FCC Test Report

Report No.:	RF150513C25-1
FCC ID:	E2K-APL280B5
Test Model:	APL28-0B5
Received Date:	May 13, 2015
Test Date:	Jun. 01 ~ Jun. 09, 2015
Issued Date:	Jun. 11, 2015
Applicant:	Dell Inc.
Address:	One Dell Way, Round Rock, Texas 78682, USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.
Lab Address:	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
RF150513C25-1	Original release	Jun. 11, 2015

1 Certificate of Conformity

Product:	Wireless Network Security Appliance
Brand:	DELL, DELL SONICWALL, SONICWALL
Test Model:	APL28-0B5
Sample Status:	Engineering sample
Applicant:	Dell Inc.
Test Date:	Jun. 01 ~ Jun. 09, 2015
Standards:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10:2009

The above equipment 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 : Celine Chou , **Date:** Jun. 11, 2015

Celine Chou / Specialist

Approved by : Ken Liu , **Date:** Jun. 11, 2015

Ken Liu / Senior Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.207 15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -10.93dB at 0.1500MHz.
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.0dB at 5150.00MHz, 5714.00MHz, 5280.00MHz and 10400.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connectors are R-TNC and R-SMA not a standard connector.

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	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports0	150kHz ~ 30MHz	2.44 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.86 dB
	200MHz ~1000MHz	3.87 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	Wireless Network Security Appliance
Brand	DELL, DELL SONICWALL, SONICWALL
Test Model	APL28-0B5
Status of EUT	Engineering sample
Power Supply Rating	12Vdc (adapter)
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	OFDM
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 450Mbps 802.11ac: up to 1300Mbps
Operating Frequency	5180 ~ 5240MHz, 5745 ~ 5825MHz
Number of Channel	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
Output Power	5180 ~ 5240MHz: 236.254mW 5745 ~ 5825MHz: 93.994mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter
Data Cable Supplied	1.8m non-shielded RJ45 cable without core

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides 3 completed transmitters and 3 receivers.

Modulation Mode	TX Function
802.11a	3TX
802.11n (HT20)	3TX
802.11n (HT40)	3TX
802.11ac (VHT20)	3TX
802.11ac (VHT40)	3TX
802.11ac (VHT80)	3TX

* The modulation and bandwidth are similar for 802.11n mode for 20MHz/40MHz and 802.11ac mode for 20MHz/40MHz, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

2. The EUT uses following adapters.

Adapter 1	
Brand	AMIGO
Model	AMS117-1202000F2
Input	100-240Vac, 50/60Hz, 0.8A Max
Output	12Vdc, 2.0A
Power Line	AC: 1.75m non-shielded without core DC: 1.5m cable with one core

Adapter 2	
Brand	Sunny COMPUTER TECHNOLOGY CO., LTD.
Model	SYS1544-2412-T3
Input	100-240Vac, 1.0A MAX, 50-60Hz
Output	+12Vdc, 2.0A
Power Line	AC: 1.75m non-shielded without core DC: 1.85m cable with one core

3. The following antennas were provided to the EUT.

No.	Type	Gain(dBi)		Connector
		2.4GHz Band	5GHz Band	
1	Dipole	2.5	2.5	R-TNC
2	Dipole	2.5	2.5	R-TNC
3	Dipole	3	3	R-SMA

3.2 Description of Test Modes

For 5180 ~ 5240MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210MHz

For 5745 ~ 5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power by adapter 1
B	-	√	√	-	Power by adapter 2

Where **RE≥1G:** Radiated Emission above 1GHz & Bandedge Measurement **RE<1G:** Radiated Emission below 1GHz

PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

Note: 1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.
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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
A	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
A	802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	15.0
A	802.11ac (VHT80)		42	42	OFDM	BPSK	97.5
A	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
A	802.11n (HT40)		151 to 159	151, 159	OFDM	BPSK	15.0
A	802.11ac (VHT80)		155	155	OFDM	BPSK	97.5

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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11a	5180-5240	36 to 48	36	OFDM	BPSK	6.0
	802.11a	5745-5825	149 to 165		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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11a	5180-5240	36 to 48	36	OFDM	BPSK	6.0
	802.11a	5745-5825	149 to 165		OFDM	BPSK	6.0

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ 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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
A	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
A	802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	15.0
A	802.11ac (VHT80)		42	42	OFDM	BPSK	97.5
A	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
A	802.11n (HT40)		151 to 159	151, 159	OFDM	BPSK	15.0
A	802.11ac (VHT80)		155	155	OFDM	BPSK	97.5

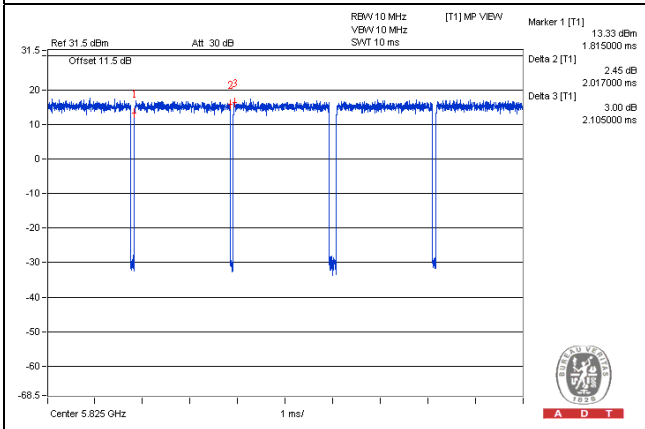
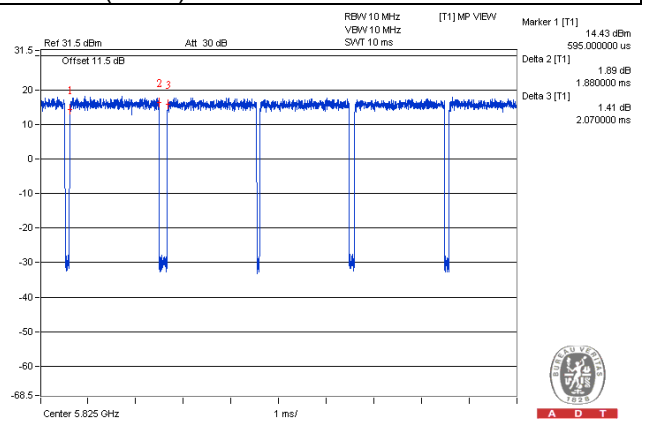
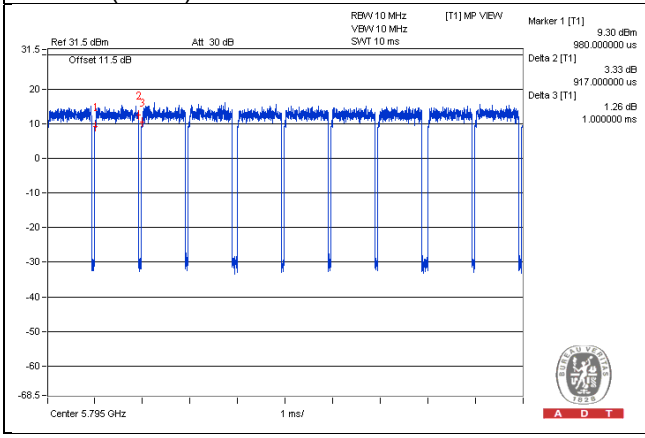
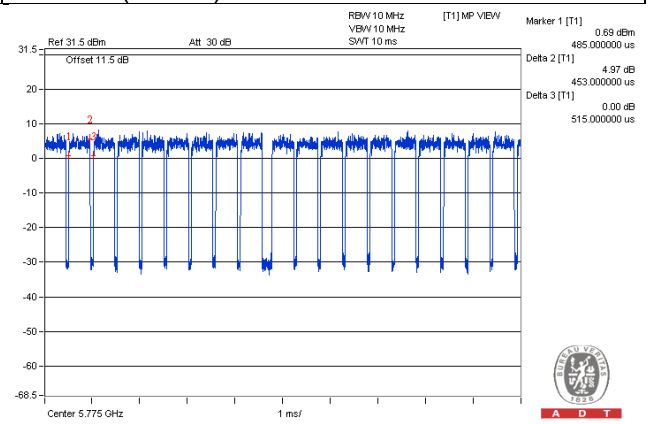
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	18deg. C, 70%RH	120Vac, 60Hz	Jones Chang
RE<1G	20deg. C, 70%RH	120Vac, 60Hz	Jones Chang
PLC	18deg. C, 70%RH	120Vac, 60Hz	Nick Hsu
APCM	25deg. C, 60%RH	120Vac, 60Hz	Nick Hsu

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is < 98 %, duty factor is required

802.11a: Duty cycle = 2.017/2.105 = 0.958, Duty factor = 10 * log(1/0.958) = 0.19
802.11n (HT20): Duty cycle = 1.880/2.070 = 0.908, Duty factor = 10 * log(1/0.908) = 0.42
802.11n (HT40): Duty cycle = 0.917/1.000 = 0.917, Duty factor = 10 * log(1/0.917) = 0.38
802.11ac (VHT80): Duty cycle = 0.453/0.515 = 0.880, Duty factor = 10 * log(1/0.880) = 0.56

802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

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.

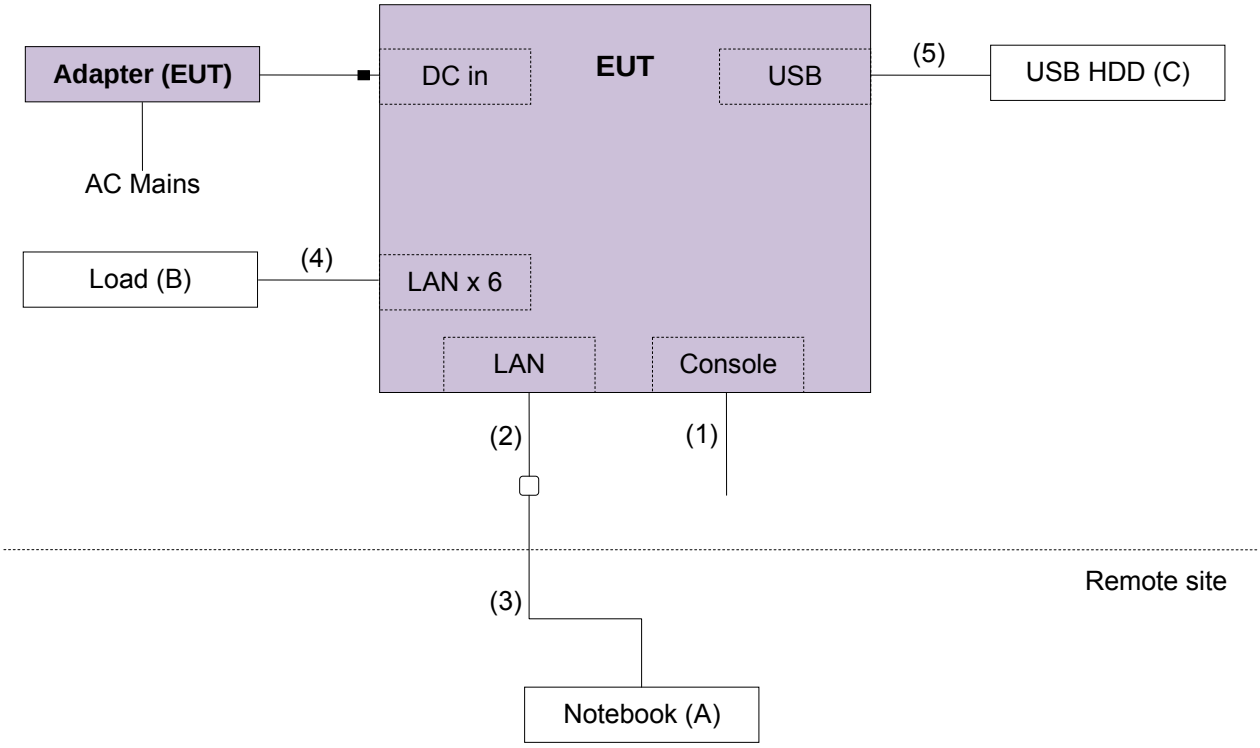
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	6RP2YM1	FCC DoC Approved	-
B.	Load	NA	NA	NA	NA	-
C.	USB HDD	WD	WDBACY5000ABL-01	WXS1CC1D3606	FCC DoC Approved	-

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.	Console	1	1.8	N	0	Provided by the client
2.	RJ45, Cat5e	1	1.8	N	0	Accessory of EUT
3.	RJ45 , Cat5e	1	3	N	0	-
4.	RJ45 , Cat5e	6	1.8	N	0	-
5.	USB	1	1.8	Y	0	-

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 E (15.407)
789033 D02 General UNII Test Procedures New Rules v01
662911 D01 Multiple Transmitter Output v02r01
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 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 20dB 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.

