FCC TEST REPORT (Z-Wave)

Report No.:	RF130927E08L-2
Model No.:	FiOS-G1100
FCC ID:	Z3M-FG1100
Received:	July 27, 2015
Tested:	July 27, 2015 to Mar. 07, 2016
Issued:	Mar. 09, 2016
Applicant:	Greenwave Systems Pte. Ltd.
Address:	10 Science Park Road, #02-07/08, The Alpha (Science Park II), Singapore 117684
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location(1):	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location(2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130927E08L-2	Original release	Mar. 09, 2016

1. CERTIFICATION

Product :	FiOS Gateway
Brand Name :	Frontier
Model No. :	FiOS-G1100
Test Sample :	ENGINEERING SAMPLE
Applicant :	Greenwave Systems Pte. Ltd.
Tested :	July 27, 2015 to Mar. 07, 2016
Standards :	**FCC Part 15, Subpart C (Section 15.249)** ANSI C63.10-2013

The above equipment (Model: FiOS-G1100) 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:** Mar. 09, 2016
Claire Kuan / Specialist

Approved by : _____ , **Date:** Mar. 09, 2016
May Chen / 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 -0.55dB at 0.35313MHz.
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 -0.1dB at 908.42MHz & 928.00MHz

2.1 MEASUREMENT UNCERTAINTY

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

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz ~ 30MHz	2.86 dB
Radiated emission	30MHz ~ 1GHz	5.19 dB
	1GHz ~6GHz	3.43 dB
	6GHz ~ 18GHz	3.49 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT (Z-Wave)

Product	FiOS Gateway
Model No.	FiOS-G1100
Power Supply	DC 12V from power adapter
Modulation Type	FSK
Carrier Frequency Of Each Channel	908.4MHz ~ 916.0MHz
Number Of Channel	2
Antenna Type	Please see NOTE
Data Cable	NA
I/O Ports	Refer to user's manual
Associated Devices	Adapter x1

NOTE:

1. There are Z-Wave technology and WLAN (2.4GHz & 5GHz) technology used for the EUT.
2. The emission of the simultaneous operation (Z-Wave & WLAN) has been evaluated and no non-compliance was found.

4. The antennas provided to the EUT, please refer to the following table:

WLAN Antenna Spec.				
2.4GHz				
Transmitter Circuit	Gain (dBi) (Include cable loss)	Antenna Type	Connecter Type	Frequency range (GHz to GHz)
Chain (0)	3.97	Dipole(Metal)	NA	2.4~2.4835
Chain (1)	4.1	Dipole(Metal)	NA	2.4~2.4835
Chain (2)	3.36	PIFA(Metal)	NA	2.4~2.4835
5GHz				
Transmitter Circuit	Gain (dBi) (Include cable loss)	Antenna Type	Connecter Type	Frequency range (GHz to GHz)
Chain (0)	3.56	Dipole(Metal)	NA	5.15~5.25
	4.05			5.725~5.85
Chain (1)	5.3	Dipole(Metal)	NA	5.15~5.25
	5.71			5.725~5.85
Chain (2)	4.6	Dipole(Metal)	NA	5.15~5.25
	4.21			5.725~5.85

Z-Wave Antenna Spec.			
Gain (dBi) (Include cable loss)	Antenna Type	Connecter Type	Frequency range (MHz to MHz)
1.73	PIFA (Metal)	NA	902~928

Note: 1. For 1Tx mode will fix transmission on Chain (0).
2. For 2Tx mode will fix transmission on Chain (0) and Chain (1)

5. The EUT must be supplied with a power adapter and following two different model names could be chosen:

No.	Brand	Model No.	Spec.
1	Ktec	KSA20C1200300HU	AC Input : 100-240V, 1A, 50-60Hz DC Output : 12V, 3A DC output cable: Unshielded, 1.5m
2	LEI	MU36-D120300-A1	AC Input : 100-240V, 1.5A, 50-60Hz DC Output : 12V, 3A DC output cable: Unshielded, 1.5m
From the above adapters, the worst radiated emission was found in **Adapter 1**. Therefore only the test data of the modes were recorded in this report.			

6. 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

2 channels are provided in this EUT.

