

FCC Test Report (15.247)

Report No.: RF150417C34

FCC ID: WT8OM5PAC

Test Model: OM5P-AC

Received Date: Apr. 28, 2015

Test Date: May 16 ~ May 19, 2015

Issued Date: May 21, 2015

Applicant: Open Mesh, Inc.

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A D T

Release Control Record

Issue No.	Description	Date Issued
RF150417C34	Original release	May 21, 2015

1 Certificate of Conformity

Product: Wireless Access Point

Brand: Open Mesh

Test Model: OM5P-AC

Sample Status: Engineering sample

Applicant: Open Mesh, Inc.

Test Date: May 16 ~ May 19, 2015

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
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:** May 21, 2015
Celine Chou / Specialist

Approved by : Ken Liu , **Date:** May 21, 2015
Ken Liu / Senior 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 -6.70dB at 0.29858MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.5dB at 2483.50, 2390.00, 5725.00 and 11570.00MHz.
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) (\pm)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.44 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.59 dB
	200MHz ~ 1000MHz	3.60 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wireless Access Point
Brand	Open Mesh
Test Model	OM5P-AC
Status of EUT	Engineering sample
Power Supply Rating	DC Input 12 ~ 24V 12 ~ 24Vdc form POE 48Vdc form POE
Modulation Type	CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300.0Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	2.4GHz: 2412 ~ 2462MHz 5.0GHz: 5745 ~ 5825MHz
Number of Channel	2.4GHz: 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) 5.0GHz: 5 for 802.11a, 802.11n (20MHz) , 802.11ac (20MHz) 2 for 802.11n (40MHz), 802.11ac (40MHz) 1 for 802.11ac (80MHz)
Output Power	470.468mW for 2412 ~ 2462MHz 454.007mW for 5745 ~ 5825MHz
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	N/A
Data Cable Supplied	N/A

Note:

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

Band	Modulation Mode	TX Function
2.4GHz	802.11b	1TX (Fixed Ant. A)
	802.11g	1TX (Fixed Ant. A)
	802.11n (20MHz)	2TX
	802.11n (40MHz)	2TX
5GHz	802.11a	1TX (Fixed Ant. A)
	802.11n (20MHz)	2TX
	802.11n (40MHz)	2TX
	802.11ac (80MHz)	2TX

2. The EUT uses following antennas.

No.	Ant. Type	Connector Type	Antenna Gain (dBi)
A	PIFA	i-pex(MHF)	2.9
B			3.38

3. The EUT consumes power from the following adapter and POE (for support unit only).

Adapter	
Brand	LEADER ELECTRONICS INC.
Model	MT12-Y120100-A1
Input Power	120Vac, 60Hz, 0.3A
Output Power	12Vdc, 1A
Power Line	1.5m cable without core attached on adapter

POE Board	
Brand	NA
Model	PE-1000IAF
Power Rating	48Vdc, 0.4A

POE's adapter	
Brand	UNIFIVE
Model	UIB336-4875
Input Power	100-240Vac, 50/60Hz, 0.9A
Output Power	48Vdc, 0.75A
Power Line	1.8m cable without core attached on adapter

3.2 Description of Test Modes

For 2.4GHz:

11 channels are provided for 802.11b, 802.11g and 802.11n (20MHz):

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 (40MHz):

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

For 5.0GHz (5745 ~ 5825MHz):

5 channels are provided for 802.11a, 802.11n (20MHz), 802.11ac (20MHz):

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

2 channels are provided for 802.11n (40MHz), 802.11ac (40MHz):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (80MHz):

Channel	Frequency
155	5775MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

FOR 2.4GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE \geq 1G	RE<1G	PLC	APCM	
A	√	√	√	√	Powered by adapter
B	-	√	√	-	Powered by POE

Where **RE \geq 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 **X-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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
A	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

Radiated Emission Test (Below 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11b	1 to 11	1	DSSS	DBPSK	1.0

Power Line Conducted Emission Test:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11b	1 to 11	1	DSSS	DBPSK	1.0

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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
A	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	25deg. C, 65%RH	120Vac, 60Hz	Chris Lin
RE<1G	24deg. C, 64%RH	120Vac, 60Hz 48Vdc	Match Tsui
PLC	24deg. C, 64%RH	120Vac, 60Hz 48Vdc	Match Tsui
APCM	25deg. C, 60%RH	120Vac, 60Hz	Nick Hsu

FOR 5.0GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE \geq 1G	RE<1G	PLC	APCM	
A	√	√	√	√	Powered by adapter
B	-	√	√	-	Powered by POE

Where **RE \geq 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 **X-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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
A	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0
A	802.11ac (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
A	802.11ac (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0
A	802.11ac (80MHz)	155	155	OFDM	BPSK	58.5

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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11a	149 to 165	149	OFDM	BPSK	6.0

Power Line Conducted Emission Test:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11a	149 to 165	149	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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
A	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0
A	802.11ac (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
A	802.11ac (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0
A	802.11ac (80MHz)	155	155	OFDM	BPSK	58.5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	24deg. C, 62%RH	120Vac, 60Hz	Alan Wu
RE<1G	24deg. C, 64%RH	120Vac, 60Hz 48Vdc	Match Tsui
PLC	24deg. C, 64%RH	120Vac, 60Hz 48Vdc	Match Tsui
APCM	25deg. C, 60%RH	120Vac, 60Hz	Nick Hsu

3.3 Duty Cycle of Test Signal

2.4GHz Band:

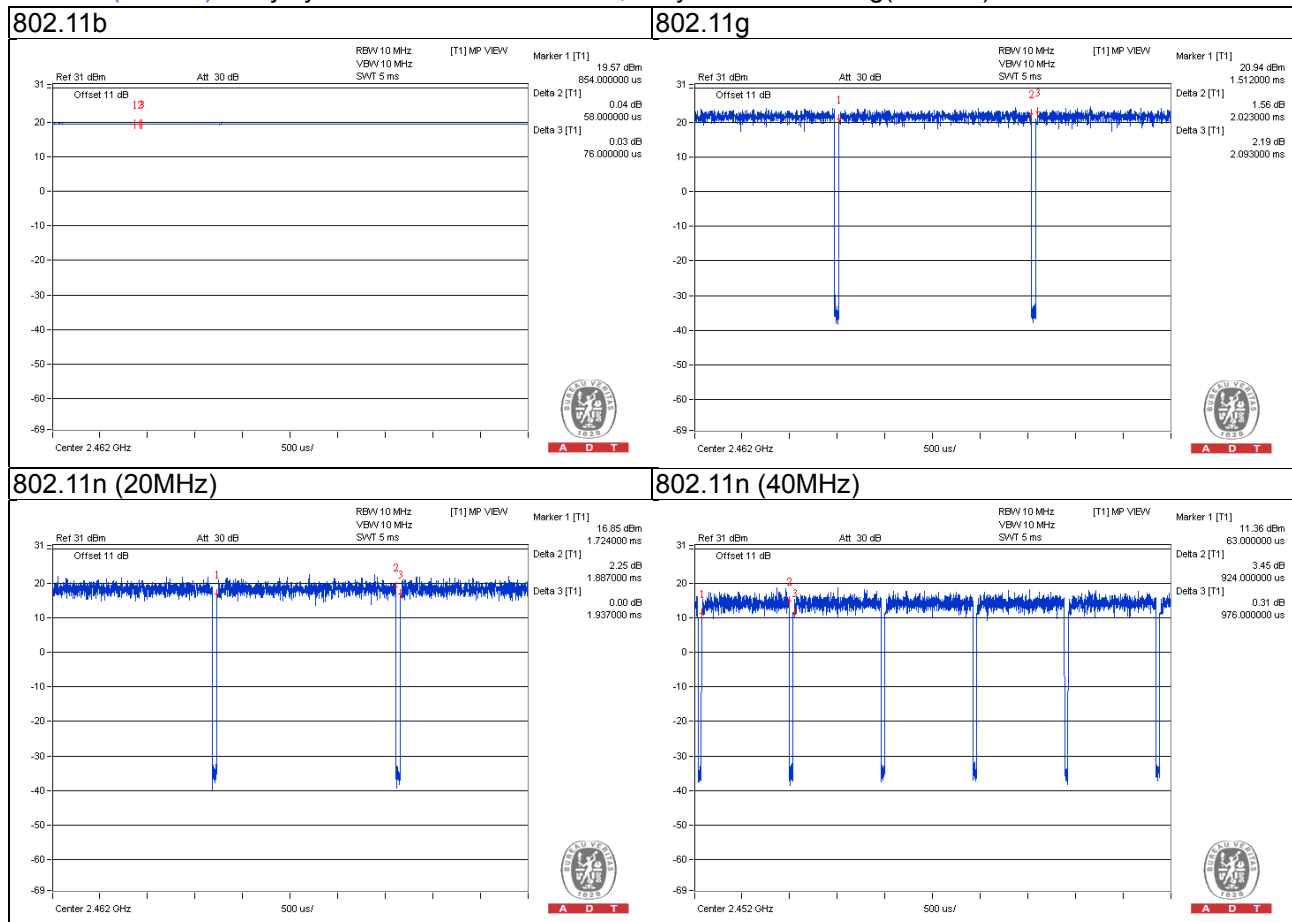
802.11b: Duty cycle of test signal is 100 %, duty factor is not required.

802.11g, 802.11n (20MHz), 802.11n (40MHz): Duty cycle is < 98%, duty factor shall be considered.

802.11g: Duty cycle = $2.023/2.093 = 0.967$, Duty factor = $10 * \log(1/0.967) = 0.15$

802.11n (20MHz): Duty cycle = $1.887/1.937 = 0.974$, Duty factor = $10 * \log(1/0.974) = 0.11$

802.11n (40MHz): Duty cycle = $0.924/0.976 = 0.947$, Duty factor = $10 * \log(1/0.947) = 0.24$



5GHz Band:

Duty cycle is < 98%, duty factor shall be considered.

802.11a: Duty cycle = $2.711/2.782 = 0.974$, Duty factor = $10 * \log(1/0.974) = 0.11$

802.11n (20MHz): Duty cycle = $2.520/2.590 = 0.973$, Duty factor = $10 * \log(1/0.973) = 0.12$

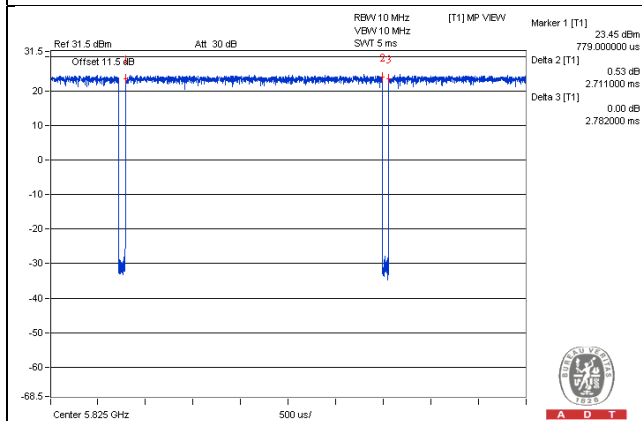
802.11n (40MHz): Duty cycle = $1.229/1.297 = 0.948$, Duty factor = $10 * \log(1/0.948) = 0.23$

802.11ac (20MHz): Duty cycle = $2.526/2.598 = 0.972$, Duty factor = $10 * \log(1/0.972) = 0.12$

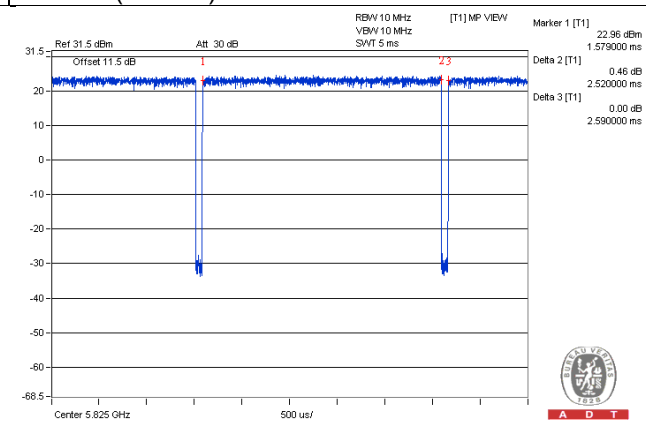
802.11ac (40MHz): Duty cycle = $1.238/1.306 = 0.948$, Duty factor = $10 * \log(1/0.948) = 0.23$

802.11ac (80MHz): Duty cycle = $0.596/0.679 = 0.878$, Duty factor = $10 * \log(1/0.878) = 0.57$

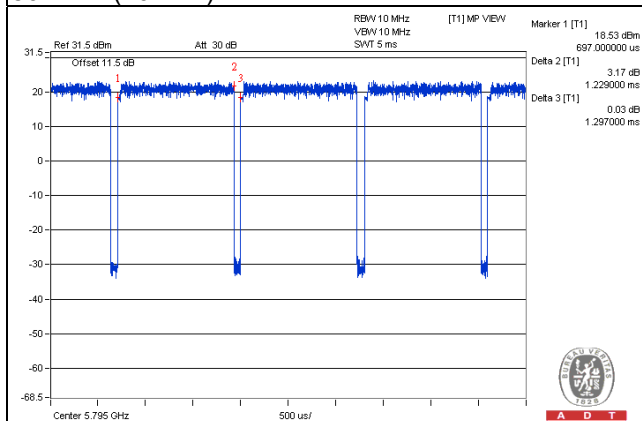
802.11a



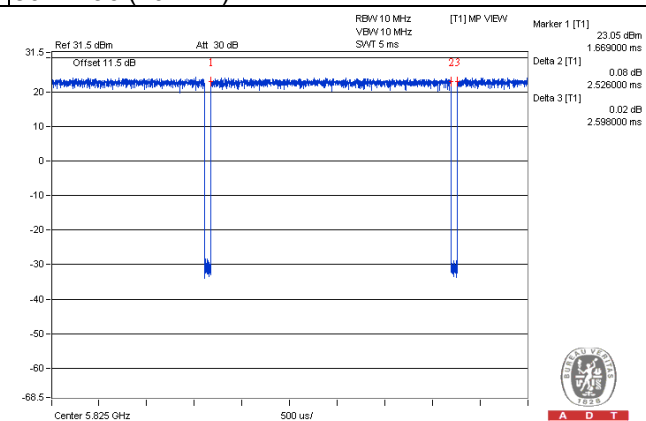
802.11n (20MHz)



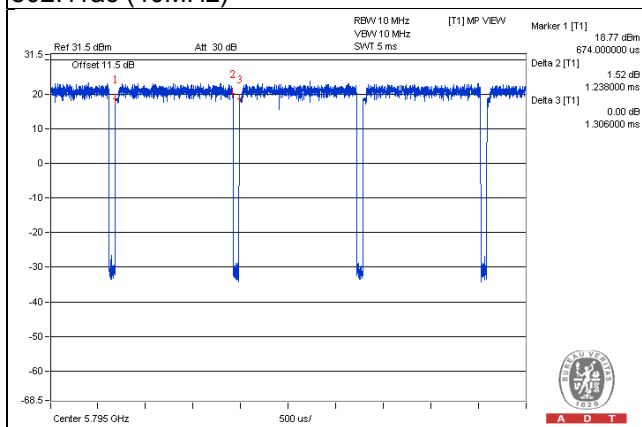
802.11n (40MHz)



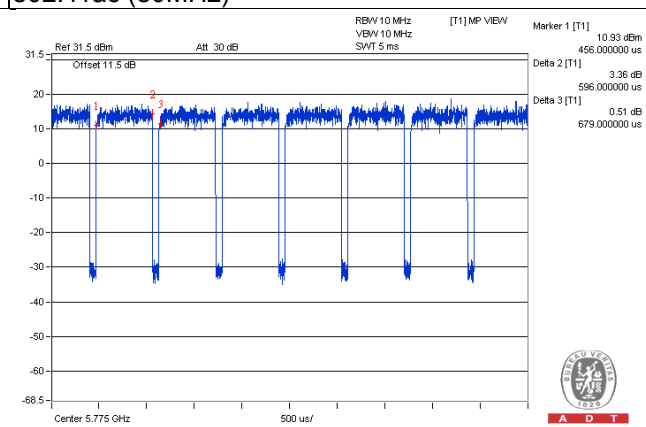
802.11ac (20MHz)



802.11ac (40MHz)



802.11ac (80MHz)



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	SONY	SVS151A12P	275548477000805	FCC DoC Approved	-
B.	Adapter	LEADER ELECTRONICS INC.	MT12-Y120100-A1	NA	NA	For test mode A only Provided by Manufacturer
C.	POE Board	NA	PE-1000IAF	NA	NA	For test mode B only Provided by Manufacturer
D.	POE's adapter	UNIFIVE	UIB336-4875	NA	NA	For test mode B only Provided by Manufacturer
E.	Load	NA	NA	NA	NA	-

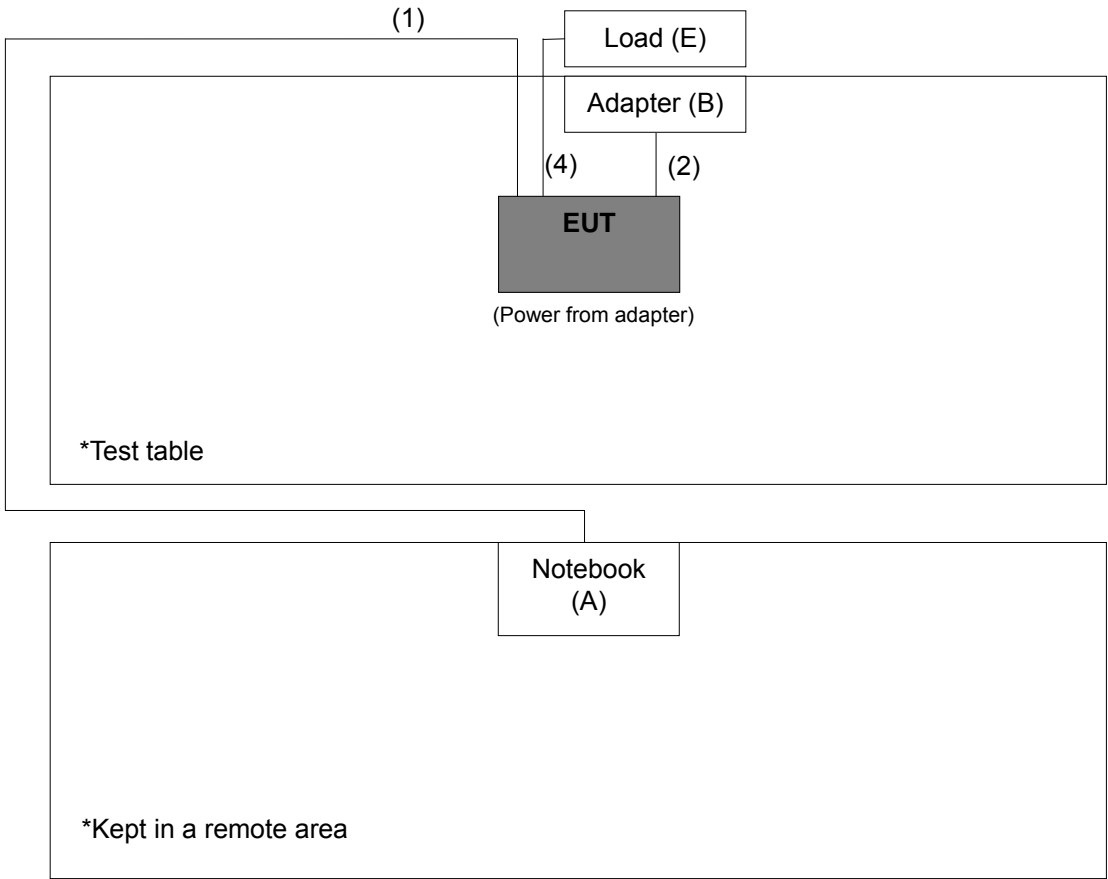
Note:

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

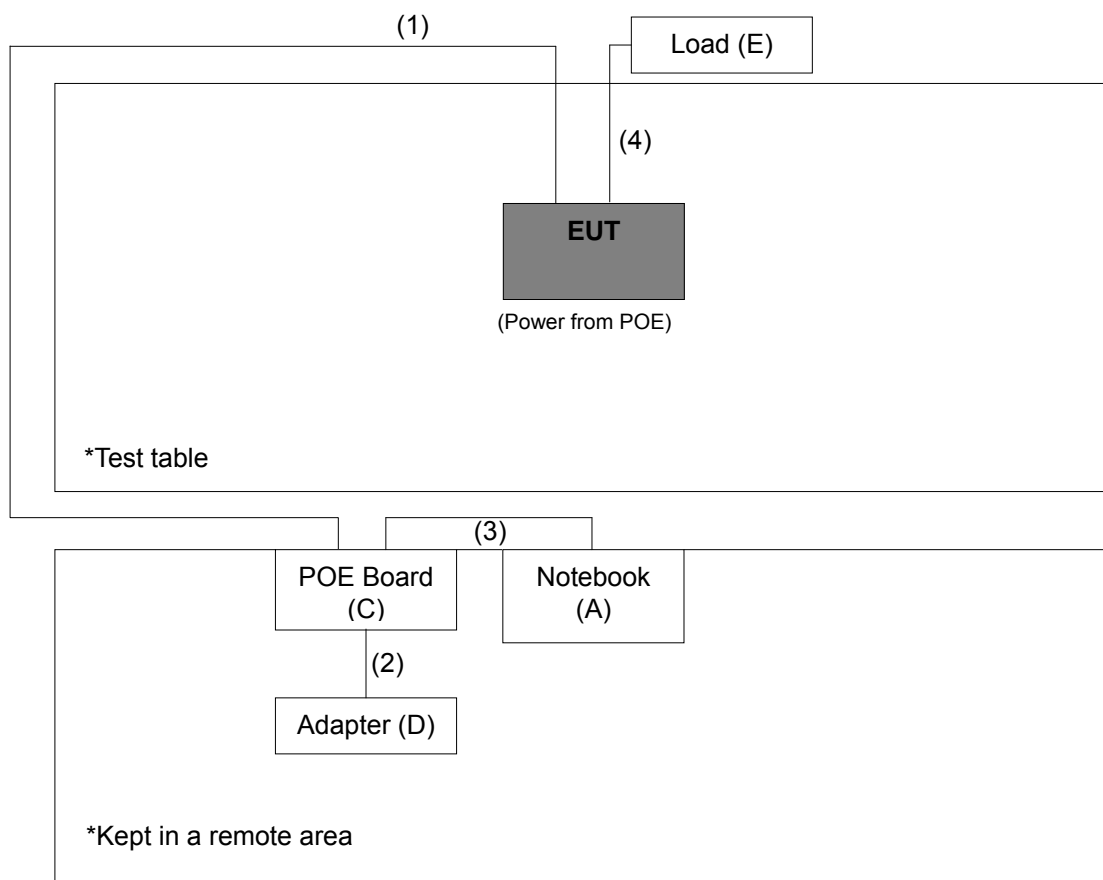
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ45	1	3	N	0	-
2.	Power	1	1.5	N	0	For test mode A only Attached on adapter
		1	1.8	N	0	For test mode B only Attached on adapter
3.	RJ45	1	1.8	N	0	-
4.	RJ45	1	1.8	N	0	-

3.4.1 Configuration of System under Test

Test mode A



Test mode B



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)

558074 D01 DTS Meas Guidance v03r02

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 (For 2.4GHz Band)

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 30dB under any condition of modulation.

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Oct. 06, 2014	Oct. 05, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Jul. 25, 2014	Jul. 24, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Feb. 06, 2015	Feb. 05, 2016
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Feb. 05, 2015	Feb. 04, 2016
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 09, 2015	Feb. 08, 2016
Preamplifier Agilent	8449B	3008A01960	Aug. 09, 2014	Aug. 08, 2015
Preamplifier Agilent	8447D	2944A10631	Aug. 09, 2014	Aug. 08, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309220/4	Aug. 09, 2014	Aug. 08, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250724/4	Aug. 09, 2014	Aug. 08, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295012/4	Aug. 09, 2014	Aug. 08, 2015
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021703	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100.	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 18, 2014	Oct. 17, 2015
High Speed Peak Power Meter	ML2495A	0824011	Jul. 26, 2014	Jul. 25, 2015
Power Sensor	MA2411B	0738171	Jul. 26, 2014	Jul. 25, 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. The test was performed in HwaYa Chamber 4.
 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 460141.
 5. The IC Site Registration No. is IC7450F-4.

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:

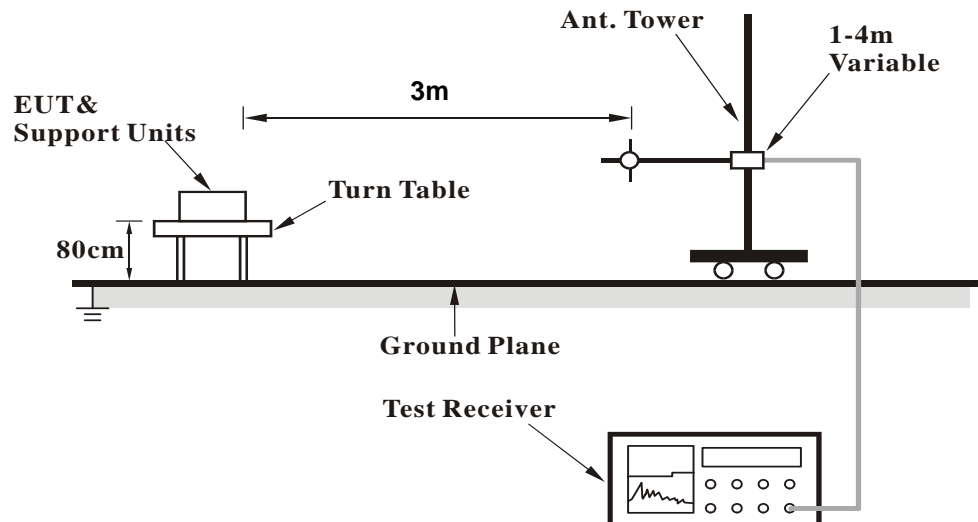
1. For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the ground at 3 meter chamber room for test
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
3. The resolution 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 ($10 \log(1/\text{duty cycle})$).
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) 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

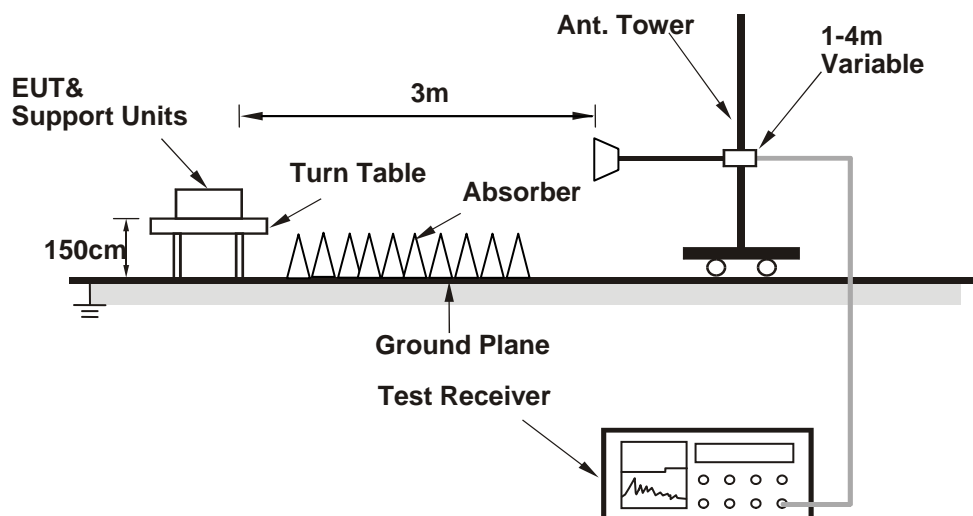
No deviation.

