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# FCC TEST REPORT

**REPORT NO.:** RF110610E02B R1

**MODEL NO.:** DTA171 HD

**FCC ID:** N89-DTA171HD

**RECEIVED:** Sep. 21, 2011

**TESTED:** Sep. 21 to Oct. 06, 2011

**ISSUED:** Aug. 17, 2012

**APPLICANT:** CyberTAN Technology, Inc.

**ADDRESS:** No.99, Park Avenue III, Science-based Industrial Park, Hsinchu, Taiwan 308,R.O.C.

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

**LAB ADDRESS :** No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

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Testing Laboratory  
2022



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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF111004E06	Original release	Nov. 24, 2011
RF111004E06 R1	Modified the model name	Aug. 17, 2012



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## 1 CERTIFICATION

**PRODUCT** : Digital Transport Adapter

**BRAND NAME** : Cisco

**MODEL NO.** : DTA171 HD

**TEST SAMPLE** : ENGINEERING SAMPLE

**APPLICANT** : CyberTAN Technology, Inc.

**TESTED** : Sep. 21 to Oct. 06, 2011

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

ANSI C63.4-2003

ANSI C63.10-2009

The above equipment (Model: DTA171 HD) 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** :  , **DATE:** Aug. 17, 2012  
( Claire Kuan, Specialist )

**APPROVED BY** :  , **DATE:** Aug. 17, 2012  
( May Chen, Deputy Manager )



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## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
Standard Paragraph	Test Type	Result	Remark
15.207	Conducted Emission Test	PASS	Minimum passing margin is -15.12dB at 0.548MHz
15.249	Radiated Emission Test	PASS	Minimum passing margin is -2.3dB at 250.00MHz
15.249	Conducted - Out Band Measurement	PASS	Meet the requirement of limit
15.203	Antenna Requirement	PASS	No antenna connector is used.

### 2.1 MEASUREMENT UNCERTAINTY

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

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

Measurement	Value
Conducted emissions	2.45 dB
Radiated emissions (30MHz-1GHz)	4.00 dB
Radiated emissions (1GHz -18GHz)	2.49 dB
Radiated emissions (18GHz -40GHz)	2.70 dB



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### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Digital Transport Adapter
MODEL NO.	DTA171 HD
FCC ID	N89-DTA171HD
POWER SUPPLY	DC 5V from AC Adapter Power cord: AC 2-pin Non-shielded DC cable (1.8m) with one ferrite core
MODULATION TYPE	O-QPSK
CARRIER FREQUENCY OF EACH CHANNEL	2425MHz ~ 2475MHz
NUMBER OF CHANNEL	3
ANTENNA TYPE	Please see note
DATA CABLE	NA
I/O PORTS	Cable in port x 1 TV out port x 1 IR in port x 1 HDMI port x 1
ASSOCIATED DEVICES	Remote control x 1 (Brand: Cisco / Model: HAD-IR2)

#### NOTE:

1. The EUT consumes power from the switching power supply:

Brand	Model No.	Power rating
AcBel	WAA016	AC I/P: 100-120V, 60Hz, 0.2A DC O/P: 5V, 1.5A



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2. There are two antennas provided to this EUT, please refer to the following table:

Transmitter Circuit	Gain(dBi)	Antenna Type	Connector Type	Diversity Function	Frequency range (MHz to MHz)
Chain(0)	3	PIFA	NA	Y	2412 ~ 2483.5
Chain(1)	3	PIFA	NA	Y	2412 ~ 2483.5

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

Three channels are provided in this EUT.

Channel	Freq. (MHz)
15	2425
20	2450
25	2475

#### NOTE:

1. Below 1 GHz, the channel 15, 20, and 25 were pre-tested in chamber. The channel 15, worst case one, was chosen for final test.
2. Above 1 GHz, the channel 15, 20, and 25 were tested individually.



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### 3.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	OB	
-	✓-	✓	✓	✓	-

Where **PLC**: Power Line Conducted Emission**RE < 1G**: Radiated Emission below 1GHz**RE ≥ 1G**: Radiated Emission above 1GHz**OB**: Conducted Out-Band Emission Measurement

#### POWER LINE CONDUCTED EMISSION TEST:

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

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
15 to 25	15	O-QPSK

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

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XY axis 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	MODULATION TYPE	AXIS
15 to 25	15	O-QPSK	X

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

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XY axis 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	MODULATION TYPE	AXIS
15 to 25	15, 20, 25	O-QPSK	X



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### **CONDUCTED - OUT BAND EMISSION MEASUREMENT:**

- 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	MODULATION TYPE
15 to 25	15, 25	O-QPSK

### **TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	26deg. C, 71%RH	120Vac, 60Hz	Timmy Hu
RE $\geq$ 1G	23deg. C, 72%RH	120Vac, 60Hz	Frank Liu
RE<1G	27deg. C, 62%RH	120Vac, 60Hz	Nick Chang
OB	25deg. C, 60%RH	120Vac, 60Hz	Kent Liu

