

## FCC Test Report

**Report No.:** RF160621C27V

**FCC ID:** PY316200341

**Test Model:** RBR50

**Series Mode:** RBS50, SRR60, SRS60 (refer to item 3.1 for more details)

**Received Date:** May 16, 2018

**Test Date:** May 18 ~ May 23, 2018

**Issued Date:** Jun. 04, 2018

**Applicant:** NETGEAR, 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 Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)



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### Release Control Record

Issue No.	Description	Date Issued
RF160621C27V	Original release.	Jun. 04, 2018

## 1 Certificate of Conformity

**Product:** Orbi Router (refer to item 3.1 for more details)

**Brand:** NETGEAR

**Test Model:** RBR50

**Series Mode:** RBS50, SRR60, SRS60 (refer to item 3.1 for more details)

**Sample Status:** Engineering sample


**Applicant:** NETGEAR, INC.

**Test Date:** May 18 ~ May 23, 2018

**Standards:** 47 CFR FCC Part 15, Subpart C (Section 15.247)  
ANSI C63.10:2013

This report is issued as a supplementary report of RF160621C27M. This report shall be used combined together with its original report.

**Prepared by :**  , **Date:** Jun. 04, 2018  
Polly Chien / Specialist

**Approved by :**  , **Date:** Jun. 04, 2018  
Bruce Chen / Project Engineer

Note: Radiated emission and conducted emission items are performed for the addendum. Refer to original report for the other test data.

## 2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -13.99dB at 0.35782MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 2390.00MHz & 2483.50MHz.
15.247(d)	Antenna Port Emission	PASS	Refer to Note
15.247(a)(2)	6dB bandwidth	PASS	Refer to Note
15.247(b)	Conducted power	PASS	Refer to Note
15.247(e)	Power Spectral Density	PASS	Refer to Note
15.203	Antenna Requirement	PASS	Antenna connector is I-PEX not a standard connector.

Note: Radiated emission and conducted emission items are performed for the addendum. Refer to original report for the other test data.

### 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	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.94 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.59 dB
	200MHz ~ 1000MHz	3.60 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

Product	Orbi Router (Refer to note for more details)
Brand	NETGEAR
Test Model	RBR50
Series Model/Code Name	RBS50, SRR60, SRS60
Model Difference	Refer to note for more details
Sample Status	Engineering sample
Power Supply Rating	12Vdc from adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 400Mbps
Operating Frequency	2412 ~ 2462MHz
Number of Channel	11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
Output Power	CDD Mode: 907.156mW Beamforming NSS1 Mode: 891.322mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter
Cable Supplied	1.95m RJ45 non-shielded cable w/o core

Note:

1. This report is prepared for FCC class II permissive change.
2. This report is issued as a supplementary report to BV CPS report no.: RF160621C27M. Please refer to the Operational Description for difference compared to the original report. After evaluation, receiver parameter and the RF portion of the EUT remain unchanged, therefore original conducted emission report data was kept. Radiated emission and AC power conducted emission items were retested in this report. Other test data was referenced from the original test report (Report No.: RF160621C27M).

4. All models are electrically identical except the firmware. Model: RBR50 is the representative for final test. (Updated names are marked in boldface.)

Brand	Model	Product Name	RF Module	Difference
NETGEAR	RBR50	Orbi Router	Module 1	software firmware: RBR50_V1.1.0.16 Master mode only
	<b>SRR60</b>	<b>Orbi Pro Router</b>	Module 2	<b>The housings SRR60 is different with RBR50, and SRR60 has no USB port.</b> <b>The housings of SRR60 is different with RBS50, and SRR60 has no USB port.</b>
	RBS50	Orbi Satellite	Module 1	software firmware: RBS50_V1.1.0.16 Master mode and Client mode for 5.50 ~ 5.70GHz and 5.745 ~ 5.825GHz band
	<b>SRS60</b>	<b>Orbi Pro Satellite</b>	Module 2	<b>The housings SRR60 is different with RBR50, and SRR60 has no USB port.</b> <b>The housings of SRR60 is different with RBS50, and SRR60 has no USB port.</b>

Note:

All of the RF specifications (include antenna type and location) are identical except the differences stated. RF Module 1 support WLAN 2.4GHz band, 5.18 ~ 5.24GHz and 5.26 ~ 5.32GHz band functionally. RF Module 2 WLAN 5.50 ~ 5.70GHz and 5.745 ~ 5.825GHz band functionally.

5. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

Band	Modulation Mode	Beamforming Mode	TX Function
2.4GHz	802.11b	Not Support	2TX
	802.11g	Not Support	2TX
	802.11n (HT20)	Support (CDD / NSS1)	2TX
	802.11n (HT40)	Support (CDD / NSS1)	2TX

\* For 802.11n, CDD mode is the worst case for final radiated emission and power line conducted emission tests after pretesting CDD mode and beamforming mode.

6. The cascade module card has type C, type D and different gaskets on the following modes. Mode C was the worst case for final test.