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedures New Rules v01	FIELD STRENGTH AT 3m	
	PK:74 (dBμV/m)	AV:54 (dBμV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK:-27 (dBm/MHz) [*1] PK:-17 (dBm/MHz) [*2]	PK: 68.2(dBμV/m) [*1] PK:78.2 (dBμV/m) [*2]

NOTE: [*1] beyond 10MHz of the band edge [*2] within 10 MHz of band edge

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts).

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	Apr. 10, 2015	Apr. 09, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Aug. 29, 2014	Aug. 28, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Feb. 05, 2015	Feb. 04, 2016
HORN Antenna SCHWARZBECK	9120D	209	Feb. 09, 2015	Feb. 08, 2016
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 09, 2015	Feb. 08, 2016
Preamplifier Agilent	8447D	2944A10738	Oct.18, 2014	Oct. 17, 2015
Preamplifier Agilent	8449B	3008A01964	Aug. 22, 2014	Aug. 21, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	214378/4	Aug. 22, 2014	Aug. 21, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 106	12738/6 +309224/4	Aug. 22, 2014	Aug. 21, 2015
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 18, 2014	Oct. 17, 2015
High Speed Power Meter	ML2495A	0824011	Jul. 26, 2014	Jul. 25, 2015
Power Sensor	MA2411B	0738171	Jul. 26, 2014	Jul. 25, 2015
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 09, 2014	Jun. 08, 2015
			Jun. 09, 2015	Jun. 08, 2016

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 3.

3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

4. The FCC Site Registration No. is 988962.

5. The IC Site Registration No. is IC 7450F-3.

4.1.3 Test Procedures

a. The EUT was placed on the top of a rotating table 0.8 meters 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:

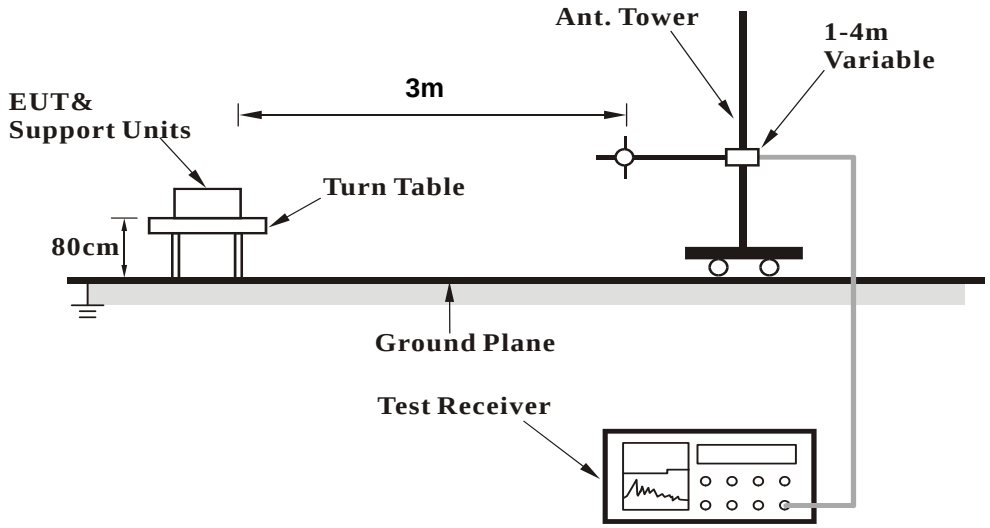
1. For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the ground at 3 meter chamber room for test.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor (10 log(1/duty cycle)).
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
6. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

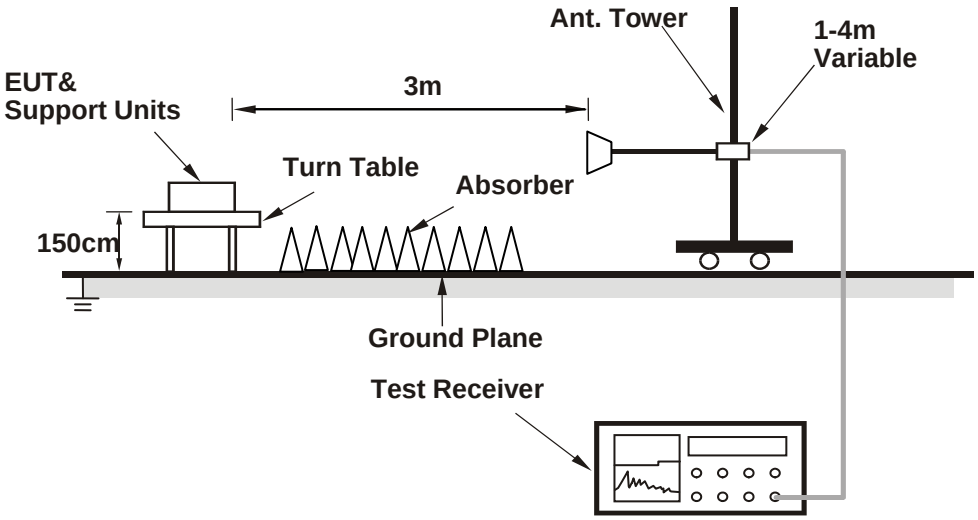
No deviation.

4.1.5 Test Set Up

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

4.1.6 EUT Operating Conditions

a. Connected the EUT with HDD and placed the EUT on the testing table.
b. Prepared a notebook to act as a communication partner and placed it outside of testing area.
c. 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.
d. The communication partner sent data to EUT by command "PING".
e. The necessary accessories enable the system in full functions.

4.1.7 Test Results

Above 1GHz Data

802.11a

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	5150.00	64.6 PK	74.0	-9.4	1.56 H	326	58.60	6.00
2	5150.00	52.1 AV	54.0	-1.9	1.56 H	326	46.10	6.00
3	*5180.00	118.7 PK			1.49 H	197	79.20	39.50
4	*5180.00	108.1 AV			1.49 H	197	68.60	39.50
5	#6906.00	57.7 PK	68.2	-10.5	1.35 H	125	46.20	11.50
6	#10360.00	66.4 PK	74.0	-7.6	1.06 H	303	48.00	18.40
7	#10360.00	52.4 AV	54.0	-1.6	1.06 H	303	34.00	18.40
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	5150.00	62.8 PK	74.0	-11.2	3.17 V	257	56.80	6.00
2	5150.00	48.5 AV	54.0	-5.5	3.17 V	257	42.50	6.00
3	*5180.00	113.4 PK			2.61 V	243	73.90	39.50
4	*5180.00	102.6 AV			2.61 V	243	63.10	39.50
5	#6906.00	54.0 PK	68.2	-14.2	1.98 V	220	42.50	11.50
6	#10360.00	60.9 PK	74.0	-13.1	1.54 V	110	42.50	18.40
7	#10360.00	47.8 AV	54.0	-6.2	1.54 V	110	29.40	18.40

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	*5200.00	121.1 PK			1.50 H	328	81.50	39.60
2	*5200.00	110.7 AV			1.50 H	328	71.10	39.60
3	5350.00	62.3 PK	74.0	-11.7	1.58 H	181	56.20	6.10
4	5350.00	50.6 AV	54.0	-3.4	1.58 H	181	44.50	6.10
5	#6933.00	59.9 PK	68.2	-8.3	1.67 H	196	48.20	11.70
6	#10400.00	67.2 PK	74.0	-6.8	2.09 H	302	48.70	18.50
7	**#10400.00**	**53.0 AV**	**54.0**	**-1.0**	**2.09 H**	**302**	**34.50**	**18.50**
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	*5200.00	114.8 PK			2.58 V	244	75.20	39.60
2	*5200.00	104.7 AV			2.58 V	244	65.10	39.60
3	5350.00	57.0 PK	74.0	-17.0	1.60 V	276	50.90	6.10
4	5350.00	45.8 AV	54.0	-8.2	1.60 V	276	39.70	6.10
5	#6933.00	54.8 PK	68.2	-13.4	1.99 V	186	43.10	11.70
6	#10400.00	61.8 PK	74.0	-12.2	1.16 V	237	43.30	18.50
7	#10400.00	48.6 AV	54.0	-5.4	1.16 V	237	30.10	18.50

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	*5240.00	122.2 PK			1.71 H	333	82.60	39.60
2	*5240.00	111.9 AV			1.71 H	333	72.30	39.60
3	5400.00	63.5 PK	74.0	-10.5	1.50 H	335	57.20	6.30
4	5400.00	51.7 AV	54.0	-2.3	1.50 H	335	45.40	6.30
5	#6986.00	60.3 PK	68.2	-7.9	1.68 H	199	48.00	12.30
6	#10480.00	67.1 PK	74.0	-6.9	1.25 H	295	48.10	19.00
7	#10480.00	52.8 AV	54.0	-1.2	1.25 H	295	33.80	19.00
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	*5240.00	116.1 PK			2.56 V	241	76.50	39.60
2	*5240.00	105.6 AV			2.56 V	241	66.00	39.60
3	5360.00	58.6 PK	74.0	-15.4	3.02 V	254	52.50	6.10
4	5360.00	46.8 AV	54.0	-7.2	3.02 V	254	40.70	6.10
5	#6986.00	54.5 PK	68.2	-13.7	1.91 V	190	42.20	12.30
6	#10480.00	63.8 PK	74.0	-10.2	2.18 V	249	44.80	19.00
7	#10480.00	50.8 AV	54.0	-3.2	2.18 V	249	31.80	19.00

