FCC Test Report

Report No.:	RF160219E04
FCC ID:	RSL-AP500
Test Model:	AT-AP500
Received Date:	July 24, 2014
Test Date:	Sep. 10, 2014 and Mar. 14 to 22, 2016
Issued Date:	Apr. 14, 2016
Applicant:	Allied Telesis K.K.
Address:	2nd TOC Bldg. 7-21-11 Nishi-Gotanda, Shinagawa-ku, Tokyo 141-0031, Japan
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (1):	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RF160219E04	Original release.	Apr. 14, 2016

1 Certificate of Conformity

Product:	Cloud-Managed Enterprise-class Wireless Access Point with IEEE802.11a/b/g/n/ac Dual Radio
Brand:	Allied Telesis
Test Model:	AT-AP500
Sample Status:	ENGINEERING SAMPLE
Applicant:	Allied Telesis K.K.
Test Date:	Sep. 10, 2014 and Mar. 14 to 22, 2016
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.247) ANSI C63.10: 2013

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 : _____ , **Date:** Apr. 14, 2016
Claire Kuan / Specialist

Approved by : _____ , **Date:** Apr. 14, 2016
May Chen / Manager

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 -3.76dB at 0.33750MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.3dB at 2486.00MHz
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is i-pex (MHF) 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 ports	150kHz ~ 30MHz	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.37 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.72 dB
	6GHz ~ 18GHz	4.00 dB
	18GHz ~ 40GHz	4.11 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Cloud-Managed Enterprise-class Wireless Access Point with IEEE802.11a/b/g/n/ac Dual Radio
Brand	Allied Telesis
Test Model	AT-AP500
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 12V from Power Adapter or DC 48V from POE Adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a / g: up to 54Mbps 802.11n: up to 450Mbps 802.11ac: up to 1733.3Mbps
Operating Frequency	**2.4GHz:** 2.412GHz ~ 2.472GHz **5GHz:** 5.18GHz ~ 5.24GHz, 5.745GHz ~ 5.825GHz
Number of Channel	**2.4GHz:** 11 for 802.11b, 802.11g, 802.11n (HT20), VHT20 7 for 802.11n (HT40), VHT40 **5GHz:** 9 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 4 for 802.11n (HT40), 802.11ac (VHT40) 2 for 802.11ac (VHT80)
Output Power	**2.4GHz:** 802.11b: 126.474mW 802.11g: 362.092mW 802.11n (HT20): 275.13mW 802.11n (HT40): 118.624mW **5GHz (5.18 ~ 5.24GHz):** 802.11a: 374.366mW 802.11ac (VHT20): 354.405mW 802.11ac (VHT40): 287.629mW 802.11ac (VHT80): 84.17mW **5GHz (5.745 ~ 5.825GHz):** 802.11a: 374.284mW 802.11ac (VHT20): 348.113mW 802.11ac (VHT40): 269.741mW 802.11ac (VHT80): 50.927mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Power Adapter (Option) x 1
Data Cable Supplied	NA

Note:

1. 2.4GHz and 5GHz technology can transmit at same time.
2. The EUT could be supplied with a power adapter (Option) or POE adapter (only for test,not for sale) as following table:

Item	Brand	Model No.	Spec.
Power adapter	Elementech	A124-11202050	Input: 100-240V, 0.6A, 50/60Hz Output: 12.0V, 2A DC output cable(1.8m, unshielded)
POE adapter	RUCKUS	GRT-480125A (740-64216-001)	Input: 100-240V, 1.0A, 50/60Hz Output: 48V, 1250mA
From the above adapters, the radiated emission worse case was found in **POE adapter**. Therefore only the test data of the mode was recorded in this report.			

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

2.4GHz					
Transmitter Circuit	Brand	Model	Antenna Type	Antenna Gain(dBi) Including cable loss	Connector type
Chain (0)	Aristotle	RFA-02-G133-70B-110R	PIFA	3.1	i-pex(MHF)
Chain (1)		RFA-52-G181-58-90		2.47	
Chain (2)		RFA-02-G133-70B-180		1.75	
5 GHz					
Transmitter Circuit	Brand	Model	Antenna Type	Antenna Gain(dBi) Including cable loss	Connector type
Chain (0)	Aristotle	RFA-05-G134-70-230C	PIFA	2.65	i-pex(MHF)
Chain (1)		RFA-52-G181-58-90		5.55	
Chain (2)		RFA-05-G134-70-105C		4.15	
Chain (3)		RFA-05-G134-70-75C		4.04	

4. The EUT incorporates a MIMO function.

2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11b	1 ~ 11Mbps	1Tx Fixed Chan 0	3Rx
802.11g	6 ~ 54Mbps	3Tx/2Tx/1Tx diversity	3Rx
802.11n (HT20)	MCS 0~7	3Tx/2Tx/1Tx diversity	3Rx
	MCS 8~15	3Tx/2Tx	3Rx
	MCS 16~23	3Tx	3Rx
802.11n (HT40)	MCS 0~7	3Tx/2Tx/1Tx diversity	3Rx
	MCS 8~15	3Tx/2Tx	3Rx
	MCS 16~23	3Tx	3Rx
VHT20	MCS0~8 Nss=1	3Tx/2Tx/1Tx diversity	3Rx
	MCS0~8 Nss=2	3Tx/2Tx	3Rx
	MCS0~9 Nss=3	3Tx	3Rx
VHT40	MCS0~9 Nss=1	3Tx/2Tx/1Tx diversity	3Rx
	MCS0~9 Nss=2	3Tx/2Tx	3Rx
	MCS0~9 Nss=3	3Tx	3Rx
5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	6 ~ 54Mbps	4Tx/3Tx/2Tx/1Tx diversity	4Rx
802.11n (HT20)	MCS 0~7	4Tx/3Tx/2Tx/1Tx diversity	4Rx
	MCS 8~15	4Tx/3Tx/2Tx	4Rx
	MCS 16~23	4Tx/3Tx	4Rx
	MCS 24~31	4Tx	4Rx
802.11n (HT40)	MCS 0~7	4Tx/3Tx/2Tx/1Tx diversity	4Rx
	MCS 8~15	4Tx/3Tx/2Tx	4Rx
	MCS 16~23	4Tx/3Tx	4Rx
	MCS 24~31	4Tx	4Rx
802.11ac (VHT20)	MCS0~8 Nss=1	4Tx/3Tx/2Tx/1Tx diversity	4Rx
	MCS0~8 Nss=2	4Tx/3Tx/2Tx	4Rx
	MCS0~9 Nss=3	4Tx/3Tx	4Rx
	MCS0~8 Nss=4	4Tx	4Rx
802.11ac (VHT40)	MCS0~9 Nss=1	4Tx/3Tx/2Tx/1Tx diversity	4Rx
	MCS0~9 Nss=2	4Tx/3Tx/2Tx	4Rx
	MCS0~9 Nss=3	4Tx/3Tx	4Rx
	MCS0~9 Nss=4	4Tx	4Rx
802.11ac (VHT80)	MCS0~9 Nss=1	4Tx/3Tx/2Tx/1Tx diversity	4Rx
	MCS0~9 Nss=2	4Tx/3Tx/2Tx	4Rx
	MCS0~9 Nss=3	4Tx/3Tx	4Rx
	MCS0~9 Nss=4	4Tx	4Rx
Note: 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)			

5. Spurious emission of the simultaneous operation (2.4GHz and 5GHz) has been evaluated and no non-compliance was found.
6. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20), VHT20:

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), VHT40:

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≥1G	RE<1G	PLC	APCM	
1	√	√	√	√	With PoE
2	-	-	√	-	With adapter

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: The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on **X-plane**

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

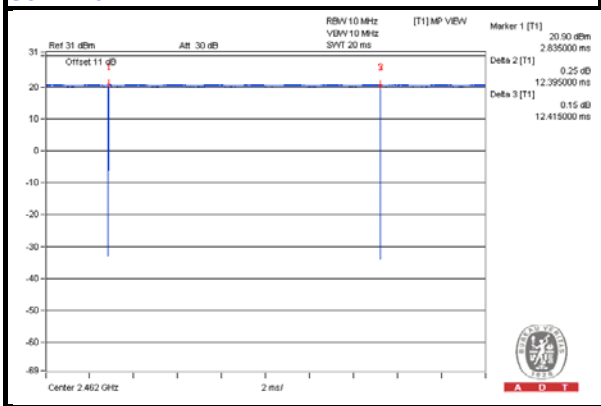
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	22deg. C, 66%RH	120Vac, 60Hz	Andy Ho
	22deg. C, 66%RH	120Vac, 60Hz	Gary Cheng
RE<1G	22deg. C, 72%RH	120Vac, 60Hz	Andy Ho
PLC	24deg. C, 61%RH	120Vac, 60Hz	Eagle Chen
APCM	25deg. C, 60%RH	120Vac, 60Hz	James Chan
	25deg. C, 60%RH	120Vac, 60Hz	Gary Cheng

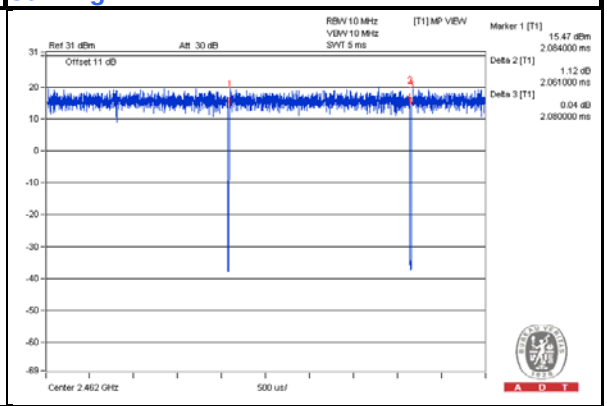
3.3 Duty Cycle of Test Signal

Duty cycle of test signal is ≥ 98 %, duty factor is not required.
802.11b: Duty cycle = 12.395 ms/12.415 ms = 0.998
802.11g: Duty cycle = 2.061 ms/2.08 ms = 0.991
802.11n (HT20): Duty cycle = 1.916 ms/1.938 ms = 0.989
802.11n (HT40): Duty cycle = 0.939 ms/0.958 ms = 0.98

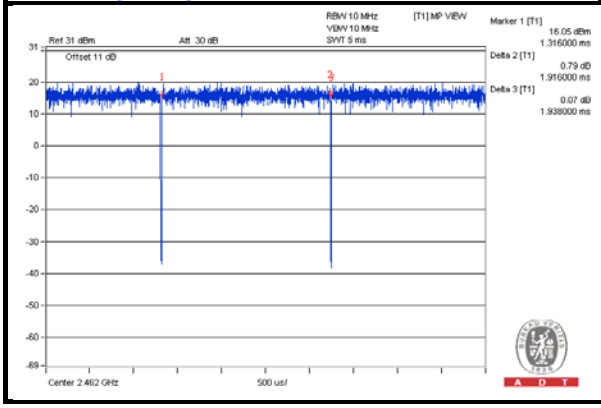
802.11b



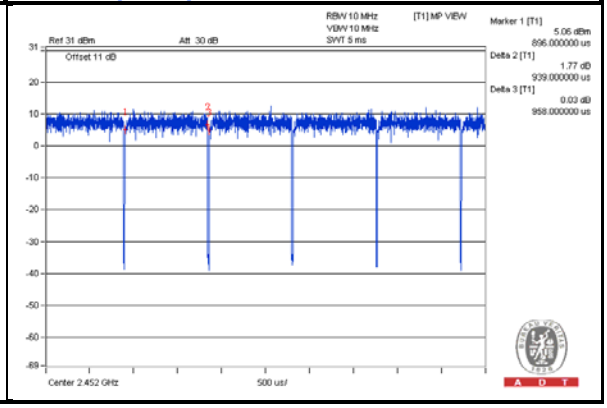
802.11g



802.11n (HT20)



802.11n (HT40)



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 COMPUTER	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
B.	POE	RUCKUS	GRT-480125A (740-64216-001)	NA	NA	Supplied by client

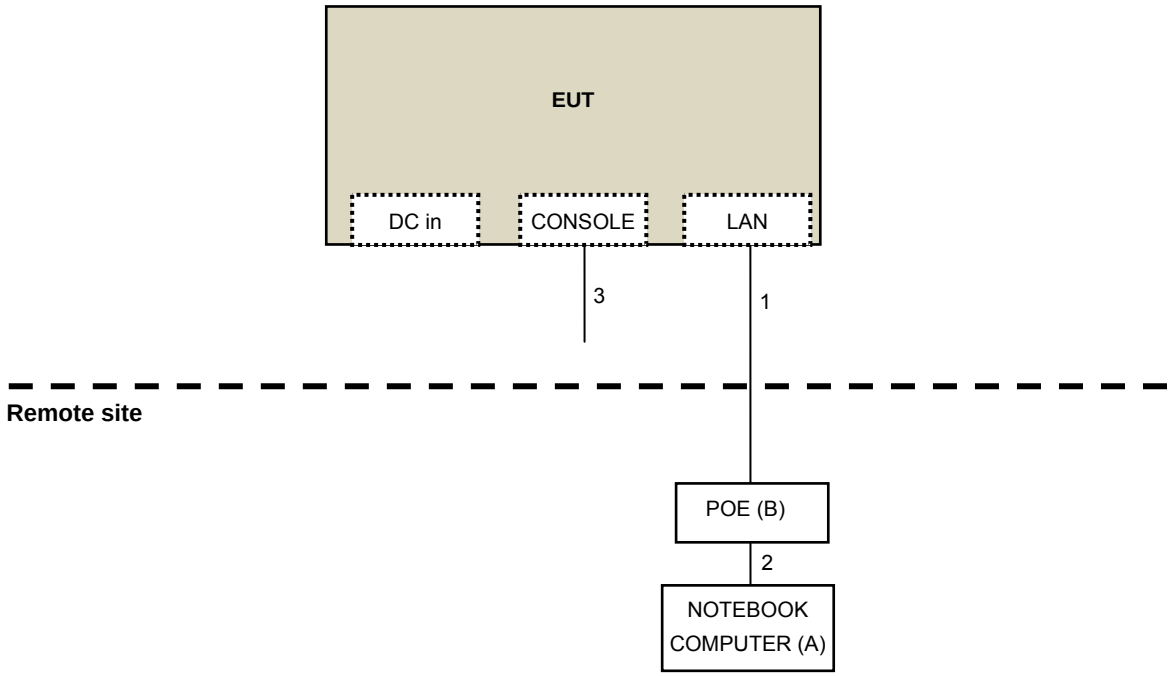
Note:

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

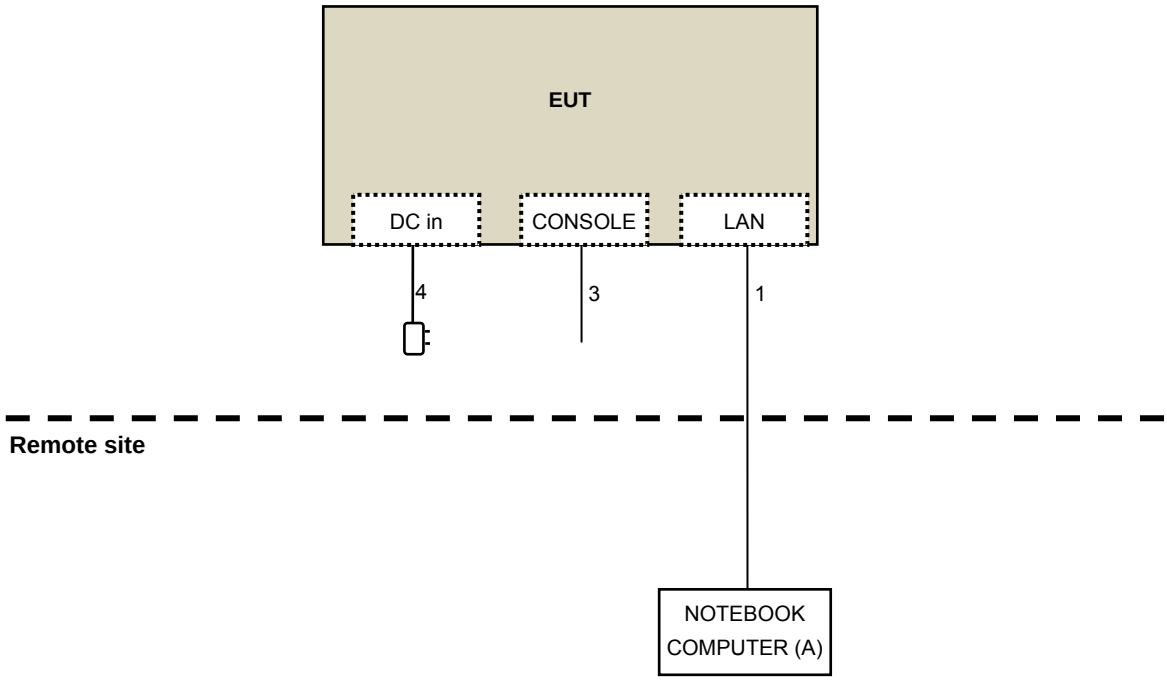
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-45	1	10	No	0	Provided by Lab
2.	RJ-45	1	3	No	0	Provided by Lab
3.	Console	1	1.8	No	0	Provided by Lab
4.	DC	1	1.8	No	0	Supplied by client

