

FCC TEST REPORT (15.247)

REPORT NO.: RF130814C33-3

MODEL NO.: NeverLost® 6 Tablet

FCC ID: 2AA4L-HTZNLTABLET

RECEIVED: Aug. 14, 2013

TESTED: Sep. 02, 2013 ~ Sep. 07, 2013

ISSUED: Sep. 16, 2013

APPLICANT: MiTAC International Corp.

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ISSUED BY: Bureau Veritas Consumer Products Services
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130814C33-3	Original release	Sep. 16, 2013



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1. CERTIFICATION

PRODUCT: Automotive Navigation Device
MODEL NO.: NeverLost® 6 Tablet
BRAND: Hertz
APPLICANT: MiTAC International Corp.
TESTED: Sep. 02, 2013 ~ Sep. 07, 2013
TEST SAMPLE: Production Unit
STANDARDS: **FCC Part 15, Subpart C (Section 15.247)**
ANSI C63.10-2009

The above equipment (model: NeverLost® 6 Tablet) 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 : Vera Huang , **DATE** : Sep. 16, 2013
Vera Huang / Specialist
APPROVED BY : Sam chen , **DATE** : Sep. 16, 2013
Sam Chen / Assistant Manager

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	N/A	Without AC power port of the EUT.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.02dB at 2390MHz.
15.247(d)	Band Edge Measurement	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	No antenna connector is used.

NOTE: "NA" means Not Applicable.

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	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.34 dB
	200MHz ~1000MHz	3.35 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Automotive Navigation Device
MODEL NO.	NeverLost® 6 Tablet
POWER SUPPLY	3.7Vdc (battery)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 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
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) 2 for 802.11n (40MHz)
OUTPUT POWER	327.030mW for 2412 ~ 2462MHz 189.705mW for 5745 ~ 5825MHz
ANTENNA TYPE	2.4GHz: PIFA antenna with 1.5dBi gain 5.0GHz: PIFA antenna with 3.1dBi gain
ANTENNA CONNECTOR	NA
DATA CABLE	Refer to Note as below
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Refer to Note as below

NOTE:

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

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11a	1TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX

2. The EUT contains following accessory devices.

ITEM	BRAND	MODEL	DESCRIPTION
Battery	Tian Yu	N425	Rating: 3.7Vdc, 920mAh
WWAN Module	CINTERION	PHS8-P	--
WLAN Module	nFore	NF3301	--
NFC Module	Jogtek	TM-007A	--
BT Module	nFore	NF3301	--

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 DESCRIPTION OF TEST MODES

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):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

FOR 2.4GHz:

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	RE≥1G	RE<1G	APCM	
A	√	-	√	Chain 0 only
B	-	-	√	Chain 1 only
C	√	√	√	Chain 0 + Chain 1

Where **RE≥1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz
APCM: Antenna Port Conducted Measurement

NOTE:

The antenna of the EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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
C	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	MCS8
C	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	MCS8

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)
C	802.11n (20MHz)	1 to 11	1	OFDM	BPSK	MCS8

**A D T****BANDEDGE MEASUREMENT:**

- ☒ 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, 11	DSSS	DBPSK	1.0
A, B	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
C	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	MCS8
C	802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	MCS8

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, B	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A, B	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
C	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	MCS8
C	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	MCS8

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE _≥ 1G	25deg. C, 65%RH	120Vac, 60Hz	David Huang
RE _{<} 1G	25deg. C, 65%RH	120Vac, 60Hz	David Huang
APCM	25deg. C, 65%RH	120Vac, 60Hz	Howard Kao

FOR 5.0GHz (5745 ~ 5825MHz):

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	RE≥1G	RE<1G	APCM	
A	√	-	√	Chain 0 only
B	-	-	√	Chain 1 only
C	√	√	√	Chain 0 + Chain 1

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

APCM: Antenna Port Conducted Measurement

NOTE:

The antenna of the EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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
C	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	MCS8
C	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS8

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)
C	802.11n (20MHz)	149 to 165	149	OFDM	BPSK	MCS8

BANDEDGE MEASUREMENT:

- ☒ 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, 165	OFDM	BPSK	6.0
C	802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	MCS8
C	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS8

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, B	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
C	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	MCS8
C	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS8

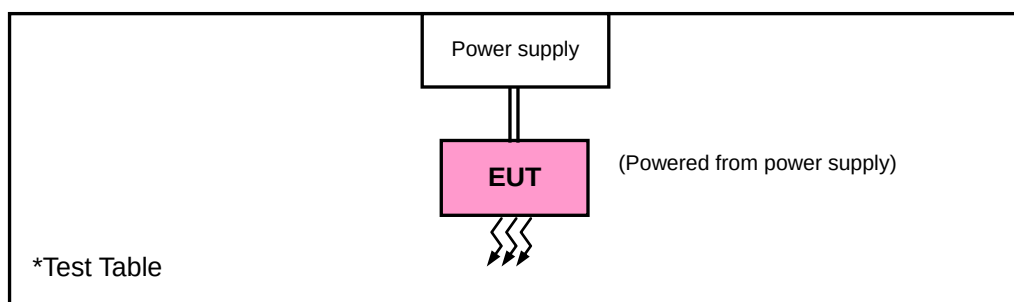
TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	David Huang
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	David Huang
APCM	25deg. C, 65%RH	120Vac, 60Hz	Howard Kao

3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units.

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



3.4 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 v03r01

662911 D01 Multiple Transmitter Output v02

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 20dB below the highest level of the desired power:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



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4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100744	Apr. 15, 2013	Apr. 14, 2014
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 17, 2012	Dec. 16, 2013
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Mar. 25, 2013	Mar. 24, 2014
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Jan. 07, 2013	Jan. 06, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 25, 2012	Dec. 24, 2013
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier EMCI	EMC 012645	980115	Dec. 28, 2012	Dec. 27, 2013
Preamplifier EMCI	EMC 184045	980116	Dec. 28, 2012	Dec. 27, 2013
Preamplifier EMCI	EMC 330H	980112	Dec. 28, 2012	Dec. 27, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4	Oct. 19, 2012	Oct. 18, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 19, 2012	Oct. 18, 2013
RF signal cable Worken	RG-213	NA	Dec. 29, 2012	Dec. 28, 2013
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
Power Meter	ML2495A	1012010	Jul. 31, 2013	Jul. 30, 2014
Power Sensor	MA2411B	1315050	Jul. 31, 2013	Jul. 30, 2014

- 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 calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in HwaYa Chamber 10.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The FCC Site Registration No. is 690701.
6. The IC Site Registration No. is IC 7450F-10.

4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. 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 antenna is a broadband antenna, and its height 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 Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

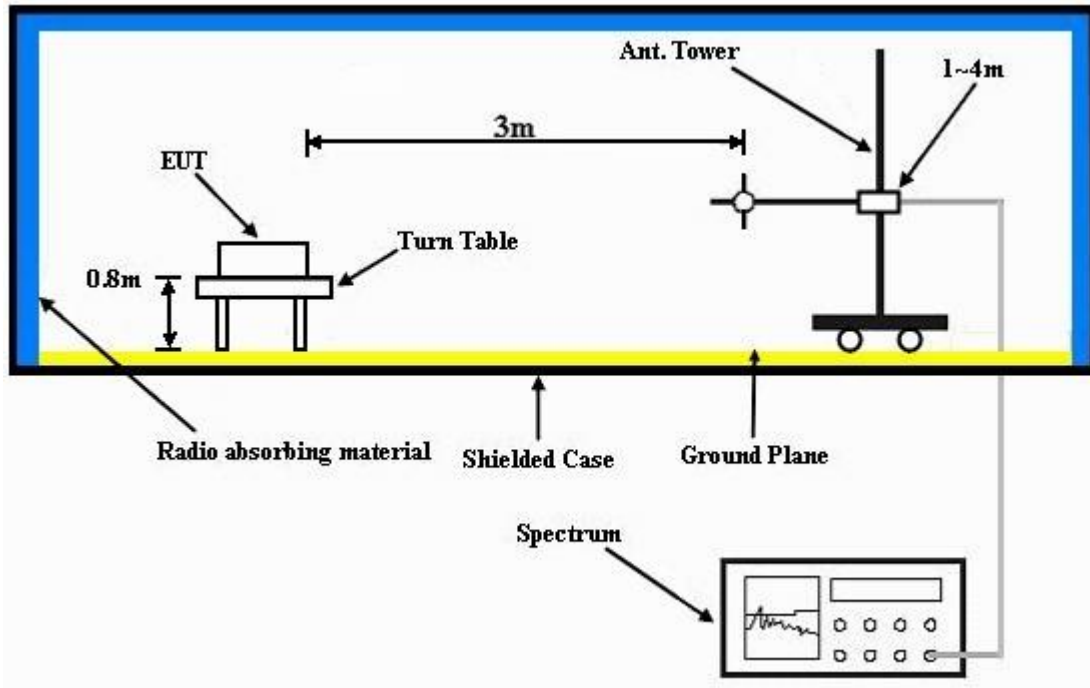
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 1kHz(Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

4.1.5 TEST SETUP



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

4.1.6 EUT OPERATING CONDITIONS

- Plugged the EUT into a notebook through a convertible board and placed on a test table.
- The notebook ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.



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4.1.7 TEST RESULTS

ABOVE 1GHz WORST-CASE DATA

MODE A

802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	46.19	53.26	54	-7.81	26.91	3.54	37.52	130	120	Average
2390	56.7	63.77	74	-17.3	26.91	3.54	37.52	130	120	Peak
2412	102.06	109.08			26.96	3.54	37.52	130	120	Average
2412	106.44	113.46			26.96	3.54	37.52	130	120	Peak
2486	34.29	40.86	54	-19.71	27.15	3.6	37.32	130	120	Average
2486	53.69	60.26	74	-20.31	27.15	3.6	37.32	130	120	Peak
4824	48.89	65.21	54	-5.11	30.99	5.77	53.08	100	215	Average
4824	51.12	67.44	74	-22.88	30.99	5.77	53.08	100	215	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	42.98	50.05	54	-11.02	26.91	3.54	37.52	100	48	Average
2390	55.77	62.84	74	-18.23	26.91	3.54	37.52	100	48	Peak
2412	99.03	106.05			26.96	3.54	37.52	100	48	Average
2412	103.57	110.59			26.96	3.54	37.52	100	48	Peak
2482	34.31	40.88	54	-19.69	27.15	3.6	37.32	100	48	Average
2482	52.91	59.48	74	-21.09	27.15	3.6	37.32	100	48	Peak
4824	52.04	68.36	54	-1.96	30.99	5.77	53.08	102	230	Average
4824	55.48	71.8	74	-18.52	30.99	5.77	53.08	102	230	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 2412MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2372	35.02	42.14	54	-18.98	26.86	3.52	37.5	121	332	Average
2372	50.11	57.23	74	-23.89	26.86	3.52	37.5	121	332	Peak
2437	98.76	105.6			27.06	3.56	37.46	121	332	Average
2437	102.75	109.59			27.06	3.56	37.46	121	332	Peak
2500	34.57	41	54	-19.43	27.2	3.62	37.25	121	332	Average
2500	50.9	57.33	74	-23.1	27.2	3.62	37.25	121	332	Peak
4874	49.62	65.81	54	-4.38	31.06	5.8	53.05	108	106	Average
4874	55.04	71.23	74	-18.96	31.06	5.8	53.05	108	106	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2376	33.88	41	54	-20.12	26.86	3.52	37.5	100	305	Average
2376	51.06	58.18	74	-22.94	26.86	3.52	37.5	100	305	Peak
2437	95.69	102.53			27.06	3.56	37.46	100	305	Average
2437	99.65	106.49			27.06	3.56	37.46	100	305	Peak
2498	34.38	40.81	54	-19.62	27.2	3.62	37.25	100	305	Average
2498	50.42	56.85	74	-23.58	27.2	3.62	37.25	100	305	Peak
4874	50.61	66.8	54	-3.39	31.06	5.8	53.05	100	194	Average
4874	55.69	71.88	74	-18.31	31.06	5.8	53.05	100	194	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 2437MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	33.66	40.73	54	-20.34	26.91	3.54	37.52	126	110	Average
2390	48.89	55.96	74	-25.11	26.91	3.54	37.52	126	110	Peak
2462	100.41	107.12			27.1	3.58	37.39	126	110	Average
2462	104	110.71			27.1	3.58	37.39	126	110	Peak
2484	45.91	52.48	54	-8.09	27.15	3.6	37.32	126	110	Average
2484	54.57	61.14	74	-19.43	27.15	3.6	37.32	126	110	Peak
4924	43.77	59.85	54	-10.23	31.12	5.83	53.03	114	174	Average
4924	48.09	64.17	74	-25.91	31.12	5.83	53.03	114	174	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	33.59	40.66	54	-20.41	26.91	3.54	37.52	123	46	Average
2390	50.08	57.15	74	-23.92	26.91	3.54	37.52	123	46	Peak
2462	97.02	103.73			27.1	3.58	37.39	123	46	Average
2462	100.89	107.6			27.1	3.58	37.39	123	46	Peak
2484	41.28	47.85	54	-12.72	27.15	3.6	37.32	123	46	Average
2484	53.46	60.03	74	-20.54	27.15	3.6	37.32	123	46	Peak
4924	52.23	68.31	54	-1.77	31.12	5.83	53.03	102	222	Average
4924	54.21	70.29	74	-19.79	31.12	5.83	53.03	102	222	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 2462MHz: Fundamental frequency.



