



FCC TEST REPORT

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MODEL NO.: ZM5304-U
FCC ID: D87-ZM5304-U
RECEIVED: Jul. 10, 2013
TESTED: Jul. 19 ~ Aug. 07, 2013
ISSUED: Aug. 09, 2013

APPLICANT : Sigma Designs, Inc.

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

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TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130710C16	Original release	Aug. 09, 2013



1. CERTIFICATION

PRODUCT: Z-Wave Serial Interface Module with On-Board Antenna

MODEL NO.: ZM5304-U

BRAND: Sigma Designs

APPLICANT: Sigma Designs, Inc.

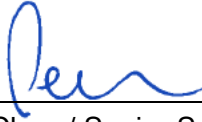
TESTED: Jul. 19 ~ Aug. 07, 2013

TEST SAMPLE: ENGINEERING SAMPLE

STANDARDS: FCC Part 15, Subpart C (Section 15.249, 15.212)

ANSI C63.10-2009

The above equipment (model: ZM5304-U) 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:** Aug. 09, 2013
Pettie Chen / Senior Specialist

APPROVED BY :  , **DATE:** Aug. 09, 2013
Ken Liu / Senior 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
15.207	Conducted Emission Test	PASS	Meet the requirement of limit. Minimum passing margin is -10.68dB at 0.32578MHz.
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 -1.8dB at 908.40MHz

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	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	Z-Wave Serial Interface Module with On-Board Antenna
MODEL NO.	ZM5304-U
POWER SUPPLY	3.3Vdc
MODULATION TYPE	2FSK (9.6kbps) (For 908.42MHz) 2FSK (40kbps) (For 908.40MHz) 2GFSK (100kbps) (For 916.00MHz)
DATA RATE	9.6kbps, 40kbps, 100kbps
OPERATING FREQUENCY	908.42MHz, 908.4MHz, 916MHz
NUMBER OF CHANNEL	3
ANTENNA TYPE	helical antenna with 1dBi gain
ANTENNA CONNECTOR	Thru-hole soldered connector
DATA CABLE	NA
I/O PORT	Refer to User's Manual
ACCESSORY DEVICES	NA

NOTE:

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

3 channels are provided to this EUT.

CHANNEL	FREQ. (MHz)	DATA RATE	POWER SETTING
1	908.42	9.6kbps	31
2	908.40	40kbps	31
3	916.00	100kbps	31

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	BM	
-	√	√	√	√	

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

NOTE: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**

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.

TESTED CHANNEL	OPERATING FREQUENCY	MODULATION TYPE
1	908.42MHz	2FSK
2	908.40MHz	2FSK
3	916.00MHz	2GFSK

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.

TESTED CHANNEL	OPERATING FREQUENCY	MODULATION TYPE
1	908.42MHz	2FSK
2	908.40MHz	2FSK
3	916.00MHz	2GFSK

POWER LINE CONDUCTED EMISSION TEST:

- 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.

TESTED CHANNEL	OPERATING FREQUENCY	MODULATION TYPE
1	908.42MHz	2FSK
2	908.40MHz	2FSK
3	916.00MHz	2GFSK



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.

TESTED CHANNEL	OPERATING FREQUENCY	MODULATION TYPE
1	908.42MHz	2FSK
2	908.40MHz	2FSK
3	916.00MHz	2GFSK

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	22deg. C, 65%RH	120Vac, 60Hz	Cedric Wu
RE<1G	22deg. C, 65%RH	120Vac, 60Hz	Cedric Wu
PLC	25deg. C, 65%RH	120Vac, 60Hz	Ted Chang
BM	22deg. C, 65%RH	120Vac, 60Hz	Cedric Wu

3.3 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.

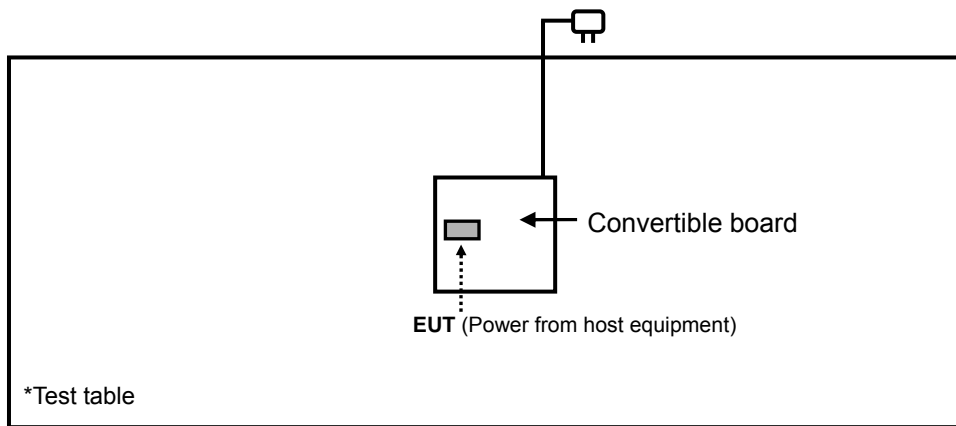
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Convertible Board	NA	NA	NA	NA
2	Adapter	V-INFINITY	EMSA090067	NA	NA

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

NOTE:

1. All power cords of the above support units are non shielded (1.8m).
2. Items 1, 2 were provided by the client.

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



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 C63.10-2009

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

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION AND BAND EDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following

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

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 as below table, whichever is the lesser attenuation

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. 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	ESCS30	100289	Nov. 16, 2012	Nov. 15, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jan. 28, 2013	Jan. 27, 2014
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Mar. 22, 2013	Mar. 21, 2014
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-209	Sep. 03, 2012	Sep. 02, 2013
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 15, 2013	Jul. 14, 2014
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier Agilent	8449B	3008A01911	Oct. 25, 2012	Oct. 24, 2013
Preamplifier Agilent	8447D	2944A10638	Oct. 25, 2012	Oct. 24, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295013/4 283403/4	Aug. 28, 2012	Aug. 27, 2013
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 11, 2012	Aug. 10, 2013
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	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 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 215374.
6. The IC Site Registration No. is IC 7450F-9.

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.

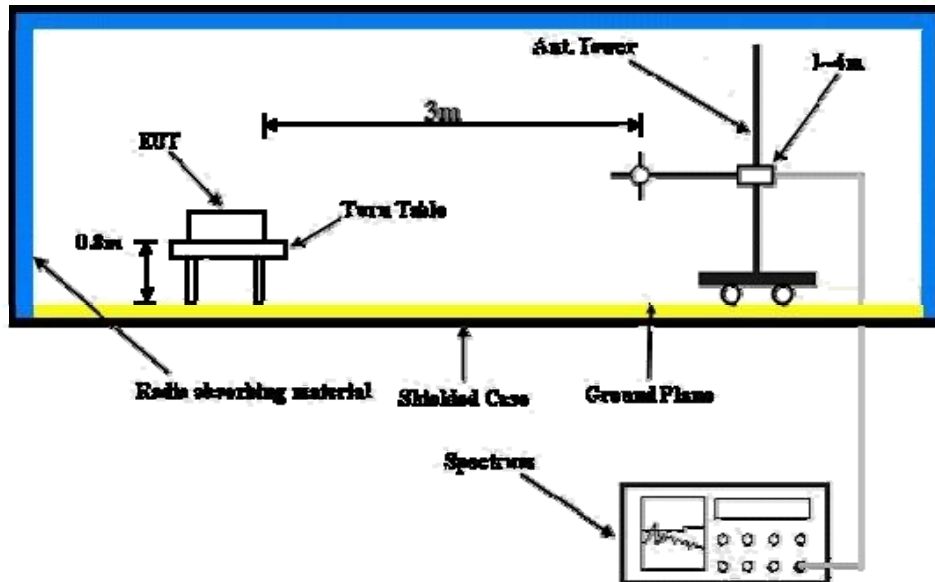
NOTE:

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 1MHz 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 1kHz(Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. 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

- a. Plugged EUT into convertible board and placed them on the testing table.
- b. Set the EUT under transmission condition continuously at specific channel frequency.



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4.1.7 TEST RESULTS

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1 (908.42MHz)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	902.00	46.7 PK	74.0	-27.3	1.00 H	30	20.10	26.60
2	902.00	37.6 AV	54.0	-16.4	1.00 H	30	11.00	26.60
3	*908.42	92.7 PK	114.0	-21.3	1.45 H	11	65.80	26.90
4	*908.42	92.1 AV	94.0	-1.9	1.45 H	11	65.20	26.90
5	928.00	47.2 PK	74.0	-26.8	1.00 H	60	20.00	27.20
6	928.00	38.6 AV	54.0	-15.4	1.00 H	60	11.40	27.20
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	902.00	47.1 PK	74.0	-26.9	1.00 V	250	20.50	26.60
2	902.00	37.3 AV	54.0	-16.7	1.00 V	250	10.70	26.60
3	*908.42	90.5 PK	114.0	-23.5	1.00 V	78	63.60	26.90
4	*908.42	89.8 AV	94.0	-4.2	1.00 V	78	62.90	26.90
5	928.00	47.1 PK	74.0	-26.9	1.00 V	310	19.90	27.20
6	928.00	37.9 AV	54.0	-16.1	1.00 V	310	10.70	27.20

- 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) – Pre-Amplifier Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “ : Fundamental frequency