Channel	Freq. (MHz)
1	908.4
2	916.0

3.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	PLC	RE<1G	RE≥1G	
1	√	√	√	With adapter 1
2	√	-	-	With adapter 2

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

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
1 to 2	2	FSK

RADIATED EMISSION TEST (BELOW 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations 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
1 to 2	1, 2	FSK

RADIATED EMISSION TEST (ABOVE 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations 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
1 to 2	1, 2	FSK

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	26deg. C, 55%RH	120Vac, 60Hz	Barry Lee
RE≥1G	23deg. C, 64%RH	120Vac, 60Hz	Gary Chuang
RE<1G	23deg. C, 64%RH	120Vac, 60Hz	Gary Chuang

3.4 DESCRIPTION OF SUPPORT UNITS

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

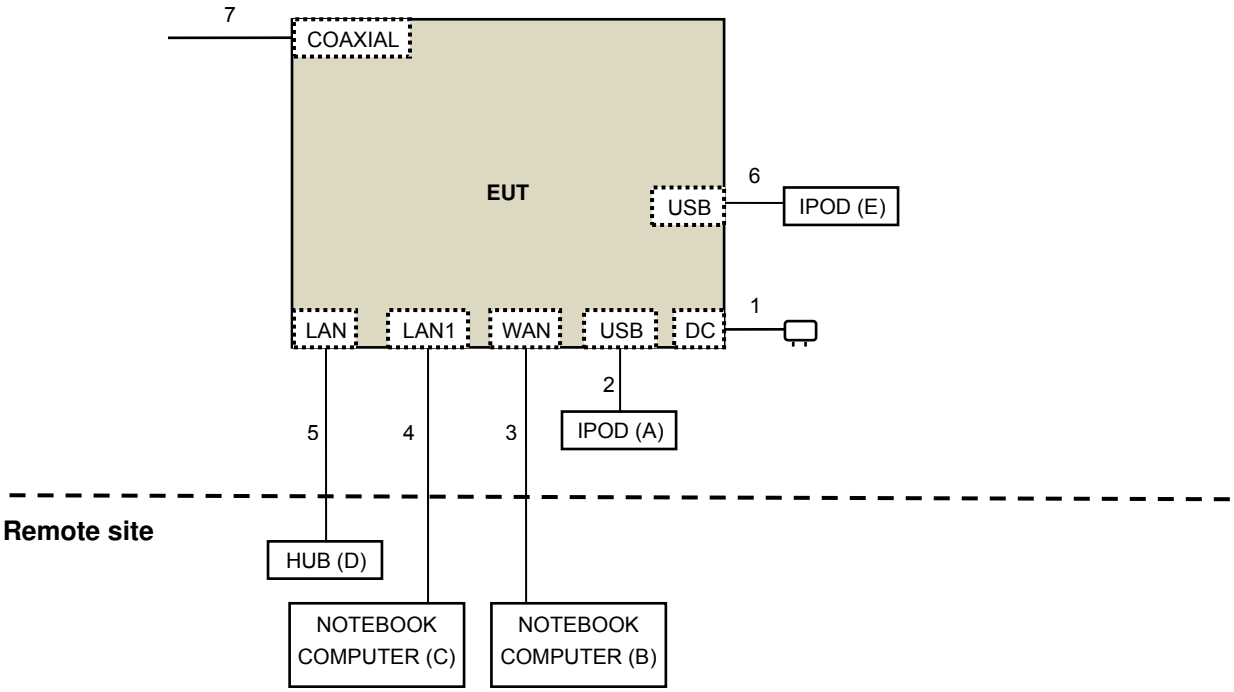
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	IPOD	BUFFALO	HD-LBU3	55291820800967	NA	Provided by Lab
B.	NOTEBOOK COMPUTER	DELL	E5430	4YV4VY1	FCC DoC	Provided by Lab
C.	NOTEBOOK COMPUTER	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
D.	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab
E.	IPOD	Apple	MD778TA/A	CC4JG680F4T1	NA	Provided by Lab

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC	1	1.5	No	0	Supplied by Client
2.	USB	1	0.1	Yes	0	Provided by Lab
3.	RJ-45	1	10	No	0	Provided by Lab
4.	RJ-45	1	10	No	0	Provided by Lab
5.	RJ-45	3	10	No	0	Provided by Lab
6.	USB	1	0.1	Yes	0	Provided by Lab
7.	Coaxial	1	1.2	Yes	0	Provided by Lab