Mode	Description
A	Type C on chain 1, 2, 3, and 4. Triangular gaskets on chain 1, 2, 3, and 4.
B	Type C on chain 1, 2, 3, and 4. Triangular gaskets on chain 1, 2, and 3. No gasket on chain 4.
C	Type C on chain 1, 2, 3, and 4. Rectangular gaskets on chain 1, 2, 3, and 4.
D	Type C on chain 1, 2, 3, and 4. Rectangular gaskets on chain 1, 2, and 3. No gasket on chain 4.
E	Type C on chain 1, 2, and 3. Type D on chain 4. Triangular gaskets on chain 1, 2, and 3. No gasket on chain 4.

7. The following filters are provided to this EUT.

RF Module Brand / Model	Filter	Position	Gasket	Remark
Module 1	1st (Filter 1)	TFL1 ,TFL2	With TFL1, TFL2 gasket	passive filter (pin to pin & Same design)
	2nd (Filter 2)	TFL1 ,TFL2	Without TFL1, TFL2 gasket	passive filter (pin to pin & Same design)
Module 2	1st (Filter 3)	BHPF1 ,BHPF2 BHPF3 ,BHPF4	With BHPF1, BHPF2, BHPF3, BHPF4 gasket	passive filter (pin to pin & Same design)
	2nd (Filter 4)	BHPF1 ,BHPF2 BHPF3 ,BHPF4	Without BHPF1, BHPF2, BHPF3, BHPF4 gasket	passive filter (pin to pin & Same design)

8. The following antennas were provided to the EUT.

Ant. Type	Dipole					
Connector Type	I-PEX (WLAN)					
Directional Antenna Gain (dBi)						
Item	2.4G	5G Band 1	5G Band 2	5G Band 3	5G Band 4	
					Nss1	Nss2
-	2.61	4.18	4.18	7.43	7.43	4.86

9. The EUT uses following adapters.

Adapter 1	
Brand	NETGEAR
Model	AD2080F20
PN	332-10883-01
Input Power	100-240Vdc, 50/60Hz 1.0A
Output Power	12Vdc, 3.5A
Power Line	1.8m power cable without core attached on adapter

Adapter 2	
Brand	NETGEAR
Model	2ABN042F NA
PN	332-10888-01
Input Power	100-240Vdc, 50/60Hz 1.3A
Output Power	12Vdc, 3.5A
Power Line	1.85m power cable without core attached on adapter

10. Spurious emission of the simultaneous operation (2.4GHz, 5GHz and BT LE) has been evaluated and no non-compliance was found.



### 3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

Channel	Frequency	Channel	Frequency
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

7 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

### 3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to			Description
	RE $\geq$ 1G	RE $<$ 1G	PLC	
A	√	√	√	EUT power from adapter 1
B	-	√	√	EUT power from adapter 2

Where RE $\geq$ 1G: Radiated Emission above 1GHz & Bandedge Measurement  
 RE $<$ 1G: Radiated Emission below 1GHz  
 PLC: Power Line Conducted Emission

Note:

1. The EUT was positioned on the Z-plane during testing.
2. "-" means no effect.

#### Radiated Emission Test (Above 1GHz):

- 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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Date Rate (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
A	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

#### Radiated Emission Test (Below 1GHz):

- 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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Date Rate (Mbps)
A, B	802.11g	1 to 11	6	OFDM	BPSK	6.0

#### 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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Date Rate (Mbps)
A, B	802.11g	1 to 11	6	OFDM	BPSK	6.0

#### Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE $\geq$ 1G	25 deg. C, 70% RH	120Vac, 60Hz	Noah Chang
RE $<$ 1G	25 deg. C, 70% RH	120Vac, 60Hz	Noah Chang
PLC	25 deg. C, 70% RH	120Vac, 60Hz	Matthew Yang

### 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.

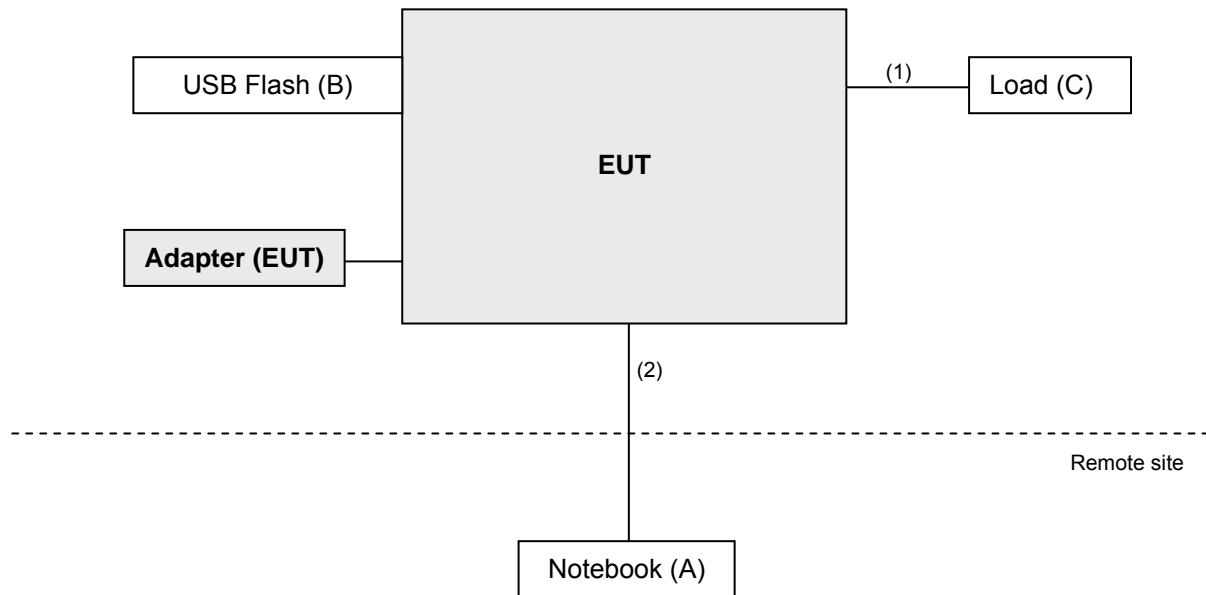
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	6RP2YM1	FCC DoC Approved	-
B.	USB 3.0 Flash	HP	v250W	01	FCC DoC Approved	-
C.	Load	N/A	N/A	N/A	N/A	-