3.4.1 Configuration of System under Test

For PoE Mode:



For Adapter Mode:



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)
KDB 558074 D01 DTS Meas Guidance v03r04
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.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	Aug. 12, 2015	Aug. 11, 2016
Pre-Amplifier(*) EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2014	Dec. 15, 2016
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 18, 2016	Jan. 17, 2017
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-07	May 08, 2015	May 07, 2016
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	138	Jan. 18, 2016	Jan. 17, 2017
RF Cable	8D	966-3-1 966-3-2 966-3-3	Apr. 03, 2015	Apr. 02, 2016
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Jan. 20, 2016	Jan. 19, 2017
Pre-Amplifier Agilent	8449B	3008A02465	Apr. 06, 2015	Apr. 05, 2016
RF Cable	EMC104-SM-SM-2000 EMC104-SM-SM-5000 EMC104-SM-SM-5000	150317 150321 150322	Mar. 31, 2015	Mar. 30, 2016
Spectrum Analyzer Keysight	N9030A	MY54490520	July 26, 2015	July 25, 2016
Pre-Amplifier EMCI	EMC184045	980143	Jan. 15, 2016	Jan. 14, 2017
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Jan. 08, 2016	Jan. 07, 2017
RF Cable	SUCOFLEX 102	36432/2 36441/2	Jan. 16, 2016	Jan. 15, 2017
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA
Boresight Antenna Fixture	NA	NA	NA	NA
Power Meter Anritsu	ML2495A	1014008	Apr. 28, 2015	Apr. 27, 2016
Power Sensor Anritsu	MA2411B	0917122	Apr. 28, 2015	Apr. 27, 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 966 Chamber No. 3.
3. The FCC Site Registration No. is 147459
4. The CANADA Site Registration No. is 20331-1
5. Tested Date: Mar. 22, 2016

4.1.3 Test Procedures

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

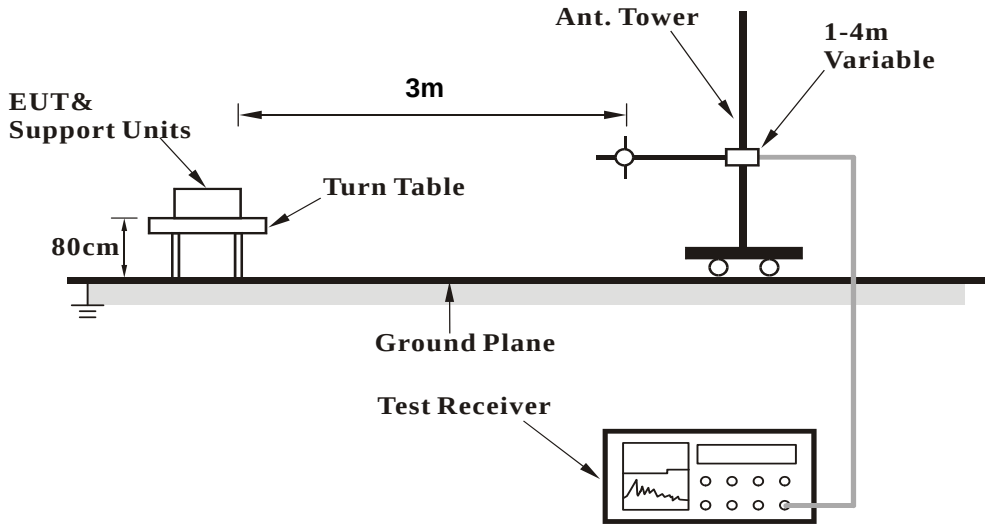
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

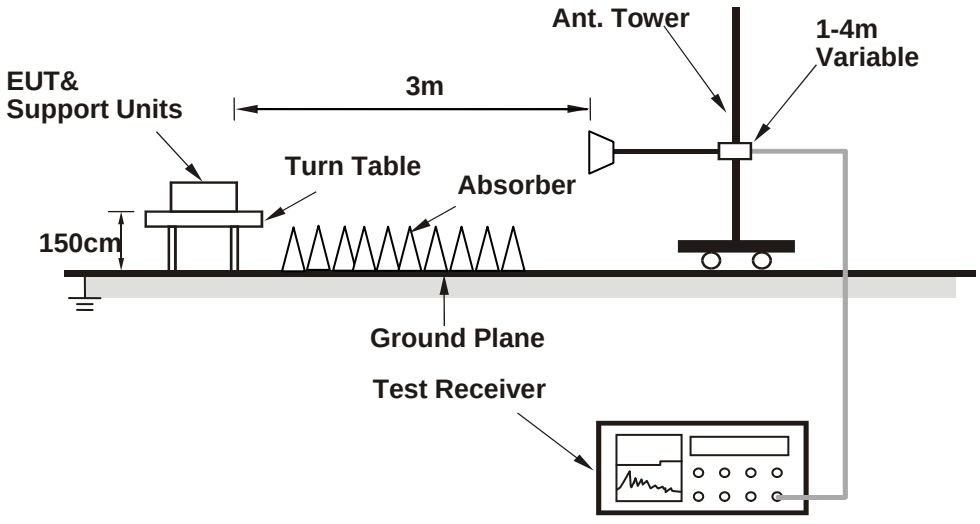
No deviation.

4.1.5 Test Setup

<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

1. Turn on the power of all equipment.
2. The support unit A (Notebook Computer) runs “Mtool.exe [V2.0.2.7]” program to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz Data：

802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	56.5 PK	74.0	-17.5	1.09 H	330	60.88	-4.38
2	2390.00	49.9 AV	54.0	-4.1	1.09 H	330	54.28	-4.38
3	*2412.00	107.5 PK			1.03 H	317	111.81	-4.31
4	*2412.00	105.2 AV			1.03 H	317	109.51	-4.31
5	4824.00	51.9 PK	74.0	-22.1	1.49 H	57	49.91	1.99
6	4824.00	44.2 AV	54.0	-9.8	1.49 H	57	42.21	1.99
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	58.5 PK	74.0	-15.5	1.20 V	27	62.88	-4.38
2	2390.00	52.4 AV	54.0	-1.6	1.20 V	27	56.78	-4.38
3	*2412.00	108.4 PK			1.22 V	27	112.71	-4.31
4	*2412.00	106.1 AV			1.22 V	27	110.41	-4.31
5	4824.00	51.5 PK	74.0	-22.5	1.20 V	175	49.51	1.99
6	4824.00	42.9 AV	54.0	-11.1	1.20 V	175	40.91	1.99

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	48.5 PK	74.0	-25.5	1.02 H	209	52.88	-4.38
2	2390.00	35.4 AV	54.0	-18.6	1.02 H	209	39.78	-4.38
3	*2437.00	107.1 PK			1.02 H	209	111.34	-4.24
4	*2437.00	104.6 AV			1.02 H	209	108.84	-4.24
5	2483.50	52.2 PK	74.0	-21.8	1.02 H	209	56.29	-4.09
6	2483.50	38.3 AV	54.0	-15.7	1.02 H	209	42.39	-4.09
7	4874.00	46.3 PK	74.0	-27.7	3.24 H	127	44.17	2.13
8	4874.00	39.5 AV	54.0	-14.5	3.24 H	127	37.37	2.13
9	7311.00	49.8 PK	74.0	-24.2	2.42 H	69	41.20	8.60
10	7311.00	39.6 AV	54.0	-14.4	2.42 H	69	31.00	8.60
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	48.7 PK	74.0	-25.3	2.25 V	203	53.08	-4.38
2	2390.00	35.7 AV	54.0	-18.3	2.25 V	203	40.08	-4.38
3	*2437.00	108.0 PK			2.25 V	203	112.24	-4.24
4	*2437.00	105.5 AV			2.25 V	203	109.74	-4.24
5	2483.50	53.0 PK	74.0	-21.0	2.25 V	203	57.09	-4.09
6	2483.50	38.5 AV	54.0	-15.5	2.25 V	203	42.59	-4.09
7	4874.00	46.0 PK	74.0	-28.0	2.47 V	112	43.87	2.13
8	4874.00	40.4 AV	54.0	-13.6	2.47 V	112	38.27	2.13
9	7311.00	51.7 PK	74.0	-22.3	2.63 V	113	43.10	8.60
10	7311.00	43.8 AV	54.0	-10.2	2.63 V	113	35.20	8.60

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 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	107.6 PK			1.05 H	316	111.76	-4.16
2	*2462.00	104.9 AV			1.05 H	316	109.06	-4.16
3	2483.50	56.9 PK	74.0	-17.1	1.00 H	331	60.99	-4.09
4	2483.50	50.0 AV	54.0	-4.0	1.00 H	331	54.09	-4.09
5	4924.00	51.6 PK	74.0	-22.4	1.52 H	50	49.39	2.21
6	4924.00	44.4 AV	54.0	-9.6	1.52 H	50	42.19	2.21
7	7386.00	52.4 PK	74.0	-21.6	1.28 H	264	43.61	8.79
8	7386.00	42.6 AV	54.0	-11.4	1.28 H	264	33.81	8.79
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	108.1 PK			2.25 V	208	112.26	-4.16
2	*2462.00	105.6 AV			2.25 V	208	109.76	-4.16
3	2483.50	59.2 PK	74.0	-14.8	1.16 V	33	63.29	-4.09
4	2483.50	52.6 AV	54.0	-1.4	1.16 V	33	56.69	-4.09
5	4924.00	46.3 PK	74.0	-27.7	2.46 V	98	44.09	2.21
6	4924.00	40.5 AV	54.0	-13.5	2.46 V	98	38.29	2.21
7	7386.00	51.6 PK	74.0	-22.4	2.65 V	111	42.81	8.79
8	7386.00	43.9 AV	54.0	-10.1	2.65 V	111	35.11	8.79

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	73.0 PK	74.0	-1.0	1.04 H	323	77.38	-4.38
2	2390.00	52.4 AV	54.0	-1.6	1.04 H	323	56.78	-4.38
3	*2412.00	114.2 PK			1.16 H	133	118.51	-4.31
4	*2412.00	103.8 AV			1.16 H	133	108.11	-4.31
5	4824.00	51.0 PK	74.0	-23.0	1.39 H	66	49.01	1.99
6	4824.00	43.6 AV	54.0	-10.4	1.39 H	66	41.61	1.99
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	72.2 PK	74.0	-1.8	2.91 V	178	76.58	-4.38
2	2390.00	48.2 AV	54.0	-5.8	2.91 V	178	52.58	-4.38
3	*2412.00	114.4 PK			2.91 V	178	118.71	-4.31
4	*2412.00	104.1 AV			2.91 V	178	108.41	-4.31
5	4824.00	52.3 PK	74.0	-21.7	1.26 V	138	50.31	1.99
6	4824.00	44.0 AV	54.0	-10.0	1.26 V	138	42.01	1.99

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	72.3 PK	74.0	-1.7	1.02 H	338	76.68	-4.38
2	2390.00	51.6 AV	54.0	-2.4	1.02 H	338	55.98	-4.38
3	*2437.00	116.9 PK			1.42 H	130	121.14	-4.24
4	*2437.00	106.9 AV			1.42 H	130	111.14	-4.24
5	2483.50	57.7 PK	74.0	-16.3	1.42 H	130	61.79	-4.09
6	2483.50	41.9 AV	54.0	-12.1	1.42 H	130	45.99	-4.09
7	4874.00	51.0 PK	74.0	-23.0	1.43 H	42	48.87	2.13
8	4874.00	43.9 AV	54.0	-10.1	1.43 H	42	41.77	2.13
9	7311.00	53.2 PK	74.0	-20.8	1.34 H	282	44.60	8.60
10	7311.00	43.1 AV	54.0	-10.9	1.34 H	282	34.50	8.60
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	58.7 PK	74.0	-15.3	2.82 V	180	63.08	-4.38
2	2390.00	40.7 AV	54.0	-13.3	2.82 V	180	45.08	-4.38
3	*2437.00	117.7 PK			2.82 V	180	121.94	-4.24
4	*2437.00	107.4 AV			2.82 V	180	111.64	-4.24
5	2483.50	60.5 PK	74.0	-13.5	2.82 V	180	64.59	-4.09
6	2483.50	44.4 AV	54.0	-9.6	2.82 V	180	48.49	-4.09
7	4874.00	52.2 PK	74.0	-21.8	1.26 V	151	50.07	2.13
8	4874.00	43.7 AV	54.0	-10.3	1.26 V	151	41.57	2.13
9	7311.00	55.4 PK	74.0	-18.6	1.69 V	310	46.80	8.60
10	7311.00	46.0 AV	54.0	-8.0	1.69 V	310	37.40	8.60

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 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	113.0 PK			1.10 H	316	117.16	-4.16
2	*2462.00	102.6 AV			1.10 H	316	106.76	-4.16
3	2483.50	72.6 PK	74.0	-1.4	1.07 H	338	76.69	-4.09
4	2483.50	52.0 AV	54.0	-2.0	1.07 H	338	56.09	-4.09
5	4924.00	51.2 PK	74.0	-22.8	1.43 H	54	48.99	2.21
6	4924.00	44.0 AV	54.0	-10.0	1.43 H	54	41.79	2.21
7	7386.00	53.1 PK	74.0	-20.9	1.34 H	273	44.31	8.79
8	7386.00	43.3 AV	54.0	-10.7	1.34 H	273	34.51	8.79
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	114.3 PK			1.16 V	193	118.46	-4.16
2	*2462.00	103.5 AV			1.16 V	193	107.66	-4.16
3	2483.50	71.4 PK	74.0	-2.6	1.22 V	221	75.49	-4.09
4	2483.50	50.5 AV	54.0	-3.5	1.22 V	221	54.59	-4.09
5	4924.00	52.1 PK	74.0	-21.9	1.23 V	138	49.89	2.21
6	4924.00	43.6 AV	54.0	-10.4	1.23 V	138	41.39	2.21
7	7386.00	55.5 PK	74.0	-18.5	1.67 V	318	46.71	8.79
8	7386.00	46.1 AV	54.0	-7.9	1.67 V	318	37.31	8.79

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	73.2 PK	74.0	-0.8	1.08 H	308	77.58	-4.38
2	2390.00	51.7 AV	54.0	-2.3	1.08 H	308	56.08	-4.38
3	*2412.00	112.0 PK			1.13 H	318	116.31	-4.31
4	*2412.00	101.3 AV			1.13 H	318	105.61	-4.31
5	4824.00	50.6 PK	74.0	-23.4	1.50 H	66	48.61	1.99
6	4824.00	43.4 AV	54.0	-10.6	1.50 H	66	41.41	1.99
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	70.7 PK	74.0	-3.3	1.25 V	212	75.08	-4.38
2	2390.00	49.3 AV	54.0	-4.7	1.25 V	212	53.68	-4.38
3	*2412.00	114.1 PK			1.19 V	196	118.41	-4.31
4	*2412.00	103.7 AV			1.19 V	196	108.01	-4.31
5	4824.00	51.0 PK	74.0	-23.0	1.33 V	172	49.01	1.99
6	4824.00	42.4 AV	54.0	-11.6	1.33 V	172	40.41	1.99