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

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

4.1.7 Test Results

Above 1GHz Data:

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.2 PK	74.0	-18.8	2.04 H	219	23.10	32.10
2	2390.00	43.9 AV	54.0	-10.1	2.04 H	219	11.80	32.10
3	*2412.00	96.9 PK			2.04 H	219	64.70	32.20
4	*2412.00	93.2 AV			2.04 H	219	61.00	32.20
5	4824.00	49.1 PK	74.0	-24.9	1.00 H	229	44.70	4.40
6	4824.00	42.7 AV	54.0	-11.3	1.00 H	229	38.30	4.40
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	2390.00	55.3 PK	74.0	-18.7	1.50 V	125	23.20	32.10
2	2390.00	44.3 AV	54.0	-9.7	1.50 V	125	12.20	32.10
3	*2412.00	104.4 PK			1.50 V	125	72.20	32.20
4	*2412.00	100.7 AV			1.50 V	125	68.50	32.20
5	4824.00	56.4 PK	74.0	-17.6	1.55 V	74	52.00	4.40
6	4824.00	53.2 AV	54.0	-0.8	1.55 V	74	48.80	4.40

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	98.8 PK			1.69 H	37	66.60	32.20
2	*2437.00	94.9 AV			1.69 H	37	62.70	32.20
3	4874.00	49.1 PK	74.0	-24.9	1.03 H	19	44.60	4.50
4	4874.00	42.6 AV	54.0	-11.4	1.03 H	19	38.10	4.50
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	*2437.00	101.8 PK			1.00 V	27	69.60	32.20
2	*2437.00	98.5 AV			1.00 V	27	66.30	32.20
3	4874.00	55.8 PK	74.0	-18.2	1.72 V	32	51.30	4.50
4	4874.00	53.3 AV	54.0	-0.7	1.72 V	32	48.80	4.50

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	99.7 PK			1.88 H	353	67.40	32.30
2	*2462.00	95.7 AV			1.88 H	353	63.40	32.30
3	2483.50	55.8 PK	74.0	-18.2	1.88 H	353	23.50	32.30
4	2483.50	44.1 AV	54.0	-9.9	1.88 H	353	11.80	32.30
5	4924.00	49.3 PK	74.0	-24.7	1.93 H	23	44.60	4.70
6	4924.00	39.3 AV	54.0	-14.7	1.93 H	23	37.70	4.70
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	99.1 PK			1.00 V	120	66.80	32.30
2	*2462.00	95.5 AV			1.00 V	120	63.20	32.30
3	2483.50	56.1 PK	74.0	-17.9	1.00 V	120	23.80	32.30
4	2483.50	44.2 AV	54.0	-9.8	1.00 V	120	11.90	32.30
5	4924.00	56.2 PK	74.0	-17.8	1.61 V	21	51.50	4.70
6	4924.00	53.2 AV	54.0	-0.8	1.61 V	21	48.50	4.70

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.

802.11g

CHANNEL	TX Channel 1	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	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	60.2 PK	74.0	-13.8	1.81 H	220	28.10	32.10
2	2390.00	47.0 AV	54.0	-7.0	1.81 H	220	14.90	32.10
3	*2412.00	99.1 PK			1.81 H	220	66.90	32.20
4	*2412.00	88.3 AV			1.81 H	220	56.10	32.20
5	4824.00	48.0 PK	74.0	-26.0	1.69 H	87	43.60	4.40
6	4824.00	35.2 AV	54.0	-18.8	1.69 H	87	30.80	4.40
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	2390.00	66.6 PK	74.0	-7.4	1.00 V	9	34.50	32.10
2	2390.00	53.1 AV	54.0	-0.9	1.00 V	9	21.00	32.10
3	*2412.00	101.6 PK			1.00 V	9	69.40	32.20
4	*2412.00	91.4 AV			1.00 V	9	59.20	32.20
5	4824.00	52.2 PK	74.0	-21.8	1.07 V	87	47.80	4.40
6	4824.00	38.2 AV	54.0	-15.8	1.07 V	87	33.80	4.40

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	103.1 PK			1.08 H	53	70.90	32.20
2	*2437.00	92.5 AV			1.08 H	53	60.30	32.20
3	4874.00	56.5 PK	74.0	-17.5	1.29 H	219	52.00	4.50
4	4874.00	43.1 AV	54.0	-10.9	1.29 H	219	38.60	4.50
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	*2437.00	105.8 PK			1.00 V	218	73.60	32.20
2	*2437.00	95.1 AV			1.00 V	218	62.90	32.20
3	4874.00	65.1 PK	74.0	-8.9	1.71 V	69	60.60	4.50
4	4874.00	50.9 AV	54.0	-3.1	1.71 V	69	46.40	4.50

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.3 PK			1.37 H	355	70.00	32.30
2	*2462.00	91.7 AV			1.37 H	355	59.40	32.30
3	2483.50	70.5 PK	74.0	-3.5	1.37 H	355	38.20	32.30
4	2483.50	52.9 AV	54.0	-1.1	1.37 H	355	20.60	32.30
5	4924.00	47.2 PK	74.0	-26.8	1.32 H	54	42.50	4.70
6	4924.00	35.0 AV	54.0	-19.0	1.32 H	54	30.30	4.70
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	100.0 PK			1.00 V	212	67.70	32.30
2	*2462.00	90.8 AV			1.00 V	212	58.50	32.30
3	2483.50	71.7 PK	74.0	-2.3	1.00 V	212	39.40	32.30
4	2483.50	53.3 AV	54.0	-0.7	1.00 V	212	21.00	32.30
5	4924.00	49.6 PK	74.0	-24.4	1.26 V	97	44.90	4.70
6	4924.00	37.6 AV	54.0	-16.4	1.26 V	97	32.90	4.70

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.

802.11n (20MHz)

CHANNEL	TX Channel 1	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	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	21.5 PK	74.0	-52.5	1.32 H	0	23.60	-2.10
2	2390.00	12.7 AV	54.0	-41.3	1.32 H	0	14.80	-2.10
3	*2412.00	97.5 PK			1.82 H	220	65.30	32.20
4	*2412.00	87.3 AV			1.82 H	220	55.10	32.20
5	4824.00	47.9 PK	74.0	-26.1	1.57 H	47	43.50	4.40
6	4824.00	35.5 AV	54.0	-18.5	1.57 H	47	31.10	4.40
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	2390.00	68.5 PK	74.0	-5.5	1.01 V	107	36.40	32.10
2	2390.00	53.1 AV	54.0	-0.9	1.01 V	107	21.00	32.10
3	*2412.00	104.5 PK			1.00 V	216	72.30	32.20
4	*2412.00	94.9 AV			1.00 V	216	62.70	32.20
5	4824.00	49.2 PK	74.0	-24.8	1.00 V	108	44.80	4.40
6	4824.00	37.3 AV	54.0	-16.7	1.00 V	108	32.90	4.40

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.3 PK			1.69 H	35	76.10	32.20
2	*2437.00	97.8 AV			1.69 H	35	65.60	32.20
3	2483.50	68.2 PK	74.0	-5.8	1.69 H	12	35.90	32.30
4	2483.50	51.5 AV	54.0	-2.5	1.69 H	12	19.20	32.30
5	4874.00	57.8 PK	74.0	-16.2	1.28 H	299	53.30	4.50
6	4874.00	44.4 AV	54.0	-9.6	1.28 H	299	39.90	4.50
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	*2437.00	111.2 PK			1.00 V	225	79.00	32.20
2	*2437.00	101.7 AV			1.00 V	225	69.50	32.20
3	2483.50	72.7 PK	74.0	-1.3	1.00 V	85	40.40	32.30
4	2483.50	53.5 AV	54.0	-0.5	1.00 V	85	21.20	32.30
5	4874.00	65.7 PK	74.0	-8.3	1.82 V	51	61.20	4.50
6	4874.00	52.7 AV	54.0	-1.3	1.82 V	51	48.20	4.50

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	98.4 PK			1.21 H	57	66.10	32.30
2	*2462.00	88.8 AV			1.21 H	57	56.50	32.30
3	2483.50	61.3 PK	74.0	-12.7	1.00 H	51	29.00	32.30
4	2483.50	47.7 AV	54.0	-6.3	1.00 H	51	15.40	32.30
5	4924.00	48.7 PK	74.0	-25.3	1.45 H	41	44.00	4.70
6	4924.00	36.4 AV	54.0	-17.6	1.45 H	41	31.70	4.70
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	104.7 PK			1.00 V	156	72.40	32.30
2	*2462.00	95.1 AV			1.00 V	156	62.80	32.30
3	2483.50	71.0 PK	74.0	-3.0	1.00 V	214	38.70	32.30
4	2483.50	53.3 AV	54.0	-0.7	1.00 V	214	21.00	32.30
5	4924.00	49.3 PK	74.0	-24.7	1.56 V	31	44.60	4.70
6	4924.00	38.1 AV	54.0	-15.9	1.56 V	31	33.40	4.70

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.

802.11n (40MHz)

CHANNEL	TX Channel 3	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	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	68.0 PK	74.0	-6.0	1.09 H	87	35.90	32.10
2	2390.00	51.5 AV	54.0	-2.5	1.09 H	87	19.40	32.10
3	*2422.00	94.8 PK			2.76 H	220	62.60	32.20
4	*2422.00	85.1 AV			2.76 H	220	52.90	32.20
5	4844.00	47.1 PK	74.0	-26.9	1.23 H	69	42.60	4.50
6	4844.00	35.5 AV	54.0	-18.5	1.23 H	69	31.00	4.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.5 PK	74.0	-3.5	1.00 V	77	38.40	32.10
2	2390.00	53.5 AV	54.0	-0.5	1.00 V	77	21.40	32.10
3	*2422.00	100.8 PK			1.00 V	217	68.60	32.20
4	*2422.00	91.2 AV			1.00 V	217	59.00	32.20
5	4844.00	50.1 PK	74.0	-23.9	1.54 V	78	45.60	4.50
6	4844.00	37.9 AV	54.0	-16.1	1.54 V	78	33.40	4.50

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.

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	58.9 PK	74.0	-15.1	1.44 H	264	26.80	32.10
2	2390.00	49.0 AV	54.0	-5.0	1.44 H	264	16.90	32.10
3	*2437.00	97.2 PK			1.00 V	224	72.50	32.20
4	*2437.00	86.8 AV			1.00 V	224	63.10	32.20
5	4874.00	47.1 PK	74.0	-26.9	1.36 H	98	42.60	4.50
6	4874.00	36.1 AV	54.0	-17.9	1.36 H	98	31.60	4.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.0 PK	74.0	-2.0	1.13 V	92	39.90	32.10
2	2390.00	53.5 AV	54.0	-0.5	1.13 V	92	21.40	32.10
3	*2437.00	104.7 PK			1.00 V	224	72.50	32.20
4	*2437.00	95.3 AV			1.00 V	224	63.10	32.20
5	4874.00	50.5 PK	74.0	-23.5	1.58 V	74	46.00	4.50
6	4874.00	37.9 AV	54.0	-16.1	1.58 V	74	33.40	4.50

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	94.8 PK			1.52 H	34	62.60	32.20
2	*2452.00	85.0 AV			1.52 H	34	52.80	32.20
3	2483.50	65.3 PK	74.0	-8.7	1.60 H	40	33.00	32.30
4	2483.50	46.8 AV	54.0	-7.2	1.60 H	40	14.50	32.30
5	4904.00	47.6 PK	74.0	-26.4	1.55 H	87	43.00	4.60
6	4904.00	35.9 AV	54.0	-18.1	1.55 H	87	31.30	4.60
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	*2452.00	101.5 PK			1.00 V	215	69.30	32.20
2	*2452.00	92.6 AV			1.00 V	215	60.40	32.20
3	2483.50	71.3 PK	74.0	-2.7	1.00 V	214	39.00	32.30
4	2483.50	53.1 AV	54.0	-0.9	1.00 V	214	20.80	32.30
5	4904.00	50.2 PK	74.0	-23.8	1.58 V	74	45.60	4.60
6	4904.00	38.0 AV	54.0	-16.0	1.58 V	74	33.40	4.60

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.

Below 1GHz Data:

802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		
TETS 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	299.66	35.5 QP	46.0	-10.5	1.00 H	95	48.05	-12.57
2	600.36	28.1 QP	46.0	-18.0	1.49 H	184	34.39	-6.34
3	825.40	39.4 QP	46.0	-6.6	1.00 H	346	41.79	-2.41
4	873.90	28.6 QP	46.0	-17.4	1.00 H	157	30.45	-1.88
5	901.06	32.9 QP	46.0	-13.1	1.49 H	179	34.23	-1.31
6	955.38	30.6 QP	46.0	-15.4	1.49 H	42	30.75	-0.18
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	37.76	24.5 QP	40.0	-15.5	1.00 V	41	39.69	-15.15
2	171.62	28.0 QP	43.5	-15.5	1.00 V	295	42.48	-14.46
3	299.66	31.2 QP	46.0	-14.8	1.50 V	149	43.81	-12.57
4	361.74	32.0 QP	46.0	-14.1	1.50 V	186	43.34	-11.39
5	825.40	40.6 QP	46.0	-5.4	1.99 V	30	43.00	-2.41
6	901.06	32.1 QP	46.0	-13.9	1.00 V	268	33.38	-1.31

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 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		
TETS 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	51.34	27.5 QP	40.0	-12.5	1.49 H	105	41.96	-14.43
2	72.68	32.4 QP	40.0	-7.6	1.99 H	81	49.40	-16.98
3	185.20	36.3 QP	43.5	-7.2	1.49 H	99	52.16	-15.90
4	196.84	30.6 QP	43.5	-12.9	1.49 H	291	47.37	-16.77
5	299.66	31.7 QP	46.0	-14.3	1.00 H	172	44.23	-12.57
6	361.74	31.6 QP	46.0	-14.4	1.00 H	145	43.00	-11.39
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	35.82	37.7 QP	40.0	-2.3	1.49 V	8	53.34	-15.61
2	72.68	36.4 QP	40.0	-3.6	1.00 V	135	53.36	-16.98
3	127.00	31.7 QP	43.5	-11.8	1.00 V	135	47.57	-15.91
4	189.08	33.2 QP	43.5	-10.3	1.00 V	72	49.45	-16.28
5	196.84	28.7 QP	43.5	-14.8	1.49 V	8	45.43	-16.77
6	652.74	31.1 QP	46.0	-15.0	1.00 V	197	36.60	-5.55

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	ESCI	100613	Nov. 11, 2014	Nov. 10, 2015
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 26, 2014	Dec. 25, 2015
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 02, 2015	Mar. 01, 2016
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 21, 2014	Jul. 20, 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 1.
3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedures

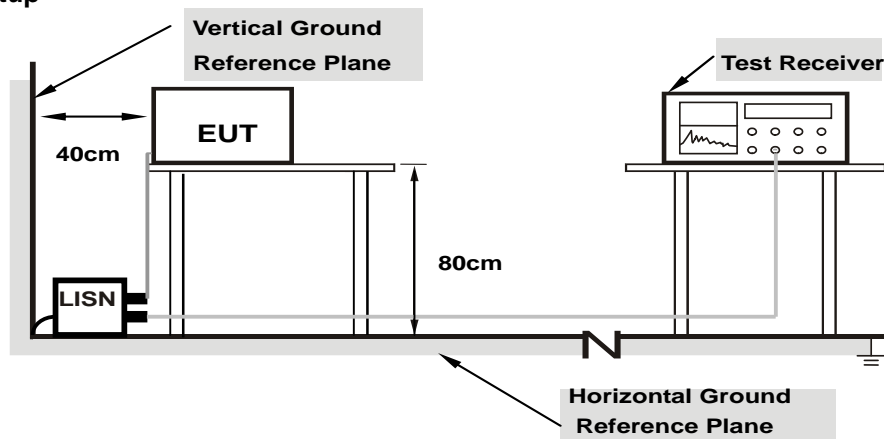
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) 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.

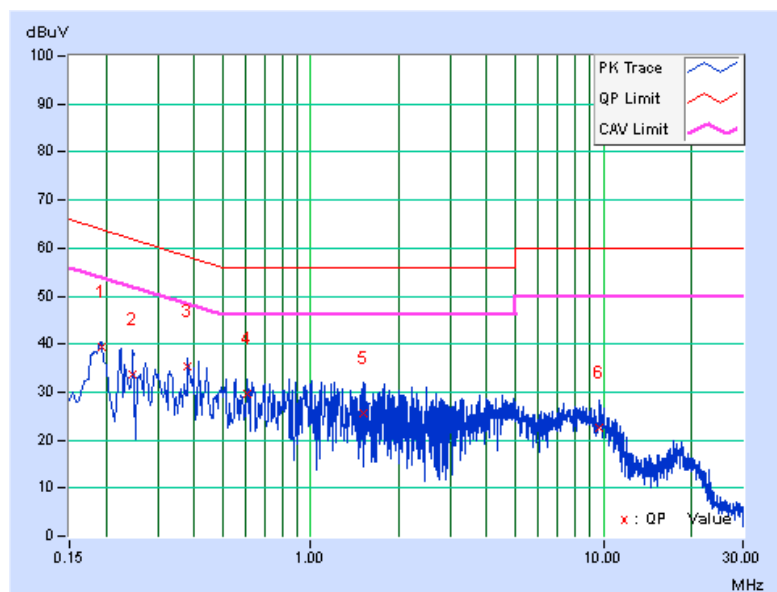
4.2.7 Test Results

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

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19255	0.06	39.33	30.62	39.39	30.68	63.93	53.93	-24.54	-23.25
2	0.24775	0.06	33.62	23.72	33.68	23.78	61.83	51.83	-28.15	-28.05
3	0.38069	0.06	35.38	25.63	35.44	25.69	58.26	48.26	-22.82	-22.57
4	0.60747	0.07	29.58	19.60	29.65	19.67	56.00	46.00	-26.35	-26.33
5	1.52344	0.10	25.59	15.63	25.69	15.73	56.00	46.00	-30.31	-30.27
6	9.68649	0.44	22.11	10.03	22.55	10.47	60.00	50.00	-37.45	-39.53

Remarks:

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

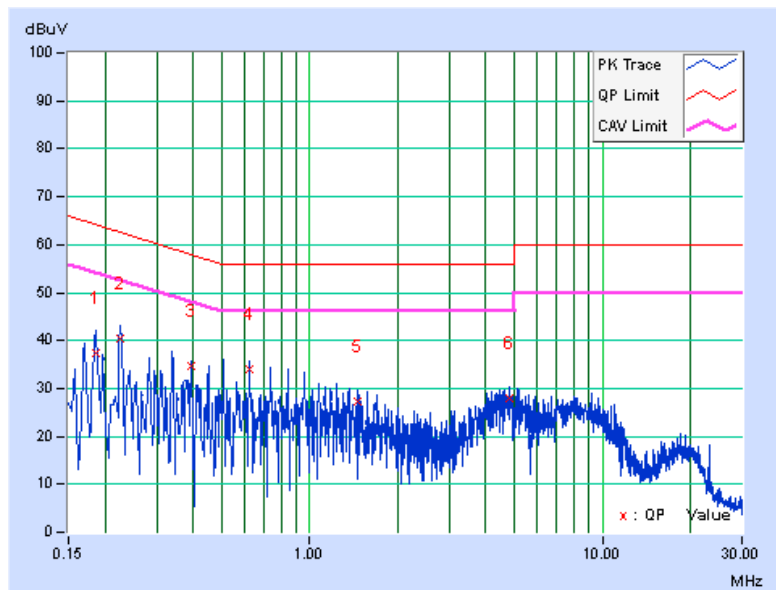


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test mode	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18519	0.05	37.30	22.29	37.35	22.34	64.25	54.25	-26.90	-31.91
2	0.22434	0.05	40.30	23.83	40.35	23.88	62.66	52.66	-22.31	-28.78
3	0.39426	0.06	34.62	17.53	34.68	17.59	57.97	47.97	-23.29	-30.38
4	0.61920	0.07	33.77	16.81	33.84	16.88	56.00	46.00	-22.16	-29.12
5	1.46376	0.09	27.17	11.96	27.26	12.05	56.00	46.00	-28.74	-33.95
6	4.83027	0.22	27.78	11.66	28.00	11.88	56.00	46.00	-28.00	-34.12

Remarks:

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

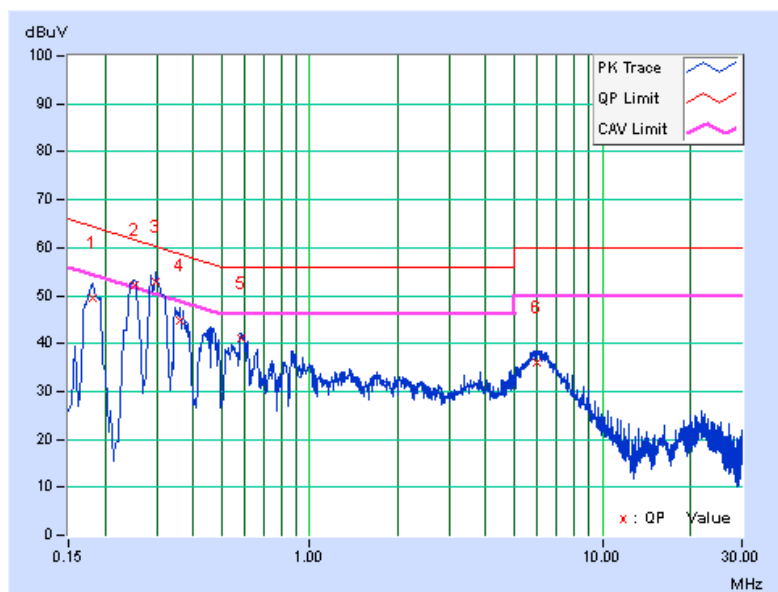


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test mode	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18122	0.06	49.42	40.14	49.48	40.20	64.43	54.43	-14.95	-14.23
2	0.25125	0.06	52.08	41.79	52.14	41.85	61.72	51.72	-9.58	-9.87
3	0.29858	0.06	52.92	42.52	52.98	42.58	60.28	50.28	-7.30	-7.70
4	0.36114	0.06	44.83	33.86	44.89	33.92	58.70	48.70	-13.81	-14.78
5	0.58077	0.07	40.90	27.63	40.97	27.70	56.00	46.00	-15.03	-18.30
6	5.99936	0.28	35.65	29.65	35.93	29.93	60.00	50.00	-24.07	-20.07

Remarks:

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

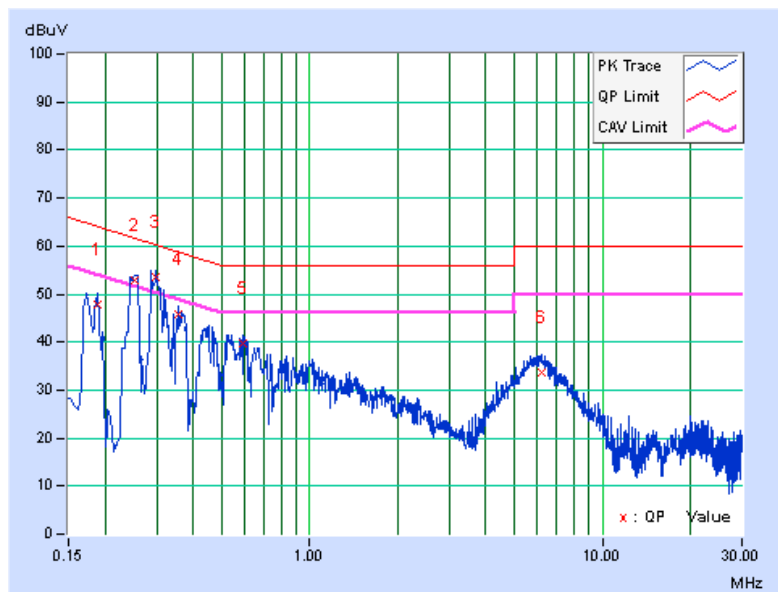


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test mode	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18910	0.05	47.61	36.31	47.66	36.36	64.08	54.08	-16.42	-17.72
2	0.25125	0.05	52.87	42.41	52.92	42.46	61.72	51.72	-8.79	-9.25
3	0.29858	0.05	53.53	43.15	53.58	43.20	60.28	50.28	-6.70	-7.08
4	0.35723	0.06	45.71	34.66	45.77	34.72	58.79	48.79	-13.02	-14.07
5	0.59314	0.07	39.70	26.13	39.77	26.20	56.00	46.00	-16.23	-19.80
6	6.21832	0.28	33.33	28.09	33.61	28.37	60.00	50.00	-26.39	-21.63

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.

