

FCC TEST REPORT

REPORT NO.: RF990507D01

MODEL NO.: 1454

RECEIVED: May 7, 2010

TESTED: May 13 ~ 18, 2010

ISSUED: May 24, 2010

APPLICANT: Microsoft Corporation

ADDRESS: One Microsoft Way Redmond, WA 98052-6399

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

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1. CERTIFICATION

PRODUCT: Wireless Mouse
BRAND NAME: Microsoft®
MODEL NO.: 1454
APPLICANT: Microsoft Corporation
TESTED: May 13 ~ 18, 2010
TEST ITEM: ENGINEERING SAMPLE
STANDARDS: FCC Part 15, Subpart C (Section 15.249)
ANSI C63.4-2003

The above equipment 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 : Celia Chen , **DATE:** May 24, 2010
(Celia Chen / Senior Specialist)

TECHNICAL
ACCEPTANCE : Jamison Chan , **DATE:** May 24, 2010
Responsible for RF (Jamison Chan / Supervisor)

APPROVED BY : Ken Liu , **DATE:** May 24, 2010
(Ken Liu / Assistant Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.249)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207	Conducted Emission Test	N/A	Power supply is 1.5Vdc from battery
15.209 15.249 15.249 (d)	Radiated Emission Test Band Edge Measurement Limit: 50dB less than the peak value of fundamental frequency or meet radiated emission limit in section 12.209	PASS	Minimum passing margin is -6.4dB at 2390.00MHz

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	Frequency	Uncertainty
Radiated emissions	30MHz ~ 1GHz	3.67 dB
	Above 1GHz	2.89 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Wireless Mouse
MODEL NO.	1454
FCC ID	C3K1454
POWER SUPPLY	1.5Vdc from battery
MODULATION TYPE	GFSK
OPERATING FREQUENCY	2403MHz ~ 2480MHz
NUMBER OF CHANNEL	24
ANTENNA TYPE	PCB Strip antenna with -0.45dBi gain
ANTENNA CONNECTOR	N/A
DATA CABLE	N/A
I/O PORTS	N/A
ASSOCIATED DEVICES	N/A

NOTE:

1. The EUT is a transceiver.
2. The EUT has serial samples, which are defined as their serial no. as follows:

Product	Model No.	Serial no.
Wireless Mouse	1454	EVT 053A
		EVT 296A
		EVT 385A

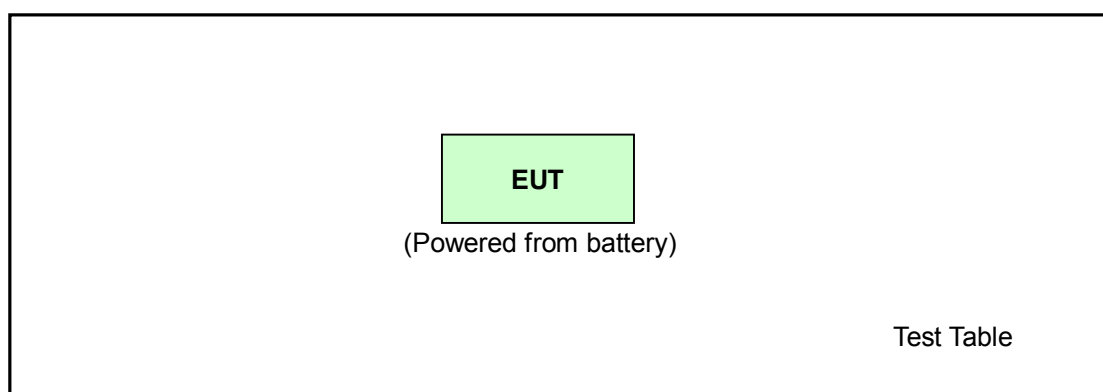
3. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

24 channels are provided to this EUT:

Channel Group	Channel	Frequency (MHz)	Channel Group	Channel	Frequency (MHz)
Subset A	0	2403	Subset D	12	2405
	1	2419		13	2425
	2	2478		14	2444
	3	2468		15	2452
Subset B	4	2429	Subset E	16	2423
	5	2450		17	2446
	6	2470		18	2456
	7	2480		19	2474
Subset C	8	2421	Subset F	20	2417
	9	2431		21	2427
	10	2472		22	2448
	11	2454		23	2476

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT configure mode	Applicable to					Description
	PLC	RE<1G	RE≥1G	FT	BM	
-	Note	√	√	√	√	-

Where PLC: Power Line Conducted Emission RE<1G RE: Radiated Emission below 1GHz
RE≥1G: Radiated Emission above 1GHz FT: Frequency Tolerance
BM: Bandedge Measurement

Note: No need to concern of Conducted Emission due to the EUT is powered by battery.

RADIATED EMISSION TEST (BELOW 1 GHz):

- ☒ 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.

AVAILABLE CHANNEL	TESTED CHANNEL	SERIAL NO.	MODULATION TYPE
0 to 23	0	EVT 053A, EVT 296A, EVT 385A	GFSK

RADIATED EMISSION TEST (ABOVE 1 GHz):

- ☒ 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.

AVAILABLE CHANNEL	TESTED CHANNEL	SERIAL NO.	MODULATION TYPE
0 to 23	0, 14, 7	EVT 053A, EVT 296A, EVT 385A	GFSK

FREQUENCY TOLERANCE:

- ☒ 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.

AVAILABLE CHANNEL	TESTED CHANNEL	SERIAL NO.	MODULATION TYPE
0 to 23	0, 14, 7	EVT 385A	GFSK

BANDEDGE 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.