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	2390.00	63.1 PK	74.0	-10.9	1.14 H	315	67.48	-4.38
2	2390.00	44.5 AV	54.0	-9.5	1.14 H	315	48.88	-4.38
3	*2437.00	115.8 PK			1.13 H	314	120.04	-4.24
4	*2437.00	104.4 AV			1.13 H	314	108.64	-4.24
5	2483.50	62.3 PK	74.0	-11.7	1.12 H	299	66.39	-4.09
6	2483.50	43.8 AV	54.0	-10.2	1.12 H	299	47.89	-4.09
7	4874.00	50.3 PK	74.0	-23.7	1.59 H	62	48.17	2.13
8	4874.00	43.2 AV	54.0	-10.8	1.59 H	62	41.07	2.13
9	7311.00	52.1 PK	74.0	-21.9	1.40 H	281	43.50	8.60
10	7311.00	42.7 AV	54.0	-11.3	1.40 H	281	34.10	8.60
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	64.5 PK	74.0	-9.5	1.21 V	194	68.88	-4.38
2	2390.00	44.5 AV	54.0	-9.5	1.21 V	194	48.88	-4.38
3	*2437.00	117.0 PK			1.14 V	220	121.24	-4.24
4	*2437.00	106.4 AV			1.14 V	220	110.64	-4.24
5	2483.50	63.7 PK	74.0	-10.3	1.15 V	214	67.79	-4.09
6	2483.50	44.9 AV	54.0	-9.1	1.15 V	214	48.99	-4.09
7	4874.00	51.5 PK	74.0	-22.5	1.23 V	141	49.37	2.13
8	4874.00	43.6 AV	54.0	-10.4	1.23 V	141	41.47	2.13
9	7311.00	56.5 PK	74.0	-17.5	1.84 V	351	47.90	8.60
10	7311.00	46.8 AV	54.0	-7.2	1.84 V	351	38.20	8.60

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 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	109.8 PK			1.17 H	136	113.96	-4.16
2	*2462.00	99.4 AV			1.17 H	136	103.56	-4.16
3	2483.50	71.3 PK	74.0	-2.7	1.17 H	160	75.39	-4.09
4	2483.50	51.4 AV	54.0	-2.6	1.17 H	160	55.49	-4.09
5	4924.00	51.6 PK	74.0	-22.4	1.46 H	56	49.39	2.21
6	4924.00	44.4 AV	54.0	-9.6	1.46 H	56	42.19	2.21
7	7386.00	52.3 PK	74.0	-21.7	1.30 H	258	43.51	8.79
8	7386.00	42.9 AV	54.0	-11.1	1.30 H	258	34.11	8.79
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	110.7 PK			2.66 V	193	114.86	-4.16
2	*2462.00	100.2 AV			2.66 V	193	104.36	-4.16
3	2483.50	70.5 PK	74.0	-3.5	2.66 V	193	74.59	-4.09
4	2483.50	50.0 AV	54.0	-4.0	2.66 V	193	54.09	-4.09
5	4924.00	51.7 PK	74.0	-22.3	1.24 V	175	49.49	2.21
6	4924.00	43.3 AV	54.0	-10.7	1.24 V	175	41.09	2.21
7	7386.00	55.8 PK	74.0	-18.2	1.76 V	326	47.01	8.79
8	7386.00	45.9 AV	54.0	-8.1	1.76 V	326	37.11	8.79

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	68.1 PK	74.0	-5.9	1.11 H	333	72.48	-4.38
2	2390.00	52.9 AV	54.0	-1.1	1.11 H	333	57.28	-4.38
3	*2422.00	108.9 PK			1.09 H	332	113.17	-4.27
4	*2422.00	98.0 AV			1.09 H	332	102.27	-4.27
5	4844.00	51.1 PK	74.0	-22.9	1.49 H	67	49.05	2.05
6	4844.00	44.5 AV	54.0	-9.5	1.49 H	67	42.45	2.05
7	7266.00	52.6 PK	74.0	-21.4	1.29 H	248	44.11	8.49
8	7266.00	43.1 AV	54.0	-10.9	1.29 H	248	34.61	8.49
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	68.5 PK	74.0	-5.5	1.12 V	204	72.88	-4.38
2	2390.00	52.5 AV	54.0	-1.5	1.12 V	204	56.88	-4.38
3	*2422.00	109.0 PK			1.18 V	202	113.27	-4.27
4	*2422.00	98.8 AV			1.18 V	202	103.07	-4.27
5	4844.00	52.4 PK	74.0	-21.6	1.21 V	155	50.35	2.05
6	4844.00	44.4 AV	54.0	-9.6	1.21 V	155	42.35	2.05
7	7266.00	55.5 PK	74.0	-18.5	1.74 V	317	47.01	8.49
8	7266.00	46.3 AV	54.0	-7.7	1.74 V	317	37.81	8.49

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2386.00	68.5 PK	74.0	-5.5	1.00 H	314	72.89	-4.39
2	2386.00	50.0 AV	54.0	-4.0	1.00 H	314	54.39	-4.39
3	*2437.00	110.3 PK			1.06 H	308	114.54	-4.24
4	*2437.00	99.5 AV			1.06 H	308	103.74	-4.24
5	2486.00	70.1 PK	74.0	-3.9	1.06 H	320	74.20	-4.10
6	2486.00	51.6 AV	54.0	-2.4	1.06 H	320	55.70	-4.10
7	4874.00	50.6 PK	74.0	-23.4	1.45 H	39	48.47	2.13
8	4874.00	43.7 AV	54.0	-10.3	1.45 H	39	41.57	2.13
9	7311.00	52.6 PK	74.0	-21.4	1.38 H	253	44.00	8.60
10	7311.00	43.1 AV	54.0	-10.9	1.38 H	253	34.50	8.60
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	2386.00	69.0 PK	74.0	-5.0	1.22 V	198	73.39	-4.39
2	2386.00	48.2 AV	54.0	-5.8	1.22 V	198	52.59	-4.39
3	*2437.00	111.3 PK			1.16 V	212	115.54	-4.24
4	*2437.00	100.5 AV			1.16 V	212	104.74	-4.24
5	**2486.00**	**73.7 PK**	**74.0**	**-0.3**	**1.20 V**	**211**	**77.80**	**-4.10**
6	2486.00	51.2 AV	54.0	-2.8	1.20 V	211	55.30	-4.10
7	4874.00	51.9 PK	74.0	-22.1	1.21 V	163	49.77	2.13
8	4874.00	43.7 AV	54.0	-10.3	1.21 V	163	41.57	2.13
9	7311.00	54.6 PK	74.0	-19.4	1.69 V	333	46.00	8.60
10	7311.00	45.5 AV	54.0	-8.5	1.69 V	333	36.90	8.60

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 9	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	*2452.00	105.9 PK			1.28 H	296	110.09	-4.19
2	*2452.00	95.6 AV			1.28 H	296	99.79	-4.19
3	2483.50	69.5 PK	74.0	-4.5	1.29 H	289	73.59	-4.09
4	2483.50	52.8 AV	54.0	-1.2	1.29 H	289	56.89	-4.09
5	4904.00	50.6 PK	74.0	-23.4	1.51 H	56	48.40	2.20
6	4904.00	43.5 AV	54.0	-10.5	1.51 H	56	41.30	2.20
7	7356.00	52.4 PK	74.0	-21.6	1.29 H	250	43.68	8.72
8	7356.00	42.7 AV	54.0	-11.3	1.29 H	250	33.98	8.72
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	*2452.00	107.4 PK			1.23 V	212	111.59	-4.19
2	*2452.00	96.9 AV			1.23 V	212	101.09	-4.19
3	2483.50	68.4 PK	74.0	-5.6	1.20 V	214	72.49	-4.09
4	2483.50	52.3 AV	54.0	-1.7	1.20 V	214	56.39	-4.09
5	4904.00	51.5 PK	74.0	-22.5	1.23 V	164	49.30	2.20
6	4904.00	43.4 AV	54.0	-10.6	1.23 V	164	41.20	2.20
7	7356.00	54.7 PK	74.0	-19.3	1.70 V	302	45.98	8.72
8	7356.00	45.3 AV	54.0	-8.7	1.70 V	302	36.58	8.72

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	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.02	25.8 QP	40.0	-14.2	1.00 H	213	35.06	-9.25
2	57.25	31.4 QP	40.0	-8.6	2.00 H	263	39.81	-8.44
3	68.55	28.1 QP	40.0	-11.9	1.50 H	15	37.70	-9.57
4	178.06	23.7 QP	43.5	-19.8	1.50 H	253	32.89	-9.20
5	225.05	25.3 QP	46.0	-20.7	1.50 H	306	36.21	-10.93
6	637.57	27.4 QP	46.0	-18.6	1.50 H	31	26.98	0.43
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	41.88	33.7 QP	40.0	-6.3	1.00 V	294	42.25	-8.59
2	79.67	35.6 QP	40.0	-4.4	1.50 V	144	47.72	-12.10
3	117.43	30.1 QP	43.5	-13.4	1.00 V	346	40.95	-10.83
4	221.14	23.5 QP	46.0	-22.5	1.50 V	55	34.60	-11.08
5	274.08	22.1 QP	46.0	-24.0	1.00 V	63	30.28	-8.23
6	800.02	30.1 QP	46.0	-15.9	1.50 V	194	27.06	3.05

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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	100375	May 06, 2015	May 05, 2016
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 01, 2015	Aug. 31, 2016
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 11, 2015	June 10, 2016
RF Cable	5D-FB	COCCAB-001	Mar. 08, 2016	Mar. 07, 2017
50 ohms Terminator	N/A	EMC-03	Sep. 23, 2015	Sep. 22, 2016
50 ohms Terminator	N/A	EMC-02	Oct. 01, 2015	Sep. 30, 2016
50 ohms Terminator	E1-011315	13	Dec. 11 2015	Dec. 10 2016
Software BVADT	BVADT_Cond_ V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: Mar. 22, 2016

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.

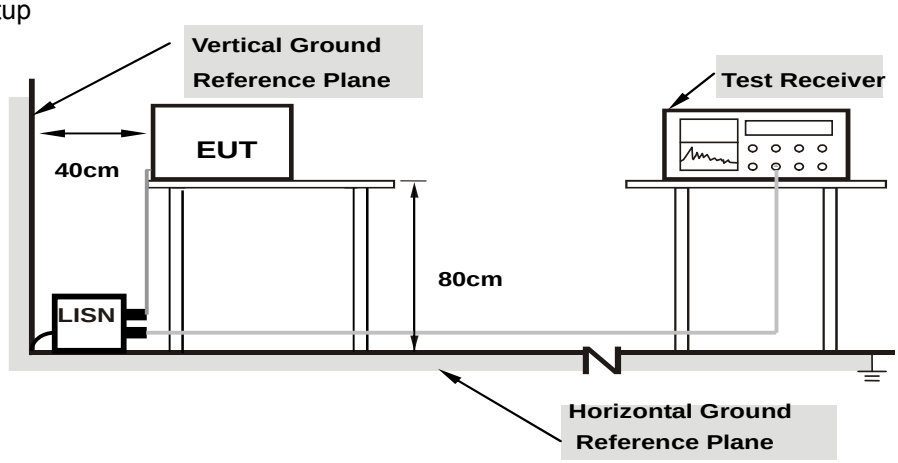
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

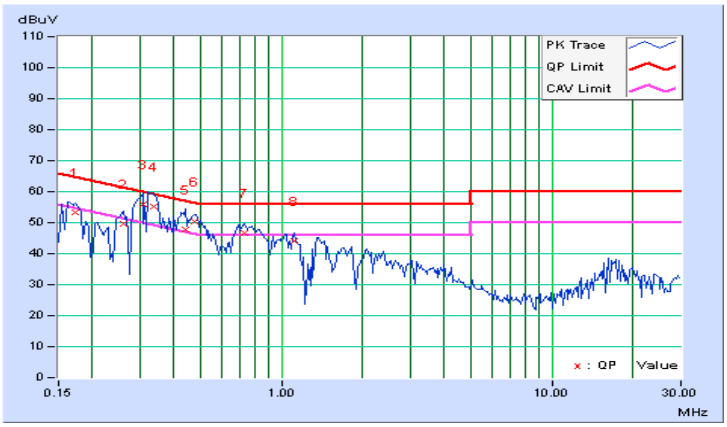
4.2.7 Test Results (Mode 1)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17344	10.30	43.01	37.03	53.31	47.33	64.79	54.79	-11.48	-7.46
2	0.25938	10.29	39.52	32.93	49.81	43.22	61.45	51.45	-11.65	-8.24
3	0.30625	10.29	45.46	33.00	55.75	43.29	60.07	50.07	-4.32	-6.78
4	**0.33750**	**10.29**	**44.82**	**35.21**	**55.11**	**45.50**	**59.26**	**49.26**	**-4.15**	**-3.76**
5	0.43906	10.30	37.42	23.04	47.72	33.34	57.08	47.08	-9.36	-13.74
6	0.47422	10.29	39.93	31.89	50.22	42.18	56.44	46.44	-6.22	-4.26
7	0.72813	10.26	36.29	28.75	46.55	39.01	56.00	46.00	-9.45	-6.99
8	1.12109	10.23	33.84	26.13	44.07	36.36	56.00	46.00	-11.93	-9.64

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.

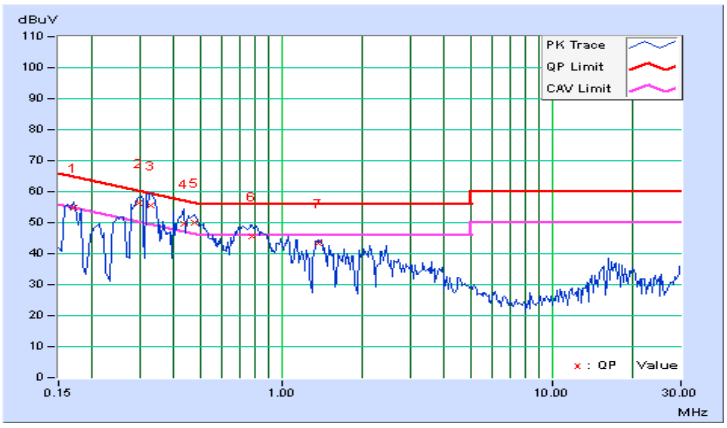


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	10.29	44.38	39.80	54.67	50.09	64.98	54.98	-10.32	-4.90
2	0.29844	10.27	46.16	36.23	56.43	46.50	60.29	50.29	-3.86	-3.79
3	0.32969	10.27	45.29	34.38	55.56	44.65	59.46	49.46	-3.90	-4.81
4	0.43516	10.28	39.36	26.34	49.64	36.62	57.15	47.15	-7.52	-10.54
5	0.47813	10.27	39.81	28.94	50.08	39.21	56.37	46.37	-6.29	-7.16
6	0.78281	10.24	35.19	25.47	45.43	35.71	56.00	46.00	-10.57	-10.29
7	1.36719	10.23	33.06	25.99	43.29	36.22	56.00	46.00	-12.71	-9.78

REMARKS:

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



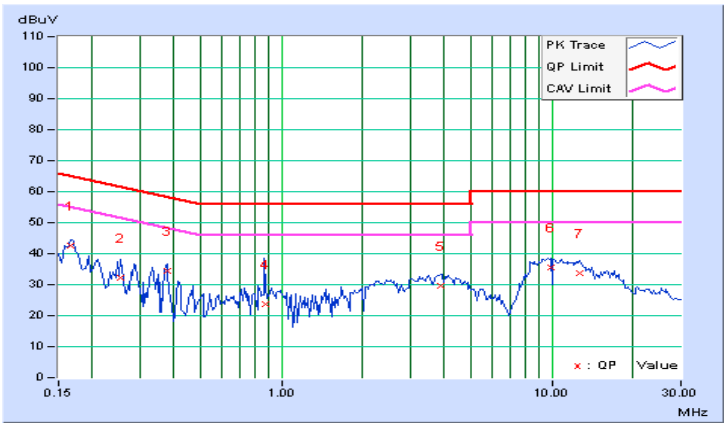
4.2.8 Test Results (Mode 2)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	10.31	32.19	21.21	42.50	31.52	65.18	55.18	-22.68	-23.66
2	0.25547	10.29	21.92	14.32	32.21	24.61	61.58	51.58	-29.37	-26.97
3	0.37656	10.30	24.03	23.97	34.33	34.27	58.35	48.35	-24.03	-14.09
4	0.87509	10.24	13.44	11.17	23.68	21.41	56.00	46.00	-32.32	-24.59
5	3.87500	10.42	19.21	11.61	29.63	22.03	56.00	46.00	-26.37	-23.97
6	9.87500	10.54	25.00	15.11	35.54	25.65	60.00	50.00	-24.46	-24.35
7	12.68359	10.67	22.91	14.25	33.58	24.92	60.00	50.00	-26.42	-25.08

REMARKS:

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

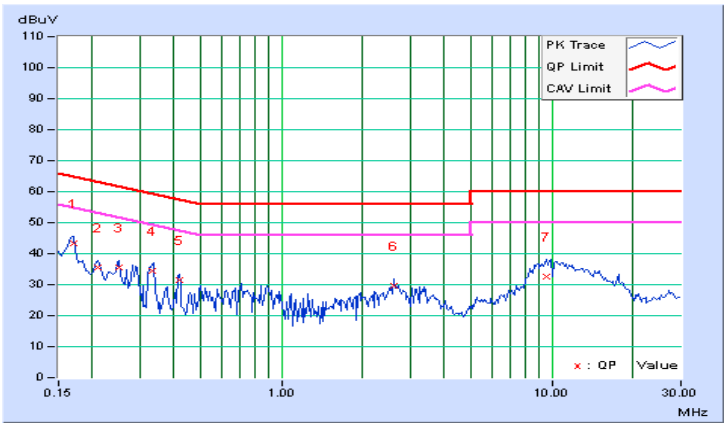


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	10.29	32.94	24.00	43.23	34.29	64.98	54.98	-21.76	-20.70
2	0.20859	10.26	25.24	15.86	35.50	26.12	63.26	53.26	-27.76	-27.14
3	0.25156	10.27	25.32	18.86	35.59	29.13	61.71	51.71	-26.12	-22.58
4	0.33350	10.27	24.32	23.13	34.59	33.40	59.36	49.36	-24.77	-15.96
5	0.41953	10.28	21.21	19.95	31.49	30.23	57.46	47.46	-25.97	-17.23
6	2.61719	10.32	19.24	9.09	29.56	19.41	56.00	46.00	-26.44	-26.59
7	9.55078	10.54	22.03	13.28	32.57	23.82	60.00	50.00	-27.43	-26.18

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.