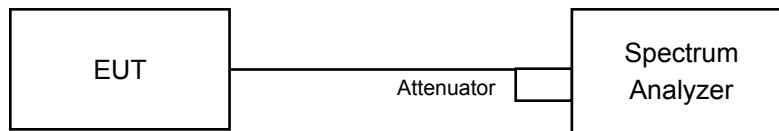


4.3 6dB Bandwidth Measurement

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

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

- Set resolution bandwidth (RBW) = 100kHz
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- 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 from Test 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	7.06	0.5	Pass
6	2437	7.11	0.5	Pass
11	2462	7.09	0.5	Pass

802.11g

Channel	Frequency (MHz)	6db Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.38	0.5	Pass
6	2437	16.40	0.5	Pass
11	2462	16.38	0.5	Pass

802.11n (20MHz)

Channel	Frequency (MHz)	6db Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.63	17.59	0.5	Pass
6	2437	17.36	17.57	0.5	Pass
11	2462	17.60	17.60	0.5	Pass

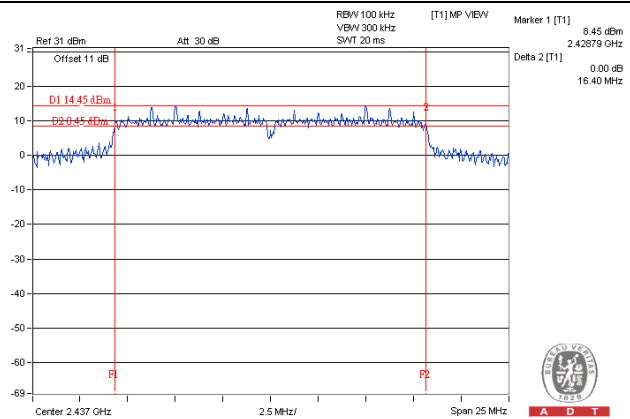
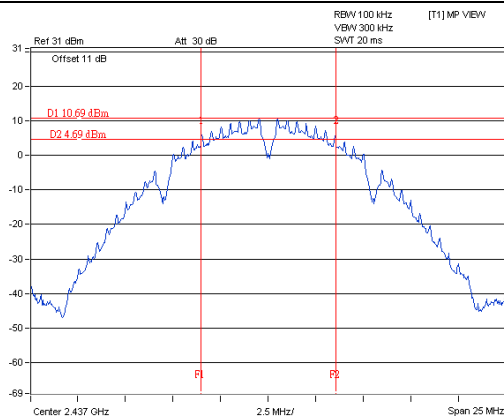
802.11n (40MHz)

Channel	Frequency (MHz)	6db Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.86	36.43	0.5	Pass
6	2437	35.93	36.34	0.5	Pass
9	2452	36.11	36.36	0.5	Pass

Spectrum Plot of Worst Value

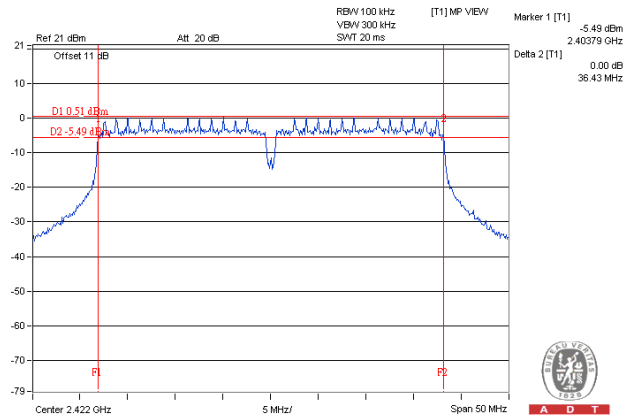
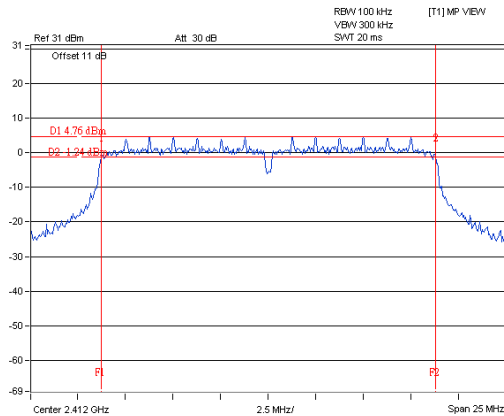
802.11b

802.11g



802.11n (20MHz)

802.11n (40MHz)



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,

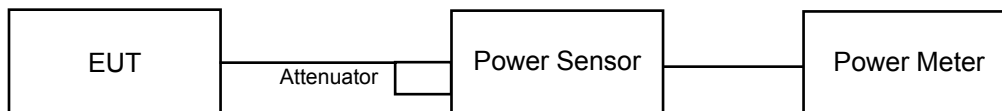
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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.

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

An 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 average 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

802.11b

Chan.	Chan. Freq. (MHz)	Power (mW)	AVG. Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	80.538	19.06	30	Pass
6	2437	69.823	18.44	30	Pass
11	2462	50.350	17.02	30	Pass

802.11g

Chan.	Chan. Freq. (MHz)	Power (mW)	AVG. Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	70.958	18.51	30	Pass
6	2437	276.694	24.42	30	Pass
11	2462	84.333	19.26	30	Pass

802.11n (20MHz)

Chan.	Chan. Freq. (MHz)	AVG. Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	16.20	16.75	89.002	19.49	30	Pass
6	2437	23.71	23.72	470.468	26.73	30	Pass
11	2462	15.92	16.38	82.535	19.17	30	Pass

802.11n (40MHz)

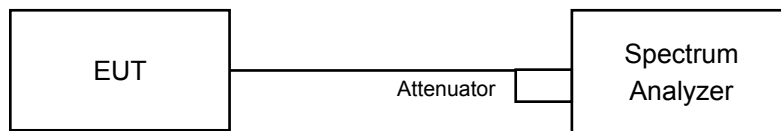
Chan.	Chan. Freq. (MHz)	AVG. Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	14.16	14.97	57.467	17.59	30	Pass
6	2437	16.94	17.90	111.091	20.46	30	Pass
9	2452	14.92	15.64	67.690	18.31	30	Pass

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

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

- Measure the duty cycle (x).
- Set instrument center frequency to DTS channel center frequency.
- Set span to at least 1.5 times the OBW.
- Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set VBW $\geq 3 \times \text{RBW}$.
- Detector = power averaging (RMS) or sample detector (when RMS not available).
- Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span}/\text{RBW}$.
- Sweep time = auto couple.
- Do not use sweep triggering. Allow sweep to "free run".
- Employ trace averaging (RMS) mode over a minimum of 100 traces.
- Use the peak marker function to determine the maximum amplitude level.
- Add $10 \log (1/x)$, where x is the duty cycle measured in step (a), to the measured PSD to compute the average PSD during the actual transmission time.

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	Freq. (MHz)	PSD (dBm)	Limit (dBm)	Pass / Fail
1	2412	-8.05	8.00	Pass
6	2437	-8.79	8.00	Pass
11	2462	-10.32	8.00	Pass

802.11g

Channel	Freq. (MHz)	PSD (dBm)	Duty Factor	PSD with Duty Factor (dBm)	Limit (dBm)	Pass / Fail
1	2412	-12.03	0.15	-11.88	8.00	Pass
6	2437	-6.38	0.15	-6.23	8.00	Pass
11	2462	-9.96	0.15	-9.81	8.00	Pass

Note: Refer to section 3.3 for duty cycle spectrum plot.

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Duty Factor	Total PSD with Duty Factor (dBm)	Limit (dBm)	Pass / Fail
0	1	2412	-15.10	3.01	0.11	-11.98	7.85	Pass
	6	2437	-6.05	3.01	0.11	-2.93	7.85	Pass
	11	2462	-15.15	3.01	0.11	-12.03	7.85	Pass
1	1	2412	-11.97	3.01	0.11	-8.85	7.85	Pass
	6	2437	-7.98	3.01	0.11	-4.86	7.85	Pass
	11	2462	-14.47	3.01	0.11	-11.35	7.85	Pass

Note:

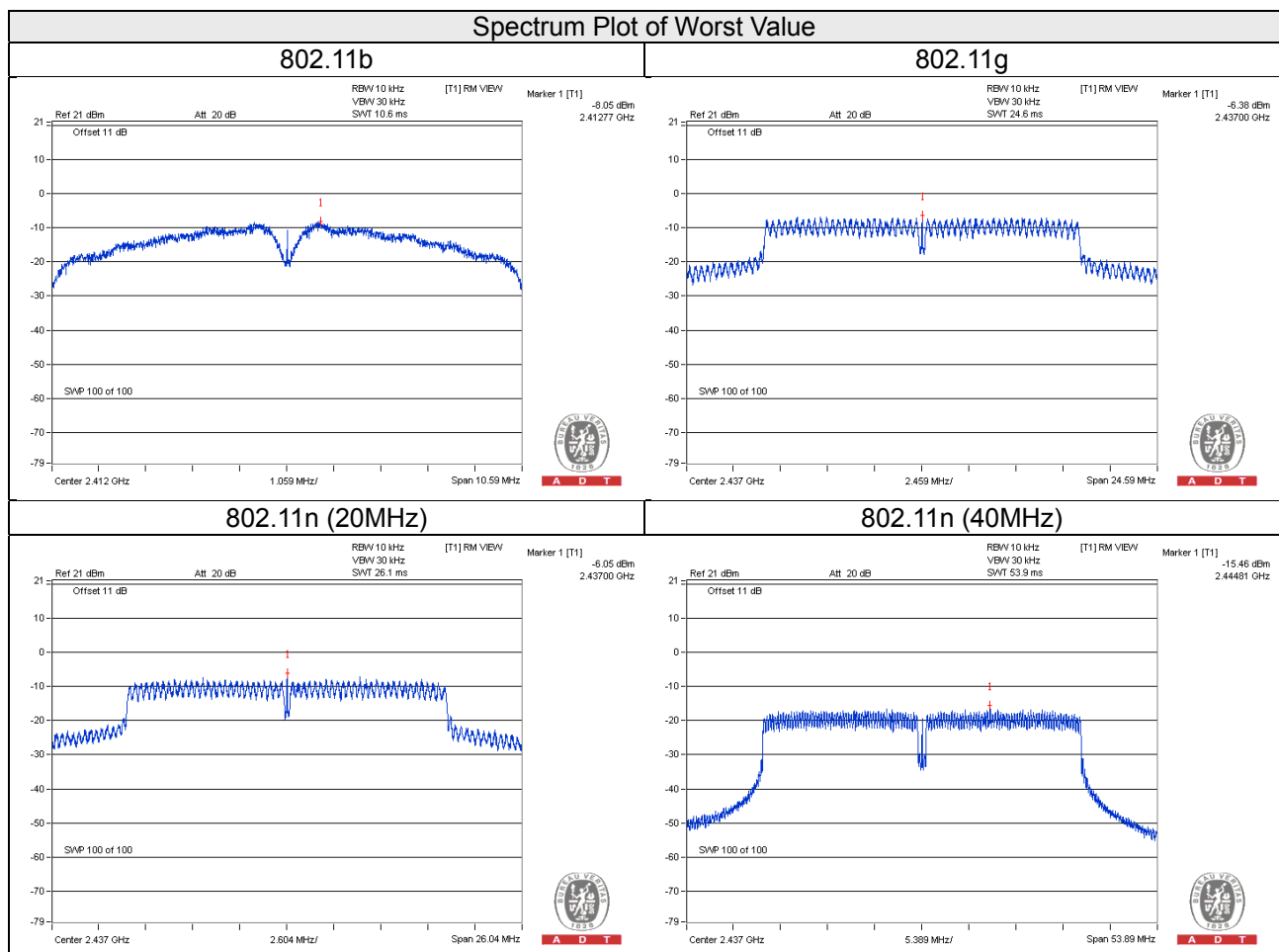
- Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.15 \text{dBi} > 6 \text{dBi}$, so the power density limit shall be reduced to $8 - (6.15 - 6) = 7.85 \text{dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Duty Factor	Total PSD with Duty Factor (dBm)	Limit (dBm)	Pass / Fail
0	3	2422	-18.95	3.01	0.24	-15.70	7.85	Pass
	6	2437	-15.46	3.01	0.24	-12.21	7.85	Pass
	9	2452	-18.62	3.01	0.24	-15.37	7.85	Pass
1	3	2422	-18.50	3.01	0.24	-15.25	7.85	Pass
	6	2437	-15.90	3.01	0.24	-12.65	7.85	Pass
	9	2452	-17.14	3.01	0.24	-13.89	7.85	Pass

Note:

- Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.15 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $8 - (6.15 - 6) = 7.85 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

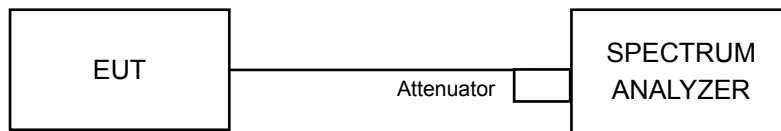


4.6 Conducted Out of Band Emission Measurement

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

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

- Set the RBW = 100 kHz.
- Set the VBW \geq 300 kHz.
- Detector = Average.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

- Set RBW = 100 kHz.
- Set VBW \geq 300 kHz.
- Detector = peak.
- Sweep = auto couple.
- Trace Mode = max hold.
- Allow trace to fully stabilize.
- 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

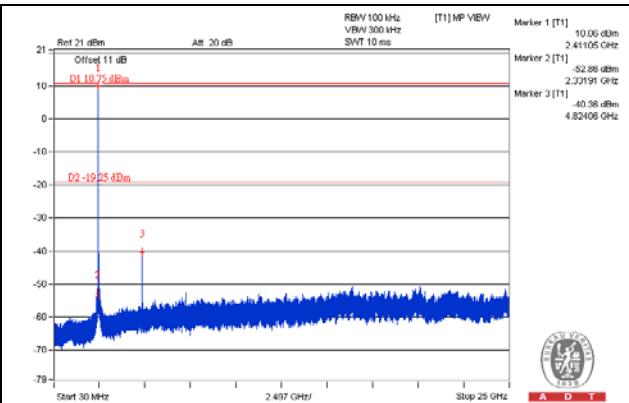
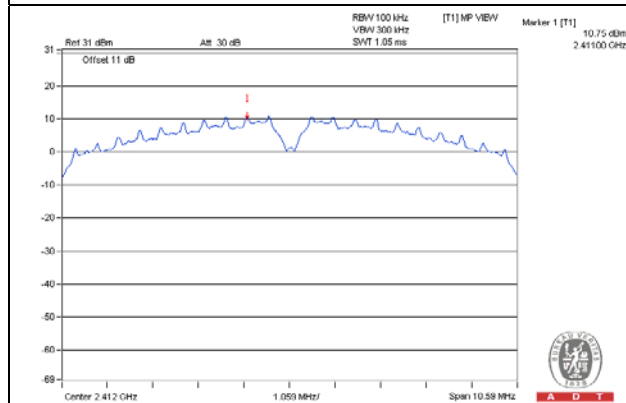
Same as Item 4.3.6

4.6.7 Test Results

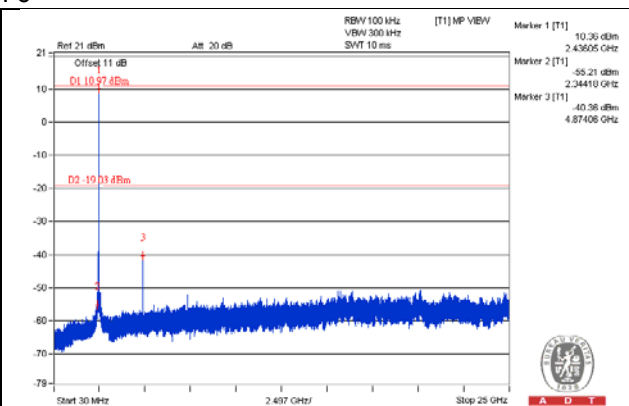
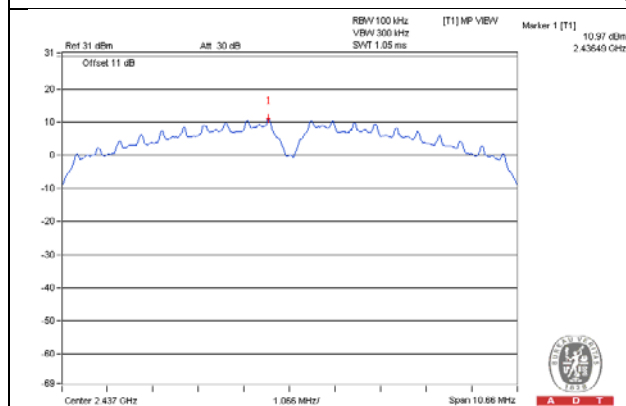
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

802.11b

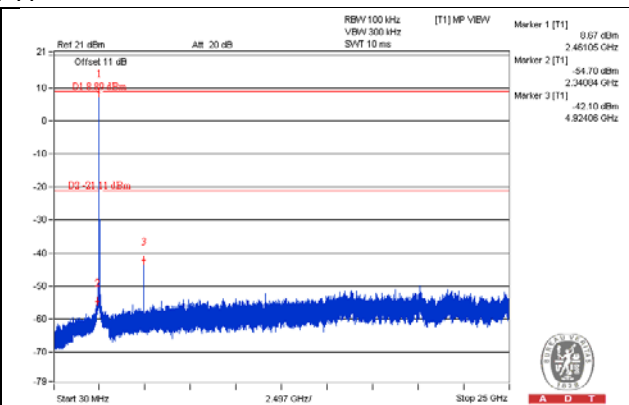
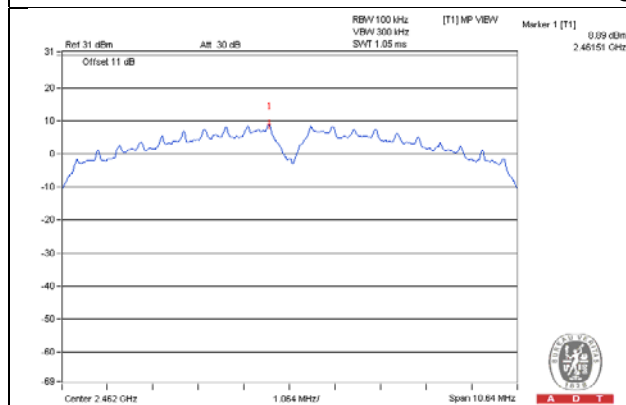
CH 1



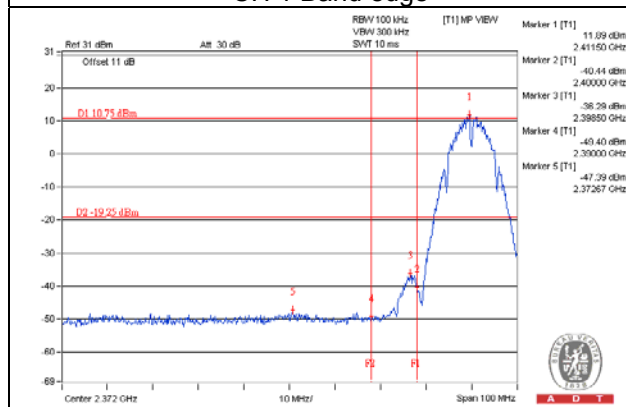
CH 6



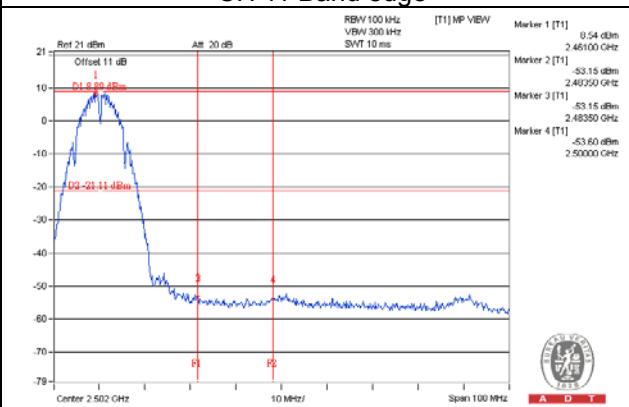
CH 11



CH 1 Band edge

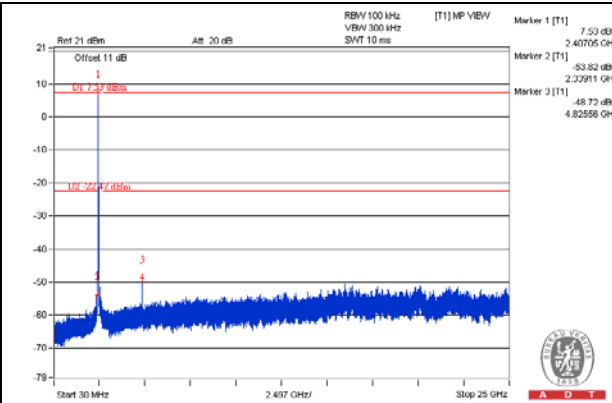
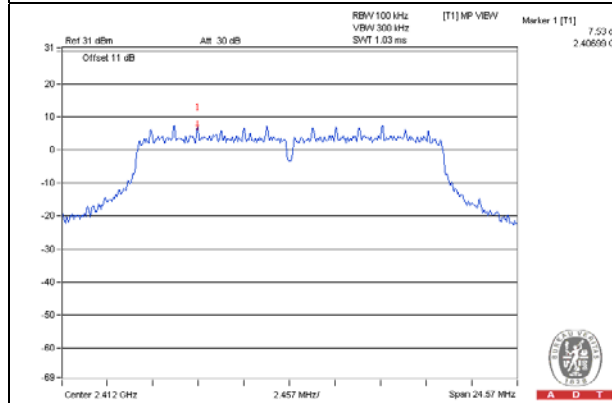


CH 11 Band edge

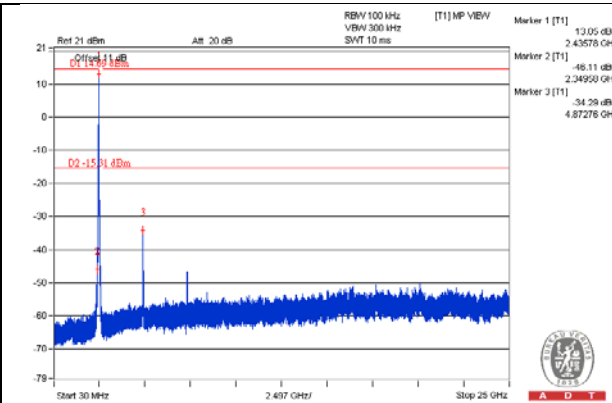
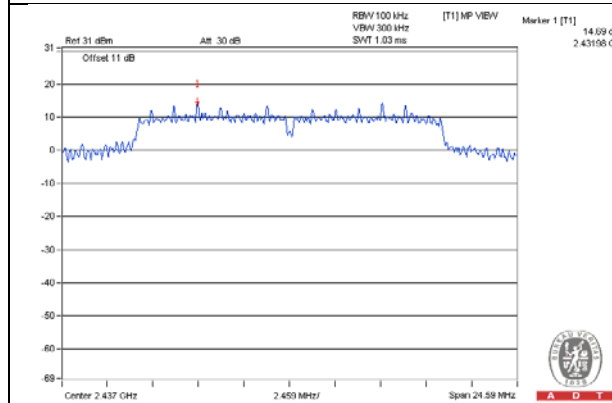


802.11g

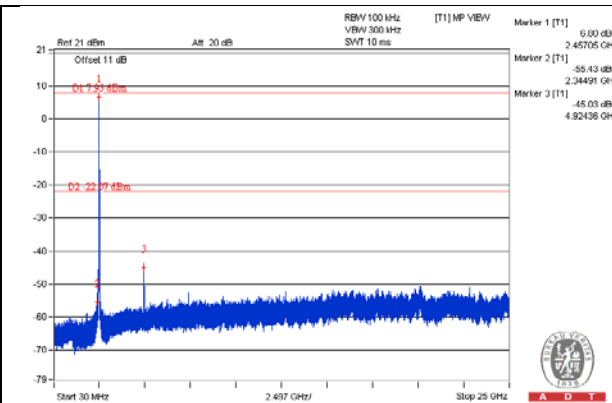
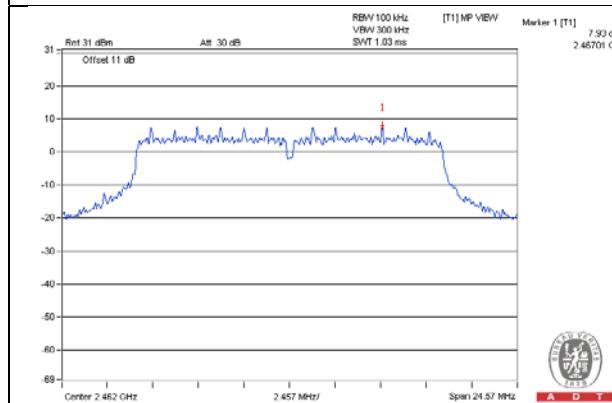
CH 1



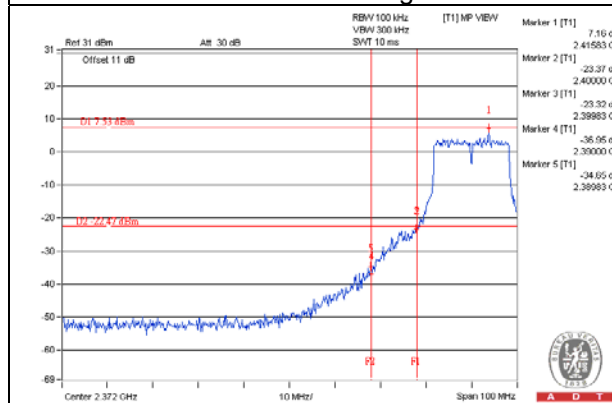
CH 6



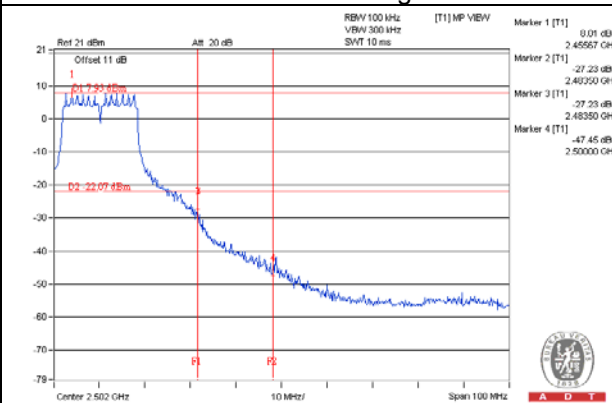
CH 11



CH 1 Band edge

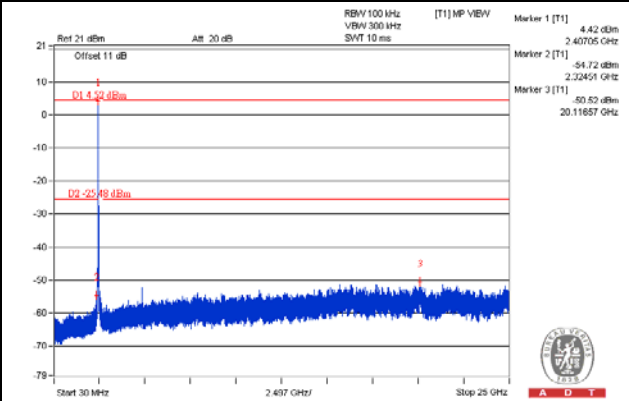
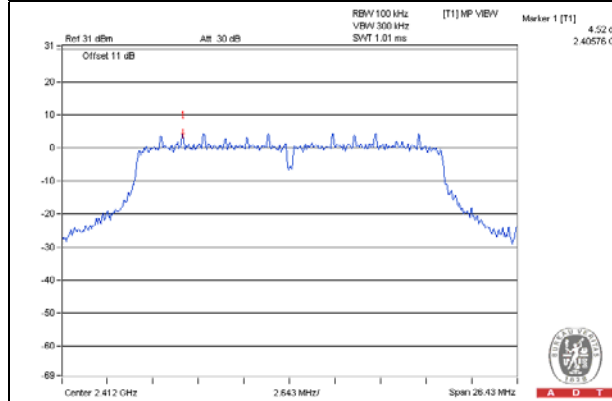