### **3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS**

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

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

**ANSI C63.4: 2003**

**ANSI C63.10: 2009**

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



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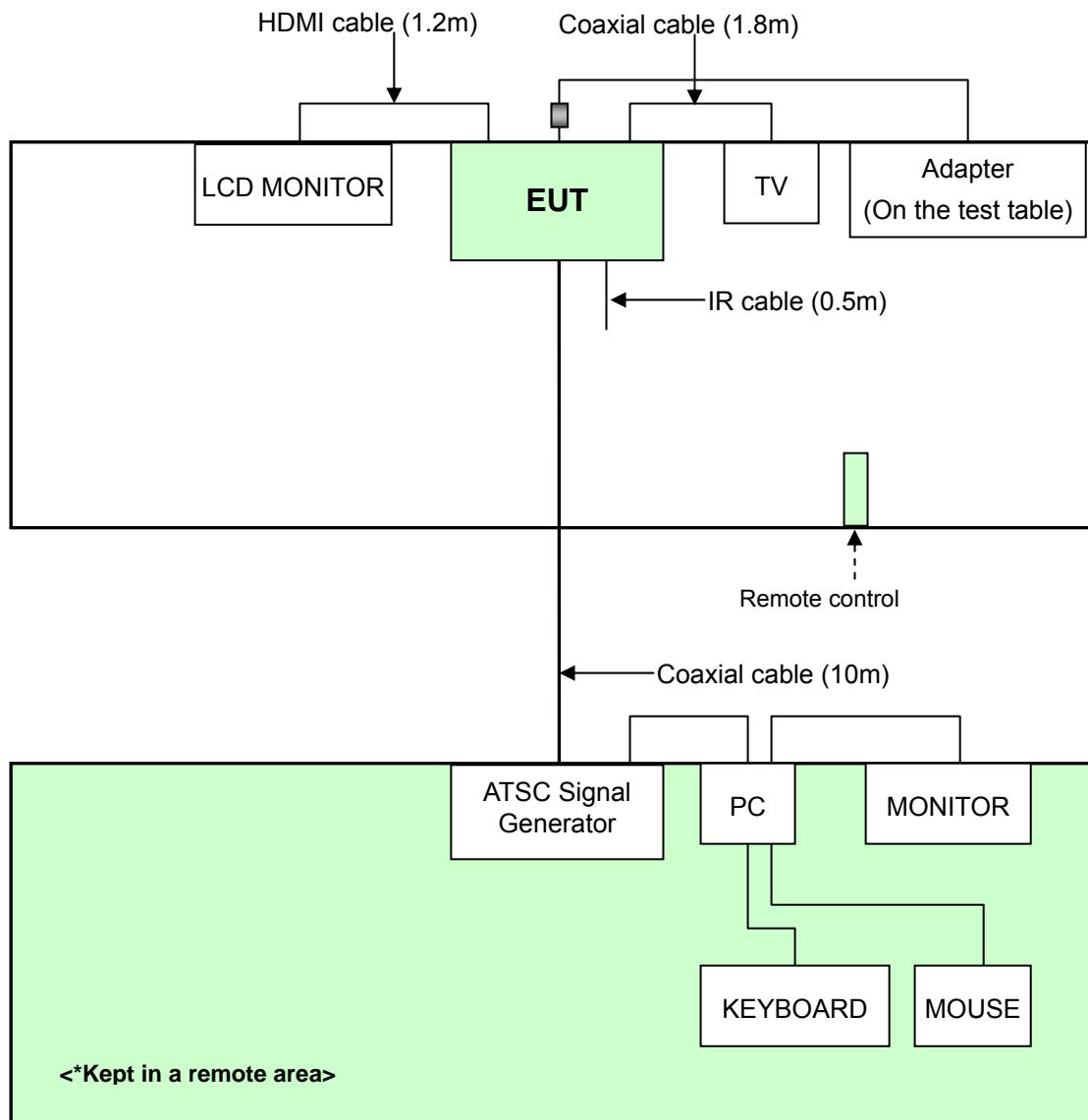
### 3.5 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	PERSONAL COMPUTER	IBM	A52-8327-075	NA	NA
2	MONITOR	DELL	SK-8115	MY-0DJ325-716 19-99B-0476	FCC DoC
3	KEYBOARD	BTC	M851	G00347024171	FCC DoC
4	MOUSE	DELL	MOC5UO	I1401LVG	E5XMSM860
5	TV	Sony	KDL-32CX520	NA	NA
6	LCD MONITOR	Dell	2408WFPb	NA	NA
7	ATSC SIGNAL GENERATOR	DRAKE	TMQAMASI DU864	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.8m USB cable.
2	1.8m braid shielded wire, terminated with VGA connector via metallic frame, with two croes
3	1.8m foil shielded wire, terminated with USB connector via metallic frame, w/o core.
4	1.5m braid shielded wire, terminated with PS/2 connector via drain wire, w/o core.
5	1.8m Coaxial cable.
6	1.2m HDMI cable.
7	10m Coaxial cable.

### 3.6 CONFIGURATION OF SYSTEM UNDER TEST





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## 4 TEST PROCEDURES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

**NOTE:**

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

#### 4.1.2 TEST INSTRUMENTS

Test date: Oct. 06, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 09, 2011	Mar. 08, 2012
Line-Impedance Stabilization Network (for EUT)	ENV216	100072	June 10, 2011	June 09, 2012
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Nov. 03, 2010	Nov. 02, 2011
RF Cable (JYEBAO)	5DFB	COCCAB-002	Aug. 29, 2011	Aug. 28, 2012
50 ohms Terminator	50	3	Oct. 07, 2010	Nov. 02, 2011
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.



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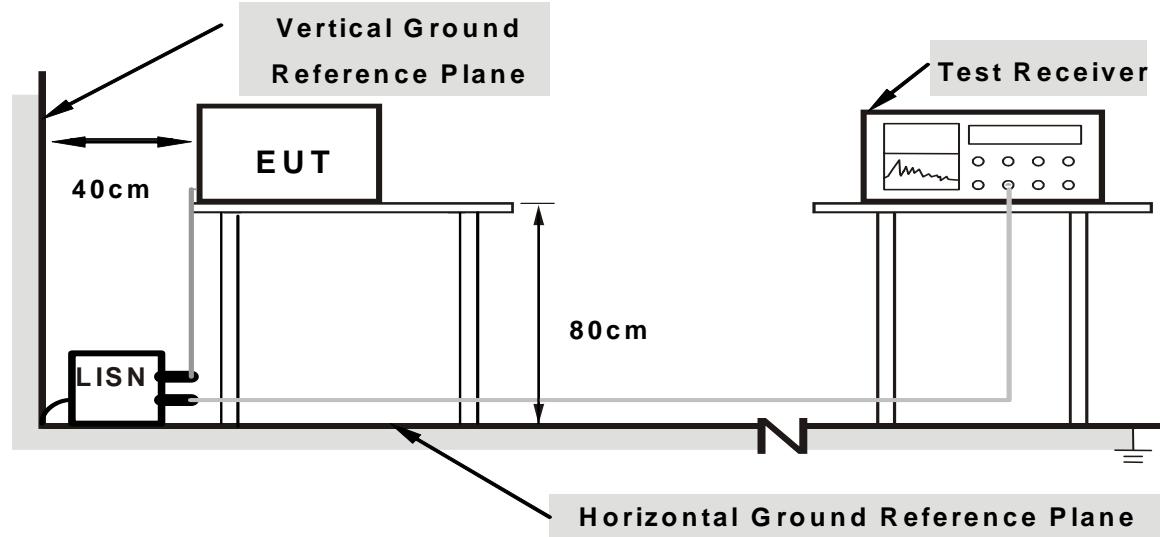
#### 4.1.3 TEST PROCEDURES

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

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.5 TEST SETUP



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

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

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

#### 4.1.6 EUT OPERATING CONDITIONS

1. Turn on the power of all equipment.
2. The communication partner run test program "Hyper\_terminal (ADT vf4ce test) command.doc" to enable EUT under transmission/receiving condition continuously at specific channel frequency.