3.4.1 CONFIGURATION OF SYSTEM UNDER TEST



3.5 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 C63.10-2013

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

NOTE: The EUT 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 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	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.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	100287	Apr. 17, 2015	Apr. 16, 2016
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-523	Sep. 29, 2014	Sep. 28, 2015
RF Cable	5D-FB	COACAB-001	May 25, 2015	May 24, 2016
50 ohms Terminator	50	3	Oct. 17, 2014	Oct. 16, 2015
50 ohms Terminator	N/A	EMC-04	Oct. 21, 2014	Oct. 20, 2015
Software BVADT	BVADT_Cond_ V7.3.7.3	NA	NA	NA
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100071	Nov. 10, 2014	Nov. 09, 2015

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. A.
3. The VCCI Con A Registration No. is C-817.
4. Tested Date: July 27, 2015

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.

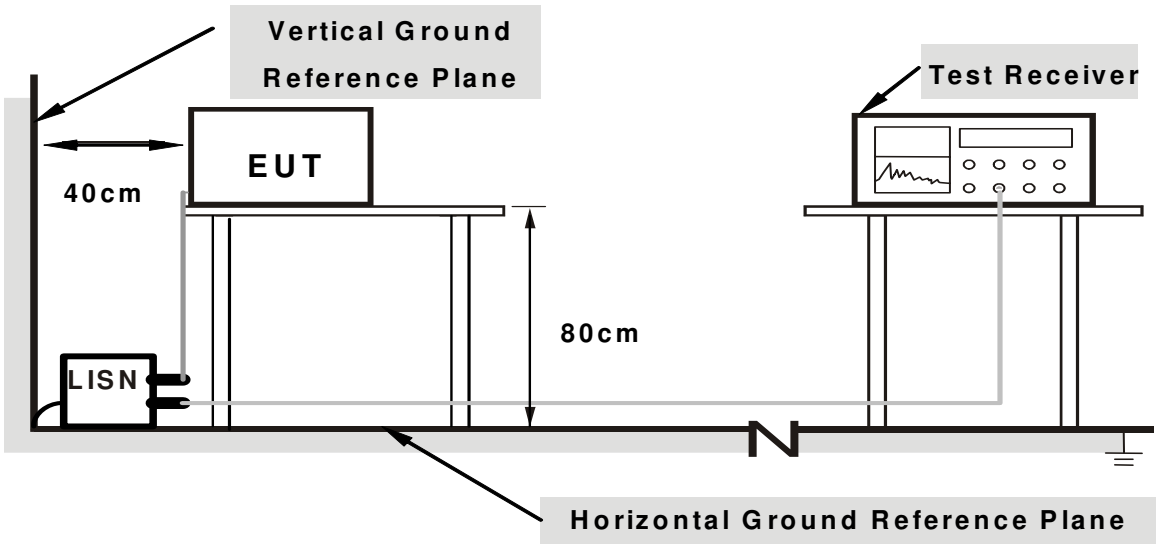
NOTE:

1. The resolution bandwidth of test receiver is 9kHz for Quasi-peak detection (QP) & Average detection (AV).

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

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

4.1.6 EUT OPERATING CONDITIONS

1. Placed the EUT on testing table.
2. Prepared computer system (support units B, C) to act as communication partner.
3. The communication partner ran test program “Teraterm command” to enable EUT under transmission/receiving condition continuously.

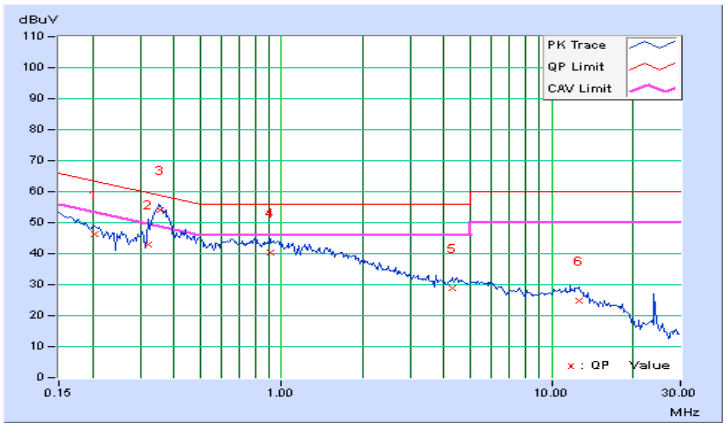
4.1.7 TEST RESULTS (MODE 1)