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	#5280.00	67.1 PK	68.2	-1.1	2.01 H	193	61.00	6.10
2	5350.00	66.0 PK	74.0	-8.0	1.72 H	341	59.90	6.10
3	5350.00	52.1 AV	54.0	-1.9	1.72 H	341	46.00	6.10
4	#5714.00	62.4 PK	74.0	-11.6	1.58 H	354	55.60	6.80
5	#5714.00	48.4 AV	54.0	-5.6	1.58 H	354	41.60	6.80
6	#5722.00	72.7 PK	78.2	-5.5	1.98 H	340	65.90	6.80
7	#5725.00	60.2 PK	78.2	-18.0	1.98 H	336	53.40	6.80
8	*5745.00	116.2 PK			1.52 H	328	75.80	40.40
9	*5745.00	105.4 AV			1.52 H	328	65.00	40.40
10	11490.00	61.3 PK	74.0	-12.7	1.11 H	273	42.90	18.40
11	11490.00	48.0 AV	54.0	-6.0	1.11 H	273	29.60	18.40
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	#5280.00	61.2 PK	68.2	-7.0	3.10 V	253	55.10	6.10
2	5370.00	58.7 PK	74.0	-15.3	2.86 V	264	52.50	6.20
3	5370.00	46.5 AV	54.0	-7.5	2.86 V	264	40.30	6.20
4	#5714.00	59.4 PK	74.0	-14.6	2.53 V	242	52.60	6.80
5	#5714.00	47.6 AV	54.0	-6.4	2.53 V	242	40.80	6.80
6	#5722.00	67.7 PK	78.2	-10.5	2.93 V	255	60.90	6.80
7	#5725.00	62.7 PK	78.2	-15.5	2.93 V	255	55.90	6.80
8	*5745.00	107.6 PK			1.00 V	267	67.20	40.40
9	*5745.00	97.1 AV			1.00 V	267	56.70	40.40
10	11490.00	60.1 PK	74.0	-13.9	1.58 V	187	41.70	18.40
11	11490.00	46.8 AV	54.0	-7.2	1.58 V	187	28.40	18.40

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	#5280.00	67.0 PK	68.2	-1.2	2.00 H	195	60.90	6.10
2	5360.00	65.4 PK	74.0	-8.6	1.76 H	333	59.30	6.10
3	5360.00	52.1 AV	54.0	-1.9	1.76 H	333	46.00	6.10
4	*5785.00	114.6 PK			1.69 H	332	74.10	40.50
5	*5785.00	104.3 AV			1.69 H	332	63.80	40.50
6	11570.00	60.9 PK	74.0	-13.1	1.51 H	241	42.50	18.40
7	11570.00	47.7 AV	54.0	-6.3	1.51 H	241	29.30	18.40
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	#5280.00	61.7 PK	68.2	-6.5	3.09 V	253	55.60	6.10
2	5390.00	58.3 PK	74.0	-15.7	2.65 V	256	52.10	6.20
3	5390.00	46.5 AV	54.0	-7.5	2.65 V	256	40.30	6.20
4	*5785.00	107.8 PK			2.87 V	241	67.30	40.50
5	*5785.00	97.4 AV			2.87 V	241	56.90	40.50
6	11570.00	60.3 PK	74.0	-13.7	1.72 V	176	41.90	18.40
7	11570.00	47.2 AV	54.0	-6.8	1.72 V	176	28.80	18.40

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	#5280.00	66.9 PK	68.2	-1.3	2.02 H	193	60.80	6.10
2	5350.00	63.6 PK	74.0	-10.4	1.75 H	327	57.50	6.10
3	5350.00	52.3 AV	54.0	-1.7	1.75 H	327	46.20	6.10
4	*5825.00	113.5 PK			1.48 H	339	73.00	40.50
5	*5825.00	103.3 AV			1.48 H	339	62.80	40.50
6	#5850.00	58.3 PK	78.2	-19.9	1.55 H	329	51.40	6.90
7	#5853.00	62.5 PK	78.2	-15.7	1.55 H	329	55.50	7.00
8	#5861.00	57.2 PK	74.0	-16.8	1.52 H	328	50.20	7.00
9	#5861.00	46.5 AV	54.0	-7.5	1.52 H	328	39.50	7.00
10	11650.00	61.7 PK	74.0	-12.3	1.23 H	302	42.80	18.90
11	11650.00	48.5 AV	54.0	-5.5	1.23 H	302	29.60	18.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5280.00	61.4 PK	68.2	-6.8	3.06 V	259	55.30	6.10
2	5380.00	59.5 PK	74.0	-14.5	2.74 V	255	53.30	6.20
3	5380.00	46.8 AV	54.0	-7.2	2.74 V	255	40.60	6.20
4	*5825.00	103.8 PK			1.00 V	249	63.30	40.50
5	*5825.00	93.8 AV			1.00 V	249	53.30	40.50
6	#5850.00	57.4 PK	78.2	-20.8	2.86 V	250	50.50	6.90
7	#5853.00	59.5 PK	78.2	-18.7	2.86 V	250	52.50	7.00
8	#5861.00	57.0 PK	74.0	-17.0	2.93 V	260	50.00	7.00
9	#5861.00	46.0 AV	54.0	-8.0	2.93 V	260	39.00	7.00
10	11650.00	61.2 PK	74.0	-12.8	1.82 V	202	42.30	18.90
11	11650.00	47.9 AV	54.0	-6.1	1.82 V	202	29.00	18.90

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11n (HT20)

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	5150.00	61.0 PK	74.0	-13.0	1.60 H	329	55.00	6.00
2	**5150.00**	**53.0 AV**	**54.0**	**-1.0**	**1.60 H**	**329**	**47.00**	**6.00**
3	*5180.00	118.8 PK			1.81 H	322	79.30	39.50
4	*5180.00	108.4 AV			1.81 H	322	68.90	39.50
5	#6933.00	60.2 PK	68.2	-8.0	1.82 H	199	48.50	11.70
6	#10360.00	68.1 PK	74.0	-5.9	1.28 H	300	49.70	18.40
7	#10360.00	52.2 AV	54.0	-1.8	1.28 H	300	33.80	18.40
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	5150.00	52.7 PK	74.0	-21.3	3.11 V	258	46.70	6.00
2	5150.00	49.0 AV	54.0	-5.0	3.11 V	258	43.00	6.00
3	*5180.00	114.9 PK			3.06 V	267	75.40	39.50
4	*5180.00	104.4 AV			3.06 V	267	64.90	39.50
5	#6906.00	54.6 PK	68.2	-13.6	2.00 V	217	43.10	11.50
6	#10360.00	61.4 PK	74.0	-12.6	2.11 V	232	43.00	18.40
7	#10360.00	48.3 AV	54.0	-5.7	2.11 V	232	29.90	18.40

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	*5200.00	120.6 PK			1.73 H	195	81.00	39.60
2	*5200.00	110.4 AV			1.73 H	195	70.80	39.60
3	#6933.00	55.2 PK	74.0	-18.8	1.40 H	338	43.50	11.70
4	#6933.00	46.3 AV	54.0	-7.7	1.40 H	338	34.60	11.70
5	#10400.00	68.1 PK	74.0	-5.9	1.24 H	298	49.60	18.50
6	#10400.00	52.7 AV	54.0	-1.3	1.24 H	298	34.20	18.50
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	*5200.00	115.5 PK			3.18 V	256	75.90	39.60
2	*5200.00	105.2 AV			3.18 V	256	65.60	39.60
3	#6933.00	55.3 PK	74.0	-18.7	2.01 V	233	43.60	11.70
4	#6933.00	42.2 AV	54.0	-11.8	2.01 V	233	30.50	11.70
5	#10400.00	61.0 PK	74.0	-13.0	1.98 V	229	42.50	18.50
6	#10400.00	47.9 AV	54.0	-6.1	1.98 V	229	29.40	18.50

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	*5240.00	120.5 PK			1.70 H	327	80.90	39.60
2	*5240.00	110.3 AV			1.70 H	327	70.70	39.60
3	5350.00	60.9 PK	74.0	-13.1	1.56 H	191	54.80	6.10
4	5350.00	50.3 AV	54.0	-3.7	1.56 H	191	44.20	6.10
5	#10480.00	67.5 PK	74.0	-6.5	1.22 H	297	48.50	19.00
6	#10480.00	52.7 AV	54.0	-1.3	1.22 H	297	33.70	19.00
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	*5240.00	116.3 PK			3.14 V	256	76.70	39.60
2	*5240.00	105.7 AV			3.14 V	256	66.10	39.60
3	5350.00	58.3 PK	74.0	-15.7	3.01 V	255	52.20	6.10
4	5350.00	46.4 AV	54.0	-7.6	3.01 V	255	40.30	6.10
5	#10480.00	62.5 PK	74.0	-11.5	2.02 V	267	43.50	19.00
6	#10480.00	49.7 AV	54.0	-4.3	2.02 V	267	30.70	19.00

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	**#5280.00**	**67.2 PK**	**68.2**	**-1.0**	**1.34 H**	**327**	**61.10**	**6.10**
2	5350.00	54.2 PK	74.0	-19.8	1.68 H	320	48.10	6.10
3	5350.00	51.6 AV	54.0	-2.4	1.68 H	320	45.50	6.10
4	#5714.00	62.5 PK	74.0	-11.5	1.59 H	349	55.70	6.80
5	#5714.00	49.4 AV	54.0	-4.6	1.59 H	349	42.60	6.80
6	#5722.00	74.9 PK	78.2	-3.3	1.92 H	298	68.10	6.80
7	#5725.00	63.8 PK	78.2	-14.4	1.92 H	298	57.00	6.80
8	*5745.00	115.1 PK			1.41 H	165	74.70	40.40
9	*5745.00	105.1 AV			1.41 H	165	64.70	40.40
10	11490.00	61.0 PK	74.0	-13.0	1.11 H	277	42.60	18.40
11	11490.00	48.0 AV	54.0	-6.0	1.11 H	277	29.60	18.40
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	#5280.00	62.1 PK	68.2	-6.1	3.09 V	256	56.00	6.10
2	5350.00	58.4 PK	74.0	-15.6	2.76 V	271	52.30	6.10
3	5350.00	46.9 AV	54.0	-7.1	2.76 V	271	40.80	6.10
4	#5714.00	60.0 PK	74.0	-14.0	2.85 V	266	53.20	6.80
5	#5714.00	46.8 AV	54.0	-7.2	2.85 V	266	40.00	6.80
6	#5722.00	69.5 PK	78.2	-8.7	2.92 V	258	62.70	6.80
7	#5725.00	65.4 PK	78.2	-12.8	2.92 V	258	58.60	6.80
8	*5745.00	106.6 PK			1.00 V	266	66.20	40.40
9	*5745.00	97.2 AV			1.00 V	266	56.80	40.40
10	11490.00	60.5 PK	74.0	-13.5	1.09 V	260	42.10	18.40
11	11490.00	47.5 AV	54.0	-6.5	1.09 V	260	29.10	18.40

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	#5280.00	66.9 PK	68.2	-1.3	2.08 H	322	60.80	6.10
2	5350.00	63.3 PK	74.0	-10.7	1.61 H	302	57.20	6.10
3	5350.00	51.2 AV	54.0	-2.8	1.61 H	302	45.10	6.10
4	*5785.00	114.6 PK			1.43 H	325	74.10	40.50
5	*5785.00	104.7 AV			1.43 H	325	64.20	40.50
6	11570.00	60.7 PK	74.0	-13.3	1.33 H	94	42.30	18.40
7	11570.00	47.8 AV	54.0	-6.2	1.33 H	94	29.40	18.40
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	#5280.00	61.8 PK	68.2	-6.4	3.08 V	255	55.70	6.10
2	5350.00	58.8 PK	74.0	-15.2	2.77 V	268	52.70	6.10
3	5350.00	46.6 AV	54.0	-7.4	2.77 V	268	40.50	6.10
4	*5785.00	106.4 PK			1.00 V	268	65.90	40.50
5	*5785.00	97.2 AV			1.00 V	268	56.70	40.50
6	11570.00	60.3 PK	74.0	-13.7	1.88 V	300	41.90	18.40
7	11570.00	47.5 AV	54.0	-6.5	1.88 V	300	29.10	18.40

