



FCC TEST REPORT

REPORT NO. : RF110519C22

MODEL NO. : 1490

FCC ID: C3K1490

RECEIVED : Apr. 22, 2011

TESTED : Apr. 22 ~ Apr. 23, 2011

ISSUED : May 23, 2011

APPLICANT : Microsoft Corporation

ADDRESS : One Microsoft Way, Redmond WA 98052-6399,
U.S.A

ISSUED BY : Bureau Veritas Consumer Products Services (H.K.)
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	N/A	May 23, 2011



1. CERTIFICATION

PRODUCT: Wireless Mouse

MODEL: 1490

BRAND: Microsoft

APPLICANT: Microsoft Corporation

TESTED: Apr. 22 ~ Apr. 23, 2011

TEST SAMPLE: ENGINEERING SAMPLE

STANDARDS: **FCC Part 15, Subpart C (Section 15.249)**

ANSI C63.4-2003

ANSI C63.10-2009

The above equipment (model: 1490) have 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 :  , DATE: May 23, 2011
Pettie Chen / Specialist

APPROVED BY :  , DATE: May 23, 2011
Gary Chang / 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 PARAGRAPH	TEST TYPE	RESULT	REMARK
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 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -12.5dB at 2398.00 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:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Radiated emissions	30MHz ~ 200MHz	2.93 dB
	200MHz ~1000MHz	2.95 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.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Wireless Mouse
MODEL NO.	1490
FCC ID	C3K1490
POWER SUPPLY	3.0Vdc
MODULATION TYPE	GFSK
OPERATING FREQUENCY	2403 - 2480MHz
NUMBER OF CHANNEL	24
ANTENNA TYPE	PIFA antenna with 0.74dBi gain
DATA CABLE	NA
I/O PORT	NA
ACCESSORY DEVICE	NA

NOTE:

1. The following samples are provided for final test.

SAMPLE	SERIAL NO.
Sample 1	217
Sample 2	480
Sample 3	128

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

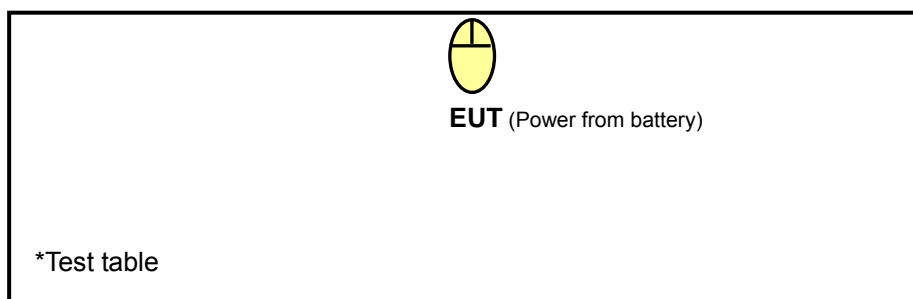
3.2 DESCRIPTION OF TEST MODES

24 channels are provided to this EUT.

Index	Channel Group	Frequency (MHz)	Index	Channel Group	Frequency (MHz)
0	Subset A	2403	1	Subset A	2419
4	Subset B	2429	5	Subset B	2450
8	Subset C	2421	9	Subset C	2431
12	Subset D	2405	13	Subset D	2425
16	Subset E	2423	17	Subset E	2446
20	Subset F	2417	21	Subset F	2427

Index	Channel Group	Frequency (MHz)	Index	Channel Group	Frequency (MHz)
2	Subset A	2478	3	Subset A	2468
6	Subset B	2470	7	Subset B	2480
10	Subset C	2472	11	Subset C	2454
14	Subset D	2444	15	Subset D	2452
18	Subset E	2456	19	Subset E	2474
22	Subset F	2448	23	Subset F	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
	RE \geq 1G	RE $<$ 1G	BM	
A	√	√	√	Serial No.: 217
B	√	√	-	Serial No.: 480
C	√	√	-	Serial No.: 128

Where **RE $<$ 1G**: Radiated Emission below 1GHz

RE \geq 1G: Radiated Emission above 1GHz

BM: Bandedge Measurement

NOTE: "-": Means no effect.

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.

EUT CONFIGURE MODE	AVAILABLE FREQUENCY (MHz)	TESTED FREQUENCY (MHz)	MODULATION TYPE
A, B, C	2403 to 2480	2403, 2444, 2480	GFSK

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.

EUT CONFIGURE MODE	AVAILABLE FREQUENCY (MHz)	TESTED FREQUENCY (MHz)	MODULATION TYPE
A, B, C	2403 to 2480	2403	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.

EUT CONFIGURE MODE	AVAILABLE FREQUENCY (MHz)	TESTED FREQUENCY (MHz)	MODULATION TYPE
A	2403 to 2480	2403, 2480	GFSK

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	25deg. C, 68%RH, 1006 hPa	3.0Vdc	David Huang
RE<1G	25deg. C, 68%RH, 1006 hPa	3.0Vdc	David Huang
BM	25deg. C, 68%RH, 1006 hPa	3.0Vdc	David Huang

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

ANSI C63.10-2009

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.

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 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.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Aug. 04, 2010	Aug. 03, 2011
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Jul. 09, 2010	Jul. 08, 2011
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 12, 2011	Apr. 11, 2012
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-209	Aug. 02, 2010	Aug. 01, 2011
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Loop Antenna	HFH2-Z2	100070	Feb. 03, 2010	Feb. 02, 2012
Preamplifier Agilent	8449B	3008A01910	Sep. 09, 2010	Sep. 08, 2011
Preamplifier Agilent	8447D	2944A10638	Nov. 03, 2010	Nov. 02, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218190/4 231241/4	May 14, 2010	May 13, 2011
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 20, 2010	Aug. 19, 2011
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	NA	NA	NA

- NOTE:**
1. The calibration interval of the above test instruments (except loop antenna) is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. The test was performed in HwaYa Chamber 9.
 4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 5. The FCC Site Registration No. is 460141.
 6. The IC Site Registration No. is IC 7450F-4.