A D T

802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	52.98	60.05	54	-1.02	26.91	3.54	37.52	132	119	Average
2390	71.08	78.15	74	-2.92	26.91	3.54	37.52	132	119	Peak
2412	99.36	106.38			26.96	3.54	37.52	132	119	Average
2412	109.44	116.46			26.96	3.54	37.52	132	119	Peak
2484	36.17	42.74	54	-17.83	27.15	3.6	37.32	132	119	Average
2484	53.07	59.64	74	-20.93	27.15	3.6	37.32	132	119	Peak
4824	39.75	56.07	54	-14.25	30.99	5.77	53.08	100	101	Average
4824	47.46	63.78	74	-26.54	30.99	5.77	53.08	100	101	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	48.85	55.92	54	-5.15	26.91	3.54	37.52	127	50	Average
2390	64.62	71.69	74	-9.38	26.91	3.54	37.52	127	50	Peak
2412	96.39	103.41			26.96	3.54	37.52	127	50	Average
2412	106.11	113.13			26.96	3.54	37.52	127	50	Peak
2484	33.97	40.54	54	-20.03	27.15	3.6	37.32	127	50	Average
2484	52.16	58.73	74	-21.84	27.15	3.6	37.32	127	50	Peak
4824	41.7	58.02	54	-12.3	30.99	5.77	53.08	100	184	Average
4824	49.78	66.1	74	-24.22	30.99	5.77	53.08	100	184	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 2412MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2388	41.24	48.29	54	-12.76	26.91	3.54	37.5	145	317	Average
2388	56.52	63.57	74	-17.48	26.91	3.54	37.5	145	317	Peak
2437	96.27	103.11			27.06	3.56	37.46	145	317	Average
2437	106.55	113.39			27.06	3.56	37.46	145	317	Peak
2492	37.5	43.93	54	-16.5	27.2	3.62	37.25	145	317	Average
2492	54.95	61.38	74	-19.05	27.2	3.62	37.25	145	317	Peak
4874	37.85	54.04	54	-16.15	31.06	5.8	53.05	100	98	Average
4874	45.88	62.07	74	-28.12	31.06	5.8	53.05	100	98	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2384	37.9	45.02	54	-16.1	26.86	3.52	37.5	100	303	Average
2384	53.3	60.42	74	-20.7	26.86	3.52	37.5	100	303	Peak
2437	92.75	99.59			27.06	3.56	37.46	100	303	Average
2437	102.71	109.55			27.06	3.56	37.46	100	303	Peak
2484	36.16	42.73	54	-17.84	27.15	3.6	37.32	100	303	Average
2484	53	59.57	74	-21	27.15	3.6	37.32	100	303	Peak
4874	38.25	54.44	54	-15.75	31.06	5.8	53.05	100	335	Average
4874	45.77	61.96	74	-28.23	31.06	5.8	53.05	100	335	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 2437MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	36.77	6.32	54	-17.23	26.91	3.54	0	127	119	Average
2390	52.49	22.04	74	-21.51	26.91	3.54	0	127	119	Peak
2462	96.31	65.63			27.1	3.58	0	127	119	Average
2462	106.86	76.18			27.1	3.58	0	127	119	Peak
2484	51.44	20.69	54	-2.56	27.15	3.6	0	127	119	Average
2484	68.01	37.26	74	-5.99	27.15	3.6	0	127	119	Peak
4924	35.68	51.76	54	-18.32	31.12	5.83	53.03	100	106	Average
4924	47.21	63.29	74	-26.79	31.12	5.83	53.03	100	106	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	35.71	5.26	54	-18.29	26.91	3.54	0	122	50	Average
2390	52.38	21.93	74	-21.62	26.91	3.54	0	122	50	Peak
2462	94.34	63.66			27.1	3.58	0	122	50	Average
2462	103.2	72.52			27.1	3.58	0	122	50	Peak
2484	45.49	14.74	54	-8.51	27.15	3.6	0	122	50	Average
2484	66.7	35.95	74	-7.3	27.15	3.6	0	122	50	Peak
4924	35.5	51.58	54	-18.5	31.12	5.83	53.03	100	113	Average
4924	46.92	63	74	-27.08	31.12	5.83	53.03	100	113	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 2462MHz: Fundamental frequency.



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MODE C

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2388	49.81	56.86	54	-4.19	26.91	3.54	37.5	100	336	Average
2388	67.58	74.63	74	-6.42	26.91	3.54	37.5	100	336	Peak
2412	96.69	103.71			26.96	3.54	37.52	100	336	Average
2412	107.07	114.09			26.96	3.54	37.52	100	336	Peak
2498	36.7	43.13	54	-17.3	27.2	3.62	37.25	100	336	Average
2498	53.18	59.61	74	-20.82	27.2	3.62	37.25	100	336	Peak
4824	36.31	52.63	54	-17.69	30.99	5.77	53.08	115	272	Average
4824	46.3	62.62	74	-27.7	30.99	5.77	53.08	115	272	Peak
14472	52.66	52.24	54	-1.34	42.03	10.08	51.69	103	248	Average
14472	64.07	63.65	74	-9.93	42.03	10.08	51.69	103	248	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	50.49	57.56	54	-3.51	26.91	3.54	37.52	100	91	Average
2390	69.78	76.85	74	-4.22	26.91	3.54	37.52	100	91	Peak
2412	98.02	105.04			26.96	3.54	37.52	100	91	Average
2412	108.36	115.38			26.96	3.54	37.52	100	91	Peak
2490	36	42.5	54	-18	27.2	3.62	37.32	100	91	Average
2490	52.8	59.3	74	-21.2	27.2	3.62	37.32	100	91	Peak
4824	42.15	58.47	54	-11.85	30.99	5.77	53.08	108	184	Average
4824	51.49	67.81	74	-22.51	30.99	5.77	53.08	108	184	Peak
9648	49.82	53.85	54	-4.18	38.32	7.93	50.28	100	229	Average
9648	60.11	64.14	74	-13.89	38.32	7.93	50.28	100	229	Peak
14472	52.6	52.18	54	-1.4	42.03	10.08	51.69	100	247	Average
14472	67.27	66.85	74	-6.73	42.03	10.08	51.69	100	247	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 2412MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2378	41.03	48.15	54	-12.97	26.86	3.52	37.5	141	234	Average
2378	55.06	62.18	74	-18.94	26.86	3.52	37.5	141	234	Peak
2437	95.68	102.52			27.06	3.56	37.46	141	234	Average
2437	105.16	112			27.06	3.56	37.46	141	234	Peak
2498	38.39	44.82	54	-15.61	27.2	3.62	37.25	141	234	Average
2498	53.91	60.34	74	-20.09	27.2	3.62	37.25	141	234	Peak
4874	35.5	51.69	54	-18.5	31.06	5.8	53.05	200	0	Average
4874	47.13	63.32	74	-26.87	31.06	5.8	53.05	200	0	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	37.87	44.94	54	-16.13	26.91	3.54	37.52	100	302	Average
2390	52.69	59.76	74	-21.31	26.91	3.54	37.52	100	302	Peak
2437	92.24	99.08			27.06	3.56	37.46	100	302	Average
2437	101.92	108.76			27.06	3.56	37.46	100	302	Peak
2484	36.04	42.61	54	-17.96	27.15	3.6	37.32	100	302	Average
2484	52.73	59.3	74	-21.27	27.15	3.6	37.32	100	302	Peak
4874	36.49	52.68	54	-17.51	31.06	5.8	53.05	100	191	Average
4874	47.69	63.88	74	-26.31	31.06	5.8	53.05	100	191	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 2437MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2388	39.34	46.39	54	-14.66	26.91	3.54	37.5	100	28	Average
2388	54.16	61.21	74	-19.84	26.91	3.54	37.5	100	28	Peak
2462	94.38	101.09			27.1	3.58	37.39	100	28	Average
2462	105.18	111.89			27.1	3.58	37.39	100	28	Peak
2484	46.3	52.87	54	-7.7	27.15	3.6	37.32	100	28	Average
2484	65.91	72.48	74	-8.09	27.15	3.6	37.32	100	28	Peak
14772	50.91	52.41	54	-3.09	41.14	10.23	52.87	108	307	Average
14772	62.38	63.88	74	-11.62	41.14	10.23	52.87	108	307	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2388	38.68	45.73	54	-15.32	26.91	3.54	37.5	121	89	Average
2388	54.07	61.12	74	-19.93	26.91	3.54	37.5	121	89	Peak
2462	94.83	101.54			27.1	3.58	37.39	121	89	Average
2462	105.53	112.24			27.1	3.58	37.39	121	89	Peak
2484	44.9	51.47	54	-9.1	27.15	3.6	37.32	121	89	Average
2484	64.7	71.27	74	-9.3	27.15	3.6	37.32	121	89	Peak
4924	37.19	53.27	54	-16.81	31.12	5.83	53.03	103	229	Average
4924	48.51	64.59	74	-25.49	31.12	5.83	53.03	103	229	Peak
14772	51.58	53.08	54	-2.42	41.14	10.23	52.87	112	252	Average
14772	63.12	64.62	74	-10.88	41.14	10.23	52.87	112	252	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 2462MHz: Fundamental frequency.



A D T

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	50.65	57.72	54	-3.35	26.91	3.54	37.52	100	316	Average
2390	68.64	75.71	74	-5.36	26.91	3.54	37.52	100	316	Peak
2422	89.63	96.52			27.01	3.56	37.46	100	316	Average
2422	100.23	107.12			27.01	3.56	37.46	100	316	Peak
2500	36.4	42.83	54	-17.6	27.2	3.62	37.25	100	316	Average
2500	57.23	63.66	74	-16.77	27.2	3.62	37.25	100	316	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2384	51.36	58.48	54	-2.64	26.86	3.52	37.5	100	91	Average
2384	71.25	78.37	74	-2.75	26.86	3.52	37.5	100	91	Peak
2422	90.75	97.64			27.01	3.56	37.46	100	91	Average
2422	101.98	108.87			27.01	3.56	37.46	100	91	Peak
2500	36.71	43.14	54	-17.29	27.2	3.62	37.25	100	91	Average
2500	57.61	64.04	74	-16.39	27.2	3.62	37.25	100	91	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 2422MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2388	43.24	50.29	54	-10.76	26.91	3.54	37.5	100	330	Average
2388	61.79	68.84	74	-12.21	26.91	3.54	37.5	100	330	Peak
2437	87.6	94.44			27.06	3.56	37.46	100	330	Average
2437	98.52	105.36			27.06	3.56	37.46	100	330	Peak
2486	36.04	42.61	54	-17.96	27.15	3.6	37.32	100	330	Average
2486	56.14	62.71	74	-17.86	27.15	3.6	37.32	100	330	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	43.43	50.5	54	-10.57	26.91	3.54	37.52	100	90	Average
2390	63.81	70.88	74	-10.19	26.91	3.54	37.52	100	90	Peak
2437	88.08	94.92			27.06	3.56	37.46	100	90	Average
2437	98.6	105.44			27.06	3.56	37.46	100	90	Peak
2484	35.14	41.71	54	-18.86	27.15	3.6	37.32	100	90	Average
2484	57.34	63.91	74	-16.66	27.15	3.6	37.32	100	90	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 2437MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	38.51	45.58	54	-15.49	26.91	3.54	37.52	100	331	Average
2390	55.84	62.91	74	-18.16	26.91	3.54	37.52	100	331	Peak
2452	87.64	94.39			27.06	3.58	37.39	100	331	Average
2452	98.21	104.96			27.06	3.58	37.39	100	331	Peak
2484	39.61	46.18	54	-14.39	27.15	3.6	37.32	100	331	Average
2484	61.22	67.79	74	-12.78	27.15	3.6	37.32	100	331	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	36.17	43.24	54	-17.83	26.91	3.54	37.52	123	90	Average
2390	56.07	63.14	74	-17.93	26.91	3.54	37.52	123	90	Peak
2452	87.04	93.79			27.06	3.58	37.39	123	90	Average
2452	97.32	104.07			27.06	3.58	37.39	123	90	Peak
2490	38.8	45.3	54	-15.2	27.2	3.62	37.32	123	90	Average
2490	60.54	67.04	74	-13.46	27.2	3.62	37.32	123	90	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 2452MHz: Fundamental frequency.



A D T

BELOW 1GHz WORST-CASE DATA:

MODE C

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) QP
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
71.31	13.28	33.84	40	-26.72	10.29	0.91	31.76	100	106	Peak
167.97	15.21	33.58	43.5	-28.29	11.96	1.43	31.76	100	113	Peak
281.1	17.07	34.51	46	-28.93	12.4	1.97	31.81	100	191	Peak
307.7	24.3	41.01	46	-21.7	13.13	2.08	31.92	100	229	Peak
694.1	25.03	32.69	46	-20.97	20.75	3.41	31.82	100	176	Peak
986	29.33	32.95	54	-24.67	23.99	4.14	31.75	100	291	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
69.96	13.33	33.48	40	-26.67	10.77	0.9	31.82	100	310	Peak
182.01	13.28	32.98	43.5	-30.22	10.6	1.51	31.81	100	233	Peak
279.48	15.5	33.04	46	-30.5	12.34	1.96	31.84	100	167	Peak
344.1	22.26	37.87	46	-23.74	14.01	2.21	31.83	100	186	Peak
658.4	24.6	32.98	46	-21.4	20.31	3.27	31.96	100	322	Peak
893.6	28.32	32.95	46	-17.68	23.42	3.95	32	100	101	Peak

REMARKS:

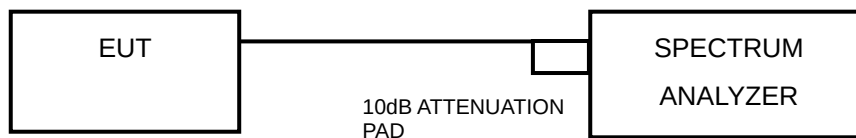
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value

4.2 6dB BANDWIDTH MEASUREMENT

4.2.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.2.2 TEST SETUP



4.2.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.2.4 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

4.2.5 DEVIATION FROM TEST STANDARD

No deviation.