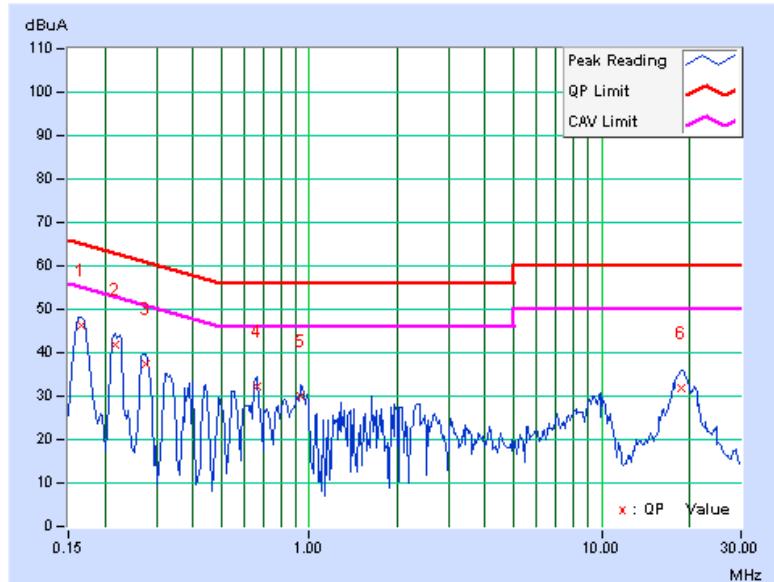
#### 4.1.7 TEST RESULTS

PHASE		Line (L)		6dB BANDWIDTH		9 kHz	
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.166	0.06	46.26	36.58	46.32	36.64	65.18	55.18	-18.86	-18.54
2	0.216	0.06	41.83	30.65	41.89	30.71	62.96	52.96	-21.06	-22.24
3	0.275	0.07	37.44	26.03	37.51	26.10	60.97	50.97	-23.46	-24.87
4	0.662	0.09	31.99	23.51	32.08	23.60	56.00	46.00	-23.92	-22.40
5	0.935	0.10	29.78	20.50	29.88	20.60	56.00	46.00	-26.12	-25.40
6	18.777	0.96	30.96	22.21	31.92	23.17	60.00	50.00	-28.08	-26.83

**REMARKS:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

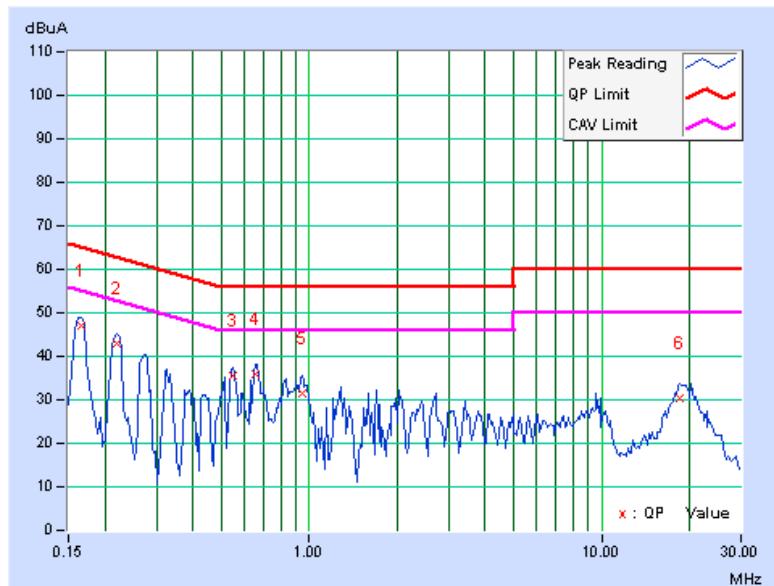


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.166	0.07	47.09	36.82	47.16	36.89	65.18	55.18	-18.01	-18.28
2	0.220	0.08	42.93	35.06	43.01	35.14	62.81	52.81	-19.80	-17.67
<b>3</b>	<b>0.548</b>	<b>0.09</b>	<b>35.33</b>	<b>30.79</b>	<b>35.42</b>	<b>30.88</b>	<b>56.00</b>	<b>46.00</b>	<b>-20.58</b>	<b>-15.12</b>
4	0.658	0.10	35.79	30.64	35.89	30.74	56.00	46.00	-20.11	-15.26
5	0.943	0.11	31.47	20.02	31.58	20.13	56.00	46.00	-24.42	-25.87
6	18.605	0.95	29.40	21.55	30.35	22.50	60.00	50.00	-29.65	-27.50

**REMARKS:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.





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## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

According to 15.249 the field strength of emissions from intentional radiators operated under these frequencies bands shall not exceed the following:

<b>Fundamental Frequency (MHz)</b>	<b>Field Strength of Fundamental (dBuV/m)</b>	
	<b>Peak</b>	<b>Average</b>
2400 ~ 2483.5	114	94
	<b>Field Strength of Harmonics (dBuV/m)</b>	
	74	54

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

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

<b>Frequencies (MHz)</b>	<b>Field strength (microvolts/meter)</b>	<b>Measurement distance (meters)</b>
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

**NOTE:**

- 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.
- Section 15.205 restricted bands of operation shall compliance with the limits in Section 15.209.