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.20469	0.10	46.14	37.00	46.24	37.10	63.42	53.42	-17.18	-16.32
2	0.32188	0.14	42.88	32.18	43.02	32.32	59.66	49.66	-16.64	-17.34
3	0.35463	0.15	53.94	47.50	54.09	47.65	58.85	48.85	-4.77	-1.21
4	0.90781	0.22	40.08	34.64	40.30	34.86	56.00	46.00	-15.70	-11.14
5	4.32031	0.35	28.54	22.56	28.89	22.91	56.00	46.00	-27.11	-23.09
6	12.61719	0.60	24.18	19.12	24.78	19.72	60.00	50.00	-35.22	-30.28

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

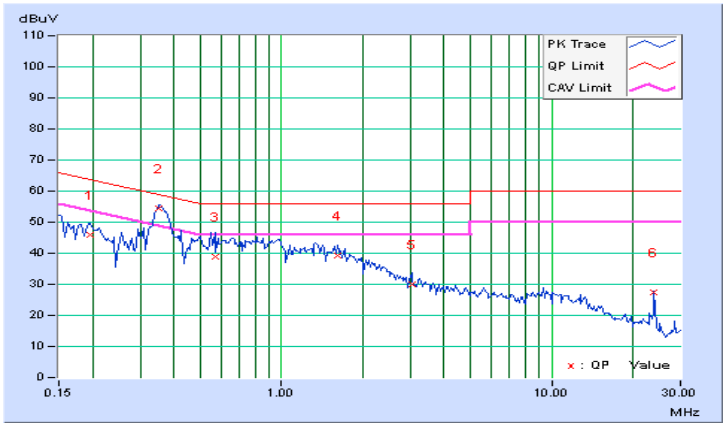


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19687	0.10	45.68	37.88	45.78	37.98	63.74	53.74	-17.96	-15.76
2	**0.35313**	**0.14**	**54.32**	**48.20**	**54.46**	**48.34**	**58.89**	**48.89**	**-4.43**	**-0.55**
3	0.56797	0.17	38.80	31.36	38.97	31.53	56.00	46.00	-17.03	-14.47
4	1.62109	0.24	38.90	33.06	39.14	33.30	56.00	46.00	-16.86	-12.70
5	3.03125	0.29	29.76	23.14	30.05	23.43	56.00	46.00	-25.95	-22.57
6	23.96484	0.83	26.52	25.70	27.35	26.53	60.00	50.00	-32.65	-23.47

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



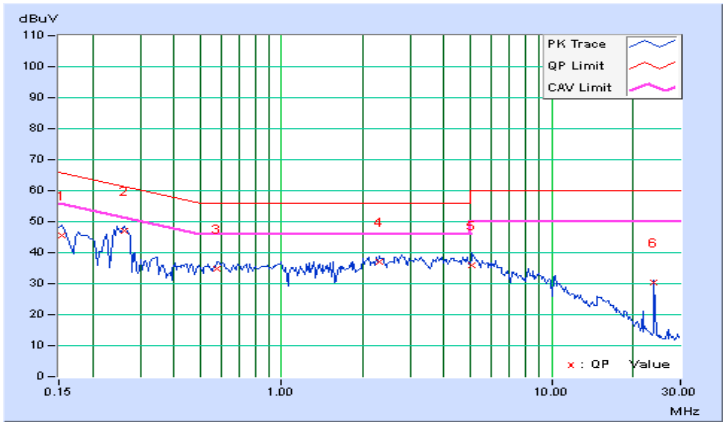
4.1.8 TEST RESULTS (MODE 2)