4.2.6 EUT OPERATING CONDITIONS

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

4.2.7 TEST RESULTS

MODE A

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	8.07	0.5	PASS
6	2437	8.07	0.5	PASS
11	2462	8.06	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.21	0.5	PASS
6	2437	15.74	0.5	PASS
11	2462	15.69	0.5	PASS

MODE B

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	8.09	0.5	PASS
6	2437	8.58	0.5	PASS
11	2462	8.17	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.57	0.5	PASS
6	2437	15.18	0.5	PASS
11	2462	15.21	0.5	PASS

MODE C

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	15.55	16.30	0.5	PASS
6	2437	15.80	16.34	0.5	PASS
11	2462	15.50	16.56	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.37	36.38	0.5	PASS
6	2437	36.44	36.19	0.5	PASS
9	2452	36.45	36.37	0.5	PASS

4.3 CONDUCTED OUTPUT POWER

4.3.1 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 v01r02 Method of conducted output power measurement on IEEE 802.11 devices,

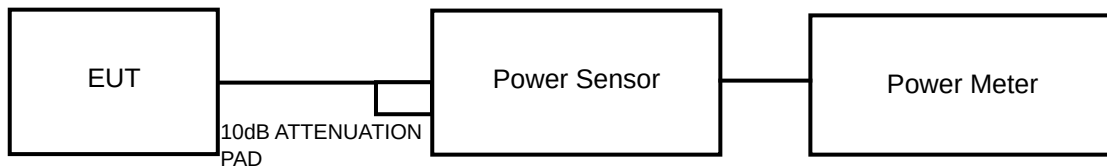
Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = $5 \log(NANT/NSS)$ dB or 3 dB, whichever is less for 20-MHz channel widths with $NANT \geq 5$.

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

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 PROCEDURES

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



A D T

4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

4.3.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.



A D T

4.3.7 TEST RESULTS

FOR PEAK POWER

MODE A

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	68.391	18.35	30	PASS
6	2437	61.376	17.88	30	PASS
11	2462	41.305	16.16	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	181.552	22.59	30	PASS
6	2437	171.791	22.35	30	PASS
11	2462	165.196	22.18	30	PASS

MODE B

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	67.764	18.31	30	PASS
6	2437	65.766	18.18	30	PASS
11	2462	43.752	16.41	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	179.473	22.54	30	PASS
6	2437	180.717	22.57	30	PASS
11	2462	176.604	22.47	30	PASS



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MODE C**802.11n (20MHz)**

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	21.91	22.35	327.030	25.15	30	PASS
6	2437	21.97	22.25	325.279	25.12	30	PASS
11	2462	21.29	21.54	277.147	24.43	30	PASS

802.11n (40MHz)

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	18.26	18.96	145.693	21.63	30	PASS
6	2437	18.81	20.13	179.071	22.53	30	PASS
9	2452	18.10	19.14	146.601	21.66	30	PASS

FOR AVERAGE POWER**MODE A****802.11b**

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	26.730	14.27
6	2437	24.717	13.93
11	2462	16.444	12.16

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	22.131	13.45
6	2437	22.336	13.49
11	2462	22.284	13.48

**MODE B****802.11b**

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	28.576	14.56
6	2437	27.542	14.40
11	2462	17.865	12.52

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	22.646	13.55
6	2437	23.227	13.66
11	2462	22.594	13.54

MODE C**802.11n (20MHz)**

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	12.98	13.42	41.879	16.22
6	2437	13.00	13.33	41.495	16.18
11	2462	12.29	12.48	34.674	15.40

802.11n (40MHz)

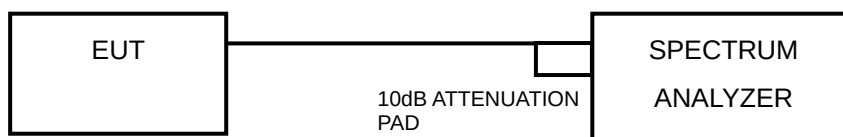
CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	8.59	9.33	15.812	11.99
6	2437	9.30	10.43	19.543	12.91
9	2452	8.44	9.16	15.241	11.83

4.4 POWER SPECTRAL DENSITY MEASUREMENT

4.4.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

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 PROCEDURE

- Set the RBW = 3 kHz, VBW = 10 kHz, Detector = peak.
- 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.

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITION

Same as Item 4.3.6

**A D T**

4.4.7 TEST RESULTS

MODE A

802.11b

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-7.84	8	PASS
6	2437	-8.84	8	PASS
11	2462	-9.99	8	PASS

802.11g

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-11.63	8	PASS
6	2437	-12.12	8	PASS
11	2462	-11.18	8	PASS

MODE B

802.11b

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-9.08	8	PASS
6	2437	-9.04	8	PASS
11	2462	-9.25	8	PASS

802.11g

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-11.90	8	PASS
6	2437	-11.39	8	PASS
11	2462	-11.10	8	PASS

MODE C

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-12.16	3.01	-9.15	8	PASS
	6	2437	-12.32	3.01	-9.31	8	PASS
	11	2462	-12.02	3.01	-9.01	8	PASS
1	1	2412	-11.96	3.01	-8.95	8	PASS
	6	2437	-12.07	3.01	-9.06	8	PASS
	11	2462	-11.93	3.01	-8.92	8	PASS

NOTE: Directional gain = 1.5dBi + 10log(2) = 4.51dBi < 6dBi , so the limit no need to reduced.

802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-20.44	3.01	-17.43	8	PASS
	6	2437	-18.22	3.01	-15.21	8	PASS
	9	2452	-19.24	3.01	-16.23	8	PASS
1	3	2422	-21.60	3.01	-18.59	8	PASS
	6	2437	-20.73	3.01	-17.72	8	PASS
	9	2452	-21.05	3.01	-18.04	8	PASS

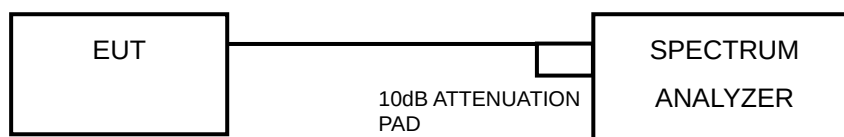
NOTE: Directional gain = 1.5dBi + 10log(2) = 4.51dBi < 6dBi , so the limit no need to reduced.

4.5 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.5.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

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

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Set span to encompass the spectrum to be examined.
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

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

The conducted emission test is performed on each TX port of operating mode without summing or adding $10\log(N)$ since the limit is relative emission limit.

