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FCC TEST REPORT (15.247)

REPORT NO.: RF110219C05D

MODEL NO.: MR24

FCC ID: UDX-60014010

RECEIVED: Feb. 02, 2013

TESTED: Feb. 08 ~ Apr. 13, 2013

ISSUED: Apr. 15, 2013

APPLICANT: Cisco Systems

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF110219C05D	Original release	Apr. 15, 2013



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1. CERTIFICATION

PRODUCT: Wireless 802.11 abgn AP

MODEL NO.: MR24

BRAND: Meraki

APPLICANT: Cisco Systems

TESTED: Feb. 08 ~ Apr. 13, 2013

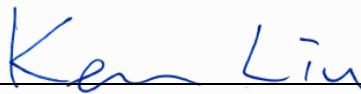
TEST SAMPLE: ENGINEERING SAMPLE

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

ANSI C63.10-2009

The above equipment (model: MR24) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY :  , **DATE :** Apr. 15, 2013
Pettie Chen / Senior Specialist

APPROVED BY :  , **DATE :** Apr. 15, 2013
Ken Liu / Senior 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 -3.03dB at 10.50368MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2483.50, 2485.00MHz.
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	Antenna connector is IPEX not a standard connector.

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

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

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Wireless 802.11 abgn AP
MODEL NO.	MR24
POWER SUPPLY	56Vdc (POE) 12Vdc (adapter)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300.0Mbps
OPERATING FREQUENCY	2.4GHz: 2412 ~ 2462MHz 5.0GHz: 5745 ~ 5825MHz
NUMBER OF CHANNEL	2.4GHz: 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) 5.0GHz: 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	807.683mW for 2412 ~ 2462MHz 403.931mW for 5745 ~ 5825MHz
ANTENNA TYPE	2.4GHz: Internal PIFA antenna with 5dBi gain 5.0GHz: Internal PIFA antenna with 6dBi gain
ANTENNA CONNECTOR	IPEX
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	NA

NOTE:

1. This report is issued as a supplementary report of BV ADT report no.: RF110219C05. This report is prepared for FCC class II permissive change. Difference compared with the original report is changing applicant, chip and without changing an amplifier chip, oscillator chip or frequency determining chip (detail as below). Therefore, the EUT is re-tested in this report.

Band	Original Chip Model	New Chip Model
2.4GHz	AR9380	AR9381
5.0GHz	AR9390	AR9380

2. The EUT provides three completed transmitters and three receivers

MODULATION MODE	TX FUNCTION
802.11b	3TX
802.11g	3TX
802.11a	3TX
802.11n (20MHz) (MCS 0~7)	1TX
802.11n (20MHz) (MCS 8~15)	2TX
802.11n (20MHz) (MCS 16~23)	3TX
802.11n (40MHz) (MCS 0~7)	1TX
802.11n (40MHz) (MCS 8~15)	2TX
802.11n (40MHz) (MCS 16~23)	3TX

3. The EUT consumes power from the following POE & adapter:

ADAPTER	
BRAND:	DVE
MODEL:	DSA-12G-12 FUS 120120
INPUT:	100-240Vac, 50/60Hz, 0.3A
OUTPUT:	12Vdc, 1A
POWER LINE:	1.8m non-shielded cable without core

POE	
BRAND:	PHIHONG
MODEL:	POE20U-560(G)
INPUT:	100-240Vac, 50-60Hz, 0.95A
OUTPUT:	56Vdc / 0.35A

**POE & adapter were for the optional accessories

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

3.2 DESCRIPTION OF TEST MODES

FOR 2.4GHz:

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

FOR 5.0GHz (5745 ~ 5825MHz):

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

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

FOR 2.4GHz:

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

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

NOTE:

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

NOTE: "-" means no effect.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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

RADIATED EMISSION TEST (BELOW 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11g	1 to 11	6	OFDM	BPSK	6.0

POWER LINE CONDUCTED EMISSION TEST:

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

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

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	22deg. C, 72%RH	120Vac, 60Hz	Alan Wu
RE<1G	22deg. C, 72%RH	120Vac, 60Hz	Alan Wu
PLC	23deg. C, 67%RH	120Vac, 60Hz	Alan Wu
APCM	22deg. C, 65%RH	120Vac, 60Hz	Jun Wu

FOR 5.0GHz (5745 ~ 5825MHz):

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

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

NOTE:

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

NOTE: “-” means no effect.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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

RADIATED EMISSION TEST (BELOW 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11n (20MHz)	149 to 165	165	OFDM	BPSK	7.2

POWER LINE CONDUCTED EMISSION TEST:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11n (20MHz)	149 to 165	165	OFDM	BPSK	7.2

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	802.11a	149 to 165	149, 165	OFDM	BPSK	6.0
A	802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	7.2
A	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	25deg. C, 65%RH	120Vac, 60Hz	Chris Lin
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Chris Lin
PLC	23deg. C, 67%RH	120Vac, 60Hz	Alan Wu
APCM	25deg. C, 60%RH	120Vac, 60Hz	Antony Lee

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3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

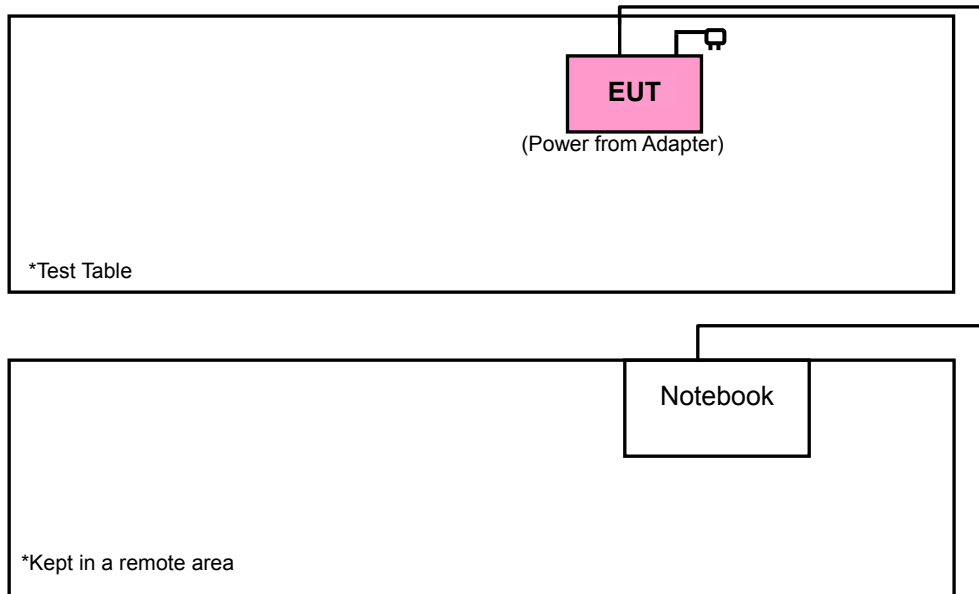
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	HP	n6000	CNU3480WP2	NA
2	ADAPTER	DVE	DSA-12G-12 FUS 120120	NA	NA
3	POE	PHIHONG	POE20U-560(G)	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	10m UTP RJ45 cable
2	NA
3	NA

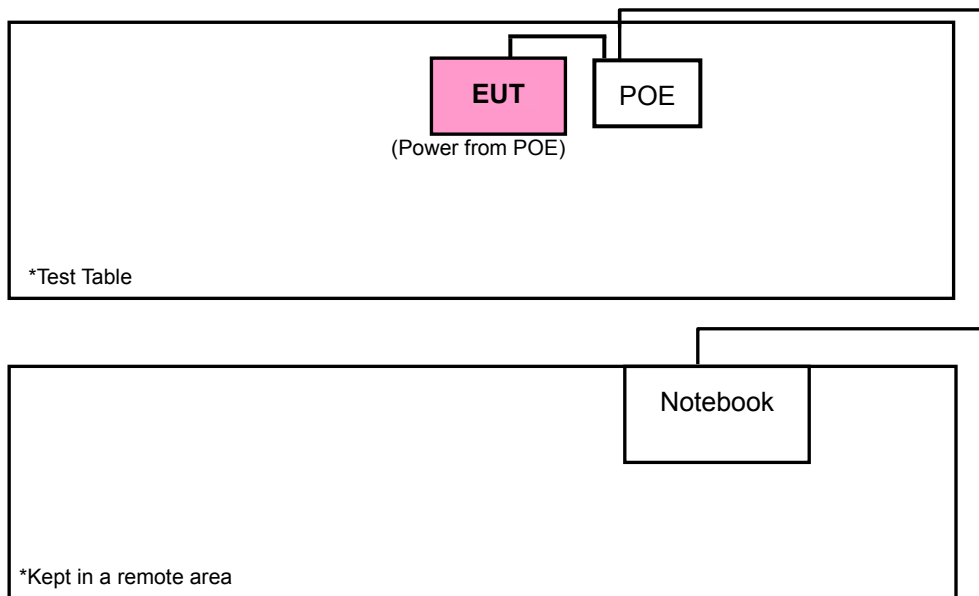
NOTE: 1. All power cords of the above support units are non shielded (1.8m).
2. Item 1 acted as communication partner to transfer data.
3. Items 2-3 are provided by client.

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST

TEST MODE A



TEST MODE B





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3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)

558074D01 DTS Meas Guidance v03r01

662911 D01 Multiple Transmitter Output v01 r02

ANSI C63.10-2009

All test items have been performed and recorded as per the above standards.

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4. TEST TYPES AND RESULTS (FOR 2.4GHz BAND)

4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

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

NOTE:

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



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4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	Aug. 06, 2012	Aug. 05, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jan. 31, 2013	Jan. 30, 2014
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Mar. 20, 2013	Mar. 19, 2014
HORN Antenna SCHWARZBECK	9120D	209	Sep. 03, 2012	Sep. 02, 2013
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 11, 2012	Jul. 10, 2013
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier Agilent	8447D	2944A10633	Oct. 25, 2012	Oct. 24, 2013
Preamplifier Agilent	8449B	3008A01964	Oct. 25, 2012	Oct. 24, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250723/4	Aug. 28, 2012	Aug. 27, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 106	12738/6+309224/4	Aug. 28, 2012	Aug. 27, 2013
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100	TT93021703	NA	NA
Turn Table Controller ADT.	SC100	SC93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021704	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 25, 2012	Oct. 24, 2013
High Speed Peak Power Meter	ML2495A	0842014	Apr. 28, 2012	Apr. 27, 2013
Power Sensor	MA2411B	0738404	Apr. 28, 2012	Apr. 27, 2013

- 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 4.
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 460141.
6. The IC Site Registration No. is IC7450F-4.

4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

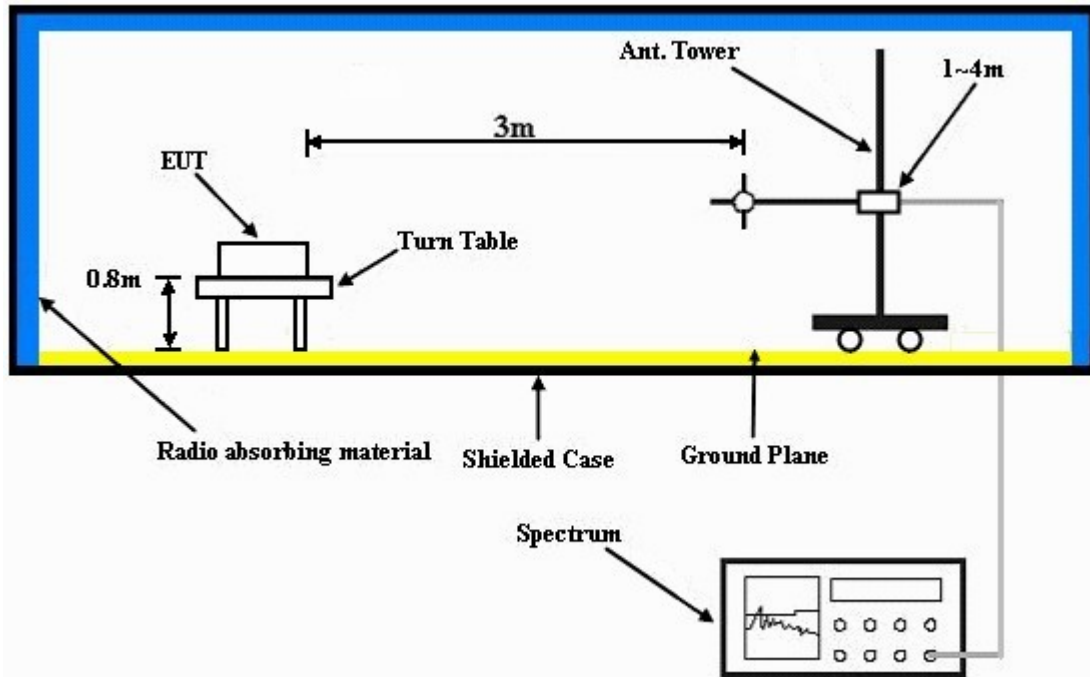
NOTE:

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

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

4.1.5 TEST SETUP



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

4.1.6 EUT OPERATING CONDITIONS

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



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4.1.7 TEST RESULTS

ABOVE 1GHz DATA :

802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 72%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.8 PK	74.0	-1.2	1.29 H	140	40.80	32.00
2	2390.00	49.0 AV	54.0	-5.0	1.29 H	140	17.00	32.00
3	*2412.00	117.5 PK			1.00 H	156	85.50	32.00
4	*2412.00	112.9 AV			1.00 H	156	80.90	32.00
5	4824.00	48.4 PK	74.0	-25.6	1.06 H	170	9.60	38.80
6	4824.00	38.3 AV	54.0	-15.7	1.06 H	170	-0.50	38.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.7 PK	74.0	-4.3	1.02 V	130	37.70	32.00
2	2390.00	46.3 AV	54.0	-7.7	1.02 V	130	14.30	32.00
3	*2412.00	111.0 PK			1.06 V	139	79.00	32.00
4	*2412.00	105.7 AV			1.06 V	139	73.70	32.00
5	4824.00	47.2 PK	74.0	-26.8	1.00 V	70	8.40	38.80
6	4824.00	37.1 AV	54.0	-16.9	1.00 V	70	-1.70	38.80

REMARKS:

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 72%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	117.2 PK			1.00 H	154	85.10	32.10
2	*2437.00	112.4 AV			1.00 H	154	80.30	32.10
3	2483.50	72.6 PK	74.0	-1.4	1.00 H	155	40.40	32.20
4	2483.50	48.9 AV	54.0	-5.1	1.00 H	155	16.70	32.20
5	4874.00	49.2 PK	74.0	-24.8	1.09 H	174	10.30	38.90
6	4874.00	39.1 AV	54.0	-14.9	1.09 H	174	0.20	38.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	104.9 PK			1.00 V	125	72.80	32.10
2	*2437.00	100.7 AV			1.00 V	125	68.60	32.10
3	2483.50	64.1 PK	74.0	-9.9	1.00 V	124	31.90	32.20
4	2483.50	45.4 AV	54.0	-8.6	1.00 V	124	13.20	32.20
5	4874.00	48.1 PK	74.0	-25.9	1.00 V	74	9.20	38.90
6	4874.00	38.0 AV	54.0	-16.0	1.00 V	74	-0.90	38.90

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 72%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.9 PK			1.00 H	156	78.80	32.10
2	*2462.00	105.4 AV			1.00 H	156	73.30	32.10
3	2483.50	72.9 PK	74.0	-1.1	1.00 H	160	40.70	32.20
4	2483.50	48.3 AV	54.0	-5.7	1.00 H	160	16.10	32.20
5	4924.00	47.9 PK	74.0	-26.1	1.06 H	179	8.90	39.00
6	4924.00	37.8 AV	54.0	-16.2	1.06 H	179	-1.20	39.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.8 PK			1.00 V	145	70.70	32.10
2	*2462.00	98.7 AV			1.00 V	145	66.60	32.10
3	2483.50	67.3 PK	74.0	-6.7	1.00 V	144	35.10	32.20
4	2483.50	45.9 AV	54.0	-8.1	1.00 V	144	13.70	32.20
5	4924.00	46.6 PK	74.0	-27.4	1.00 V	77	7.60	39.00
6	4924.00	36.5 AV	54.0	-17.5	1.00 V	77	-2.50	39.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 72%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.1 PK	74.0	-2.9	1.00 H	161	39.10	32.00
2	2390.00	52.8 AV	54.0	-1.2	1.00 H	161	20.80	32.00
3	*2412.00	115.7 PK			1.00 H	162	83.70	32.00
4	*2412.00	105.5 AV			1.00 H	162	73.50	32.00
5	4824.00	46.9 PK	74.0	-27.1	1.00 H	170	8.10	38.80
6	4824.00	36.0 AV	54.0	-18.0	1.00 H	170	-2.80	38.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.4 PK	74.0	-4.6	1.00 V	229	37.40	32.00
2	2390.00	49.9 AV	54.0	-4.1	1.00 V	229	17.90	32.00
3	*2412.00	110.9 PK			1.00 V	221	78.90	32.00
4	*2412.00	100.6 AV			1.00 V	221	68.60	32.00
5	4824.00	45.5 PK	74.0	-28.5	1.00 V	79	6.70	38.80
6	4824.00	34.5 AV	54.0	-19.5	1.00 V	79	-4.30	38.80

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 72%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	121.6 PK			1.00 H	156	89.50	32.10
2	*2437.00	110.9 AV			1.00 H	156	78.80	32.10
3	2483.50	70.2 PK	74.0	-3.8	1.00 H	155	38.00	32.20
4	2483.50	52.3 AV	54.0	-1.7	1.00 H	155	20.10	32.20
5	4874.00	47.9 PK	74.0	-26.1	1.00 H	175	9.00	38.90
6	4874.00	36.6 AV	54.0	-17.4	1.00 H	175	-2.30	38.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	116.3 PK			1.00 V	300	84.20	32.10
2	*2437.00	105.6 AV			1.00 V	300	73.50	32.10
3	2483.50	63.3 PK	74.0	-10.7	1.00 V	298	31.10	32.20
4	2483.50	46.8 AV	54.0	-7.2	1.00 V	298	14.60	32.20
5	4874.00	46.6 PK	74.0	-27.4	1.00 V	78	7.70	38.90
6	4874.00	35.2 AV	54.0	-18.8	1.00 V	78	-3.70	38.90

REMARKS:

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 72%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	114.6 PK			1.00 H	154	82.50	32.10
2	*2462.00	104.3 AV			1.00 H	154	72.20	32.10
3	2485.00	72.3 PK	74.0	-1.7	1.00 H	166	40.10	32.20
4	2485.00	53.0 AV	54.0	-1.0	1.00 H	166	20.80	32.20
5	4924.00	46.0 PK	74.0	-28.0	1.00 H	170	7.00	39.00
6	4924.00	34.9 AV	54.0	-19.1	1.00 H	170	-4.10	39.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.4 PK			1.00 V	143	77.30	32.10
2	*2462.00	99.5 AV			1.00 V	143	67.40	32.10
3	2483.50	68.2 PK	74.0	-5.8	1.00 V	145	36.00	32.20
4	2483.50	48.3 AV	54.0	-5.7	1.00 V	145	16.10	32.20
5	4924.00	44.5 PK	74.0	-29.5	1.00 V	75	5.50	39.00
6	4924.00	33.3 AV	54.0	-20.7	1.00 V	75	-5.70	39.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



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802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 72%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.6 PK	74.0	-2.4	1.00 H	161	39.60	32.00
2	2390.00	52.3 AV	54.0	-1.7	1.00 H	161	20.30	32.00
3	*2412.00	116.0 PK			1.00 H	166	84.00	32.00
4	*2412.00	105.4 AV			1.00 H	166	73.40	32.00
5	4824.00	47.2 PK	74.0	-26.8	1.00 H	176	8.40	38.80
6	4824.00	36.7 AV	54.0	-17.3	1.00 H	176	-2.10	38.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.0 PK	74.0	-3.0	1.33 V	200	39.00	32.00
2	2390.00	51.9 AV	54.0	-2.1	1.33 V	200	19.90	32.00
3	*2412.00	111.3 PK			1.39 V	201	79.30	32.00
4	*2412.00	100.9 AV			1.39 V	201	68.90	32.00
5	4824.00	46.9 PK	74.0	-27.1	1.00 V	73	8.10	38.80
6	4824.00	36.3 AV	54.0	-17.7	1.00 V	73	-2.50	38.80

