED EMISSION MEASUREMENT (ABOVE 1GHz)

#### 4.3.1 LIMITS OF RADIATED EMISSION MEASUREMENT

In the FCC 24.238(a), On any frequency outside a licensee's frequency block within USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB. The specified minimum attenuation becomes 43dB and the limit of emission equal to  $-13\text{dBm}$ .

#### 4.3.2 TEST INSTRUMENTS

Same as 4.1.2.

#### 4.3.3 TEST PROCEDURES

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G
- c.  $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$ .

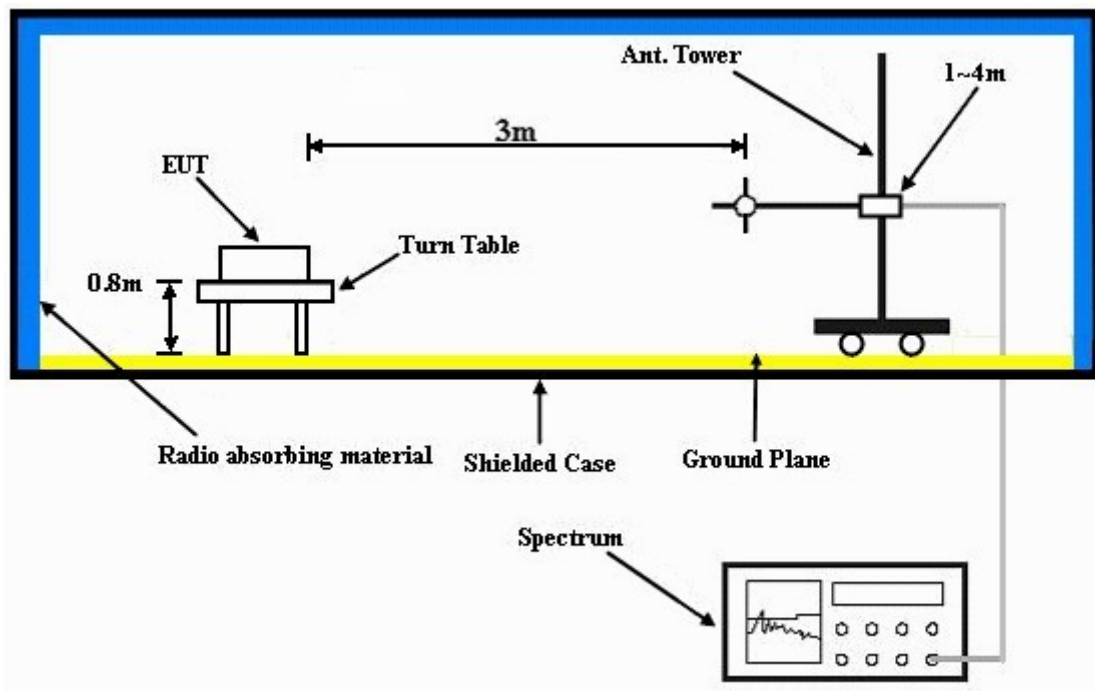
**NOTE:** The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.



#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.3.5 TEST SETUP



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.3.6 EUT OPERATING CONDITIONS

- a. The EUT makes a call to the communication simulator.
- b. The communication simulator station system controlled an EUT to export maximum output power under transmission mode and specific channel frequency.



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#### 4.3.7 TEST RESULTS

<b>MODE</b>	Channel 1175	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>INPUT POWER</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 65%RH
<b>TEST MODE</b>	A	<b>TESTED BY</b>	Sam Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	POWER VALUE (dBm)
1	3817.50	59.5	-13.0	-44.9	9.9	-35.0
2	5726.25	45.3	-13.0	-58.7	9.6	-49.1
3	7635.00	48.6	-13.0	-53.9	7.8	-46.1

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	POWER VALUE (dBm)
1	3817.50	49.6	-13.0	-54.8	9.9	-44.9
2	5726.25	45.0	-13.0	-59.0	9.6	-49.4
3	7635.00	51.5	-13.0	-51.0	7.8	-43.2