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

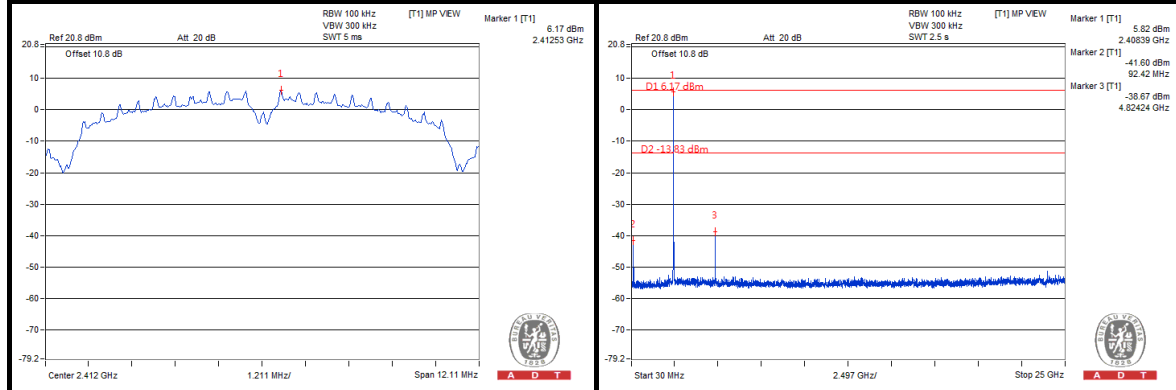


A D T

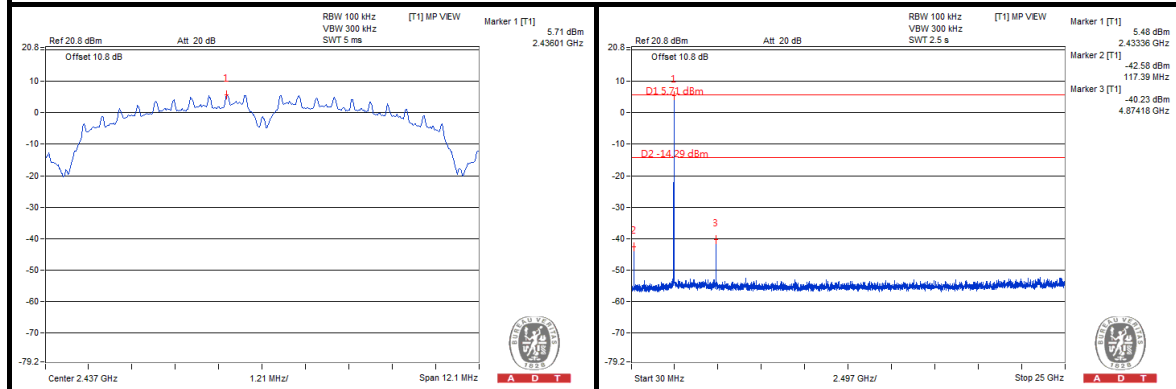
MODE A

802.11b

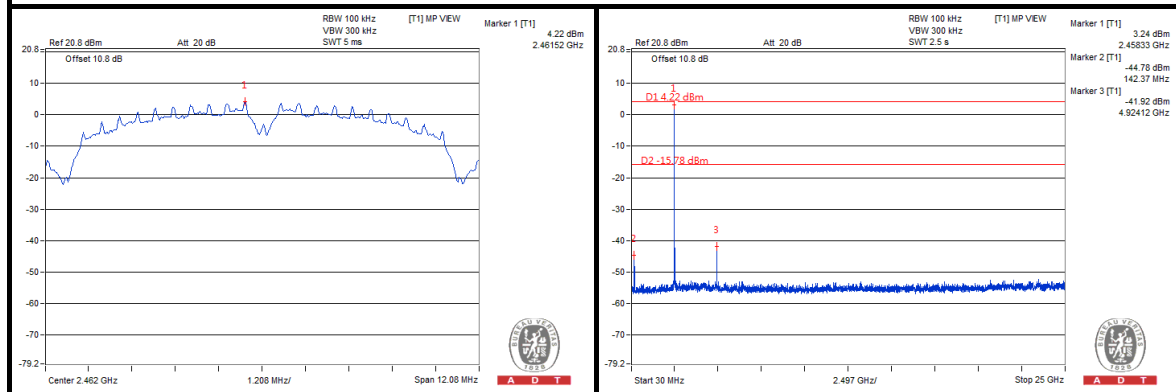
CH 1



CH 6



CH 11

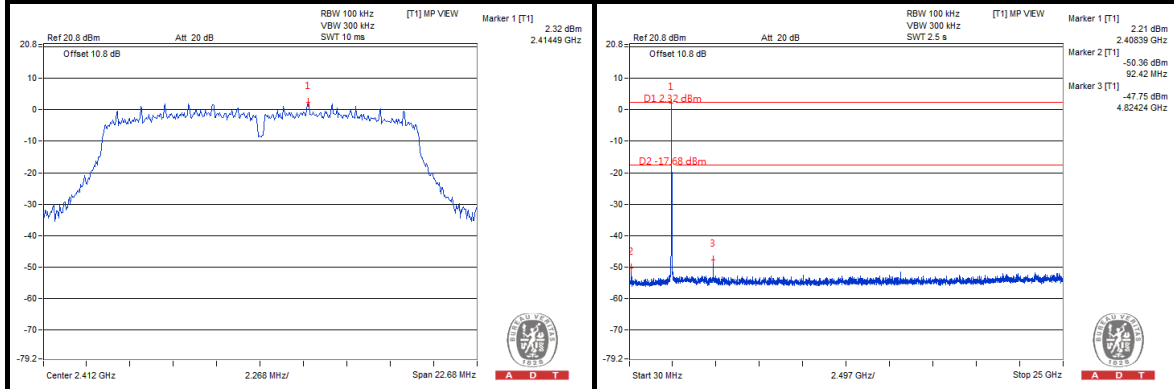




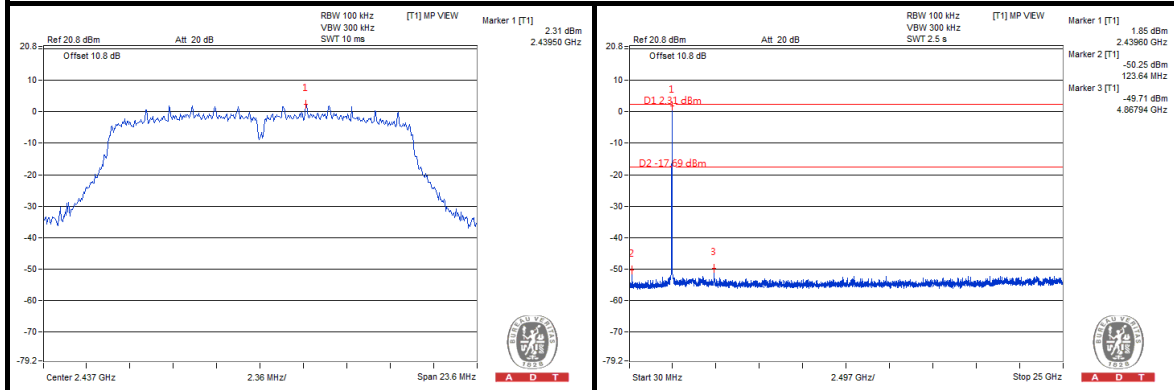
A D T

802.11g

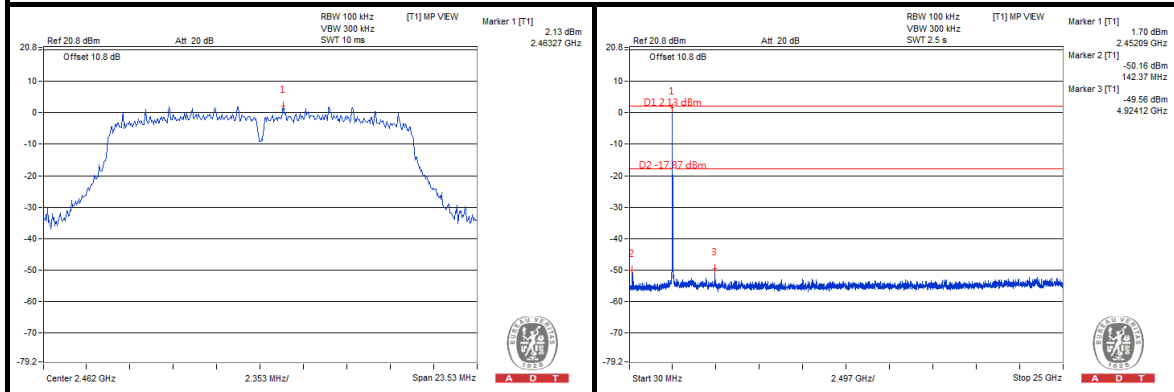
CH 1



CH 6



CH 11



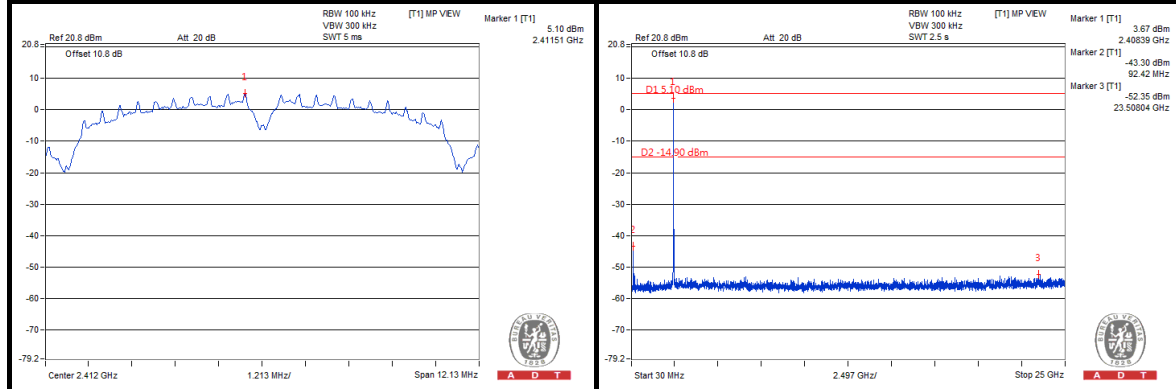


A D T

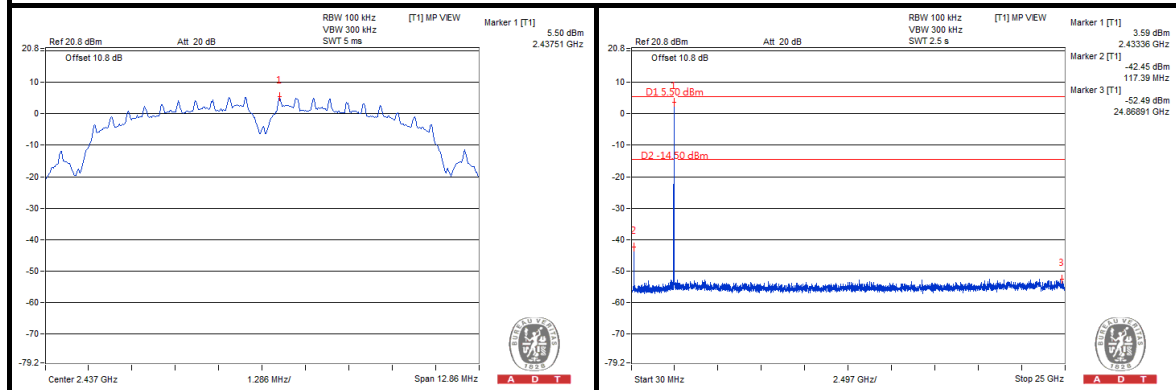
MODE B

802.11b

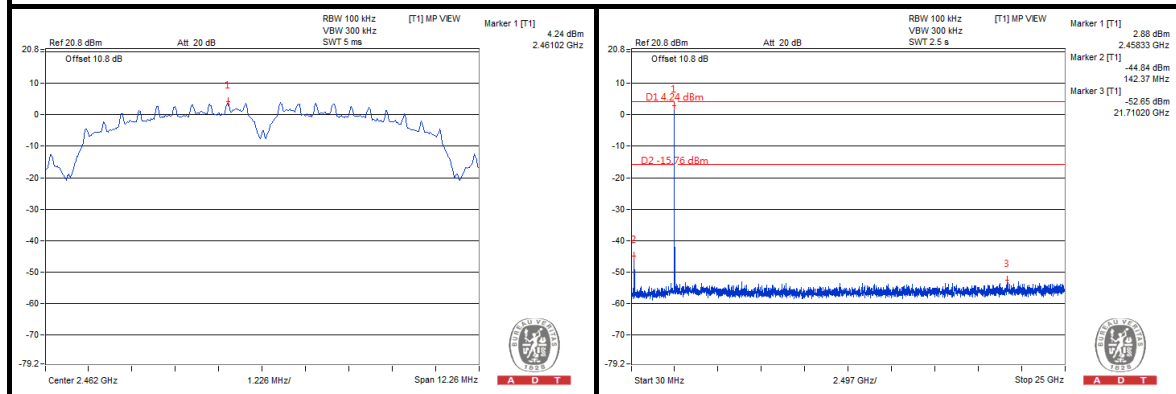
CH 1



CH 6



CH 11

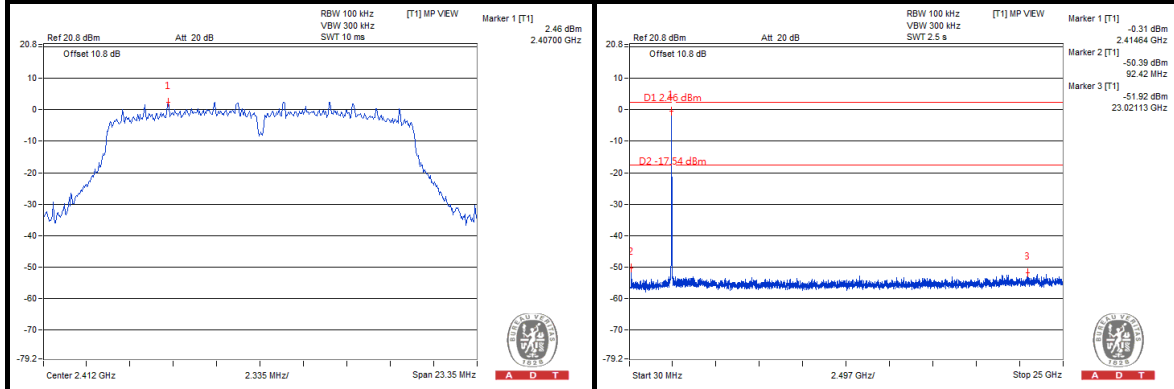




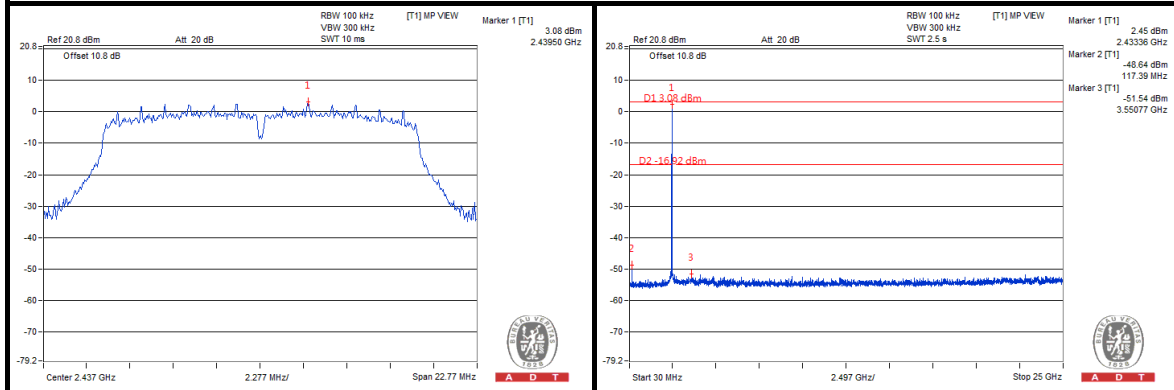
A D T

802.11g

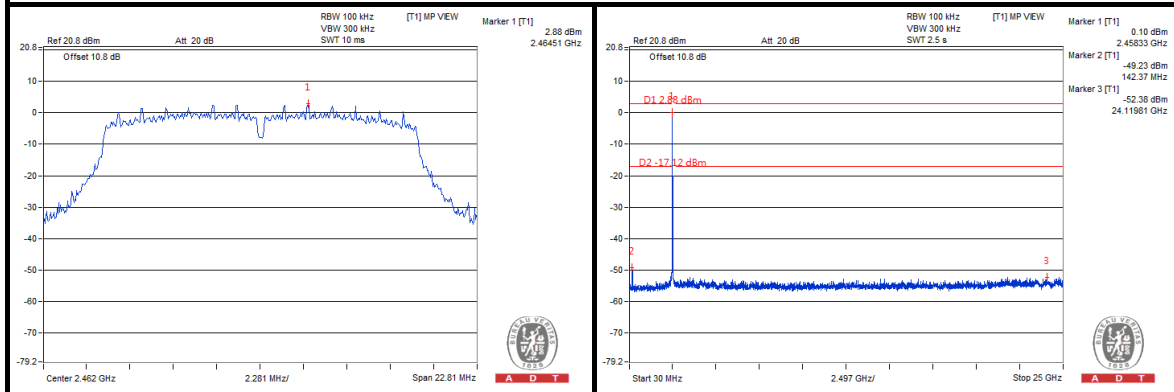
CH 1



CH 6



CH 11



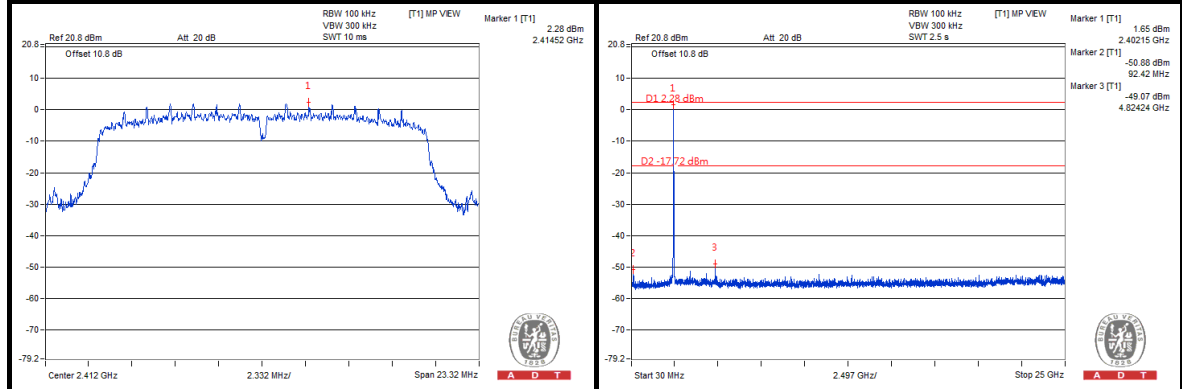


A D T

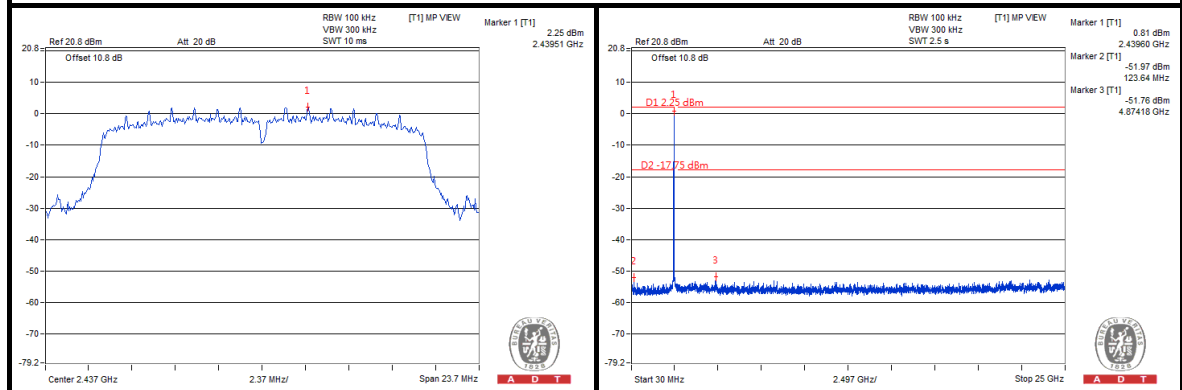
MODE C
802.11n (20MHz)