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 72%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	120.6 PK			1.00 H	159	88.50	32.10
2	*2437.00	110.7 AV			1.00 H	159	78.60	32.10
3	2483.50	70.9 PK	74.0	-3.1	1.00 H	150	38.70	32.20
4	2483.50	52.7 AV	54.0	-1.3	1.00 H	150	20.50	32.20
5	4874.00	47.5 PK	74.0	-26.5	1.00 H	170	8.60	38.90
6	4874.00	36.9 AV	54.0	-17.1	1.00 H	170	-2.00	38.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	114.9 PK			1.08 V	162	82.80	32.10
2	*2437.00	104.3 AV			1.08 V	162	72.20	32.10
3	2483.50	67.3 PK	74.0	-6.7	1.04 V	163	35.10	32.20
4	2483.50	49.0 AV	54.0	-5.0	1.04 V	163	16.80	32.20
5	4874.00	46.2 PK	74.0	-27.8	1.00 V	77	7.30	38.90
6	4874.00	35.5 AV	54.0	-18.5	1.00 V	77	-3.40	38.90

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 72%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	115.0 PK			1.00 H	159	82.90	32.10
2	*2462.00	104.7 AV			1.00 H	159	72.60	32.10
3	2483.50	71.9 PK	74.0	-2.1	1.00 H	158	39.70	32.20
4	2483.50	52.5 AV	54.0	-1.5	1.00 H	158	20.30	32.20
5	4924.00	46.8 PK	74.0	-27.2	1.00 H	179	7.80	39.00
6	4924.00	36.0 AV	54.0	-18.0	1.00 H	179	-3.00	39.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.2 PK			1.06 V	142	78.10	32.10
2	*2462.00	99.8 AV			1.06 V	142	67.70	32.10
3	2483.50	71.0 PK	74.0	-3.0	1.08 V	143	38.80	32.20
4	2483.50	51.2 AV	54.0	-2.8	1.08 V	143	19.00	32.20
5	4924.00	45.4 PK	74.0	-28.6	1.00 V	71	6.40	39.00
6	4924.00	34.5 AV	54.0	-19.5	1.00 V	71	-4.50	39.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



A D T

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 72%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.5 PK	74.0	-2.5	1.05 H	151	39.50	32.00
2	2390.00	52.9 AV	54.0	-1.1	1.05 H	151	20.90	32.00
3	*2422.00	108.0 PK			1.02 H	157	75.90	32.10
4	*2422.00	97.7 AV			1.02 H	157	65.60	32.10
5	4844.00	44.9 PK	74.0	-29.1	1.00 H	173	6.10	38.80
6	4844.00	33.9 AV	54.0	-20.1	1.00 H	173	-4.90	38.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.9 PK	74.0	-8.1	1.00 V	204	33.90	32.00
2	2390.00	48.5 AV	54.0	-5.5	1.00 V	204	16.50	32.00
3	*2422.00	104.9 PK			1.00 V	207	72.80	32.10
4	*2422.00	95.0 AV			1.00 V	207	62.90	32.10
5	4844.00	44.3 PK	74.0	-29.7	1.00 V	75	5.50	38.80
6	4844.00	33.2 AV	54.0	-20.8	1.00 V	75	-5.60	38.80

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 72%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	112.8 PK			1.00 H	155	80.70	32.10
2	*2437.00	102.6 AV			1.00 H	155	70.50	32.10
3	2483.50	72.7 PK	74.0	-1.3	1.00 H	155	40.50	32.20
4	2483.50	53.0 AV	54.0	-1.0	1.00 H	155	20.80	32.20
5	4874.00	45.8 PK	74.0	-28.2	1.00 H	175	6.90	38.90
6	4874.00	34.5 AV	54.0	-19.5	1.00 H	175	-4.40	38.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.1 PK			1.14 V	160	75.00	32.10
2	*2437.00	97.1 AV			1.14 V	160	65.00	32.10
3	2483.50	66.2 PK	74.0	-7.8	1.18 V	156	34.00	32.20
4	2483.50	48.7 AV	54.0	-5.3	1.18 V	156	16.50	32.20
5	4874.00	45.3 PK	74.0	-28.7	1.00 V	74	6.40	38.90
6	4874.00	33.9 AV	54.0	-20.1	1.00 V	74	-5.00	38.90

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 72%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	108.4 PK			1.00 H	157	76.30	32.10
2	*2452.00	98.5 AV			1.00 H	157	66.40	32.10
3	2483.50	72.0 PK	74.0	-2.0	1.00 H	152	39.80	32.20
4	2483.50	52.9 AV	54.0	-1.1	1.00 H	152	20.70	32.20
5	4904.00	44.8 PK	74.0	-29.2	1.00 H	170	5.90	38.90
6	4904.00	33.2 AV	54.0	-20.8	1.00 H	170	-5.70	38.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	104.0 PK			1.00 V	143	71.90	32.10
2	*2452.00	94.1 AV			1.00 V	143	62.00	32.10
3	2483.50	69.2 PK	74.0	-4.8	1.00 V	149	37.00	32.20
4	2483.50	49.2 AV	54.0	-4.8	1.00 V	149	17.00	32.20
5	4904.00	44.2 PK	74.0	-29.8	1.00 V	78	5.30	38.90
6	4904.00	32.5 AV	54.0	-21.5	1.00 V	78	-6.40	38.90

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



A D T

BELOW 1GHz WORST-CASE DATA : 802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 67%RH	TESTED BY	Alan Wu
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	59.01	33.8 QP	40.0	-6.2	1.99 H	210	20.30	13.50
2	138.56	38.8 QP	43.5	-4.7	1.99 H	221	25.50	13.30
3	299.62	41.0 QP	46.0	-5.0	1.00 H	238	26.40	14.60
4	375.29	34.5 QP	46.0	-11.5	1.00 H	347	18.00	16.50
5	701.28	33.6 QP	46.0	-12.4	1.99 H	207	10.70	22.90
6	800.24	36.2 QP	46.0	-9.8	1.00 H	209	11.60	24.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	51.04	35.9 QP	40.0	-4.1	1.24 V	197	22.30	13.60
2	101.69	36.3 QP	43.5	-7.2	1.00 V	8	26.90	9.40
3	204.54	39.9 QP	43.5	-3.6	1.49 V	207	29.20	10.70
4	319.02	37.7 QP	46.0	-8.3	1.49 V	201	22.60	15.10
5	800.24	36.9 QP	46.0	-9.1	1.24 V	189	12.30	24.60
6	872.03	40.5 QP	46.0	-5.5	1.00 V	73	15.00	25.50

REMARKS:

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 67%RH	TESTED BY	Alan Wu
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	51.24	37.7 QP	40.0	-2.3	1.99 H	203	24.10	13.60
2	117.22	40.7 QP	43.5	-2.8	1.99 H	273	29.50	11.20
3	173.49	41.2 QP	43.5	-2.3	1.25 H	119	28.10	13.10
4	299.62	38.1 QP	46.0	-7.9	1.00 H	219	23.50	14.60
5	701.28	36.4 QP	46.0	-9.6	1.99 H	219	13.50	22.90
6	802.18	37.5 QP	46.0	-8.5	1.00 H	143	12.90	24.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	46.90	38.3 QP	40.0	-1.7	1.00 V	0	24.50	13.80
2	93.93	35.8 QP	43.5	-7.7	1.24 V	246	27.20	8.60
3	187.07	33.1 QP	43.5	-10.4	1.00 V	302	21.30	11.80
4	247.22	39.6 QP	46.0	-6.4	1.24 V	229	26.90	12.70
5	400.52	34.1 QP	46.0	-11.9	1.24 V	118	17.00	17.10
6	800.24	36.7 QP	46.0	-9.3	1.24 V	1	12.10	24.60

REMARKS:

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

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 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.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 16, 2012	Nov. 15, 2013
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 28, 2012	Dec. 27, 2013
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 02, 2012	Jul. 01, 2013
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Feb. 04, 2013	Feb. 03, 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 1.
3. The VCCI Site Registration No. is C-2040.

4.2.3 TEST PROCEDURES

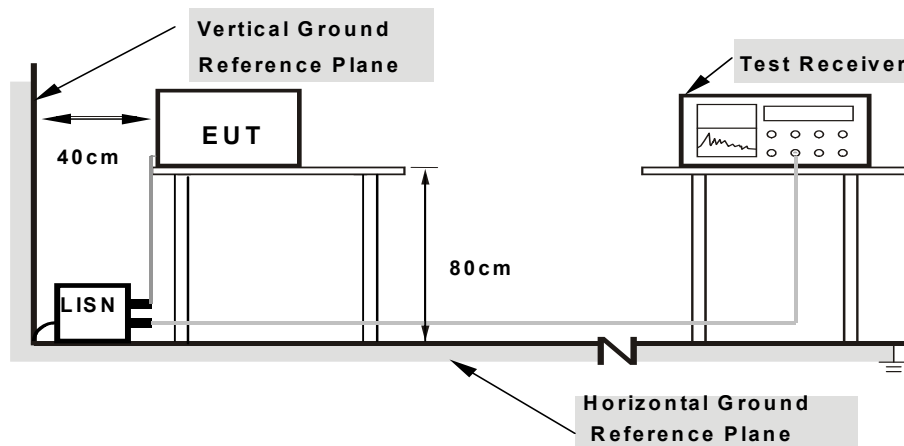
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

NOTE: 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 cm 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.

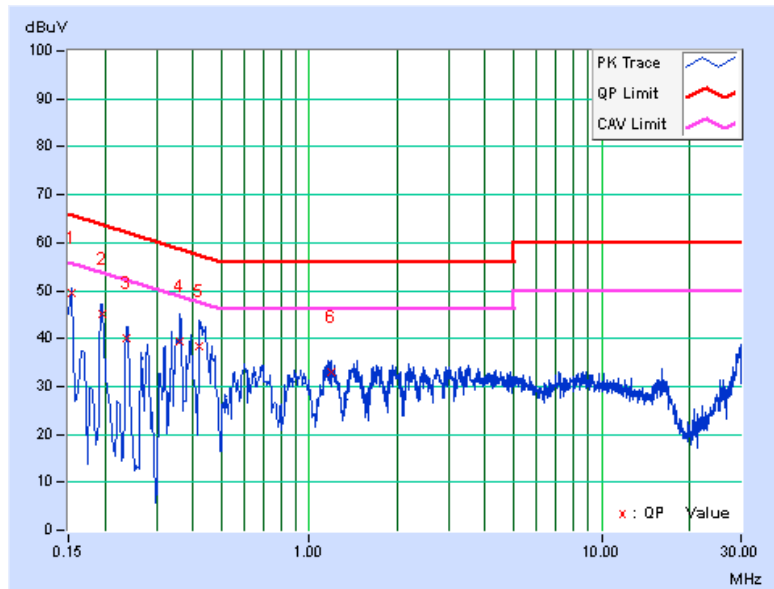
4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA : 802.11g

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.13	49.30	34.06	49.43	34.19	65.79	55.79	-16.36	-21.60
2	0.19692	0.13	44.83	32.70	44.96	32.83	63.74	53.74	-18.78	-20.91
3	0.23710	0.14	40.09	26.66	40.23	26.80	62.20	52.20	-21.97	-25.40
4	0.36143	0.17	39.30	28.82	39.47	28.99	58.70	48.70	-19.23	-19.71
5	0.42000	0.18	38.35	21.14	38.53	21.32	57.45	47.45	-18.92	-26.13
6	1.18615	0.21	32.62	22.27	32.83	22.48	56.00	46.00	-23.17	-23.52

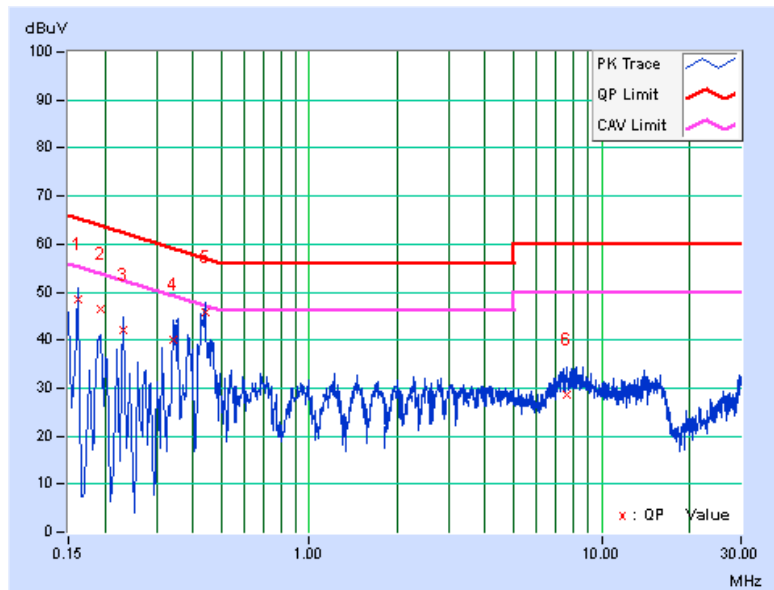
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16173	0.14	48.37	31.29	48.51	31.43	65.37	55.37	-16.87	-23.95
2	0.19255	0.14	46.21	33.00	46.35	33.14	63.93	53.93	-17.58	-20.79
3	0.23211	0.15	42.07	28.11	42.22	28.26	62.37	52.37	-20.15	-24.11
4	0.34159	0.18	40.04	25.34	40.22	25.52	59.16	49.16	-18.94	-23.64
5	0.43924	0.20	45.63	34.70	45.83	34.90	57.08	47.08	-11.24	-12.17
6	7.61419	0.50	28.00	19.02	28.50	19.52	60.00	50.00	-31.50	-30.48

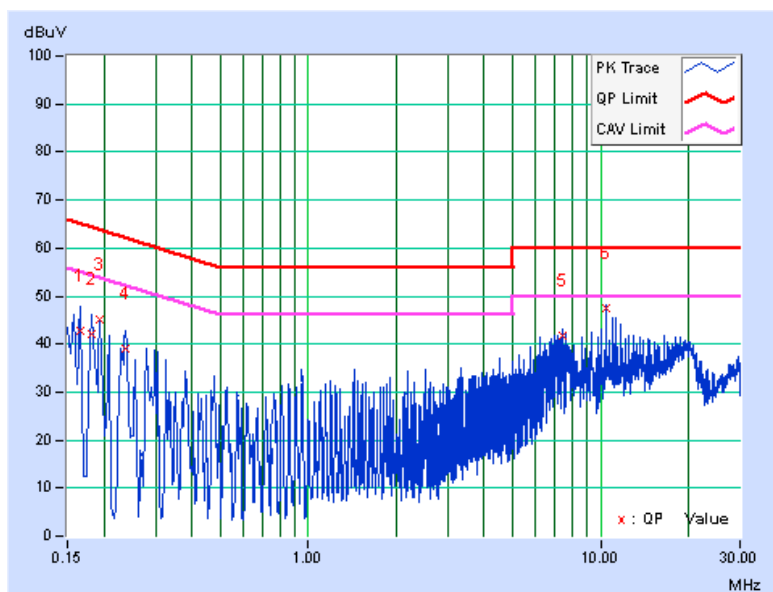
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading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



PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16564	0.13	42.74	13.26	42.87	13.39	65.18	55.18	-22.31	-41.79
2	0.18122	0.13	41.93	16.37	42.06	16.50	64.43	54.43	-22.37	-37.93
3	0.19305	0.13	44.99	36.21	45.12	36.34	63.90	53.90	-18.79	-17.57
4	0.23602	0.14	38.81	32.25	38.95	32.39	62.24	52.24	-23.29	-19.85
5	7.40305	0.52	41.24	36.50	41.76	37.02	60.00	50.00	-18.24	-12.98
6	10.50368	0.68	46.65	46.29	47.33	46.97	60.00	50.00	-12.67	-3.03

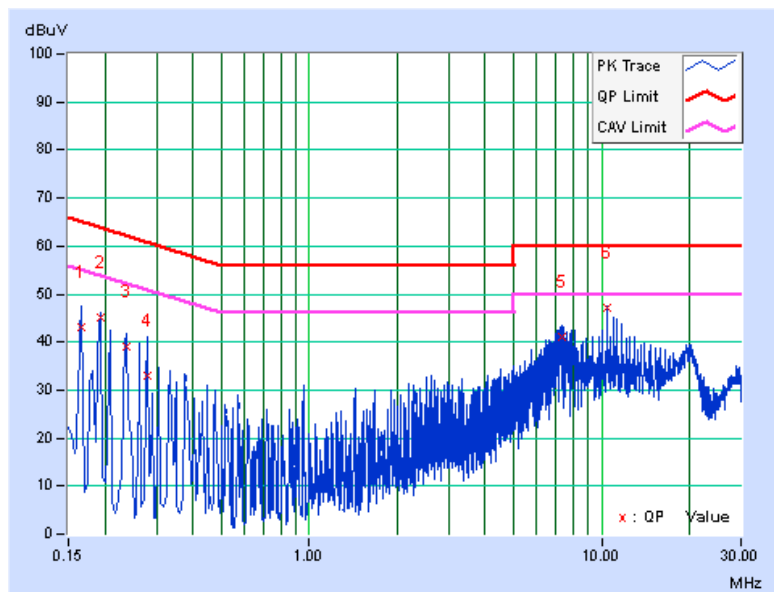
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading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



PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16564	0.14	42.82	13.41	42.96	13.55	65.18	55.18	-22.22	-41.63
2	0.19301	0.14	44.87	34.77	45.01	34.91	63.91	53.91	-18.90	-19.00
3	0.23602	0.15	38.91	30.41	39.06	30.56	62.24	52.24	-23.17	-21.67
4	0.27903	0.16	32.84	11.99	33.00	12.15	60.84	50.84	-27.84	-38.69
5	7.30139	0.49	40.50	38.06	40.99	38.55	60.00	50.00	-19.01	-11.45
6	10.50368	0.62	46.47	46.28	47.09	46.90	60.00	50.00	-12.91	-3.10

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.