CH 11 Band edge

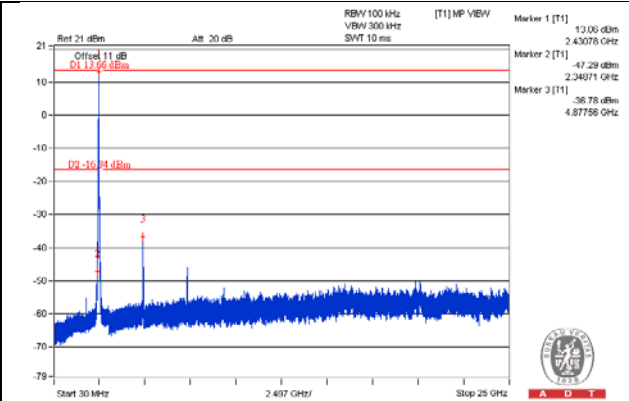
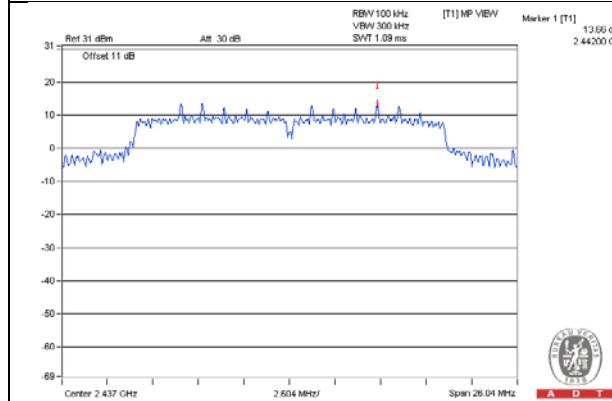


802.11n (20MHz)_Chain 0

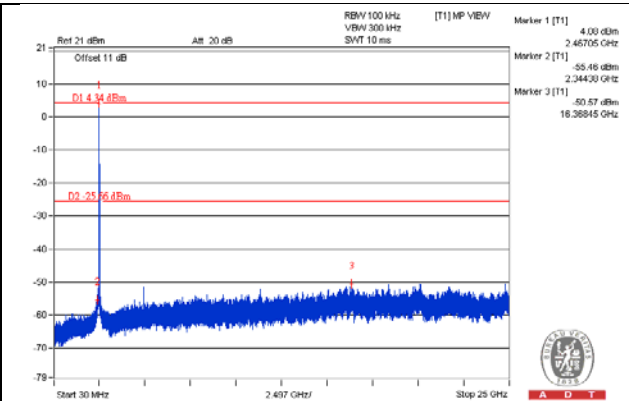
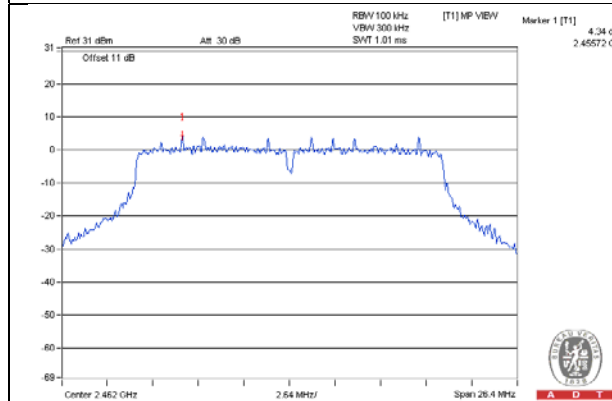
CH 1



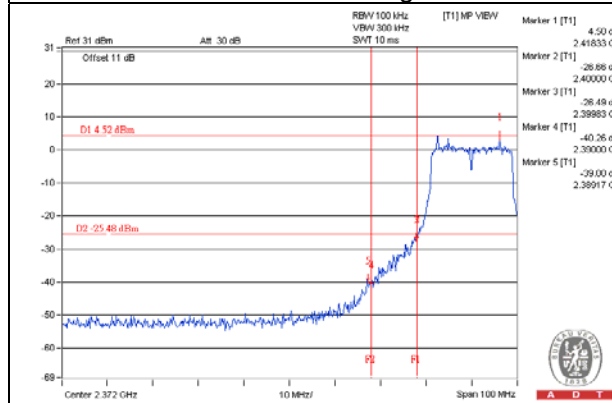
CH 6



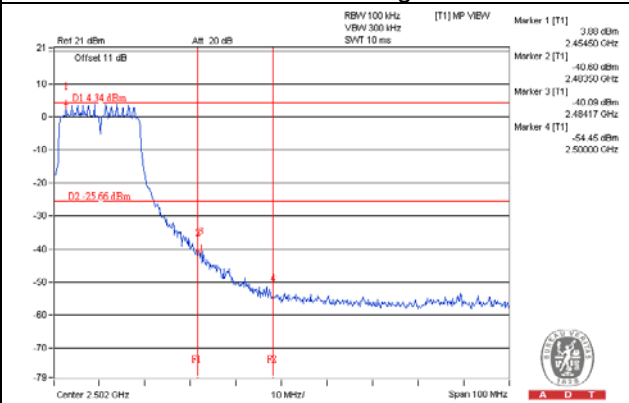
CH 11



CH 1 Band edge

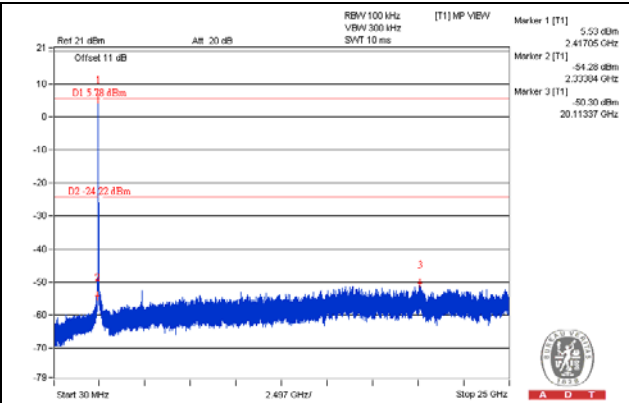
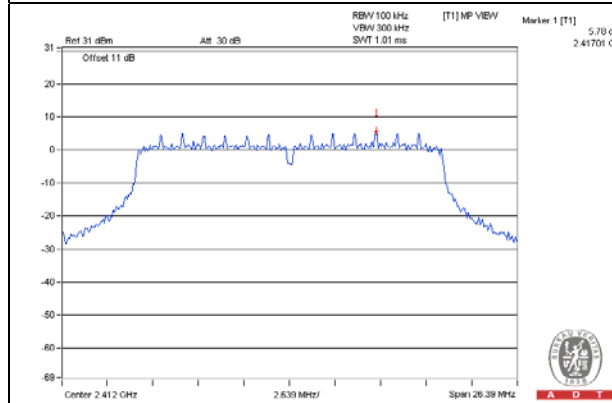


CH 11 Band edge

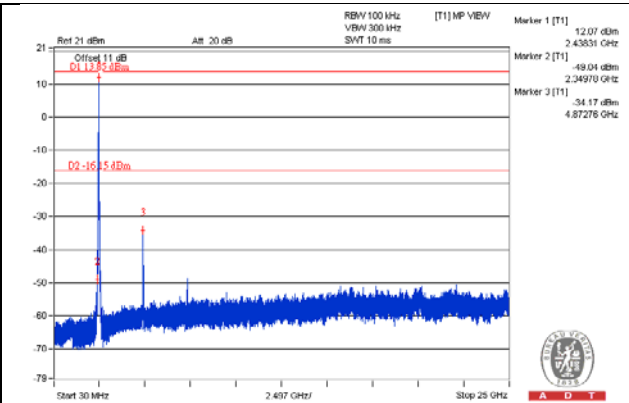
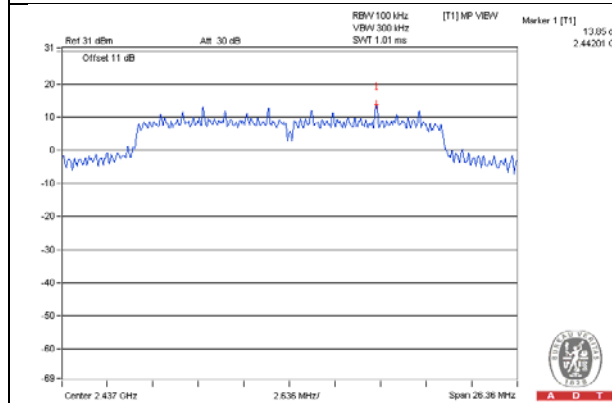


802.11n (20MHz)_Chain 1

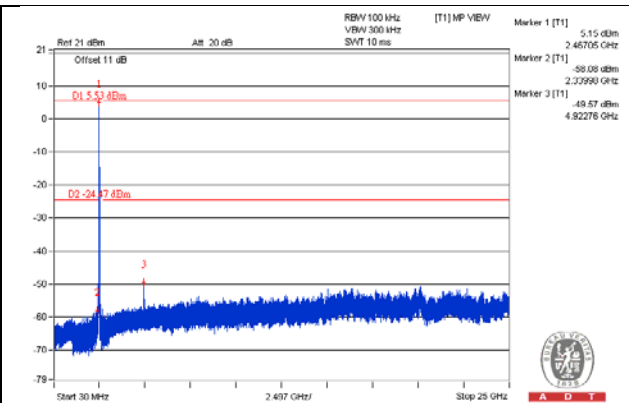
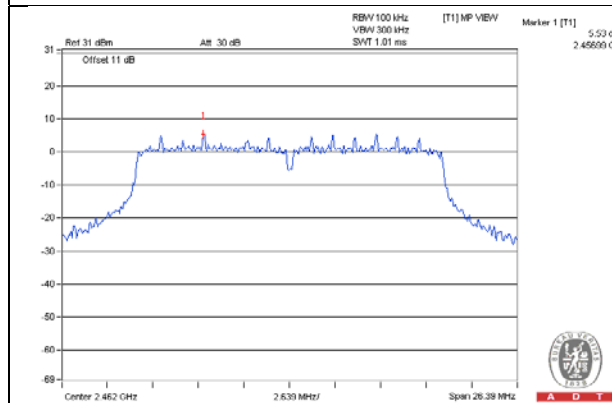
CH 1



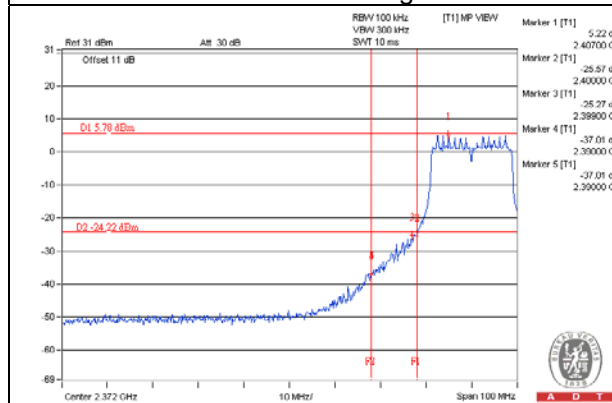
CH 6



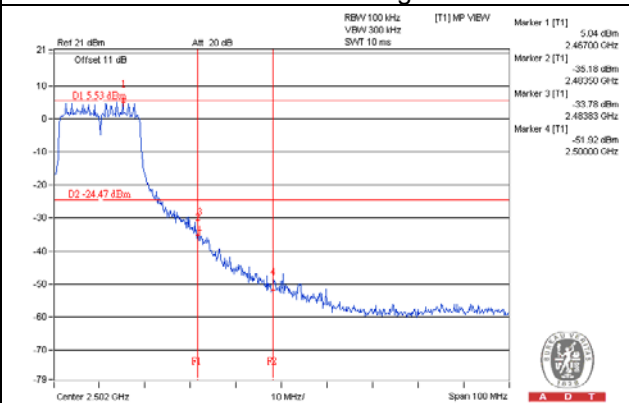
CH 11



CH 1 Band edge

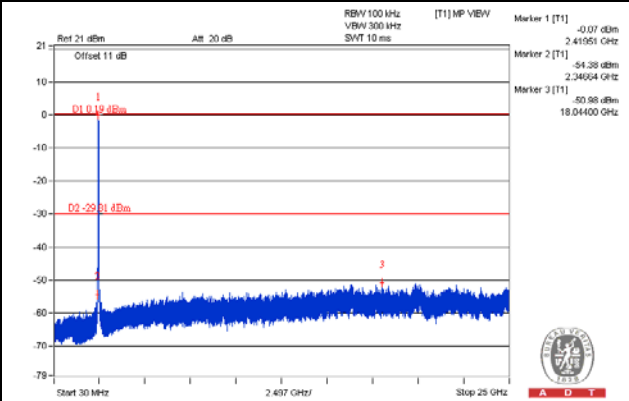
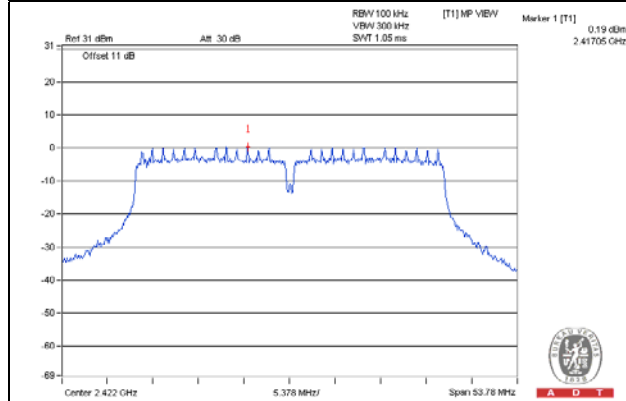


CH 11 Band edge

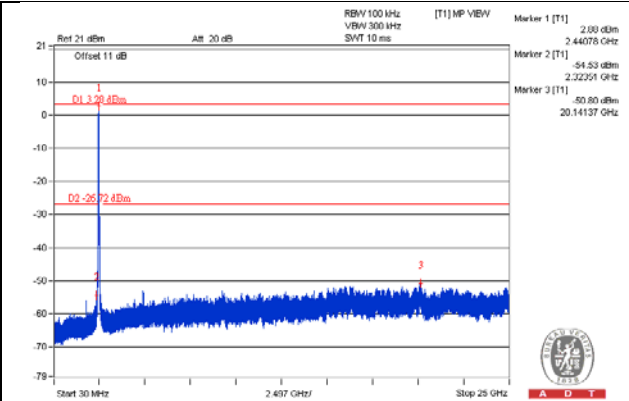
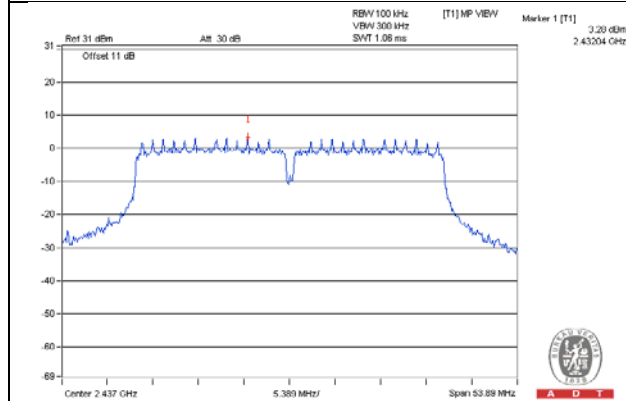


802.11n (40MHz)_Chain 0

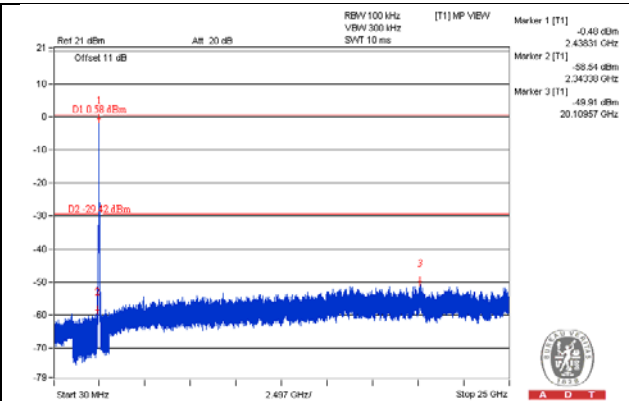
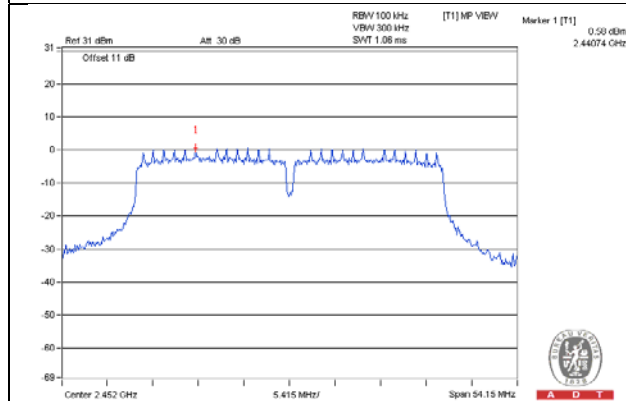
CH 3



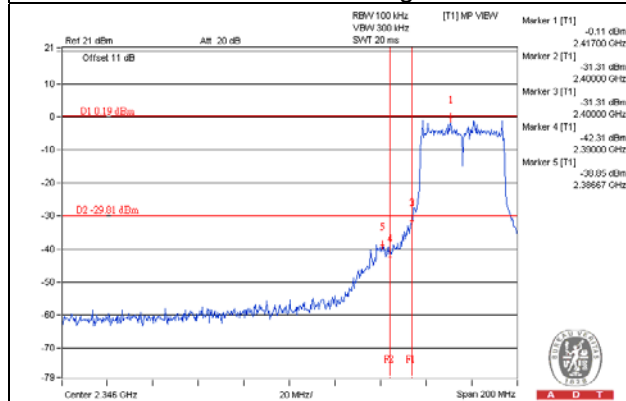
CH 6



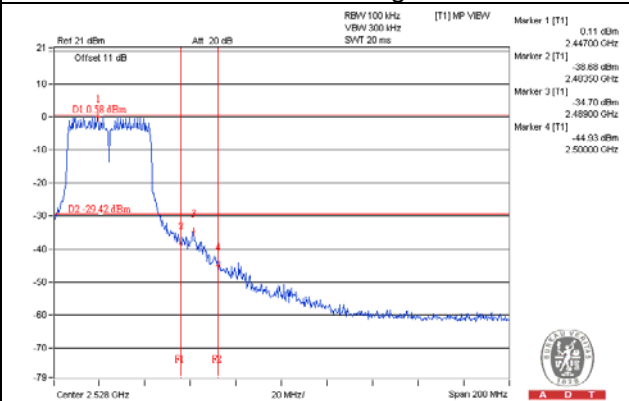
CH 9



CH 3 Band edge

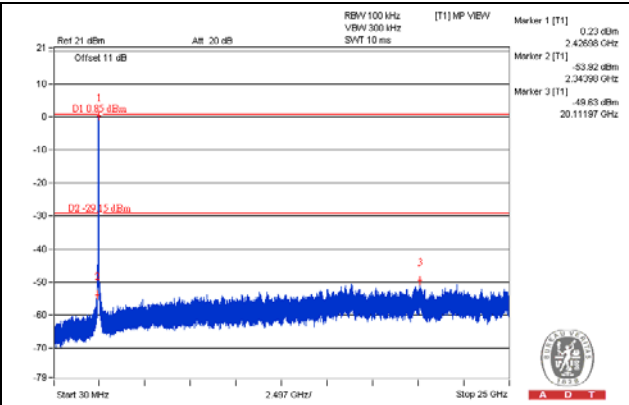
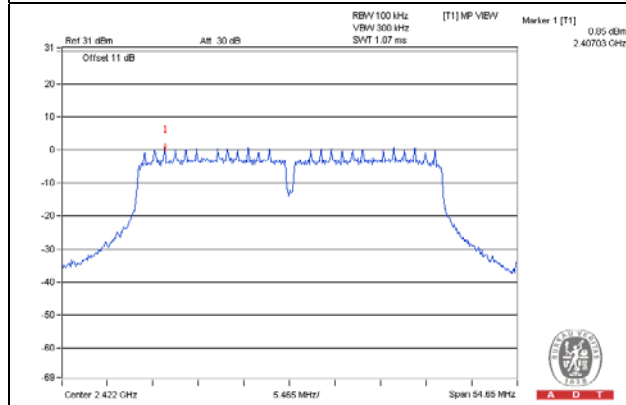


CH 9 Band edge

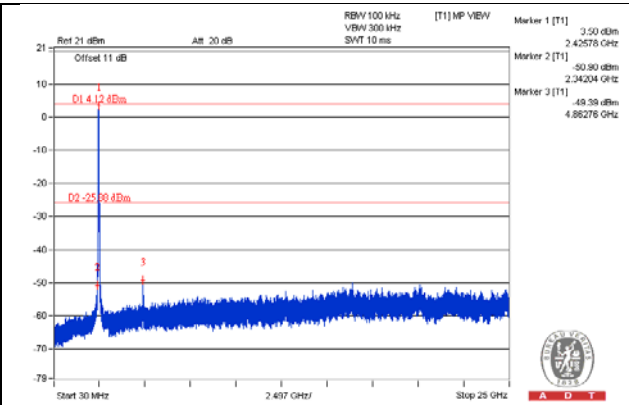
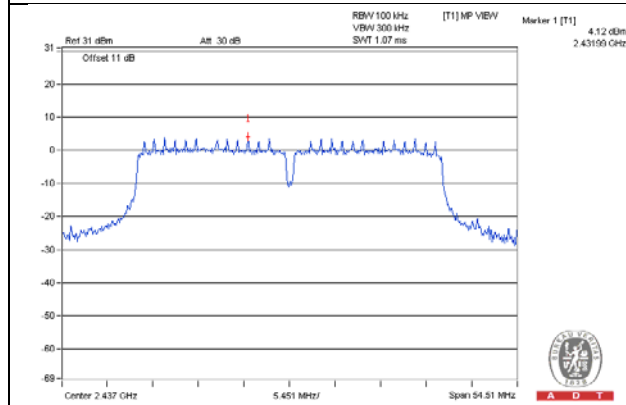


802.11n (40MHz)_Chain 1

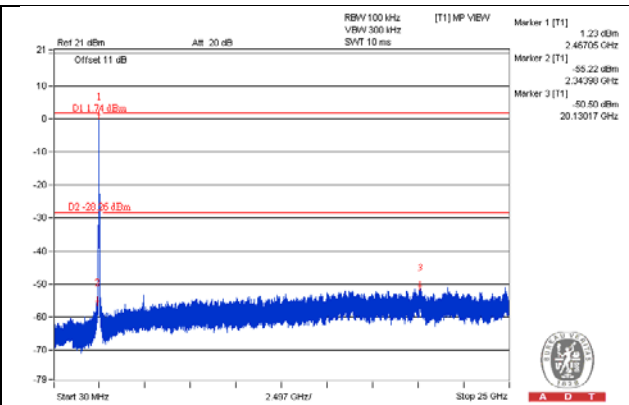
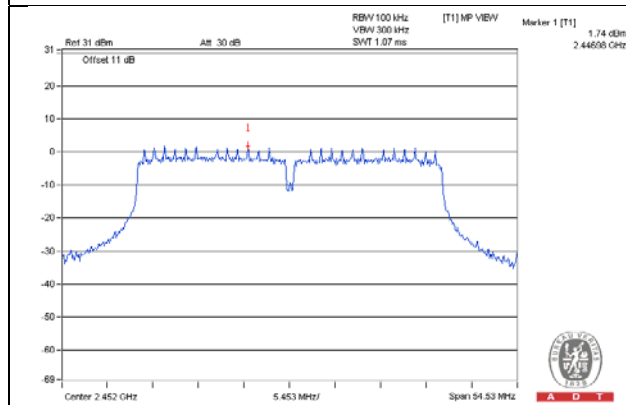
CH 3



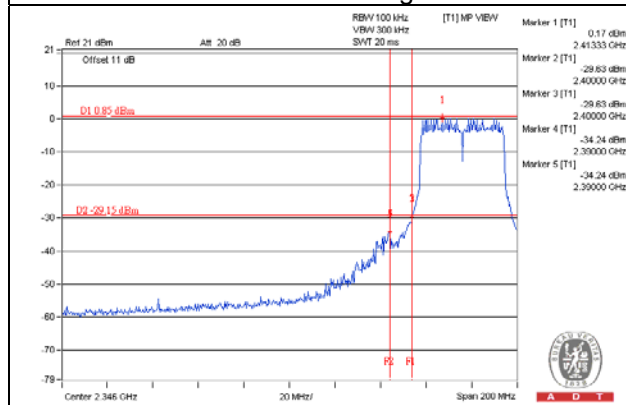
CH 6



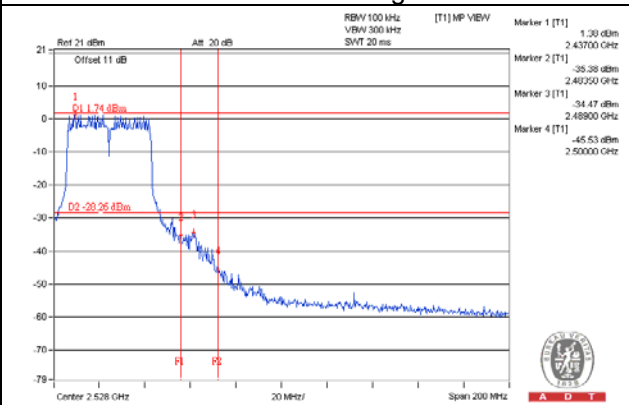
CH 9



CH 3 Band edge



CH 9 Band edge



5 Test Types and Results (For 5.0GHz Band)

5.1 Radiated Emission and Bandedge Measurement

5.1.1 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 30dB under any condition of modulation.

5.1.2 Test Instruments

Same as item 4.1.2.