CHAIN 0

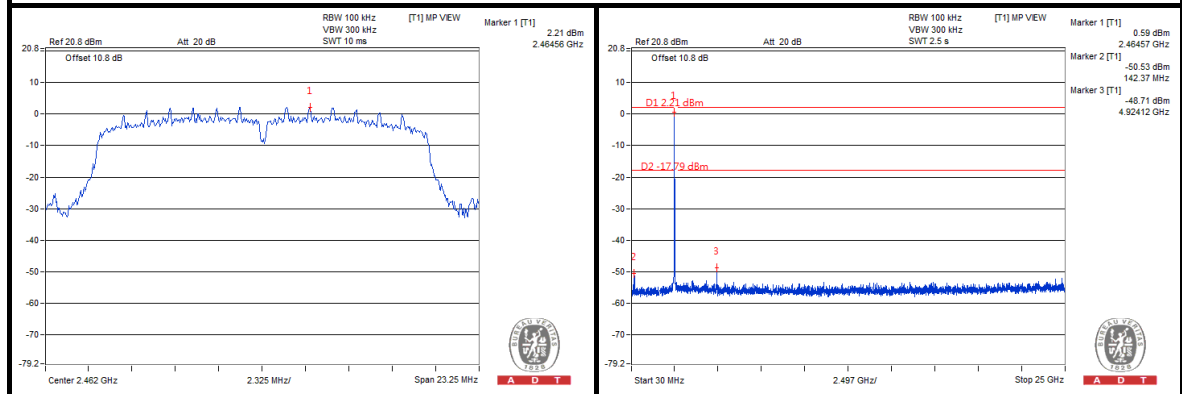
CH 1



CH 6



CH 11

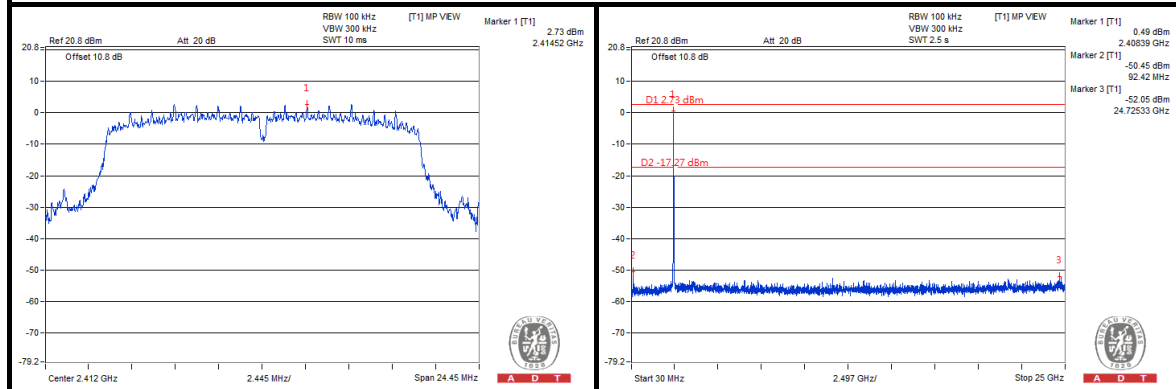




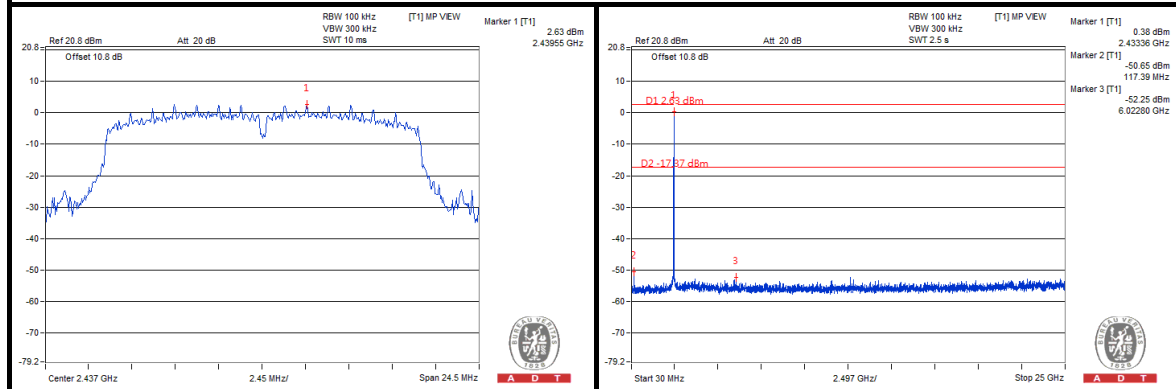
A D T

CHAIN 1

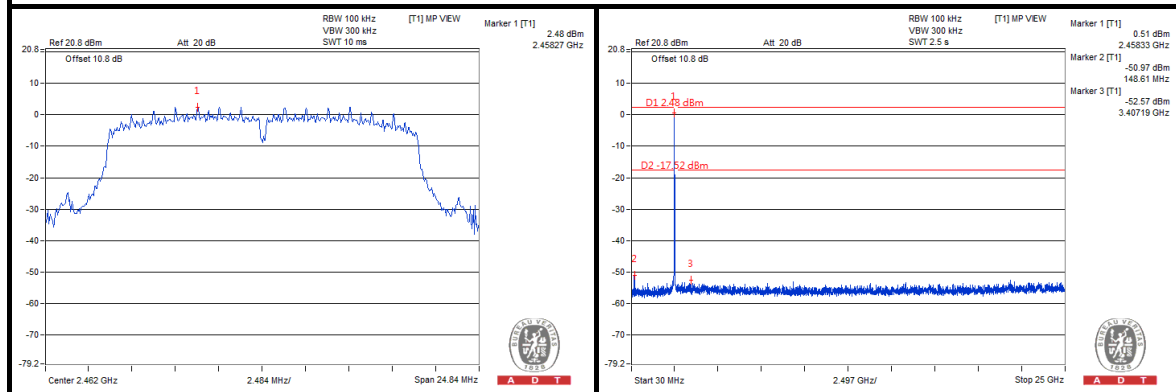
CH 1



CH 6



CH 11

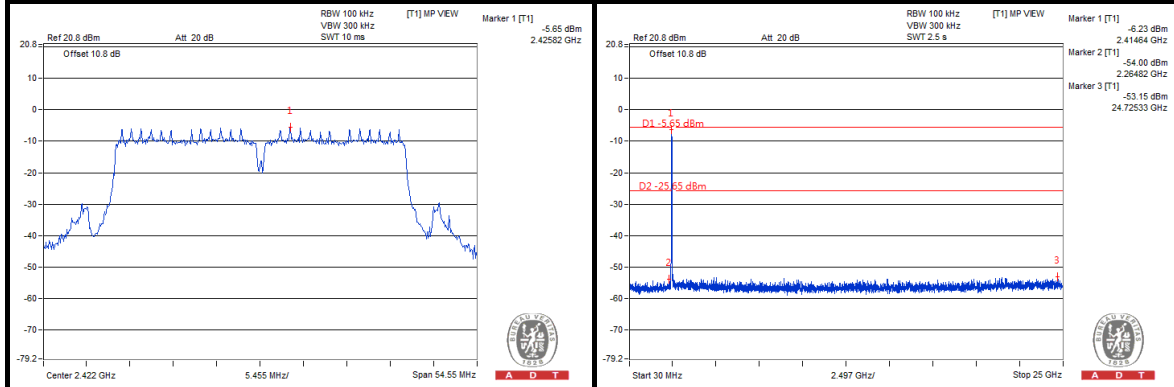




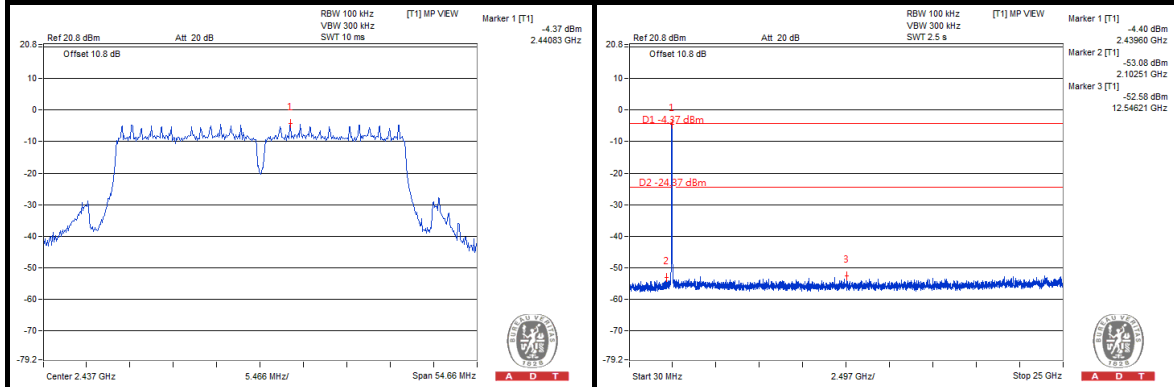
A D T

802.11n (40MHz) CHAIN 0

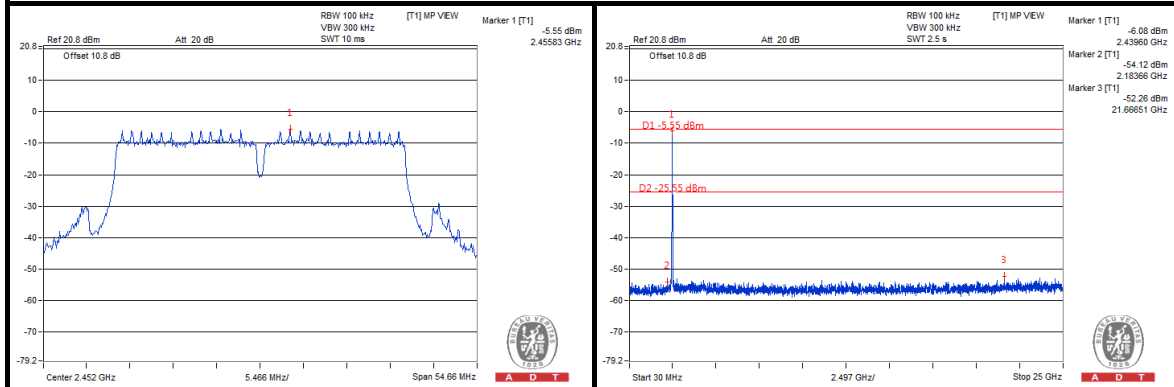
CH 3



CH 6



CH 9

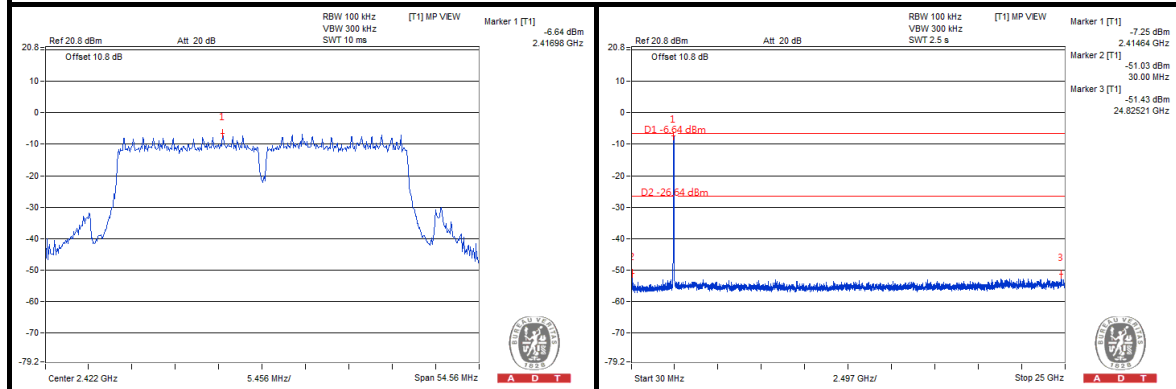




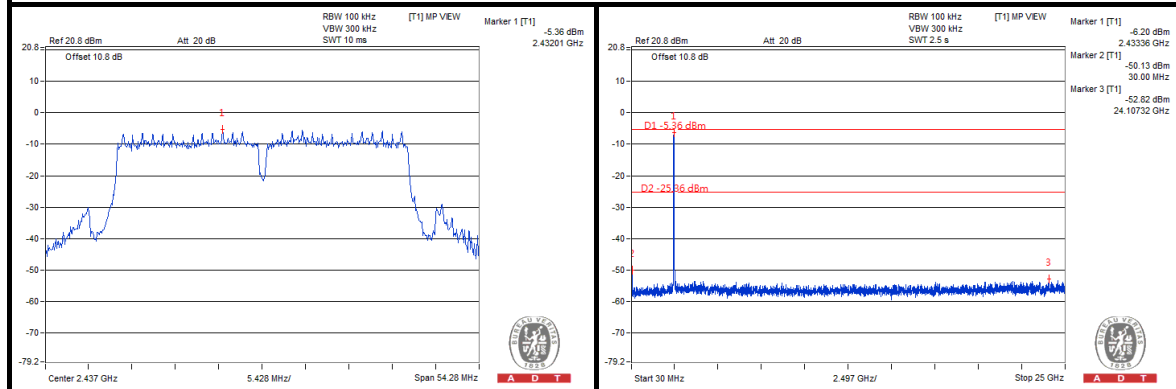
A D T

CHAIN 1

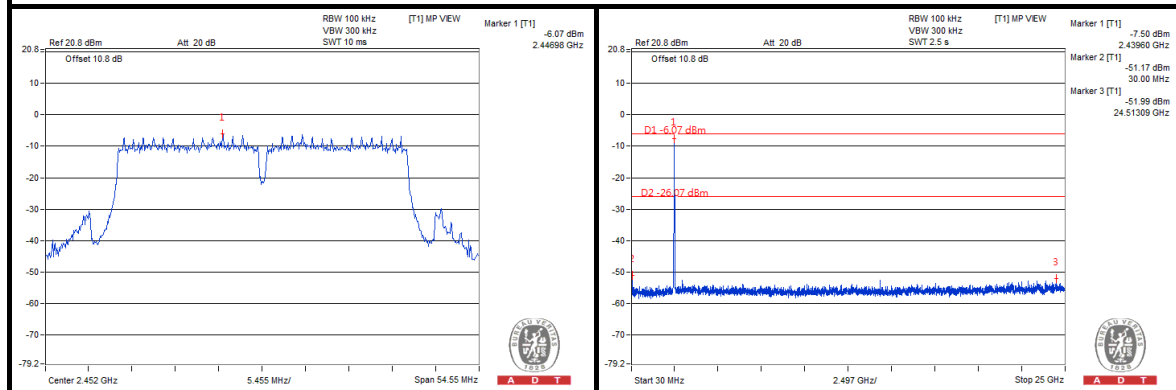
CH 3



CH 6



CH 9



5. TEST TYPES AND RESULTS (FOR 5.0GHz BAND)

5.1 RADIATED EMISSION MEASUREMENT

5.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



A D T

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.

