

FCC TEST REPORT (15.247)

REPORT NO.: RF131024C08-1
MODEL NO.: CB1C13
FCC ID: HFS-ZM7
RECEIVED: Oct. 24, 2013
TESTED: Nov. 21, 2013 ~ Dec. 04, 2013
ISSUED: Dec. 04, 2013

APPLICANT: Quanta Computer Inc.

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(H.K.) Ltd., Taoyuan Branch

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF131024C08-1	Original release	Dec. 04, 2013



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1. CERTIFICATION

PRODUCT: Portable Computer

MODEL NO.: CB1C13

BRAND: Dell

APPLICANT: Quanta Computer Inc.

TESTED: Nov. 21, 2013 ~ Dec. 04, 2013

TEST SAMPLE: PRODUCTION UNIT

STANDARDS: FCC Part 15, Subpart C (Section 15.247)

ANSI C63.10-2009

The above equipment (model: CB1C13) 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 : Ivonne Wu , **DATE** : Dec. 04, 2013

Ivonne Wu / Supervisor

APPROVED BY : Sam Chen , **DATE** : Dec. 04, 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	PASS	Meet the requirement of limit. Minimum passing margin is -12.89dB at 0.17734MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.40dB at 2484.00MHz.
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.

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	2.93 dB
	200MHz ~1000MHz	2.95 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	Portable Computer
MODEL NO.	CB1C13
POWER SUPPLY	19.5Vdc (adapter) 11.1Vdc (Li-ion 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 MCS7
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	355.926mW for 2412 ~ 2462MHz 269.497mW for 5745 ~ 5825MHz
ANTENNA TYPE	2.4GHz: PIFA antenna with -1.5dBi gain 5.0GHz: PIFA antenna with 1.68dBi 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:

- The EUT contains following accessory devices.

ITEM	BRAND	MODEL	SPECIFICATION
Adapter	Dell	LA65NM130	I/P: 100-240Vac, 50~60Hz, 1.7A O/P: 19.5Vdc, 3.34A Power Cord: 1.85m non-shielded cable w/o core
Battery	SAMSUNG	CB1C13	3.8Vdc, 11.1Vdc, 4564mAh
WLAN Module	Qualcomm Atheros	AR5B22	--

2. The EUT provides one completed transmitter and one receiver.

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

3. The above EUT information is declared by the 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 $\geq$ 1G	RE<1G	PLC	APCM	
A	√	-	-	√	1TX
B	√	√	√	√	2TX

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

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, 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
B	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	MCS0
B	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	MCS0

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)
B	802.11n (20MHz)	1 to 11	11	OFDM	BPSK	MCS0

POWER LINE CONDUCTED EMISSION TEST:

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
B	802.11n (20MHz)	1 to 11	11	OFDM	BPSK	MCS0

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
B	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	MCS0
B	802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	MCS0

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
B	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	MCS0
B	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	MCS0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Johnson Liao
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Johnson Liao
PLC	25deg. C, 65%RH	120Vac, 60Hz	David Huang
APCM	25deg. C, 65%RH	120Vac, 60Hz	Demon Lin

FOR 5.0GHz (5745 ~ 5825MHz):

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

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

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, B	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
B	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	MCS0
B	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS0

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)
B	802.11a	149 to 165	165	OFDM	BPSK	6.0

POWER LINE CONDUCTED EMISSION TEST:

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

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
B	802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	MCS0
B	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS0

ANTENNA PORT CONDUCTED 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, 157, 165	OFDM	BPSK	6.0
B	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	MCS0
B	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS0

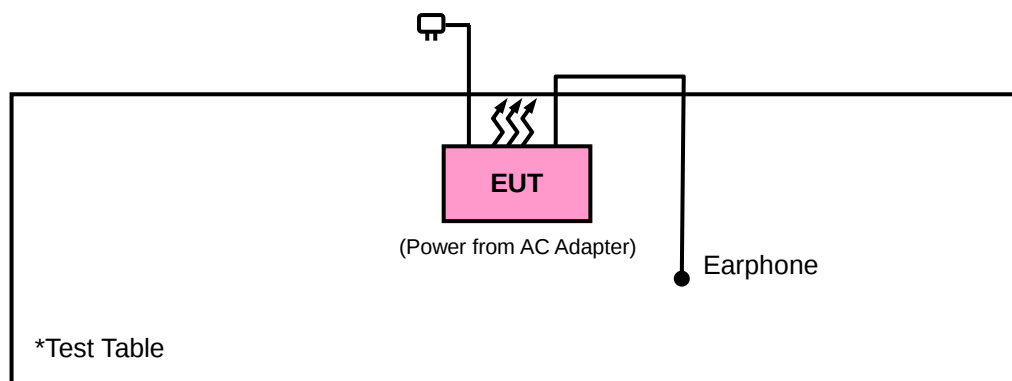
TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Johnson Liao
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Johnson Liao
PLC	25deg. C, 65%RH	120Vac, 60Hz	David Huang
APCM	25deg. C, 65%RH	120Vac, 60Hz	Demon Lin

3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit.

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



3.4 DUTY CYCLE TEST SIGNAL

Mode A

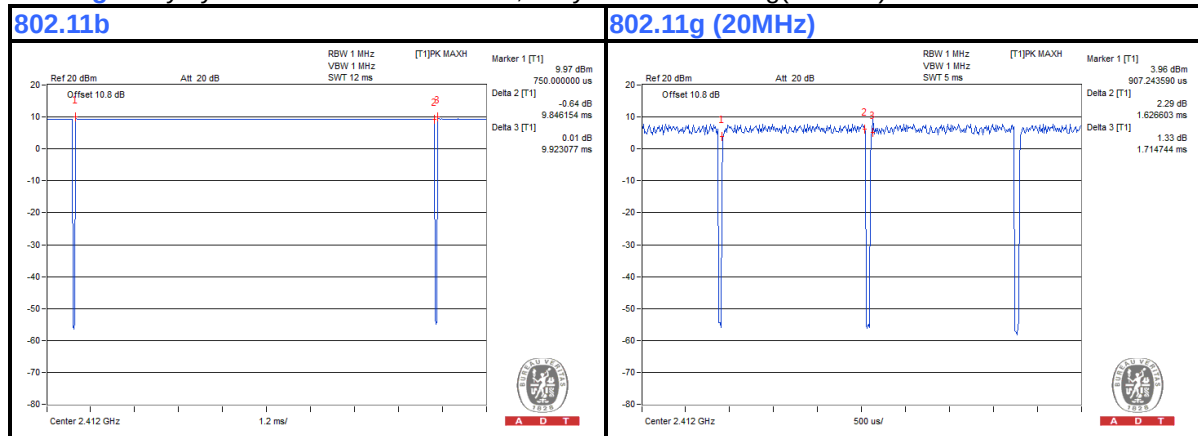
2.4GHz

Duty cycle of test signal is > 98 %

802.11b: Duty cycle = $9.846/9.923 = 0.992$

If duty cycle is < 98%

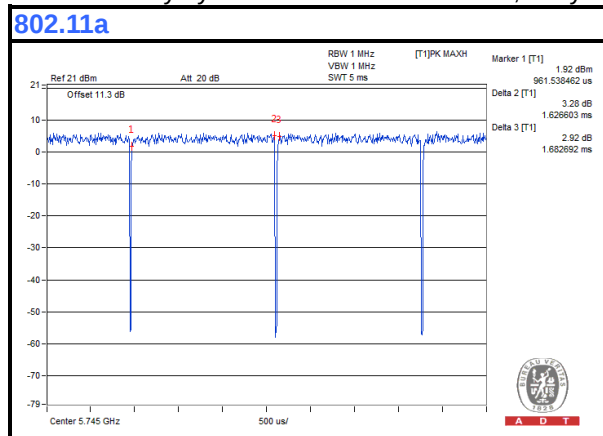
802.11g: Duty cycle = $1.627/1.715 = 0.949$, Duty factor = $10 * \log(1/0.949) = 0.23$



5725MHz ~ 5850MHz

If duty cycle is < 98%

802.11a: Duty cycle = $1.627/1.683 = 0.967$, Duty factor = $10 * \log(1/0.967) = 0.15$



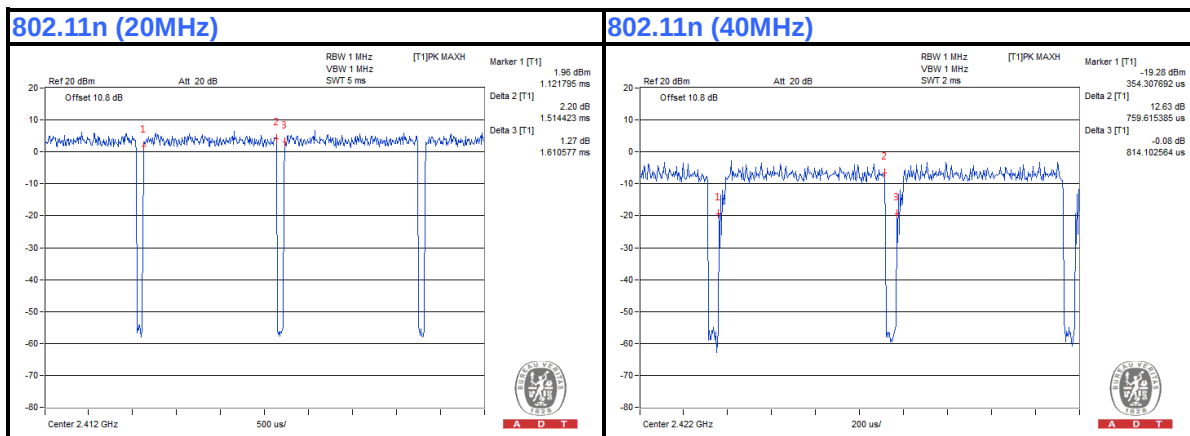
Mode B

2.4GHz

If duty cycle is < 98%

802.11n (20MHz): Duty cycle = $1.514/1.611 = 0.940$, Duty factor = $10 * \log(1/0.940) = 0.27$

802.11n (40MHz): Duty cycle = $759.6/814.1 = 0.933$, Duty factor = $10 * \log(1/0.933) = 0.30$



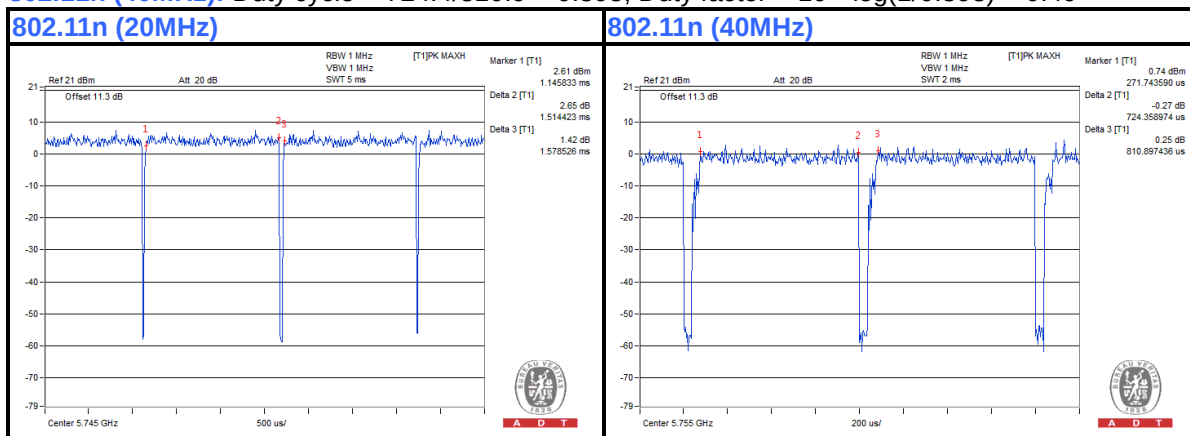
5725MHz ~ 5850MHz

Duty cycle of test signal is > 98 %, duty factor is not required.

If duty cycle is < 98%

802.11n (20MHz): Duty cycle = $1.514/1.579 = 0.959$, Duty factor = $10 * \log(1/0.959) = 0.18$

802.11n (40MHz): Duty cycle = $724.4/810.9 = 0.893$, Duty factor = $10 * \log(1/0.893) = 0.49$





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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)

ANSI C63.10-2009

KDB 558074 D01 DTS Meas Guidance v03r01

662911 D01 Multiple Transmitter Output v01 r02

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.

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. 18, 2013	Oct. 17, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 18, 2013	Oct. 17, 2014
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	1232002	Aug. 23, 2013	Aug. 22, 2014
Power Sensor	MA2411B	1207325	Aug. 23, 2013	Aug. 22, 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. Height of receiving 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 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:

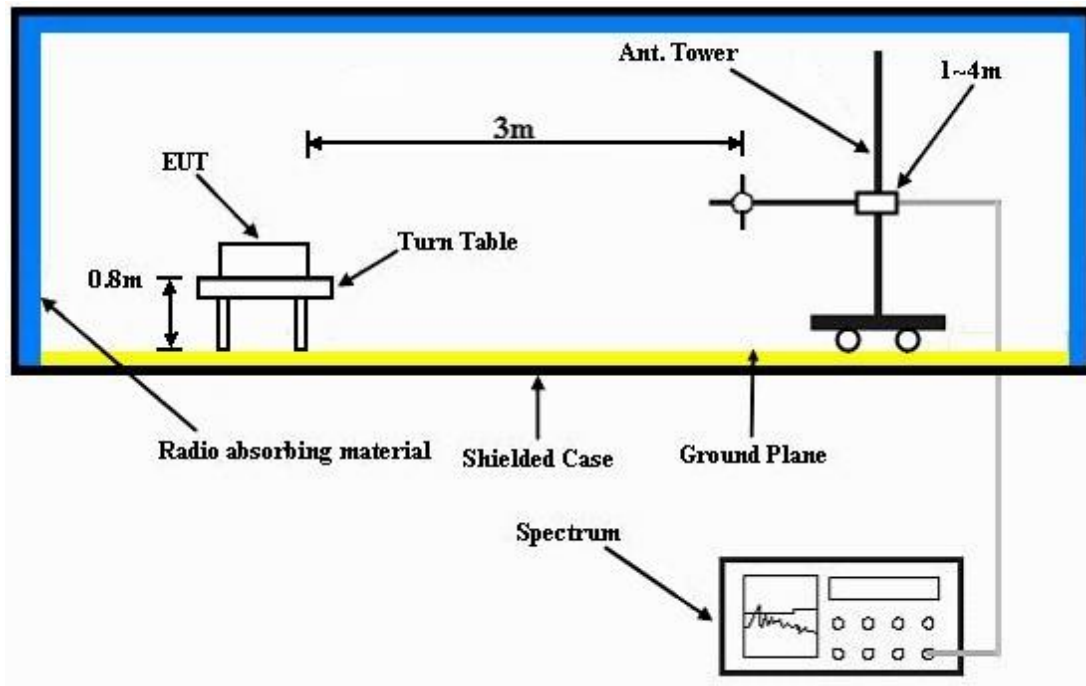
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution 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

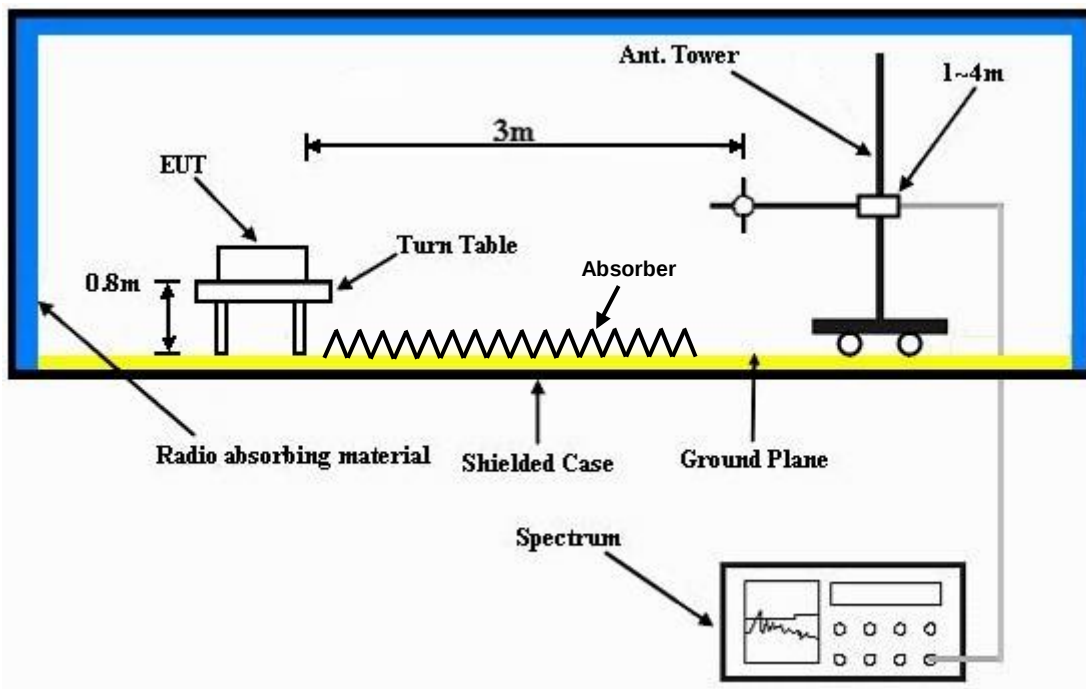
No deviation.