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	#5280.00	67.1 PK	68.2	-1.1	2.13 H	324	61.00	6.10
2	5350.00	63.3 PK	74.0	-10.7	1.55 H	321	57.20	6.10
3	5350.00	51.6 AV	54.0	-2.4	1.55 H	321	45.50	6.10
4	*5825.00	114.1 PK			1.70 H	335	73.60	40.50
5	*5825.00	103.6 AV			1.70 H	335	63.10	40.50
6	#5850.00	63.7 PK	78.2	-14.5	1.68 H	337	56.80	6.90
7	#5853.00	65.1 PK	78.2	-13.1	1.68 H	337	58.10	7.00
8	#5861.00	60.1 PK	74.0	-13.9	1.74 H	341	53.10	7.00
9	#5861.00	49.0 AV	54.0	-5.0	1.74 H	341	42.00	7.00
10	11650.00	60.9 PK	74.0	-13.1	1.23 H	299	42.00	18.90
11	11650.00	47.9 AV	54.0	-6.1	1.23 H	299	29.00	18.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5280.00	61.1 PK	68.2	-7.1	3.02 V	253	55.00	6.10
2	5350.00	59.1 PK	74.0	-14.9	2.79 V	270	53.00	6.10
3	5350.00	46.7 AV	54.0	-7.3	2.79 V	270	40.60	6.10
4	*5825.00	104.8 PK			1.00 V	246	64.30	40.50
5	*5825.00	94.6 AV			1.00 V	246	54.10	40.50
6	#5850.00	57.8 PK	78.2	-20.4	1.20 V	260	50.90	6.90
7	#5853.00	60.3 PK	78.2	-17.9	1.20 V	260	53.30	7.00
8	#5861.00	58.3 PK	74.0	-15.7	1.11 V	266	51.30	7.00
9	#5861.00	46.3 AV	54.0	-7.7	1.11 V	266	39.30	7.00
10	11650.00	60.8 PK	74.0	-13.2	2.78 V	222	41.90	18.90
11	11650.00	47.6 AV	54.0	-6.4	2.78 V	222	28.70	18.90

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11n (HT40)

CHANNEL	TX Channel 38	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	5150.00	68.0 PK	74.0	-6.0	1.60 H	325	62.00	6.00
2	5150.00	52.7 AV	54.0	-1.3	1.60 H	325	46.70	6.00
3	*5190.00	110.1 PK			1.68 H	326	70.60	39.50
4	*5190.00	100.2 AV			1.68 H	326	60.70	39.50
5	#6920.00	57.3 PK	68.2	-10.9	1.34 H	198	45.60	11.70
6	#10380.00	60.4 PK	74.0	-13.6	1.44 H	21	41.90	18.50
7	#10380.00	48.1 AV	54.0	-5.9	1.44 H	21	29.60	18.50
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	5150.00	64.5 PK	74.0	-9.5	3.10 V	254	58.50	6.00
2	5150.00	49.6 AV	54.0	-4.4	3.10 V	254	43.60	6.00
3	*5190.00	104.1 PK			3.18 V	257	64.60	39.50
4	*5190.00	94.1 AV			3.18 V	257	54.60	39.50
5	#6920.00	55.3 PK	68.2	-12.9	1.94 V	298	43.60	11.70
6	#10380.00	60.1 PK	74.0	-13.9	2.04 V	221	41.60	18.50
7	#10380.00	47.0 AV	54.0	-7.0	2.04 V	221	28.50	18.50

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 46	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	5150.00	60.9 PK	74.0	-13.1	1.78 H	195	54.90	6.00
2	5150.00	50.1 AV	54.0	-3.9	1.78 H	195	44.10	6.00
3	*5230.00	117.2 PK			1.88 H	197	77.60	39.60
4	*5230.00	106.7 AV			1.88 H	197	67.10	39.60
5	5350.00	60.7 PK	74.0	-13.3	1.51 H	129	54.60	6.10
6	5350.00	49.6 AV	54.0	-4.4	1.51 H	129	43.50	6.10
7	#10460.00	63.4 PK	74.0	-10.6	1.14 H	225	44.50	18.90
8	#10460.00	50.3 AV	54.0	-3.7	1.14 H	225	31.40	18.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.7 PK	74.0	-16.3	3.10 V	255	51.70	6.00
2	5150.00	46.1 AV	54.0	-7.9	3.10 V	255	40.10	6.00
3	*5230.00	111.2 PK			3.15 V	256	71.60	39.60
4	*5230.00	101.4 AV			3.15 V	256	61.80	39.60
5	5350.00	56.9 PK	74.0	-17.1	2.88 V	202	50.80	6.10
6	5350.00	46.0 AV	54.0	-8.0	2.88 V	202	39.90	6.10
7	#10460.00	62.3 PK	74.0	-11.7	2.15 V	245	43.40	18.90
8	#10460.00	49.1 AV	54.0	-4.9	2.15 V	245	30.20	18.90

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 151	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	#5714.00	66.2 PK	74.0	-7.8	1.63 H	175	59.40	6.80
2	#5714.00	52.6 AV	54.0	-1.4	1.63 H	175	45.80	6.80
3	#5722.00	74.6 PK	78.2	-3.6	1.50 H	343	67.80	6.80
4	#5725.00	59.6 PK	78.2	-18.6	1.20 H	342	52.80	6.80
5	*5755.00	110.3 PK			1.77 H	333	69.80	40.50
6	*5755.00	100.1 AV			1.77 H	333	59.60	40.50
7	11510.00	59.3 PK	74.0	-14.7	1.36 H	100	41.00	18.30
8	11510.00	46.4 AV	54.0	-7.6	1.36 H	100	28.10	18.30
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	#5714.00	60.2 PK	74.0	-13.8	2.31 V	237	53.40	6.80
2	#5714.00	47.0 AV	54.0	-7.0	2.31 V	237	40.20	6.80
3	#5722.00	66.1 PK	78.2	-12.1	1.10 V	240	59.30	6.80
4	#5725.00	62.9 PK	78.2	-15.3	1.10 V	240	56.10	6.80
5	*5755.00	101.8 PK			1.00 V	248	61.30	40.50
6	*5755.00	92.2 AV			1.00 V	248	51.70	40.50
7	11510.00	59.2 PK	74.0	-14.8	1.00 V	183	40.90	18.30
8	11510.00	46.3 AV	54.0	-7.7	1.00 V	183	28.00	18.30

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	#5280.00	66.7 PK	68.2	-1.5	2.41 H	326	60.60	6.10
2	*5795.00	111.2 PK			1.96 H	334	70.70	40.50
3	*5795.00	101.0 AV			1.96 H	334	60.50	40.50
4	#5850.00	57.4 PK	78.2	-20.8	1.39 H	330	50.50	6.90
5	#5853.00	62.1 PK	78.2	-16.1	1.39 H	330	55.10	7.00
6	#5861.00	59.0 PK	74.0	-15.0	1.49 H	338	52.00	7.00
7	#5861.00	48.1 AV	54.0	-5.9	1.49 H	338	41.10	7.00
8	11590.00	60.9 PK	74.0	-13.1	1.30 H	289	42.40	18.50
9	11590.00	47.8 AV	54.0	-6.2	1.30 H	289	29.30	18.50
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	#5280.00	61.2 PK	68.2	-7.0	2.42 V	245	55.10	6.10
2	*5795.00	104.1 PK			1.00 V	247	63.60	40.50
3	*5795.00	94.0 AV			1.00 V	247	53.50	40.50
4	#5850.00	58.3 PK	78.2	-19.9	1.23 V	259	51.40	6.90
5	#5853.00	62.5 PK	78.2	-15.7	1.23 V	259	55.50	7.00
6	#5861.00	57.3 PK	74.0	-16.7	1.00 V	277	50.30	7.00
7	#5861.00	46.1 AV	54.0	-7.9	1.00 V	277	39.10	7.00
8	11590.00	60.2 PK	74.0	-13.8	1.33 V	180	41.70	18.50
9	11590.00	47.1 AV	54.0	-6.9	1.33 V	180	28.60	18.50

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ac (VHT80)

CHANNEL	TX Channel 42	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	5150.00	68.5 PK	74.0	-5.5	1.55 H	328	62.50	6.00
2	5150.00	52.6 AV	54.0	-1.4	1.55 H	328	46.60	6.00
3	*5210.00	106.5 PK			1.60 H	193	66.90	39.60
4	*5210.00	94.9 AV			1.60 H	193	55.30	39.60
5	#6946.00	56.2 PK	68.2	-12.0	1.32 H	198	44.20	12.00
6	#10420.00	60.1 PK	74.0	-13.9	1.45 H	59	41.50	18.60
7	#10420.00	47.8 AV	54.0	-6.2	1.45 H	59	29.20	18.60
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	5150.00	60.4 PK	74.0	-13.6	2.96 V	264	54.40	6.00
2	5150.00	47.6 AV	54.0	-6.4	2.96 V	264	41.60	6.00
3	*5210.00	98.3 PK			3.14 V	257	58.70	39.60
4	*5210.00	88.7 AV			3.14 V	257	49.10	39.60
5	#6946.00	54.1 PK	68.2	-14.1	1.84 V	301	42.10	12.00
6	#10420.00	60.0 PK	74.0	-14.0	1.95 V	255	41.40	18.60
7	#10420.00	47.2 AV	54.0	-6.8	1.95 V	255	28.60	18.60

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 155	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	#5714.00	67.1 PK	74.0	-6.9	1.98 H	334	60.30	6.80
2	**#5714.00**	**53.0 AV**	**54.0**	**-1.0**	**1.98 H**	**334**	**46.20**	**6.80**
3	#5722.00	69.5 PK	78.2	-8.7	1.01 H	226	62.70	6.80
4	#5725.00	57.4 PK	78.2	-20.8	1.02 H	231	50.60	6.80
5	*5775.00	106.1 PK			1.43 H	329	65.60	40.50
6	*5775.00	95.0 AV			1.43 H	329	54.50	40.50
7	11550.00	59.9 PK	74.0	-14.1	1.24 H	271	41.50	18.40
8	11550.00	46.7 AV	54.0	-7.3	1.24 H	271	28.30	18.40
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	#5714.00	58.8 PK	74.0	-15.2	1.07 V	240	52.00	6.80
2	#5714.00	46.9 AV	54.0	-7.1	1.07 V	240	40.10	6.80
3	#5725.00	60.0 PK	78.2	-18.2	1.15 V	244	53.20	6.80
4	#5725.00	56.9 PK	78.2	-21.3	1.15 V	244	50.10	6.80
5	*5775.00	97.6 PK			1.00 V	259	57.10	40.50
6	*5775.00	86.6 AV			1.00 V	259	46.10	40.50
7	11550.00	59.4 PK	74.0	-14.6	1.00 V	166	41.00	18.40
8	11550.00	46.4 AV	54.0	-7.6	1.00 V	166	28.00	18.40