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 2 (908.40MHz)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	902.00	47.7 PK	74.0	-26.3	1.00 H	36	21.10	26.60
2	902.00	37.4 AV	54.0	-16.6	1.00 H	36	10.80	26.60
3	*908.40	92.6 PK	114.0	-21.4	1.42 H	9	65.70	26.90
4	*908.40	92.2 AV	94.0	-1.8	1.42 H	9	65.30	26.90
5	928.00	47.0 PK	74.0	-27.0	1.00 H	66	19.80	27.20
6	928.00	38.6 AV	54.0	-15.4	1.00 H	66	11.40	27.20
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	902.00	47.3 PK	74.0	-26.7	1.00 V	255	20.70	26.60
2	902.00	36.9 AV	54.0	-17.1	1.00 V	255	10.30	26.60
3	*908.40	90.8 PK	114.0	-23.2	1.00 V	80	63.90	26.90
4	*908.40	90.2 AV	94.0	-3.8	1.00 V	80	63.30	26.90
5	928.00	46.4 PK	74.0	-27.6	1.00 V	319	19.20	27.20
6	928.00	37.8 AV	54.0	-16.2	1.00 V	319	10.60	27.20

- 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)
– Pre-Amplifier Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “ : Fundamental frequency



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3 (916.00MHz)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	902.00	47.4 PK	74.0	-26.6	1.00 H	49	20.80	26.60
2	902.00	37.4 AV	54.0	-16.6	1.00 H	49	10.80	26.60
3	*916.00	92.8 PK	114.0	-21.2	1.52 H	10	65.80	27.00
4	*916.00	92.1 AV	94.0	-1.9	1.52 H	10	65.10	27.00
5	928.00	48.8 PK	74.0	-25.2	1.00 H	21	21.60	27.20
6	928.00	38.9 AV	54.0	-15.1	1.00 H	21	11.70	27.20
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	902.00	46.9 PK	74.0	-27.1	1.00 V	242	20.30	26.60
2	902.00	37.8 AV	54.0	-16.2	1.00 V	242	11.20	26.60
3	*916.00	90.5 PK	114.0	-23.5	1.00 V	81	63.50	27.00
4	*916.00	89.8 AV	94.0	-4.2	1.00 V	81	62.80	27.00
5	928.00	48.1 PK	74.0	-25.9	1.00 V	298	20.90	27.20
6	928.00	38.3 AV	54.0	-15.7	1.00 V	298	11.10	27.20

- 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) – Pre-Amplifier Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “ : Fundamental frequency



ABOVE 1GHz DATA

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1 (908.42MHz)	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	1816.84	40.9 PK	74.0	-33.1	1.00 H	87	45.80	-4.90
2	1816.84	28.5 AV	54.0	-25.5	1.00 H	87	33.40	-4.90
3	2725.26	51.1 PK	74.0	-22.9	1.00 H	160	52.10	-1.00
4	2725.26	46.9 AV	54.0	-7.1	1.00 H	160	47.90	-1.00
5	3633.68	50.1 PK	74.0	-23.9	1.03 H	129	47.90	2.20
6	3633.68	41.3 AV	54.0	-12.7	1.03 H	129	39.10	2.20
7	4542.10	55.3 PK	74.0	-18.7	1.00 H	154	51.30	4.00
8	4542.10	44.9 AV	54.0	-9.1	1.00 H	154	40.90	4.00
9	5450.52	58.4 PK	74.0	-15.6	1.00 H	350	52.20	6.20
10	5450.52	46.0 AV	54.0	-8.0	1.00 H	350	39.80	6.20
11	6358.94	59.6 PK	74.0	-14.4	1.00 H	125	52.90	6.70
12	6358.94	46.4 AV	54.0	-7.6	1.00 H	125	39.70	6.70
13	7267.36	64.0 PK	74.0	-10.0	1.00 H	80	55.00	9.00
14	7267.36	51.1 AV	54.0	-2.9	1.00 H	80	42.10	9.00
15	8175.78	57.4 PK	74.0	-16.6	1.00 H	100	47.00	10.40
16	8175.78	47.7 AV	54.0	-6.3	1.00 H	100	37.30	10.40
17	9084.20	57.5 PK	74.0	-16.5	1.00 H	98	46.20	11.30
18	9084.20	49.6 AV	54.0	-4.4	1.00 H	98	38.30	11.30
19	9992.62	60.8 PK	74.0	-13.2	1.00 H	20	48.90	11.90
20	9992.62	51.7 AV	54.0	-2.3	1.00 H	20	39.80	11.90

- 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)
– Pre-Amplifier 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 1 (908.42MHz)	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	1816.84	38.7 PK	74.0	-35.3	1.00 V	254	43.60	-4.90
2	1816.84	26.4 AV	54.0	-27.6	1.00 V	254	31.30	-4.90
3	2725.26	48.1 PK	74.0	-25.9	1.00 V	233	49.10	-1.00
4	2725.26	40.0 AV	54.0	-14.0	1.00 V	233	41.00	-1.00
5	3633.68	48.7 PK	74.0	-25.3	1.00 V	161	46.50	2.20
6	3633.68	38.0 AV	54.0	-16.0	1.00 V	161	35.80	2.20
7	4542.10	54.2 PK	74.0	-19.8	1.00 V	99	50.20	4.00
8	4542.10	43.8 AV	54.0	-10.2	1.00 V	99	39.80	4.00
9	5450.52	58.2 PK	74.0	-15.8	1.00 V	44	52.00	6.20
10	5450.52	45.9 AV	54.0	-8.1	1.00 V	44	39.70	6.20
11	6358.94	59.1 PK	74.0	-14.9	1.00 V	81	52.40	6.70
12	6358.94	45.0 AV	54.0	-9.0	1.00 V	81	38.30	6.70
13	7267.36	65.3 PK	74.0	-8.7	1.00 V	265	56.30	9.00
14	7267.36	50.8 AV	54.0	-3.2	1.00 V	265	41.80	9.00
15	8175.78	56.6 PK	74.0	-17.4	1.00 V	333	46.20	10.40
16	8175.78	47.0 AV	54.0	-7.0	1.00 V	333	36.60	10.40
17	9084.20	57.0 PK	74.0	-17.0	1.00 V	354	45.70	11.30
18	9084.20	49.2 AV	54.0	-4.8	1.00 V	354	37.90	11.30
19	9992.62	60.2 PK	74.0	-13.8	1.00 V	45	48.30	11.90
20	9992.62	51.2 AV	54.0	-2.8	1.00 V	45	39.30	11.90

- 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) – Pre-Amplifier 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	
CHANNEL	Channel 2 (908.40MHz)	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	1816.80	43.0 PK	74.0	-31.0	1.00 H	129	47.90	-4.90
2	1816.80	31.3 AV	54.0	-22.7	1.00 H	129	36.20	-4.90
3	2725.20	51.7 PK	74.0	-22.3	1.00 H	161	52.70	-1.00
4	2725.20	46.9 AV	54.0	-7.1	1.00 H	161	47.90	-1.00
5	3633.60	50.2 PK	74.0	-23.8	1.00 H	107	48.00	2.20
6	3633.60	41.2 AV	54.0	-12.8	1.00 H	107	39.00	2.20
7	4542.00	55.6 PK	74.0	-18.4	1.00 H	157	51.60	4.00
8	4542.00	45.3 AV	54.0	-8.7	1.00 H	157	41.30	4.00
9	5450.40	58.9 PK	74.0	-15.1	1.00 H	352	52.70	6.20
10	5450.40	46.6 AV	54.0	-7.4	1.00 H	352	40.40	6.20
11	6358.80	60.1 PK	74.0	-13.9	1.00 H	129	53.40	6.70
12	6358.80	46.9 AV	54.0	-7.1	1.00 H	129	40.20	6.70
13	7267.20	64.2 PK	74.0	-9.8	1.00 H	88	55.20	9.00
14	7267.20	51.4 AV	54.0	-2.6	1.00 H	88	42.40	9.00
15	8175.60	57.8 PK	74.0	-16.2	1.00 H	106	47.40	10.40
16	8175.60	48.1 AV	54.0	-5.9	1.00 H	106	37.70	10.40
17	9084.00	57.9 PK	74.0	-16.1	1.00 H	102	46.60	11.30
18	9084.00	49.9 AV	54.0	-4.1	1.00 H	102	38.60	11.30
19	9992.40	61.2 PK	74.0	-12.8	1.00 H	27	49.30	11.90
20	9992.40	52.1 AV	54.0	-1.9	1.00 H	27	40.20	11.90

- 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)
– Pre-Amplifier 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 2 (908.40MHz)	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	1816.80	41.0 PK	74.0	-33.0	1.00 V	311	45.90	-4.90
2	1816.80	27.9 AV	54.0	-26.1	1.00 V	311	32.80	-4.90
3	2725.20	47.9 PK	74.0	-26.1	1.00 V	232	48.90	-1.00
4	2725.20	40.4 AV	54.0	-13.6	1.00 V	232	41.40	-1.00
5	3633.60	49.4 PK	74.0	-24.6	1.00 V	36	47.20	2.20
6	3633.60	38.0 AV	54.0	-16.0	1.00 V	36	35.80	2.20
7	4542.00	54.6 PK	74.0	-19.4	1.00 V	107	50.60	4.00
8	4542.00	44.1 AV	54.0	-9.9	1.00 V	107	40.10	4.00
9	5450.40	58.4 PK	74.0	-15.6	1.00 V	46	52.20	6.20
10	5450.40	46.3 AV	54.0	-7.7	1.00 V	46	40.10	6.20
11	6358.80	59.5 PK	74.0	-14.5	1.00 V	85	52.80	6.70
12	6358.80	45.5 AV	54.0	-8.5	1.00 V	85	38.80	6.70
13	7267.20	65.6 PK	74.0	-8.4	1.00 V	277	56.60	9.00
14	7267.20	51.2 AV	54.0	-2.8	1.00 V	277	42.20	9.00
15	8175.60	57.0 PK	74.0	-17.0	1.00 V	341	46.60	10.40
16	8175.60	47.5 AV	54.0	-6.5	1.00 V	341	37.10	10.40
17	9084.00	57.2 PK	74.0	-16.8	1.00 V	1	45.90	11.30
18	9084.00	49.5 AV	54.0	-4.5	1.00 V	1	38.20	11.30
19	9992.40	60.6 PK	74.0	-13.4	1.00 V	52	48.70	11.90
20	9992.40	51.7 AV	54.0	-2.3	1.00 V	52	39.80	11.90