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#### 4.2.2 TEST INSTRUMENTS

Test date: Sep. 21, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011
Agilent PSA Spectrum Analyzer	E4446A	MY48250113	Nov. 30 , 2010	Nov. 29, 2011
HP Pre_Amplifier	8449B	300801923	Nov. 01, 2010	Oct. 31, 2011
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Sep. 02, 2011	Sep. 01, 2012
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	Apr. 14, 2011	Apr. 13, 2012
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 17, 2010	Dec. 16, 2011
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 17, 2011	Jan. 16, 2012
RF Switches	EMH-011	1001	Sep. 25, 2010	Sep. 24, 2011
RF CABLE (Chaintek)	Sucoflex 106	RF106-102	Jan. 27, 2011	Jan. 26, 2012
RF Cable	8DFB	STCCAB-30M-1GHz	Sep. 25, 2010	Sep. 24, 2011
Software	ADT_Radiated_V7.6.15.9.2	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
2. The horn antenna, preamplifier (model: 8449B) and Spectrum Analyzer (model: FSP40) are used only for the measurement of emission frequency above 1GHz if tested.  
3. The test was performed in Open Site No. C.  
4. The FCC Site Registration No. is 656396.  
5. The VCCI Site Registration No. is R-1626.  
6. The CANADA Site Registration No. is IC 7450G-3.



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#### 4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meters open field site. 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. The spectrum analyzer system was set to peak detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

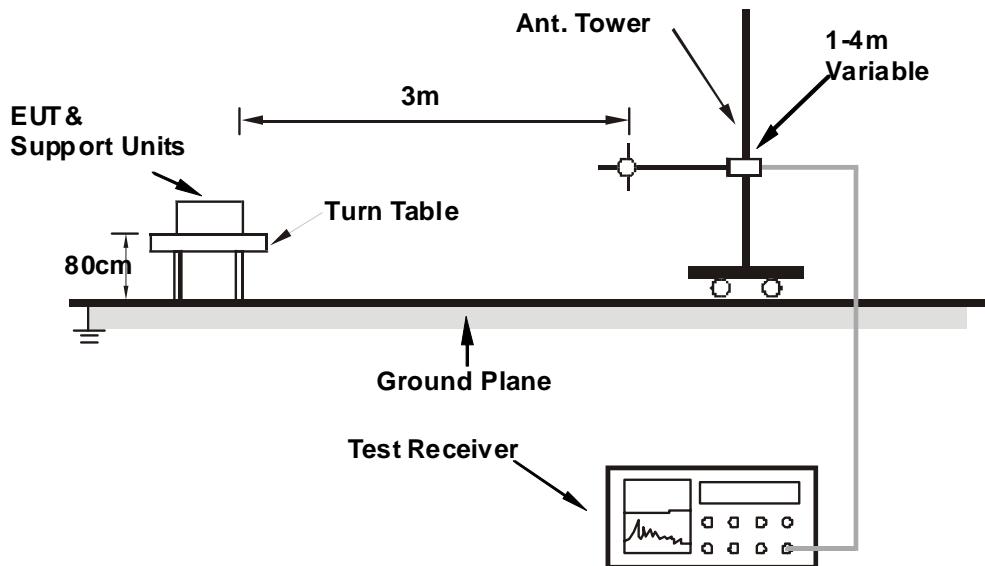
##### NOTE:

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

#### 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

Same as 4.1.6



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## 4.2.7 TEST RESULTS

### BELOW 1GHz WORST-CASE DATA

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL		Channel 15		FREQUENCY RANGE Below 1000MHz
INPUT POWER		120Vac, 60 Hz		DETECTOR FUNCTION Quasi-Peak
ENVIRONMENTAL CONDITIONS		23deg. C, 72%RH		TESTED BY Frank Liu

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	125.00	30.6 QP	43.5	-12.9	1.00 H	13	17.60	12.98
2	250.00	39.3 QP	46.0	-6.7	1.00 H	64	26.05	13.28
3	375.00	37.3 QP	46.0	-8.8	1.00 H	81	20.14	17.11
4	500.00	42.7 QP	46.0	-3.3	1.00 H	211	22.62	20.06
5	625.00	43.0 QP	46.0	-3.0	1.00 H	243	20.57	22.42
6	725.00	31.3 QP	46.0	-14.7	1.00 H	357	7.65	23.68
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	125.00	29.1 QP	43.5	-14.4	1.00 V	244	16.15	12.98
2	250.00	43.7 QP	46.0	-2.3	1.00 V	254	30.38	13.28
3	375.00	36.4 QP	46.0	-9.6	1.00 V	13	19.32	17.11
4	500.00	40.6 QP	46.0	-5.4	1.13 V	214	20.56	20.06
5	625.00	41.3 QP	46.0	-4.7	1.00 V	262	18.88	22.42
6	725.00	34.3 QP	46.0	-11.7	1.25 V	343	10.62	23.68

**REMARKS:**

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



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## ABOVE 1GHz DATA

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL		Channel 15		FREQUENCY RANGE 1 ~ 25GHz
INPUT POWER		120Vac, 60 Hz		DETECTOR FUNCTION Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS		27deg. C, 62%RH		TESTED BY Nick Chang

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	2400.00	55.4 PK	74.0	-18.6	1.43 H	195	24.05	31.35
2	2400.00	17.2 AV	54.0	-36.8	1.43 H	195	-14.15	31.35
3	*2425.00	98.1 PK	114.0	-15.9	1.43 H	195	66.66	31.44
4	*2425.00	59.9 AV	94.0	-34.1	1.43 H	195	28.46	31.44
5	4850.00	54.7 PK	74.0	-19.3	1.15 H	247	18.46	36.24
6	4850.00	16.5 AV	54.0	-37.5	1.15 H	247	-19.74	36.24
7	7275.00	47.5 PK	74.0	-26.5	1.20 H	150	5.36	42.14
8	7275.00	9.3 AV	54.0	-44.7	1.20 H	150	-32.84	42.14
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	2400.00	55.2 PK	74.0	-18.8	1.03 V	252	23.85	31.35
2	2400.00	17.0 AV	54.0	-37.0	1.03 V	252	-14.35	31.35
3	*2425.00	100.7 PK	114.0	-13.3	1.03 V	252	69.26	31.44
4	*2425.00	62.5 AV	94.0	-31.5	1.03 V	252	31.06	31.44
5	4850.00	53.7 PK	74.0	-20.3	1.23 V	287	17.46	36.24
6	4850.00	15.5 AV	54.0	-38.5	1.23 V	287	-20.74	36.24
7	7275.00	49.7 PK	74.0	-24.3	1.24 V	123	7.56	42.14
8	7275.00	11.5 AV	54.0	-42.5	1.24 V	123	-30.64	42.14