**A D T**

5.1.7 TEST RESULTS

ABOVE 1GHz WORST-CASE DATA :

MODE A

802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	63.45	63.33	80.53	-17.08	31.96	5.59	37.43	100	131	Average
5725	79.12	79	89.99	-10.87	31.96	5.59	37.43	100	131	Peak
5745	100.53	100.41			31.99	5.6	37.47	100	131	Average
5745	109.99	109.87			31.99	5.6	37.47	100	131	Peak
5850	38.53	38.23	80.53	-42	32.15	5.66	37.51	100	131	Average
5850	59.65	59.35	89.99	-30.34	32.15	5.66	37.51	100	131	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	62.31	62.19	80.04	-17.73	31.96	5.59	37.43	100	190	Average
5725	77.51	77.39	89.01	-11.5	31.96	5.59	37.43	100	190	Peak
5745	100.04	99.92			31.99	5.6	37.47	100	190	Average
5745	109.01	108.89			31.99	5.6	37.47	100	190	Peak
5850	38.52	38.22	80.04	-41.52	32.15	5.66	37.51	100	190	Average
5850	59.23	58.93	89.01	-29.78	32.15	5.66	37.51	100	190	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
2. 5745MHz: Fundamental frequency.
3. 5725MHz & 5850MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	43.63	43.51	80.61	-36.98	31.96	5.59	37.43	123	163	Average
5725	59.48	59.36	90.23	-30.75	31.96	5.59	37.43	123	163	Peak
5785	100.61	100.49			32.04	5.62	37.54	123	163	Average
5785	110.23	110.11			32.04	5.62	37.54	123	163	Peak
5850	40.31	40.01	80.61	-40.3	32.15	5.66	37.51	123	163	Average
5850	59.34	59.04	90.23	-30.89	32.15	5.66	37.51	123	163	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	41.53	41.41	77.78	-36.25	31.96	5.59	37.43	100	196	Average
5725	59.1	58.98	87.06	-27.96	31.96	5.59	37.43	100	196	Peak
5785	97.78	97.66			32.04	5.62	37.54	100	196	Average
5785	107.06	106.94			32.04	5.62	37.54	100	196	Peak
5850	39.29	38.99	77.78	-38.49	32.15	5.66	37.51	100	196	Average
5850	60.36	60.06	87.06	-26.7	32.15	5.66	37.51	100	196	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 5785MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	39.47	39.35	79.45	-39.98	31.96	5.59	37.43	123	232	Average
5725	59.24	59.12	88.73	-29.49	31.96	5.59	37.43	123	232	Peak
5825	99.45	99.22			32.12	5.64	37.53	123	232	Average
5825	108.73	108.5			32.12	5.64	37.53	123	232	Peak
5850	58.16	57.86	79.45	-21.29	32.15	5.66	37.51	123	232	Average
5850	74.48	74.18	88.73	-14.25	32.15	5.66	37.51	123	232	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	38.86	38.74	76.88	-38.02	31.96	5.59	37.43	109	173	Average
5725	59.37	59.25	86.33	-26.96	31.96	5.59	37.43	109	173	Peak
5825	96.88	96.65			32.12	5.64	37.53	109	173	Average
5825	106.33	106.1			32.12	5.64	37.53	109	173	Peak
5850	55.18	54.88	76.88	-21.7	32.15	5.66	37.51	109	173	Average
5850	70.39	70.09	86.33	-15.94	32.15	5.66	37.51	109	173	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
2. 5825MHz: Fundamental frequency.
3. 5725MHz & 5850MHz: Out of restricted band



A D T

MODE C

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	66.36	66.24	79.87	-13.51	31.96	5.59	37.43	100	133	Average
5725	79.43	79.31	88.97	-9.54	31.96	5.59	37.43	100	133	Peak
5745	99.87	99.75			31.99	5.6	37.47	100	133	Average
5745	108.97	108.85			31.99	5.6	37.47	100	133	Peak
5850	38.89	38.59	79.87	-40.98	32.15	5.66	37.51	100	133	Average
5850	59.43	59.13	88.97	-29.54	32.15	5.66	37.51	100	133	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	66.47	66.35	80.72	-14.25	31.96	5.59	37.43	100	214	Average
5725	81.41	81.29	90.28	-8.87	31.96	5.59	37.43	100	214	Peak
5745	100.72	100.6			31.99	5.6	37.47	100	214	Average
5745	110.28	110.16			31.99	5.6	37.47	100	214	Peak
5850	39.11	38.81	80.72	-41.61	32.15	5.66	37.51	100	214	Average
5850	59.38	59.08	90.28	-30.9	32.15	5.66	37.51	100	214	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 5745MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	44.32	44.2	80.21	-35.89	31.96	5.59	37.43	104	131	Average
5725	61.16	61.04	89.61	-28.45	31.96	5.59	37.43	104	131	Peak
5785	100.21	100.09			32.04	5.62	37.54	104	131	Average
5785	109.61	109.49			32.04	5.62	37.54	104	131	Peak
5850	40.99	40.69	80.21	-39.22	32.15	5.66	37.51	104	131	Average
5850	58.91	58.61	89.61	-30.7	32.15	5.66	37.51	104	131	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	44.61	44.49	81.11	-36.5	31.96	5.59	37.43	101	191	Average
5725	60.21	60.09	90.2	-29.99	31.96	5.59	37.43	101	191	Peak
5785	101.11	100.99			32.04	5.62	37.54	101	191	Average
5785	110.2	110.08			32.04	5.62	37.54	101	191	Peak
5850	42.2	41.9	81.11	-38.91	32.15	5.66	37.51	101	191	Average
5850	60.49	60.19	90.2	-29.71	32.15	5.66	37.51	101	191	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
2. 5785MHz: Fundamental frequency.
3. 5725MHz & 5850MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	40.01	39.89	78.19	-38.18	31.96	5.59	37.43	100	127	Average
5725	60.87	60.75	87.8	-26.93	31.96	5.59	37.43	100	127	Peak
5825	98.19	97.96			32.12	5.64	37.53	100	127	Average
5825	107.8	107.57			32.12	5.64	37.53	100	127	Peak
5850	57.27	56.97	78.19	-20.92	32.15	5.66	37.51	100	127	Average
5850	71.65	71.35	87.8	-16.15	32.15	5.66	37.51	100	127	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	39.86	39.74	79.12	-39.26	31.96	5.59	37.43	100	198	Average
5725	59.19	59.07	88.92	-29.73	31.96	5.59	37.43	100	198	Peak
5825	99.12	98.89			32.12	5.64	37.53	100	198	Average
5825	108.92	108.69			32.12	5.64	37.53	100	198	Peak
5850	58.6	58.3	79.12	-20.52	32.15	5.66	37.51	100	198	Average
5850	72.88	72.58	88.92	-16.04	32.15	5.66	37.51	100	198	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 5825MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band



A D T

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	72.75	72.63	76.97	-4.22	31.96	5.59	37.43	113	127	Average
5725	84.21	84.09	87.4	-3.19	31.96	5.59	37.43	113	127	Peak
5755	96.97	96.83			32.01	5.6	37.47	113	127	Average
5755	107.4	107.26			32.01	5.6	37.47	113	127	Peak
5850	43.75	43.45	76.97	-33.22	32.15	5.66	37.51	113	127	Average
5850	59.87	59.57	87.4	-27.53	32.15	5.66	37.51	113	127	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	73.53	73.41	77.84	-4.31	31.96	5.59	37.43	102	195	Average
5725	84.91	84.79	88.72	-3.81	31.96	5.59	37.43	102	195	Peak
5755	97.84	97.7			32.01	5.6	37.47	102	195	Average
5755	108.72	108.58			32.01	5.6	37.47	102	195	Peak
5850	44.97	44.67	77.84	-32.87	32.15	5.66	37.51	102	195	Average
5850	60.69	60.39	88.72	-28.03	32.15	5.66	37.51	102	195	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 5755MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	56.03	55.91	76.77	-20.74	31.96	5.59	37.43	100	125	Average
5725	69.56	69.44	85.82	-16.26	31.96	5.59	37.43	100	125	Peak
5795	96.77	96.61			32.07	5.63	37.54	100	125	Average
5795	105.82	105.66			32.07	5.63	37.54	100	125	Peak
5850	54.86	54.56	76.77	-21.91	32.15	5.66	37.51	100	125	Average
5850	68.71	68.41	85.82	-17.11	32.15	5.66	37.51	100	125	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	54.59	54.47	77.05	-22.46	31.96	5.59	37.43	100	198	Average
5725	65.87	65.75	86.83	-20.96	31.96	5.59	37.43	100	198	Peak
5795	97.05	96.89			32.07	5.63	37.54	100	198	Average
5795	106.83	106.67			32.07	5.63	37.54	100	198	Peak
5850	55.6	55.3	77.05	-21.45	32.15	5.66	37.51	100	198	Average
5850	69.52	69.22	86.83	-17.31	32.15	5.66	37.51	100	198	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value
- 5795MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band



A D T

BELOW 1GHz WORST-CASE DATA :

MODE C

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) QP
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
49.71	23.79	41.23	40	-16.21	13.08	0.76	31.28	100	274	Peak
153.39	16.13	33.74	43.5	-27.37	12.72	1.36	31.69	100	252	Peak
264.09	23.4	41.56	46	-22.6	11.88	1.88	31.92	100	189	Peak
479.2	20.89	33.12	46	-25.11	16.91	2.71	31.85	100	194	Peak
682.2	24.95	32.83	46	-21.05	20.6	3.36	31.84	100	162	Peak
930	28.93	33.21	46	-17.07	23.68	4.03	31.99	100	43	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
50.25	24.28	41.85	40	-15.72	12.97	0.77	31.31	100	162	Peak
152.85	15.44	33.05	43.5	-28.06	12.72	1.36	31.69	100	179	Peak
253.29	14.75	33.24	46	-31.25	11.57	1.85	31.91	100	238	Peak
374.2	26.3	41.18	46	-19.7	14.73	2.32	31.93	100	143	Peak
612.9	24.38	33.6	46	-21.62	19.76	3.13	32.11	100	261	Peak
972	28.29	32.1	54	-25.71	23.91	4.12	31.84	100	239	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value

5.2 6dB BANDWIDTH MEASUREMENT

5.2.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

5.2.2 TEST SETUP

Same as item 4.3.2.

5.2.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.2.4 TEST PROCEDURE

Same as item 4.3.4.

5.2.5 DEVIATION FROM TEST STANDARD

No deviation.

5.2.6 EUT OPERATING CONDITIONS

Same as item 4.3.6.

5.2.7 TEST RESULTS

MODE A

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	15.55	0.5	PASS
157	5785	15.69	0.5	PASS
165	5825	15.34	0.5	PASS

MODE B

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	15.71	0.5	PASS
157	5785	15.19	0.5	PASS
165	5825	15.16	0.5	PASS

**A D T****MODE C****802.11n (20MHz)**

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	15.56	16.36	0.5	PASS
157	5785	15.34	16.33	0.5	PASS
165	5825	15.20	16.38	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.37	36.41	0.5	PASS
159	5795	36.41	36.44	0.5	PASS

5.3 CONDUCTED OUTPUT POWER

5.3.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 5725 –5850 MHz bands: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output v01r02 Method of conducted output power measurement on IEEE 802.11 devices,

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

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = $5 \log(NANT/NSS)$ dB or 3 dB, whichever is less for 20-MHz channel widths with $NANT \geq 5$.

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

5.3.2 TEST SETUP

Same as Item 4.4.2.

5.3.3 INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.3.4 TEST PROCEDURES

Same as Item 4.4.4.

5.3.5 DEVIATION FROM TEST STANDARD

No deviation.