4.1.5 TEST SETUP

Frequency Range 30MHz ~ 1GHz



Frequency Range above 1GHz



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



A D T

4.1.6 EUT OPERATING CONDITIONS

- a. Placed the EUT on a testing table.
- b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

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
2386	41.53	48.6	54	-12.47	26.91	3.52	37.5	122	13	Average
2386	52.69	59.76	74	-21.31	26.91	3.52	37.5	122	13	Peak
2412	99.35	106.37			26.96	3.54	37.52	122	13	Average
2412	103.53	110.55			26.96	3.54	37.52	122	13	Peak
2490	35.82	42.32	54	-18.18	27.2	3.62	37.32	122	13	Average
2490	50.99	57.49	74	-23.01	27.2	3.62	37.32	122	13	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
2386	41.93	49	54	-12.07	26.91	3.52	37.5	100	229	Average
2386	53.01	60.08	74	-20.99	26.91	3.52	37.5	100	229	Peak
2412	100.05	107.07			26.96	3.54	37.52	100	229	Average
2412	104.87	111.89			26.96	3.54	37.52	100	229	Peak
2484	35.77	42.34	54	-18.23	27.15	3.6	37.32	100	229	Average
2484	50.73	57.3	74	-23.27	27.15	3.6	37.32	100	229	Peak
4824	47.96	64.28	54	-6.04	30.99	5.77	53.08	100	1	Average
4824	50.25	66.57	74	-23.75	30.99	5.77	53.08	100	1	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2412MHz: 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	36.89	43.94	54	-17.11	26.91	3.54	37.5	121	8	Average
2388	51.2	58.25	74	-22.8	26.91	3.54	37.5	121	8	Peak
2437	101.12	107.96			27.06	3.56	37.46	121	8	Average
2437	105.04	111.88			27.06	3.56	37.46	121	8	Peak
2484	36.07	42.64	54	-17.93	27.15	3.6	37.32	121	8	Average
2484	51.51	58.08	74	-22.49	27.15	3.6	37.32	121	8	Peak
4874	46.03	62.22	54	-7.97	31.06	5.8	53.05	100	110	Average
4874	48.98	65.17	74	-25.02	31.06	5.8	53.05	100	110	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	34.92	41.99	54	-19.08	26.91	3.54	37.52	101	194	Average
2390	53.57	60.64	74	-20.43	26.91	3.54	37.52	101	194	Peak
2437	102.49	109.33			27.06	3.56	37.46	101	194	Average
2437	106.47	113.31			27.06	3.56	37.46	101	194	Peak
2500	37.32	43.75	54	-16.68	27.2	3.62	37.25	101	194	Average
2500	51.41	57.84	74	-22.59	27.2	3.62	37.25	101	194	Peak
4874	51.51	67.7	54	-2.49	31.06	5.8	53.05	113	303	Average
4874	52.76	68.95	74	-21.24	31.06	5.8	53.05	113	303	Peak

REMARKS:

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

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
2386	36.7	43.77	54	-17.3	26.91	3.52	37.5	104	34	Average
2386	51.35	58.42	74	-22.65	26.91	3.52	37.5	104	34	Peak
2462	101.2	107.91			27.1	3.58	37.39	104	34	Average
2462	105.98	112.69			27.1	3.58	37.39	104	34	Peak
2484	44.52	51.09	54	-9.48	27.15	3.6	37.32	104	34	Average
2484	54.56	61.13	74	-19.44	27.15	3.6	37.32	104	34	Peak
4924	44.24	60.32	54	-9.76	31.12	5.83	53.03	100	113	Average
4924	46.54	62.62	74	-27.46	31.12	5.83	53.03	100	113	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
2358	34.93	42.11	54	-19.07	26.81	3.5	37.49	100	194	Average
2358	51	58.18	74	-23	26.81	3.5	37.49	100	194	Peak
2462	102.45	109.16			27.1	3.58	37.39	100	194	Average
2462	106.87	113.58			27.1	3.58	37.39	100	194	Peak
2484	46.02	52.59	54	-7.98	27.15	3.6	37.32	100	194	Average
2484	55.29	61.86	74	-18.71	27.15	3.6	37.32	100	194	Peak
4924	50.64	66.72	54	-3.36	31.12	5.83	53.03	123	302	Average
4924	52.78	68.86	74	-21.22	31.12	5.83	53.03	123	302	Peak

REMARKS:

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

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	32.14	39.21	54	-21.86	26.91	3.54	37.52	124	33	Average
2390	64.7	71.77	74	-9.3	26.91	3.54	37.52	124	33	Peak
2412	94.81	101.83			26.96	3.54	37.52	124	33	Average
2412	103.83	110.85			26.96	3.54	37.52	124	33	Peak
2488	37.06	43.56	54	-16.94	27.2	3.62	37.32	124	33	Average
2488	50.55	57.05	74	-23.45	27.2	3.62	37.32	124	33	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	46.59	53.66	54	-7.41	26.91	3.54	37.52	103	193	Average
2390	63.9	70.97	74	-10.1	26.91	3.54	37.52	103	193	Peak
2412	95.16	102.18			26.96	3.54	37.52	103	193	Average
2412	104.3	111.32			26.96	3.54	37.52	103	193	Peak
2490	37.41	43.91	54	-16.59	27.2	3.62	37.32	103	193	Average
2490	50.46	56.96	74	-23.54	27.2	3.62	37.32	103	193	Peak
4824	34.64	50.96	54	-19.36	30.99	5.77	53.08	100	1	Average
4824	44.66	60.98	74	-29.34	30.99	5.77	53.08	100	1	Peak

REMARKS:

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

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
2390	38.56	45.63	54	-15.44	26.91	3.54	37.52	122	34	Average
2390	52.49	59.56	74	-21.51	26.91	3.54	37.52	122	34	Peak
2437	98.25	105.09			27.06	3.56	37.46	122	34	Average
2437	108.01	114.85			27.06	3.56	37.46	122	34	Peak
2484	39.88	46.45	54	-14.12	27.15	3.6	37.32	122	34	Average
2484	54.62	61.19	74	-19.38	27.15	3.6	37.32	122	34	Peak
4874	36.56	52.75	54	-17.44	31.06	5.8	53.05	101	114	Average
4874	48.55	64.74	74	-25.45	31.06	5.8	53.05	101	114	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	37.52	44.59	54	-16.48	26.91	3.54	37.52	100	193	Average
2390	52.93	60	74	-21.07	26.91	3.54	37.52	100	193	Peak
2437	99.19	106.03			27.06	3.56	37.46	100	193	Average
2437	109.74	116.58			27.06	3.56	37.46	100	193	Peak
2484	41.42	47.99	54	-12.58	27.15	3.6	37.32	100	193	Average
2484	54.28	60.85	74	-19.72	27.15	3.6	37.32	100	193	Peak
4874	41.98	58.17	54	-12.02	31.06	5.8	53.05	114	305	Average
4874	52.49	68.68	74	-21.51	31.06	5.8	53.05	114	305	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
2384	37.12	44.24	54	-16.88	26.86	3.52	37.5	121	8	Average
2384	51.03	58.15	74	-22.97	26.86	3.52	37.5	121	8	Peak
2462	95.97	102.68			27.1	3.58	37.39	121	8	Average
2462	105.05	111.76			27.1	3.58	37.39	121	8	Peak
2484	49.19	55.76	54	-4.81	27.15	3.6	37.32	121	8	Average
2484	65.61	72.18	74	-8.39	27.15	3.6	37.32	121	8	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	35.91	42.98	54	-18.09	26.91	3.54	37.52	100	194	Average
2390	51.41	58.48	74	-22.59	26.91	3.54	37.52	100	194	Peak
2462	97.13	103.84			27.1	3.58	37.39	100	194	Average
2462	106.45	113.16			27.1	3.58	37.39	100	194	Peak
2484	52.29	58.86	54	-1.71	27.15	3.6	37.32	100	194	Average
2484	68.8	75.37	74	-5.2	27.15	3.6	37.32	100	194	Peak
4924	35.95	52.03	54	-18.05	31.12	5.83	53.03	100	303	Average
4924	48.82	64.9	74	-25.18	31.12	5.83	53.03	100	303	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 2462MHz: Fundamental frequency.



A D T

Mode B

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
2366	37.5	44.67	54	-16.5	26.81	3.52	37.5	151	3	Average
2366	52.83	60	74	-21.17	26.81	3.52	37.5	151	3	Peak
2412	102.37	109.39			26.96	3.54	37.52	151	3	Average
2412	106.55	113.57			26.96	3.54	37.52	151	3	Peak
2490	35.43	41.93	54	-18.57	27.2	3.62	37.32	151	3	Average
2490	53.34	59.84	74	-20.66	27.2	3.62	37.32	151	3	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	39.03	46.1	54	-14.97	26.91	3.54	37.52	148	90	Average
2390	54.37	61.44	74	-19.63	26.91	3.54	37.52	148	90	Peak
2412	104.09	111.11			26.96	3.54	37.52	148	90	Average
2412	108.51	115.53			26.96	3.54	37.52	148	90	Peak
2488	36.81	43.31	54	-17.19	27.2	3.62	37.32	148	90	Average
2488	53.08	59.58	74	-20.92	27.2	3.62	37.32	148	90	Peak
4824	43.4	59.72	54	-10.6	30.99	5.77	53.08	100	2	Average
4824	46.89	63.21	74	-27.11	30.99	5.77	53.08	100	2	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2412MHz: 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
2380	37.08	44.2	54	-16.92	26.86	3.52	37.5	148	2	Average
2380	54.01	61.13	74	-19.99	26.86	3.52	37.5	148	2	Peak
2437	104.55	111.39			27.06	3.56	37.46	148	2	Average
2437	108.59	115.43			27.06	3.56	37.46	148	2	Peak
2484	36.15	42.72	54	-17.85	27.15	3.6	37.32	148	2	Average
2484	53.18	59.75	74	-20.82	27.15	3.6	37.32	148	2	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	37.12	44.19	54	-16.88	26.91	3.54	37.52	102	193	Average
2390	53.82	60.89	74	-20.18	26.91	3.54	37.52	102	193	Peak
2437	105.63	112.47			27.06	3.56	37.46	102	193	Average
2437	109.43	116.27			27.06	3.56	37.46	102	193	Peak
2488	39.08	45.58	54	-14.92	27.2	3.62	37.32	102	193	Average
2488	54.39	60.89	74	-19.61	27.2	3.62	37.32	102	193	Peak
4874	46.58	62.77	54	-7.42	31.06	5.8	53.05	100	2	Average
4874	49.62	65.81	74	-24.38	31.06	5.8	53.05	100	2	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 2437MHz: Fundamental frequency.

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
2382	37.51	44.63	54	-16.49	26.86	3.52	37.5	147	2	Average
2382	53.19	60.31	74	-20.81	26.86	3.52	37.5	147	2	Peak
2462	103.46	110.17			27.1	3.58	37.39	147	2	Average
2462	107.87	114.58			27.1	3.58	37.39	147	2	Peak
2484	41.29	47.86	54	-12.71	27.15	3.6	37.32	147	2	Average
2484	54.64	61.21	74	-19.36	27.15	3.6	37.32	147	2	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
2338	36.91	44.11	54	-17.09	26.77	3.5	37.47	101	194	Average
2338	52.56	59.76	74	-21.44	26.77	3.5	37.47	101	194	Peak
2462	105.26	111.97			27.1	3.58	37.39	101	194	Average
2462	109.87	116.58			27.1	3.58	37.39	101	194	Peak
2484	43.29	49.86	54	-10.71	27.15	3.6	37.32	101	194	Average
2484	54.49	61.06	74	-19.51	27.15	3.6	37.32	101	194	Peak
4924	47.74	63.82	54	-6.26	31.12	5.83	53.03	113	302	Average
4924	50.03	66.11	74	-23.97	31.12	5.83	53.03	113	302	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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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	41.66	48.73	54	-12.34	26.91	3.54	37.52	145	2	Average
2390	60.13	67.2	74	-13.87	26.91	3.54	37.52	145	2	Peak
2412	94.7	101.72			26.96	3.54	37.52	145	2	Average
2412	103.82	110.84			26.96	3.54	37.52	145	2	Peak
2488	36.71	43.21	54	-17.29	27.2	3.62	37.32	145	2	Average
2488	53.04	59.54	74	-20.96	27.2	3.62	37.32	145	2	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	43.04	50.11	54	-10.96	26.91	3.54	37.52	148	90	Average
2390	61.92	68.99	74	-12.08	26.91	3.54	37.52	148	90	Peak
2412	96.24	103.26			26.96	3.54	37.52	148	90	Average
2412	105.72	112.74			26.96	3.54	37.52	148	90	Peak
2492	37.32	43.75	54	-16.68	27.2	3.62	37.25	148	90	Average
2492	53.16	59.59	74	-20.84	27.2	3.62	37.25	148	90	Peak

REMARKS:

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

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
2382	37.59	44.71	54	-16.41	26.86	3.52	37.5	149	1	Average
2382	53.35	60.47	74	-20.65	26.86	3.52	37.5	149	1	Peak
2437	98.6	105.44			27.06	3.56	37.46	149	1	Average
2437	107.92	114.76			27.06	3.56	37.46	149	1	Peak
2490	37.63	44.13	54	-16.37	27.2	3.62	37.32	149	1	Average
2490	53.43	59.93	74	-20.57	27.2	3.62	37.32	149	1	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	37.73	44.8	54	-16.27	26.91	3.54	37.52	102	191	Average
2390	53.69	60.76	74	-20.31	26.91	3.54	37.52	102	191	Peak
2437	99.78	106.62			27.06	3.56	37.46	102	191	Average
2437	108.96	115.8			27.06	3.56	37.46	102	191	Peak
2486	39.98	46.55	54	-14.02	27.15	3.6	37.32	102	191	Average
2486	55.54	62.11	74	-18.46	27.15	3.6	37.32	102	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
2330	36.34	43.61	54	-17.66	26.72	3.48	37.47	140	32	Average
2330	52.24	59.51	74	-21.76	26.72	3.48	37.47	140	32	Peak
2462	98.32	105.03			27.1	3.58	37.39	140	32	Average
2462	107.72	114.43			27.1	3.58	37.39	140	32	Peak
2484	44.17	50.74	54	-9.83	27.15	3.6	37.32	140	32	Average
2484	63.12	69.69	74	-10.88	27.15	3.6	37.32	140	32	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
2352	36.16	43.34	54	-17.84	26.81	3.5	37.49	100	191	Average
2352	52.33	59.51	74	-21.67	26.81	3.5	37.49	100	191	Peak
2462	99.5	106.21			27.1	3.58	37.39	100	191	Average
2462	108.35	115.06			27.1	3.58	37.39	100	191	Peak
2484	46.93	53.5	54	-7.07	27.15	3.6	37.32	100	191	Average
2484	67.79	74.36	74	-6.21	27.15	3.6	37.32	100	191	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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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
2390	42.73	49.8	54	-11.27	26.91	3.54	37.52	146	5	Average
2390	59.9	66.97	74	-14.1	26.91	3.54	37.52	146	5	Peak
2412	93.19	100.21			26.96	3.54	37.52	146	5	Average
2412	102.74	109.76			26.96	3.54	37.52	146	5	Peak
2488	36.72	43.22	54	-17.28	27.2	3.62	37.32	146	5	Average
2488	53.05	59.55	74	-20.95	27.2	3.62	37.32	146	5	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	44.69	51.76	54	-9.31	26.91	3.54	37.52	102	189	Average
2390	63.31	70.38	74	-10.69	26.91	3.54	37.52	102	189	Peak
2412	95.28	102.3			26.96	3.54	37.52	102	189	Average
2412	104.72	111.74			26.96	3.54	37.52	102	189	Peak
2488	38.65	45.15	54	-15.35	27.2	3.62	37.32	102	189	Average
2488	53.72	60.22	74	-20.28	27.2	3.62	37.32	102	189	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
2390	31.81	38.88	54	-22.19	26.91	3.54	37.52	123	0	Average
2390	51.26	58.33	74	-22.74	26.91	3.54	37.52	123	0	Peak
2437	97.33	104.17			27.06	3.56	37.46	123	0	Average
2437	106.67	113.51			27.06	3.56	37.46	123	0	Peak
2484	32.57	39.14	54	-21.43	27.15	3.6	37.32	123	0	Average
2484	51.55	58.12	74	-22.45	27.15	3.6	37.32	123	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	32.65	39.72	54	-21.35	26.91	3.54	37.52	121	88	Average
2390	52.71	59.78	74	-21.29	26.91	3.54	37.52	121	88	Peak
2437	98.61	105.45			27.06	3.56	37.46	121	88	Average
2437	107.96	114.8			27.06	3.56	37.46	121	88	Peak
2484	31.81	38.38	54	-22.19	27.15	3.6	37.32	121	88	Average
2484	52.71	59.28	74	-21.29	27.15	3.6	37.32	121	88	Peak

REMARKS:

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

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	32.04	39.11	54	-21.96	26.91	3.54	37.52	103	42	Average
2390	51.07	58.14	74	-22.93	26.91	3.54	37.52	103	42	Peak
2462	94.03	100.74			27.1	3.58	37.39	103	42	Average
2462	103.67	110.38			27.1	3.58	37.39	103	42	Peak
2484	47.28	53.85	54	-6.72	27.15	3.6	37.32	103	42	Average
2484	67.56	74.13	74	-6.44	27.15	3.6	37.32	103	42	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	32.14	39.21	54	-21.86	26.91	3.54	37.52	100	185	Average
2390	51.95	59.02	74	-22.05	26.91	3.54	37.52	100	185	Peak
2462	97.16	103.87			27.1	3.58	37.39	100	185	Average
2462	105.67	112.38			27.1	3.58	37.39	100	185	Peak
2484	52.6	59.17	54	-1.4	27.15	3.6	37.32	100	185	Average
2484	68.67	75.24	74	-5.33	27.15	3.6	37.32	100	185	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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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	45.19	52.26	54	-8.81	26.91	3.54	37.52	100	6	Average
2390	59.71	66.78	74	-14.29	26.91	3.54	37.52	100	6	Peak
2422	88.39	95.28			27.01	3.56	37.46	100	6	Average
2422	97.87	104.76			27.01	3.56	37.46	100	6	Peak
2492	36.04	42.47	54	-17.96	27.2	3.62	37.25	100	6	Average
2492	50.3	56.73	74	-23.7	27.2	3.62	37.25	100	6	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	47.49	54.56	54	-6.51	26.91	3.54	37.52	144	88	Average
2390	62.94	70.01	74	-11.06	26.91	3.54	37.52	144	88	Peak
2422	91.23	98.12			27.01	3.56	37.46	144	88	Average
2422	100.36	107.25			27.01	3.56	37.46	144	88	Peak
2490	36.98	43.48	54	-17.02	27.2	3.62	37.32	144	88	Average
2490	52.11	58.61	74	-21.89	27.2	3.62	37.32	144	88	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2422MHz: 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
2390	42.94	50.01	54	-11.06	26.91	3.54	37.52	100	182	Average
2390	57.69	64.76	74	-16.31	26.91	3.54	37.52	100	182	Peak
2437	91.13	97.97			27.06	3.56	37.46	100	182	Average
2437	101.09	107.93			27.06	3.56	37.46	100	182	Peak
2484	44.4	50.97	54	-9.6	27.15	3.6	37.32	100	182	Average
2484	52.46	59.03	74	-21.54	27.15	3.6	37.32	100	182	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	42.92	49.99	54	-11.08	26.91	3.54	37.52	102	189	Average
2390	54.1	61.17	74	-19.9	26.91	3.54	37.52	102	189	Peak
2437	94.25	101.09			27.06	3.56	37.46	102	189	Average
2437	104.24	111.08			27.06	3.56	37.46	102	189	Peak
2484	46.28	52.85	54	-7.72	27.15	3.6	37.32	102	189	Average
2484	57.42	63.99	74	-16.58	27.15	3.6	37.32	102	189	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 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	34.01	41.08	54	-19.99	26.91	3.54	37.52	123	0	Average
2390	50.6	57.67	74	-23.4	26.91	3.54	37.52	123	0	Peak
2452	90.44	97.19			27.06	3.58	37.39	123	0	Average
2452	100.67	107.42			27.06	3.58	37.39	123	0	Peak
2484	49.41	55.98	54	-4.59	27.15	3.6	37.32	123	0	Average
2484	64.14	70.71	74	-9.86	27.15	3.6	37.32	123	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	44.97	52.04	54	-9.03	26.91	3.54	37.52	100	190	Average
2390	54.03	61.1	74	-19.97	26.91	3.54	37.52	100	190	Peak
2452	92.53	99.28			27.06	3.58	37.39	100	190	Average
2452	102.43	109.18			27.06	3.58	37.39	100	190	Peak
2484	52.49	59.06	54	-1.51	27.15	3.6	37.32	100	190	Average
2484	69.32	75.89	74	-4.68	27.15	3.6	37.32	100	190	Peak

REMARKS:

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

BELOW 1GHz WORST-CASE DATA:

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK)
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
57	27.67	45.96	40	-12.33	12.25	0.81	31.35	100	145	Peak
108.3	27.56	48.39	43.5	-15.94	9.9	1.12	31.85	100	203	Peak
188.49	34.4	54.37	43.5	-9.1	10.19	1.54	31.7	100	135	Peak
320.3	21.1	37.44	46	-24.9	13.43	2.12	31.89	100	55	Peak
501.6	21.19	32.68	46	-24.81	17.35	2.78	31.62	100	198	Peak
617.1	23.36	32.55	46	-22.64	19.81	3.14	32.14	100	318	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
58.08	33.24	51.63	40	-6.76	12.15	0.81	31.35	102	146	Peak
146.91	24.5	42.18	43.5	-19	12.61	1.33	31.62	100	175	Peak
183.09	26.7	46.45	43.5	-16.8	10.53	1.51	31.79	100	263	Peak
423.2	19.64	33.38	46	-26.36	15.79	2.51	32.04	100	212	Peak
546.4	22.17	32.73	46	-23.83	18.37	2.93	31.86	100	48	Peak
662.6	24.91	33.17	46	-21.09	20.36	3.29	31.91	100	237	Peak

REMARKS: Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	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.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Nov. 17, 2013	Nov. 16, 2014
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 28, 2012	Dec. 27, 2013
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 21, 2012	Dec. 20, 2013
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 08, 2013	Jul. 07, 2014
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 2.
3. The VCCI Site Registration No. is C-2047.