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ45	3	1.8	N	0	-
2.	RJ45	1	10	N	0	-

#### 3.3.1 Configuration of System under Test



### 3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specification of the EUT declared by the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart C (15.247)**

**KDB 558074 D01 DTS Meas Guidance v04**

**KDB 662911 D01 Multiple Transmitter Output v02r01**

**ANSI C63.10-2013**

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

## 4 Test Types and Results

### 4.1 Radiated Emission and Bandedge Measurement

#### 4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30dB below the highest level of the desired power:

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.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Oct. 17, 2017	Oct. 16, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Aug. 18, 2017	Aug. 17, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Dec. 11, 2017	Dec. 10, 2018
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Dec. 13, 2017	Dec. 12, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 01, 2017	Nov. 30, 2018
Loop Antenna EMCI	EM-6879	269	Aug. 11, 2017	Aug. 10, 2018
Preamplifier Agilent (Below 1GHz)	8447D	2944A10631	Aug. 08, 2017	Aug. 07, 2018
Preamplifier Agilent (Above 1GHz)	8449B	3008A01922	Sep. 15, 2017	Sep. 14, 2018
RF signal cable HUBER+SUHNER	SUCOFLEX 104	MY 13380+295012/04	Aug. 08, 2017	Aug. 07, 2018
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03 (250724)	Aug. 08, 2017	Aug. 07, 2018
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021703	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100	SC93021703	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	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 Chamber 4.  
 3. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.  
 4. The IC Site Registration No. is IC 7450F-4.

### 4.1.3 Test Procedures

#### For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter 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. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case 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.

#### Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

#### For Radiated emission above 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. 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:

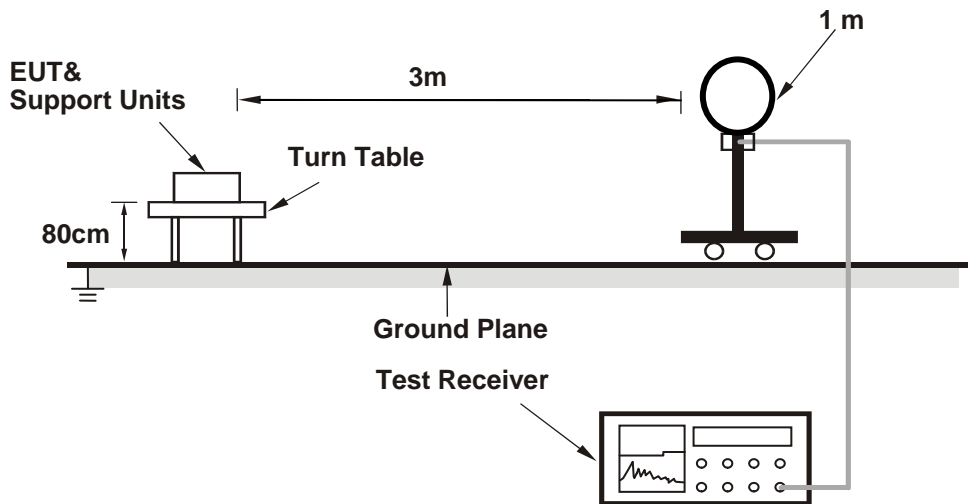
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98%) or 10Hz (Duty cycle  $\geq 98\%$ ) 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

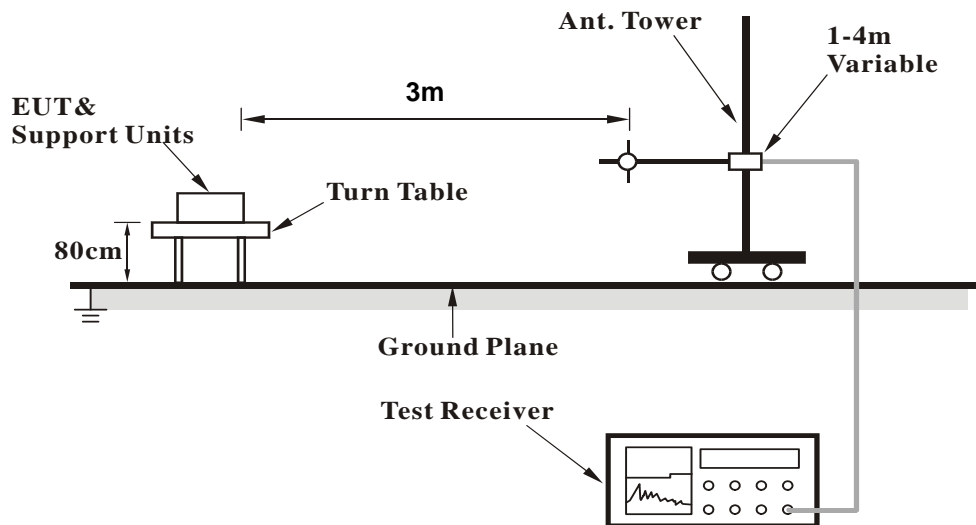
No deviation.