5.1.3 Test Procedures

Same as item 4.1.3.

5.1.4 Deviation from Test Standard

No deviation.

5.1.5 Test Setup

Same as item 4.1.5.

5.1.6 EUT Operating Conditions

Same as item 4.1.6.

5.1.7 Test Results

Above 1GHz Data:

802.11a

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	#5725.00	73.9 PK	74.4	-0.5	2.26 H	257	67.60	6.30
2	#5725.00	63.7 AV	64.2	-0.5	2.26 H	257	57.40	6.30
3	*5745.00	104.4 PK			2.23 H	256	64.10	40.30
4	*5745.00	94.2 AV			2.23 H	256	53.90	40.30
5	11490.00	62.8 PK	74.0	-11.2	1.00 H	343	45.60	17.20
6	11490.00	48.6 AV	54.0	-5.4	1.00 H	343	31.40	17.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	82.3 PK	82.8	-0.5	1.06 V	250	76.00	6.30
2	#5725.00	72.6 AV	73.1	-0.5	1.06 V	250	66.30	6.30
3	*5745.00	112.8 PK			1.02 V	258	72.50	40.30
4	*5745.00	103.1 AV			1.02 V	258	62.80	40.30
5	11490.00	65.7 PK	74.0	-8.3	1.16 V	326	48.50	17.20
6	11490.00	50.9 AV	54.0	-3.1	1.16 V	326	33.70	17.20

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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.
7. The limit value is defined as per 15.247.

CHANNEL	TX Channel 157	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz	FUNCTION	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	*5785.00	107.4 PK			1.00 H	208	67.00	40.40
2	*5785.00	97.2 AV			1.00 H	208	56.80	40.40
3	11570.00	65.7 PK	74.0	-8.3	1.00 H	346	48.40	17.30
4	11570.00	51.7 AV	54.0	-2.3	1.00 H	346	34.40	17.30
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	*5785.00	117.3 PK			1.00 V	256	76.90	40.40
2	*5785.00	105.5 AV			1.00 V	256	65.10	40.40
3	11570.00	68.6 PK	74.0	-5.4	1.06 V	328	51.30	17.30
4	11570.00	53.5 AV	54.0	-0.5	1.06 V	328	36.20	17.30

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 limit value is defined as per 15.247.

CHANNEL	TX Channel 165	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz	FUNCTION	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	*5825.00	106.6 PK			1.17 H	255	66.10	40.50
2	*5825.00	95.9 AV			1.17 H	255	55.40	40.50
3	#5850.00	75.8 PK	76.6	-0.8	1.17 H	255	69.20	6.60
4	#5850.00	65.1 AV	65.9	-0.8	1.17 H	255	58.50	6.60
5	11650.00	63.7 PK	74.0	-10.3	1.00 H	341	46.00	17.70
6	11650.00	49.6 AV	54.0	-4.4	1.00 H	341	31.90	17.70
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	*5825.00	115.1 PK			1.00 V	256	74.60	40.50
2	*5825.00	104.3 AV			1.00 V	256	63.80	40.50
3	#5850.00	84.3 PK	85.1	-0.8	1.00 V	253	77.70	6.60
4	#5850.00	73.5 AV	74.3	-0.8	1.00 V	253	66.90	6.60
5	11650.00	66.1 PK	74.0	-7.9	1.21 V	327	48.40	17.70
6	11650.00	51.2 AV	54.0	-2.8	1.21 V	327	33.50	17.70

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.
7. The limit value is defined as per 15.247.

802.11n (20MHz)

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	#5725.00	73.9 PK	74.9	-1.0	1.00 H	169	67.60	6.30
2	#5725.00	63.6 AV	64.6	-1.0	1.00 H	169	57.30	6.30
3	*5745.00	104.9 PK			1.00 H	169	64.60	40.30
4	*5745.00	94.6 AV			1.00 H	169	54.30	40.30
5	11490.00	62.1 PK	74.0	-11.9	1.00 H	304	44.90	17.20
6	11490.00	48.7 AV	54.0	-5.3	1.00 H	304	31.50	17.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	82.5 PK	83.5	-1.0	1.07 V	257	76.20	6.30
2	#5725.00	72.9 AV	73.9	-1.0	1.07 V	257	66.60	6.30
3	*5745.00	113.5 PK			1.05 V	251	73.20	40.30
4	*5745.00	103.9 AV			1.05 V	251	63.60	40.30
5	11490.00	65.7 PK	74.0	-8.3	1.02 V	329	48.50	17.20
6	11490.00	51.0 AV	54.0	-3.0	1.02 V	329	33.80	17.20

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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.
7. The limit value is defined as per 15.247.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	*5785.00	108.6 PK			1.00 H	151	68.20	40.40
2	*5785.00	98.0 AV			1.00 H	151	57.60	40.40
3	11570.00	65.7 PK	74.0	-8.3	1.00 H	337	48.40	17.30
4	11570.00	51.7 AV	54.0	-2.3	1.00 H	337	34.40	17.30
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	*5785.00	118.0 PK			1.00 V	259	77.60	40.40
2	*5785.00	106.7 AV			1.00 V	259	66.30	40.40
3	11570.00	68.4 PK	74.0	-5.6	1.05 V	340	51.10	17.30
4	11570.00	53.3 AV	54.0	-0.7	1.05 V	340	36.00	17.30

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 limit value is defined as per 15.247.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	*5825.00	104.8 PK			1.00 H	200	64.30	40.50
2	*5825.00	93.2 AV			1.00 H	200	52.70	40.50
3	#5850.00	74.0 PK	74.8	-0.8	1.00 H	170	67.40	6.60
4	#5850.00	62.4 AV	63.2	-0.8	1.00 H	170	55.80	6.60
5	11650.00	63.7 PK	74.0	-10.3	1.00 H	340	46.00	17.70
6	11650.00	49.2 AV	54.0	-4.8	1.00 H	340	31.50	17.70
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	*5825.00	114.5 PK			1.02 V	261	74.00	40.50
2	*5825.00	104.1 AV			1.02 V	261	63.60	40.50
3	#5850.00	83.7 PK	84.5	-0.8	1.00 V	250	77.10	6.60
4	#5850.00	73.3 AV	74.1	-0.8	1.00 V	250	66.70	6.60
5	11650.00	65.9 PK	74.0	-8.1	1.19 V	313	48.20	17.70
6	11650.00	51.3 AV	54.0	-2.7	1.19 V	313	33.60	17.70

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.
7. The limit value is defined as per 15.247.

802.11n (40MHz)

CHANNEL	TX Channel 151	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz	FUNCTION	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	#5725.00	68.7 PK	69.7	-1.0	1.00 H	159	62.40	6.30
2	#5725.00	59.1 AV	60.1	-1.0	1.00 H	159	52.80	6.30
3	*5755.00	99.7 PK			1.00 H	161	59.40	40.30
4	*5755.00	90.1 AV			1.00 H	161	49.80	40.30
5	11510.00	62.1 PK	74.0	-11.9	1.00 H	23	45.00	17.10
6	11510.00	48.1 AV	54.0	-5.9	1.00 H	23	31.00	17.10
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	#5725.00	78.5 PK	79.5	-1.0	1.00 V	258	72.20	6.30
2	#5725.00	68.1 AV	69.1	-1.0	1.00 V	258	61.80	6.30
3	*5755.00	109.5 PK			1.00 V	253	69.20	40.30
4	*5755.00	99.1 AV			1.00 V	253	58.80	40.30
5	11510.00	64.4 PK	74.0	-9.6	1.10 V	326	47.30	17.10
6	11510.00	49.9 AV	54.0	-4.1	1.10 V	326	32.80	17.10

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
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.

CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	*5795.00	105.9 PK			1.00 H	163	65.50	40.40
2	*5795.00	95.4 AV			1.00 H	163	55.00	40.40
3	#5850.00	75.0 PK	75.9	-0.9	1.00 H	152	68.40	6.60
4	#5850.00	64.5 AV	65.4	-0.9	1.00 H	152	57.90	6.60
5	11590.00	62.4 PK	74.0	-11.6	1.00 H	60	45.20	17.20
6	11590.00	48.5 AV	54.0	-5.5	1.00 H	60	31.30	17.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	112.7 PK			1.01 V	253	72.30	40.40
2	*5795.00	101.6 AV			1.01 V	253	61.20	40.40
3	#5850.00	81.8 PK	82.7	-0.9	1.02 V	255	75.20	6.60
4	#5850.00	70.7 AV	71.6	-0.9	1.02 V	255	64.10	6.60
5	11590.00	65.0 PK	74.0	-9.0	1.02 V	320	47.80	17.20
6	11590.00	49.8 AV	54.0	-4.2	1.02 V	320	32.60	17.20

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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.
7. The limit value is defined as per 15.247.

802.11ac (20MHz)

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	#5725.00	74.5 PK	75.4	-0.9	1.00 H	163	68.20	6.30
2	#5725.00	64.5 AV	65.4	-0.9	1.00 H	163	58.20	6.30
3	*5745.00	105.4 PK			1.00 H	166	65.10	40.30
4	*5745.00	95.4 AV			1.00 H	166	55.10	40.30
5	11490.00	62.9 PK	74.0	-11.1	1.00 H	340	45.70	17.20
6	11490.00	48.9 AV	54.0	-5.1	1.00 H	340	31.70	17.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	83.2 PK	84.1	-0.9	1.09 V	252	76.90	6.30
2	#5725.00	73.2 AV	74.1	-0.9	1.09 V	252	66.90	6.30
3	*5745.00	114.1 PK			1.09 V	254	73.80	40.30
4	*5745.00	104.1 AV			1.09 V	254	63.80	40.30
5	11490.00	65.9 PK	74.0	-8.1	1.11 V	327	48.70	17.20
6	11490.00	51.1 AV	54.0	-2.9	1.11 V	327	33.90	17.20

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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.
7. The limit value is defined as per 15.247.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	*5785.00	109.2 PK			1.00 H	165	68.80	40.40
2	*5785.00	99.2 AV			1.00 H	165	58.80	40.40
3	11570.00	66.0 PK	74.0	-8.0	1.00 H	343	48.70	17.30
4	11570.00	52.0 AV	54.0	-2.0	1.00 H	343	34.70	17.30
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	*5785.00	117.7 PK			1.00 V	256	77.30	40.40
2	*5785.00	106.2 AV			1.00 V	256	65.80	40.40
3	11570.00	68.6 PK	74.0	-5.4	1.04 V	327	51.30	17.30
4	11570.00	53.4 AV	54.0	-0.6	1.04 V	327	36.10	17.30

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 limit value is defined as per 15.247.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	*5825.00	105.3 PK			1.00 H	201	64.80	40.50
2	*5825.00	93.9 AV			1.00 H	201	53.40	40.50
3	#5850.00	74.7 PK	75.3	-0.6	1.00 H	207	68.10	6.60
4	#5850.00	63.3 AV	63.9	-0.6	1.00 H	207	56.70	6.60
5	11650.00	64.1 PK	74.0	-9.9	1.00 H	346	46.40	17.70
6	11650.00	49.7 AV	54.0	-4.3	1.00 H	346	32.00	17.70
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	*5825.00	115.0 PK			1.06 V	256	74.50	40.50
2	*5825.00	104.7 AV			1.06 V	256	64.20	40.50
3	#5850.00	84.4 PK	85.0	-0.6	1.00 V	255	77.80	6.60
4	#5850.00	74.1 AV	74.7	-0.6	1.00 V	255	67.50	6.60
5	11650.00	66.5 PK	74.0	-7.5	1.27 V	321	48.80	17.70
6	11650.00	51.6 AV	54.0	-2.4	1.27 V	321	33.90	17.70

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.
7. The limit value is defined as per 15.247.

802.11ac (40MHz)

CHANNEL	TX Channel 151	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz	FUNCTION	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	#5725.00	69.6 PK	70.5	-0.9	1.00 H	163	63.30	6.30
2	#5725.00	59.8 AV	60.7	-0.9	1.00 H	163	53.50	6.30
3	*5755.00	100.5 PK			1.00 H	165	60.20	40.30
4	*5755.00	90.7 AV			1.00 H	165	50.40	40.30
5	11510.00	62.5 PK	74.0	-11.5	1.00 H	12	45.40	17.10
6	11510.00	48.4 AV	54.0	-5.6	1.00 H	12	31.30	17.10
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	#5725.00	79.0 PK	79.9	-0.9	1.00 V	253	72.70	6.30
2	#5725.00	68.8 AV	69.7	-0.9	1.00 V	253	62.50	6.30
3	*5755.00	109.9 PK			1.00 V	258	69.60	40.30
4	*5755.00	99.7 AV			1.00 V	258	59.40	40.30
5	11510.00	64.8 PK	74.0	-9.2	1.13 V	323	47.70	17.10
6	11510.00	50.1 AV	54.0	-3.9	1.13 V	323	33.00	17.10

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
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.

CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	*5795.00	106.3 PK			1.00 H	167	65.90	40.40
2	*5795.00	96.3 AV			1.00 H	167	55.90	40.40
3	#5850.00	75.7 PK	76.3	-0.6	1.00 H	166	69.10	6.60
4	#5850.00	65.4 AV	66.3	-0.9	1.00 H	166	58.80	6.60
5	11590.00	62.9 PK	74.0	-11.1	1.00 H	6	45.70	17.20
6	11590.00	48.9 AV	54.0	-5.1	1.00 H	6	31.70	17.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	113.4 PK			1.07 V	256	73.00	40.40
2	*5795.00	102.4 AV			1.07 V	256	62.00	40.40
3	#5850.00	82.8 PK	83.4	-0.6	1.09 V	259	76.20	6.60
4	#5850.00	71.8 AV	72.4	-0.6	1.09 V	259	65.20	6.60
5	11590.00	65.7 PK	74.0	-8.3	1.20 V	328	48.50	17.20
6	11590.00	50.6 AV	54.0	-3.4	1.20 V	328	33.40	17.20

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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.
7. The limit value is defined as per 15.247.

802.11ac (80MHz)

CHANNEL	TX Channel 155	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	#5725.00	68.6 PK	69.2	-0.6	1.00 H	162	62.30	6.30
2	#5725.00	58.0 AV	58.6	-0.6	1.00 H	162	51.70	6.30
3	*5775.00	99.2 PK			1.00 H	166	58.80	40.40
4	*5775.00	88.6 AV			1.00 H	166	48.20	40.40
5	11550.00	62.0 PK	74.0	-12.0	1.00 H	2	44.90	17.10
6	11550.00	47.8 AV	54.0	-6.2	1.00 H	2	30.70	17.10
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	#5725.00	76.1 PK	76.7	-0.6	1.00 V	266	69.80	6.30
2	#5725.00	65.2 AV	65.8	-0.6	1.00 V	266	58.90	6.30
3	*5775.00	106.7 PK			1.00 V	266	66.30	40.40
4	*5775.00	95.8 AV			1.00 V	266	55.40	40.40
5	11550.00	63.9 PK	74.0	-10.1	1.10 V	326	46.80	17.10
6	11550.00	49.2 AV	54.0	-4.8	1.10 V	326	32.10	17.10

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
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.

Below 1GHz Data:

802.11a

CHANNEL	TX Channel 149	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	159.98	26.8 QP	43.5	-16.7	1.49 H	78	40.76	-14.00
2	299.66	32.5 QP	46.0	-13.5	1.00 H	230	45.05	-12.57
3	827.34	33.0 QP	46.0	-13.1	1.00 H	315	35.36	-2.41
4	901.06	36.1 QP	46.0	-9.9	1.49 H	156	37.44	-1.31
5	930.16	29.7 QP	46.0	-16.3	1.49 H	42	30.22	-0.54
6	951.50	31.0 QP	46.0	-15.0	1.49 H	257	31.34	-0.31
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	47.46	33.2 QP	40.0	-6.8	1.00 V	266	47.71	-14.47
2	62.98	29.3 QP	40.0	-10.7	1.00 V	146	44.56	-15.28
3	158.04	29.0 QP	43.5	-14.5	1.00 V	27	42.84	-13.86
4	167.74	30.8 QP	43.5	-12.7	1.00 V	354	44.98	-14.20
5	375.32	32.4 QP	46.0	-13.6	1.00 V	83	43.46	-11.07
6	901.06	34.0 QP	46.0	-12.0	1.00 V	191	35.32	-1.31

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 149	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	30.00	27.7 QP	40.0	-12.3	1.50 H	240	43.53	-15.80
2	72.68	31.8 QP	40.0	-8.2	1.00 H	232	48.81	-16.98
3	185.20	35.8 QP	43.5	-7.7	1.50 H	100	51.66	-15.90
4	194.90	29.2 QP	43.5	-14.3	1.50 H	280	45.85	-16.67
5	299.66	31.8 QP	46.0	-14.3	1.50 H	168	44.32	-12.57
6	656.62	30.5 QP	46.0	-15.5	1.00 H	216	36.05	-5.53
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	35.82	37.3 QP	40.0	-2.8	1.00 V	9	52.86	-15.61
2	72.68	36.2 QP	40.0	-3.8	1.00 V	209	53.16	-16.98
3	189.08	28.1 QP	43.5	-15.4	1.00 V	1	44.40	-16.28
4	621.70	32.5 QP	46.0	-13.5	1.00 V	216	38.37	-5.90
5	901.06	36.2 QP	46.0	-9.8	1.00 V	174	37.47	-1.31
6	937.92	31.4 QP	46.0	-14.7	1.00 V	286	31.84	-0.49

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

5.2 Conducted Emission Measurement

5.2.1 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.

5.2.2 Test Instruments

Same as item 4.2.2.

5.2.3 Test Procedures

Same as item 4.2.3.

5.2.4 Deviation from Test Standard

No deviation.

5.2.5 Test Setup

Same as item 4.2.5.

5.2.6 EUT Operating Conditions

Same as 4.1.6.

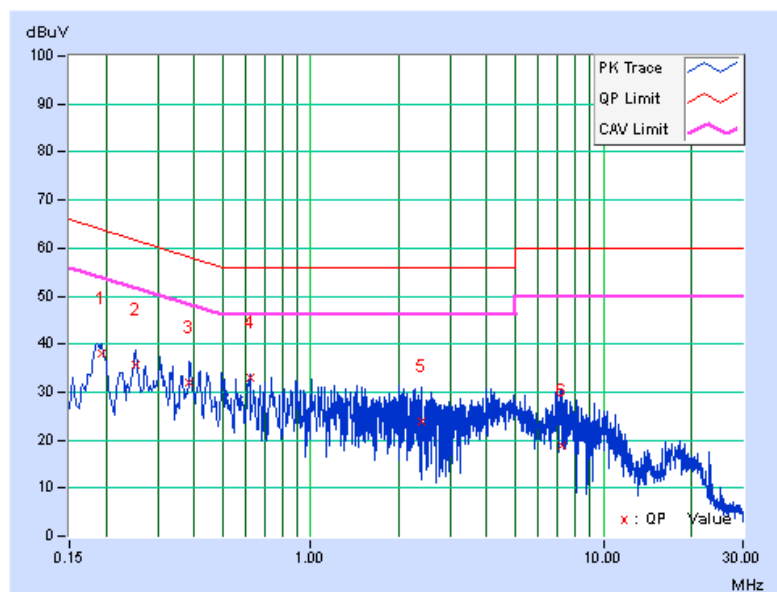
5.2.7 Test Results

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

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19305	0.06	38.00	30.36	38.06	30.42	63.90	53.90	-25.85	-23.49
2	0.25166	0.06	35.79	25.22	35.85	25.28	61.70	51.70	-25.85	-26.42
3	0.38503	0.06	32.01	22.41	32.07	22.47	58.17	48.17	-26.10	-25.70
4	0.61920	0.07	33.02	20.34	33.09	20.41	56.00	46.00	-22.91	-25.59
5	2.39825	0.13	23.93	12.41	24.06	12.54	56.00	46.00	-31.94	-33.46
6	7.22319	0.33	18.58	8.64	18.91	8.97	60.00	50.00	-41.09	-41.03

Remarks:

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

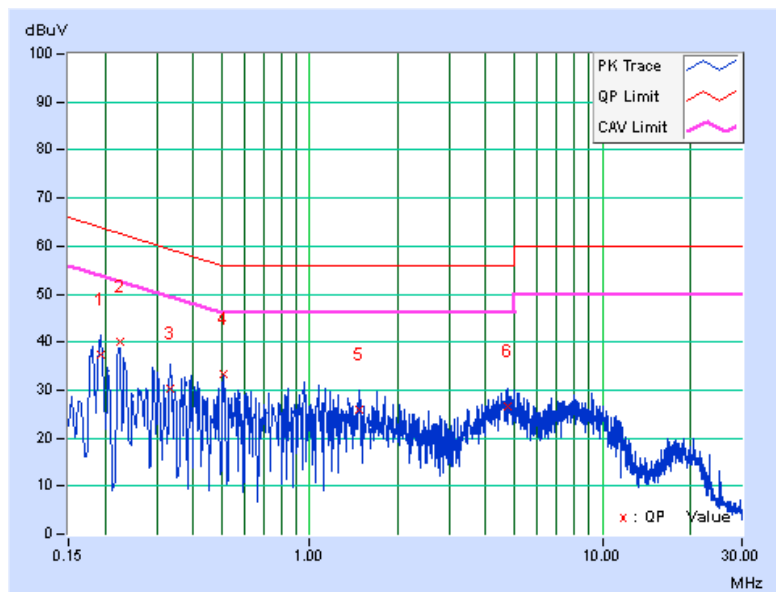


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test mode	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19301	0.05	37.42	21.85	37.47	21.90	63.91	53.91	-26.44	-32.01
2	0.22434	0.05	40.14	23.69	40.19	23.74	62.66	52.66	-22.47	-28.92
3	0.33377	0.06	30.36	16.57	30.42	16.63	59.36	49.36	-28.94	-32.73
4	0.50581	0.06	33.37	17.12	33.43	17.18	56.00	46.00	-22.57	-28.82
5	1.47158	0.09	25.71	10.71	25.80	10.80	56.00	46.00	-30.20	-35.20
6	4.77944	0.22	26.37	11.03	26.59	11.25	56.00	46.00	-29.41	-34.75

Remarks:

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

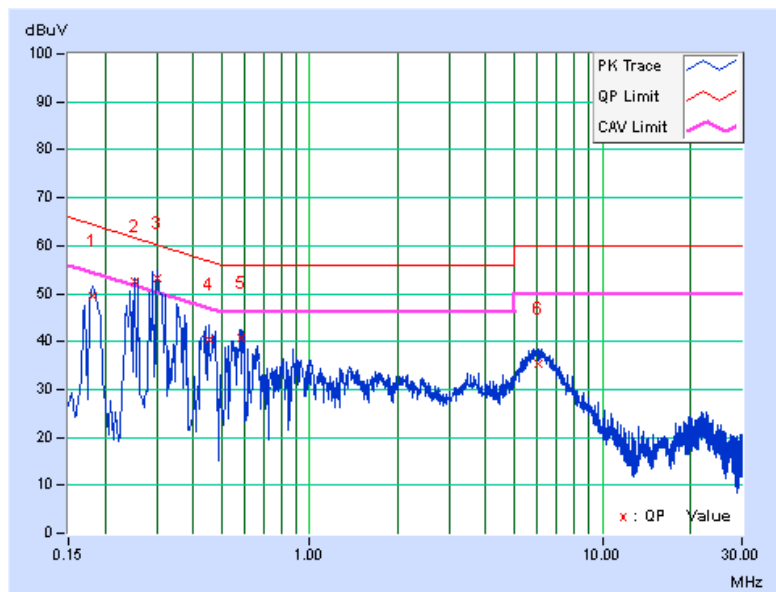


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test mode	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18122	0.06	49.49	40.34	49.55	40.40	64.43	54.43	-14.88	-14.03
2	0.25166	0.06	52.40	41.85	52.46	41.91	61.70	51.70	-9.24	-9.79
3	0.30249	0.06	53.14	41.37	53.20	41.43	60.17	50.17	-6.97	-8.74
4	0.45107	0.06	40.40	23.17	40.46	23.23	56.86	46.86	-16.39	-23.62
5	0.58538	0.07	40.83	27.55	40.90	27.62	56.00	46.00	-15.10	-18.38
6	6.05019	0.28	35.10	28.77	35.38	29.05	60.00	50.00	-24.62	-20.95

Remarks:

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

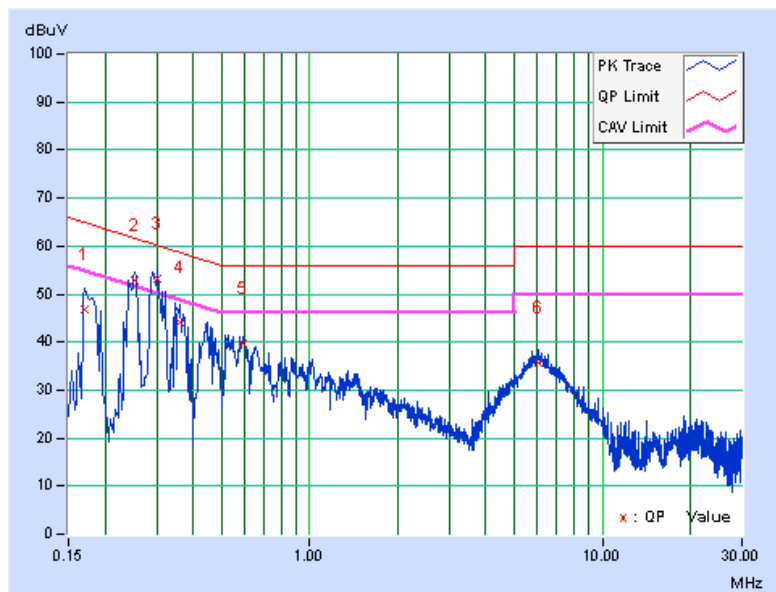


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test mode	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16967	0.05	46.80	30.89	46.85	30.94	64.98	54.98	-18.13	-24.04
2	0.25192	0.05	52.96	42.16	53.01	42.21	61.69	51.69	-8.68	-9.48
3	0.30249	0.06	53.09	41.46	53.15	41.52	60.17	50.17	-7.03	-8.66
4	0.36114	0.06	44.07	33.26	44.13	33.32	58.70	48.70	-14.57	-15.38
5	0.58792	0.07	39.76	26.10	39.83	26.17	56.00	46.00	-16.17	-19.83
6	6.05801	0.27	35.31	28.67	35.58	28.94	60.00	50.00	-24.42	-21.06

Remarks:

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



5.3 6dB Bandwidth Measurement

5.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

5.3.2 Test Setup

Same as item 4.3.2.

5.3.3 Test Instruments

Same as item 4.3.3.