AVAILABLE CHANNEL	TESTED CHANNEL	SERIAL NO.	MODULATION TYPE
0 to 23	0, 7	EVT 385A	GFSK

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	23deg. C, 82% RH, 1010hPa	1.5Vdc	Nick Chen
RE<1G	23deg. C, 82% RH, 1010hPa	1.5Vdc	Nick Chen
FT	23deg. C, 63% RH, 1009hPa	1.5Vdc	Nick Chen
BM	23deg. C, 82% RH, 1010hPa	1.5Vdc	Nick Chen

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 Part 15, Subpart C (Section 15.249)

ANSI C63.4-2003

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 without any necessary accessory or support unit.

4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

N/A

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, 15.249 as following:

15.209 Limit		
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
15.249 Limit		
Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
902 ~ 928 MHz	50	500
2400 ~ 2483.5 MHz	50	500
5725 ~ 5875 MHz	50	500
24 ~ 24.25 GHz	250	2500

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/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.



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4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	May 06, 2010	May 05, 2011
HP Preamplifier	8449B	3008A01924	Aug. 31, 2009	Aug. 30, 2010
HP Preamplifier	8449B	3008A01292	Aug. 10, 2009	Aug. 09, 2010
ROHDE & SCHWARZ TEST RECEIVER	ESU26	100005	Jun. 06, 2009	Jun. 05, 2010
Schwarzbeck Antenna	VULB 9168	137	Apr. 29, 2010	Apr. 28, 2011
Schwarzbeck Antenna	VHBA 9123	480	Apr. 29, 2010	Apr. 28, 2011
EMCO Horn Antenna	3115	6714	Oct. 26, 2009	Oct. 25, 2010
EMCO Horn Antenna	3115	9312-4192	Apr. 23, 2010	Apr. 22, 2011
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	ADT_Radiated_V 7.6.15.9.2	NA	NA	NA
SUHNER RF cable	SF104-26.5	CABLE-CH6-17m -01	Aug. 20, 2009	Aug. 19, 2010
ROHDE & SCHWARZ Spectrum Analyzer	FSP 40	100036	Apr. 06, 2010	Apr. 05, 2011

- NOTE:**
1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
 2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 3. The test was performed in Chamber No. 6.
 4. The Industry Canada Reference No. IC 7450E-6.
 5. The FCC Site Registration No. is 447212.

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 meter semi-anechoic 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 is varied from one meter to four meters above the ground to determine 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. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak method or average method as specified and then reported in data sheet.

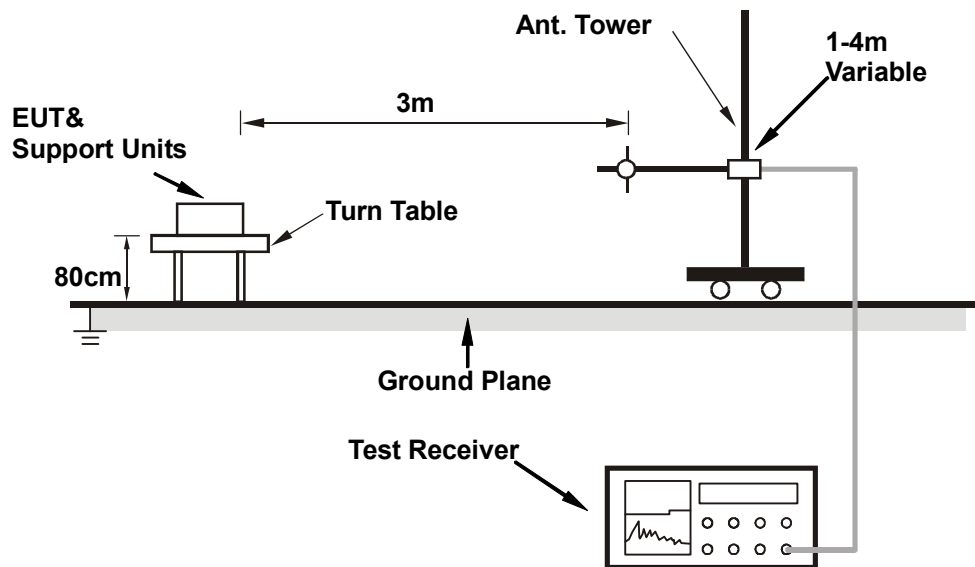
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

Set the EUT under transmission condition continuously at specific channel frequency.

4.2.7 TEST RESULTS

ABOVE 1GHz DATA (For Fundamental, Harmonics)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	1.5Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 82%RH 1010 hPa	TESTED BY	Nick Chen
SERIAL NO.	EVT 385A		

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	*2403.00	101.4 PK	114.0	-12.6	1.16 H	166	69.78	31.60
2	*2403.00	69.5 AV	94.0	-24.5	1.16 H	166	37.88	31.60
3	4806.00	48.0 PK	74.0	-26.0	1.34 H	312	10.33	37.67
4	4806.00	16.1 AV	54.0	-37.9	1.34 H	312	-21.57	37.67
5	7209.00	59.2 PK	74.0	-14.9	1.38 H	325	15.37	43.78
6	7209.00	27.3 AV	54.0	-26.8	1.38 H	325	-16.53	43.78
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	*2403.00	92.4 PK	114.0	-21.6	1.00 V	103	60.82	31.60
2	*2403.00	60.5 AV	94.0	-33.5	1.00 V	103	28.92	31.60
3	4806.00	52.0 PK	74.0	-22.0	1.00 V	210	14.30	37.67
4	4806.00	20.1 AV	54.0	-33.9	1.00 V	210	-17.60	37.67
5	7209.00	57.1 PK	74.0	-16.9	1.17 V	16	13.35	43.78
6	7209.00	25.2 AV	54.0	-28.8	1.17 V	16	-18.55	43.78