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.10	45.56	36.74	45.66	36.84	65.79	55.79	-20.13	-18.95
2	0.26328	0.12	46.90	43.20	47.02	43.32	61.33	51.33	-14.31	-8.01
3	0.57969	0.18	34.46	29.00	34.64	29.18	56.00	46.00	-21.36	-16.82
4	2.29688	0.29	36.62	28.90	36.91	29.19	56.00	46.00	-19.09	-16.81
5	5.08984	0.38	35.60	29.20	35.98	29.58	60.00	50.00	-24.02	-20.42
6	23.96484	0.84	29.68	29.26	30.52	30.10	60.00	50.00	-29.48	-19.90

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

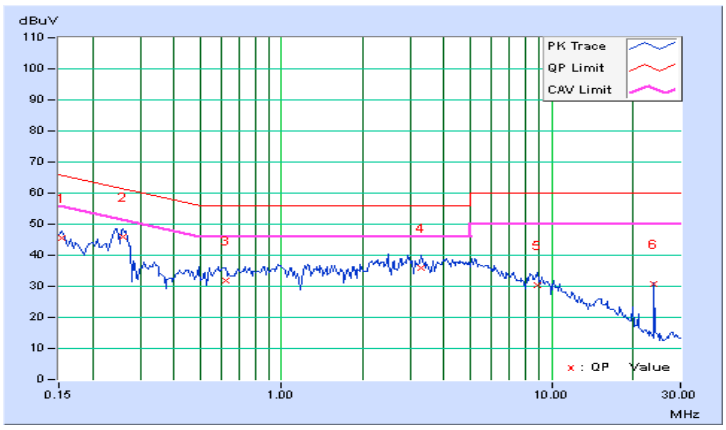


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.09	45.62	36.66	45.71	36.75	65.79	55.79	-20.08	-19.04
2	0.25938	0.11	45.66	38.82	45.77	38.93	61.45	51.45	-15.68	-12.52
3	0.61875	0.17	31.68	27.08	31.85	27.25	56.00	46.00	-24.15	-18.75
4	3.29297	0.29	35.48	27.54	35.77	27.83	56.00	46.00	-20.23	-18.17
5	8.80859	0.47	30.00	24.66	30.47	25.13	60.00	50.00	-29.53	-24.87
6	23.96484	0.83	29.92	29.58	30.75	30.41	60.00	50.00	-29.25	-19.59

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



4.2 RADIATED EMISSION AND BAND EDGE MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION AND BAND EDGE 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.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY54450088	July 24, 2015	July 23, 2016
Pre-Amplifier(*) EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2014	Dec. 15, 2016
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 18, 2016	Jan. 17, 2017
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-01	Nov. 11, 2015	Nov. 10, 2016
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Jan. 04, 2016	Jan. 03, 2017
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 03, 2015	Apr. 02, 2016
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Jan. 19, 2016	Jan. 18, 2017
Pre-Amplifier Agilent	8449B	3008A01922	Sep. 19, 2015	Sep. 18, 2016
RF Cable	EMC104-SM-SM-2000 EMC104-SM-SM-5000 EMC104-SM-SM-5000	150318 150323 150324	Mar. 31, 2015	Mar. 30, 2016
Software	ADT_Radiated_V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	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 test was performed in 966 Chamber No. 4.
3. The FCC Site Registration No. is 292998
4. The CANADA Site Registration No. is 20331-2
5. Tested Date: Mar. 07, 2016

4.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

NOTE:

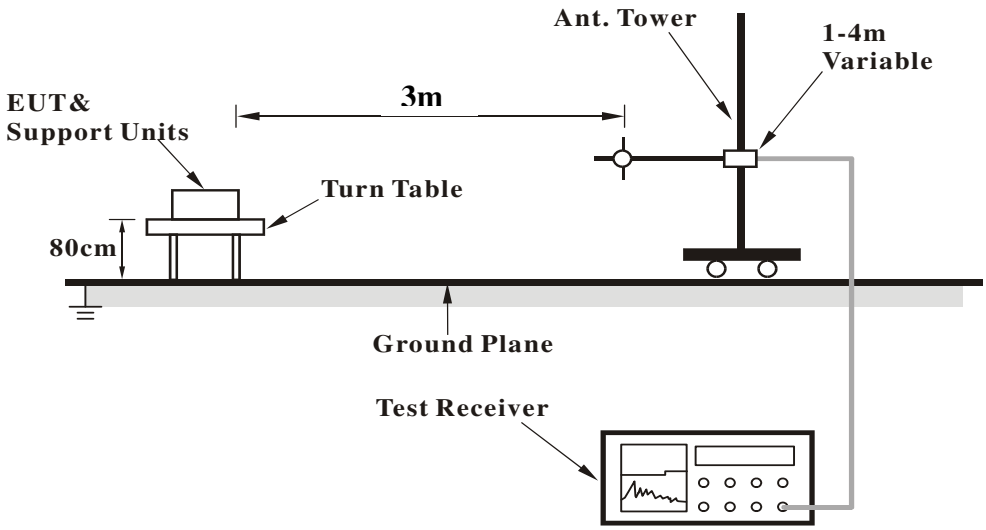
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.2.4 DEVIATION FROM TEST STANDARD