4.2.3 TEST PROCEDURES

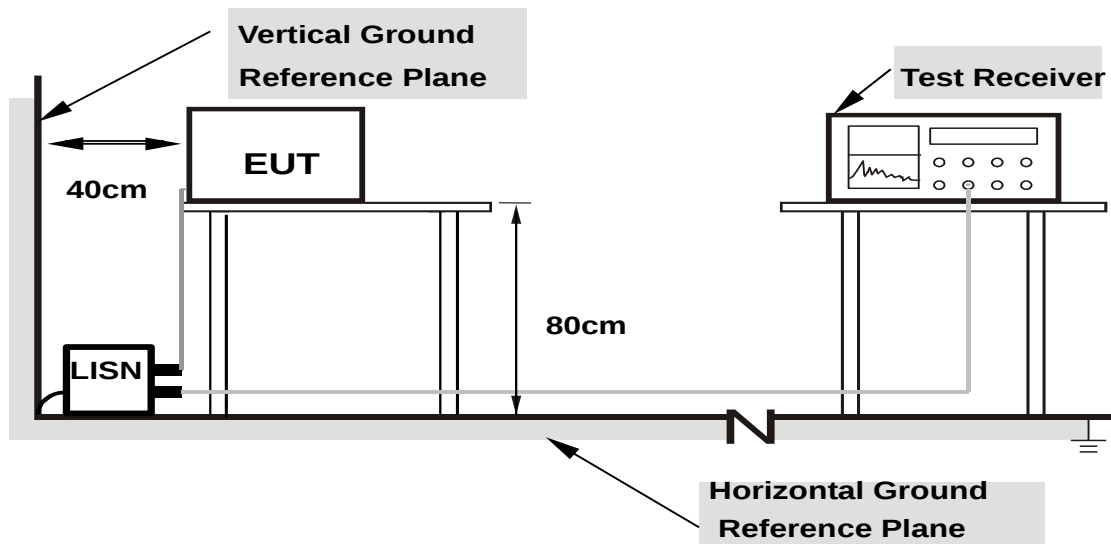
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80
from other units and other metal planes

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

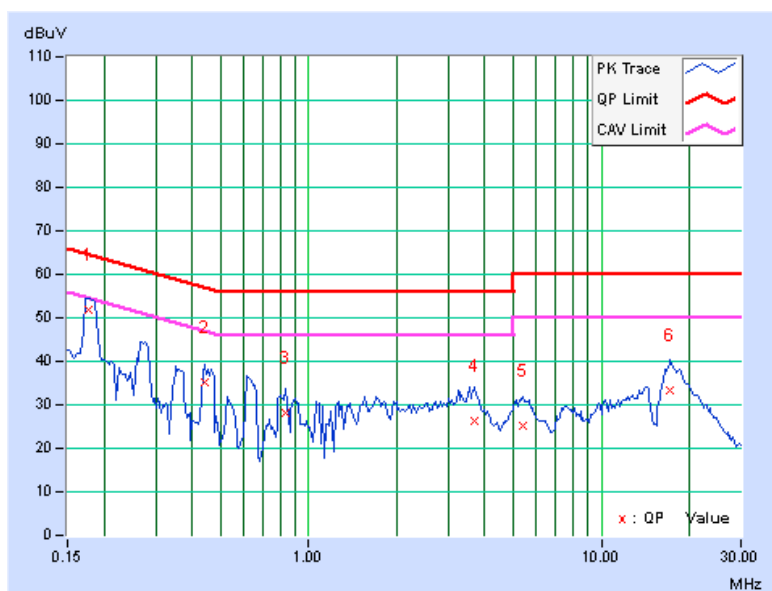
CONDUCTED WORST-CASE DATA :

PHASE	Line 1	6dB BANDWIDTH	9kHz
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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	0.17734	0.17	51.55	39.75	51.72	39.92	64.61	54.61	-12.89	-14.69
2	0.44297	0.21	34.95	26.11	35.16	26.32	57.01	47.01	-21.84	-20.68
3	0.83750	0.25	27.72	15.78	27.97	16.03	56.00	46.00	-28.03	-29.97
4	3.67188	0.36	26.09	17.79	26.45	18.15	56.00	46.00	-29.55	-27.85
5	5.40234	0.38	24.98	19.10	25.36	19.48	60.00	50.00	-34.64	-30.52
6	17.22266	0.58	32.69	27.79	33.27	28.37	60.00	50.00	-26.73	-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

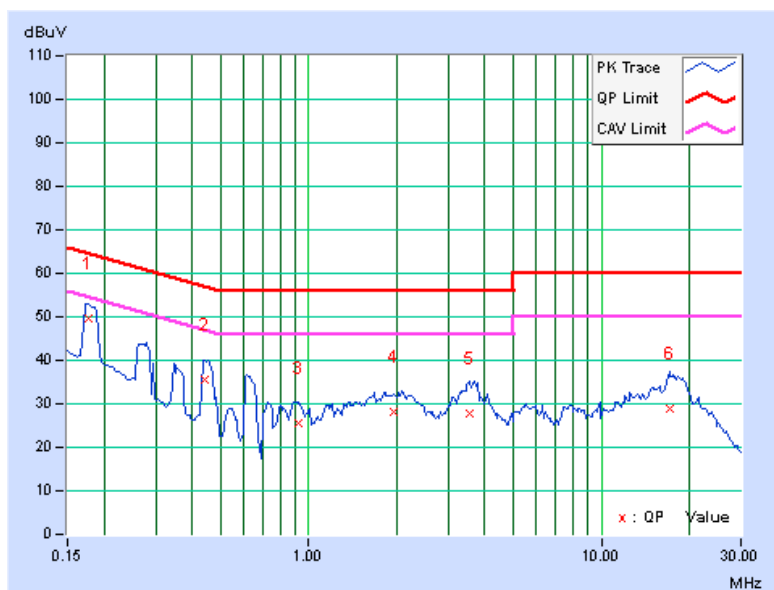


PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	0.18	49.57	37.14	49.75	37.32	64.61	54.61	-14.86	-17.29
2	0.44297	0.25	35.47	27.33	35.72	27.58	57.01	47.01	-21.29	-19.43
3	0.92344	0.23	25.34	13.19	25.57	13.42	56.00	46.00	-30.43	-32.58
4	1.94141	0.28	27.90	19.04	28.18	19.32	56.00	46.00	-27.82	-26.68
5	3.53906	0.36	27.39	18.52	27.75	18.88	56.00	46.00	-28.25	-27.12
6	17.08594	0.66	28.16	21.01	28.82	21.67	60.00	50.00	-31.18	-28.33

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

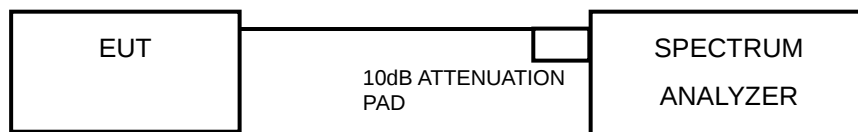


4.3 6dB BANDWIDTH MEASUREMENT

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 RESULTS

Mode A

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.04	0.5	PASS
6	2437	10.08	0.5	PASS
11	2462	10.08	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.35	0.5	PASS
6	2437	16.40	0.5	PASS
11	2462	16.37	0.5	PASS

Mode B

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	10.08	9.76	0.5	PASS
6	2437	10.09	10.11	0.5	PASS
11	2462	10.06	10.11	0.5	PASS

802.11g

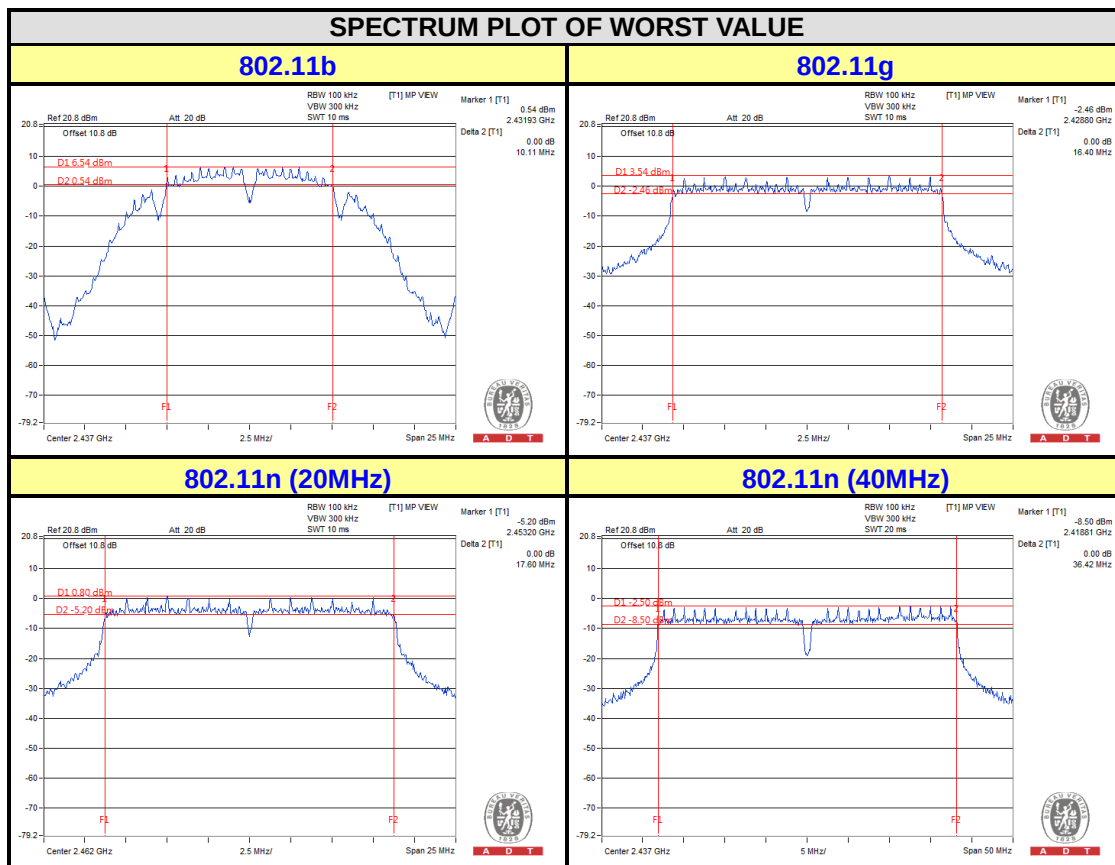
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.38	16.35	0.5	PASS
6	2437	16.38	16.40	0.5	PASS
11	2462	16.34	16.38	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.56	17.56	0.5	PASS
6	2437	17.56	16.99	0.5	PASS
11	2462	17.58	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	36.37	36.38	0.5	PASS
6	2437	36.42	36.38	0.5	PASS
9	2452	36.39	36.39	0.5	PASS

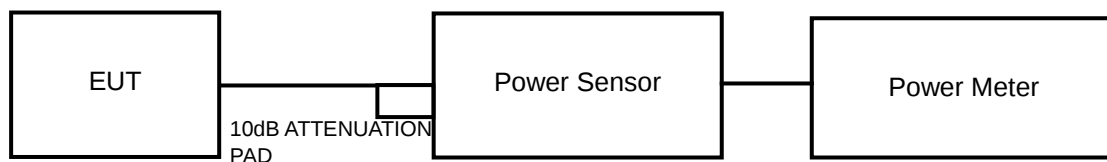


4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

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

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

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.



A D T

4.4.7 TEST RESULTS

FOR PEAK POWER

Mode A

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	76.913	18.86	30	PASS
6	2437	96.383	19.84	30	PASS
11	2462	115.080	20.61	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	255.270	24.07	30	PASS
6	2437	297.852	24.74	30	PASS
11	2462	242.103	23.84	30	PASS

Mode B

802.11b

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	19.01	17.92	141.560	21.51	30	PASS
6	2437	18.53	18.56	143.065	21.56	30	PASS
11	2462	18.76	19.11	156.633	21.95	30	PASS

802.11g

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	21.59	21.24	277.257	24.43	30	PASS
6	2437	22.15	22.83	355.926	25.51	30	PASS
11	2462	21.33	21.66	259.587	24.14	30	PASS

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	21.78	20.99	276.264	24.41	30	PASS
6	2437	21.33	21.89	290.357	24.63	30	PASS
11	2462	19.90	20.72	215.756	23.34	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	19.18	17.66	141.254	21.50	30	PASS
6	2437	19.11	19.38	168.267	22.26	30	PASS
9	2452	19.61	19.28	176.198	22.46	30	PASS

FOR AVERAGE POWER

Mode A

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	45.814	16.61
6	2437	58.479	17.67
11	2462	70.307	18.47

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	39.628	15.98
6	2437	53.088	17.25
11	2462	36.728	15.65

Mode B

802.11b

CHAN.	FREQ. (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	16.88	15.71	85.992	19.34	30	PASS
6	2437	16.35	16.40	86.803	19.39	30	PASS
11	2462	16.56	16.94	94.721	19.76	30	PASS

802.11g

CHAN.	FREQ. (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	13.13	12.01	36.444	15.62	30	PASS
6	2437	14.01	14.24	51.723	17.14	30	PASS
11	2462	13.15	13.22	41.643	16.20	30	PASS

802.11n (20MHz)

CHAN.	FREQ. (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	13.13	11.95	36.226	15.59	30	PASS
6	2437	12.64	13.11	38.830	15.89	30	PASS
11	2462	11.02	11.62	27.168	14.34	30	PASS

802.11n (40MHz)

CHAN.	FREQ. (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	10.42	9.56	20.052	13.02	30	PASS
6	2437	10.68	10.99	24.255	13.85	30	PASS
9	2452	9.95	9.77	19.370	12.87	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

- 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.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.5.7 TEST RESULTS

Mode A

802.11b

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-8.61	8	PASS
6	2437	-7.83	8	PASS
11	2462	-6.49	8	PASS

802.11g

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-10.98	8	PASS
6	2437	-8.08	8	PASS
11	2462	-10.92	8	PASS

Mode B

802.11b

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	-8.42	3.01	-5.41	8	PASS
	6	2437	-8.76	3.01	-5.75	8	PASS
	11	2462	-7.85	3.01	-4.84	8	PASS
1	1	2412	-8.87	3.01	-5.86	8	PASS
	6	2437	-8.13	3.01	-5.12	8	PASS
	11	2462	-8.76	3.01	-5.75	8	PASS

NOTE: Directional gain = $-1.5\text{dBi} + 10\log(2) = 1.51\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

802.11g

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	-13.99	3.01	-10.98	8	PASS
	6	2437	-13.00	3.01	-9.99	8	PASS
	11	2462	-12.45	3.01	-9.44	8	PASS
1	1	2412	-15.43	3.01	-12.42	8	PASS
	6	2437	-12.21	3.01	-9.20	8	PASS
	11	2462	-13.24	3.01	-10.23	8	PASS

NOTE: Directional gain = $-1.5\text{dBi} + 10\log(2) = 1.51\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

802.11n (20MHz)

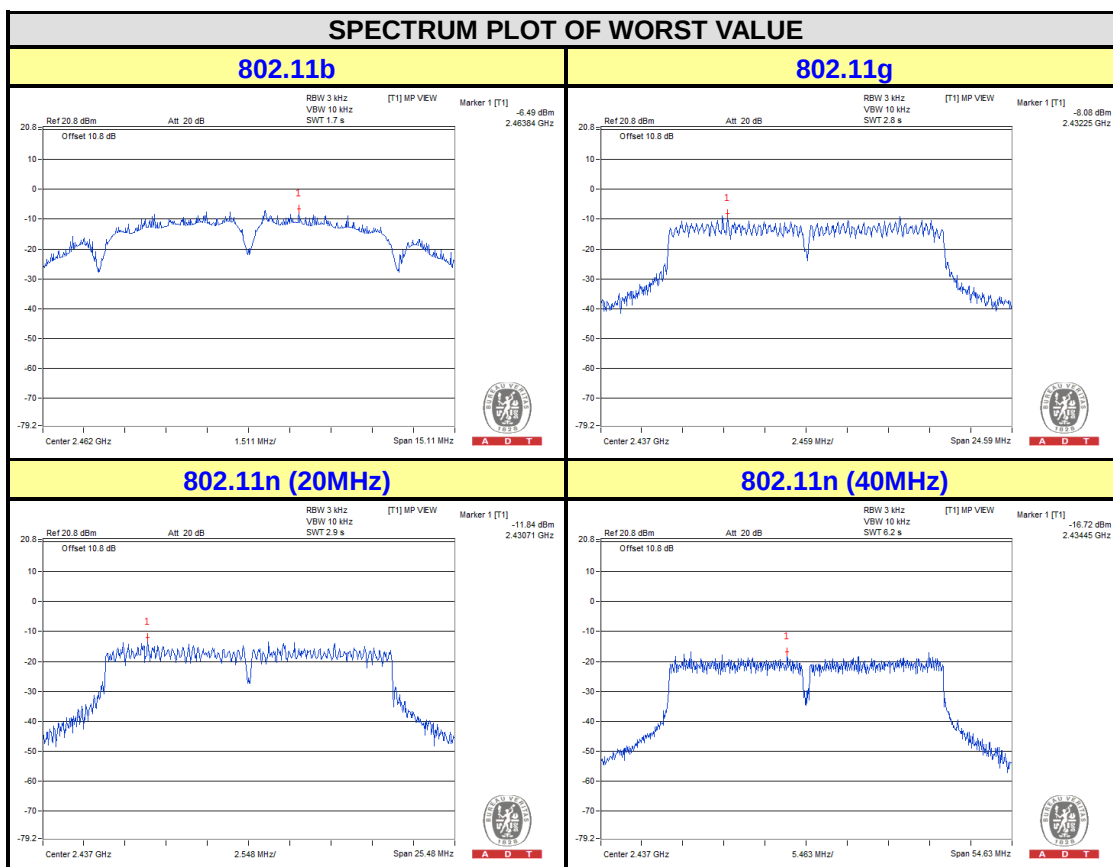
TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-13.69	3.01	-10.68	8	PASS
	6	2437	-14.15	3.01	-11.14	8	PASS
	11	2462	-14.43	3.01	-11.42	8	PASS
1	1	2412	-14.96	3.01	-11.95	8	PASS
	6	2437	-11.84	3.01	-8.83	8	PASS
	11	2462	-14.60	3.01	-11.59	8	PASS

NOTE: Directional gain = $-1.5\text{dBi} + 10\log(2) = 1.51\text{dBi} < 6\text{dBi}$, 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	-18.85	3.01	-15.84	8	PASS
	6	2437	-16.72	3.01	-13.71	8	PASS
	9	2452	-19.58	3.01	-16.57	8	PASS
1	3	2422	-19.42	3.01	-16.41	8	PASS
	6	2437	-17.68	3.01	-14.67	8	PASS
	9	2452	-20.40	3.01	-17.39	8	PASS

NOTE: Directional gain = $-1.5\text{dBi} + 10\log(2) = 1.51\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

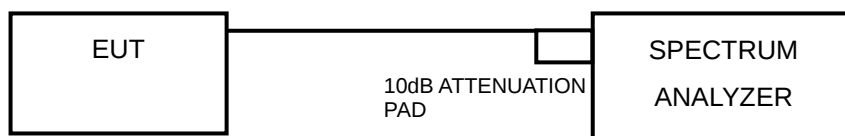


4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below –20dB 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

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. Ensure that the number of measurement points $\geq$ span/RBW
4. According to measurement points to set differ measurement span.
5. Detector = peak.
6. Trace Mode = max hold.
7. Sweep = auto couple.

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 20dB offset below D1. It shows compliance with the requirement.