- 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) – Pre-Amplifier 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 3 (916.00MHz)	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	1832.00	40.9 PK	74.0	-33.1	1.00 H	120	45.60	-4.70
2	1832.00	30.1 AV	54.0	-23.9	1.00 H	120	34.80	-4.70
3	2402.86	46.2 PK	74.0	-27.8	1.00 H	211	48.60	-2.40
4	2402.86	37.8 AV	54.0	-16.2	1.00 H	211	40.20	-2.40
5	2748.00	50.5 PK	74.0	-23.5	1.00 H	161	51.60	-1.10
6	2748.00	46.4 AV	54.0	-7.6	1.00 H	161	47.50	-1.10
7	3664.00	51.1 PK	74.0	-22.9	1.00 H	106	48.70	2.40
8	3664.00	42.1 AV	54.0	-11.9	1.00 H	106	39.70	2.40
9	4580.00	55.0 PK	74.0	-19.0	1.00 H	151	50.90	4.10
10	4580.00	44.7 AV	54.0	-9.3	1.00 H	151	40.60	4.10
11	5496.00	58.0 PK	74.0	-16.0	1.00 H	342	51.70	6.30
12	5496.00	45.5 AV	54.0	-8.5	1.00 H	342	39.20	6.30
13	6412.00	59.3 PK	74.0	-14.7	1.00 H	121	52.50	6.80
14	6412.00	46.0 AV	54.0	-8.0	1.00 H	121	39.20	6.80
15	7328.00	63.8 PK	74.0	-10.2	1.00 H	74	54.60	9.20
16	7328.00	50.8 AV	54.0	-3.2	1.00 H	74	41.60	9.20
17	8244.00	57.1 PK	74.0	-16.9	1.00 H	92	46.70	10.40
18	8244.00	47.2 AV	54.0	-6.8	1.00 H	92	36.80	10.40
19	9160.00	57.1 PK	74.0	-16.9	1.00 H	88	45.90	11.20
20	9160.00	49.0 AV	54.0	-5.0	1.00 H	88	37.80	11.20
21	10076.00	60.3 PK	74.0	-13.7	1.00 H	12	48.40	11.90
22	10076.00	51.2 AV	54.0	-2.8	1.00 H	12	39.30	11.90

- 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)
– Pre-Amplifier 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 3 (916.00MHz)	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	1832.00	39.7 PK	74.0	-34.3	1.00 V	300	44.40	-4.70
2	1832.00	28.4 AV	54.0	-25.6	1.00 V	300	33.10	-4.70
3	2402.86	43.7 PK	74.0	-30.3	1.00 V	66	46.10	-2.40
4	2402.86	38.2 AV	54.0	-15.8	1.00 V	66	40.60	-2.40
5	2748.00	48.1 PK	74.0	-25.9	1.05 V	180	49.20	-1.10
6	2748.00	43.1 AV	54.0	-10.9	1.05 V	180	44.20	-1.10
7	3664.00	50.1 PK	74.0	-23.9	1.00 V	20	47.70	2.40
8	3664.00	39.2 AV	54.0	-14.8	1.00 V	20	36.80	2.40
9	4580.00	54.0 PK	74.0	-20.0	1.00 V	94	49.90	4.10
10	4580.00	43.5 AV	54.0	-10.5	1.00 V	94	39.40	4.10
11	5496.00	57.5 PK	74.0	-16.5	1.00 V	56	51.20	6.30
12	5496.00	44.3 AV	54.0	-9.7	1.00 V	56	38.00	6.30
13	6412.00	58.9 PK	74.0	-15.1	1.00 V	74	52.10	6.80
14	6412.00	44.6 AV	54.0	-9.4	1.00 V	74	37.80	6.80
15	7328.00	64.9 PK	74.0	-9.1	1.00 V	256	55.70	9.20
16	7328.00	50.3 AV	54.0	-3.7	1.00 V	256	41.10	9.20
17	8244.00	56.3 PK	74.0	-17.7	1.00 V	320	45.90	10.40
18	8244.00	46.5 AV	54.0	-7.5	1.00 V	320	36.10	10.40
19	9160.00	56.8 PK	74.0	-17.2	1.00 V	349	45.60	11.20
20	9160.00	48.8 AV	54.0	-5.2	1.00 V	349	37.60	11.20
21	10076.00	60.0 PK	74.0	-14.0	1.00 V	35	48.10	11.90
22	10076.00	50.9 AV	54.0	-3.1	1.00 V	35	39.00	11.90

- 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) – Pre-Amplifier Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.

**BELOW 1GHz WORST-CASE DATA**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1 (908.42MHz)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	35.82	24.0 QP	40.0	-16.0	1.24 H	241	39.00	-15.00
2	99.84	19.5 QP	43.5	-24.0	1.00 H	141	38.30	-18.80
3	159.98	20.6 QP	43.5	-22.9	1.50 H	111	34.50	-13.90
4	286.08	19.7 QP	46.0	-26.3	1.50 H	118	32.60	-12.90
5	544.10	23.9 QP	46.0	-22.1	1.24 H	294	31.80	-7.90
6	868.40	25.1 QP	46.0	-20.9	1.24 H	29	26.70	-1.60
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	33.88	29.5 QP	40.0	-10.5	1.50 V	19	45.50	-16.00
2	99.84	32.3 QP	43.5	-11.2	1.24 V	11	51.10	-18.80
3	148.34	31.7 QP	43.5	-11.8	1.24 V	10	46.00	-14.30
4	189.08	20.0 QP	43.5	-23.5	1.00 V	194	36.20	-16.20
5	559.62	21.3 QP	46.0	-24.7	1.00 V	151	28.70	-7.40
6	868.40	24.4 QP	46.0	-21.6	1.75 V	279	26.00	-1.60

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)
– Pre-Amplifier 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 2 (908.40MHz)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	35.82	23.3 QP	40.0	-16.7	1.00 H	172	38.30	-15.00
2	99.84	19.6 QP	43.5	-23.9	1.75 H	153	38.40	-18.80
3	158.04	20.0 QP	43.5	-23.5	1.50 H	97	34.40	-14.40
4	286.08	21.4 QP	46.0	-24.6	1.00 H	133	34.30	-12.90
5	544.10	24.8 QP	46.0	-21.2	1.00 H	184	32.70	-7.90
6	868.40	25.2 QP	46.0	-20.8	1.25 H	221	26.80	-1.60
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	33.88	30.5 QP	40.0	-9.5	1.25 V	96	46.50	-16.00
2	99.84	30.5 QP	43.5	-13.0	1.00 V	342	49.30	-18.80
3	615.88	23.5 QP	46.0	-22.5	1.50 V	175	29.40	-5.90
4	773.02	24.4 QP	46.0	-21.6	1.00 V	211	27.30	-2.90
5	835.10	25.4 QP	46.0	-20.6	1.75 V	102	27.60	-2.20
6	868.40	38.8 QP	46.0	-7.2	1.00 V	193	40.40	-1.60

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) – Pre-Amplifier 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 3 (916.00MHz)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	33.88	25.0 QP	40.0	-15.0	1.74 H	288	41.00	-16.00
2	99.84	22.0 QP	43.5	-21.5	1.74 H	159	40.80	-18.80
3	158.04	21.8 QP	43.5	-21.7	1.74 H	110	36.20	-14.40
4	286.08	21.2 QP	46.0	-24.8	1.00 H	109	34.10	-12.90
5	433.52	25.6 QP	46.0	-20.4	1.24 H	186	35.20	-9.60
6	868.40	26.0 QP	46.0	-20.0	1.74 H	241	27.60	-1.60

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	33.88	30.4 QP	40.0	-9.6	1.74 V	110	46.40	-16.00
2	99.84	31.8 QP	43.5	-11.7	1.26 V	320	50.60	-18.80
3	134.76	22.5 QP	43.5	-21.0	1.01 V	14	37.60	-15.10
4	439.34	24.8 QP	46.0	-21.2	1.01 V	161	34.20	-9.40
5	658.56	22.9 QP	46.0	-23.1	1.50 V	55	28.40	-5.50
6	868.40	26.2 QP	46.0	-19.8	1.01 V	165	27.80	-1.60

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) – Pre-Amplifier Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ 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.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Nov. 09, 2012	Nov. 08, 2013
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 28, 2012	Dec. 27, 2013
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 21, 2012	Dec. 20, 2013
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 02, 2013	Jul. 01, 2014
Software ADT	BV ADT_Cond_ V7.3.7.3	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 HwaYa Shielded Room 2.
 3. The VCCI Site Registration No. is C-2047.