#### 4.1.5 Test Setup

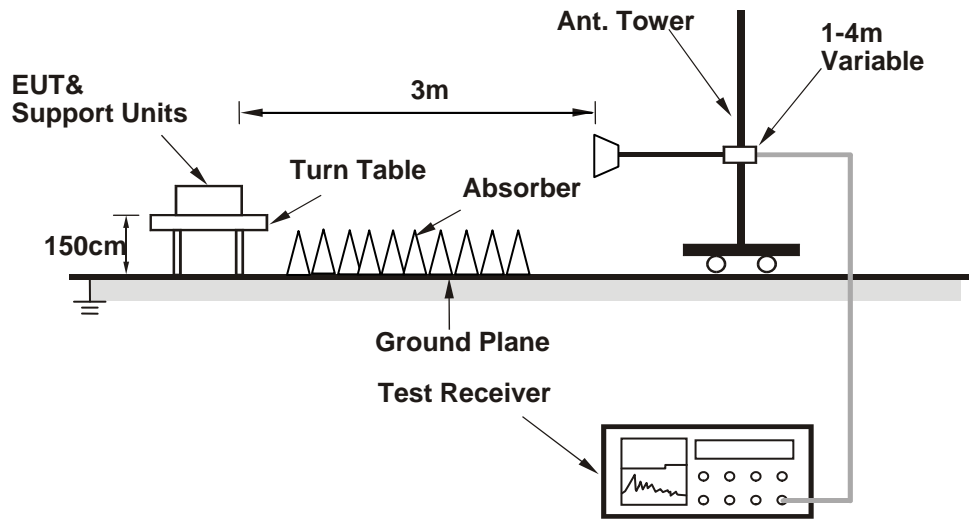
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



### For Radiated emission above 1GHz



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

#### 4.1.6 EUT Operating Conditions

- Placed the EUT on the testing table.
- Prepared a notebook to act as a communication partner and placed it outside of testing area.
- The communication partner connected with EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- The communication partner sent data to EUT by command "PING".
- The necessary accessories enable the system in full functions.



#### 4.1.7 Test Results

Above 1GHz Worst-Case Data :

802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2390.00	56.8 PK	74.0	-17.2	1.00 H	67	23.40	33.40
2	2390.00	45.5 AV	54.0	-8.5	1.00 H	67	12.10	33.40
3	*2412.00	102.3 PK			1.00 H	67	68.90	33.40
4	*2412.00	98.2 AV			1.00 H	67	64.80	33.40
5	4824.00	53.7 PK	74.0	-20.3	1.22 H	207	50.10	3.60
6	4824.00	49.1 AV	54.0	-4.9	1.22 H	207	45.50	3.60

#### 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	2390.00	59.1 PK	74.0	-14.9	2.37 V	106	25.70	33.40
2	2390.00	49.6 AV	54.0	-4.4	2.37 V	106	16.20	33.40
3	*2412.00	115.2 PK			2.37 V	106	81.80	33.40
4	*2412.00	113.0 AV			2.37 V	106	79.60	33.40
5	4824.00	55.0 PK	74.0	-19.0	2.38 V	189	51.40	3.60
6	4824.00	50.3 AV	54.0	-3.7	2.38 V	189	46.70	3.60

#### 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.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2437.00	101.7 PK			1.11 H	48	68.30	33.40
2	*2437.00	97.7 AV			1.11 H	48	64.30	33.40
3	4874.00	53.7 PK	74.0	-20.3	1.00 H	212	50.40	3.30
4	4874.00	49.4 AV	54.0	-4.6	1.00 H	212	46.10	3.30

**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	*2437.00	116.0 PK			2.69 V	153	82.60	33.40
2	*2437.00	113.2 AV			2.69 V	153	79.80	33.40
3	4874.00	55.0 PK	74.0	-19.0	1.39 V	218	51.70	3.30
4	4874.00	51.4 AV	54.0	-2.6	1.39 V	218	48.10	3.30

**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 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2462.00	101.8 PK			1.00 H	116	68.30	33.50
2	*2462.00	97.7 AV			1.00 H	116	64.20	33.50
3	2483.50	57.4 PK	74.0	-16.6	1.00 H	116	23.90	33.50
4	2483.50	45.5 AV	54.0	-8.5	1.00 H	116	12.00	33.50
5	4924.00	51.0 PK	74.0	-23.0	1.00 H	206	47.70	3.30
6	4924.00	45.0 AV	54.0	-9.0	1.00 H	206	41.70	3.30

**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	*2462.00	115.7 PK			2.97 V	152	82.20	33.50
2	*2462.00	113.0 AV			2.97 V	152	79.50	33.50
3	2483.50	59.0 PK	74.0	-15.0	2.97 V	152	25.50	33.50
4	2483.50	47.7 AV	54.0	-6.3	2.97 V	152	14.20	33.50
5	4924.00	55.9 PK	74.0	-18.1	1.37 V	215	52.60	3.30
6	4924.00	51.2 AV	54.0	-2.8	1.37 V	215	47.90	3.30