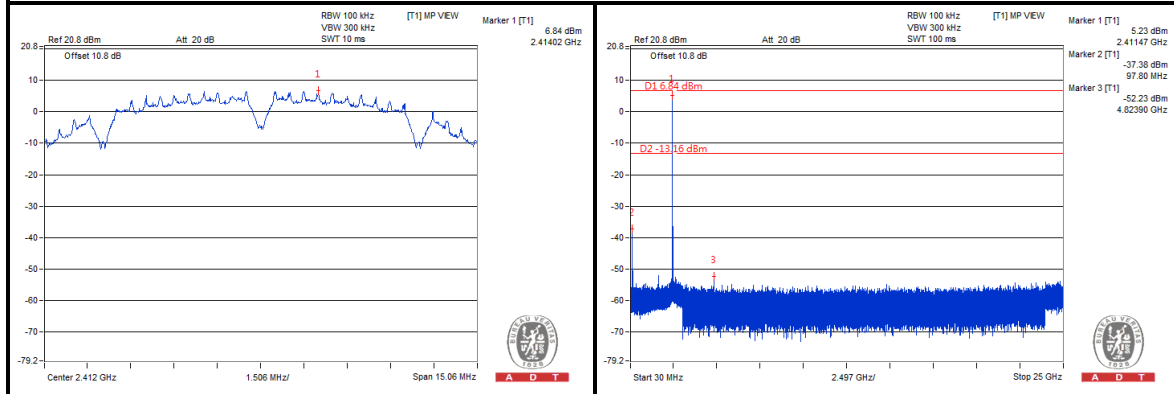


A D T

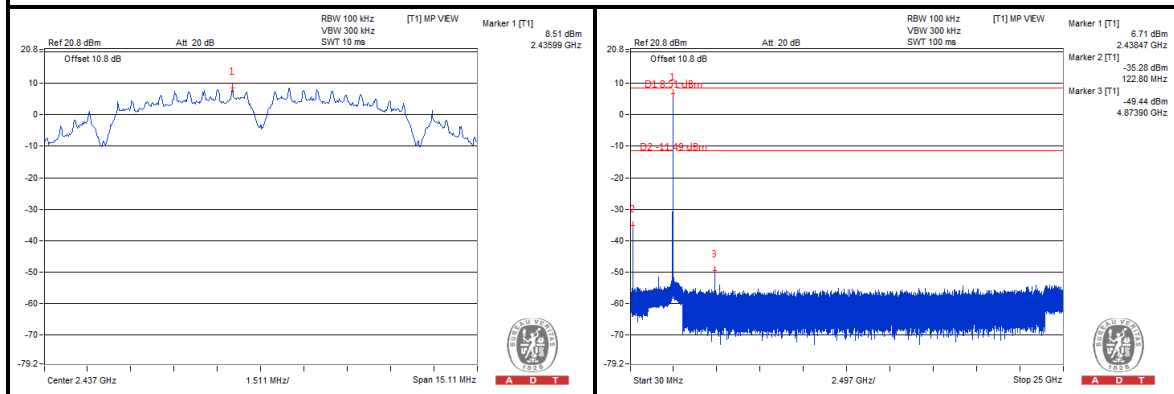
Mode A

802.11b

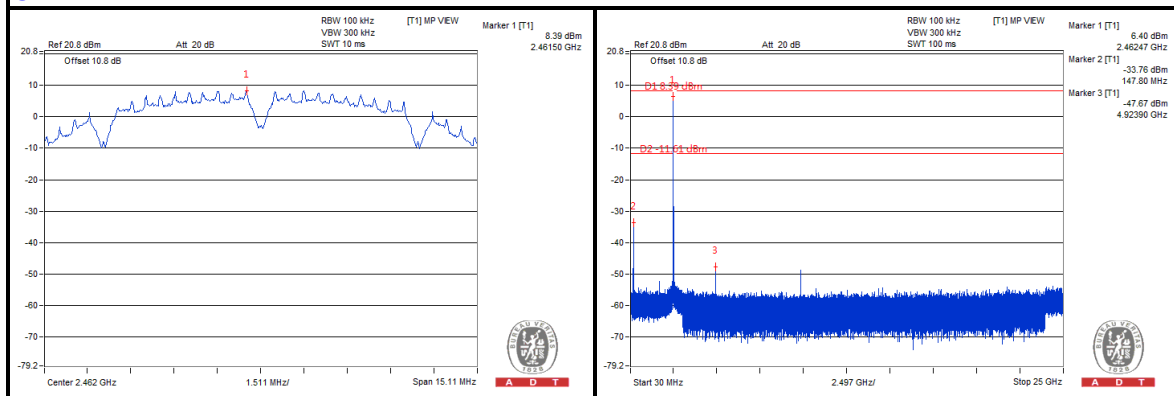
CH 1



CH 6



CH 11

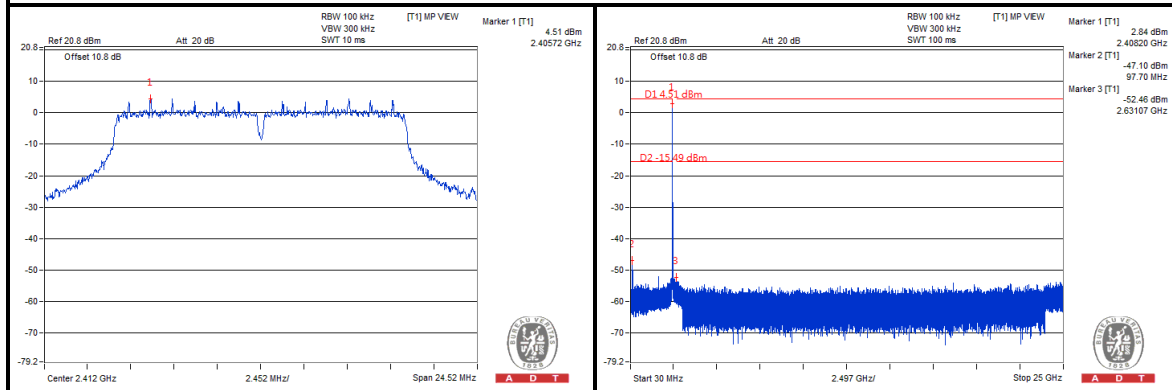




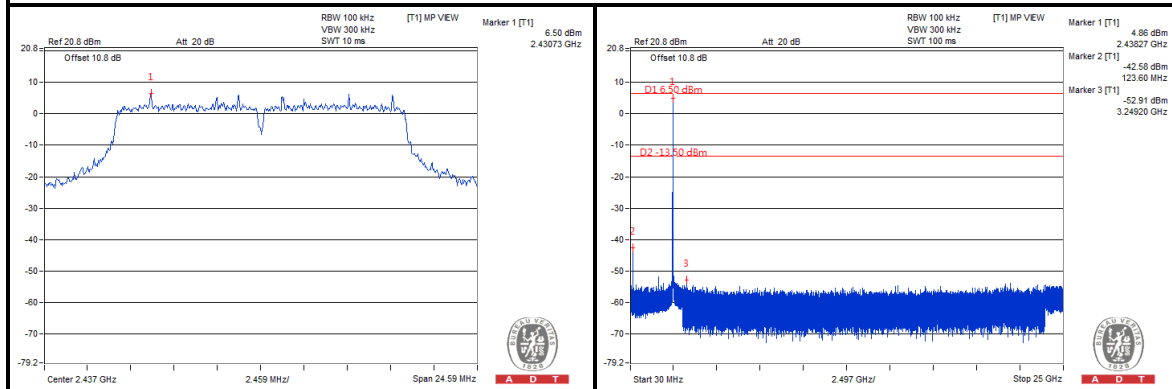
A D T

802.11g

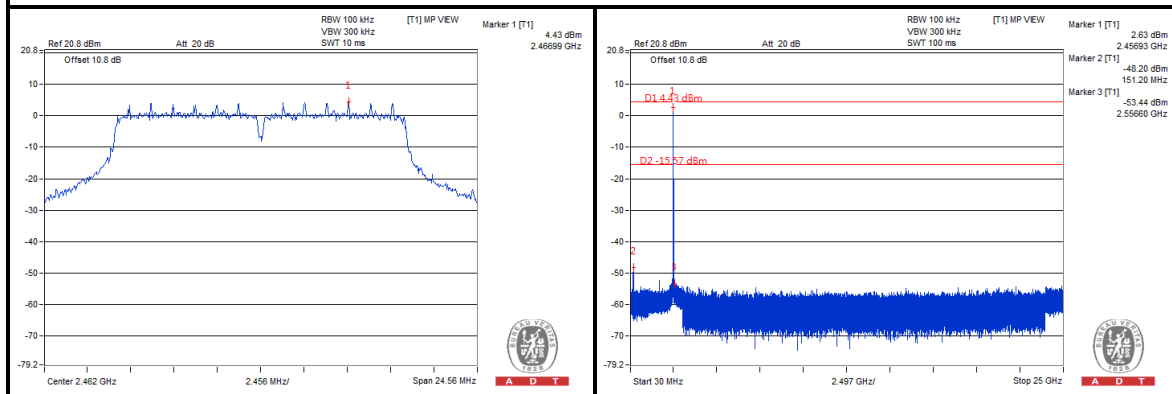
CH 1



CH 6



CH 11





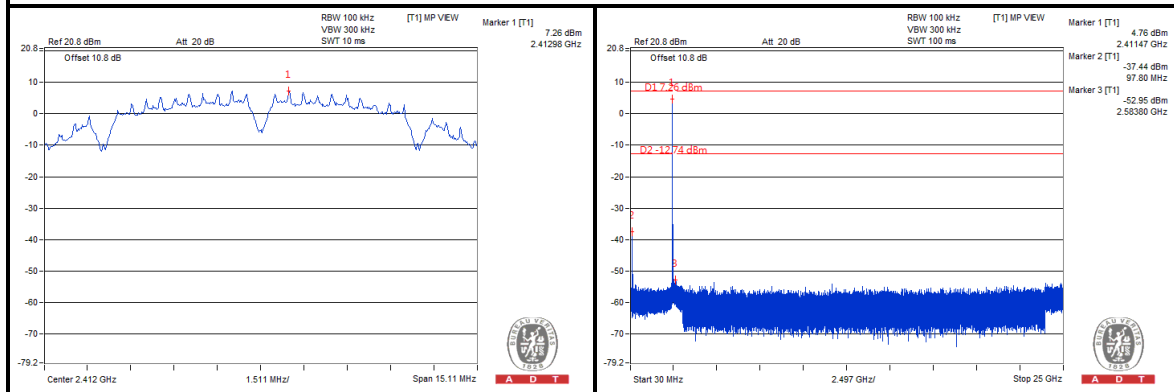
A D T

Mode B

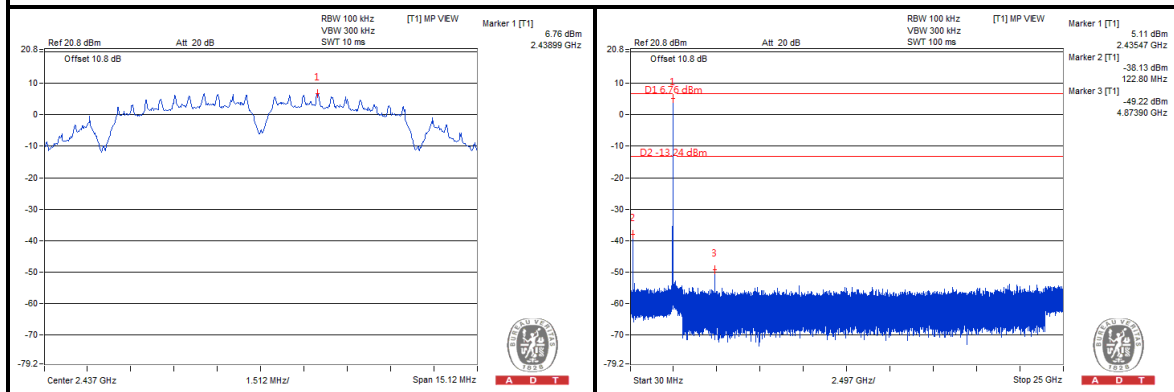
802.11b

CHAIN 0

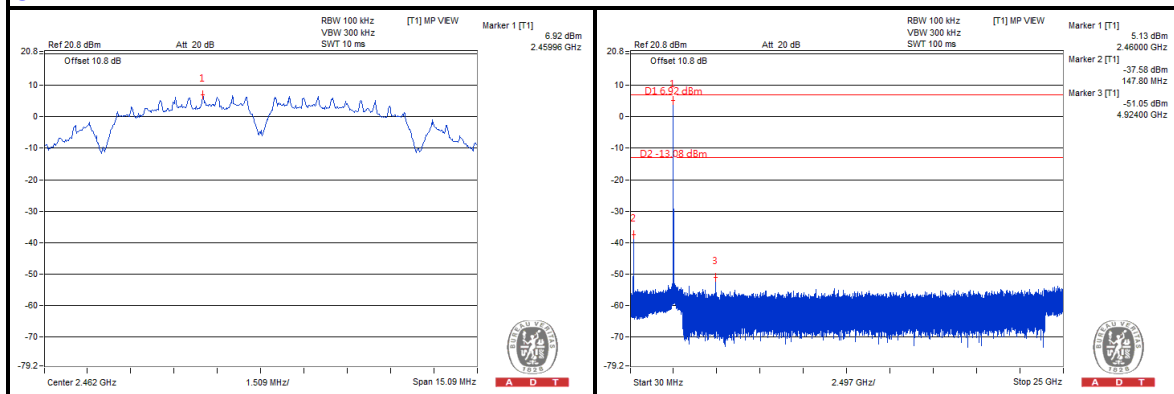
CH 1



CH 6



CH 11

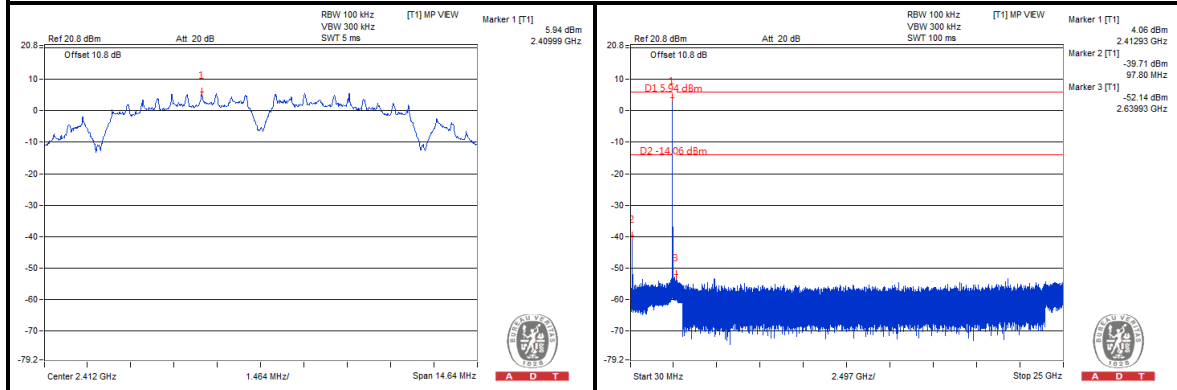




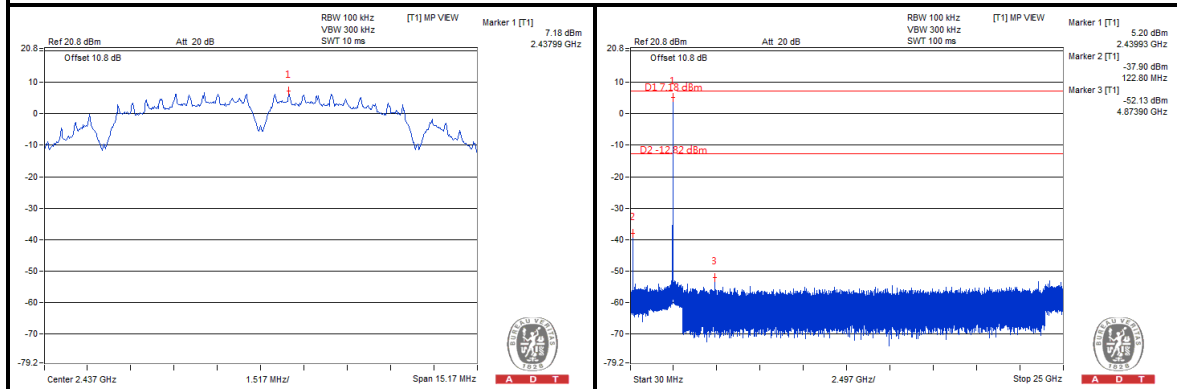
A D T

CHAIN 1

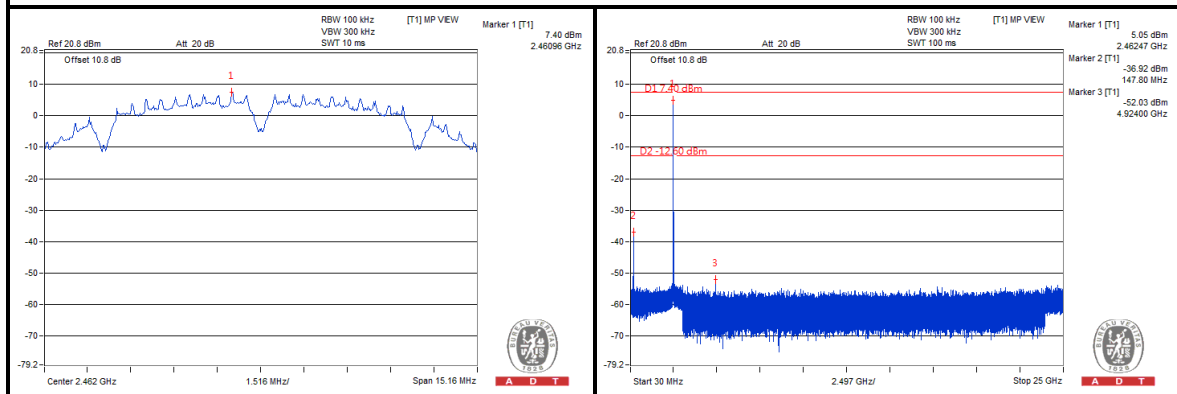
CH 1



CH 6



CH 11



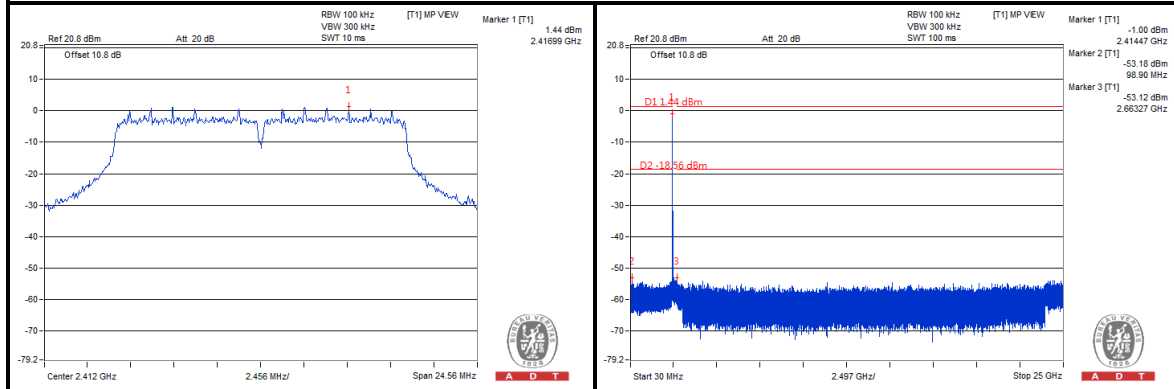


A D T