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.
5. “ * ” : Fundamental frequency
6. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:

$$20 \log (\text{Duty cycle}) = 20 \log (0.196 \text{ ms} \times 13 / 100 \text{ ms}) = -31.9 \text{ dB}$$
Please see page 16 for plotted duty.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 14	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	1.5Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 82%RH 1010 hPa	TESTED BY	Nick Chen
SERIAL NO.	EVT 385A		

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	*2444.00	101.4 PK	114.0	-12.6	1.15 H	168	69.68	31.76
2	*2444.00	69.5 AV	94.0	-24.5	1.15 H	168	37.78	31.76
3	4888.00	46.8 PK	74.0	-27.2	1.31 H	249	8.80	37.96
4	4888.00	14.9 AV	54.0	-39.1	1.31 H	249	-23.10	37.96
5	7332.00	62.8 PK	74.0	-11.2	1.34 H	326	18.59	44.19
6	7332.00	30.9 AV	54.0	-23.1	1.34 H	326	-13.31	44.19
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	*2444.00	93.2 PK	114.0	-20.8	1.00 V	106	61.40	31.76
2	*2444.00	61.3 AV	94.0	-32.7	1.00 V	106	29.50	31.76
3	4888.00	48.7 PK	74.0	-25.3	1.00 V	20	10.78	37.96
4	4888.00	16.8 AV	54.0	-37.2	1.00 V	20	-21.12	37.96
5	7332.00	61.3 PK	74.0	-12.7	1.45 V	26	17.08	44.19
6	7332.00	29.4 AV	54.0	-24.6	1.45 V	26	-14.82	44.19

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.
5. “ * ” : Fundamental frequency
6. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:
 $20 \log (\text{Duty cycle}) = 20 \log (0.196 \text{ ms} \times 13 / 100 \text{ ms}) = -31.9 \text{ dB}$
Please see page 16 for plotted duty.

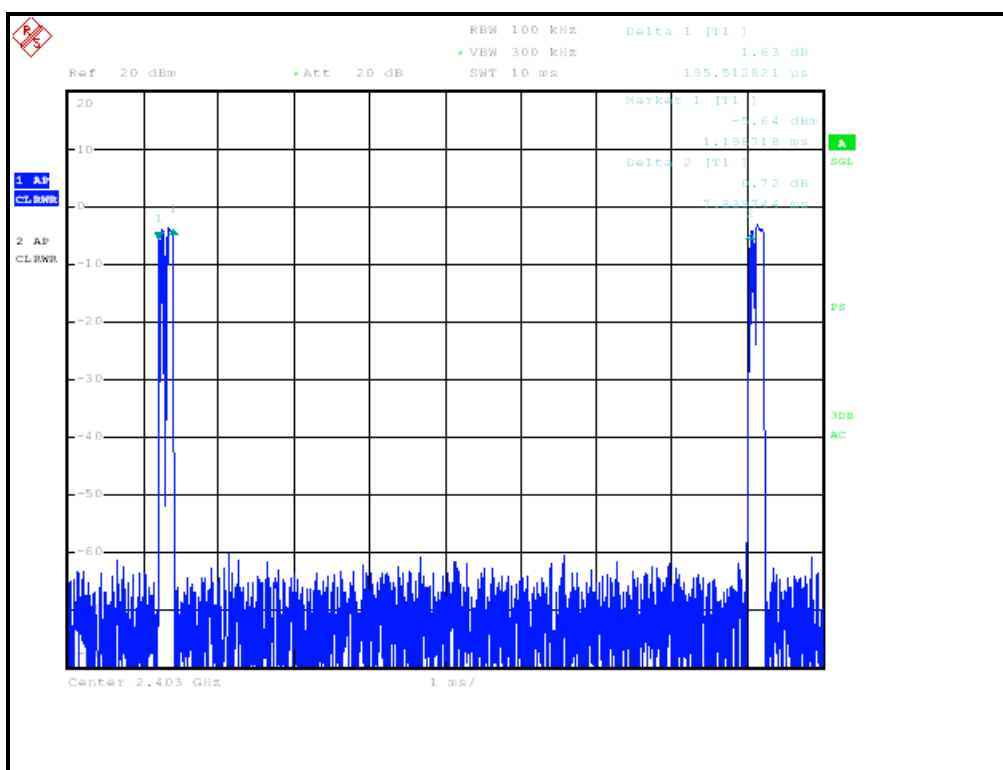
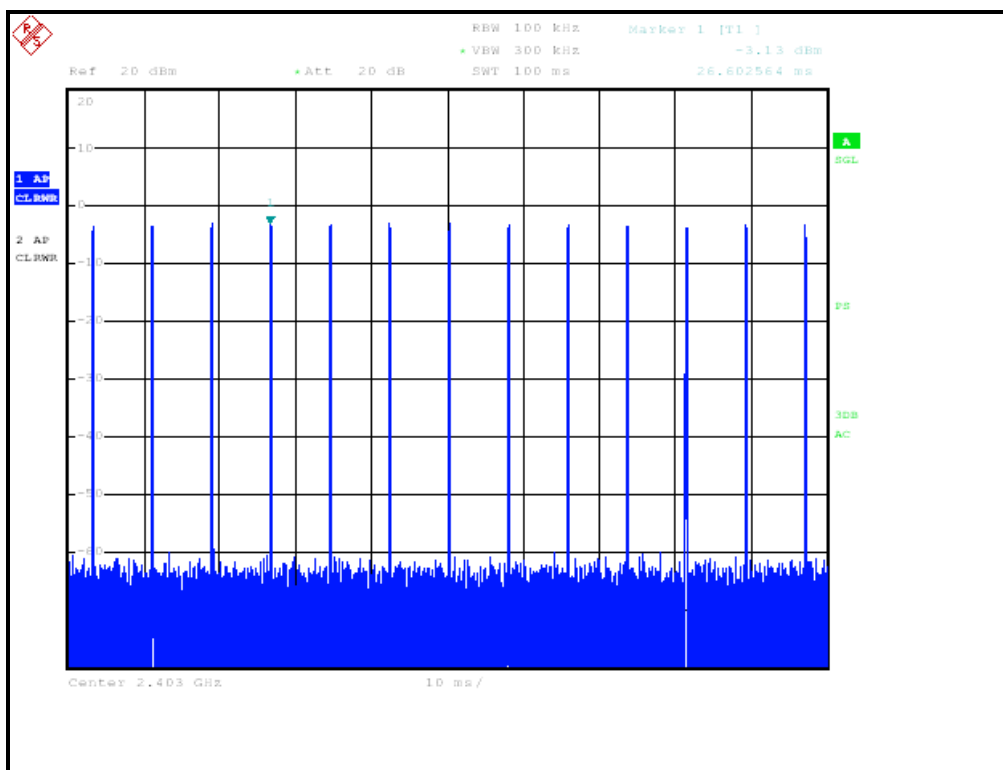