4.1.3 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. 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 antenna is a broadband antenna, and its height 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 Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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 or average method as specified and then reported in a data sheet.

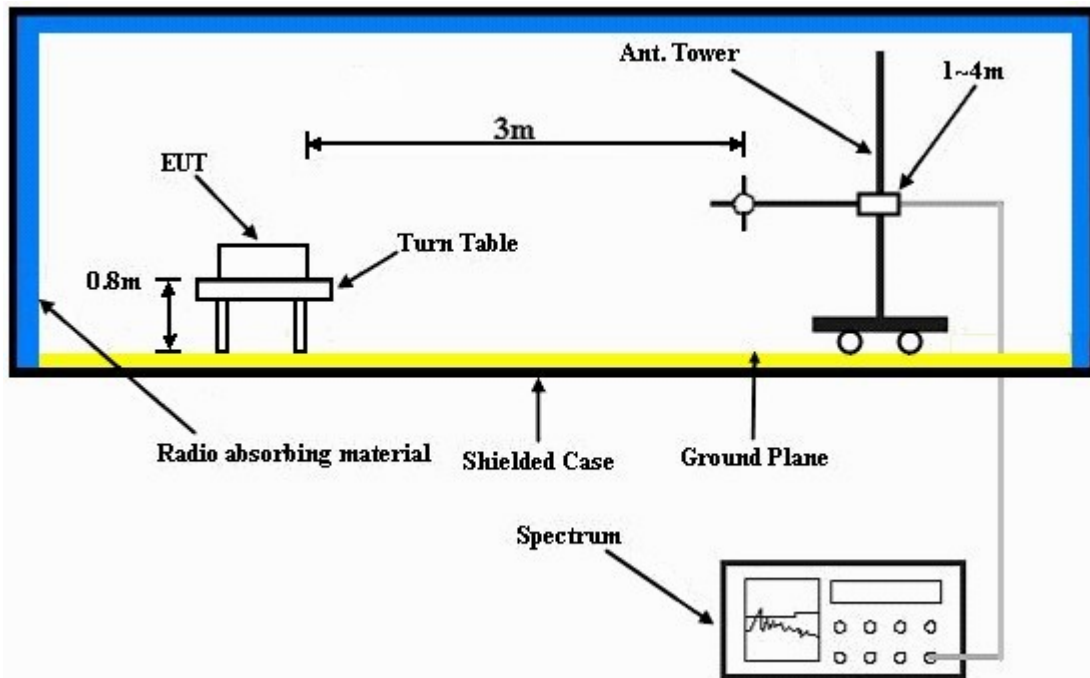
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection 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. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

4.1.5 TEST SETUP



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

4.1.6 EUT OPERATING CONDITIONS

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



4.1.7 TEST RESULTS

ABOVE 1GHz DATA

EUT TEST CONDITION		MEASUREMENT DETAIL	
TEST FREQUENCY	2403 MHz	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	3.0Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1006 hPa	TESTED BY	David Huang
TEST MODE	A		

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	2390.00	52.2 PK	74.0	-21.8	1.30 H	125	21.70	30.50
2	2390.00	23.7 AV	54.0	-30.3	1.30 H	125	-6.80	30.50
3	2398.00	61.4 PK	74.0	-12.6	1.30 H	125	30.80	30.60
4	2398.00	25.7 AV	54.0	-28.3	1.30 H	125	-4.90	30.60
5	2400.00	51.9 PK	74.0	-22.1	1.30 H	125	21.30	30.60
6	2400.00	20.4 AV	54.0	-33.6	1.30 H	125	-10.20	30.60
7	*2403.00	93.0 PK	114.0	-21.0	1.30 H	125	62.40	30.60
8	*2403.00	61.5 AV	94.0	-32.5	1.30 H	125	30.90	30.60
9	4806.00	50.8 PK	74.0	-23.2	1.10 H	151	14.30	36.50
10	4806.00	19.3 AV	54.0	-34.7	1.10 H	151	-17.20	36.50

- 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:
 $20 \log (\text{Duty cycle}) = 20 \log (13 \text{ ms} * 0.204 / 100 \text{ ms}) = -31.5 \text{ dB}$
 Please see page 26 for plotted duty.

EUT TEST CONDITION		MEASUREMENT DETAIL	
TEST FREQUENCY	2403 MHz	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	3.0Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1006 hPa	TESTED BY	David Huang
TEST MODE	A		

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	2390.00	42.0 PK	74.0	-32.0	1.00 V	222	11.50	30.50
2	2390.00	23.3 AV	54.0	-30.7	1.00 V	222	-7.20	30.50
3	2398.00	48.1 PK	74.0	-25.9	1.00 V	222	17.50	30.60
4	2398.00	23.0 AV	54.0	-31.0	1.00 V	222	-7.60	30.60
5	2400.00	40.2 PK	74.0	-33.8	1.00 V	222	9.60	30.60
6	2400.00	8.7 AV	54.0	-45.3	1.00 V	222	-21.90	30.60
7	*2403.00	80.7 PK	114.0	-33.3	1.00 V	222	50.10	30.60
8	*2403.00	49.2 AV	94.0	-44.8	1.00 V	222	18.60	30.60
9	4806.00	46.9 PK	74.0	-27.1	1.00 V	282	10.40	36.50
10	4806.00	15.4 AV	54.0	-38.6	1.00 V	282	-21.10	36.50

- 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:
 $20 \log (\text{Duty cycle}) = 20 \log (13 \text{ ms} * 0.204 / 100 \text{ ms}) = -31.5 \text{ dB}$
 Please see page 26 for plotted duty.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
TEST FREQUENCY	2444 MHz	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	3.0Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1006 hPa	TESTED BY	David Huang
TEST MODE	A		