4.2.3 TEST PROCEDURES

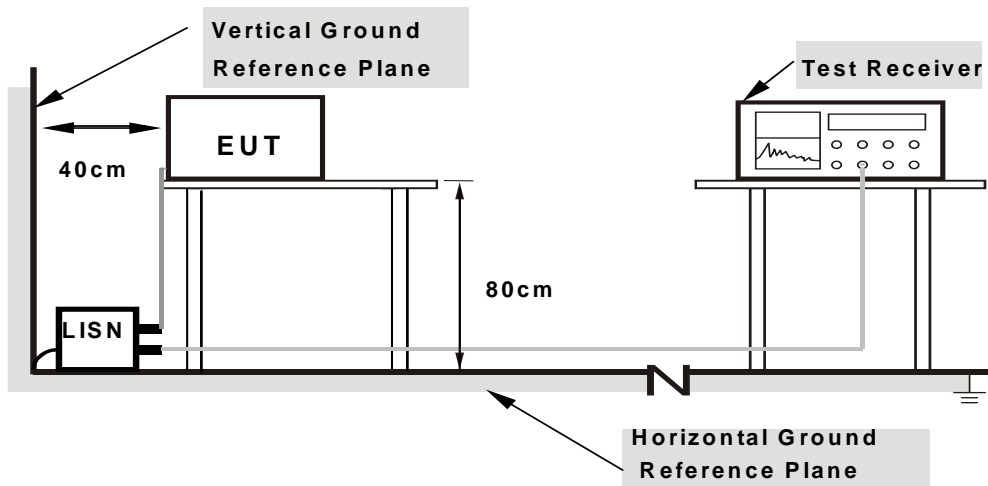
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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) was not recorded.

NOTE: 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



- Note:**
- 1.Support units were connected to second LISN.
 - 2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

4.2.7 TEST RESULTS

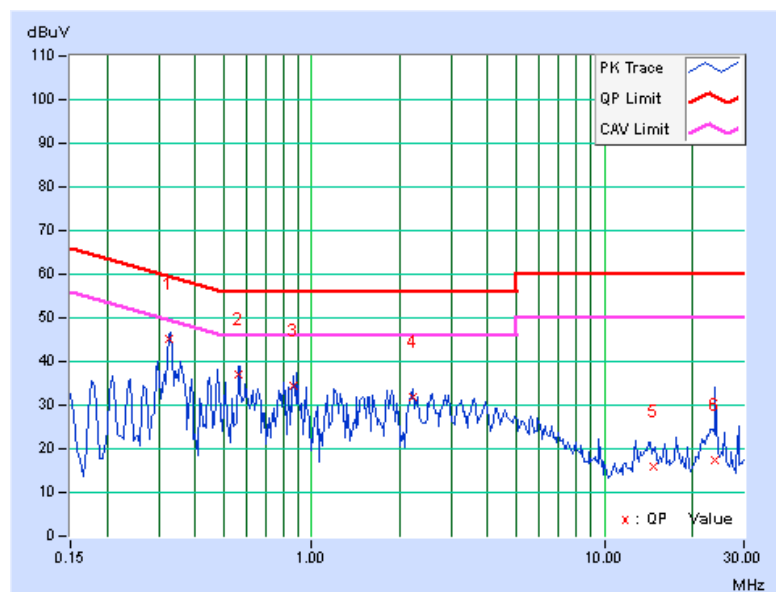
CONDUCTED WORST-CASE DATA :

CHANNEL	Channel 1 (908.42MHz)	PHASE	Line 1
6dB BANDWIDTH	9kHz		

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	0.32578	0.21	44.80	38.55	45.01	38.76	59.56	49.56	-14.55	-10.80
2	0.56406	0.24	36.87	30.66	37.11	30.90	56.00	46.00	-18.89	-15.10
3	0.86094	0.27	34.08	26.77	34.35	27.04	56.00	46.00	-21.65	-18.96
4	2.20703	0.33	31.65	23.57	31.98	23.90	56.00	46.00	-24.02	-22.10
5	14.77344	0.60	15.24	5.96	15.84	6.56	60.00	50.00	-44.16	-43.44
6	23.78906	0.70	16.85	6.66	17.55	7.36	60.00	50.00	-42.45	-42.64

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

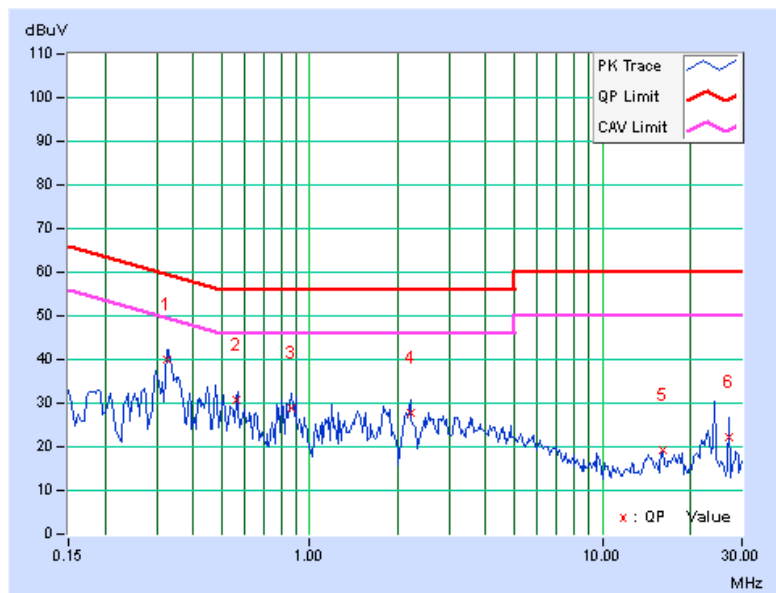


CHANNEL	Channel 1 (908.42MHz)	PHASE	Line 2
6dB BANDWIDTH	9kHz		

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	0.32578	0.24	39.79	36.30	40.03	36.54	59.56	49.56	-19.53	-13.02
2	0.56406	0.27	30.46	27.09	30.73	27.36	56.00	46.00	-25.27	-18.64
3	0.86094	0.26	28.52	24.41	28.78	24.67	56.00	46.00	-27.22	-21.33
4	2.20703	0.33	27.63	22.57	27.96	22.90	56.00	46.00	-28.04	-23.10
5	16.01563	0.72	18.53	12.11	19.25	12.83	60.00	50.00	-40.75	-37.17
6	27.23047	0.74	21.31	11.12	22.05	11.86	60.00	50.00	-37.95	-38.14

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

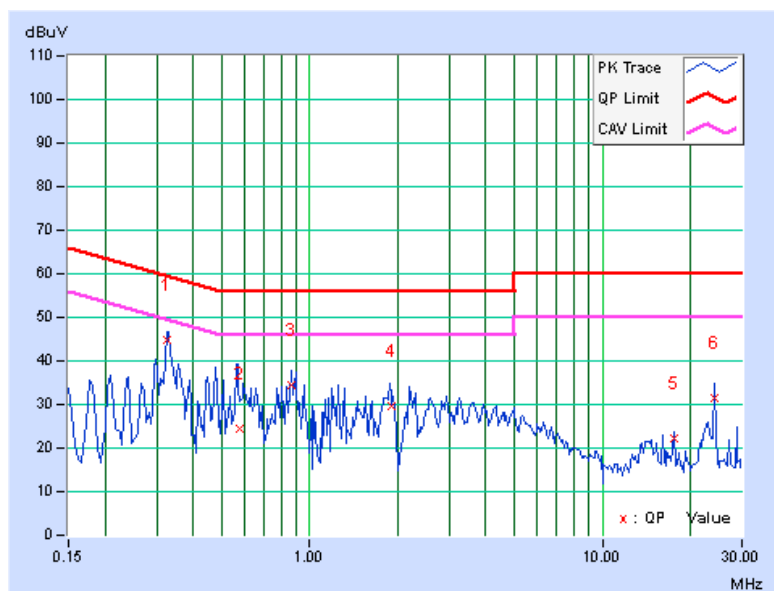


CHANNEL	Channel 2 (908.40MHz)	PHASE	Line 1
6dB BANDWIDTH	9kHz		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.32578	0.21	44.67	38.67	44.88	38.88	59.56
2	0.57969	0.24	24.29	12.55	24.53	12.79	56.00	46.00	-31.47	-33.21
3	0.86094	0.27	34.17	26.87	34.44	27.14	56.00	46.00	-21.56	-18.86
4	1.90234	0.32	29.40	20.39	29.72	20.71	56.00	46.00	-26.28	-25.29
5	17.61328	0.67	21.67	16.92	22.34	17.59	60.00	50.00	-37.66	-32.41
6	24.02344	0.70	30.70	21.83	31.40	22.53	60.00	50.00	-28.60	-27.47

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
6. The bold test was minimum passing margin value.

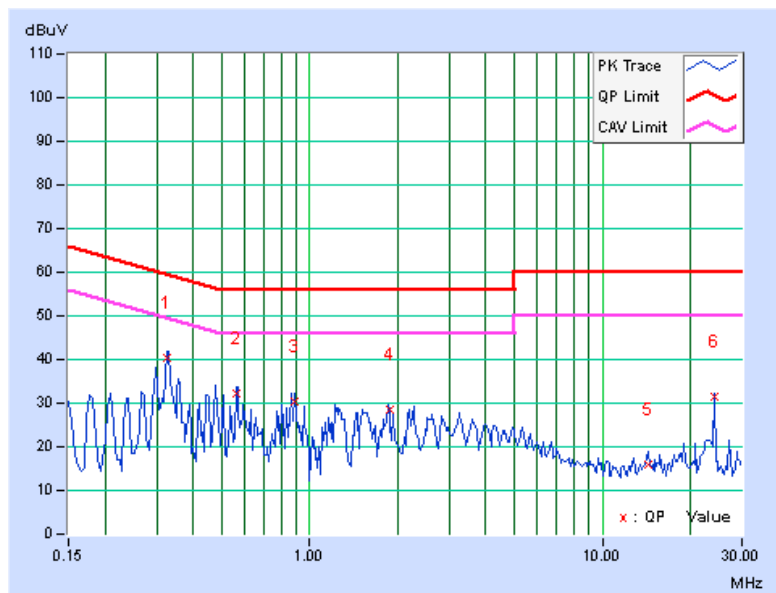


CHANNEL	Channel 2 (908.40MHz)	PHASE	Line 2
6dB BANDWIDTH	9kHz		

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	0.32578	0.24	40.15	36.80	40.39	37.04	59.56	49.56	-19.17	-12.52
2	0.56406	0.27	31.85	28.92	32.12	29.19	56.00	46.00	-23.88	-16.81
3	0.89219	0.26	30.10	26.87	30.36	27.13	56.00	46.00	-25.64	-18.87
4	1.87500	0.31	28.15	24.32	28.46	24.63	56.00	46.00	-27.54	-21.37
5	14.41016	0.68	15.39	10.67	16.07	11.35	60.00	50.00	-43.93	-38.65
6	24.01953	0.79	30.81	20.65	31.60	21.44	60.00	50.00	-28.40	-28.56