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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	1.5Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 82%RH 1010 hPa	TESTED BY	Nick Chen
SERIAL NO.	EVT 385A		

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	*2480.00	101.1 PK	114.0	-12.9	1.13 H	172	69.21	31.89
2	*2480.00	69.2 AV	94.0	-24.8	1.13 H	172	37.31	31.89
3	4960.00	52.0 PK	74.0	-22.0	1.14 H	160	13.87	38.10
4	4960.00	20.1 AV	54.0	-33.9	1.14 H	160	-18.03	38.10
5	7440.00	62.2 PK	74.0	-11.9	1.29 H	328	17.67	44.48
6	7440.00	30.3 AV	54.0	-23.8	1.29 H	328	-14.23	44.48
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	*2480.00	94.8 PK	114.0	-19.2	1.10 V	147	62.89	31.89
2	*2480.00	62.9 AV	94.0	-31.1	1.10 V	147	30.99	31.89
3	4960.00	48.5 PK	74.0	-25.5	1.09 V	333	10.43	38.10
4	4960.00	16.6 AV	54.0	-37.4	1.09 V	333	-21.47	38.10
5	7440.00	63.9 PK	74.0	-10.1	1.18 V	165	19.44	44.48
6	7440.00	32.0 AV	54.0	-22.0	1.18 V	165	-12.46	44.48

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.
5. “ * ” : Fundamental frequency
6. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:
 $20 \log (\text{Duty cycle}) = 20 \log (0.196 \text{ ms} \times 13 / 100 \text{ ms}) = -31.9 \text{ dB}$
Please see page 16 for plotted duty.



$$20 \log (\text{Duty cycle}) = 20 \log (0.196 \text{ ms} \cdot 13 / 100 \text{ ms}) = -31.9 \text{ dB}$$



A D T

ABOVE 1GHz DATA (For Spurious Emission)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	1.5Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 82%RH 1010 hPa	TESTED BY	Nick Chen
SERIAL NO.	EVT 053A		

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	1201.00	51.7 PK	74.0	-22.3	1.24 H	111	23.71	28.01
2	1201.00	43.7 AV	54.0	-10.3	1.24 H	111	15.69	28.01
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	1201.00	44.9 PK	74.0	-29.1	1.22 V	214	16.88	28.01
2	1201.00	36.9 AV	54.0	-17.1	1.22 V	214	8.90	28.01

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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 14	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	1.5Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 82%RH 1010 hPa	TESTED BY	Nick Chen
SERIAL NO.	EVT 053A		

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	1221.00	50.1 PK	74.0	-23.9	1.25 H	120	22.03	28.06
2	1221.00	41.9 AV	54.0	-12.1	1.25 H	120	13.83	28.06
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	1221.00	43.8 PK	74.0	-30.2	1.15 V	180	15.75	28.06
2	1221.00	35.9 AV	54.0	-18.1	1.15 V	180	7.79	28.06

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.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	1.5Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 82%RH 1010 hPa	TESTED BY	Nick Chen
SERIAL NO.	EVT 053A		

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	1239.00	49.5 PK	74.0	-24.5	1.20 H	122	21.37	28.11
2	1239.00	41.6 AV	54.0	-12.4	1.20 H	122	13.52	28.11
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	1239.00	44.8 PK	74.0	-29.2	1.13 V	221	16.65	28.11
2	1239.00	36.2 AV	54.0	-17.8	1.13 V	221	8.10	28.11

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.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	1.5Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 82%RH 1010 hPa	TESTED BY	Nick Chen
SERIAL NO.	EVT 296A		

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	1201.00	51.6 PK	74.0	-22.4	1.26 H	116	23.58	28.01
2	1201.00	43.7 AV	54.0	-10.3	1.26 H	116	15.69	28.01
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	1201.00	44.7 PK	74.0	-29.3	1.23 V	197	16.72	28.01
2	1201.00	36.8 AV	54.0	-17.2	1.23 V	197	8.77	28.01

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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 14	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	1.5Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 82%RH 1010 hPa	TESTED BY	Nick Chen
SERIAL NO.	EVT 296A		

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	1221.00	49.1 PK	74.0	-24.9	1.36 H	121	21.06	28.06
2	1221.00	41.5 AV	54.0	-12.6	1.36 H	121	13.38	28.06
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	1221.00	43.6 PK	74.0	-30.4	1.14 V	187	15.49	28.06
2	1221.00	35.1 AV	54.0	-18.9	1.14 V	187	7.00	28.06

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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	1.5Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 82%RH 1010 hPa	TESTED BY	Nick Chen
SERIAL NO.	EVT 296A		