5.3.4 Test Procedure

Same as item 4.3.4.

5.3.5 Deviation from Test Standard

No deviation.

5.3.6 EUT Operating Conditions

Same as item 4.3.3.

5.3.7 Test Result

802.11a

Channel	Frequency (MHz)	6db Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.36	0.5	PASS
157	5785	16.39	0.5	PASS
165	5825	16.38	0.5	PASS

802.11n (20MHz)

Channel	Frequency (MHz)	6db Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	17.64	16.70	0.5	PASS
157	5785	17.66	17.62	0.5	PASS
165	5825	17.15	17.63	0.5	PASS

802.11n (40MHz)

Channel	Frequency (MHz)	6db Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.84	35.47	0.5	PASS
159	5795	36.10	35.81	0.5	PASS

802.11ac (20MHz)

Channel	Frequency (MHz)	6db Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	17.62	16.94	0.5	PASS
157	5785	17.63	17.65	0.5	PASS
165	5825	17.62	17.62	0.5	PASS

802.11ac (40MHz)

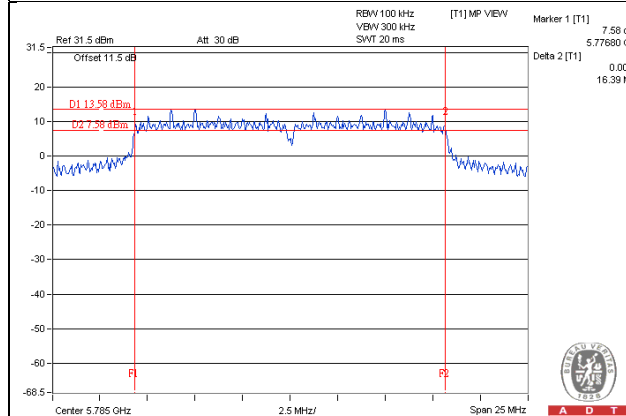
Channel	Frequency (MHz)	6db Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.88	35.34	0.5	PASS
159	5795	36.11	35.39	0.5	PASS

802.11ac (80MHz)

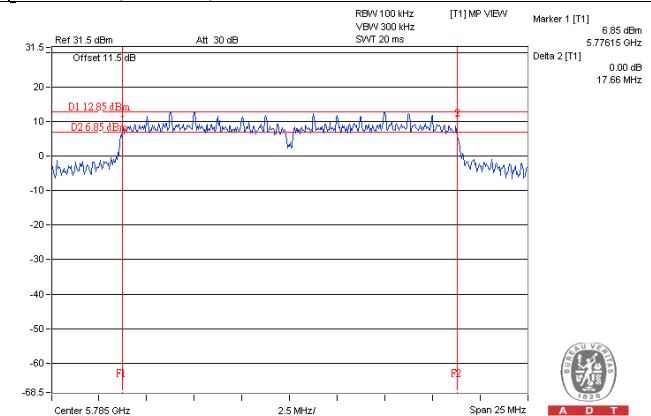
Channel	Frequency (MHz)	6db Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	76.00	70.93	0.5	PASS

Spectrum Plot of Worst Value

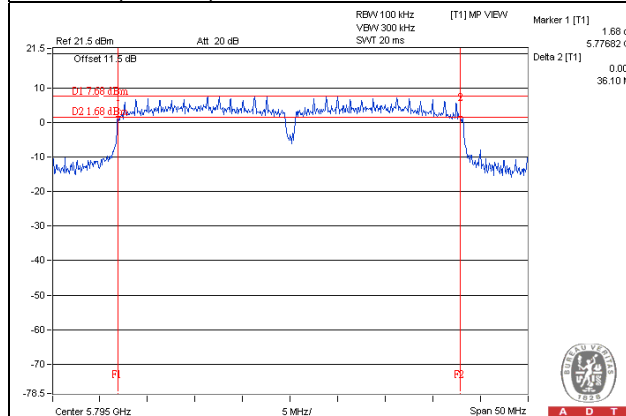
802.11a



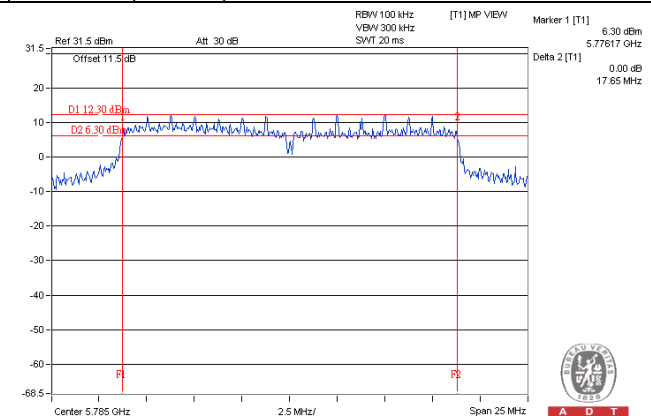
802.11n (20MHz)



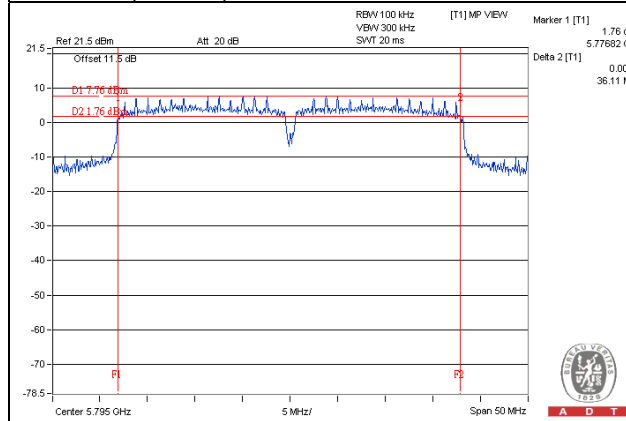
802.11n (40MHz)



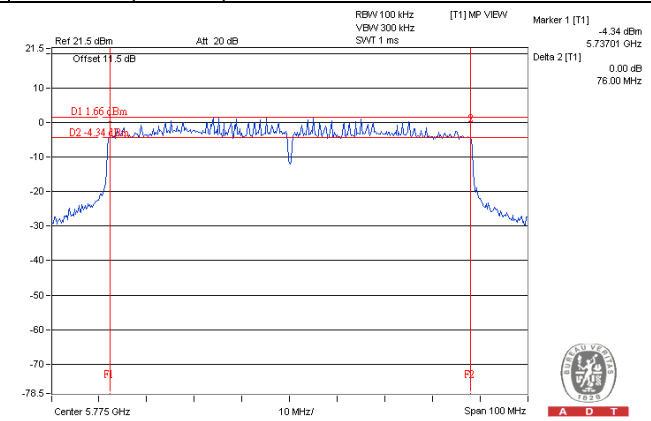
802.11ac (20MHz)



802.11ac (40MHz)



802.11ac (80MHz)



5.4 Conducted Output Power Measurement

5.4.1 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 $N_{ANT} \leq 4$;

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.

5.4.2 Test Setup

Same as item 4.4.2.

5.4.3 Test Instruments

Same as item 4.4.3.

5.4.4 Test Procedures

Same as item 4.4.4.

5.4.5 Deviation from Test Standard

No deviation.

5.4.6 EUT Operating Conditions

Same as item 4.4.6.

5.4.7 Test Results

802.11a

Chan.	Chan. Freq. (MHz)	Power (mW)	AVG. Power (dBm)	Limit (dBm)	Pass / Fail
149	5745	139.959	21.46	30	Pass
157	5785	250.611	23.99	30	Pass
165	5825	187.068	22.72	30	Pass

802.11n (20MHz)

Chan.	Chan. Freq. (MHz)	AVG. Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
149	5745	21.37	20.02	237.550	23.76	30	Pass
157	5785	23.71	22.74	422.895	26.26	30	Pass
165	5825	21.77	21.13	280.032	24.47	30	Pass

802.11n (40MHz)

Chan.	Chan. Freq. (MHz)	AVG. Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
151	5755	19.12	17.55	138.543	21.42	30	Pass
159	5795	22.39	21.13	303.098	24.82	30	Pass

802.11ac (20MHz)

Chan.	Chan. Freq. (MHz)	AVG. Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
149	5745	21.67	20.52	259.613	24.14	30	Pass
157	5785	23.91	23.18	454.007	26.57	30	Pass
165	5825	22.36	21.20	304.013	24.83	30	Pass

802.11ac (40MHz)

Chan.	Chan. Freq. (MHz)	AVG. Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
151	5755	19.01	17.58	136.896	21.36	30	Pass
159	5795	22.05	21.33	296.156	24.72	30	Pass

802.11ac (80MHz)

Chan.	Chan. Freq. (MHz)	AVG. Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
155	5775	17.48	15.74	93.473	19.71	30	Pass

5.5 Power Spectral Density Measurement

5.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 Test Setup

Same as Item 4.5.2

5.5.3 Test Instruments

Same as Item 4.5.3

5.5.4 Test Procedure

Same as Item 4.5.4

5.5.5 Deviation from Test Standard

No deviation.

5.5.6 EUT Operating Condition

Same as Item 4.3.6

5.5.7 Test Results

802.11a

Channel	Freq. (MHz)	PSD (dBm)	Duty Factor	PSD with Duty Factor (dBm)	Limit (dBm)	Pass / Fail
149	5745	-9.19	0.11	-9.08	8.00	Pass
157	5785	-7.01	0.11	-6.90	8.00	Pass
165	5825	-8.20	0.11	-8.09	8.00	Pass

Note: Refer to section 3.3 for duty cycle spectrum plot.

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Duty Factor	Total PSD with Duty Factor (dBm)	Limit (dBm)	Pass / Fail
0	149	5745	-9.85	3.01	0.12	-6.72	7.85	Pass
	157	5785	-8.15	3.01	0.12	-5.02	7.85	Pass
	165	5825	-9.29	3.01	0.12	-6.16	7.85	Pass
1	149	5745	-10.26	3.01	0.12	-7.13	7.85	Pass
	157	5785	-7.31	3.01	0.12	-4.18	7.85	Pass
	165	5825	-10.36	3.01	0.12	-7.23	7.85	Pass

Note:

1. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.15\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (6.15 - 6) = 7.85\text{dBm}$.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Duty Factor	Total PSD with Duty Factor (dBm)	Limit (dBm)	Pass / Fail
0	151	5755	-14.33	3.01	0.23	-11.09	7.85	Pass
	159	5795	-12.11	3.01	0.23	-8.87	7.85	Pass
1	151	5755	-15.47	3.01	0.23	-12.23	7.85	Pass
	159	5795	-8.73	3.01	0.23	-5.49	7.85	Pass

Note:

1. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.15\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (6.15 - 6) = 7.85\text{dBm}$.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Duty Factor	Total PSD with Duty Factor (dBm)	Limit (dBm)	Pass / Fail
0	149	5745	-9.16	3.01	0.12	-6.03	7.85	Pass
	157	5785	-7.67	3.01	0.12	-4.54	7.85	Pass
	165	5825	-9.92	3.01	0.12	-6.79	7.85	Pass
1	149	5745	-10.33	3.01	0.12	-7.20	7.85	Pass
	157	5785	-7.76	3.01	0.12	-4.63	7.85	Pass
	165	5825	-10.33	3.01	0.12	-7.20	7.85	Pass

Note:

1. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.15\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (6.15 - 6) = 7.85\text{dBm}$.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Duty Factor	Total PSD with Duty Factor (dBm)	Limit (dBm)	Pass / Fail
0	151	5755	-14.88	3.01	0.23	-11.64	7.85	Pass
	159	5795	-11.89	3.01	0.23	-8.65	7.85	Pass
1	151	5755	-15.58	3.01	0.23	-12.34	7.85	Pass
	159	5795	-10.72	3.01	0.23	-7.48	7.85	Pass

Note:

1. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.15\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (6.15 - 6) = 7.85\text{dBm}$.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (80MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Duty Factor	Total PSD with Duty Factor (dBm)	Limit (dBm)	Pass / Fail
0	155	5775	-18.57	3.01	0.57	-14.99	7.85	Pass
1	155	5775	-19.36	3.01	0.57	-15.78	7.85	Pass

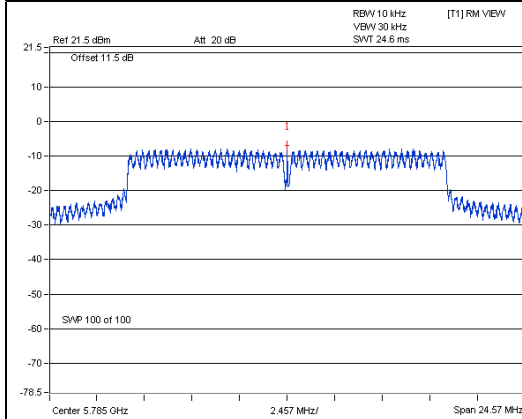
Note:

1. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.15\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (6.15 - 6) = 7.85\text{dBm}$.
2. Refer to section 3.3 for duty cycle spectrum plot.

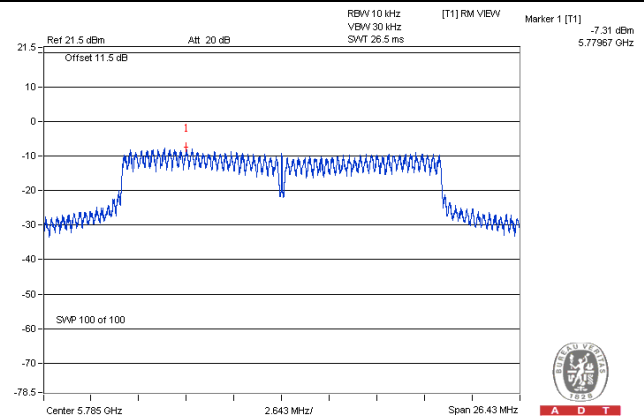
Spectrum Plot of Worst Value

802.11a

802.11n (20MHz)



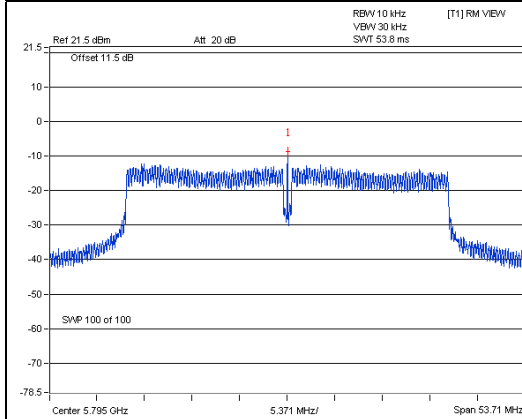
A D T



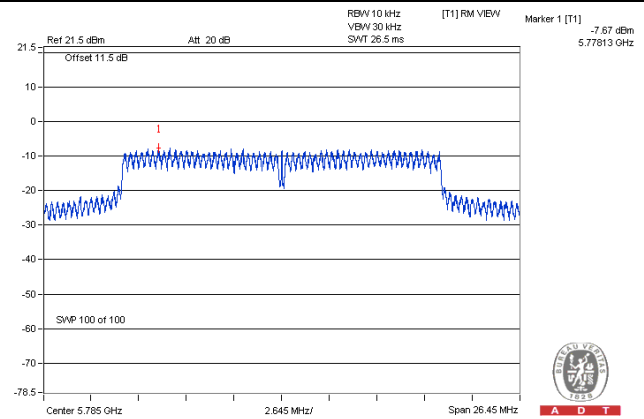
A D T

802.11n (40MHz)

802.11ac (20MHz)



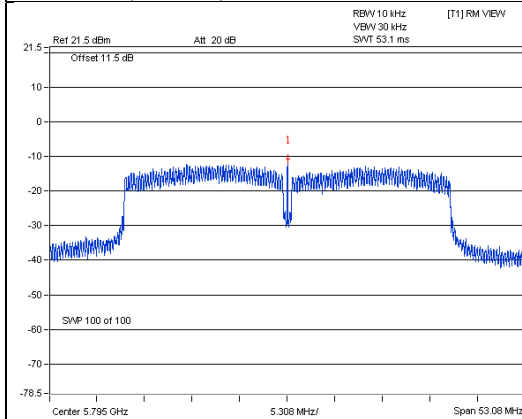
A D T



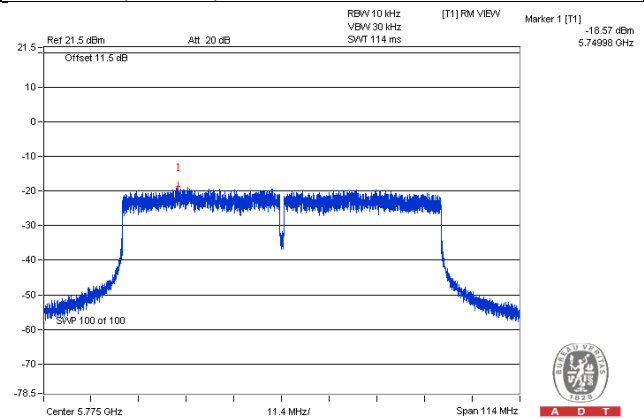
A D T

802.11ac (40MHz)

802.11ac (80MHz)



A D T



A D T

5.6 Conducted Out of Band Emission Measurement

5.6.1 Limits of Conducted Out of Band Emission Measurement

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

5.6.2 Test Setup

Same as Item 4.6.2

5.6.3 Test Instruments

Same as Item 4.6.3

5.6.4 Test Procedure

Same as Item 4.6.4

5.6.5 Deviation from Test Standard

No deviation.

5.6.6 EUT Operating Condition

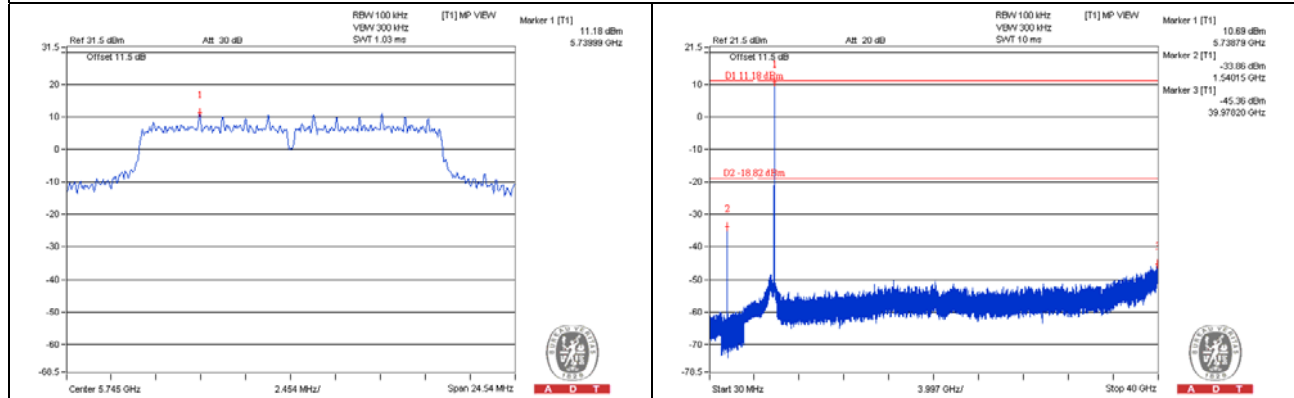
Same as Item 4.3.6

5.6.7 Test Results

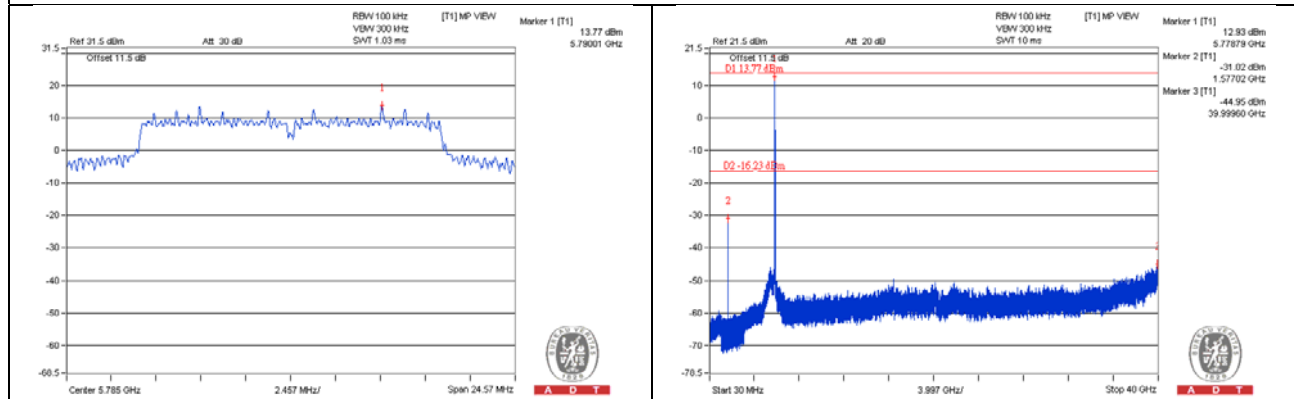
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

802.11a

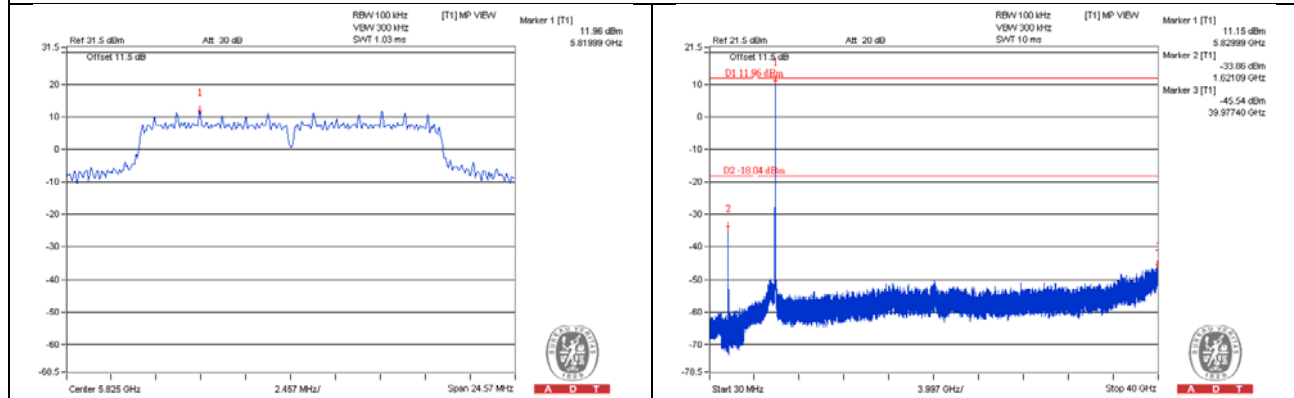
CH 149



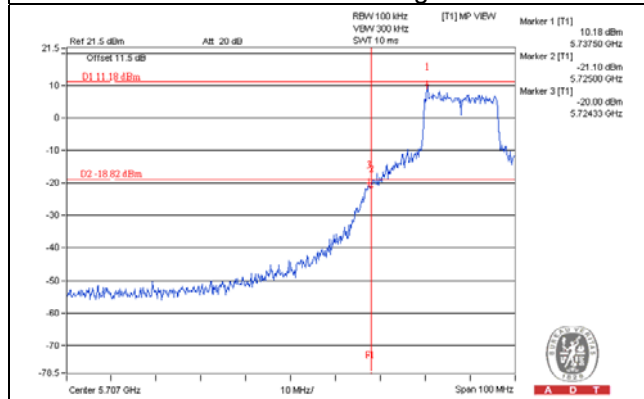
CH 157



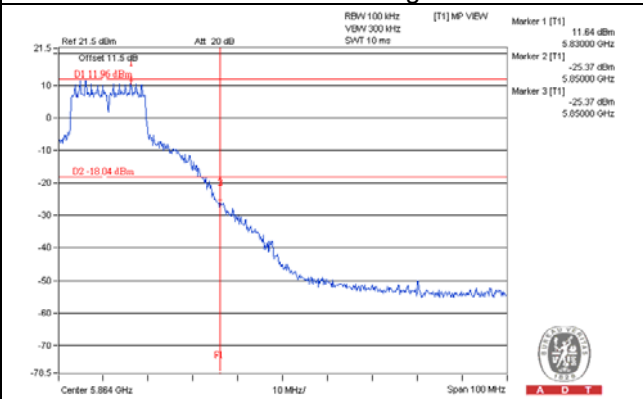
CH 165



CH 149 Band edge

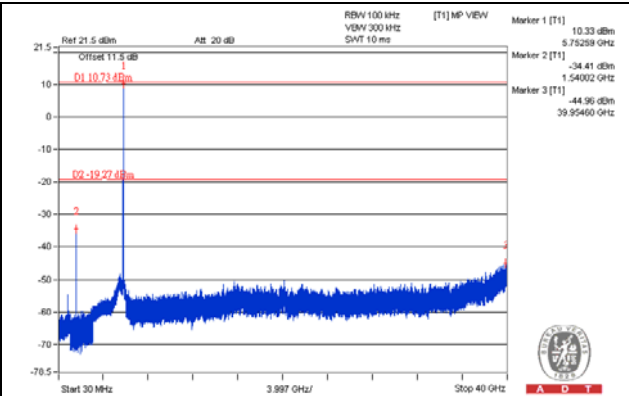
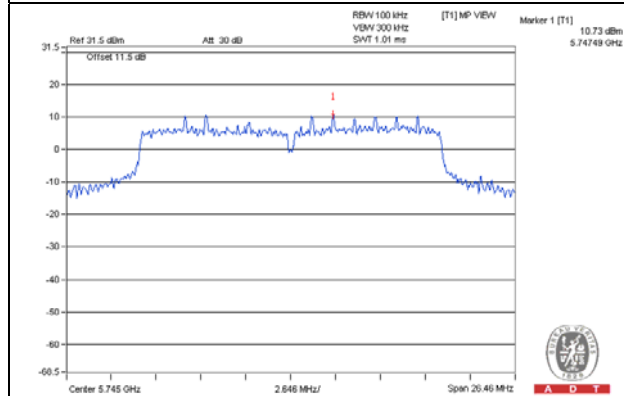