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

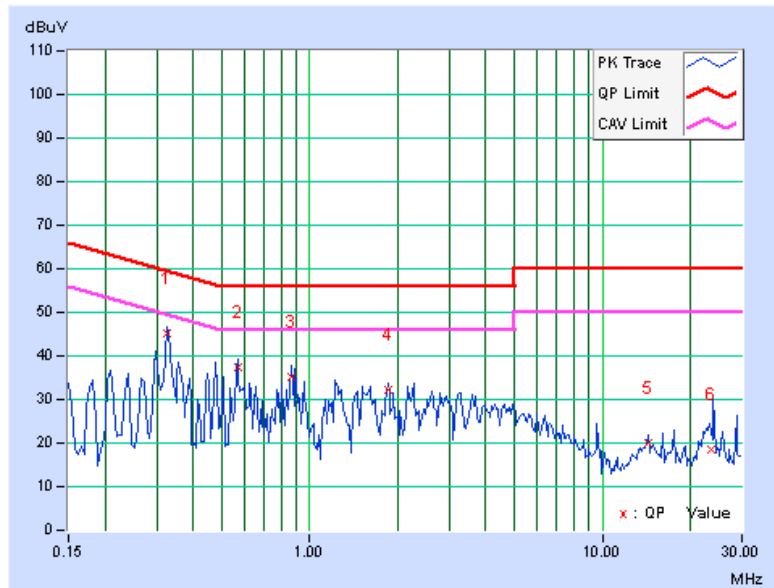


CHANNEL	Channel 3 (916.00MHz)	PHASE	Line 1
6dB BANDWIDTH	9kHz		

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	0.32578	0.21	44.86	38.67	45.07	38.88	59.56	49.56	-14.49	-10.68
2	0.56797	0.24	37.14	30.90	37.38	31.14	56.00	46.00	-18.62	-14.86
3	0.86094	0.27	35.05	27.68	35.32	27.95	56.00	46.00	-20.68	-18.05
4	1.84766	0.32	31.85	24.47	32.17	24.79	56.00	46.00	-23.83	-21.21
5	14.41016	0.60	19.44	15.41	20.04	16.01	60.00	50.00	-39.96	-33.99
6	23.62891	0.70	17.99	6.57	18.69	7.27	60.00	50.00	-41.31	-42.73

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
6. The bold test was minimum passing margin value.

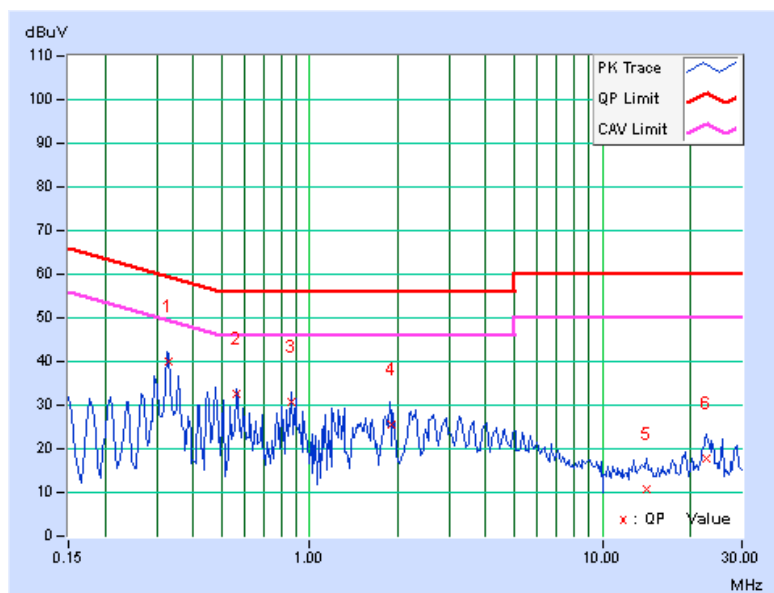


CHANNEL	Channel 3 (916.00MHz)	PHASE	Line 2
6dB BANDWIDTH	9kHz		

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	0.32969	0.24	39.87	36.44	40.11	36.68	59.46	49.46	-19.35	-12.78
2	0.56406	0.27	32.19	29.40	32.46	29.67	56.00	46.00	-23.54	-16.33
3	0.86094	0.26	30.34	26.69	30.60	26.95	56.00	46.00	-25.40	-19.05
4	1.90234	0.31	25.30	20.58	25.61	20.89	56.00	46.00	-30.39	-25.11
5	14.16797	0.67	10.13	2.52	10.80	3.19	60.00	50.00	-49.20	-46.81
6	22.80078	0.80	16.83	5.19	17.63	5.99	60.00	50.00	-42.37	-44.01

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



4.3 RADIATED EMISSION MEASUREMENT (FOR 50dBc)

4.3.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following

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

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 as below table, whichever is the lesser attenuation

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. 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.



4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 16, 2012	Nov. 15, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jan. 28, 2013	Jan. 27, 2014
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Mar. 22, 2013	Mar. 21, 2014
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-209	Sep. 03, 2012	Sep. 02, 2013
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 15, 2013	Jul. 14, 2014
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier Agilent	8449B	3008A01911	Oct. 25, 2012	Oct. 24, 2013
Preamplifier Agilent	8447D	2944A10638	Oct. 25, 2012	Oct. 24, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295013/4 283403/4	Aug. 28, 2012	Aug. 27, 2013
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 11, 2012	Aug. 10, 2013
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	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 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 215374.
6. The IC Site Registration No. is IC 7450F-9.

4.3.3 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.

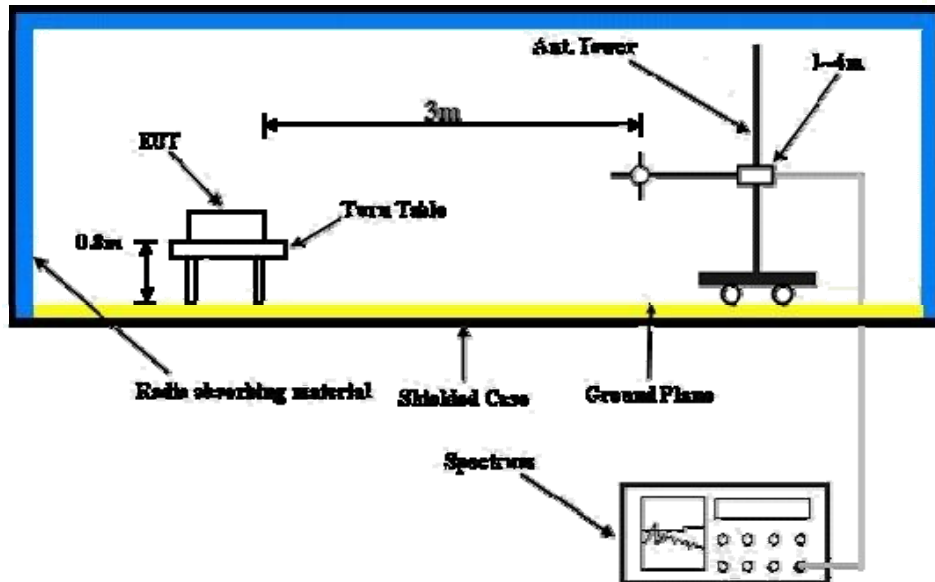
NOTE:

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 1MHz 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 1kHz(Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

4.3.5 TEST SETUP



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

4.3.6 EUT OPERATING CONDITIONS

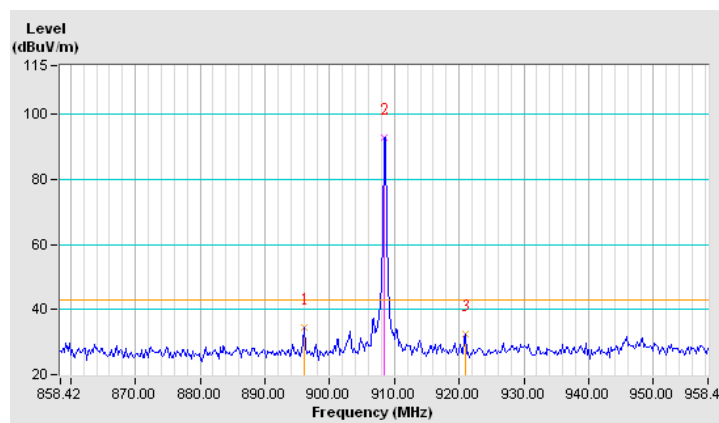
- a. Plugged EUT into convertible board and placed them on the testing table.
- b. Set the EUT under transmission condition continuously at specific channel frequency.