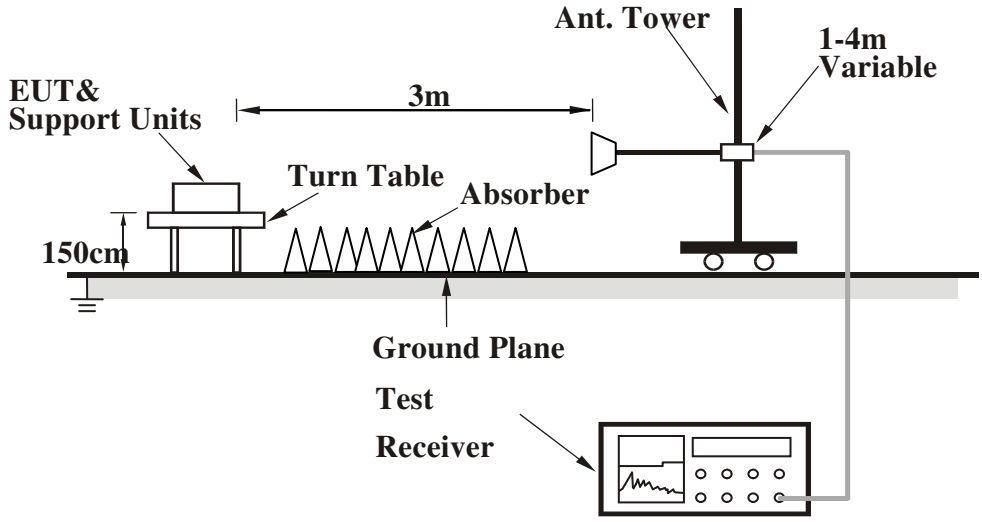
No deviation.

4.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

4.2.6 EUT OPERATING CONDITIONS

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

4.2.7 TEST RESULTS

BELOW 1GHz DATA

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	52.00	35.2 QP	40.0	-4.8	1.00 H	52	44.14	-8.94
2	375.00	37.6 QP	46.0	-8.4	1.50 H	124	43.58	-5.98
3	625.00	43.5 QP	46.0	-2.5	1.50 H	72	43.58	-0.08
4	875.00	40.6 QP	46.0	-5.4	1.00 H	42	37.22	3.38
5	902.00	42.6 QP	46.0	-3.4	1.20 H	190	38.83	3.77
6	*908.42	93.2 QP	94.0	-0.8	1.20 H	190	89.26	3.94
7	928.00	42.8 QP	46.0	-3.2	1.20 H	190	38.50	4.30
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	500.00	42.6 QP	46.0	-3.4	1.00 V	175	45.51	-2.91
2	650.11	42.4 QP	46.0	-3.7	1.00 V	220	42.16	0.19
3	750.00	41.4 QP	46.0	-4.6	1.20 V	220	39.56	1.88
4	**875.00**	**45.6 QP**	**46.0**	**-0.4**	**1.20 V**	**211**	**42.22**	**3.38**
5	902.00	42.4 QP	46.0	-3.6	1.00 V	109	38.59	3.77
6	*908.42	92.8 QP	94.0	-1.2	1.00 V	109	88.86	3.94
7	928.00	40.6 QP	46.0	-5.4	1.10 V	109	36.30	4.30

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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.