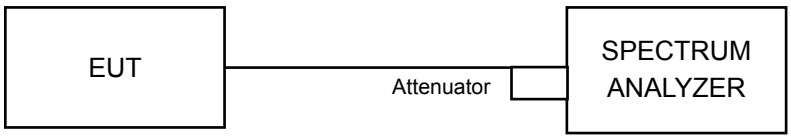


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

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. Tested date : Sep. 10, 2014

4.3.4 Test Procedure

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

4.3.5 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

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	10.16	0.5	PASS
6	2437	11.07	0.5	PASS
11	2462	10.14	0.5	PASS

802.11g

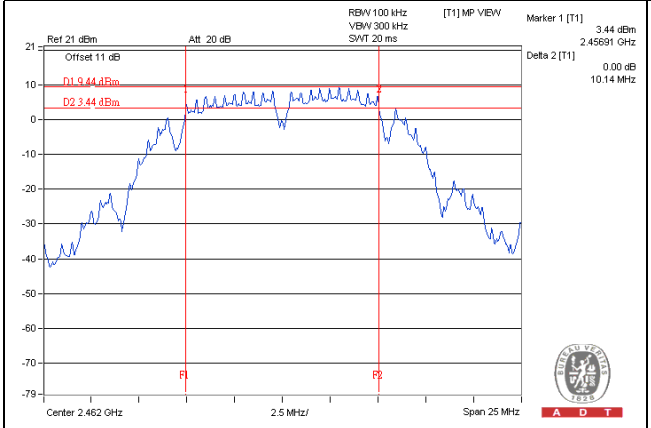
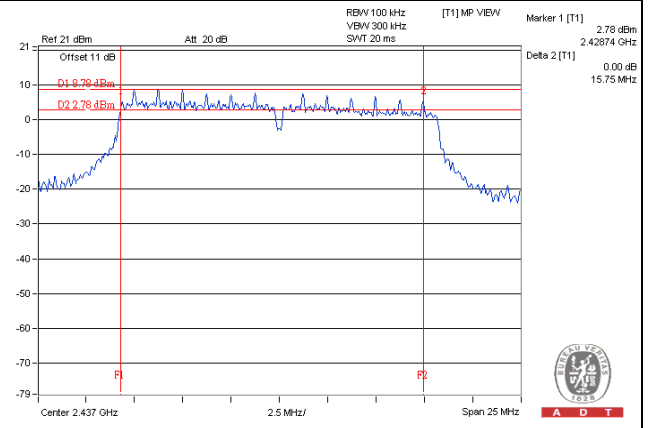
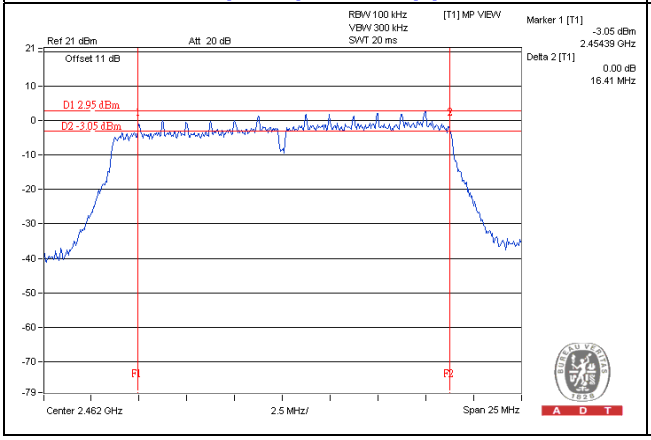
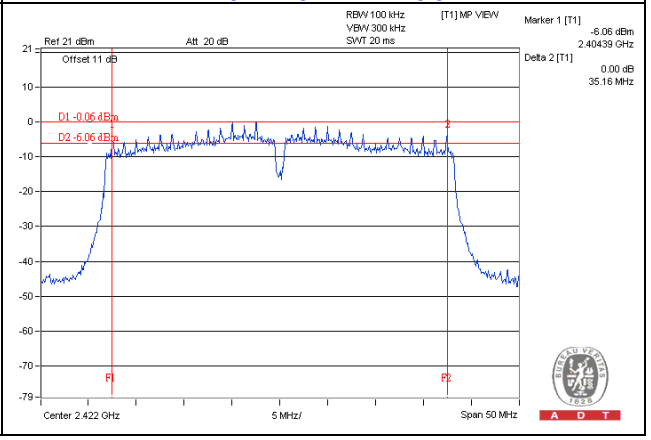
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	15.80	16.38	16.39	0.5	PASS
6	2437	16.13	15.75	16.41	0.5	PASS
11	2462	15.80	16.41	15.80	0.5	PASS

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	16.74	17.01	16.99	0.5	Pass
6	2437	16.74	17.02	17.65	0.5	Pass
11	2462	16.41	17.04	16.67	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		CHAIN 0	CHAIN 1	CHAIN 2		
3	2422	35.19	35.19	35.16	0.5	Pass
6	2437	35.93	35.82	35.93	0.5	Pass
9	2452	35.90	36.52	35.88	0.5	Pass

Spectrum Plot of Worst Value	
802.11b / CH11	**802.11g / Chain (1) : CH6**
	
802.11n (HT20) / Chain (0) : CH11	**802.11n (HT40) / Chain (2) : CH3**
	

4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

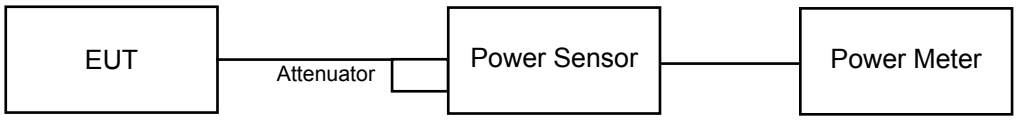
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;
Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.

For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

4.4.2 Test Setup



4.4.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power meter Anritsu	ML2495A	1014008	Apr. 30, 2014	Apr. 29, 2015
Power sensor Anritsu	MA2411B	0917122	Apr. 30, 2014	Apr. 29, 2015

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. Tested date : Sep. 10, 2014

4.4.4 Test Procedures

A average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor. Record the power level.

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 AVERAGE POWER

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	126.183	21.01	30	PASS
6	2437	126.474	21.02	30	PASS
11	2462	99.083	19.96	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	16.81	17.39	17.29	156.381	21.94	30	PASS
6	2437	20.33	21.15	20.93	362.092	25.59	30	PASS
11	2462	15.47	15.96	15.91	113.677	20.56	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	15.86	16.47	16.31	125.665	20.99	30	PASS
6	2437	19.11	19.89	19.83	275.13	24.40	30	PASS
11	2462	14.12	14.57	14.51	82.714	19.18	30	PASS

802.11n (HT40)

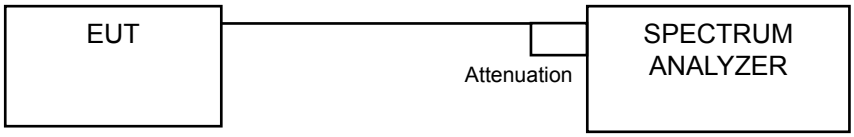
CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
3	2422	13.45	13.96	13.92	71.68	18.55	30	PASS
6	2437	15.61	16.17	16.11	118.624	20.74	30	PASS
9	2452	11.27	11.54	11.47	41.681	16.20	30	PASS

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 Test Setup



4.5.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

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. Tested date : Sep. 10, 2014

4.5.4 Test Procedure

a) Set instrument center frequency to DTS channel center frequency.
b) Set span to at least 1.5 times the OBW.
c) Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d) Set VBW ≥3 x RBW.
e) Detector = power averaging (RMS) or sample detector (when RMS not available).
f) Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
g) Sweep time = auto couple.
h) Employ trace averaging (RMS) mode over a minimum of 100 traces.
i) Use the peak marker function to determine the maximum amplitude level.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	LIMIT (dBm)	PASS /FAIL
1	2412	-8.90	8	PASS
6	2437	-9.26	8	PASS
11	2462	-10.78	8	PASS

802.11g

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=3) dB	TOTAL PSD (dBm)	LIMIT (dBm)	PASS /FAIL
0	1	2412	-12.99	4.77	-8.22	6.53	PASS
	6	2437	-10.05	4.77	-5.28	6.53	PASS
	11	2462	-14.73	4.77	-9.96	6.53	PASS
1	1	2412	-13.74	4.77	-8.97	6.53	PASS
	6	2437	-9.95	4.77	-5.18	6.53	PASS
	11	2462	-15.18	4.77	-10.41	6.53	PASS
2	1	2412	-13.03	4.77	-8.26	6.53	PASS
	6	2437	-10.02	4.77	-5.25	6.53	PASS
	11	2462	-14.92	4.77	-10.15	6.53	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 7.47dBi > 6dBi , so the power density limit shall be reduced to 8-(7.47-6) = 6.53dBm.

802.11n (HT20)

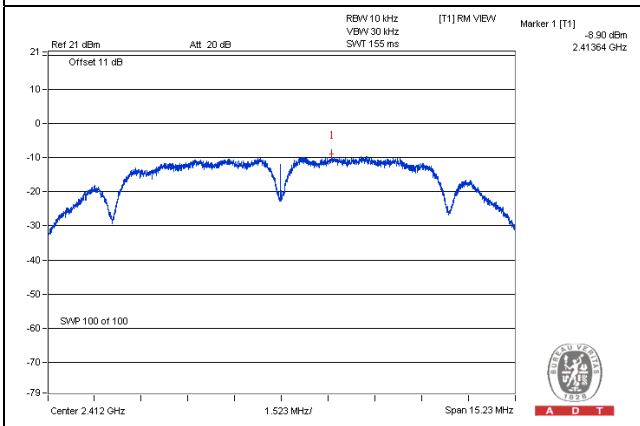
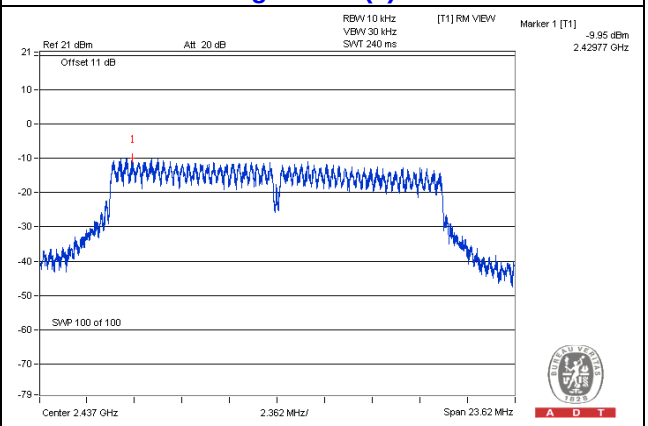
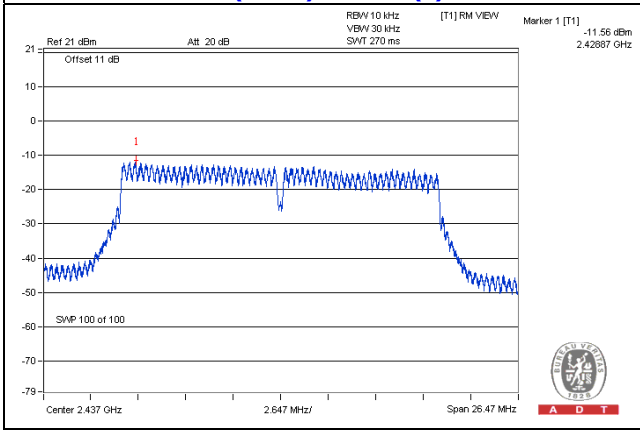
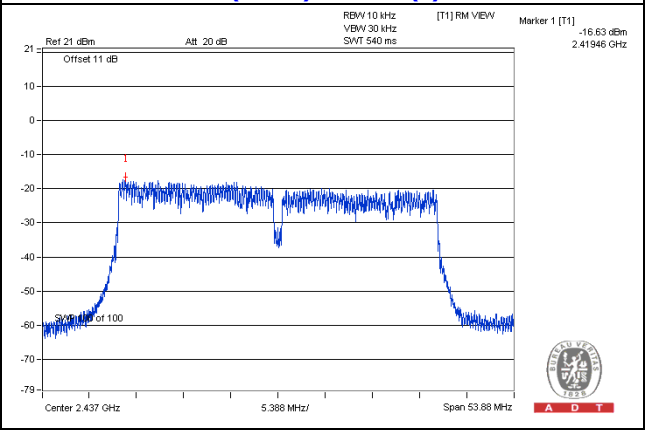
TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=3) dB	TOTAL PSD (dBm)	LIMIT (dBm)	PASS /FAIL
0	1	2412	-15.72	4.77	-10.95	6.53	PASS
	6	2437	-12.36	4.77	-7.59	6.53	PASS
	11	2462	-16.96	4.77	-12.19	6.53	PASS
1	1	2412	-15.64	4.77	-10.87	6.53	PASS
	6	2437	-12.24	4.77	-7.47	6.53	PASS
	11	2462	-17.25	4.77	-12.48	6.53	PASS
2	1	2412	-15.89	4.77	-11.12	6.53	PASS
	6	2437	-11.56	4.77	-6.79	6.53	PASS
	11	2462	-17.26	4.77	-12.49	6.53	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 7.47dBi > 6dBi , so the power density limit shall be reduced to 8-(7.47-6) = 6.53dBm.

802.11n (HT40)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=3) dB	TOTAL PSD (dBm)	LIMIT (dBm)	PASS /FAIL
0	3	2422	-18.40	4.77	-13.63	6.53	PASS
	6	2437	-16.63	4.77	-11.86	6.53	PASS
	9	2452	-21.65	4.77	-16.88	6.53	PASS
1	3	2422	-20.08	4.77	-15.31	6.53	PASS
	6	2437	-17.89	4.77	-13.12	6.53	PASS
	9	2452	-22.18	4.77	-17.41	6.53	PASS
2	3	2422	-19.88	4.77	-15.11	6.53	PASS
	6	2437	-17.87	4.77	-13.10	6.53	PASS
	9	2452	-21.42	4.77	-16.65	6.53	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 7.47dBi > 6dBi , so the power density limit shall be reduced to 8-(7.47-6) = 6.53dBm.