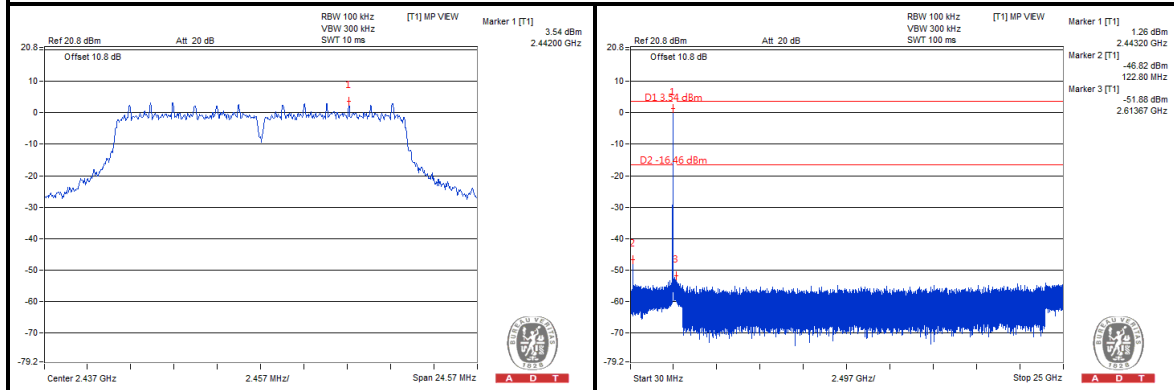
802.11g

CHAIN 0

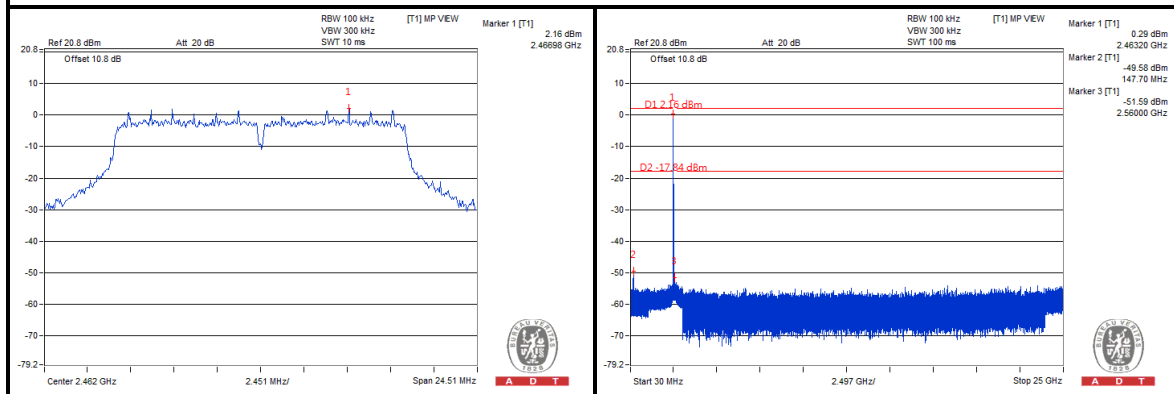
CH 1



CH 6



CH 11

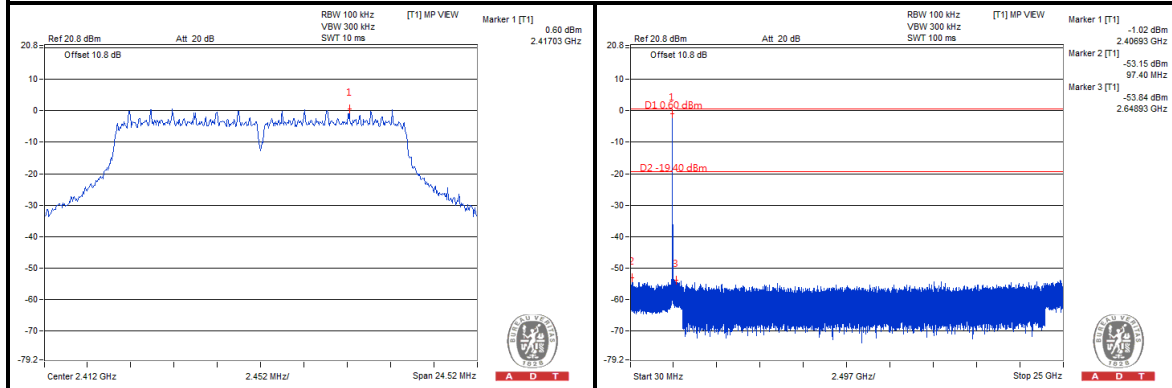




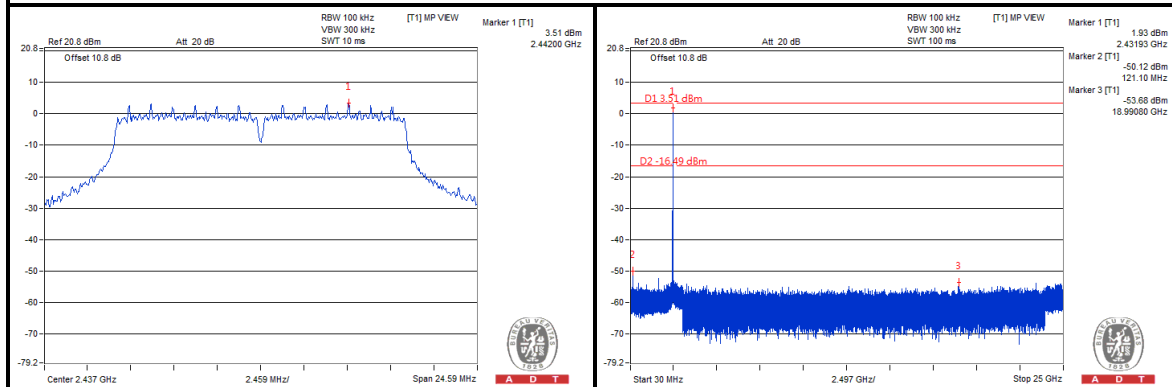
A D T

CHAIN 1

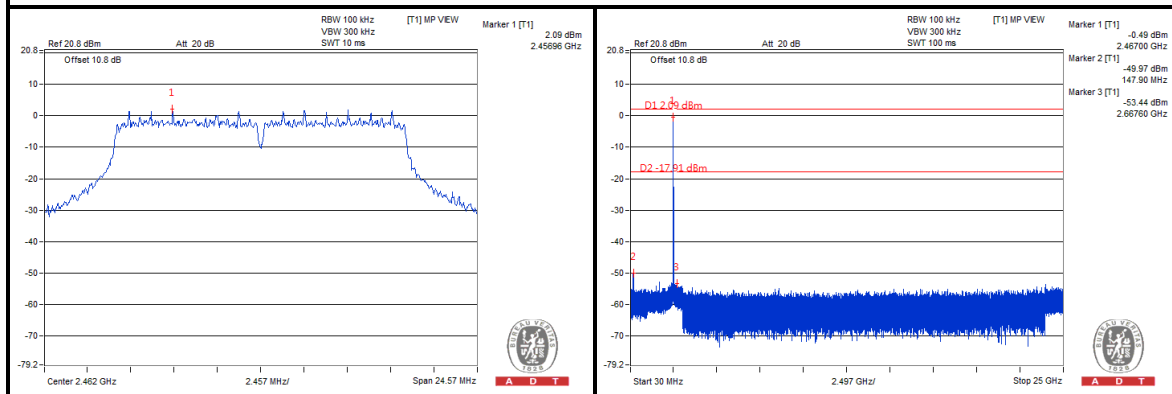
CH 1



CH 6



CH 11



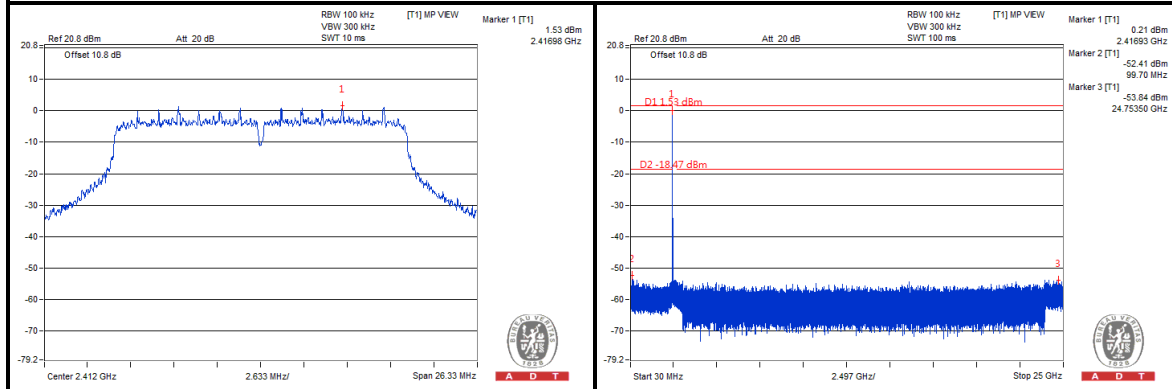


A D T

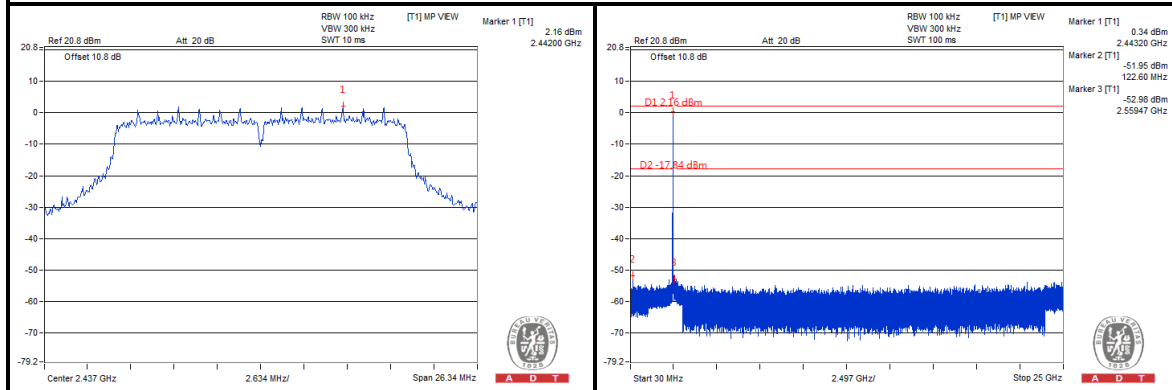
802.11n (20MHz)

CHIAN 0

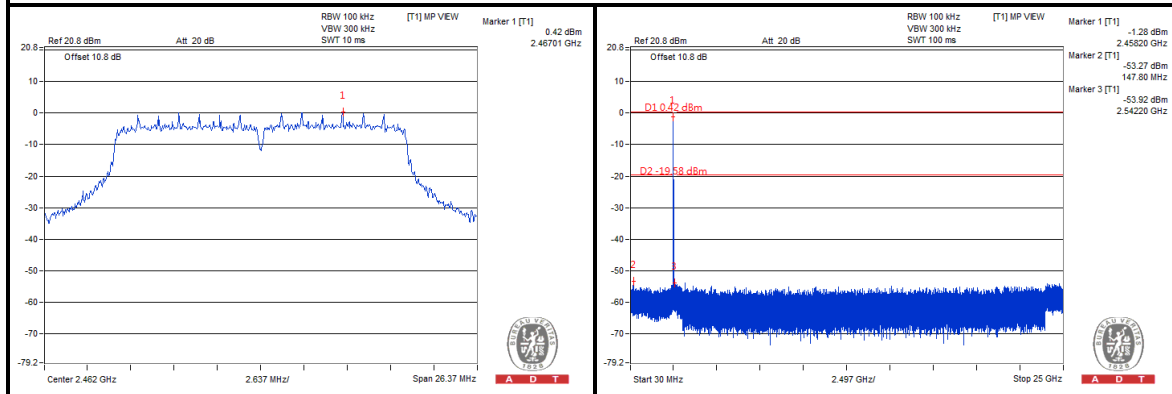
CH 1



CH 6



CH 11

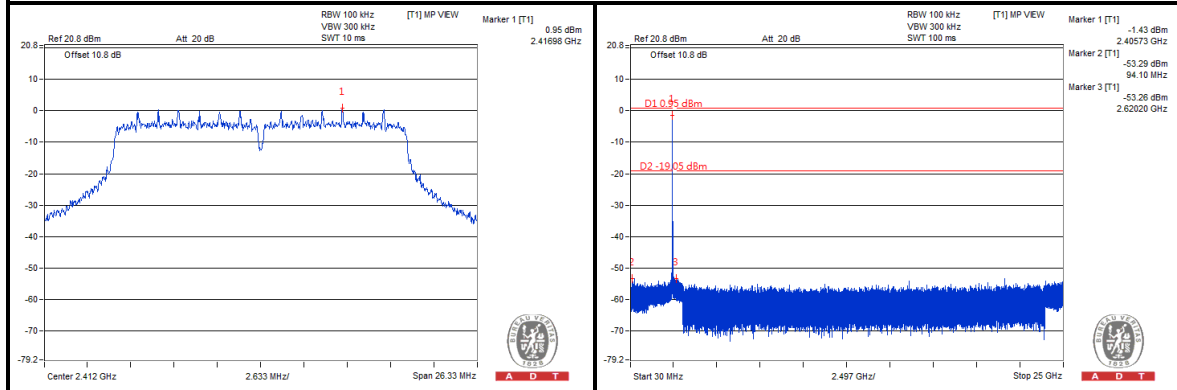




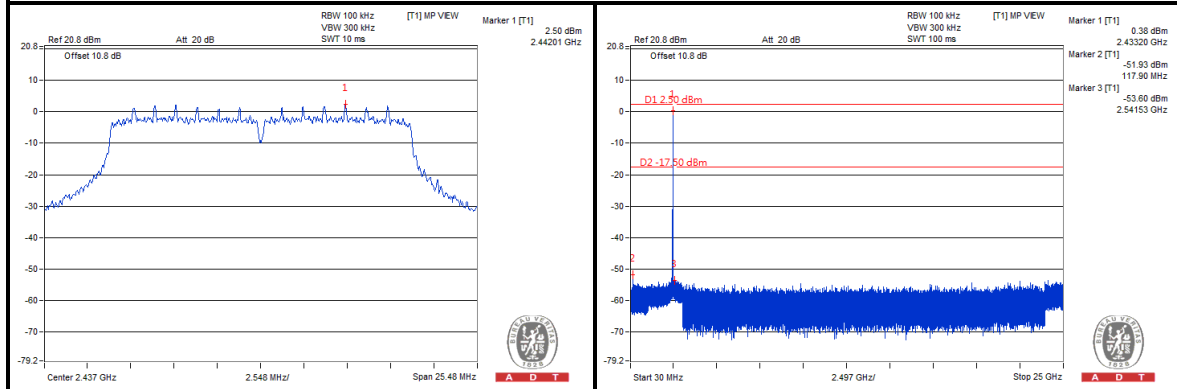
A D T

CHIAN 1

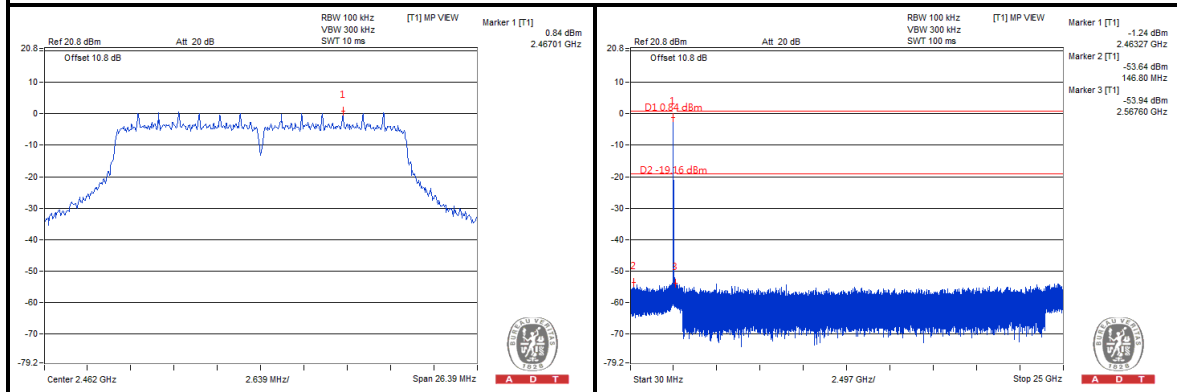
CH 1



CH 6



CH 11



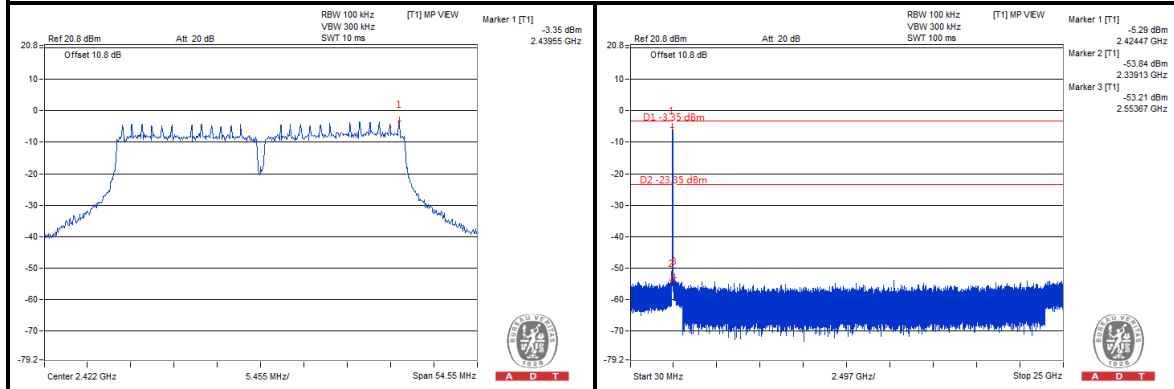


A D T

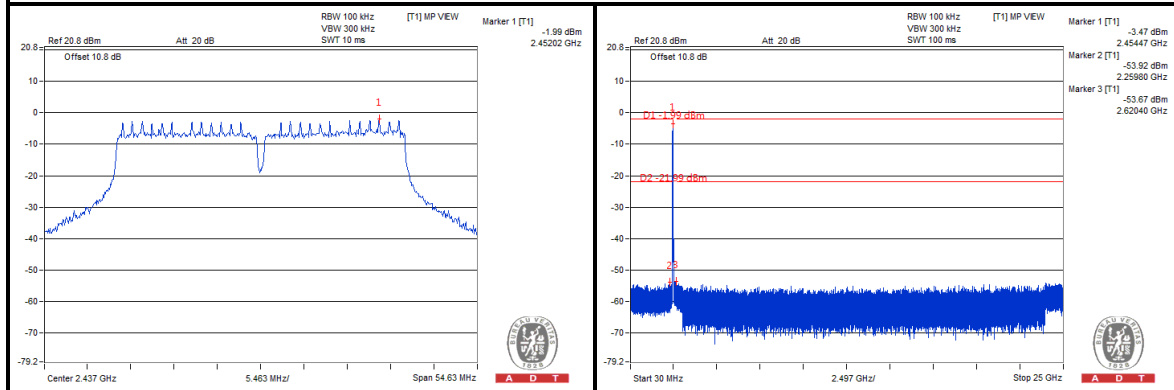
802.11n (40MHz)