CHANNEL	TX Channel 2	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	52.24	35.4 QP	40.0	-4.6	1.10 H	77	44.31	-8.93
2	375.01	37.2 QP	46.0	-8.8	1.40 H	138	43.22	-5.98
3	625.00	43.4 QP	46.0	-2.6	1.40 H	120	43.46	-0.08
4	875.00	40.3 QP	46.0	-5.7	1.20 H	102	36.95	3.38
5	902.00	42.9 QP	46.0	-3.1	1.50 H	210	39.09	3.77
6	*916.00	85.4 QP	94.0	-8.6	1.50 H	210	81.28	4.12
7	928.00	43.6 QP	46.0	-2.4	1.50 H	210	39.30	4.30
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	500.00	43.1 QP	46.0	-2.9	1.00 V	180	46.01	-2.91
2	650.02	42.7 QP	46.0	-3.3	1.20 V	215	42.47	0.19
3	750.30	40.6 QP	46.0	-5.4	1.10 V	198	38.71	1.89
4	875.00	45.4 QP	46.0	-0.6	1.10 V	200	42.04	3.38
5	902.00	41.6 QP	46.0	-4.4	1.10 V	125	37.83	3.77
6	*916.00	82.3 QP	94.0	-11.7	1.10 V	125	78.18	4.12
7	928.00	42.6 QP	46.0	-3.4	1.10 V	125	38.30	4.30

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 10GHz		Average (AV)

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	40.0 PK	74.0	-34.0	1.00 H	90	45.78	-5.78
2	1816.80	33.6 AV	54.0	-20.4	1.00 H	90	39.38	-5.78
3	2725.20	50.0 PK	74.0	-24.0	1.00 H	90	52.64	-2.64
4	2725.20	43.6 AV	54.0	-10.4	1.00 H	90	46.24	-2.64
5	3633.60	46.9 PK	74.0	-27.1	1.00 H	95	46.30	0.60
6	3633.60	40.5 AV	54.0	-13.5	1.00 H	95	39.90	0.60
7	4542.00	51.8 PK	74.0	-22.2	1.10 H	143	45.73	6.07
8	4542.00	45.4 AV	54.0	-8.6	1.10 H	143	39.33	6.07
9	5450.40	50.1 PK	74.0	-23.9	1.13 H	92	42.62	7.48
10	5450.40	43.7 AV	54.0	-10.3	1.13 H	92	36.22	7.48
11	6358.80	56.3 PK	74.0	-17.7	1.08 H	32	47.36	8.94
12	6358.80	49.9 AV	54.0	-4.1	1.08 H	32	40.96	8.94
13	7267.20	55.9 PK	74.0	-18.1	1.18 H	15	44.92	10.98
14	7267.20	49.5 AV	54.0	-4.5	1.18 H	15	38.52	10.98
15	8175.60	57.5 PK	74.0	-16.5	1.58 H	169	44.46	13.04
16	8175.60	51.1 AV	54.0	-2.9	1.58 H	169	38.06	13.04
17	9084.00	57.7 PK	74.0	-16.3	1.55 H	157	44.59	13.11
18	9084.00	51.3 AV	54.0	-2.7	1.55 H	157	38.19	13.11

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 10GHz		

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	56.4 PK	74.0	-17.6	1.36 V	110	62.18	-5.78
2	1816.80	50.0 AV	54.0	-4.0	1.36 V	110	55.78	-5.78
3	2725.20	56.4 PK	74.0	-17.6	1.13 V	81	59.04	-2.64
4	2725.20	50.0 AV	54.0	-4.0	1.13 V	81	52.64	-2.64
5	3633.60	50.7 PK	74.0	-23.3	1.15 V	88	50.10	0.60
6	3633.60	44.3 AV	54.0	-9.7	1.15 V	88	43.70	0.60
7	4542.00	52.9 PK	74.0	-21.1	1.12 V	91	46.83	6.07
8	4542.00	46.5 AV	54.0	-7.5	1.12 V	91	40.43	6.07
9	5450.40	50.3 PK	74.0	-23.7	1.00 V	138	42.82	7.48
10	5450.40	43.9 AV	54.0	-10.1	1.00 V	138	36.42	7.48
11	6358.80	58.7 PK	74.0	-15.3	1.57 V	87	49.76	8.94
12	6358.80	52.3 AV	54.0	-1.7	1.57 V	87	43.36	8.94
13	7267.20	57.9 PK	74.0	-16.1	1.00 V	140	46.92	10.98
14	7267.20	51.5 AV	54.0	-2.5	1.00 V	140	40.52	10.98
15	8175.60	58.7 PK	74.0	-15.3	1.29 V	83	45.66	13.04
16	8175.60	52.3 AV	54.0	-1.7	1.29 V	83	39.26	13.04
17	9084.00	57.7 PK	74.0	-16.3	1.42 V	119	44.59	13.11
18	9084.00	51.3 AV	54.0	-2.7	1.42 V	119	38.19	13.11