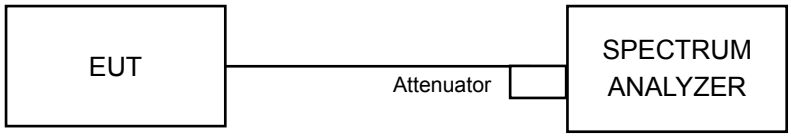
Spectrum Plot of Worst Value	
802.11b / CH1	**802.11g / Chain(1) : CH6**
	
802.11n (HT20) / Chain(2) : CH6	**802.11n (HT40) / Chain(0) : CH6**
	

4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below 30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 Test Setup



4.6.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

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. Tested date : Sep. 10, 2014

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

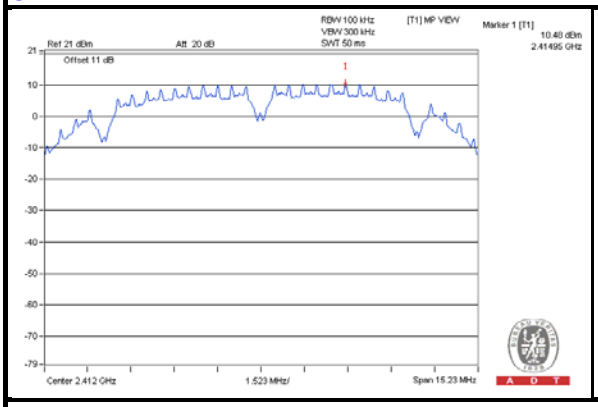
Same as Item 4.3.6

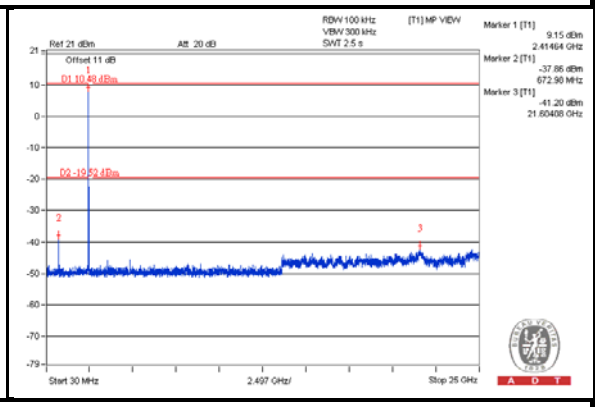
4.6.7 Test Results

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

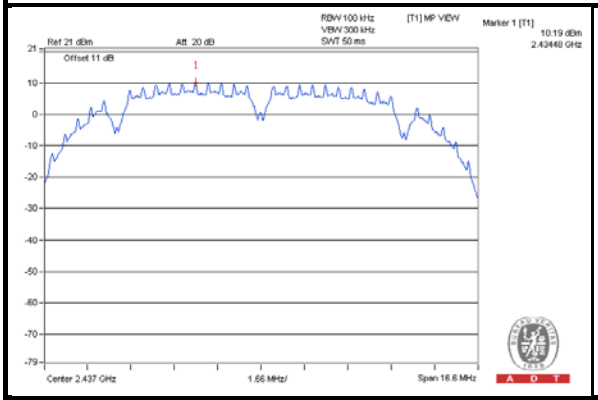
802.11b

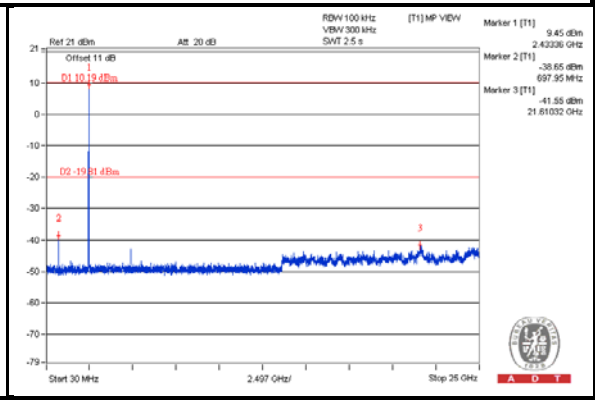
CH 1



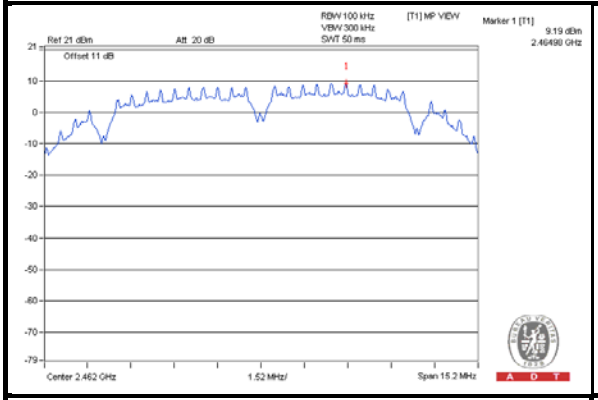


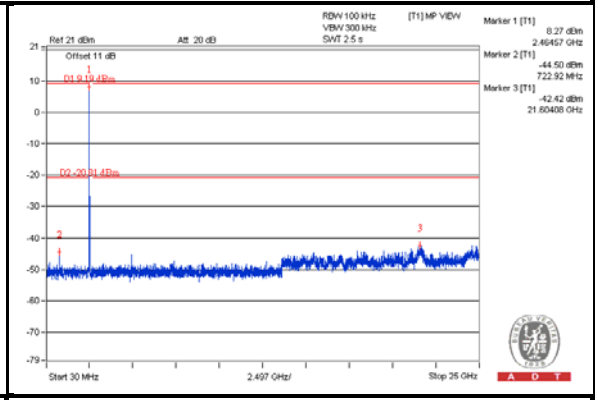
CH 6



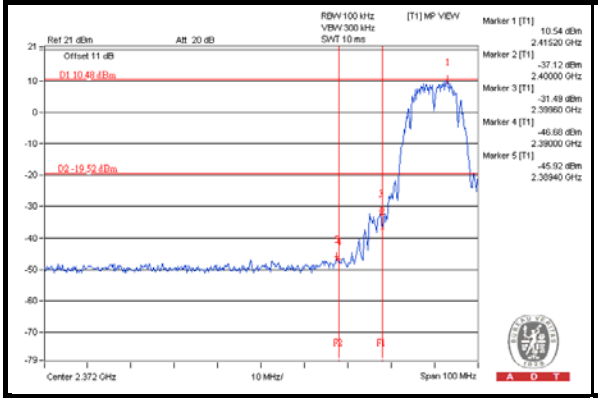


CH 11

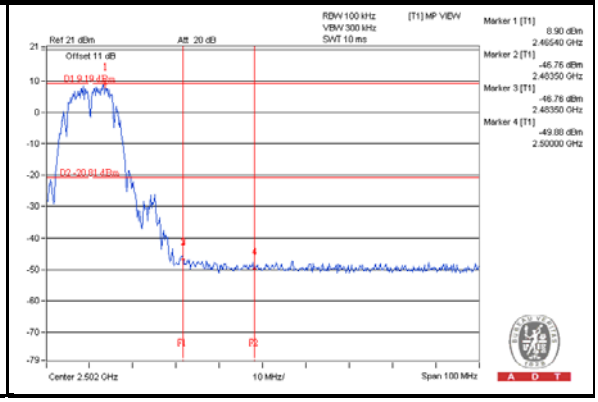




CH 1 Band edge



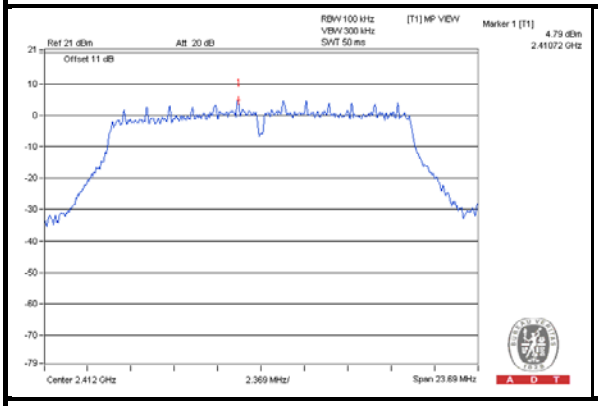
CH 11 Band edge

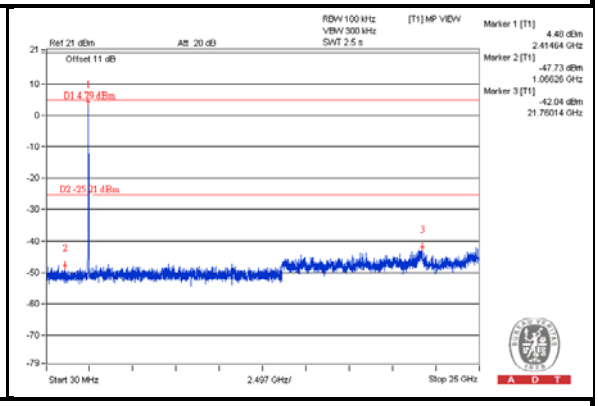


802.11g

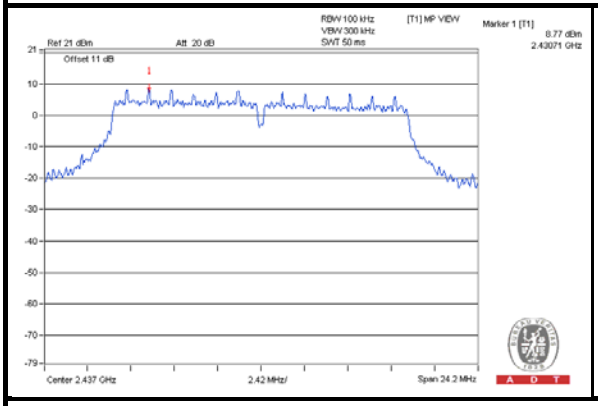
Chain(0)

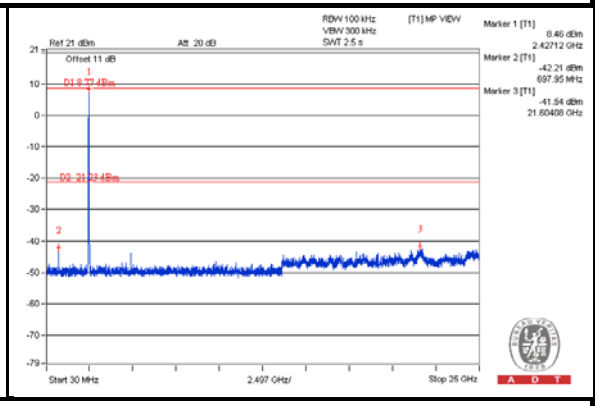
CH 1



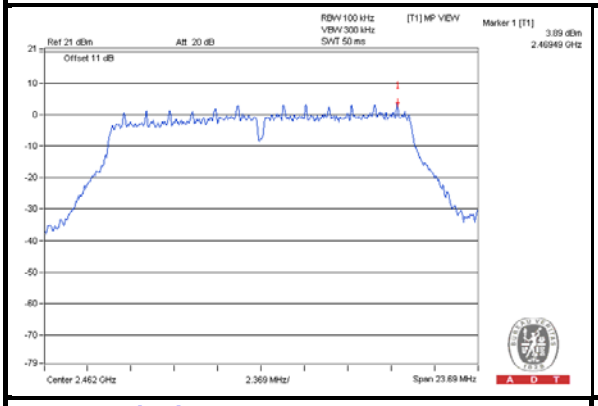


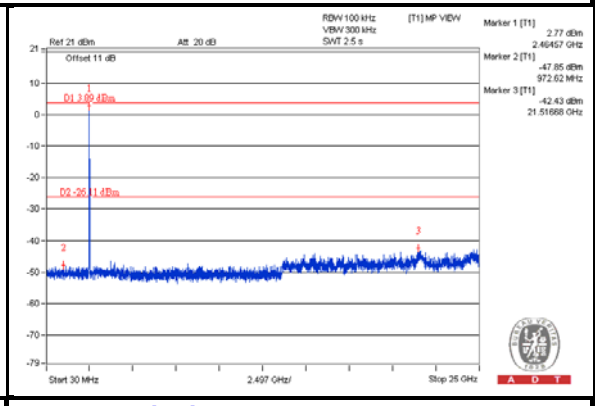
CH 6



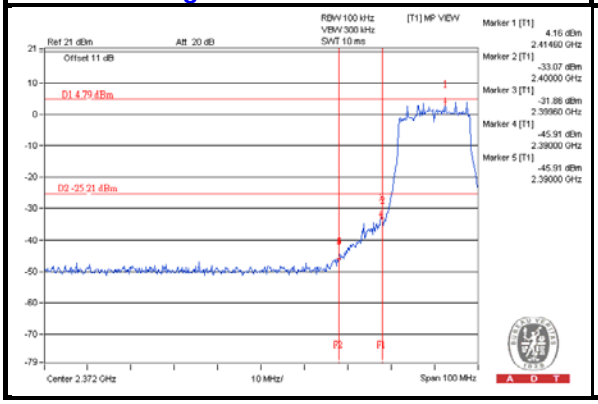


CH 11

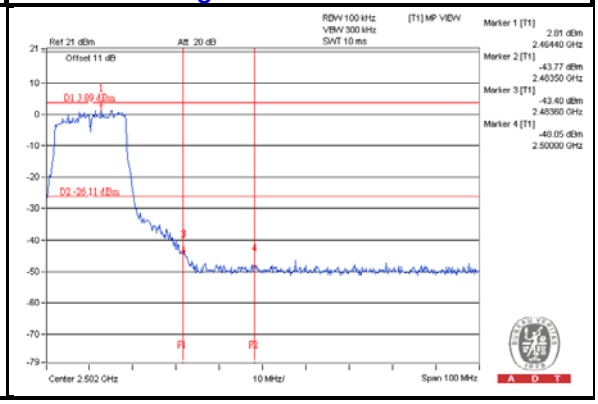




CH 1 Band edge



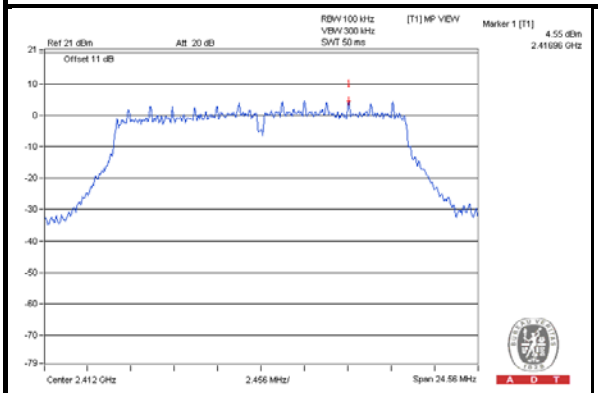
CH 11 Band edge

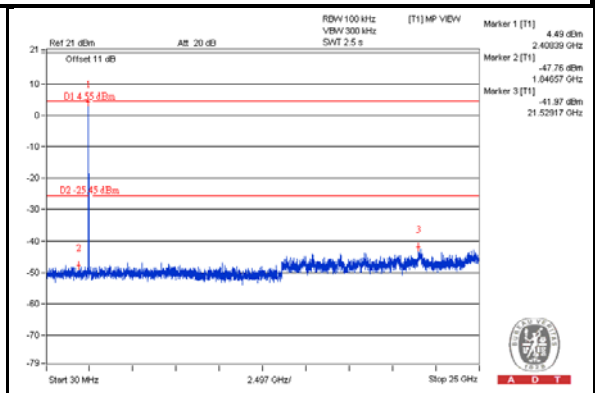


802.11g

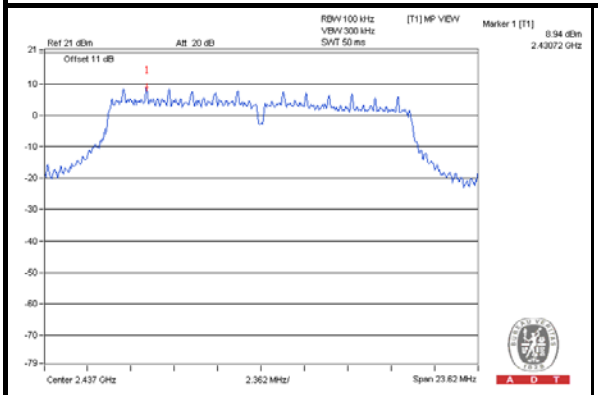
Chain(1)