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	2390.00	40.8 PK	74.0	-33.2	1.31 H	129	10.30	30.50
2	2390.00	23.8 AV	54.0	-30.2	1.31 H	129	-6.70	30.50
3	*2444.00	93.2 PK	114.0	-20.8	1.31 H	129	62.50	30.70
4	*2444.00	61.7 AV	94.0	-32.3	1.31 H	129	31.00	30.70
5	4888.00	51.4 PK	74.0	-22.6	1.00 H	265	14.70	36.70
6	4888.00	19.9 AV	54.0	-34.1	1.00 H	265	-16.80	36.70
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	2390.00	36.4 PK	74.0	-37.6	2.01 V	167	5.90	30.50
2	2390.00	23.4 AV	54.0	-30.6	2.01 V	167	-7.10	30.50
3	*2444.00	84.0 PK	114.0	-30.0	2.01 V	167	53.30	30.70
4	*2444.00	52.5 AV	94.0	-41.5	2.01 V	167	21.80	30.70
5	4888.00	49.3 PK	74.0	-24.7	1.00 V	0	12.60	36.70
6	4888.00	17.8 AV	54.0	-36.2	1.00 V	0	-18.90	36.70

- REMARKS:**
- Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 - Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 - The other emission levels were very low against the limit.
 - Margin value = Emission level – Limit value.
 - * * * : Fundamental frequency
 - The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:
 $20 \log (\text{Duty cycle}) = 20 \log (13 \text{ ms} * 0.204 / 100 \text{ ms}) = -31.5 \text{ dB}$
 Please see page 26 for plotted duty.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
TEST FREQUENCY	2480 MHz	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	3.0Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1006 hPa	TESTED BY	David Huang
TEST MODE	A		

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	92.1 PK	114.0	-21.9	1.26 H	125	61.20	30.90
2	*2480.00	60.6 AV	94.0	-33.4	1.26 H	125	29.70	30.90
3	2483.50	52.8 PK	74.0	-21.2	1.26 H	125	21.90	30.90
4	2483.50	21.3 AV	54.0	-32.7	1.26 H	125	-9.60	30.90
5	2485.50	57.3 PK	74.0	-16.7	1.26 H	125	26.40	30.90
6	2485.50	25.0 AV	54.0	-29.0	1.26 H	125	-5.90	30.90
7	4960.00	52.3 PK	74.0	-21.7	1.10 H	164	15.40	36.90
8	4960.00	20.8 AV	54.0	-33.2	1.10 H	164	-16.10	36.90
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	81.5 PK	114.0	-32.5	1.93 V	164	50.60	30.90
2	*2480.00	50.0 AV	94.0	-44.0	1.93 V	164	19.10	30.90
3	2483.50	43.2 PK	74.0	-30.8	1.93 V	164	12.30	30.90
4	2483.50	11.7 AV	54.0	-42.3	1.93 V	164	-19.20	30.90
5	2485.50	48.1 PK	74.0	-25.9	1.93 V	164	17.20	30.90
6	2485.50	23.6 AV	54.0	-30.4	1.93 V	164	-7.30	30.90
7	4960.00	48.2 PK	74.0	-25.8	1.05 V	327	11.30	36.90
8	4960.00	16.7 AV	54.0	-37.3	1.05 V	327	-20.20	36.90

- 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:
 $20 \log (\text{Duty cycle}) = 20 \log (13 \text{ ms} * 0.204 / 100 \text{ ms}) = -31.5 \text{ dB}$
Please see page 26 for plotted duty.



EUT TEST CONDITION		MEASUREMENT DETAIL	
TEST FREQUENCY	2403 MHz	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	3.0Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1006 hPa	TESTED BY	David Huang
TEST MODE	B		

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	2390.00	53.0 PK	74.0	-21.0	1.33 H	137	22.50	30.50
2	2390.00	23.5 AV	54.0	-30.5	1.33 H	137	-7.00	30.50
3	2398.00	61.5 PK	74.0	-12.5	1.33 H	137	30.90	30.60
4	2398.00	26.2 AV	54.0	-27.8	1.33 H	137	-4.40	30.60
5	2400.00	50.8 PK	74.0	-23.2	1.33 H	137	20.20	30.60
6	2400.00	19.3 AV	54.0	-34.7	1.33 H	137	-11.30	30.60
7	*2403.00	93.5 PK	114.0	-20.5	1.33 H	137	62.90	30.60
8	*2403.00	62.0 AV	94.0	-32.0	1.33 H	137	31.40	30.60
9	4806.00	52.2 PK	74.0	-21.8	1.00 H	136	15.70	36.50
10	4806.00	20.7 AV	54.0	-33.3	1.00 H	136	-15.80	36.50

- REMARKS:**
- Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 - Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 - The other emission levels were very low against the limit.
 - Margin value = Emission level – Limit value.
 - * * * : Fundamental frequency
 - The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:
 $20 \log (\text{Duty cycle}) = 20 \log (13 \text{ ms} * 0.204 / 100 \text{ ms}) = -31.5 \text{ dB}$
 Please see page 26 for plotted duty.