5.3.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

5.3.7 TEST RESULTS

FOR PEAK POWER

MODE A

802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	120.781	20.82	30	PASS
157	5785	111.173	20.46	30	PASS
165	5825	100.925	20.04	30	PASS

MODE B

802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	81.658	19.12	30	PASS
157	5785	77.090	18.87	30	PASS
165	5825	76.033	18.81	30	PASS

MODE C

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	20.71	18.57	189.705	22.78	30	PASS
157	5785	20.05	18.38	170.023	22.31	30	PASS
165	5825	19.54	18.44	159.773	22.04	30	PASS

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	20.24	18.45	175.666	22.45	30	PASS
159	5795	19.88	18.36	165.824	22.20	30	PASS

FOR AVERAGE POWER

MODE A

802.11a

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
149	5745	40.458	16.07
157	5785	38.726	15.88
165	5825	35.975	15.56

MODE B

802.11a

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
149	5745	20.941	13.21
157	5785	18.493	12.67
165	5825	17.061	12.32

MODE C

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
149	5745	16.02	12.71	58.614	17.68
157	5785	15.49	12.33	52.481	17.20
165	5825	14.87	12.06	46.774	16.70

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
151	5755	16.02	13.15	60.674	17.83
159	5795	15.71	12.66	55.719	17.46

5.4 POWER SPECTRAL DENSITY MEASUREMENT

5.4.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.4.2 TEST SETUP

Same as item 4.5.2.

5.4.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.4.4 TEST PROCEDURE.

Same as item 4.5.4.

5.4.5 DEVIATION FROM TEST STANDARD

No deviation.

5.4.6 EUT OPERATING CONDITION

Same as item 4.3.6.



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5.4.7 TEST RESULTS

MODE A

802.11a

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-9.32	8	PASS
157	5785	-7.85	8	PASS
165	5825	-9.24	8	PASS

MODE B

802.11a

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-13.22	8	PASS
157	5785	-12.49	8	PASS
165	5825	-12.93	8	PASS

MODE C

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-8.47	3.01	-5.46	7.89	PASS
	157	5785	-10.09	3.01	-7.08	7.89	PASS
	165	5825	-10.08	3.01	-7.07	7.89	PASS
1	149	5745	-13.67	3.01	-10.66	7.89	PASS
	157	5785	-13.05	3.01	-10.04	7.89	PASS
	165	5825	-11.19	3.01	-8.18	7.89	PASS

NOTE: Directional gain = $3.1\text{dBi} + 10\log(2) = 6.11\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.11-6) = 7.89\text{dBm}$.

802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-13.03	3.01	-10.02	7.89	PASS
	159	5795	-13.12	3.01	-10.11	7.89	PASS
1	151	5755	-17.34	3.01	-14.33	7.89	PASS
	159	5795	-17.17	3.01	-14.16	7.89	PASS

NOTE: Directional gain = $3.1\text{dBi} + 10\log(2) = 6.11\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.11-6) = 7.89\text{dBm}$.