CHAIN 0

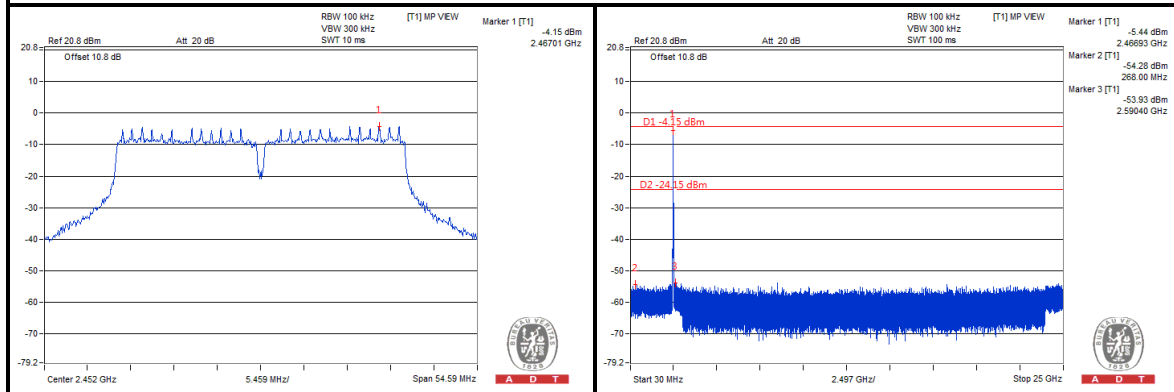
CH 3



CH 6

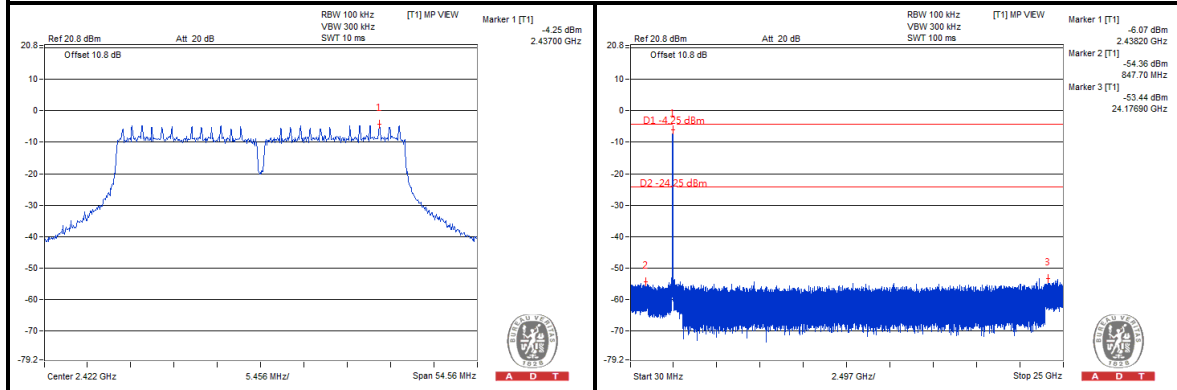


CH 9

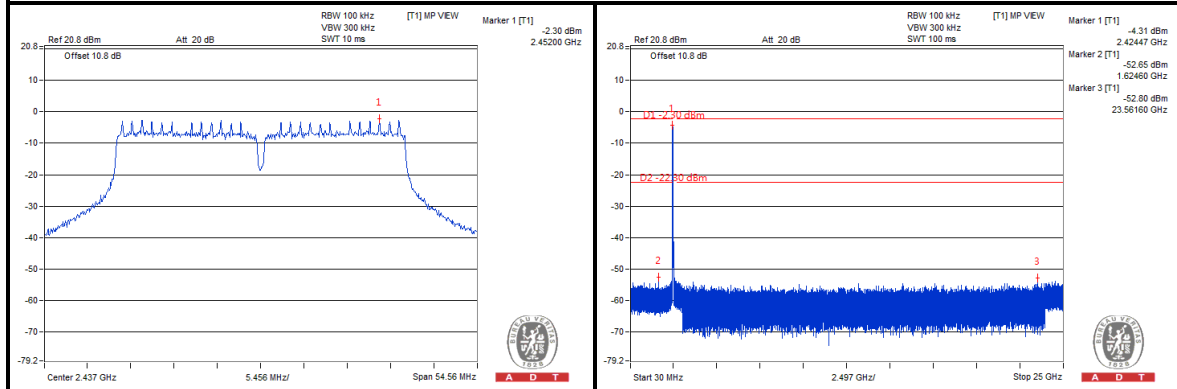


CHAIN 1

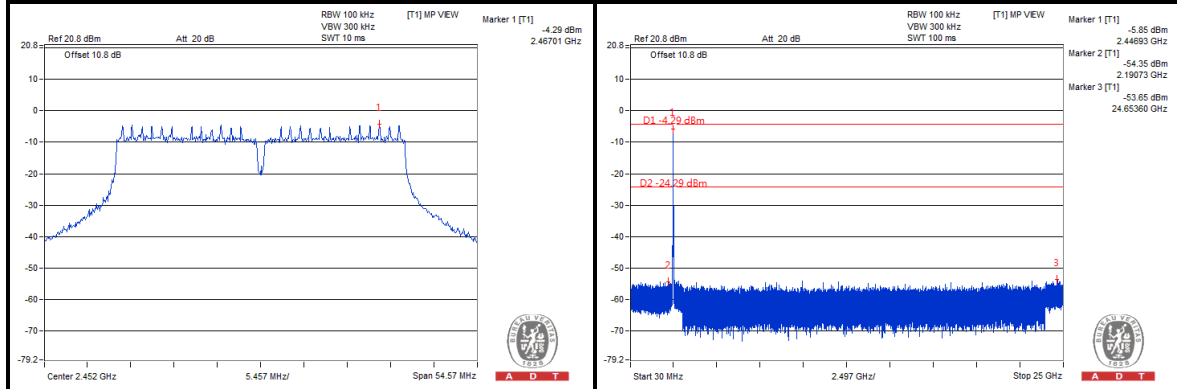
CH 3



CH 6



CH 9



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 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.

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 4.1.6.

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	53.54	53.42	72.35	-18.81	31.96	5.59	37.43	106	110	Average
5725	68.87	68.75	81.47	-12.6	31.96	5.59	37.43	106	110	Peak
5745	92.35	92.23			31.99	5.6	37.47	106	110	Average
5745	101.47	101.35			31.99	5.6	37.47	106	110	Peak
5850	38.09	37.79	72.35	-34.26	32.15	5.66	37.51	106	110	Average
5850	58.24	57.94	81.47	-23.23	32.15	5.66	37.51	106	110	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	58.7	58.58	77.71	-19.01	31.96	5.59	37.43	100	201	Average
5725	72.52	72.4	87.01	-14.49	31.96	5.59	37.43	100	201	Peak
5745	97.71	97.59			31.99	5.6	37.47	100	201	Average
5745	107.01	106.89			31.99	5.6	37.47	100	201	Peak
5850	38.53	38.23	77.71	-39.18	32.15	5.66	37.51	100	201	Average
5850	58.61	58.31	87.01	-28.4	32.15	5.66	37.51	100	201	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

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	38.12	38	73.9	-35.78	31.96	5.59	37.43	102	108	Average
5725	59.53	59.41	82.9	-23.37	31.96	5.59	37.43	102	108	Peak
5785	93.9	93.78			32.04	5.62	37.54	102	108	Average
5785	102.9	102.78			32.04	5.62	37.54	102	108	Peak
5850	38.12	37.82	73.9	-35.78	32.15	5.66	37.51	102	108	Average
5850	58.05	57.75	82.9	-24.85	32.15	5.66	37.51	102	108	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	39.19	39.07	79.26	-40.07	31.96	5.59	37.43	100	204	Average
5725	58.48	58.36	88.23	-29.75	31.96	5.59	37.43	100	204	Peak
5785	99.26	99.14			32.04	5.62	37.54	100	204	Average
5785	108.23	108.11			32.04	5.62	37.54	100	204	Peak
5850	38.57	38.27	79.26	-40.69	32.15	5.66	37.51	100	204	Average
5850	58.06	57.76	88.23	-30.17	32.15	5.66	37.51	100	204	Peak
11570	47.65	52.11	54	-6.35	39.78	9.09	53.33	147	175	Average
11570	59.77	64.23	74	-14.23	39.78	9.09	53.33	147	175	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

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	37.98	37.86	75.02	-37.04	31.96	5.59	37.43	111	109	Average
5725	59.91	59.79	83.73	-23.82	31.96	5.59	37.43	111	109	Peak
5825	95.02	94.79			32.12	5.64	37.53	111	109	Average
5825	103.73	103.5			32.12	5.64	37.53	111	109	Peak
5850	46.77	46.47	75.02	-28.25	32.15	5.66	37.51	111	109	Average
5850	66.61	66.31	83.73	-17.12	32.15	5.66	37.51	111	109	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	38.91	38.79	80.07	-41.16	31.96	5.59	37.43	100	200	Average
5725	57.88	57.76	89.03	-31.15	31.96	5.59	37.43	100	200	Peak
5825	100.07	99.84			32.12	5.64	37.53	100	200	Average
5825	109.03	108.8			32.12	5.64	37.53	100	200	Peak
5850	50.33	50.03	80.07	-29.74	32.15	5.66	37.51	100	200	Average
5850	70.11	69.81	89.03	-18.92	32.15	5.66	37.51	100	200	Peak
11650	49.59	54.17	54	-4.41	39.65	9.12	53.35	100	176	Average
11650	61.53	66.11	74	-12.47	39.65	9.12	53.35	100	176	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

Mode B

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	50.66	50.54	73.17	-22.51	31.96	5.59	37.43	103	188	Average
5725	66.59	66.47	82.46	-15.87	31.96	5.59	37.43	103	188	Peak
5745	93.17	93.05			31.99	5.6	37.47	103	188	Average
5745	102.46	102.34			31.99	5.6	37.47	103	188	Peak
5850	38.65	38.35	73.17	-34.52	32.15	5.66	37.51	103	188	Average
5850	59.47	59.17	82.46	-22.99	32.15	5.66	37.51	103	188	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	57.79	57.67	79.34	-21.55	31.96	5.59	37.43	100	166	Average
5725	70.15	70.03	88.33	-18.18	31.96	5.59	37.43	100	166	Peak
5745	99.34	99.22			31.99	5.6	37.47	100	166	Average
5745	108.33	108.21			31.99	5.6	37.47	100	166	Peak
5850	39.48	39.18	79.34	-39.86	32.15	5.66	37.51	100	166	Average
5850	59.17	58.87	88.33	-29.16	32.15	5.66	37.51	100	166	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

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	38.5	38.38	74.69	-36.19	31.96	5.59	37.43	102	292	Average
5725	58.96	58.84	84.07	-25.11	31.96	5.59	37.43	102	292	Peak
5785	94.69	94.57			32.04	5.62	37.54	102	292	Average
5785	104.07	103.95			32.04	5.62	37.54	102	292	Peak
5850	38.64	38.34	74.69	-36.05	32.15	5.66	37.51	102	292	Average
5850	59.58	59.28	84.07	-24.49	32.15	5.66	37.51	102	292	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	39.11	38.99	81.15	-42.04	31.96	5.59	37.43	100	160	Average
5725	59.21	59.09	89.88	-30.67	31.96	5.59	37.43	100	160	Peak
5785	101.15	101.03			32.04	5.62	37.54	100	160	Average
5785	109.88	109.76			32.04	5.62	37.54	100	160	Peak
5850	38.85	38.55	81.15	-42.3	32.15	5.66	37.51	100	160	Average
5850	60.1	59.8	89.88	-29.78	32.15	5.66	37.51	100	160	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

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	38.17	38.05	76.69	-38.52	31.96	5.59	37.43	102	296	Average
5725	58.6	58.48	85.44	-26.84	31.96	5.59	37.43	102	296	Peak
5825	96.69	96.46			32.12	5.64	37.53	102	296	Average
5825	105.44	105.21			32.12	5.64	37.53	102	296	Peak
5850	45.19	44.89	76.69	-31.5	32.15	5.66	37.51	102	296	Average
5850	63.23	62.93	85.44	-22.21	32.15	5.66	37.51	102	296	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	38.73	38.61	82.04	-43.31	31.96	5.59	37.43	100	17	Average
5725	58.85	58.73	91.22	-32.37	31.96	5.59	37.43	100	17	Peak
5825	102.04	101.81			32.12	5.64	37.53	100	17	Average
5825	111.22	110.99			32.12	5.64	37.53	100	17	Peak
5850	51.46	51.16	82.04	-30.58	32.15	5.66	37.51	100	17	Average
5850	68.53	68.23	91.22	-22.69	32.15	5.66	37.51	100	17	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 (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	55.98	55.86	75.12	-19.14	31.96	5.59	37.43	102	188	Average
5725	74.54	74.42	84.73	-10.19	31.96	5.59	37.43	102	188	Peak
5745	95.12	95			31.99	5.6	37.47	102	188	Average
5745	104.73	104.61			31.99	5.6	37.47	102	188	Peak
5850	38.44	38.14	75.12	-36.68	32.15	5.66	37.51	102	188	Average
5850	58.5	58.2	84.73	-26.23	32.15	5.66	37.51	102	188	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	63.68	63.56	80.35	-16.67	31.96	5.59	37.43	102	343	Average
5725	72.91	72.79	89.52	-16.61	31.96	5.59	37.43	102	343	Peak
5745	100.35	100.23			31.99	5.6	37.47	102	343	Average
5745	109.52	109.4			31.99	5.6	37.47	102	343	Peak
5850	39.05	38.75	80.35	-41.3	32.15	5.66	37.51	102	343	Average
5850	59.97	59.67	89.52	-29.55	32.15	5.66	37.51	102	343	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

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	38.44	38.32	76.2	-37.76	31.96	5.59	37.43	118	248	Average
5725	58.81	58.69	84.93	-26.12	31.96	5.59	37.43	118	248	Peak
5785	96.2	96.08			32.04	5.62	37.54	118	248	Average
5785	104.93	104.81			32.04	5.62	37.54	118	248	Peak
5850	38.45	38.15	76.2	-37.75	32.15	5.66	37.51	118	248	Average
5850	61.34	61.04	84.93	-23.59	32.15	5.66	37.51	118	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
5725	39.21	39.09	82.72	-43.51	31.96	5.59	37.43	101	170	Average
5725	58.84	58.72	91.68	-32.84	31.96	5.59	37.43	101	170	Peak
5785	102.72	102.6			32.04	5.62	37.54	101	170	Average
5785	111.68	111.56			32.04	5.62	37.54	101	170	Peak
5850	39.07	38.77	82.72	-43.65	32.15	5.66	37.51	101	170	Average
5850	58.64	58.34	91.68	-33.04	32.15	5.66	37.51	101	170	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

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	39.42	39.3	78.16	-38.74	31.96	5.59	37.43	102	295	Average
5725	58.85	58.73	87.52	-28.67	31.96	5.59	37.43	102	295	Peak
5825	98.16	97.93			32.12	5.64	37.53	102	295	Average
5825	107.52	107.29			32.12	5.64	37.53	102	295	Peak
5850	55.71	55.41	78.16	-22.45	32.15	5.66	37.51	102	295	Average
5850	72.22	71.92	87.52	-15.3	32.15	5.66	37.51	102	295	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	38.63	38.51	83.88	-45.25	31.96	5.59	37.43	100	169	Average
5725	58.06	57.94	91.8	-15.94	31.96	5.59	37.43	100	169	Peak
5825	103.88	103.65			32.12	5.64	37.53	100	169	Average
5825	111.8	111.57			32.12	5.64	37.53	100	169	Peak
5850	61.27	60.97	83.88	-22.61	32.15	5.66	37.51	100	169	Average
5850	80.52	80.22	91.8	-11.28	32.15	5.66	37.51	100	169	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	62.53	62.41	73.73	-11.2	31.96	5.59	37.43	113	296	Average
5725	74.68	74.56	82.43	-7.75	31.96	5.59	37.43	113	296	Peak
5755	93.73	93.59			32.01	5.6	37.47	113	296	Average
5755	102.43	102.29			32.01	5.6	37.47	113	296	Peak
5850	38.65	38.35	73.73	-35.08	32.15	5.66	37.51	113	296	Average
5850	57.63	57.33	82.43	-24.8	32.15	5.66	37.51	113	296	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	68.01	67.89	79.98	-11.97	31.96	5.59	37.43	101	196	Average
5725	78.57	78.45	88.6	-10.03	31.96	5.59	37.43	101	196	Peak
5755	99.98	99.84			32.01	5.6	37.47	101	196	Average
5755	108.6	108.46			32.01	5.6	37.47	101	196	Peak
5850	39.5	39.2	79.98	-40.48	32.15	5.66	37.51	101	196	Average
5850	58.21	57.91	88.6	-30.39	32.15	5.66	37.51	101	196	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5755MHz: Fundamental frequency.
3. 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	39.88	39.76	74.33	-34.45	31.96	5.59	37.43	103	295	Average
5725	58.45	58.33	82.89	-24.44	31.96	5.59	37.43	103	295	Peak
5795	94.33	94.17			32.07	5.63	37.54	103	295	Average
5795	102.89	102.73			32.07	5.63	37.54	103	295	Peak
5850	44.08	43.78	74.33	-30.25	32.15	5.66	37.51	103	295	Average
5850	60.41	60.11	82.89	-22.48	32.15	5.66	37.51	103	295	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	44.16	44.04	81.24	-37.08	31.96	5.59	37.43	102	180	Average
5725	59.44	59.32	89.86	-30.42	31.96	5.59	37.43	102	180	Peak
5795	101.24	101.08			32.07	5.63	37.54	102	180	Average
5795	109.86	109.7			32.07	5.63	37.54	102	180	Peak
5850	49.04	48.74	81.24	-32.2	32.15	5.66	37.51	102	180	Average
5850	61.2	60.9	89.86	-28.66	32.15	5.66	37.51	102	180	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5795MHz: Fundamental frequency.
3. 5725MHz & 5850MHz: Out of restricted band



A D T

BELOW 1GHz WORST-CASE DATA :**802.11a**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK)
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
112.89	22.84	43.29	43.5	-20.66	10.27	1.14	31.86	100	132	Peak
182.55	26.56	46.26	43.5	-16.94	10.6	1.51	31.81	100	236	Peak
282.45	26.92	44.32	46	-19.08	12.42	1.97	31.79	100	123	Peak
355.3	30.9	46.29	46	-15.1	14.26	2.25	31.9	100	214	Peak
500.2	28.38	39.89	46	-17.62	17.33	2.78	31.62	100	120	Peak
799.8	35.38	40.89	46	-10.62	22.23	3.69	31.43	100	132	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
39.45	22.56	39.36	40	-17.44	13.54	0.65	30.99	100	196	Peak
110.73	20.48	41.11	43.5	-23.02	10.09	1.13	31.85	100	142	Peak
183.36	32.44	52.19	43.5	-11.06	10.53	1.51	31.79	100	156	Peak
538.7	31.67	42.29	46	-14.33	18.19	2.91	31.72	100	131	Peak
635.3	33.21	42.09	46	-12.79	20.03	3.2	32.11	100	196	Peak
845.3	30.18	35.4	46	-15.82	22.81	3.81	31.84	100	218	Peak

REMARKS: Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value

5.2 CONDUCTED EMISSION MEASUREMENT

5.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	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.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

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

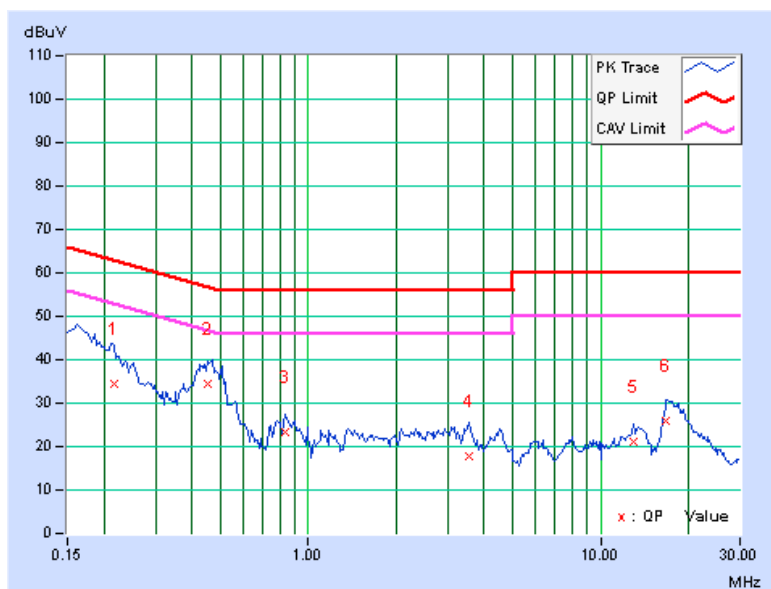
CONDUCTED WORST-CASE DATA :

PHASE	Line 1	6dB BANDWIDTH	9kHz
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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	0.21641	0.17	34.43	18.47	34.60	18.64	62.96	52.96	-28.35	-34.31
2	0.45469	0.22	34.40	30.67	34.62	30.89	56.79	46.79	-22.17	-15.90
3	0.83750	0.25	23.19	17.89	23.44	18.14	56.00	46.00	-32.56	-27.86
4	3.56641	0.35	17.55	7.49	17.90	7.84	56.00	46.00	-38.10	-38.16
5	13.00781	0.49	20.61	15.96	21.10	16.45	60.00	50.00	-38.90	-33.55
6	16.81250	0.57	25.27	20.21	25.84	20.78	60.00	50.00	-34.16	-29.22

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

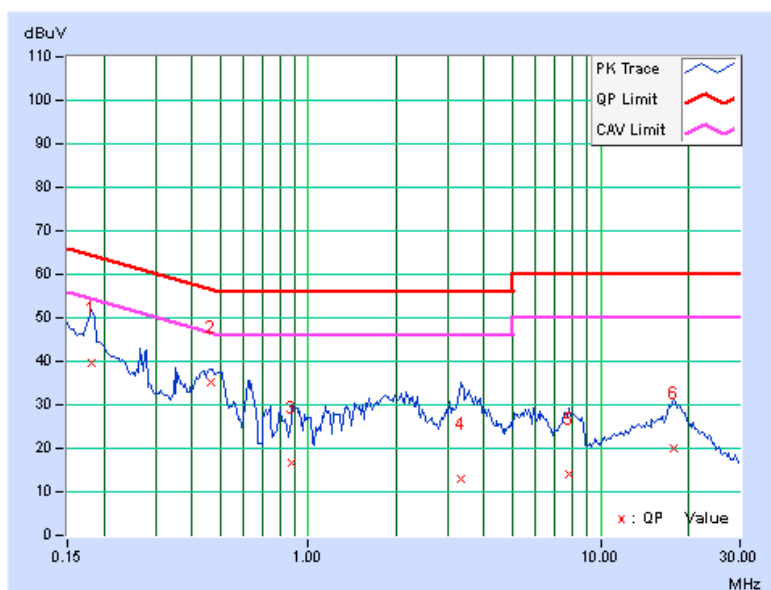


PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18125	0.18	39.60	30.79	39.78	30.97	64.43	54.43	-24.65	-23.46
2	0.46641	0.25	35.02	29.36	35.27	29.61	56.58	46.58	-21.31	-16.97
3	0.87656	0.23	16.37	10.72	16.60	10.95	56.00	46.00	-39.40	-35.05
4	3.34375	0.35	12.51	4.57	12.86	4.92	56.00	46.00	-43.14	-41.08
5	7.82813	0.45	13.51	8.24	13.96	8.69	60.00	50.00	-46.04	-41.31
6	17.70703	0.67	19.50	13.63	20.17	14.30	60.00	50.00	-39.83	-35.70

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 0.5MHz.