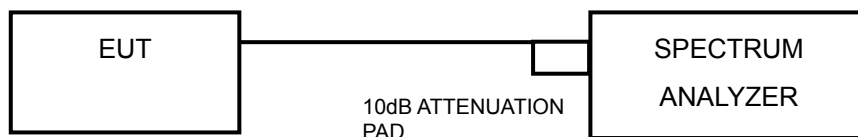


4.3 6dB BANDWIDTH MEASUREMENT

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

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	10.14	10.07	10.08	0.5	PASS
6	2437	10.13	10.14	10.14	0.5	PASS
11	2462	10.09	10.12	10.15	0.5	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	16.47	16.46	16.50	0.5	PASS
6	2437	16.43	16.43	16.45	0.5	PASS
11	2462	16.44	16.46	16.45	0.5	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	17.66	17.70	17.67	0.5	PASS
6	2437	17.34	17.66	17.64	0.5	PASS
11	2462	17.63	17.66	17.66	0.5	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
3	2422	36.26	36.51	36.51	0.5	PASS
6	2437	36.49	36.55	36.54	0.5	PASS
9	2452	36.12	36.50	36.50	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)

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

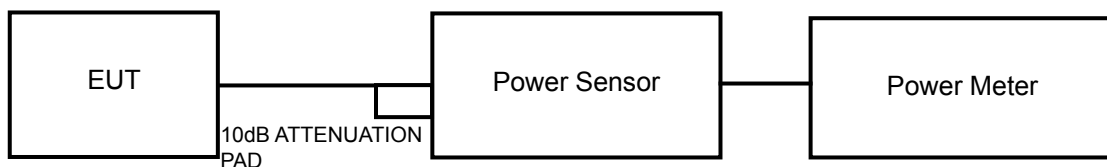
Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

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

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

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

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



A D T

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

4.4.7 TEST RESULTS

FOR PEAK POWER

802.11b

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	19.34	19.31	19.26	255.544	24.07	30	PASS
6	2437	21.26	21.51	20.14	378.515	25.78	30	PASS
11	2462	19.62	19.73	19.73	279.566	24.46	30	PASS

802.11g

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	21.13	21.27	20.81	384.190	25.85	30	PASS
6	2437	21.39	21.26	20.93	395.261	25.97	30	PASS
11	2462	20.92	21.48	21.14	394.217	25.96	30	PASS

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	21.84	22.13	22.31	486.278	26.87	30	PASS
6	2437	23.52	24.06	25.16	807.683	29.07	30	PASS
11	2462	21.24	22.06	22.01	452.594	26.56	30	PASS

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
3	2422	21.63	21.37	22.09	444.442	26.48	30	PASS
6	2437	22.37	21.73	22.17	486.336	26.87	30	PASS
9	2452	20.73	20.34	20.24	332.129	25.21	30	PASS

FOR AVERAGE POWER

802.11b

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	17.04	17.34	17.14	156.543	21.95
6	2437	18.34	19.06	18.02	212.159	23.27
11	2462	16.54	17.06	17.33	149.973	21.76

802.11g

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	11.43	11.36	10.73	39.407	15.96
6	2437	12.06	11.13	10.95	41.486	16.18
11	2462	11.84	11.26	11.06	41.406	16.17

802.11n (20MHz)

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	13.74	13.59	13.73	70.120	18.46
6	2437	17.12	17.65	17.62	167.543	22.24
11	2462	13.16	13.32	13.43	64.208	18.08

802.11n (40MHz)

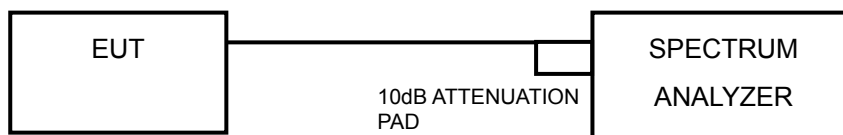
CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1	CHAIN 2		
3	2422	13.09	12.56	12.24	55.149	17.42
6	2437	14.32	13.61	14.06	75.469	18.78
9	2452	12.26	12.06	11.34	46.510	16.68

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

802.11b

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-7.59	4.77	-2.82	4.23	PASS
	6	2437	-8.32	4.77	-3.55	4.23	PASS
	11	2462	-13.08	4.77	-8.31	4.23	PASS
1	1	2412	-8.02	4.77	-3.25	4.23	PASS
	6	2437	-8.01	4.77	-3.24	4.23	PASS
	11	2462	-13.70	4.77	-8.93	4.23	PASS
2	1	2412	-6.55	4.77	-1.78	4.23	PASS
	6	2437	-8.01	4.77	-3.24	4.23	PASS
	11	2462	-12.93	4.77	-8.16	4.23	PASS

NOTE: Directional gain = 5dBi + 10log(3/1) = 9.77dBi > 6dBi , so the power density limit shall be reduced to 8-(9.77-6) = 4.23dBm.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-10.62	4.77	-5.85	4.23	PASS
	6	2437	-6.93	4.77	-2.16	4.23	PASS
	11	2462	-12.13	4.77	-7.36	4.23	PASS
1	1	2412	-10.20	4.77	-5.43	4.23	PASS
	6	2437	-6.31	4.77	-1.54	4.23	PASS
	11	2462	-12.47	4.77	-7.70	4.23	PASS
2	1	2412	-10.07	4.77	-5.30	4.23	PASS
	6	2437	-6.80	4.77	-2.03	4.23	PASS
	11	2462	-11.60	4.77	-6.83	4.23	PASS

NOTE: Directional gain = 5dBi + 10log(3/1) = 9.77dBi > 6dBi , so the power density limit shall be reduced to 8-(9.77-6) = 4.23dBm.

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

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-11.00	4.77	-6.23	8	PASS
	6	2437	-7.04	4.77	-2.27	8	PASS
	11	2462	-12.24	4.77	-7.47	8	PASS
1	1	2412	-10.16	4.77	-5.39	8	PASS
	6	2437	-7.10	4.77	-2.33	8	PASS
	11	2462	-12.27	4.77	-7.50	8	PASS
2	1	2412	-11.51	4.77	-6.74	8	PASS
	6	2437	-6.60	4.77	-1.83	8	PASS
	11	2462	-11.66	4.77	-6.89	8	PASS

Note: Directional gain = 5dBi + 10log(3/3)=5dBi < 6dBi , so the power density not need to reduced

802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-16.90	4.77	-12.13	8	PASS
	6	2437	-14.68	4.77	-9.91	8	PASS
	9	2452	-16.99	4.77	-12.22	8	PASS
1	3	2422	-16.50	4.77	-11.73	8	PASS
	6	2437	-15.47	4.77	-10.70	8	PASS
	9	2452	-15.47	4.77	-10.70	8	PASS
2	3	2422	-17.75	4.77	-12.98	8	PASS
	6	2437	-14.80	4.77	-10.03	8	PASS
	9	2452	-18.59	4.77	-13.82	8	PASS

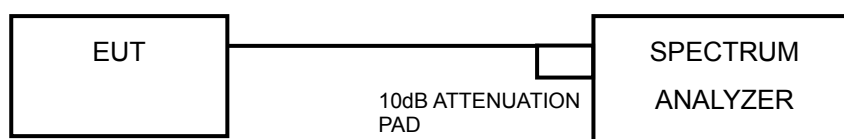
Note: Directional gain = 5dBi + 10log(3/3)=5dBi < 6dBi , so the power density not need to reduced

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. Set span to encompass the spectrum to be examined.
4. Detector = peak.
5. Trace Mode = max hold.
6. 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 conducted emission test is performed on each TX port of operating mode without summing or adding $10\log(N)$ since the limit is relative emission limit.

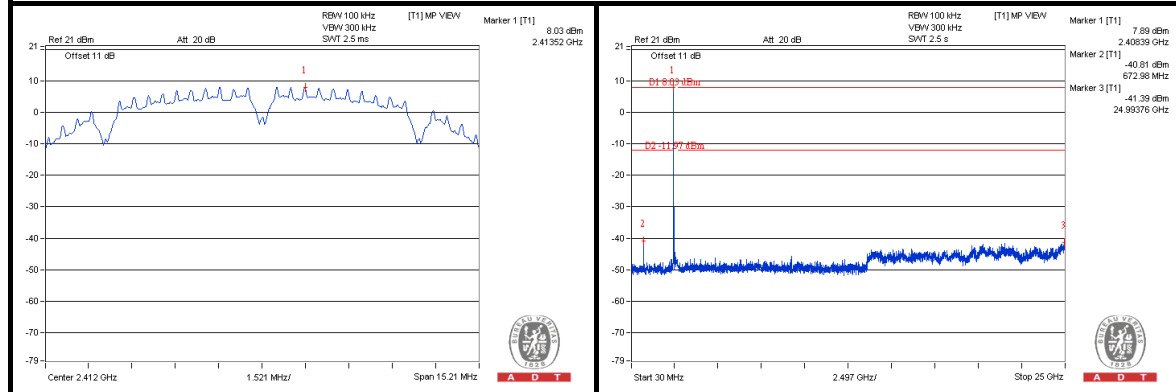
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