**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 (Duty cycle) = 20 log (2 ms / 163.5 ms) = -38.2 dB  
Please see page 25 for plotted duty.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 20	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 62%RH	TESTED BY	Nick Chang

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	*2450.00	97.7 PK	114.0	-16.3	1.32 H	188	66.17	31.53
2	*2450.00	59.5 AV	94.0	-34.5	1.32 H	188	27.97	31.53
3	4900.00	55.2 PK	74.0	-18.8	1.17 H	250	18.82	36.38
4	4900.00	17.0 AV	54.0	-37.0	1.17 H	250	-19.38	36.38
5	7350.00	48.1 PK	74.0	-25.9	1.21 H	96	5.72	42.38
6	7350.00	9.9 AV	54.0	-44.1	1.21 H	96	-32.48	42.38

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	*2450.00	97.4 PK	114.0	-16.6	1.25 V	158	65.87	31.53
2	*2450.00	59.2 AV	94.0	-34.8	1.25 V	158	27.67	31.53
3	4900.00	53.5 PK	74.0	-20.5	1.18 V	162	17.12	36.38
4	4900.00	15.3 AV	54.0	-38.7	1.18 V	162	-21.08	36.38
5	7350.00	50.1 PK	74.0	-23.9	1.11 V	156	7.72	42.38
6	7350.00	11.9 AV	54.0	-42.1	1.11 V	156	-30.48	42.38

**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:  

$$20 \log (\text{Duty cycle}) = 20 \log (2 \text{ ms} / 163.5 \text{ ms}) = -38.2 \text{ dB}$$

Please see page 25 for plotted duty.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 25	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 62%RH	TESTED BY	Nick Chang

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	*2475.00	95.7 PK	114.0	-18.3	1.32 H	193	64.07	31.63
2	*2475.00	57.5 AV	94.0	-36.5	1.32 H	193	25.87	31.63
3	2483.50	56.6 PK	74.0	-17.4	1.32 H	193	24.94	31.66
4	2483.50	18.4 AV	54.0	-35.6	1.32 H	193	-13.26	31.66
5	4950.00	54.8 PK	74.0	-19.2	1.28 H	247	18.33	36.47
6	4950.00	16.6 AV	54.0	-37.4	1.28 H	247	-19.87	36.47
7	7425.00	48.9 PK	74.0	-25.1	1.25 H	161	6.29	42.61
8	7425.00	10.7 AV	54.0	-43.3	1.25 H	161	-31.91	42.61
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2475.00	102.0 PK	114.0	-12.0	1.00 V	90	70.37	31.63
2	*2475.00	63.8 AV	94.0	-30.2	1.00 V	90	32.17	31.63
3	2483.50	60.0 PK	74.0	-14.0	1.00 V	90	28.34	31.66
4	2483.50	21.8 AV	54.0	-32.2	1.00 V	90	-9.86	31.66
5	4950.00	53.5 PK	74.0	-20.5	1.01 V	118	17.03	36.47
6	4950.00	15.3 AV	54.0	-38.7	1.01 V	118	-21.17	36.47
7	7425.00	48.5 PK	74.0	-25.5	1.23 V	125	5.89	42.61
8	7425.00	10.3 AV	54.0	-43.7	1.23 V	125	-32.31	42.61

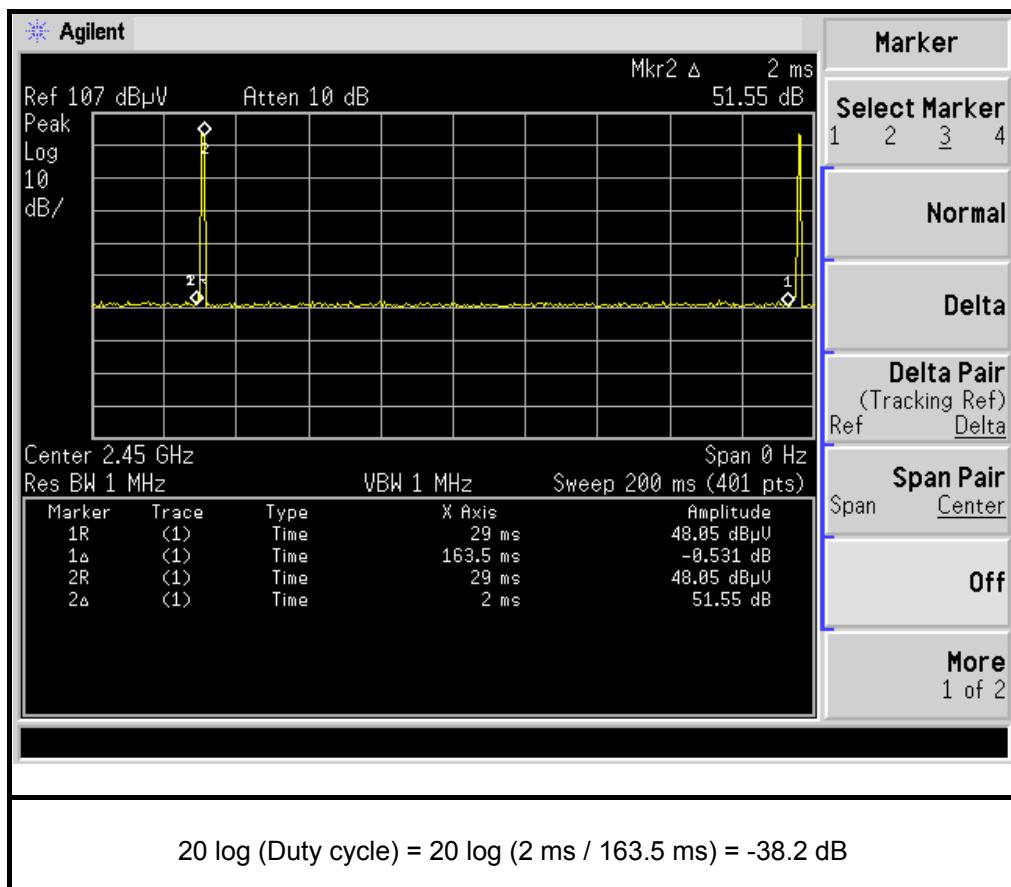
**REMARKS:**

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 is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:  
20 log (Duty cycle) = 20 log (2 ms / 163.5 ms) = -38.2 dB

Please see page 25 for plotted duty.