5.5 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

5.5.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

5.5.2 TEST SETUP

Same as Item 4.6.2

5.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.5.4 TEST PROCEDURE

Same as Item 4.6.4

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

The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

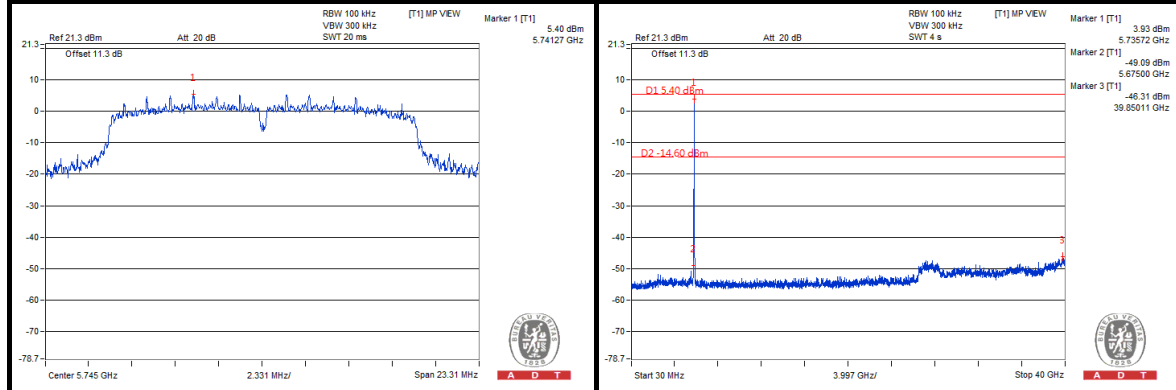


A D T

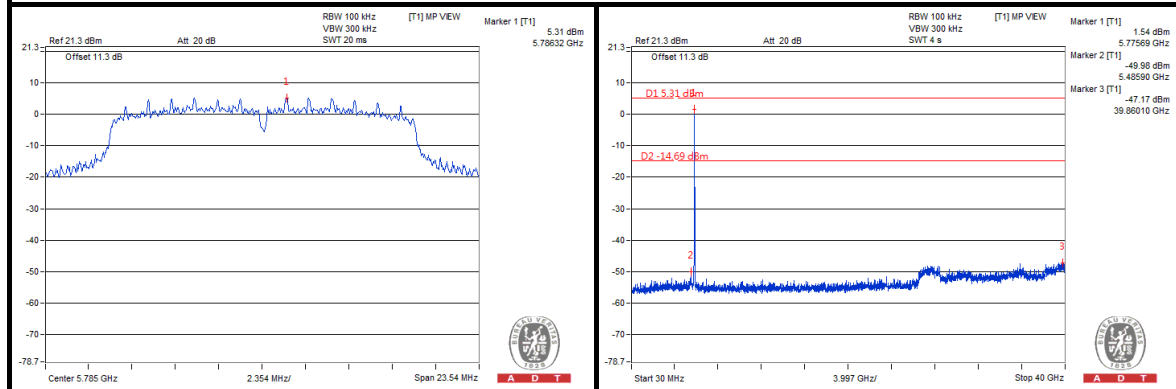
MODE A

802.11a

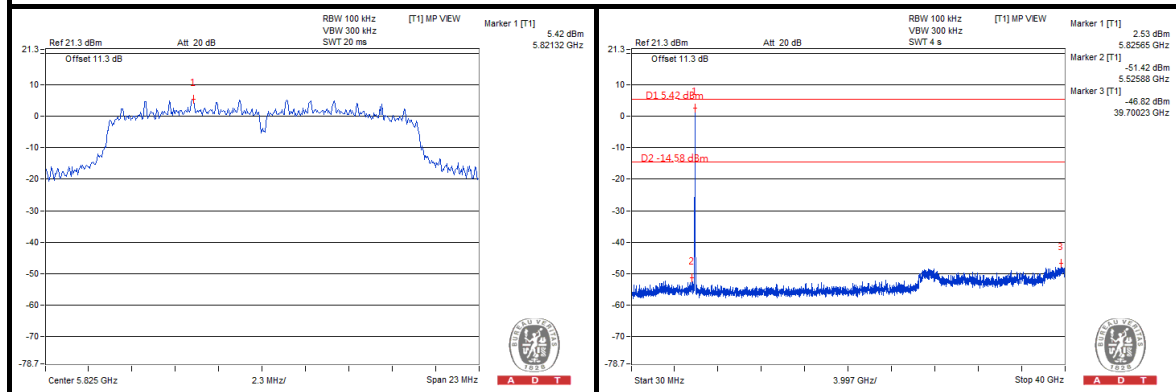
CH 149



CH 157



CH 165



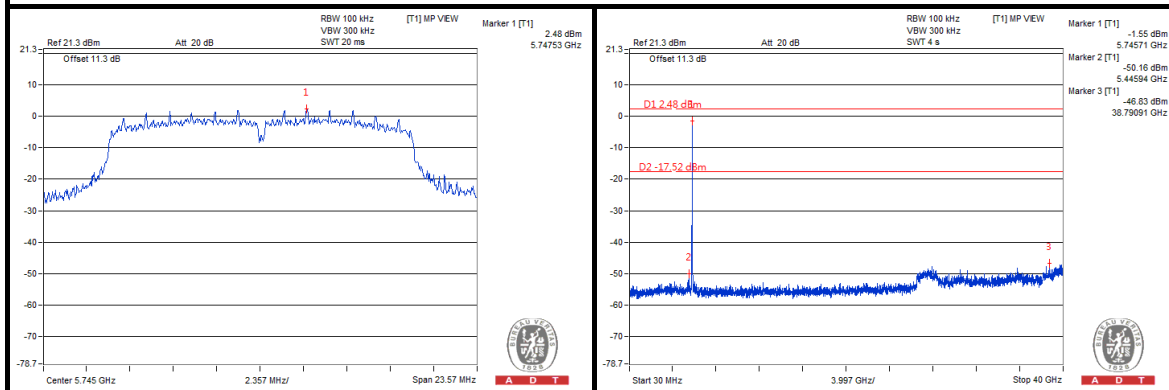


A D T

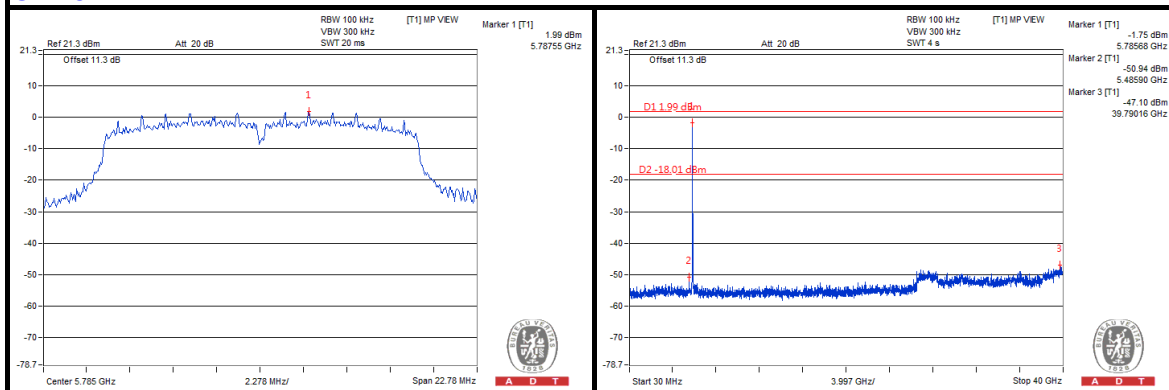
MODE B

802.11a

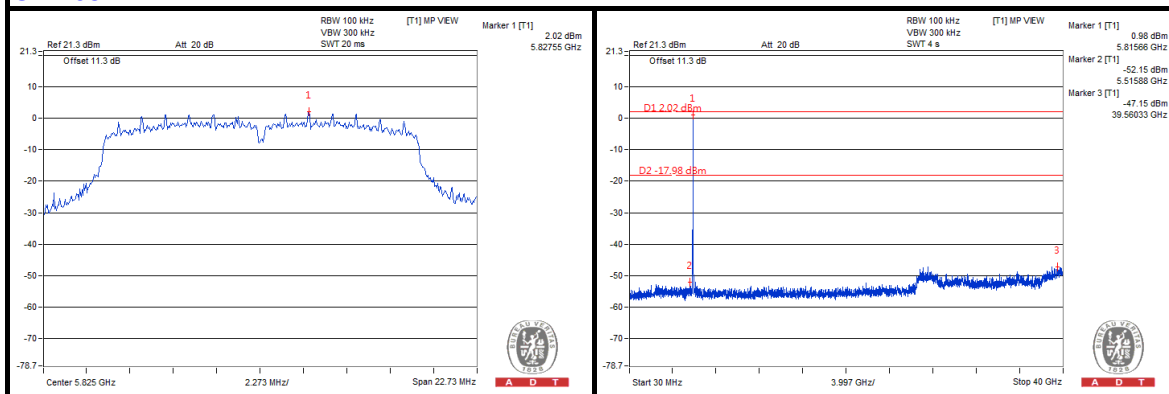
CH 149



CH 157



CH 165

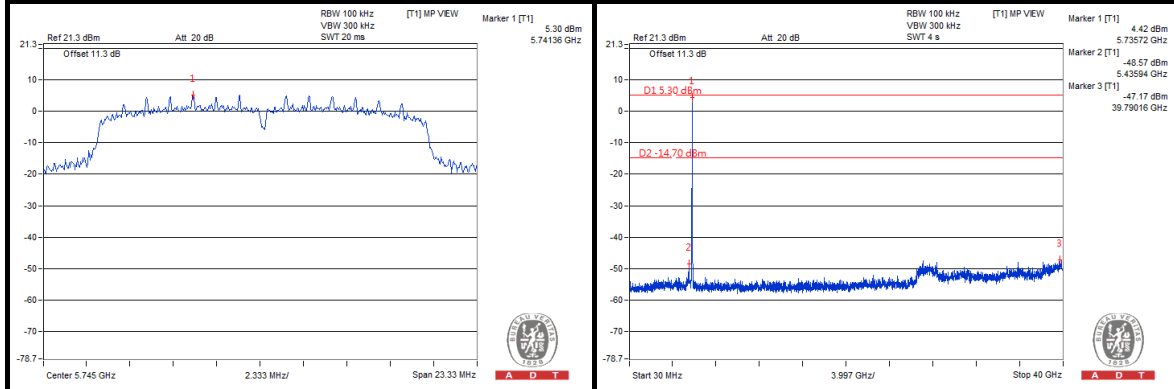




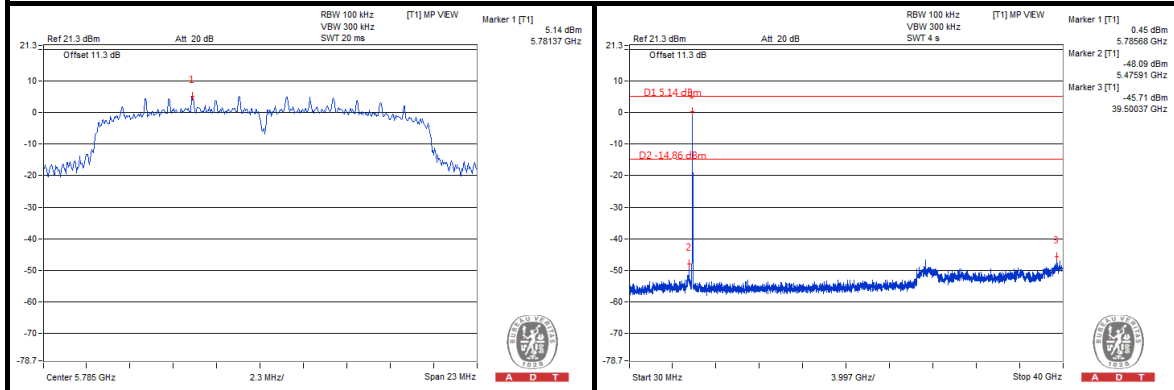
A D T

MODE C
802.11n (20MHz)
CHAIN 0

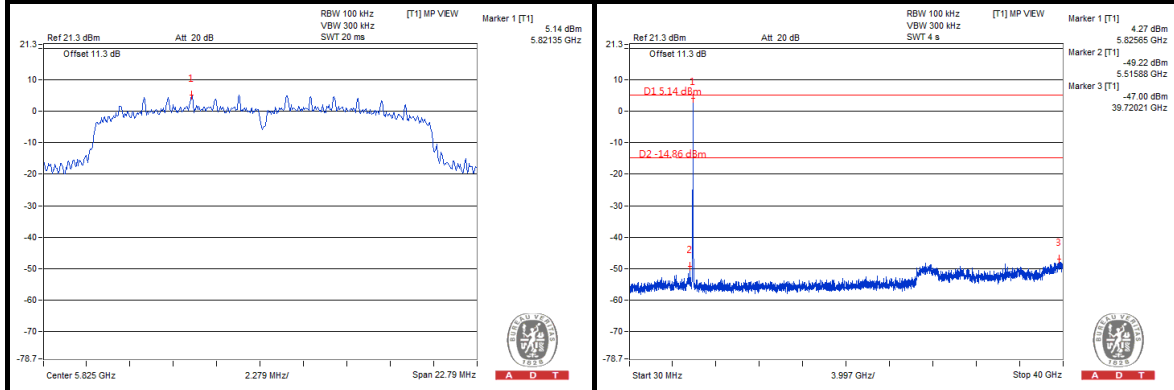
CH 149



CH 157



CH 165

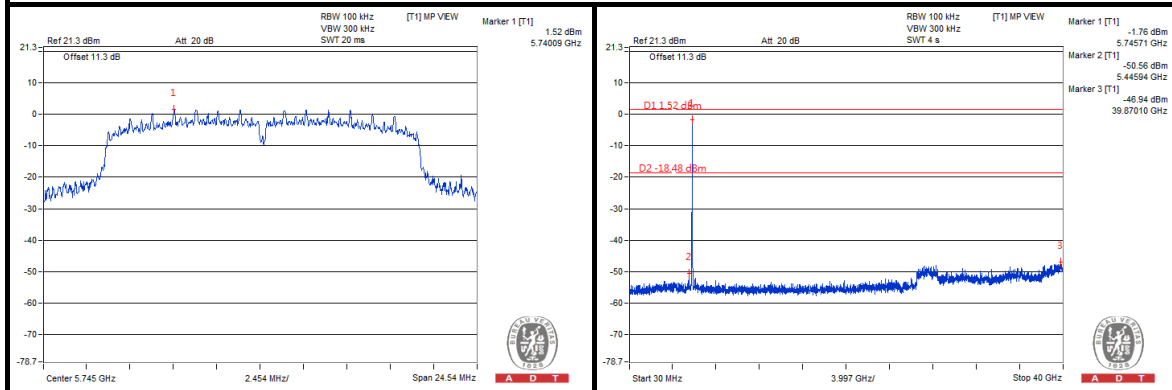




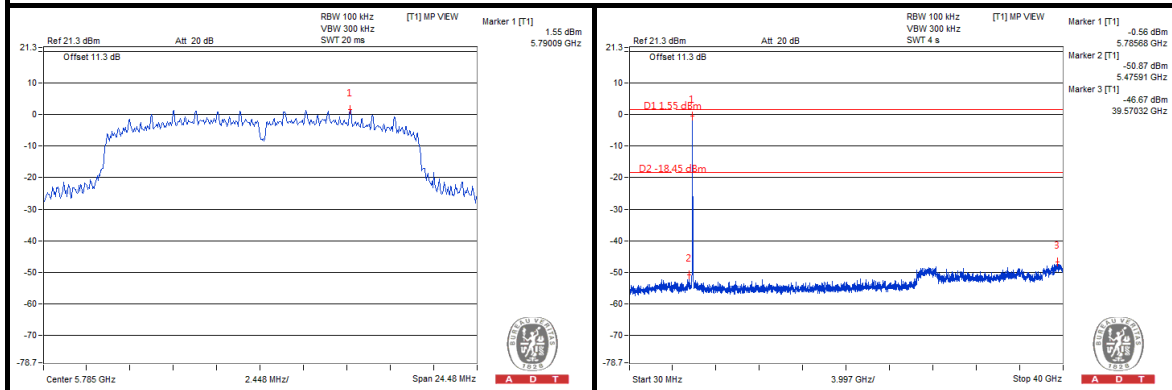
A D T

CHAIN 1

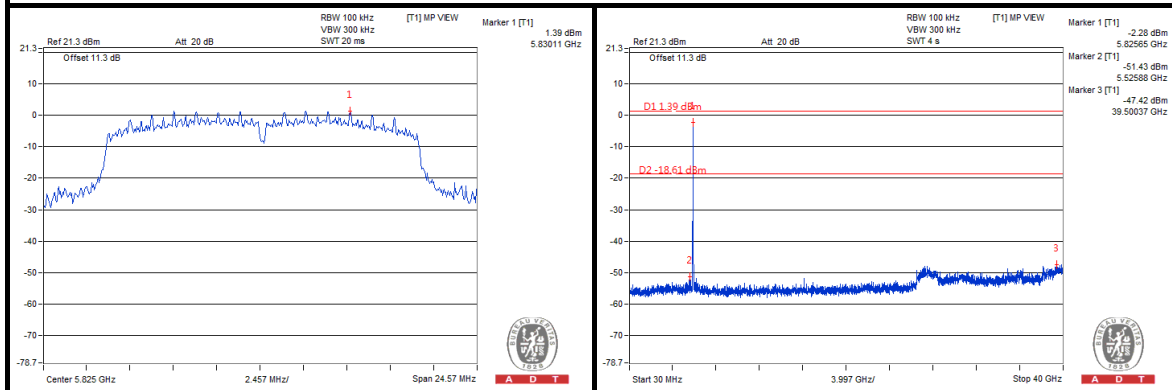
CH 149



CH 157



CH 165



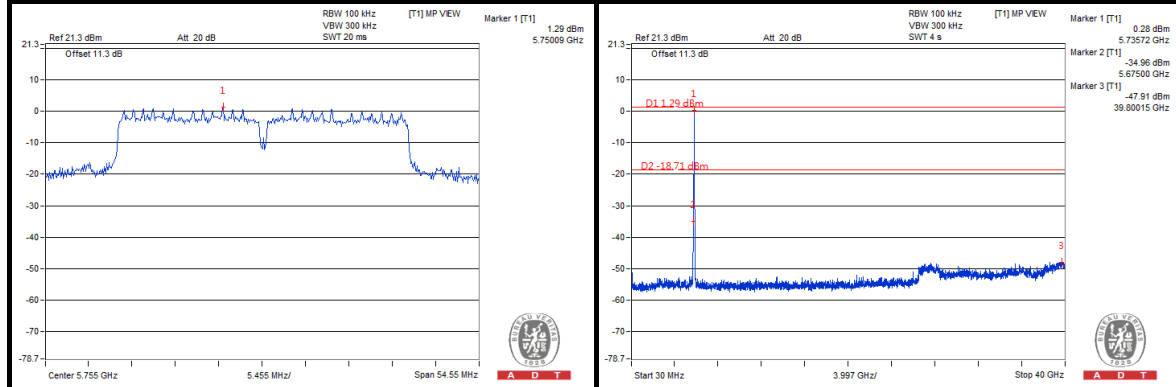


A D T

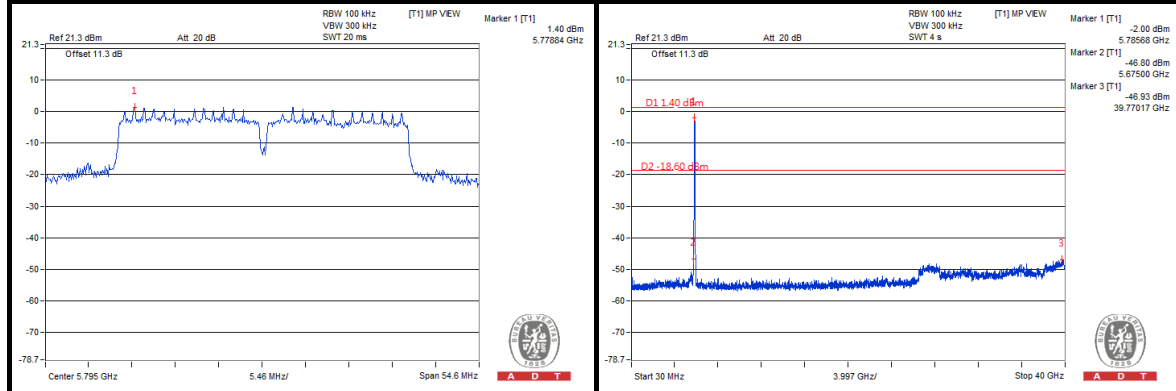
802.11n (40MHz)

CHAIN 0

CH 151



CH 159

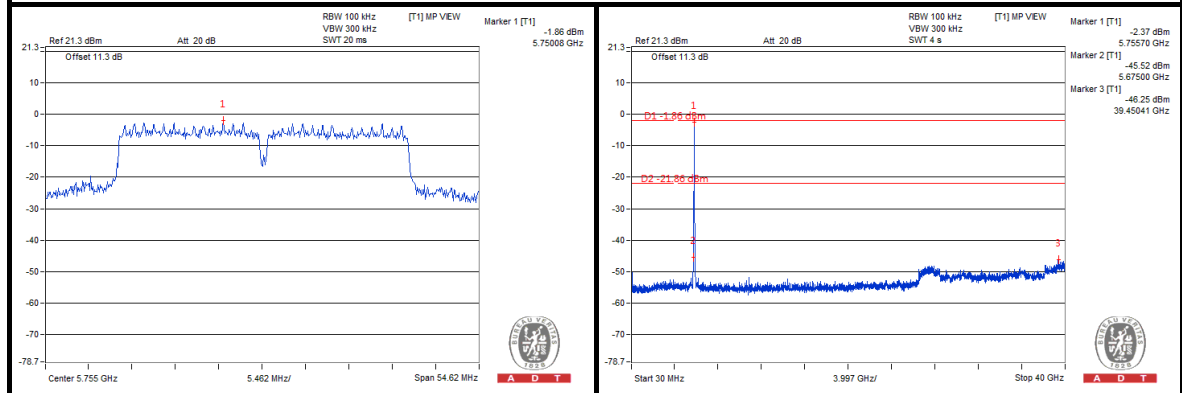




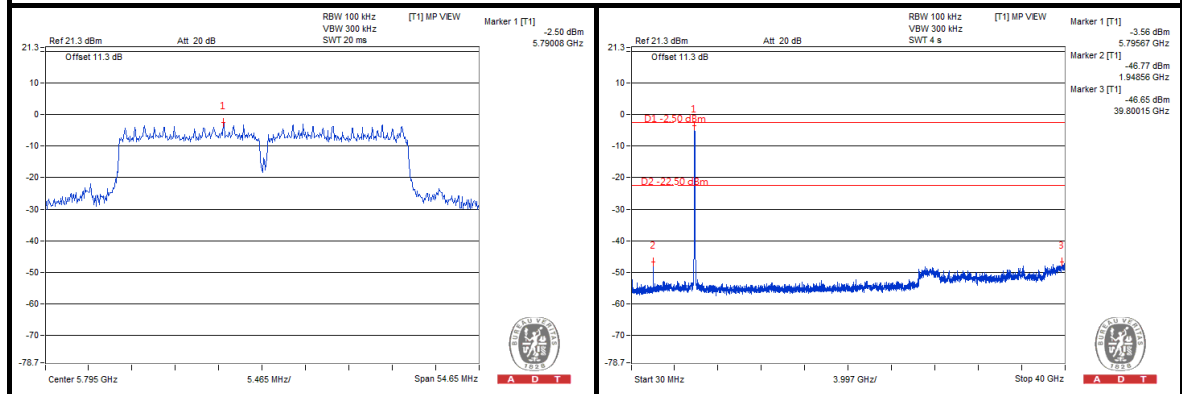
A D T

CHAIN 1

CH 151



CH 159





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6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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7. 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:

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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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8. APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

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

---END---