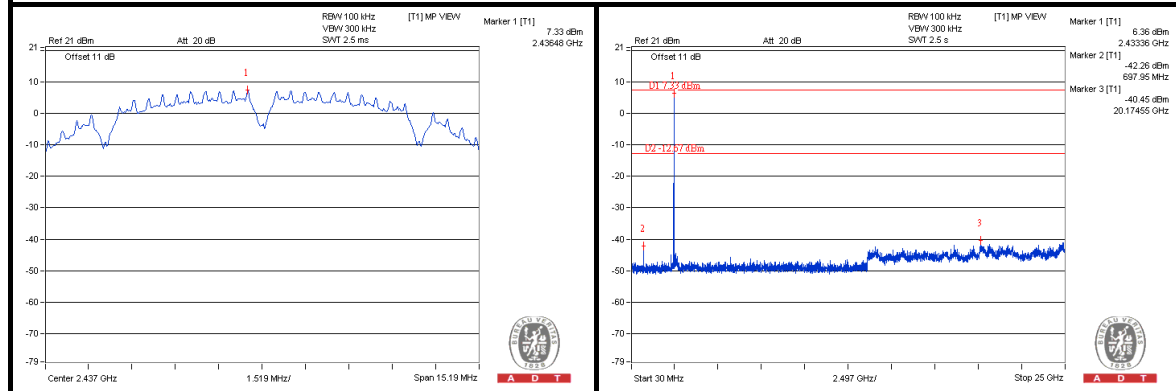
A D T

802.11b CHAIN 0

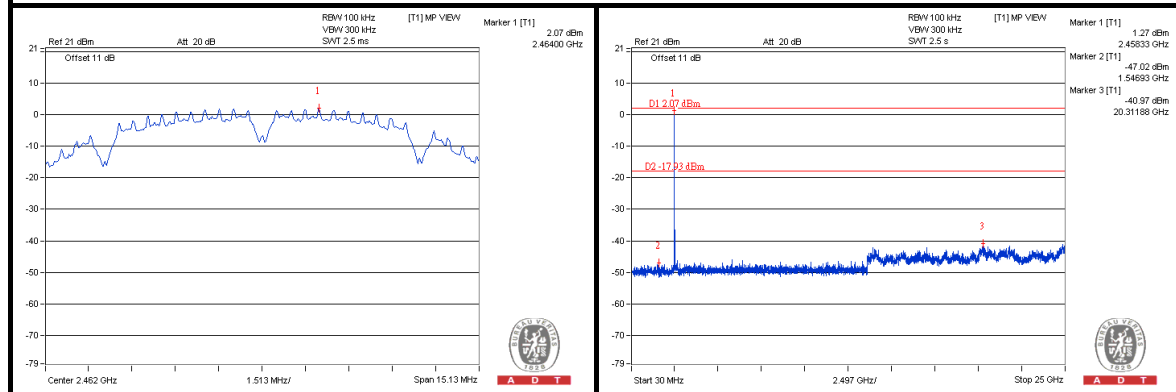
CH 1



CH 6



CH 11

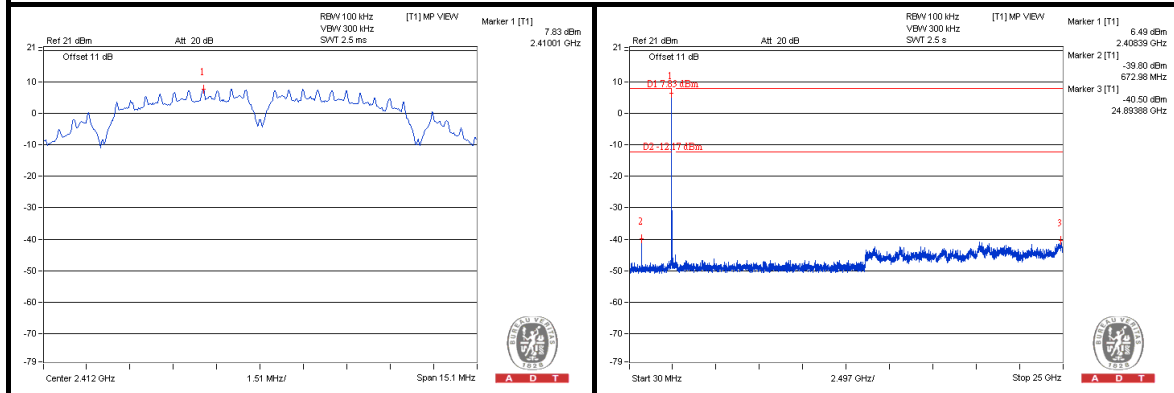




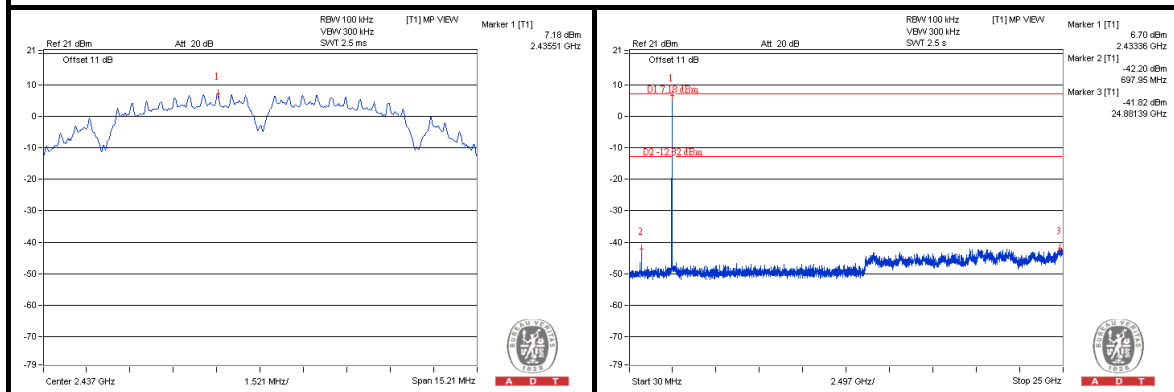
A D T

CHAIN 1

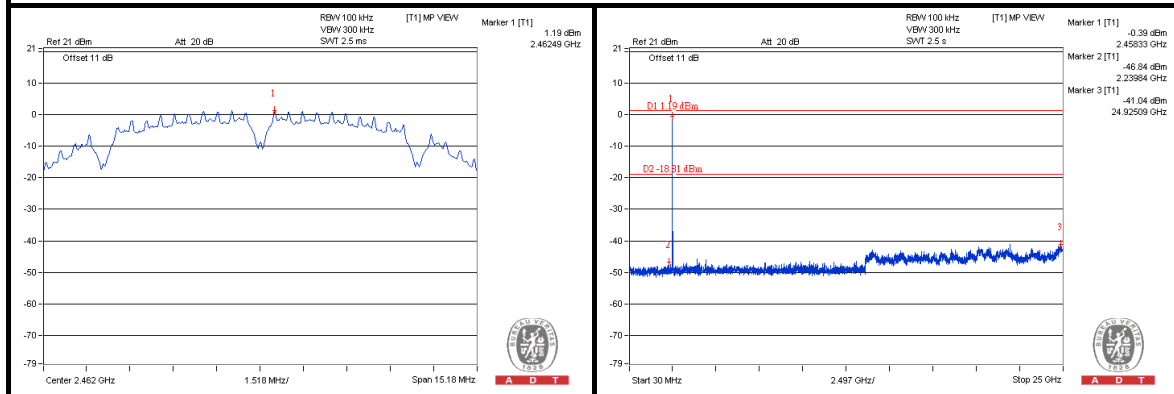
CH 1



CH 6



CH 11

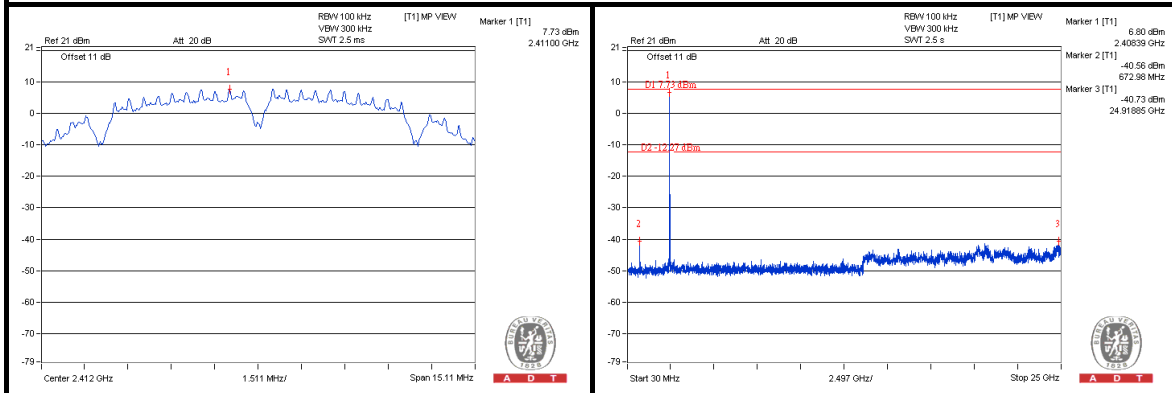




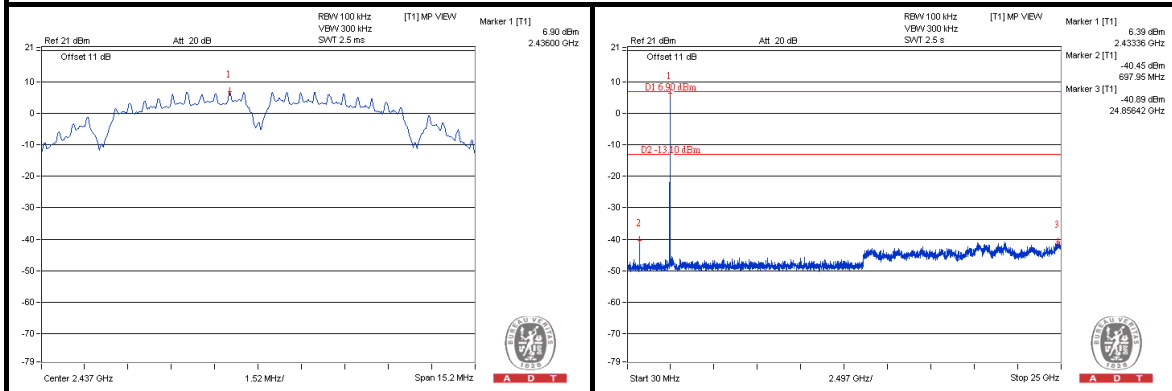
A D T

CHAIN 2

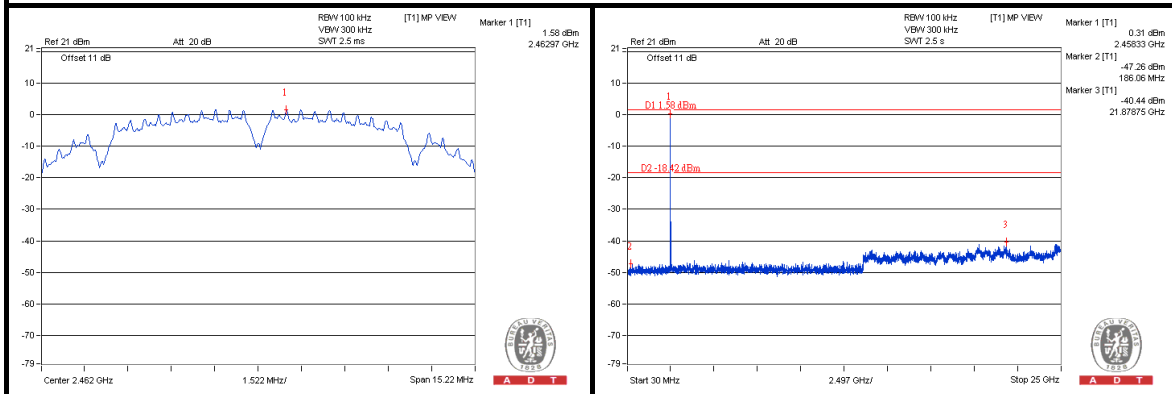
CH 1



CH 6



CH 11

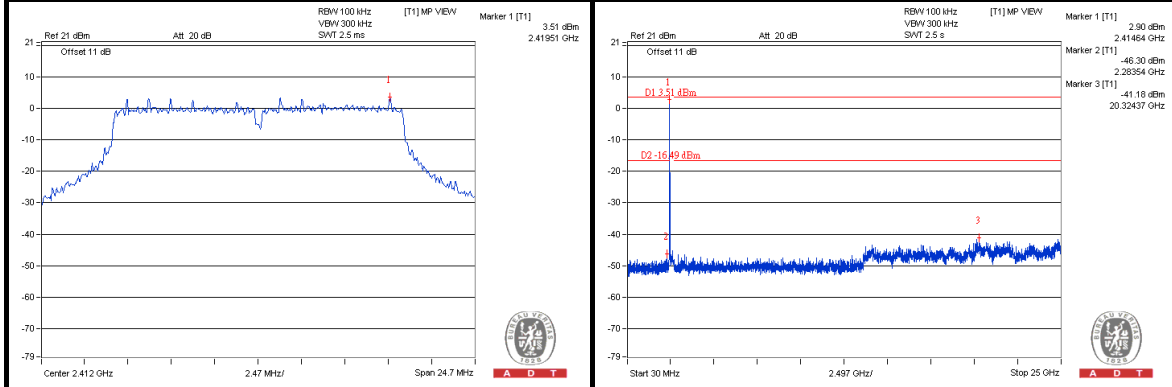




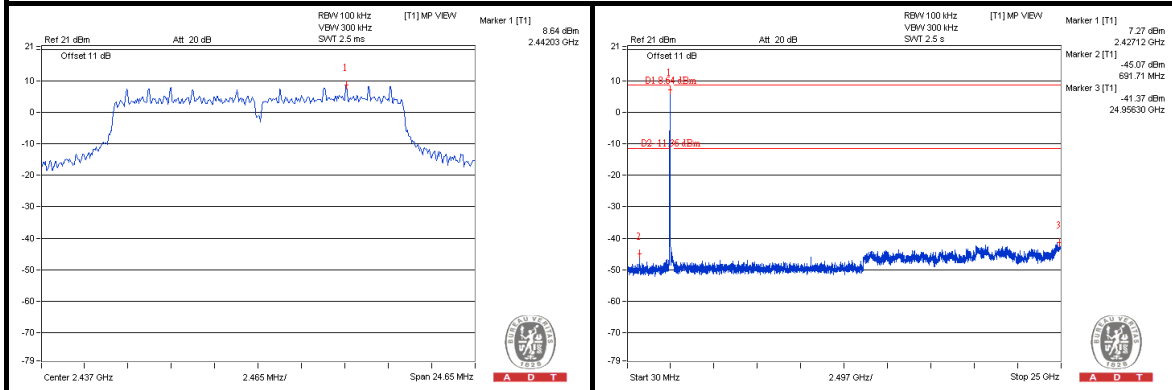
A D T

802.11g
CHAIN 0

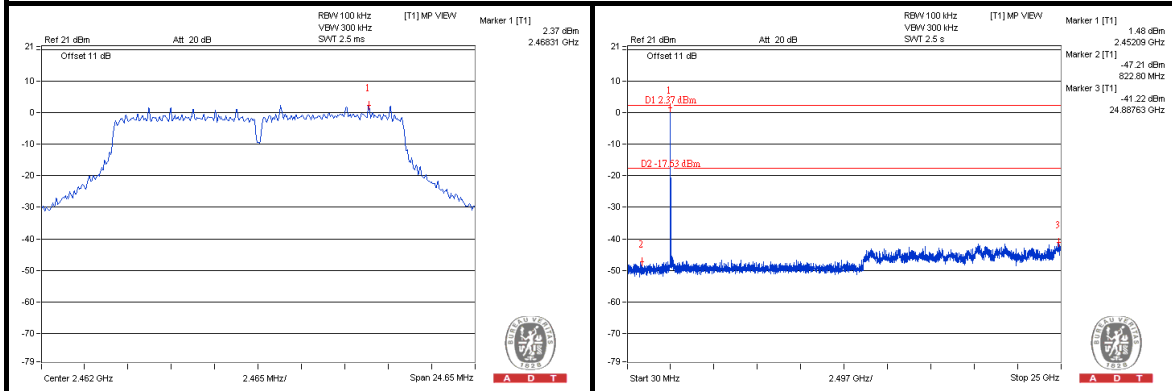
CH 1



CH 6



CH 11

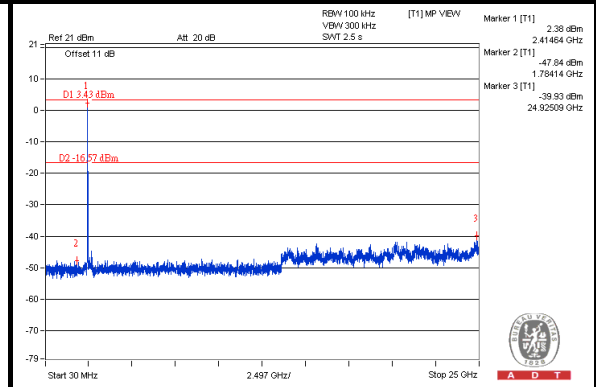
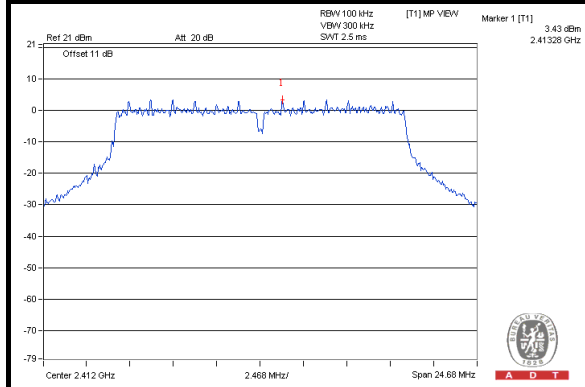




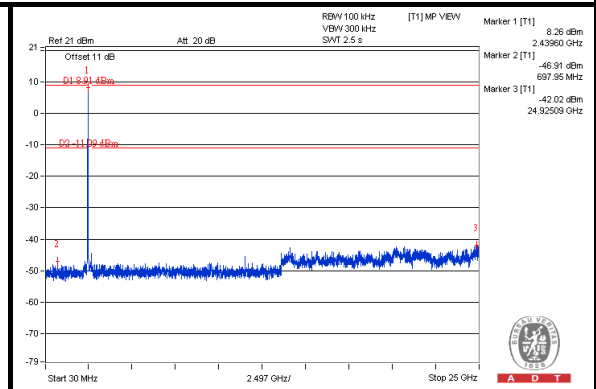
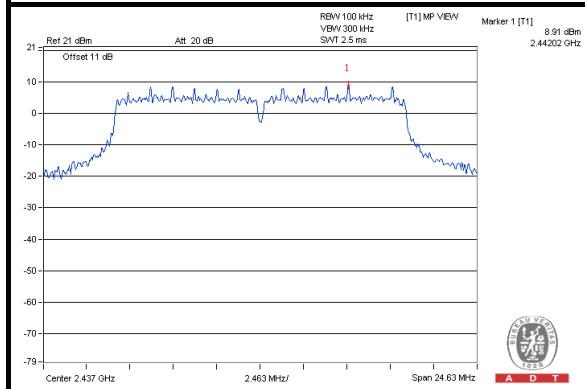
A D T

CHAIN 1

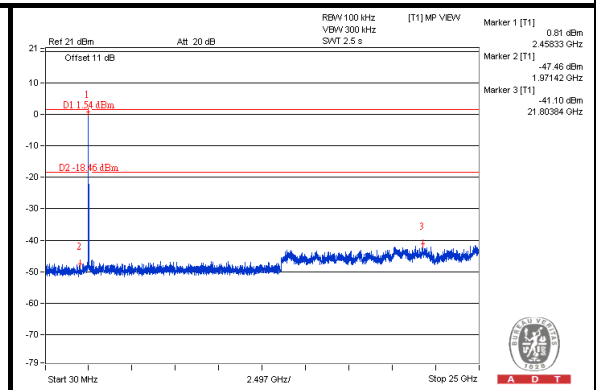
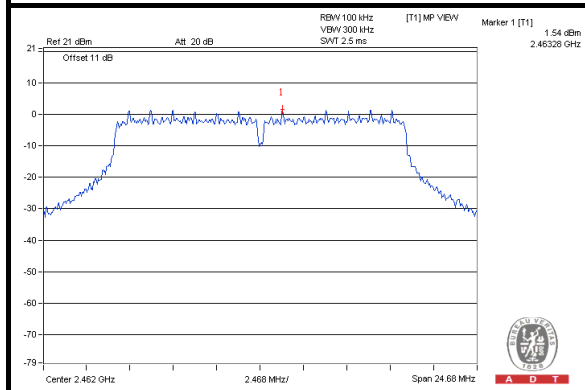
CH 1



CH 6



CH 11

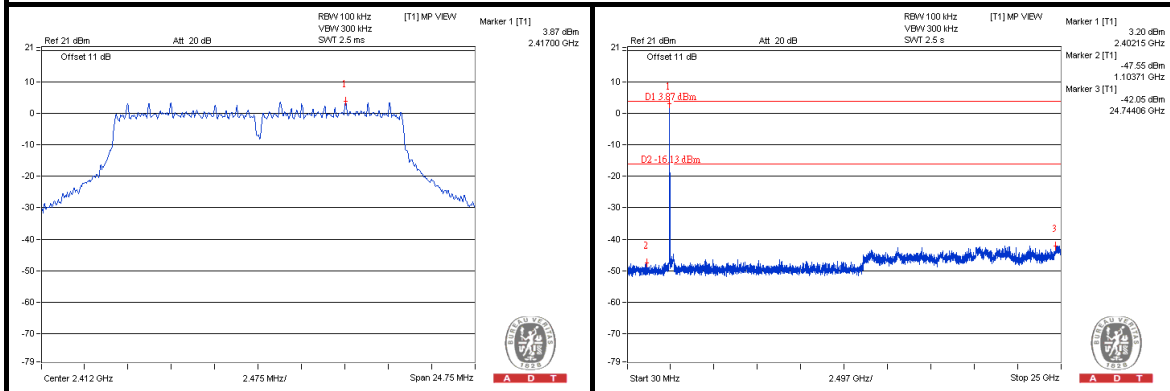




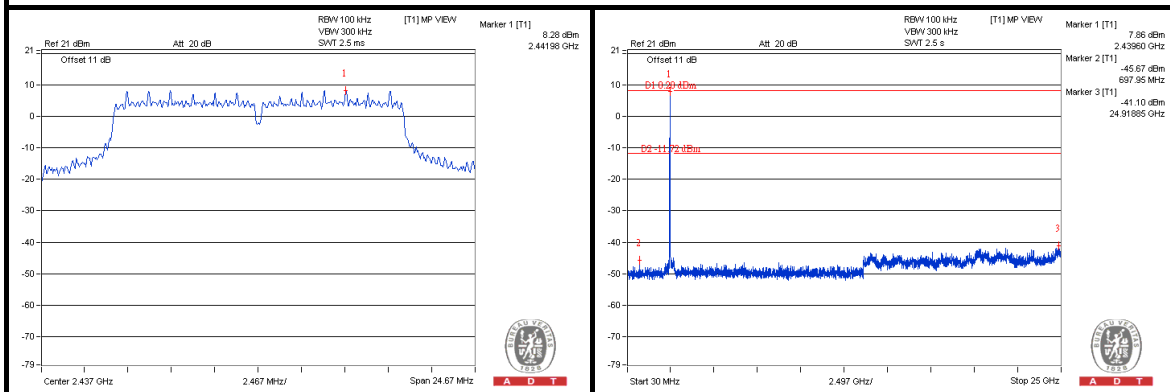
A D T

CHAIN 2

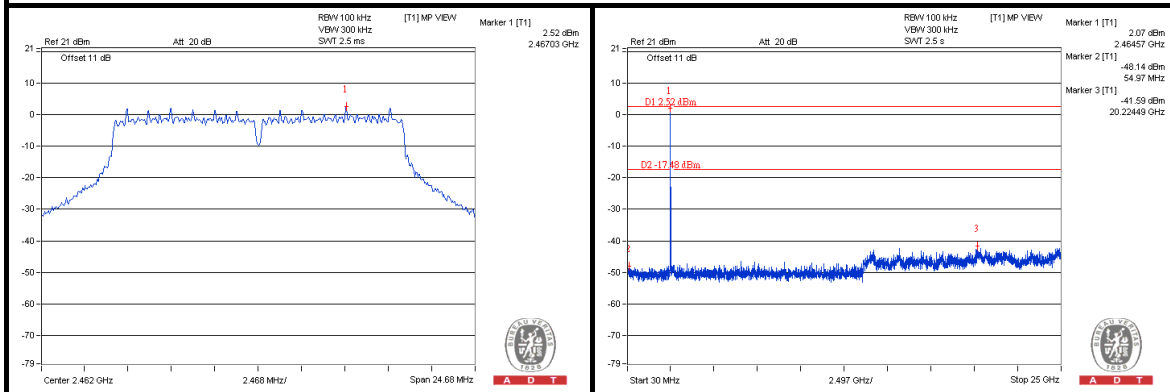
CH 1



CH 6



CH 11



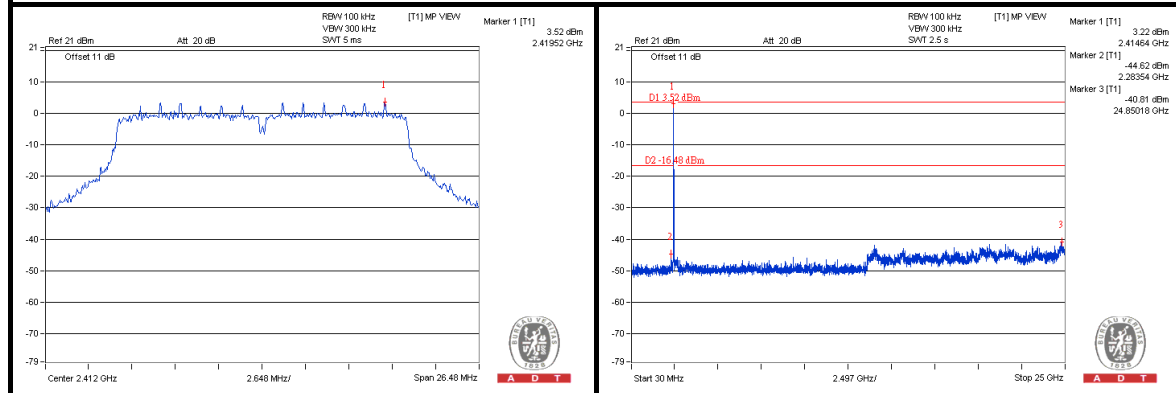


A D T

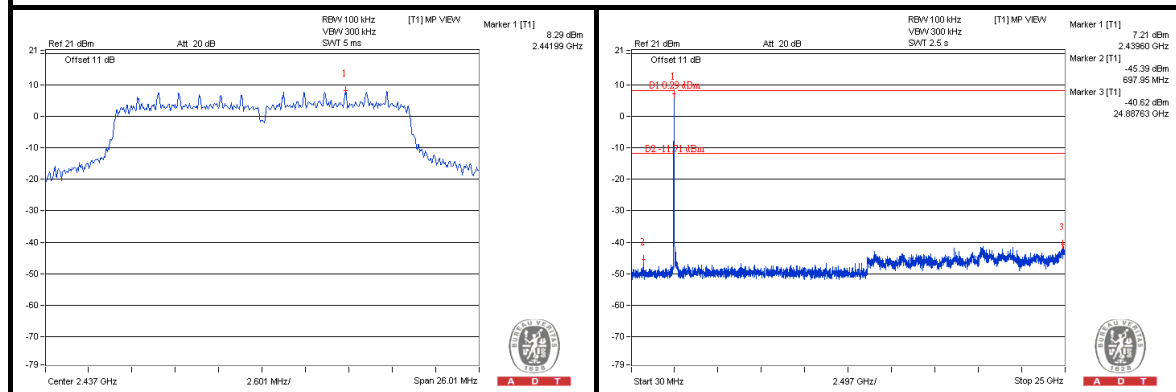
802.11n (20MHz)

CHAIN 0

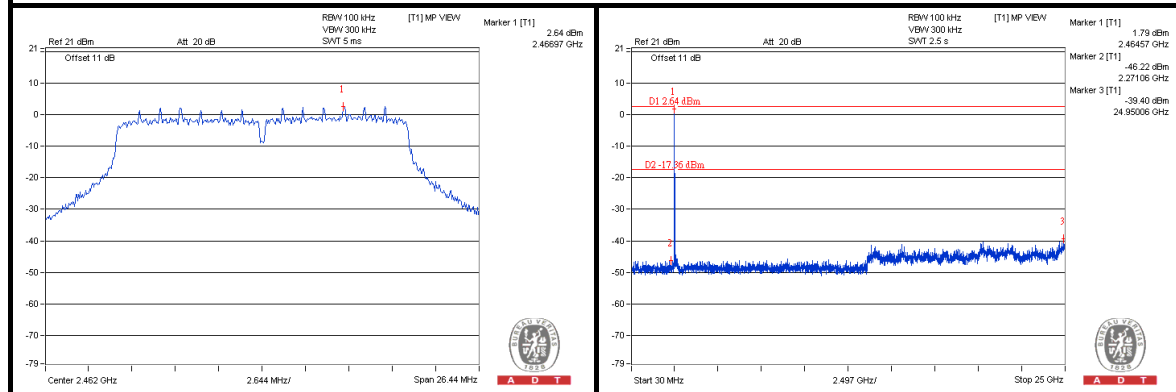
CH 1



CH 6



CH 11

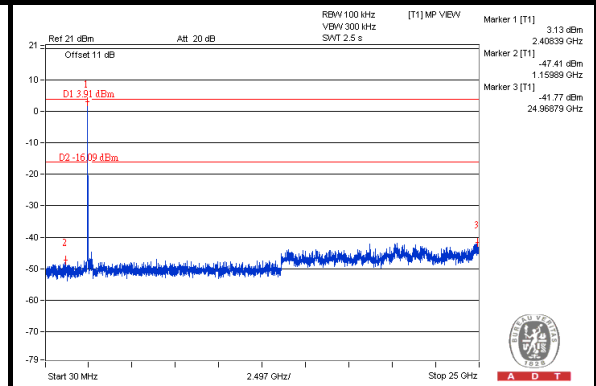
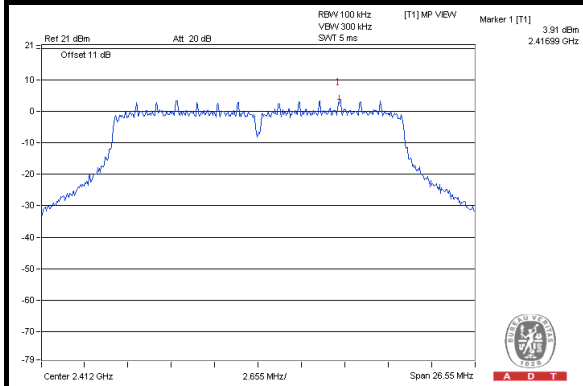




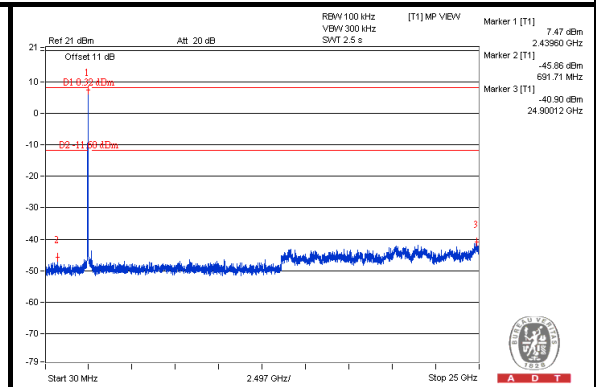
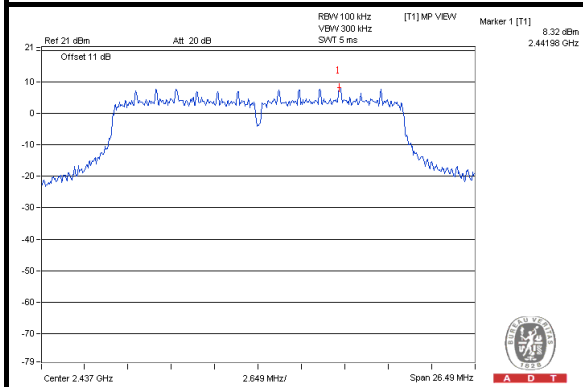
A D T

CHAIN 1

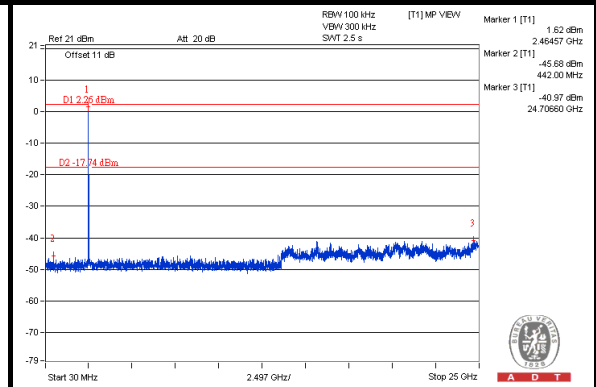
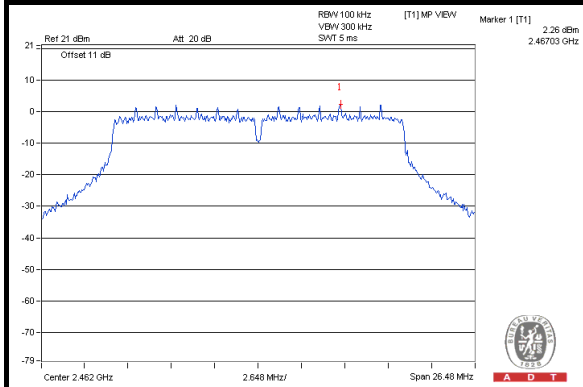
CH 1