**NOTE:** Power Value (dBum) = S.G Power Value (dBm) + Correction Factor (dB).



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<b>MODE</b>	Channel 600	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>INPUT POWER</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 65%RH
<b>TEST MODE</b>	B	<b>TESTED BY</b>	Sam Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>						
<b>NO.</b>	<b>FREQ. (MHz)</b>	<b>EMISSION LEVEL (dBuV)</b>	<b>LIMIT (dBm)</b>	<b>S.G POWER VALUE (dBm)</b>	<b>CORRECTION FACTOR (dB)</b>	<b>POWER VALUE (dBm)</b>
1	3760.00	51.0	-13.0	-53.4	9.9	-43.5
2	5640.00	45.1	-13.0	-59.2	9.6	-49.6
3	7520.00	40.0	-13.0	-62.4	7.8	-54.6
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>						
<b>NO.</b>	<b>FREQ. (MHz)</b>	<b>EMISSION LEVEL (dBuV)</b>	<b>LIMIT (dBm)</b>	<b>S.G POWER VALUE (dBm)</b>	<b>CORRECTION FACTOR (dB)</b>	<b>POWER VALUE (dBm)</b>
1	3760.00	52.9	-13.0	-51.5	9.9	-41.6
2	5640.00	45.5	-13.0	-58.8	9.6	-49.2
3	7520.00	40.0	-13.0	-62.4	7.8	-54.6

**NOTE:** Power Value (dBum) = S.G Power Value (dBm) + Correction Factor (dB).



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<b>MODE</b>	Channel 1175	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>INPUT POWER</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 65%RH
<b>TEST MODE</b>	<b>C</b>	<b>TESTED BY</b>	Kay Wu

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	POWER VALUE (dBm)
1	3702.50	49.5	-13.0	-55.0	9.9	-45.1
2	5553.75	47.2	-13.0	-57.0	9.7	-47.3
3	7405.00	52.4	-13.0	-50.2	7.9	-42.3

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	POWER VALUE (dBm)
1	3702.50	48.7	-13.0	-55.8	9.9	-45.9
2	5553.75	47.4	-13.0	-56.8	9.7	-47.1
3	7405.00	53.2	-13.0	-49.4	7.9	-41.5

**NOTE:** Power Value (dBum) = S.G Power Value (dBm) + Correction Factor (dB).



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<b>MODE</b>	Channel 600	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>INPUT POWER</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 65%RH
<b>TEST MODE</b>	D	<b>TESTED BY</b>	Kay Wu

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>						
<b>NO.</b>	<b>FREQ. (MHz)</b>	<b>EMISSION LEVEL (dBuV)</b>	<b>LIMIT (dBm)</b>	<b>S.G POWER VALUE (dBm)</b>	<b>CORRECTION FACTOR (dB)</b>	<b>POWER VALUE (dBm)</b>
1	3760.00	52.4	-13.0	-52.0	9.9	-42.1
2	5640.00	49.3	-13.0	-55.0	9.6	-45.4
3	7520.00	53.0	-13.0	-49.4	7.8	-41.6
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>						
<b>NO.</b>	<b>FREQ. (MHz)</b>	<b>EMISSION LEVEL (dBuV)</b>	<b>LIMIT (dBm)</b>	<b>S.G POWER VALUE (dBm)</b>	<b>CORRECTION FACTOR (dB)</b>	<b>POWER VALUE (dBm)</b>
1	3760.00	53.9	-13.0	-50.5	9.9	-40.6
2	5640.00	52.2	-13.0	-52.1	9.6	-42.5
3	7520.00	53.7	-13.0	-48.7	7.8	-40.9

**NOTE:** Power Value (dBum) = S.G Power Value (dBm) + Correction Factor (dB).



## 5 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



## 6 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 and authorization 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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**Hsin Chu EMC/RF Lab:**

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**Email:** [service.adt@tw.bureauveritas.com](mailto:service.adt@tw.bureauveritas.com)

**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.



## **7 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.

**---END---**