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Below 1GHz Data

802.11a

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	220.44	30.7 QP	46.0	-15.3	1.00 H	317	47.00	-16.30
2	358.48	31.3 QP	46.0	-14.7	1.00 H	322	42.80	-11.50
3	667.63	40.3 QP	46.0	-5.7	1.00 H	98	45.30	-5.00
4	729.84	38.3 QP	46.0	-7.7	1.00 H	190	42.00	-3.70
5	751.23	38.5 QP	46.0	-7.5	1.00 H	258	41.70	-3.20
6	875.67	35.8 QP	46.0	-10.2	1.50 H	19	36.90	-1.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	29.90	32.2 QP	40.0	-7.8	1.00 V	268	47.90	-15.70
2	59.06	28.8 QP	40.0	-11.2	1.00 V	324	43.30	-14.50
3	500.42	30.0 QP	46.0	-16.0	1.00 V	164	38.40	-8.40
4	667.63	33.2 QP	46.0	-12.8	1.00 V	331	38.20	-5.00
5	747.34	41.9 QP	46.0	-4.1	2.00 V	143	45.20	-3.30
6	875.67	32.4 QP	46.0	-13.6	1.50 V	180	33.50	-1.10

Remarks:

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

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	39.62	31.6 QP	40.0	-8.4	1.50 H	67	46.60	-15.00
2	57.12	29.1 QP	40.0	-10.9	1.50 H	66	43.70	-14.60
3	105.73	25.9 QP	43.5	-17.6	1.50 H	275	44.00	-18.10
4	500.42	36.1 QP	46.0	-9.9	1.50 H	135	44.50	-8.40
5	722.07	40.0 QP	46.0	-6.0	1.00 H	178	44.10	-4.10
6	893.16	40.4 QP	46.0	-5.6	1.00 H	287	41.30	-0.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	39.62	35.0 QP	40.0	-5.0	1.49 V	16	50.00	-15.00
2	49.34	34.6 QP	40.0	-5.4	1.49 V	4	49.00	-14.40
3	59.06	34.4 QP	40.0	-5.6	1.49 V	16	48.90	-14.50
4	107.67	28.0 QP	43.5	-15.5	1.49 V	108	45.80	-17.80
5	500.42	32.6 QP	46.0	-13.4	1.00 V	263	41.00	-8.40
6	747.34	41.2 QP	46.0	-4.8	1.49 V	16	44.50	-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)
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

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Apr. 27, 2015	Apr. 26, 2016
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 26, 2014	Dec. 25, 2015
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 30, 2014	Dec. 29, 2015
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 10, 2014	Jul. 09, 2015
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.

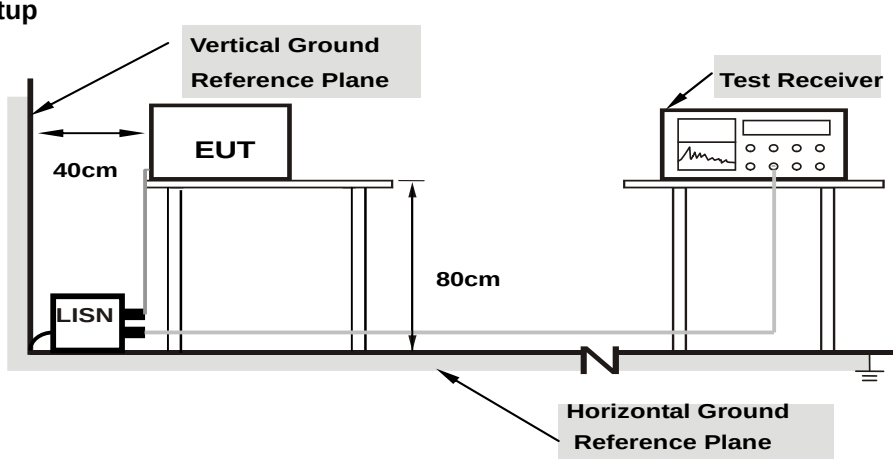
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: 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.

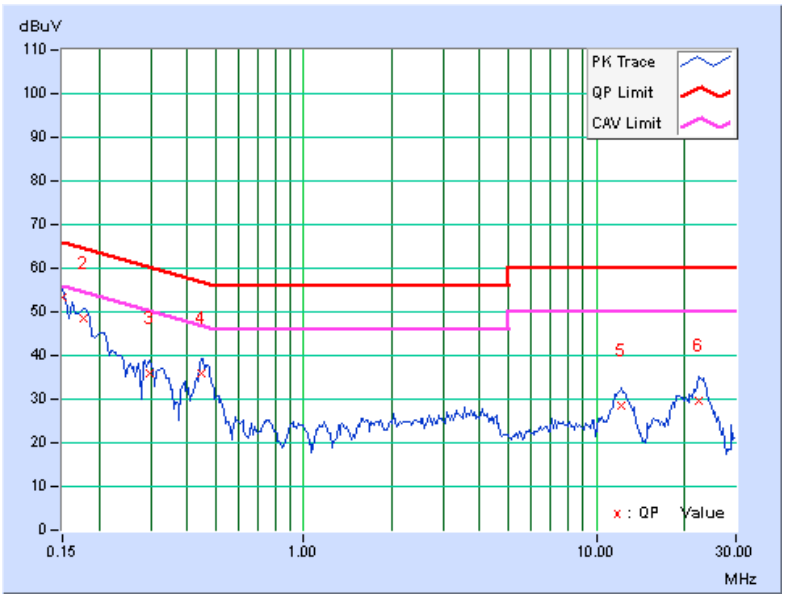
4.2.7 Test Results

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

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.16	53.20	44.37	53.36	44.53	66.00	56.00	-12.64	-11.47
2	0.17734	0.17	48.24	39.53	48.41	39.70	64.61	54.61	-16.20	-14.91
3	0.29844	0.17	35.82	27.87	35.99	28.04	60.29	50.29	-24.29	-22.24
4	0.44688	0.18	35.90	31.89	36.08	32.07	56.93	46.93	-20.85	-14.86
5	12.23047	0.49	27.92	23.10	28.41	23.59	60.00	50.00	-31.59	-26.41
6	22.33203	0.58	28.91	23.61	29.49	24.19	60.00	50.00	-30.51	-25.81

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.

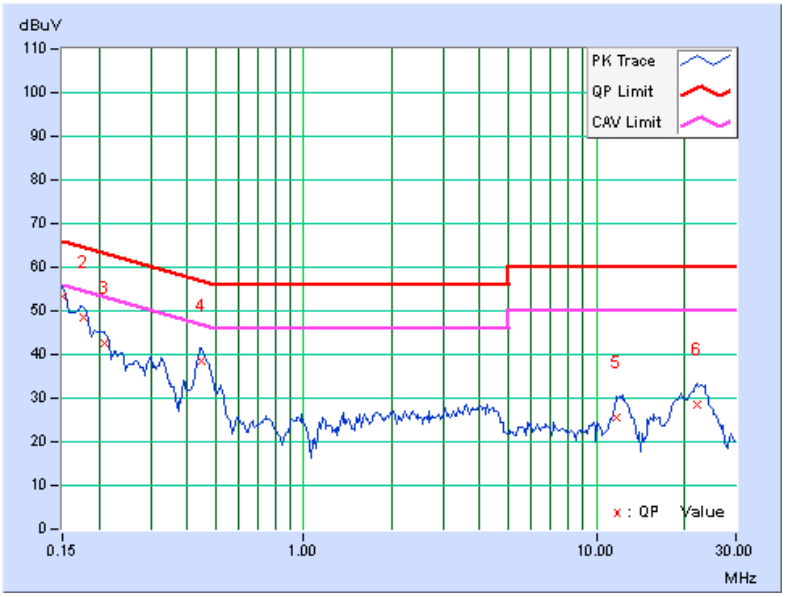


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test mode	A		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.15000**	**0.17**	**53.18**	**44.90**	**53.35**	**45.07**	**66.00**	**56.00**	**-12.65**	**-10.93**
2	0.17598	0.18	48.28	39.51	48.46	39.69	64.67	54.67	-16.22	-14.99
3	0.20859	0.18	42.57	34.59	42.75	34.77	63.26	53.26	-20.51	-18.49
4	0.44806	0.20	38.15	34.12	38.35	34.32	56.91	46.91	-18.56	-12.59
5	11.67578	0.57	24.82	20.07	25.39	20.64	60.00	50.00	-34.61	-29.36
6	22.17969	0.74	27.82	22.77	28.56	23.51	60.00	50.00	-31.44	-26.49

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.

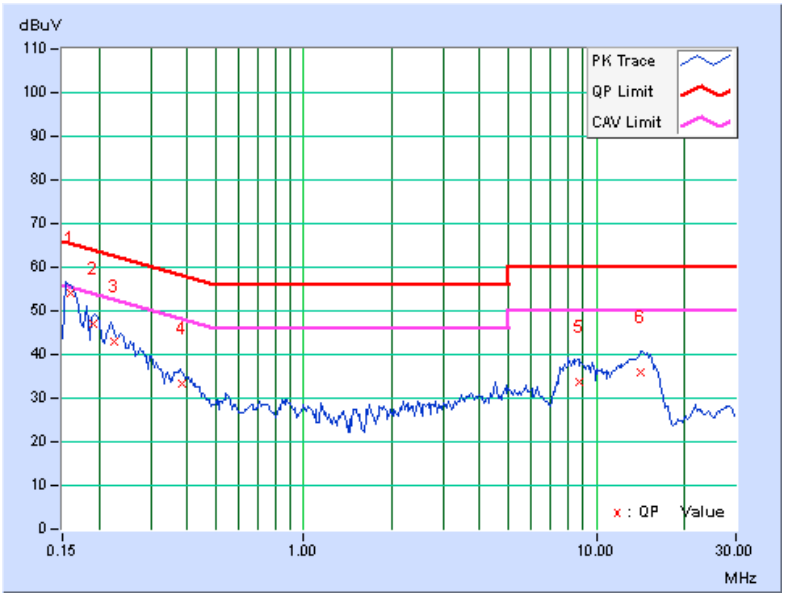


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test mode	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15900	0.17	53.75	40.94	53.92	41.11	65.52	55.52	-11.60	-14.41
2	0.19016	0.17	46.94	33.70	47.11	33.87	64.03	54.03	-16.92	-20.16
3	0.22540	0.17	42.70	30.00	42.87	30.17	62.62	52.62	-19.75	-22.45
4	0.38556	0.18	33.33	27.10	33.51	27.28	58.16	48.16	-24.65	-20.88
5	8.75000	0.43	33.33	27.88	33.76	28.31	60.00	50.00	-26.24	-21.69
6	14.22266	0.52	35.49	30.29	36.01	30.81	60.00	50.00	-23.99	-19.19

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.