REMARKS:

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

CHANNEL	TX Channel 2	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 10GHz		

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	40.2 PK	74.0	-33.8	1.06 H	104	45.87	-5.67
2	1832.00	22.5 AV	54.0	-31.5	1.06 H	104	28.17	-5.67
3	2748.00	50.1 PK	74.0	-23.9	1.04 H	91	52.68	-2.58
4	2748.00	32.4 AV	54.0	-21.6	1.04 H	91	34.98	-2.58
5	3664.00	46.5 PK	74.0	-27.5	1.00 H	96	45.75	0.75
6	3664.00	28.8 AV	54.0	-25.2	1.00 H	96	28.05	0.75
7	4580.00	51.0 PK	74.0	-23.0	1.07 H	131	44.86	6.14
8	4580.00	33.3 AV	54.0	-20.7	1.07 H	131	27.16	6.14
9	5496.00	50.0 PK	74.0	-24.0	1.09 H	87	42.47	7.53
10	5496.00	32.3 AV	54.0	-21.7	1.09 H	87	24.77	7.53
11	6412.00	56.7 PK	74.0	-17.3	1.11 H	29	47.70	9.00
12	6412.00	39.0 AV	54.0	-15.0	1.11 H	29	30.00	9.00
13	7328.00	55.9 PK	74.0	-18.1	1.21 H	1	44.74	11.16
14	7328.00	38.2 AV	54.0	-15.8	1.21 H	1	27.04	11.16
15	8244.00	57.2 PK	74.0	-16.8	1.60 H	171	44.23	12.97
16	8244.00	39.5 AV	54.0	-14.5	1.60 H	171	26.53	12.97
17	9160.00	58.0 PK	74.0	-16.0	1.59 H	150	45.08	12.92
18	9160.00	40.3 AV	54.0	-13.7	1.59 H	150	27.38	12.92

CHANNEL	TX Channel 2	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 10GHz		

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	56.7 PK	74.0	-17.3	1.31 V	102	62.37	-5.67
2	1832.00	39.0 AV	54.0	-15.0	1.31 V	102	44.67	-5.67
3	2748.00	57.1 PK	74.0	-16.9	1.15 V	83	59.68	-2.58
4	2748.00	39.4 AV	54.0	-14.6	1.15 V	83	41.98	-2.58
5	3664.00	50.6 PK	74.0	-23.4	1.10 V	81	49.85	0.75
6	3664.00	32.9 AV	54.0	-21.1	1.10 V	81	32.15	0.75
7	4580.00	53.6 PK	74.0	-20.4	1.16 V	102	47.46	6.14
8	4580.00	35.9 AV	54.0	-18.1	1.16 V	102	29.76	6.14
9	5496.00	50.4 PK	74.0	-23.6	1.00 V	123	42.87	7.53
10	5496.00	32.7 AV	54.0	-21.3	1.00 V	123	25.17	7.53
11	6412.00	59.3 PK	74.0	-14.7	1.56 V	80	50.30	9.00
12	6412.00	41.6 AV	54.0	-12.4	1.56 V	80	32.60	9.00
13	7328.00	57.5 PK	74.0	-16.5	1.06 V	124	46.34	11.16
14	7328.00	39.8 AV	54.0	-14.2	1.06 V	124	28.64	11.16
15	8244.00	59.0 PK	74.0	-15.0	1.28 V	92	46.03	12.97
16	8244.00	41.3 AV	54.0	-12.7	1.28 V	92	28.33	12.97
17	9160.00	57.7 PK	74.0	-16.3	1.46 V	115	44.78	12.92
18	9160.00	40.0 AV	54.0	-14.0	1.46 V	115	27.08	12.92

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. 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/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety 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 – MODIFICATION RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

---END---