**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.

802.11g

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2390.00	59.0 PK	74.0	-15.0	1.00 H	67	25.60	33.40
2	2390.00	46.6 AV	54.0	-7.4	1.00 H	67	13.20	33.40
3	*2412.00	99.6 PK			1.00 H	67	66.20	33.40
4	*2412.00	89.1 AV			1.00 H	67	55.70	33.40
5	4824.00	47.7 PK	74.0	-26.3	2.25 H	310	44.10	3.60
6	4824.00	35.1 AV	54.0	-18.9	2.25 H	310	31.50	3.60

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	2390.00	67.8 PK	74.0	-6.2	2.35 V	106	34.40	33.40
2	2390.00	53.5 AV	54.0	-0.5	2.35 V	106	20.10	33.40
3	*2412.00	112.1 PK			2.35 V	106	78.70	33.40
4	*2412.00	102.1 AV			2.35 V	106	68.70	33.40
5	4824.00	50.5 PK	74.0	-23.5	1.68 V	221	46.90	3.60
6	4824.00	37.9 AV	54.0	-16.1	1.68 V	221	34.30	3.60

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.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2437.00	102.4 PK			1.02 H	66	69.00	33.40
2	*2437.00	92.2 AV			1.02 H	66	58.80	33.40
3	4874.00	48.9 PK	74.0	-25.1	2.59 H	320	45.60	3.30
4	4874.00	35.6 AV	54.0	-18.4	2.59 H	320	32.30	3.30

**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	*2437.00	116.3 PK			2.31 V	126	82.90	33.40
2	*2437.00	106.1 AV			2.31 V	126	72.70	33.40
3	4874.00	52.8 PK	74.0	-21.2	1.41 V	210	49.50	3.30
4	4874.00	40.2 AV	54.0	-13.8	1.41 V	210	36.90	3.30

**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 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2462.00	97.9 PK			1.00 H	117	64.40	33.50
2	*2462.00	87.8 AV			1.00 H	117	54.30	33.50
3	2483.50	58.2 PK	74.0	-15.8	1.00 H	117	24.70	33.50
4	2483.50	46.1 AV	54.0	-7.9	1.00 H	117	12.60	33.50
5	4924.00	49.5 PK	74.0	-24.5	3.33 H	15	46.20	3.30
6	4924.00	35.2 AV	54.0	-18.8	3.33 H	15	31.90	3.30

**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	*2462.00	112.2 PK			2.35 V	158	78.70	33.50
2	*2462.00	102.2 AV			2.35 V	158	68.70	33.50
3	2483.50	70.3 PK	74.0	-3.7	2.35 V	158	36.80	33.50
4	2483.50	52.0 AV	54.0	-2.0	2.35 V	158	18.50	33.50
5	4924.00	51.3 PK	74.0	-22.7	1.42 V	212	48.00	3.30
6	4924.00	37.4 AV	54.0	-16.6	1.42 V	212	34.10	3.30

**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.

802.11n (HT20)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2390.00	58.4 PK	74.0	-15.6	1.40 H	213	25.00	33.40
2	2390.00	46.8 AV	54.0	-7.2	1.40 H	213	13.40	33.40
3	*2412.00	99.7 PK			1.40 H	213	66.30	33.40
4	*2412.00	89.8 AV			1.40 H	213	56.40	33.40
5	4824.00	48.9 PK	74.0	-25.1	3.35 H	15	45.30	3.60
6	4824.00	36.1 AV	54.0	-17.9	3.35 H	15	32.50	3.60

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	2390.00	68.9 PK	74.0	-5.1	2.35 V	91	35.50	33.40
2	2390.00	53.6 AV	54.0	-0.4	2.35 V	91	20.20	33.40
3	*2412.00	112.4 PK			2.35 V	91	79.00	33.40
4	*2412.00	101.6 AV			2.35 V	91	68.20	33.40
5	4824.00	49.6 PK	74.0	-24.4	1.66 V	216	46.00	3.60
6	4824.00	37.2 AV	54.0	-16.8	1.66 V	216	33.60	3.60

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.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2437.00	102.9 PK			1.40 H	212	69.50	33.40
2	*2437.00	92.7 AV			1.40 H	212	59.30	33.40
3	4874.00	47.9 PK	74.0	-26.1	3.88 H	102	44.60	3.30
4	4874.00	35.4 AV	54.0	-18.6	3.88 H	102	32.10	3.30

**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	*2437.00	116.9 PK			2.40 V	142	83.50	33.40
2	*2437.00	106.4 AV			2.40 V	142	73.00	33.40
3	4874.00	48.8 PK	74.0	-25.2	1.44 V	249	45.50	3.30
4	4874.00	36.6 AV	54.0	-17.4	1.44 V	249	33.30	3.30

**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 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2462.00	98.9 PK			1.33 H	214	65.40	33.50
2	*2462.00	88.7 AV			1.33 H	214	55.20	33.50
3	2483.50	58.4 PK	74.0	-15.6	1.33 H	214	24.90	33.50
4	2483.50	46.0 AV	54.0	-8.0	1.33 H	214	12.50	33.50
5	4924.00	48.3 PK	74.0	-25.7	3.00 H	177	45.00	3.30
6	4924.00	34.9 AV	54.0	-19.1	3.00 H	177	31.60	3.30