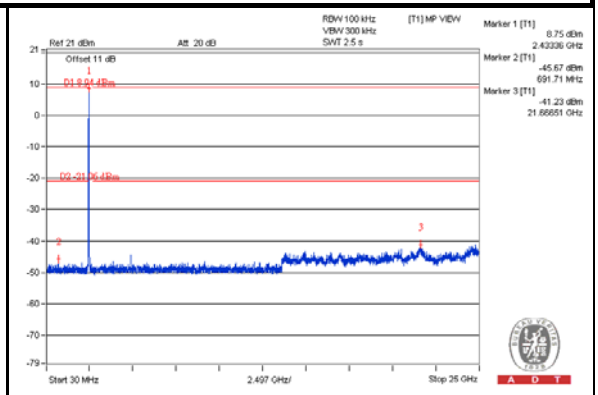
CH 1



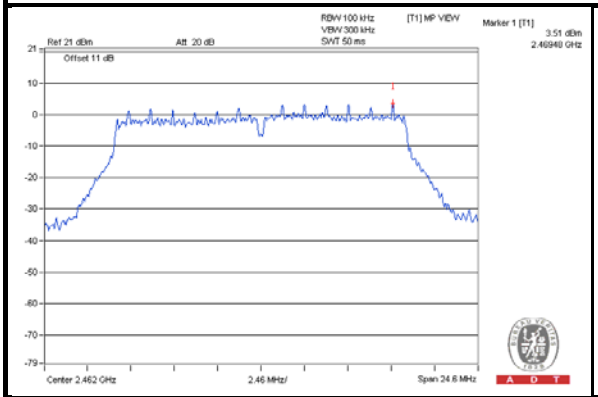


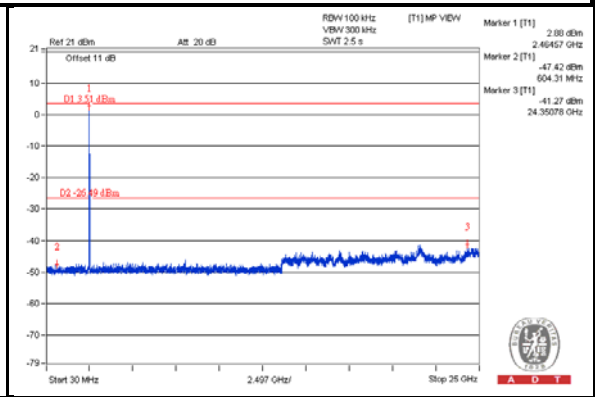
CH 6



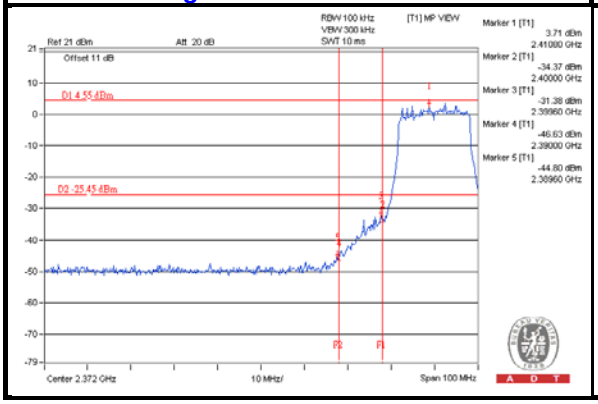


CH 11

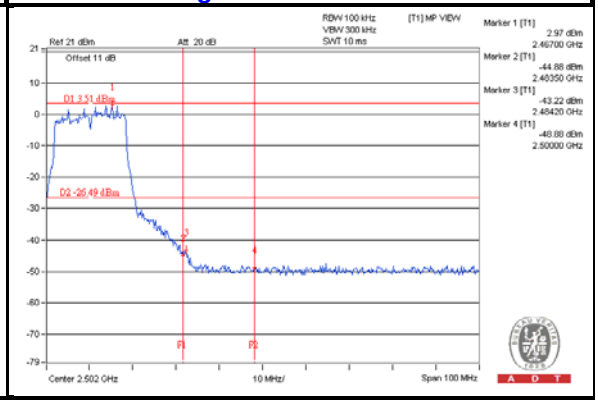




CH 1 Band edge



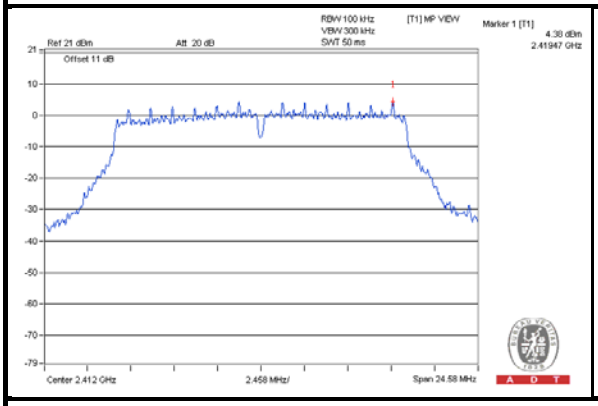
CH 11 Band edge

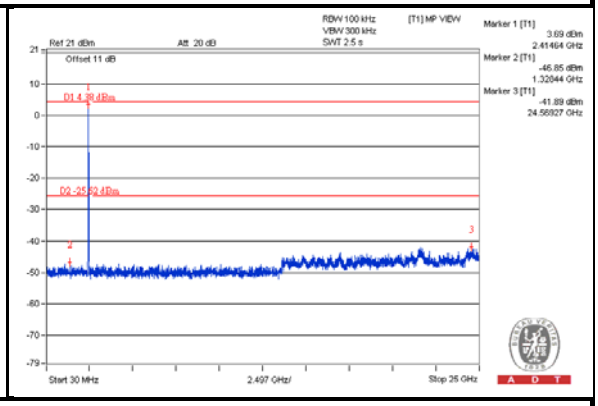


802.11g

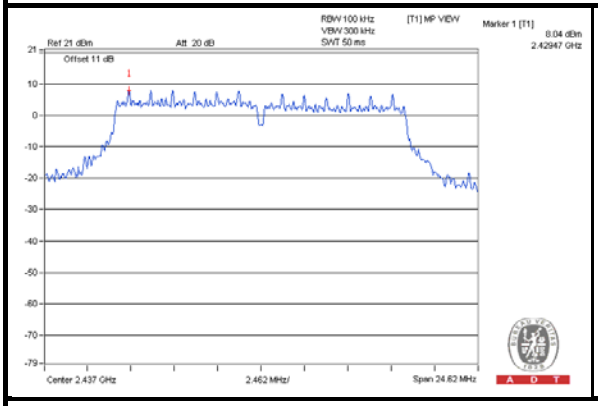
Chain(2)

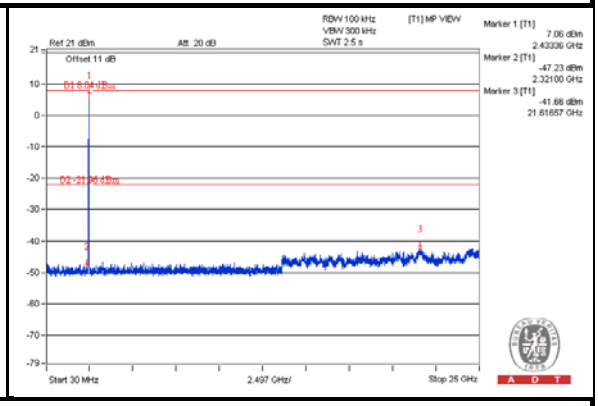
CH 1



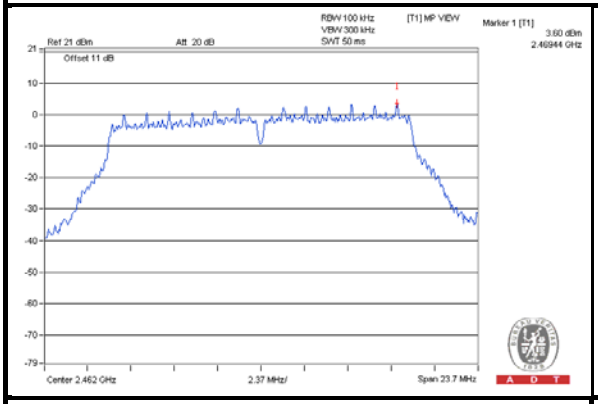


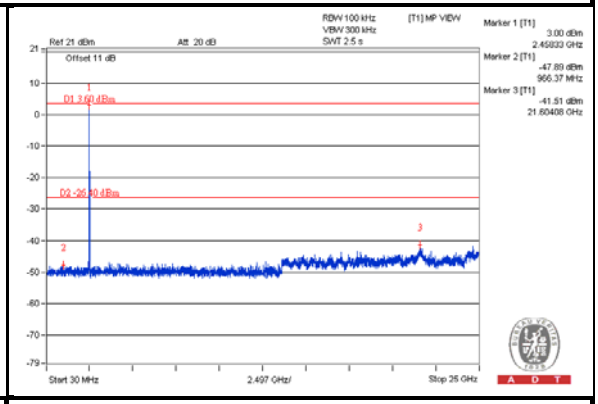
CH 6



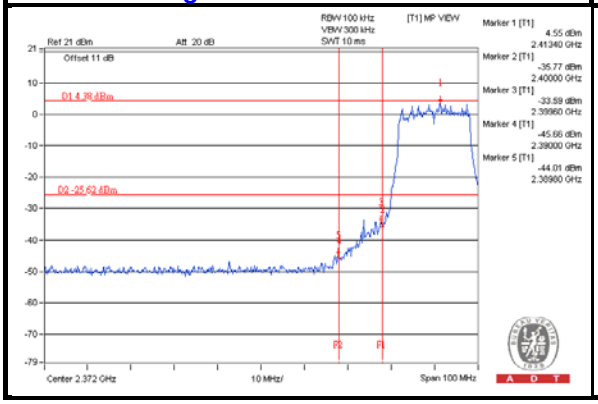


CH 11

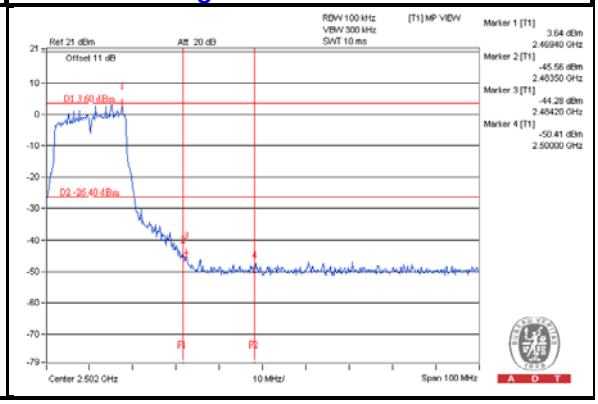




CH 1 Band edge



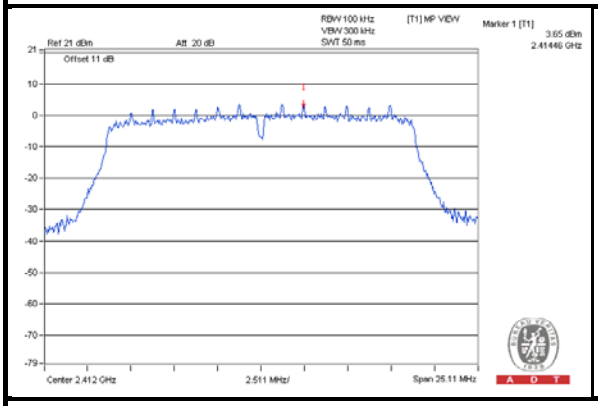
CH 11 Band edge

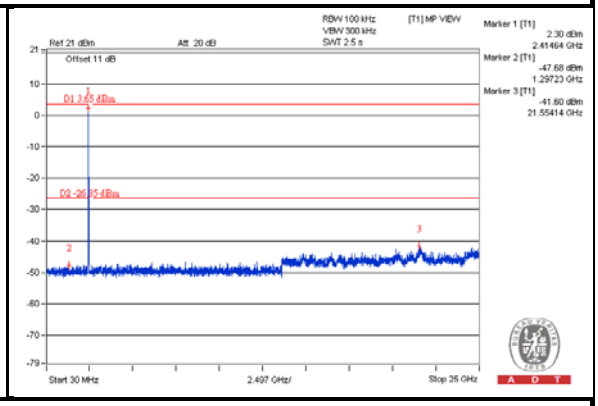


802.11n (HT20)

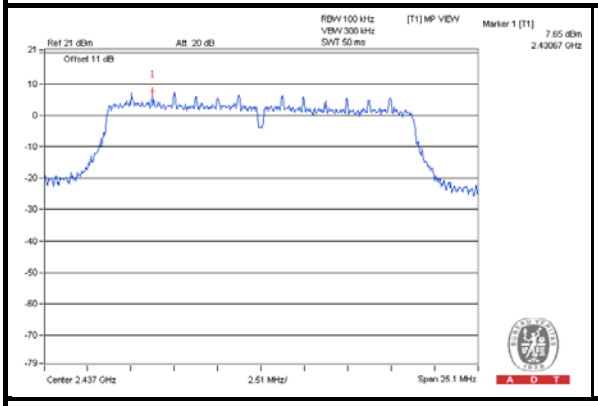
Chain(0)

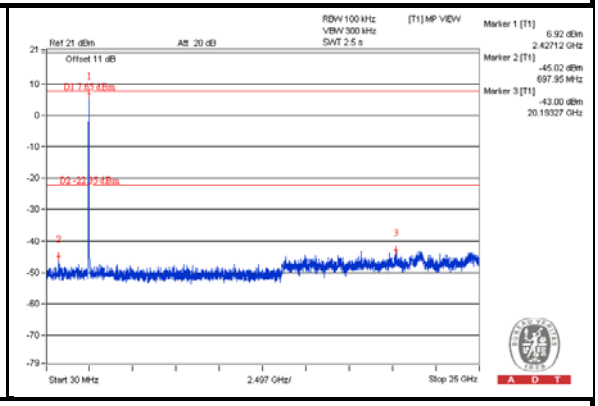
CH 1



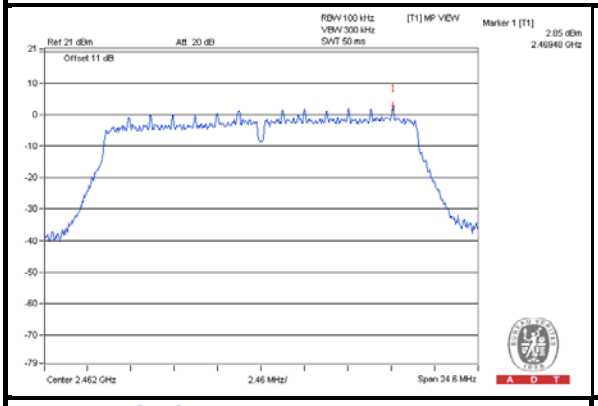


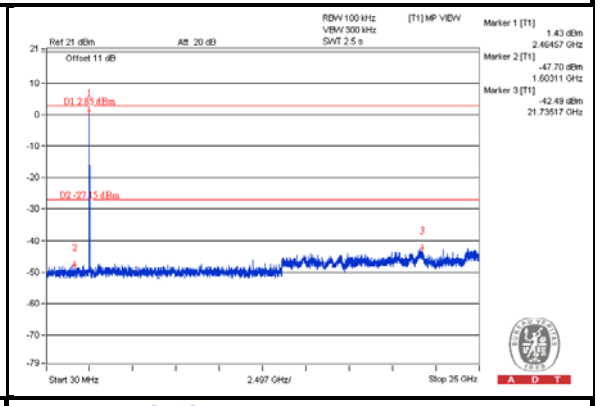
CH 6



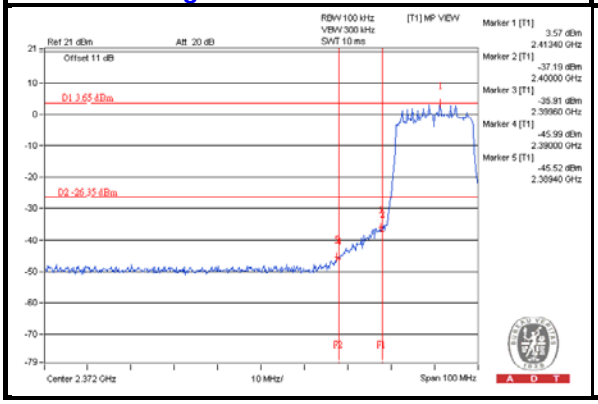


CH 11

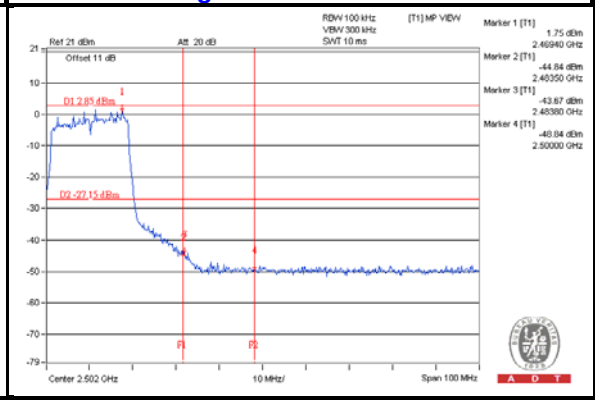




CH 1 Band edge



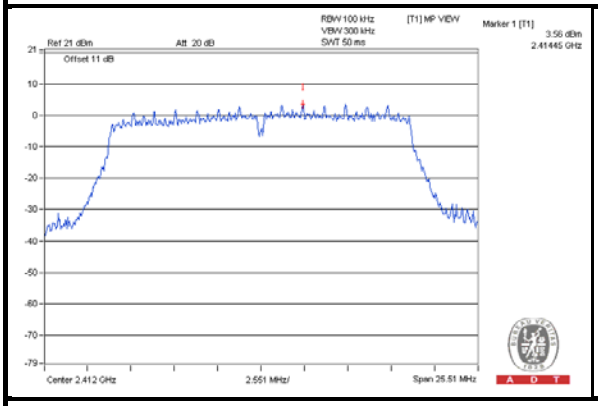
CH 11 Band edge

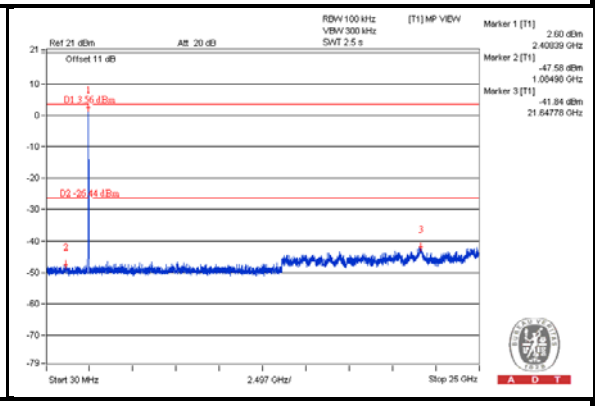


802.11n (HT20)