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	1239.00	49.2 PK	74.0	-24.8	1.20 H	125	21.06	28.11
2	1239.00	41.2 AV	54.0	-12.8	1.20 H	125	13.07	28.11
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	1239.00	44.3 PK	74.0	-29.7	1.15 V	190	16.19	28.11
2	1239.00	35.6 AV	54.0	-18.4	1.15 V	190	7.45	28.11

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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	1.5Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 82%RH 1010 hPa	TESTED BY	Nick Chen
SERIAL NO.	EVT 385A		

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	1201.00	51.8 PK	74.0	-22.2	1.28 H	117	23.81	28.01
2	1201.00	43.7 AV	54.0	-10.3	1.28 H	117	15.72	28.01
3	2390.00	67.6 PK	74.0	-6.4	1.16 H	166	36.03	31.55
4	2390.00	46.0 AV	54.0	-8.0	1.16 H	166	14.45	31.55
5	2400.00	61.3 PK	74.0	-12.7	1.16 H	166	29.69	31.59
6	2400.00	29.4 AV	54.0	-24.6	1.16 H	166	-2.21	31.59
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	1201.00	42.9 PK	74.0	-31.1	1.20 V	48	14.88	28.01
2	1201.00	34.5 AV	54.0	-19.5	1.20 V	48	6.49	28.01
3	2390.00	58.8 PK	74.0	-15.2	1.00 V	103	27.21	31.55
4	2390.00	46.1 AV	54.0	-7.9	1.00 V	103	14.56	31.55
5	2400.00	52.3 PK	74.0	-21.7	1.00 V	103	20.73	31.59
6	2400.00	20.4 AV	54.0	-33.6	1.00 V	103	-11.17	31.59

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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 14	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	1.5Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 82%RH 1010 hPa	TESTED BY	Nick Chen
SERIAL NO.	EVT 385A		

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	1221.00	49.0 PK	74.0	-25.0	1.28 H	140	20.90	28.06
2	1221.00	41.1 AV	54.0	-12.9	1.28 H	140	13.05	28.06
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	1221.00	42.8 PK	74.0	-31.2	1.14 V	54	14.70	28.06
2	1221.00	34.0 AV	54.0	-20.0	1.14 V	54	5.94	28.06

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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	1.5Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 82%RH 1010 hPa	TESTED BY	Nick Chen
SERIAL NO.	EVT 385A		

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	1239.00	49.0 PK	74.0	-25.1	1.21 H	140	20.84	28.11
2	1239.00	40.9 AV	54.0	-13.1	1.21 H	140	12.82	28.11
3	2483.50	57.4 PK	74.0	-16.6	1.13 H	172	25.49	31.91
4	2483.50	25.5 AV	54.0	-28.5	1.13 H	172	-6.41	31.91
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	1239.00	41.9 PK	74.0	-32.1	1.07 V	79	13.75	28.11
2	1239.00	31.7 AV	54.0	-22.3	1.07 V	79	3.57	28.11
3	2483.50	51.1 PK	74.0	-22.9	1.10 V	147	19.17	31.91
4	2483.50	19.2 AV	54.0	-34.8	1.10 V	147	-12.73	31.91

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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BELOW 1GHz WORST-CASE DATA

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	1.5Vdc	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 82%RH 1010 hPa	TESTED BY	Nick Chen
SERIAL NO.	EVT 053A		

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	37.77	22.2 QP	40.0	-17.8	1.00 H	127	9.27	12.90
2	120.16	24.7 QP	43.5	-18.8	1.24 H	61	13.34	11.39
3	788.59	25.3 QP	46.0	-20.7	1.08 H	10	-1.09	26.42
4	827.45	25.7 QP	46.0	-20.3	1.13 H	28	-1.38	27.04
5	850.77	26.5 QP	46.0	-19.5	1.26 H	265	-0.91	27.41
6	880.30	27.2 QP	46.0	-18.8	1.33 H	268	-0.58	27.79
7	931.60	27.2 QP	46.0	-18.8	1.50 H	10	-1.19	28.39
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	89.07	29.2 QP	43.5	-14.3	1.25 V	10	20.91	8.25
2	107.72	30.3 QP	43.5	-13.2	1.24 V	67	20.42	9.85
3	140.37	26.5 QP	43.5	-17.0	1.13 V	232	12.97	13.56
4	838.33	25.7 QP	46.0	-20.3	1.03 V	67	-1.51	27.22
5	858.54	26.6 QP	46.0	-19.4	1.07 V	313	-0.93	27.51
6	892.74	27.2 QP	46.0	-18.8	1.26 V	94	-0.74	27.95
7	954.92	27.7 QP	46.0	-18.4	1.50 V	100	-1.00	28.65

- 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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	1.5Vdc	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 82%RH 1010 hPa	TESTED BY	Nick Chen
SERIAL NO.	EVT 296A		

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	37.77	25.5 QP	40.0	-14.6	1.05 H	307	12.55	12.90
2	811.91	26.3 QP	46.0	-19.7	1.03 H	196	-0.52	26.80
3	830.56	26.2 QP	46.0	-19.8	1.27 H	10	-0.93	27.09
4	856.99	26.5 QP	46.0	-19.5	1.25 H	127	-1.00	27.49
5	905.18	27.1 QP	46.0	-18.9	1.24 H	199	-1.01	28.10
6	916.06	27.4 QP	46.0	-18.6	1.33 H	190	-0.83	28.22
7	945.59	27.6 QP	46.0	-18.4	1.50 H	22	-0.91	28.54
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	71.97	27.9 QP	40.0	-12.1	1.15 V	10	16.20	11.70
2	106.17	31.3 QP	43.5	-12.2	1.27 V	265	21.60	9.66
3	148.14	23.5 QP	43.5	-20.0	1.23 V	106	9.25	14.26
4	200.99	23.9 QP	43.5	-19.6	1.18 V	64	12.66	11.26
5	759.05	25.1 QP	46.0	-20.9	1.02 V	142	-0.87	25.94
6	797.92	25.2 QP	46.0	-20.8	1.23 V	322	-1.38	26.58
7	833.67	26.3 QP	46.0	-19.7	1.50 V	265	-0.81	27.14
8	934.71	28.2 QP	46.0	-17.8	1.00 V	124	-0.19	28.42