**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	*2462.00	112.1 PK			2.45 V	149	78.60	33.50
2	*2462.00	101.9 AV			2.45 V	149	68.40	33.50
3	2483.50	68.4 PK	74.0	-5.6	2.45 V	149	34.90	33.50
4	2483.50	53.7 AV	54.0	-0.3	2.45 V	149	20.20	33.50
5	4924.00	48.9 PK	74.0	-25.1	1.84 V	190	45.60	3.30
6	4924.00	35.8 AV	54.0	-18.2	1.84 V	190	32.50	3.30

**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.

802.11n (HT40)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2390.00	58.6 PK	74.0	-15.4	1.46 H	217	25.20	33.40
2	2390.00	47.1 AV	54.0	-6.9	1.46 H	217	13.70	33.40
3	*2422.00	92.9 PK			1.46 H	217	59.50	33.40
4	*2422.00	83.8 AV			1.46 H	217	50.40	33.40
5	2483.50	57.9 PK	74.0	-16.1	1.46 H	217	24.40	33.50
6	2483.50	45.7 AV	54.0	-8.3	1.46 H	217	12.20	33.50
7	4844.00	48.1 PK	74.0	-25.9	2.21 H	102	44.60	3.50
8	4844.00	35.4 AV	54.0	-18.6	2.21 H	102	31.90	3.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.3 PK	74.0	-5.7	2.65 V	77	34.90	33.40
2	<b>2390.00</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>2.65 V</b>	<b>77</b>	<b>20.50</b>	<b>33.40</b>
3	*2422.00	106.0 PK			2.65 V	77	72.60	33.40
4	*2422.00	96.7 AV			2.65 V	77	63.30	33.40
5	2483.50	58.7 PK	74.0	-15.3	2.65 V	77	25.20	33.50
6	2483.50	47.2 AV	54.0	-6.8	2.65 V	77	13.70	33.50
7	4844.00	48.6 PK	74.0	-25.4	3.32 V	102	45.10	3.50
8	4844.00	36.0 AV	54.0	-18.0	3.32 V	102	32.50	3.50

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– 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 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2437.00	95.3 PK			1.41 H	213	61.90	33.40
2	*2437.00	86.0 AV			1.41 H	213	52.60	33.40
3	4874.00	47.5 PK	74.0	-26.5	2.99 H	102	44.20	3.30
4	4874.00	34.2 AV	54.0	-19.8	2.99 H	102	30.90	3.30

**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	*2437.00	109.6 PK			2.59 V	163	76.20	33.40
2	*2437.00	100.1 AV			2.59 V	163	66.70	33.40
3	4874.00	47.8 PK	74.0	-26.2	2.41 V	332	44.50	3.30
4	4874.00	34.9 AV	54.0	-19.1	2.41 V	332	31.60	3.30

**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 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2390.00	57.9 PK	74.0	-16.1	1.46 H	213	24.50	33.40
2	2390.00	45.8 AV	54.0	-8.2	1.46 H	213	12.40	33.40
3	*2452.00	95.5 PK			1.46 H	213	62.00	33.50
4	*2452.00	86.2 AV			1.46 H	213	52.70	33.50
5	2483.50	58.1 PK	74.0	-15.9	1.46 H	213	24.60	33.50
6	2483.50	46.1 AV	54.0	-7.9	1.46 H	213	12.60	33.50
7	4904.00	47.8 PK	74.0	-26.2	2.55 H	198	44.50	3.30
8	4904.00	34.5 AV	54.0	-19.5	2.55 H	198	31.20	3.30

**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	2390.00	63.9 PK	74.0	-10.1	2.60 V	154	30.50	33.40
2	2390.00	49.9 AV	54.0	-4.1	2.60 V	154	16.50	33.40
3	*2452.00	106.6 PK			2.60 V	154	73.10	33.50
4	*2452.00	97.5 AV			2.60 V	154	64.00	33.50
5	2483.50	68.2 PK	74.0	-5.8	2.60 V	154	34.70	33.50
<b>6</b>	<b>2483.50</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>2.60 V</b>	<b>154</b>	<b>20.40</b>	<b>33.50</b>
7	4904.00	48.2 PK	74.0	-25.8	1.09 V	332	44.90	3.30
8	4904.00	34.9 AV	54.0	-19.1	1.09 V	332	31.60	3.30

**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.

Below 1GHz Worst-Case Data: 802.11g

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz	TEST MODE	A

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	55.13	25.5 QP	40.0	-14.5	1.50 H	268	39.60	-14.10
2	124.98	31.2 QP	43.5	-12.3	1.00 H	95	46.90	-15.70
3	181.25	31.5 QP	43.5	-12.0	1.00 H	254	46.50	-15.00
4	249.17	31.1 QP	46.0	-14.9	2.00 H	107	45.20	-14.10
5	732.32	36.4 QP	46.0	-9.6	1.00 H	182	39.50	-3.10
6	932.19	36.3 QP	46.0	-9.7	1.00 H	303	35.80	0.50