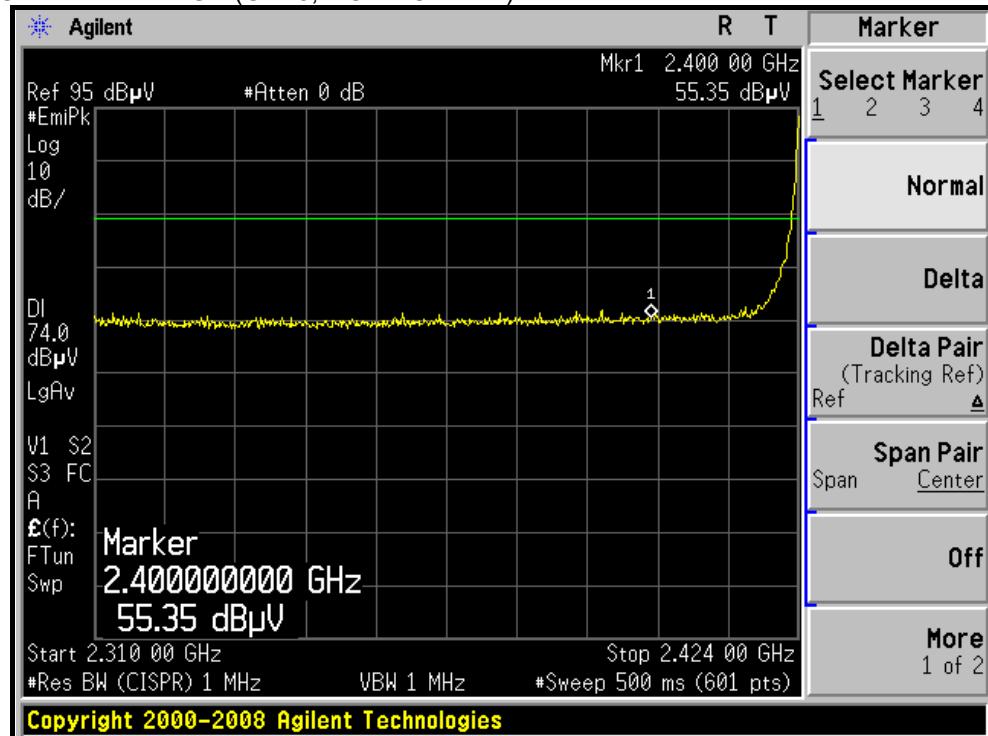
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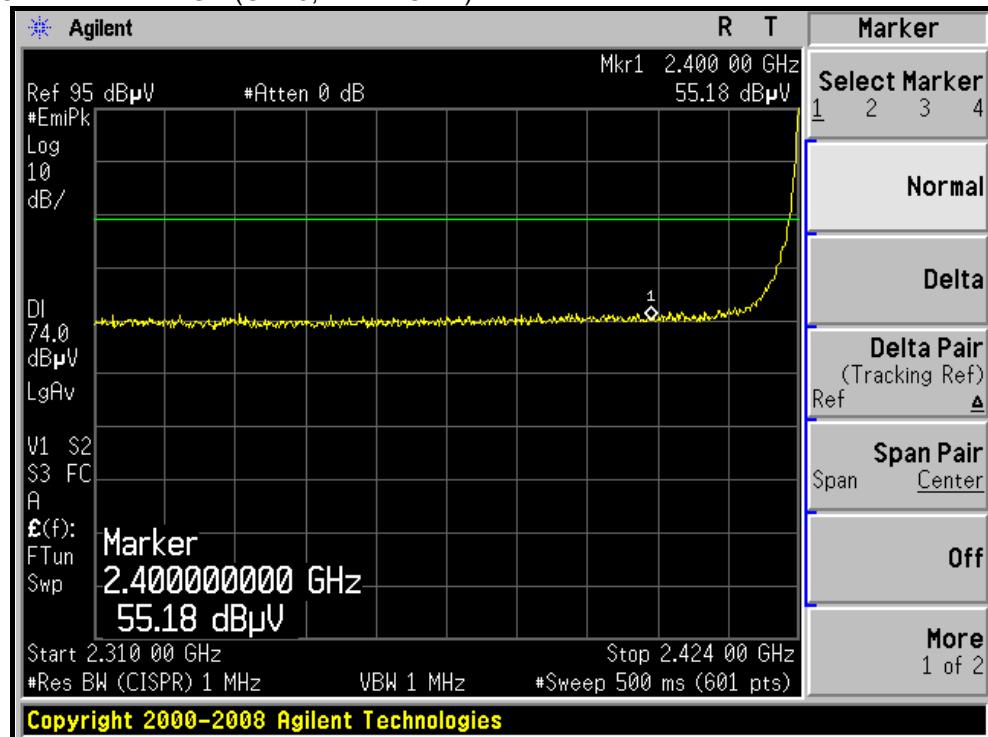


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RESTRICTED BANDEDGE (CH15, HORIZONTAL )



RESTRICTED BANDEDGE (CH15, VERTICAL )