CH 157 Band edge

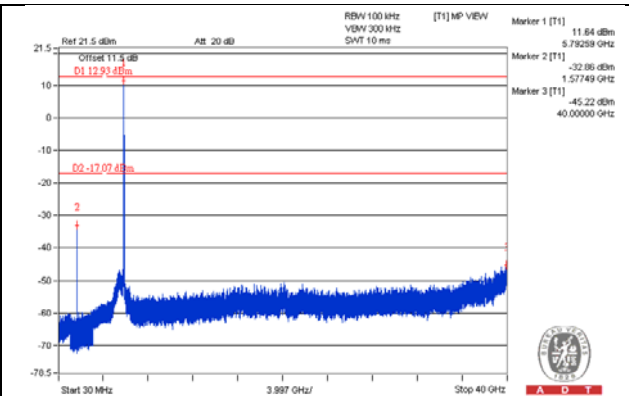
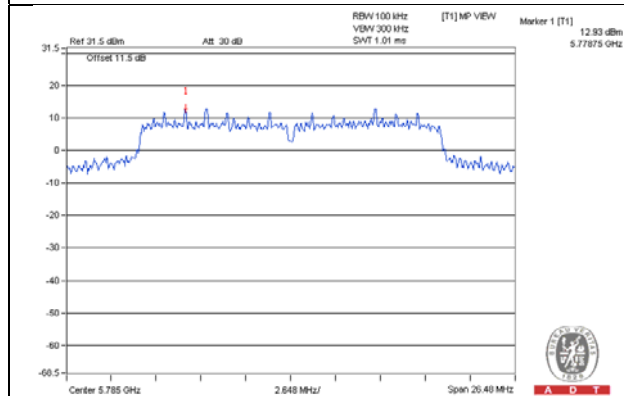


802.11n (20MHz)_Chain 0

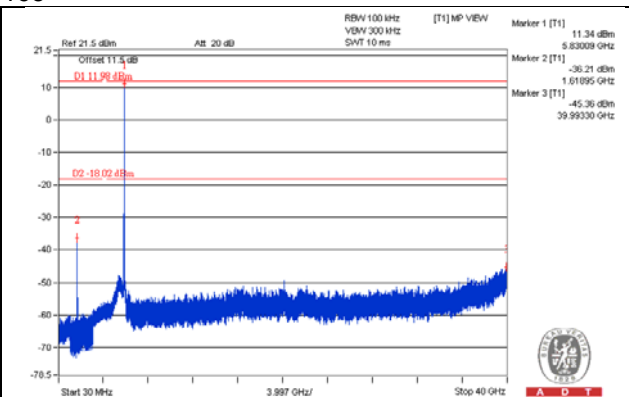
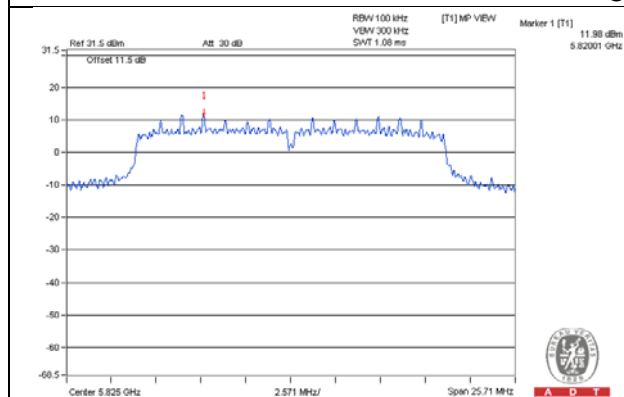
CH 149



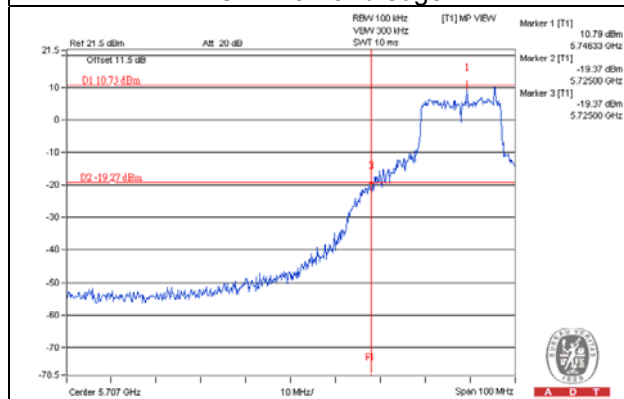
CH 157



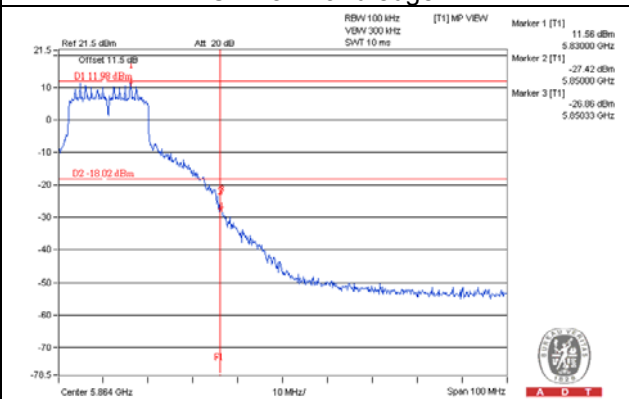
CH 165



CH 149 Band edge

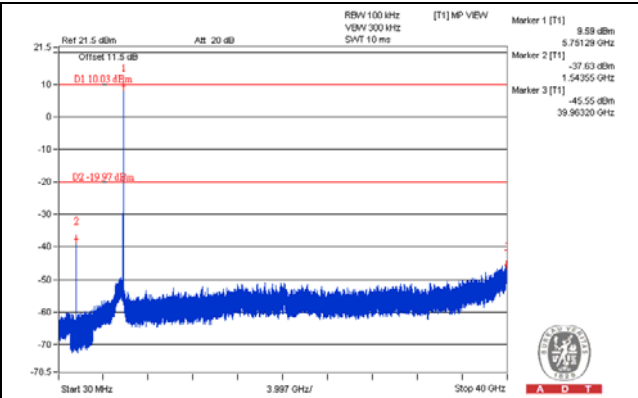
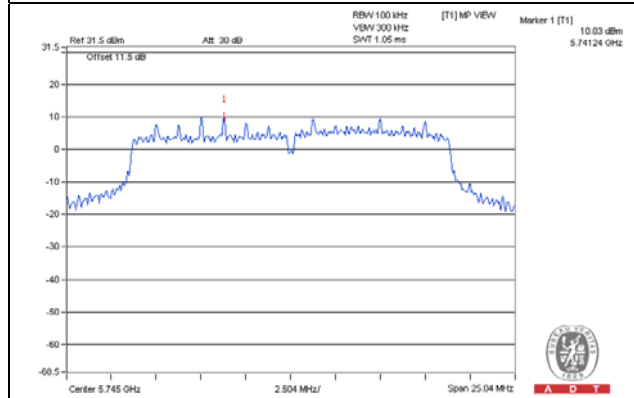


CH 157 Band edge

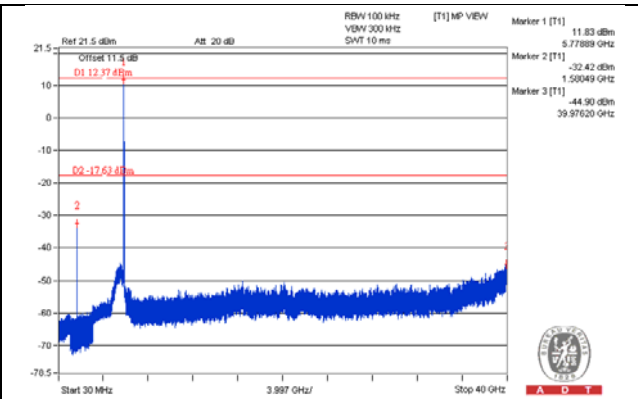
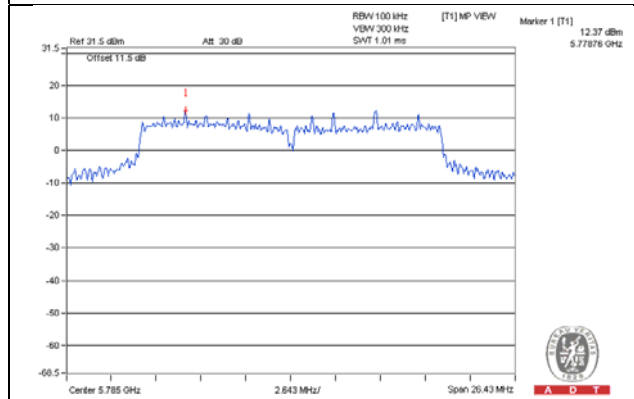


802.11n (20MHz)_Chain 1

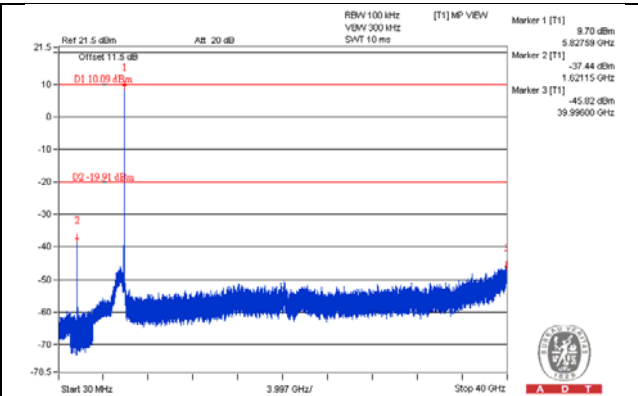
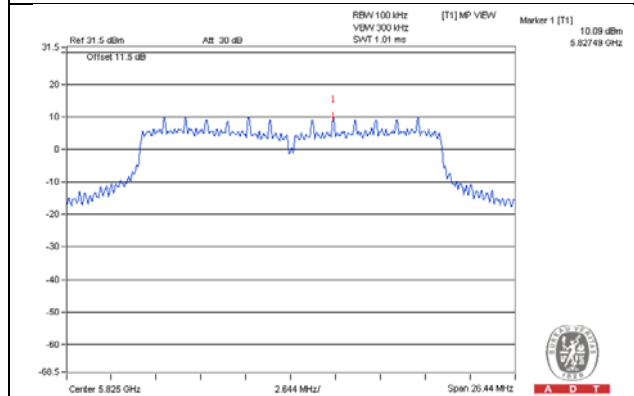
CH 149



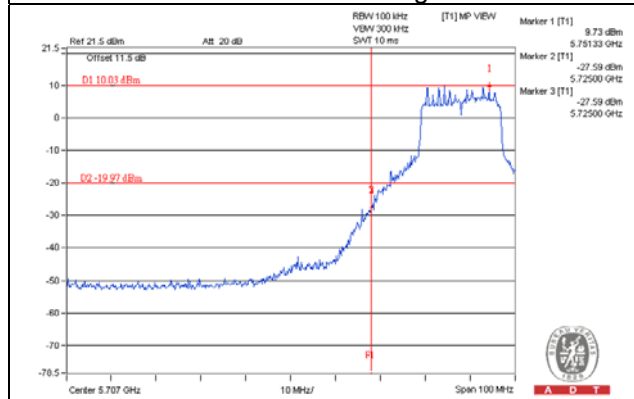
CH 157



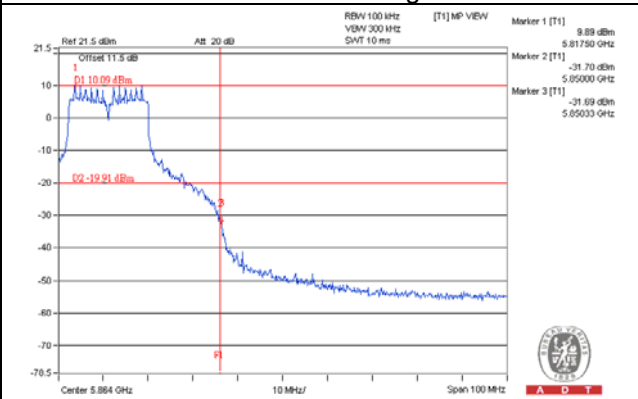
CH 165



CH 149 Band edge

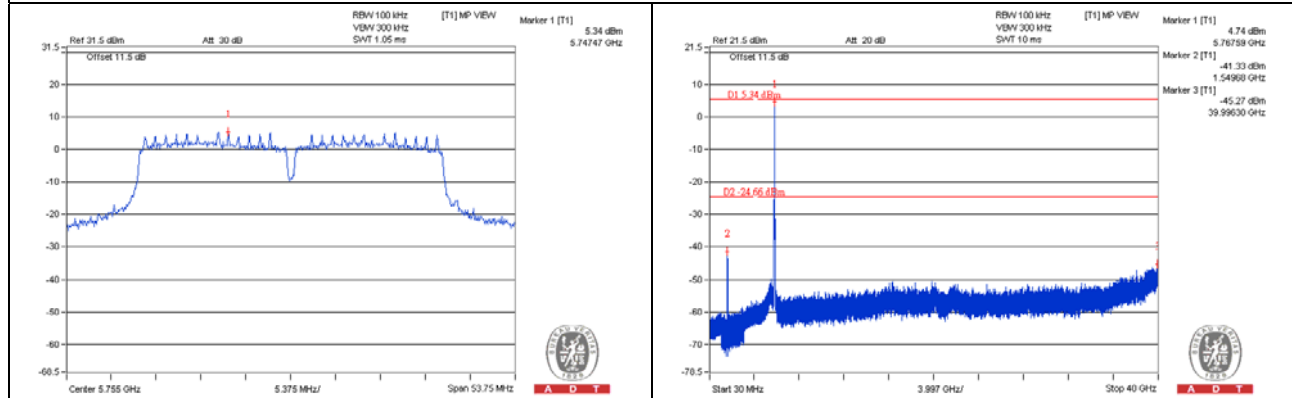


CH 157 Band edge

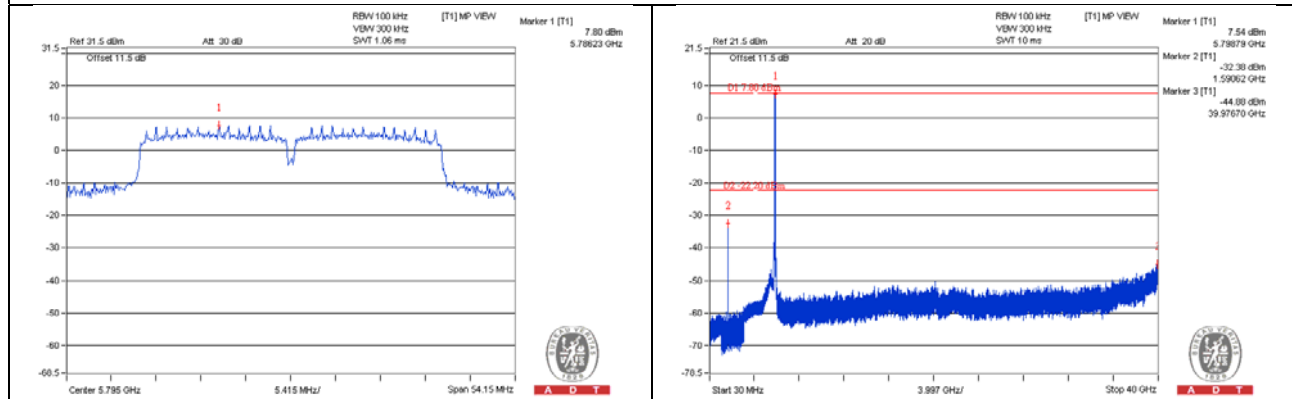


802.11n (40MHz)_Chain 0

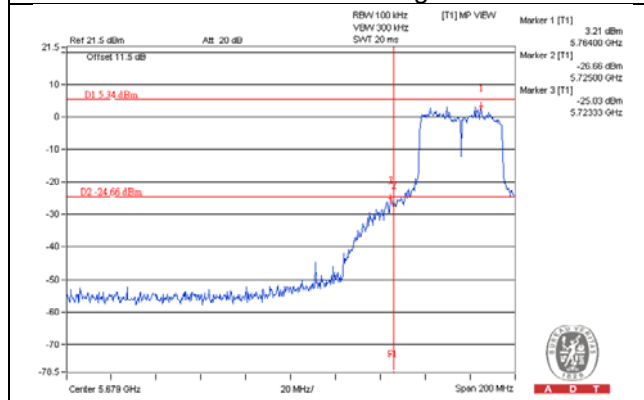
CH 151



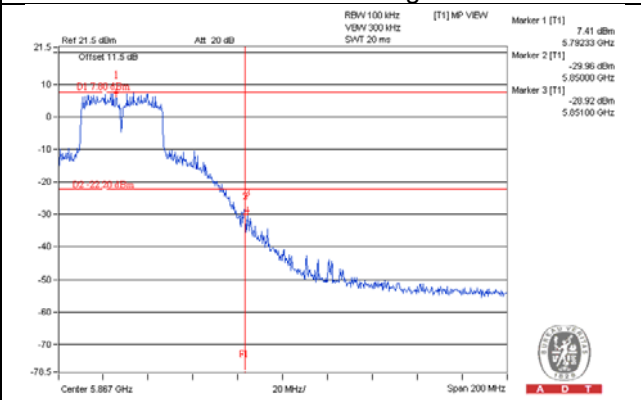
CH 159



CH 151 Band edge

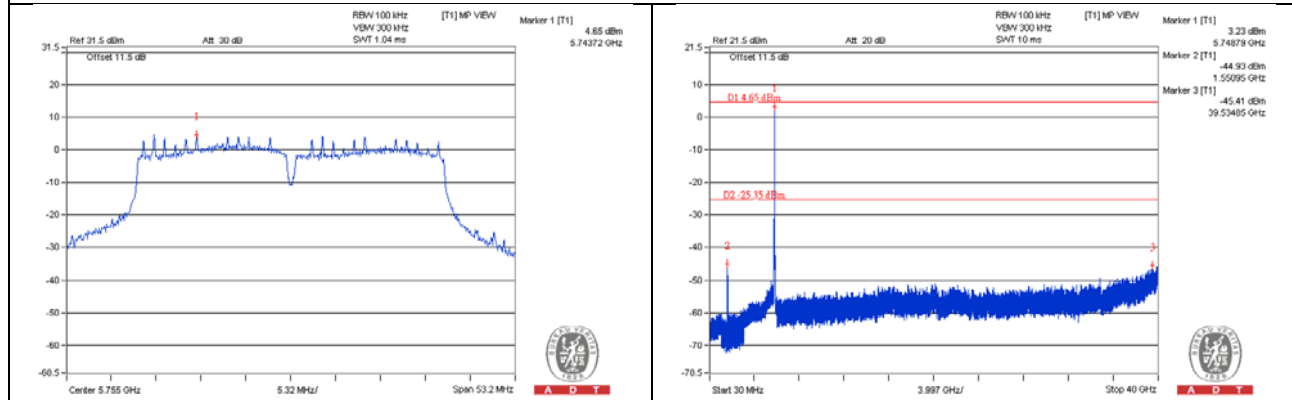


CH 159 Band edge

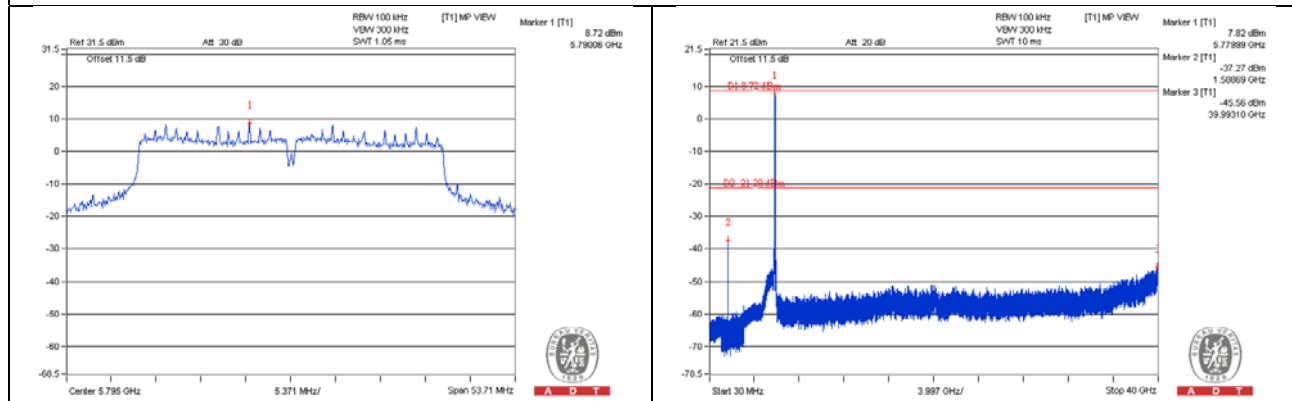


802.11n (40MHz)_Chain 1

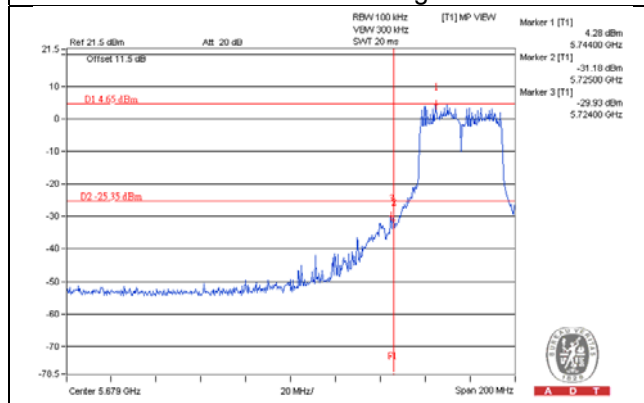
CH 151



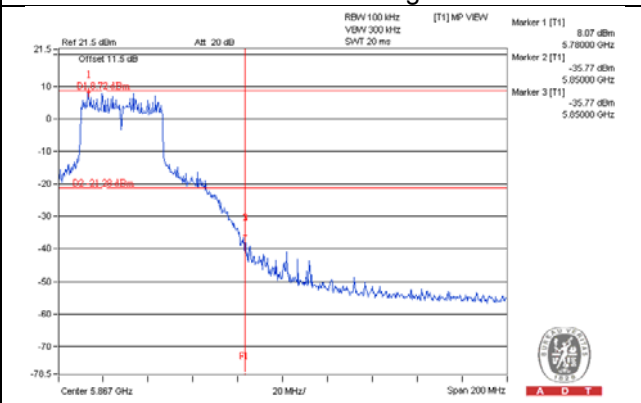
CH 159



CH 151 Band edge

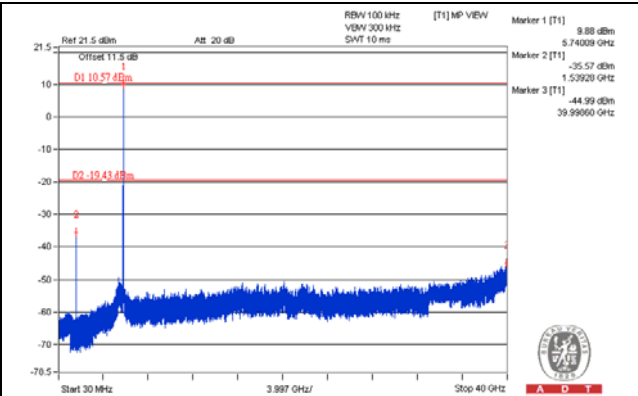
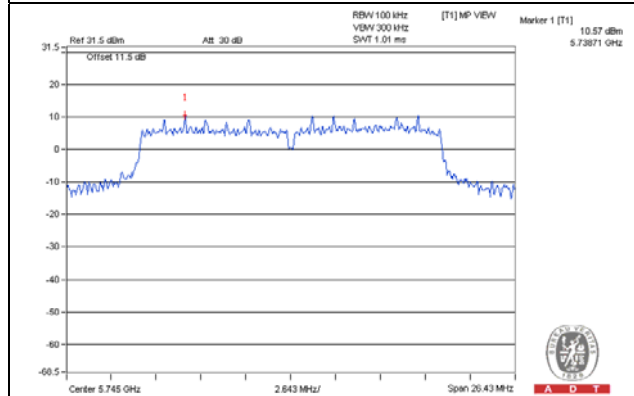


CH 159 Band edge

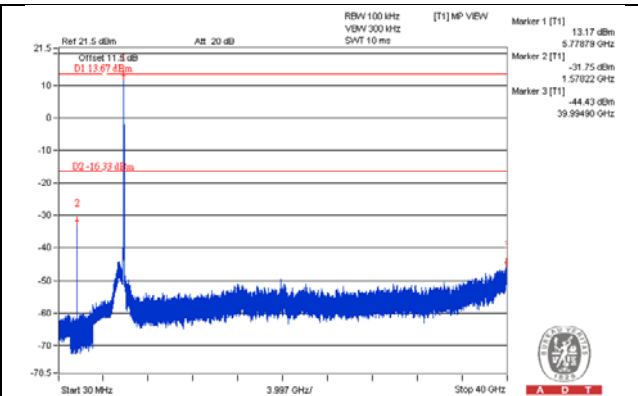
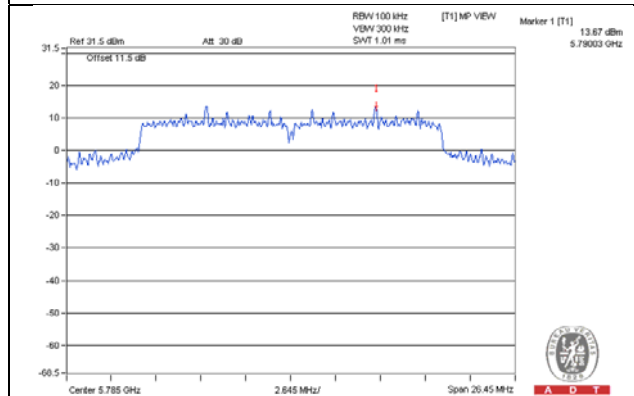


802.11ac (20MHz)_Chain 0

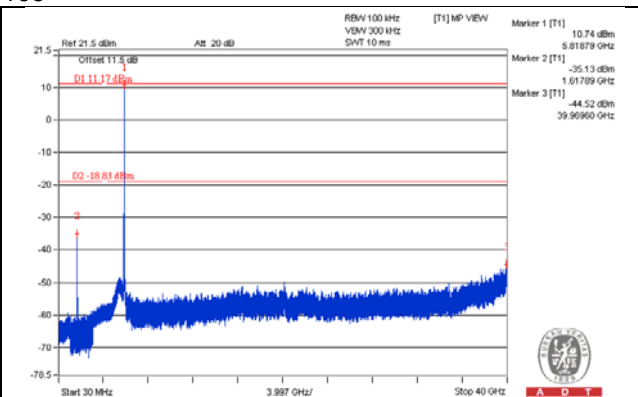
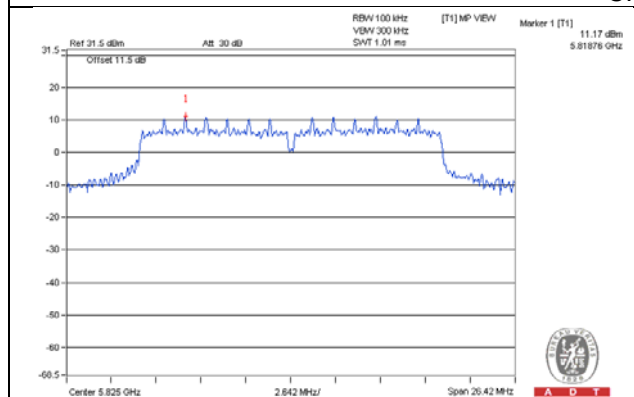
CH 149