- 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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	1.5Vdc	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 82%RH 1010 hPa	TESTED BY	Nick Chen
SERIAL NO.	EVT 385A		

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	37.77	19.5 QP	40.0	-20.5	1.24 H	10	6.64	12.90
2	797.92	25.1 QP	46.0	-20.9	1.11 H	10	-1.48	26.58
3	838.33	26.9 QP	46.0	-19.1	1.16 H	220	-0.36	27.22
4	875.64	26.8 QP	46.0	-19.2	1.27 H	247	-0.97	27.73
5	916.06	27.9 QP	46.0	-18.1	1.13 H	10	-0.34	28.22
6	944.04	27.3 QP	46.0	-18.7	1.50 H	97	-1.25	28.52
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	61.09	27.3 QP	40.0	-12.7	1.13 V	235	14.56	12.76
2	106.17	29.5 QP	43.5	-14.0	1.27 V	178	19.80	9.66
3	151.25	29.2 QP	43.5	-14.3	1.06 V	88	14.82	14.38
4	740.40	25.2 QP	46.0	-20.8	1.13 V	217	-0.44	25.61
5	808.80	25.9 QP	46.0	-20.1	1.24 V	199	-0.87	26.75
6	833.67	26.7 QP	46.0	-19.3	1.03 V	331	-0.47	27.14
7	884.97	27.1 QP	46.0	-18.9	1.00 V	10	-0.75	27.85

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.

4.3 FREQUENCY TOLERANCE MEASUREMENT

4.3.1 LIMITS OF FREQUENCY TOLERANCE MEASUREMENT

Limit : $\pm 0.001\%$

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSP 40	100036	Apr. 06, 2010	Apr. 05, 2011

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.3.3 TEST PROCEDURE

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.001\%$ of the operating frequency over a temperature variation of -20 degrees to $+50$ degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 EUT OPERATING CONDITION

Same as Item 4.2.6

4.3.6 TEST RESULTS

SERIAL NO.	EVT 385A		
INPUT POWER	1.5Vdc	CHANNEL	0, 14, 7

CH 0

TEST CONDITION			Carrier Frequency (MHz)	Frequency Drift (kHz)	Frequency error (%)
Tnom(℃)	20	Vnom(V)	2403.0453	0	0
Tmin(℃)	-20	Vmin(V)	2403.0645	19.2	0.0007990
		Vmax(V)	2403.0647	19.4	0.0008073
Tmax(℃)	55	Vmin(V)	2403.0270	-18.3	-0.0007615
		Vmax(V)	2403.0275	-17.8	-0.0007407
Limit : ±0.001%					

CH 14

TEST CONDITION			Carrier Frequency (MHz)	Frequency Drift (kHz)	Frequency error (%)
Tnom(℃)	20	Vnom(V)	2444.0451	0	0
Tmin(℃)	-20	Vmin(V)	2444.0656	20.5	0.0008388
		Vmax(V)	2444.0659	20.8	0.0008510
Tmax(℃)	55	Vmin(V)	2444.0299	-15.2	-0.0006219
		Vmax(V)	2444.0305	-14.6	-0.0005974
Limit : ±0.001%					

CH 7

TEST CONDITION			Carrier Frequency (MHz)	Frequency Drift (kHz)	Frequency error (%)
Tnom(℃)	20	Vnom(V)	2480.0462	0	0
Tmin(℃)	-20	Vmin(V)	2480.0676	21.4	0.0008629
		Vmax(V)	2480.0680	21.8	0.0008790
Tmax(℃)	55	Vmin(V)	2480.0310	-15.2	-0.0006129
		Vmax(V)	2480.0313	-14.9	-0.0006008
Limit : ±0.001%					

4.4 BAND EDGES MEASUREMENT

4.4.1 LIMITS OF BAND EDGES MEASUREMENT

Below –50dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSP 40	100036	Apr. 06, 2010	Apr. 05, 2011

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.4.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz and 300 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots are attached on the following pages.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 EUT OPERATING CONDITION