5.3.2 TEST SETUP

Same as item 4.3.2.

5.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

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 4.3.6.



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5.3.7 TEST RESULTS

Mode A

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.34	0.5	PASS
157	5785	16.38	0.5	PASS
165	5825	16.37	0.5	PASS

Mode B

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	16.31	16.38	0.5	PASS
157	5785	16.40	16.40	0.5	PASS
165	5825	16.38	16.40	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.27	17.62	0.5	PASS
157	5785	17.65	17.58	0.5	PASS
165	5825	17.00	17.61	0.5	PASS

802.11n (40MHz)

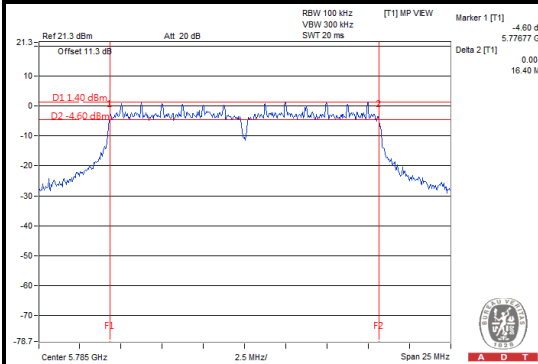
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	35.25	35.23	0.5	PASS
159	5795	35.21	35.19	0.5	PASS



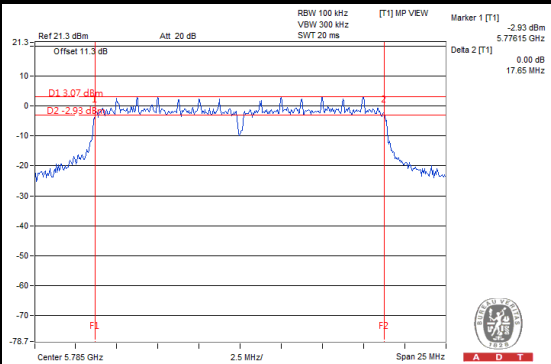
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SPECTRUM PLOT OF WORST VALUE

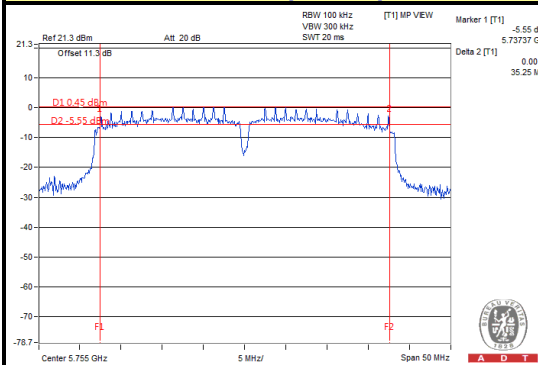
802.11a



802.11n (20MHz)



802.11n (40MHz)



5.4 MAXIMUM OUTPUT POWER

5.4.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

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

5.4.2 TEST SETUP

Same as Item 4.4.2.

5.4.3 INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

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 4.3.6.

5.4.7 TEST RESULTS

FOR PEAK POWER

Mode A

802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	152.055	21.82	30	PASS
157	5785	149.624	21.75	30	PASS
165	5825	161.808	22.09	30	PASS

Mode B

802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS/FAIL
		CHAIN 0	CHAIN 1				
149	5745	20.89	20.23	228.183	23.58	30	PASS
157	5785	20.73	20.32	225.951	23.54	30	PASS
165	5825	20.77	20.52	232.119	23.66	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS/FAIL
		CHAIN 0	CHAIN 1				
149	5745	21.42	21.10	267.501	24.27	30	PASS
157	5785	21.25	21.34	269.497	24.31	30	PASS
165	5825	21.03	21.33	262.597	24.19	30	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS/FAIL
		CHAIN 0	CHAIN 1				
151	5755	20.95	20.60	239.267	23.79	30	PASS
159	5795	20.58	20.44	224.950	23.52	30	PASS

FOR AVERAGE POWER

Mode A

802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)
149	5745	30.200	14.8
157	5785	27.227	14.35
165	5825	33.113	15.2

Mode B

802.11a

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
149	5745	12.77	11.27	32.320	15.09
157	5785	12.33	12.07	33.207	15.21
165	5825	12.85	12.48	36.976	15.68

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
149	5745	13.92	12.67	43.153	16.35
157	5785	13.76	13.76	46.572	16.68
165	5825	13.97	13.90	49.493	16.95

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
151	5755	14.41	14.15	53.607	17.29
159	5795	13.76	13.61	46.730	16.70

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

Refer to section 4.1.2 to get information of above instrument.

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

Mode A

802.11a

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-13.65	8	PASS
157	5785	-12.95	8	PASS
165	5825	-11.26	8	PASS

Mode B

802.11a

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	-14.69	3.01	-11.68	8	PASS
	157	5785	-14.36	3.01	-11.35	8	PASS
	165	5825	-13.48	3.01	-10.47	8	PASS
1	149	5745	-16.04	3.01	-13.03	8	PASS
	157	5785	-15.32	3.01	-12.31	8	PASS
	165	5825	-14.98	3.01	-11.97	8	PASS

NOTE: Directional gain = 2.04dBi + 10log(2) = 5.05dBi < 6dBi , so the limit no need to be reduced.

802.11n (20MHz)

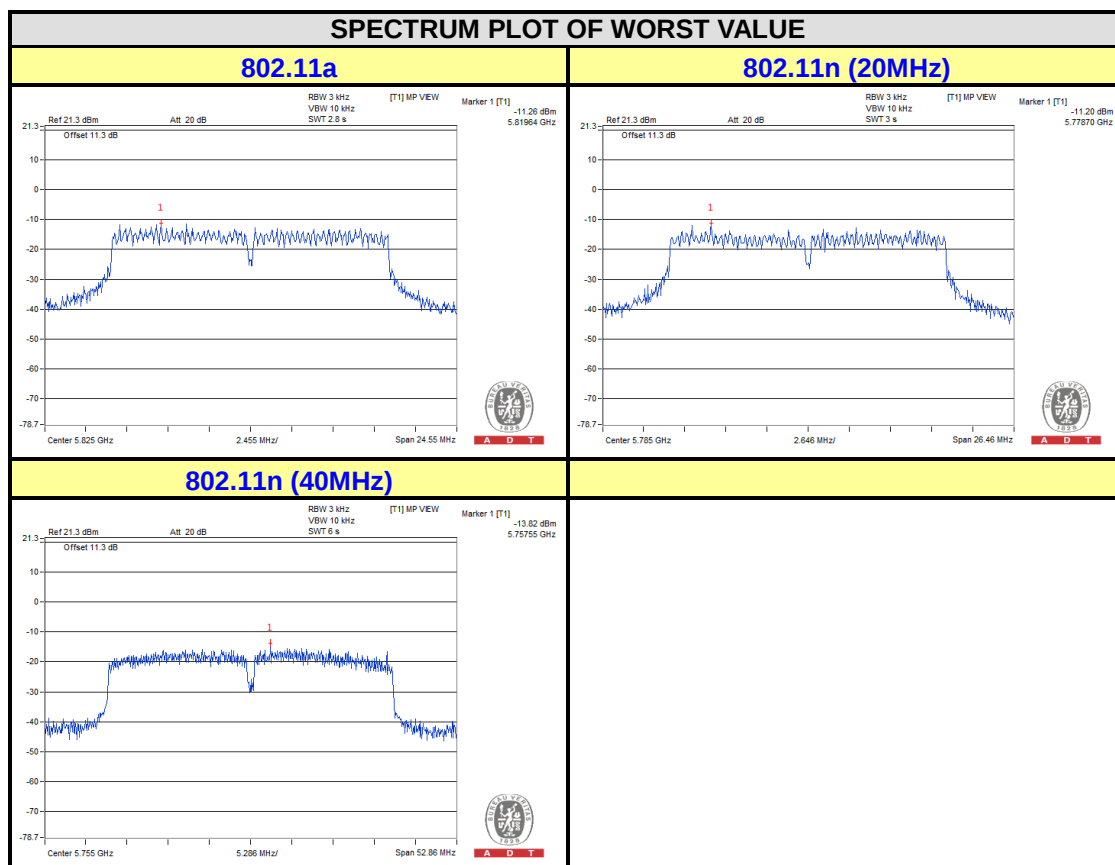
TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-12.60	3.01	-9.59	8	PASS
	157	5785	-11.20	3.01	-8.19	8	PASS
	165	5825	-11.47	3.01	-8.46	8	PASS
1	149	5745	-14.61	3.01	-11.60	8	PASS
	157	5785	-13.09	3.01	-10.08	8	PASS
	165	5825	-13.41	3.01	-10.40	8	PASS

NOTE: Directional gain = 2.04dBi + 10log(2) = 5.05dBi < 6dBi , so the limit no need to be 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	151	5755	-13.82	3.01	-10.81	8	PASS
	159	5795	-13.90	3.01	-10.89	8	PASS
1	151	5755	-16.00	3.01	-12.99	8	PASS
	159	5795	-14.61	3.01	-11.60	8	PASS

NOTE: Directional gain = 2.04dBi + 10log(2) = 5.05dBi < 6dBi , so the limit no need to be reduced.





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5.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

5.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below –20dB 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

Refer to section 4.1.2 to get information of above instrument.

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 20dB offset below D1. It shows compliance with the requirement.