4.3.7 TEST RESULTS

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1 (908.42MHz)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	896.02	34.5 PK	42.9	-8.4	1.00 H	125	35.70	-1.20
2	*908.42	92.9 PK			1.50 H	245	93.70	-0.80
3	921.02	32.4 PK	42.9	-10.5	1.00 H	253	33.00	-0.60

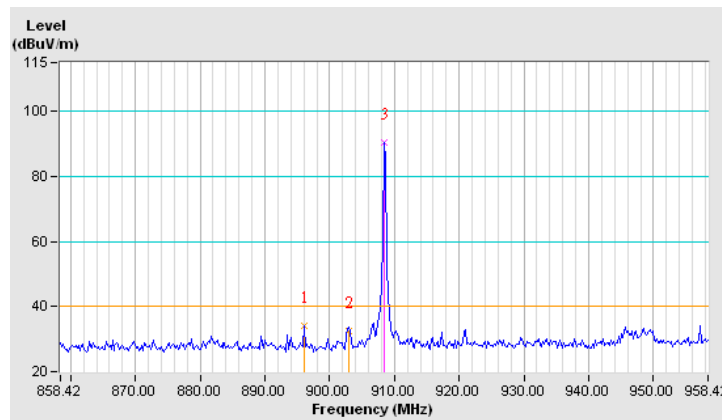
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * ” : Fundamental frequency



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1 (908.42MHz)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	896.02	34.1 PK	40.3	-6.2	1.00 V	125	35.30	-1.20
2	903.02	32.5 PK	40.3	-7.8	1.14 V	351	33.60	-1.10
3	*908.42	90.3 PK			1.20 V	10	91.10	-0.80

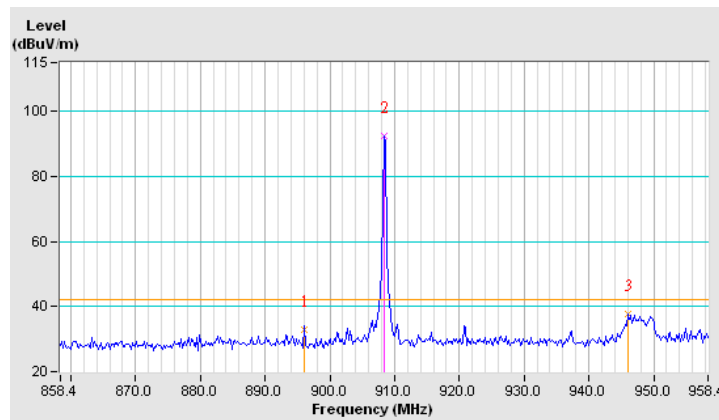
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “ : Fundamental frequency



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 2 (908.40MHz)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	896.00	33.0 PK	42.3	-9.3	1.13 H	125	34.20	-1.20
2	*908.40	92.3 PK			1.00 H	278	93.10	-0.80
3	946.00	37.6 PK	42.3	-4.7	1.26 H	36	37.80	-0.20

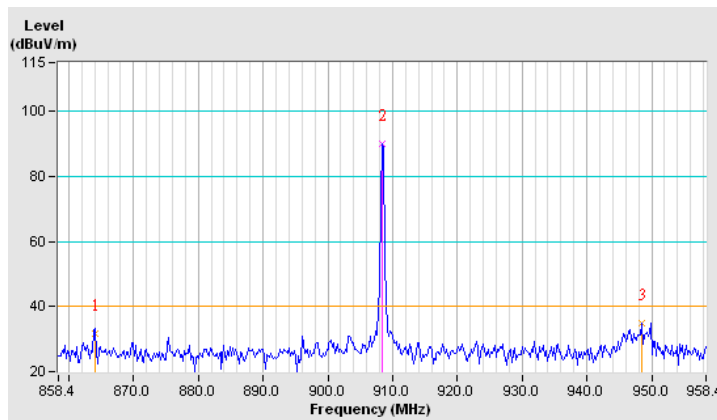
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “ : Fundamental frequency



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 2 (908.40MHz)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	864.00	31.7 PK	40.1	-8.4	1.22 V	305	33.30	-1.60
2	*908.40	90.1 PK			1.00 V	40	90.90	-0.80
3	948.40	34.7 PK	40.1	-5.4	1.11 V	166	34.90	-0.20

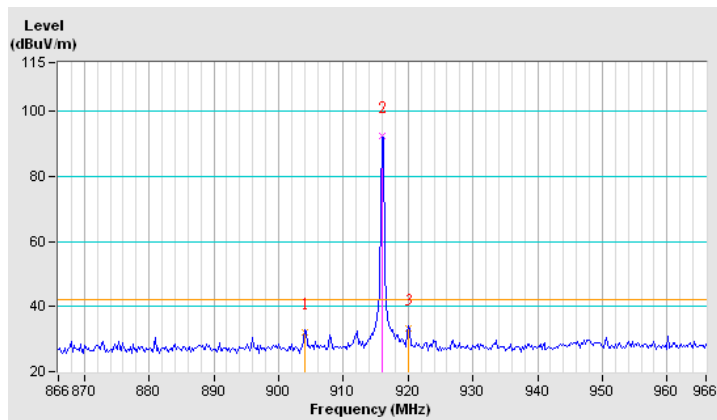
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “ : Fundamental frequency



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3 (916.00MHz)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	904.00	32.0 PK	42.3	-10.3	1.22 H	247	33.00	-1.00
2	*916.00	92.3 PK			1.00 H	222	93.00	-0.70
3	920.00	33.4 PK	42.3	-8.9	1.44 H	26	34.00	-0.60

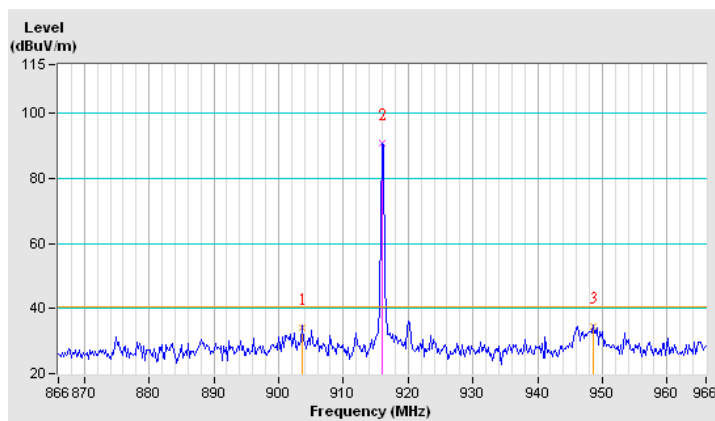
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “ : Fundamental frequency



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3 (916.00MHz)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	903.60	33.9 PK	40.7	-6.8	1.33 V	325	34.90	-1.00
2	*916.00	90.7 PK			1.00 V	5	91.40	-0.70
3	948.60	34.6 PK	40.7	-6.1	1.10 V	10	34.80	-0.20

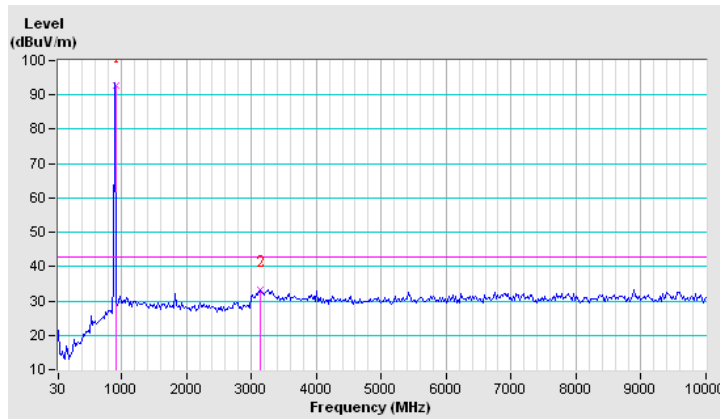
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “ : Fundamental frequency



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1 (908.42MHz)	FREQUENCY RANGE	30~10000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 68%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	*908.42	92.7 PK			1.50 H	267	93.50	-0.80
2	3140.64	33.4 PK	42.7	-9.3	1.00 H	66	33.00	0.40

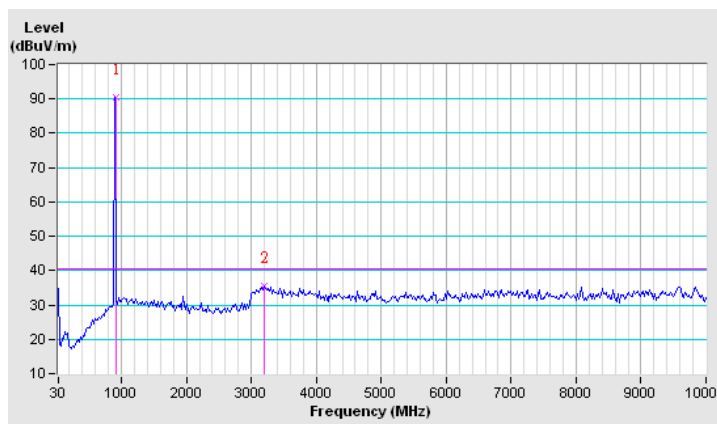
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “ : Fundamental frequency



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1 (908.42MHz)	FREQUENCY RANGE	30~10000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 68%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	*908.42	90.6 PK			1.19 V	12	91.40	-0.80
2	3200.46	35.4 PK	40.6	-5.2	1.00 V	255	35.00	0.40

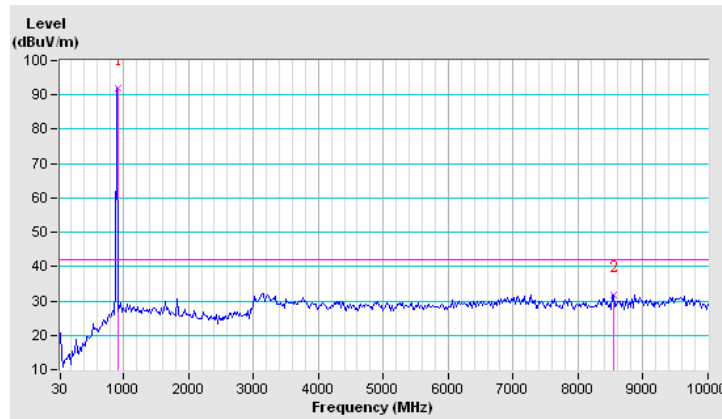
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * ” : Fundamental frequency