EUT TEST CONDITION		MEASUREMENT DETAIL	
TEST FREQUENCY	2403 MHz	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	3.0Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1006 hPa	TESTED BY	David Huang
TEST MODE	B		

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	2390.00	43.4 PK	74.0	-30.6	1.67 V	185	12.90	30.50
2	2390.00	23.5 AV	54.0	-30.5	1.67 V	185	-7.00	30.50
3	2398.00	51.5 PK	74.0	-22.5	1.67 V	185	20.90	30.60
4	2398.00	23.8 AV	54.0	-30.2	1.67 V	185	-6.80	30.60
5	2400.00	41.2 PK	74.0	-32.8	1.67 V	185	10.60	30.60
6	2400.00	9.7 AV	54.0	-44.3	1.67 V	185	-20.90	30.60
7	*2403.00	83.6 PK	114.0	-30.4	1.67 V	185	53.00	30.60
8	*2403.00	52.1 AV	94.0	-41.9	1.67 V	185	21.50	30.60
9	4806.00	48.0 PK	74.0	-26.0	1.10 V	223	11.50	36.50
10	4806.00	16.5 AV	54.0	-37.5	1.10 V	223	-20.00	36.50

- 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:
 $20 \log (\text{Duty cycle}) = 20 \log (13 \text{ ms} * 0.204 / 100 \text{ ms}) = -31.5 \text{ dB}$
Please see page 26 for plotted duty.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
TEST FREQUENCY	2444 MHz	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	3.0Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1006 hPa	TESTED BY	David Huang
TEST MODE	B		

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	2390.00	54.4 PK	74.0	-19.6	1.30 H	156	23.90	30.50
2	2390.00	24.7 AV	54.0	-29.3	1.30 H	156	-5.80	30.50
3	*2444.00	93.2 PK	114.0	-20.8	1.30 H	156	62.50	30.70
4	*2444.00	61.7 AV	94.0	-32.3	1.30 H	156	31.00	30.70
5	4888.00	52.5 PK	74.0	-21.5	1.30 H	156	15.80	36.70
6	4888.00	21.0 AV	54.0	-33.0	1.30 H	156	-15.70	36.70
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	2390.00	36.2 PK	74.0	-37.8	2.02 V	213	5.70	30.50
2	2390.00	23.6 AV	54.0	-30.4	2.02 V	213	-6.90	30.50
3	*2444.00	83.4 PK	114.0	-30.6	2.02 V	213	52.70	30.70
4	*2444.00	51.9 AV	94.0	-42.1	2.02 V	213	21.20	30.70
5	4888.00	49.5 PK	74.0	-24.5	1.05 V	182	12.80	36.70
6	4888.00	18.0 AV	54.0	-36.0	1.05 V	182	-18.70	36.70

- REMARKS:**
- Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 - Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 - The other emission levels were very low against the limit.
 - Margin value = Emission level – Limit value.
 - * * * : Fundamental frequency
 - The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:
 $20 \log (\text{Duty cycle}) = 20 \log (13 \text{ ms} * 0.204 / 100 \text{ ms}) = -31.5 \text{ dB}$
 Please see page 26 for plotted duty.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
TEST FREQUENCY	2480 MHz	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	3.0Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1006 hPa	TESTED BY	David Huang
TEST MODE	B		

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	92.0 PK	114.0	-22.0	1.31 H	142	61.10	30.90
2	*2480.00	60.5 AV	94.0	-33.5	1.31 H	142	29.60	30.90
3	2483.50	55.6 PK	74.0	-18.4	1.31 H	142	24.70	30.90
4	2483.50	24.1 AV	54.0	-29.9	1.31 H	142	-6.80	30.90
5	2485.50	56.4 PK	74.0	-17.6	1.31 H	142	25.50	30.90
6	2485.50	25.4 AV	54.0	-28.6	1.31 H	142	-5.50	30.90
7	4960.00	51.7 PK	74.0	-22.3	1.10 H	206	14.80	36.90
8	4960.00	20.2 AV	54.0	-33.8	1.10 H	206	-16.70	36.90
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	82.1 PK	114.0	-31.9	1.66 V	203	51.20	30.90
2	*2480.00	50.6 AV	94.0	-43.4	1.66 V	203	19.70	30.90
3	2483.50	46.8 PK	74.0	-27.2	1.66 V	203	15.90	30.90
4	2483.50	15.3 AV	54.0	-38.7	1.66 V	203	-15.60	30.90
5	2485.50	47.2 PK	74.0	-26.8	1.66 V	203	16.30	30.90
6	2485.50	22.9 AV	54.0	-31.1	1.66 V	203	-8.00	30.90
7	4960.00	48.4 PK	74.0	-25.6	1.10 V	229	11.50	36.90
8	4960.00	16.9 AV	54.0	-37.1	1.10 V	229	-20.00	36.90

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:
 $20 \log (\text{Duty cycle}) = 20 \log (13 \text{ ms} * 0.204 / 100 \text{ ms}) = -31.5 \text{ dB}$
 Please see page 26 for plotted duty.

EUT TEST CONDITION		MEASUREMENT DETAIL	
TEST FREQUENCY	2403 MHz	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	3.0Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1006 hPa	TESTED BY	David Huang
TEST MODE	C		

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	2390.00	51.6 PK	74.0	-22.4	1.31 H	131	21.10	30.50
2	2390.00	23.8 AV	54.0	-30.2	1.31 H	131	-6.70	30.50
3	2398.00	60.3 PK	74.0	-13.7	1.31 H	131	29.70	30.60
4	2398.00	25.3 AV	54.0	-28.7	1.31 H	131	-5.30	30.60
5	2400.00	48.9 PK	74.0	-25.1	1.33 H	130	18.30	30.60
6	2400.00	17.4 AV	54.0	-36.6	1.33 H	130	-13.20	30.60
7	*2403.00	91.8 PK	114.0	-22.2	1.31 H	131	61.20	30.60
8	*2403.00	60.3 AV	94.0	-33.7	1.31 H	131	29.70	30.60
9	4806.00	50.7 PK	74.0	-23.3	1.00 H	166	14.20	36.50
10	4806.00	19.2 AV	54.0	-34.8	1.00 H	166	-17.30	36.50

- 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:
 $20 \log (\text{Duty cycle}) = 20 \log (13 \text{ ms} * 0.204 / 100 \text{ ms}) = -31.5 \text{ dB}$
Please see page 26 for plotted duty.