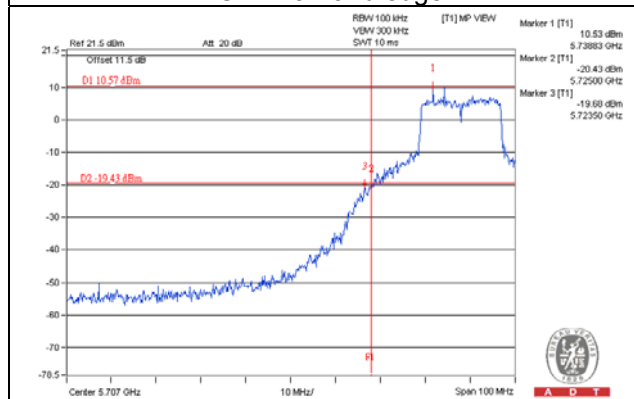
CH 157



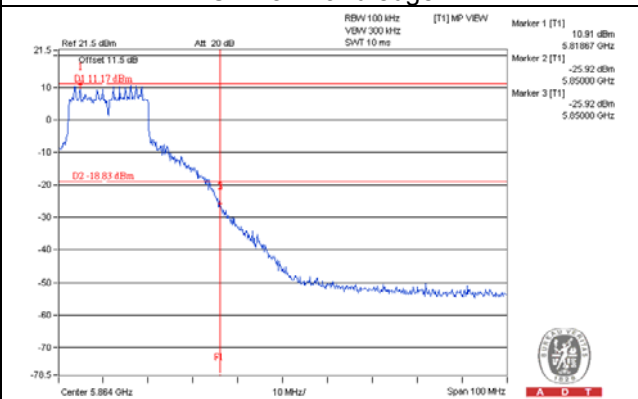
CH 165



CH 149 Band edge

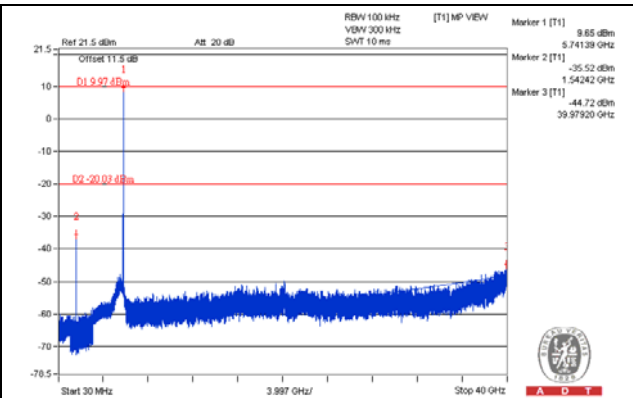
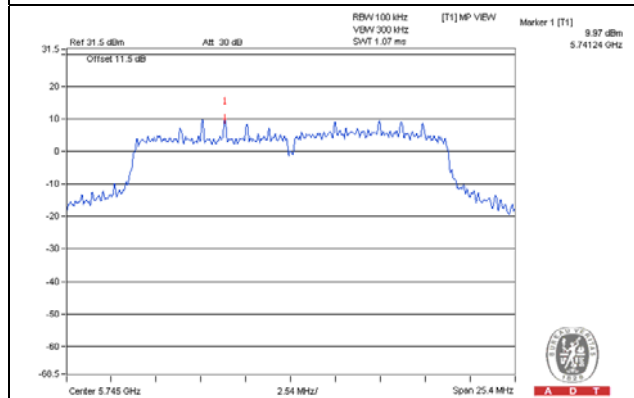


CH 157 Band edge

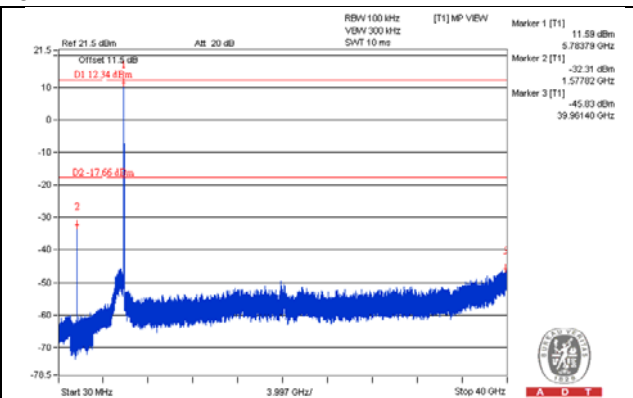
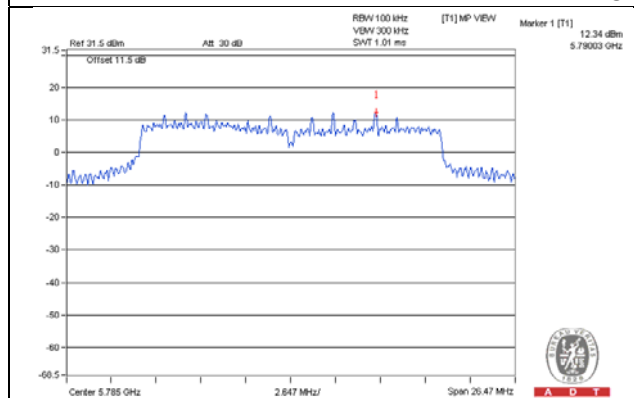


802.11ac (20MHz)_Chain 1

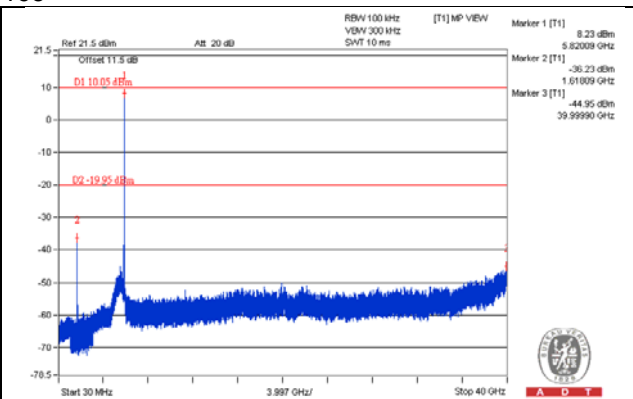
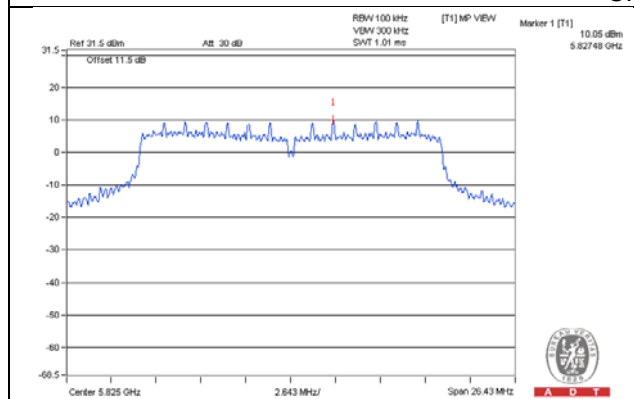
CH 149



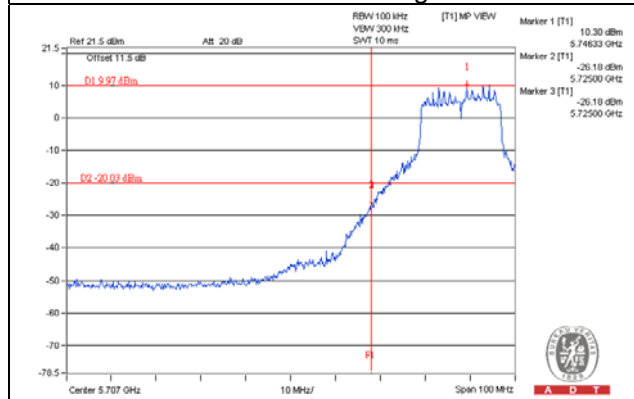
CH 157



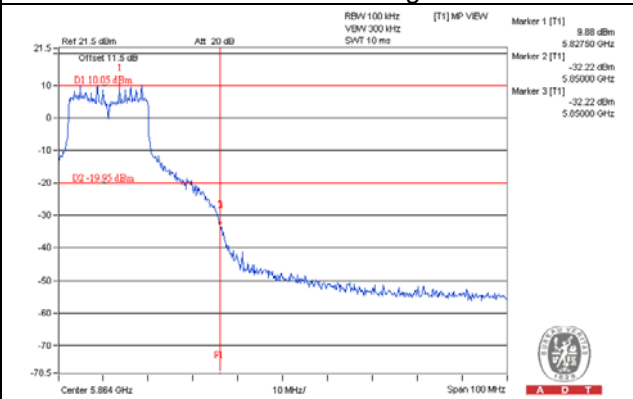
CH 165



CH 149 Band edge

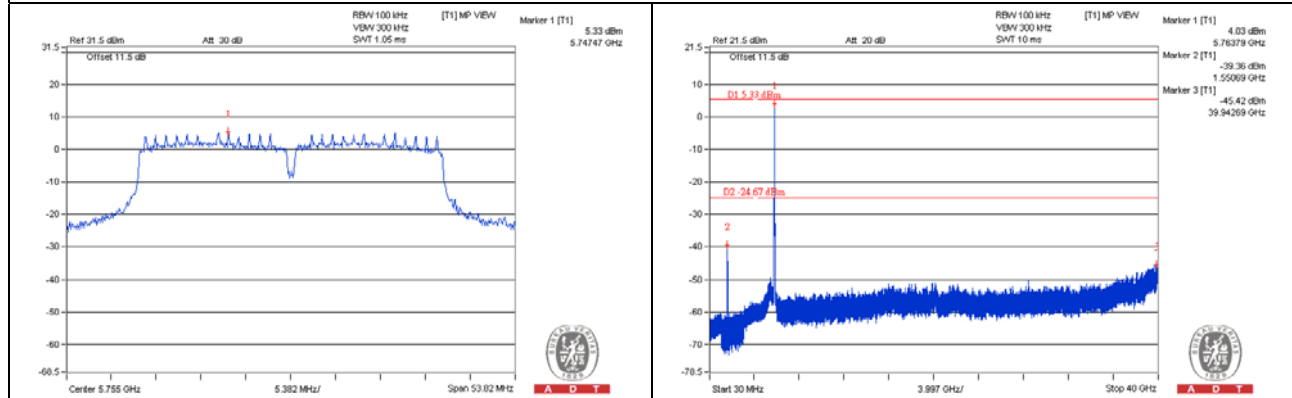


CH 157 Band edge

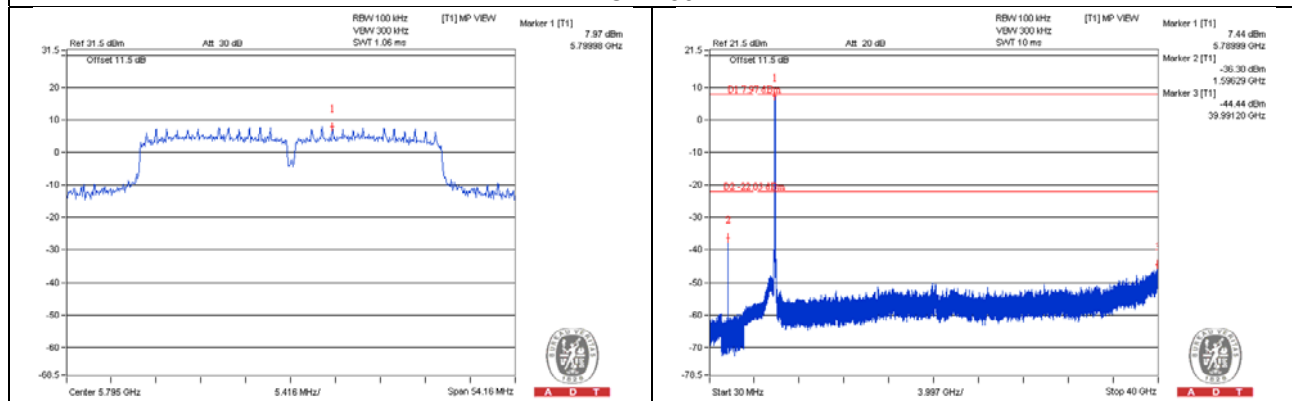


802.11ac (40MHz)_Chain 0

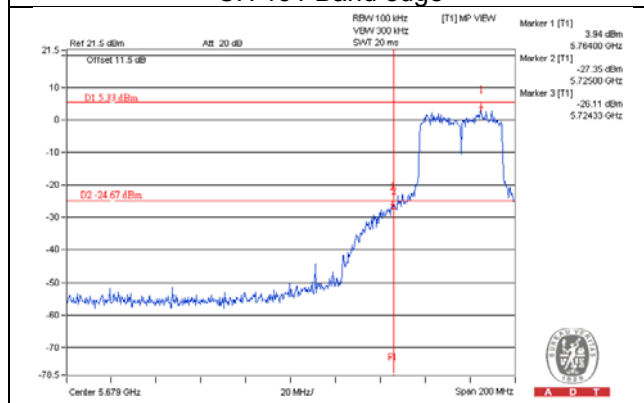
CH 151



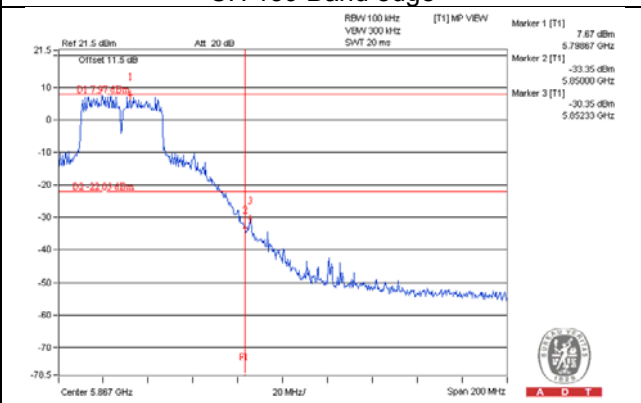
CH 159



CH 151 Band edge

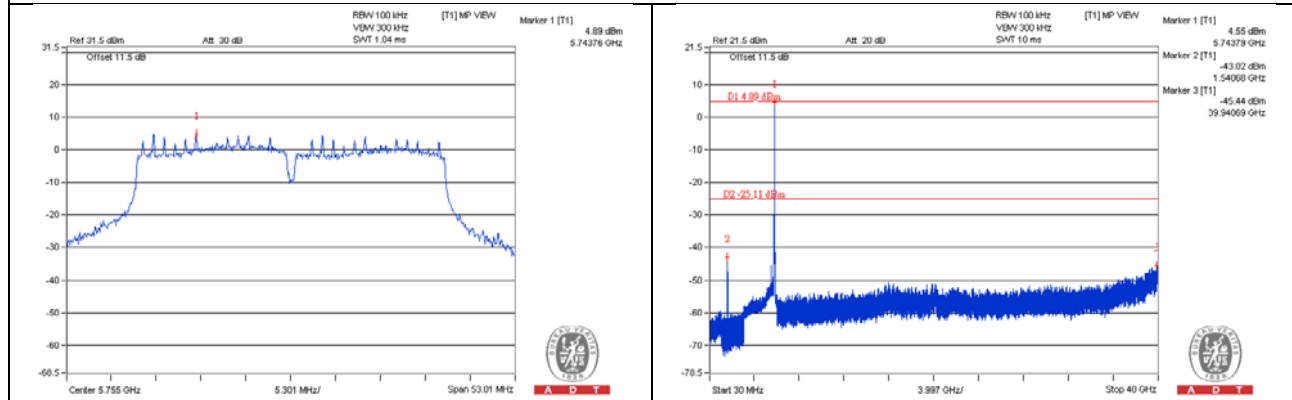


CH 159 Band edge

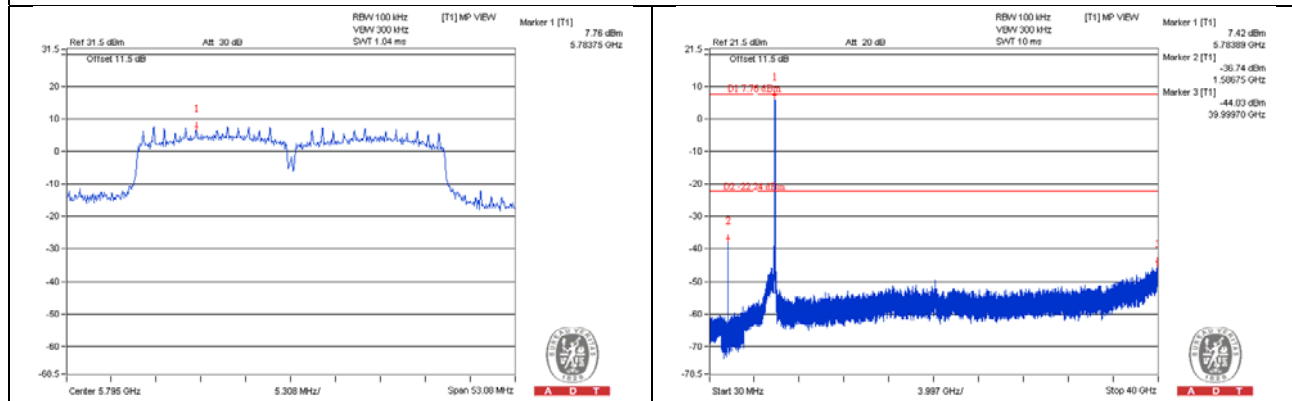


802.11ac (40MHz) Chain 1

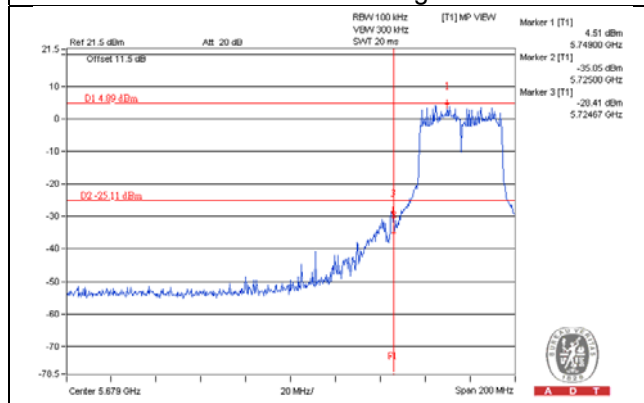
CH 151



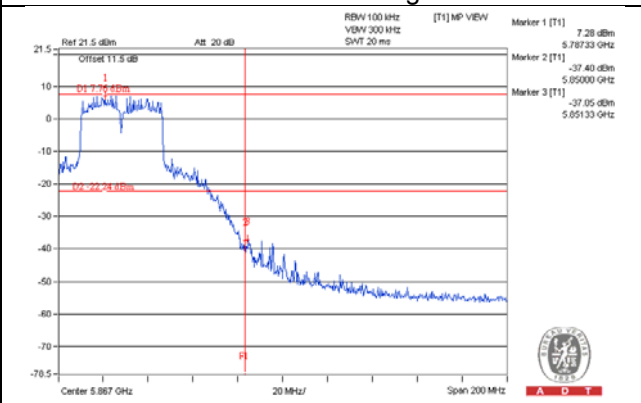
CH 159



CH 151 Band edge

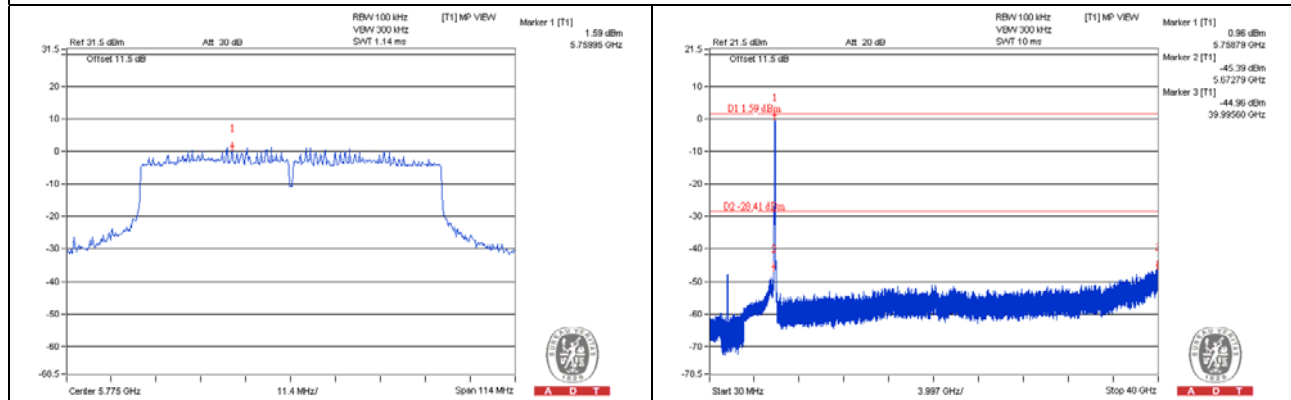


CH 159 Band edge

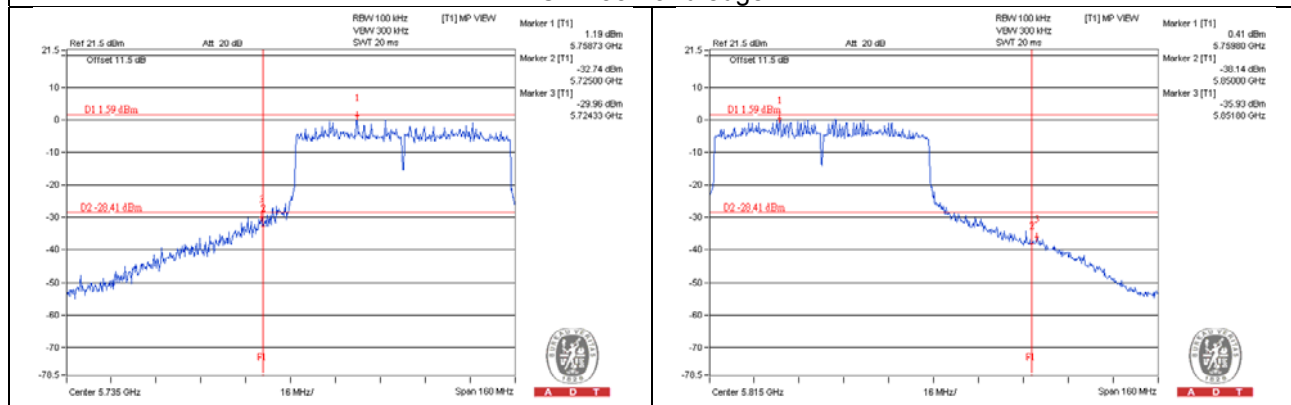


802.11ac (80MHz)_Chain 0

CH 155

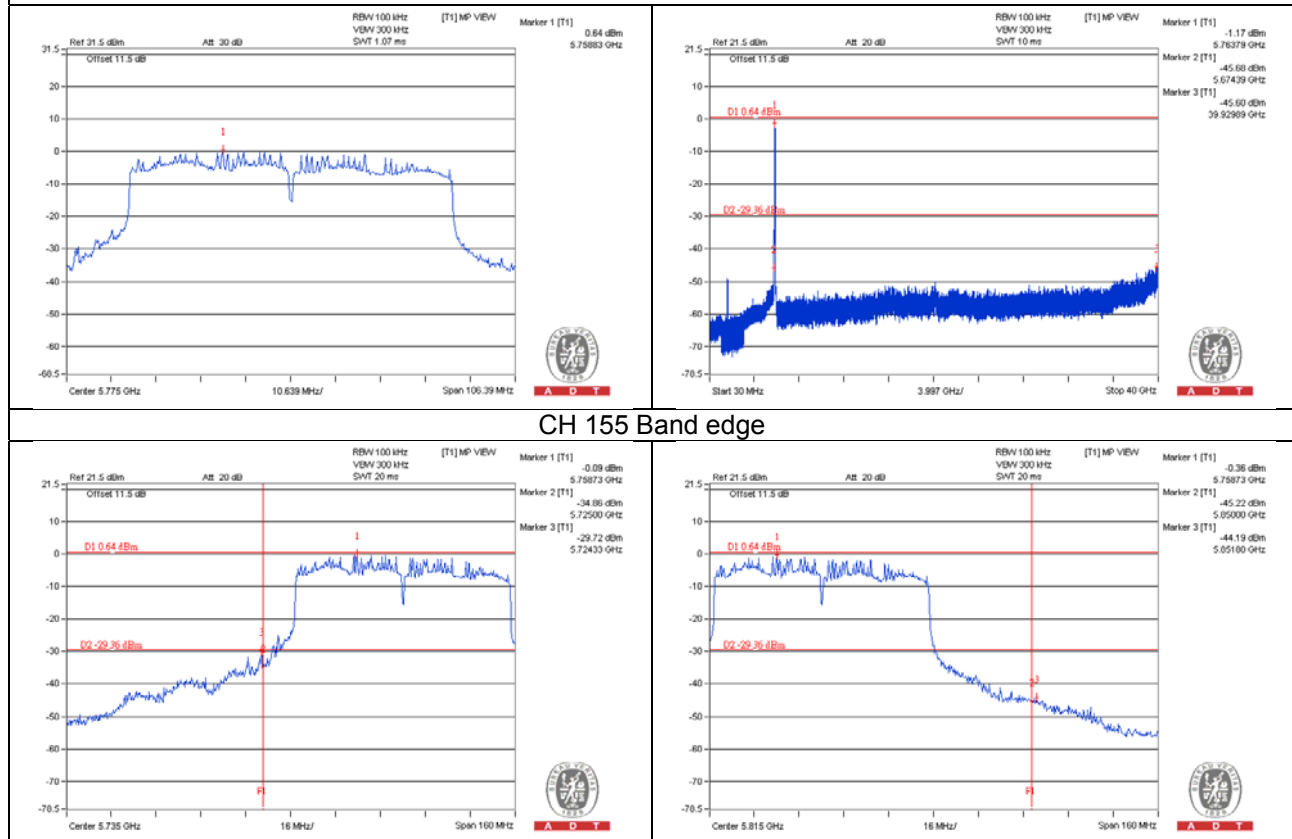


CH 155 Band edge



802.11ac (80MHz)_Chain 1

CH 155



6 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

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Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-5935343

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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.

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