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 2 (908.40MHz)	FREQUENCY RANGE	30~10000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 68%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	*908.40	92.1 PK			1.00 H	285	92.90	-0.80
2	8544.38	31.9 PK	42.1	-10.2	1.13 H	274	31.50	0.40

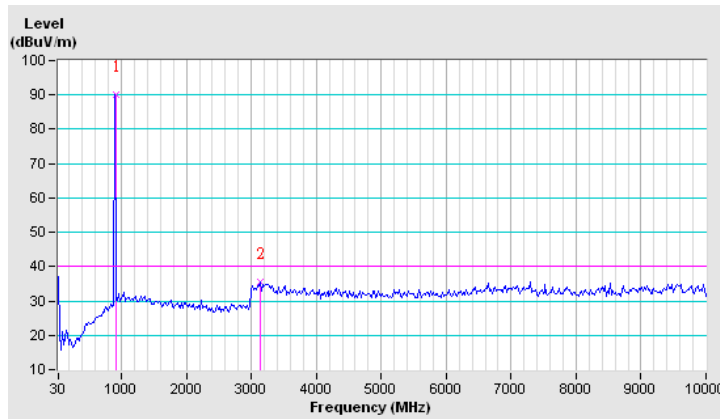
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “ : Fundamental frequency



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 2 (908.40MHz)	FREQUENCY RANGE	30~10000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 68%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	*908.40	90.0 PK			1.10 V	170	90.80	-0.80
2	3140.64	35.4 PK	40.0	-4.6	1.45 V	344	35.00	0.40

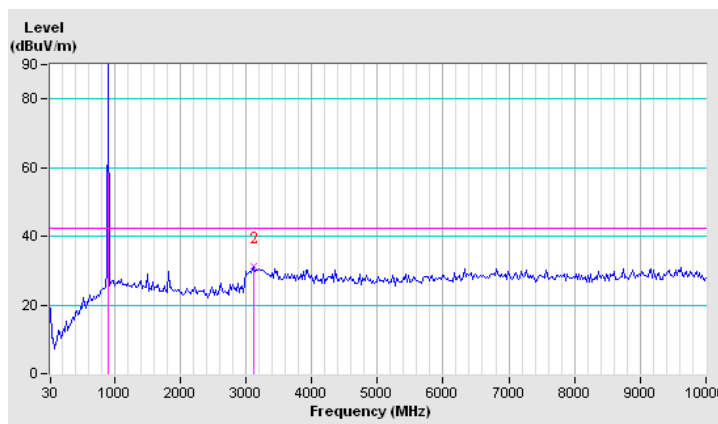
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * ” : Fundamental frequency



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3 (916.00MHz)	FREQUENCY RANGE	30~10000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 68%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	*916.00	92.2 PK			1.25 H	40	92.90	-0.70
2	3120.70	31.3 PK	42.2	-10.9	1.00 H	99	30.90	0.40

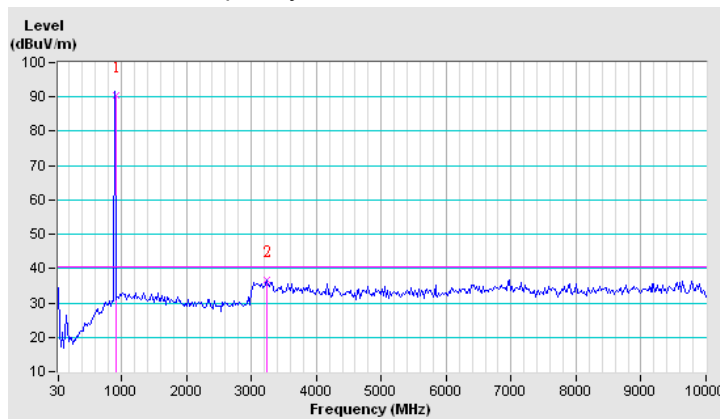
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * ” : Fundamental frequency



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3 (916.00MHz)	FREQUENCY RANGE	30~10000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 68%RH	TESTED BY	Cedric Wu
RADIO MODE	Transmit Modulated		

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	*916.00	90.5 PK			1.00 V	125	91.20	-0.70
2	3240.34	36.8 PK	40.5	-3.7	1.50 V	222	36.40	0.40

- 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) – Pre-Amplifier Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * ” : Fundamental frequency



4.4 CONDUCTED EMISSION MEASUREMENT

4.4.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

Below -50dB of the highest emission level of operating band.

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100269	Jan. 28, 2013	Jan. 27, 2014

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. The spectrum plots are attached on the following pages.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

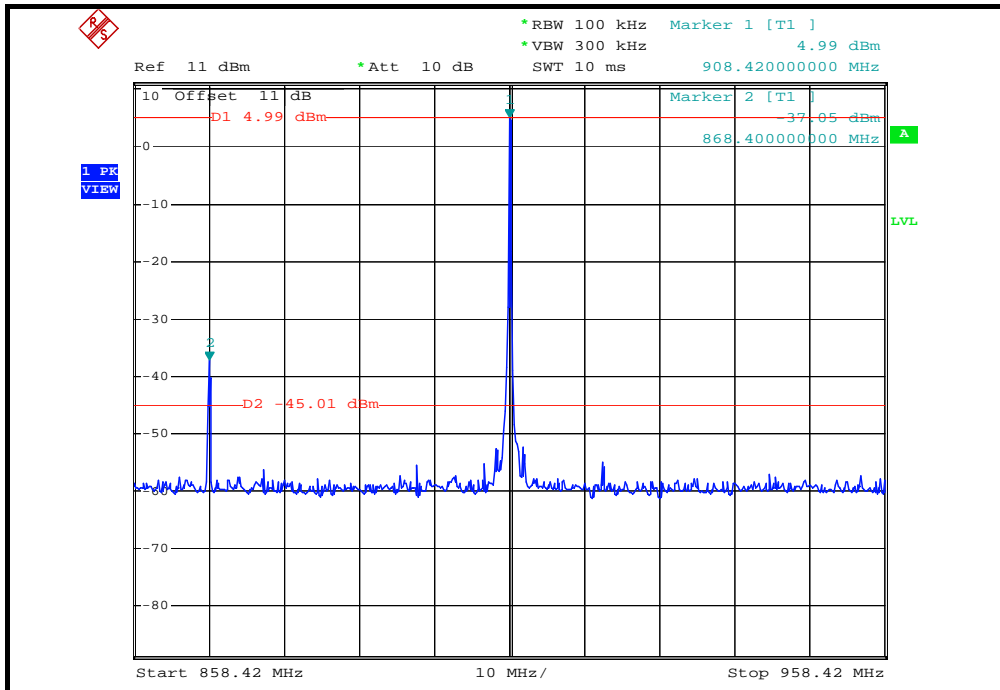
4.4.5 EUT OPERATING CONDITION

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

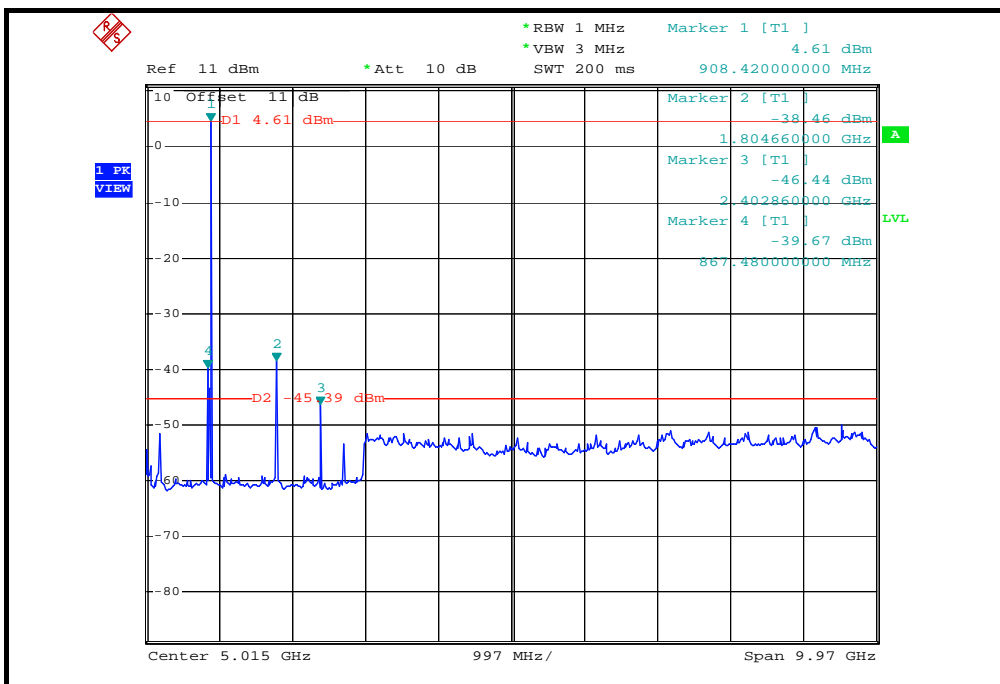
4.4.6 TEST RESULTS

The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 50dB offset below D1.