Same as Item 4.2.6

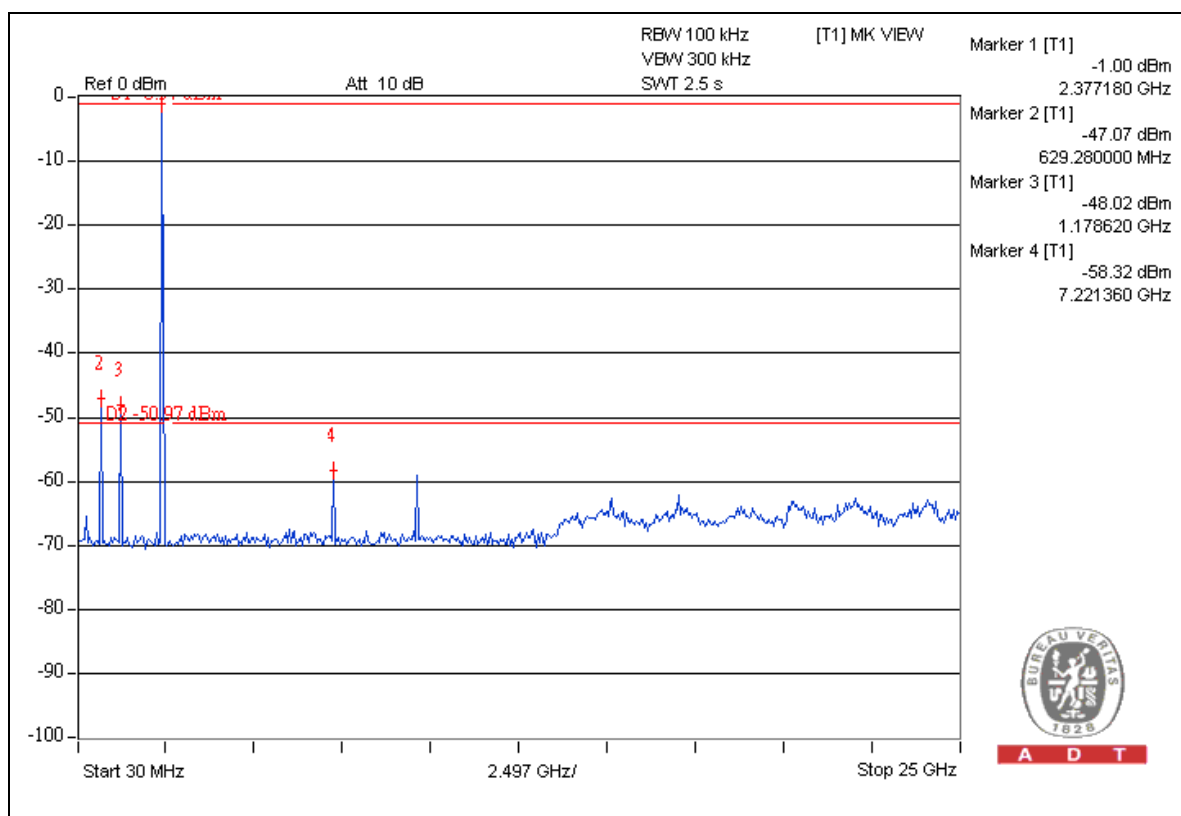
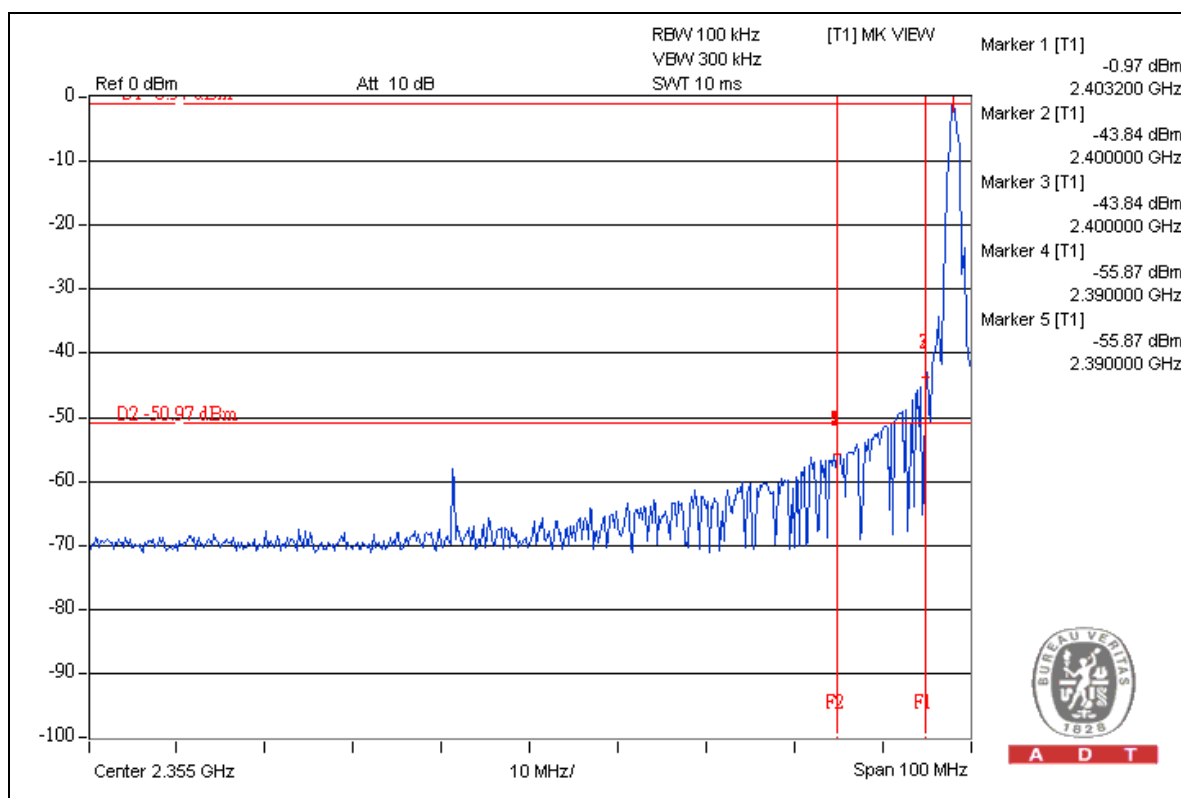
4.4.6 TEST RESULTS

The spectrum plots are attached on the following 4 images. D1 line indicates the highest level, and D2 line indicates the 50dB offset below D1. It shows compliance with the requirement in part 15.249(d).