CH 6



CH 11

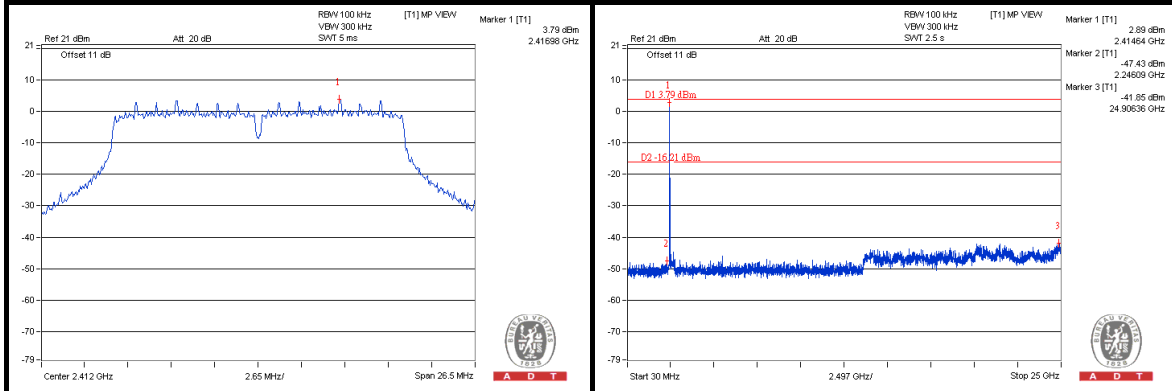




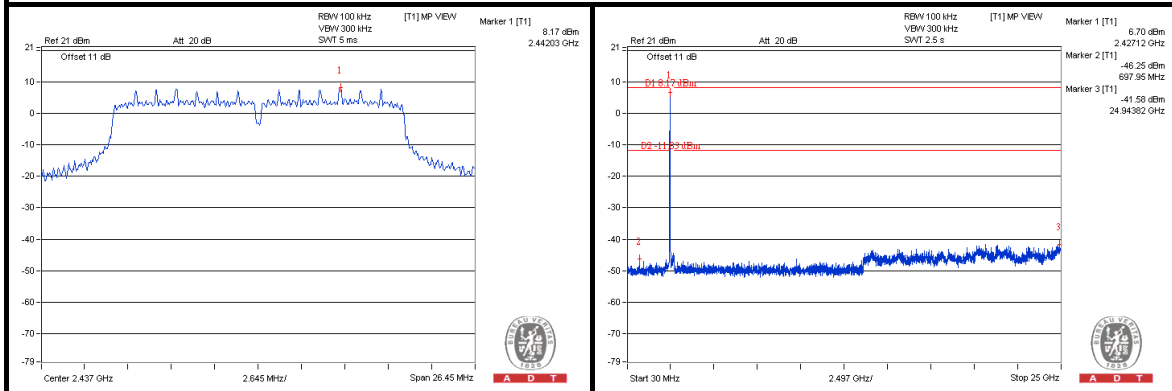
A D T

CHAIN 2

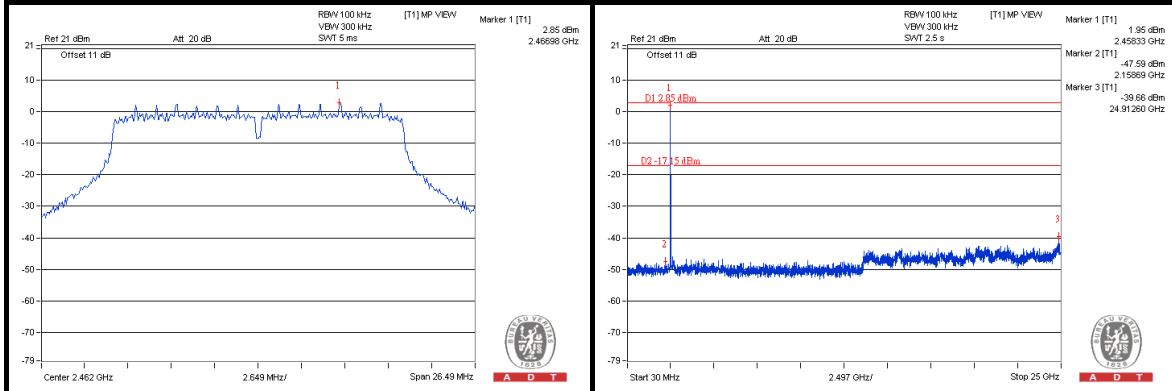
CH 1



CH 6



CH 11

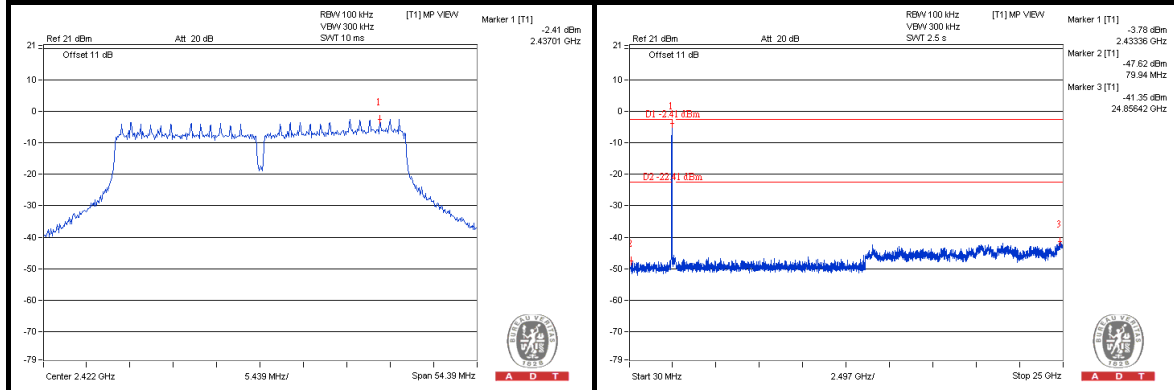




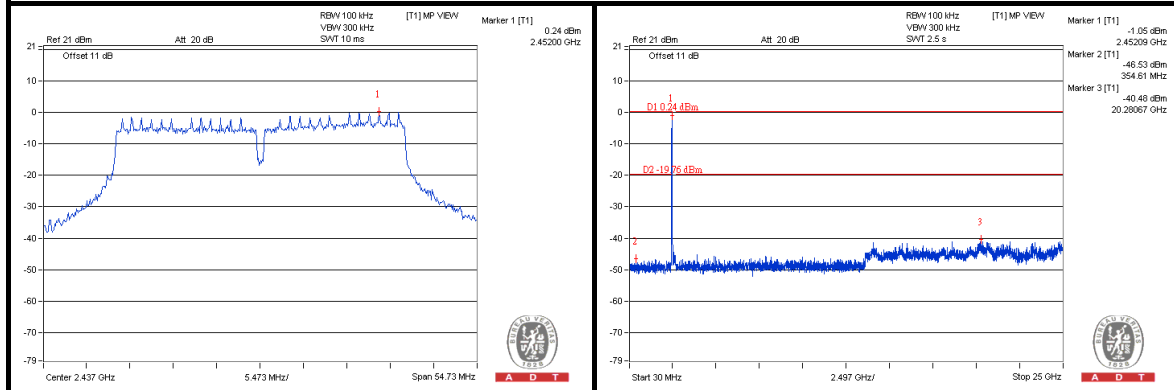
A D T

802.11n (40MHz) CHAIN 0

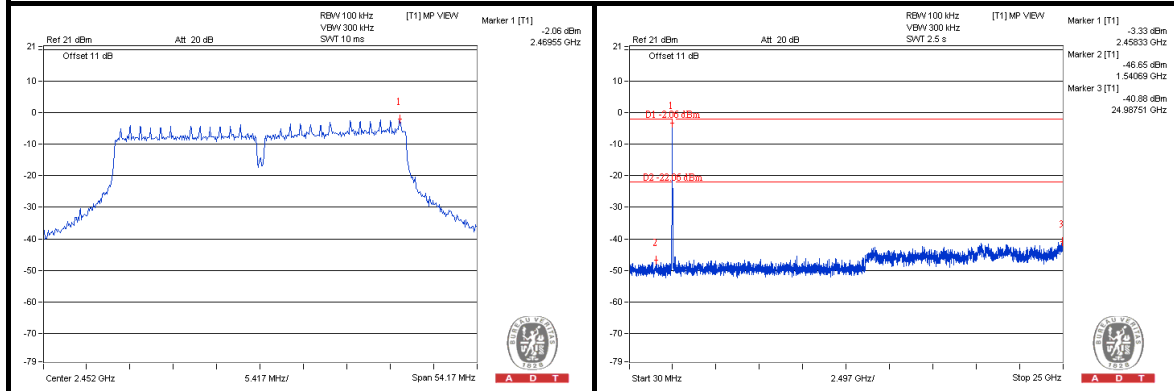
CH 3



CH 6



CH 9

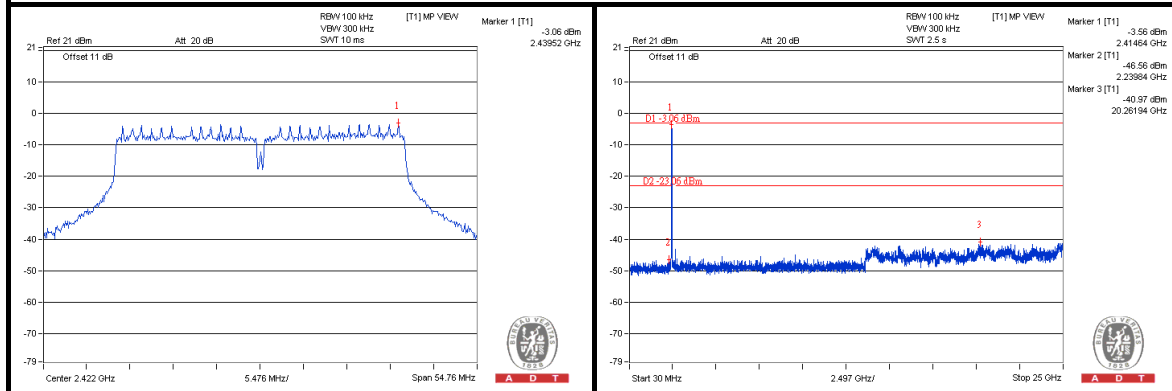




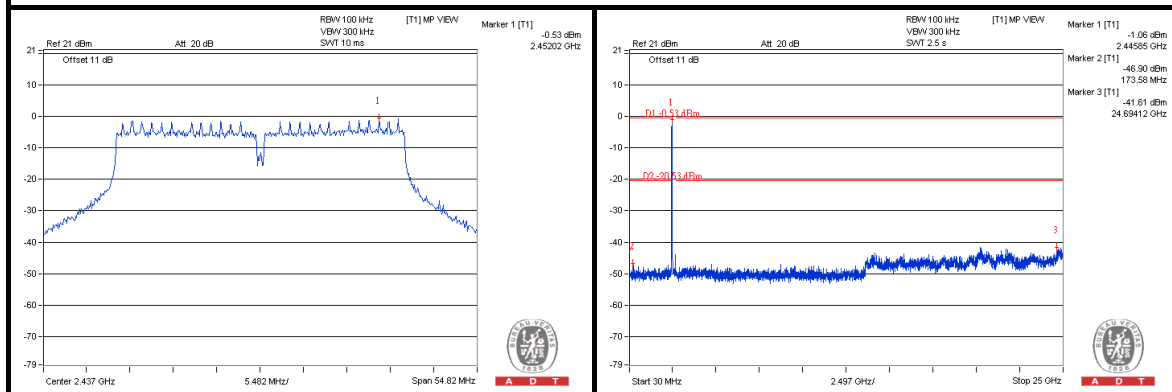
A D T

CHAIN 1

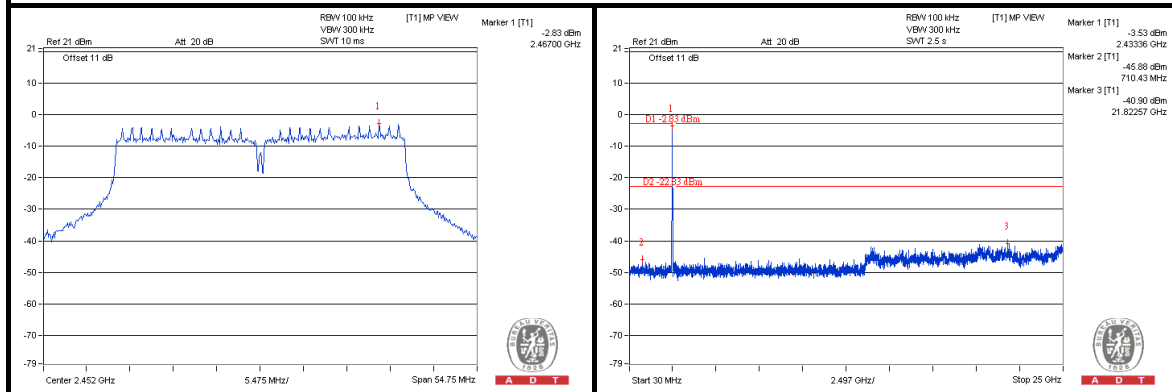
CH 3



CH 6



CH 9

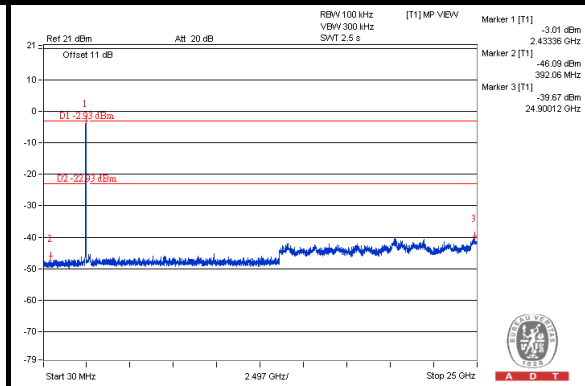
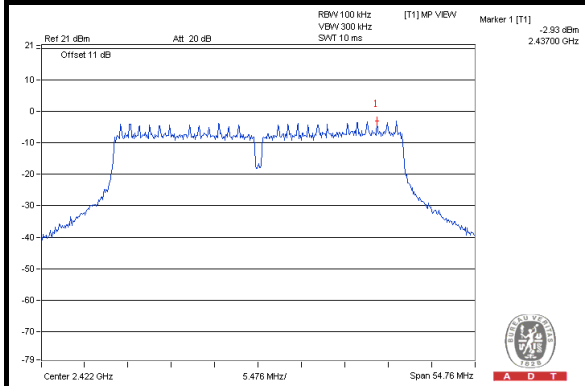




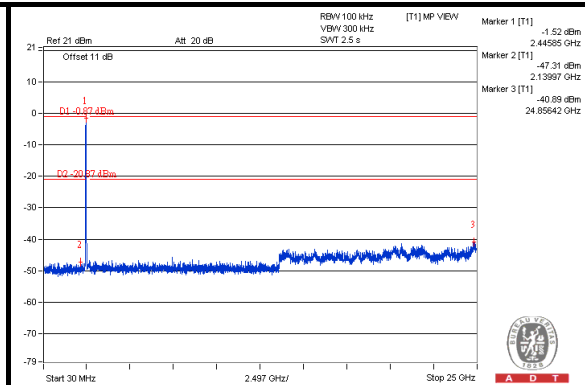
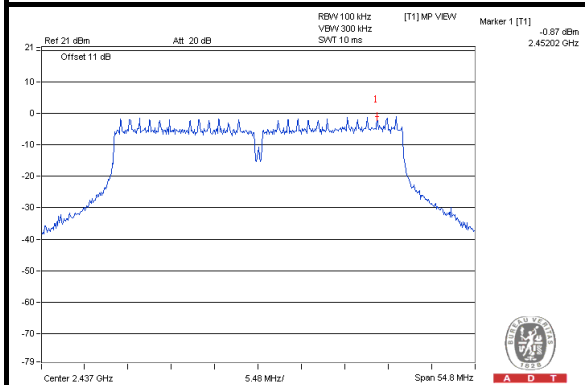
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CHAIN 2

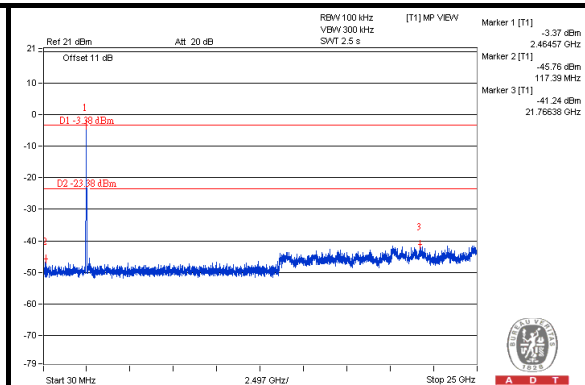
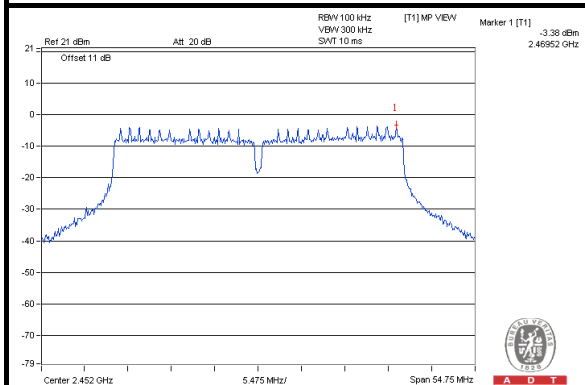
CH 3



CH 6



CH 9



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

5.1 RADIATED EMISSION MEASUREMENT

5.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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



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5.1.2 TEST INSTRUMENTS

Same as item 4.1.2.

5.1.3 TEST PROCEDURES

Same as item 4.1.3.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation.

5.1.5 TEST SETUP

Same as item 4.1.5.

5.1.6 EUT OPERATING CONDITIONS

Same as item 4.1.6.



A D T

5.1.7 TEST RESULTS

ABOVE 1GHz DATA :

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	58.6 PK	74.0	-15.4	1.00 H	297	21.20	37.40
2	5000.00	50.4 AV	54.0	-3.6	1.00 H	297	13.00	37.40
3	5120.00	58.4 PK	74.0	-15.6	1.00 H	282	20.80	37.60
4	5120.00	50.1 AV	54.0	-3.9	1.00 H	282	12.50	37.60
5	#5725.00	67.2 PK	89.0	-21.8	1.04 H	37	28.50	38.70
6	#5725.00	52.9 AV	79.2	-26.3	1.04 H	37	14.20	38.70
7	*5745.00	109.0 PK			1.12 H	291	70.30	38.70
8	*5745.00	99.2 AV			1.12 H	291	60.50	38.70
9	11490.00	57.7 PK	74.0	-16.3	1.00 H	165	8.20	49.50
10	11490.00	44.4 AV	54.0	-9.6	1.00 H	165	-5.10	49.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”: The radiated frequency is out the restricted band.



A D T

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

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	58.0 PK	74.0	-16.0	1.18 V	360	20.60	37.40
2	5000.00	48.8 AV	54.0	-5.2	1.18 V	360	11.40	37.40
3	5120.00	56.5 PK	74.0	-17.5	1.00 V	316	18.90	37.60
4	5120.00	47.7 AV	54.0	-6.3	1.00 V	316	10.10	37.60
5	#5725.00	57.9 PK	84.2	-26.3	1.04 V	37	19.20	38.70
6	#5725.00	47.9 AV	74.2	-26.3	1.04 V	37	9.20	38.70
7	*5745.00	104.2 PK			1.00 V	319	65.50	38.70
8	*5745.00	94.2 AV			1.00 V	319	55.50	38.70
9	11490.00	59.6 PK	74.0	-14.4	1.55 V	163	10.10	49.50
10	11490.00	47.5 AV	54.0	-6.5	1.55 V	163	-2.00	49.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”:The radiated frequency is out the restricted band.