For 908.42 MHz

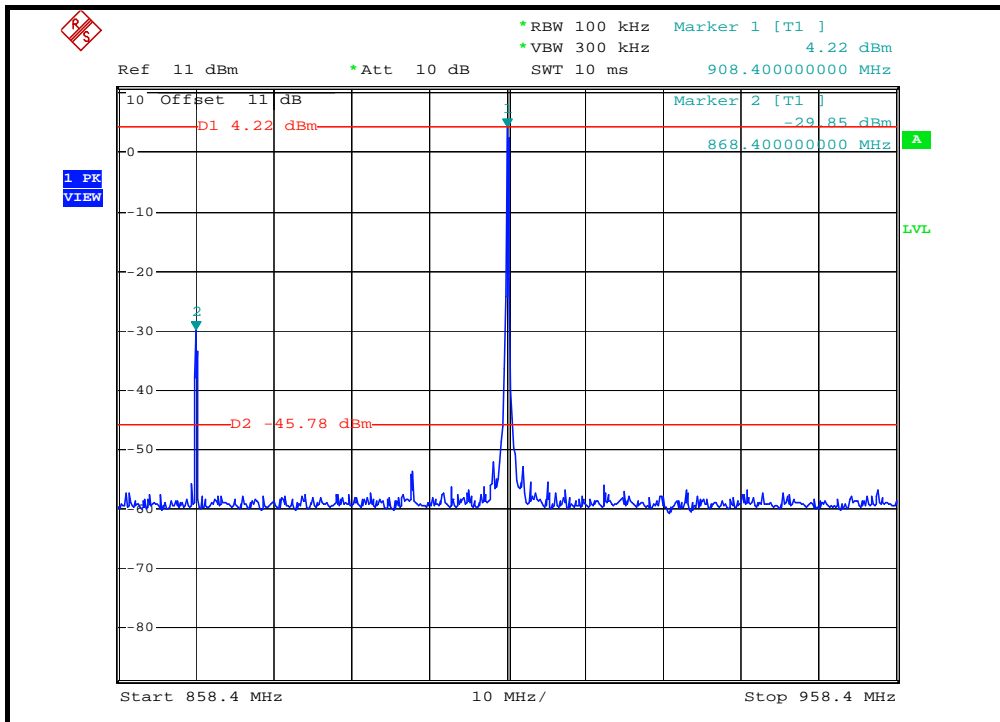


* The unwanted emission at 868.40MHz was verified and the test result was passed by radiated measurement. (Please refer section 4.1.7)

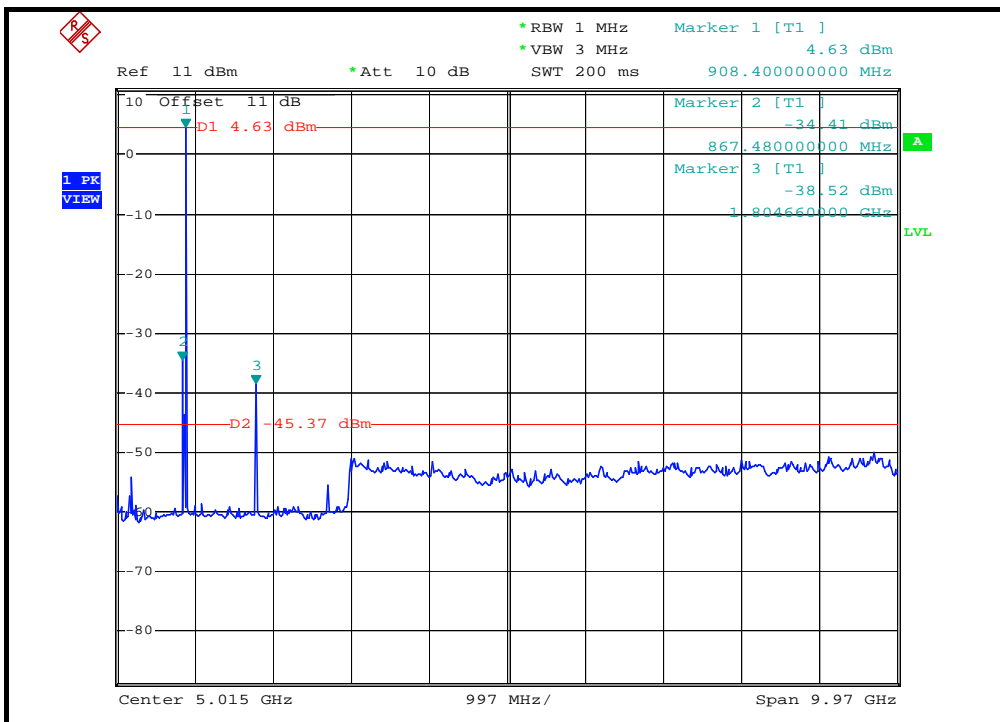


* The unwanted emission at 1.80466GHz, 867.48MHz were verified and the test result were passed by radiated measurement. (Please refer section 4.1.7)

For 908.40 MHz

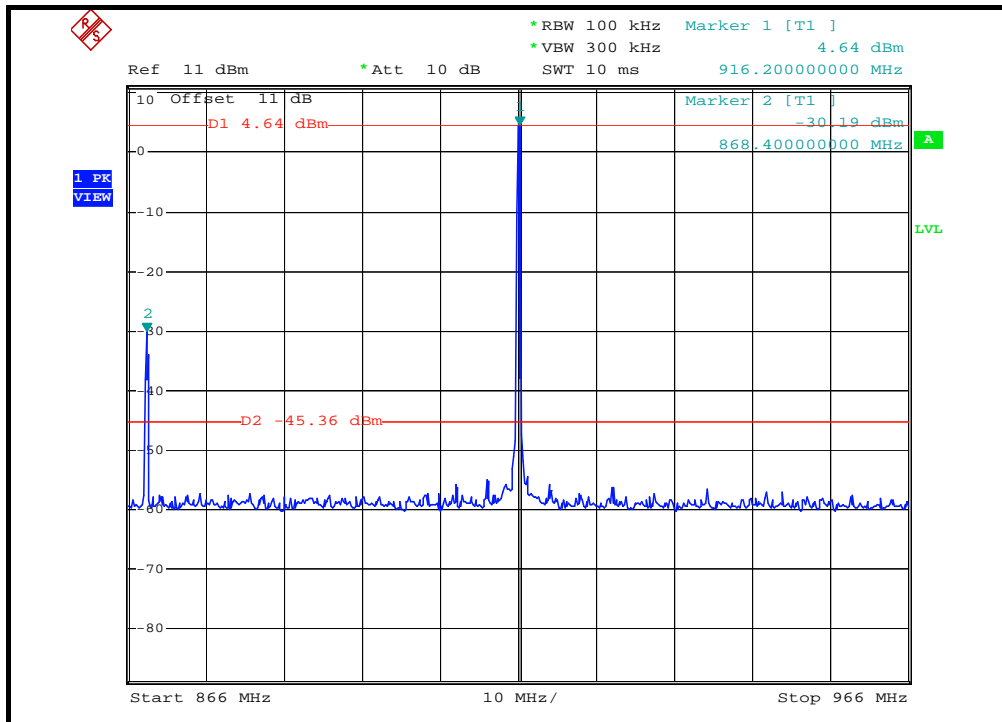


* The unwanted emission at 868.40MHz was verified and the test result was passed by radiated measurement. (Please refer section 4.1.7)

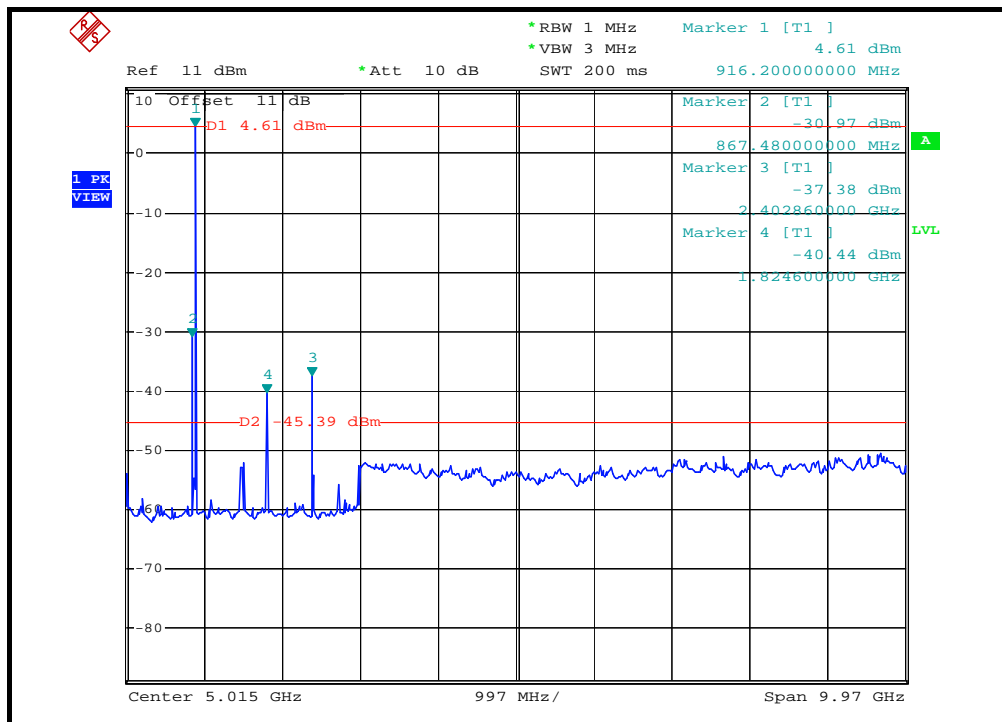


* The unwanted emission at 1.80466GHz, 867.48MHz were verified and the test result were passed by radiated measurement. (Please refer section 4.1.7)

For 916.00 MHz



* The unwanted emission at 868.40MHz was verified and the test result was passed by radiated measurement. (Please refer section 4.1.7)



* The unwanted emission at 867.48MHz, 2.40286GHz, 1.82460GHz, were verified and the test result were passed by radiated measurement. (Please refer section 4.1.7)



A D T

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.

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: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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 ---