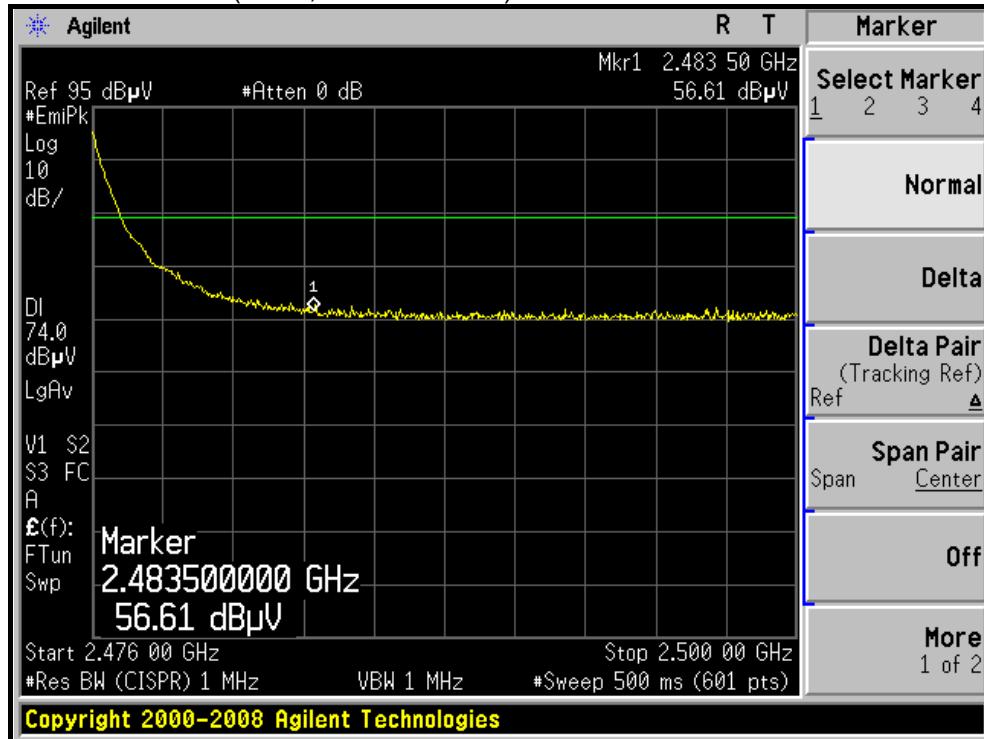


\* The average value is: Average = Peak value + 20log(Duty cycle). And it meets the requirement of limit.

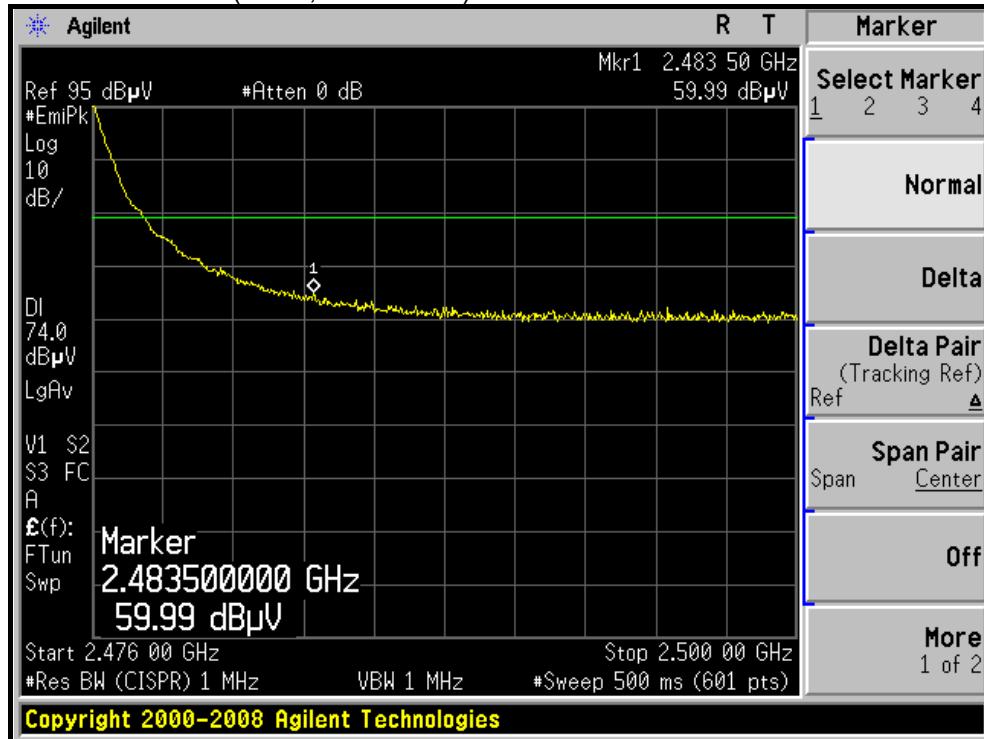


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RESTRICTED BANDEDGE (CH25, HORIZONTAL )



RESTRICTED BANDEDGE (CH25, VERTICAL )



\* The average value is: Average = Peak value + 20log(Duty cycle). And it meets the requirement of limit.



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### 4.3 CONDUCTED - OUT BAND MEASUREMENT

#### 4.3.1 LIMITS OF CONDUCTED - OUT BAND MEASUREMENT

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

#### 4.3.2 TEST INSTRUMENTS

Test date: Oct. 06, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011

**NOTE:**

1. 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 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 from band edge. The band edges was measured and recorded.

#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

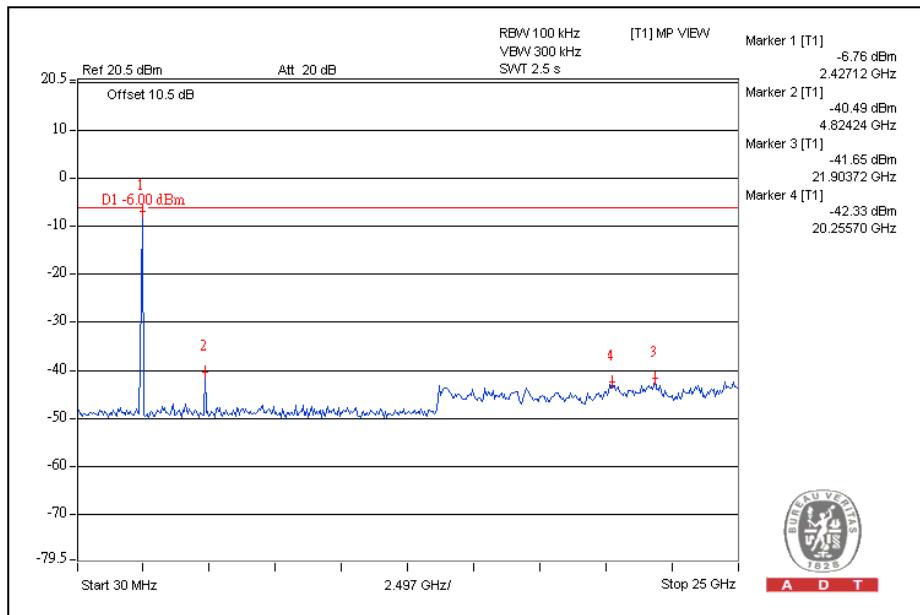
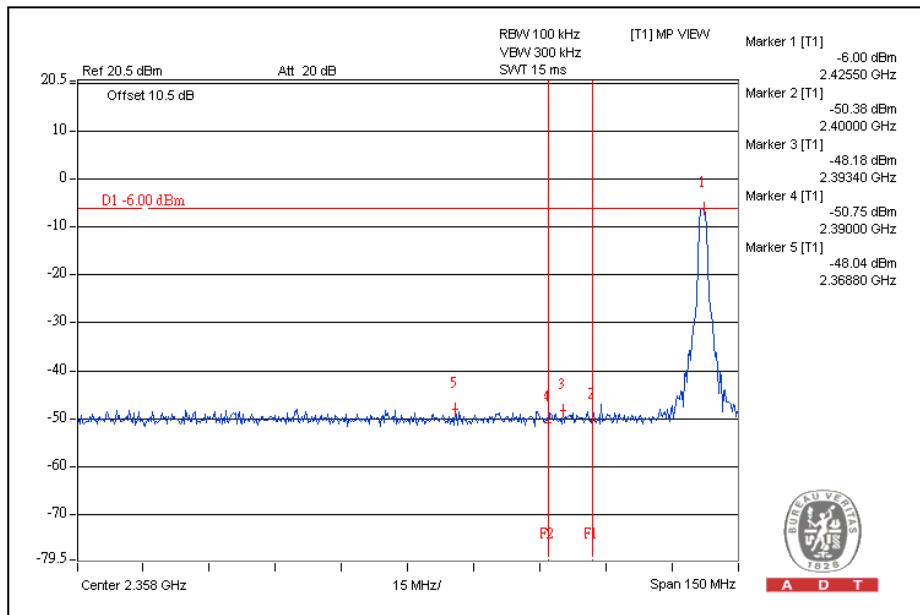
#### 4.3.5 EUT OPERATING CONDITION