EUT TEST CONDITION		MEASUREMENT DETAIL	
TEST FREQUENCY	2403 MHz	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	3.0Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1006 hPa	TESTED BY	David Huang
TEST MODE	C		

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	2390.00	42.5 PK	74.0	-31.5	2.06 V	165	12.00	30.50
2	2390.00	23.5 AV	54.0	-30.5	2.06 V	165	-7.00	30.50
3	2398.00	49.8 PK	74.0	-24.2	2.06 V	165	19.20	30.60
4	2398.00	23.9 AV	54.0	-30.1	2.06 V	165	-6.70	30.60
5	2400.00	39.1 PK	74.0	-34.9	2.06 V	165	8.50	30.60
6	2400.00	7.6 AV	54.0	-46.4	2.06 V	165	-23.00	30.60
7	*2403.00	81.7 PK	114.0	-32.3	2.06 V	165	51.10	30.60
8	*2403.00	50.2 AV	94.0	-43.8	2.06 V	165	19.60	30.60
9	4806.00	47.4 PK	74.0	-26.6	1.00 V	324	10.90	36.50
10	4806.00	15.9 AV	54.0	-38.1	1.00 V	324	-20.60	36.50

- 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:
 $20 \log (\text{Duty cycle}) = 20 \log (13 \text{ ms} * 0.204 / 100 \text{ ms}) = -31.5 \text{ dB}$
Please see page 26 for plotted duty.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
TEST FREQUENCY	2444 MHz	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	3.0Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1006 hPa	TESTED BY	David Huang
TEST MODE	C		

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	2390.00	42.2 PK	74.0	-31.8	1.28 H	126	11.70	30.50
2	2390.00	23.8 AV	54.0	-30.2	1.28 H	126	-6.70	30.50
3	*2444.00	91.9 PK	114.0	-22.1	1.28 H	126	61.20	30.70
4	*2444.00	60.4 AV	94.0	-33.6	1.28 H	126	29.70	30.70
5	4888.00	51.1 PK	74.0	-22.9	1.00 H	158	14.40	36.70
6	4888.00	19.6 AV	54.0	-34.4	1.00 H	158	-17.10	36.70
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	2390.00	41.3 PK	74.0	-32.7	2.04 V	161	10.80	30.50
2	2390.00	22.4 AV	54.0	-31.6	2.04 V	161	-8.10	30.50
3	*2444.00	82.3 PK	114.0	-31.7	2.04 V	161	51.60	30.70
4	*2444.00	50.8 AV	94.0	-43.2	2.04 V	161	20.10	30.70
5	4888.00	48.5 PK	74.0	-25.5	1.00 V	129	11.80	36.70
6	4888.00	17.0 AV	54.0	-37.0	1.00 V	129	-19.70	36.70

- REMARKS:**
- Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 - Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 - The other emission levels were very low against the limit.
 - Margin value = Emission level – Limit value.
 - * * * : Fundamental frequency
 - The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:
 $20 \log (\text{Duty cycle}) = 20 \log (13 \text{ ms} * 0.204 / 100 \text{ ms}) = -31.5 \text{ dB}$
 Please see page 26 for plotted duty.

EUT TEST CONDITION		MEASUREMENT DETAIL	
TEST FREQUENCY	2480 MHz	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	3.0Vdc	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1006 hPa	TESTED BY	David Huang
TEST MODE	C		