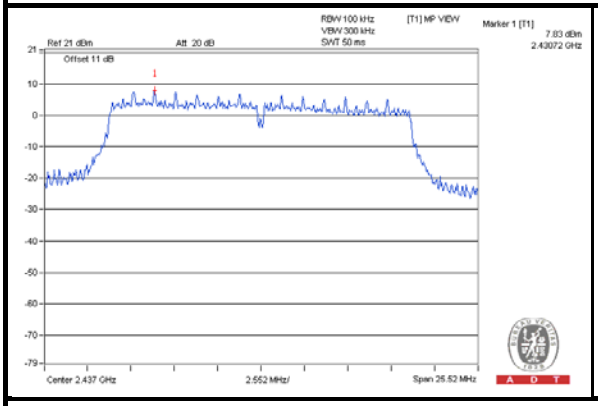
Chain(1)

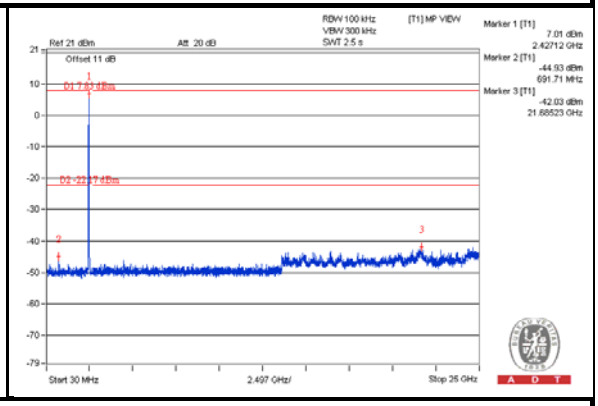
CH 1



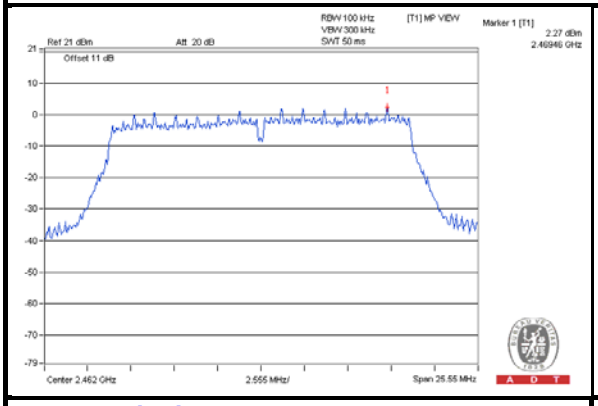


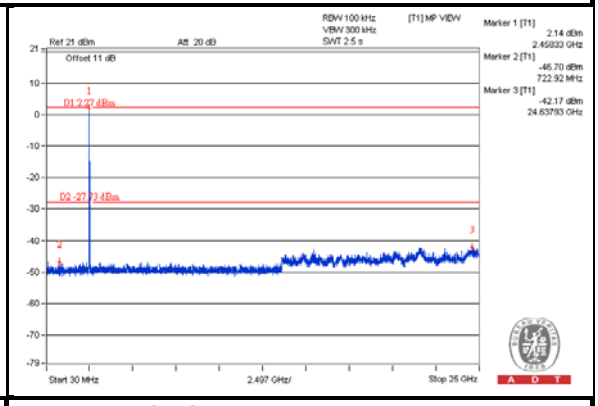
CH 6



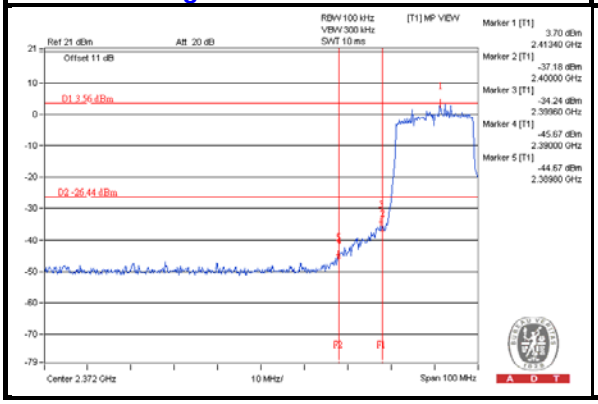


CH 11

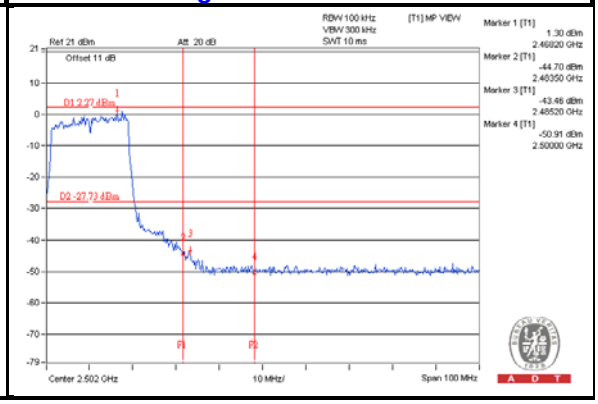




CH 1 Band edge



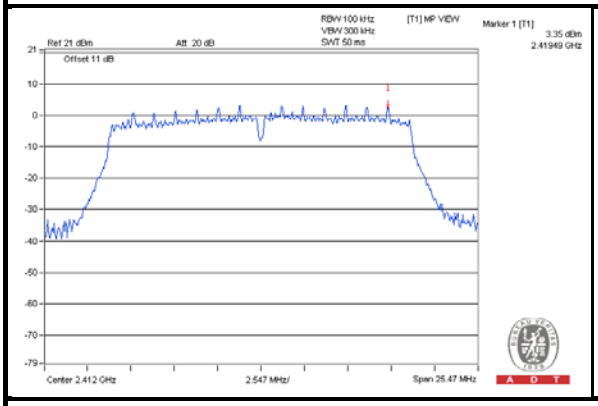
CH 11 Band edge

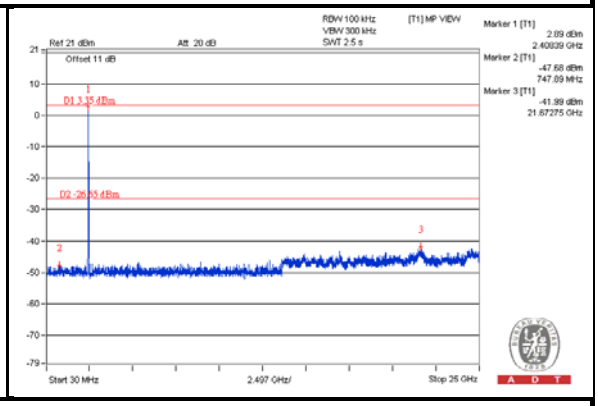


802.11n (HT20)

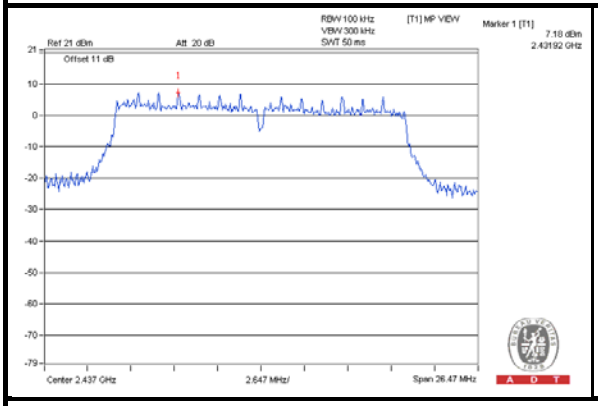
Chain(2)

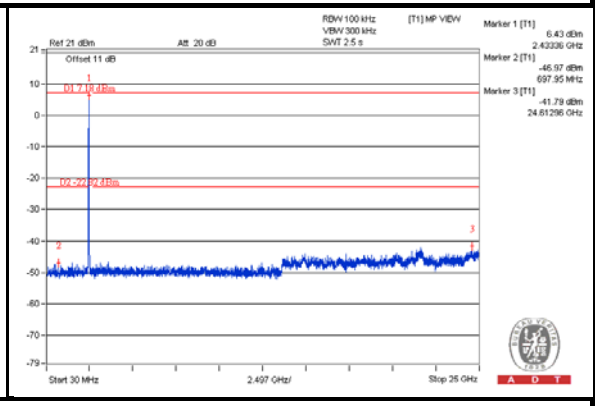
CH 1



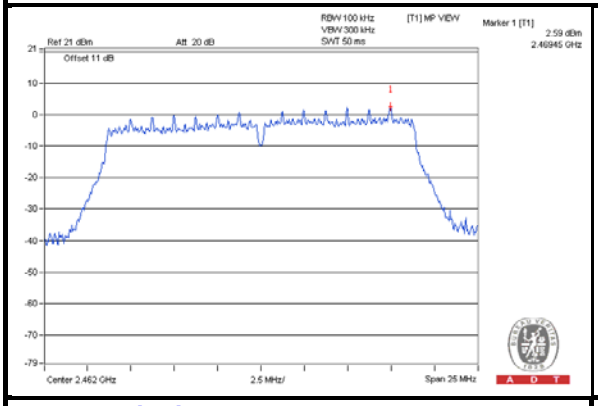


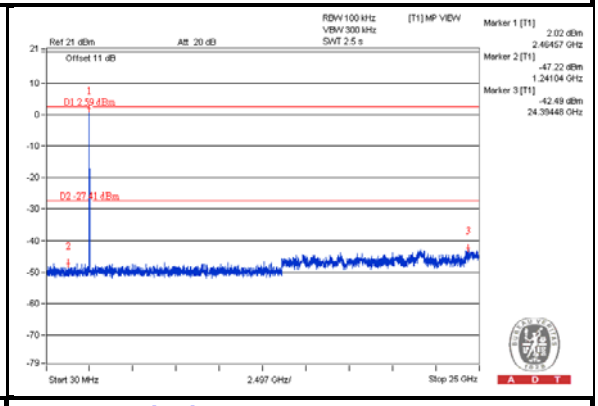
CH 6



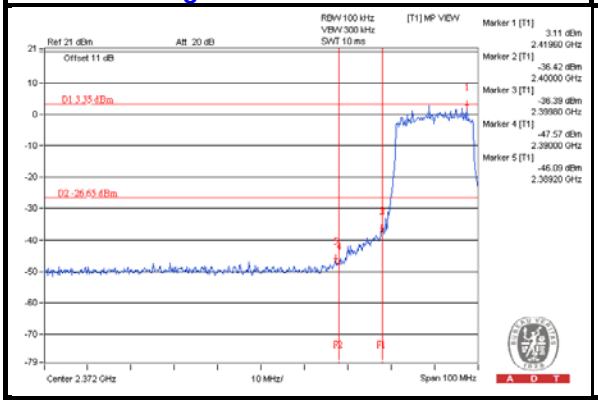


CH 11

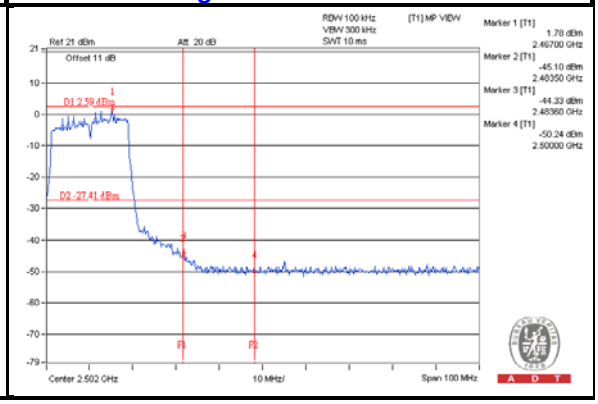




CH 1 Band edge



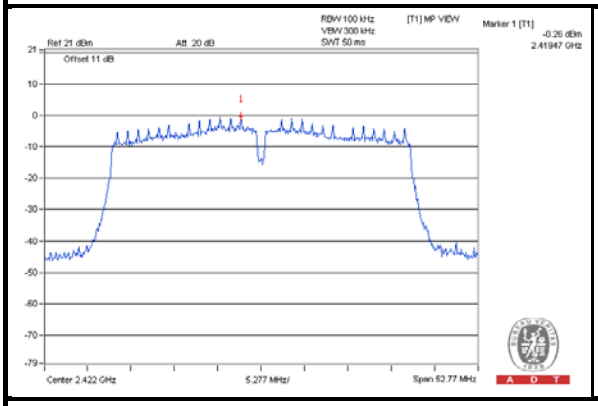
CH 11 Band edge

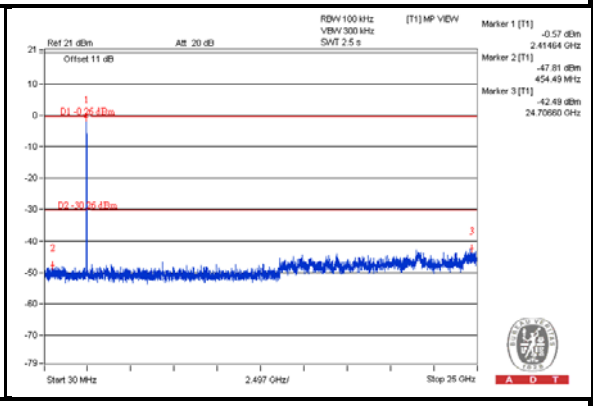


802.11n (HT40)

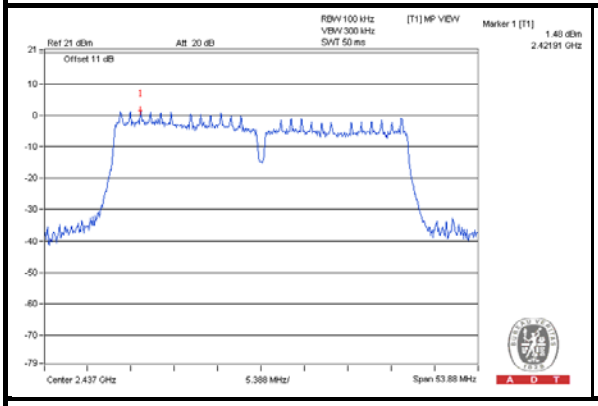
Chain(0)