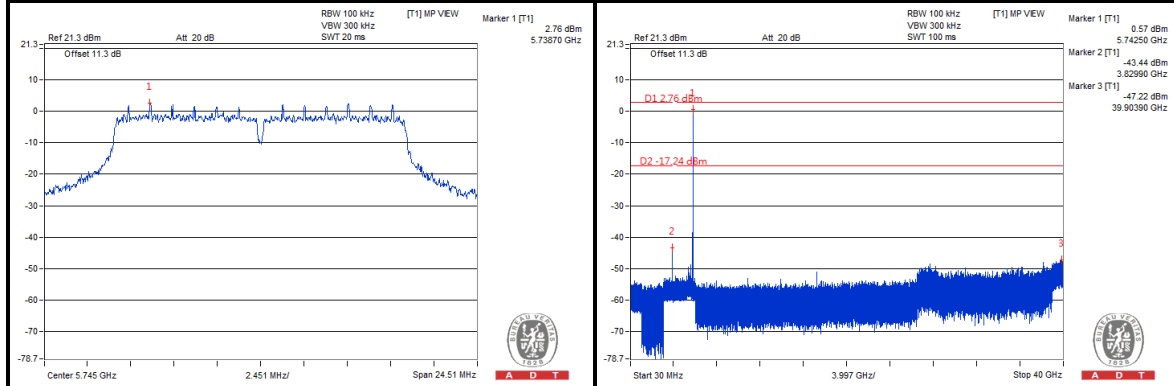


A D T

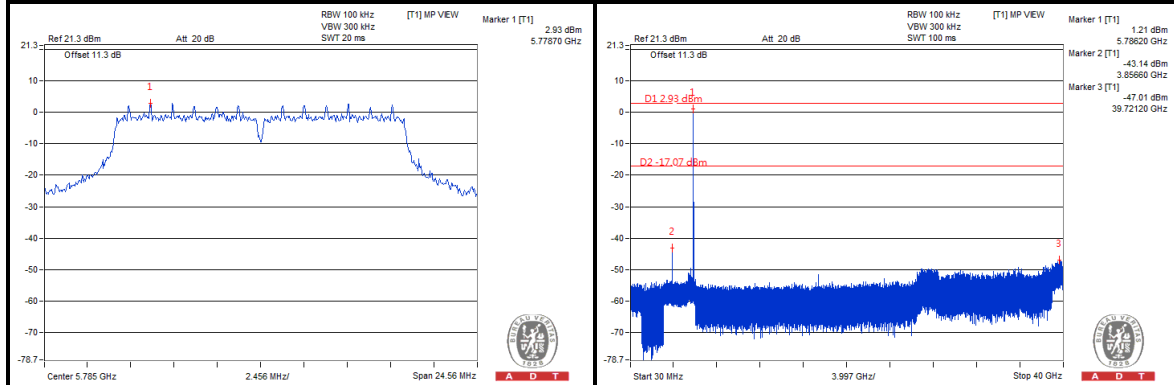
Mode A

802.11a

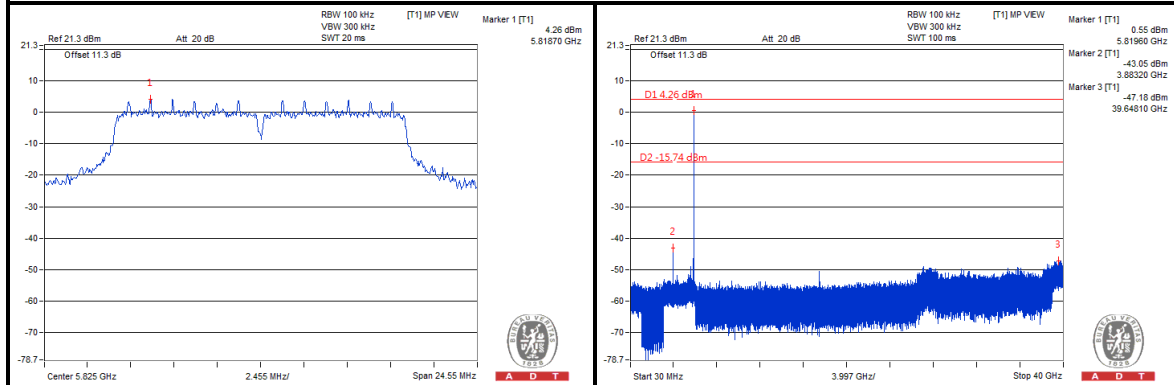
CH 149



CH 157



CH 165





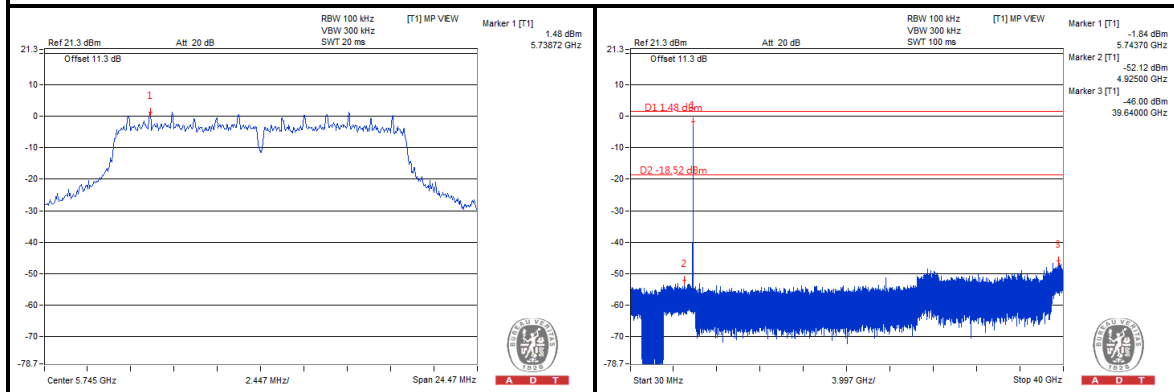
A D T

Mode B

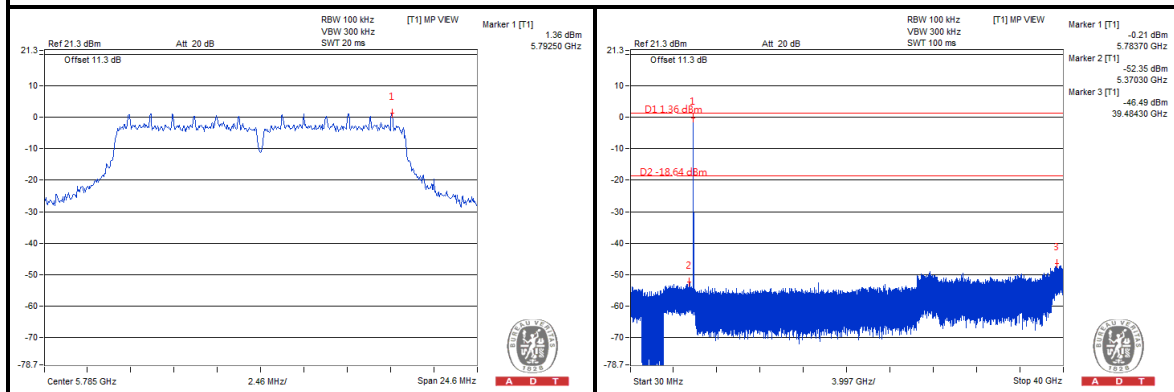
802.11a

CHAIN 0

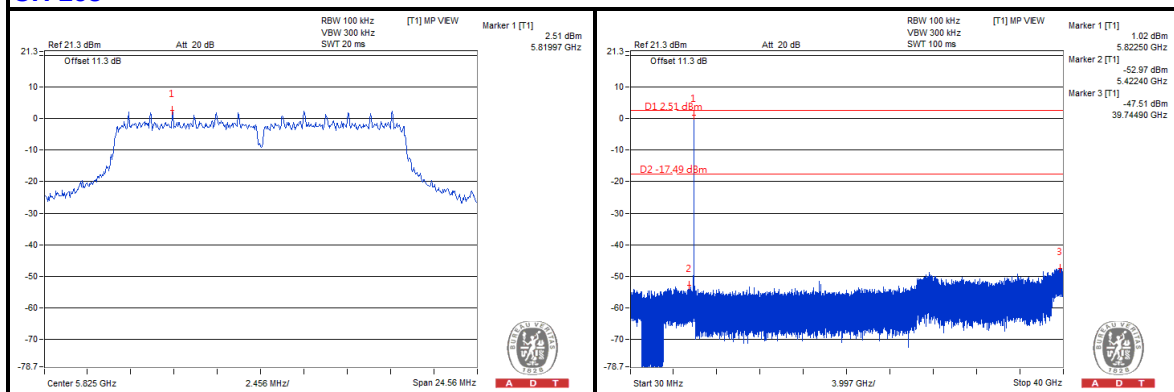
CH 149



CH 157



CH 165

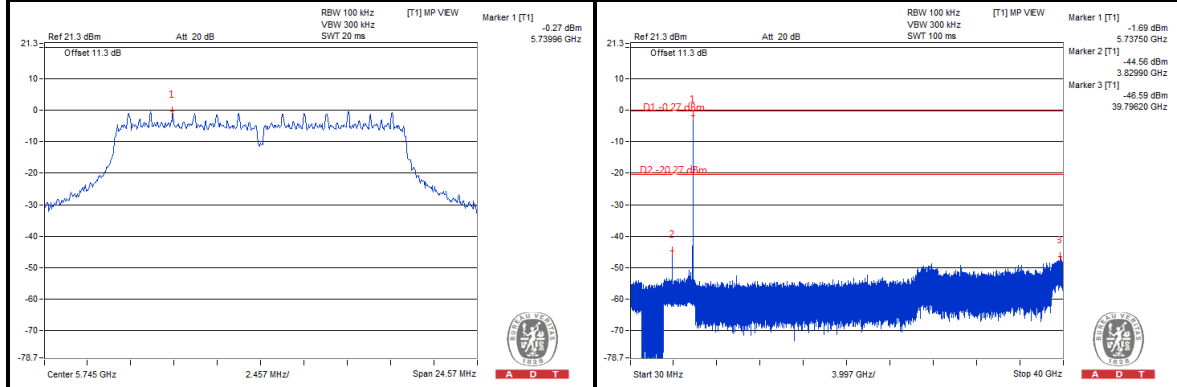




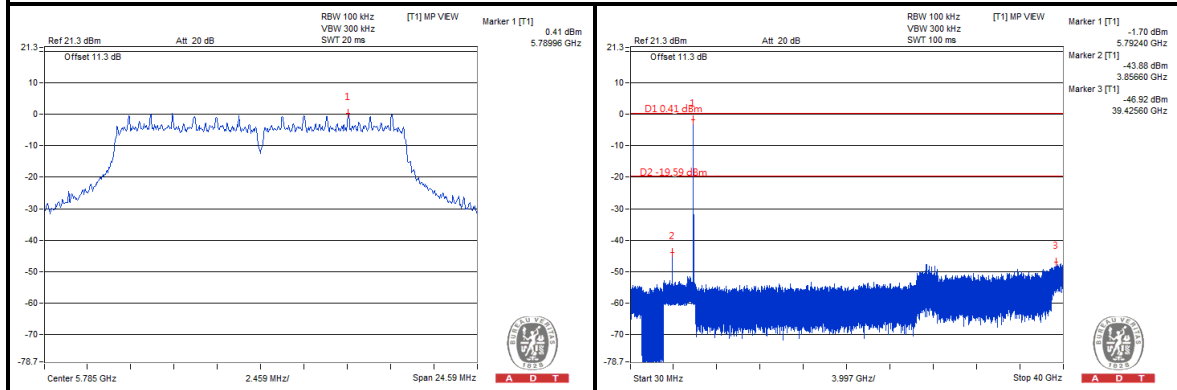
A D T

CHAIN 1

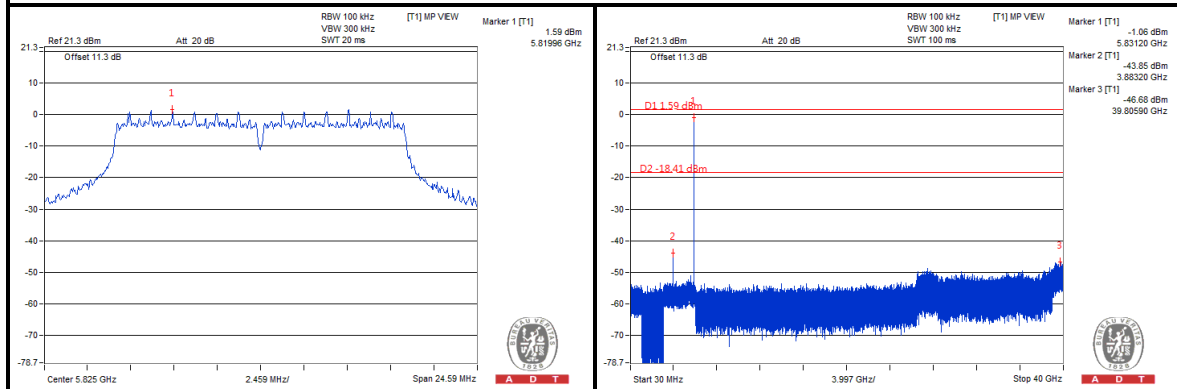
CH 149



CH 157



CH 165



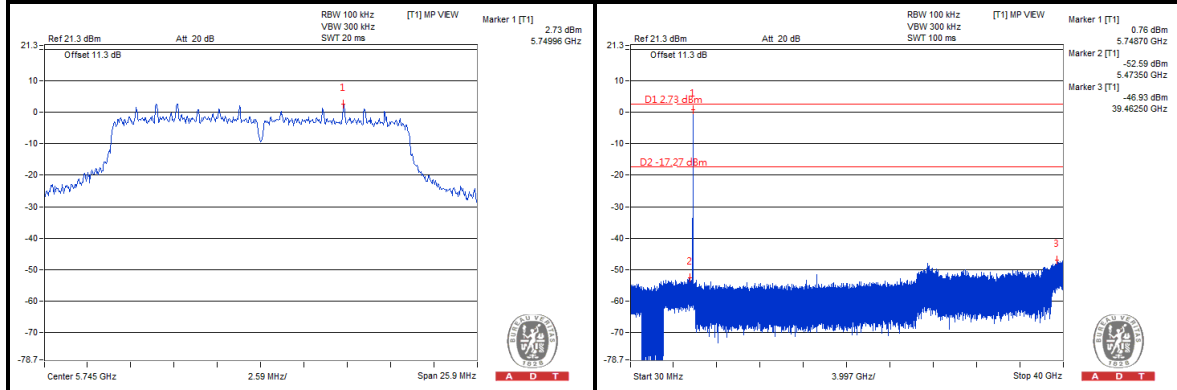


A D T

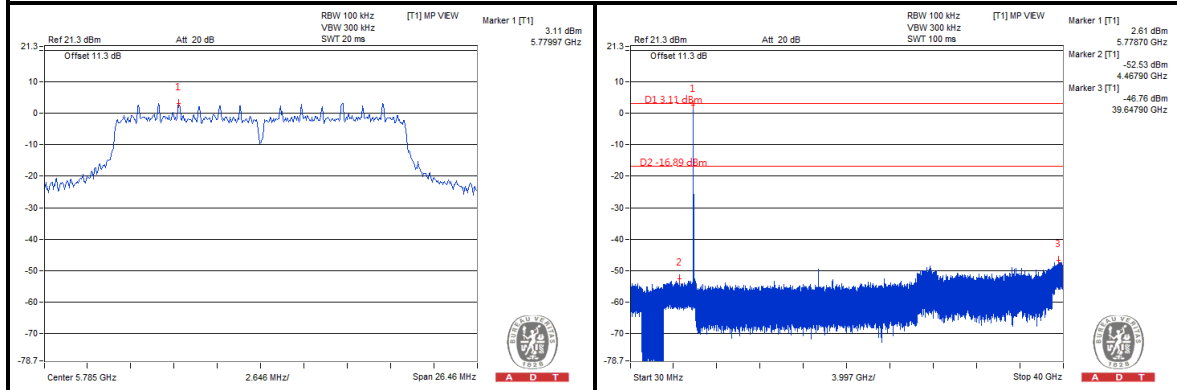
802.11n (20MHz)

CHAIN 0

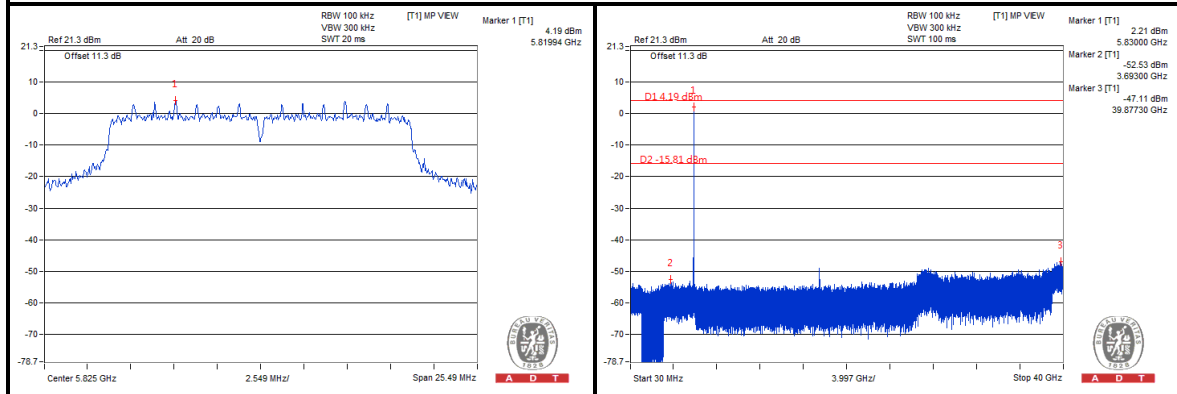
CH 149



CH 157



C165

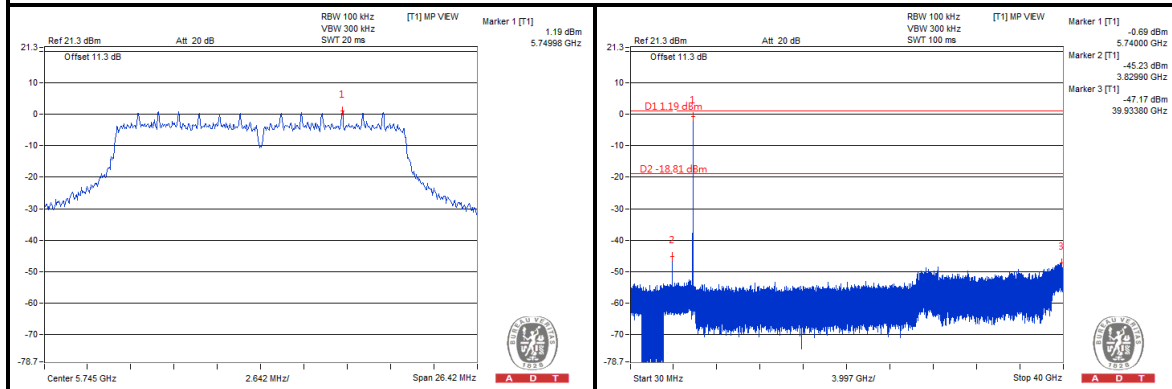




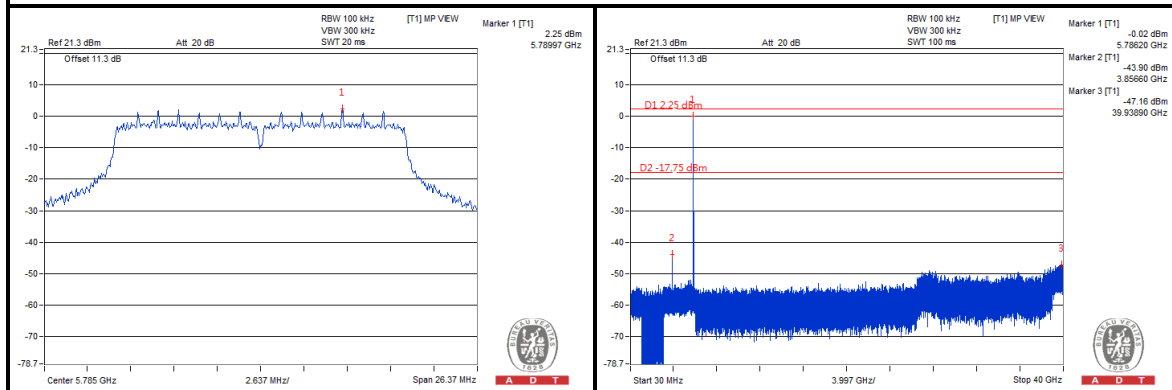
A D T

CHAIN 1

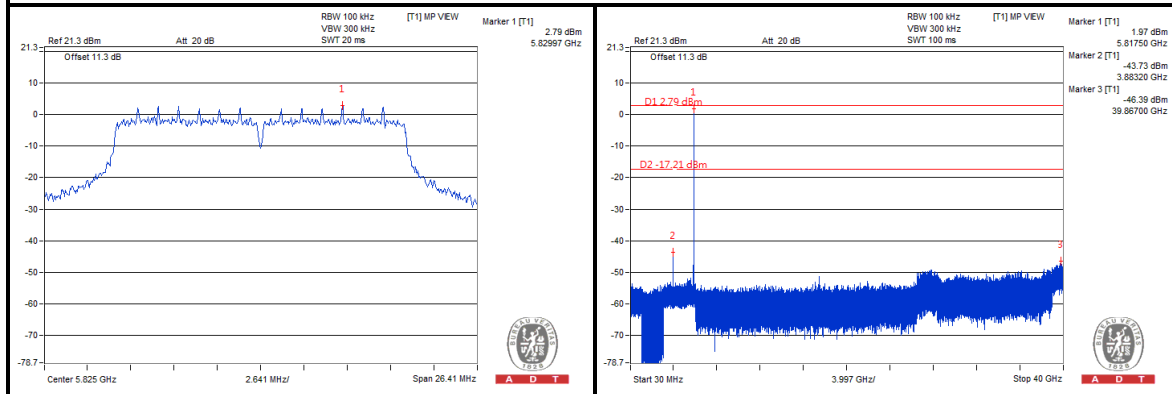
CH 149



CH 157



C165



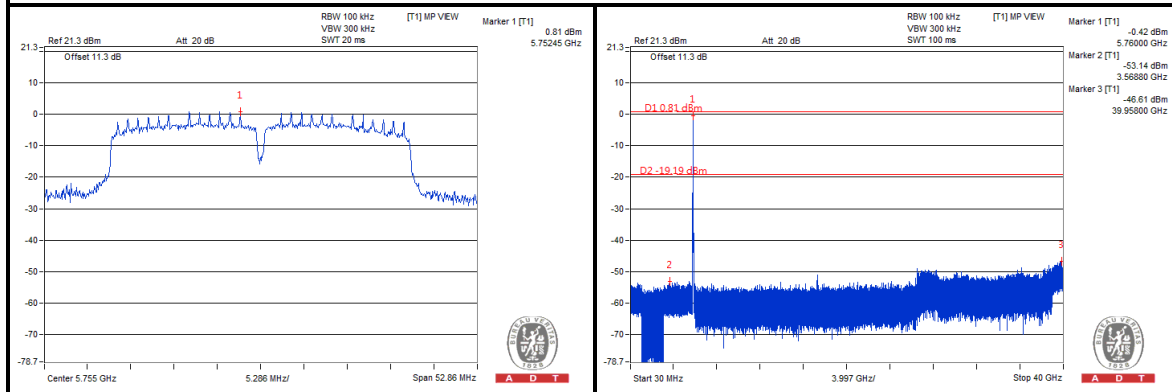


A D T

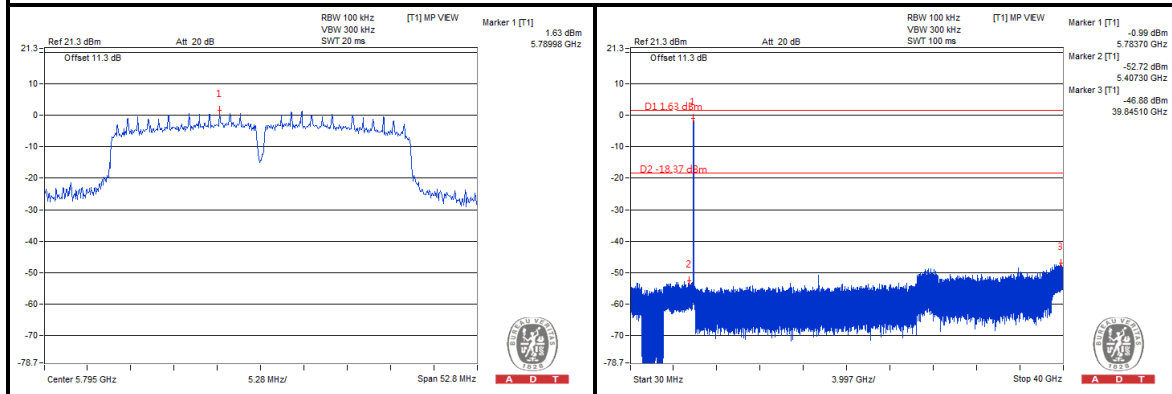
802.11n (40MHz)

CHAIN 0

CH 151



CH 159



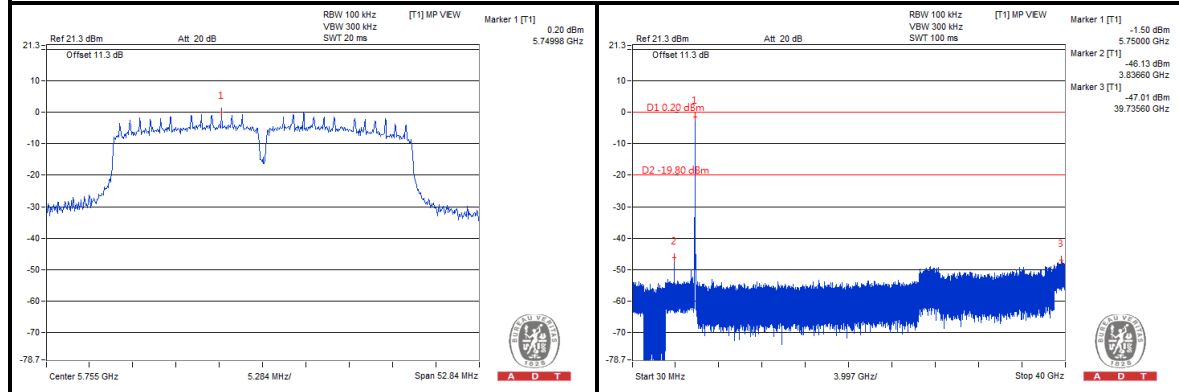


A D T

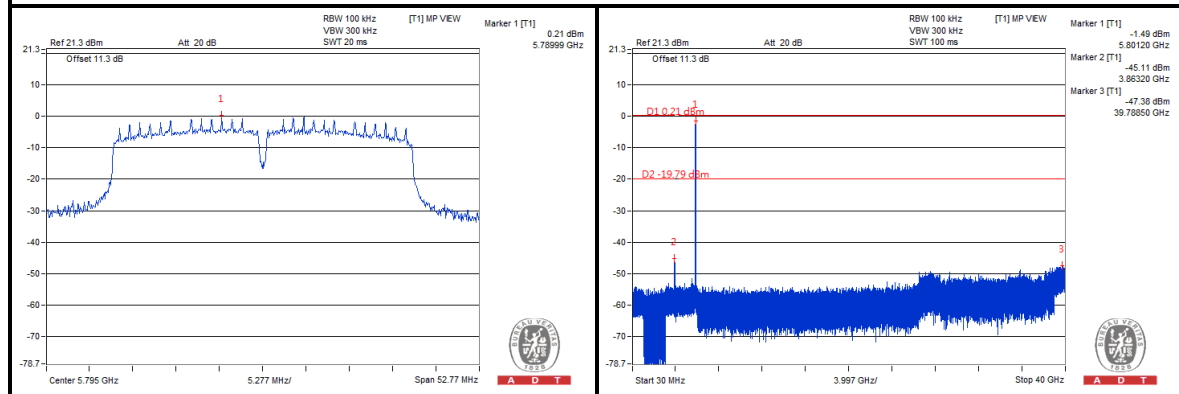
802.11n (40MHz)

CHAIN 1

CH 151



CH 159



6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

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:

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:

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Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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



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

No any modifications are made to the EUT by the lab during the test.

---END---