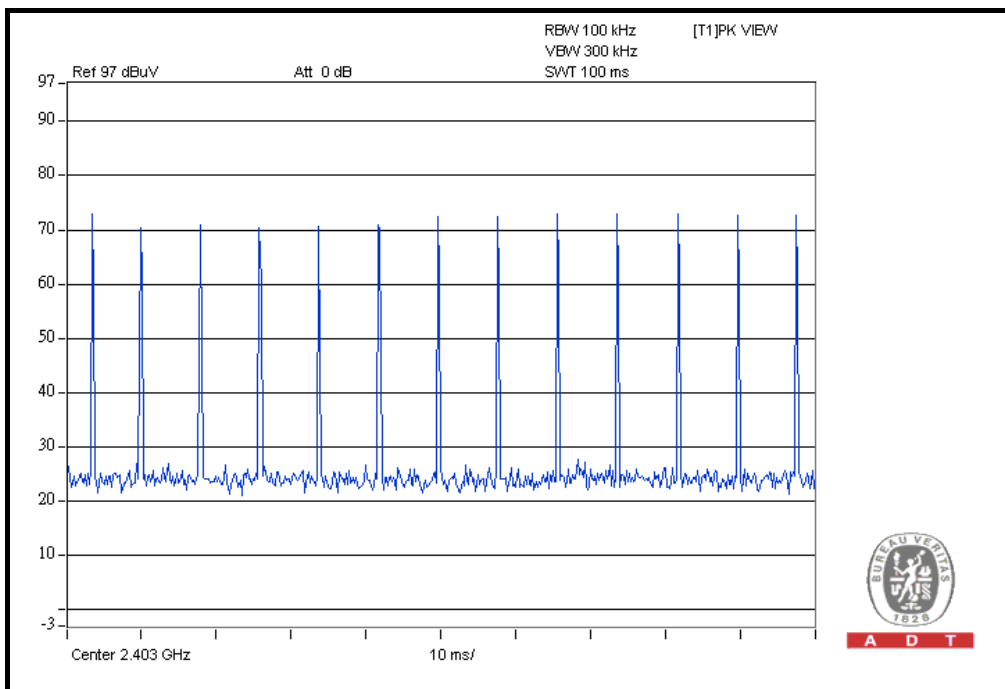
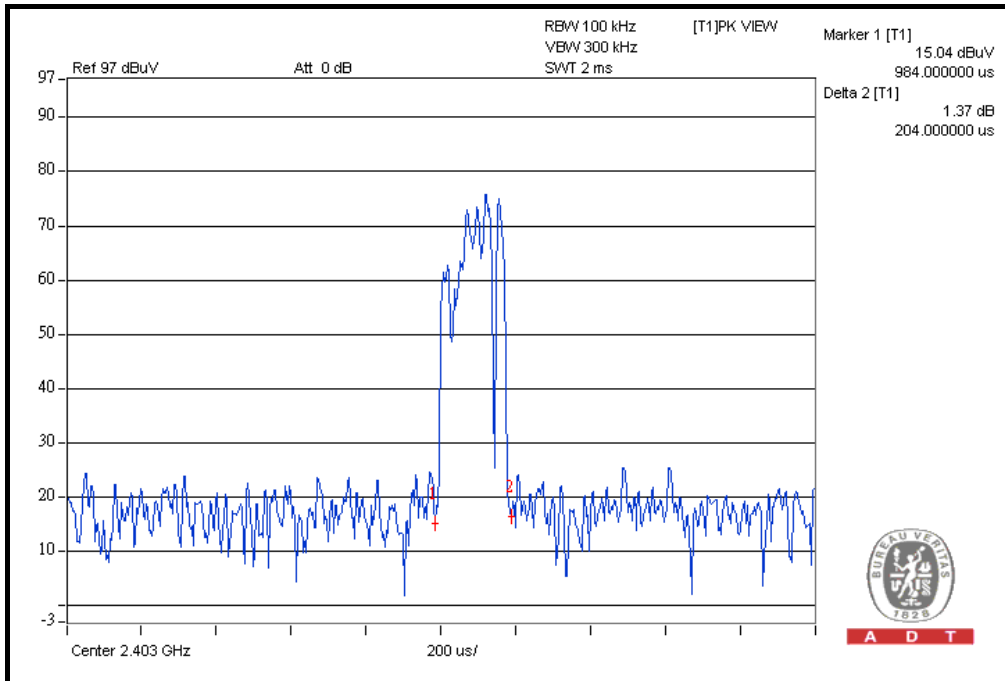
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	92.0 PK	114.0	-22.0	1.28 H	130	61.10	30.90
2	*2480.00	60.5 AV	94.0	-33.5	1.28 H	130	29.60	30.90
3	2483.50	54.6 PK	74.0	-19.4	1.28 H	130	23.70	30.90
4	2483.50	23.1 AV	54.0	-30.9	1.28 H	130	-7.80	30.90
5	2485.50	55.6 PK	74.0	-18.4	1.28 H	130	24.70	30.90
6	2485.50	24.1 AV	54.0	-29.9	1.28 H	130	-6.80	30.90
7	4960.00	52.2 PK	74.0	-21.8	1.10 H	197	15.30	36.90
8	4960.00	20.7 AV	54.0	-33.3	1.10 H	197	-16.20	36.90
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	81.3 PK	114.0	-32.7	1.95 V	166	50.40	30.90
2	*2480.00	49.8 AV	94.0	-44.2	1.95 V	166	18.90	30.90
3	2483.50	45.9 PK	74.0	-28.1	1.95 V	166	15.00	30.90
4	2483.50	14.4 AV	54.0	-39.6	1.95 V	166	-16.50	30.90
5	2485.50	47.7 PK	74.0	-26.3	1.95 V	166	16.80	30.90
6	2485.50	23.9 AV	54.0	-30.1	1.95 V	166	-7.00	30.90
7	4960.00	49.0 PK	74.0	-25.0	1.00 V	231	12.10	36.90
8	4960.00	17.5 AV	54.0	-36.5	1.00 V	231	-19.40	36.90

REMARKS:

- Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
- Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- The other emission levels were very low against the limit.
- Margin value = Emission level – Limit value.
- " * " : Fundamental frequency
- The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:
 $20 \log (\text{Duty cycle}) = 20 \log (13 \text{ ms} * 0.204 / 100 \text{ ms}) = -31.5 \text{ dB}$
 Please see page 26 for plotted duty.



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$$20 \log (\text{Duty cycle}) = 20 \log (13 \text{ ms} * 0.204 / 100 \text{ ms}) = -31.5 \text{ dB}$$

BELOW 1GHz WORST-CASE DATA

EUT TEST CONDITION		MEASUREMENT DETAIL	
TEST FREQUENCY	2403 MHz	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	3.0Vdc	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1006 hPa	TESTED BY	David Huang
TEST MODE	A		

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	29.90	17.9 QP	40.0	-22.1	1.00 H	52	5.50	12.40
2	99.89	19.2 QP	43.5	-24.3	2.00 H	328	9.90	9.30
3	175.72	20.2 QP	43.5	-23.3	2.00 H	91	7.30	12.90
4	309.88	16.3 QP	46.0	-29.7	1.00 H	346	1.60	14.70
5	515.97	23.3 QP	46.0	-22.7	2.00 H	10	3.60	19.70
6	685.13	22.2 QP	46.0	-23.8	2.00 H	88	0.30	21.90
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	29.90	22.5 QP	40.0	-17.5	1.00 V	277	10.10	12.40
2	99.89	20.4 QP	43.5	-23.1	1.00 V	142	11.10	9.30
3	175.72	25.2 QP	43.5	-18.3	1.00 V	97	12.30	12.90
4	199.05	24.6 QP	43.5	-18.9	1.00 V	118	13.60	11.00
5	531.53	20.3 QP	46.0	-25.7	1.00 V	154	0.20	20.10
6	753.18	24.0 QP	46.0	-22.0	1.00 V	238	0.80	23.20

- 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
TEST FREQUENCY	2403 MHz	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	3.0Vdc	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1006 hPa	TESTED BY	David Huang
TEST MODE	B		