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	105.58	34.3 QP	43.5	-9.2	2.00 V	184	51.90	-17.60
2	181.25	29.6 QP	43.5	-13.9	1.00 V	338	44.60	-15.00
3	499.48	32.8 QP	46.0	-13.2	1.50 V	69	41.10	-8.30
4	712.92	38.9 QP	46.0	-7.1	1.50 V	7	42.80	-3.90
5	745.91	36.3 QP	46.0	-9.7	1.00 V	7	39.00	-2.70
6	932.19	36.6 QP	46.0	-9.4	1.00 V	76	36.10	0.50

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– 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 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz	TEST MODE	B

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	35.72	36.1 QP	40.0	-3.9	2.00 H	242	51.40	-15.30
2	124.98	33.3 QP	43.5	-10.2	1.50 H	106	49.00	-15.70
3	249.17	32.6 QP	46.0	-13.4	1.50 H	87	46.70	-14.10
4	365.59	29.5 QP	46.0	-16.5	1.00 H	7	40.40	-10.90
5	747.85	41.5 QP	46.0	-4.5	1.00 H	125	44.20	-2.70
6	910.84	43.5 QP	46.0	-2.5	1.50 H	108	43.30	0.20

**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	62.89	35.4 QP	40.0	-4.6	2.00 V	285	50.10	-14.70
2	124.98	31.4 QP	43.5	-12.1	1.00 V	108	47.10	-15.70
3	249.17	27.8 QP	46.0	-18.2	1.50 V	150	41.90	-14.10
4	499.48	35.1 QP	46.0	-10.9	1.00 V	164	43.40	-8.30
5	732.32	37.7 QP	46.0	-8.3	2.00 V	3	40.80	-3.10
6	914.72	37.2 QP	46.0	-8.8	1.00 V	12	36.80	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

## 4.2 Conducted Emission Measurement

### 4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	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 0.50MHz.

### 4.2.2 Test Instruments

Tested date: May 18, 2018

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESR3	102412	Feb. 08, 2018	Feb. 07, 2019
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Sep. 08, 2017	Sep. 07, 2018
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Feb. 05, 2018	Feb. 04, 2019
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Aug. 02, 2017	Aug. 01, 2018
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

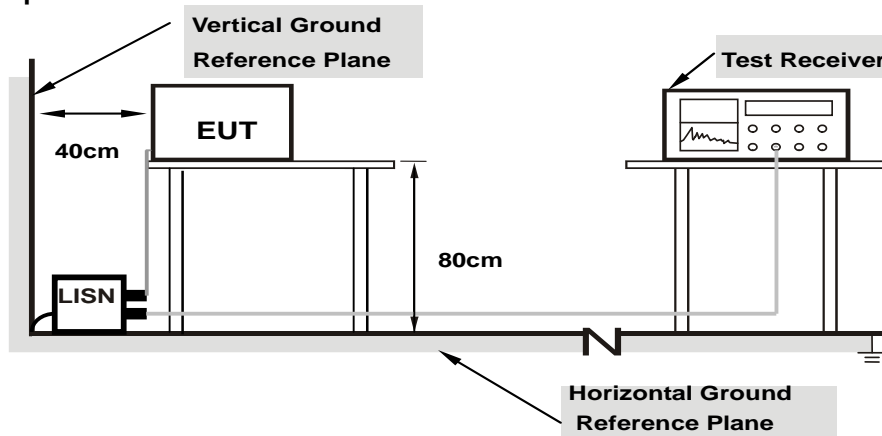
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

**NOTE:** The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

#### 4.2.4 Deviation from Test Standard

No deviation.

#### 4.2.5 Test Setup



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

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.



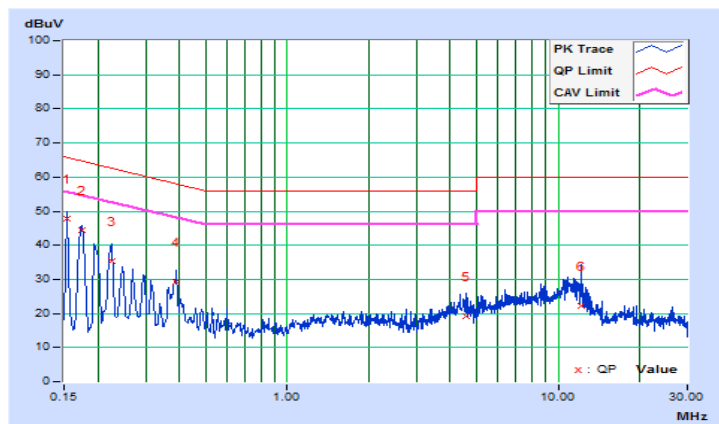
#### 4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

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	0.15400	10.16	37.71	19.44	47.87	29.60	65.78	55.78	-17.91	-26.18
2	0.17384	10.16	34.12	17.52	44.28	27.68	64.77	54.77	-20.49	-27.09
3	0.22600	10.16	25.34	9.94	35.50	20.10	62.60	52.60	-27.10	-32.50
4	0.39000	10.20	19.25	9.61	29.45	19.81	58.06	48.06	-28.61	-28.25
5	4.58600	10.38	8.94	1.04	19.32	11.42	56.00	46.00	-36.68	-34.58
6	12.23800	10.78	11.30	3.62	22.08	14.40	60.00	50.00	-37.92	-35.60

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.