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	58.5 PK	74.0	-15.5	1.00 H	297	21.10	37.40
2	5000.00	49.5 AV	54.0	-4.5	1.00 H	297	12.10	37.40
3	*5785.00	107.9 PK			1.22 H	45	69.10	38.80
4	*5785.00	97.1 AV			1.22 H	45	58.30	38.80
5	11570.00	58.4 PK	74.0	-15.6	1.00 H	298	9.00	49.40
6	11570.00	44.7 AV	54.0	-9.3	1.00 H	298	-4.70	49.40
7	#17355.00	63.7 PK	87.9	-24.2	1.00 H	70	10.70	53.00
8	#17355.00	50.5 AV	77.1	-26.6	1.00 H	70	-2.50	53.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	56.7 PK	74.0	-17.3	1.18 V	335	19.30	37.40
2	5000.00	47.4 AV	54.0	-6.6	1.18 V	335	10.00	37.40
3	*5785.00	101.8 PK			1.00 V	315	63.00	38.80
4	*5785.00	91.8 AV			1.00 V	315	53.00	38.80
5	11570.00	58.9 PK	74.0	-15.1	1.33 V	174	9.50	49.40
6	11570.00	45.2 AV	54.0	-8.8	1.33 V	174	-4.20	49.40
7	#17355.00	61.2 PK	81.8	-20.6	1.22 V	139	8.20	53.00
8	#17355.00	48.7 AV	71.8	-23.1	1.22 V	139	-4.30	53.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”:The radiated frequency is out the restricted band.



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	58.9 PK	74.0	-15.1	1.00 H	293	21.50	37.40
2	5000.00	50.3 AV	54.0	-3.7	1.00 H	293	12.90	37.40
3	5120.00	59.5 PK	74.0	-14.5	1.23 H	286	21.90	37.60
4	5120.00	51.0 AV	54.0	-3.0	1.23 H	286	13.40	37.60
5	*5825.00	107.3 PK			1.11 H	49	68.40	38.90
6	*5825.00	97.4 AV			1.11 H	49	58.50	38.90
7	#5850.00	57.3 PK	87.3	-30.0	1.00 H	50	18.40	38.90
8	#5850.00	47.4 AV	77.4	-30.0	1.00 H	50	8.50	38.90
9	11650.00	56.9 PK	74.0	-17.1	1.00 H	168	7.60	49.30
10	11650.00	43.9 AV	54.0	-10.1	1.00 H	168	-5.40	49.30

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”:The radiated frequency is out the restricted band.



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

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	58.0 PK	74.0	-16.0	1.18 V	360	20.60	37.40
2	5000.00	48.8 AV	54.0	-5.2	1.18 V	360	11.40	37.40
3	5120.00	56.5 PK	74.0	-17.5	1.00 V	316	18.90	37.60
4	5120.00	47.7 AV	54.0	-6.3	1.00 V	316	10.10	37.60
5	*5825.00	104.2 PK			1.00 V	319	65.30	38.90
6	*5825.00	94.2 AV			1.00 V	319	55.30	38.90
7	#5850.00	55.9 PK	84.2	-28.3	1.04 V	37	17.00	38.90
8	#5850.00	45.9 AV	74.2	-28.3	1.04 V	37	7.00	38.90
9	11490.00	59.6 PK	74.0	-14.4	1.55 V	163	10.10	49.50
10	11490.00	47.5 AV	54.0	-6.5	1.55 V	163	-2.00	49.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#": The radiated frequency is out the restricted band.



A D T

802.11n (20MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	59.1 PK	74.0	-14.9	1.00 H	295	21.70	37.40
2	5000.00	50.2 AV	54.0	-3.8	1.00 H	295	12.80	37.40
3	#5725.00	65.6 PK	89.6	-24.0	1.24 H	45	26.90	38.70
4	#5725.00	55.1 AV	79.1	-24.0	1.24 H	45	16.40	38.70
5	*5745.00	109.6 PK			1.12 H	43	70.90	38.70
6	*5745.00	99.1 AV			1.12 H	43	60.40	38.70
7	11490.00	58.1 PK	74.0	-15.9	1.00 H	182	8.60	49.50
8	11490.00	44.8 AV	54.0	-9.2	1.00 H	182	-4.70	49.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	57.7 PK	74.0	-16.3	1.18 V	4	20.30	37.40
2	5000.00	48.9 AV	54.0	-5.1	1.18 V	4	11.50	37.40
3	#5725.00	59.3 PK	83.3	-24.0	1.24 V	45	20.60	38.70
4	#5725.00	48.9 AV	72.9	-24.0	1.24 V	45	10.20	38.70
5	*5745.00	103.3 PK			1.11 V	313	64.60	38.70
6	*5745.00	92.9 AV			1.11 V	313	54.20	38.70
7	11490.00	59.6 PK	74.0	-14.4	1.48 V	256	10.10	49.50
8	11490.00	46.5 AV	54.0	-7.5	1.48 V	256	-3.00	49.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#": The radiated frequency is out the restricted band.



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	58.7 PK	74.0	-15.3	1.00 H	291	21.30	37.40
2	5000.00	50.0 AV	54.0	-4.0	1.00 H	291	12.60	37.40
3	5040.00	58.2 PK	74.0	-15.8	1.00 H	288	20.70	37.50
4	5040.00	50.4 AV	54.0	-3.6	1.00 H	288	12.90	37.50
5	*5785.00	108.8 PK			1.20 H	47	70.00	38.80
6	*5785.00	99.0 AV			1.20 H	47	60.20	38.80
7	11570.00	57.0 PK	74.0	-17.0	1.00 H	296	7.60	49.40
8	11570.00	44.7 AV	54.0	-9.3	1.00 H	296	-4.70	49.40
9	#17355.00	63.4 PK	88.8	-25.4	1.00 H	42	10.40	53.00
10	#17355.00	51.1 AV	79.0	-27.9	1.00 H	42	-1.90	53.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”:The radiated frequency is out the restricted band.



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

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	56.8 PK	74.0	-17.2	1.06 V	7	19.40	37.40
2	5000.00	47.8 AV	54.0	-6.2	1.06 V	7	10.40	37.40
3	5040.00	56.9 PK	74.0	-17.1	1.15 V	0	19.40	37.50
4	5040.00	49.2 AV	54.0	-4.8	1.15 V	0	11.70	37.50
5	*5785.00	103.1 PK			1.00 V	316	64.30	38.80
6	*5785.00	93.4 AV			1.00 V	316	54.60	38.80
7	11570.00	59.2 PK	74.0	-14.8	1.26 V	147	9.80	49.40
8	11570.00	46.4 AV	54.0	-7.6	1.26 V	147	-3.00	49.40
9	#17355.00	61.7 PK	83.1	-21.4	1.26 V	149	8.70	53.00
10	#17355.00	48.8 AV	73.4	-24.6	1.26 V	149	-4.20	53.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#": The radiated frequency is out the restricted band.



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	59.0 PK	74.0	-15.0	1.00 H	295	21.60	37.40
2	5000.00	50.4 AV	54.0	-3.6	1.00 H	295	13.00	37.40
3	*5825.00	109.3 PK			1.10 H	44	70.40	38.90
4	*5825.00	99.1 AV			1.10 H	44	60.20	38.90
5	#5850.00	59.3 PK	89.3	-30.0	1.17 H	49	20.40	38.90
6	#5850.00	49.1 AV	79.1	-30.0	1.17 H	49	10.20	38.90
7	11650.00	56.6 PK	74.0	-17.4	1.06 H	163	7.30	49.30
8	11650.00	44.3 AV	54.0	-9.7	1.06 H	163	-5.00	49.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	57.1 PK	74.0	-16.9	1.01 V	1	19.70	37.40
2	5000.00	49.0 AV	54.0	-5.0	1.01 V	1	11.60	37.40
3	*5825.00	108.0 PK			1.00 V	318	69.10	38.90
4	*5825.00	97.6 AV			1.00 V	318	58.70	38.90
5	#5850.00	58.0 PK	88.0	-30.0	1.17 V	49	19.10	38.90
6	#5850.00	47.6 AV	77.6	-30.0	1.17 V	49	8.70	38.90
7	11650.00	58.3 PK	74.0	-15.7	1.26 V	148	9.00	49.30
8	11650.00	46.4 AV	54.0	-7.6	1.26 V	148	-2.90	49.30

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”:The radiated frequency is out the restricted band.



A D T

802.11n (40MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	58.6 PK	74.0	-15.4	1.00 H	294	21.20	37.40
2	5000.00	50.0 AV	54.0	-4.0	1.00 H	294	12.60	37.40
3	#5725.00	70.5 PK	87.5	-17.0	1.01 H	34	31.80	38.70
4	#5725.00	60.2 AV	77.2	-17.0	1.01 H	34	21.50	38.70
5	*5755.00	107.5 PK			1.24 H	45	68.80	38.70
6	*5755.00	97.2 AV			1.24 H	45	58.50	38.70
7	11510.00	57.6 PK	74.0	-16.4	1.00 H	111	8.10	49.50
8	11510.00	44.8 AV	54.0	-9.2	1.00 H	111	-4.70	49.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	56.4 PK	74.0	-17.6	1.31 V	360	19.00	37.40
2	5000.00	47.2 AV	54.0	-6.8	1.31 V	360	9.80	37.40
3	#5725.00	64.1 PK	81.1	-17.0	1.01 V	34	25.40	38.70
4	#5725.00	54.7 AV	71.7	-17.0	1.01 V	34	16.00	38.70
5	*5755.00	101.1 PK			1.00 V	316	62.40	38.70
6	*5755.00	91.7 AV			1.00 V	316	53.00	38.70
7	11510.00	58.8 PK	74.0	-15.2	1.35 V	147	9.30	49.50
8	11510.00	46.7 AV	54.0	-7.3	1.35 V	147	-2.80	49.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#": The radiated frequency is out the restricted band.



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	59.0 PK	74.0	-15.0	1.00 H	291	21.60	37.40
2	5000.00	49.9 AV	54.0	-4.1	1.00 H	291	12.50	37.40
3	*5795.00	107.5 PK			1.28 H	51	68.70	38.80
4	*5795.00	97.5 AV			1.28 H	51	58.70	38.80
5	#5850.00	61.5 PK	87.5	-26.0	1.00 H	40	22.60	38.90
6	#5850.00	51.5 AV	77.5	-26.0	1.00 H	40	12.60	38.90
7	11590.00	57.7 PK	74.0	-16.3	1.00 H	25	8.30	49.40
8	11590.00	43.8 AV	54.0	-10.2	1.00 H	25	-5.60	49.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	57.0 PK	74.0	-17.0	1.13 V	353	19.60	37.40
2	5000.00	48.7 AV	54.0	-5.3	1.13 V	353	11.30	37.40
3	*5795.00	103.2 PK			1.00 V	316	64.40	38.80
4	*5795.00	93.1 AV			1.00 V	316	54.30	38.80
5	#5850.00	57.2 PK	83.2	-26.0	1.00 V	40	18.30	38.90
6	#5850.00	47.1 AV	73.1	-26.0	1.00 V	40	8.20	38.90
7	11590.00	58.5 PK	74.0	-15.5	1.32 V	55	9.10	49.40
8	11590.00	45.5 AV	54.0	-8.5	1.32 V	55	-3.90	49.40

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”:The radiated frequency is out the restricted band.



A D T

BELOW 1GHz WORST-CASE DATA : 802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 67%RH	TESTED BY	Chris Lin
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	51.24	36.0 QP	40.0	-4.0	1.50 H	255	22.40	13.60
2	124.98	39.0 QP	43.5	-4.5	1.74 H	280	27.00	12.00
3	299.62	38.8 QP	46.0	-7.2	1.00 H	339	24.20	14.60
4	375.29	34.2 QP	46.0	-11.8	1.00 H	332	17.70	16.50
5	701.28	32.5 QP	46.0	-13.5	3.00 H	206	9.60	22.90
6	800.24	35.4 QP	46.0	-10.6	1.25 H	208	10.80	24.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	53.18	35.5 QP	40.0	-4.5	1.00 V	82	21.90	13.60
2	113.34	39.7 QP	43.5	-3.8	1.49 V	272	29.00	10.70
3	144.38	37.7 QP	43.5	-5.8	1.00 V	229	24.00	13.70
4	315.14	37.7 QP	46.0	-8.3	2.00 V	157	22.70	15.00
5	516.94	39.0 QP	46.0	-7.0	1.00 V	87	19.20	19.80
6	800.24	36.0 QP	46.0	-10.0	3.00 V	181	11.40	24.60

REMARKS:

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 67%RH	TESTED BY	Chris Lin
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	39.60	37.2 QP	40.0	-2.8	1.74 H	120	23.90	13.30
2	95.87	33.4 QP	43.5	-10.1	1.74 H	120	24.60	8.80
3	138.56	32.5 QP	43.5	-11.0	1.50 H	120	19.20	13.30
4	299.62	38.7 QP	46.0	-7.3	1.00 H	198	24.10	14.60
5	375.29	33.9 QP	46.0	-12.1	3.00 H	5	17.40	16.50
6	802.18	37.7 QP	46.0	-8.3	1.00 H	137	13.10	24.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	53.18	38.1 QP	40.0	-1.9	1.00 V	188	24.50	13.60
2	101.69	34.6 QP	43.5	-8.9	1.74 V	189	25.20	9.40
3	218.12	34.2 QP	46.0	-11.8	2.00 V	189	22.80	11.40
4	309.32	37.0 QP	46.0	-9.0	1.74 V	211	22.20	14.80
5	456.79	33.1 QP	46.0	-12.9	3.00 V	189	14.70	18.40
6	802.18	37.3 QP	46.0	-8.7	1.00 V	172	12.70	24.60

REMARKS:

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

5.2 CONDUCTED EMISSION MEASUREMENT

5.2.1 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.

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 item 4.1.6.

5.2.7 TEST RESULTS

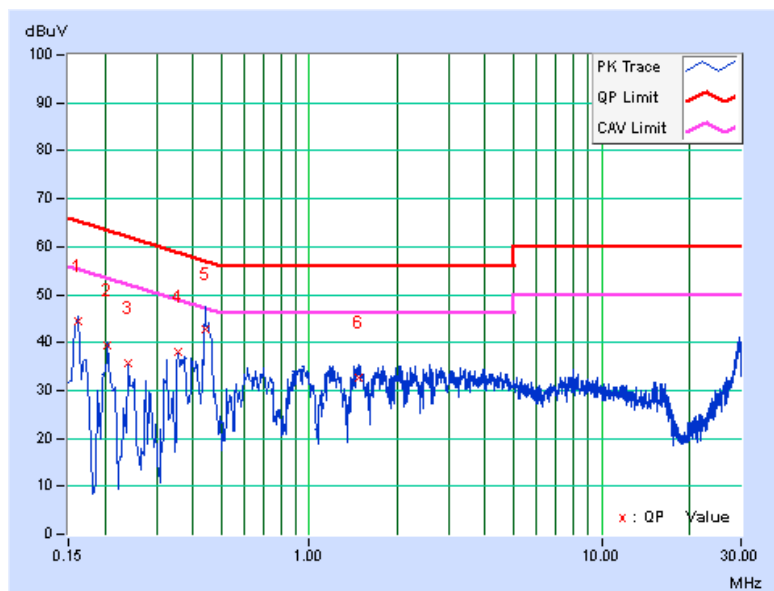
CONDUCTED WORST-CASE DATA : 802.11n (20MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16173	0.13	44.30	33.12	44.43	33.25	65.37	55.37	-20.95	-22.13
2	0.20474	0.13	39.34	30.50	39.47	30.63	63.42	53.42	-23.94	-22.78
3	0.23993	0.14	35.58	22.77	35.72	22.91	62.10	52.10	-26.38	-29.19
4	0.35670	0.17	37.74	23.48	37.91	23.65	58.80	48.80	-20.90	-25.16
5	0.43924	0.18	42.62	32.87	42.80	33.05	57.08	47.08	-14.27	-14.02
6	1.47940	0.22	32.37	22.31	32.59	22.53	56.00	46.00	-23.41	-23.47

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.

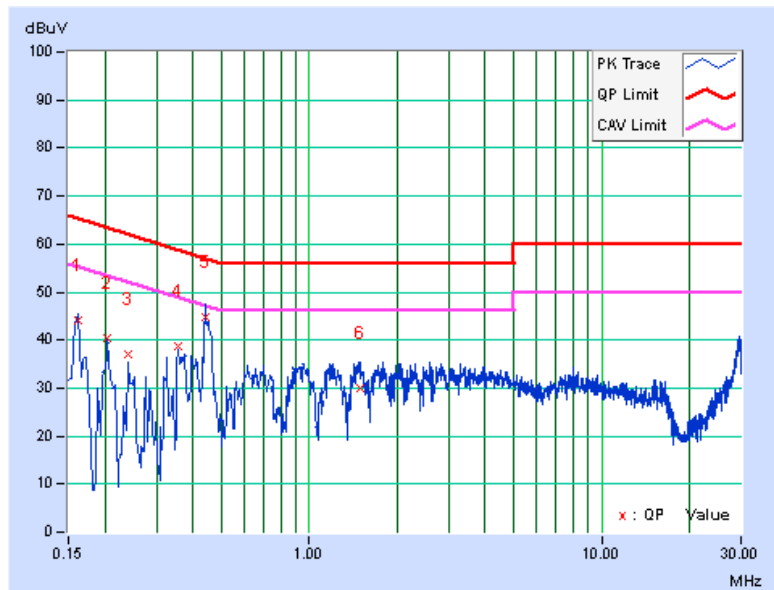


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16139	0.14	44.05	32.66	44.19	32.80	65.39	55.39	-21.21	-22.60
2	0.20474	0.14	40.17	31.05	40.31	31.19	63.42	53.42	-23.10	-22.22
3	0.23993	0.15	36.96	23.04	37.11	23.19	62.10	52.10	-24.99	-28.91
4	0.35670	0.19	38.45	24.89	38.64	25.08	58.80	48.80	-20.17	-23.73
5	0.43924	0.20	44.46	33.39	44.66	33.59	57.08	47.08	-12.41	-13.48
6	1.48722	0.23	29.77	19.77	30.00	20.00	56.00	46.00	-26.00	-26.00

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.

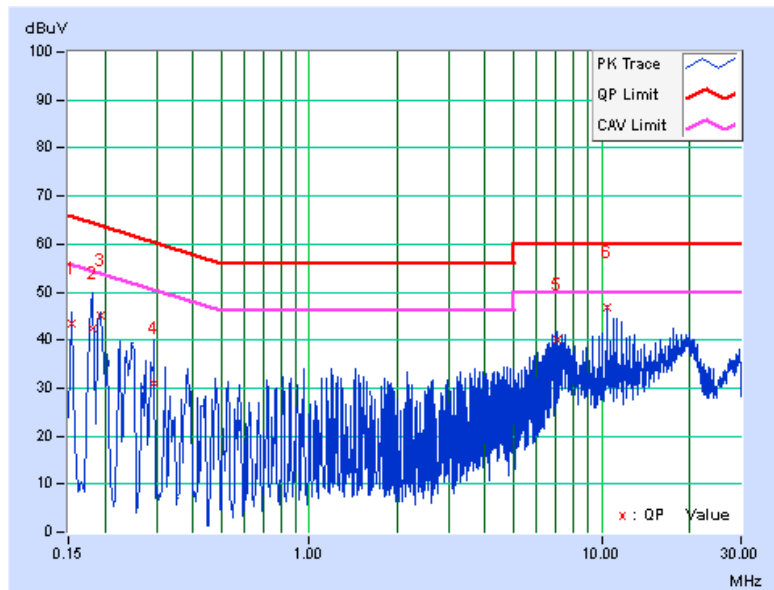


PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.13	43.17	22.99	43.30	23.12	65.79	55.79	-22.49	-32.67
2	0.18128	0.13	42.14	15.63	42.27	15.76	64.43	54.43	-22.16	-38.67
3	0.19305	0.13	45.10	36.40	45.23	36.53	63.90	53.90	-18.68	-17.38
4	0.29467	0.15	30.78	14.03	30.93	14.18	60.39	50.39	-29.46	-36.21
5	7.03551	0.50	39.63	36.68	40.13	37.18	60.00	50.00	-19.87	-12.82
6	10.50368	0.68	46.22	45.36	46.90	46.04	60.00	50.00	-13.10	-3.96

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.