The software provided by client enabled the EUT to transmit and receive data at lowest and highest channel frequencies individually.

#### 4.3.6 TEST RESULTS

Emissions radiated outside of the specified frequency bands, was met the requirement of the general radiated emission limits in § 15.209.

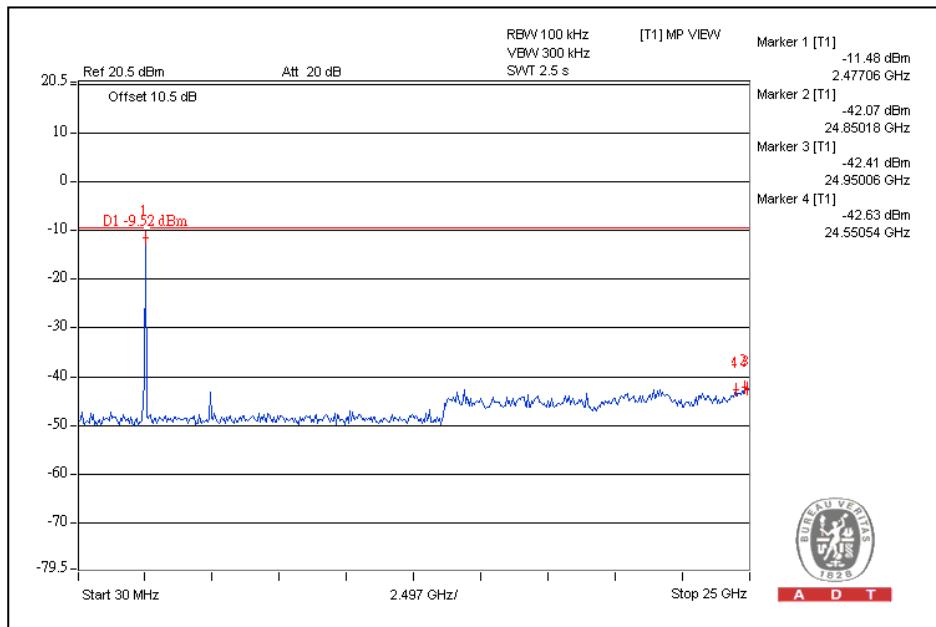
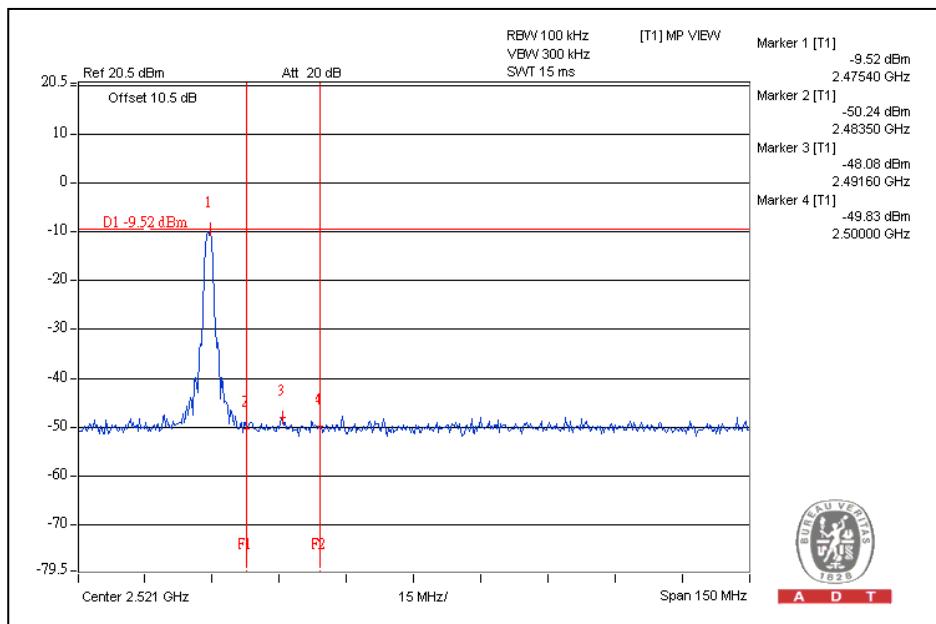
CH15





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CH25





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## 5 INFORMATION ON THE TESTING LABORATORIES

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

Copies of accreditation 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  
Fax: 886-2-26052943

**Hsin Chu EMC/RF Lab:**

Tel: 886-3-5935343  
Fax: 886-3-5935342

**Hwa Ya EMC/RF/Safety/Telecom Lab:**

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Fax: 886-3-3185050

**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.



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

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

--- END ---