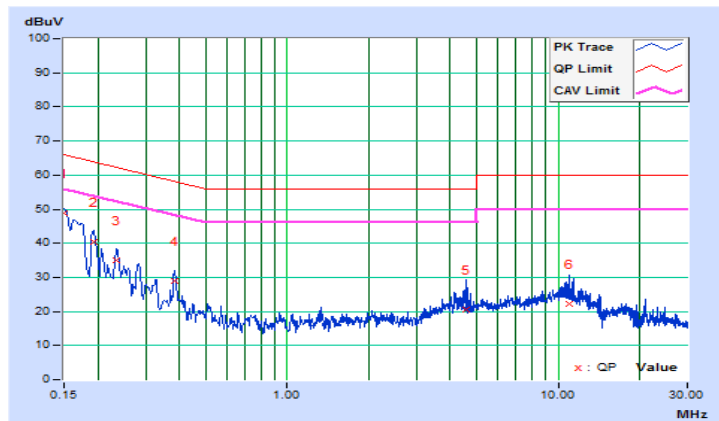


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

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	0.15000	10.14	38.66	22.21	48.80	32.35	66.00
2	0.19400	10.16	30.23	14.01	40.39	24.17	63.86	53.86	-23.47	-29.69
3	0.23412	10.17	24.90	9.49	35.07	19.66	62.30	52.30	-27.23	-32.64
4	0.38218	10.19	18.90	7.88	29.09	18.07	58.23	48.23	-29.14	-30.16
5	4.58600	10.37	10.13	0.61	20.50	10.98	56.00	46.00	-35.50	-35.02
6	11.00600	10.61	11.59	5.83	22.20	16.44	60.00	50.00	-37.80	-33.56

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.

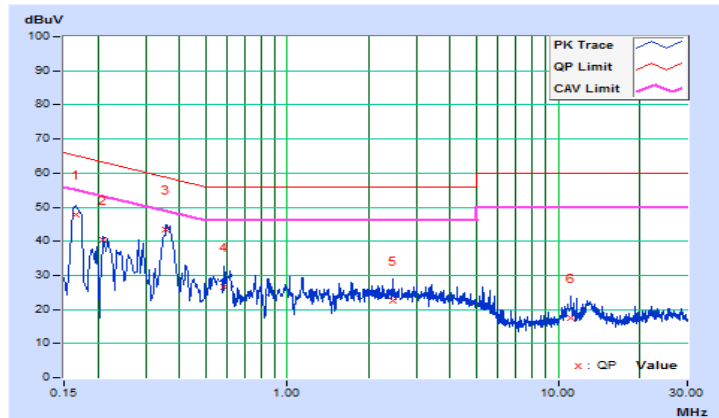


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

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	0.16600	10.16	37.77	22.27	47.93	32.43	65.16
2	0.21000	10.16	30.23	14.27	40.39	24.43	63.21	53.21	-22.82	-28.78
<b>3</b>	<b>0.35782</b>	<b>10.20</b>	<b>33.11</b>	<b>24.59</b>	<b>43.31</b>	<b>34.79</b>	<b>58.78</b>	<b>48.78</b>	<b>-15.47</b>	<b>-13.99</b>
4	0.58600	10.20	16.47	5.40	26.67	15.60	56.00	46.00	-29.33	-30.40
5	2.47000	10.27	12.20	4.12	22.47	14.39	56.00	46.00	-33.53	-31.61
6	11.11000	10.72	6.87	0.53	17.59	11.25	60.00	50.00	-42.41	-38.75

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.

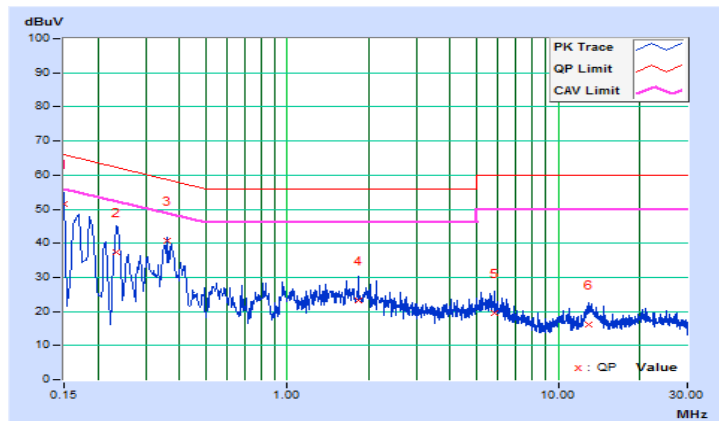


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

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	0.15000	10.14	41.36	24.37	51.50	34.51	66.00
2	0.23400	10.17	27.12	11.86	37.29	22.03	62.31	52.31	-25.02	-30.28
3	0.36200	10.19	30.64	21.86	40.83	32.05	58.68	48.68	-17.85	-16.63
4	1.82600	10.22	12.89	4.55	23.11	14.77	56.00	46.00	-32.89	-31.23
5	5.83000	10.41	9.08	2.13	19.49	12.54	60.00	50.00	-40.51	-37.46
6	12.98200	10.70	5.62	0.66	16.32	11.36	60.00	50.00	-43.68	-38.64

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.



## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

## Appendix – 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 FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

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**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

The address and road map of all our labs can be found in our web site also.

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