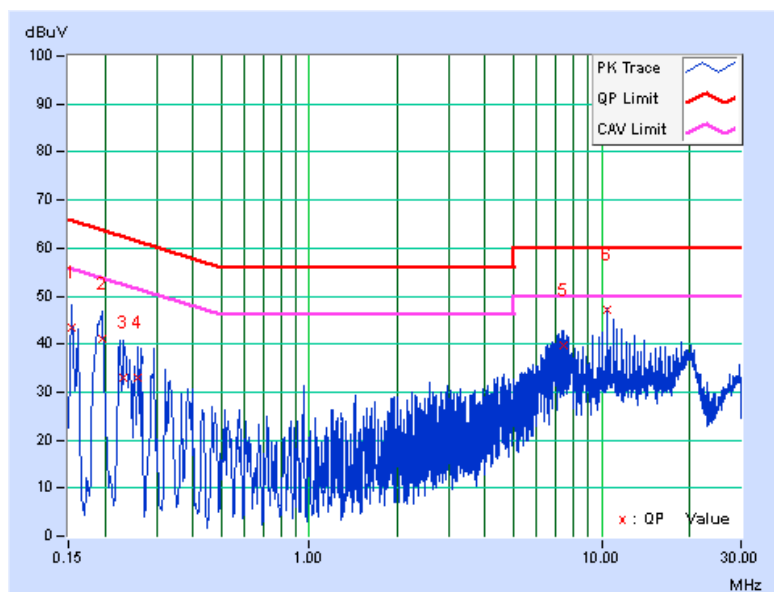


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.14	43.24	23.23	43.38	23.37	65.79	55.79	-22.41	-32.42
2	0.19692	0.14	40.79	27.69	40.93	27.83	63.74	53.74	-22.81	-25.91
3	0.23216	0.15	32.92	18.36	33.07	18.51	62.37	52.37	-29.30	-33.86
4	0.25948	0.16	32.93	5.26	33.09	5.42	61.45	51.45	-28.36	-46.03
5	7.42267	0.50	39.38	36.62	39.88	37.12	60.00	50.00	-20.12	-12.88
6	10.50368	0.62	46.41	45.51	47.03	46.13	60.00	50.00	-12.97	-3.87

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.

5.3.7 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
149	5745	15.81	16.39	15.77	0.5	PASS
157	5785	14.52	16.11	15.79	0.5	PASS
165	5825	15.78	15.74	16.45	0.5	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
149	5745	17.62	17.63	17.63	0.5	PASS
157	5785	17.33	17.68	16.34	0.5	PASS
165	5825	17.02	16.38	17.67	0.5	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
151	5755	36.22	36.48	35.94	0.5	PASS
159	5795	35.83	35.87	35.88	0.5	PASS

5.4 CONDUCTED OUTPUT POWER

5.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

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

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

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

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

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

5.4.2 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

802.11a

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
149	5745	18.53	20.24	20.34	285.110	24.55	30	PASS
157	5785	19.53	19.99	20.13	292.552	24.66	30	PASS
165	5825	19.54	19.93	19.62	279.973	24.47	30	PASS

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
149	5745	18.96	21.13	21.78	359.084	25.55	30	PASS
157	5785	20.41	20.53	20.84	344.220	25.37	30	PASS
165	5825	20.29	19.84	21.21	335.418	25.26	30	PASS

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
151	5755	20.48	21.66	21.29	392.827	25.94	30	PASS
159	5795	20.79	21.67	21.37	403.931	26.06	30	PASS



FOR AVERAGE POWER

802.11a

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1	CHAIN 2		
149	5745	9.26	9.46	10.58	28.693	14.58
157	5785	9.12	9.63	10.13	27.653	14.42
165	5825	10.11	9.06	9.37	26.961	14.31

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1	CHAIN 2		
149	5745	10.16	10.41	12.26	38.192	15.82
157	5785	10.44	10.49	11.13	35.232	15.47
165	5825	10.83	10.37	11.24	36.300	15.60

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1	CHAIN 2		
151	5755	9.84	11.34	11.76	38.249	15.83
159	5795	9.73	11.26	11.69	37.520	15.74

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

802.11a

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-17.97	4.77	-13.20	3.23	PASS
	157	5785	-16.72	4.77	-11.95	3.23	PASS
	165	5825	-16.68	4.77	-11.91	3.23	PASS
1	149	5745	-16.51	4.77	-11.74	3.23	PASS
	157	5785	-17.29	4.77	-12.52	3.23	PASS
	165	5825	-15.18	4.77	-10.41	3.23	PASS
2	149	5745	-14.27	4.77	-9.50	3.23	PASS
	157	5785	-14.04	4.77	-9.27	3.23	PASS
	165	5825	-15.28	4.77	-10.51	3.23	PASS

NOTE: Directional gain = 6dBi + 10log(3/1) = 10.77dBi > 6dBi , so the power density limit shall be reduced to 8-(10.77-6) = 3.23dBm.

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-17.72	4.77	-12.95	8	PASS
	157	5785	-16.67	4.77	-11.90	8	PASS
	165	5825	-14.99	4.77	-10.22	8	PASS
1	149	5745	-16.32	4.77	-11.55	8	PASS
	157	5785	-14.89	4.77	-10.12	8	PASS
	165	5825	-16.48	4.77	-11.71	8	PASS
2	149	5745	-14.26	4.77	-9.49	8	PASS
	157	5785	-14.83	4.77	-10.06	8	PASS
	165	5825	-15.16	4.77	-10.39	8	PASS

Note: Directional gain =6dBi + 10log(3/3)=6dBi , so the power density not need to reduced



A D T

802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-19.27	4.77	-14.50	8	PASS
	159	5795	-18.63	4.77	-13.86	8	PASS
1	151	5755	-19.03	4.77	-14.26	8	PASS
	159	5795	-19.69	4.77	-14.92	8	PASS
2	151	5755	-17.30	4.77	-12.53	8	PASS
	159	5795	-17.76	4.77	-12.99	8	PASS

Note: Directional gain =6dBi + 10log(3/3)=6dBi , so the power density not need to reduced

5.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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

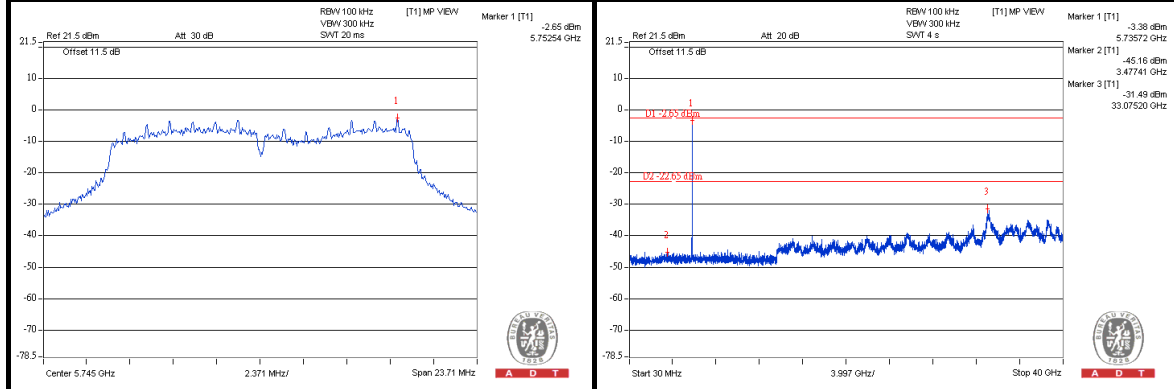
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



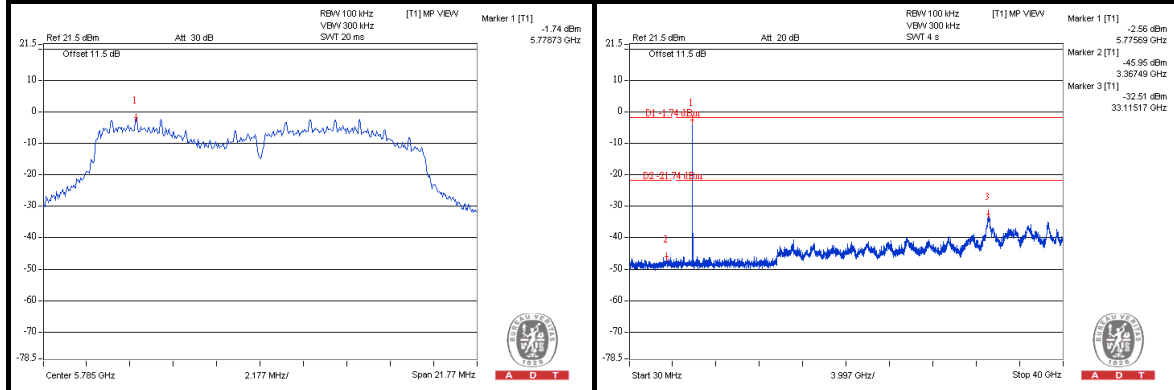
A D T

802.11a CHAIN 0

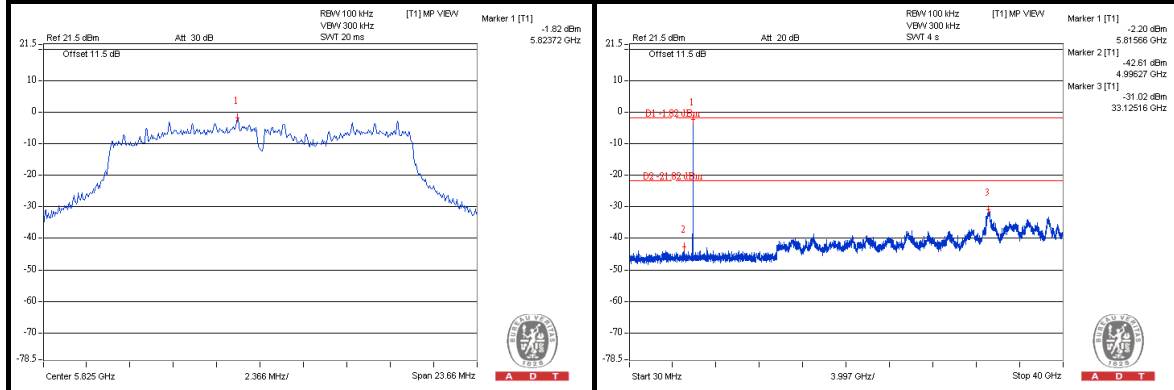
CH 149



CH 157



CH 165

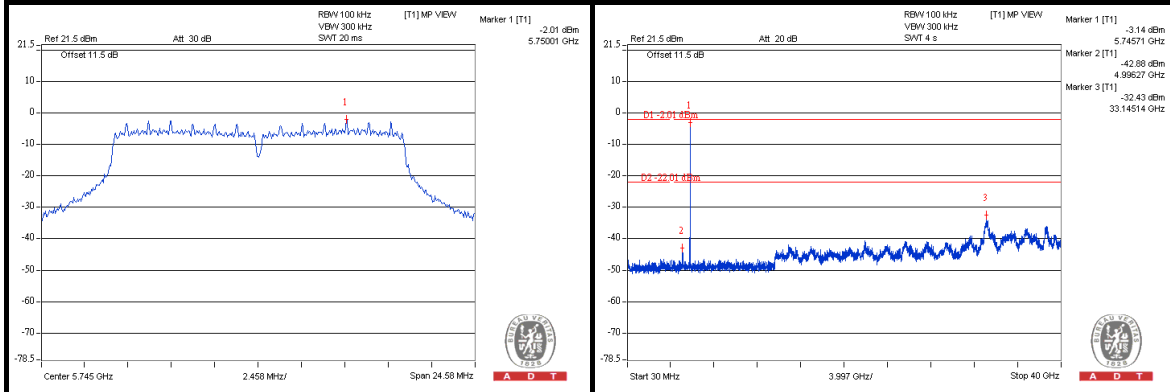




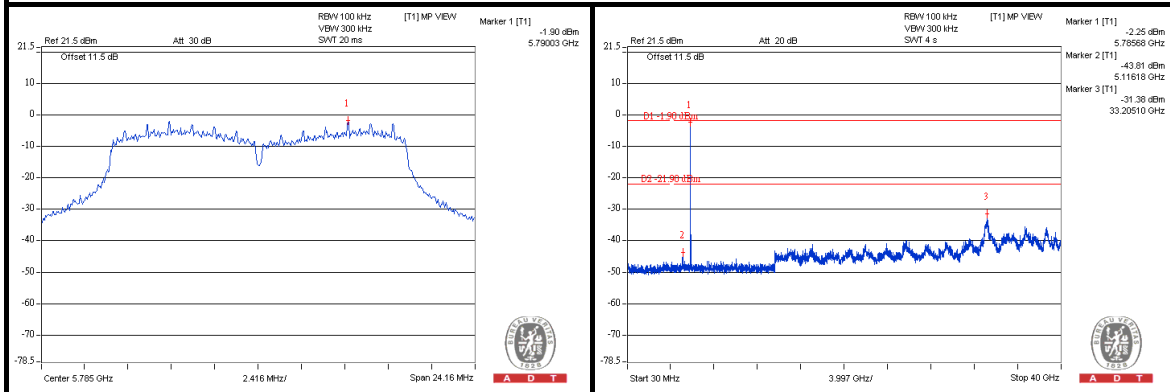
A D T

CHAIN 1

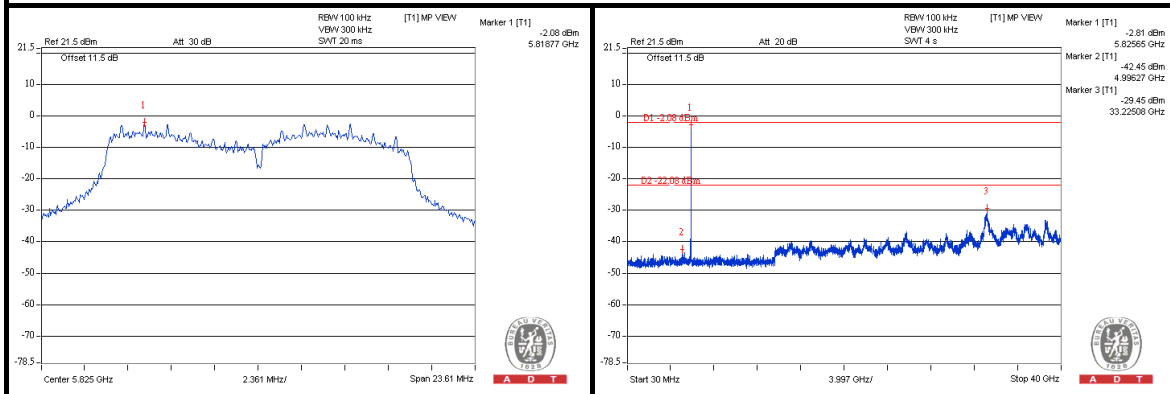
CH 149



CH 157



CH 165

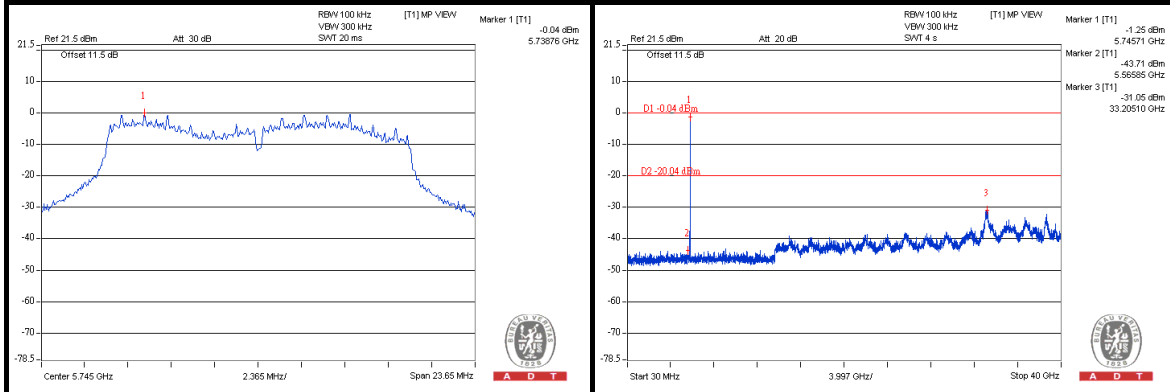




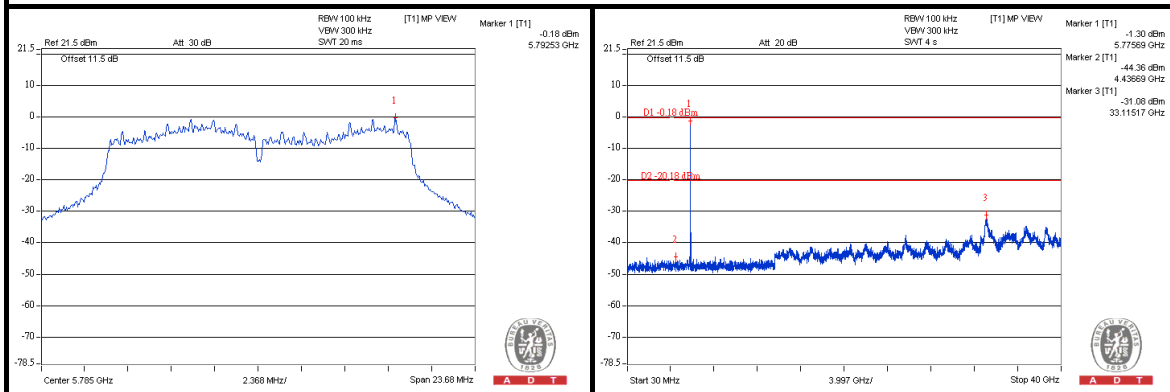
A D T

CHAIN 2

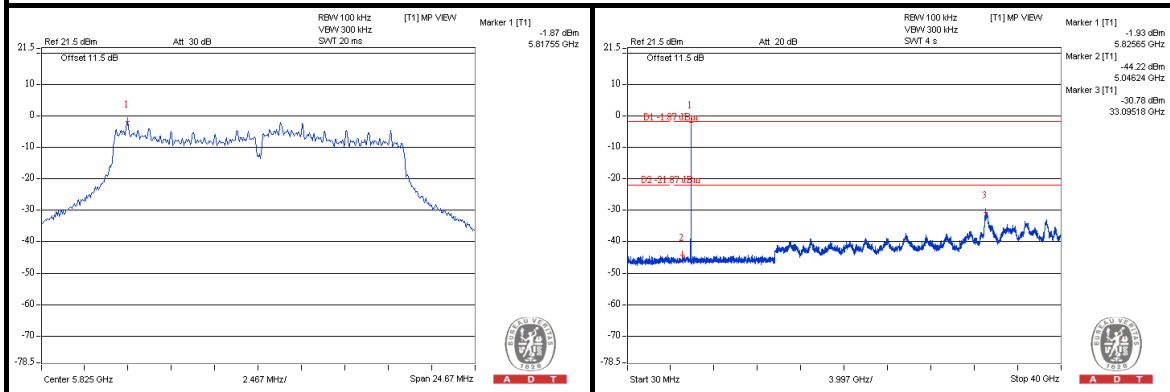
CH 149



CH 157



CH 165

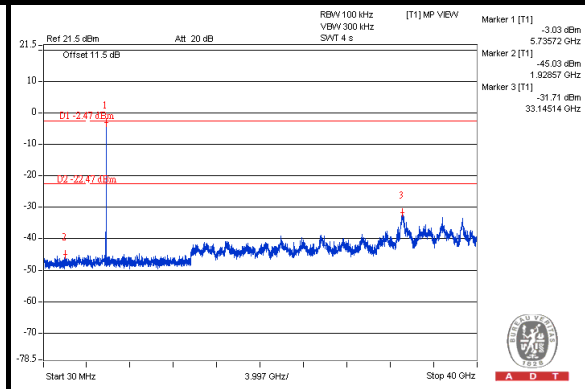
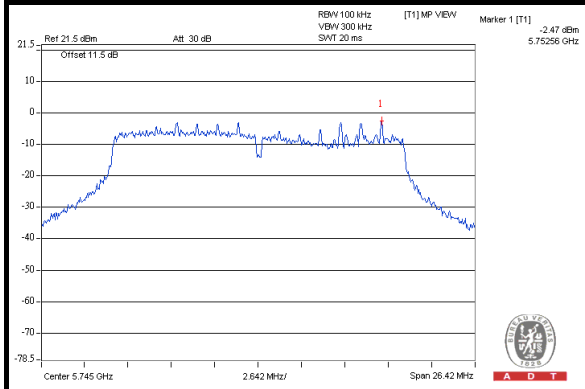