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	99.89	20.1 QP	43.5	-23.4	2.00 H	322	10.80	9.30
2	175.72	18.8 QP	43.5	-24.7	2.00 H	283	5.90	12.90
3	300.16	15.8 QP	46.0	-30.2	1.00 H	229	1.30	14.50
4	545.14	25.7 QP	46.0	-20.3	1.00 H	91	5.20	20.50
5	768.73	26.0 QP	46.0	-20.0	1.00 H	13	2.30	23.70
6	832.89	30.0 QP	46.0	-16.0	1.00 H	1	5.30	24.70
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	97.95	20.0 QP	43.5	-23.5	1.00 V	10	11.00	9.00
2	175.72	24.5 QP	43.5	-19.0	1.00 V	112	11.60	12.90
3	199.05	22.5 QP	43.5	-21.0	1.00 V	112	11.50	11.00
4	477.09	19.1 QP	46.0	-26.9	2.00 V	61	0.40	18.70
5	665.68	21.5 QP	46.0	-24.5	1.00 V	136	-0.40	21.90
6	891.22	25.3 QP	46.0	-20.7	1.00 V	214	0.00	25.30

- 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.



EUT TEST CONDITION		MEASUREMENT DETAIL	
TEST FREQUENCY	2403 MHz	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	3.0Vdc	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1006 hPa	TESTED BY	David Huang
TEST MODE	C		

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	99.89	19.3 QP	43.5	-24.2	2.00 H	337	10.00	9.30
2	175.72	20.7 QP	43.5	-22.8	2.00 H	274	7.80	12.90
3	515.97	23.5 QP	46.0	-22.5	2.00 H	262	3.80	19.70
4	545.14	24.6 QP	46.0	-21.4	2.00 H	49	4.10	20.50
5	733.73	23.2 QP	46.0	-22.8	2.00 H	163	0.40	22.80
6	887.33	25.5 QP	46.0	-20.5	2.00 H	184	0.30	25.20

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	97.95	20.1 QP	43.5	-23.4	1.00 V	10	11.10	9.00
2	175.72	25.4 QP	43.5	-18.1	1.00 V	118	12.50	12.90
3	199.05	22.8 QP	43.5	-20.7	1.00 V	106	11.80	11.00
4	416.81	17.4 QP	46.0	-28.6	2.00 V	265	0.20	17.20
5	529.58	19.3 QP	46.0	-26.7	1.00 V	307	-0.80	20.10
6	700.68	25.2 QP	46.0	-20.8	1.00 V	10	3.20	22.00

- 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.

4.2 BAND EDGES MEASUREMENT

4.2.1 LIMITS OF BAND EDGES MEASUREMENT

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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
R&S SPECTRUM ANALYZER	FSP40	100039	Feb. 23, 2011	Feb. 22, 2012

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

4.2.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss 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.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 EUT OPERATING CONDITION

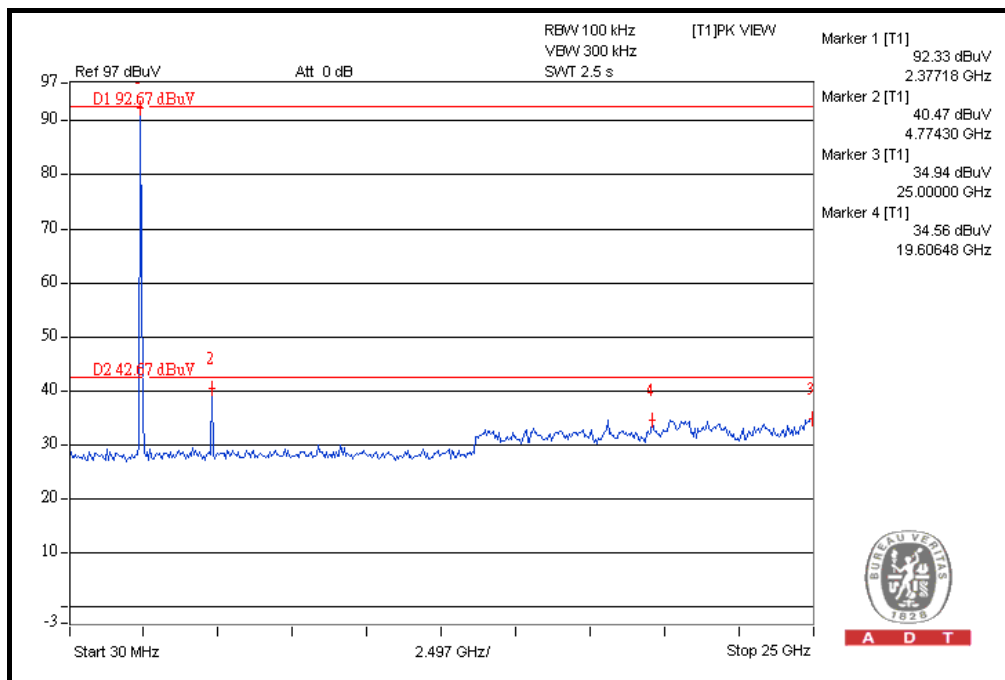
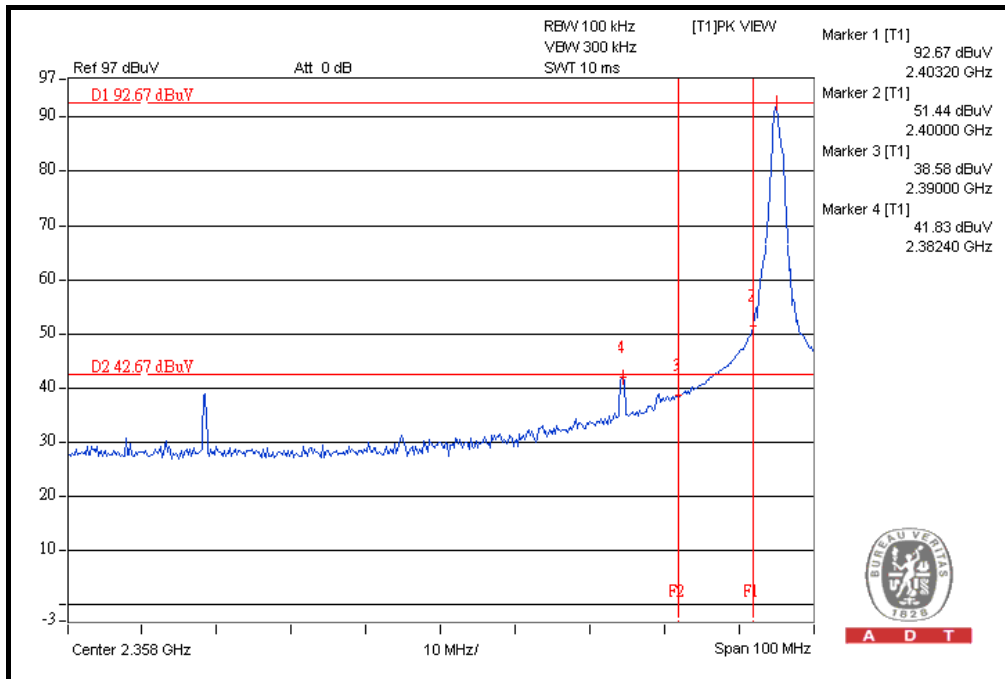
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.2.6 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).