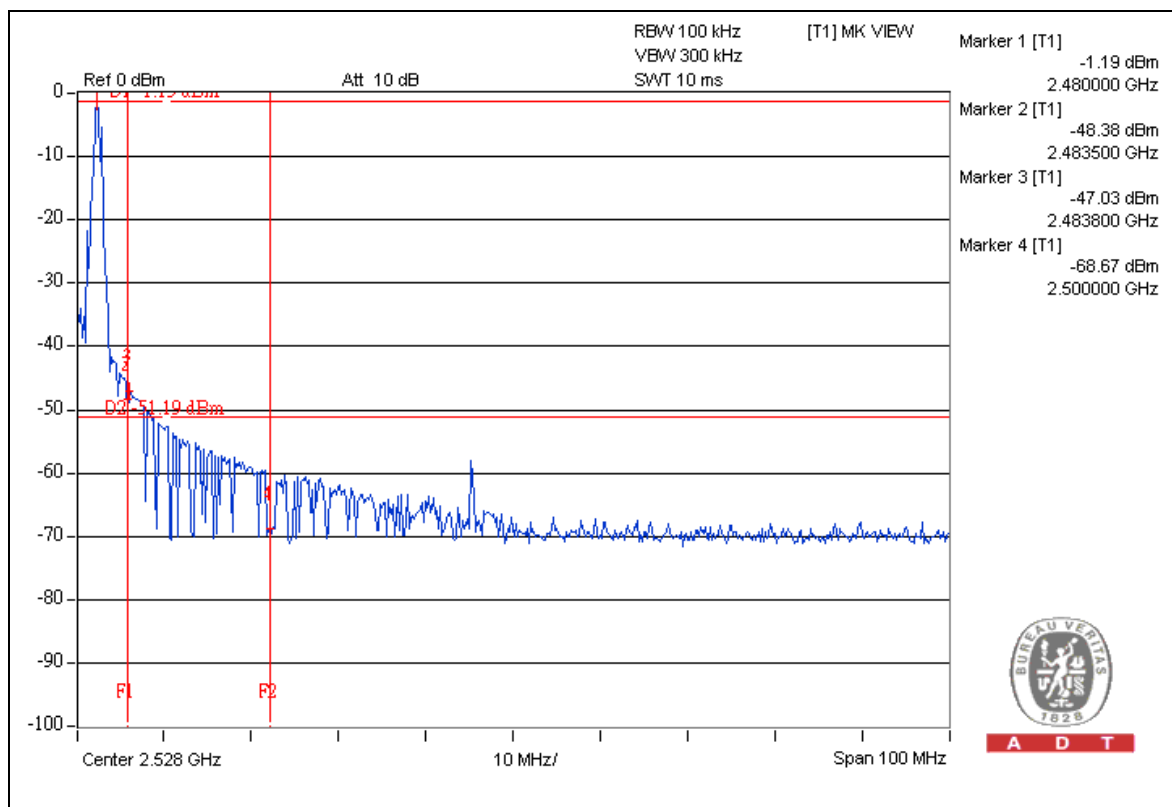
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SERIAL NO.: EVT 385A

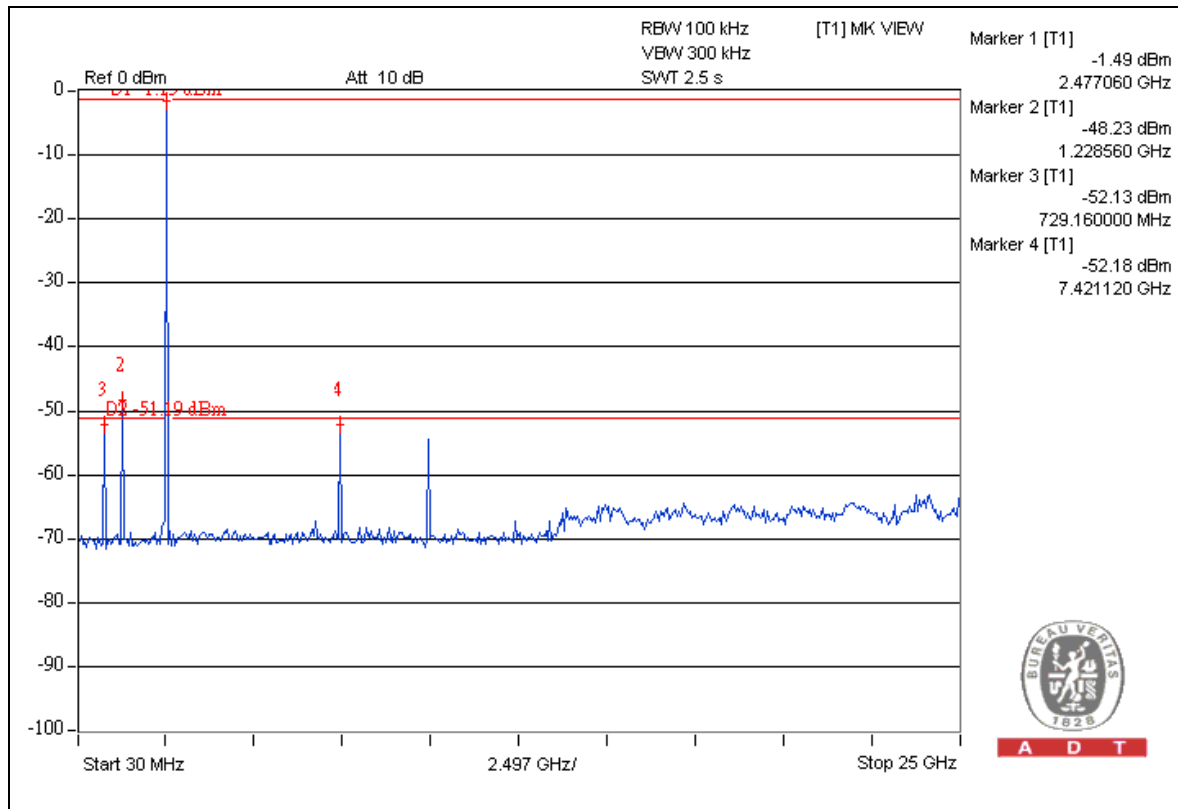




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5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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 certificates of our laboratories obtained from approval agencies can be downloaded from our web site: 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
Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Web Site: 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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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---