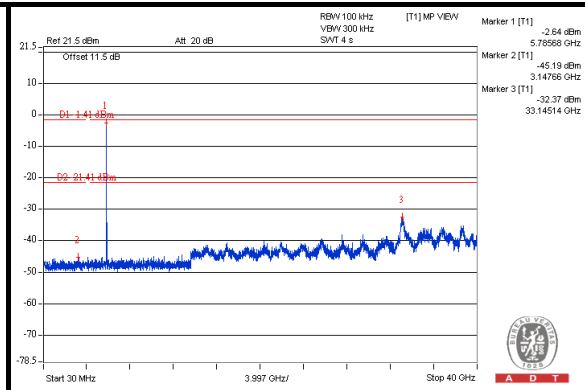
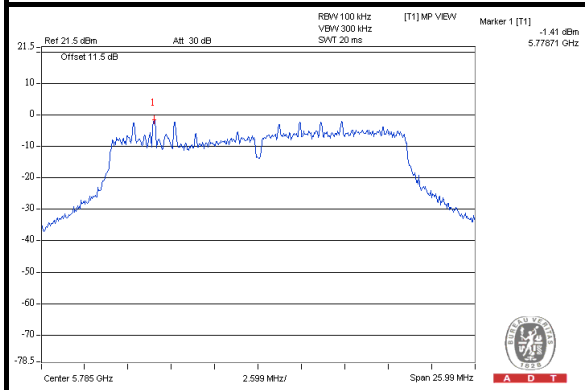
A D T

802.11n (20MHz) CHAIN 0

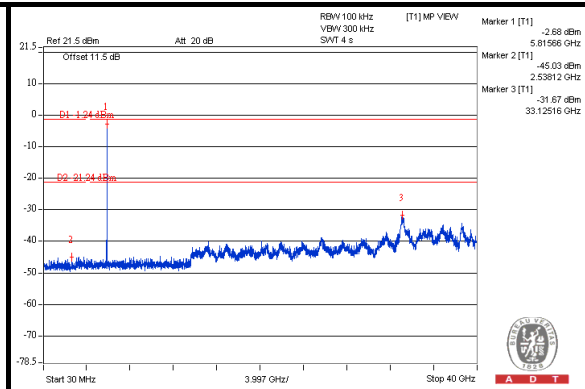
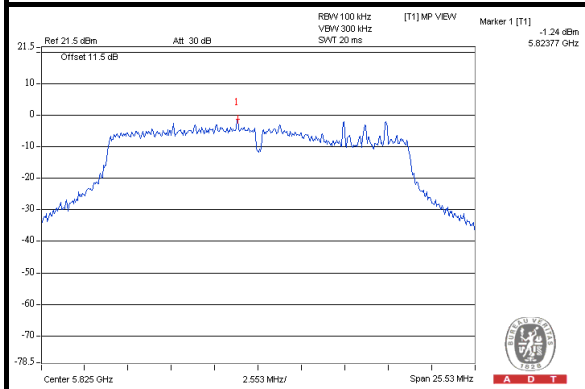
CH 149



CH 157



CH 165

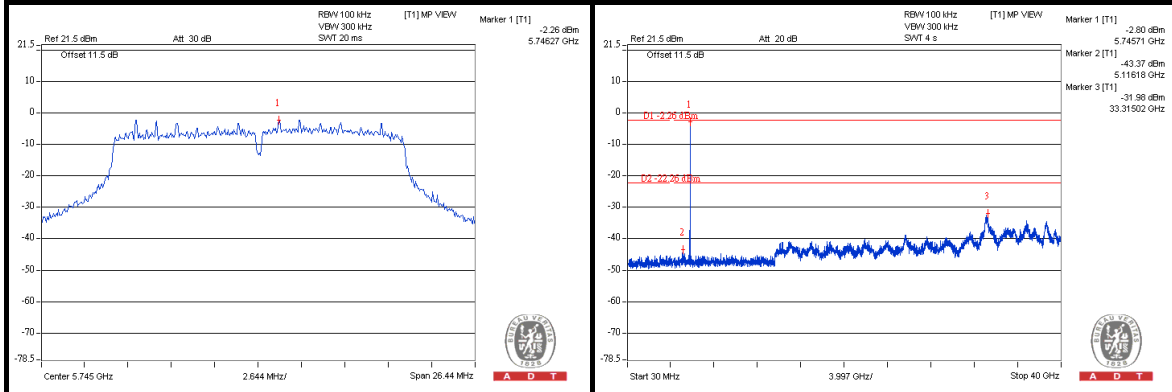




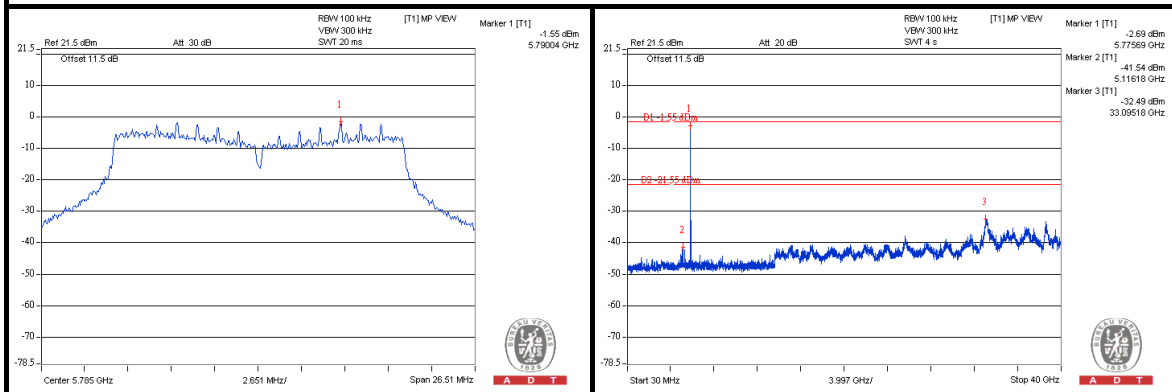
A D T

CHAIN 1

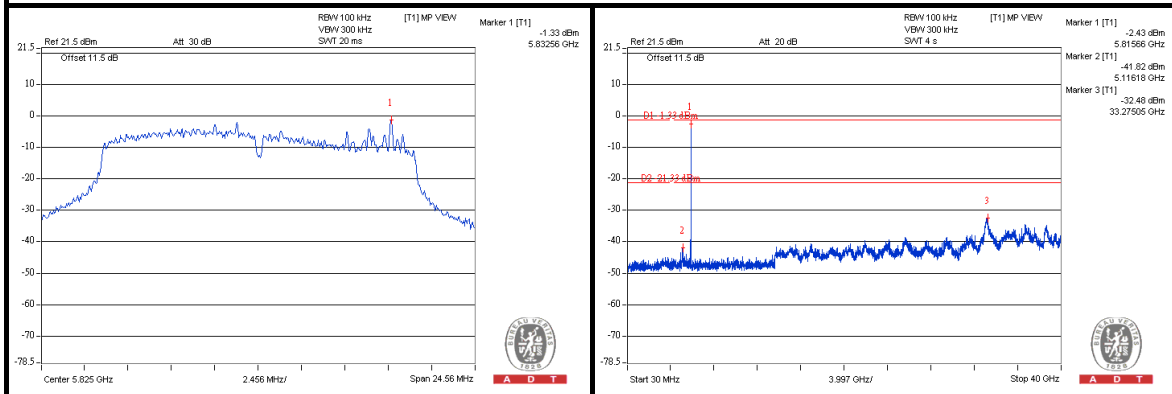
CH 149



CH 157



CH 165

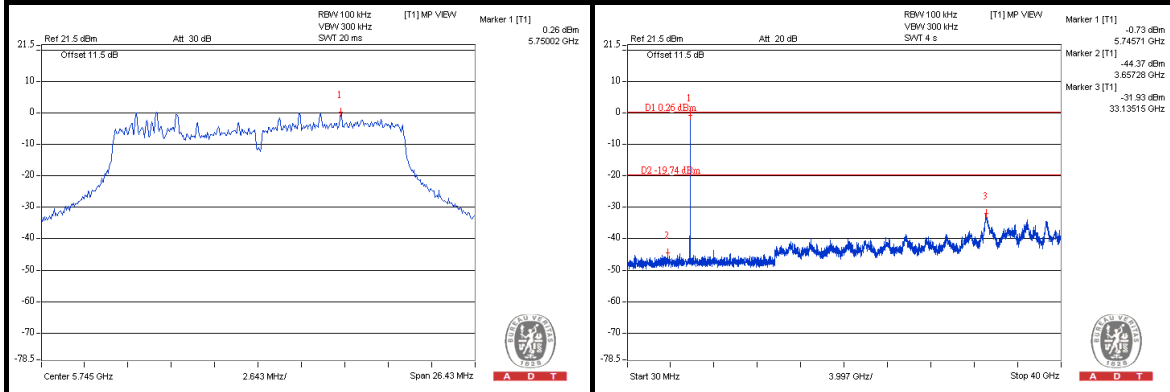




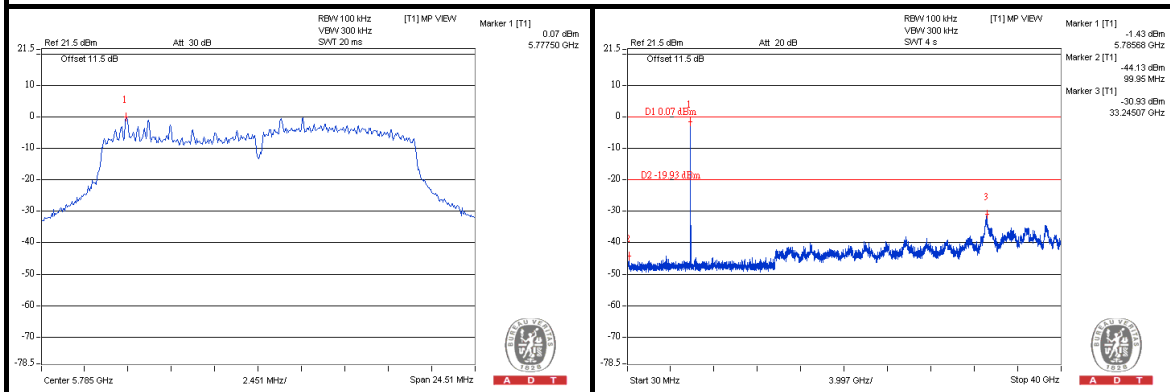
A D T

CHAIN 2

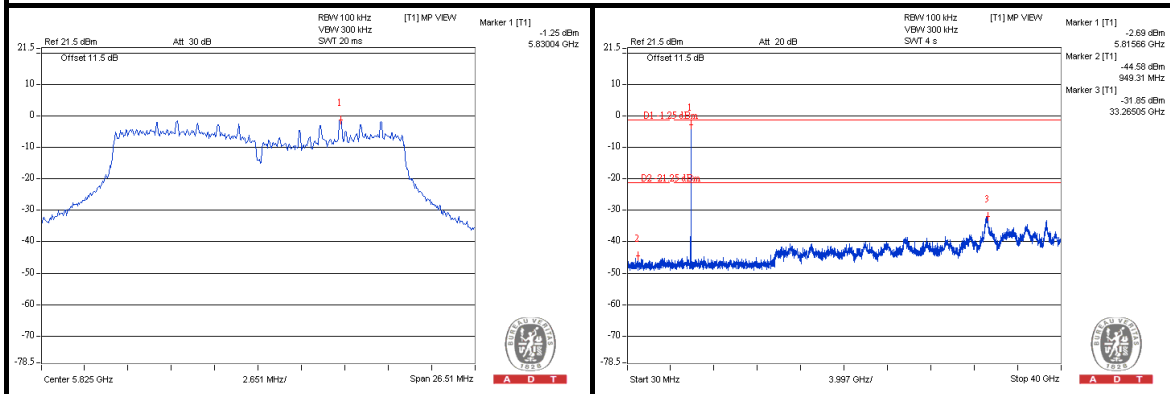
CH 149



CH 157



CH 165

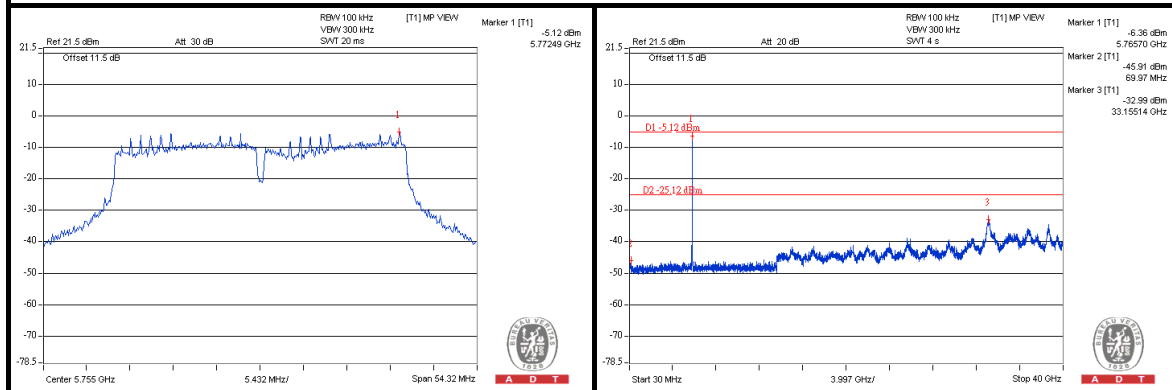




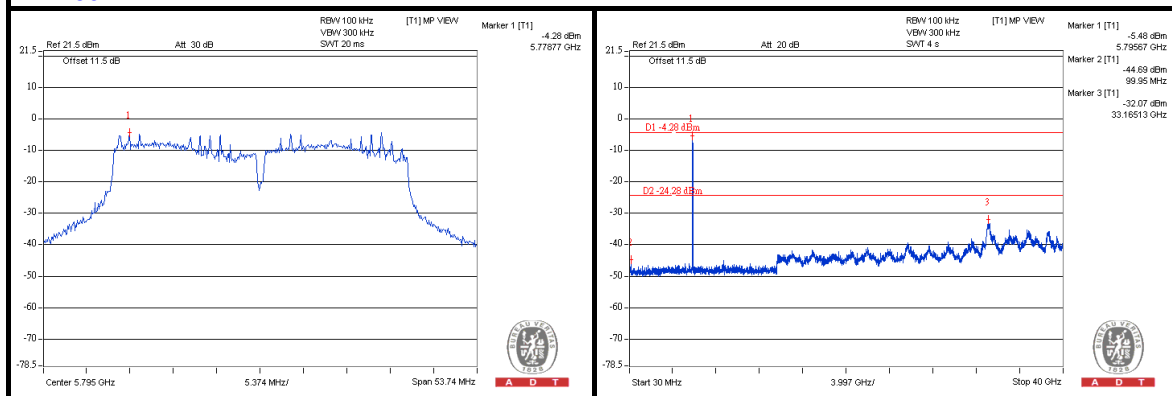
A D T

802.11n (40MHz) CHAIN 0

CH 151



CH 159

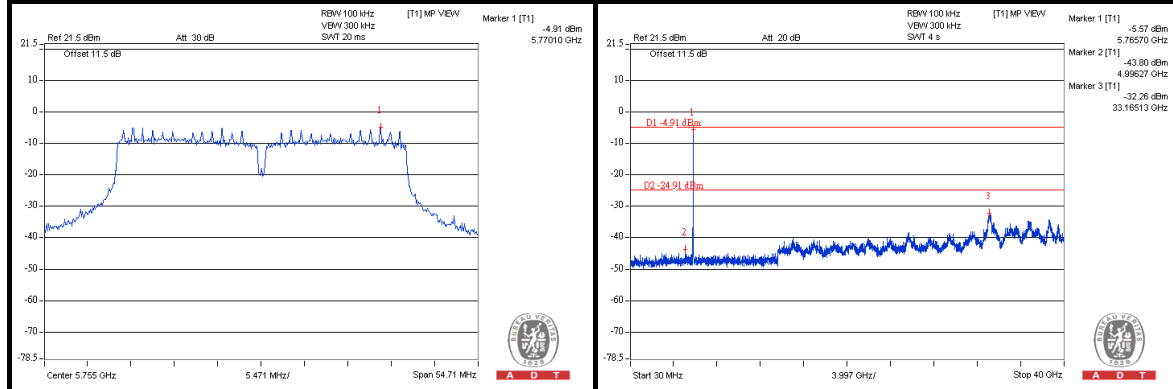




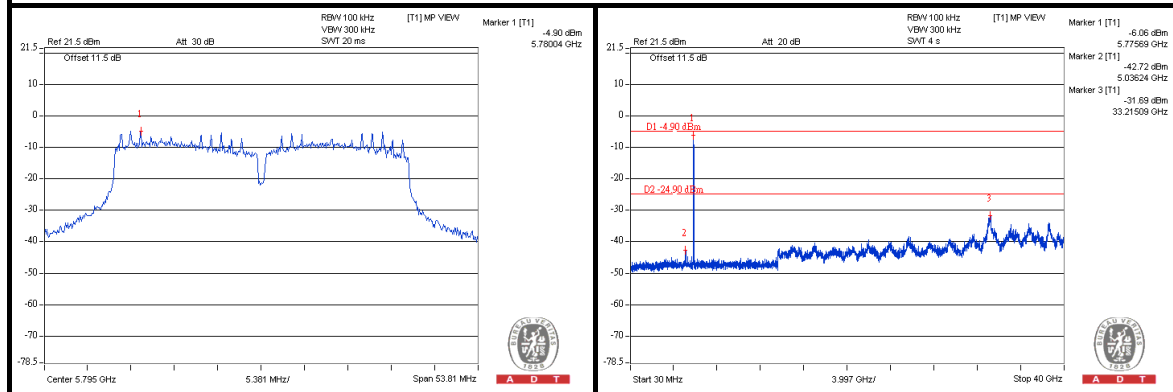
A D T

CHAIN 1

CH 151



CH 159

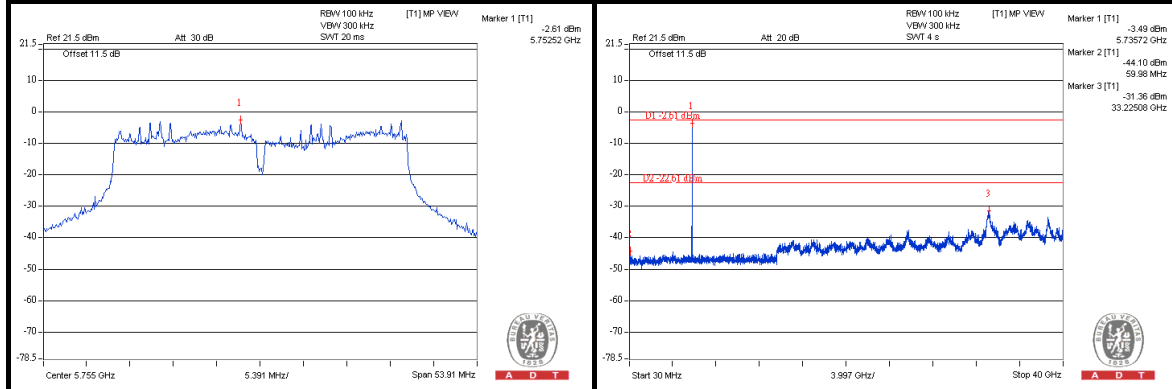




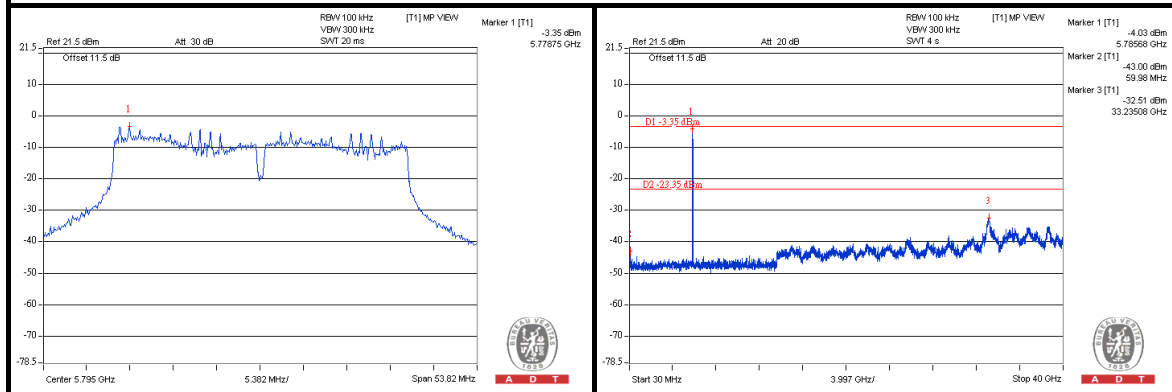
A D T

CHAIN 2

CH 151



CH 159





A D T

6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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7. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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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 modifications were made to the EUT by the lab during the test.

---END---