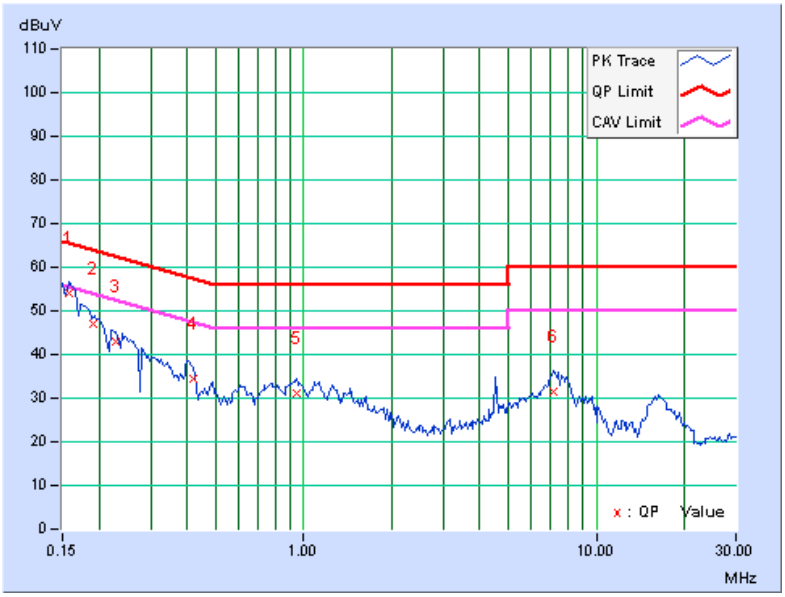


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test mode	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.18	53.79	40.42	53.97	40.60	65.58	55.58	-11.61	-14.98
2	0.19142	0.18	47.01	34.24	47.19	34.42	63.97	53.97	-16.79	-19.56
3	0.22812	0.18	42.82	30.30	43.00	30.48	62.52	52.52	-19.52	-22.04
4	0.41963	0.20	34.14	28.34	34.34	28.54	57.46	47.46	-23.11	-18.91
5	0.94297	0.24	30.84	25.23	31.08	25.47	56.00	46.00	-24.92	-20.53
6	7.14453	0.46	30.98	25.43	31.44	25.89	60.00	50.00	-28.56	-24.11

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 Transmit Power Measurment

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
	√	Indoor Access Point	1 Watt (30 dBm)
		Mobile and Portable client device	250mW (24 dBm)
U-NII-2A	---		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	---		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

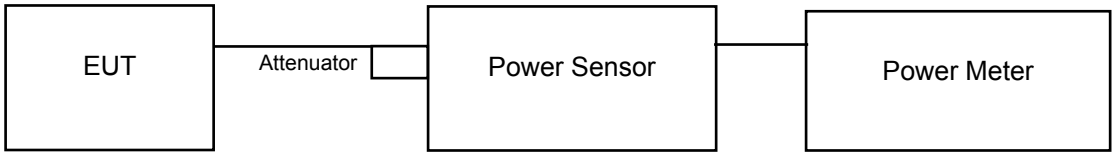
*B is the 26 dB emission bandwidth in megahertz

Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

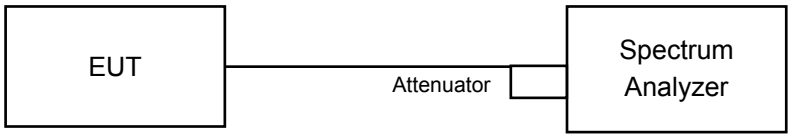
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

For 802.11a, 802.11n (HT20), 802.11n (HT40), 802.11ac (VHT20), 802.11ac (VHT40)



For 802.11ac (VHT80)



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

FOR AVERAGE POWER MEASUREMENT

For 802.11a, 802.11n (HT20), 802.11n (HT40), 802.11ac (VHT20), 802.11ac (VHT40)
Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

For 802.11ac (VHT80)

a. Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.

b. Set sweep trigger to “free run”.

c. Set RBW = 1 MHz.

d. Set VBW ≥ 3 MHz

e. Number of points in sweep ≥ 2 Span / RBW.

f. Sweep time ≤ (number of points in sweep) * T

g. Using emission bandwidth to determine the frequency span for integration the channel bandwidth.

h. Detector = RMS.

i. Trace mode = max hold.

j. Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

4.3.5 Deviation fromTest Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

Power Output:

802.11a

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
36	5180	15.10	16.19	18.30	141.558	21.51	30	Pass
40	5200	17.81	19.20	19.67	**236.254**	23.73	30	Pass
48	5240	18.32	17.85	18.34	197.108	22.95	30	Pass
149	5745	13.30	14.51	10.25	60.222	17.80	30	Pass
157	5785	12.70	14.50	15.66	83.618	19.22	30	Pass
165	5825	13.10	13.98	10.87	57.638	17.61	30	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
36	5180	15.04	16.03	18.33	140.079	21.46	30	Pass
40	5200	17.64	19.07	19.83	234.961	23.71	30	Pass
48	5240	18.54	17.84	18.46	202.410	23.06	30	Pass
149	5745	14.04	15.28	15.43	**93.994**	19.73	30	Pass
157	5785	13.61	15.16	15.42	90.605	19.57	30	Pass
165	5825	13.91	14.41	14.66	81.452	19.11	30	Pass

802.11n (HT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
38	5190	11.33	12.22	12.70	48.876	16.89	30	Pass
46	5230	18.22	18.88	19.25	227.782	23.58	30	Pass
151	5755	10.55	11.84	12.49	44.368	16.47	30	Pass
159	5795	12.92	15.05	15.11	84.011	19.24	30	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
42	5210	8.52	9.17	10.02	25.418	14.05	30	Pass
155	5775	8.44	9.34	9.48	24.444	13.88	30	Pass

26dB Bandwidth:

802.11a

Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
36	5180	24.67	26.84	29.37	Pass
40	5200	37.45	36.26	38.59	Pass
48	5240	37.75	30.10	33.11	Pass

802.11n (HT20)

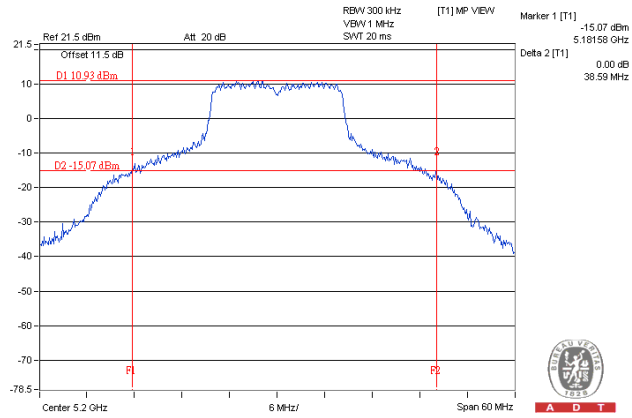
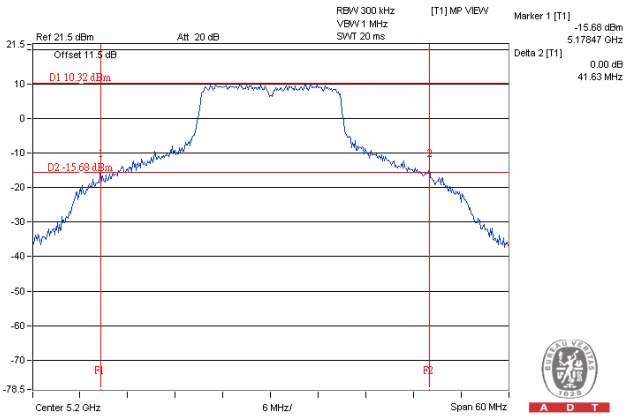
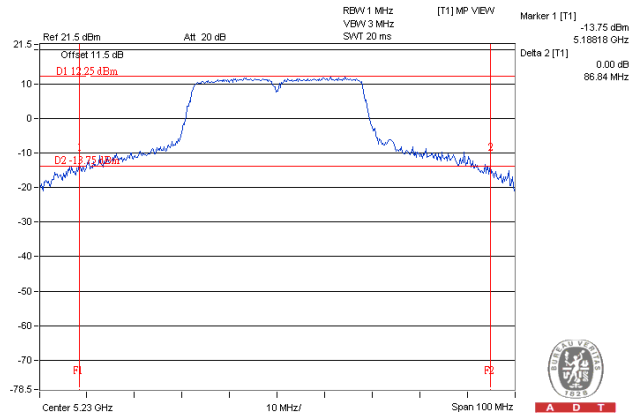
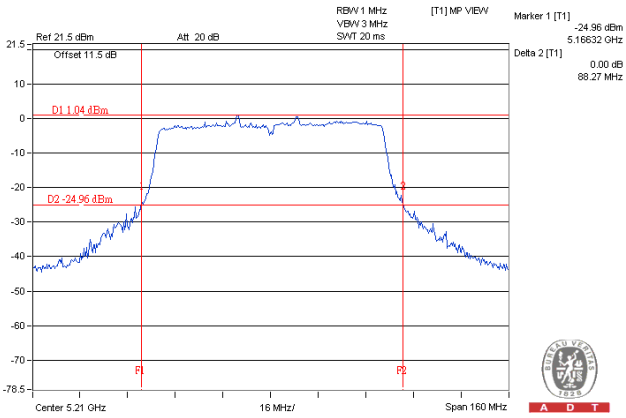
Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
36	5180	32.46	27.97	36.12	Pass
40	5200	40.36	38.41	41.63	Pass
48	5240	39.39	31.41	35.10	Pass

802.11n (HT40)

Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
38	5190	46.93	46.96	46.39	Pass
46	5230	86.84	68.65	80.14	Pass

802.11ac (VHT80)

Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
42	5210	88.27	87.48	88.07	Pass

Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

Occupied Bandwidth:

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
36	5180	16.92	16.92	17.16
40	5200	19.68	18.84	19.92
48	5240	19.20	17.40	17.88
149	5745	16.87	16.78	16.78
157	5785	16.92	16.80	16.68
165	5825	16.92	16.80	16.68

802.11n (HT20)

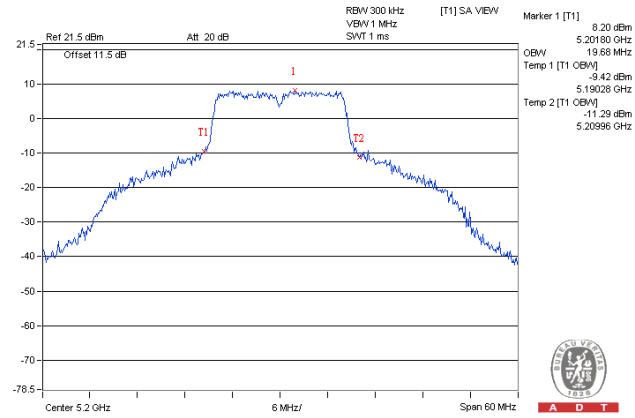
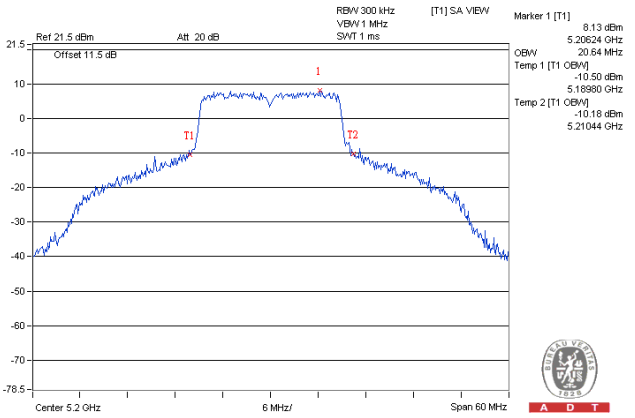
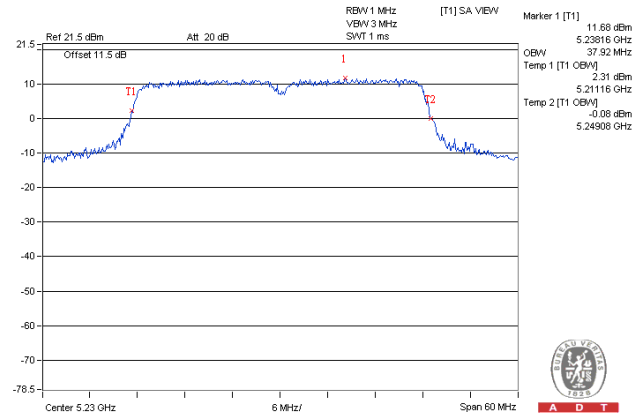
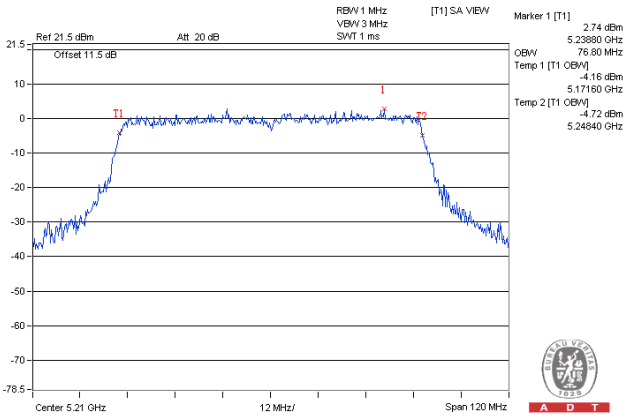
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
36	5180	18.48	18.12	18.60
40	5200	20.64	19.44	20.64
48	5240	19.99	18.48	18.84
149	5745	18.12	17.88	18.00
157	5785	18.00	17.88	17.88
165	5825	18.00	17.88	18.00