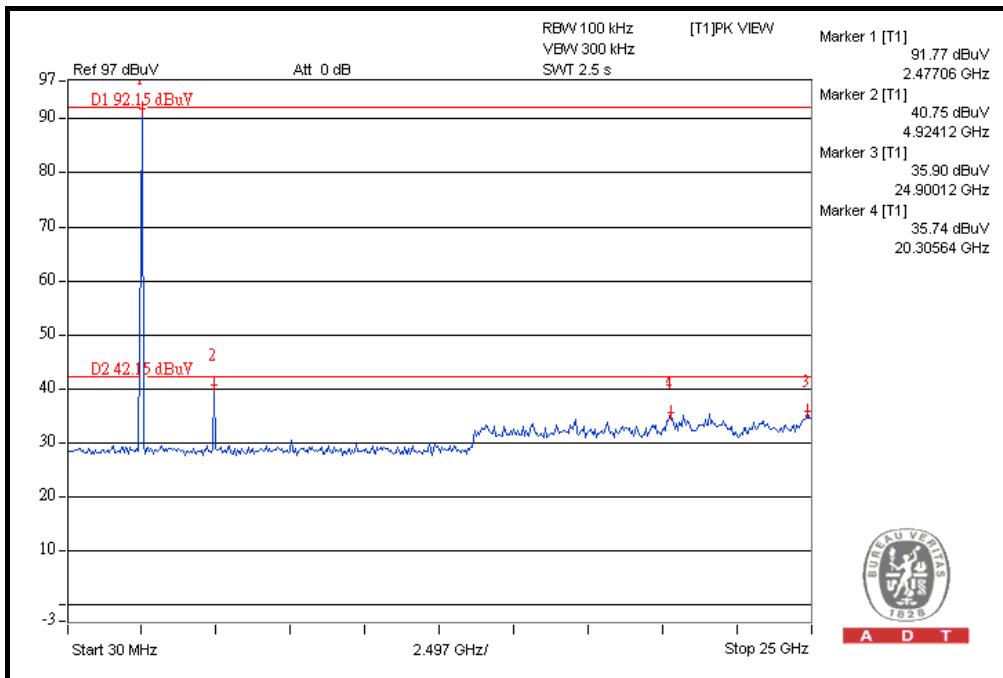
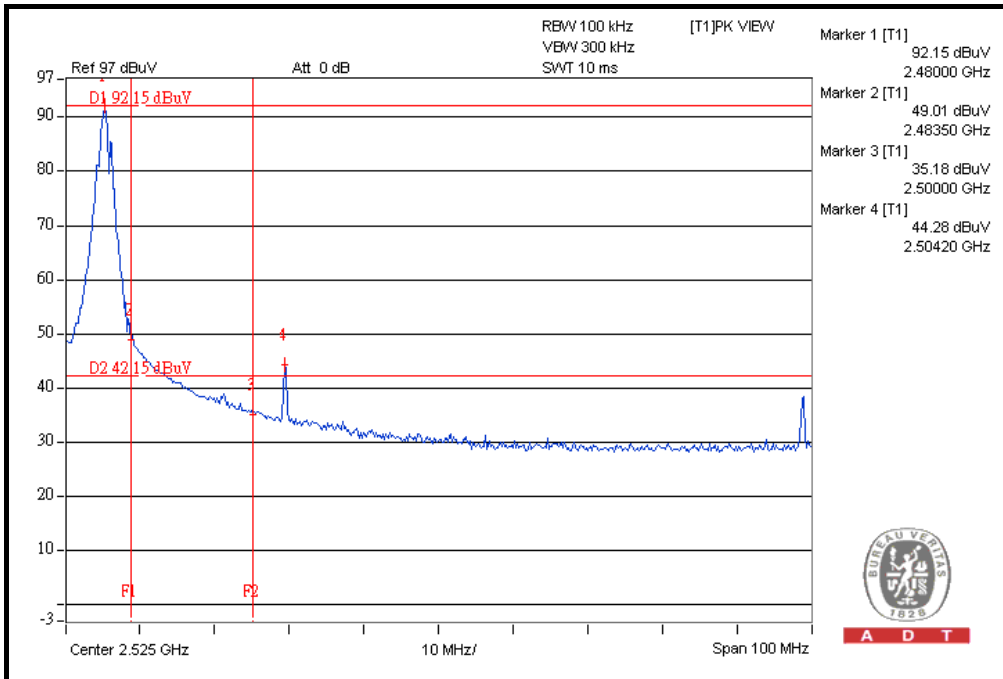


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5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

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 ---