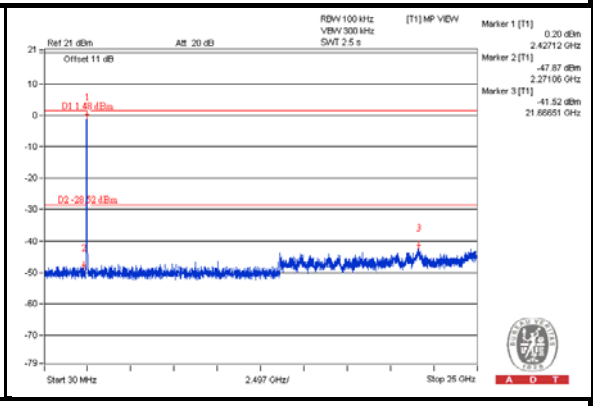
CH 3



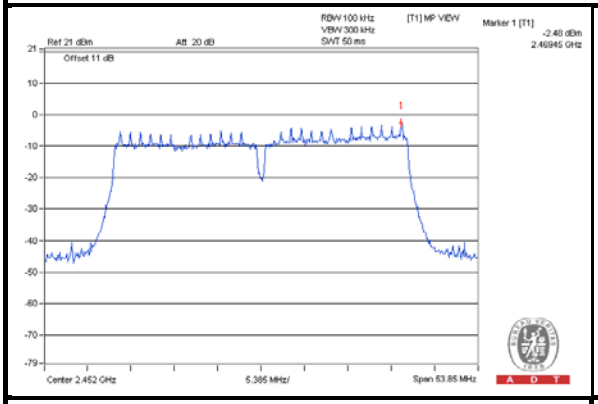


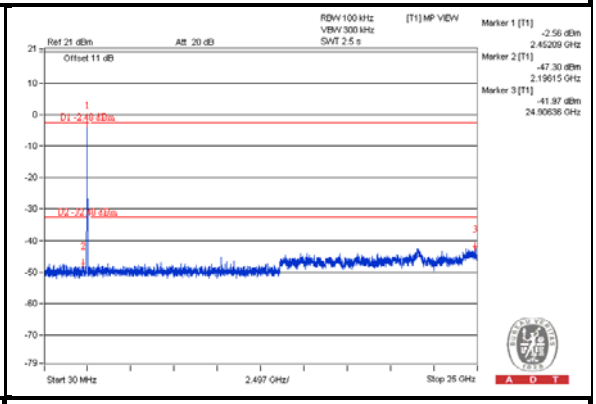
CH 6



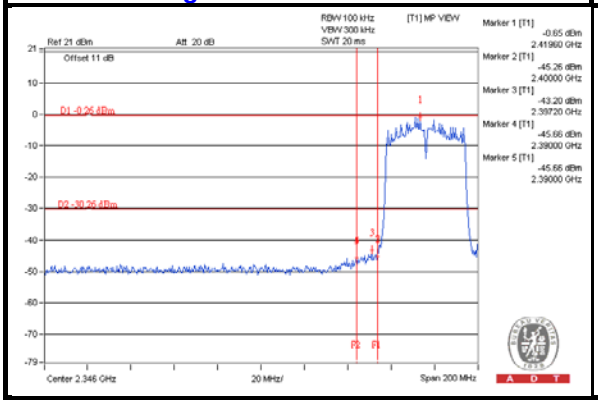


CH 9

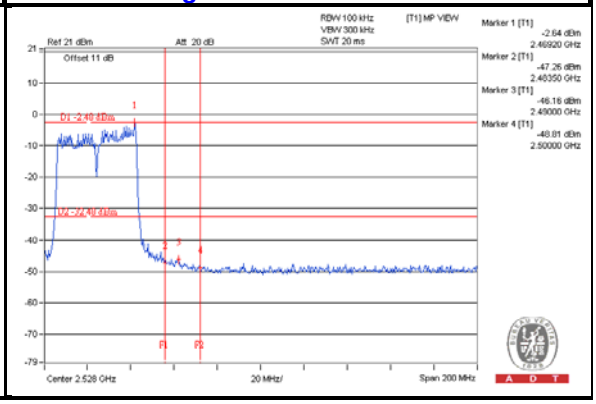




CH 3 Band edge



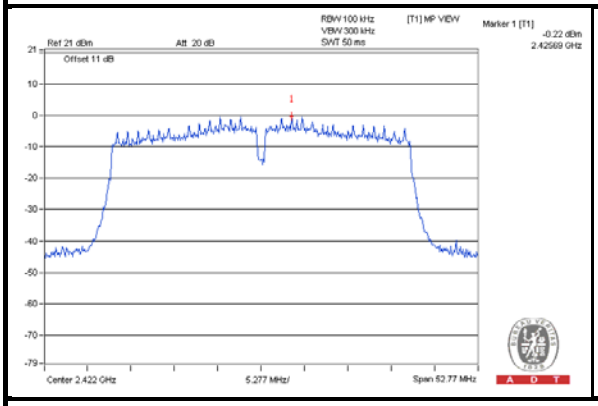
CH 9 Band edge

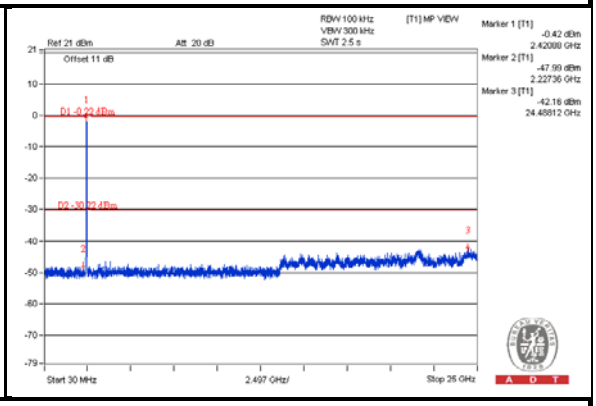


802.11n (HT40)

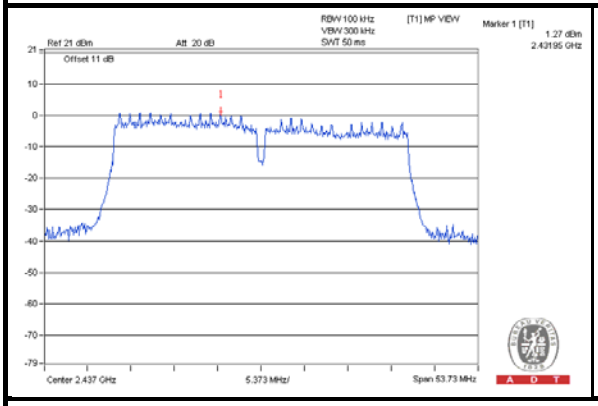
Chain(1)

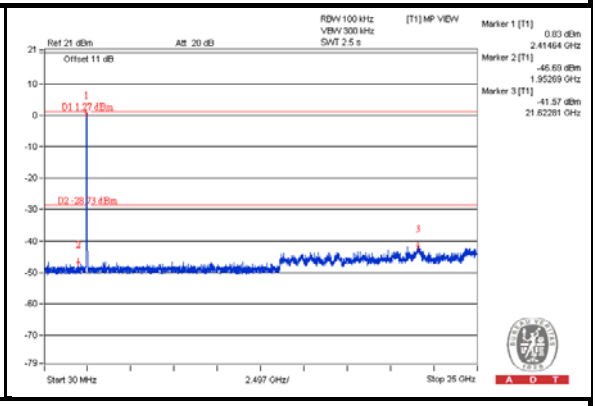
CH 3



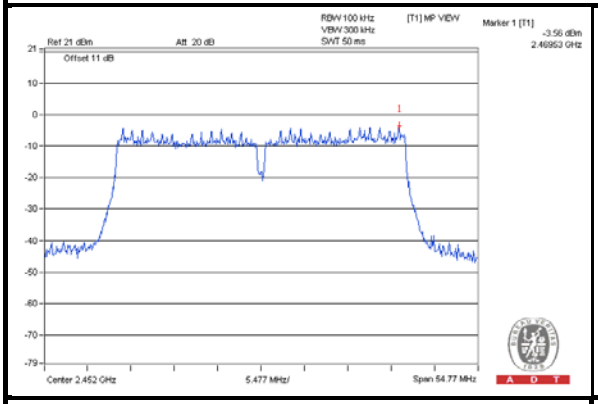


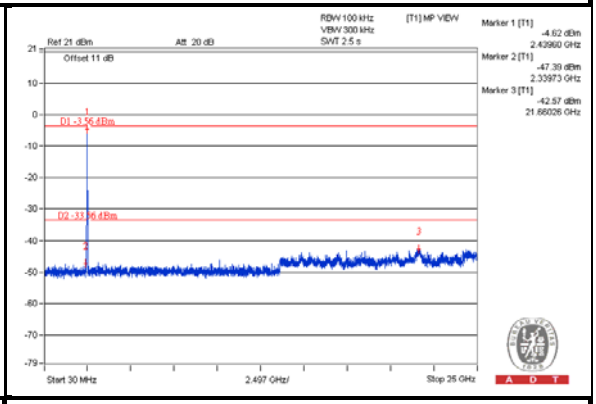
CH 6



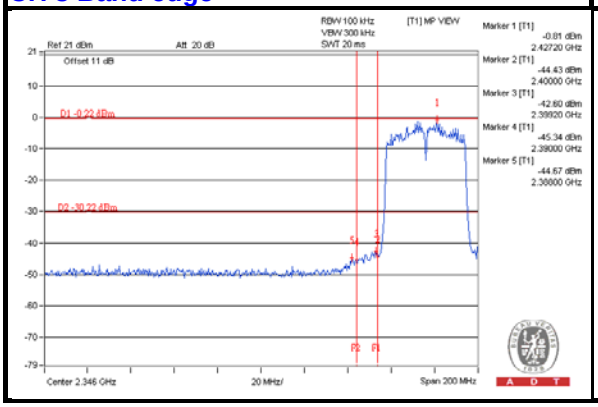


CH 9

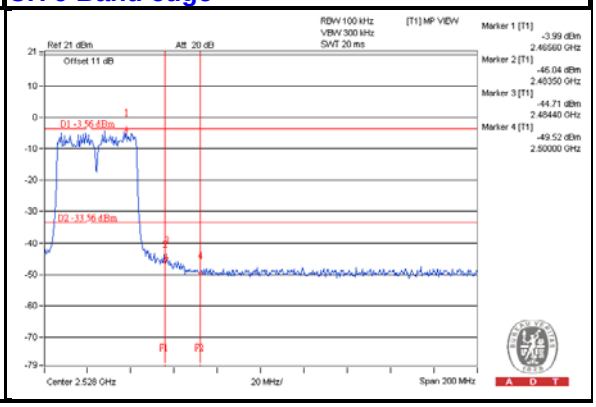




CH 3 Band edge



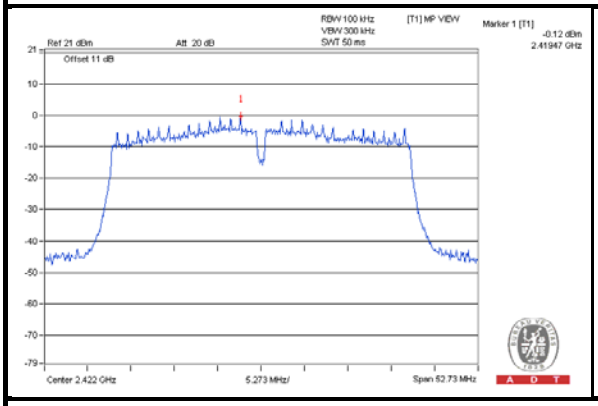
CH 9 Band edge

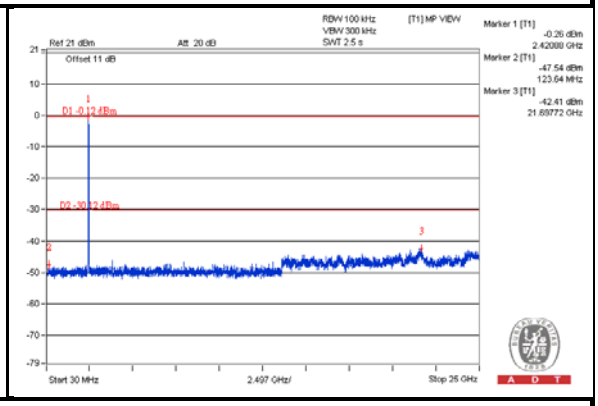


802.11n (HT40)

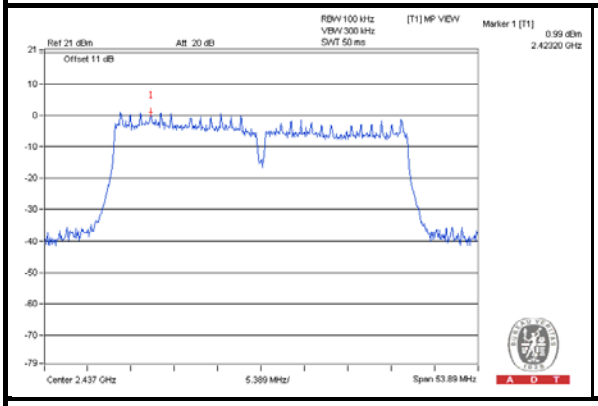
Chain(2)

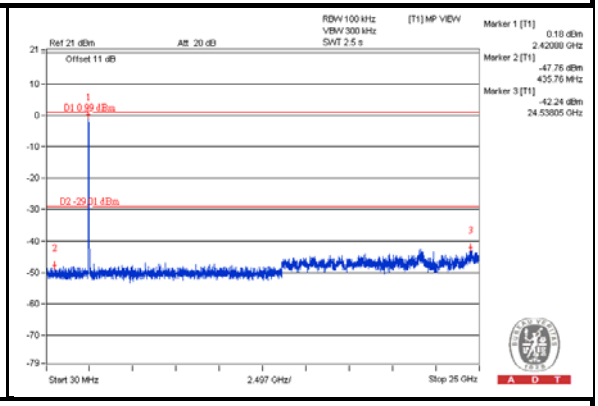
CH 3



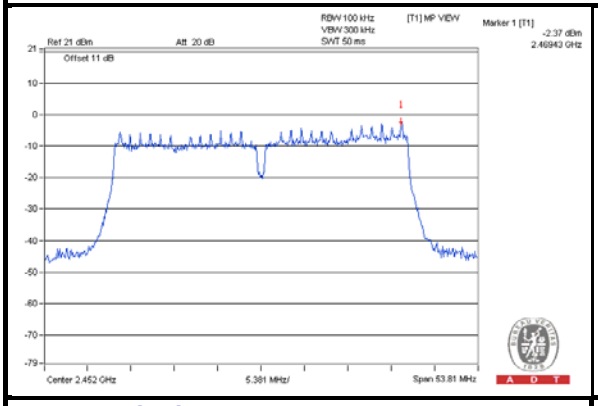


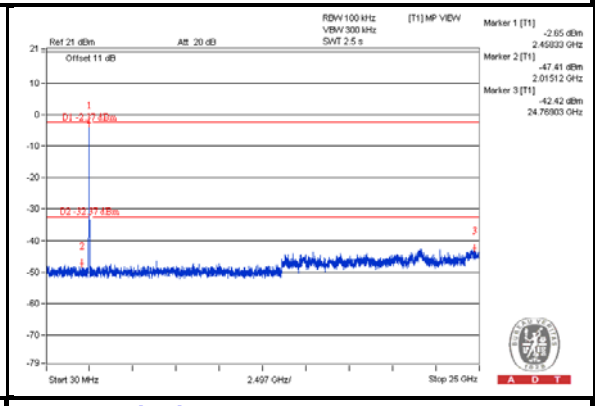
CH 6



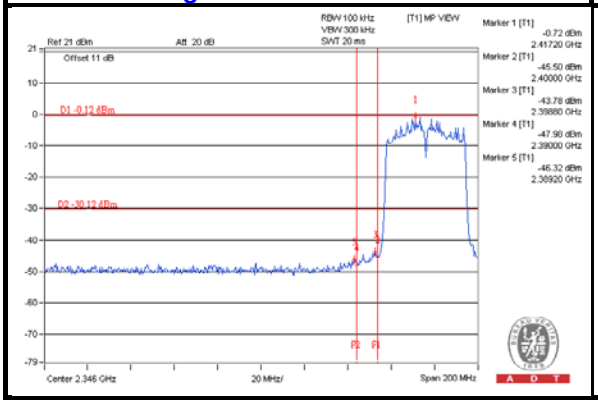


CH 9

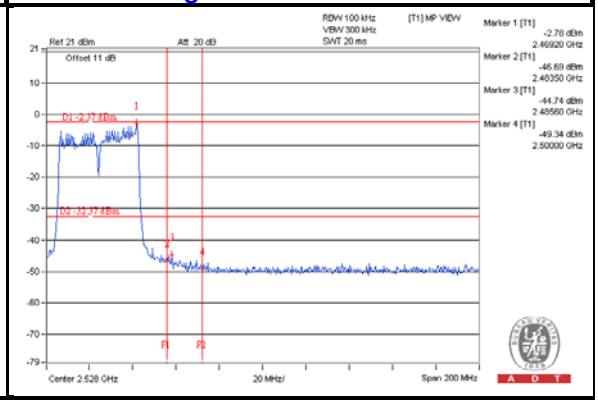




CH 3 Band edge



CH 9 Band edge



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: 886-3-6668565
Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

--- END ---