802.11n (HT40)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
38	5190	36.96	37.20	37.08
46	5230	37.92	37.20	37.56
151	5755	37.20	37.08	36.96
159	5795	36.96	37.08	36.96

802.11ac (VHT80)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
42	5210	76.80	76.08	76.08
155	5775	76.32	76.08	76.08

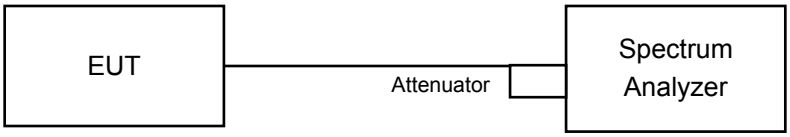
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

4.4 Peak Power Spectral Density Measurement

4.4.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
	√	Indoor Access Point	
		Mobile and Portable client device	11dBm/ MHz
U-NII-2A	---		11dBm/ MHz
U-NII-2C	---		11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

For U-NII-1 band:

Using method SA-2

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS

c. Sweep time = auto, trigger set to “free run”.

d. Trace average at least 100 traces in power averaging mode.

e. Record the max value and add 10 log (1/duty cycle)

For U-NII-3 band:

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS

c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.

d. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz/300kHz)

e. Sweep time = auto, trigger set to “free run”.

f. Trace average at least 100 traces in power averaging mode.

g. Record the max value and add 10 log (1/duty cycle)

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

For U-NII-1 Band

802.11a

Chan.	Freq. (MHz)	PSD (dBm)			Total PSD w/o duty factor (dBm)	Duty factor	Total PSD with duty factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2					
36	5180	1.52	2.29	4.35	7.66	0.19	7.85	15.56	Pass
40	5200	4.38	5.20	5.73	9.91	0.19	10.10	15.56	Pass
48	5240	4.77	4.26	4.88	9.41	0.19	9.60	15.56	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/3$]= 7.44 dBi > 6dBi , so the power density limit shall be reduced to 17-(7.44-6) = 15.56dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD (dBm)			Total PSD w/o duty factor (dBm)	Duty factor	Total PSD with duty factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2					
36	5180	2.40	3.37	4.45	8.26	0.42	8.68	15.56	Pass
40	5200	3.82	5.09	5.32	9.56	0.42	9.98	15.56	Pass
48	5240	4.32	3.85	4.48	9.00	0.42	9.42	15.56	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/3$]= 7.44 dBi > 6dBi , so the power density limit shall be reduced to 17-(7.44-6) = 15.56dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

Chan.	Freq. (MHz)	PSD (dBm)			Total PSD w/o duty factor (dBm)	Duty factor	Total PSD with duty factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2					
38	5190	-5.47	-5.36	-4.77	-0.42	0.38	-0.04	15.56	Pass
46	5230	1.39	1.02	1.89	6.22	0.38	6.60	15.56	Pass

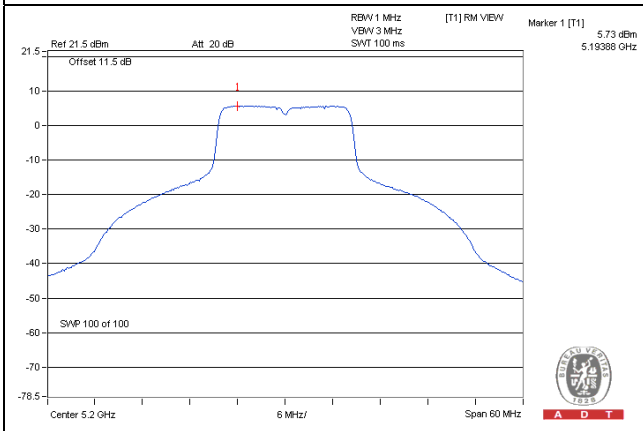
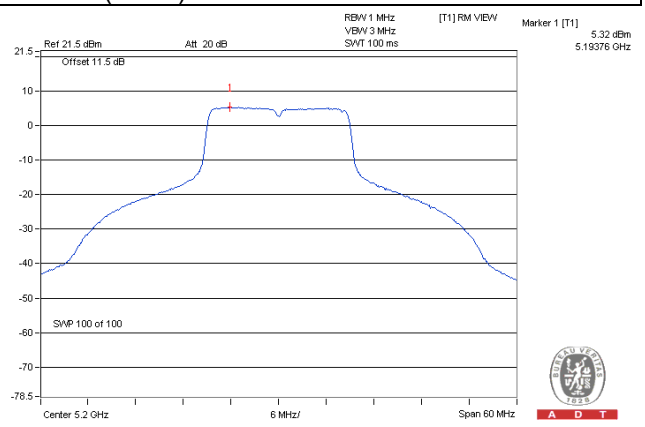
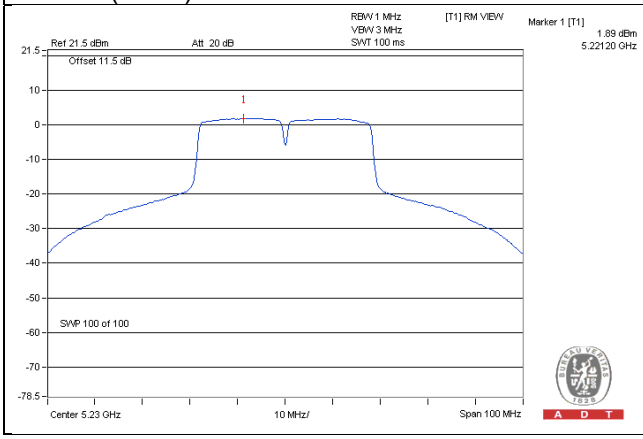
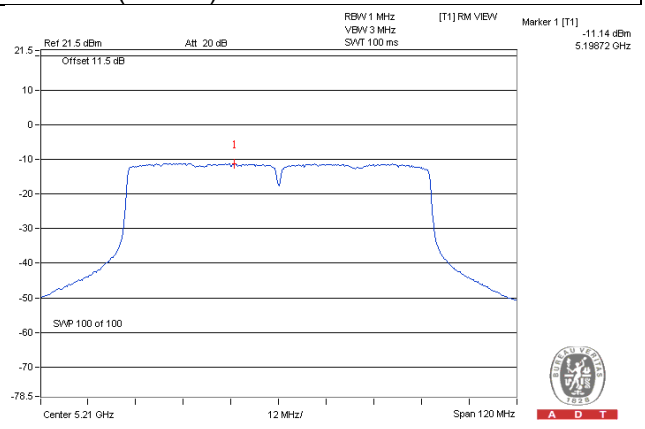
Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/3$]= 7.44 dBi > 6dBi , so the power density limit shall be reduced to 17-(7.44-6) = 15.56dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Freq. (MHz)	PSD (dBm)			Total PSD w/o duty factor (dBm)	Duty factor	Total PSD with duty factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2					
42	5210	-11.40	-11.82	-11.14	-6.68	0.56	-6.12	15.56	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[($10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20}$)^2/3]= 7.44 dBi > 6dBi , so the power density limit shall be reduced to 17-(7.44-6) = 15.56dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

For U-NII-3 Band

802.11a

TX chain	Channel	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=3) dB	Duty factor	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	149	5745	-8.67	-6.45	4.77	0.19	-1.49	28.56	Pass
	157	5785	-9.03	-6.81	4.77	0.19	-1.85	28.56	Pass
	165	5825	-9.14	-6.92	4.77	0.19	-1.96	28.56	Pass
1	149	5745	-7.89	-5.67	4.77	0.19	-0.71	28.56	Pass
	157	5785	-7.47	-5.25	4.77	0.19	-0.29	28.56	Pass
	165	5825	-8.65	-6.43	4.77	0.19	-1.47	28.56	Pass
2	149	5745	-7.50	-5.28	4.77	0.19	-0.32	28.56	Pass
	157	5785	-7.39	-5.17	4.77	0.19	-0.21	28.56	Pass
	165	5825	-8.12	-5.90	4.77	0.19	-0.94	28.56	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2/3$]= 7.44 dBi > 6dBi , so the power density limit shall be reduced to 30-(7.44-6) = 28.56dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=3) dB	Duty factor	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	149	5745	-7.98	-5.76	4.77	0.42	-0.57	28.56	Pass
	157	5785	-8.60	-6.38	4.77	0.42	-1.19	28.56	Pass
	165	5825	-8.82	-6.60	4.77	0.42	-1.41	28.56	Pass
1	149	5745	-7.32	-5.10	4.77	0.42	0.09	28.56	Pass
	157	5785	-7.31	-5.09	4.77	0.42	0.10	28.56	Pass
	165	5825	-8.27	-6.05	4.77	0.42	-0.86	28.56	Pass
2	149	5745	-7.14	-4.92	4.77	0.42	0.27	28.56	Pass
	157	5785	-7.18	-4.96	4.77	0.42	0.23	28.56	Pass
	165	5825	-7.96	-5.74	4.77	0.42	-0.55	28.56	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2/3$]= 7.44 dBi > 6dBi , so the power density limit shall be reduced to 30-(7.44-6) = 28.56dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

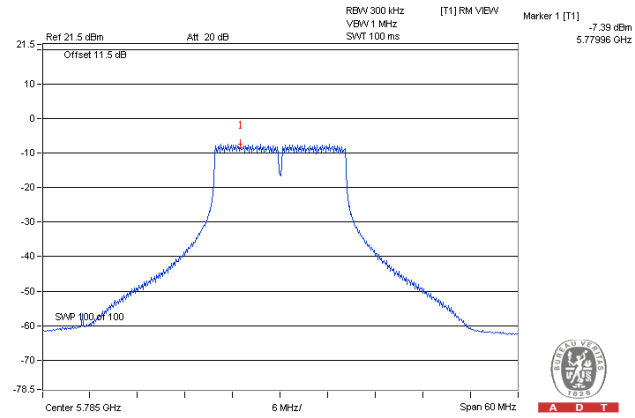
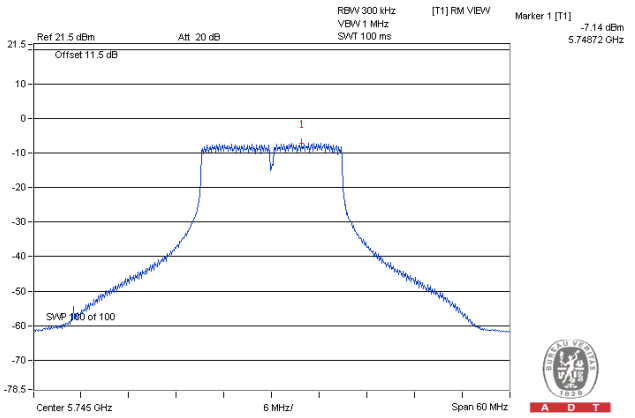
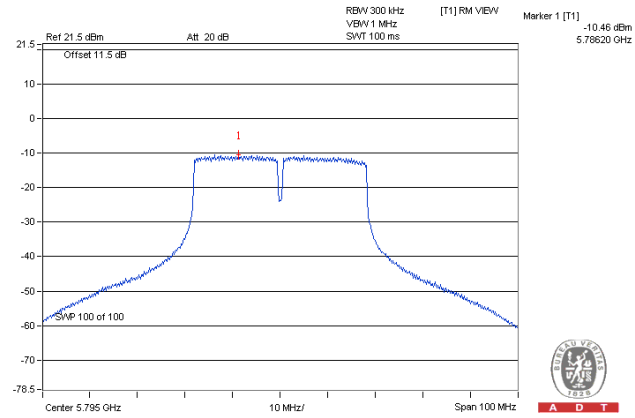
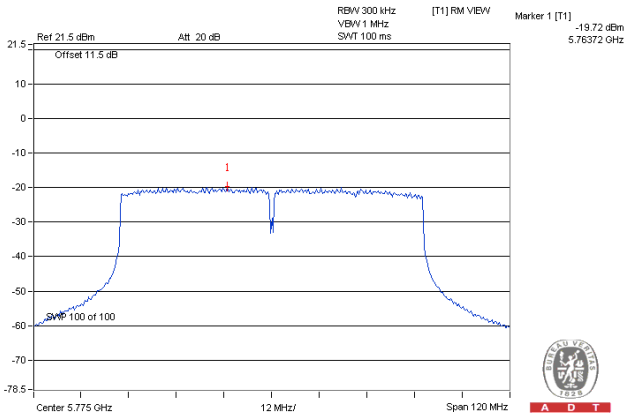
TX chain	Channel	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=3) dB	Duty factor	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	151	5755	-15.04	-12.82	4.77	0.38	-7.67	28.56	Pass
	159	5795	-12.95	-10.73	4.77	0.38	-5.58	28.56	Pass
1	151	5755	-14.11	-11.89	4.77	0.38	-6.74	28.56	Pass
	159	5795	-10.56	-8.34	4.77	0.38	-3.19	28.56	Pass
2	151	5755	-13.44	-11.22	4.77	0.38	-6.07	28.56	Pass
	159	5795	-10.46	-8.24	4.77	0.38	-3.09	28.56	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2/3$]= 7.44 dBi > 6dBi , so the power density limit shall be reduced to 30-(7.44-6) = 28.56dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=3) dB	Duty factor	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	155	5775	-21.42	-19.20	4.77	0.56	-13.87	28.56	Pass
1	155	5775	-19.75	-17.53	4.77	0.56	-12.20	28.56	Pass
2	155	5775	-19.72	-17.50	4.77	0.56	-12.17	28.56	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2/3$]= 7.44 dBi > 6dBi , so the power density limit shall be reduced to 30-(7.44-6) = 28.56dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

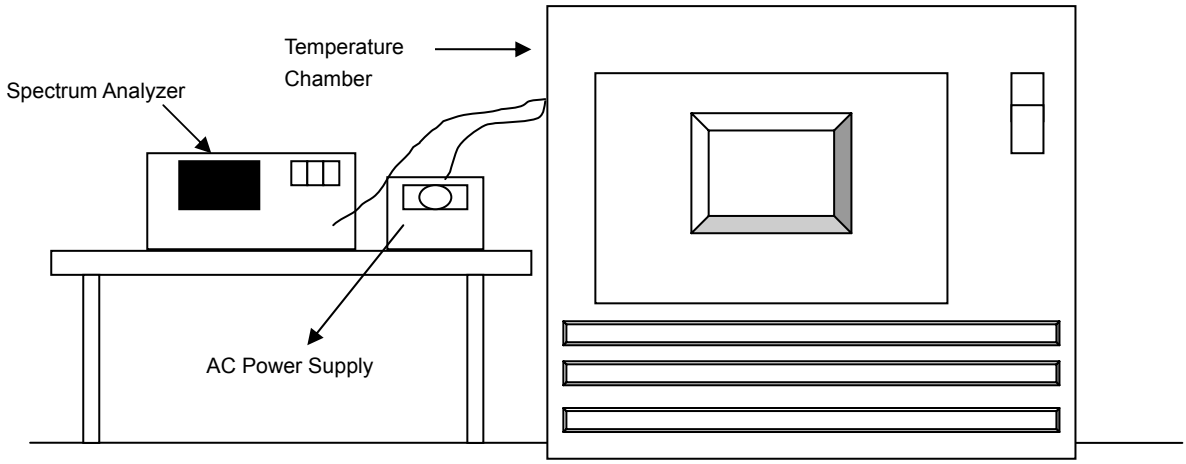
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

4.5 Frequency Stability

4.5.1 Limits of Frequency Stability Measurement

The frequency of the carrier signal shall be maintained within band of operation

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.

b. Turn the EUT on and couple its output to a spectrum analyzer.

c. Turn the EUT off and set the chamber to the highest temperature specified.

d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.

e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.

f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Set the EUT transmit at un-modulation mode to test frequency stability.

4.5.7 Test Results

Frequemcy Stability Versus Temp.									
Operating Frequency: 5180MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
40	120	5179.9901	-0.00019	5179.9873	-0.00025	5179.9911	-0.00017	5179.9869	-0.00025
30	120	5179.9895	-0.00020	5179.987	-0.00025	5179.9871	-0.00025	5179.9883	-0.00023
20	120	5179.9772	-0.00044	5179.9773	-0.00044	5179.9746	-0.00049	5179.9756	-0.00047
10	120	5180.0073	0.00014	5180.0048	0.00009	5180.0058	0.00011	5180.0097	0.00019
0	120	5179.9907	-0.00018	5179.9938	-0.00012	5179.9932	-0.00013	5179.9937	-0.00012

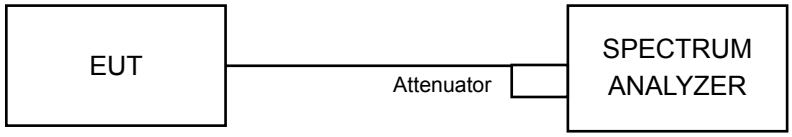
Frequemcy Stability Versus Temp.									
Operating Frequency: 5180MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5180.0066	0.00013	5180.0045	0.00009	5180.0065	0.00013	5180.0092	0.00018
	120	5180.0073	0.00014	5180.0048	0.00009	5180.0058	0.00011	5180.0097	0.00019
	102	5180.0064	0.00012	5180.0045	0.00009	5180.0051	0.00010	5180.0095	0.00018

4.6 6dB Bandwidth Measurment

4.6.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

a. Set resolution bandwidth (RBW) = 100kHz

b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.

c. Trace mode = max hold.

d. Sweep = auto couple.

e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
149	5745	16.37	16.37	16.39	0.5	Pass
157	5785	16.39	16.42	16.41	0.5	Pass
165	5825	16.38	16.39	16.41	0.5	Pass

802.11n (HT20)

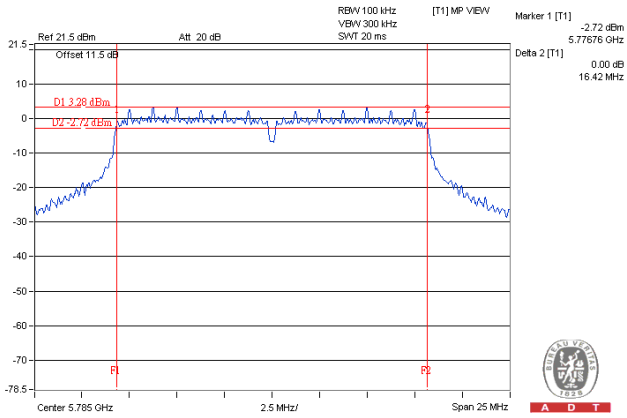
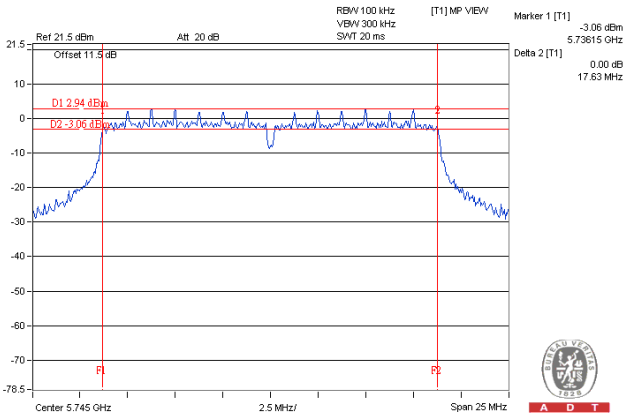
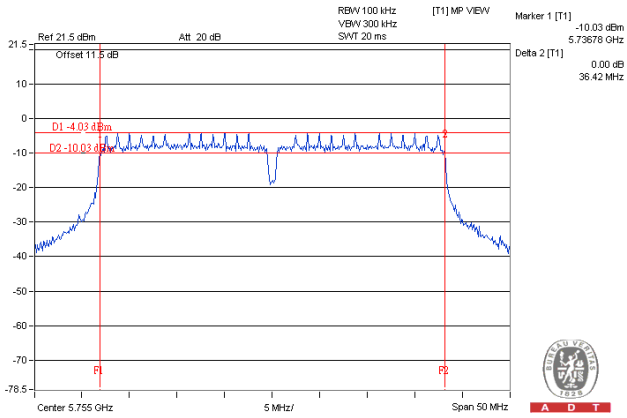
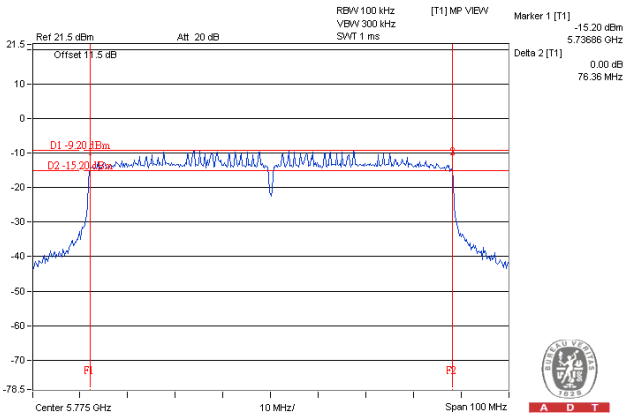
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
149	5745	17.63	17.60	17.60	0.5	Pass
157	5785	17.61	17.61	17.61	0.5	Pass
165	5825	17.60	17.60	17.61	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
151	5755	36.42	36.34	36.40	0.5	Pass
159	5795	36.42	35.89	36.34	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
155	5775	76.36	75.87	75.94	0.5	Pass

Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

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

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.

--- END ---